

FLORA OF INDIA

Series - 2

MATERIALS FOR THE FLORA OF ARUNACHAL PRADESH

VOLUME 1

(Ranunculaceae - Dipsacaceae)



BOTANICAL SURVEY OF INDIA

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(Ranunculaceae Dipsacaceae)

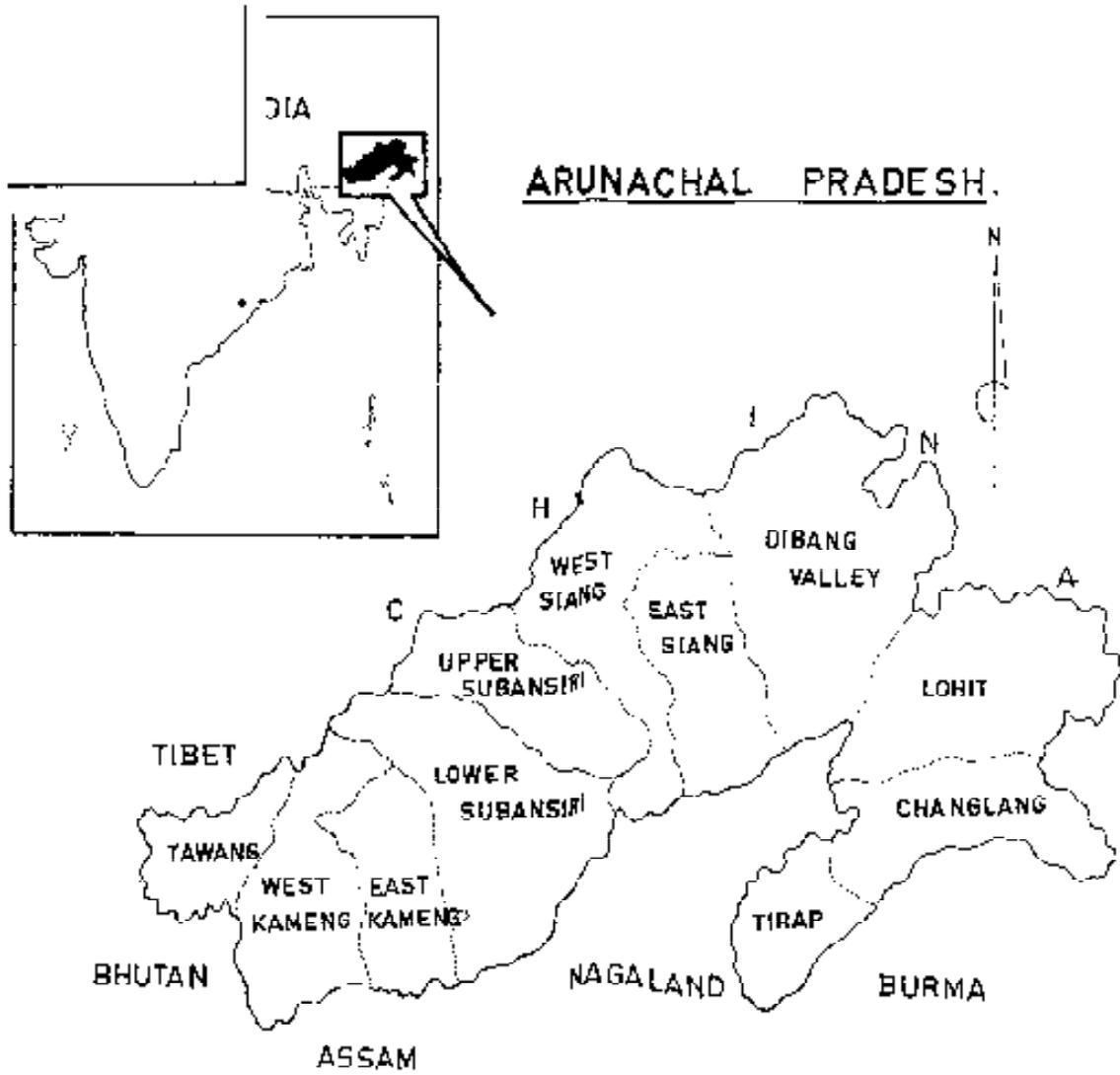
Editors
P.K. HAJRA
D.M. VERMA
and
G.S. GIRI



BOTANICAL SURVEY OF INDIA
CALCUTTA

Editors

**P.K. HAJRA
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and
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**MATERIALS FOR THE
FLORA OF
ARUNACHAL PRADESH**

VOLUME 1

(Ranunculaceae Dipsacaceae)

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FOREWORD

It gives me immense pleasure and satisfaction to accede to the request of the authors to write a few words on a 'Foreword' to the current volume which is found to be the beginning of the process of unraveling the Nature's hidden treasure in Arunachal Pradesh.

Ever since its inception the Botanical Survey of India has been conducting Floristic surveys and writings on the subject. Indeed, Indian flora is very rich and found in abundance. It is most gratifying that Botanical Survey of India has been endeavoring their best efforts in conducting systematic survey, studies and writings on the 'Flora' and conserve the rare and endangered species. 'Flora' literally means "the Roman Goddess of Flowers" and our mother nature is adorned with plenty of 'flora'. Our devout duty is to examine its life and beauty in the pursuit of unraveling this hidden treasure of nature.

For the people of Arunachal Pradesh, forest is an inseparable part of our lives. The economic development and prosperity of the people as well as the state lie with our knowledge of the forest and the wild plants that inhabit our land. Here the Botanists and Botanical Survey of India can only help us to study scientifically and explore their varied utility for the economic upliftment of Arunachal Pradesh. Since our state is extremely rich in plant life surrounding with magnificent forest trees and amazingly vast variety of wild plant resources, we owe to the Botanical Survey of India for their National Programme for conducting surveys and conservation of our plant resources which will undoubtedly help the people living in this evergreen State of India in attaining and maintaining a quality of life which they truly deserve.

I am confident that the publication of this book will further enlighten the people of this State about their natural plant resources and will meet the long felt requirement of a book on 'flora' in Arunachal Pradesh.

(Gegong Apang)

PREFACE

Arunachal Pradesh, in the extreme north-eastern corner of the country, harbours a very rich and diverse flora. Its unique phytogeographical position, topography and high degree of precipitation are some of the important factors which are mainly responsible for its enormous biological diversity comparatively in such a small area. Arunachal may also be regarded as a store house of many wild relatives of economic plants. These wild genetic resources of Agri-Horticultural importance are of immense value to the mankind in the present day world under the pressure of rapidly multiplying human population. The ruthless destruction and unplanned exploitation of natural living resources by human for various purposes necessitates appropriate measures towards germ-plasm conservation for future generations. In the fast developing states like Arunachal Pradesh the natural vegetation has been continuously and increasingly under pressure, and even before an inventory of the plant resources of the region could be undertaken, the ecological disasters have begun to take toll of several species. In order to cope with the increased domestic requirements for food, cloth and shelter, etc., owing to the population explosion, it has become essential to conserve and make the best use of all our natural resources.

Though the discovery of the wild plant resources in Arunachal Pradesh had been initiated by Griffith as back as in 1836, but it was only with the setting up of the Eastern Circle of the Botanical Survey of India, with headquarters at Shillong in 1955, the survey of plant resources in various parts of the districts of Kameng, Subansiri, Siang, Lohit and Tirap have been intensified.

Since its inception in 1977, Arunachal Field Station, Botanical Survey of India (BSI) is also actively engaged in the exploration of the flora of this region. In the present "Materials for the flora of Arunachal Pradesh" an attempt has been made to compile data from all the herbarium material housed in different herbaria of Botanical Survey of India and other Institutions and from the published literature. This publication will be helpful to the students of botany, foresters, agriculturists, pharmacologists, etc., in their research and management programmes since there is no other flora available for this region which can be consulted to assess its natural plant wealth.

The authors express their deep sense of gratitude to Dr. S.K. Jain and Dr. M.P. Nayar, Ex-Directors, Botanical Survey of India, for their invaluable suggestions and to Dr. B.D. Sharma, Ex-Director, Botanical Survey of India for assigning this important task and for his encouragement and guidance at different stages of its condensation. The authors also express their indebtedness to Dr. P.K. Hajra, Director, Botanical Survey of India, for his keen interest and guidance with valuable suggestions which he gathered through several

explorations particularly in the Kameng district of Arunachal Pradesh during his long tenure of service at the Eastern Circle of Botanical Survey of India, Shillong.

Sincere thanks are due to Sri J.K.Mehta, the Principal Chief Conservator of Forest, Arunachal Pradesh and other forest officials for their help during exploration work and to Dr. V.J.Nair, Scientist-SD-in-Charge, Eastern Circle, Botanical Survey of India (at present Deputy Director, Southern Circle, B.S.I.), Shillong, Dr. D.K. Singh, Deputy Director, Northern Circle, B.S.I.; Dr. L.K. Banerjee, Deputy Director, I.S.I.M., B.S.I. for providing library, herbarium and computer facilities. We are also thankful to Dr.K.Haridasan, Scientist, Forest Department, Arunachal Pradesh for useful suggestions. The authors also wish to place on record their sincere gratitude to the Director, Geological Survey of India, Operation Arunachal Pradesh, Regional Geology Division, North Eastern Region, Itanagar, for providing the details on the geology of Arunachal Pradesh. Our thanks are also due to technical and other staff of Arunachal Field Station, Botanical Survey of India, Itanagar and Sanjay Kumar Uniyal, Northern Circle, B.S.I. for providing all types of cooperation during the preparation and finalisation of this work.

Calcutta
01.01.1996

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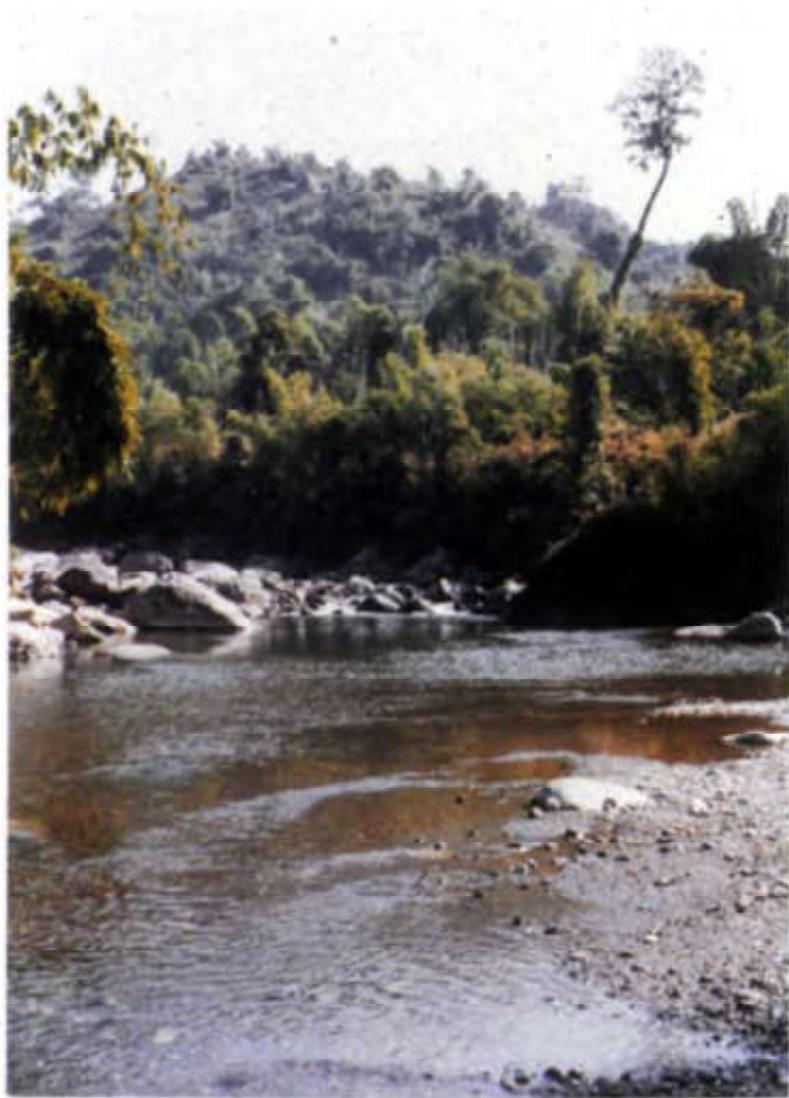
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Primary open forest showing *Cyathea* sp. - a threatened element.



Ganga lake, Itanagar : Primary tropical semievergreen forest.



Secondary forest with dominant Bamboo species along river course
(Sankie View, Itanagar).



Riverine forest (West Kameng district along the river 'Gea Bharali')



Pine forest - West Kameng district.



Open primary forest - showing Bamboo and *Pandanus* species.



Secondary forest with Bamboo and *Musa* species.



'Jhum' cultivation drying of felled primary forest vegetation.



'Jhum' cultivation - burning of dried vegetation.



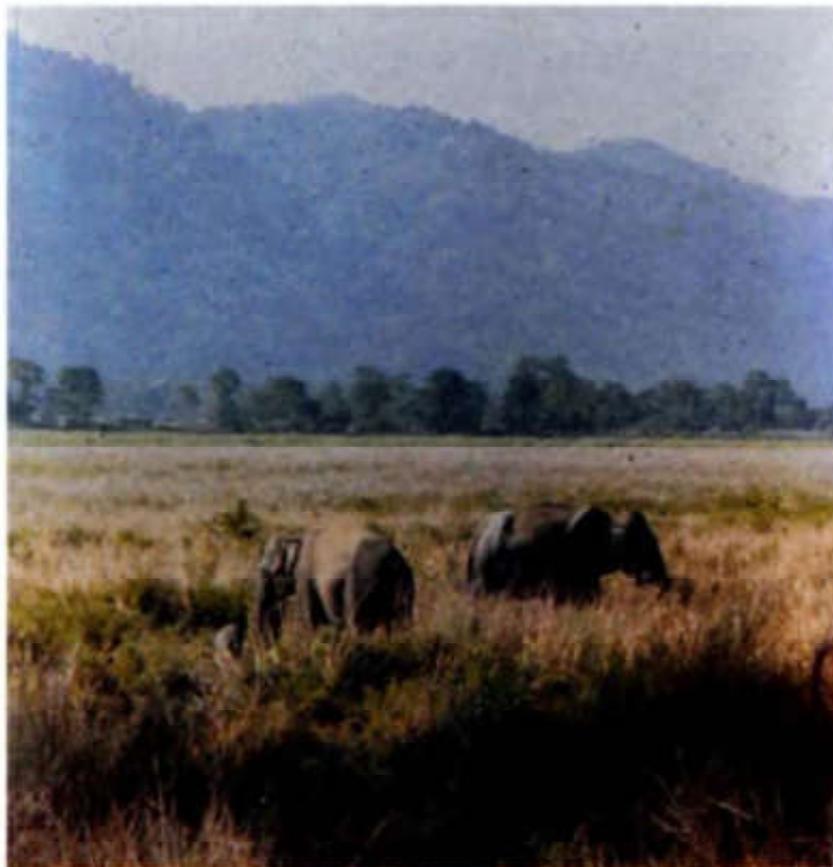
'Jhum' cultivation - paddy and maize crop.



Secondary forest on abandoned 'Jhum' land.



Mithum (*Bos gour*) - the majestic semi-domesticated cow of Arunachal Pradesh.



'Asiatic Elephant'



Podophyllum hexandrum Royle



Sarauia armata Kurz



Impatiens latiflora Hook.f. & Thomson



Oxalis debilis H.B.K. var. *corymbosa* (DC.) Lourt.



Oxalis debilis H.B.K. var. *corymbosa* (DC.) Lourt.



Dalhousia bracteata (Roxb.) Baker



Melastoma normale D. Don



Melastoma normale D. Don



Lagerstroemia reginae Roxb.



Duabanga grandiflora (Roxb. ex DC.) Walp.



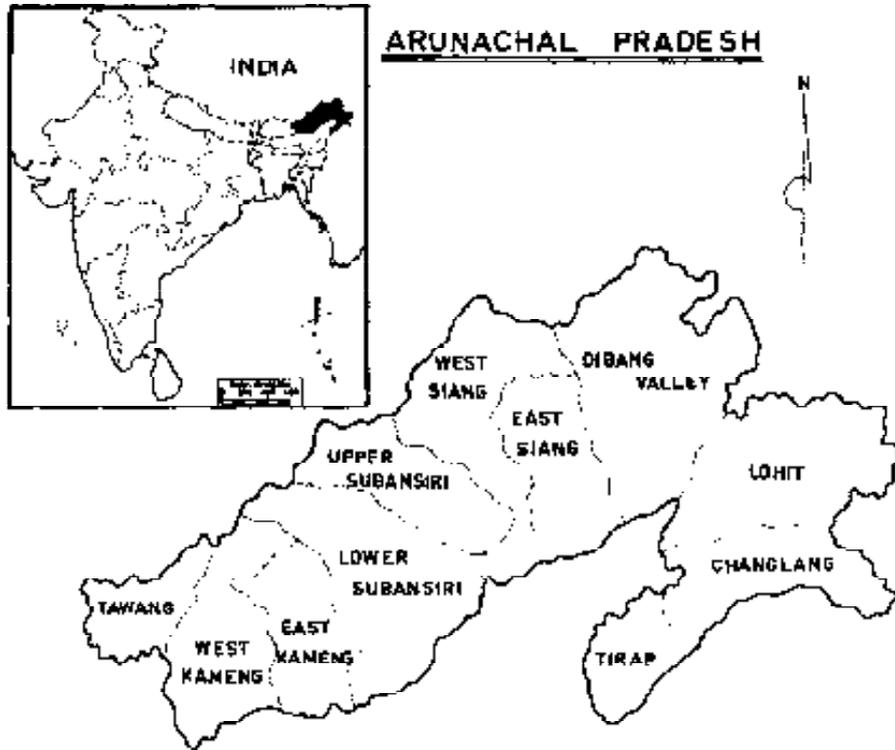
Indofevillea khasiana Chatterjee

INTRODUCTION

Arunachal the land of the rising sun, in the extreme north-eastern corner of India covers an area of 83740 Sq.Km. It lies between 26° 28' and 29° 30' North latitude and 90° 30' and 97°30' East longitude. It is bounded in the north by Mc-Mohan Line, in the east by China and Burma(Myanmar), in the south by the states of Nagaland and Assam and in the west by Bhutan.

Arunachal Pradesh- the 24th State of the Indian Union attained full fledged statehood on February 20th, 1987. It was known as North East Frontier Agency (NEFA) until 1972 when it was given the status of a Union Territory and renamed as Arunachal Pradesh and is the largest among the seven north-eastern states of the country. The state capital Itanagar, at an altitude of 530 m above sea level, is located at 93° East longitude and 27° North latitude in the Lower Subansiri district and has been named after a historical fort, the "Ita Fort" (meaning fort of bricks), built in 14-15th century. The use of bricks which are almost akin to the present day bricks is an interesting aspect of Archaeology. Arunachal finds mention in the ancient literature too, like in the "Kalika Purana" and "Mahabharata". The place is supposed to be the "Prabhu Mountains" of the Puranas. It is said that sage Parashuram washed away his sins here. This legendary place in the lower reaches of Lohit river is now a pilgrimage called "Parasuram Kund" where a large number of people from different walks of life come to have a holy dip on Makar Sankranti day. "Malinithan", a place in East Siang district, has rich granite sculptures belonging to 14-15th century depicting Indra on elephant 'Airavata', Surya on chariot and 'Nandi bul'. According to logical legends it is here the Lord Krishna married Rukmini, the daughter of the Bhismaka.

Krishna and Rukmini were welcomed here by Parvati with garlands, and Parvati thus acquired the name Malini and the place subsequently named Malinithan. These widely scattered archaeological remains at different places in Arunachal bear testimony to its rich cultural heritage. Arunachal, apart from having an important place in Hindu mythology, is also an abode of 400 years old Monastery of Mahayana Buddhist in Tawang district at an altitude of about 3100 m. Built in 17th century the place is the focal point of spiritual life of the Buddhists of this region even today and houses more than 500 Buddhist priests. It is also the birth place of the Dalai Lama the VIth.



Map 1. Arunachal Pradesh showing different districts.

The State has been divided into 11 districts namely :-

1. Tawang
2. West Kameng
3. East Kameng
4. Lower Subansiri
5. Upper Subansiri
6. West Siang
7. East Siang
8. Dibang Valley
9. Lohit
10. Changlang
- and 11. Triap.

TOPOGRAPHY

Arunachal Pradesh has generally a rugged terrain characterised by hill ridges and valleys. The ridges are either parallel or in opposite direction, and in between the hill ridges, wide or narrow, deep or shallow valleys exist. In general the hills gradually rise from south to north with an east-west orientation. Their elevation ranges from 200 m in case of Siwalik formations from the plains of Assam to the Himalayas upto 7750 m along the Tibet China border.

Based on the tribes inhabiting a particular area Arunachal Pradesh was earlier divided into the following subareas:-

1. Aka hills
2. Daphla hills
3. Miri hills
4. Abor hills
5. Mishmi hills

However, physiographically the Himalayan ranges in Arunachal Pradesh can be divided into 3 divisions :-

- a. **The Siwalik and the Foothills** : This division runs along the southern border of Arunachal Pradesh along the longitudinal valleys of Kameng, Subansiri, Siang, Dibang and Lohit. The area has a more or less flat topography and gradually merges with the plains of Assam in the northern part of Brahmaputra valley.
- b. **The Lesser Himalayas** : Rising from the Assam plains, the Siwaliks attain a sudden rise and merge into lesser Himalayan ranges in the north. This division has comparatively lower altitudes (upto 800 m) along river valleys.

- c. **The Greater Himalayas** : It is the dominant division of the state. Peaks reaching as high as 6000 m and more are located in this division. Some of the known peaks of this division are : Gorichen (7300 m), Kangto (7090 m), Namcha Barwa (7756 m), Kulangri (7544 m) and Chomo Lhari (7344 m).

GEOLOGY

The eastern Himalayas of Arunachal Pradesh can geographically be divided into three zones from south to north viz. (1) the Sub-Himalayas, (2) the Lesser Himalayas and (3) the Greater Himalayas.

The Sub-Himalayan zone consists of Neogene molassic sediments (Siwaliks) whereas the Lesser Himalayas comprises Upper Proterozoic to Lower Palaeogene shelf sediments (Bomdila Group, Buxa-Miri Formations) and the Greater Himalayas has been characterised by para and ortho metamorphites and acid to intermediate igneous intrusions from Precambrian to Tertiary age (Sela Group, Siang Group, Lumla Formation, etc.). It is a well known fact that these zones are directly or indirectly controlled by the distinct structural features called MBF, MCT, Lohit and Mishmi thrusts.

The Main Boundary Fault (MBF) separates the foot Hill molassic sediments from the shelf sediments of Lesser Himalayas. The main Central Thrust (MCT) generally identified at the base of the central crystallines of Greater Himalayas is a low angle feature. It shows the tectonic junction between the crystallines and the underlying metasediments. The north westward extension of the Lohit and Mishmi thrusts terminate the main Arunachal Himalaya against the Mishmi massif sequence - older crystalline complex and flysch of meta-sediments with serpentinite intrusives.

After the crystallines and metamorphic complex the next older sediments are the lower and middle Palaeozoic Buxa-Miri sequences of shelf sediments deposited in an extensive basin prevailed in northern part of the Lesser Himalayas. These sedimentary stratas do not show distinct fossil bearing horizons except a few remains of algal stromatolites and worm burrows at places.

During Upper Carboniferous to Lower Permian times, a marine transgression swept away parts of Arunachal Pradesh and extended its arm upto the foothill. During this period, the sedimentation commenced under glacio-

marine, marine and continental lagoonal environments and formed the glacio-marine diamictite, fossiliferous marine sediments in foothills, deposition of coal beds and intercalations of marine units with continental facies. (Bichom - Bhareli units of Gondwanas). At the end of Permian, marine regression took place and the entire part of Lesser and foothills of Arunachal Pradesh remained as land till the beginning of the Tertiary period when another episode of marine transgression and regression took place and subjected to form marine Eocene units with rich faunal and floral assemblages (Dalbuing, Dunro, Garu-Gensi, Yembung and Pasighat horizons).

The eruptive rocks in Arunachal Himalaya is represented by an extensive occurrence of Abor volcanics. From the field evidences it is found that the Abor Volcanics occur interbedded both with Buxa Permian Gondwanas and earlier workers equated them with Panjal Volcanics and Rajmahal traps. Recent studies have been brought out the infra and inter-trappen horizons with Palaeocene-Eocene marine fauna and hence the associated major basalt flows of Abor Volcanics may be related to Late Eocene period.

In the south-eastern part of the Arunachal Pradesh in Tirap district, the middle Tertiary sequences are exposed. These have been formed under a different sedimentary environment prevailed in a rapidly subsiding through and formed a mixed type of rocks under fluvial, deltaic, lagoonal conditions.

In the frontal foredeep basins developed due to the upliftment of land in the Sub-Himalayas, the Siwalik formation formed in the reversal of slope towards north-west. The Quaternary sediments after a hiatus in sedimentation history rest unconformably over the Siwalik.

DRAINAGE SYSTEM

The natural drainage system is maintained by numerous streams and rivers dissecting the varied topography of Arunachal Pradesh which usually flow from the west-north to east-south direction. The main watershed system of the state is constituted by eleven rivers which are fed through rain water or through melting snow at the sources. These rivers receive water of all other substantial streams and rivulets and are finally drained to the westerly flowing Brahmaputra. There are six principle rivers in the state namely: Kameng, Subansiri, Siang, Lohit, Tirap and Dibang. The others include Kamlang, Sissini, Kamala, Dikrong, Ranga, Noa-Dihing and Namphuk (Buri-Dihing).

SOIL

Owing to predominantly hilly terrain the soil in major parts of the state is rocky. These rocks are of Himalayan type mainly shales, schists and conglomerates. In general the soil has a high degree of acidity due to heavy rainfall and are rich in humus with higher percentage of nitrogen because of dense and rich vegetational cover. These soils have thick layer of organic matter as a result of accumulation of huge quantities of rotting/decaying plant materials. The erosion and deposition by rivers has resulted in sandy to sandy-loam, clayey soil mixed with heterogeneous matrix in some places. Sometimes soil mixed with mica is also found in river belt regions, whereas in some places the sedimentary nature of the soil can be observed. The soil in the foothill regions may be sandy or loamy or mixed, while it is clay alluvium with rich organic content in the plain areas or in the valleys.

The cultivation on the hill slopes in Arunachal Pradesh, which is being practiced since time immemorial, plays an important role in the rapid depletion of the organic matter from the surface layers of the soil as it is washed away due to heavy and prolonged rainfall, and as a result these slopes gradually lose their fertility.

The soil in higher regions are dark brown to yellowish brown in colour and somewhat coarse textured. It may be coarse sandy loam to loamy sand while the subsoil is loamy or clayey loam. These soils are well drained and granular. The soil of this region have developed from high grade metamorphics consisting schist, shales, granodiorite, sandstone, quartzites, conglomerates, mica, schist, etc.

CLIMATE

By and large the state exhibits a mosaic of climatic zones varying from place to place which is mainly due to its geographical position and varied topography. The state receives heavy rain almost throughout the year and practically without any dry months (Rao 1972). In general the major parts of the state have humid subtropical climate with wet summer and winter, whereas it is cold humid in the remaining parts. On the basis of the monsoon, roughly the 12 months can be divided into 4 seasons which sometimes overlap one another:-

1. Winter season : January to February
2. Premonsoon season : March to May

3. Monsoon season : June to September
4. Postmonsoon season : October to December

The average mean maximum and minimum temperature is 29.5° C and 17.7° C in subtropical humid regions and 21.4° C and 2.4° C in cold humid regions. Generally December, January and February are the coldest months whereas, July and August are normally the warmest months and the maximum temperature is normally $\pm 30^{\circ}$ C. However, sometimes the temperature rises as high as 35° C during summer month in the plains and broad valleys.

The average annual rainfall in the humid subtropical region is about 2972.7 mm while it is 2086.9 mm in cold humid regions. East Siang and neighboring areas of Lohit receives the highest rainfall, whereas west Kameng experiences the least annual rainfall.

PEOPLE AND CULTURE

The population of Arunachal Pradesh according to 1991 census is 8.5 lakhs. Arunachal with its rich floristic diversity is also said to possess the largest number of Tribes. There are 26 major tribes and about 72 subtribes in the state. The different tribes inhabiting in different parts of the state lead an intricate life totally dependent on the forest resources, and virtually all of their requirements ranging from food, fuel, fodder, medicine, cordage and various other domestic needs are met by the local vegetation. Some attempts have been made to record and list such plant used by the local tribes by R.K. Arora (1981); D.P. Dam & P.K. Hajra (1981); G.D. Pal (1984), K. Thothathri & G.D. Pal (1987); H.C. Pandey (1988), K. Haridasan *et al.* (1990); H.C. Pandey *et al.* (1990); and G.D. Pal (1992).

Different Tribes of Arunachal Pradesh

Aka; Apatani; Ashings; Bagins; Boris; Digarumishmis; Gallongs; Hill Miris; Idumishmis; Khamtis; Khonsa; Membas; Mijis; Mijumishmis; Mi-nyongs; Monpas; Nishis; Noktes; Padams; Pailibos; Shordukpens; Singphos; Tagins; Tangsas; Wanchos and Yobins.

These tribes may be divided into 3 cultural groups on the basis of their socio-religious affinities :-

- The Monpas, Membas and Shordukpens of Tawang and West Kameng follow Mahayan sect of Buddhism. Their villages have richly decorated "Gompas". They breed yaks, mountain goats and practice terrace cultivation. Khamtis and Singphos of the eastern part of the state follow Hinayana sect of Buddhism and are said to have migrated from Thailand, Burma (Myanmar) long ago.

- Adis, Akas, Apatanis, Bagins, Tagins, Nishis, Mijis, Tangsas, etc., worship sun and moon god called Donyi-Polo and Abo-Tani, the believed original ancestors for most of these tribes. They traditionally practice shifting or 'jhum' cultivation.

- Noktes practice elementary form of Vaishnavism.

Arunachalees are traditional craftsman having deep aesthetic sense. They master a variety of crafts like weaving carpets, rugs, garments of vivid colours and exquisite patterns, painting, pottery, wood carving, cane and bamboo furniture, house hold goods and other attractive and decorative articles.

FLORA AND FAUNA

The wide ranging altitudinal variations from 100 m in the foothills to ca 7800 m high Himalayan mountains, rippling water over stones and boulders of the streams and mighty rivers flowing down to the delightful valleys, high rainfall and humidity, soil conditions, etc., have blessed Arunachal with a rich and very diverse flora and fauna. Keeping in view the varied flora and fauna of Arunachal, a good number of protected areas have been established covering an estimated area of 5094.98 Sq.Km.

Arunachal abounds in elephants and tigers in the grassy foothills, whereas red pandas and musk deer are found in higher altitudes. The most important among the mammals is the swinging Hoolock Gibbon which occurs only here. The white winged Wood Duck is one of the most threatened birds of the world. The great Indian Hornbill is also found frequently throughout Arunachal. The "Mithun" which is found both in wild and domesticated forms has religious significance and has got close relation with socio-cultural life of the people. It is also regarded as a unit of wealth and is frequently used for barter or food on festive occasions and ceremonial functions. Some important wildlife of the state are :-

i) **Mammals:** Hoolock, Capped Langur, Assamese Macaque, Phesus Macaque, Slow Loris, Tiger, Leopard, Snow Leopard, Clouded Leopard, Golden Cat, Fishing Cat, Leopard Cat, Marbled Cat, Crab eating Mongoose, Otter, Himalayan Weasel, Civet, Sloth Bear, Himalayan Black Bear, Wild Dog, Red Panda, Indian Pangolin, Crestless Porcupine, Giant Flying Squirrel, Namdapha Flying Squirrel, Red Chicked Squirrel, Malayan Giant Squirrel, Asiatic Elephant, Sambar, Hog Deer, Barking Deer Musk Deer, Gaur, Ghoral, Takin, Hispid Hare.

ii) **Birds:** Hodgeons Hawk Eagle, Black Eagle, Gray Headed Fishing Eagle, Crested Serpent Eagle, Common Hill Partridge, Kalij Pheasant, Red Jungle Fowl, Peacock, Pintailed Green Pigeon, Green Imperial Pigeon, Spotted Dove, White Winged Wood Duck, Bay Owl, Red Headed Trogon, Blue Bearded Bee-eater, Rufous Necked Hornbill, Blue Throated Barbet, Rufous Wood Pecker, Black Headed Myna, Pied Myna, Common Myna, Jungle Myna, Hill Myna, Jungle Crow, Flycatcher Shrike, Large Wood Shrike, Scarlet Minivet, Small Minivet, Leaf Bird, Fairy Blue Bird, Redvented Bulbul, Black Bulbul, Wren Babbler, Red Headed Babbler, Black Throated Babbler.

iii) **Reptiles:** Moonitor Lizard, Geeko, Diards Blind Snake, Great Tree Racer, Black Banded Trinket Snake, Wolf Snake, King Cobra, Indian Spectacled Cobra, Russells Viper, Bamboo Pit Viper, Python, Black Krait.

LIST OF DECLARED SANCTUARIES & NATIONAL PARKS IN ARUNACHAL PRADESH

Sl. No.	Sanctuary/National Park	District	Area in Sq.Km.
1.	Dibang Wildlife Sanctuary	Dibang Valley	4149.00
2.	Eagle Nest Wildlife Sanctuary	East Kameng	217.00
3.	Itanagar Wildlife Sanctuary	Papum Pare	140.30
4.	Kamlang Wildlife Sanctuary	Lohit	783.00
5.	Kane Wildlife Sanctuary	West Siang	55.00
6.	Lali 'D' Ering Wildlife Sanctuary	East Siang	190.00

Sl. No.	Sanctuary/National Park	District	Area in Sq.Km.
7.	Mehao Wildlife Sanctuary	Dibang Valley, Lohit	281.50
8.	Pakhui Wildlife Sanctuary	East Kameng	861.95
9.	Sessa Orchid Sanctuary	West Kameng	100.00
10.	Mouling National Park	East Siang	483.00
11.	Namdapha National Park (Tiger reserve)	Tirap	1983.23

STATUS OF FORESTS IN ARUNACHAL PRADESH

Sl. No.	Status	Area in Sq.Km.	% of total Forest area	% of total Geographical area
1.	Reserve Forests	9815.37		
2.	Wildlife Sanctuaries National Parks	6777.75 2468.23	37.32	22.97
3.	Village Reserve Forests	175.20		
4.	Anchal Reserve Forests	256.08	0.50	0.30
5.	Protected Forests	7.79	0.01	0.009
6.	Unclassed State Forests	32039.00	62.17	36.27
	Grand Total	51539.42	100.00	61.54

*Source: "Arunachal Forests" by Arunachal Pradesh Environment & Forest Department, Arunachal Pradesh, Itanagar, 22nd March, 1993.

BIOSPHERE RESERVE IN ARUNACHAL PRADESH

"Dehang-Debang Biosphere Reserve" is the proposed Biosphere falls under the East Siang, West Siang and Dibang Valley districts of Arunachal Pradesh and is likely to spread over an area of 8400 sq. km.

BRIEF HISTORY OF PLANT EXPLORATIONS IN ARUNACHAL PRADESH

The geography, location, climate and varying topography have contributed to the characteristic, rich and diverse flora of Arunachal Pradesh. But, despite its fabulous plant wealth this region was not able to attract as many plant collectors or explorers as compared to other regions within Eastern Himalayas which may be attributed mainly to its tough and inaccessible terrain. The extensive as well as intensive plant collection and survey work in the state was initiated after the reorganisation of Botanical Survey of India in 1954. However, some important explorations were conducted prior to 1954 of which mention may be made of the following.

Though Lieutenant R. Wilcox and Captain Bedford visited Mishmee (Mishmi) in Arunachal Pradesh during their Survey of Assam (Assam) and the neighboring countries in view of geographic discoveries on the N.E. Frontier (1825-1828), but it was only Griffith who botanised this region for the first time. His 'Flora of Mishmee Hills' was based on the collections made by him during October-December, 1836 following more or less the route of Wilcox and Bedford. The account deals with 900 species of flowering plants and 22 species of ferns and fern allies. Thomas J. Booth undertook horticultural explorations between 1840-1850 from Bisnath (Assam) into the hills of Daphlas situated at the south-eastern corner of Bhutan and described some Rhododendrons from this area. With the advent of 20th Century, the plant explorations in this region gained momentum which resulted in the publication of some important floristic accounts of this region such as, "On the Botany of Abor Expedition" by I.H. Burkill (1924-1925); "Botanical Expedition in the Mishmi Hills" by Kingdon Ward (1929-1931); "Lohit Valley" by Kingdon Ward (1953); "A sketch of the vegetation of Aka Hills" by N.L. Bor (1938). In 1941, K.P. Biswas published "The Flora of Aka Hills" based on the collections of N.L. Bor for a period of 3 years (1931-1934) which includes 1549 species of flowering plants (Angiosperms), 9 species of Gymnosperms and 58 species of Ferns and Fern allies.

The huge collection and work of U.N.Kanjilal, the Chief Commissioner of Assam came in the light of botanical world only after his death in 1928. It was P.C.Kanjilal with A.Das, C.S.Purakayastha and R.N.De of the Forest Department of Assam published the 'Flora of Assam' in five volumes (1934-1940), where the 5th volume deals with Gramineae is by N.L.Bor (1940). This work is still regarded as a major floristic account so far as the flora of this region is concerned. G.K.Deka of the Forest Department of Assam who later on joined the Botanical Survey of India explored some parts of Kameng district mainly the foothills in 1951, while K.Srinivasan in early 1955 surveyed along the Rupa valley in Kameng district. In the late 1955, R.S.Rao undertook plant exploration along the Rupa and Dirang valley and Apatani valley and surrounding areas of Subansiri district.

With the inception of the Eastern Circle of Botanical Survey of India in December 1955, various parts of Arunachal Pradesh namely Kameng, Subansiri, Siang, Lohit, Tirap, etc., were surveyed by the botanists of Botanical Survey of India to explore the vegetational wealth of the state. Some major explorations may be summarised as: R.S.Rao (1955-59, 1973: Kameng, Subansiri, Siang, Tirap); G.Panigrahi (1957-59: Kameng, Subansiri, Siang, Lohit, Tirap); J.Joseph (1957-58, 1964, 1969: Kameng, Siang, Lohit); D.B.Deb (1961: Tirap); A.S.Rao (1964, 1969, 1970, 1973: Kameng, Siang, Lohit); A.R.K.Sastry (1964-66: Subansiri); C.L.Malhotra (1970-71: Subansiri); P.K.Hajra (1970, 1973, 1976: Kameng).

As the climatic conditions are ideal for the growth and development of orchid in this region, National Orchidarium at Shillong and Experimental Garden at Barapani near Shillong have been set up by the Botanical Survey of India to provide facilities for conservation, multiplication and thorough systematic studies of Orchidaceae of this region and in this regard contributions of S.K.Kataki and N.C.Deori of Eastern Circle, B.S.I. are worth mentioning. S.N.Hegde and A.N.Rao of the Forest Department of Arunachal Pradesh also have made very valuable contributions so far as the Orchid wealth of the state is concerned.

After the establishment of Arunachal Pradesh Field Station, Itanagar in July 1977, R.M.Dutta, A.K.Baishya, Jagadish Lal, H.J.Chowdhery, S.K.Das and A.Pramanik surveyed some selected areas of Arunachal Pradesh. G.D.Pal, one of the authors of this present work surveyed the flora of Lower Subansiri district (1978-85) in detail for his Ph.D. dissertation.

Apart from these, K.C.Sahani (1964,1969); H.B.Naithani, K.N.Bahadur, S.S.R.Bennet and other scientists from the Forest Research Institute, Dehra Dun have explored some parts of Arunachal Pradesh. The forest officers and Scientists of the Forest Department of Arunachal Pradesh who are the custodian of the vegetational wealth of the state also made valuable contributions in respect of survey, protection and conservation of this enormous plant genetic resources.

GENERAL VEGETATION

The phytogeographical position, irregular and undulated topography with lofty hill ridges and deep valleys accompanied by wide variation in climate and soil have resulted into the formation of varied ecological diversity which subsequently influenced a very rich and fascinating vegetation in the North-Eastern region of India comprising seven states. The dense vegetation right from the foothills up to the snow line is estimated to harbour 7000-8000 species of flowering plants, nearly 50% of the Indian flora. Among these seven states, Arunachal Pradesh, the largest state of North-East exhibits the richest type in terms of both species diversity and concentration and may be considered as the most valuable region of active speciation in the country. The forest cover of the state is about 61.54% of its total geographical area of which a major part still enjoys primary forest, though they are quickly eroding due to various biotic and abiotic factors. The characteristic three storeyed sequence of vegetation particularly in the tropical and subtropical zones is one of the significant features in Arunachal Pradesh where the shrubs and small trees form the ground storey, the medium sized trees form the middle storey and the lofty trees with dense canopy form the top storey.

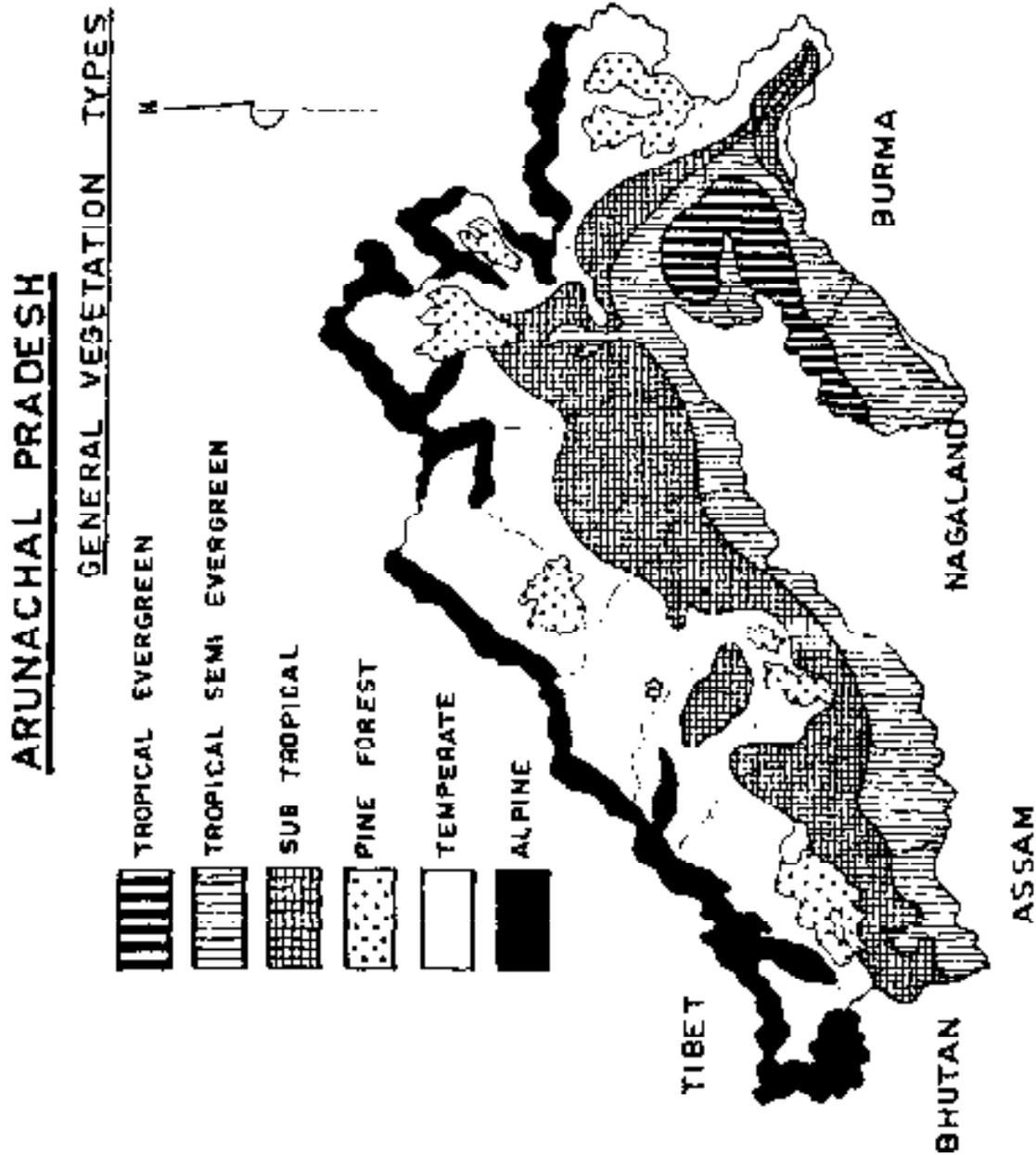
Classification of the vegetation types are followed basically on two lines 1) classification based on vegetation i.e. study of plant communities where the data being grouped in any of the several categories such as physiognomy, structure, composition and dynamics, and 2) classification based mainly on climate. Schimper (1898) put primary importance to the moisture condition and considered mountain separately because of their own climatic peculiarities. Beard's (1944, 1955) classification was mainly based on floristic grouping which was primarily followed by Champion & Seth (1968) where the authors remarked Moisture condition during the growing season are evidently the most important items in determining the type of vegetation which can exist; but neither rainfall alone nor atmospheric humidity indicates the availability of

moisture for growth, many other factors among which the soil is predominant also coming into play'. He classified the vegetation in five major groups namely 1) Tropical forests 2) Montane subtropical forests 3) Montane temperate forests 4) Subalpine forests and 5) Alpine forests with several subtypes in each major category. The vegetation of Arunachal Pradesh may be ascribed to his wet evergreen and semievergreen subtypes of Tropical forests, 'subtropical broad leaved and subtropical pine subtypes of Montane subtropical forests, Himalayan moist temperate subtype under Montane temperate forests, subalpine forests and moist alpine scrubs of Alpine forests. M.A.Rau (1974) discussed the vegetation and phytogeography of the Himalayas and categorised the vegetation of Arunachal Pradesh into tropical, subtropical, temperate and subalpine zones, while A.S.Rao (1974) on 'The vegetation and phytogeography of Assam-Burma' proposed 3 major categories viz. tropical (subtropical mixed as subtype), temperate and alpine. In the present work, the vegetation of Arunachal Pradesh is considered under 4 major categories namely 1. Tropical 2. Subtropical 3. Temperate and 4. Subalpine & Alpine, based on Champion & Seth (1968) and added information available from recent studies by scientists of Botanical Survey of India and Forest Department of Arunachal Pradesh.

I. Tropical Vegetation

Such vegetation exists up to an elevation of 900 m in the foothill regions and outer valleys with heavy rainfall and high summer temperature. This vegetation can be further divided into two subtypes based on the composition and structure:-

I.a. Tropical Evergreen : The tropical evergreen vegetation typically extends from foothills up to 1000 m in the areas receiving maximum rainfall. The top canopy or the upper storey in these forests mainly consists of tall trees. Some of the most commonly occurring species are *Aglaia hiernii*, *Altingia excelsa*, *Artocarpus chama*, *Bischofia javanica*, *Bombax ceiba*, *Callicarpa arborea*, *Canarium bengalense*, *Castanopsis indica*, *Cinnamomum glaucescens*, *Chukrasia tabularis*, *Dillenia indica*, *Dipterocarpus gracilis*, *D.retusus*, *Duabanga grandiflora*, *Dysoxylum gobara*, *Echinocarpus sp.*, *Lagerstroemia reginae*, *Magnolia campbelli*, *M.caveana*, *Mesua assamica*, *M.ferrea*, *Pterospermum acerifolium*, *Quercus griffithii*, *Q.lamellosa*, *Shorea assamica*, *S.robusta*, *Terminalia chebula*, *T.myriocarpa*.



Map 2. General vegetation types of Arunachal Pradesh.
(After Kaul and Haridasan 1987).

These tall trees with their close canopy cover stifle plants of the lower storeys of the forest and the dense, dark humid environ thus created provides excellent conditions for the profuse and luxuriant growth of the epiphytes.

The next canopy is represented by small trees and shrubs. Some of the most common elements of this storey are: *Actephila excelsa*, *Ardisia crispa*, *A. humilis*, *Baliospermum corymbiferum*, *Bauhinia purpurea*, *Boehmeria macrophylla*, *B. platyphylla*, *Buddleja asiatica*, *Capparis acutifolia* subsp. *sabtaefolia*, *Clerodendrum bracteatum*, *C. colebrookianum*, *C. serratum*, *C. venosum*, *Coffea benghalensis*, *Dendrocnide sinuata*, *Ficus hispida*, *Friesodielsia fornicata*, *Goniothalamus sesquipedalis*, *Grewia disperma*, *Gynocardia odorata*, *Illicium manipurense*, *Leea robusta*, *Magnolia hodgsonii*, *Michelia dolisopa*, *Micromelum minutum*, *Mussaenda roxburghii*, *Oxyropa paniculata*, *Phlogacanthus* spp., *Pseudodissochaeta assamica*, *Rhus succedanea*, *Sambucus hookeri*, *Saurauia punduana*, *Solanum torvum*, *Sterculia hamiltonii*, *Strobilanthes coloratus*, *Styrax serrulatum*, *Syzygium anisopetalum* and *Triumfetta rhomboidea*. Canes like *Calamus erectus* and *C. leptospadix* occur in swampy areas and form impenetrable thickets. Some palms are also met within these forest, the most common are *Arenga pinnata*, *Caryota obtusa*, *C. urens*, *Didymosperma nana*, *Licuala peltata*, *Livistona jenkinsiana*, *Pinanga gracilis* and *Phoenix rupicola*. *Salacca secunda*, *Wallichia densiflora* and *W. triandra* are found to grow scattered on the drier hill slopes, whereas *Pandanus nepalensis*, species of *Cyathea* -the tree ferns and large leaved fern like *Angiopteris evecta* with fronds measuring upto 6 m in length may be seen growing along the nullahs and moist places. Species of wild banana - *Musa* spp. are one of the prominent features of these forests.

The forest trees are densely covered with numerous climbers and epiphytes. Of the numerous lianas, species of *Acacia*, *Bauhinia*, *Derris*, *Entada*, *Gnetum*, *Hodgsonia*, *Mezoneurum*, *Mucuna*, *Piper*, *Rhaphidophora*, *Thunbergia*, *Toddalia*, *Unona* and *Vitis* are more prominent. Several species of *Calamus* also stretch long distances from one tree to another.

Some of the most common epiphytic orchids are species of *Aerides*, *Coelogyne*, *Cymbidium*, *Dendrobium*, *Eria*, *Oberonia*, *Pholidota*, *Rhynchostylis*, *Saccolabium*, etc., and the epiphytic species of ferns belong to

Asplenium, *Nephrolepis*, *Drymoglossum*, *Colysis*, etc. *Aeschynanthus* spp., *Chonemorpha griffithii*, *Clematis* spp., *Dioscorea* spp., *Dischidia rafflesiana*, *Gymnostemma pedata*, *Hoya* spp, *Ipomoea* spp., *Jasminum* spp., *Naravelia zeylanica*, *Piper* spp., *Pothos* spp. *Pueraria phaseoloides*, *Rhaphidophora* spp., *Tetrastigma bracteolatum*, *Trichosanthes cordata*, *Thunbergia coccinea*, *T. grandiflora* are some of the commonly occurring climbers.

The ground flora mainly consists of herbaceous elements such as *Arystasia neesiana*, *Begonia roxburghii*, *B. sikkimensis*, *Chirita oblongifolia*, *C. pumila*, *Commelina* spp., *Deeringia amaranthoides*, *Exacum tetragonum*, *Floscopa scandens*, *Globba* spp., *Lindenbergia indica*, *Lobelia pyramidalis*, *Murdannia nudiflora*, *Oxalis corniculata*, *Polygonum* spp., *Rhynchoglossum obliquum*, etc. *Arundina graminifolia* the bamboo orchid with its beautiful lilac-red flowers may be seen growing alongwith the tall grasses on the open cut slopes of the hills along the roadsides. *Tacca* spp. with their showy floral bracts are also conspicuous in shady places along the streams and moist places at lower elevations. Profuse growth of *Ichnanthus vicinus* may be seen on moist-wet rocks and boulders in fairly open sunny places whereas *Gonatanthus pumilus* in association with *Selaginella* sp. is found commonly growing on slopes that are regularly moistened with water along the roadsides. Several terrestrial orchids like species of *Goodyera*, *Habenaria*, *Calanthe*, *Malaxis*, *Phaius*, etc., ferns like *Angiopteris* sp., *Diplazium dilatatum*, *Pteris* sp. and fern allies, mainly species of *Equisetum*, *Lycopodium* and *Selaginella* are of common occurrence. Among the interesting root parasites, *Balanophora dioica* infesting the roots of many tree species is worth mentioning. The saprophytic species like *Epipogium roseum*, *Galeola falconeri* the giant orchid and *Monotropastrum humile* occur in moist, shady, humus rich soils of these forests.

The conspicuous rhizomatous Monocotyledons forming a green-belt at lower elevations alongwith bamboos are of *Amomum* spp., *Arisaema* spp., *Amischotolype mollissima*, *Colocasia* spp., *Costus speciosus*, *Curculigo capitulata*, *Curcuma* spp., *Curcumorpha longiflora*, *Gonatanthus* spp., *Hedychium* spp., *Homalomena aromatica*, *Musa rosacea*, *M. balbisiana*, *M. acuminata*, *Phrynium rheedei*, *Zingiber* spp., etc. *Clerodendrum squamatum* var. *urticifolia* with beautiful red flowers in large terminal bunches is occasionally seen along the forest edges.

I.b. Tropical Semievergreen : The tropical Semievergreen type of vegetation occurs along the foothills and river banks up to an elevation of 600 m. The top canopy in this type consists of generally deciduous trees whereas the remaining storeys are dominated by evergreen species and thick undergrowth of shrubs, climbers and lianas. This type may be further divided into two subtypes as follows:

I.b. (1). Low Hills & Plains Semievergreen: The upper storey in this vegetation type is dominated by tall tree species like *Aglaia hiernii*, *Ailanthus integrifolia* subsp. *calycina*, *Altingia excelsa*, *Anthocephalus chinensis*, *Artocarpus lacucha*, *Bischofia javanica*, *Bombax ceiba*, *Canarium strictum*, *Castanopsis* spp., *Chukrasia tabularis*, *Cinnamomum glaucescens*, *Dillenia indica*, *Duabanga grandiflora*, *Dysoxylum binectariferum*, *Elaeocarpus aristatus*, *Firmiana colorata*, *Gmelina arborea*, *Khasiaculnea oligocephala*, *Phoebe goalparensis*, *Pterospermum* spp., *Sterculia villosa*, *Stereospermum chelonoides*, *Terminalia myriocarpa*, *Tetrameles nudiflora*, etc.

The next storey is represented by small trees and shrubs. Some of the common tree species are *Crateva religiosa*, *Croton chlorocalyx*, *Ficus* spp., *Gynocardia odorata*, *Litsea panamonja*, *Meliosma simplicifolia*, *Turpinia nepalensis*, etc. Species of *Ardisia*, *Boehmeria*, *Capparis*, *Clerodendrum*, *Phlogacanthus*, *Strobilanthes* are some of the common shrubs.

The ground floor is dominated by species of *Ageratum*, *Amorphophallus*, *Arisaema*, *Colocasia*, *Costus*, *Impatiens*, *Phrynium*, *Strobilanthes*. Among the climbers and lianas, *Gouania tilaefolia*, *Stixis suaveolens* and *Thunbergia* spp. are of common occurrence. Epiphytic species of *Dendrobium*, *Hoya*, *Papilionanthe*, *Eria* and several species of ferns may be seen in this vegetation type.

I.b. (2). Riverine Semievergreen: Such vegetation exists along the river banks, riverine plains and swamps. The trees in this vegetation type are generally deciduous, buttressed and lack dense canopy. The top canopy is dominated by species like - *Albizia* spp., *Artocarpus chama*, *Bischofia javanica*, *Bombax ceiba*, *Canarium strictum*, *Castanopsis* spp., *Dalbergia sissoo*, *Dillenia indica*, *Duabanga grandiflora*,

Lagerstroemia parviflora, *L. reginae*, *Radermachera gigantea*, *Sterculia villosa*, *Terminalia bellirica*, *T. myrtocarpa*.

The second storey, if present is generally consists of species of *Ficus*, *Litsea*, *Magnolia*, *Meliosma*, *Turpinia*, *Villebrunea*, etc. Species of *Calamus*, *Murraya*, *Randia* often form dense covering at the ground level mixed with species of *Phragmites*, *Saccharum*, *Costus* and *Hedychium*. Climbers and epiphytes are not very common in this vegetation type.

II. Subtropical Vegetation

This vegetation type occurs between 900-2000 m and is basically of ever-green and dense in nature. The forests of Sessini and its surrounding Baha and Kalaktang adjoining Bhutan border in Kameng district, Kherbari onwards to Ziro and beyond up to Amjee in Subansiri district, the entire region of Siang river valley, upper Lohit valley and south-western part of Tirap district are some of the areas where the predominant vegetation is subtropical type. This vegetation can be broadly divided into two subtypes as follows:-

II.a. Subtropical Broad Leaved Forests: The dominant tree species of this vegetation are: *Acer oblongum*, *Actinodaphne obovata*, *Alnus nepalensis*, *Beilschmiedia roxburghiana*, *Byttneria grandifolia*, *Callicarpa arborea*, *Castanopsis armata*, *C. indica*, *C. purpurella*, *Dichroa febrifuga*, *Engelhardia spicata*, *Euodia trichotoma*, *Ficus gasparriniana*, *Garcinia acuminata*, *Gynocardia odorata*, *Kydia calycina*, *Magnolia pterocarpa*, *Manglietia insignis*, *Michelia oblonga*, *Ostodes paniculata*, *Prunus napaulensis*, *Quercus acutissima*, *Q. griffithii*, *Q. lamellosa*, *Q. lanata*, *Q. semecarpifolia*, *Q. spicata*, *Saurauia armata*, *S. punduana*, *Schima wallichii* var. *khasiana*, *Stachyurus himalaicus*, *Sterculia hamiltonii*, *Ulmus lanceifolia*. Among the small trees *Capparis multijlora*, *Lepisanthes senegalensis*, *Photinia integrifolia*, etc., are common alongwith *Ardisia* spp., *Artemisia indica*, *Berberis wallichiana* var. *latifolia*, *Camellia caudata*, *Cassia mimosoides*, *Dianella ensifolia*, *Drymaria diandra*, *Eurya acuminata*, *E. japonica*, *Lasianthus longicauda*, *Mahonia acanthifolia*, *M. napaulensis*, *Plectranthus griffithii*, *P. hispidus*, *Rosa indica*, *Solanum erianthum*, *Sophora acuminata*, *Stellaria uliginosa*, *Symplocos* spp., *Wendlandia* spp., *Tephrosia candida*, *Triumfetta pilosa*, *Urena lobata*, *Vernonia saligna*, *Viburnum foetidum*, *V. mullaha*, whereas *Clematis acuminata*, *Holboellia latifolia* and *Tinospora sinensis* are some of the common woody climbers. Among the other climbers and straggling shrubs met within these forests

are *Actinidia callosa*, *Argyrea wallichii*, *Boehneria* spp., *Clematis gowriana*, *Clerodendrum* spp., *Clitoria mariana*, *Combretum pilosum*, *Dioscorea pentaphylla*, *Gnetum ula*, *Jasminum* spp., *Lagenaria ciceraria*, *Lygodium japonicum*, *Maesa* spp., *Phlogacanthus* spp., *Rubia cordifolia*, *Rubus moluccanus*, *R. moluccanus* var. *macrocarpa*, *Toddalia asiatica*, *Thunbergia* spp. and *Zanthoxylum oxyphyllum*.

The herbaceous flora is mainly composed of species like *Anaphalis adnata*, *A. busua*, *A. contorta*, *Anemone vitifolia*, *Astilbe rivularis*, *Campanula khasiana*, *Cardamine hirsuta*, *Cynoglossum glochidiatum*, *Exacum tetragonum*, *Inula cappa*, *Justicia khasiana*, *Leucas ciliata*, *Osbeckia stellata*, *Plantago major*, *Polygonum* spp., *Potentilla* spp., *Valeriana hardwickii*, *Viola betonicifolia*, *V. diffusa*, *V. hamiltoniana* and *V. pilosa* alongwith several species of terrestrial orchids and ferns. Apart from these, some common herbaceous climbers like *Clitoria mariana*, *Parabaena sagittata*, *Pericampylus glaucus* and *Stephania elegans* may also be seen.

The epiphytic flora in this forest comprises of a variety of ferns like *Asplenium ensiforme*, *Drynaria propinqua*, *Lepisorus* spp., *Pyrrosia* spp. The density of Orchid components in these forests are very high belonging to genera like *Bulbophyllum*, *Coelogyne*, *Dendrobium*, *Octochilus*, *Ritaia*, etc.

The common ground orchids present are species of *Goodyera*, *Hebenaria*, *Malaxis* and *Phaius*. The common grasses met with are *Arundo donax*, *Capillipedium assimile*, *Imperata cylindrica*, *Setaria palmifolia* and species of *Panicum* and *Erianthum*.

II. b. Subtropical Pine Forests: These forests occur between 1000-1800 m in subtropical and semitemperate regions mainly in Dirang valley of Kameng district, lower hill slopes around Apatani valley of Subansiri district, hill slopes around Walng and along inner Lohit river valley of Lohit district (Rao 1972). These forests are represented by 3 species of *Pinus* viz., *P. merkusii*, *P. roxburghii* and *P. wallichiana* in association with tree species like *Alnus nepalensis*, *Betula alnoides*, *Lyonia ovalifolia*, *Quercus* spp., *Rhus javanica*, *Tsuga dumosa* and shrubby and herbaceous species of *Ajuga*, *Coriaria*, *Desmodium*, *Elsholtzia*, *Indigofera*, *Luculia*, *Plectranthus*, *Fogostemon*, *Potentilla*, *Pteridium*, *Rubus*, etc.

Epiphytes are not very common since recurring annual fires in these forests during winter months destroys the undergrowth, thus not allowing more such species to grow.

III. Temperate Vegetation

The forests around Chakoo, Peri La, Morsing, Bomdila, Dirang, Rapa and Shergaon in Kameng district; the forests beyond Amjee in Subansiri district; the upper slopes above the valley particularly from Garsing to Kapang La and along the track from Take Pokong to Sirang in Siang district, Lohit and Delei in Lohit district, Waka and along the border of Burma in Tirap district and other areas in this region within the range of altitude 1800-3500 m exhibit temperate vegetation.

The characteristic appearance is open and apparent lax storeyed nature with dominance of Oaks and members of Magnoliaceae and Ericaceae, particularly the species of *Rhododendron*. But in several localities a mixture of temperate with those of tropical and subtropical elements are not uncommon. However, the temperate vegetation can be broadly divided into two distinct subtypes as follows:-

III. a. Temperate Broad Leaved Forests: This type is generally found between 1800-2800 m in the cold climatic regions with severe winter and moderately high rainfall.

The top canopy is represented by tall tree species like, *Acer hookeri*, *A. oblongum*, *A. pectinatum*, *Alnus nepalensis*, *Betula alnoides*, *Exbucklandia populnea*, *Castanopsis indica*, *Euonymus spp.*, *Magnolia campbelli*, *M. obovata*, *Photinia sp.*, *Populus ciliata*, *P. gamblei*, *Rhododendron spp.*, *Symplocos racemosa*, etc. The middle storey is predominated by species of *Pyrus*, *Prunus*, *Spiraea*, *Acer*, *Symplocos* and *Rhododendron*, etc. Lower storeys are occupied by small trees and shrubs of *Ardisia spp.*, *Berberis wallichiana*, *Caryopteris odorata*, *Debregeasia longifolia*, *Illicium griffithii*, *Lyonia ovalifolia*, *Mahonia spp.*, *Myrsine semiserrata*, *Rhododendron spp.*, *Vaccinium sprengelii*, etc. Ground floor is mostly occupied by species of *Arisaema*, *Begonia*, *Corydalis*, *Drymaria*, *Fragaria*, *Geranium*, *Polygonum*, *Potentilla*, *Sedum*, *Thalictrum*, etc.

In this vegetation type climbers are of rare occurrence, but it abounds in various epiphytes of which species of *Rhododendron*, *Agapetes*, *Vaccinium* are more common along with many orchid, fern and lichen species. Along the roadsides, forest edges and streams, a prominent herbaceous layer

appears during rainy seasons which commonly includes *Ambrosia artemisiifolia*, *Cardamine hirsuta*, *Carpesium abrotanoides*, *Oenanthe javanica*, *Pilea umbrosa*, *Rorippa indica*, *Stellaria uliginosa*, etc. Terrestrial ferns are few. Among the dimorphic ferns *Plagiogyria scandens* is common on the forest floor.

III. b. Temperate Coniferous Forests: This type occurs between 2800-3500 m altitude above temperate broad leaved vegetation and experiences heavy snowfall during winter months. The lower limits of such vegetation are dominated by mixed coniferous type which include species of *Abies*, *Cupressus*, *Pinus*, *Taxus*, *Tsuga*, etc. Sometimes pure stands of *Cupressus torulosa* are also seen in places like Rupa-Shigao, whereas in the upper limits, species of *Abies*, *Juniperus*, *Larix*, *Picea*, *Taxus*, etc., are predominant. Although the temperate broad leaved forests are always situated below the temperate coniferous ones, a very peculiar phenomenon has been noticed in Tale Valley where the broad leaved forest consisting *Acer*, *Magnolia*, *Michelia*, *Quercus*, *Rhododendron*, *Schima* species and certain members of the family *Fagaceae*, *Lauraceae* are at a higher elevation, whereas the coniferous forest is confined to the bottom of the valley.

IV. Subalpine and Alpine Vegetation

There is no sharp division between subalpine and alpine vegetation and only a rough distinction can be made with concentration of certain elements. The zone between 3500-4000 m is termed as the subalpine zone characterised by tree species like *Abies spectabilis*, *Cupressus torulosa*, *Juniperus recurva*, *Larix griffithiana*, *Pinus wallichiana*, *Rhododendron spp.*, *Taxus wallichiana* and *Tsuga dumosa*. The common shrubs are *Berberis asiatica*, *B. wallichiana*, *Eurya acuminata*, *Gaultheria fragrantissima*, *Phatnia integrifolia* and *Vaccinium venosum*.

The alpine zones above an altitude of 4000 m, i.e. above tree line remains covered with snow for the major part of the year and is limited nearly at an altitude of 5500 m, above which the vegetation is very very scarce. The vegetation comprises of shrubby *Rhododendrons* and herbaceous elements with attractive brilliantly coloured flowers. Various species of *Aconitum*, *Arenaria*, *Gentiana*, *Meconopsis*, *Polygonum*, *Primula*, *Rhodiola*, *Saussurea*, *Saxifraga* and *Sedum*, etc., dominate the Alpine vegetation.

SECONDARY FORESTS

The primary forests due to the impact of various adverse biotic and abiotic factors like shifting cultivation or "Jhumming", developmental activities and urbanization, land slides, fires, etc., are destroyed and develop into secondary forests.

The shifting cultivation has been practiced in the state since time immemorial, particularly in the tropical and subtropical belt. In this method a patch of forest is cleared during winter and at the on set of spring when the debris comprising the wood, branches and leaves of herbaceous, shrubby habits and often the medium sized trees fully dry up, they are set on fire to prepare the ground for sowing with an admixture of rice, maize, millet, etc. Usually in the third year when the yield is very low and the plot becomes uneconomical due to decrease in soil fertility, the farmers move to a fresh patch of land abandoning the first plot. Often the farmers return to the first plot after a gap of 8-10 years when reasonably a good vegetation might have appeared with various herbaceous and shrubby secondary forest elements like bamboo, grasses and other weeds. Thus, when the primary forest areas are selected, not only the herbaceous and shrubby habits are destroyed, but the tree habits are often greatly damaged also due to fire, even if they are not felled. And when the same plot is repeatedly used, the hill slopes may appear as barren and bald. Jyrwa (1992) while discussing on 'Improvement on Jhum' mentioned some advantageous points behind the choice of Jhumming by hill people. It is easy, less time consuming and require very simple and minimum agricultural implements. Burning destroys many pests, the ash residues to some extent neutralise excess acidity and acts as manure and as insect repellent. But the disadvantageous part of Jhum cultivation is more and more intense. Apart from the direct effect on the existing vegetation, the burnt and cleared off ground facilitate soil erosion and land slide as the rain directly hit the upper surface of the soil and makes it loose and weak. Further, the soil fertility is quickly reduced as the rain water takes away the nutrients from the soil. However, more attention is being paid by the Government on this issue and hill people are encouraged to develop permanent land for cultivation with irrigation facility. The secondary forests may be divided into three following types:-

a. *Degraded forests*: As compared to the original primary forests these degraded ones have a very low species diversity and are generally dominated by shrubs and small trees. Of the common tree species seen - *Bauhinia*, *Calli-carpa*, *Glochidion*, *Mallotus* species are more prominent whereas, *Capparis*,

Clerodendrum, *Croton*, *Eurya*, *Randia*, *Rubus*, *Viburnum* species are common shrubs alongwith weed species like *Ageratum*, *Eupatorium* *Mikania*, etc.

b. *Bamboo forests*: This type of secondary forests mostly occur in the areas which are abandoned after "Jhum" cultivation up to the elevation of 2000 m. The common bamboo species are: *Arundina graminifolia*, *Bambusa pallida*, *B. tulda*, *Chimonobambusa callosa*, *Dandrocalamus hamiltonii*, *D. hookeri*, *D. strictus*, *Schizostachyum latifolium*, *S. polymorphum*, etc.

c. *Grasslands*: Generally formed due to the practice of "Jhum" cultivation or sometimes due to fires or over-grazing. The more commonly seen species of grasses like *Arundinella bengalensis*, *Chrysopogon aciculatus*, *Eragrostis tenella*, *E. unioides*, *Imperata cylindrica*, *Mnesithea clarkei*, *Paspalum sp.*, *Saccharum arundinaceum*, *S. spontaneum*, *Sacciolepis interrupta*, *Setaria palmifolia*, *Themeda caudata* and *Thysanolaena maxima* are found in association with sedges like *Cyperus spp.*, *Fimbristylis spp.*, *Scirpus spp.*, etc. and some scattered trees of *Bombax ceiba*, *Duabanga grandiflora*, *Macaranga denticulata*, etc., at lower altitude.

CULTIVATED AND OTHER USEFUL PLANTS

The different tribes inhabiting Arunachal Pradesh have a very rich folk lore and frequently use the plant materials for their daily needs ranging from food, clothing, shelter, medicine and various other domestic purposes. The commonly cultivated cereal crops are : *Coix lacryma-jobi* var. *ma-yuen* (used for preparing beverages), *Eleusine coracana*, *Hordeum vulgare*, *Oryza sativa*, *Pennisetum americanum*, *Setaria italica* and *Zea mays*. Among the commonly cultivated vegetables and pulses are *Abelmoschus esculentus*, *Benincasa hispida*, *Cajanus cajan*, *Canavalia ensiformis*, *Capsicum annuum*, *Chenopodium album*, *Cicer arietinum*, *Colocasia esculenta*, *Cucurbita pepo*, *Dioscorea spp.*, *Glycine max*, *Ipomoea batatas*, *Lablab purpureus*, *Lagenaria ciceraria*, *Lycopersicum esculantum*, *Solanum melongena*, *S. tuberosum* and *Vigna umbellata*. *Brassica juncea*, *B. rugosa*, *Perilla frutescens* and *Sesamum orientale* are commonly cultivated as oil seed crops, whereas *Artocarpus heterophyllus*, *Citrus spp.*, *Musa spp.* are cultivated for fruits. *Amomum aromaticum*, *A. subulatum* and *Curcuma longa* are sometimes cultivated for spice "Cardamom" and "turmeric" respectively. *Zanthoxylum armatum* and *Eryngium foetidum* are cultivated for the leaves used for flavour and aroma in curries and for the fruits used as "pepper".

Apart from the cultivated plants many wild plants are used by the local people as vegetables and fruits (Haridasan *et al.* 1990). Among the commonly used wild fruits eaten raw or cooked as vegetable, mention may be made of *Antidesma acuminatum*, *Ardisia thyrsiflora*, *Artocarpus chama*, *A. lacucha*, *Baccaurea ramiflora*, *Berberis asiatica*, *B. wallichiana*, *Debregeasia longifolia*, *Dillenia indica*, *Docynia indica*, *Elaeagnus caudata*, *Elaeocarpus floribundus*, *Eriobotrya bengalensis*, *Eugenia spp.*, *Ficus spp.*, *Garcinia spp.*, *Gaultheria fragrantissima*, *Hodgsonia macrocarpa*, *Horsfieldia kingii*, *Illicium griffithii*, *Madhuca longifolia*, *Mangifera sylvatica*, *Meyna laxiflora*, *Phoebe cooperiana*, *Prunus cerasoides*, *Rubus spp.*, *Syzygium cumini*, *Taxus wallichiana*, *Viburnum foetidum* and *Zanthoxylum armatum*.

The plants commonly used as vegetable are the rhizomes and tubers of *Alocasia spp.*, *Alpinia malaccensis*, *A. nigra*, *Amorphophalus paeonifolius*, *Colocasia esculenta*, *Costus speciosus*, *Curcuma montana*, *Dioscorea bulbifera*, *Lasia spinosa*, *Polygonatum multiflorum*, *Tacca integrifolia*, *Zingiber zerumbet*, etc. The commonly used young shoots and leaves are of *Aconogonum molle*, *Amaranthus viridis*, *Pseudodissochaeta assamica*, *Bambusa balcooa*, *Begonia palmata*, *B. hatacoa*, *Calamus flagellum*, *Centella asiatica*, *Chenopodium album*, *Chimonobambusa callosa*, *Clerodendrum colebrookianum*, *Debregeasia longifolia*, *Dendrocalamus hookeri*, *D. hamiltonii*, *Elatostema platyphyllum*, *Fagopyrum dibotrys*, *F. esculentum*, *Gnetum gnemon*, *Houttuynia cordata*, *Dendrocnide sinuata*, *Lasia spinosa*, *Mussaenda roxburghii*, *Oenanthe javanica*, *Persicaria chinensis*, *Phytolacca acinosa*, *Rumex hastatus*, *R. maritimus*, *Solanum nigrum*, *Spilanthes paniculata*, *Urtica mairei*, *Yushania racemosa*, etc.

The flowers and flower buds of *Bauhinia purpurea*, *Bombax ceiba*, *Gmelina arborea*, *Musa spp.*, *Oroxylum indicum*, *Phlogacanthus thyrsiflorus* are used as vegetable.

The skin of *Zanthoxylum armatum*, *Z. rhetsa* are used in curries and also taken alongwith the local drink "Apong".

Arunachal Pradesh has a flourishing timber industry. Following are some important commercial timber species of Arunachal Pradesh.

Botanical name	Local name
1. <i>Actinodaphne obovata</i>	Pajihuta
2. <i>Aglaiia hiernii</i>	Amari

Botanical name	Local name
3. <i>Ailanthus integrifolia</i> subsp. <i>calycina</i>	Borpat
4. <i>Albizia lucidior</i>	Moz
5. <i>Alstonia scholaris</i>	Satiana
6. <i>Altingia excelsa</i>	Jutuli
7. <i>Anthocephalus chinensis</i>	Kadam
8. <i>Artocarpus chama</i>	Sam, Cham
9. <i>Artocarpus lacucha</i>	Dewa-Chali
10. <i>Bauhinia variegata</i>	Kanchon
11. <i>Bellschmedia pseudomicropora</i>	Bonhingalo
12. <i>Betula alnoides</i>	Birch
13. <i>Bischofia javanica</i>	Urium
14. <i>Bombax ceiba</i>	Simul
15. <i>Canarium bengalense</i>	Dhuna
16. <i>Canarium strictum</i>	Dhuna
17. <i>Castanopsis indica</i>	Hingori
18. <i>Chukrasia tabularis</i>	Bogipoma
19. <i>Cinnamomum glaucescens</i>	Gonsoroi
20. <i>Dillenia indica</i>	Outenga
21. <i>Dipterocarpus retusus</i>	Hollong
22. <i>Duabanga grandiflora</i>	Khokon
23. <i>Dysoxylum alliarium</i>	Gondhaki-Poma
24. <i>Dysoxylum binectariferum</i>	Bandardima
25. <i>Dysoxylum gobara</i>	Lali
26. <i>Euodia trichotoma</i>	Maiphak
27. <i>Eurya acuminata</i>	Murmura
28. <i>Garcinia cowa</i>	Tekra, Thekera
29. <i>Gmelina arborea</i>	Gomari
30. <i>Gynocardia odorata</i>	Bandapele, Chalmugra
31. <i>Juglans regia</i>	Walnut
32. <i>Khastaculnea oligocephala</i>	Hatud-Sopa
33. <i>Kydia calycina</i>	Pichola
34. <i>Lagerstroemia reginae</i>	Ajar, Ajahar
35. <i>Lannea coromandelica</i>	Jia
36. <i>Macaranga denticulata</i>	Moralia
37. <i>Magnolia hodgsonii</i>	Boromthuri

Botanical name	Local name
38. <i>Magnolia pterocarpa</i>	Baramphuri-Sopa
39. <i>Mesua assamica</i>	Sia-Nahar
40. <i>Mesua ferrea</i>	Nahar
41. <i>Michelia baillonii</i>	Khorika Sopa, Titasopa
42. <i>Michelia champaca</i>	Champ
43. <i>Michelia doltsopa</i>	Sopa
44. <i>Morus macroura</i>	Bola
45. <i>Phoebe goalparensis</i>	Bonsum (Goalpara)
46. <i>Phoebe paniculata</i>	Mekahi
47. <i>Picea spinulosa</i>	Spruce
48. <i>Pinus roxburghii</i>	Chir Pine
49. <i>Pinus wallichiana</i>	Blue pine
50. <i>Pterpsernum acerifolium</i>	Hatipolia
51. <i>Quercus</i> spp.	Oak
52. <i>Schima wallichii</i>	Makrisal, Gogra
53. <i>Shorea assamica</i>	Mekai
54. <i>Sloanea sterculiacea</i> var. <i>assamica</i>	Joba-Hingori
55. <i>Sterculia hamiltonii</i>	Pahari
56. <i>Sterculia villosa</i>	Udal
57. <i>Syzygium cumini</i>	Jamuk
58. <i>Terminalia bellirica</i>	Bohera
59. <i>Terminalia chebula</i>	Hilika
60. <i>Terminalia myriocarpa</i>	Hollock
61. <i>Tetrameles nudiflora</i>	Bhelu
62. <i>Toona ciliata</i>	Poma, Toon
63. <i>Trewia nudiflora</i>	Bhelkar, merua

Common Bamboos

1. <i>Bambusa pallida</i>	Makai
2. <i>Bambusa tulda</i>	Bijili
3. <i>Dendrocalamus hamiltonii</i>	Kakua
4. <i>Dendrocalamus strictus</i>	Katabans
5. <i>Melocanna baccifera</i>	Muli
6. <i>Schizostachyum polymorphum</i>	Bajal

Botanical name	Local name
Common Canes	
1. <i>Calamus flagellum</i>	Raidang Bet
2. <i>Calamus floribundus</i>	Lejai Bet
3. <i>Calamus latifolius</i>	Hauka Bet
4. <i>Calamus tenuis</i>	Jati Bet

Aquatic Vegetation

Some of the common hydrophytes growing in the marshes, roadside pools, nullahs and paddy fields are *Alisma plantago-aquatica*, *Eriocaulon luzulifolium*, *Monochoria vaginalis*, *Persicaria nepalensis*, *Potamogeton nodosus*, *Sagittaria trifolia*, *Sanicula elata*, *Utricularia* spp., etc. *Zeylandidium olivaceum* - the liverwort-like plant of the family Podostemaceae grows under water on the stones and boulders in the fast running streams at lower altitudes. Its occurrence in Arunachal Pradesh represents the northern most distribution of this family in India (Rao & Hajra, 1972).

WEEDS

The modification of vegetation through various anthropogenic causes and through the introduction of exotics is well established. In areas where the primary vegetation is destroyed or modified due to various biotic factors, or lands abandoned after "Jhum" cultivation, a variety of weed species colonize. In the lower elevation *Mikania micrantha*, a presumably introduced species from Tropical America is at present the most problematic weed that has been spreaded over a vast area choking the other herbaceous and shrubby habits. Similarly, *Tagetes minuta* and different species of *Eupatorium* of Asteraceae and *Cuphea carthagensis* of Lythraceae have become equally noxious and a menace. Some other common weeds in such places are: *Adenostemma lavenia*, *Ageratum conyzoides*, *Bidens biternata*, *Conyza bonariensis*, *Crassocephalum crepidioides*, *Croton bonplandianum*, *Cuscuta reflexa*, *Emilia sonchifolia*, *E. pusilus*, *Eupatorium odoratum*, *Gallinsoga parviflora*, *Hedyotis scandens*, *Kyllinga brevifolia*, *Laggersa alata*, *Lantana camara*, *Ludwigia octovalvis* subsp. *sessiliflora*, *Mitracarpus verticillatus*, *Persicaria nepalensis*, *Scoparia dulcis*, *Sida rhombifolia*, *Solanum myriacanthum*, *S. nigrum*, *Spermacoce latifolia*, *Spilanthes clava*, *S. paniculata*, *Urena lobata*, *Vernonia cinerea*, etc.

SOME INTERESTING ELEMENTS OF ARUNACHAL PRADESH FLORA

Curious Plants

The rich and diverse flora of Arunachal Pradesh also harbours some interesting and biologically curious plants. Among interesting and rare root parasites, mention may be made of *Sapria himalayana* one of the largest root parasites first reported by Griffith from Mishmi hills in Lohit district and subsequently by Bor (1938) from Aka hills in Kameng district, and *Rhopalocnemis phalloides* in Namdapha in Changlang district. *Balanophora dioica* is commonly found associated with the roots of several tree species in dense humid forests, whereas *Aeginetia indica* is a common root parasite is found on grasses. Similarly *Boschniakia himalaica*, a parasite on the roots of *Rhododendron* spp. is found in the alpine meadows of Arunachal Pradesh.

Among the common saprophytes, *Monotropastrum humile* and orchids like, *Epipogium indicum*, *E. roseum*, and *Galeola falconeri* are found in dense humid forests on organic matter and humus rich soil. Among the insectivorous plants mention may be made of *Drosera peltata*.

A large number of endemic species have been recorded from Arunachal Pradesh. Some of the endemic species are : *Acer oblongum* var. *microcarpum*, *A. sikkimense* var. *serrulatum*, *Aconogonum pangianum*, *Begonia aborensis*, *B. scintillum*, *Capparis pachyphylla*, *Coptis teeta*, *Hedychium longipedunculatum*, *Illicium cambodianum*, *Lysimachia congestiflora* var. *santapau*, *Maesa arunachalensis*, *Merrilliopanax listeri*, *Paphiopedilum wardii*, *Pholidota watii*, *Primula subansirica*, *Pternopetalum senii*, *Pueraria bella*, *Rhododendron santapau*, *Rhynchoglossum lazulinum*, *Schefflera venulosa*, *Tricarpelema glanduliferum*, and *Wallichia triandra*, etc.

Rare & Endangered Plants: There are several factors directly or indirectly involved in the loss of biodiversity of an area and the loss in a quantitative measure may be slow and gradual or may be abrupt and sudden. One of the factors related with quick decline is the ever increasing human population and their many fold increased demand for food and other items of daily need which are taking a heavy toll of the natural resources of this region. Shifting cultivation, over exploitation of medicinal and other useful economic plants, developmental activities such as new townships, roads, industries, clearing of forest

land for permanent agriculture are some of the major threats to the biological diversity of this region and as a result a good number of species have become rare, vulnerable, threatened or endangered. Some of the rare, endangered and vulnerable categories of plants are: *Alniphyllum fortunei*, *Ardisia rhychnophylla*, *Balanophora dioica*, *Bergenia ciliata* forma *ligulata*, *Blechnum melanopus*, *Boehmeria tirapensis*, *Boschniakia himalaica*, *Bulbophyllum depressum*, *Bulleyia yunnanensis*, *Cymbidium hookerianum*, *C. eburneum*, *Coptis teeta*, *Dioscorea laurifolia*, *D. orbiculata*, *Diplomeris hirsuta*, *Drosera peltata*, *Eria ferruginea*, *Galeola falconeri*, *Gastrochilus inconspicuus*, *Huodendron biaristatum*, *Ilex venulosa*, *Leptodermis scabrida*, *Nertera sinensis*, *Nomocharis synaptica*, *Oberonia sulcata*, *Paphlopedilum fairieanum*, *P. spicerianum*, *Pauia belladonna*, *Podophyllum hexandrum*, *Rhododendron nuttalli*, *R. santapau*, *Rhopalocnemis phalloides*, *Sopria himalayana*, *Saurauia griffithii*, *Sunipia fusco-purpurea*, *S. virens*, *Tylostylis discolor*, etc.

Wild Relative of cultivated Plants

The wild species from which the present day cultivated plants were selected still continue to exist today along with their close relatives. As compared to the well cared and much looked after crop plants, these wild relatives have continued to evolve and interact with other species in nature, and as a result they have developed a survival strategy to cope with many natural calamities like extreme cold and heat, drought and flood, etc. These have also developed resistance to pests and diseases which entail heavy economic losses to their cultivated counter parts. The genes from wild relatives may help plant breeders to breed crops that can resist pests and diseases and thus are in utmost need more than ever before to feed the fast expanding world population. Arunachal Pradesh falls under 'Hindustan Centre of Origin of Cultivated plants' (Vavilov 1926, 1951) is very rich in *Musa* and *Citrus* wealth. All the basic sets of chromosomes viz. $2n=18, 20, 22$ & 24 in *Musa* have been reported from the state. Some types are found to show resistance to diseases, pests and cold conditions. The state has been considered as a major *Citrus* growing belt in the North-Eastern region of India. Many allied species of *Thea* which are used as substitute of tea also have been recorded from the state. Falling within the Eastern Himalayan agro-ecological region. The state has rich crop plant diversity particularly in the case of barley, maize, buckwheat, finger millet, foxtail-millet, amaranth, french bean, soybean, cowpea, blackgram, pea, scarlet bean, pumpkin, cucumber, *Allium*, ginger, chayote, tree tomato, *Brassica*, pome and

stone fruits (Paroda & Arora 1991). Apart from these, the state is very rich in tall and drought-hardy types of Sesame, tree cotton, taros, yam and species of *Colocasia*, *Capsicum*, etc.

Medicinal and Ethnobotanically Important Plants

Medicinal Plants: Parallel with the rich biodiversity, the state also harbours a wide range of medicinal plants used in Ayurvedic, Homoeopathic and Unani medicines or are used by the local people. The scientists of the Regional Research Laboratory, Jorhat and Itanagar and Regional Research Centre (Ayurveda), Itanagar are engaged in the study and research on biologically potential plants. Some medicinally important plants are: *Abies spectabilis*, *Abroma augusta*, *Abrus precatorius*, *Abutilon indicum*, *Acacia catechu*, *Aconitum ferox*, *A. laeve*, *A. novoluridum*, *Acorus calamus*, *Albizia lebbeck*, *Alpinia galanga*, *Alstonia scholaris*, *Aquilaria malaccensis* (*A. agallocha*), *Asparagus filicinus*, *A. racemosus*, *Artemisia nilagirica*, *Azadirachta indica*, *Baliospermum montanum*, *Bambusa arundinacea*, *Barringtonia acutangularis*, *Bauhinia variegata*, *Bergenia ciliata* forma *ligulata*, *Berberis asiatica*, *Boerhaavia diffusa*, *Bombax ceiba*, *Caesalpinia bonduc*, *Calotropis gignatea*, *Caltha palustris*, *Canarium strictum*, *Cassia fistula*, *C. occidentalis*, *Celastrus paniculatus*, *Centella asiatica*, *Centratherum anthelminticum*, *Cinnamomum tamala*, *Clerodendrum colebrookinum*, *C. serratum*, *Coptis teeta*, *Cordia wallichii*, *Costus speciosus*, *Crateva magna*, *Croton tiglium*, *Curculigo orchioides*, *Curcuma zedoaria*, *Cymbopogon* spp., *Cyperus rotundus*, *Dactylorhiza hatagirea*, *Datura stramonium*, *Dregea volubilis*, *Dioscorea deltoidea*, *D. floribunda*, *Embelia ribes*, *Emblica officinalis*, *Eupatorium trapezoideum*, *Garcinia pedunculata*, *Gaultheria fragrantissima*, *Gloriosa superba*, *Gmelina arborea*, *Gynocardia odorata*, *Gymnostemma pedata*, *Hedychium spicatum*, *Holarrhena pubescens*, *Hydnocarpus kurzii*, *Illicium griffithii*, *Ipomoea mauritiana*, *Juglans regia*, *Justicia adhatoda*, *Litsea cubeba*, *Lyonia ovalifolia*, *Malaxis acuminata*, *Mallotus philippinensis*, *Melia azedarach*, *Melissa axillaris*, *Mesua ferrea*, *Mimosa pudica*, *Mucuna pruriens*, *Myrica esculenta*, *Nardostachys grandiflora*, *Nerium indicum*, *Nymphaea nouchali*, *Oxalis corniculata*, *Paederia foetida*, *Panax pseudoginseng*, *Piper longum*, *Plumbago zeylanica*, *Podophyllum hexandrum*, *Prunus cerasoides*, *Polygonatum verticillatum*, *Rauwolfia serpentina*, *Rheum australe*, *Rhus succedanea*, *Ricinus communis*, *Rubia rhombifolia*, *Scindapsus officinalis*, *Semecarpus anacardium*, *Shorea robusta*, *Sida cordifolia*, *Skimmia anquetilia*, *Solanum anguivi*, *Solanum myriacanthum*, *Spilanthes acmella*, *Stephania japonica*, *Strychnos nuxvomica*,

Swertia chirayita, *Syzygium cumini*, *Tamarindus indica*, *Taraxacum officinalis*, *Taxus wallichiana*, *Tectona grandis*, *Tetrastigma serrulatum*, *Tinospora cordifolia*, *T. sinensis*, *Trewia nudiflora*, *Tylophora indica*, *Valeriana hardwickii*, *V.jatamansi*, *Vernonia cinerea*, *Zanthoxylum acanthopodium*, *Z. armatum*, *Z. nitidum*, *Z. rhetsa*, *Zizyphus mauritiana*, etc.

Ethnobotanically Important Plants: Comparing other parts of India, the north-eastern region is still ethnobotanically underexplored though the richness of its flora and a large number of tribal population offer immense scope for such study. As discussed earlier some attempts have been made by R.K.Arora (1981); D.P.Dam & P.K.Hajra (1981); G.D.Pal (1984, 1992); H.C.Pandey (1988, 1990); K.Haridasan *et al.* (1990), etc., to record and list ethnobotanically important plants used by the local people for food, medicine, fish-poisoning, dye making, local drinks, etc. Some important plants as studied by G.D.Pal (1984) and Pandey *et al.* (1990) are: *Acacia rugata* (powdered stems are used in fish-poisoning); *Amischotolype molissima* (plant juice is used as arrow-poison); *Gallium mollugo* (decoction is used in dying clothes); *Anisomeles ovata* (used to relief muscular pain); *Berberis wallichiana* (bunch of spines are used in tattooing chin and forehead); *Bidens biternata* (leaves are used as substitute for tea); *Callicarpa arborea* var. *ovalifolia* (stems are used as substitute of tobacco); *Chenopodium album* (seeds are used for preparation of country liquor 'Apong'); *Chimonobambusa callosa* (bark is used as rope); *Chlorophytum arundinaceum* (used as substitute of onion); *Crassocephalum crepidioides* (leaf juice is used to prevent bleeding); *Dendrobium hookerianum* (flowers are used to prepare yellow dye); *Dendrocalamus strictus* (planted near the house in spiritual belief of keeping the devil spirit away); *Elscholtzia blanda* (paste prepared from leaves is used to clear pus and maggot of cattle); *Gaultheria fragrantissima* (leaves and twigs are used as incense); *Gentiana bryoides* (whole plant mixed with 'sillu' leaves used as incense, leaves are used in malaria and dysentery); *Geranium nepalense* (the paste prepared from whole plant mixed with turmeric and mustard oil is used in cases of eczema, itch and other skin diseases); *Gerhera piloselloides* (used as hot fomentation to relief rheumatic pain); *Impatiens racemosa* (whole plant is used in malarial fever); *Lasianthus longicauda* (fruit extract is used as gum for catching birds); *Plectranthus hispidus* (whole plant is used in cough and cold); *Rubus paniculata* (leaves are used as substitute for peper betel); *Scrophularia elatior* (decoction of whole plant is used in urinary trouble); *Tacca integrifolia* (decoction of leaves is used in blood dysentery and diarrhoea).

Ornamental Plants: Considering the density of orchid species, some parts of Arunachal Pradesh can be designated as Orchid Sanctuary. The state alone harbours more than 450 species of orchids out of about 1000 species recorded so far from India and this is because of its wide variation in climatic conditions and humidity spreading over a greater range of elevations starting from foothills up to the snow-clad peaks. The Orchid Research cum Development Centre (ORDC) under the Forest Department of Arunachal Pradesh at Tipi is engaged in research, conservation and commercialization of the potential orchids over the last 20 years.

The 'Convention on International Trade in Endangered Species of Wild Flora and Fauna' is aimed at the regulation of wild species in international trade with a view to the rational and sustainable use of the wild genetic resources. Considering the critical endangered status, the Orchidaceae as a whole is included under Appendix II of CITES, where some species are again placed under Appendix I, and thereby the international trade is subject to strict regulations. In India, their collection from wild sources for trade purpose is prohibited in accordance with the Wild Life Conservation Act 1982 under the category of schedule I and II of endangered species. However, under the above mentioned act, the artificially propagated, either vegetative or adopting biotechnology or other nursery grown orchids can be traded. Hegde & Thapliyal (1992) on 'Prospect and Problems of commercialization of orchid in Arunachal Pradesh' indentified some potential ornamental species from the state as follows: *Acampe rigida*, *Acanthephippium striatum*, *A. sylhetense*, *Aerides fieldingii*, *A. multiflorum*, *A. odoratum*, *Anoectochilus roxburghii*, *Arundina graminifolia*, *Ascocentrum ampullaceum*, *Calanthe alismaefolia*, *C. biloba*, *C. densiflora*, *C. masuca*, *C. tricarinata*, *Cleisostoma racemiferum*, *C. williamsonii*, *Coelogyne corymbosa*, *C. cristata*, *C. punctulata*, *Cymbidium aloifolium*, *C. cochleare*, *C. eburneum*, *C. elegans*, *C. hookerianum*, *C. iridioides*, *C. longifolium*, *C. lowianum*, *C. mastersii*, *Dendrobium candidum*, *D. chrysanthum*, *D. chrysotoxum*, *D. densiflorum*, *D. devonianum*, *D. falconeri*, *D. farmeri*, *D. fimbriatum* var. *occulatum*, *D. formosum*, *D. gibsonii*, *D. heterocarpum*, *D. hookerianum*, *D. moschatum*, *D. nobile*, *D. sulcatum*, *D. transparens*, *D. wardianum*, *Esmeralda cathcartii*, *E. clarkei*, *Gastrochilus dasypogon*, *Neogyna gardneriana*, *Paphiopedilum fairieanum*, *P. wardii*, *Papilionanthe teres*, *Phaius flavus*, *P. mishmiensis*, *P. tancarvilleae*, *Phalaenopsis mannii*, *Pleione hookeriana*, *P. humilis*, *P. maculata*, *P. praecox*, *Renanthera imschoo-*

tiana, *Rhynchostylis retusa*, *Thunia alba*, *Vanda alipna*, *V.coerulea*, *V.cristata*.

In addition to the wide variety of orchids, the state is also extremely rich in other wild ornamental plant resources like the species of *Begonia*, *Hedy-chium*, *Hypericum*, *Impatiens*, *Ixora*, *Meconopsis*, *Melastoma*, *Rhododendron*, *Viola* and various aroids.

Primitive Angiosperms

The presence of a large number of primitive Angiosperms in Arunachal Pradesh such as *Alnus nepalensis*, *Altingia excelsa*, *Aspidocarya uvifera*, *Betula alnoides*, *Decaisnea insignis*, *Euptele pleiosperma*, *Exbucklandia populnea*, *Haematocarpus validus*, *Holboellia latifolia* var. *angustifolia*, *Houttuynia cordata*, *Magnolia caveana*, *M. griffithii*, *M. hodgsonii*, *M. pterocarpa*, *Pycnarrhena pleniflora*, *Tetracentron sinense* and other species of *Camellia*, *Magnolia*, *Michelia*, *Rhododendron*, various orchids and several wild and economic plants suggest that perhaps in this region evolutionary development of Angiosperms have taken place. Takhtajan (1969) has suggested North Eastern Region of India as the true "Cradle of flowering plants" due to the presence of large number of primitive Angiosperms. C.B. Clarke (1898) based upon his studies on the Cyperaceae (*Carex*) treated Eastern Himalaya and Assam as distinct sub-areas unlike Hooker (1904) who considered major parts of Assam as part of Gangetic Plains and included hilly areas of Assam, Shillong Plateau, Patkoi, Naga and Manipur hills in Burma and treated Eastern Himalaya as distinct separate area, whereas Chatterjee (1962) treated Assam as a distinct area based on its characteristic flora. Takhtajan (1969) attempted to localize the Cradle of flowering plants from the analysis of the distribution of primitive angiosperms, which do not occur in any other part of India except in the North-Eastern region, mainly the Eastern Himalaya, Assam and Burma. It is clearly indicated that the North-Eastern Himalayan Province under Eastern Asiatic region of Boreal subkingdom by Takhtajan (1986) includes parts of eastern Nepal in the west up to Kali river valley, 83rd East longitude, Darjeeling, Sikkim, Bhutan, parts of Assam Himalaya, certain extreme south province extends up to Mt. Namcha Barwa and approaches Dihing river valley excepting tropical vegetation found below 100 m above sea level.

GYMNOSPERMS

Gymnosperms, specially the conifers, form a significant part of the vegetation and are economically important too being used in house construction, tea

chests, furniture, fuel and for tapping of resin (mainly from *Pinus* spp.). The known Gymnosperms from the state are listed below :

Araucariaceae:

Agathis robusta Bailey. Cultivated ornamental.

Araucaria columnaris (Forster) Hooker. Cultivated ornamental.

Cupressaceae:

Cupressus corneyana Hort. ex Carr. Local name- "Dhupi". Lofty trees. Valued for its durable timber.

C. torulosa D. Don - Large, rather close-foliaged trees. Valued for its durable timbers.

Juniperus indica Bertol. (Black Juniper). Large gregarious shrubs. Used as incense in Buddhist temples.

J. recurva Buch.-Ham. ex D. Don (Drooping Juniper). Low spreading shrubs. The common dwarf Juniper.

Thuja orientalis L. Cultivated ornamental shrubs.

Cephalotaxaceae:

Cephalotaxus griffithii Hook. f. Small trees. Cultivated ornamental.

Gnetaceae:

Gnetum montanum Markgraf

Pinaceae:

Abies delavayi (Van Tiegham) Franchet. Tall trees.

A. densa Griffith ex R. Parker (East Himalayan Silver Fir). Tall trees.

A. spectabilis (D. Don) Mirb. (Himalayan Silver Fir). Tall trees.

Cedrus deodara (Roxb. ex D. Don) G. Don (Deodar, Himalayan Cedar). Large, robust trees. A valuable timber tree. Wood durable, aromatic, extensively used for furniture, building, etc. Oil extracted by distillation is used medicinally.

Larix griffithiana (Hook. f. ex Lindley) Hort. ex Carr. (East Himalayan Larch). Small trees.

Picea brachystyla (Franchet) Pritzl. Trees.

P. spinulosa (Griffith) Henry (East Himalayan spruce). Lofty trees.

Pinus armandi Franchet. Tall trees.

P. bhutanica Grierson. Trees.

P. merkusii Jungh. et Desr. 2 needled pine.

P. roxburghii Sargent (Chir Pine). Large trees. Wood is used in general construction but not durable. Sap-wood yields resin, bark yields tannin which is used in dyeing. Turpentine oil extracted from wood is used medicinally. Seeds edible.

P. wallichiana A. B. Jackson (Himalayan blue pine). Tall trees. Wood is highly resinous and used for general construction, matches, tea chests, etc. Tree also yields turpentine oil and Tar.

P. wallichiana var. *parva* Sahnj. Reported only from Tawang district of Arunachal Pradesh.

Tsuga dumosa (D. Don) Eichler (Himalayan Himlock). Tall trees. Logs are often used for construction of bridges over small rivers.

Podocarpaceae:

Podocarpus neriifolius D. Don. Lofty evergreen trees.

Taxaceae:

Amentotaxus assamica Ferguson. Small dioecious trees, 3-8 m tall. Endemic to Arunachal Pradesh (Lohit district). Rare and vulnerable due to habitat destruction.

Taxus wallichiana Zucc. (Himalayan Yew). Tall trees. Wood is used for making furniture, poles and axles of cart. The bark and leaves are used for extraction of "Taxol" - a highly potential drug used in the treatment of ovarian and breast cancer. Fleshy fruits are eaten.

Taxodiaceae:

Cryptomeria japonica (L.f.) D. Don (Japanese Red Cedar). Cultivated ornamental. Tall evergreen trees with long drooping branches. Wood is used for making tea chests.

Taxodium distichum (L.) Richard. Cultivated ornamental.

Salient Feature of the Flora

In the present account of flora of Arunachal Pradesh, only species of flowering plants (Angiosperms) have been included. The proportion of the dicots and monocots is 2.7 : 1 whereas, genera and species is 1 : 3.3 (Table -I).

TABLE -I

	Genera	Species
Monocotyledons	325	1096
Dicotyledons	894	2959
Total	1219	4055

Based on the studies carried out by Botanical Survey of India and with available information regarding this region a comparative account of the ten dominant families of this area is given below (Table -II).

TABLE -II

Comparative account of ten dominant families in Arunachal Pradesh, Eastern Himalaya and adjacent regions

Arunachal Pradesh	E. Himalaya (Hooker, 1906)	Burma (Myanmar) (Hooker, 1906)	N.E. Region (Rao & Murti, 1990)
1. Orchidaceae	1. Orchidaceae	1. Orchidaceae	1. Gramineae (Poaceae)
2. Leguminosae (Fabaceae)	2. Gramineae	2. Leguminosae	2. Orchidaceae
3. Compositae (Asteraceae)	3. Leguminosae	3. Gramineae	3. Leguminosae
4. Rubiaceae	4. Compositae	4. Rubiaceae	4. Compositae
5. Gramineae	5. Cyperaceae	5. Euphorbiaceae	5. Cyperaceae
6. Urticaceae (Including Moraceae)	6. Urticaceae	6. Acanthaceae	6. Labiatae (Lamiaceae)
7. Ericaceae	7. Scrophulariaceae	7. Cyperaceae	7. Scrophulariaceae
8. Rosaceae	8. Rosaceae	8. Urticaceae	8. Acanthaceae
9. Cyperaceae	9. Rutaceae	9. Compositae	9. Euphorbiaceae
10. Euphorbiaceae	10. Euphorbiaceae	10. Scitamineae	10. Rubiaceae

Apart from these, the following are the most significant genera belonging to different families.

Trees: Alnus, Bauhinia, Castanopsis, Cinnamomum, Dillenia, Dipterocarpus, Duabanga, Elaeocarpus, Ficus, Litsea, Mallotus, Rhododendron, Symplocos, Terminalia.

Shrubs: Aralia, Bauhinia, Celastrus, Citrus, Clerodendrum, Elatostema, Maesa, Melastoma, Mella, Mussaenda, Osbeckia, Psychotria, Rhododendron, Rubus, Saurauia, Solanum.

Herbs: Alocasia, Arisaema, Begonia, Blumea, Carex, Colocasia, Cyperus, Hedychium, Impatiens, Molineria, Musa, Ophiorrhiza, Piper, Plantago, Torenia.

Style of presentation of the Flora

In the present flora all the families have been arranged according to Bentham and Hooker (1862-83) system of classification, except for certain families where the family delimitation and circumscription is based on Cronquist's system (1981). Genera and species in individual family are arranged alphabetically. Each species has been provided with original citation, basionym if any, reference to Flora of British India or the reference of the first report from India, reference to Flora of India (Vol.1-3: 1993) and other major reference where necessary. Local names wherever known are indicated at the end of the citations. Short descriptions to each species has been provided alongwith flowering and fruiting period. The distribution for each species in Arunachal Pradesh has been provided up to district level. In some cases where specific areas/districts are not traced, they are referred under Arunachal Pradesh only. While citing the distribution of individual species in the present Flora, the earlier known five names of the districts have been followed viz. Kameng, Lohit, Siang, Subansiri and Tirap, since in the majority of cases (herbarium specimens and literature) only the older names are referred. In 1980 the five districts were divided into eleven. In 1993 again a new district 'Papum Pare' has been carved out of the Lower Subansiri district and accordingly the total number of districts in Arunachal Pradesh is 12 at present.

Abbreviations used:

Conventional abbreviations have been used for metric measurements, m: meter; cm: centimeter; mm: millimeter; Fl. & Fr.: flowers and fruits; Distrib.: distribution. The abbreviations used to denote various local Arunachalee languages are, Abor.: Aborees; Adi: Adi; Apat.: Apatani; Asm.: Assamese; Daff.: Daffla; Hill Miri: Hill Miri; Kach.: Kachhari; Miri: Miri; Mishmi: Mishmi; Monpa: Monpa and Nokte: Nokte.

RANUNCULACEAE

Aconitum assamicum Lauener in Notes Roy. Bot. Gard. Edinburgh 25:28. 1963; Rau in Sharma *et al.*, Fl. India 1:5. 1993.

Biennial erect herbs up to 60 cm high, golden spreading hairy; roots usually paired. Leaves reniform. Panicles long, many flowered; sepals hairy; petals yellowish, glabrous. Carpels 3, golden hairy.

Fl. & Fr.: Sept.

Distrib.: Arunachal Pradesh, 3900-4300 m.

Aconitum bisma (Buch.-Ham.) Rapaics in Nov. Kozl. 6: 164. 1907; Rau in Sharma *et al.*, Fl. India 1: 7. 1993. *Caltha bisma* Buch.-Ham. in Edinburgh J. Sci. 1: 251. 1824. *Aconitum palmatum* D. Don, Prodr. Fl. Nep. 196. 1825; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1: 28. 1872.

Herbs, 40-130 cm high, glabrous; roots paired, tuberous. Leaves reniform, deeply 5-lobed. Panicles loose, few flowered; flowers blue or bluish white. Follicles oblong, glabrous.

Fl. & Fr.: Nov. - March.

Distrib.: Kameng, Lohit, Siang; 1500-4000 m, along roadsides and open forest edges.

Use: The paste obtained from the roots and tubers is used to poison the arrows. The poison is so strong that even an elephant can be killed. The meat of the kill is consumed after thorough boiling.

Aconitum ferox Wallich ex Seringe in Mus. Helvet. 1: 160, t. 15, ff. 43 & 44. 1823; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1: 28. 1872, *p.p.* Rau in Sharma *et al.*, Fl. India 1: 12. 1993. Fig. 1.

Erect herbs, 80-180 cm high, puberulous. Leaves rounded, palmately 5-lobed. Panicles long, many flowered; flowers blue. Follicles 5, finely hairy.

Fl. & Fr.: Oct. - Feb.

Distrib.: Lohit, Tawang; 3000-5000 m, on grassy moist hill slopes.

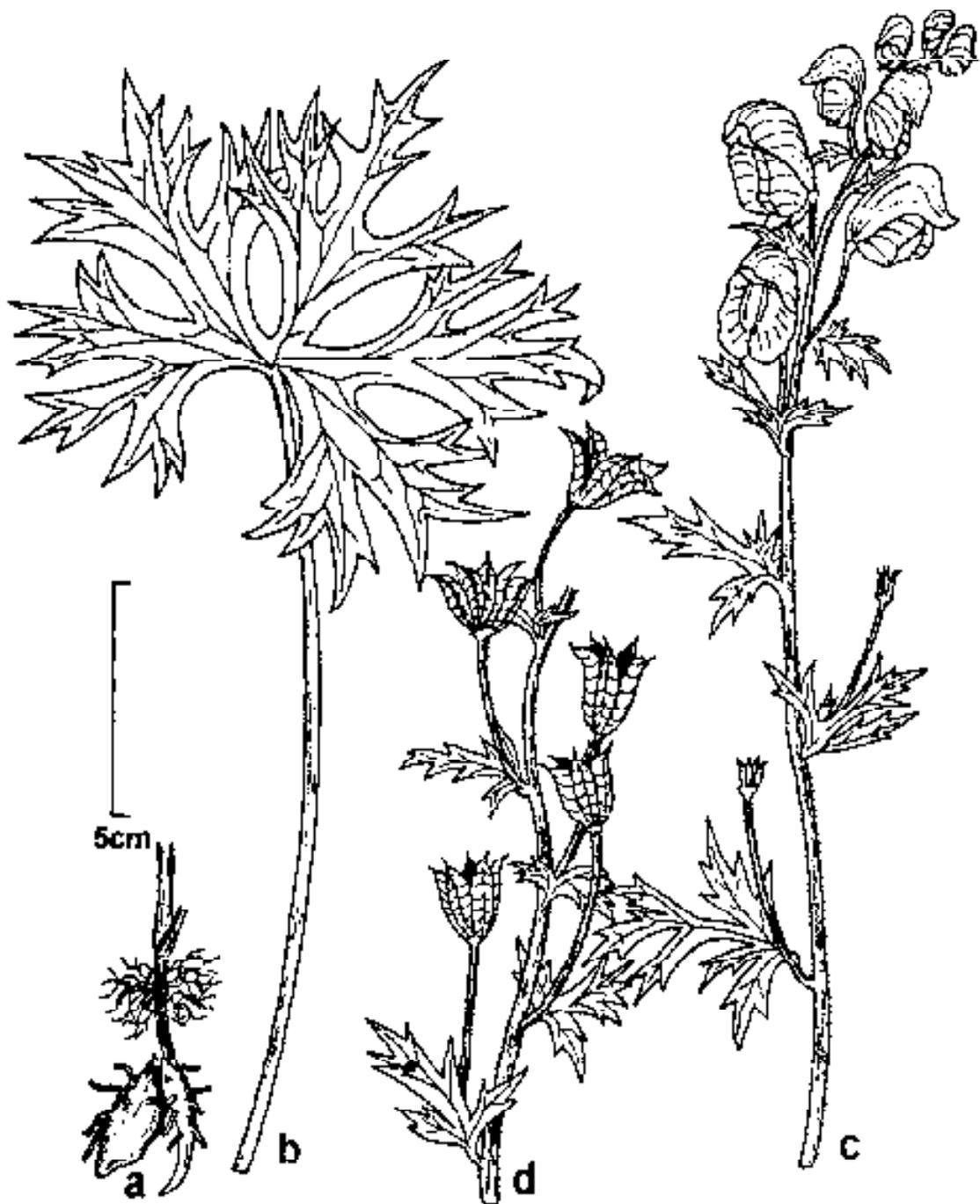


Fig. 1. *Aconitum ferox* Wallich ex Seringe : a. Tuber; b. Basal leaf; c. Inflorescence; d. Infructescence (after Stapf, 1905).

Use : The plant is used in the treatment of cold.

Aconitum fletcherianum G. Taylor in J. Roy. Hort. Soc. London 77 : 245. 1952; Rau in Sharma *et al.*, Fl. India 1 : 13. 1993.

Perennial herbs, 7-12 cm high; roots long, fusiform. Leaves radical, lamina orbicular-cordata to reniform, glabrous. Flowers solitary, blue or violet. Filaments and anthers bluish. Carpels pubescent.

Fl. & Fr. : Aug. - Oct.

Distrib. : Arunachal Pradesh; 3000-4500 m, on moist slopes, meadows.

Aconitum hookeri Stapf in Ann. Roy. Bot. Gard. Calcutta 10:147. 1905; Rau in Sharma *et al.*, Fl. India 1:16. 1993.

Biennial erect herbs up to 20 cm high, puberulous. Leaves orbicular-cordate or reniform, 3-5 partite. Racemes few flowered, lax; sepals, petals and stamens dark blue. Follicles 5, oblong, densely hairy.

Fl. & Fr. : Aug.

Distrib. : Arunachal Pradesh.

Aconitum laeve Royle, Ill. Bot. Himal. 1 : 56. 1834; Rau in Sharma *et al.*, Fl. India 1 : 17. 1993. *A. lycoctonum auct. non L.*: Hook. f. & Thomson, Fl. Ind. 55. 1855 and in Hook. f., Fl. Brit. India 1:28. 1872.

Erect herbs up to 1 m high, pubescent or glabrous; roots elongate, nontuberosus. Leaves simple, deeply lobed. Flowers in racemes, sepals pale yellow or dull purple. Follicles 3, glabrous or yellowish hirsute.

Fl. & Fr. : April - Aug.

Distrib. : Kameng; 2000-4000 m, in moist meadows.

Aconitum lethale Griffith, Notul. 4 : 732. 1854; Rau in Sharma *et al.*, Fl. India 1 : 18. 1993. *A. palmatum* Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:28. 1872, *p.p.*, non D. Don 1825.

Local name : Bhi, Bhis (Mishmi).

Erect or scandent herbs up to 70 cm high; roots fusiform. Leaves reniform, deeply 5-lobed, glabrous. Flowers in few flowered panicles, greenish blue. Follicles linear-oblong, sparingly pubescent.

Fl. & Fr.: Oct. - Dec.

Distrib.: Changlang, Lohit; 2000-3000 m, in grasslands.

Aconitum nagarum Stapf in Ann. Roy. Bot. Gard. Calcutta 10:176. 1905; Rau in Sharma *et al.*, Fl. India 1 : 19. 1993.

Herbs; stems erect; roots paired. Leaves hairy, deeply cut, 3-partite, glabrous. Flowers in slender racemes, greyish pubescent. Follicles oblong, divergent.

Fl. & Fr.: June - Sept.

Distrib.: Kameng; 2000-4500 m, on moist slopes, in grasslands.

Use : Paste of the rootstock is applied to poison the arrows for killing wild animals by local people.

Aconitum novoluridum Muaz in Gentes Herb. 6 : 472. 1945; Rau in Sharma *et al.*, Fl. India 1 : 21. 1993. *A. luridum* Hook. f. & Thomson, Fl. Ind. 55. 1855 and in Hook. f., Fl. Brit. India 1: 28. 1872, *non* Salisb. 1816.

Herbs up to 1 m high; stems erect, slightly pubescent; rootstocks cylindrical. Leaves simple, palmately lobed. Flowers in racemes, reddish.

Fl. & Fr.: Jan. - Sept.

Distrib.: Kameng; 2000-3500 m, in open moist places.

Actaea acuminata Wallich ex Royle, Ill. Bot. Himal. 57. 1834; Rau in Sharma *et al.*, Fl. India 1:24. 1993. *A. spicata* auct. *non* L.: Hook. f. & Thomson, Fl. Ind. 59. 1855 and in Hook. f., Fl. Brit. India 1:29. 1872. *A. spicata* var. *acuminata* (Wallich ex Royle) Hara in J. Jap. Bot. 51: 132-133. 1976. Fig. 2.

Perennial, erect herbs 45-100 cm high, glabrous, leaf sheaths with ovate scales at base. Leaves ternately compound; leaflets usually 3-lobed, irregularly

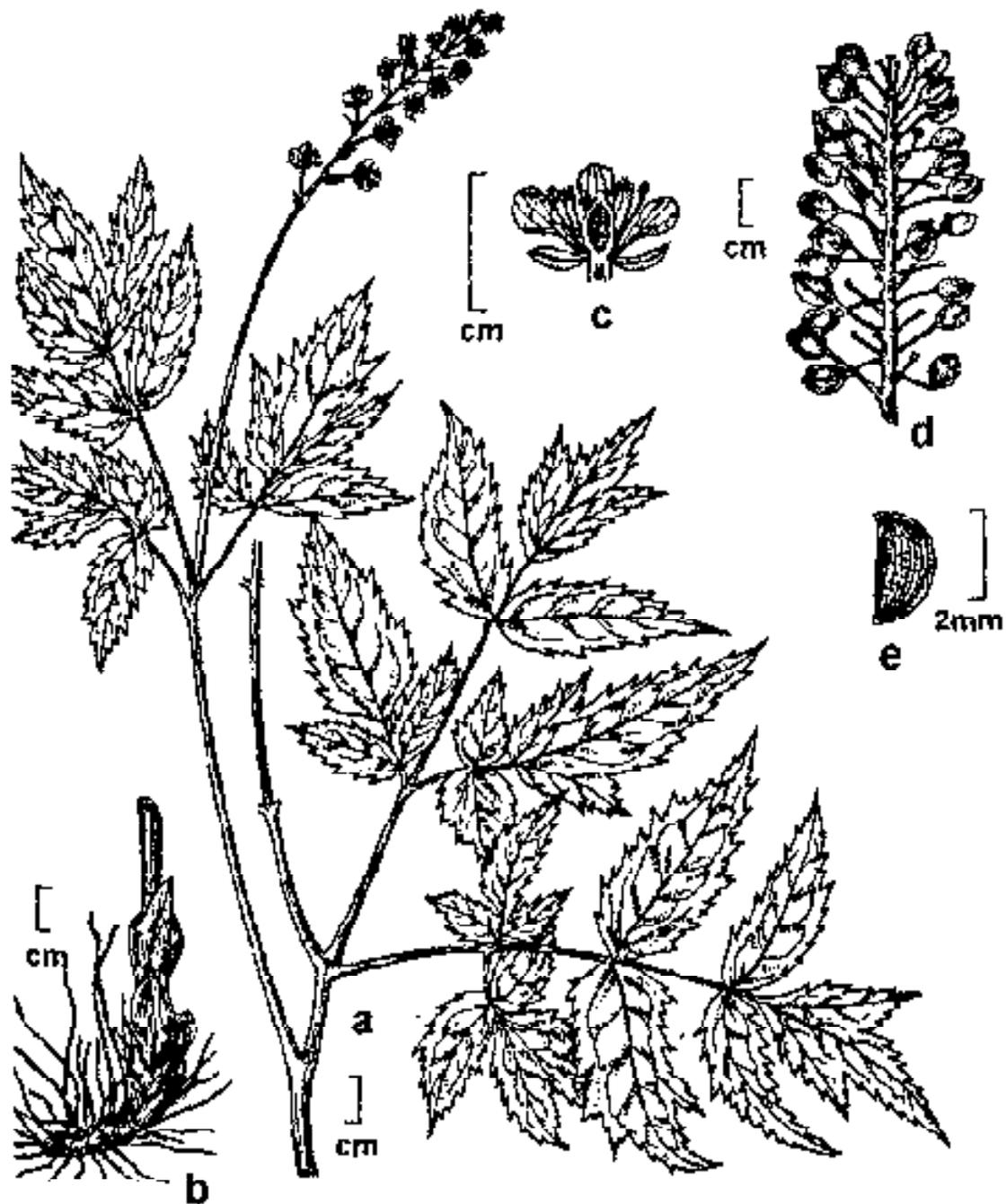


Fig. 2. *Actaea acuminata* Wallich ex Royle : a. Flowering shoot; b. Rootstock; c. Flower, longitudinal sectional view; d. infructescence; e. Seed.

serrate. Flowers in terminal racemes ca 1 cm across, white. Berry ellipsoid, black.

Fl. & Fr.: May - Aug.

Distrib.: Arunachal Pradesh.

Anemone elongata D. Don, Prodr. Fl. Nep. 194. 1825; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:10. 1872; Rau in Sharma *et al.*, Fl. India 1:30. 1993.

Perennial, pubescent herbs up to 1 m high; rootstocks fibrous. Radical leaves orbicular-cordate, deeply 3-partite. Flowers in lax cymes, white. Achenes ovate or ellipsoid, beaked.

Fl. & Fr.: April - July.

Distrib.: Kameng, Tawang; 1200-1800 m, in open moist places and grasslands.

Anemone geum A. Leveille in Bull. Acad. Georg. B. 25:25. 1915; Rau in Sharma *et al.*, Fl. India 1:31. 1993. *A. obtusifolia* D. Don var. *ovalifolia* Bruehl in Ann. Roy. Bot. Gard. Calcutta 5:78. 1896. *A. ovalifolia* (Bruehl) Hand.-Mazz., Symb. Sin. 7:315. 1931.

Villous herbs. Leaves ovate, cordate, trifoliate, petioles much longer. Flowers in few flowered simple scape; sepals slightly longer than receptacle, bluish. Achenes compressed, softly hairy.

Fl. & Fr.: July - Aug.

Distrib.: Arunachal Pradesh.

Anemone griffithii Hook. f. & Thomson, Fl. Ind. 24. 1855 and in Hook. f., Fl. Brit. India 1:8. 1872; Rau in Sharma *et al.*, Fl. India 1:31. 1993.

Herbs with woody rootstocks. Radical leaf solitary, 3-partite; lobes inciso-crenate; cauline leaves 3. Flowers in 1-2 flowered hairy scape, white or pinkish. Achenes oblong or ovoid, compressed, glabrous.

Fl. & Fr.: Sept. - Jan.

Distrib.: Kameng; 1800-3000 m, along hill slopes and roadsides.

Anemone howellii W.W. Smith & J.E. Jeffrey in Notes Roy. Bot. Gard. Edinburgh 9:78. 1916; Rau in Sharma *et al.*, Fl. India 1:32. 1993.

Herbs, 30 -50 cm high with woody rootstocks. Leaves radical, ovate-cordate. Flowers in erect, long scape, white. Achenes compressed in subglobose heads, greenish, glabrous.

Fl. & Fr.: April - July.

Distrib.: Subansiri, Tirap; 1500-2500 m, in moist and shaded localities, on humus rich soil.

Anemone rivularis Buch. - Ham. ex DC., Syst. Nat. 1:211. 1817; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:9. 1872; Rau in Sharma *et al.*, Fl. India 1:35. 1993. *A. wightiana* Wallich ex Wight & Arn., Prodr. Fl. Pen. Ind. Or. 3. 1834.

Herbs, 35 -110 cm high, silky pubescent; rootstocks stout, woody. Radical leaves long petioled, 3-partite, hairy. Flowers white or violet, silky outside. Achenes large, oblong or elliptic with hooked beaks.

Fl. & Fr.: May - Aug.

Distrib.: kameng; 1300-1600 m, in shady places.

Anemone rupestris Wallich ex Hook. f. & Thomson, Fl. Ind. 21. 1855, *p.p.* and in Hook. f., Fl. Brit. India 1:9. 1872, *p.p.*; Rau in Sharma *et al.*, Fl. India 1:36. 1993.

Tufted hairy herbs; rootstocks stout, fibrous. Leaves crowded at base, 3-partite, hairy. Flowers solitary on long scapes, white or golden yellow. Achenes oblong or elliptic, compressed, beaked.

Fl. & Fr.: Sept. -Jan.

Distrib. : Kameng; 1800-3000 m, along slopes and roadsides.

Anemone vitifolia Buch.-Ham. ex DC., Syst. Nat. 1:210. 1817; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:8. 1872; Rau in Sharma *et al.*, Fl. India 1:40. 1993.

Herbs, 60-80 cm high; rootstocks stout, woody. Radical leaves orbicular, deeply 5-lobed, densely tomentose beneath. Flowers pinkish white, pubescent outside. Achenes in large heads, white wooly.

Fl. & Fr. : Aug. - Dec.

Distrib. : Kameng, Subansiri; 1400-1600 m, on rocky slopes along roadsides.

Caltha palustris L., Sp. Pl. 558. 1753; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:21. 1872; Rau in Sharma *et al.*, Fl. India 1:47. 1993. *C. himalensis* D. Don, Prodr. Fl. Nep. 195. 1825. *C. palustris* var. *himalensis* (D. Don) Mukerjee in Bull. Bot. Surv. India 2:105. 1960. *C. palustris* var. *nemorialis* Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:21. 1872. var. *palustris*.

Annual herbs up to 30 cm high; rootstocks stout. Radical leaves long petioled, reniform. Flowers solitary, 3 - 7 cm across, terminal, yellow. Follicles many seeded.

Fl. & Fr. : March - July.

Distrib. : Kameng, Subansiri; 1800-3000 m, in swamps and wet places along streams.

Notes : Roots are acrid, poisonous.

Caltha palustris var. *purpurea* Sparre & Fischer in Bull. Misc. Inf. Kew 8:248. 1929; Rau in Sharma *et al.*, Fl. India 1:49. 1993.

Distinguished from var. *palustris* by magenta pink flowers.

Fl. & Fr. : July - Oct.

Distrib. : Arunachal Pradesh.

Caltha scaposa Hook. f. & Thomson, Fl. Ind. 40. 1855 and in Hook. f., Brit. India 1:21. 1872; Rau in Sharma *et al.*, Fl. India 1:49. 1993.

Herbs with densely fibrous rootstocks. Leaves all radical, long petioled, oval to cordate. Flowers usually solitary, yellow, 2.5-3 cm across. Follicles stalked, ovoid, black.

Fl. & Fr. : May - Aug.

Distrib. : Kameng, Tawang; 2500-4500 m, in open moist places.

Clematis acuminata DC., Syst. Nat. 1:148. 1817; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:5. 1872; Rau in Sharma *et al.*, Fl. India 1:54. 1993. subsp. *acuminata*.

Large, woody climbers with purplish branches. Leaves trifoliolate, leaflets oblong-lanceolate. Flowers in axillary panicles, white; sepals tomentose without. Achenes ovate, silky.

Fl. & Fr. : Nov. - April.

Distrib. : Changlang, Kameng, Subansiri; 800-2500 m, in forests, along river banks.

Clematis acuminata subsp. *sikkimensis* (Hook. f. & Thomson) Bruehl in Ann. Roy. Bot. Gard. Calcutta 5:75. 1896; Rau in Sharma *et al.*, Fl. India 1:56. 1993. *C. acuminata* var. *sikkimensis* Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:6. 1872.

Distinguished from subsp. *acuminata* by ovate-lanceolate leaflets and sepals tomentose only along margin without.

Fl. & Fr. : Nov. - June.

Distrib. : Kameng, Subansiri; in subtropical forests.

Clematis acutangula Hook. f. & Thomson, Fl. Ind. 5. 1855 and in Hook. f., Fl. Brit. India 1:3. 1872; Rau in Sharma *et al.*, Fl. India 1:56. 1993.

Woody climbers. Stems deeply furrowed. Leaves bipinnate; leaflets ovate-lanceolate. Flowers brownish yellow. Achenes flat, hairy.

Fl. & Fr. : Aug. - Jan.

Distrib. : Kameng; 500-1500 m, in forests.

Clematis buchananiana DC., Syst. Nat. 1:140. 1817; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:6. 1872; Rau in Sharma *et al.*, Fl.

India 1:60. 1993. *C. buchananiana* vars. *rugosa*, *tortuosa* and *vitifolia* Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:6. 1872

Local name : Mei-bytengdoh (Kh.), Danying khongru (Monpa).

Large woody climbers, coarsely hairy. Leaflets ovate or suborbicular-cordate, 3-5 lobed, pilose. Flowers in axillary or terminal panicles, white, scented. Achenes densely hairy with long silky tails.

Fl. & Fr. : April - July.

Distrib. : Arunachal Pradesh; 100-1000 m, in moist tropical forests.

Clematis cadmia Buch.-Ham. ex Hook. f. & Thomson, Fl. Ind. 5. 1855 and in Hook. f., Fl. Brit. India 1:2. 1872; Rau in Sharma *et al.*, Fl. India 1:60. 1993.

Local name : Hon-jaiuki, Ban-marich (Asm.).

Climbers. Leaflets ovate-oblong to narrow lanceolate, glabrous. Flowers axillary, solitary, white. Achenes ovate with long beak.

Fl. & Fr. : Feb. - April.

Distrib. : Arunachal Pradesh; 500-1500 m, in dense primary forests.

Clematis connata DC., Prodr. 1:4. 1824; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:6. 1872; Rau in Sharma *et al.*, Fl. India 1:61. 1993.

Fig. 3.

Large woody climbers, glabrous or young parts covered with scattered hairs. Leaflets 3-7, ovate-cordate. Flowers in many flowered panicles, white. Achenes silky with long feathery silky hairy tails.

Fl. & Fr. : June - Oct.

Distrib. : Kameng; 1000-1600 m, in dense forests.

Clematis gouriana Roxb. ex DC., Syst. Nat. 1:138. 1817; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:4. 1872; Rau in Sharma *et al.*, Fl. India 1:64. 1993.

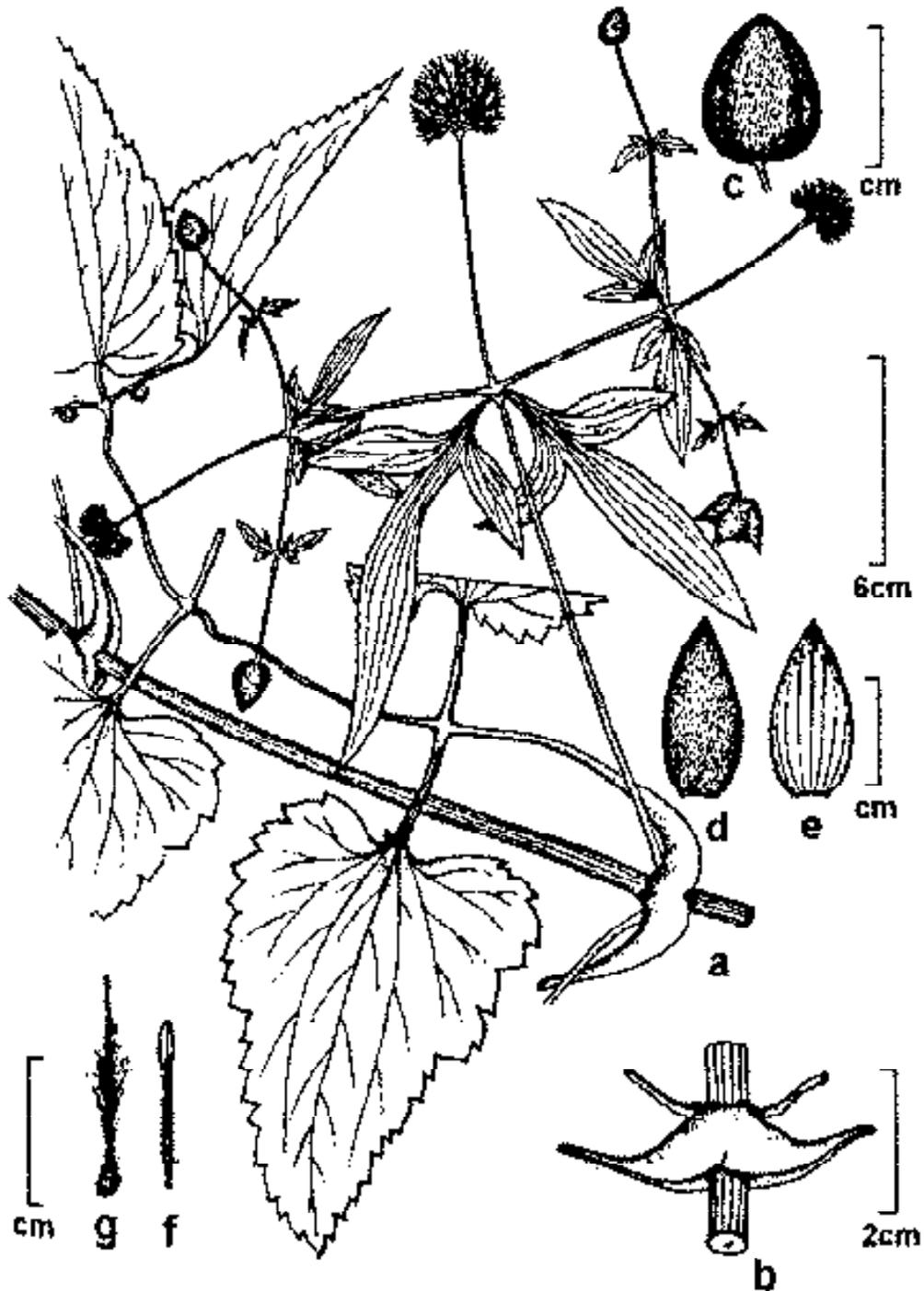


Fig. 3. *Clematis connata* DC. : a. Flowering twig; b. Node showing winged-petiole base; c. Bud; d. Sepal, outer view; e. Sepal, inner view; f. Stamen; g. Carpel.

Extensive woody climbers, branches ribbed and furrowed. Leaflets ovate-lanceolate to ovate-cordate, membranous, shiny green. Flowers crowded, yellowish white. Achenes narrowly oblong, densely hairy with feathery tails.

Fl. & Fr. : Nov. - Jan.

Distrib. : Kameng, Lohit, Siang, Subansiri; 500-1000 m, in open forests.

Clematis grata Wallich, Pl. Asiat. Rar. 1 : 83, t. 98. 1830; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1 : 3. 1872; Rau in Sharma *et al.*, Fl. India 1:65. 1993.

Large woody climbers. Leaflets 5, ovate. Flowers in axillary or terminal panicles, creamy white. Achenes densely pubescent, ovate, compressed.

Fl. & Fr. : Oct. - Dec.

Distrib. : Lohit; 500-1200 m, along roadsides, forest edges.

Clematis grewiiflora DC., Syst. Nat. 1:140. 1817; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:6. 1872; Rau in Sharma *et al.*, Fl. India 1:66. 1993. *C. loasaefolia* DC., Syst. Nat. 1:140. 1817; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:6. 1872.

Woody climbers, branches purplish, densely tomentose. Leaflets ovate-cordate, tomentose, deeply 5-lobed. Flowers in axillary or terminal panicles, pale white, tomentose without. Achenes ovate, velvety.

Fl. & Fr. : April - Sept.

Distrib. : Arunachal Pradesh; 900-1500 m, in dense primary forests.

Clematis meyeriana Walp. in Nov. Cur. 19. suppl. 1:297. 1843; Kapoor in Bull. Bot. Surv. India 29 (1-4) : 117. 1989.

Woody climbers. Leaves pinnately 3-foliolate, leaflets linear-ovate. Flowers white. Achenes ovate-oblong, hairy.

Fl. & Fr. : Oct. -Dec.

Distrib. : Kameng; between 1400-1600 m, in forests.

Clematis montana Buch.-Ham. ex DC., Syst. Nat. 1:164. 1817; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:2. 1872; Rau in Sharma *et al.*, Fl. India 1:69. 1993. var. *montana*.

Large woody climbers. Leaves 3-foliolate; leaflets ovate. Flowers 6-10 cm across, white or pinkish; sepals glabrous inside. Achenes flat, glabrous.

Fl. & Fr. : April - Sept.

Distrib. : Kameng, Tawang; 1500-4000 m, in shady forests amidst shrubs.

Clematis montana var. *manipurensis* Bruehl in Ann. Roy. Bot. Gard. Calcutta 5:74. 1896; Rau in Sharma *et al.*, Fl. India 1:71. 1993.

Climbers. Leaves ovate. flowers large, white; sepals narrowly acuminate, hairy inside.

Fl. & Fr. : May - Aug.

Distrib. : Kameng, Tawang; 2000-3000 m, in open forests and roadsides.

Clematis smilacifolia Wallich in Asiat. Res. 13:402. 1820; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:3. 1872; Rau in Sharma *et al.*, Fl. India 1:75. 1993. *C. loureiriana* auct. non DC.: Merr. in Trans. Am. Phill. Soc. n. s. 24(2): 154. 1935, *p.p.*

Extensive woody climbers. Leaves simple, glabrous, ovate-cordate, purplish beneath. Flowers ca 3.5 cm across, purplish brown, sweet scented. Achenes elliptic -ovate, flat with very long feathery tails.

Fl. & Fr. : Oct. - Jan.

Distrib. : Lohit; 100-1200 m, in damp moist places of forests.

Use : The plant is used in the treatment of cough, cold, malaria and influenza.

Coptis teeta Wallich in Trans. Med. & Phys. Soc. Calcutta 7:347. 1838; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:23. 1872; Rau in Sharma *et al.*, Fl. India 1:83. 1993. Fig. 4.

Local name : Mishmi teeta, Tita (Abor.; Asm.; Mishmi).

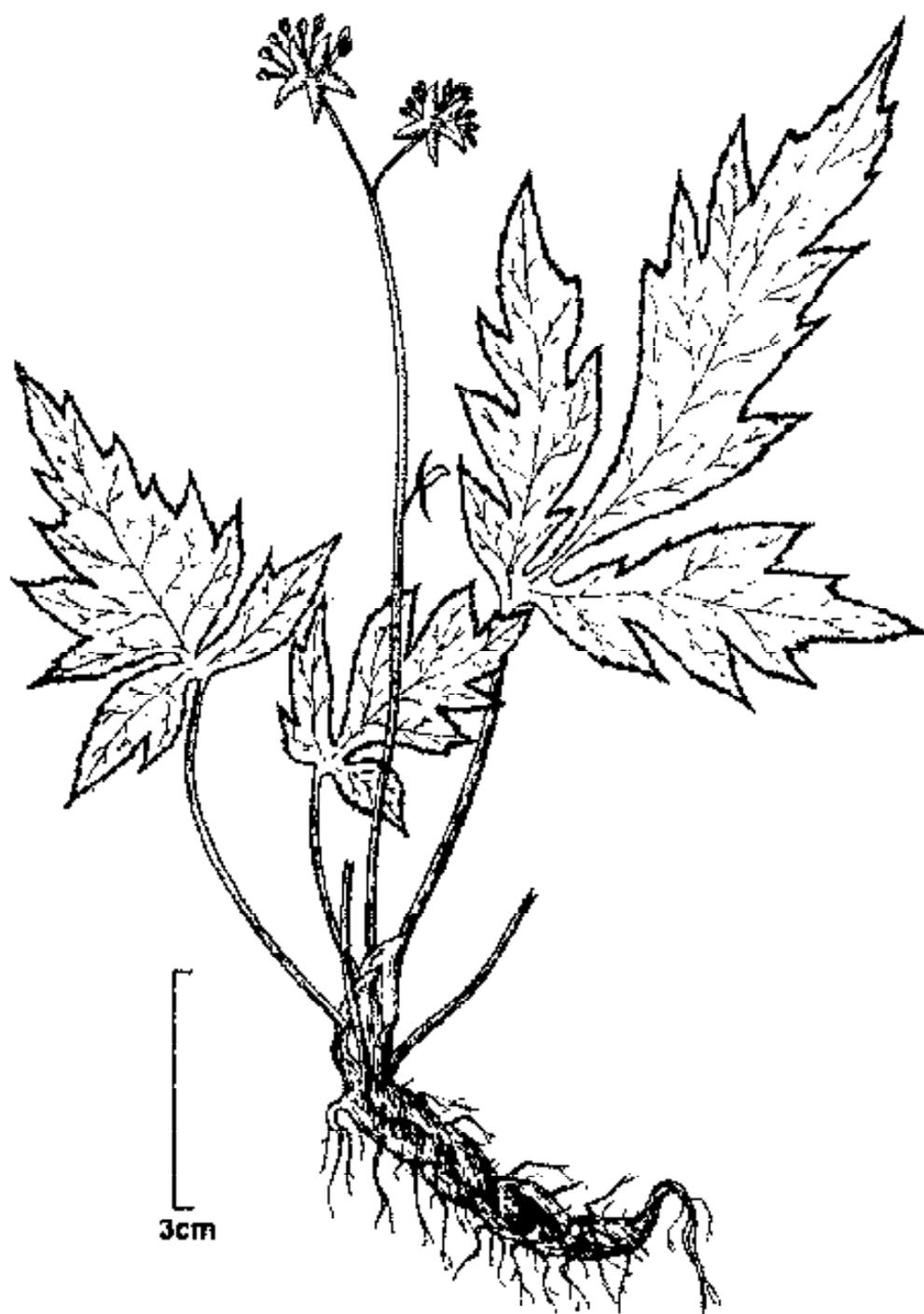


Fig. 4. *Coptis teeta* Wallich.

Perennial stemless herbs; rootstocks horizontal, densely fibrous, golden-yellow. Leaves pinnatifid, petioles very long, leaflets ovate-lanceolate. Flowers 1-3, white or yellowish. Follicles 6-8, stalked.

Fl. & Fr. : Feb. - April.

Distrib. : Lohit, Siang; 1500-2500 m, in open forests.

Note : Rare and endemic, now under cultivation at some places in the state.

Use : The rootstocks contain an alkaloid of berberine group used in cough, cold and also in stomachache, dysentery and diarrhoea. Also used as general around tonic.

Delphinium altissimum Wallich, Pl. Asiat. Rar. 2:25, t. 128. 1831; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:26. 1872; Rau in Sharma *et al.*, Fl. India 1:86. 1993. *D. altissimum* subsp. *wallichii* var. *nipalensis* Bruehl in Ann. Roy. Bot. Gard. Calcutta 5:101. 1896.

Perennial herbs, 1-1.5 m high; roots elongate, fleshy. Leaves palmately 5-partite, segments broadly cuneate obovate. Flowers in racemes, hairy, sepals deep blue, petals purple, spur long. Follicles 3, cylindrical, pubescent with a beak.

Fl. & Fr. : July - Sept.

Distrib. : Arunachal Pradesh.

Isopyrum adiantifolium Hook. f. & Thomson, Fl. Ind. 42. 1855 and in Hook. f., Fl. Brit. India 1:23. 1872; Hara, Fl. E. Himal. 2nd Rep. 30. 1971. *Dichocarpum adiantifolium* (Hook. f. & Thomson) W.T. Wang & Hsiao in Acta. Phytotax. Sin. 9:329. 1964; Rau in Sharma *et al.*, Fl. India 1:102. 1993.

Fleshy herbs up to 15 cm tall; rootstocks slender, scaly. Leaves pinnatisect; leaflets ovate. Flowers in dichasium, actinomorphic, without spur, ca 1 cm across, white; sepals petaloid. Follicles 2, cylindrical, connate at base.

Fl. & Fr. : May - Aug.

Distrib. : Kameng, Subansiri, Tirap; 1500-2700 m, in moist shaded forests.

Naravelia zeylanica (L.) DC., Syst. Nat. 1:167. 1817; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:7. 1872; Rau in Sharma *et al.*, Fl. India 1:106. 1993. *Artagene zeylanica* L., Sp. Pl. 542. 1753.

Large woody climbers, 6-7 m long. Leaves opposite, 3-foliolate, terminal leaflets ending in tendril, lateral leaflets ovate. Flowers in long panicle, petals greenish white. Achenes 6-8 mm long, almost twisted, brown.

Fl. & Fr. : Oct. - March.

Distrib. : Dibang valley, Kameng, Lohit, Subansiri; 500-1200 m, in dense forests.

Use : The stems are used as tooth sticks to cure toothaches.

Paraquilegia microphylla (Royle) Drumm. & Hutch. in Kew Bull. 1920 : 157, f. 2. 1920; Rau in Sharma *et al.*, Fl. India 1:111. 1993. *Isopyrum microphyllum* Royle, Ill. Bot. Himal. 54, t. 11. f. 4. 1833. *I. grandiflorum* auct. non Fischer ex DC. : Hook. f. & Thomson, Fl. Ind. 43. 1855, *p.p.* and in Hook. f., Fl. Brit. India 1:23. 1872, *p.p.*

Delicate caespitose, bristly hairy herbs; rootstocks stout, clothed with stiff hairs. Leaves pinnatisect, leaflets obovate, glaucous. Flowers pale yellow or blue. Follicles narrowly oblong.

Fl. & Fr. : April - July.

Distrib. : Lohit; 1400-1600 m, along roadsides.

Ranunculus adoxifolius Hand. -Mazz. in Acta Hort. Gotob. 13:152. 1939; Rau in Sharma *et al.*, Fl. India 1:115. 1993. *R. affinis* auct. non R. Brown: Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:18. 1872, *p.p.*

Erect or diffused hairy herbs, 15-30 cm tall. Leaves pedately 5-9 lobed, leaflets broadly ovate, silky pubescent. Flowers solitary, 10-15 mm across, yellow. Achenes compressed, glabrous.

Fl. & Fr. : May - Aug.

Distrib. : Kameng; 3000-3500 m, along grassy slopes.

Ranunculus brotherusii Freyn in Bull. Herb. Boiss. 6:885. 1898; Rau in Sharma *et al.*, Fl. India 1:116. 1993. *R. affinis* auct. non R. Brown: Hook. f. & Thomson, Fl. Ind. 33. 1855, *p.p.* and in Hook. f., Fl. Brit. India 1:18. 1872, *p.p.* var. *brotherusii*.

Perennial herbs; stems slender, hairy or glabrous. Basal leaves reniform, deeply 3-lobed, cauline leaves 2-4 partite, lacineae linear. Flowers 1-2, yellow. Achenes oblong to cylindric, glabrous.

Fl. & Fr. : May - July.

Distrib. : Kameng; 3000-3300 m, on grassy slopes.

Ranunculus brotherusii var. *tanguticus* (Maxim.) Tamura in Acta Phytotax. Geobot. 23: 31 & 105. 1968; Rau in Sharma *et al.*, Fl. India 1:117. 1993. *R. affinis* var. *tanguticus* Maxim. in Fl. Tangut. 14. 1889. *R. brotherusii* var. *dasycarpus* (Maxim.) Hand. -Mazz. in Acta Hort. Gotob. 13:149. 1939; Mukerjee in Bull. Bot. Surv. India 2:102. 1960.

Herbs. Leaves 3-lobed. Achenes hairy.

Fl. & Fr. : May - Aug.

Distrib. : Kameng; 1800-3000m, in open moist places.

Ranunculus cantoniensis DC., Prodr. 1:43. 1824; Rau in Sharma *et al.*, Fl. India 1:117. 1993. *R. pennsylvanicus* auct. non L. f. : Hook. f., Fl. Brit. India 1:19. 1872, *p.p.* Fig. 5.

Erect or prostrate herbs, 60-100 cm tall. Radical leaves 3-foliolate, leaflets narrow oblanceolate. Flowers solitary, yellow. Achenes compressed with intramarginal ridges, glabrous or granular.

Fl. & Fr. : May - Sept.

Distrib. : Changlang, Kameng, Subansiri, Tirap; 1400-3500 m, in open muddy places.

Ranunculus chinensis Bunge, Enum. Pl. Chin. Bor. 3: 1833. *R. pennsylvanicus* auct. non L. f. : Hook. f. & Thomson in Hook. f., Fl. Brit. India 1: 19. 1872, *p.p.*

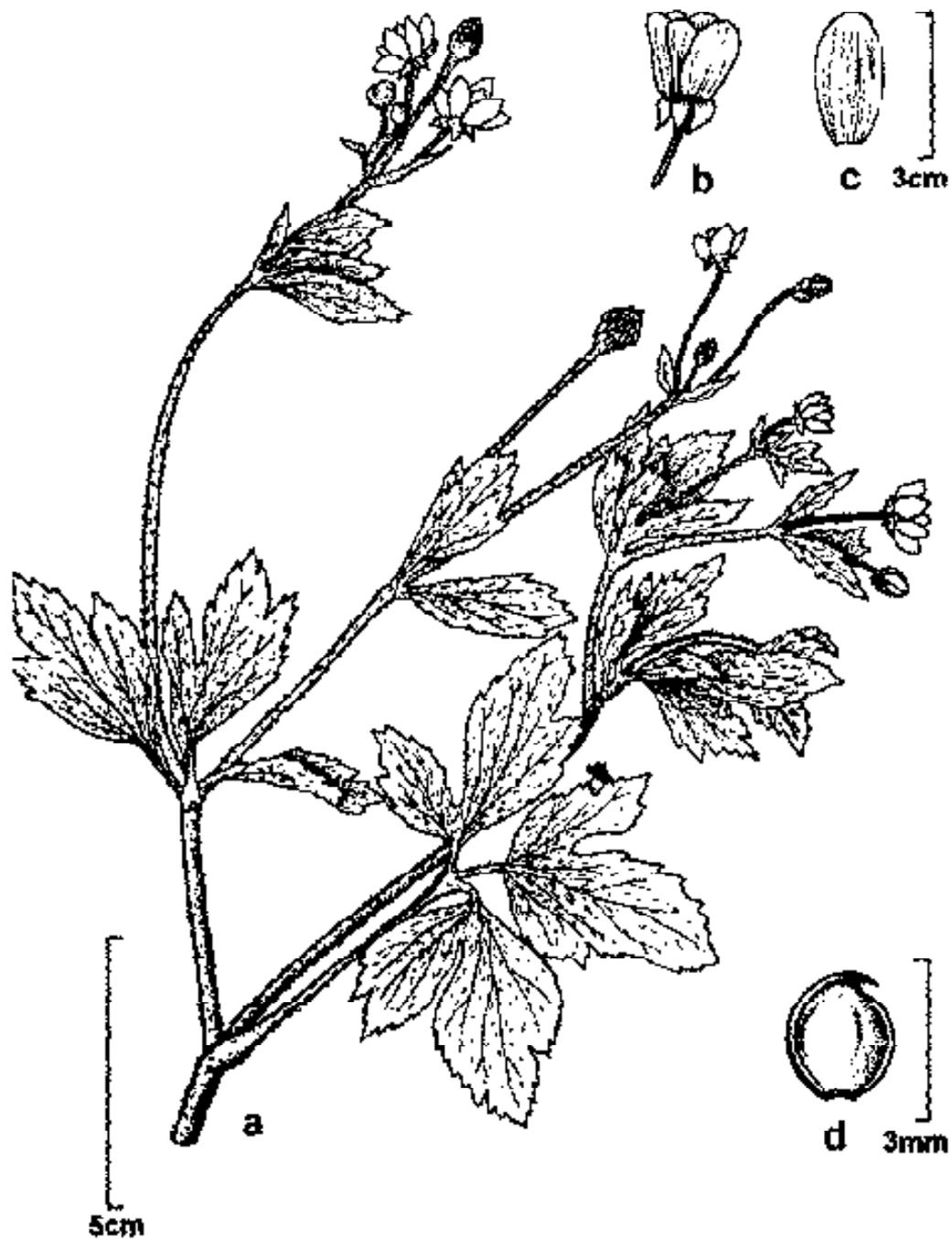


Fig. 5. *Ranunculus cantoniensis* DC. : a. Flowering twig; b. Flower; c. Petal; d. Achene.

Weak herbs up to 30 cm tall. Radical leaves 3-foliolate; leaflets cut into linear segments. Flowers yellow. Achenes slightly compressed.

Fl. & Fr. : May - Jan.

Distrib. : Kameng, Subansiri, Tirap; 1600-2000 m, in moist situations near drains and streams.

Ranunculus diffusus DC., Prodr. 1:38. 1824; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:19. 1872; Rau in Sharma *et al.*, Fl. India 1:119. 1993.

Perennial, diffuse or prostrate, hairy herbs. Leaves nearly orbicular, 3-partite. Flowers solitary, axillary, 12-25 mm across, white or yellow. Achenes suborbicular, compressed.

Fl. & Fr. : June - Sept.

Distrib. : Subansiri, Tirap; 1500-1600 m, grow in wet soil.

Ranunculus hirtellus Royle, Ill. Bot. Himal. 53. 1834; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:18. 1872; Rau in Sharma *et al.*, Fl. India 1:121. 1993.

Erect or decumbent pubescent herbs. Radical leaves reniform, lateral segments deeply 2-lobed; cauline palmately 3-partite. Flowers yellow. Achenes minutely pubescent.

Fl. & Fr. : March - Aug.

Distrib. : Kameng, Tawang; 3000-4000 m, in open grasslands, alpine meadows.

Ranunculus laetus Wallich ex D. Don in Royle, Ill. Bot. Himal. 53. 1834; Hook. f. & Thomson in Hook. f., Brit. India 1:19. 1872; Rau in Sharma *et al.*, Fl. India 1:122. 1993.

Erect herbs, 35-70 cm tall, whitish pubescent. Radical leaves 3-foliolate, lobes narrowly oblong. Flowers ca 2.8 cm across, yellow. Achenes globose, smooth.

Fl. & Fr. : June - Sept.

Distrib. : Lohit, Tirap; 600-1400 m, in wet places.

Ranunculus pennsylvanicus L. f. subsp. *napaulensis* (DC.) Riedl. in *Kew Bull.* 34:364. 1979. *R. napaulensis* DC., *Prodr.* 1:39. 1824. *R. diffusus* auct. non DC.: Hook. f. & Thomson in Hook. f., *Fl. Brit. India* 1:19. 1872, p.p. *R. pennsylvanicus* auct. non L. f. : Hook. f. & Thomson in Hook. f., *Fl. Brit. India* 1:19. 1872, p.p.

Prostrate hairy herbs, Leaves 3-partite. Flowers 1.5 - 2.8 cm across, white or yellow. Achenes ovate, compressed.

Fl. & Fr. : July - Sept.

Distrib. : Kameng, Subansiri; 1200-1600 m, in open marshy places.

Ranunculus scleratus L., *Sp. Pl.* 776. 1753; Hook. f. & Thomson in Hook. f., *Fl. Brit. India* 1:19. 1872; Rau in Sharma *et al.*, *Fl. India* 1:128. 1993.

Erect, annual herbs with acrid juice; stems fleshy, hollow. Leaves 3-partite, segments obovate, cauline leaves sessile. Flowers 1-1.5 cm across, yellow. Achenes ridged, obovoid.

Fl. & Fr. : May - Sept.

Distrib. : Tirap; 1000-1600 m, along edges of streams or water sources.

Ranunculus sikkimensis Hand.- Mazz. in *Acta Hort. Gotob.* 13:155. 1939; Rau in Sharma *et al.*, *Fl. India* 1:128. 1993. *R. nivalis* auct. non L.: Hook. f. & Thomson in Hook. f., *Fl. Brit. India* 1:19. 1872.

Erect or decumbent herbs up to 40 cm high. Leaves 3-partite, petioles broad, slightly hairy; cauline leaves shortly petioled. Flowers solitary, pale yellow, pubescent.

Fl. & Fr. : July - Sept.

Distrib. : Kameng; 1500-2000 m, in open grassy lands.

Thalictrum foliolesum DC., *Syst. Nat.* 1:175. 1817; Hook. f. & Thomson in Hook. f., *Fl. Brit. India* 1:14. 1872; Rau in Sharma *et al.*, *Fl. India* 1:136. 1993.

Herbs or small shrubs up to 4 m tall. Leaves pinnately compound; leaflets suborbicular, glaucous. Flowers bluish or greenish inside and white outside. Achenes sharply 8-ribbed.

Fl. & Fr.: July - Oct.

Distrib.: Subansiri, Tirap; 600-1200 m, in forests.

Use: The decoction of roots is used in fever and eye diseases.

Thalictrum minus L., Sp. Pl. 546. 1753; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:14. 1872.

Herbs, 60-120 cm tall. Leaves sheathing, decomponently pinnate. Flowers purple. Achenes oblong.

Fl. & Fr.: July - Aug.

Distrib.: Kameng, Tirap; 500-1300 m, in forests.

Use: Roots are used in fever and eye diseases.

Thalictrum saniculiforme DC., Prodr. 1:12. 1824; Hook.f. & Thomson in Hook. f., Fl. Brit. India 1:13. 1872; Rau in Sharma *et al.*, Fl. India 1:141. 1993. *T. radiatum* Royle, Ill. Bot. Himal. 52. 1834.

Erect herbs up to 40 cm high. Leaves subsolitary, 3-4 ternate; leaflets orbicular, glaucous beneath. Flowers small, white. Achenes sessile, oblong or ellipsoid, 3-ribbed.

Fl. & Fr.: June - Sept.

Distrib.: Kameng, Tawang; 2500-4000 m, in temperate and alpine forests.

Trollius farreri Stapf in Bot. Mag. 152,t. 9143. 1928; Rau in Sharma *et al.*, Fl. India 1:145. 1993.

Erect herbs, 15-20 cm high, rootstocks stout, fibrous, one leaved near the base. Leaves palmatisect, segments dissected. Flowers terminal, solitary, golden yellow. Follicles prominently beaked.

Fl. & Fr.: June - July.

Distrib.: Arunachal Pradesh.

CIRCAEASTERACEAE

Circaeaster agres's Maxim. in Bull. Acad. St. Petersburg. 27:556. 1881; Hook. f., Fl. Brit. India 5:101. 1886; Rao & Hajra in Sharma *et al.*, Fl. India 1:146. 1993. Fig. 6.

Annual, erect herbs with persistent cotyledons, 5-15 cm high. Leaves in false whorl at apex of stem, spatulate, toothed at margin. Flowers solitary, apetalous. Achenes ellipsoid, hooked hairy.

Fl. & Fr.: July - Oct.

Distrib.: Arunachal Pradesh; in shaded moist places at higher altitude.

DILLENACEAE

Dillenia indica L., Sp. Pl. 535. 1753; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:36. 1872; Majumdar in Sharma *et al.*, Fl. India 1:155. 1993.

Local name: On-tenga, Panchkol (Asm.), Chumpa (Adi), Pumplang (Mik.), Changne (Nishi).

Evergreen trees up to 25 m high with oval crown. Leaves oblong to oblanceolate. Flowers solitary, 8-12 cm across, white, pendent. Pseudocarps yellowish green, globose, enclosed by thickened sepals, 10-15 cm across.

Fl. & Fr.: July - Jan.

Distrib.: Changlang, Siang, Subansiri, Tirap; 100-600 m, in tropical riverine forests, also gregarious in damp places.

Use: Timber is good for making poles. Fruits are eaten either raw or cooked or used in making jam.

Dillenia pentagyna Roxb., Pl. Corom. 1:21, t. 20. 1795; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:38. 1872; Majumdar in Sharma *et al.*, Fl. India 1:156. 1993.

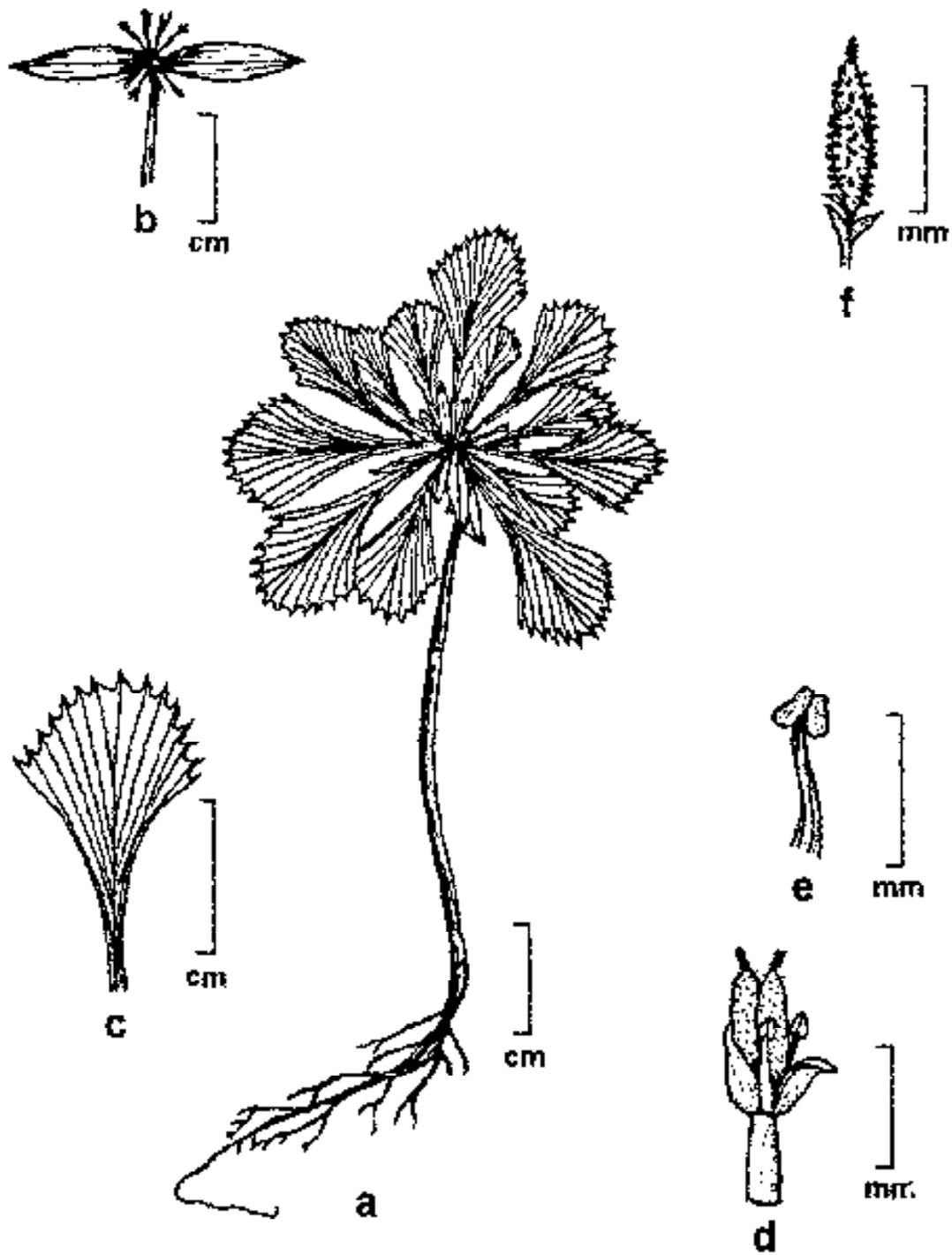


Fig. 6. *Circaeastris agrestis* Maxim. : a. Plant; b. Cotyledons; c. Leaf; d. Flower; e. Stamen; f. Achene.

Local name : Akshi, Banjiou (Asm.).

Deciduous trees up to 25 m high with lax crown. Leaves of young plants upto 1.5 m long, obovate or oblanceolate. Flowers in fascicles, ca 5 cm across, bright yellow. Fruits large, subglobose, fleshy, yellow or orange.

Fl. & Fr. : March - Sept.

Distrib. : Changlang; 100-500 m, in dense tropical humid forests.

Use : The fruits are edible.

Dillenia scabrella Roxb. ex Wallich, Pl. Asiat. Rar. 1:20, t.22. 1830; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:38 1872; Majumdar in Sharma *et al.*, Fl. India 1:157. 1993.

Local name : Banjiou, Ona (Asm.).

Deciduous trees up to 35 m high. Leaves obovate-oblong to narrowly obovate, hispid above, pubescent beneath. Flowers fascicled, 4-6 cm across, yellow. Fruits orange yellow with enclosed sepals.

Fl. & Fr. : March - Sept.

Distrib. : Kameng; 200-800 m, in tropical mixed forests.

Tetracera sarmentosa (L.) Vahl subsp. *andamanica* (Hoogl.) Hoogl. in Blumea 9:588. 1959; Majumdar in Sharma *et al.*, Fl. India 1:159. 1993. *T. asiatica* (Lour.) Hoogl. subsp. *andamanica* Hoogl. in Fl. Males. 1,4:144. 1951. *Delima sarmentosa* L. var. *glabra* Hook. f. & Thomson, Fl. Ind. 61. 1855 and in Hook. f., Fl. Brit. India 1:31. 1872. Fig. 7.

Shrubs or woody climbers; young branches and inflorescence strigose. Leaves obovate or broadly lanceolate, scabrid, strongly nerved. Flowers solitary, white. Follicles globose, glabrous, purplish.

Fl. & Fr. : March - Oct.

Distrib. : Subansiri; 500-1500 m, in forests.

Tetracera scandens (L.) Merr., Interpr. Rumph. Herb. Amb. 365. 1917 Majumdar in Sharma *et al.*, Fl. India 1:161. 1993. *Tragia scandens* L. in

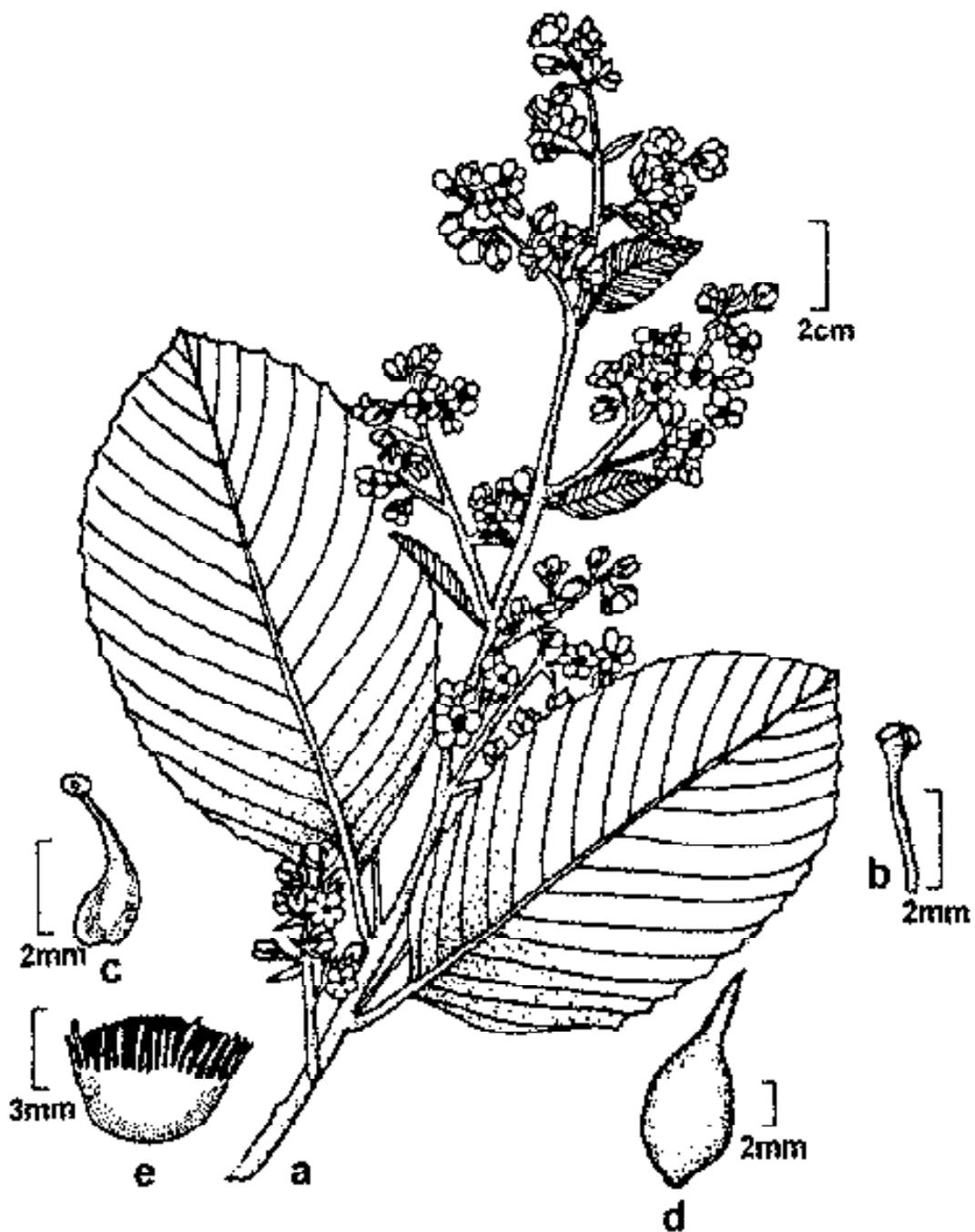


Fig. 7. *Tetracera sarmentosa* (L.) Vahl subsp. *andamanica* (Hoogl.) Hoogl.: a. Twig with flowers; b. Stamen; c. Carpel; d. Follicle; e. Seed with aril.

Stickm., Herb. Amb. 18. 1754. *Delima sarmentosa* L. var. *hebecarpa* (DC.) Hook. f. & Thomson, Fl.Ind. 61. 1855 and in Hook. f., Fl. Brit. India 1:31. 1872. *D.hebecarpa* DC., Prodr. 1:70. 1824.

Shrubs or woody climbers. Leaves obovate or oblong. Flowers in terminal panicles, white. Follicles globose, hairy.

Fl. & Fr.: March - Oct.

Distrib.: Kameng, Lohit, Siang; 100-1000 m, in tropical primary forests.

MAGNOLIACEAE

Magnolia campbelli Hook. f. & Thomson, Fl.Ind. 77. 1855 and in Hook. f., Fl. Brit. India 1:41. 1872; Raju in Sharma *et al.*, Fl.India 1:166. 1993.

Local name: Lal-champ (Asm.).

Trees, 20-25 m high; crown dense, oval. Leaves elliptic-ovate or oblong, silky beneath. Flowers solitary, terminal, 12-20 cm across, showy, white. Follicles obtuse.

Fl. & Fr.: April - Sept.

Distrib.: Kameng, Subansiri, 1600-2000 m, in dense evergreen humid forests.

Magnolia caveana (Hook. f. & Thomson) Raju & Nayar in Indian J. Bot. 3:170. 1980; Raju in Sharma *et al.*, Fl.India 1:166. 1993. *Manglietia caveana* Hook. f. & Thomson, Fl.Ind. 76.1855 and in Hook. f., Fl. Brit. India 1:42. 1872. Fig. 8.

Local name: Pan-sopa; Phul-sopa (Asm.).

Medium-sized trees up to 15 m high with oval crown. Leaves oblong-elliptic. Flowers 10-15 cm across, white. Follicles obscurely beaked.

Fl. & Fr.: March - July.

Distrib.: Subansiri; 400-800 m, in tropical dense forests.

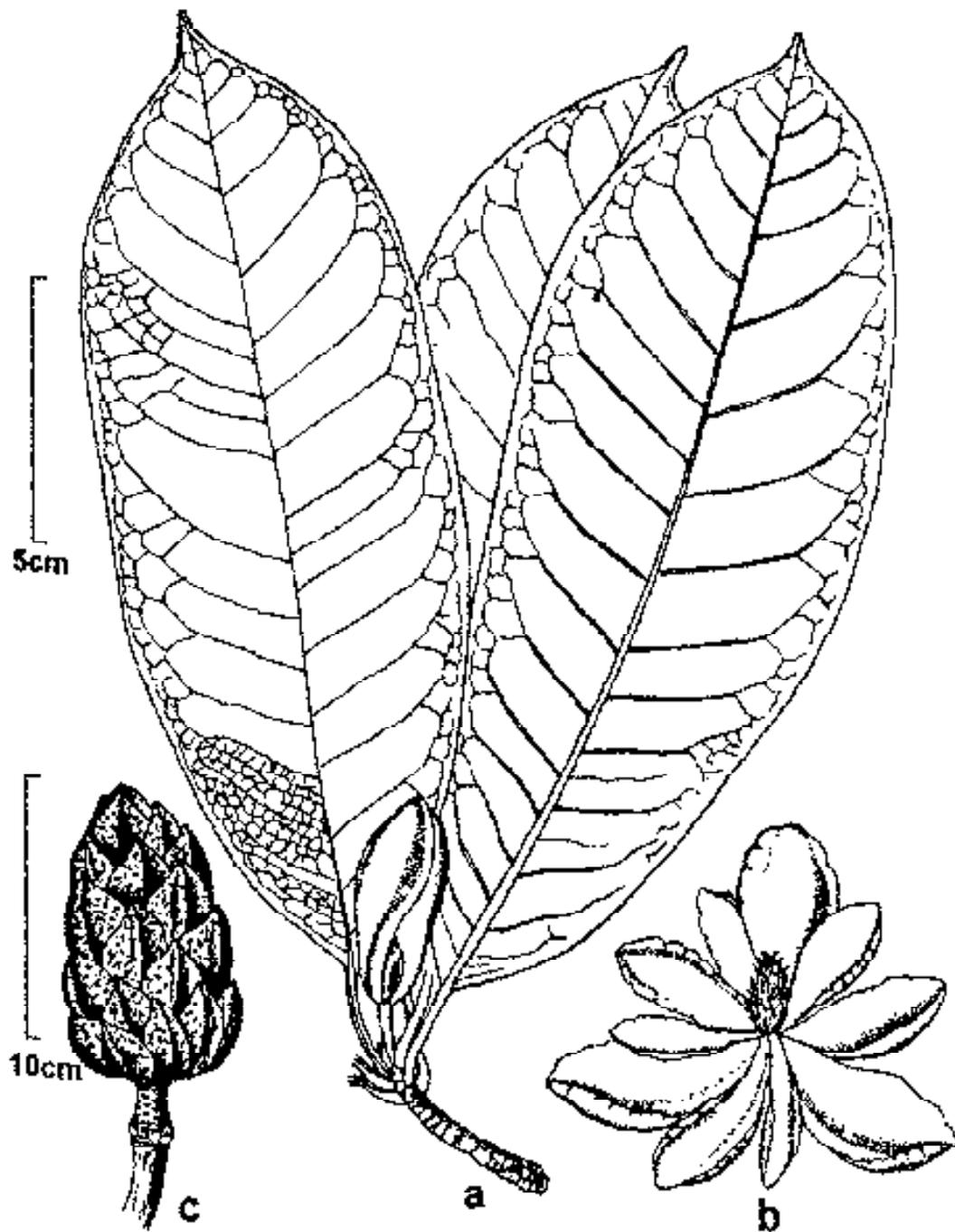


Fig. 6. *Magnolia caveana* (Hook.f. & Thomson) Raju & Nayar : a. Twig with flowering bud; b. Flower; c. Fruit (After King, 1891).

Magnolia globosa Hook. f. & Thomson, Fl. Ind. 77. 1855 and in Hook. f., Fl. Brit. India 1:40. 1872; Raju in Sharma *et al.*, Fl. India 1:167. 1993.

Small trees, young branchlets tomentose. Leaves ovate-elliptic, brownish tomentose beneath. Flowers pendulous, 12-15 cm across, white or cream coloured, fragrant. Fruiting receptacles 3-5.5 cm long, elliptic-ovoid, beaked.

Fl. & Fr.: May - Aug.

Distrib.: Arunachal Pradesh.

Magnolia grandiflora L., Syst. Nat. ed. 10. 1082. 1759.

Shrubs or small trees upto 6 m tall. Leaves glossy green above, brown beneath. Flowers large, showy, white, fragrant. Follicles compressed.

Fl. & Fr.: Sept. - March.

Distrib.: Kameng; 1300-2500 m, in open places, also cultivated.

Magnolia griffithii Hook. f. & Thomson, Fl. Ind. 77. 1855 and in Hook. f., Fl. Brit. India 1:41. 1872; Raju in Sharma *et al.*, Fl. India 1:167. 1993.

Local name: Bar-gahori-sopa, Gouri-sopa, Kala-sopa, Pan-sopa (Asm.).

Medium-sized trees with oval crown; young branches rusty pilose. Leaves oblong or elliptic, densely tomentose beneath. Flowers 12-16 cm across, pale white, faintly scented.

Fl. & Fr.: April - Jan.

Distrib.: Changlang, Kameng, Lohit; 1500-2000 m, in evergreen forests.

Magnolia gustavii King in Ann. Roy Bot. Gard. Calcutta 3(2): 209, t.61. 1891; Kanjilal *et al.*, Fl. Assam 1(1): 15. 1934; Raju in Sharma *et al.*, Fl. India 1:168. 1993.

Local name: Khorokia-sopa (Asm.).

Trees up to 30 m high with narrow and conical crown. Leaves elliptic-lanceolate, glabrous. Flowers terminal or axillary, solitary, ca 13 cm across, pale yellow. Fruits obovoid or oblong.

Fl. & Fr.: March - Dec.

Distrib.: Kameng, Siang, Subansiri; 300-1000 m, in tropical wet forests.

Magnolia hodgsonii (Hook. f. & Thomson) Keng in Gard. Bull. Singapore 31:129. 1978; Raju in Sharma *et al.*, Fl. India 1:168. 1993. *Talauma hodgsonii* Hook. f. & Thomson, Fl. Ind. 74. 1855 and in Hook. f., Fl. Brit. India 1:40. 1872. Fig. 9.

Local name : Burbang-asing (Adi); Boromthuri, Dat-bhola (Asm.); Boronthari-arong (Mik.); Teterasing (Miri).

Large evergreen trees up to 25 m high with oval, lax crown. Leaves elliptic, leathery. Flowers terminal, 7-10 cm across, white. Fruits cone like, stout, upright.

Fl. & Fr.: April - Sept.

Distrib.: Changlang, Lohit, Siang, Subansiri, Tirap; 200-600 m, in primary tropical forests and riverine forests.

Magnolia hookeri (Cubitt & Smith) Raju & Nayar in Ind. J. Bot. 3:171. 1980; Raju in Sharma *et al.*, Fl. India 1:170. 1993. *Manglietia hookeri* Cubitt & Smith in Rec. Bot. Surv. India 4:273. 1913.

Local name : Pan-sopa, Phul-sopa (Asm.).

Large trees with straight bole up to 30 m high; young parts rufous silky. Leaves elliptic, rusty pubescent beneath. Flowers 15-18 cm across, white. Fruits ovoid.

Fl. & Fr.: Feb. - July.

Distrib.: Kameng, Siang, Subansiri, Tirap; 300-1000 m, in tropical dense forests.

Magnolia pealiana King in Ann. Roy Bot. Gard. Calcutta 3(2): 210, t. 59. 1891; Kanjilal *et al.*, Fl. Assam 1(1):14. 1934.

Local name : Gahori-sopa (Asm.).

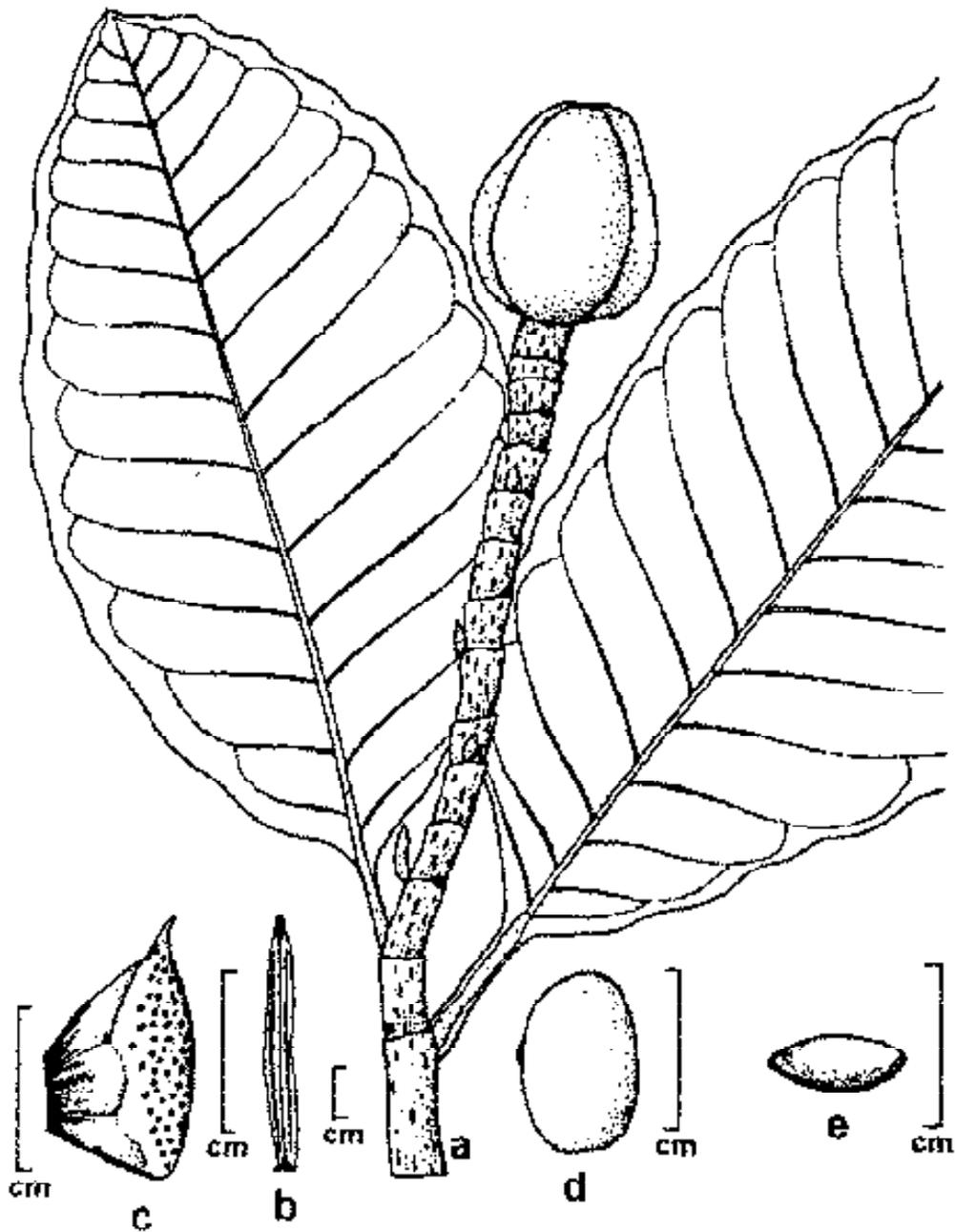


Fig. 9. *Magnolia hodgsonii* (Hook. f. & Thomson) Keng : a. Twig with flower bud; b. Stamen; c. Follicle; d. Seed, lateral view; e. Seed, end view.

Trees up to 15 m high; young parts pubescent. Leaves oblong, obtusely acuminate at apex, involucre with yellow silky hairs. Fruits 2-seeded.

Fl. & Fr.: March - Oct.

Distrib.: Kameng, Lohit, Siang, Subansiri, Tirap; 100-1000 m, in dense tropical forests.

Magnolia pterocarpa Roxb., Pl. Corom. 3:62, t. 266. 1820; Raju in Sharma *et al.*, Fl.India 1:172. 1993. *Liriodendron grandiflorum* Roxb., Fl.Ind. 2:653. 1832. *Magnolia sphenocarpa* Hook. f. & Thomson, Fl.Ind. 78. 1855 and in Hook. f., Fl.Brit. India 1:41. 1872.

Local name: Baramphuri-sopa, Thouthua (Asm.).

Evergreen trees up to 15 m high with dense crown. Leaves large, coriaceous, rusty tomentose. Flowers 8-12 cm across, dull white. Mature carpels recurved, oblong.

Fl. & Fr.: April - Nov.

Distrib.: Changlang, Kameng, Siang, Subansiri; 1500-2500 m, in forests.

Use: Wood is white and soft, used in making tea-chests; tender stipules are chewed for blackening the gum and teeth.

Magnolia rabaniana (Hook. f. & Thomson) Raju & Nayar in Ind. J. Bot. 3:171. 1980; Raju in Sharma *et al.*, Fl.India 1:173. 1993. *Talauma rabaniana* Hook. f. & Thomson, Fl.Ind. 75. 1855 and in Hook. f., Fl.Brit. India 1:40. 1872.

Local name: Sopa (Asm.).

Trees up to 25 m high with conical crown. Leaves oblanceolate, dark green above. Flowers solitary, terminal, ca 9 cm across, white or yellowish.

Fl. & Fr.: April - Aug.

Distrib.: Kameng, Lohit, Siang, Subansiri; 200-1000 m, in primary forests.

Manglietia insignis (Wallich) Blume, Fl.Jav. 1:23. 1828; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:43. 1872. *Magnolia insignis* Wallich, Tent. Fl.Nep. 3, t. 1. 1824; Raju in Sharma *et al.*, Fl.India 1:170. 1993.

Fig. 10.

Local name : Pan-sopa, Phul-sopa (Asm.).

Tall trees, 20-30 m high with oval or spreading crown. Leaves oblanceolate, shining above. Flowers 6-9 cm across, white or pale pink, fragrant. Follicles ovoid, red.

Fl. & Fr. : May - Jan.

Distrib. : Kameng, Subansiri, Tirap; 500-1500 m, in tropical evergreen forests.

Michelia baillonii (Pierre) Finet & Gagnepain in Mem. Soc. Bot. France 1(4): 46. 1905; Raju in Sharma *et al.*, Fl.India 1:174. 1993. *Magnolia baillonii* Pierre, Fl.Cochinch. 1:t. 2. 1879.

Local name : Tita-sopa; Khorika-sopa (Asm.); Chikong-arang (Mik.).

Large trees, 20-30 m high, branches rusty pilose. Leaves elliptic or oblong-lanceolate. Flowers axillary, solitary, ca 3 cm across, pale white. Follicles hooked. Seeds ovoid, red.

Fl. & Fr. : April - Oct.

Distrib. : Changlang; 600-1500 m, in primary forests.

Michelia champaca L., Sp.-Pl. 536. 1753; Hook. f. & Thomson in Hook. f., Fl.Brit. India 1:42. 1872; Raju in Sharma *et al.*, Fl.India 1:175. 1993. *M.aurantiaca* Wallich, Pl. Asiat. Rar. 2:39, t. 147. 1831.

Local name : Tita-sopa (Asm.); Serjo-asing (Miri).

Large evergreen trees, 20-25 m high with oval, lax crown. Leaves ovate-lanceolate. Flowers solitary, 3-4 cm across, pale yellow or orange yellow, fragrant. Fruits cone like, white speckled.

Fl. & Fr. : May - April.

Distrib. : Kameng; 800-1800 m, in forests.

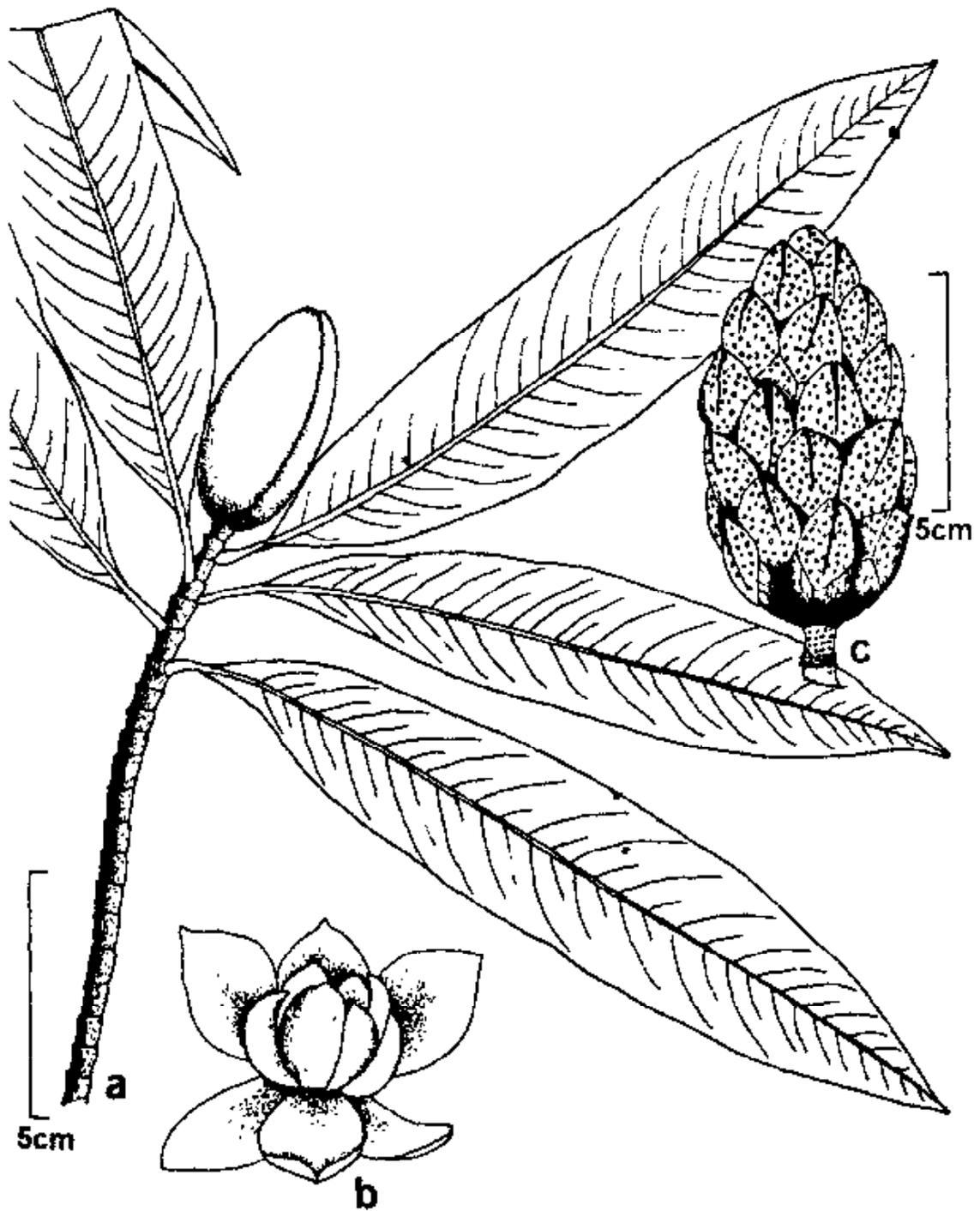


Fig. 10. *Manglietia insignis* (Wall.) Blume : a. Flowering twig; b. Flower; c. Fruit.

Michelia doltsopa Buch.-Ham. ex DC., Syst. Nat. 1:448. 1817; Raju in Sharma *et al.*, Fl.India 1:176. 1993. *Magnolia excelsa* Wallich, Tent. Fl.Nep. 5, t. 2.1824. *Michelia excelsa* (Wallich) Blume, Fl.Jav. 1:9.1828; Hook. f. & Thomson in Hook. f., Fl.Brit. India 1:43. 1872. *M.manipurensis* Watt ex Brandis, Indian Trees 8. 1906.

Trees up to 20 m high with lax crown, branchlets ferruginous tomentose. Leaves elliptic to lanceolate. Flowers 7-12 cm across, white to pink, mildly fragrant. Follicles ovoid.

Fl. & Fr.: April - Nov.

Distrib.: Kameng, Siang, Subansiri; 1300-1700 m, in primary forests.

Michelia glabra Parment. in Bull. Soc. Fr.Belg. 27:214,283. 1896; Raju in Sharma *et al.*, Fl.India 1:177. 1993. *M.kingii* Dandy in J. Bot. 66:321. 1928. *M.montana auct.non* Blume: Kanjilal *et al.*, Fl. Assam 1:25. 1934.

Local name : Pan-sopa (Asm.).

Trees up to 20 m high; bark aromatic. Leaves elliptic, shining on both surfaces. Flowers axillary, solitary, white. Ripe carpels obovoid.

Fl. & Fr.: June - Oct.

Distrib.: Siang, Subansiri; 300-1000 m, in forests.

Michelia kisopa Buch.-Ham. ex DC., Syst. Nat. 1:448. 1817; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:43. 1872; Raju in Sharma *et al.*, Fl.India 1:178. 1993.

Deciduous trees, 10-20 m high. Leaves ovate or elliptic. Flowers axillary, yellowish. Ripe carpels sessile, compressed, 3-4 seeded.

Fl. & Fr.: July - Dec.

Distrib.: Arunachal Pradesh.

Michelia mannii King in Ann. Roy. Bot. Gard. Calcutta 3(2): 218, t. 70. 1891; Kanjilal *et al.*, Fl. Assam 1(1):25. 1934; Raju in Sharma *et al.*, Fl.India 1:178. 1993.

Local name : Kothalua-sopa (Asm.).

Evergreen trees, 10-15 m high. Leaves oblong or obovate. Flowers axillary, solitary, 8-10 cm across, white. Ripe carpels obovoid, 2-seeded.

Fl. & Fr. : Nov. - May.

Distrib. : Siang, Subansiri; 100-1000 m, in tropical primary forests.

Michelia oblonga Wallich ex Hook. f. & Thomson, Fl.Ind. 81. 1855 and in Hook. f., Fl. Brit. India 1:43. 1872; Raju in Sharma *et al.*, Fl.India 1:179. 1993.

Local name : Bor-sopa, Kothal-sopa, (Asm.); Serio-asing (Adi & Miri).

Large trees up to 40 m tall with buttressed base; crown lax, spreading. Leaves oblanceolate. Flowers axillary, solitary, 2-3 cm across, white to dull yellow. Fruits cone like.

Fl. & Fr. : March - Nov.

Distrib. : Kameng, Siang; 1200-1800 m, in primary forests.

Use : Timber is used in planking and cabinet making.

Michelia punduana Hook. f. & Thomson, Fl.Ind. 81. 1855 and in Hook. f., Fl. Brit. India 1:43. 1872; Raju in Sharma *et al.*, Fl.India 1:180. 1993.

Fig. 11.

Medium-sized trees up to 15 m high with subovoid crown, young parts densely red silky. Leaves oblanceolate. Flowers axillary, 2-3 cm across, yellowish, fragrant. Follicles obovoid.

Fl. & Fr. : Sept. - March.

Distrib. : Kameng, Lohit, Siang, Subansiri, Tirap; 1000-1500 m, in primary forests.

Michelia velutina DC., Prodr. 1:79. 1824; Raju in Sharma *et al.*, Fl.India 1:181. 1993. *M. lanuginosa* Wallich, Tent. Fl.Nep. 1:8, t. 5. 1824; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:43. 1872.

Local name : Dieng-lali (Kh.); Gogoi-champa (Nep.).

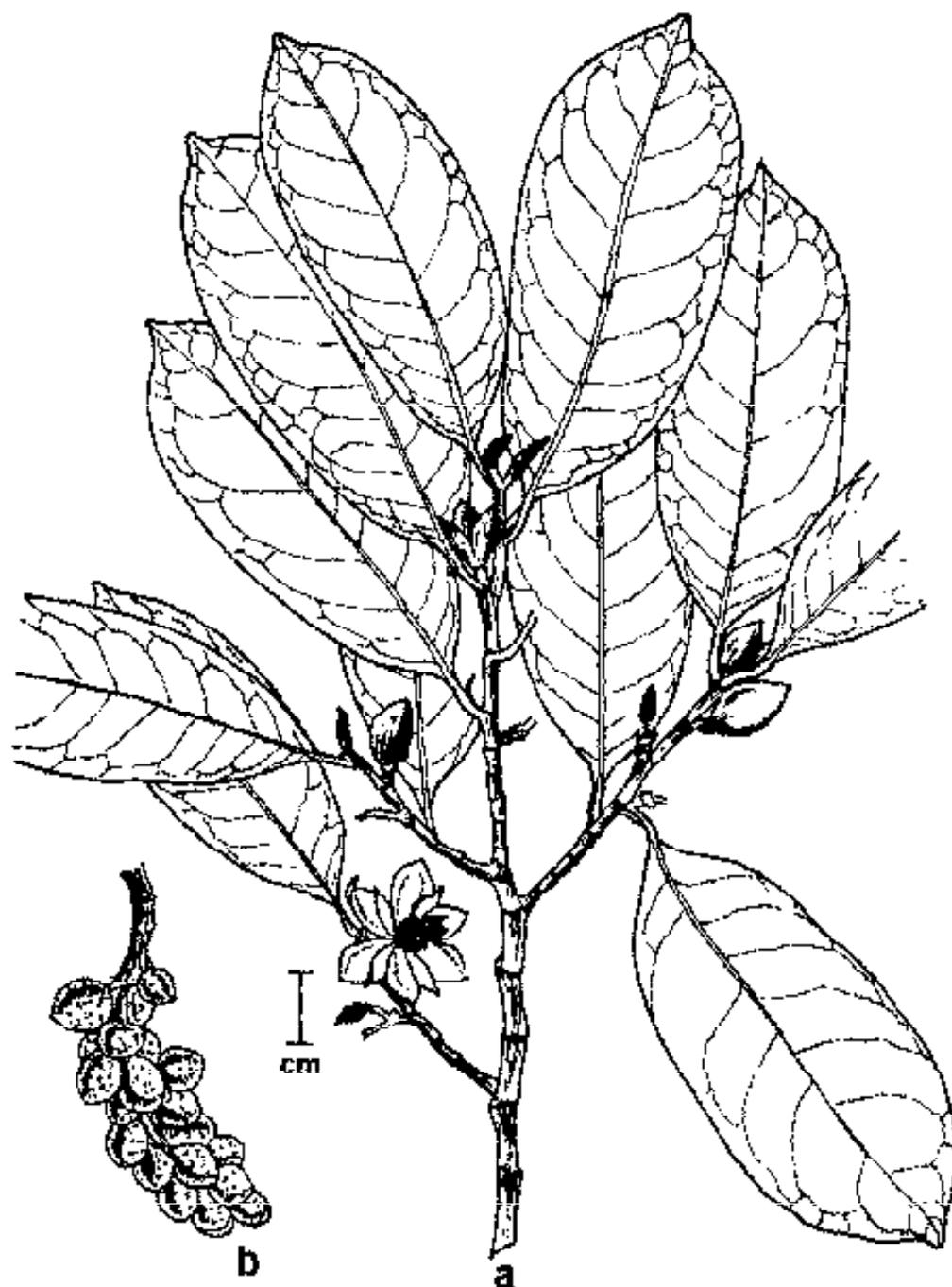


Fig. 11. *Michelia punduana* Hook.f. & Thomson : a. Flowering twig;
b. Bunch of fruits (after King, 1891).

Deciduous trees up to 35 m high with broad crown, velutinous when young. Leaves oblong-lanceolate. Flowers axillary, solitary, ca 10 cm across, dull white. Ripe carpels shortly stalked, 1-3 seeded.

Fl. & Fr.: Aug. - Dec.

Distrib.: Kameng, Lohit, Siang; 1500-2000 m, in primary forests.

Michelia wardii Dandy in J. Bot. 65:222. 1929; Raju in Sharma *et al.*, Fl. India 1:182. 1993.

Large trees. Leaves oblanceolate to elliptic-oblong, glaucescent and adpressed pubescent along nerves beneath. Flowers cream coloured, pubescent without. Carpels pubescent when young.

Fl. & Fr.: July - Sept.

Distrib.: Arunachal Pradesh.

Pachylarnax pleiocarpa Dandy in J. Bot. 71:313. 1933; Kanjilal *et al.*, Fl. Assam 1(1):19. 1934; Raju in Sharma *et al.*, Fl. India 1:182. 1993.

Local name : Phul-sopa, Kathal pathia-sopa (Asm.).

Trees, 20-30 m high. Leaves crowded at branch apices, elliptic or oblong, pale green beneath. Flowers solitary, rarely in pair, 10-11 cm across, whitish yellow. Fruits ellipsoid. Seeds orange yellow.

Fl. & Fr.: Sept. - Aug.

Distrib.: Lohit, Tirap; 100-1000 m, in dense primary forests.

ILLICIACEAE

Illicium cambodianum Hance in J. Bot. 14:240. 1876; Subba Rao & Kumari in Bull. Bot. Surv. India 6(1):105. 1964. Raju *et al.*, Fl. India 1:185. 1993. Fig. 12.

Large, evergreen shrubs or trees up to 10 m high. Leaves elliptic-lanceolate. Flowers axillary or terminal, solitary, pinkish white to red; perianth segment ca 7. Follicles compressed, beaked.

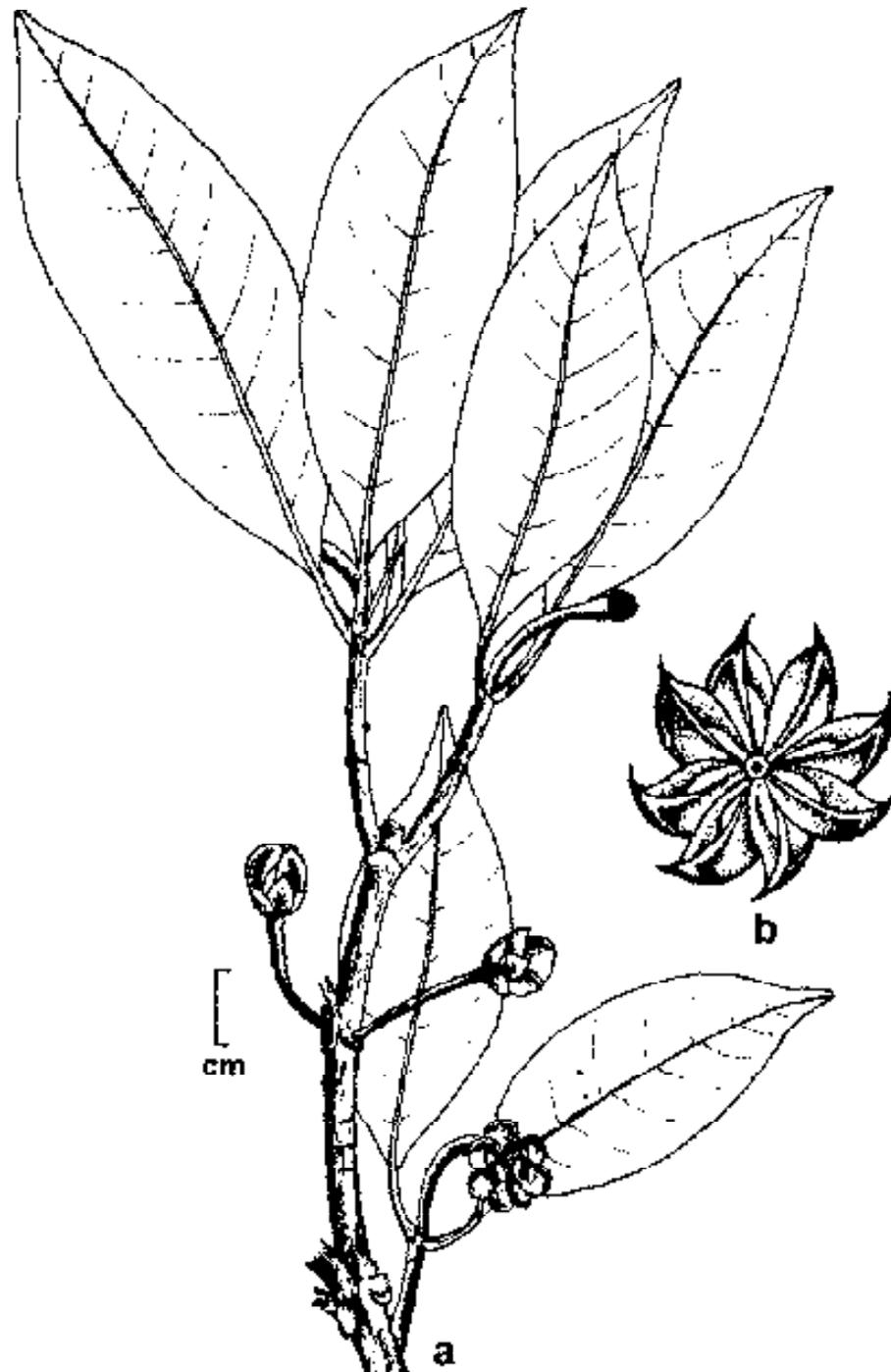


Fig. 12. *Elicium cambodianum* Hance : a. Flowering twig; b. Dehiscent fruit (after King, 1891).

Fl. & Fr. : May - Oct.

Distrib. : Kameng, Subansiri; 1600-1800 m, in forests.

Note : Fruits aromatic and have carminative properties.

Illicium griffithii Hook. f., & Thomson, Fl. Ind. 74. 1855 and in Hook. f., Fl. Brit. India 1:40. 1872; Raju *et al.*, in Sharma *et al.*, Fl. India 1:186. 1993.

Evergreen shrubs or trees. Leaves ovate or elliptic. Flowers axillary, solitary, perianth segment ca 24. Follicles ovoid, compressed.

Fl. & Fr. : April - Nov.

Distrib. : Arunachal Pradesh; 1200-1800 m, in subtropical forests.

Illicium manipurense Watt ex King in Ann. Roy. Bot. Gard. Calcutta 3(2):200, t. 40B. 1891; Deb in Bull. Bot. Surv. India 3(3 & 4):255. 1961; Raju *et al.*, in Sharma *et al.*, Fl. India 1:186. 1993.

Trees, 15-20 m high; crown lax. Leaves elliptic to elliptic-lanceolate. Flowers white, fragrant. Follicles subulate or oblong, compressed with recurved beak.

Fl. & Fr. : April - Sept.

Distrib. : Subansiri; 1800-2500 m, in moist broad leaved temperate forests.

Illicium simonsii Maxim. in Bull. Acad. Sci. St. Petersburg 32:480. 1888; Raju *et al.* in Sharma *et al.*, Fl. India 1:187. 1993.

Trees, 5-10 m tall. Leaves dull green and glossy above. Flowers pale yellow, scented. Follicles beaked.

Fl. & Fr. : April - Oct.

Distrib. : Kameng, Subansiri; 1800-2500 m, in forests.

SCHISANDRACEAE

Kadsura heteroclita (Roxb.) Craib, Fl. Siam. Enum. 1:28. 1925; Rao & Hajra in Sharma *et al.*, Fl. India 1:189. 1993. *Uvaria heteroclita* Roxb., Fl. Ind. 2:663. 1832. *Kadsura roxburghiana* Arn. in Mag. Zool. Bot. 2:546. 1838; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:45. 1872. *K. wightiana* Arn. in Mag. Zool. Bot. 2:546. 1838; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:45. 1872. Fig. 13.

Shrubs or climbers up to 5 m high. Leaves elliptic to ovate-lanceolate, leathery. Flowers axillary, solitary, unisexual, yellowish or whitish. Fruits globose.

Fl. & Fr. : May - Nov.

Distrib. : Changlang, Kameng, Subansiri; 1600-1800 m, in temperate forests.

Schisandra grandiflora (Wallich) Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:44. 1872; Rao & Hajra in Sharma *et al.*, Fl. India 1:191. 1993. *Kadsura grandiflora* Wallich, Tent. Fl. Nep. 10, t. 14. 1824. Fig. 14.

Climbing shrubs, 6-8 m tall, glabrous. Leaves ovate to oblong-lanceolate. Flowers solitary, pinkish white with slight rosy tinge at margin. Fruitlets red.

Fl. & Fr. : April - Oct.

Distrib. : Kameng, Tawang; 2800-3200 m, along forest edges.

Schisandra neglecta A. C. Smith in Sargentia 7:127, f. 17. g. 1947; Rao & Hajra in Sharma *et al.*, Fl. India 1:193. 1993. *Sphaerostema elongatum* auct. non Blume: Hook. f. & Thomson, Fl. Ind. 85. 1855, p.p. *Schisandra elongata* auct. non (Blume) Hook. f. & Thomson : Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:44. 1872, p.p. (excl. basynonym).

Deciduous woody climbers up to 7 m long, lenticellate. Leaves ovate, glaucous beneath. Flowers 1-1.5 cm across, yellowish. Carpels fleshy, red.

Fl. & Fr. : May - Sept.

Distrib. : Kameng; 1300-1600 m, in forests.

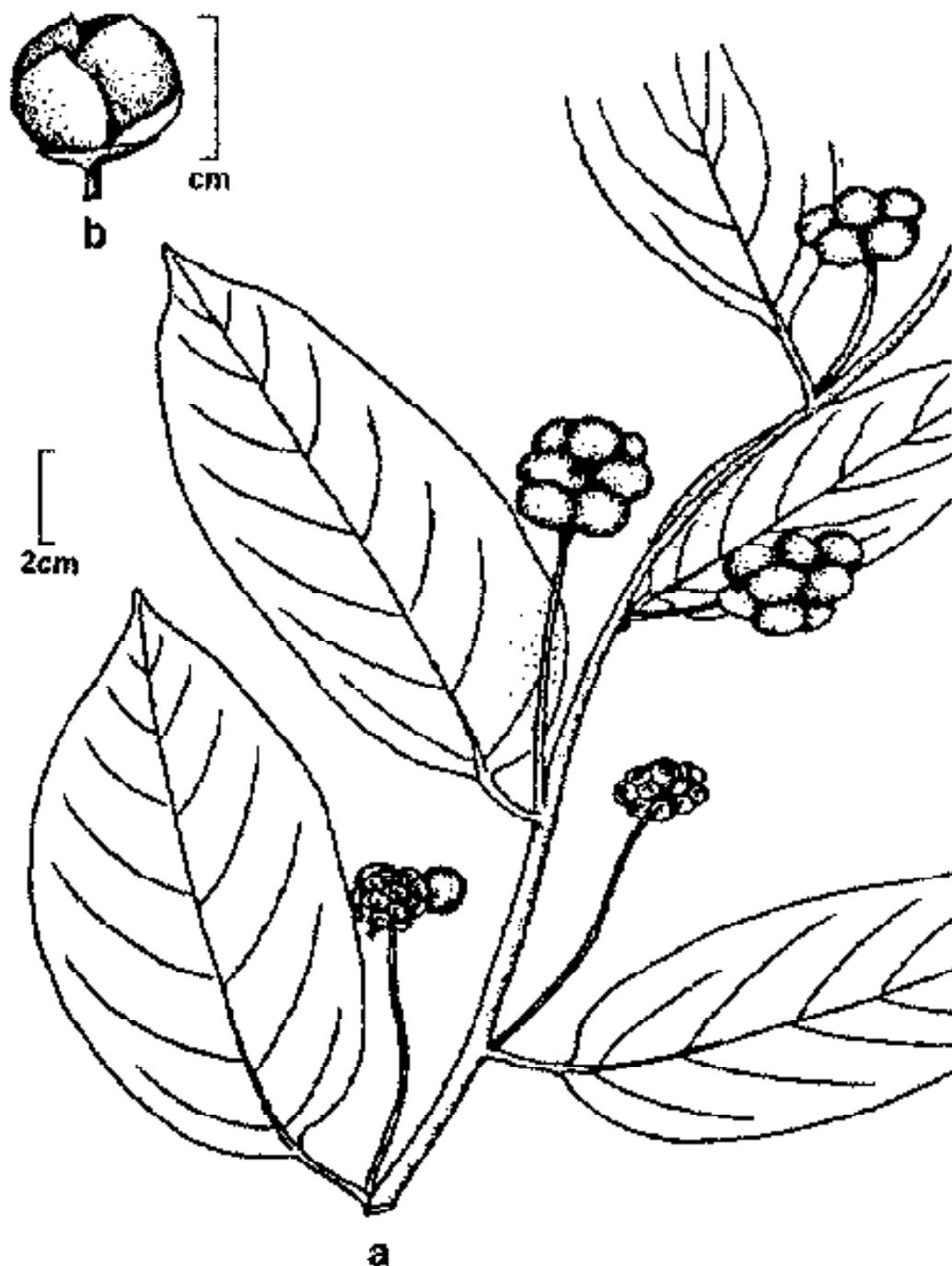


Fig. 13. *Kadsura heteroclita* (Roxb.) Craib : a. Branch with fruits;
b. Flower.



Fig. 14. *Schisandra grandiflora* (Wallich) Hook.f. & Thonson : a. Part of twig with flowers; b. Fructing column with fruitlets.

Schisandra plena A. C. Smith in *Sargentia* 7:154. 1947; Rao & Hajra in *Sharma et al.*, *Fl.India* 1:194. 1993.

Deciduous, glabrous shrubs, young branches brownish purple. Leaves elliptic, distantly denticulate. Flowers solitary or in small clusters, axillary, yellowish. Fruitlets subglobose.

Fl. & Fr. : April - Sept.

Distrib. : Arunachal Pradesh; 600-1500 m, in mixed forests.

Schisandra propinqua (Wallich) Baill. ex A. C. Smith in *Sargentia* 7:149. 1947; Rao & Hajra in *Sharma et al.*, *Fl.India* 1:194. 1993. *Kadsura propinqua* Wallich, *Tent. Fl.Nep.* 11, t. 15. 1824.

Woody climbers, stems lenticellate, brown. Leaves narrowly oblong-lanceolate. Flowers axillary, solitary, yellowish. Fruitlets globose.

Fl. & Fr. : Sept.- Nov.

Distrib. : Arunachal Pradesh.

Schisandra rubriflora Rehder & Wilson in *Sargent*, *Pl. Wils.* 1:412. 1913; Rao & Hajra in *Sharma et al.*, *Fl.India* 1:195. 1993. *S.sphenanthera* auct.non Rehder & Wilson 1913; Kanjilal *et al.*, *Fl. Assam* 1:28. 1935.

Shrubs, 3-6 m tall, often climbing or rambling. Leaves obovate, entire or distantly sinuate-denticulate. Flowers unisexual, axillary, solitary, brownish red. Fruitlets subglobose.

Fl. & Fr. : July - Sept.

Distrib. : Arunachal Pradesh; 1800-2600 m.

TETRACENTRACEAE

Tetracentron sinense Oliver in *Hook.*, *lc. Pl.* 19: t. 1892. 1889; Hajra & Rao in *J. Econ. Tax. Bot.* 8(2):455. 1986; Rao & Hajra in *Sharma et al.*, *Fl.India* 1:197. 1993. *T.sinense* var. *himalense* Hara & Kanai in *J. Jap.Bot.* 39:195. 1964.

Fig. 15.

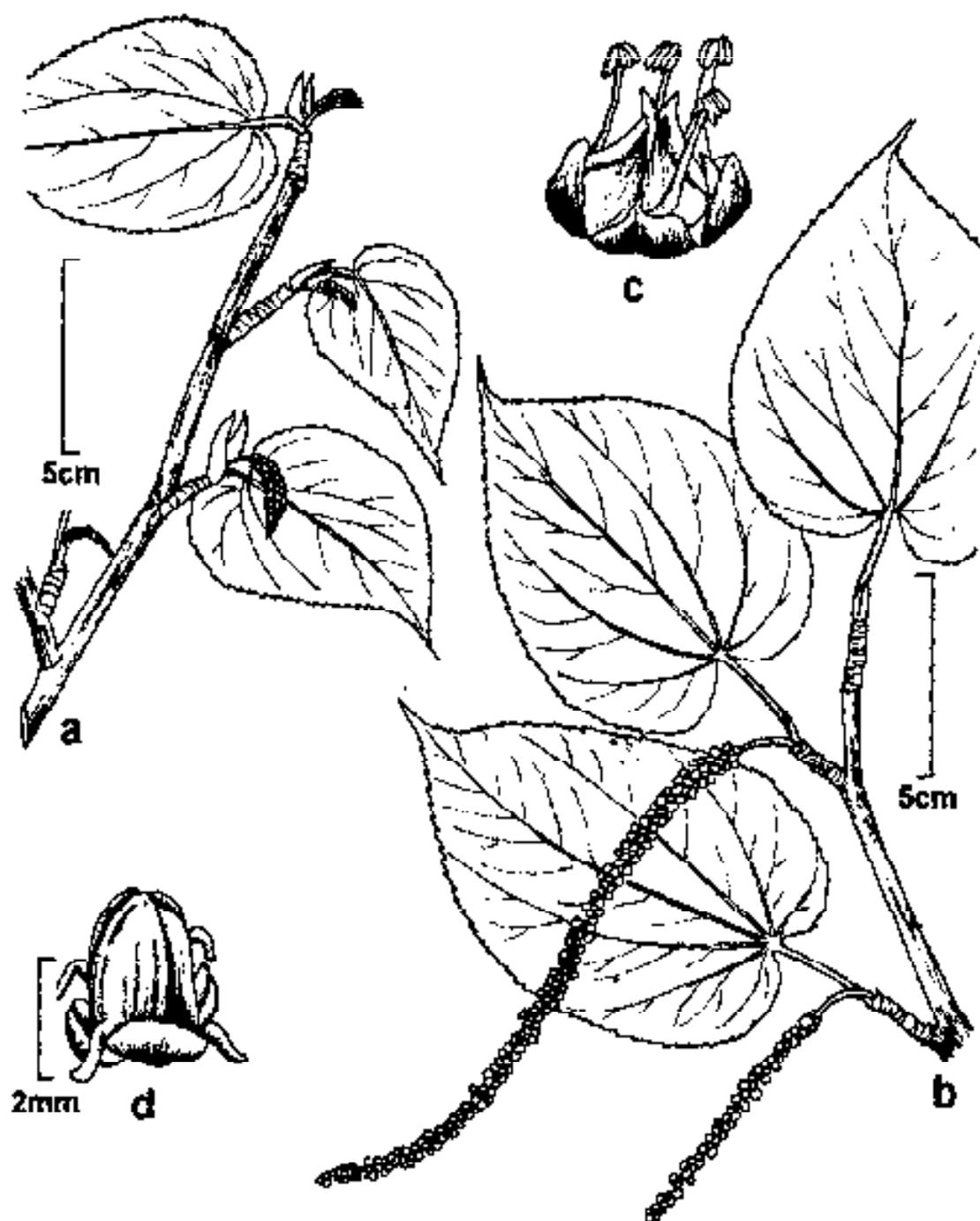


Fig. 15. *Tetracentron sinense* Oliver : a. Branchlet with young inflorescence; b. Branchlet with mature inflorescence; c. Flower with Stamens; d. Young fruit.

Trees, 15-25 m tall, 1-2 m diam. Stipular flanges papyraceous. Leaves ovate to ovate-elliptic. Flowers green. Mature follicles ca 3 mm long, depressed at apex. Seeds usually 6 per follicle ca 2 mm long.

Fl. & Fr. : April -Sept.

Distrib. : Kameng; 1800-2000 m, in forests.

EUPTELEACEAE

Euptelea pleiosperma Hook. f. & Thomson in J. Linn. Soc. Bot. 7:240, t.2. 1864 and in Hook. f., Fl. Brit. India 1:39. 1872; Raju *et al.* in Sharma *et al.*, Fl. India 1:200. 1993.

Shrubs with white spots on branches. Leaves broadly elliptic, pale green beneath. Flowers in axillary fascicles, perianth absent. Fruits samaroid, winged, reddish.

Fl. & Fr. : March - May.

Distrib. : Lohit; 1500-2000 m, in moist forests.

ANNONACEAE

Alphonsea lutea (Roxb.) Hook. f. & Thomson, Fl. Ind. 153. 1855 and in Hook. f., Fl. Brit. India 1:89. 1872; Mitra in Sharma *et al.*, Fl. India 1:209. 1993. *Uvaria lutea* Roxb., Pl. Corom. 1: t. 36. 1795 and Fl. Ind. 2:666. 1832.

Medium-sized trees, minutely rufous tomentose. Leaves ovate-oblong. Flowers in very short leaf-opposed racemes, tomentose outside. Ripe carpels broadly ovoid, puberulous.

Fl. & Fr. : March - Sept.

Distrib. : Lohit; 200-600 m, in primary humid forests.

Alphonsea ventricosa (Roxb.) Hook. f. & Thomson, Fl. Ind. 152. 1855 and in Hook. f., Fl. Brit. India 1:89. 1872; Mitra in Sharma *et al.*, Fl. India 1:211. 1993. *Uvaria ventricosa* Roxb., Fl. Ind. 2:658. 1832.

Local name : Naga - cola (Asm.).

Large trees up to 30 m high with conical crown. Leaves oblong, turning yellow before falling. Flowers in extra-axillary racemes, greenish white, rusty tomentose. Ripe carpels ovoid, yellowish.

Fl. & Fr. : March - Sept.

Distrib. : Kameng, Subansiri; 100-1000 m, in forests.

Annona reticulata L., Sp. Pl. 537. 1753; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:78. 1872; Mitra in Sharma *et al.*, Fl. India 1:207. 1993.

Trees up to 8 m high. Leaves oblong. Flowers in extra-axillary or lateral fascicles, white or yellowish. Fruits subglobose, yellowish.

Fl. & Fr. : May - Nov.

Distrib. : Kameng; 100-800 m, in dense tropical forests.

Annona squamosa L., Sp. Pl. 537. 1753; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:78. 1872; Mitra in Sharma *et al.*, Fl. India 1:207. 1993.

Local name : Ata - Kothal (Asm.).

Trees up to 6 m high with spreading branches. Leaves oblong-lanceolate, dark green. Flowers axillary, solitary or few together, yellowish. Fruits many seeded, globose, yellowish.

Fl. & Fr. : May - Aug.

Distrib. : Kameng; 100-500 m, in dense tropical forests.

Artabotrys caudatus Wallich ex Hook. f. & Thomson, Fl. Ind. 129. 1855 and in Hook. f., Fl. Brit. India 1:55. 1872; Mitra in Sharma *et al.*, Fl. India 1:249. 1993.

Local name : Dhupa - Iota (Asm.).

Woody climbers or lianas. Leaves oblong or lanceolate. Flowers solitary or in fascicles, yellowish green, silky tomentose. Carpels elliptic, 2-seeded, purple when ripe.

Fl. & Fr. : March - Nov.

Distrib.: Lohit, Siang, Subansiri, Tirap; 100-1000 m, in dense primary forests.

Desmos chinensis Lour., Fl. Cochinch. 1:352. 1790; Mitra in Sharma *et al.*, Fl. India 1:257. 1993. *Unona discolor* Vahl, Symb. Bot. 2:63, t. 36. 1791; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:59. 1872. *U. dunalii* Hook. f. & Thomson, Fl. Ind. 131. 1855. Fig. 16.

Erect or scandent shrubs, 2-5 m high. Leaves oblong-lanceolate. Flowers solitary, extra-axillary, 6-10 cm long, pale yellow. Carpels jointed.

Fl. & Fr. : April - Oct.

Distrib.: Siang; 300-400 m, in evergreen forests.

Desmos dumosus (Roxb.) Safford in Bull. Torrey Bot. Club 39:506. 1912; Mitra in Sharma *et al.*, Fl. India 1:260. 1993. *Unona dumosa* Roxb., Fl. Ind. 2:670. 1832; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:59. 1872.

Climbing or straggling shrubs. Leaves ovate-oblong or obovate-lanceolate. Flowers solitary, extra-axillary, up to 15 cm long, greenish yellow. Ripe carpels constricted, 1-4 seeded.

Fl. & Fr. : May - Dec.

Distrib.: Changlang; 300-800 m, in forests.

Desmos longiflorus (Roxb.) Safford in Bull. Torrey Bot. Club 39:507. 1912; Mitra in Sharma *et al.*, Fl. India 1:261. 1993. *Unona longiflora* Roxb., Fl. Ind. 2:668. 1832; Hook. f. & Thomson in Hook. f., Fl. Brit. 1:61. 1872.

Local name : Jor-lewa (Asm.); Theseiming (Mik.).

Shrubs or trees, 4-8 m high, rusty tomentose. Leaves oblong-lanceolate. Flowers solitary, axillary, pendent, reddish brown or orange outside, yellow inside, horn shaped. Carpels moniliform.

Fl. & Fr. : April - Oct.

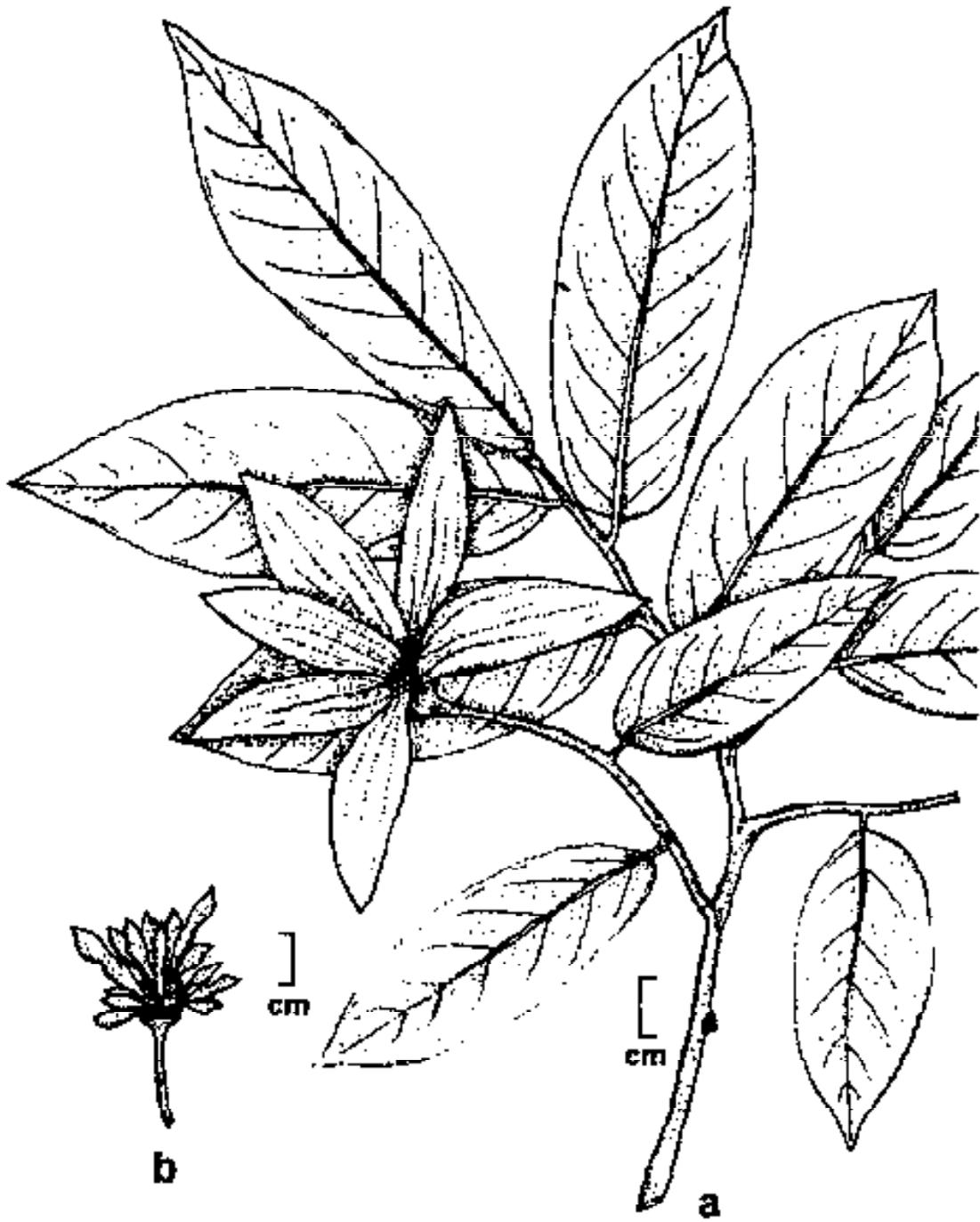


Fig. 16. *Desmos chinensis* Lour. : a. Twig with flower; b. Fruit.

Distrib.: Siang; 1000-1200 m, in forests.

Desmos praecox (Hook. f. & Thomson) Safford in Bull. Torrey Bot. Club 39:507. 1912; Mitra in Sharma *et al.*, Fl. India 1:262. 1993. *Unona praecox* Hook. f. & Thomson, Fl. Ind. 136. 1855 and in Hook. f., Fl. Brit. India 1:60. 1872.

Deciduous trees up to 30 m high; crown conical. Leaves elliptic, ovate or lanceolate. Flowers solitary, extra-axillary or terminal, greenish, scented. Ripe carpels moniliform.

Fl. & Fr. : April - July.

Distrib.: Kameng, Lohit, Siang, Subansiri, Tirap; in tropical semievergreen forests.

Fissistigma bicolor (Roxb.) Merr. in Philipp. J. Sci. 15:131. 1919; Mitra in Sharma *et al.*, Fl. India 1:297. 1993. *Uvaris bicolor* Roxb., Fl. Ind. 2:662. 1832, non Wallich. *Melodorum bicolor* (Roxb.) Hook. f. & Thomson, Fl. Ind. 119. 1855 and in Hook. f., Fl. Brit. India 1:80. 1872.

Local name : Hed-bheduli (Asm.); Moja-kotta (Daff.).

Woody lenticellate climbers. Leaves ovate. Flowers leaf-opposed, yellowish, densely rufous or tan-silky outside. Ripe carpels subglobose.

Fl. & Fr. : June - Aug.

Distrib.: Changlang, Lohit, Siang, Subansiri, Tirap; 300-800 m, in tropical evergreen forests as undergrowth.

Fissistigma manubriatum (Hook. f. & Thomson) Merr. in Philipp. J. Sci. 15:134. 1919. *Melodorum manubriatum* Hook. f. & Thomson, Fl. Ind. 1:118. 1855 and in Hook. f., Fl. Brit. India 1:79. 1872.

Woody climbers or shrubs, densely brownish pilose. Leaves ovate-lanceolate with purple veins. Flowers terminal or leaf-opposed, dull purple. Ripe carpels subglobose, densely tomentose.

Fl. & Fr. : April - Sept.

Distrib.: Tirap; 1000-1200 m, in forests.

Fissistigma polyanthum (Hook. f. & Thomson) Merr. in Philipp. J. Sci. 15:135. 1919; Mitra in Sharma *et al.*, Fl.India 1:299. 1993. *Melodorum polyanthum* Hook. f. & Thomson, Fl.Ind. 121. 1855 and in Hook. f., Fl. Brit. India 1:81. 1872.

Local name : Karle-phingnu (Mik.).

Woody lenticellate climbers. Leaves oblong-lanceolate. Flowers leaf-opposed, 6-8 mm across, pale orange, fragrant. Carpels hairy.

Fl. & Fr. : March - Sept.

Distrib. : Changlang, Siang; 300-550 m, in primary forests.

Use : Ripe fruits are eaten.

Fissistigma rubiginosum (A.DC.) Merr. in Philipp. J. Sci. 15:135. 1919; Mitra in Sharma *et al.*, Fl.India 1:300. 1993. *Uvaria rubiginosa* A.DC., Mem. Soc. Phys. Geneve 5:202. 1832. *Melodorum rubiginosum* (A.DC.) Hook. f. & Thomson, Fl.Ind. 116. 1855 and in Hook. f., Fl. Brit. India 1:79. 1872.

Lianas, young parts rusty tomentose. Leaves oblanceolate. Flowers axillary, solitary or in pair, 2-3 cm long, brownish yellow. Carpels brown, silky tomentose.

Fl. & Fr. : Nov. - June.

Distrib. : Kameng, Siang, Subansiri; 500-1200 m, in tropical evergreen forests.

Fissistigma wallichii (Hook. f. & Thomson) Merr. in Philipp. J. Sci. 15:137. 1919; Mitra in Sharma *et al.*, Fl.India 1:303. 1993. *Melodorum wallichii* Hook. f. & Thomson, Fl.Ind. 118.1855 and in Hook. f., Fl. Brit. India 1:81. 1872. Fig. 17.

Woody climbers, young branchlets pubescent. Leaves narrowly oblong to lanceolate, glabrous. Flowers in terminal and leaf-opposed fascicles, brownish purple. Fruits verrucose, yellowish brown.

Fl. & Fr. : Jan. - Dec.



Fig. 17. *Fissistigma wallichii* (Hook.f. & Thomson) Merr. : a. Flowering twig; b. Sepal; c. & d. Petals, outer and inner views; e. Stamens, back and front views; f. Carpel.

Distrib.: Changlang; 400-700 m, in forest opening.

Friesodielsia fornicata (Roxb.) D.Das in Bull. Bot. Surv. India 5(1):43. 1963; Mitra in Sharma *et al.*, Fl.India 1:264. 1993. *Uvaria fornicata* Roxb., Fl.Ind. 2:262. 1832. *Oxymitra fornicata* (Roxb.) Hook. f. & Thomson, Fl.Ind. 146. 1855 and in Hook. f., Fl. Brit. India 1:71. 1872.

Local name : Mota-bokol-bill (Asm.).

Woody climbers or scandent shrubs. Leaves oblanceolate. Flowers solitary, extra-axillary or leaf-opposed, up to 6 cm long, pale yellow. Ripe carpels verrucose, dull red, puberulous.

Fl. & Fr. : April - Dec.

Distrib.: Kameng, Subansiri; 1000-1560 m, along forest edges.

Goniothalamus fuscus Merr. in Philipp. J. Sci. 11:231. 1915.

Flowers dull yellowish green, turning to yellowish. Fruits globose, velvety hairy.

Fl. & Fr. : May - Aug.

Distrib.: Changlang; 300-800 m, in forests.

Goniothalamus sesquipetalis (Wallich) Hook. f. & Thomson, Fl.Ind. 108. 1855 and in Hook. f., Fl. Brit. India 1:73. 1872; Mitra in Sharma *et al.*, Fl.India 1:237. 1993. *Guatteria sesquipetalis* Wallich, Pl. Asiat. Rar. 3: t. 266. 1832.

Shrubs up to 3 m high, unbranched. Leaves oblanceolate, glaucous beneath. Flowers solitary or fascicled, green to greenish yellow, pendent. Ripe carpels ellipsoid, orange red when ripe.

Fl. & Fr. : May - Dec.

Distrib.: Changlang, Tirap; 500-1500 m, in forests and shaded places.

Use : Decoction of leaves is given in case of liver enlargement.

Goniothalamus simonsii Hook. f. & Thomson, Fl. Ind. 108. 1855 and in Hook. f., Fl. Brit. India 1:74. 1872; Mitra in Sharma *et al.*, Fl. India 1:239. 1993.

Trees up to 15 m high with lax crown; young parts reddish brown tomentose. Leaves oblong-lanceolate, tomentose along nerves beneath. Flowers axillary, solitary, pendent, purplish or greenish brown. Ripe carpels oblong with elongated torus.

Fl. & Fr. : May - Nov.

Distrib.: Subansiri; 500-1200 m, in forests.

Milium dolichantha Craib in Kew Bull. 1920:108. 1920; Burkill in Rec. Bot. Surv. India 10:232. 1925; Mitra in Sharma *et al.*, Fl. India 1:214. 1993.

Trees up to 10 m high. Leaves ovate-lanceolate or oblong-lanceolate. Flowers in axillary cymes, white or reddish. Ripe carpels globose, black.

Fl. & Fr. : April- Sept.

Distrib.: Siang; upto 500 m, in forests.

Milium globosa (DC.) Panigr. & S.C. Mishra in Taxon 33:713. 1984; Mitra in Sharma *et al.*, Fl. India 1:215. 1993. *Guatteria globosa* DC. in Mem. Soc. Phys. Hist. Natur. Geneve 5:41 (1831) & 218. 1832. *Milium roxburghiana* (Wallich) Hook. f. & Thomson, Fl. Ind. 150. 1855 and in Hook. f., Fl. Brit. India 1:87. 1872. *Hyalostemma roxburghiana* Wallich, Cat. 219, n. 6434. 1832, *nom. illeg.* *Uvaria dioica* Roxb., Fl. Ind. 2:659. 1832. Fig. 18.

Local name : Bon-ponial, Chang- ladoi, Jora-bhanora (Asm.); Tase-mayang-changne (Daff.).

Shrubs or small trees, 3-7 m tall. Leaves elliptic. Flowers axillary, 0.8-1.5 cm across, pendent, red. Ripe carpels subglobose, reddish.

Fl. & Fr. : March - Dec.

Distrib.: Changlang, Dibang valley, Kameng, Siang, Subansiri; 500-800 m, in tropical damp forests.

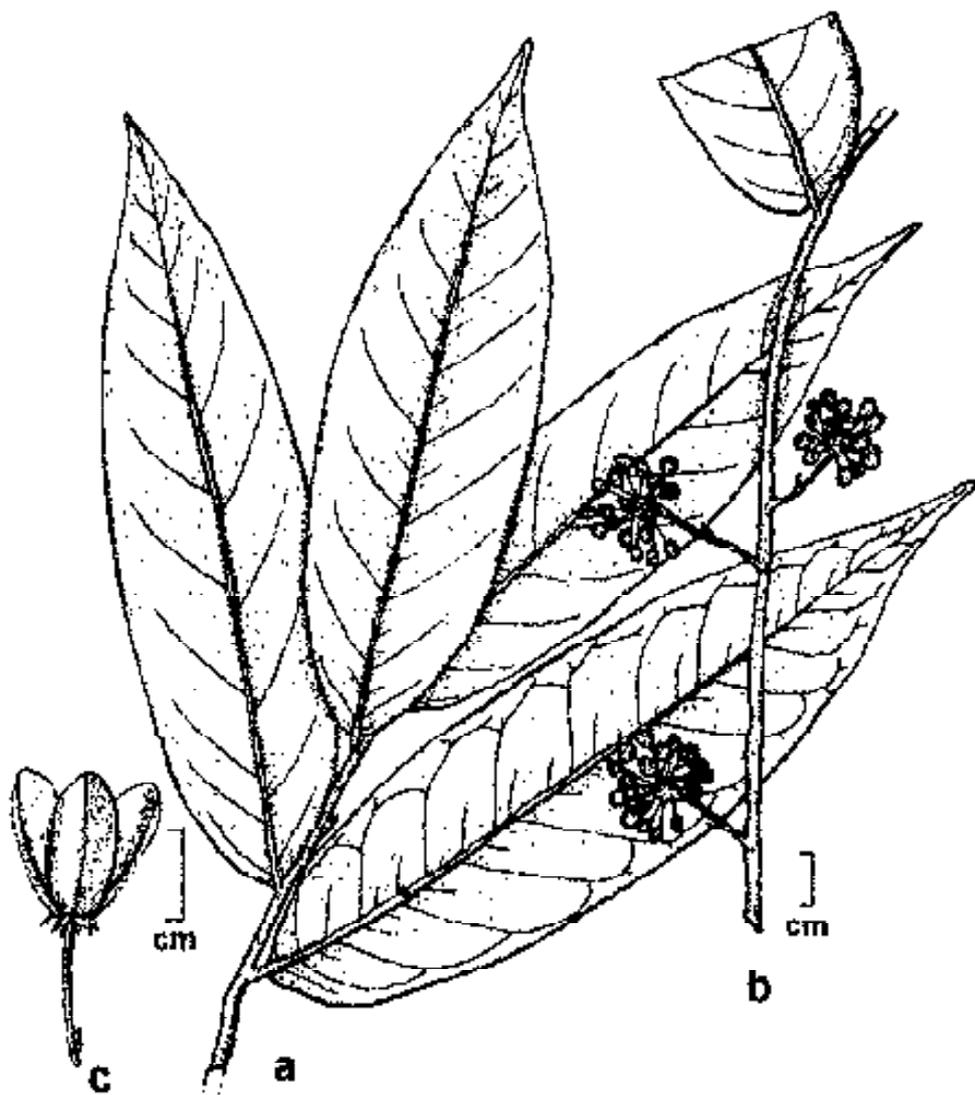


Fig. 16. *Miliusa globosa* (DC.) Panigr. & S.C. Mishra : a. & b. Branch with fruits; c. Flower.

Miliusa longiflora (Hook. f. & Thomson) Finet & Gagnepain in Bull. Soc. Bot. France 53(4):153. 1906; Mitra in Sharma *et al.*, Fl.India 1:217. 1993. *Saccopetalum longiflorum* Hook. f. & Thomson, Fl.Ind. 151. 1855 and in Hook. f., Fl. Brit. India 1:88. 1872.

Trees, 8-10 m high. Leaves ovate-oblong. Flowers solitary, axillary, pale yellow or whitish. Ripe carpels ca 3.5 cm across, black.

Fl. & Fr. : May - July.

Distrib. : Kameng; 1000-1200 m, in forests.

Miliusa macrocarpa Hook. f. & Thomson, Fl.Ind. 150. 1855 and in Hook. f., Fl. Brit. India 1:86. 1872; Mitra in Sharma *et al.*, Fl. India 1:218. 1993.

Trees up to 8 m high; branchlets lenticellate. Leaves oblong-lanceolate, shining underneath. Flowers leaf-opposed, solitary or few flowered cymes, reddish brown. Ripe carpels oblong, 1-seeded, reddish.

Fl. & Fr. : March - June.

Distrib. : Kameng; 100-800 m, in tropical primary forests.

Mitrephora harae Ohashi in Hara, Fl. E. Himal. 97. 1966; Naithani & Bahadur in Ind. For. 107(11): 717. 1981; Mitra in Sharma *et al.*, Fl.India 1:243. 1993.

Trees up to 12 m high. Leaves narrow-elliptic, caudate-acuminate at apex. Flowers 2, white with purple streaks. Ripe carpels ellipsoid.

Fl. & Fr. : March - July.

Distrib. : Kameng; 500-1000 m, in tropical primary forests.

Mitrephora tomentosa Hook. f. & Thomson, Fl.Ind. 113. 1855 and in Hook. f., Fl. Brit. India 1:76. 1872; Mitra in Sharma *et al.*, Fl.India 1:244. 1993.

Local name : Kolty, Kolori (Asm.); Gothi-arang (Mik.).

Trees up to 20 m high with oval crown. Leaves lanceolate, ovate or elliptic; tomentose beneath. Flowers in leaf-opposed or terminal cymes, ca 7 cm across, brown silky tomentose. Ripe carpels tomentose.

Fl. & Fr. : April - Dec.

Distrib. : Kameng, Lohit, Siang, Subansiri, Tirap; 100-1200 m, in tropical dense forests.

Polyalthia cerasoides (Roxb.) Beddome, Fl. Sylv. 1:t. 1. 1869; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:63. 1872; Mitra in Sharma *et al.*, Fl. India 1:270. 1993. *Uvaria cerasoides* Roxb., Pl. Corom. 1:t. 33. 1795.

Shrubs or small trees, 2-7 m high with spreading crown. Leaves oblong-lanceolate. Flowers solitary on axillary tubercles, 0.8-1.2 cm across, greenish white. Fruits ellipsoid or ovoid, dark red when ripe.

Fl. & Fr. : Dec. - May.

Distrib. : Lohit, Siang; 100-200 m, in tropical forests.

Polyalthia jenkinsii (Hook. f. & Thomson) Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:64. 1872; Mitra in Sharma *et al.*, Fl. India 1:272. 1993. *Guatteria jenkinsii* Hook. f. & Thomson, Fl. Ind. 141. 1855.

Local name : Kolioki, Tita-hachi, Kola-khamtou (Asm.); Theng-piopsu (Mik.).

Trees, 8-15 m high. Leaves oblong-lanceolate, elliptic or ovate. Flowers axillary, spreading, white or pale yellow, fragrant. Ripe carpels oblong, green.

Fl. & Fr. : April - Oct.

Distrib. : Changlang; 100-600 m, in primary tropical forests.

Polyalthia longifolia (Sonn.) Thwaites, Enum. Pl. Zeyl. 398. 1864; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:62. 1872; Mitra in Sharma *et al.*, Fl. India 1:274. 1993. *Uvaria longifolia* Sonn., Voy. aux Indes 2:233, t. 131. 1782.

Local name : Umboi (Asm.).

Trees up to 30 m high with straight bole; crown conical. Leaves narrow lanceolate, dull green beneath. Flowers in umbelliform racemes in the axils of fallen leaves, greenish yellow. Ripe carpels ellipsoid, yellowish.

Fl. & Fr. : Jan. - June.

Distrib. : Usually cultivated.

Polyalthia simiarum (Hook. f. & Thomson) Hook. f. & Thomson in Hook. f., *Fl. Brit. India* 1:63. 1872, *p.p.*; Mitra in Sharma *et al.*, *Fl. India* 1:276. 1993. *Guatteria simiarum* Hook. f. & Thomson, *Fl. Ind.* 142. 1855.

Fig. 19.

Local name : Bogo-khamtou (Asm.); Mengchuri-arong (Mik.); Mikir-asing (Miri).

Trees with straight bole up to 25 m high; crown pyramidal with horizontal branches. Leaves ovate or oblong-ob lanceolate. Flowers in axils of fallen leaves, greenish yellow. Ripe carpels orange red.

Fl. & Fr. : May - Oct.

Distrib. : Kameng, Lohit, Siang, Tirap; 100-1000 m, in forests.

Polyalthia suberosa (Roxb.) Thwaites, *Enum. Pl. Zeyl.* 398. 1864; Hook. f. & Thomson in Hook. f., *Fl. Brit. India* 1:65. 1872; Mitra in Sharma *et al.*, *Fl. India* 1:278. 1993. *Guatteria suberosa* Roxb., *Pl. Corom.* 1:t. 34. 1795.

Local name : Habida-cha; Makhameraphang (Asm.).

Shrubs up to 6 m high; branchlets rusty pubescent. Leaves oblong, sparsely hairy beneath. Flowers in extra-axillary tubercled fascicles, reddish brown. Fruit subglobose.

Fl. & Fr. : April - Dec.

Distrib. : Kameng; 100-800 m, in forests.

Trivalvaria argentea (Hook. f. & Thomson) Sinclair in *Sarawak Mus. J.* 5:603. 1951; Mitra in Sharma *et al.*, *Fl. India* 1:285. 1993. *Polyalthia argentea* Hook. f. & Thomson in Hook. f., *Fl. Brit. India* 1:67. 1872; *Popowia hookeri* King in *J. Asiat. Soc. Bengal* 61(2):97. 1892.

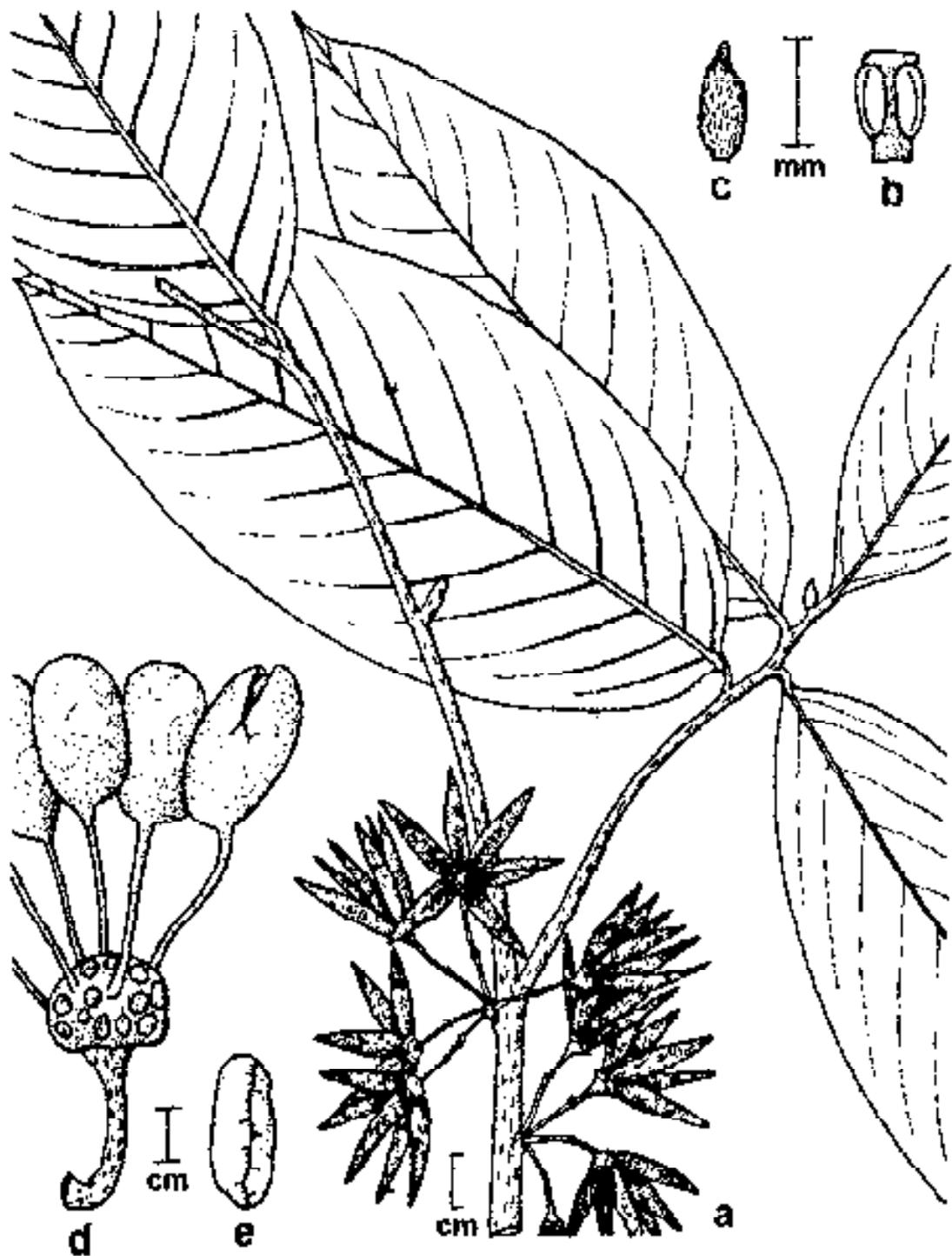


Fig. 19. *Polyalthia simiarum* (Hook.f. & Thomson) Hook.f. & Thomson :
 a. Branch with flowers; b. Stamen; c. Carpel; d. Fruit; e. Seed.

Shrubs ca 2 m high with spreading branches. Leaves oblong-lanceolate, glaucous. Flowers solitary or in fascicles, red to pale pinkish. Fruits pink, granulate.

Fl. & Fr. : June - Feb.

Distrib. : Changlang, Kameng, Lohit, Siang, Tirap; 100-1000 m, along edges of mountain rivers.

MENISPERMACEAE

Aspidocarya uvifera Hook. f. & Thomson, Fl. Ind. 180. 1855 and in Hook. f., Fl. Brit. India 1:95. 1872; Pramanik in Sharma *et al.*, Fl. India 1:345. 1993.

Woody climbers or twiners, pubescent. Leaves subpeltate, ovate-cordate. Flowers in panicles, red. Drupes 2-3 cm across, oblong-ovoid.

Fl. & Fr. : Feb. - Aug.

Distrib. : Kameng, Siang, Tirap; 1000-1400 m, in forests.

Use : Ripe fruits are eaten.

Cissampelos pareira L., Sp. Pl. 1031. 1753; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:103. 1872. var. *pareira*.

Local name : Tubuki-lota, Tabaki-lot (Asm.).

Twining shrubs. Leaves ovate-orbicular. Flowers minute, greenish yellow. Drupes 4-6 mm across, globose, deep red when ripe.

Fl. & Fr. : Aug. - Jan.

Distrib. : Changlang, Kameng, Siang; 600-1200 m, in tropical dense forests.

Use : Decoction of leaves and stems is given in malaria.

Cissampelos pareira var. *hirsuta* (Buch.-Ham. ex DC.) Forman in Kew Bull. 22:356. 1968; Gangopadhyay in Sharma *et al.*, Fl. India 1:317. 1993.

C. hirsuta Buch.-Ham. ex DC., Syst. Nat. 1:535. 1817; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:103. 1872.

Distinguished from var. *pareira* by peduncles and drupes hirsute.

Fl. & Fr. : Aug. - Jan.

Distrib. : Kameng, Lohit; 500-1200 m, in moist dense forests.

Cocculus orbiculatus (L.) DC., Syst. Nat 1:523. 1817; Gangopadhyay in Sharma *et al.*, Fl. India 1:319. 1993. *Menispermum orbiculatum* L., Sp. Pl. 341. 1753. *Cocculus mollis* Wallisn. ex Hook. f. & Thomson, Fl. Ind. 193. 1855 and in Hook. f., Fl. Brit. India 1:102. 1872.

Scandent shrubs or climbers up to 3 m tall. Leaves ovate or elliptic. Flowers axillary or extra-axillary, minute, yellow. Drupes 4-6 mm across, compressed, tubercled.

Fl. & Fr. : May - Nov.

Distrib. : Kameng; 1500-2000 m, along forest edges.

Cyclea bicristata (Griffith) Diels in Engler, Pflanzenr. 46:317, f. 93. A-E. 1910; Gangopadhyay in Sharma *et al.*, Fl. India 1:322. 1993. *Lophophyllum bicristatum* Griffith, Notul. 4:313. 1854; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:105. 1872. *Cyclea populifolia* Hook. f. & Thomson, Fl. Ind. 202. 1855.

Large climbers. Leaves ovate-lanceolate or deltoid, rusty pilose beneath. Flowers yellowish, minute. Drupes orbicular, 5-8 mm across, pilose.

Fl. & Fr. : April - Oct.

Distrib. : Kameng, Siang, Subansiri; 300-400 m, in dense forests.

Cyclea peltata (Lamk.) Hook. f. & Thomson, Fl. Ind. 201. 1855 and in Hook. f., Fl. Brit. India 1:104. 1872, *p.p.*; Gangopadhyay in Sharma *et al.*, Fl. India 1:325. 1993. *Menispermum peltatum* Lamk., Encycl. Meth. Bot. 4:96. 1797. *Cyclea burmannii* (Wight & Arn.); Hook. f. & Thomson, Fl. Ind. 201. 1855 and in Hook. f., Fl. Brit. India 1:104. 1872. *Clypea burmannii* Wight & Arn., Prodr. Fl. Pen. Ind. Or. 14. 1834.

Climbing shrubs, pubescent. Leaves peltate or deltoid, pubescent beneath. Flowers in axillary panicles, pale yellow. Drupes ovoid, pilose.

Fl. & Fr. : Sept. - March.

Distrib. : Lohit; 300-1200 m, in forests.

Diploclisia glaucescens (Blume) Diels in Engler, *Pflanzenr.* 46:225. 1910; Pramanik in Sharma *et al.*, *Fl.India* 1:327. 1993. *Cocculus glaucescens* Blume, *Bijdr.* 25. 1825; *C. macrocarpus* Wight & Arn., *Prodr. Fl. Pen. Ind. Or.* 13. 1834; Hook. f. & Thomson in Hook. f., *Fl. Brit. India* 1:101. 1872.

Cauliflorous woody climbers. Leaves suborbicular, glaucous beneath. Flowers, minute, pale yellow. Drupes woody, ca 2.5 cm across.

Fl. & Fr. : March - July.

Distrib. : Siang; 500-700 m, in forests.

Haematocarpus validus (Miers) Bakh. f. ex Forman in *Kew Bull.* 26:420. 1972; Gangopadhyay in Sharma *et al.*, *Fl.India* 1:340. 1993. *Baterium validum* Miers in *Ann. Mag. Nat. Hist. ser. 3*, 13:124 1864; *Haematocarpus thomsonii* Miers in *Ann. Mag. Nat. Hist. ser. 3*, 19:197 1867; Hook. f. & Thomson in Hook. f., *Fl. Brit. India* 1:106. 1872.

Woody climbers. Leaves oblong. Flowers small in axillary racemes, yellowish. Drupes suboblique, 2-3.5 cm across, smooth.

Fl. & Fr. : April - Aug.

Distrib. : Changlang, Lohit, Tirap; 500-1000 m, in dense forests.

Hypserpa nitida Miers in Hooker, *Kew J. Bot.* 3:258. 1851; Pramanik in Sharma *et al.*, *Fl.India* 1:329. 1993. *Limacia cuspidata* Hook. f. & Thomson, *Fl.Ind.* 189. 1855 and in Hook. f., *Fl. Brit. India* 1:100. 1872.

Climbing shrubs, hairy. Leaves ovate or oblong-lanceolate. Flowers solitary, axillary, dull white. Drupes globose.

Fl. & Fr. : June - Oct.

Distrib. : Kameng; 100-800 m, in dense primary forests.

Limacia oblonga Miers in Ann. & Mag. Nat. Hist. ser. 2, 7:43. 1851; Hook. f. & Thomson, Fl. Ind. 189. 1855. *L. velutina* auct. non Miers : Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:100. 1872, p.p.

Climbing shrubs. Leaves oblong or lanceolate. Drupes subglobose.

Fl. & Fr.: Nov. - Jan.

Distrib.: Subansiri; 1000-1300 m, in forests.

Use: The ripe fruits are sweet and edible.

Parabaena sagittata Miers ex Hook. f. & Thomson, Fl. Ind. 181. 1855 and in Hook. f., Fl. Brit. India 1:96. 1872; Pramanik in Sharma *et al.*, Fl. India 1:346. 1993.

Climbers with milky juice. Leaves ovate-cordate or sagittate. Flowers in axillary or supra axillary, solitary or few to many flowered cymes, dull white. Drupes globose, saffron coloured when ripe.

Fl. & Fr.: May - Nov.

Distrib.: Changlang; 200-700 m, in primary tropical forests.

Pericampylus aduncus Miers in Ann. Nat. Hist. ser. 14,3:371. 1864; Burkill in Rec. Bot. Surv. India 10:233. 1925.

Woody climbers. Flowers pale yellow. Drupes subglobose, black.

Fl. & Fr.: Nov. - March.

Distrib.: Siang; 800-1200 m, in forests.

Pericampylus glaucus (Lamk.) Merr., Interpr. Rumph. Herb. Amboin. 219. 1917; Pramanik in Sharma *et al.*, Fl. India 1:330. 1993. *Menispermum glaucum* Lamk., Encycl. Meth. Bot. 4:100. 1797. *Pericampylus incanus* (Colebr.) Miers in Ann. Nat. Hist. ser. 7,2:40. 1851; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:102. 1872. Fig. 20.

Local name: Gorja-loti (Asm.).

Climbers, 6-8 m tall. Leaves ovate, cordata. Flowers small, pale green. Drupes 5-6 mm across, subglobose, red, echinate.

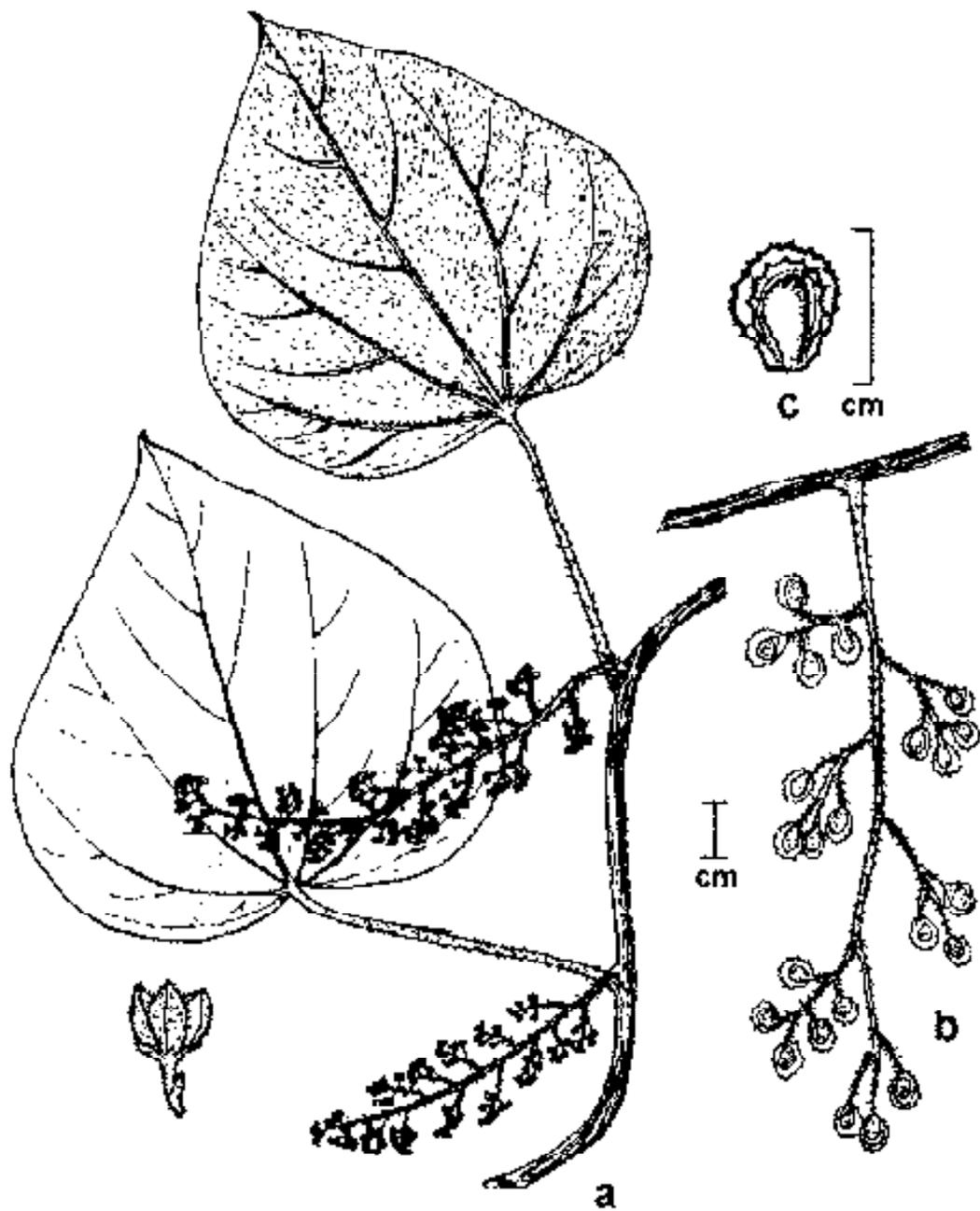


Fig. 20. *Pericampylus glaucus* (Lamk.) Merr. : a. Flowering branch; b. Fruiting branch; c. Fruit.

Fl. & Fr.: April - Oct.

Distrib.: Changlang, Kameng, Subansiri, Tirap; 400-1600 m, in forests.

Use: The stem is used as rope which is very strong and durable.

Pycnarrhena pleniflora Hook. f. & Thomson, Fl. Ind. 206. 1855 (as *pleniflora*) and in Hook. f., Fl. Brit. India 1:106. 1872; Gangopadhyay in Sharma *et al.*, Fl. India 1:342. 1993.

Local name: Holok-lota (Asm.).

Woody climbers. Leaves oblong-lanceolate. Flowers in axillary fascicles, white. Drupes broadly oblong.

Fl. & Fr.: Feb. - May.

Distrib.: Siang; 300-1000 m, in dense forests.

Stephania elegans Hook. f. & Thomson, Fl. Ind. 195. 1855 and in Hook. f., Fl. Brit. India 1:103. 1872; Gangopadhyay in Sharma *et al.*, Fl. India 1:333. 1993.

Woody climbers. Leaves elongate, deltoid. Flowers small, purple or greenish. Drupes small, red when ripe.

Fl. & Fr.: July - Nov.

Distrib.: Lohit, Siang; 200-1000 m, in moist soil.

Stephania glabra (Roxb.) Miars in Ann. Mag. Nat. Hist. ser. 3, 18:14. 1866; Gangopadhyay in Sharma *et al.*, Fl. India 1:334. 1993. *Cissampelos glabra* Roxb., Fl. Ind. 3:840. 1832. *Stephania rotunda* auct. non Lour.: Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:103. 1872, *p.p.*

Local name: Paer-gruj (Asm.).

Twining up to 5 m tall. Leaves broadly ovate or suborbicular, often repand. Flowers 4-5 mm across, yellow. Drupes pisiform.

Fl. & Fr.: Oct. - Jan.

Distrib.: Kameng, Siang; 300-1000 m, in forests.

Stephania glandulifera Miers in Contrib. Bot. 3:220. 1871; Gangopadhyay in Sharma *et al.*, Fl. India 1:334. 1993. *S. rotunda auct. non Lour.*: Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:103. 1872, *p.p.*

Climbers with tuberous roots. Leaves suborbicular. Flowers minute, yellowish. Drupes obovoid.

Fl. & Fr.: Aug. - Dec.

Distrib.: Siang, Tirap; 600-1400 m, inside forests.

Stephania japonica (Thunb.) Miers in Contrib. Bot. 3:213. 1871, *p.p.* excluding Cumming 1160; Gangopadhyay in Sharma *et al.*, Fl. India 1:335. 1993. *Menispermum japonicum* Thunb., Fl. Jap. 193. 1784. *Cissampelos hernandifolia* Willd., Sp. Pl. 4:861. 1806. *Stephonia hernandifolia* (Willd.) Walp., Rep. 1:96. 1842; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:103. 1872. Var. *japonica*.

Local name: Tubuki lot, Galdua (Asm.).

Large herbaceous climbers, branches striate, grooved, twisting clockwise. Leaves peltate, truncate, glabrous beneath. Flowers yellow. Drupes globose, ca 7 mm across, red, tubercled.

Fl. & Fr.: March - Sept.

Distrib.: Changlang, Kameng, Siang, Subansiri, Tirap; 100-1000 m, in both primary and secondary forests.

Stephania japonica var. *discolor* (Blume) Forman in Kew Bull. 11:56. 1956; Gangopadhyay in Sharma *et al.*, Fl. India 1:337. 1993. *Clypea discolor* Blume, Bijdr. 26. 1825. *Cissampelos hexandra* Roxb., Fl. Ind. 3:841. 1832.

Climbing herbs. Leaves peltate, puberulous beneath. Inflorescence puberulous, yellow. Drupes globose, red.

Fl. & Fr.: May - Aug.

Distrib.: Kameng, Tirap; 100-1000 m, in primary forests.

Use: Roots are medicinal.

Tinomisium petiolare Hook. f. & Thomson, Fl. Ind. 205, 1855 and in Hook. f., Fl. Brit. India 1:97, 1872; Pramanik in Sharma *et al.*, Fl. India 1:315, 1993.

Woody climbers. Leaves ovate-oblong. Flowers in axillary or terminal racemes, pale yellow. Drupes ovoid-oblong, compressed.

Fl. & Fr.: Feb. - June.

Distrib.: Siang; 600-1100 m, in forests.

Tinospora cordifolia (Willd.) Hook. f. & Thomson, Fl. Ind. 184, 1855 and in Hook. f., Fl. Brit. India 1:97, 1872; Pramanik in Sharma *et al.*, Fl. India 1:347, 1993. *Menispermum cordifolium* Willd., Sp. Pl. 4:826, 1806.

Local name: Hoguni-lot (Asm.).

Large woody climbers. Leaves orbicular or ovate-cordate. Flowers in axillary or terminal racemes, yellow. Drupes globose, red and glossy when ripe.

Fl. & Fr.: Feb. - May.

Distrib.: Siang; 100-800 m, in open forests.

Tinospora crispa (L.) Hook. f. & Thomson, Fl. Ind. 1:183, 1855 and in Hook. f., Fl. Brit. India 1:96, 1872; Pramanik in Sharma *et al.*, Fl. India 1:348, 1993. *Menispermum crispa* L. Sp., Pl. ed. 2, 1488, 1763.

Local name: Hoguni-lot (Asm.).

Large glabrous climbers. Leaves ovate-oblong. Flowers 2-4 mm across, yellowish green. Drupes ca 2.5 cm across, ellipsoid, pale yellow.

Fl. & Fr.: Jan. - May.

Distrib.: Siang, Subansiri, Tirap; 100-1000 m, in open forests.

Tinospora sinensis (Lour.) Merr. in Sunyatsenia 1:193, 1934; Pramanik in Sharma *et al.*, Fl. India 1:349, 1993. *Campylus sinensis* Lour., Fl. Co-

chinch. 113. 1790. *Menispermum malabaricum* Lamk., *Encycl. Meth. Bot.* 4:96. 1797. *Cocculus tomentosa* Colebr. in *Trans. Linn. Soc. London* 13:56. 1872. *Tinospora tomentosa* (Colebr.) Hook. f. & Thomson, *Fl. Ind.* 183. 1855 and in Hook. f., *Fl. Brit. India* 1:96. 1872. *T. malabarica* (Lamk.) Hook. f. & Thomson in Hook. f., *Fl. Brit. India* 1:96. 1872.

Climbers. Leaves orbicular-cordate, hairy. Flowers yellow. Drupes pisi-form, orange yellow when ripe.

Fl. & Fr.: March - Sept.

Distrib.: Tirap; 200-1000 m, in open forests.

BERBERIDACEAE

Berberis asiatica Roxb. ex DC., *Syst. Nat.* 2:13. 1821, *non* Griffith 1847; Hook. f. & Thomson in Hook. f., *Fl. Brit. India* 1:110. 1872; Uniyal & Rao in Sharma *et al.*, *Fl. India* 1:370. 1993.

Shrubs up to 1.5 m high, much branched with thorny stems. Leaves orbicular or obovate, spinulose at margin, whitish beneath. Flowers in axillary corymbose racemes, yellow. Berries black, pruinose white.

Fl. & Fr.: March - June.

Distrib.: Kameng; 1600-3000 m, in dry places amongst scrubs.

Berberis chitria Edwards, *Bot. Reg.* 9:t. 729. 1823; Banerjee in Sharma *et al.*, *Fl. India* 1:381. 1993. *B. aristata* auct. *non* DC.: Hook. f. & Thomson, *Fl. Ind.* 222. 1855, *p.p.* and in Hook. f., *Fl. Brit. India* 1:110. 1872, *p.p.*

Shrubs up to 2 m high. Leaves obovate or oblong, entire with few distant spinous teeth at margin. Flowers in corymbose cymes, purplish or reddish. Berries ellipsoid, purple when ripe.

Fl. & Fr.: Sept. March.

Distrib.: Kameng; 1500-3000 m, in scrub jungles, along roadsides.

Berberis dasyclada Ahrhndt In *J. Bot. London* 79. suppl. 12. 1941; Dasgupta in Sharma *et al.*, *Fl. India* 1:397. 1993. **Fig. 21.**

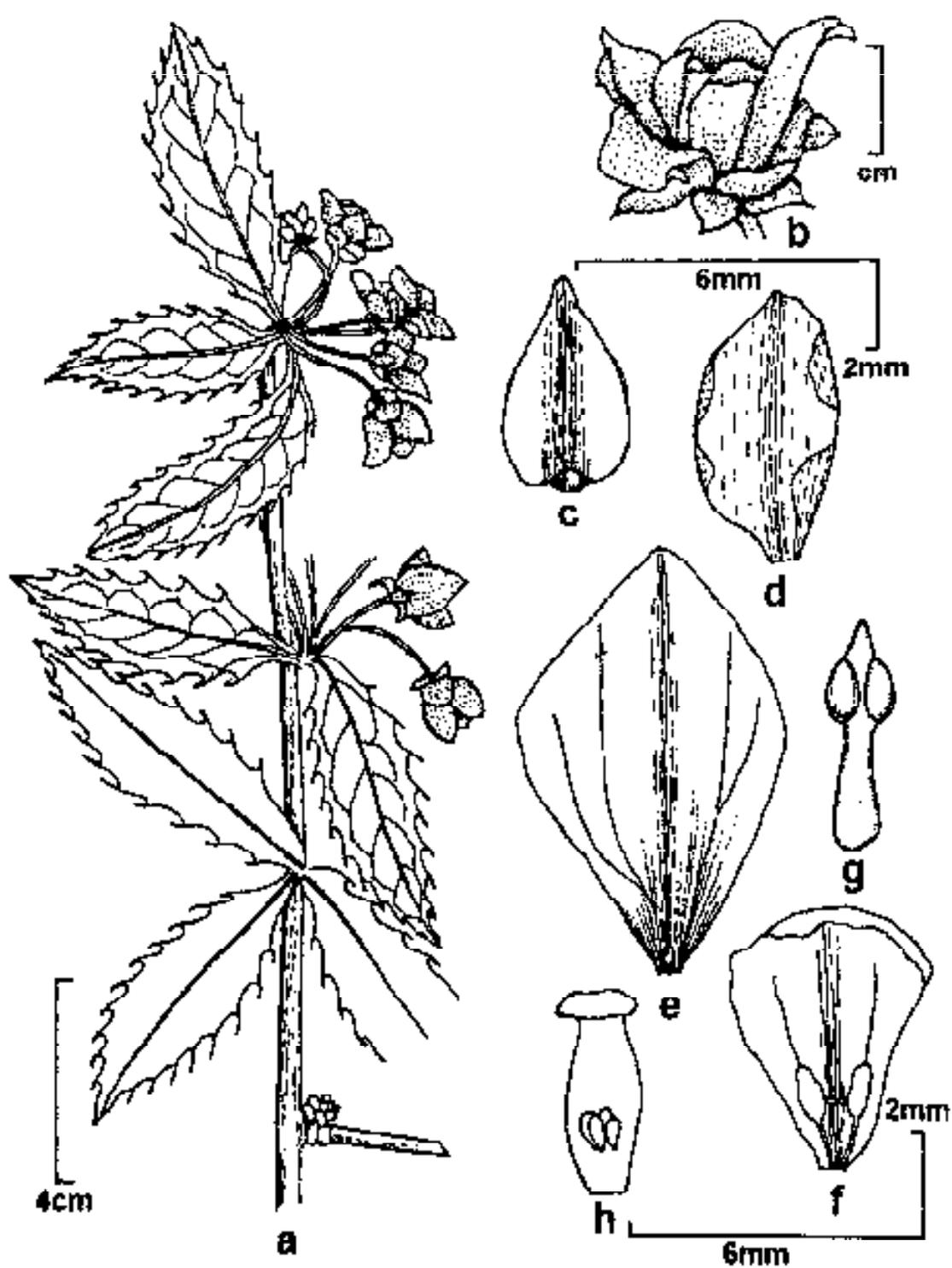


Fig. 21. *Berberis dasyclada* Ahrendt : a. Twig; b. Flower; c. Prophyll; d. Outer sepal; e. Petal with nectary glands; g. Stamen; h. Pistil with ovules inside.

Shrubs, stems pubescent, red. Leaves narrowly elliptic or lanceolate. Flowers in fascicles, golden yellow, fragrant.

Fl. & Fr.: June - Sept.

Distrib.: Kameng; 2000-3500 m, among scrubs, on slopes.

Berberis insignis Hook. f. & Thomson, Fl. Ind. 226. 1855 and in Hook. f., Fl. Brit. India 1:111. 1872; Dasgupta in Sharma *et al.*, Fl. India 1:399. 1993. *B. insignis* var. *elegantifolia* Ahrendt in J. Linn. Soc. London 57:37. 1961. *B. insignis* var. *gouldii* Ahrendt, l.c. 38. *B. insignis* var. *shergaonensis* Ahrendt, l.c. 37.

Shrubs, 1.25-3 m high, stems glabrous, yellowish. Leaves elliptic or linear-lanceolate, very stiff, distal. Flowers in axillary fascicles. Berries obovoid, black.

Fl. & Fr.: April - July.

Distrib.: Kameng; 3000-3500 m, among scrubs, along roadsides, forest edges.

Berberis macrosepala Hook. f. & Thomson, Fl. Ind. 228. 1855 and in Hook. f., Fl. Brit. India 1:111. 1872; Sur in Sharma *et al.*, Fl. India 1:357. 1993.

Erect or prostrate shrubs up to 2 m high with spreading branches. Leaves obovate-oblong, spinulose toothed, glaucous beneath. Flowers solitary, yellow. Berries ovoid, red.

Fl. & Fr.: May - Jan.

Distrib.: Kameng, Tawang; 2000-4000 m, among scrubs, along roadsides.

Berberis wallichiana DC., Prodr. 1:107. 1824; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:110. 1872; Guha Bakshi in Sharma *et al.*, Fl. India 1:395. 1993. var. *wallichiana*. Fig. 22.

Armed shrubs up to 3 m high. Leaves oblong-lanceolate. Flowers many in fascicles, yellow. Berries red, turning to blue.

Fl. & Fr.: March - Dec.

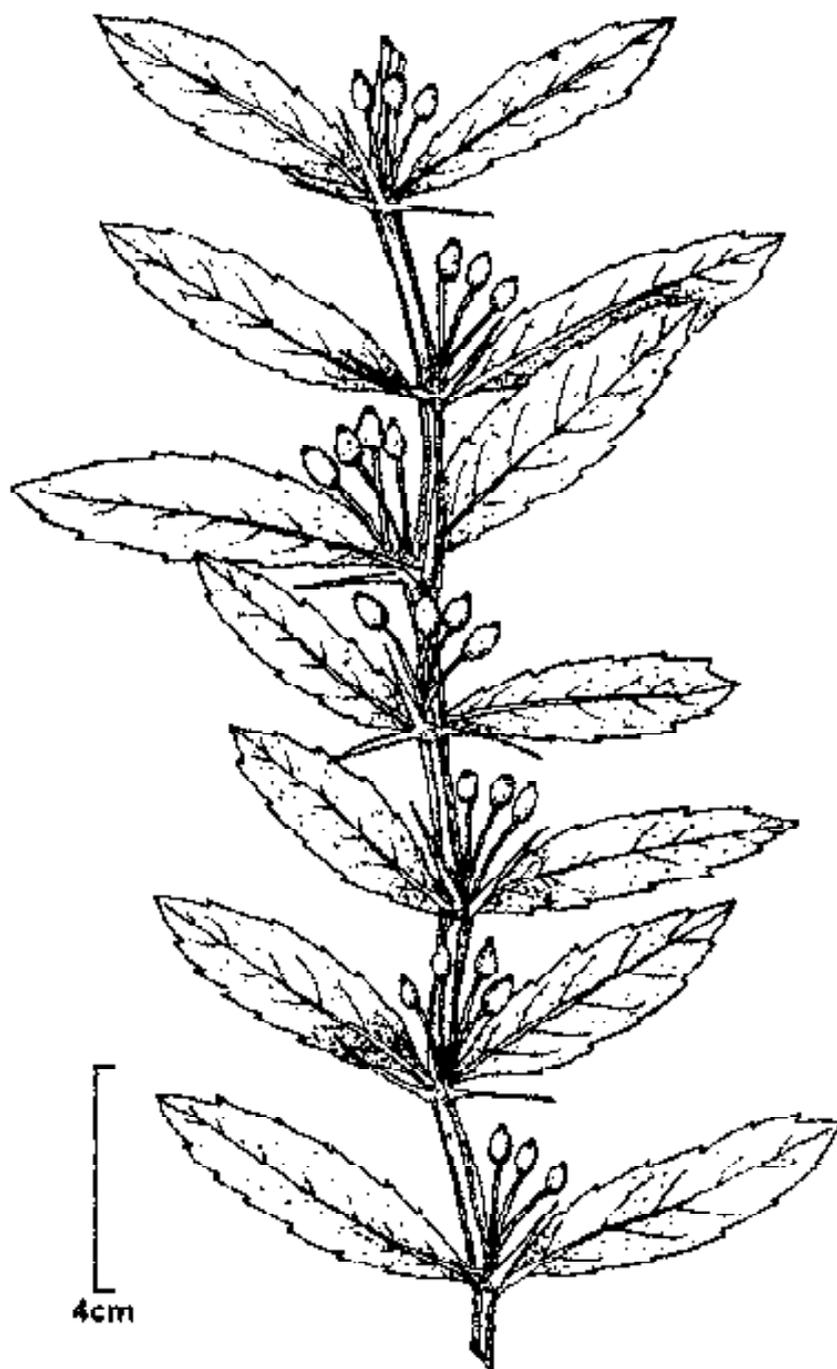


Fig. 22. *Berberis wallichiana* DC.

Distrib.: Lohit, Subansiri; 1400-2000 m, growing near swampy forest edges.

Use: Bunch of spines is used for tattooing on chin and forehead by the local people.

Berberis wallichiana var. *latifolia* Hook. f. & Thomson in Hook.f., Fl. Brit. India 1:111. 1872.

Shrubs up to 2 m high. Leaves broadly obovate or elliptic-oblong.

Fl. & Fr.: May - Aug.

Distrib.: Subansiri; 1600-2500 m, in open forests, along roadsides and scrubs.

Dysosma aurantiocaula (Hand.-Mazz.) Hu in Bull. Fan. Mem. Indt. Biol. Peiping Bot. ser. 8:37. 1937. *Podophyllum aurantiocaula* Hand.-Mazz. in Anz. Akad. Wiss. Wein Math. -Nat. 61:163. 1925.

Herbs with stout rootstock. Leaves peltate. Flowers solitary, whitish or pinkish. Berries many seeded.

Fl. & Fr.: Oct. - Jan.

Distrib.: Kameng, Tawang; 1800-2500 m, in scrubs.

Mahonia acanthifolia G. Don, Gen. Syst. 1:118. 1831; Banerjee in Rec. Bot. Surv. India 19(2):22. 1966; Guha Bakshi in Sharma *et al.*, Fl. India 1:407. 1993.

Shrubs, 2.5-3.5 m high. Leaflets elliptic-oblong. Flowers in axillary or terminal racemes, 5-6 mm across, yellow. Berries ellipsoid, 1-1.5 cm long, blue when ripe.

Fl. & Fr.: April - July.

Distrib.: Subansiri; 2000-3500 m, in broad leaved temperate forests, sacred groves.

Mahonia calamicaulis Sparre & Fischer in Kew Bull. 1929:249. 1929; Guha Bakshi in Sharma *et al.*, Fl. India 1:408. 1993.

Shrubs up to 2 m high. Leaves compound; leaflets ovate-lanceolate, sinuate. Flowers in axillary racemes, yellow. Berries subglobose.

Fl. & Fr.: May - July.

Distrib.: Kameng, Tawang; 2000-3500 m, in open forests, scrubs, roadsides.

Mahonia napaulensis DC., Syst. Nat. 2:21. 1821; Guha Bakshi in Sharma *et al.*, Fl. India 1:411. 1993. *Berberis nepalensis* (DC.) Spreng., Syst. Veg. 2:120. 1825; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:109. 1872, *p.p.*

Shrubs up to 2 m high. Leaves compound; leaflets 2-12 pairs, ovate or lanceolate, spiny. Flowers in fascicles, yellowish. Berries blue.

Fl. & Fr.: March - May.

Distrib.: Kameng; 2000-3500 m, in open forests.

PODOPHYLLACEAE

Podophyllum hexandrum Royle, Ill. Bot. Himal. 64. 1834; Rao & Hajra in Sharma *et al.*, Fl. India 1:415. 1993. *P. emodi* Wallich ex Honigberger, Thirtyfive years in the East 329, t. 20. 1852; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:112. 1872, *nom. illeg.*

Scapigerous herbs up to 30 cm high with scaly rootstock. Leaves orbicular, 3-5 lobed. Flowers solitary, creamy white with rosy tinge. Berries ellipsoid, red when ripe.

Fl. & Fr.: Sept. - Jan.

Distrib.: Kameng, Tawang; 2500-4500 m, on moist slopes, grassy meadows.

Use: Fruits edible, entire plant is used as medicine.

LARDIZABALACEAE

Decaisnea insignis (Griffith) Hook. f. & Thomson in Proc. Linn. Soc. London 2:349. 1854 and in Hook. f., Fl. Brit. India 1:107. 1872; Nayar & Paul in Sharma *et al.*, Fl. India 1:419. 1993. *Slakia insignis* Griffith, Itin. Notes 187. 1848.

Erect shrubs or trees up to 8 m high. Leaves compound; leaflets 6-8 pairs, ovate-lanceolate, glaucous beneath. Flowers 2-3 cm long, pendent, yellow green. Follicles cylindrical.

Fl. & Fr.: May - Aug.

Distrib.: Kameng, Tawang; 1500-2000 m, in forests.

Holboellia latifolia Wallich, Tent. Fl. Nep. 24, t. 16. 1824; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:108. 1872; Nayar & Paul in Sharma *et al.*, Fl. India 1:423. 1993. var. *latifolia*. Fig. 23.

Climbing shrubs up to 5 m high. Leaves digitately 3-9 foliolate, leaflets oblong-ovate. Flowers in axillary 5-10 cm long racemes, purplish green. Fruits ellipsoid, red.

Fl. & Fr.: March - Aug.

Distrib.: Kameng, Lohit, Subansiri; 1000-1600 m, in moist humid forests.

Use: Fruits are edible.

Holboellia latifolia var. *angustifolia* (Wallich) Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:108. 1872; Nayar & Paul in Sharma *et al.*, Fl. India 1:423. 1993. *H. angustifolia* Wallich, Tent. Fl. Nep. 24, t. 17. 1824.

Climbers. Leaflets narrow lanceolate. Flowers creamy white; buds rosy tinged outside.

Fl. & Fr.: May - Aug.

Distrib.: Kameng, Tawang; 2000-3300 m, in open forests.

Parvattia brunoniana Decne. in Archiv. Mus. 1:190, t. 12A. 1839; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:108. 1872; Nayar & Paul in Sharma *et al.*, Fl. India 1:424. 1993.

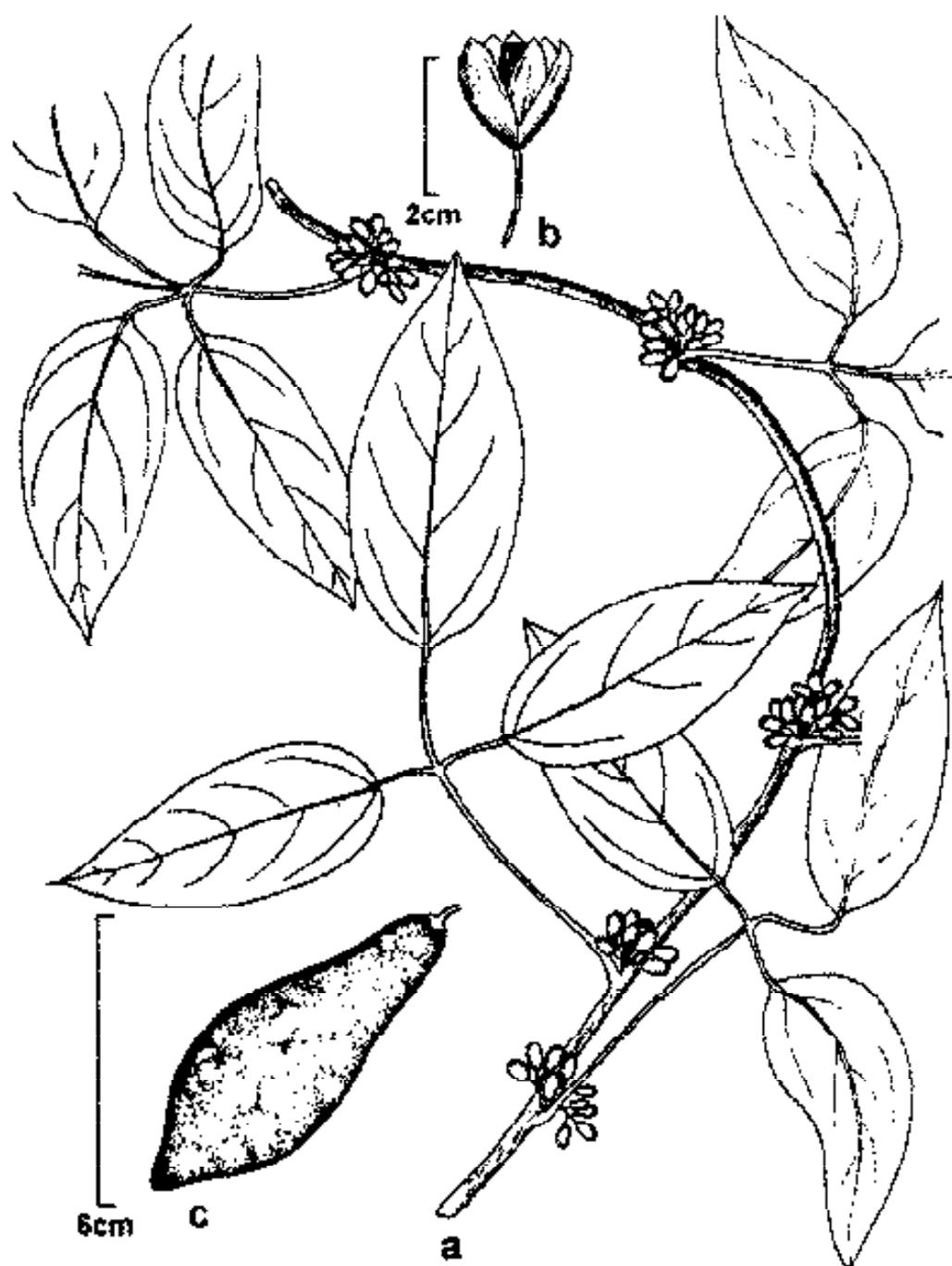


Fig. 23. *Holboellia latifolia* Wallich : a. Branch; b. Flower; c. Fruit.

Woody climbers. Leaves pinnately 3-foliolate; leaflets elliptic or lanceolate, caudate-acuminate, glabrous beneath. Flowers in axillary racemes, ca 1 cm across, greenish yellow. Berries ovoid, many seeded.

Fl. & Fr.: April - Sept.

Distrib.: Kameng; 100-500 m, in dense primary forests.

Parvattia elliptica (Hemsley) Nayar & Paul In Fasc. Fl.India 19:36. 1988 and in Sharma *et al.*, Fl. India 1:425. 1993. *Stauntonia elliptica* Hemsley in Hooker, Ic. Pl.t. 2844. 1907; Kanjilal *et al.*, Fl. Assam 1:60. 1934.

Large climbers. Leaves pinnately 3-foliolate; leaflets elliptic or ovate, glaucous beneath. Flowers in axillary fascicles, greenish yellow. Fruits oblong.

Fl. & Fr.: Aug. - Oct.

Distrib.: Changlang; 200-1500 m, in forests.

NYMPHAEACEAE

Nymphaea nouchali Burm. f. Fl.Ind. 120. 1768; Mitra in Sharma *et al.*, Fl. India 1:430. 1993. *N.stellata* Willd., Sp. Pl. 2:1153. 1799; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:114. 1872. Fig. 24.

Perennial, aquatic herbs. Leaves elliptic-orbicular, purplish beneath. Flowers purplish blue. Berries globose. Seeds broadly ellipsoid, rough.

Fl. & Fr.: July - Nov.

Distrib.: Kameng; 1000-1600 m, in ditches, ponds and pools.

Nymphaea rubra Roxb. ex Andrews, Bot. Rep. 8(104):t. 503. 1808; Mitra in Sharma *et al.*, Fl. India 1:432. 1993. *N.lotus auct. non L.:* Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:114. 1872, *p.p.*

Rhizomatous herbs. Rootstocks creeping. Leaves orbicular, sharply sinuate-toothed, reddish. Flowers red on long radical scapes. Berries spongy. Seeds ellipsoid.

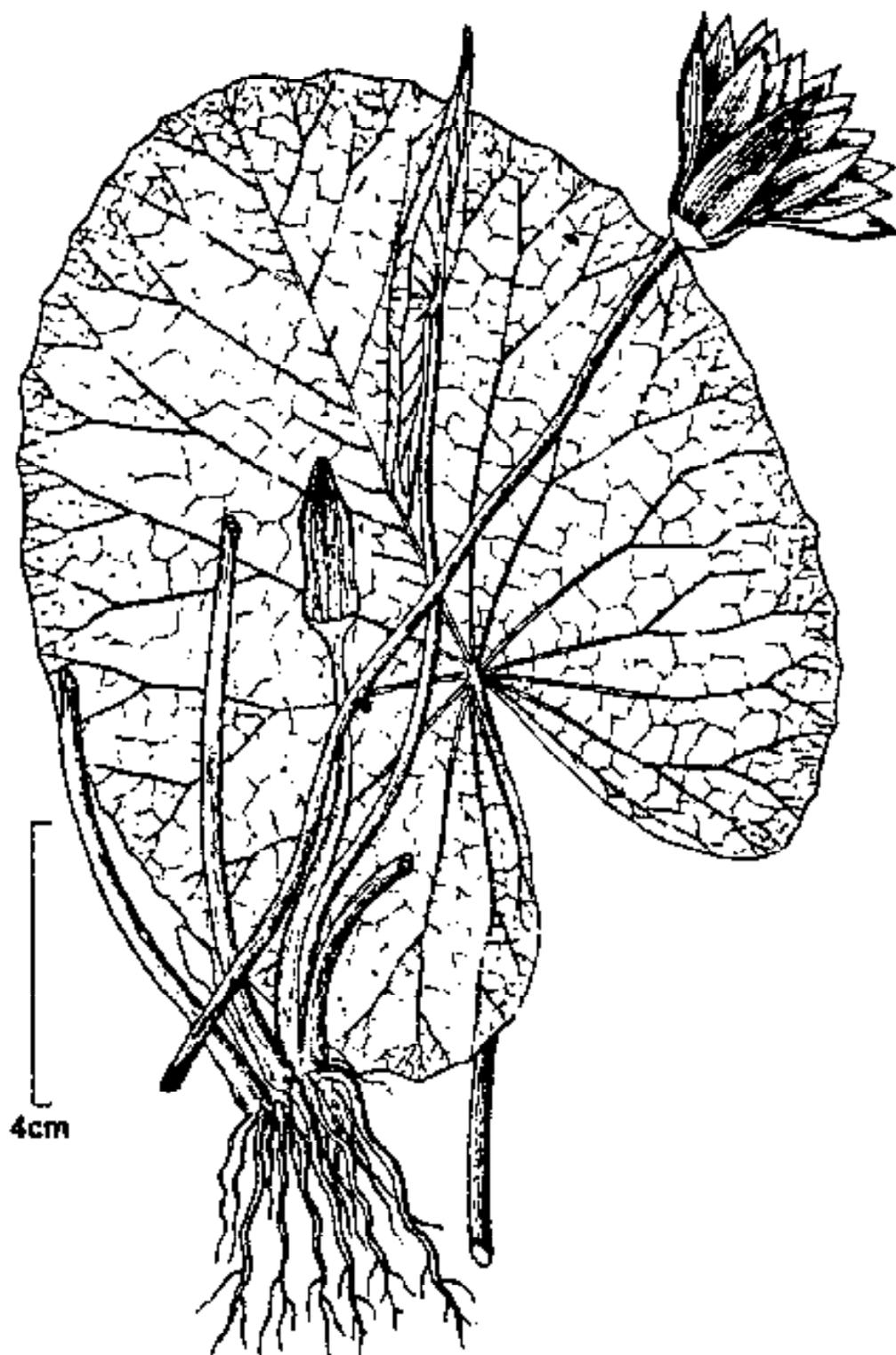


Fig. 24. *Nymphaea nauchali* Burm. f.

Fl. & Fr.: March - Nov.

Distrib.: Kameng; 100-200 m, in open ponds and ditches.

PAPAVERACEAE

Argemone mexicana L., Sp. Pl. 508. 1753; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:117. 1872; Debnath & Nayar in Sharma *et al.*, Fl. India 2:2. 1993.

Local name: Kuhumkanta (Asm.).

Prickly herbs up to 1 m tall, whitish green, much branched with yellow latex. Leaves sessile, sinuate-pinnatifid. Flowers solitary, terminal, bright yellow. Capsules ellipsoid.

Fl. & Fr.: March - July.

Distrib.: Kameng; 500-1200 m, weed along roadsides and in wastelands.

Meconopsis betonicifolia Franchet, Pl. Delav. 1:42, t. 12. 1889; Debnath & Nayar in Sharma *et al.*, Fl. India 2:13. 1993. **Fig. 25.**

Herbs up to 1.5 m tall with rufous hairs. Leaves oblong, auriculate at base. Flowers solitary, purple or blue-violet. Capsules ellipsoid.

Fl. & Fr.: July - Sept.

Distrib.: Kameng; 1500-3000 m, along roadsides and forests edges.

Meconopsis napaulensis DC., Prodr. 1:121. 1824; Debnath & Nayar in Sharma *et al.*, Fl. India 2:20. 1993. *M. wallichii* Hook. f. in Curtis, Bot. Mag. 78:t. 4668. 1852; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:118. 1872.

Herbs up to 1.5 m tall, stellate hairy or bristly. Leaves sinuate-lobed or pinnatisect. Flowers solitary, axillary or terminal, purplish. Capsules obovate-oblong.

Fl. & Fr.: June - Aug.

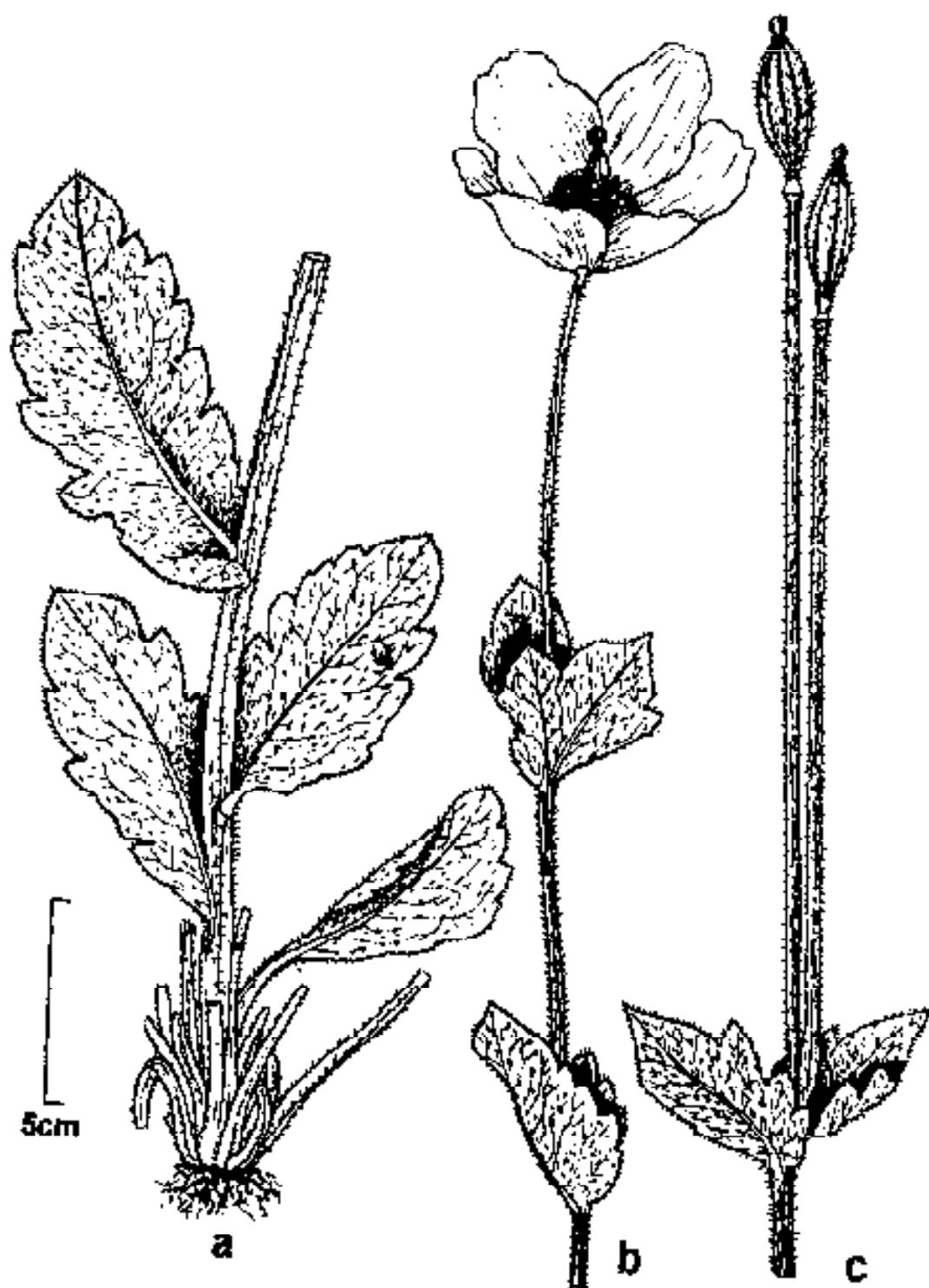


Fig. 25. *Meconopsis betonicifolia* Franch. : a. Habit; b. Flowering twig; c. Fruiting twig.

Distrib.: Kameng; 2000-4000 m, along roadsides, forests clearings.

Meconopsis paniculata (D. Don) Prain in *J. Asiat. Soc. Bengal* 64(2):316. 1896; Giri & Lal in *J. Econ. Tax. Bot.* 12(2):365 1988; Debnath & Nayar in Sharma *et al.*, *Fl. India* 2:21. 1993. *Papaver paniculatum* D. Don, *Prodr. Fl. Nep.* 197. 1825.

Herbs up to 2 m high with golden brown hairs. Leaves linear-oblong, pinnatifid. Flowers in 4-7 flowered racemes, yellow. Capsules ellipsoid.

Fl. & Fr.: June - July.

Distrib.: Tawang; 3000-4000 m, in open places among rocks and boulders.

Meconopsis simplicifolia (D. Don) Walp., *Repert.* 1:110. 1842; Hook. f. & Thomson in Hook. f., *Fl. Brit. India* 1:118. 1872; Debnath & Nayar in Sharma *et al.*, *Fl. India* 2:22. 1993. *Papaver simplicifolium* D. Don, *Prodr. Fl. Nep.* 197. 1825. Fig. 26.

Perennial, hairy herbs up to 50 cm high; roots fusiform, stout. Leaves lanceolate. Flowers on scapes, solitary, nodding blue or purple. Capsules linear-oblong, hairy.

Fl. & Fr.: July - Oct.

Distrib.: Kameng, Tawang; 2000-3500 m, in open moist places along roadsides and on grassy slopes.

Papaver somniferum L., *Sp. Pl.* 508. 1753; Hook. f. & Thomson in Hook. f., *Fl. Brit. India* 1:117. 1872; Debnath & Nayar in Sharma *et al.*, *Fl. India* 2:32. 1993.

Annual herbs, stems cauliramous, 10-100 cm long. Leaves simple or pinnatifid. Flowers white, pink or reddish purple. Capsules stalked, subglobose.

Fl. & Fr.: April - Aug.

Distrib.: Siang; in wastelands, often cultivated.



Fig. 26. *Meconopsis simplicifolia* (D. Don) Walp.

FUMARIACEAE

Corydalis cashmeriana Royle, Ill. Bot. Himal. 69, t. 16, f. 1. 1833; Hook. f. Thomson in Hook. f., Fl. Brit. India 1:128. 1872; Ellis & Balakrishnan in Sharma *et al.*, Fl. India 2:42. 1993.

Bulbous or tuberous herbs up to 30 cm tall. Leaves palmately 3-4 partite. Flowers blue with dark blue tip. Capsules linear-oblong, pendent.

Fl. & Fr.: April - July.

Distrib.: Subansiri; 2500-3500 m, in swampy areas of open valleys.

Corydalis chaerophylla DC., Prodr. 1:128. 1824; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:126. 1872.

Flowers golden yellow with brownish veins. Capsules broadly linear or linear-obovate.

Fl. & Fr.: March - May.

Distrib.: Kameng; 1500-2000 m, in moist forests.

Corydalis davidii Franch. in Nouv. Arch. Mus. Paris ser. 3,8:198. 1885 (1886).

Herbs. Leaves compound. Flowers yellow.

Fl. & Fr.: May - July.

Distrib.: Kameng; 3000-3500 m, on moist soil slopes and in rock crevices.

Corydalis drepanantha D. Long in Notes Roy. Bot. Gard. Edinburgh 42(1):101, F. 4D. 1984; Ellis & Balakrishnan in Sharma *et al.*, Fl. India 2:52. 1993.

Erect herbs with slender rootstock. Cauline leaves broadly ovate, ternisect. Flowers yellow, sickle shaped. Capsules obovate-elliptic.

Fl. & Fr.: April - July.

Distrib.: Kameng; 2000-2300 m.

Corydalis geraniifolia Hook. f. & Thomson, Fl. India 269. 1855 and in Hook. f., Fl. Brit. India 1:126. 1872, p.p.; Ellis & Balakrishnan in Sharma *et al.*, Fl. India 1:57. 1993. *C. chaerophylla* var. *geraniifolia* (Hook. f. & Thomson) Hara, Fl. E. Himal. 103. 1966. Fig. 27.

Suberect herbs up to 1.25 m high. Leaves deltoid, compound, pale green beneath. Flowers in terminal small racemes, golden yellow. Capsules linear obovate.

Fl. & Fr.: May - Aug.

Distrib.: Kameng; 1600-2500 m, in open forests.

Corydalis leptocarpa Hook. f. & Thomson, Fl. Ind. 260. 1855 and in Hook. f., Fl. Brit. India 1:122. 1872; Ellis & Balakrishnan in Sharma *et al.*, Fl. India 2:65. 1993.

Diffuse, succulent herbs up to 40 cm high. Leaves biternately pinnatisect. Flowers in racemes, dull purple or pink. Capsules linear, 2.5-4 cm long.

Fl. & Fr.: April - June.

Distrib.: Kameng; 1600-2500 m, in moist places, stream sides.

Corydalis ophiocarpa Hook. f. & Thomson, Fl. Ind. 259. 1855 and in Hook. f., Fl. Brit. India 1:122. 1872; Ellis & Balakrishnan in Sharma *et al.*, Fl. India 2:68. 1993.

Erect to suberect herbs up to 1 m tall. Leaves 2-3 pinnatisect. Flowers in racemes, violet. Capsules oblong, ca 2 cm long.

Fl. & Fr.: April - July.

Distrib.: Subansiri; 600-1200 m, in open moist places, along jhum cultivated fields.

Corydalis pseudolongipes Liden in Bull. Brit. Mus. (Nat. Hist.) Botany 18:532, ff. 22D & 23D. 1989; Ellis & Balakrishnan in Sharma *et al.*, Fl. India 2:70. 1993. *C. sibirica* auct. non (L.f.) Pers. :Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:125. 1872, p.p.



Fig. 27. *Corydalis geraniifolia* Hook.f. & Thomson.

Delicate herbs up to 60 cm high with many branches. Leaves 2-3 pinnate. Flowers in racemes, spurred, yellow. Capsules deflexed, linear-obovate, 1-2 cm long.

Fl. & Fr.: Oct. - Jan.

Distrib.: Kameng, Lohit, Tawang; 1500-3500 m, along waysides and in rock crevices.

Dicentra paucinervia K. Stern in *Brittonia* 13:45. 1961; Naithani & Bahadur in *Ind. For.* 107(11):715. 1981; Ellis & Balakrishnan in *Sharma et al.*, *Fl. India* 2:78. 1993.

Scandent herbs, 4-5 m long. Leaves trifoliolate, leaflets broadly ovate. Flowers in leaf-opposed 7-14 flowered racemes, orange or yellowish. Capsules ovoid.

Fl. & Fr.: Oct. - Nov.

Distrib.: Kameng; 1000-1500 m, along forest edges and in abandoned cultivated fields.

Dicentra roylei Hook. f. & Thomson, *Fl. Ind.* 273. 1855 and in Hook. f., *Fl. Brit. India* 1:121. 1872; Ellis & Balakrishnan in *Sharma et al.*, *Fl. India* 2:79. 1993. *Dactylicapnos roylei* (Hook. f. & Thomson) Hutchinson in *Kew Bull.* 1921:104. 1921.

Tendrilled climbers up to 1.25 m long. Leaves 3-4 foliolate, leaflets ovate-spathulate. Flowers yellow. Capsules ovate-oblong, 2-3 cm long.

Fl. & Fr.: Oct. - Feb.

Distrib.: Subansiri; 1400-1600 m, in dense humid forests.

Dicentra scandens (D. Don) Walp., *Repert.* 1:118. 1842; Hook. f. & Thomson in Hook. f., *Fl. Brit. India* 1:121. 1872, *p.p.*; Ellis & Balakrishnan in *Sharma et al.*, *Fl. India* 2:79. 1993. *Dielytra scandens* D. Don, *Prodr. Fl. Nep.* 198. 1825. *Dactylicapnos thalictrifolia* Wallich, *Tent. Fl. Nep.* 51, t. 89. 1826. *Dicentra thalictrifolia* (Wallich) Hook. f. & Thomson, *Fl. Ind.* 273. 1855 and in Hook. f., *Fl. Brit. India* 1:121. 1872. *Dactylicapnos scandens* (D. Don) Hutchinson in *Kew Bull.* 1921:105. 1921. Fig. 28.

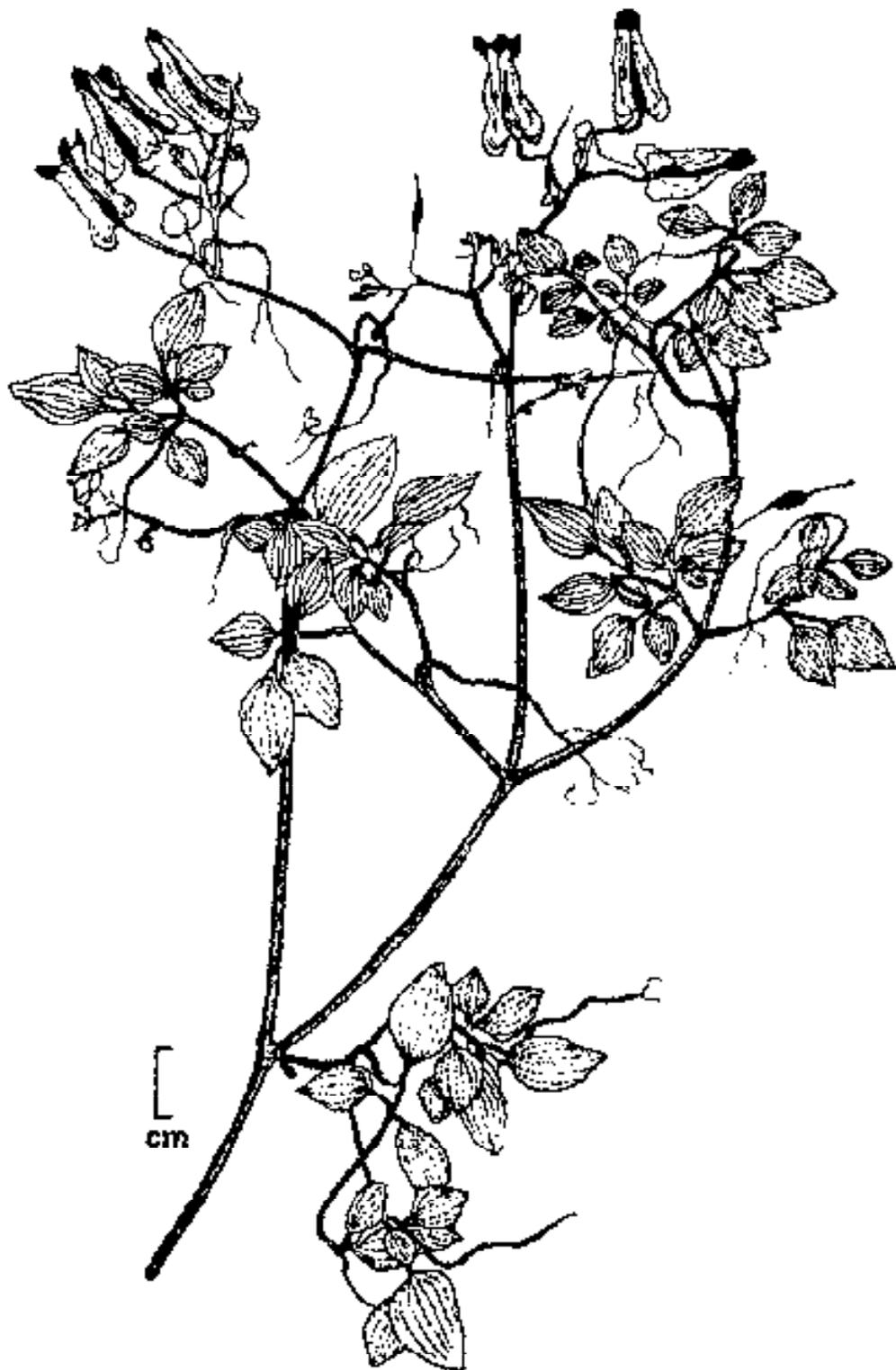


Fig. 28. *Dicentra saccondens* (D. Don) Walp.: Twig with flowers and capsules.

Delicate climbers. Leaves segmented, oblong or orbicular. Flowers golden yellow to dark red. Capsules pendulous, lanceolate.

Fl. & Fr.: June - Sept.

Distrib.: Changlang, Kameng, Siang, Subansiri, Tirap; 1500-2500 m, inside forests amidst shrubs, along paddy fields.

Use: Paste of the fresh tubers is applied in snake bite; the powder made from dried tubers is taken in case of gastric troubles.

Fumaria indica (Haussk.) Pugsley in J. Linn. Soc. Bot. 44:313. 1919; Ellis & Balakrishnan in Sharma *et al.*, Fl. India 2:84. 1993. *F. parviflora* Lamk. subsp. *vaillantii* (Loisel) Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:128. 1872, *p.p.* *F. vaillantii* Loisel var. *indica* Haussk. in Flora 56:443. 1873.

Succulent annuals up to 15 cm high, branched at base. Leaf segments lacinate, flat. Flowers white or pale pink. Fruits globose, rugose.

Fl. & Fr.: April - Aug.

Distrib.: Kameng; 1800-2000 m, in open cultivated places.

BRASSICACEAE

Arabidopsis himalaica (Edgew.) Schulz in Engler, Pflanzenr. 4. 86:283. 1924; Hajra *et al.* in Sharma *et al.*, Fl. India 2:227. 1993. *Arabis himalaica* Edgew. in Trans. Linn. Soc. London 20:31. 1846. *Sisymbrium himalaicum* (Edgew.) Hook. f. & Thomson in J. Linn. Soc. Bot. 5:160. 1861; Hook. f. & Anders. in Hook. f., Fl. Brit. India. 1:147. 1872.

Annual or biennial herbs, up to 40 cm tall, branched at base. Leaves radical, oblong or spatulate. Flowers in racemes, white or rose coloured. Pods straight, terete.

Fl. & Fr.: April - June.

Distrib.: Kameng; 1600-2200 m, in open moist places.

Arabidopsis mollissima (Mey.) Busch, Fl. Sib. & Or. Extr. 1:136. 1913; Hajra *et al.* in Sharma *et al.*, Fl. India 2:228. 1993. *Sisymbrium mollissimum*

Mey. in Ledeb., Fl. Alt. 3:140. 1831; Hook. f. & Anders. in Hook. f., Fl. Brit. India 1:147. 1872.

Perennial herbs up to 40 cm high. Leaves obovate-lanceolate. Flowers in racemes, white or yellowish. Pods straight, 2-4 cm long.

Fl. & Fr.: May - Aug.

Distrib.: Kameng, Tawang; 2000-4000 m, on moist soil.

Arabis amplexicaulis Edgew. in Trans. Linn. Soc. London 20:31. 1846; Hook. f. & Anders. in Hook. f., Fl. Brit. India 1:136. 1872; Hajra & Chowdhery in Sharma *et al.*, Fl. India 2:100. 1993.

Perennial herbs up to 30 cm high, reddish. Leaves obovate-oblong. Flowers in many flowered racemes, white. Pods linear.

Fl. & Fr.: April - July.

Distrib.: Kameng; 1500-3500 m, along roadsides.

Barbarea vulgaris R. Brown in Aiton., Hort. Kew. ed. 2, 4:109. 1812; Hook. f. & Anders. in Hook. f., Fl. Brit. India 1:134. 1872; Hajra & Chowdhery in Sharma *et al.*, Fl. India 2:107. 1993.

Perennial herbs up to 40 cm high. Lower leaves lyrate-pinnate; upper leaves obovate. Flowers in racemes, yellow. Pods narrowly linear, ca 3.5 cm long, strongly keeled.

Fl. & Fr.: May - Aug.

Distrib.: Tawang; 3500-4500 m, on slopes along foot tracks.

Brassica juncea L. var. *cuneifolia* (Roxb.) Kitamura in Acta Phytotax. Geobot. 16:62. 1955. *Sinapis cuneifolia* Roxb., Fl. Ind. ed. 2,3:121. 1832.

Herbs up to 1 m tall. Upper leaves lanceolate. Flowers in racemes, bright yellow. Pods linear-lanceolate, ca 2 cm long.

Fl. & Fr.: Feb. - April.

Distrib.: Kameng, Siang; 600-1200 m, in open places, along moist soil slopes.

Brassica napus L. var. *dichotoma* (Roxb.) Prain in Agri. Ledger. 5:36, t. 8. 1898. *Sinapis dichotoma* Roxb., Fl. Ind. 3:117. 1832.

Herbs up to 60 cm high with fusiform roots. Flowers in racemes, white or yellow. Pods linear up to 2.5 cm long.

Fl. & Fr.: April - Aug.

Distrib.: Kameng, Siang; 1800-2500 m, widely cultivated.

Brassica nigra (L.) Koch in Roehling, Deuts., Fl. ed. 3,4:713. 1833; Hook. f. & Anders. in Hook. f., Fl. Brit. India 1:156. 1872; Hajra *et al.* in Sharma *et al.*, Fl. India 2:136. 1993. *Sinapis nigra* L., Sp. Pl. 668. 1753.

Herbs up to 1 m high, sparsely hairy. Leaves lyrate; upper leaves entire. Flowers in racemes, bright yellow. Pods subulate.

Fl. & Fr.: Jan. - May.

Distrib.: Arunachal Pradesh; up to an altitude 1500 m. Usually cultivated.

Use: Widely cultivated for oil seeds to extract "Mustard oil" as preservative in pickles. Young shoots are cooked and eaten as green vegetable. The oil is said to improve eye sight, oil warmed with garlic is used in relieving ear-ache.

Brassica rapa L. subsp. *campestris* (L.) Clapham in Fl. Brit. Isles ed. 2:124. 1962; Hajra *et al.* in Sharma *et al.*, Fl. India 2:138. 1993. *B. campestris* L., Sp. Pl. 666. 1753; Hook. f. & Anders. in Hook. f., Fl. Brit. India 1:156. 1872. Fig. 29.

Herbs up to 1 m high. Leaves pinnatifid, large. Flowers large, bright yellow. Pods flat.

Fl. & Fr.: May - July.

Distrib.: Changlang, Kameng, Tirap; 1800-2400 m, in open places. Cultivated throughout.

Brassica rugosa Prain in Bull. Dept. Land Rec. Agri. Bengal 4:11. 1898

Herbs up to 60 cm high. Flowers in racemes, yellow. Pods linear.

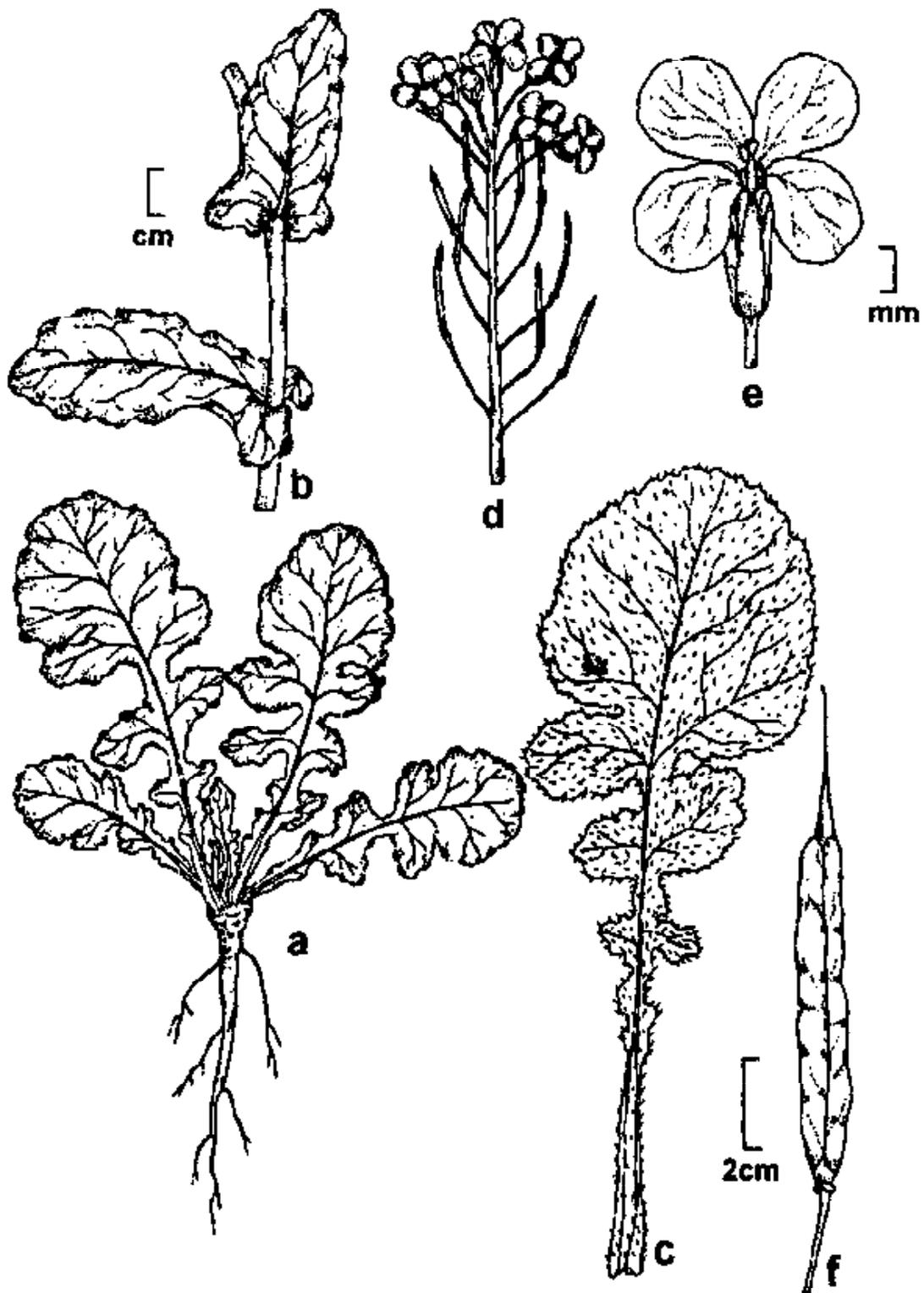


Fig. 29. *Brassica rapa* L. subsp. *campestris* (L.) Clapham : a. & b. Habit; c. Basal leaf; d. Inflorescence; e. Flower; f. Fruit.

Fl. & Fr.: March - Sept.

Distrib.: Siang; 300-700 m, widely cultivated.

Capsella bursa-pastoris (L.) Medikus, Pflanzengatt. 1:85. 1792; Hook. f. & Anders. in Hook. f., Fl. Brit. India 1:159. 1872; Bhaumik in Sharma *et al.*, Fl. India 2:189. 1993. *Thlaspi bursa-pastoris* L., Sp. Pl. 647. 1753.

Herbs up to 40 cm high. Leaves rosulate, pinnatifid. Flowers in racemes, 3-4 mm across, white. Pods triangular.

Fl. & Fr.: Oct. - Jan.

Distrib.: Kameng; 2000-2500 m, in open places on forest floor.

Cardamine circaeoides Hook. f. & Thomson in J. Linn. Soc. Bot. 5:144. 1861; Hook. f. & Anders. in Hook. f., Fl. Brit. India 1:137. 1872; Hajra & Chowdhery in Sharma *et al.*, Fl. India 2:109. 1993.

Herbs up to 25 cm high. Leaves radical, simple. Flowers in racemes, few flowered, white. Pods narrowly linear, greenish.

Fl. & Fr.: April - June.

Distrib.: Kameng, Subansiri; 1500-2000 m, along rocky slopes.

Cardamine elegantula Hook. f. & Thomson in J. Linn. Soc. Bot. 5:146. 1861; Hook. f. & Anders. in Hook. f., Fl. Brit. India 1:139. 1872. Hajra & Chowdhery in Sharma *et al.*, Fl. India 2:110. 1993.

Herbs up to 10 cm high. Leaves pinnate; leaflets linear-oblong. Flowers in racemes, white. Pods tapering at both ends, 1.5-3.5 cm long.

Fl. & Fr.: May - Aug.

Distrib.: Kameng; 1800-3500 m, along water sources, on moist soil and rock crevices.

Cardamine hirsuta L., Sp. Pl. 655. 1753; Hajra & Chowdhery in Sharma *et al.*, Fl. India 2:112. 1993. *C. hirsuta* var. *silvatica* (Link) Hook. f. & Anders. in Hook. f., Fl. Brit. India 1:138. 1872, *p.p.* Fig. 30.

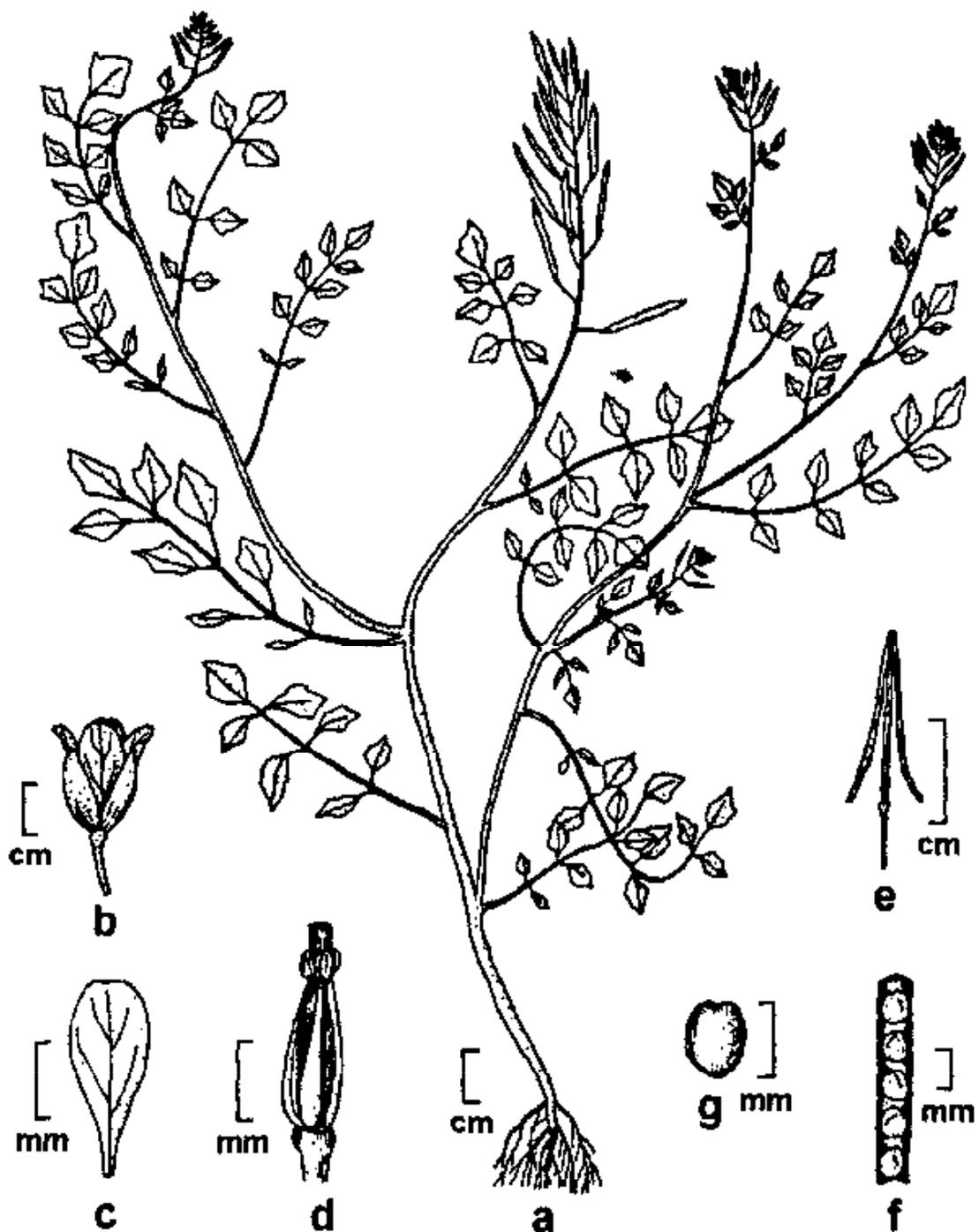


Fig. 30. *Cardamine hirsuta* L. : a. Plant; b. Flower; c. Petal; d. Stamens adhering to ovary; e. Dehiscent fruit; f. Seeds attached to septum; g. Seed.

Suberect to decumbent, glabrous herbs up to 35 cm high. Leaves compound; leaflets orbicular, upper surfaces hairy. Flowers in terminal racemes, white. Pods linear up to 3 cm long.

Fl. & Fr. : May - Sept.

Distrib. : Changlang, Kameng, Siang, Subansiri, Tirap; 500-1000 m, in marshy places along streams and frequent along new roads.

Use : Leaves are used as vegetable, eaten raw or cooked.

Cardamine impatiens L., Sp. Pl. 655. 1753; Hook. f. & Anders. in Hook. f., Fl. Brit. India 1:138. 1872; Hajra & Chowdhery in Sharma *et al.*, Fl. India 2:114. 1993.

Succulent herbs up to 35 cm tall. Leaves pinnate, auricled at base; leaflets ovate-oblong; radical leaves in rosette. Flowers in racemes, white. Pods linear.

Fl. Fr. : April - July.

Distrib. : Kameng; 1800-2500 m, near streams on sandy banks.

Cardamine macrophylla Willd., Sp. Pl. 3(1):484. 1800; Hook. f. & Anders. in Hook. f., Fl. Brit. India 1:139. 1872; Hajra & Chowdhery in Sharma *et al.*, Fl. India 2:115. 1993. var. *macrophylla*.

Succulent herbs up to 1 m high. Leaflets lanceolate. Flowers in racemes, bluish pink. Pods linear.

Fl. & Fr. : April - Aug.

Distrib. : Kameng; 1500-2000 m, on sandy beds near water.

Cardamine macrophylla var. *lobata* Hook. f. & Anders. in Hook. f., Fl. Brit. India 1:139. 1872.

Leaflets ovate-lanceolate, coarsely lobed. Flowers white. Pods pale yellow or whitish.

Fl. & Fr. : March - July.

Distrib. : Subansiri; 1500-2500 m, in moist shady places, on sandy soil.

Cardamine scoriarum W.Smith in Notes Roy. Bot. Gard. Edinburgh 11:203. 1920; Hajra & Chowdhery in Sharma *et al.*, Fl. India 2:115. 1993. *C.smithiana* Biswas in J. Bot. 46:22. 1938.

Succulent herbs up to 50 cm high. Leaves compound. Flowers in racemes, pink. Pods linear.

Fl. & Fr.: March - June.

Distrib.: Kameng; 1300-2000 m, along forest edges in damp situations.

Cardamine scutata Thunb. subsp. *flexuosa* (Withering) Hara in J. Fasc. Sci. Univ. Tokyo Bot. 6:59. 1952. *C.flexuosa* Withering, Bot. Arr. Brit. Pl. ed. 3,3:578. 1796. *C.hirsuta* var. *sylvatica* auct. non Link.:Hook. f. & Anders. in Hook. f., Fl. Brit. India 1:138. 1872, *p.p.*

Erect herbs up to 30 cm high, flexuose, branched below. Leaves compound. Flowers in racemes, white. Pods ca 2 cm long, linear.

Fl. & Fr.: Sept. - Jan.

Distrib.: Siang, Subansiri; 1200-2000 m, along nallhas in open places.

Draha gracillima Hook. f. & Thomson in J. Linn. Soc. Bot. 5:153. 1861; Hook. f. & Anders. in Hook. f., Fl. Brit. India 1:144. 1872; Basak in Sharma *et al.*, Fl. India 2:159. 1993. Fig. 31.

Herbs up to 35 cm high. Radical leaves spatulate. Scapes filiform, numerous. Flowers in long racemes, bright yellow. Pods compressed, tapering at both ends.

Fl. & Fr.: May - Aug.

Distrib.: Kameng; 3000-4000 m, on moist soil slopes.

Eruca sativa Miller, Gard. Dict. ed. 8, no. 1. 1768; Hook. f. & Anders. in Hook. f., Fl. Brit. India 1:158. 1872. Hajra *et al.* in Sharma *et al.*, Fl. India 2:143. 1993. *E.vesicaria* (L.) Cav. var. *sativa* (Miller) Thell. in Hegi, Ill. Fl. Mittleur 4(1):201-1918.

Herbs up to 35 cm high. Leaves obovate. Flowers large, pale yellow or white. Pods 2.5-3 cm long, erect, appressed to stem.

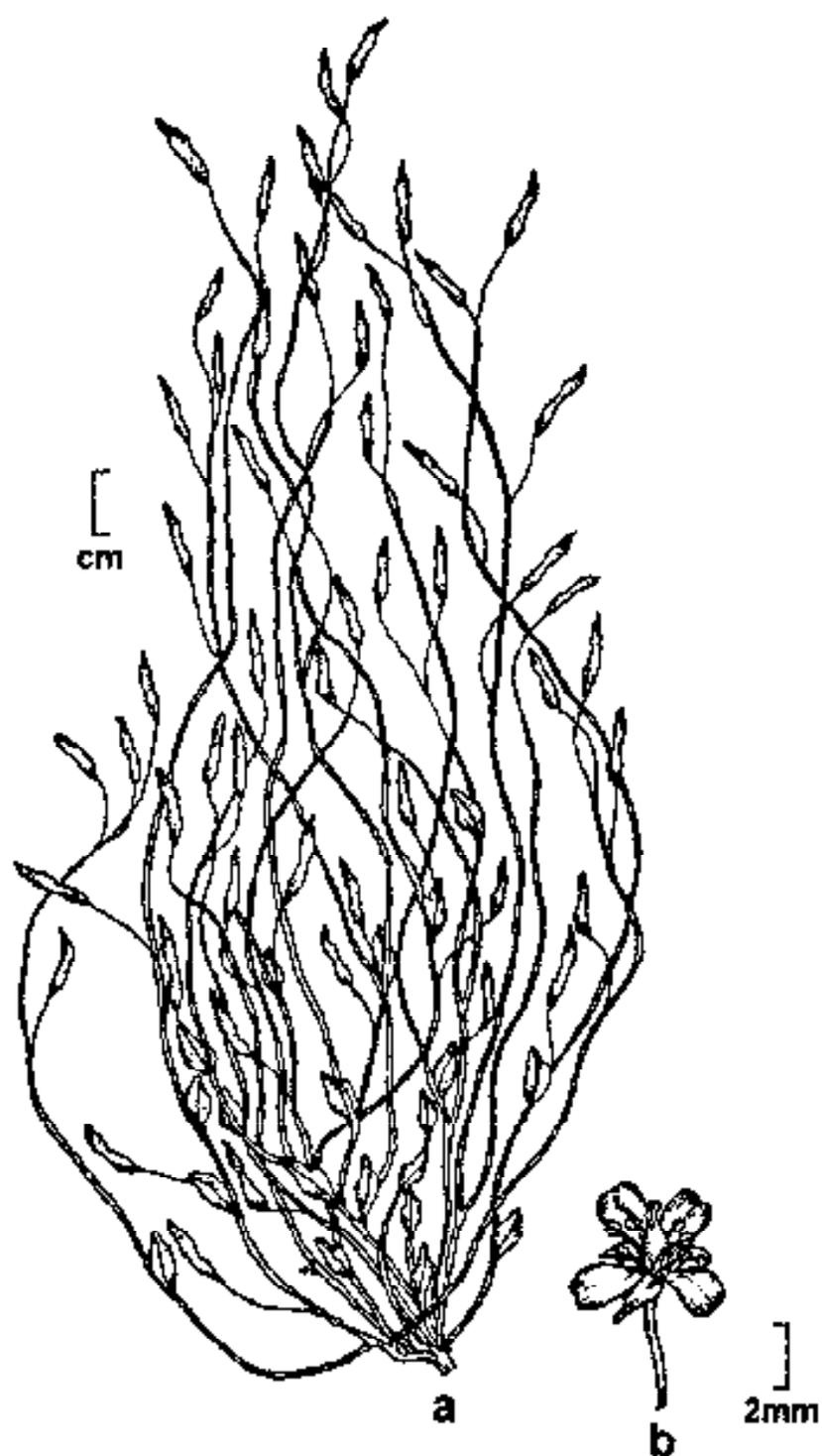


Fig. 31. *Draba gracillima* Hook.f. & Thomson : a. Habit; b. Flower.

Fl. & Fr.: April - July.

Distrib.: Kameng; 1200-2000 m, in damp areas.

Guillenia axillare (Hook. f. & Thomson) Bennet in J. Econ. Tax. Bot. 4:593. 1983; Hajra *et al.* in Sharma *et al.*, Fl. India 2:237. 1993. *Sisymbrium axillare* Hook. f. & Thomson in J. Linn. Soc. Bot. 5:102. 1861; Hook. f. & Anders. in Hook. f., Fl. India 1:149. 1872.

Annual herbs up to 15 cm high. Leaves radical, spatulate. Flowers axillary, solitary, large, white. Pods 8-10 mm long, straight or slightly curved.

Fl. & Fr.: April - July.

Distrib.: Kameng; 2500-3000 m, along roadsides and forest edges.

Lepidium virginicum L., Sp. Pl. 645. 1753; Naithani & Bennet in Ind. For. 4(2):1981; Bhaumik in Sharma *et al.*, Fl. India 2:207. 1993.

Erect herbs up to 40 cm high, often branched above. Basal leaves oblanceolate, pinnatifid. Flowers in many flowered racemes, white. Fruits ovate or suborbicular.

Fl. & Fr.: Oct. - Jan.

Distrib.: Kameng; 1000-1500 m, in open grassy fields, along roadsides.

Use: Seeds furnish tasty seasoning for soup and salad and can be mixed with vinegar and salt for meat dressing. The spring shoots can be eaten raw, sprinkled in salad as a substitute of water cress.

Pegaeophyton scapiflorum (Hook. f. & Thomson) Marq. & Shaw in J. Linn. Soc. Bot. 48:229. 1929; Hajra & Chowdhery in Sharma *et al.*, Fl. India 2:126. 1993. *Cochlearia scapiflora* Hook. f. & Thomson in J. Linn. Soc. Bot. 5:154. 1861; Hook. f. & Anders. in Hook. f., Fl. Brit. India 1:145. 1872.

Stemless, fleshy herbs. Rootstocks very stout. Leaves linear-lanceolate or spatulate. Flowers solitary on scape, white with slight bluish streaks at the mouth of corolla. Pods-obliquely elliptic-oblong, 4-8 mm long.

Fl. & Fr.: May - Sept.

Distrib.: Kameng, Tawang; 3000-4000 m, on moist soil slopes.

Raphanus sativus L., Sp. Pl. 669. 1753; Hook. f. & Anders. in Hook. f., Fl. Brit. India 1:166. 1872; Hajra *et al.* in Sharma *et al.*, Fl. India 2:145. 1993.

Herbs with fleshy tuberous roots. Flowers in racemes, white but cultivated stalk with bluish pink flowers. Pods terete, broader with acuminate tip.

Fl. & Fr.: April - June.

Distrib.: Kameng, Tawang; 2000-3000 m, on hill slopes. Mostly cultivated.

Rorippa indica (L.) Hiern in Cat. Afr. Pl. Welw. 1:26. add. et corr. 1896 et 2:481. errata 1899; Hajra & Chowdhery in Sharma *et al.*, Fl. India 2:129. 1993. *Sisymbrium indicum* L., Mant. Pl. 1:93. 1767, *Nasturtium indicum* (L.) DC., Syst. Nat. 2:199. 1821; Hook. f. & Anders. in Hook. f., Fl. Brit. India 1:134. 1872. Fig. 32.

Herbs up to 35 cm high. Radical leaves deeply pinnatifid. Flowers in racemes, yellow. Pods cylindric, 1.2-1.8 cm long.

Fl. & Fr.: May - July.

Distrib.: Kameng, Subansiri; 1600-3000 m, on moist shaded forest floor.

Thlaspi arvense L., Sp. Pl. 646. 1753; Hook. f. & Anders. in Hook. f., Fl. Brit., India 1:162. 1872; Bhaumik in Sharma *et al.*, Fl. India 2:211. 1993.

Herbs up to 40 cm high. Leaves obovate-oblong. Flowers in racemes, white. Pods 1-2 cm long, much flattened.

Fl. & Fr.: May - Aug.

Distrib.: Kameng, Tawang; 2000-4000 m, in open moist places along roadsides.

Thlaspi cochlearioides Hook. f. & Thomson in J. Linn. Soc. Bot. 5:177. 1861; Hook. f. & Anders. in Hook. f., Fl. Brit. India 1:162. 1872; Bhaumik in Sharma *et al.*, Fl. India 2:212. 1993.

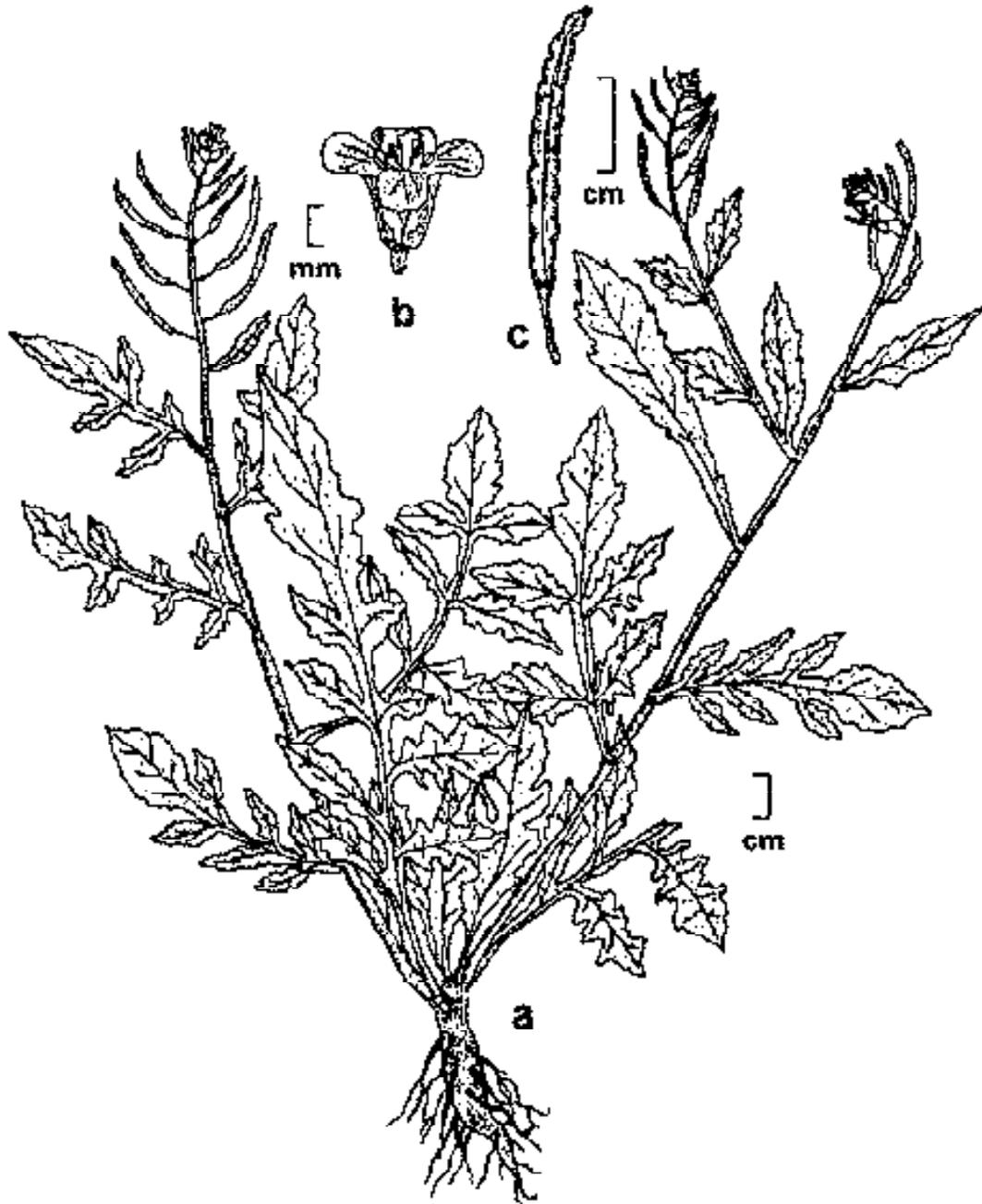


Fig. 32. *Rorippa indica* (L.) Hiern : a. Habit; b. Flower; c. Fruit.

Decumbent herbs up to 30 cm high; rootstocks slender. Radical leaves orbicular-ovate. Flowers in corymbs, whitish-violet. Pods ca 1 cm long, emarginate.

Fl. & Fr.: May - July.

Distrib.: Tawang; 3000-4000 m, in open places along roads and forests.

Thlaspi montanum L., Sp. Pl. 647. 1753; Bhaumik in Sharma *et al.*, Fl. India 2:213. 1993. *T. cochleariforme* auct. non DC.: Singh & Kachroo, Fl. Srinagar 169. 1976. *T. alpestre* auct. non L.: Hook. f. & Anders. in Hook. f., Fl. Brit. India 1:162. 1872.

Perennial herbs up to 40 cm high. Radical leaves orbicular. Cauline leaves oblong. Flowers in racemes, white, large. Pods oblong, narrowed at base, ca 1 cm long.

Fl. & Fr.: April - July.

Distrib.: Lohit; 1500-2000 m, along forest edges and open fields.

CAPPARACEAE

Capparis acutifolia Sweet subsp. *sabiaefolia* (Hook. f. & Thomson) Jacobs in Blumea 12:432. 1965; Raghavan in Sharma *et al.*, Fl. India 2:256. 1993. *C. sabiaefolia* Hook. f. & Thomson in Hook. f., Brit. India 1:179. 1872.

Local name: Keta-har (Asm.); Dieng-sning-sning (Kh.).

Shrubs up to 3 m tall. Leaves oblong-lanceolate. Flowers in racemes or solitary, whitish. Fruits pisiform, glabrous.

Fl. & Fr.: May - Nov.

Distrib.: Changlang, Kameng, Subansiri; 500-1300 m, in dense forests.

Capparis acutifolia Sweet subsp. *viminea* Jacobs in Blumea 12:429. 1965; Raghavan in Sharma *et al.*, Fl. India 2:257. 1993. *C. viminea* auct. non Oliver 1869 :Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:179. 1872.

Erect shrubs, sometimes stragglers. Leaves elliptic or oblong. Flowers in racemes, creamy white with greenish striations. Fruits globose, purple.

Fl. & Fr.: May - Aug.

Distrib.: Kameng; 1500-2000 m, in forests along banks of streams.

Capparis assamica Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:177. 1872; Raghavan in Sharma *et al.*, Fl. India 2:258. 1993.

Local name: Thanim-mum-kra (Daff.).

Shrubs, often subscaudent, 2-3 m high. Leaves oblong-lanceolate. Flowers in terminal racemes, white. Fruits globose, hard, reddish brown.

Fl. & Fr.: Aug. - Sept.

Distrib.: Changlang, Lohit; 500-1200 m, in tropical primary forests.

Capparis multiflora Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:178. 1872; Raghavan in Sharma *et al.*, Fl. India 2:279. 1993. **Fig. 33.**

Local name: Thanim-nium-kre (Aka); Thanim-nium (Mishmi).

Woody climbers or shrubs. Leaves broadly lanceolate. Flowers in axillary or terminal racemes, pale yellow to whitish. Fruits pisiform.

Fl. & Fr.: March - Nov.

Distrib.: Changlang, Kameng, Lohit, Siang, Subansiri, Tirap; 500-1400 m, in dense tropical forests.

Capparis olacifolia Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:178. 1872; Raghavan in Sharma *et al.*, Fl. India 2:283. 1993.

Local name: Kota-har (Asm.); Ingau-rikang, Ingau-waikom (Mik.).

Shrubs up to 2 m tall. Leaves ovate-lanceolate. Flowers axillary in series, white. Fruits globose with sharp beak.

Fl. & Fr.: April - June.

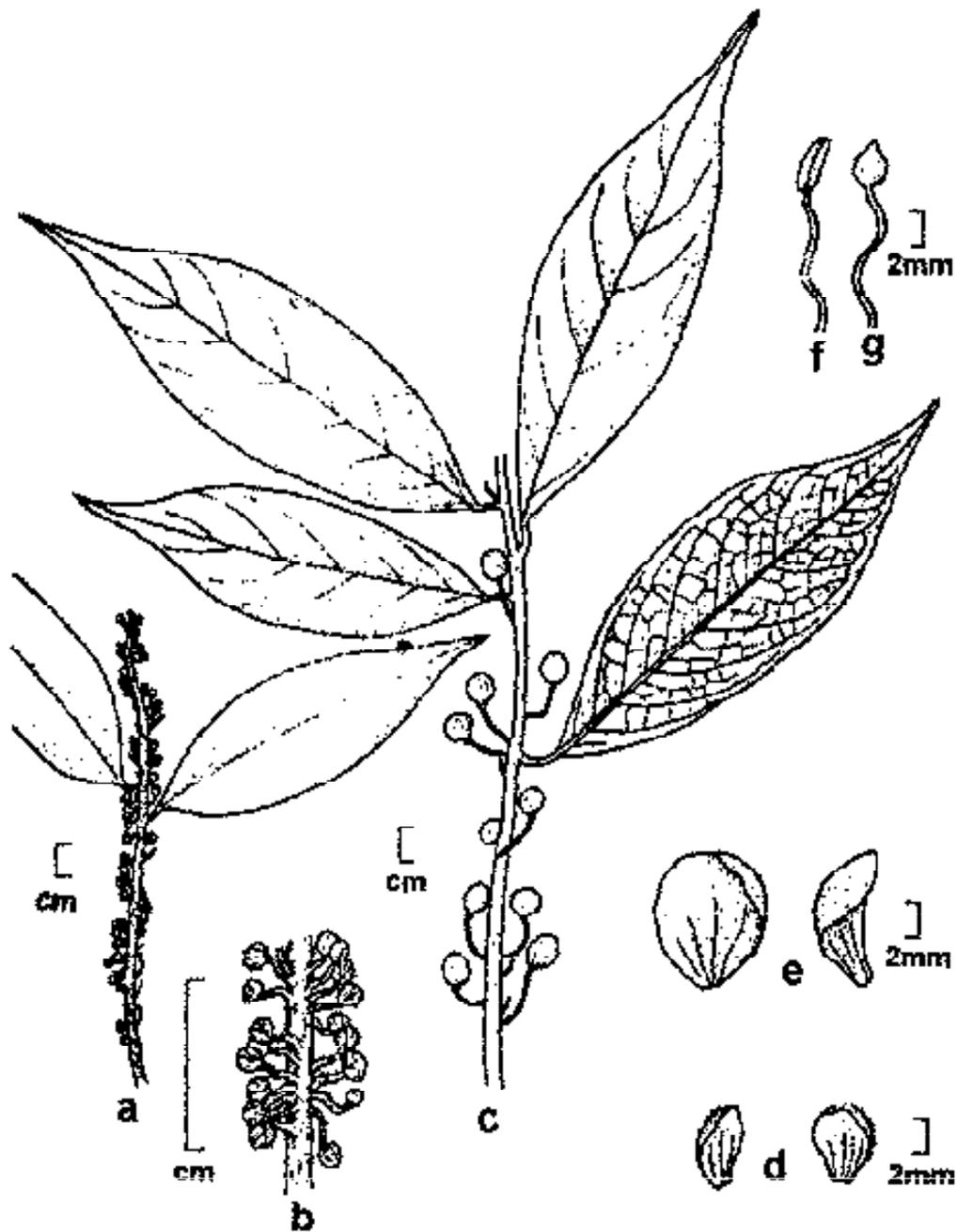


Fig. 33. *Capparis multiflora* Hook.f. & Thomson : a. Flowering twig; b. Flower buds in extra-axillary serial rows; c. Fruiting twig; d. Inner and outer sepals; e. Inner and outer petals; f. Stamen; g. Pistil.

Distrib.: Kameng; 600-1500 m, in dense moist forests.

Capparis roxburghii DC., Prodr. 1:247. 1824; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:175. 1872; Raghavan in Sharma *et al.*, Fl. India 2:288. 1993. Fig. 34.

Large, woody, thorny climbers. Leaves obovate-oblong. Flowers axillary, solitary, white. Fruits globose.

Fl. & Fr.: April - June.

Distrib.: Kameng, Lohit, Siang, Subansiri, Tirap; 500-1000 m, in primary tropical forests.

Capparis tenera Dalz. in Hook., J. Bot. Kew Gard. Misc. 2:41. 1850; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:179. 1872; Raghavan in Sharma *et al.*, Fl. India 2:297. 1993.

Sprawling shrubs. Leaves obovate. Flowers axillary, in rows, white. Fruits pisiform, few seeded.

Fl. & Fr.: Feb. - April.

Distrib.: Siang; 200-800 m, in dense forests on humus rich soil.

Cleome gynandra L., Sp. Pl. 671. 1753; Raghavan in Sharma *et al.*, Fl. India 2:309. 1993. *Gynandropsis pentaphylla* (L.) DC., Prodr. 1:238. 1824; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:171. 1872. Fig. 35

Erect herbs, strongly foetid, up to 1 m high. Leaves 3-5 foliolate, leaflets oblanceolate. Flowers in corymbose racemes, whitish. Fruits cylindrical, glandular pubescent.

Fl. & Fr.: Throughout the year.

Distrib.: Subansiri.

Crateva magna (Lour.) DC., Prodr. 1:243. 1824; Raghavan in Sharma *et al.*, Fl. India 2:324. 1993. *Capparis magna* Lour., Fl. Cochinch. 1:331. 1790. *Crateva nurvala* Buch.-Ham. in Trans. Linn. Soc. 15:121. 1827. *C. religiosa* Forster var. *nurvala* (Buch.-Ham.) Hook. f. & Thomson in Hook. f., Fl. Brit.

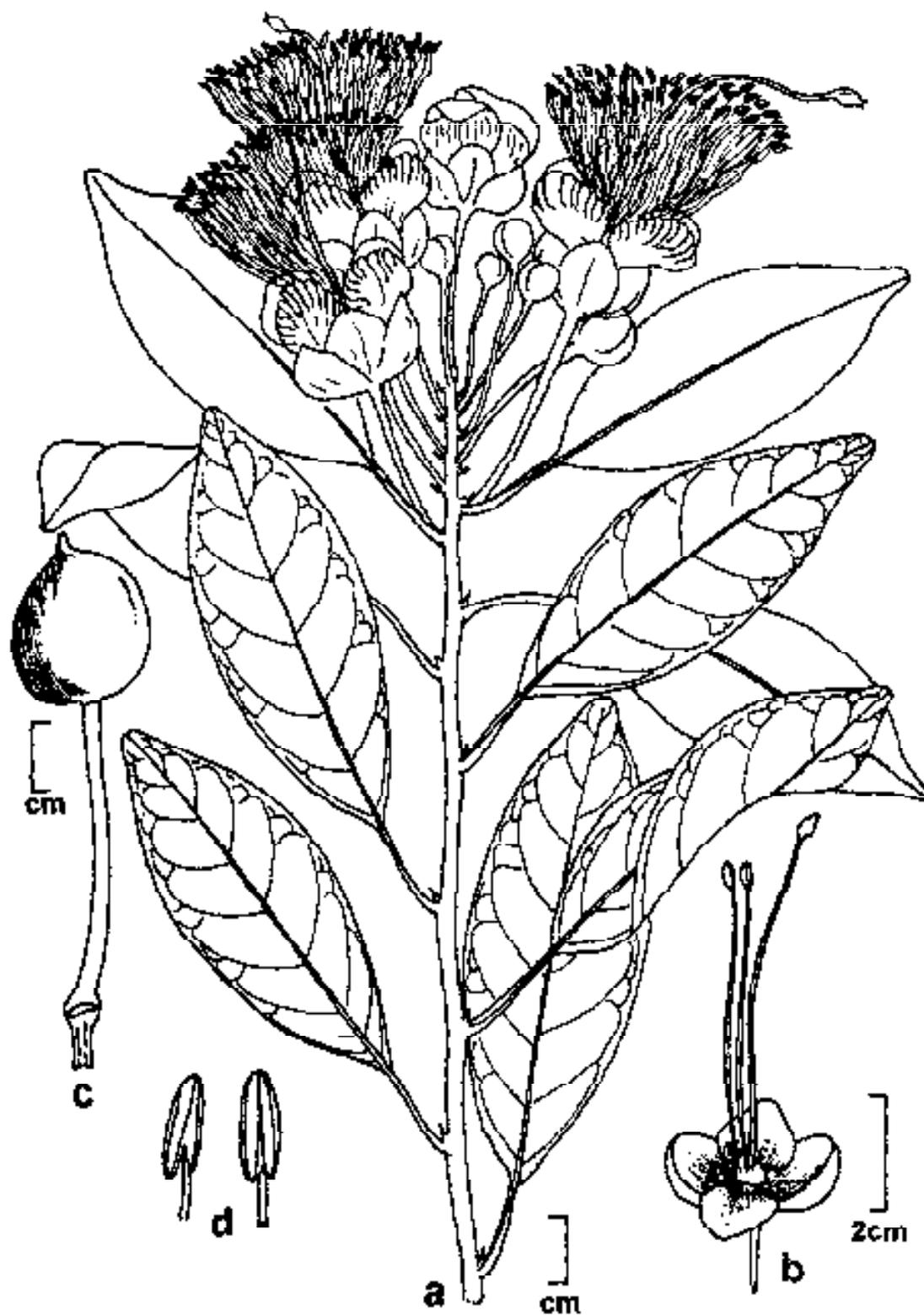


Fig. 34. *Capparis roxburghii* DC. : a. Flowering twig; b. Flower (petals removed); c. Stamens; d. Fruit.

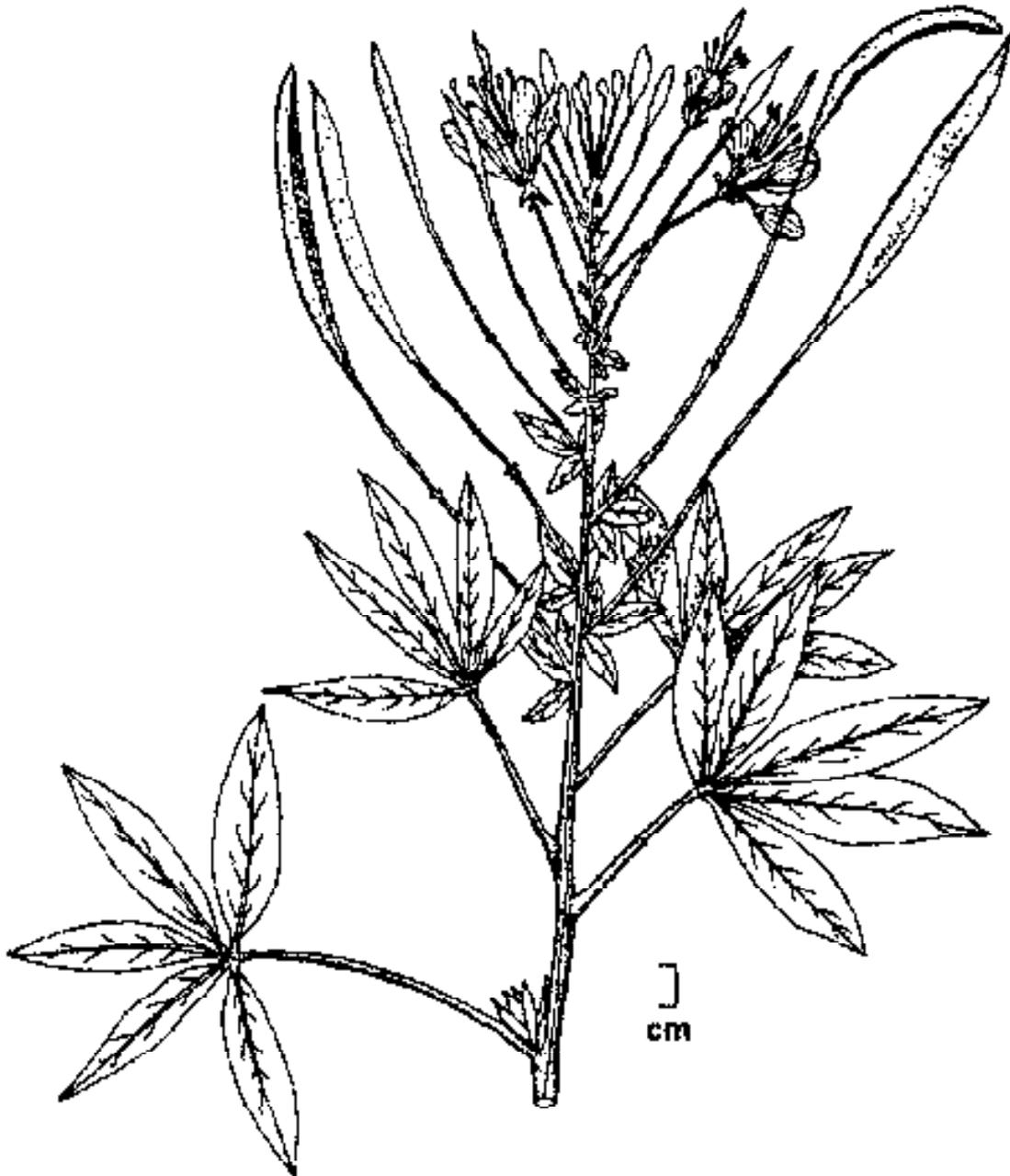


Fig. 35. *Cleome gynandra* L. : Twig with flowers and capsules.

India 1:172, 1872. *C. lophosperma* Kurz in J. Bot. 12:195, t. 147, f. 4-6, 1872; Kanjilal *et al.*, Fl. Assam 1:74, 1934.

Local name: Barun (Asm.).

Deciduous trees with spreading branches. Leaves 3-foliolate. Flowers in terminal corymbs, purplish. Berries fleshy, ashy brown.

Fl. & Fr.: Sept. - Nov.

Distrib.: Kameng, Siang; 300-600 m, in dense forests.

Stixis suaveolens Pierre in Bull. Soc. Linn. Paris 1:654, 1887; Raghavan in Sharma *et al.*, Fl. India 2:333, 1993. *Roydsia suaveolens* Roxb., Pl. Corom. 3:87, t. 289, 1819; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:180, 1872.

Local name: Madhabi malati, Madhu malati (Asm.).

Large woody climbers. Leaves oblong-lanceolate. Flowers in terminal racemes, white or yellowish white, fragrant. Drupeas ellipsoid-obovoid, greenish brown with white lenticels.

Fl. & Fr.: Aug.- Oct.

Distrib.: Changlang, Kameng, Lohit, Siang, Subansiri, Tirap; 300-800 m, in secondary and primary forests.

Use: Fruits are sweet, edible.

Insufficiently known material

Capparis pachyphylla Jacobs in Blumea 12:476, 1965. The type was collected by Kingdon Ward (1935) from Teju and afterwards it has not been collected.

VIOLACEAE

Rinorea bengalensis (Wallich) O. Ktze., Rev. Gen. Pl. 1:42, 1891; Banerjee & Pramanik in Sharma *et al.*, Fl. India 2:348, 1993. *Alsodeia bengal-*

lensis Wallich, Trans. Med. Phys. Soc. Calcutta 7:224. 1835; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:186. 1872. *A. zeylanica* Thwaites, Enum. Pl. Zeyl. 21. 1858; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:187. 1872. *A. griffithii* Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:187. 1872. *A. wallichiana* Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:187. 1872.

Shrubs or small trees. Leaves elliptic-lanceolate or elliptic-oblong. Flowers in axillary fascicles, dull white or yellowish. Capsules subglobose.

Fl. & Fr.: Feb. - Dec.

Distrib.: Kameng; 1500-1800 m, in open moist places, along forest edges.

Viola betonicifolia J. Smith in Rees, Cyclop. 37:Viola no. 7. 1819; Banerjee & Pramanik in Sharma *et al.*, Fl. India 2:355. 1993.

Plants without subterranean stems or stolons. Leaves ovate-cordate. Flowers lilac. Cauline appendages up to 2 mm, rounded. Capsules ellipsoid.

Fl. & Fr.: May - Aug.

Distrib.: Kameng, Siang, Subansiri, Tirap; 700-1500 m, in open sandy soils on rocky slopes.

Viola biflora L., Sp. Pl. 2:936. 1753; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:182. 1872, *p.p.* (*excl. Syn. V. wallichiana* Ging. & *V. reniformis* Wallich); Banerjee & Pramanik in Sharma *et al.*, Fl. India 2:357. 1993.

Decumbent herbs up to 30 cm high. Leaves broadly ovate-cordate. Flowers ca 1.5 cm across, spreading, pink or yellow. Capsules oblong, ca 1 cm long.

Fl. & Fr.: April - Aug.

Distrib.: Kameng; 1400-2000 m, along streams.

Viola canescens Wallich in Roxb., Fl. Ind. 2:450. 1824; Banerjee & Pramanik in Sharma *et al.*, Fl. India 2:359. 1993. *V. serpens* var. *canescens* (Wallich) Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:184. 1872.

Stems with runners. Leaves ovate-cordate to subreniform. Flowers ca 1.5 cm across, pale violet. Capsules subglobose hairy.

Fl. & Fr.: March - Oct.

Distrib.: Kameng, Siang, Subansiri; 1500-2500 m, in open moist places.

Viola diffusa Ging. in DC., Prodr. 1:298. 1824; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:183. 1872; Banerjee & Pramanik in Sharma *et al.*, Fl. India 2:361. 1993.

Stoloniferous herbs with densely rosette leaves. Rhizomes fimbriose. Leaves decurrent, ovate. Flowers ca 8 mm across, pale purple. Capsules ellipsoid.

Fl. & Fr.: May - July.

Distrib.: Changlang, Lohit, Siang, Subansiri, Tirap; 1600-3000 m, in moist situations, shaded or open places.

Viola glaucescens Oudem. in Miq., Ann. Mus. Bot. Lugd.-Bot. 3:74. 1867; Banerjee & Pramanik in Sharma *et al.*, Fl. India 2:362. 1993. *V. distans* var. *fimbriata* Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:184. 1872.

Herbs with articulated rootstocks. Stolons up to 20 cm long. Leaves broadly ovate-cordate. Flowers 1-1.5 cm across, distinctly white or lilac. Capsules oblong, apiculate.

Fl. & Fr.: April - Sept.

Distrib.: Kameng, Siang; 3000-3500 m, on the side of foot track and in open garssy places.

Viola hamiltoniana D. Don, Prodr. Fl. Nep. 206: 1825; Banerjee & Pramanik in Sharma *et al.*, Fl. India 2:362. 1993. *V. distans* Wallich in Trans. Med. Phys. Soc. Calcutta 7:227. 1835; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:183. 1872.

Trailing herbs up to 30 cm long. Leaves ovate to reniform-cordate. Flowers 1-1.5 cm across, white. Capsules oblong.

Fl. & Fr.: March - Aug.

Distrib.: Changlang, Kameng, Siang, Tirap; 500-1800 m, on moist soil slopes.

Viola hediniana W. Becker in Beih. Bot. Centralbl. Abt. 2,34:262. 1916; Banerjee & Pramanik in Sharma *et al.*, Fl. India 2:364. 1993.

Rhizomatous herbs up to 25 cm tall. Leaves ovate-lanceolate, cordate. Flowers ca 1 cm across, yellow.

Fl.: May.

Distrib.: Lohit; 1500-2000 m, in open moist places.

Viola hookeri Thomson in Hook. f., Fl. Brit. India 1:183. 1872; Banerjee & Pramanik in Sharma *et al.*, Fl. India 2:364. 1993.

Herbs with perennial, warted rootstocks and short stolons. Leaves rounded. Flowers ca 1 cm across, blue violet or white with purple veins. Capsules ca 5 mm long.

Fl. & Fr.: April - Aug.

Distrib.: Kameng; 1800-2500 m, in open moist places on leaf-moulds, stream sides.

Viola inconspicua Blume, Cat. Gew. Buitenz. 57. 1823; Banerjee & Pramanik in Sharma *et al.*, Fl. India 2:365. 1993. *V. apetala auct. non* Schmidt 1791 :Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:185. 1872.

Herbs with densely articulated rootstocks. Leaves in rosette, broadly ovate. Flowers solitary, pale purple. Capsules ellipsoid.

Fl. & Fr.: Jan. - June.

Distrib.: Kameng, Lohit, Siang, Subansiri Tirap; 1500-2200 m, in open moist grassy places.

Viola moupinensis Franchet in Bull. Soc. Bot. France 33:412. 1886; Banerjee & Pramanik in Sharma *et al.*, Fl. India 2:368. 1993.

Herbs with thick, articulated rhizomes. Stolons floriferous. Leaves suborbicular. Flowers ca 1 cm across, white or pale violet. Capsules ovate-oblong.

Fl. & Fr.: April - Aug.

Distrib.: Tirap; 1500-1800 m, in moist places.

Viola pilosa Blume, Cat Gew. Buitenz. 57. 1823; Banerjee & Pramanik in Sharma *et al.*, Fl. India 2:371. 1993. *V. serpens* Wall. ex. Ging in DC., Prodr. 1:296. 1824; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:184. 1872.

Prostrate herbs with leafy stolons. Leaves deltoid. Flowers white or pale violet. Capsules ellipsoid.

Fl. & Fr.: March - May.

Distrib.: Changlang; 1300-1500 m, in open forests along roadsides, in moist situations.

Viola pogonantha W. W. Smith in Notes Roy. Bot. Gard. Edinburgh 12:228. 1920; Banerjee & Pramanik in Sharma *et al.*, Fl. India 2:372. 1993.

Herbs up to 15 cm long with articulated rootstocks. Leaves ovate-cordate. Flowers ca 1.5 cm across, white with purple striations. Capsules globose, villous.

Fl. & Fr.: April - May.

Distrib.: Kameng, Lohit, Siang; 1500-2000 m, in open moist places near forests.

Viola rupestris F. W. Schmidt in Neue. Abh. Bohm. Ges. 1:60. 1791; Banerjee & Pramanik in Sharma *et al.*, Fl. India 2:373. 1993. *V. arenaria* DC., Prodr. 1:298. 1824.

Herbs, grey papillose hairy, caulescent. Leaves suborbicular. Flowers ca 1.5 cm across, violet or white. Capsules clavate.

Fl. & Fr.: June - Aug.

Distrib.: Changlang, Tirap; 800-1500 m, in open moist forest areas.

Viola sikkimensis W. Becker in Beih. Bot. Centralbl. Abt. 2:260. 1916; Banerjee & Pramanik in Sharma *et al.*, Fl. India 2:374. 1993. **Fig. 36.**

Perennials with woody rootstocks. Leaves ovate-cordate. Flowers solitary, creamy white with purple tinge. Capsules elliptic-oblong.

Fl. & Fr.: April - Nov.

Distrib.: Changlang, Kameng, Subabsiri; 1200-1600 m, in grasslands, roadsides and forest edges.

Viola thomsonii Oudem. in Miq., Ann. Mus. Bot. Lugd.-Bat. 3:74. 1867; Banerjee & Pramanik in Sharma *et al.*, Fl. India 2:377. 1993.

Stoloniferous herbs up to 25 cm tall with articulated rootstocks. Leaves ovate-cordate. Flowers ca 1.5 cm long, pale violet. Capsules oblong, apiculate.

Fl. & Fr.: March - Sept:

Distrib.: Kameng; 1800-3000 m, in open places along roadsides.

Viola yunnanensis W. Becker & Boiss. in Bull. Herb. Boiss. 8:740. 1908; Banerjee & Pramanik in Sharma *et al.*, Fl. India 2:379. 1993.

Annual herbs up to 20 cm long with almost articulated rootstocks. Leaves ovate-cordate. Flowers white.

Fl. & Fr.: April - May.

Distrib.: Kameng, Tirap; 1800-3500 m, in moist places.

FLACOURTIACEAE

Bennettiodendron leprosipes (Clos) Merr. in J. Arn. Arb. 8:11. 1927; Mitra in Sharma *et al.*, Fl. India 2:388. 1993. *Xylosma leprosipes* Clos in Ann. Sci. Nat. 4,8:230. 1857. *Bennettia longipes* Oliver in Hook., Ic. Pl. 16:t. 1596. 1887.

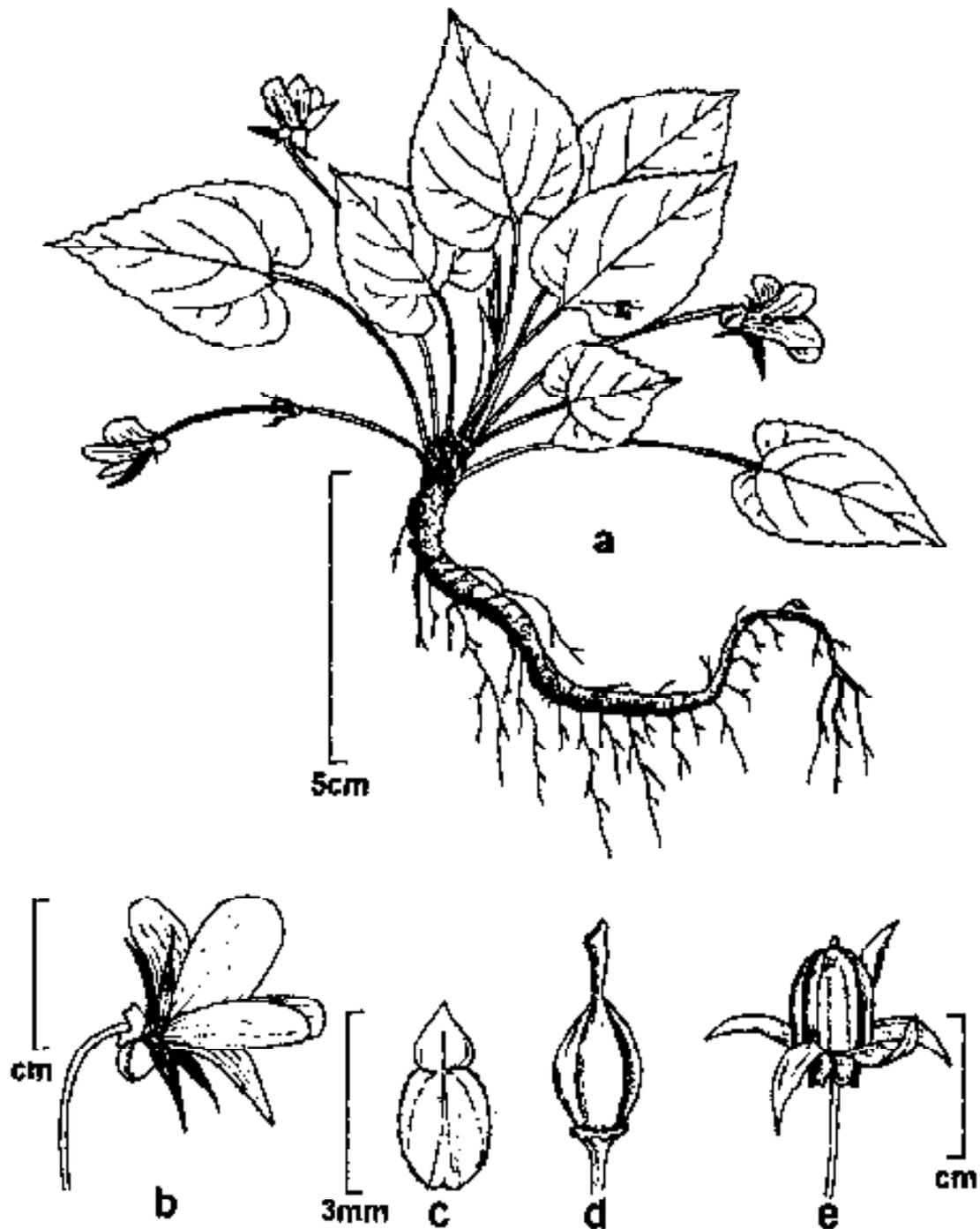


Fig. 36. *Viola sikkimensis* W. Becker : a. Habit; b. Flower; c. Stamen; d. Ovary; e. Fruit.

Trees, 10-15 m high. Leaves oblanceolate or oblong-elliptic, remotely serrate. Flowers in terminal, many flowered panicles, reddish brown. Berries subglobose, reddish.

Fl. & Fr.: March - July.

Distrib.: Siang; 400-600 m, in forests.

Casearia glomerata Roxb. ex DC., Prodr. 2:49. 1825; Clarke in Hook. f., Fl. Brit. India 2:591. 1879; Mitra in Sharma *et al.*, Fl. India 2:393. 1993.

Local name: Tel-bhurki (Asm.); Hando-akrang (Mik.).

Deciduous trees up to 20 m high with spreading crown. Leaves broadly elliptic or lanceolate. Flowers in axillary fascicles, yellowish. Fruits ellipsoid, pulpy, yellow.

Fl. & Fr.: March - July.

Distrib.: Kameng; 800-1500 m, in dense tropical to subtropical forests.

Casearia kurzii Clarke in Hook. f., Fl. Brit. India 2:594. 1879; Mitra in Sharma *et al.*, Fl. India 2:396. 1993.

Trees up to 25 m high. Leaves oblong-lanceolate. Flowers in axillary fascicles, minute, yellowish. Capsules ellipsoid, black when ripe.

Fl. & Fr.: March - Feb.

Distrib.: Kameng, Tirap; 600-1200 m, in dense tropical forests.

Casearia vareca Roxb., Fl. Ind. 2:418. 1832; Clarke in Hook. f., Fl. Brit. India 2:593. 1879; Mitra in Sharma *et al.*, Fl. India 2:398. 1993.

Local name: Abbuk-asing (Adi); Bhagini, Chagladoi, Sikraguti (Asm.); Jowmakron, Akron-arong (Mik.); Saben-bukben asing (Miri); Nelo changne (Nishi).

Medium sized trees or shrubs up to 10 m high. Leaves oblong-elliptic. Flowers in axillary fascicles, minute, greenish yellow. Capsules up to 1 cm long, ellipsoid, orange yellow.

Fl. & Fr.: Aug. - Dec.

Distrib.: Changlang, Kameng, Lohit, Siang, Subansiri, Tirap; 500-800 m, at the opening of forests and in old forest clearings.

Casearia zeylanica (Gaertn.) Thwaites, Enum. Pl. Zeyl. 19. 1858; Mitra in Sharma *et al.*, Fl. India 2:399. 1993. *Vareca zeylanica* Gaertn., Fruct. 1:290. 1788. *C. esculenta* Roxb., Fl. Ind. 2:422. 1832; Clarke in Hook. f., Fl. Brit. India 2:592. 1879, *p.p.*

Local name: Kron-suri-arong (Mik.).

Trees, 6-8 m high. Leaves elliptic-lanceolate. Flowers in axillary clusters, yellowish. Capsules ellipsoid; aril red.

Fl. & Fr.: April - Aug.

Distrib.: Arunachal Pradesh; up to 1800 m, in forests.

Flacourtia jangomas (Lour.) Raeusch., Nom. Bot. ed. 3:290. 1797; Mitra in Sharma *et al.*, Fl. India 2:403. 1993. *Stigmarota jangomas* Lour., Fl. Cochinch. 2:634. 1790. *Flacourtia cataphracta* Roxb. ex Willd., Sp. Pl. 4:830. 1806; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:193. 1872. Fig. 37.

Local name: Goch-ponial, Ponial. (Asm.).

Trees up to 10 m high. Stems spiny, young shoots pubescent. Leaves ovate or ovate-lanceolate. Flowers in axillary lax racemes, pale yellow. Fruits globose, dark purple when ripe.

Fl. & Fr.: March - Jan.

Distrib.: Kameng; 100-1000 m, in forests.

Gynocardia odorata R. Brown in Roxb., Pl. Corom. 3:95, t. 299. 1820; Hook. f. & Thomson, in Hook. f., Fl. Brit. India 1:195. 1872; Mitra in Sharma *et al.*, Fl. India 2:407. 1993.

Local name: Subetulpi (Adi); Umphu (Adi, Miri); Bonsha, Lemtem, Chalmugra (Asm.); Takuk-changne (Nishi).

Evergreen trees up to 10 m high with oval crown. Leaves oblong. Flowers in axillary fascicles on older stems, 5-8 mm across, yellow. Fruits depressed, globose with thick, hard, lenticelled rind, 8-15 cm diam; pulp sweet.

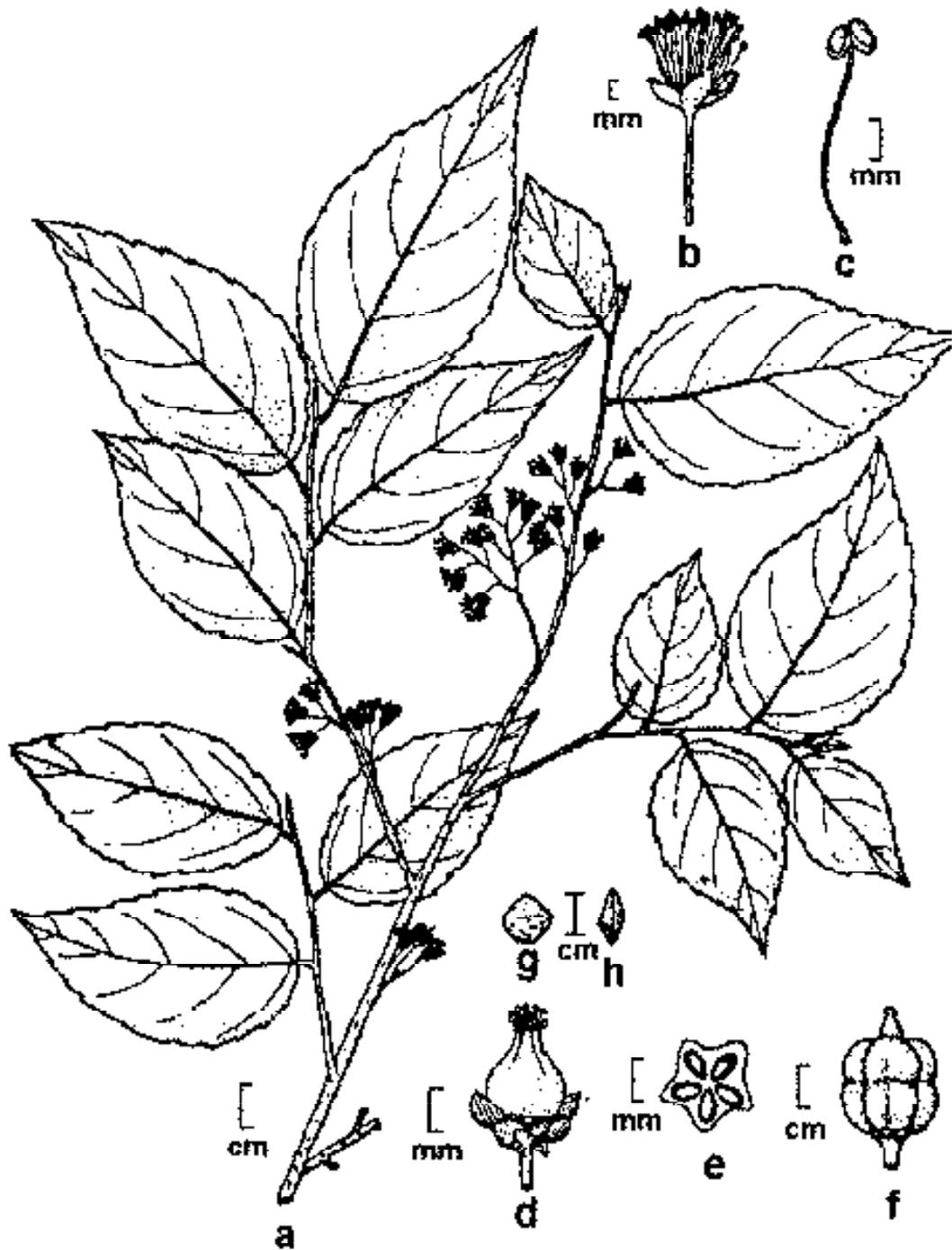


Fig. 37. *Flacourtia jangomas* (Lour.) Raeusch. : a. Branch with male flowers; b. Male flower; c. Stamen; d. Female flower; e. Ovary, t.s.; f. Fruit; g. & h. Seeds, two views.

Fl. & Fr.: March - Dec.

Distrib.: Changlang, Lohit, Subansiri, Tirap; 100-800 m, in dense tropical rain forests.

Hydnocarpus kurzii (King) Warb. in Engler & Prantl, *Pflanzenfam.* 3,6a:21. 1839; Kanjilal *et al.*, *Fl. Assam* 1(2):87. 1934; Mitra in Sharma *et al.*, *Fl. India* 2:421. 1993. *Taraktogenos kurzii* King in *J. Asiat. Soc. Bengal* 59(2):123. 1890.

Local name: Talo-asing (Adi); Lantem (Asm.); Siri-asing (Miri);

Trees up to 20 m high. Leaves oblong-lanceolate. Flowers in axillary cymes, white or pale yellow. Fruits globose, chocolate-brown, tomentose.

Fl. & Fr.: Sept. - Nov.

Distrib.: Changlang; 200-1000 m, in dense tropical forests.

Use: Seeds yield chaulmugra oil, used in leprosy and other skin diseases.

Xylosma controversum Clos in *Ann. Sci. Nat. Hist. ser.* 3,8:231. 1857; Hook. f. & Thomson in Hook. f., *Fl. Brit. India* 1:194. 1872; Mitra in Sharma *et al.*, *Fl. India* 2:434. 1993.

Small trees up to 10 m high. Leaves elliptic-ovate or obovate-lanceolate. Flowers in panicles, dull white. Berries globose, red.

Fl. & Fr.: Jan. - Dec.

Distrib.: Kameng; 100-1000 m, in primary forests along river sides

Xylosma longifolium Clos in *Ann. Sci. Nat. ser.* 4, 8:231. 1857; Hook. f. & Thomson in Hook. f., *Fl. Brit. India* 1:194. 1872; Mitra in Sharma *et al.*, *Fl. India* 2:436. 1993. Fig. 38.

Local name: Mota-koli. Rotahar (Asm.); Tang-enising, Ulitang-asing (Miri).

Trees up to 20 m high with laxly branched crown. Leaves elliptic-oblong. Flowers in axillary racemes, 5-7 mm across, pale yellow. Berries globose, red when ripe.



Fig. 38. *Xylosma longifolium* Clos : a. Flowering twig; b. flower.

Fl. & Fr.: March - Sept.

Distrib.: Subansiri; 300-600 m, in swampy areas of open forests.

PITTOSPORACEAE

Pittosporum napaulense (DC.) Rehder & Wilson in Sarg., Pl. Wilson. 3:326. 1916; Nayar & Giri in Sharma *et al.*, Fl. India 2:445. 1993. *Senecia napaulensis* DC., Prodr. 1:347. 1824. *P. floribundum* Royle, Ill. Bot. Himal. 1:77. 1834. *P. floribundum* Wight & Arn., Prodr. Fl. Pen. Ind. Or. 1:154. 1834; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:199. 1872.

Shrubs or tree up to 12 m high; crown spreading. Leaves oblong-lanceolate, smooth, glossy. Flowers in terminal corymbs, 7-9 mm long, yellow. Capsules globose, aril scarlet.

Fl. & Fr.: April - Dec.

Distrib.: Kameng; 1600-1900 m, in forests.

Pittosporum podocarpum Gagnepain, Notul Syst. 8:211. 1939; Nayar & Giri in Sharma *et al.*, Fl. India 2:446. 1993. *P. glabratum auct. non* Lindley 1846; Hook. f. & Thomson in Hook. f., Fl. Brit. India 1:198. 1872.

Shrubs or trees up to 8 m tall. Leaves oblong-lanceolate. Flowers 1.2-1.5 cm long, yellow. Capsules ellipsoid with smell of mango; aril orange red.

Fl. & Fr.: March - June.

Distrib.: Changlang, Tirap; 1000-1500 m, in forests.

POLYGALACEAE

Polygala arillata Buch. Ham. ex D. Don, Prodr. Fl. Nep. 199. 1825; Bennett in Hook. f., Fl. Brit. India 1:200. 1872, *p.p.*; Banerjee in Sharma *et al.*, Fl. India 2:457. 1993. var. *arillata*.

Scandent shrubs up to 3 m high, sometimes trees. Leaves ovate to ovate-lanceolate. Flowers in axillary or terminal drooping racemes, yellow. Capsules shortly winged, margin ciliate.

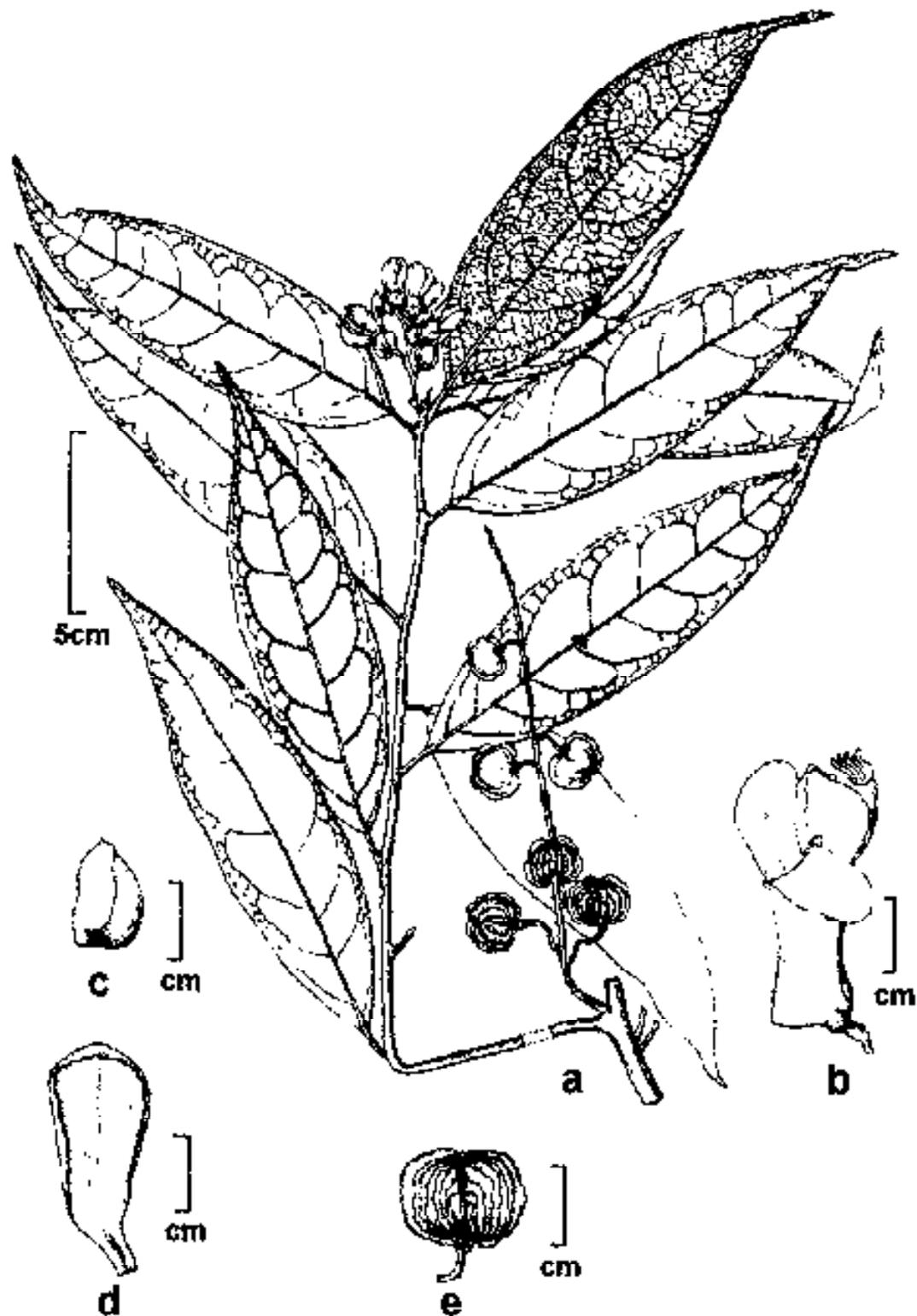


Fig. 39. *Polygala arillata* var. *laevicarpa* R.N.°Baoerjee & G.S. Giri :
a. Plant; b. Flower; c. Outer sepal; d. Inner sepal; e. Fruit.

Fl. & Fr.: Aug. - Nov.

Distrib.: Canglang, Dibang valley, Kameng, Lohit, Siang, Subansiri, Tirap; 400-2500 m, in forests on moist humus rich soil.

Polygala arillata var. *laevicarpa* Banerjee & Giri in *Candollea* 42(2):557. 1987; Banerjee in Sharma *et al.*, *Fl.India* 2:459. 1993. **Fig. 39.**

Leaves membranous, green or dull green on drying. Capsules without cilia along margin.

Fl. & Fr.: Oct. - Jan.

Distrib.: Subansiri; 400-600 m, in forests.

Polygala arillata var. *purpurescens* Clarke ex Mukerjee in *Bull. Bot. Soc. Bengal* 12:32. 1958; G.D. Pal & Giri in *J. Econ. Tax. Bot.* 14(1):225. 1990; Banerjee in Sharma *et al.*, *Fl.India* 2:459. 1993.

Main nerves much impressed above forming conspicuous channels, strongly raised beneath; reticulations prominent forming distinct areoles.

Fl. & Fr.: Sept. - Nov.

Distrib.: Subansiri; 1500-1800 m, in moist humid forests.

Polygala erioptera DC., *Prodr.* 1:326. 1824; Bennett in Hook. f., *Fl. Brit. India* 1:203. 1872; Banerjee in Sharma *et al.*, *Fl.India* 2:467. 1993.

Fig. 40.

Erect or decumbent annual herbs up to 55 cm high. Leaves sessile, oblanceolate to linear. Flowers in racemes, yellowish. Capsules oblong, obliquely winged.

Fl. & Fr.: July - Oct.

Distrib.: Lohit; 800-1600 m, in forests.

Polygala furcata Royle, *Ill. Bot. Himal.* 3:78, t. 19B(1-4). 1834; Banerjee in Sharma *et al.*, *Fl.India* 2:469. 1993. *P. triphylla* D. Don, *Prodr.* 200. 1825, non Burm. f. 1768. *P. triphylla* var. *glaucescens* (Royle) Bennett in Hook. f., *Fl. Brit. India* 1:201. 1872, *p.p.*

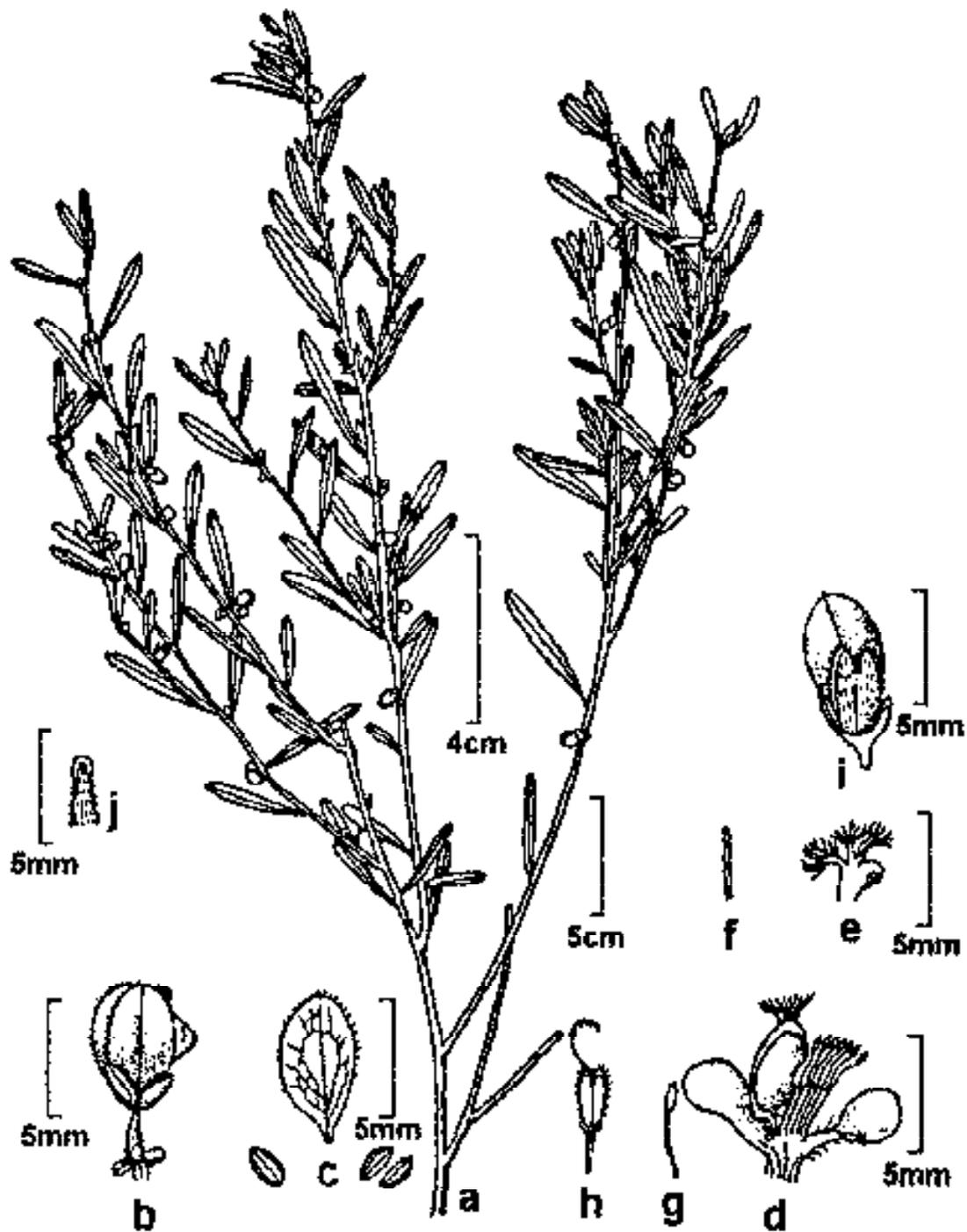


Fig. 40. *Polygala erioptera* DC. : a. Branch with flowers; b. Sepals; c. Petals; d. Corolla; e. Crest of keel petal; f. appendage of crest; g. filament and anther; h. Pistil; i. Capsule; j. Seed.

Erect herbs up to 25 cm high. Leaves crowded towards top, elliptic. Flowers in axillary or terminal racemes, yellow. Capsules suborbicular, truncate at apex.

Fl. & Fr.: March - Dec.

Distrib.: Subansiri; 1500-1800 m, in open places, grassy slopes.

Polygala globulifera Dunn in J. Linn. Soc. Bot. 35:486. 1903; Banerjee *et al.* in Bull. Bot Surv. India 26:6. 1985; Banerjee in Sharma *et al.*, Fl. India 2:470. 1993. var. *globulifera*.

Shrubs up to 2.5 m high. Leaves ovate-elliptic. Flowers in terminal long racemes, yellow; crests globuliform. Capsules broadly winged.

Fl. & Fr.: July. - Sept.

Distrib.: Tirap; 1000-1200 m, in forests.

Polygala globulifera var. *kachinensis* (Mukerjee) Banerjee in Bull. Bot. Surv. India 26:6. 1985 and in Sharma *et al.*, Fl. India 2:470. 1993. *P. arillata* forma *kachinensis* Mukerjee in Bull. Bot. Soc. Bengal 12:30. 1958.

Leaves elliptic-lanceolate with long acuminate apex. Racemes longer than leaves.

Fl. & Fr.: July - Oct.

Distrib.: Lohit, Tirap; 1000-1300 m, in forests.

Polygala karensium Kurz in J. Asiat. Soc. Bengal 41(2): 292. 1872; Mukerjee in Bull. Bot. Soc. Bengal 12:32. 1958; Banerjee in Sharma *et al.*, Fl. India 2:474. 1993.

Erect shrubs up to 2 m high; branches blackish, glabrous. Leaves ovate-lanceolate, membranous. Flowers in axillary or terminal long racemes, white with purple tip. Capsules orbicular, broadly winged.

Fl. & Fr. : Jan. - Oct.

Distrib. : Arunachal Pradesh.

Polygala linarifolia Willd., Sp. Pl. 3:877. 1803; Banerjee in Sharma *et al.*, Fl. India 2:476. 1993. *P. chinensis* L. var. *linarifolia* (Willd.) Chodat in Mem. Soc. Phys. Hist. Nat. Geneve 31(2):386. 1893; Mukerjee in Bull. Bot. Soc. Bengal 12:40. 1960.

Erect or diffuse annuals up to 35 cm high. Leaves linear to linear-lanceolate. Flowers in racemes, yellowish. Capsules winged.

Fl. & Fr.: June - Aug.

Distrib.: Kameng; 1300-1800 m, in moist forests.

Polygala longifolia Poiret in Lamk., Encycl. Meth. Bot. 5:501. 1804; Banerjee in Sharma *et al.*, Fl. India 2:476. 1993. *P. leptalea* DC., Prodr. 1:325. 1824; Bennett in Hook. f., Fl. Brit. India 1:202. 1872.

Perennial erect herbs up to 40 cm high. Leaves oblong-lanceolate. Flowers small in racemes, yellowish. Capsules narrowly winged.

Fl. & Fr.: May. - Aug.

Distrib.: Kameng; 1300-1600 m, in forests.

Polygala mariesii Hemsley in J. Linn. Soc. Bot. 23:61, t. 2B. f. 7-13. 1886; Chowdhery in Bull. Bot. Surv. India 12(1-4):263. 1970; Banerjee in Sharma *et al.*, Fl. India 2:478. 1993. **Fig. 41.**

Bushy shrubs up to 3 m high with many branches. Leaves elliptic-lanceolate. Flowers greenish yellow or brown. Capsules winged.

Fl. & Fr.: April. - July.

Distrib.: Changlang, Kameng, Tirap; 1500-1600 m, in forests, along stream sides.

Polygala persicariifolia DC., Prodr. 1:326. 1824; Bennett in Hook. f., Fl. Brit. India 1:202. 1872; Banerjee in Sharma *et al.*, Fl. India 2:480. 1993.

Erect, annual herbs up to 45 cm high. Leaves linear. Flowers pendulous, pink. Capsules ciliate with orbicular wings.

Fl. & Fr.: Sept. - Nov.

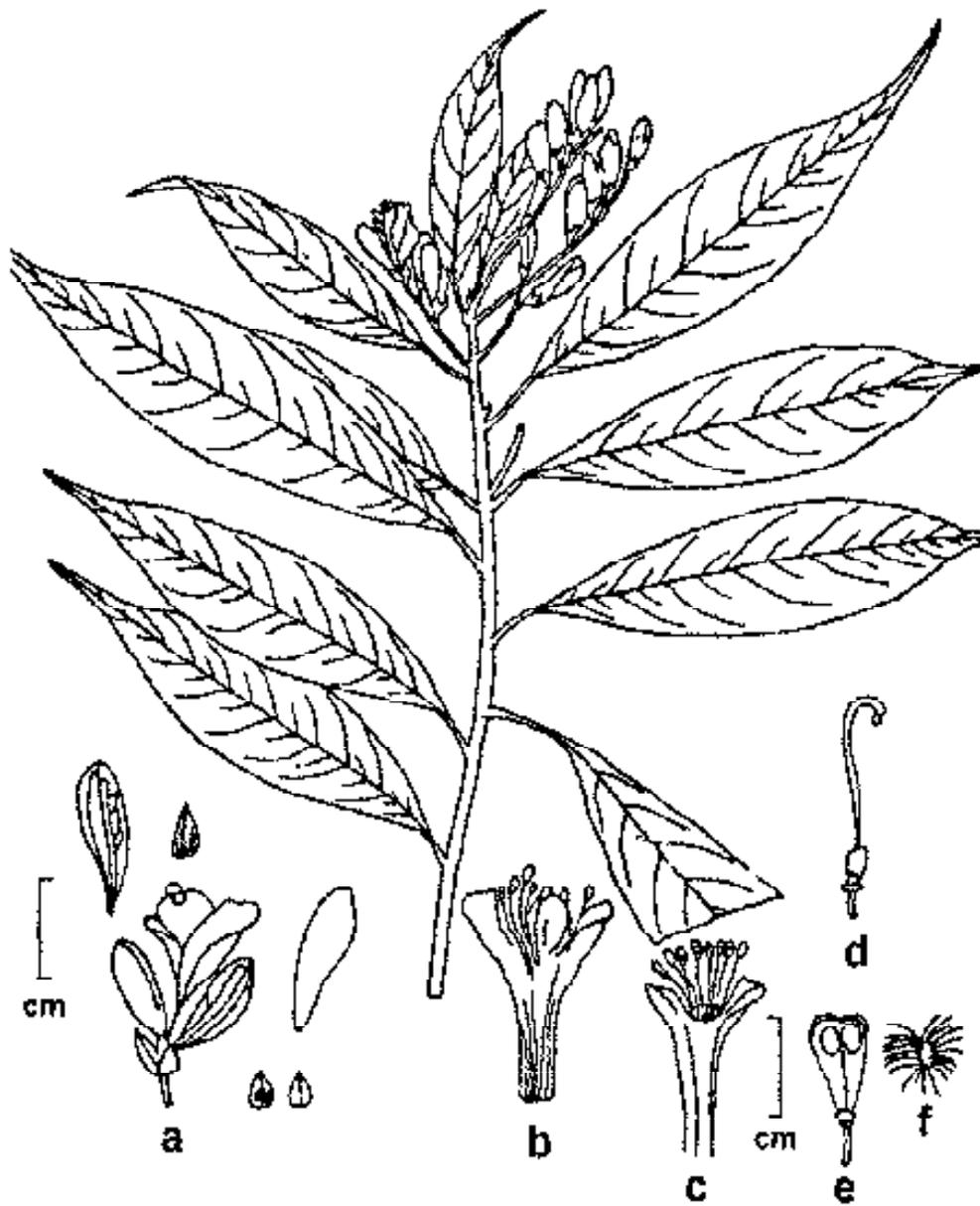


Fig. 41. *Polygala mariesii* Hemsley : a. Flowering branch; b. Flower, with sepals separated; c. Petals, showing stamens; d. Pistil; e. capsule; f. Seed.

Distrib.: Kameng; 2500-2600 m, on black humus soil amongst grasses on slopes.

Polygala sibirica L., Sp. Pl. 702. 1753; Bennett in Hook. f., Fl. Brit. India 1:205. 1872, *p.p.*; Banerjee in Sharma *et al.*, Fl. India 2:481. 1993. *P. heyneana* Wight & Arn., Prodr. Fl. Pen. Ind. Or. 1:38. 1834, *p.p.*

Perennial herbs up to 20 cm high. Rootstocks woody. Leaves oblanceolate. Flowers in axillary or extra-axillary racemes, ca 6 mm long, yellow, pink or violet. Capsules broadly winged, pinkish green.

Fl. & Fr.: Oct. - Jan.

Distrib.: Dibang valley, Kameng, Subansiri; 1400-1600 m, on open dry grassy mound of rocks, along bridle path.

Polygala tatarinowii Regel in Bull. Soc. Nat. Moscou 34(2):523. 1861; Banerjee in Sharma *et al.*, Fl. India 2:483. 1993. *P. triphylla* auct. non D. Don: Bennett in Hook. f., Fl. Brit. India 1:201. 1872 *excl.* var. *glaucescens* Royle ex Bennett; Pal & Giri J. Econ. Tax. Bot. 14:226, ff. A-C. 1990. Fig. 42.

Annuals, 10-15 cm high with profuse branching at ground level; stems winged. Leaves broadly elliptic. Flowers in racemes, pink. Capsules suborbicular or subquadrangular, emarginate at apex.

Fl. & Fr.: March - April.

Distrib.: Dibang valley, Kameng, Subansiri; 1800-2650 m, on dry slopes.

Polygala tricholopha Chodat in Mem. Soc. Phys. Geneva 31(2):98. 1893; Banerjee in Sharma *et al.*, Fl. India 2:485. 1993. *P. arillata* auct. non D. Don: Bennett in Hook. f., Fl. Brit. India 1:200. 1872, *p.p.*

Herbs up to 50 cm high, stems with projecting cicatrices of fallen leaves. Leaves ovate-lanceolate. Flowers pale yellow. Capsules elliptic to suborbicular.

Fl. & Fr.: June - Oct.

Distrib.: Changlang; 1000-1500 m, along forest edges.

Salomonina cantoniensis Lour. var. *edentula* (DC.) Banerjee in Sharma *et al.*, Fl. India 2:489. 1993. *S. edentula* DC., Prodr. 1:334. 1824; Bennett in Hook. f., Fl. Brit. India 1:207. 1872.

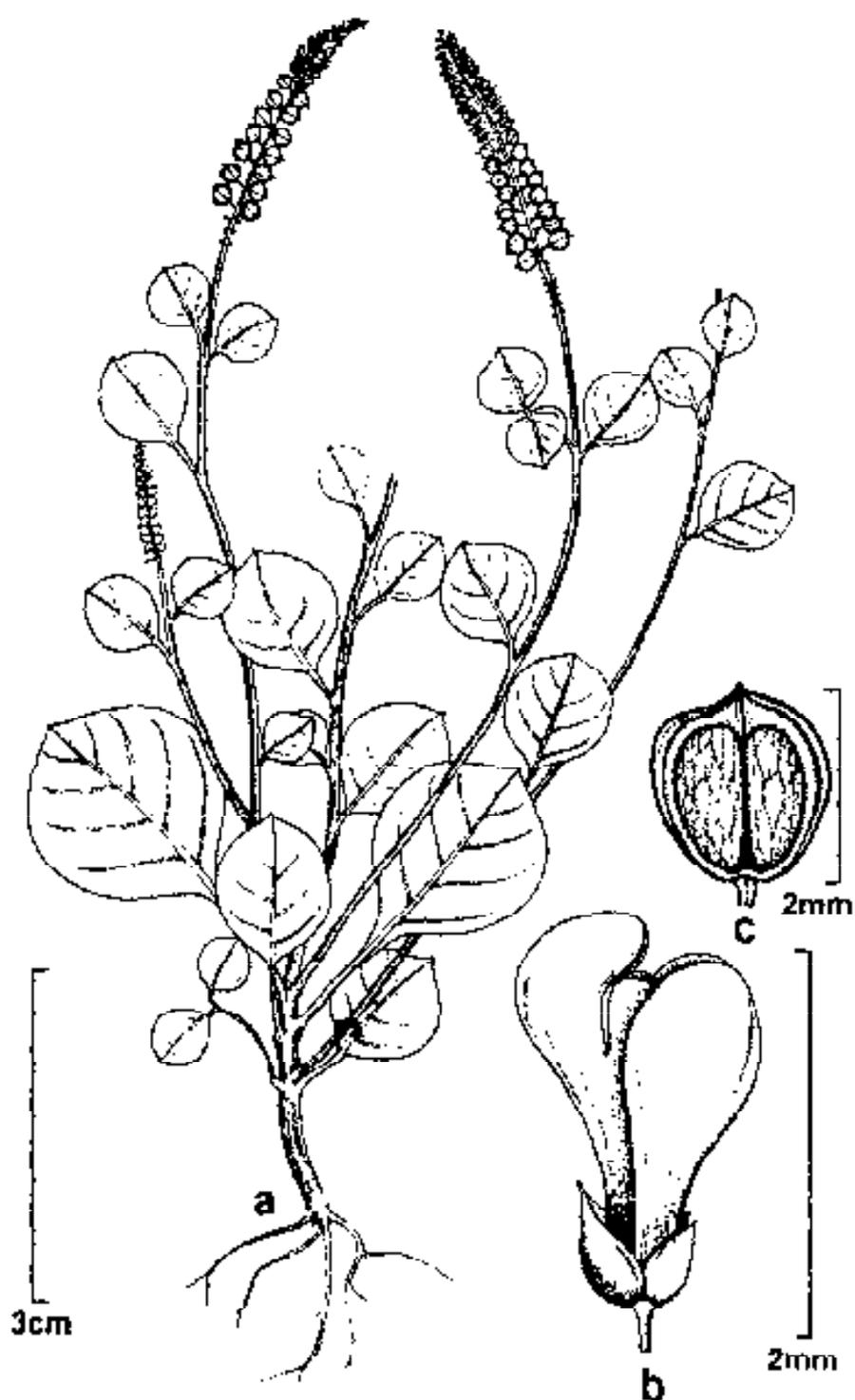


Fig. 42. *Polygala tartarinowii* Regel ; a. Habit; b. Flower; c. Capsule.

Diffuse annuals up to 15 cm high with winged stems. Leaves ovate-cordate, rosy red. Flowers in spikes, pink red. Capsules with a row of recurved triangular teeth.

Fl. & Fr.: Sept. - Jan.

Distrib.: Changlang, Siang, Subansiri, Tirap; 1400-2500 m, in sunny places, on sandy as well as in muddy places.

Securidaca inappendiculata Hassk., Pl. Jav. Rar. 295. 1848; Banerjee in Sharma *et al.*, Fl. India 2:492. 1993. *S. tavoyana* Wallich ex Bennett in Hook. f., Fl. Brit. India 1:208. 1872.

Local name: Phakchena-lota (Asm.).

Large, woody, scandent shrubs. Leaves elliptic or ovate-oblong, pubescent underneath. Flowers in corymbose panicles, pink. Samara 1-seeded.

Fl. & Fr.: March - Sept.

Distrib.: Arunachal Pradesh; in forests.

XANTHOPHYLLACEAE

Xanthophyllum burkillii Drummond & Dunn in Kew Bull. 1920 : 145. 1920; Burkill in Rec. Bot. Surv. India 10(1): 239. 1924; Banerjee & Balakrishnan in Sharma *et al.*, Fl. India 2:495. 1993.

Trees. Leaves elliptic or lanceolate, young leaves lilac, pendent. Flowers pendent in long racemes, yellow or creamy.

Fl. & Fr.: March - July.

Distrib.: Siang; 800-1400 m, in forests.

Xanthophyllum flavescens Roxb., Pl. Corom. 3:81, t. 284. 1820; Bennett in Hook. f., Fl. Brit. India 1:209. 1874; Banerjee & Balakrishnan in Sharma *et al.*, Fl. India 2:497. 1993. *X. virens* Roxb., Fl. Ind. 2:221. 1832.

Fig. 43.

Large trees up to 40 m high with dense crown. Leaves oblong-lanceolate. Flowers in diffuse panicles, 10-12 mm across, yellow. Capsules oblong-orbicular, winged, ciliate.

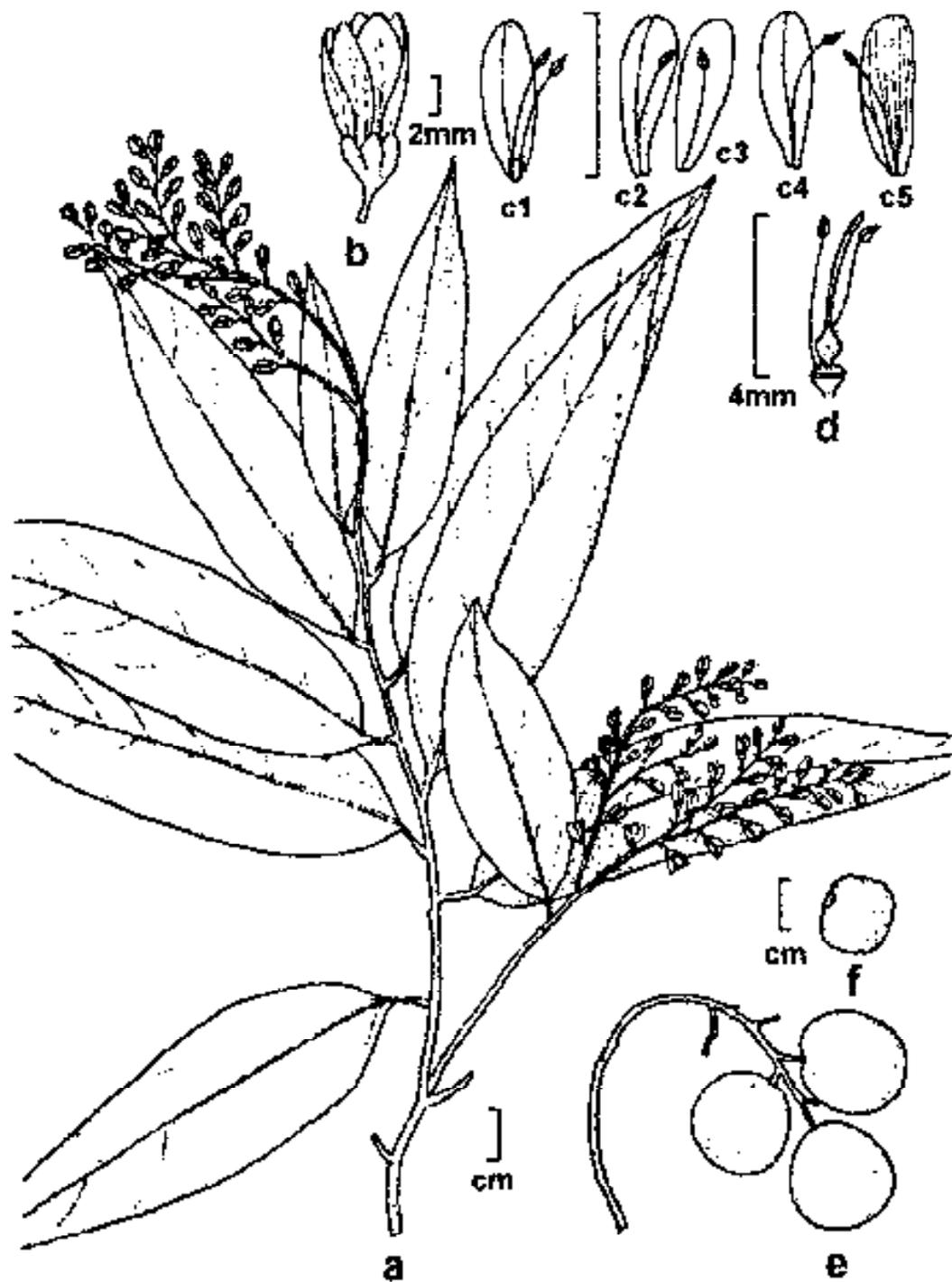


Fig. 43. *Xanthophyllum flavescens* Roxb. : a. Twig; b. Flower; c. Petals with adnate stamens; d. Pistil with free stamens; e. Fruits; f. Seed.

Fl. & Fr.: Feb. - June.

Distrib.: Kameng; 800-1400 m, in forests.

Xanthophyllum griffithii Hook. f. ex Bennett in Hook. f., Fl. Brit. India 1:210. 1874.

Trees up to 10 m high. Leaves elliptic-lanceolate. Flowers on short, stout pedicels, greenish. Fruits slightly hairy, shining.

Fl. & Fr.: June - Sept.

Distrib.: Subansiri; 1500-1800 m, along streams in forests.

CARYOPHYLLACEAE

Arenaria glanduligera Edgew. in Hook. f., Fl. Brit. India 1:240. 1874; Majumdar in Sharma *et al.* Fl. India 2:511. 1993.

Delicate, much branched, hairy herbs. Leaves elliptic-oblong. Flowers solitary, white. Capsules membranous, few seeded.

Fl. & Fr.: May - Aug.

Distrib.: Kameng, Tawang; 3000-5000 m, in moist soil on slopes.

Arenaria orbiculata Royle ex Edgew. & Hook. f. in Hook. f., Fl. Brit. India 1:240. 1874; Majumdar in Sharma *et al.*, Fl. India 2:514. 1993.

Slender, branched, decumbent herbs. Leaves orbicular. Flowers solitary or in few flowered cymes. Capsules opening by 10 valves.

Fl. & Fr. : May - Oct.

Distrib. : Kameng; 1500-4000 m, in open moist places along roadsides.

Brachystemma calycinum D. Don, Prodr. Fl. Nep. 216. 1825; Edgew. & Hook. f. in Hook. f., Fl. Brit. India 1:235. 1874; Majumdar in Sharma *et al.*, Fl. India 2:519. 1993. Fig. 44.

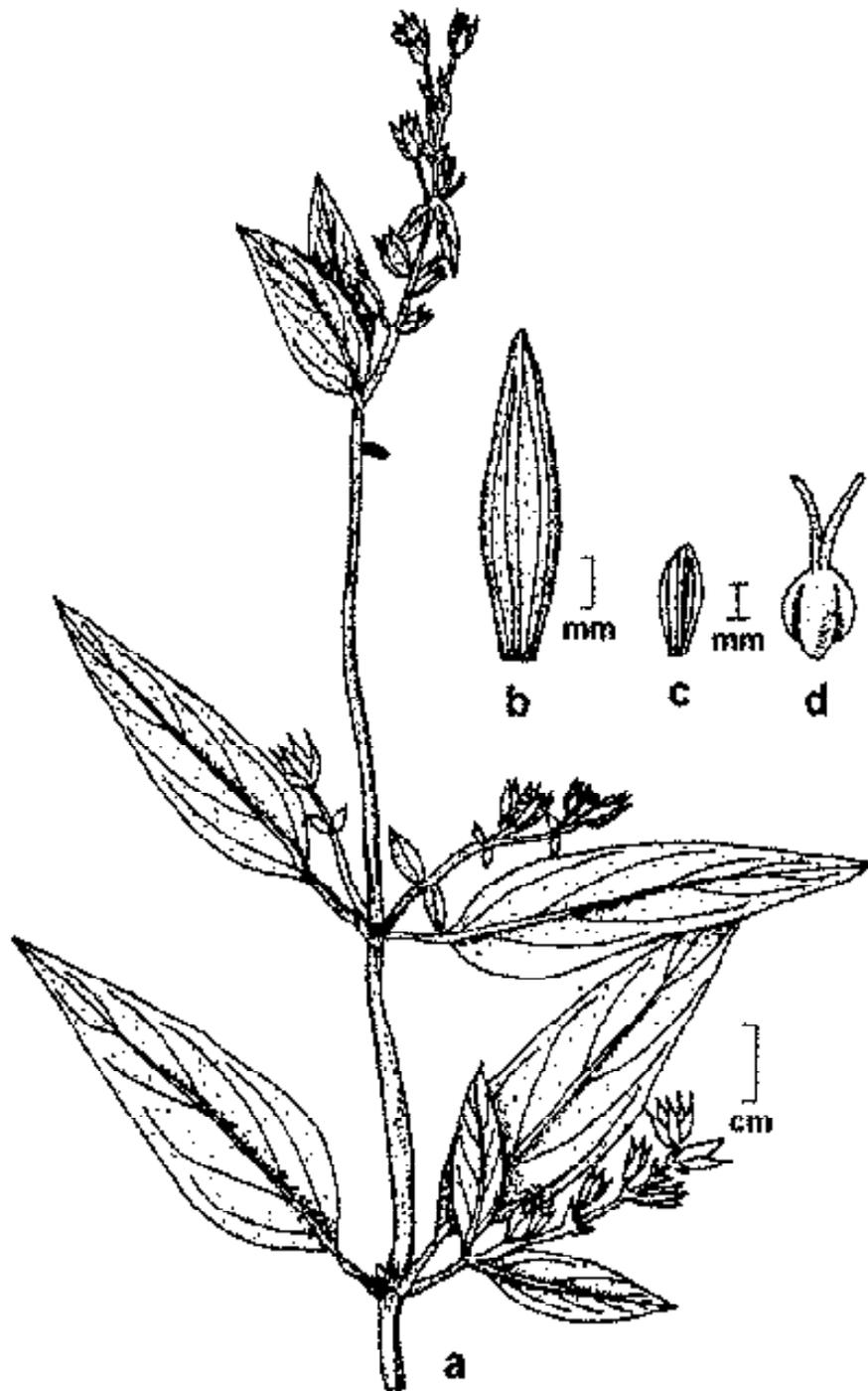


Fig. 44. *Brachystenma calycinum* D. Don : a. Flowering twig; b. Sepal; c. Petal; d. Pistil.

Soft, herbaceous climbers up to 3 m long, stems quadrangular. Leaves ovate-lanceolate. Flowers pale green or white. Capsules globose.

Fl. & Fr.: Nov. - March.

Distrib.: Dibang valley, Kameng, Lohit, Siang; 400-2500 m, along bridle paths and streams.

Cerastium cerastoides (L.) Britton in Mem. Torrey Bot. Club 5:152. 1894; Majumdar in Sharma *et al.*, Fl. India 2:521. 1993. *Stellaria cerastoides* L., Sp. Pl. 422. 1753. *Cerastium trigynum* Villars, Hist. Pl. Dauph. 3:645. 1789; Edgew. & Hook. f. in Hook. f., Fl. Brit. India 1:227. 1874.

Pubescent, tufted herbs. Leaves oblong-lanceolate. Flowers in terminal cymes, white; petals deeply bifid. Capsules cylindrical.

Fl. & Fr.: July - Sept.

Distrib.: Kameng, Tawang; 2000-4500 m, in rock crevices, along roadsides.

Cerastium fontanum Baumg. subsp. *triviale* (Link) Jalas in Arch. Soc. Zool.-Bot. Fenn. 'Vanamo' 18:63. 1963; Majumdar in Sharma *et al.*, Fl. India 2:523. 1993. *C. triviale* Link, Enum. Pl. Hort. Berol. 1:433. 1821. *C. vulgatum* L. var. *triviale* (Link) Edgew. & Hook. f. in Hook. f., Fl. Brit. India 1:228. 1874.

Annual or perennial hairy herbs up to 50 cm high. Leaves spatulate. Flowers in terminal cymes, 6-10 mm across, white. Capsule much exceeding calyx.

Fl. & Fr.: Aug. - Nov.

Distrib.: Kameng; 2500-3000 m, in open places along roads.

Cucubalus baccifer L., Sp. Pl. 413. 1753; Edgew. & Hook. f. in Hook. f., Fl. Brit. India 1:222. 1874; Majumdar in Sharma *et al.*, Fl. India 2:525. 1993. Fig. 45.

Rambling, pubescent, diffusely branched herbs. Leaves ovate-lanceolate. Flowers in terminal leafy cymes, yellow green. Capsules berry like, globose, blue black.

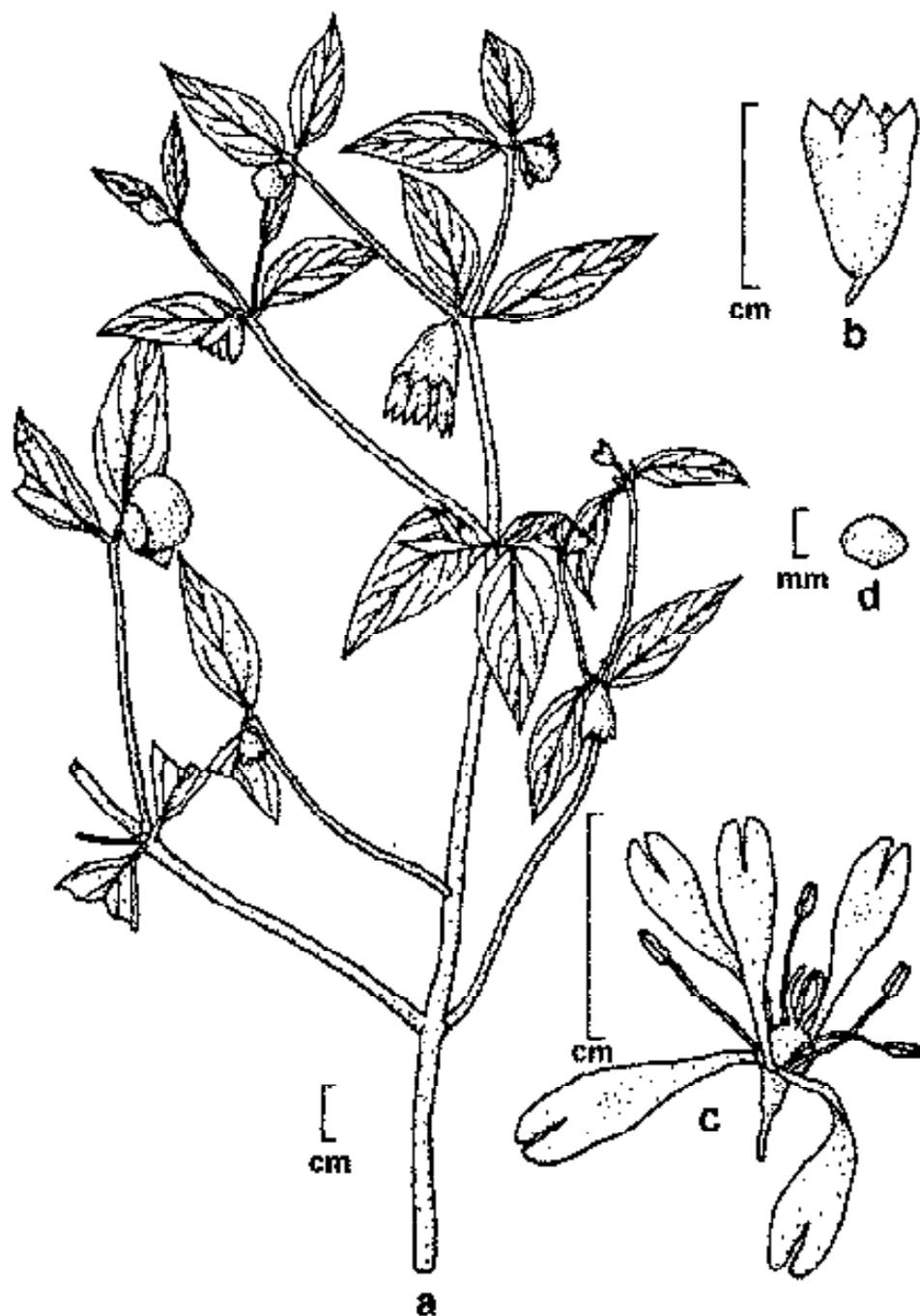


Fig. 45. *Cucubalus haccifer* L. : a. Habit; b. Calyx; c. Flower without calyx; d. Seed.

Fl. & Fr.: June - Sept.

Distrib.: Kameng; 1500-3000 m, in open moist shaded places.

Drymaria diandra Blume, Bijdr. 62. 1825; Majumdar in Sharma *et al.*, Fl. India 2:533. 1993. *D. cordata auct. non* (L.) Roem. & Schultes 1819: Edgew. & Hook. f. in Hook. f., Fl. Brit. India 1:244. 1874.

Prostrate annual herbs, 20-150 cm high. Leaves deltoid-ovate. Flowers light green to white. Capsules ovoid.

Fl. & Fr.: Sept. Aug.

Distrib.: Changlang, Kameng, Lohit, Siang, Subansiri, Tirap; 600-1300 m, along roads and forest edges, forming a mat in wet places.

Use: The leaf juice is applied in skin diseases. Leaves are edible as green vegetable.

Drymaria villosa Cham. & Schlecht. in Linnaea 5:232. 1830; Majumdar in Sharma *et al.*, Fl. India 2:533. 1993.

Decumbent herbs. Leaves ovate or deltoid-ovate. Flowers solitary, pale yellow. Sepals glandular papillose along nerves. Capsules globose.

Fl. & Fr.: Oct. - Dec.

Distrib.: Changlang; 1200-1500 m, in open moist places.

Gypsophila cerastioides D. Don, Prodr. Fl. Nep. 213. 1825; Edgew. & Hook. F., Fl. Brit. India 1:217. 1874; Majumdar in Sharma *et al.*, Fl. India 2:535. 1993. Fig. 46.

Perennial, caespitose herbs 10-25 cm high with pubescent, quadrangular branches. Radical leaves spatulate, cauline leaves obovate. Flowers in lax, terminal corymbs, white or mauve. Capsules subrounded, 5-valved.

Fl. & Fr.: May - Oct.

Distrib.: Arunachal Pradesh, on grassy slopes in higher altitudes above 3000 m.

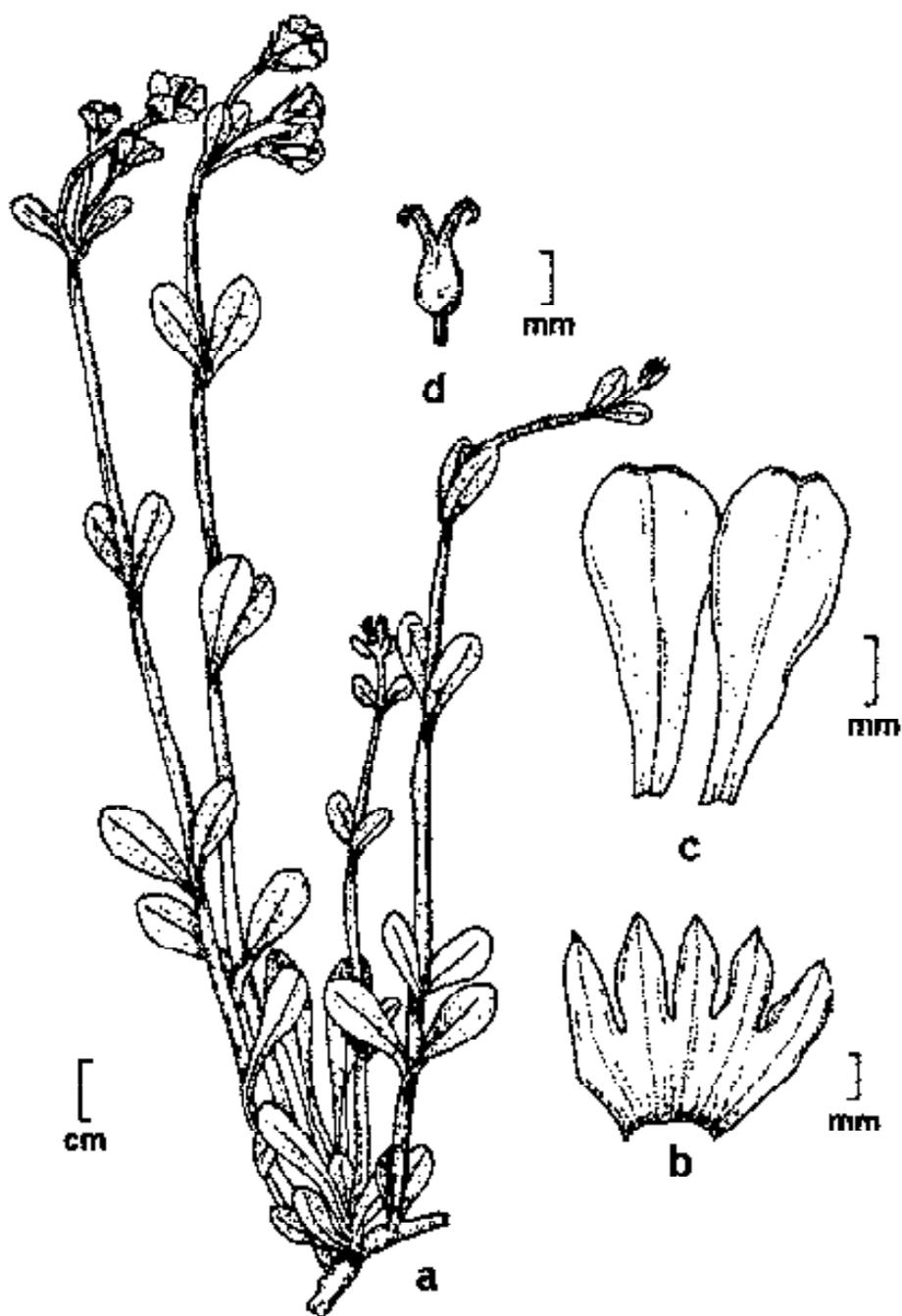


Fig. 46. *Gypsophila cerastioides* D. Don : a. Habit with flowers; b. Calyx; c. Petals. d. Pistil.

Sagina japonica (Sw.) Ohwi in J. Jap. Bot. 13:438. 1937; Majumdar in Sharma *et al.*, Fl. India 2:558. 1993. *Spergula japonica* Sw. in Gesellsch. Nat. Freunde Berlin Neue Schriften 3:164, t. 1. f. 2. 1801. *S. procumbens auct. non L.*: Edgew. & Hook. f. in Hook. f., Fl. Brit. India 1:242. 1874, *p.p.*

Delicate, tufted herbs up to 10 cm high. Leaves linear, mucronate. Flowers solitary, axillary or terminal, white. Capsules globose, larger than sepals.

Fl. & Fr.: May - Sept.

Distrib.: Tawang; 2700-3500 m, on grassy slopes, at the edges of forests and on walls.

Sagina saginoides (L.) Karsten, Deutsch Fl. 539. 1883; Majumdar in Sharma *et al.*, Fl. India 2:559. 1993. *Spergula saginoides* L., Sp. Pl. 441. 1753. *S. procumbens auct. non L.*: Edgew. & Hook. f. in Hook. f., Fl. Brit. India 1:243. 1874, *p.p.*

Annual decumbent herbs up to 15 cm high, rooting at base. Leaves linear. Flowers solitary, 4-5 mm across, white. Capsules oblong or subglobose.

Fl. & Fr.: March - Sept.

Distrib.: Kameng, Subansiri; 600-2700 m, along roadsides, forest edges and paddy fields.

Silene indica Roxb. ex Otth in DC., Prodr. 1:368. 1824; Majumdar in Sharma *et al.*, Fl. India 2:568. 1993. *Lychnis indica* (Roxb. ex Otth) Benth. in Royle, Ill. Bot. Himal. 81. 1834; Edgew. & Hook. f. in Hook. f., Fl. Brit. India 1:225. 1874. *L. nutans* Royle ex Benth. in Royle, Ill. Bot. Himal. 80. 1834; Edgew. & Hook. f. in Hook. f., Fl. Brit. India 1:225. 1874, *p.p.*, *non L.* 1753. *Silene thomsonii* Majumdar in J. Indian Bot. Soc. 42:650. 1964.

Perennial glandular hairy herbs up to 80 cm high. Leaves cauline, lanceolate, hirsute. Flowers yellowish green. Capsules ovoid.

Fl. & Fr.: July - Oct.

Distrib.: Arunachal Pradesh at higher reaches.

Stellaria decumbens Edgew. in Trans. Linn. Soc. London 20:35. 1846; Edgew. & Hook. f. in Hook. f., Fl. Brit. India 1:234. 1874; Majumdar in

Sharma *et al.*, Fl. India 2:582, 583. 1993. *S. cherleriae* (Fischer ex Ser.) F. Williams in Bull. Herb. Boiss. ser. 2, 7:830. 1907, *p.p.* *S. decumbens* var. *edgeworthii* Edgew. & Hook. f. & var. *stracheyi* Edgew. & Hook. f. in Hook. f., Fl. Brit. India 1:234. 1874. var. *decumbens*.

Slender herbs up to 15 cm high. Leaves ovate to lanceolate. Flowers in axillary cymes, minute, white. Capsules subglobose, shorter than sepals.

Fl. & Fr.: April - Sept.

Distrib.: Kameng, Siang; 1000-1600 m, in open sandy soil along roads.

Stellaria decumbens var. *minor* Edgew. & Hook. f. in Hook. f., Fl. Brit. India 1:234. 1874; Majumdar in Sharma *et al.*, Fl. India 2:583. 1993.

Differs from var. *decumbens* by smaller habit and fascicled leaves.

Fl. & Fr.: July - Oct.

Distrib.: Kameng.

Stellaria media (L.) Villars, Hist. Pl. Dauph. 3:615. 1789, *p.p.*; Edgew. & Hook. f. in Hook. f., Fl. Brit. India 1:230. 1874, *p.p.*; Majumdar in Sharma *et al.*, Fl. India 2:585. 1993, *Alsine media* L., Sp. Pl. 272. 1753.

Diffuse herbs up to 60 cm high with line of hairs on stems. Leaves ovate-cordate. Flowers in axillary or terminal cymes, 8-12 mm across, white. Capsules elongate. Seeds brown.

Fl. & Fr.: March - Sept.

Distrib.: Changlang, Kameng, Subansiri; 1000-2000 m, in open forests, roadsides.

Stellaria monosperma D. Don var. *paniculata* (Edgew.) Majumdar in J. Ind. Bot. Soc. 44(1): 141. 1865 and in Sharma *et al.*, Fl. India 2:586. 1993. *S. paniculata* Edgew. in Trans Linn. Soc. London 20:35. 1846; Edgew. & Hook. f. in Hook. f., Fl. Brit. India 1:229. 1874.

Decumbent, hairy herbs up to 1 m high. Leaves oblong, petiolate, pale beneath, crisped at margin. Flowers in axillary or terminal cymes, white. Capsules oblong. Seeds granulate.

Fl. & Fr.: July - Nov.

Distrib.: Kameng; 1400-2200 m, along roadsides and forest edges in moist, open places.

Stellaria reticulivena Hayata, Ic. Pl. Formos. 7:1, f. 1. 1918; Majumdar in Bull. Bot. Surv. India 21(1-4):172. 1981 and in Sharma *et al.*, Fl. India 2:587. 1993.

Decumbent to suberect herbs. Leaves broadly ovate, crisped. Flowers white, sepals connate at base. Capsules ovoid.

Fl. & Fr.: Aug. - Jan.

Distrib.: Kameng; 2000-2500 m, in open forests.

Stellaria sikkimensis Hook. f. ex Edgew. & Hook. f. in Hook. f., Fl. Brit. India 1:230. 1874; Majumdar in Sharma *et al.*, Fl. India 2:588. 1993.

Creeping herbs, matted on leaf mould, hairs long, spreading. Leaves ovate-lanceolate. Flowers in terminal cymes, ca 8 mm across, yellow. Capsules oblong.

Fl. & Fr.: May - Aug.

Distrib.: Kameng, Tawang; 2000-2500 m, in open places along roadsides and forest edges.

Stellaria uliginosa Murray, Prodr. Strip. Gotting. 55. 1770; Edgew. & Hook. f. in Hook. f., Fl. Brit. India 1:233. 1874; Majumdar in Sharma *et al.*, Fl. India 2:589. 1993.

Diffuse herbs up to 40 cm high. Leaves oblong-lanceolate. Flowers in axillary or terminal cymes, ca 1 cm across, white. Capsules ovoid.

Fl. & Fr.: April - Aug.

Distrib.: Kameng, Subansiri; 1500-2500 m, in open marshy places.

Stellaria vestita Kurz in J. Bot. 11:194. 1873; Majumdar in Sharma *et al.*, Fl. India 2:590. 1993. *S. saxatilis* Huch.-Ham. ex D. Don, Prodr. Fl. Nep. 215. 1825, non Scop. 1772; Edgew. & Hook. f. in Hook. f., Fl. Brit. India 1:232. 1874.

Prostrate, diffuse, stellate hairy herbs up to 15 cm high. Leaves ovate-elliptic. Flowers in axillary or terminal cymes, white. Capsules subglobose, equalling sepals.

Fl. & Fr.: April.- Aug.

Distrib.: Changlang, Kameng, Tawang; 1500-3500 m, along streams and on grassy moist slopes.

Stellaria wallichiana Benth. ex Haines in Bull. Misc. Inf. Kew 1920:66. 1920; Majumdar in Sharma *et al.*, Fl. India 2:591. 1993. *S. media* (L.) Villars, Hist. Pl. Dauph. 3:615. 1789, *p.p.*; Edgew. & Hook. f., in Hook. f., Fl. Brit. India 1:230. 1874, *p.p.*

Slender herbs with 2 lines of glandular hairs. Leaves ovate, cordate at base. Flowers solitary, white. Capsules ovoid.

Fl. & Fr.: Feb. - Aug.

Distrib.: Arunachal Pradesh.

PORTULACACEAE

Portulaca oleracea L., Sp. Pl. 445. 1753; Dyer in Hook. f., Fl. Brit. India 1:246. 1874; Rao in Sharma *et al.*, Fl. India 3:4. 1993.

Erect to decumbent, succulent, pinkish, annual herbs up to 30 cm high. Leaves fleshy, ovate or obovate. Flowers terminal, solitary or in clusters, ca 1 cm across, yellow. Capsules obovoid.

Fl. & Fr.: Sept. - Jan.

Distrib.: Dibang valley, Kameng, Subansiri; 500-1000 m, along the edges of open fields in moist soil.

TAMARICACEAE

Myricaria squamosa Desv. in Ann. Sci. Nat. ser. 1, 4:350. 1824; Shetty & Pandey in Sharma *et al.*, Fl. India 3:17. 1993. Fig. 47.

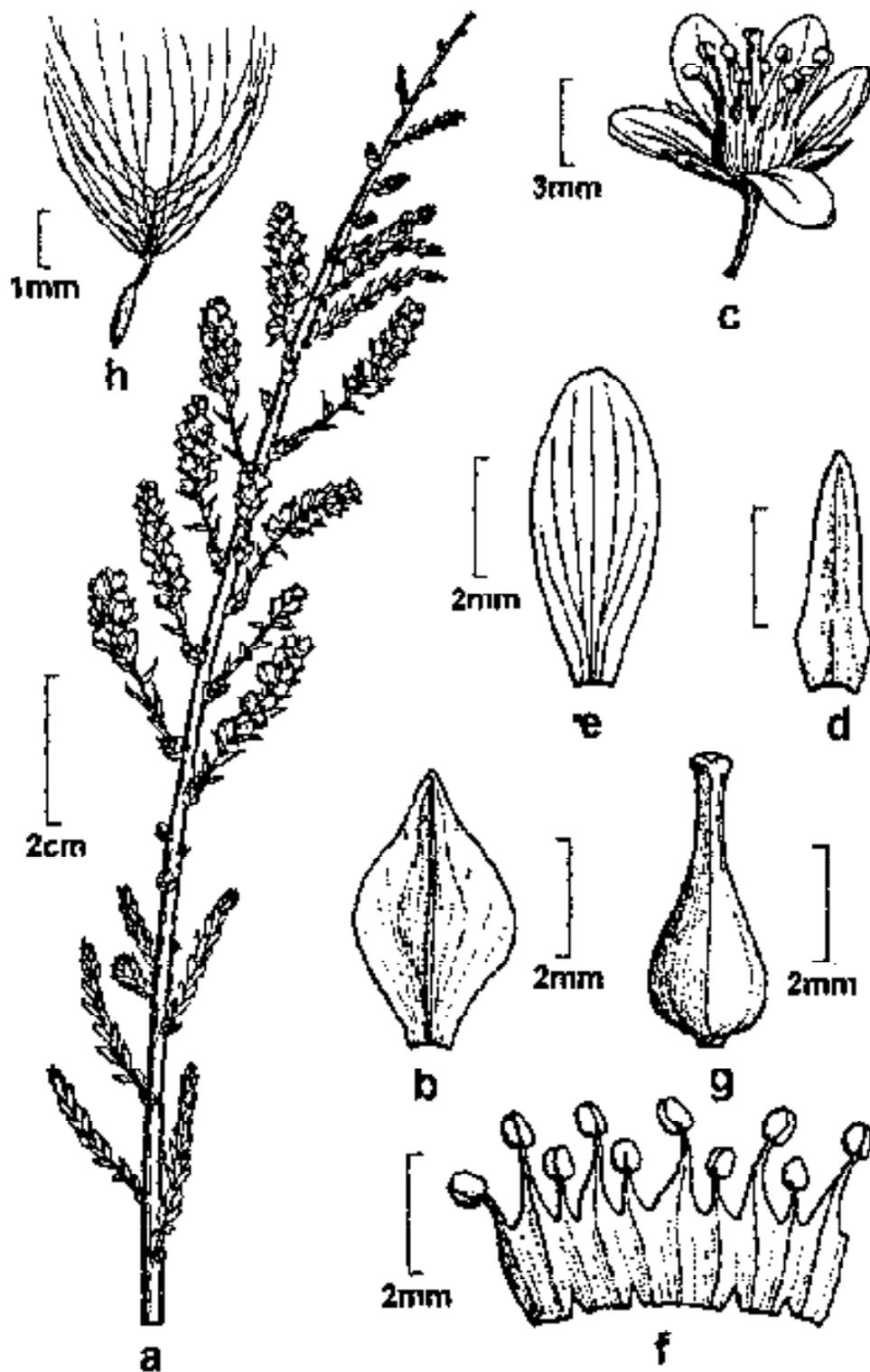


Fig. 47. *Myricaria squamosa* Desv. : a. Flowering branch; b. Bracts; c. Flower; d. Sepal; e. Petal; f. Androecium; g. Pistil; h. Seed.

Shrubs up to 3 m high, much branched; flowering branches fleshy, otherwise woody. Leaves narrowly lanceolate. Flowers in spicate racemes, pink.

Fl. & Fr.: March - Sept.

Distrib.: Lohit, Siang; 300-800 m, along sandy mountain streams in forests.

Tamarix dioica Roxb. ex Roth, Nov. Pl. Ind. Or. 185. 1821; Roxb., Fl. Ind. 2:101. 1832; Dyer in Hook. f., Fl. Brit. India 1:249. 1874; Shetty & Pandey in Sharma *et al.*, Fl. India 3:24. 1993.

Local name: Jhau, Lal Jhau (Asm.); Rapun-asing (Miri).

Small trees up to 3 m high with drooping branches. Leaves sheathing at base, obliquely truncate. Flowers in terminal spikes, pink. Capsules conical, 3-valved.

Fl. & Fr.: July - Dec.

Distrib.: Kameng; 1000-1500 m, in forests.

HYPERICACEAE

Hypericum assamicum S.N. Biswas in Webbia 25:671. 1971 and in Sharma *et al.*, Fl. India 3:52. 1993. *H. sampsonii* auct. non Hance 1865: Dyer in Hook. f., Fl. Brit. India 1:255. 1874.

Perennial, erect, glabrous herbs, 20-40 cm tall. Leaves sessile, oblong or oblanceolate, glaucous, punctate beneath. Flowers in lax corymbose panicles, yellowish. Capsules subglobose.

Fl. & Fr.: March - April.

Distrib.: Arunachal Pradesh.

Hypericum glodeoides Choisy in DC., Prodr. 1:551. 1824; Dyer in Hook. f., Fl. Brit. India 1:255. 1874; Biswas in Sharma *et al.*, Fl. India 3:56. 1993. *H. napaulense* Choisy in DC., Prodr. 1:557. 1824. *H. adenophorum* Wallich ex Dyer in Hook. f., Fl. Brit. India 1:256. 1874.

Stoloniferous, reddish yellow herbs. Leaves ovate-oblong, punctate with glandular dots. Flowers in axillary or terminal paniced cymes, yellow. Sepals glandular ciliate. Capsules ellipsoid.

Fl. & Fr.: Aug. - Dec.

Distrib.: Siang, Subansiri, Tawang, Tirap; 1100-3500 m, on sandy loam in open places, along roadsides.

Hypericum griffithii Hook. f. & Thomson ex Dyer in Hook. f., Fl. Brit. India 1:253. 1874; Biswas in Sharma *et al.*, Fl. India 3:63. 1993. Fig. 48.

Shrubs up to 1.5 m high; stems reddish. Leaves sessile, broadly ovate. Flowers in trichotomous cymes, yellow. Capsules ellipsoid-oblong.

Fl. & Fr.: March - Oct.

Distrib.: Kameng; 1000-1500 m, along forest edges, roadsides.

Hypericum hookerianum Wight & Arn., Prodr. Fl. Pen. Ind. Or. 1:99. 1834; Dyer in Hook. f., Fl. Brit. India 1:254. 1874, *p.p.*; Biswas in Sharma *et al.*, Fl. India 3:64. 1993. Fig. 49.

Shrubs up to 3 m high with reddish brown branches. Leaves oblong, glaucous beneath. Flowers in terminal corymbose cymes, 4.5-5.5 cm, bright yellow. Capsules oblong.

Fl. & Fr.: May - Nov.

Distrib.: Kameng, Subansiri; 1200-2000 m, along hill slopes in open places.

Hypericum japonicum Thunb. ex Murray, Syst. Veg. ed. 14:702. 1784; Dyer in Hook. f., Fl. Brit. India 1:256. 1874; Biswas in Sharma *et al.*, Fl. India 3:69. 1993.

Annual, erect or prostrate herbs up to 40 cm high. Leaves ovate. Flowers in axillary or terminal cymes or solitary, yellow. Capsules ellipsoid, brownish or yellow.

Fl. & Fr.: Aug. - Sept.

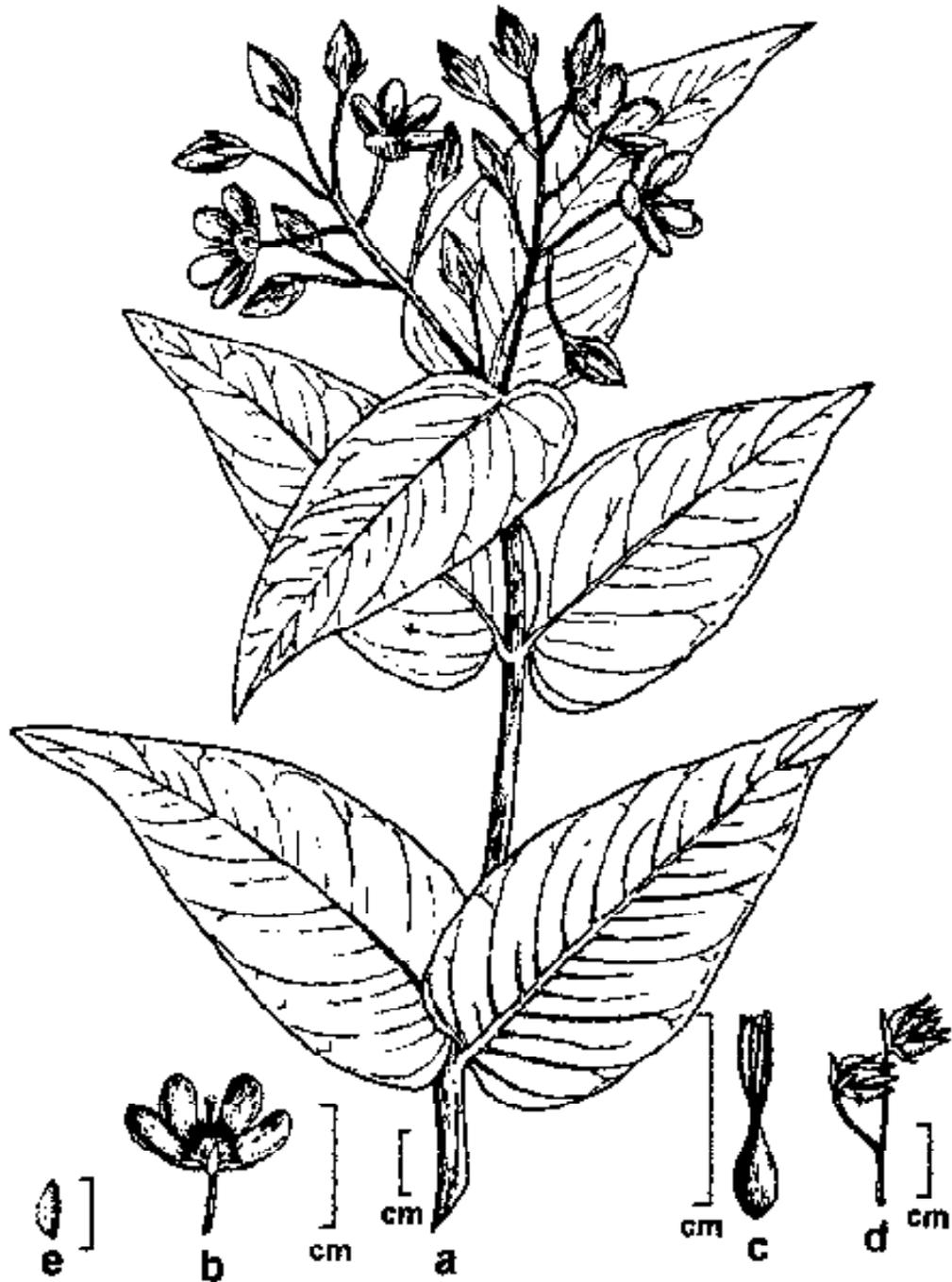


Fig. 48. *Hypericum griffithii* Hook.f. & Thomson, ex Dyer : a. Flowering twig; b. Flowers; c. Pistil; d. Fruit; e. Seed; (after Sahni & Naithani 1980).

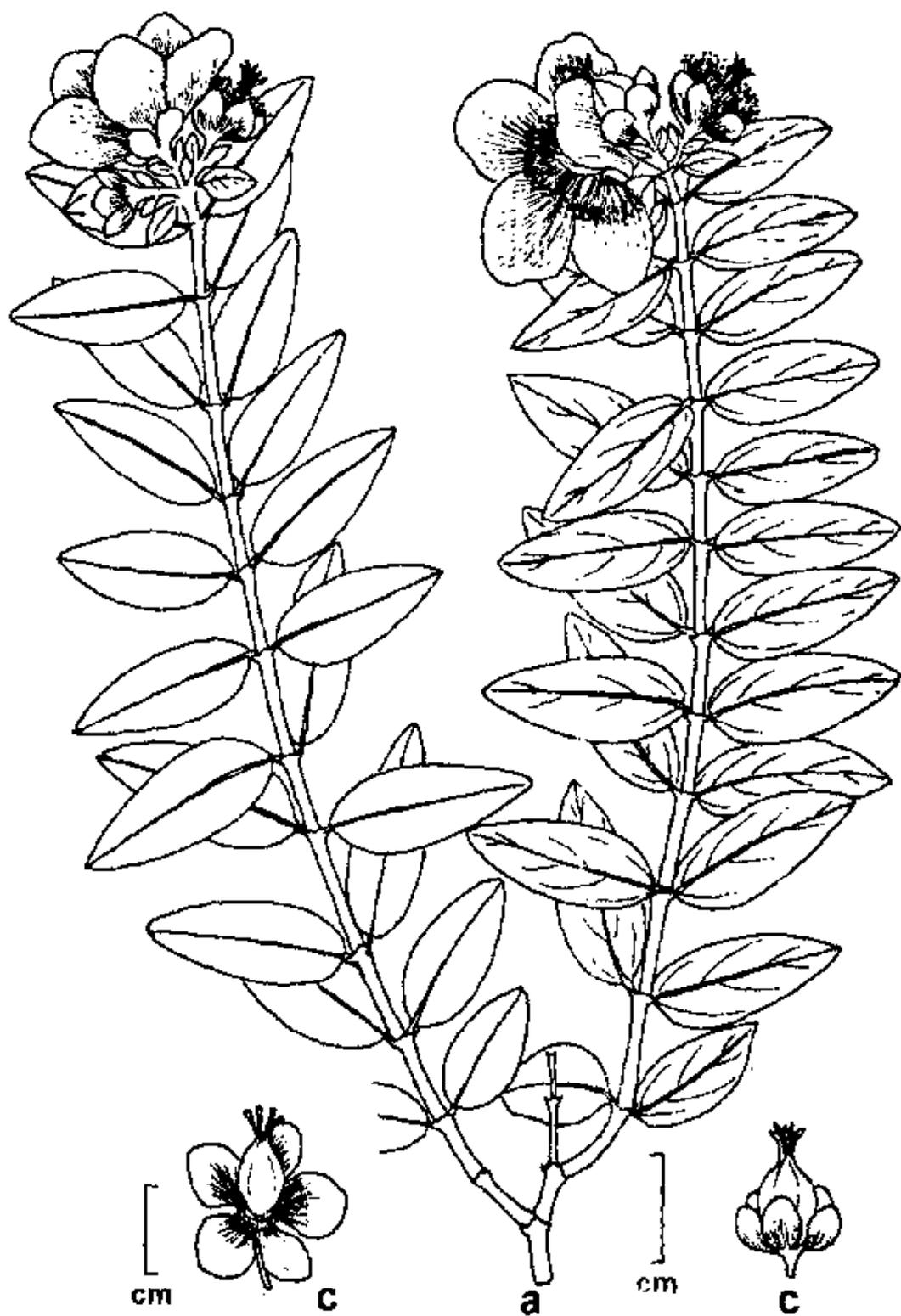


Fig. 49. *Hypericum hookerianum* Wt. & Arn. : a. Flowering twig; b. Flower (dissected); c. Fruit.

Distrib.: Changlang, Dibang valley, Kameng, Siang, Subansiri, Tirap; 1700-1800 m, on wet and marshy grassy slopes.

Hypericum monanthemum Hook. f. & Thomson ex Dyer in Hook. f., Fl. Brit. India 1:256. 1874; Biswas in Sharma *et al.*, Fl. India 3:69. 1993.

Erect herbs up to 25 cm high. Leaves obovate, punctate with glandular dots. Flowers in axillary cymes, yellow. Capsules ovoid.

Fl. & Fr.: April - June.

Distrib.: Subansiri; 500-1200 m, in open moist and sandy places.

Hypericum uralum Buch.-Ham. ex D. Don Sims, Bot. Mag. 50: t. 2375 1823; Biswas in Sharma *et al.*, Fl. India 3:77. 1993. *Norysca urala* (Buch.-Ham. ex D. Don) K. Kock, Hort. Dendr. 66. 1853. *Hypericum patulum auct. non* Thunb. ex Murray : Dyer in Hook. f., Fl. Brit. India 1:254. 1874.

Bushy shrubs up to 2 m high. Leaves elliptic-lanceolate. Flowers in terminal cymes, yellow. Capsules obtusely conical, red.

Fl. & Fr.: Aug. - Dec.

Distrib.: Kameng, Tawang, Tirap; 1500-2600 m, along waysides and amidst grasses on hill slopes.

Insufficiently Known Materials

H. elodeoides subsp. *wardii* Robson in J. Jap. Bot. 52:286. 1972.

H. wightianum Wallich subsp. *axillares* Robson in J. Jap. Bot. 52. 187. 1977. Described from Arunachal Pradesh and is characterised by ovoid capsules and narrowly oblong or oblong-lanceolate sepals according to author.

CLUSIACEAE

Calophyllum polyanthum Wallich ex Choisy, Descr. Guttif. Inde 43. 1849; Anders. in Hook. f., Fl. Brit. India 1:274. 1874; Singh in Sharma *et al.*, Fl. India 3:94. 1993. *C. tomentosum auct. non* Wight: Anders. in Hook. f., Fl. Brit. India 1:274. 1874, *p.p.*, *C. angustifolium* Dalz. & Gibs., Bombay Fl. 32. 1861, *non* Roxb. 1832.

Trees up to 15 m high with lax crown. Leaves oblong-lanceolate to oblong-elliptic. Flowers in axillary racemes, white. Drupes subglobose, shortly beaked.

Fl. & Fr.: March - Jan.

Distrib.: Siang; 600-1500 m, in forests.

Garcinia acuminata Planch. & Triana in Ann. Sci. Nat. ser. 4, 14:355. 1860; Singh in Sharma *et al.*, Fl. India 3:102. 1993. *G. morella auct. non* Desr. 1789; Anders. in Hook. f., Fl. Brit. India 1:264. 1874, *p.p.*

Local name: Kuji thekera (Asm.).

Trees up to 20 m high with lax crown. Leaves oblong-elliptic. Flowers solitary or in fascicles, yellow. Berries globose, supported by persistent calyx.

Fl. & Fr.: July - March.

Distrib.: Changlang, Kameng, Siang, Subansiri; 500-1200 m, in tropical primary forests.

Garcinia anomala Planch. & Triana in Ann. Sci. Nat. ser. 4, 14:329. 1860; Anders. in Hook. f., Fl. Brit. India 1:266. 1874; Singh in Sharma *et al.*, Fl. India 3:104. 1993. **Fig. 50.**

Trees up to 10 m high. Leaves oblong-lanceolate. Flowers in axillary cymes, female flowers in threes, yellowish or pale white. Berries ellipsoid, orange-yellow when ripe.

Fl. & Fr.: Feb. - Oct.

Distrib.: Kameng; 200-1000 m, in dense primary forests.

Garcinia atroviridis Griffith ex Anders. in Hook. f., Fl. Brit. India 1:266. 1874; Singh in Sharma *et al.*, Fl. India 3:105. 1993.

Trees up to 18 m tall. Leaves oblong-lanceolate. Male flowers paniced; female flowers terminal, solitary. Berries globular, yellowish green.

Fl. & Fr.: March - Oct.

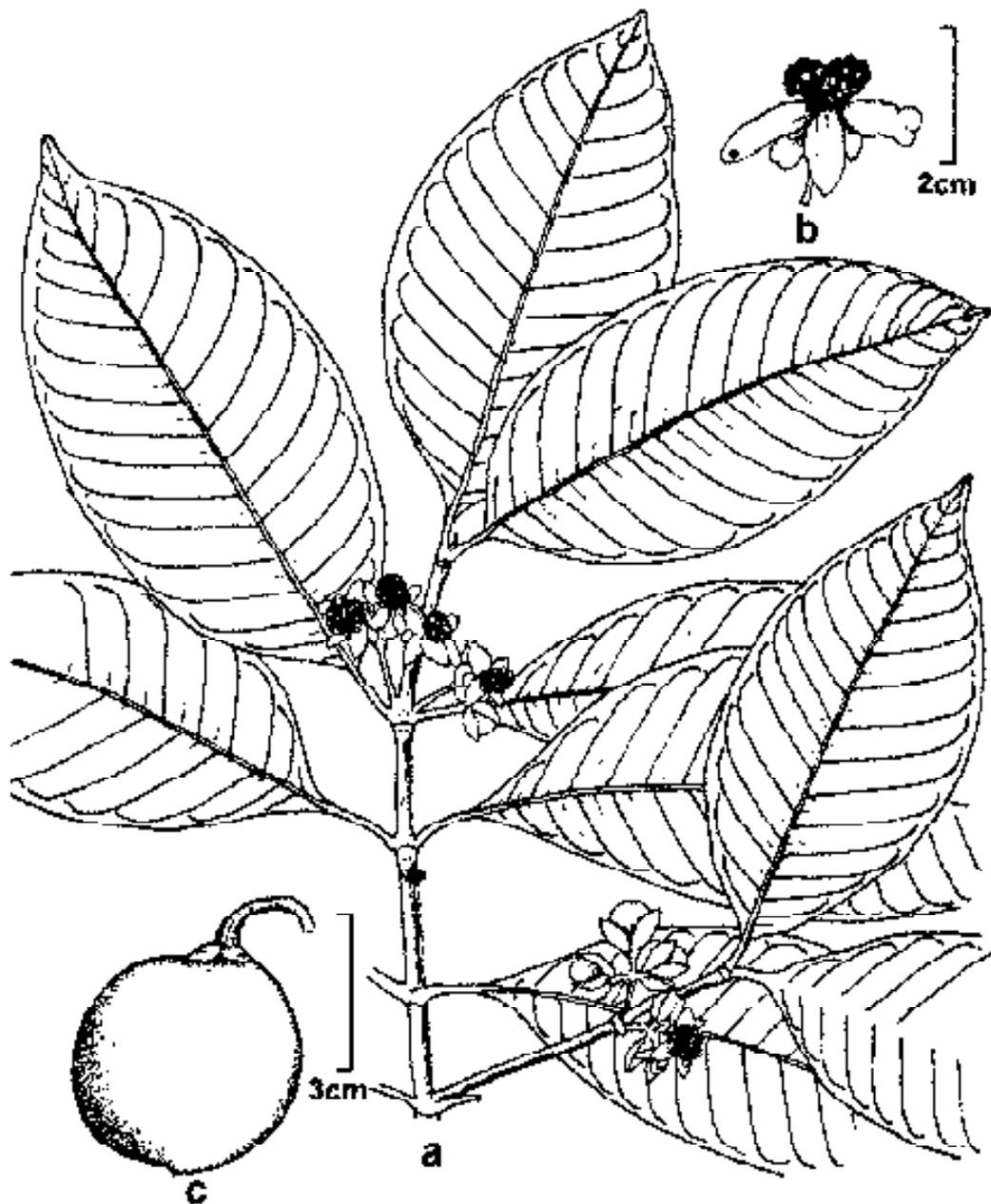


Fig. 50. *Garcinia anomala* Planch. & Triana : a. Flowering twig with fruits; b. Male flower; c. Fruit.

Distrib.: Arunachal Pradesh.

Garcinia cowa Roxb. ex DC., Prodr. 1:561. 1824; Anders. in Hook. f., Fl. Brit. India 1:262. 1874; Singh in Sharma *et al.*, Fl. India 3:108. 1993.

Trees up to 20 m high with slender bole. Leaves broadly elliptic, young leaves reddish. Flowers solitary or in axillary umbels, yellow. Berries globose, reddish.

Fl. & Fr.: April. - Sept.

Distrib.: Changlang, Subansiri; 50-200 m, in tropical primary forests.

Garcinia lanceaefolia (G. Don) Roxb., Fl. Ind. 2:623. 1832; Anders. in Hook. f., Fl. Brit. India 1:263. 1874; Singh in Sharma *et al.*, Fl. India 3:116. 1993. *Stalagmitis lanceaefolia* G. Don, Gen. Syst. 1:621. 1831.

Local name: Bapohi-thekora (Asm.); Prangsu, Prangso-arong (Mik.).

Shrubs up to 5 m high. Leaves narrowly lanceolate. Flower buds reddish with fleshy thick perianth, flowers creamy pink or red. Berries obovoid, orange yellow.

Fl. & Fr.: Oct. - Nov.

Distrib.: Siamg; 600-1000 m, in tropical primary forests.

Garcinia pedunculata Roxb. ex Buch.-Ham. in Brewster, Edinburgh J. Sci. 7:45, t. 1. 1827; Anders. in Hook. f., Fl. Brit. India 1:264. 1874; Singh in Sharma *et al.*, Fl. India 3:121. 1993.

Local name: Tabing-asing (Abor, Adi, Miri); Bor-thekera (Asm.); Ampri-arong (Mik.).

Deciduous trees up to 20 m high with oval crown. Leaves oblong. Flowers solitary or in terminal panicles, yellow to green. Berries globose, yellow.

Fl. & Fr.: July - Oct.

Distrib.: Changlang, Dibang valley, Lohit, Siang, Tirap; 100-1200 m, in primary tropical forests.

Garcinia sopsopia (Buch.-Ham.) Mabberley in *Taxon* 26:529. 1977; Singh in Sharma *et al.*, *Fl. India* 3:124. 1993. *Oxycarpus sopsopia* Buch.-Ham. in *Mem. Wern. Soc.* 5:345. 1826. *Garcinia paniculata* Roxb. ex Wight, *Ill. Ind. Bot.* 125. 1831; Anders. in Hook. f., *Fl. Brit. India* 1:266. 1874. *Stalagmittis paniculata* G. Don, *Gen. Syst.* 1:621. 1831.

Local name: Sochopa-tenga (Asm.).

Large trees up to 20 m high with oval, lax crown. Leaves oblanceolate or elliptic. Flowers in pinkish white panicles, dull white. Berries globose, yellow when ripe.

Fl. & Fr.: Nov. - July.

Distrib.: Kameng; 100-800 m, in tropical dense forests.

Garcinia stipulata Anders. in Hook. f., *Fl. Brit. India* 1:267. 1874; Singh in Sharma *et al.*, *Fl. India* 3:126. 1993.

Large trees up to 20 m high with yellow sap. Leaves elliptic-oblong. Flowers solitary or in terminal cymes, orange yellow. Berries cylindrical with yellow juice, 2-seeded.

Fl. & Fr.: Sept. - Dec.

Distrib.: Kameng, Lohit, Subansiri; 800-1300 m, in dense tropical primary forests.

Garcinia xanthochymus Hook. f., *Fl. Brit. India* 1:269. 1874; Singh in Sharma *et al.*, *Fl. India* 3:129. 1993. *Xanthochymus pictorius* Roxb., *Pl. Corom.* 2:51. t. 196. 1805, non *Garcinia pictoria* (Roxb.) D'Arcy. *Xanthochymus tinctorius* DC., *Prodr.* 1:562. 1824, 'pictorius'. *Garcinia tinctoria* (DC.) W. F. Wight in U. S. Dept. Agr. Bur. Pl. Indus. Bull. 137. 50. 1909.

Local name: Tepor-tenga (Asm.); Thesampreng (Mik.).

Trees, 10-15 m high. Leaves oblong-lanceolate. Flowers in axils of fallen leaves, dull white, yellowish. Berries ovoid, yellow.

Fl. & Fr.: March - Jan.

Distrib.: Changlang; 100-1000 m, in dense primary forests.

Mesua assamica (King ex Prain) Kosterm. in *Reinwardtia* 7:426. 1969; Singh in Sharma *et al.*, *Fl. India* 3:135. 1993. *Kayea assamica* King ex Prain in *Ind. For.* 27:62. 1901; Kanjilal *et al.*, *Fl. Assam* 1(1): 1934.

Local name: Sia-nahar (Asm.).

Evergreen trees, 10-20 m high; branches yellowish. Leaves ovate or elliptic-lanceolate. Flowers in axillary or terminal fascicled panicles, white. Fruits globose, depressed.

Fl. & Fr.: April - May.

Distrib.: Kameng, Siang, Subansiri; 100-1000 m, in tropical primary forests.

Use: Timber is used in building construction. Fruits are used as fish poison.

Mesua ferrea L., *Sp. Pl.* 515. 1753; Anders. in Hook. f., *Fl. Brit. India* 1:277. 1874; Singh in Sharma *et al.*, *Fl. India* 3:136. 1993. *Calophyllum nagassarium* Burm. f., *Fl. Ind.* 121. 1768. *Mesua roxburghii* Wight, *Ill. Ind. Bot.* 1:127. 1840. *M. nagassarium* (Burm.f.) Kosterm. in *Ceylon J. Sci. Biol. ser.* 12:76. 1976.

Local name: Ingi-asing (Adi); Nahar (Asm., Miri); Micharne or Phik-charne-arang (Mik.); Puotrom (Nokte).

Large evergreen trees up to 40 m high with conical crown. Leaves oblong-elliptic, young leaves pinkish. Flowers axillary, solitary, white, fragrant. Berries subglobose, brown.

Fl. & Fr.: April - Oct.

Distrib.: Changlang, Kameng, Subansiri; 100-800 m, in tropical forests.

Use: Ornamental. Timber is of high quality and valuable.

THEACEAE

Adinandra griffithii Dyer in Hook. f., *Fl. Brit. India* 1:282. 1874; Chauhan & Paul in Sharma *et al.*, *Fl. India* 3:170. 1993.

Trees up to 15 m high. Leaves oblong-elliptic, abruptly acuminate at apex. Flowers axillary, solitary or in pair, white, fragrant. Fruits globose.

Fl. & Fr.: April - Dec.

Distrib.: Kameng; 1200-1800 m, in primary forests.

Camellia caudata Wallich, Pl. Asiat. Rar. 3:36. 1832; Dyer in Hook. f., Fl. Brit. India 1:293. 1874; Chauhan in Bull. Bot. Surv. India 27(1-4): 238. 1987; Chauhan & Paul in Sharma *et al.*, Fl. India 3:154. 1993. Fig. 51.

Shrubs or trees up to 25 m high, branches pubescent. Leaves lanceolate, caudate-acuminate. Flowers axillary, solitary, nodding, white. Capsules globose, brownish.

Fl. & Fr.: Sept. - March.

Distrib.: Cabnglang, Siang; 1000-1800 m, in forests.

Camellia kissi Wallich in Asiat. Res. 13:429. 1820; Chauhan & Paul in Sharma *et al.*, Fl. India 3:154. 1993. *C. drupifera* auct. non Lour.: Dyer in Hook. f., Fl. Brit. India 1:293. 1874. *C. caduca* Clarke ex Brandis, Ind. Trees 61. 1906; Kanjilal *et al.*, Fl. Assam 1:123. 1934.

Shrubs or small trees up to 5 m high. Leaves oblong-lanceolate. Flowers solitary, axillary, erect, white. Capsules pyriform.

Fl. & Fr.: Nov. - March.

Distrib.: Kameng, Siang; 1100-1800 m, in forests.

Camellia lutescens Dyer in Hook. f., Fl. Brit. India 1:293. 1874; Chauhan & Paul in Sharma *et al.*, Fl. India 3:158. 1993.

Bushy shrubs or small trees up to 3 m high. Leaves elliptic-oblong. Flowers solitary, axillary, white, fragrant; sepals glabrous outside. Capsules drupaceous, globose, blackish.

Fl. & Fr.: Sept. - Jan.

Distrib.: Lohit, Siang, Subansiri; 1200-1600 m, in forests.

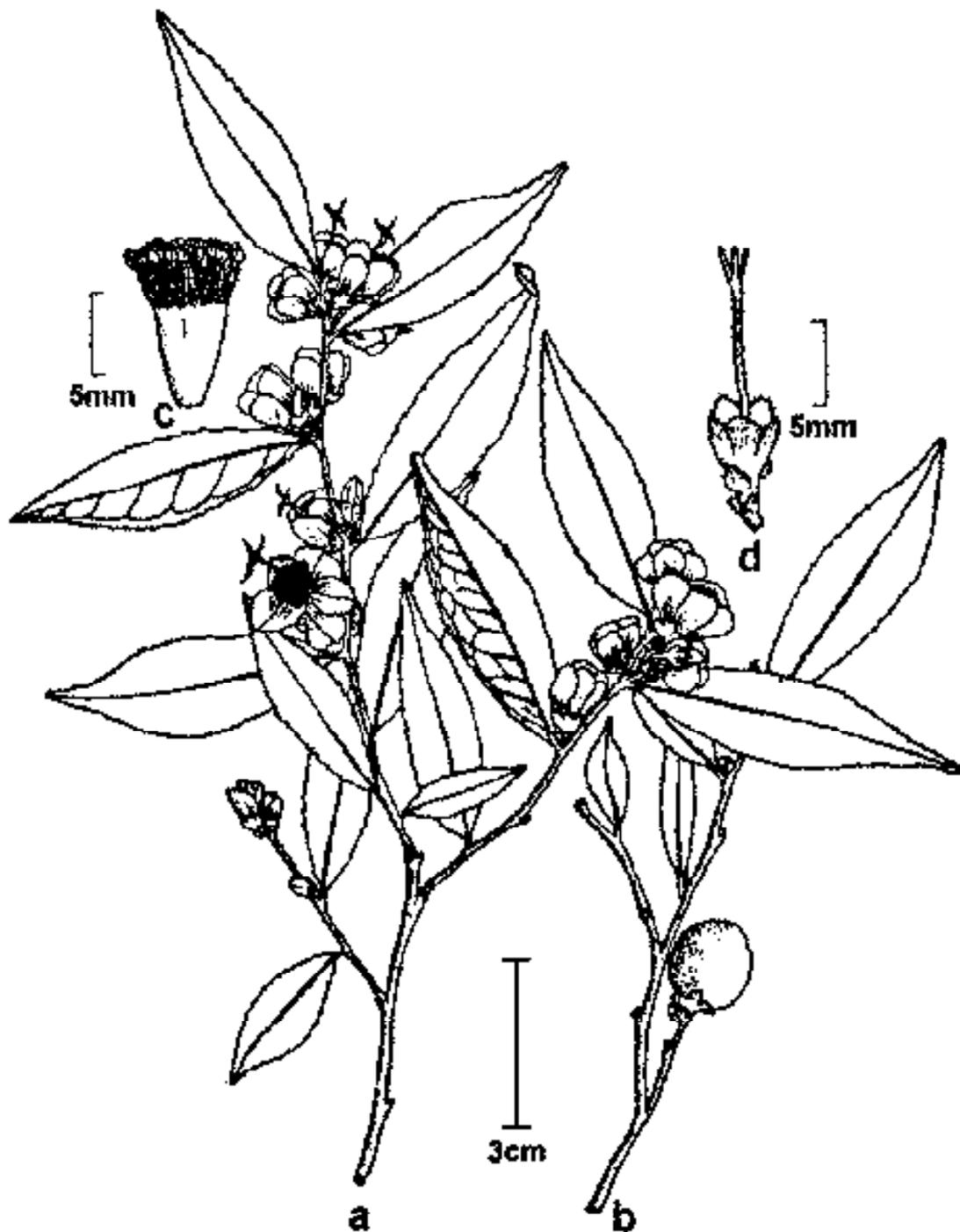


Fig. 51. *Camellia caudata* Wallich : a. Flowering Branch; b. Fruiting branch; c. Androecium; d. Flower with petals and stamens removed.

Camellia siangensis Paul & Nayar in Bull. Bot. Surv. India 27(1-4): 92. 1987; Chauhan & Paul in Sharma *et al.*, Fl. India 3:158. 1993.

Trees up to 5 m high; young branches purplish. Leaves elliptic to oblong-lanceolate. Flowers solitary, axillary or terminal, ca 1.5 cm across; sepals hairy outside.

Fl.: Nov.

Distrib.: Siang; 1150-1800 m, in forests.

Camellia sinensis (L.) O.Ktze. in Acta Horti Petrop. 10:195. 1887; Chauhan & Paul in Sharma *et al.*, Fl. India 3:159. 1993. *Thea sinensis* L., Sp. Pl. 515. 1753.

Local name: Cha (Asm.).

Shrubs up to 2 m high, branches glabrous. Leaves elliptic-oblong, coriaceous. Flowers solitary, axillary, nodding, white. Capsules leathery, trigonous or subglobose.

Fl. & Fr.: Sept. - Jan.

Distrib.: Tirap; usually cultivated.

Use: Leaf extract is used as beverage.

Eurya acuminata DC. in Mem. Syst. Phys. Geneve 1:418. 1822; Dyer in Hook. f., Fl. Brit. India 1:285. 1874; Chauhan & Paul in Sharma *et al.*, Fl. India 3:178. 1993. *E.phyllanthoides* Blume, Mus. Bot. 2:110. 1856. *E.japonica* Thunb. var. *phyllanthoides* (Blume) Dyer in Hook. f., Fl. Brit. India 1:284.1874. var. *acuminata*.

Local name: Marmura (Asm.); Theng-han-jang (Mik.).

Trees or large shrubs up to 8 m high with drooping pilose branches. Leaves oblong-lanceolate to narrow lanceolate, midrib sparsely hairy. Flowers in axillary fascicles, yellow, fragrant. Capsules globose.

Fl. & Fr.: Sept. - Nov.

Distrib.: Changlang, Siang; 800-1500 m, in forests.

Eurya acuminata var. *euprista* (Korthals) Dyer in Hook. f., Fl. Brit. India 1:285. 1874; Chauhan & Paul in Sharma *et al.*, Fl. India 3:178. 1993. *E. euprista* Korthals in Temminck, Verh. Nat. Gesch. Bezitt. Bot. 4:113. 1841; Dyer in Hook. f., Fl. Brit. India 1:285. 1874.

Shrubs up to 3 m high, hairy. Leaves oblong-elliptic, midrib pilose. Flowers in axillary fascicles, white or yellowish. Fruits globose.

Fl. & Fr.: Aug. - Oct.

Distrib.: Tirap; 1000-1500 m, on grassy hill slopes.

Eurya arunachalensis Chauhan in Ind. J. For. 13(1): 76. 1990(March); Giri *et al.* in J. Bombay Nat. Hist. Soc. 87(2):282. 1990 (August); Chauhan & Paul in Sharma *et al.*, Fl. India 3:180. 1993. **Fig. 52.**

Shrubs up to 4 m high. Leaves elliptic to oblanceolate, lateral nerves deeply impressed. Flowers in axillary fascicles, yellow.

Fl. & Fr.: March - Sept.

Distrib.: Kameng, Subansiri; 1500-3100 m, in forests.

Eurya cavinervis Vesque in Bull. Soc. Bot. France 42:158. 1895; Chauhan & Paul in Sharma *et al.*, Fl. India 3:182. 1993. *E. japonica* Thunb. var. *thunbergii* auct. non Thwaites 1858; Dyer in Hook. f., Fl. Brit. India 1:284. 1874, *p.p.*

Local name: Murmura (Asm.); Yabichangnae (Nishi).

Shrubs up to 2 m high, branches sparsely pilose. Leaves oblanceolate, veins deeply impressed. Flowers white or yellowish white. Fruits globose, purple.

Fl. & Fr.: Aug. - Nov.

Distrib.: Siang, Subansiri; 600-1400 m, in forests.

Eurya cerasifolia (D. Don) Kobuski in Ann. Missouri Bot. Gard. 25:326. 1938; Chauhan & Paul in Sharma *et al.*, Fl. India 3:182. 1993. *Diospyros cerasifolia* D. Don, Prodr. Fl. Nep. 14. 1825. *Eurya symplocina* Blume, Mus. Bot. Lugd.-Bat. 2:114. 1856; Dyer in Hook. f., Fl. Brit. India 1:284. 1874.

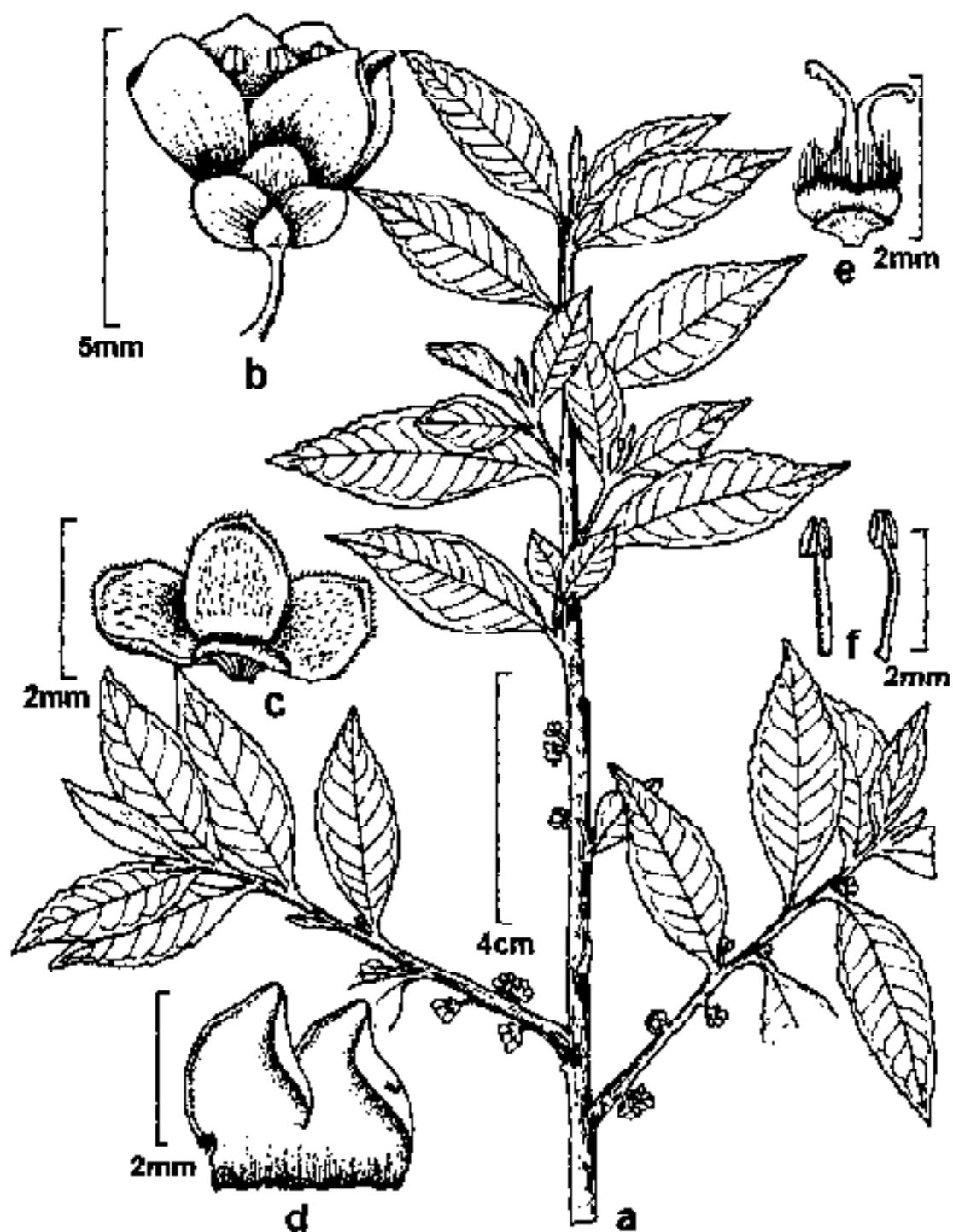


Fig. 52. *Eurya arumachalensis* Chauhan : a. Habit; b. Flower; c. Sepal; d. Petal; e. Stamens; f. Gynoecium.

Slender shrubs or small trees up to 6 m high, branches pilose. Leaves oblong-elliptic, appressed hairy, midrib and venules not impressed. Flowers in axillary fascicles, yellowish. Fruits globose.

Fl. & Fr.: Nov. - June.

Distrib.: Kameng, Siang; 1500-1800 m, in forests and shady places.

Eurya japonica Thunb., Nov. Gen. Pl. 68. 1783; Dyer in Hook. f., Fl. Brit. India 1:284. 1874; Chauhan & Paul in Sharma *et al.*, Fl. India 3:184. 1993.

Shrubs up to 3.5 m high, branches glabrous. Leaves oblanceolate to elliptic, undulate. Flowers in axillary fascicles or solitary, white or yellowish white. Fruits globose, bluish black.

Fl. & Fr.: June - Sept.

Distrib.: Subansiri; 1500-1800 m, undergrowth in primary forests.

Eurya nitida Korthals in Temminck, Verh. Nat. Gesch. Ned. Bezitt. Bot. 4:115, t.17. 1841; Chauhan & Paul in Sharma *et al.*, Fl. India 3:184. 1993. *E. japonica* var. *thunbergii* Thwaites, Enum. Pl. Zeyl. 41. 1858. *E. japonica* var. *nitida* (Korthals) Dyer in Hook. f., Fl. Brit. India 1:284. 1874.

Evergreen, spreading shrubs up to 6 m tall. Leaves elliptic to oblanceolate, upper part sharply serrate. Flowers in axillary fascicles, white or greenish white. Berries globose, brown.

Fl. & Fr.: March - Dec.

Distrib.: Arunachal Pradesh; 1000-2000 m, in tropical or subtropical forests.

Eurya trichocarpa Korthals in Temminck, Verh. Nat. Gesch. Ned. Bezitt. Bot. 4:114. 1841; Dyer in Hook. f., Fl. Brit. India 1:285. 1874; Chauhan & Paul in Sharma *et al.*, Fl. India 3:187. 1993. *E. trichogyna* Blume, Mus. Bot. Lugd.-Bat. 2:114. 1856.

Small tree with pendulous, hairy branches. Leaves elliptic to oblanceolate. Flowers in axillary fascicles, yellowish. Berries subglobose, brown, pubescent.

Fl. & Fr.: July - Jan.

Distrib.: Arunachal Pradesh; 1000-2000 m in tropical forests.

Pyrenaria barringtonifolia (Griffith) Seem in *Bonplandia* 7:49. 1859; Dyer in Hook. f., *Fl. Brit. India* 1:290. 1874. Chauhan & Paul in Sharma *et al.*, *Fl. India* 3:164. 1993. *Eusynaxis barringtoniaefolia* Griffith, *Not. Pl. Asiat.* 4:560. 1854. Fig. 53.

Local name: Gunbang (Abor); Bon madhuri (Asm.).

Scrambling shrubs up to 2.5 m high. Leaves elliptic or oblong-obovate; glabrous. Flowers axillary, solitary, white. Fruits fleshy, ovoid with lepidots.

Fl. & Fr.: April - Jan.

Distrib.: Kameng, Siang, Subansiri; 100-500 m, in primary forests.

Schima wallichii (DC.) Korthals in Temminck, *Verh. Nat. Gesch. Ned. Bezitt. Bot.* 5:143. 1842; Dyer in Hook. f., *Fl. Brit. India* 1:289. 1874; Chauhan & Paul in Sharma *et al.*, *Fl. India* 3:170. 1993. *Gordonia wallichii* DC., *Prodr.* 1:528. 1824. *G. integrifolia* Roxb., *Fl. Ind.* 2:572. 1832. *Schima mollis* Dyer in Hook. f., *Fl. Brit. India* 1:228. 1874. var. *wallichii*. Fig. 54.

Local name: Makrisal, Noga-bhe (Asm.); Cheknan-arong, Chingan-arong (Mik.).

Trees, 15-30 m high with spreading crown. Leaves oblong to obovate, entire or undulate. Flowers in terminal racemes, white or pale yellow. Fruits globose, brownish black.

Fl. & Fr.: June - Oct.

Distrib.: Changlang, Kameng, Siang, Subansiri, Tirap; 500-2000 m, in forests, along river banks.

Schima wallichii var. *khasiana* (Dyer) Bloembergen in *Reinwardtia* 2:164. 1952; Chauhan & Paul in Sharma *et al.*, *Fl. India* 3:168. 1993. *S. khasiana* Dyer in Hook. f., *Fl. Brit. India* 1:289. 1874.

Leaves ovate, membranous, strongly crenate or serrate at margin, lateral nerves inconspicuous, 5-8 pairs, glabrous. Fruits globular, split open laterally.

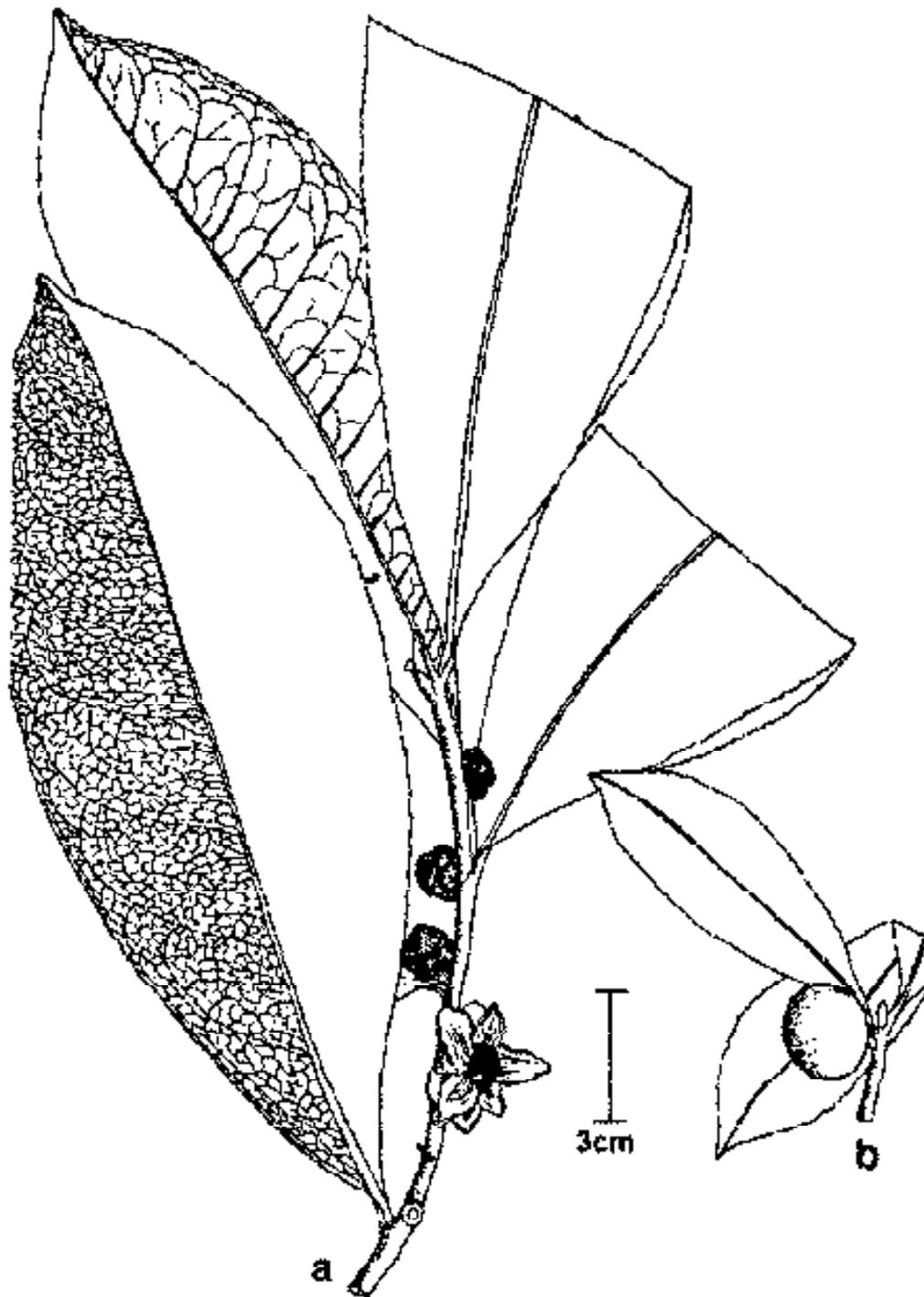


Fig. 53. *Pyrenaria barringtonifolia* (Griffith) Seem : a. Flowering branch; b. Fruit with two leaves.



Fig. 54. *Schima wallichii* (DC.) Korthals ♂ Flowering twig.

Fl. & Fr.: Aug. - Oct.

Distrib.: Kameng, Subansiri; 1400-1800 m, in forests.

ACTINIDIACEAE

Actinidia callosa Lindley, Nat. Syst. ed. 2:439, 1836; Dyer in Hook. f., Fl. Brit. India 1:286. 1874; Paul in Sharma *et al.*, Fl. India 3:195. 1993.

Fig. 55.

Stragglers; stems glabrous or white verrucose. Leaves ovate to broadly elliptic, tomentose beneath. Flowers in axillary umbellate cymes, white. Fruits ovoid, drooping.

Fl. & Fr.: May - Nov.

Distrib.: Kameng, Subansiri; 1000-2500 m, on the edge of opening in forests, or in old clearings.

Use: Fruits are edible.

Saurauia armata Kurz in J. Asiat. Soc. Bengal 42:59. 1873; Paul in Sharma *et al.*, Fl. India 3:198. 1993. *S. cerea* Griffith ex Dyer in Hook. f., Fl. Brit. India 1:288. 1874.

Local name: Porbotia-hengania (Asm.); Hero-changne (Daff., Nishi).

Shrubs or Small trees up to 5 m high; young branches with sharp, pointed scales. Leaves obovate, scaly. Flowers axillary, solitary, white. Fruits globose.

Fl. & Fr.: June - Oct.

Distrib.: Changlang, Kameng, Lohit, Subansiri; 400-1050 m, in open and dense forests, roadsides, forest edges.

Saurauia fasciculata Wallich, Pl. Asiat. Rar. 2:40, t. 148. 1831; Dyer in Hook. f., Fl. Brit. India 1:287. 1874; Paul in Sharma *et al.*, Fl. India 3:200. 1993.

Trees up to 8 m high. Leaves elliptic-oblong; branches densely rusty tomentose and scaly. Flowers in 1-3 flowered cymes, white to pink; bracts narrowly lanceolate. Berries globose, reddish brown when ripe.

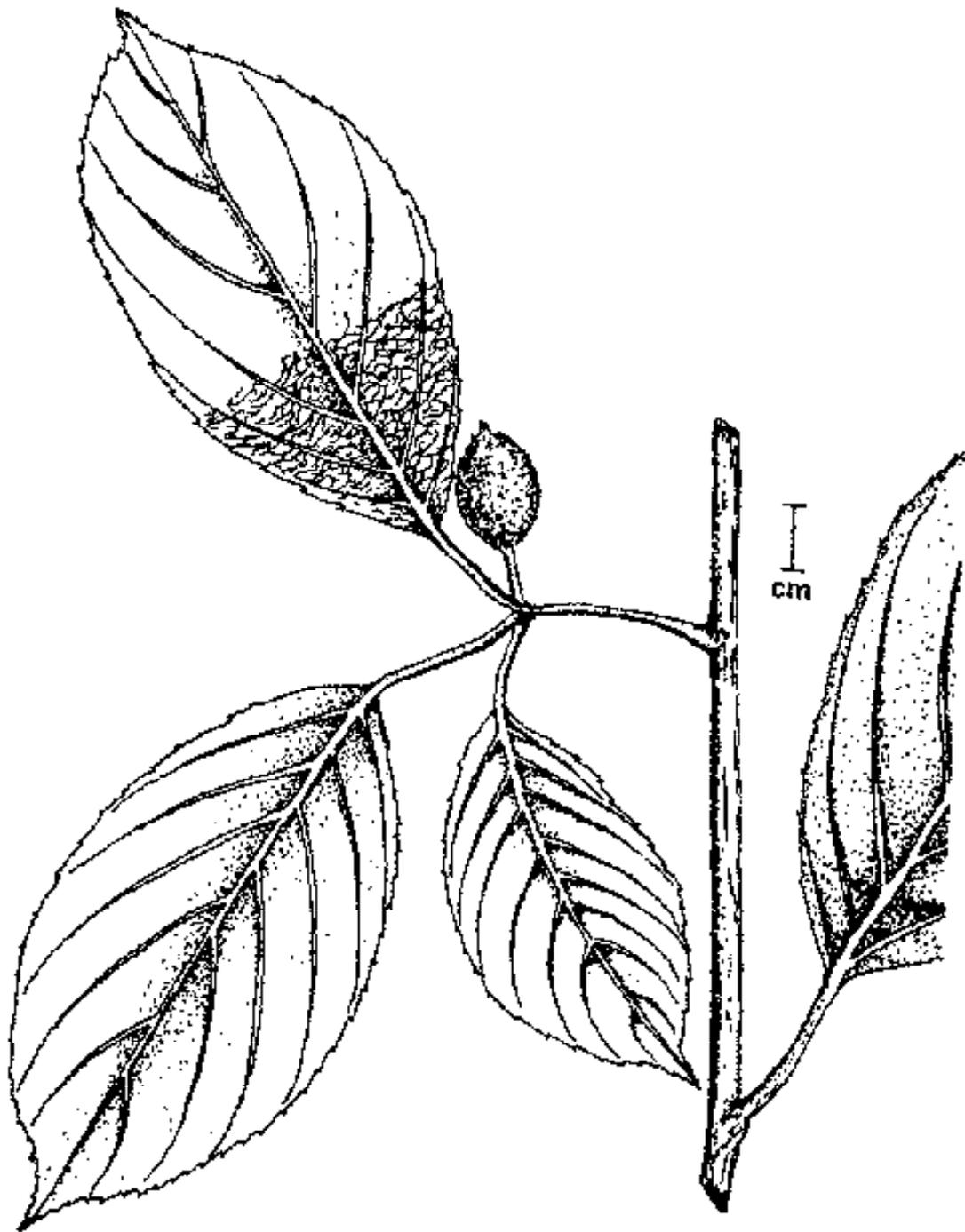


Fig. 55. *Actinidia callosa* Lindley. : Part of branch with fruits.

Fl. & Fr.: April - July.

Distrib.: Kameng, Tirap; 500-1200 m, in forests.

Saurauia griffithii Dyer in Hook. f., Fl. Brit. India 1:286. 1874; Paul in Sharma *et al.*, Fl. India 3:200. 1993.

Trees up to 12 m high; young branches rusty tomentose. Leaves elliptic-oblong. Flowers in axillary or terminal paniculate cymes, pinkish. Berries globose, whitish.

Fl. & Fr.: May - Sept.

Distrib.: Subansiri; 1200-1500 m, in open forest clearings and in secondary forests.

Saurauia macrotricha Kurz ex Dyer in Hook. f., Fl. Brit. India 1:287. 1874; Paul in Sharma *et al.*, Fl. India 3:201. 1993.

Small trees up to 10 m high; young branches stiff brownish or blackish hairy. Leaves oblong. Flowers in fascicles from fallen leaf axils, pink. Berries globose, white.

Fl. & Fr.: March - Aug.

Distrib.: Changlang, Subansiri, Tirap; 300-1500 m, underneath forests, along roadsides and forest edges.

Saurauia napaulensis DC., Mem. Transtr. 29. 1822; Dyer in Hook. f., Fl. Brit. India 1:287. 1874; Paul in Sharma *et al.*, Fl. India 3:201. 1993.

Local name: Argongma shing (Monpa).

Shrubs or Small trees up to 10 m high with spreading branches; young branches rusty tomentose and scaly. Leaves elliptic-oblong, brownish tomentose beneath. Flowers in long axillary panicles, pink. Berries globose, rosy.

Fl. & Fr.: April - Sept.

Distrib.: Dibang valley, Kameng, Lohit, Siang, Subansiri, Tirap; 1500-2000 m, along forest edges and roadsides.

Saurauia punduana Wallich, Pl. Asiat. Rar. 2:40. 1831; Dyer in Hook. f., Fl. Brit. India 1:287. 1874; Paul in Sharma *et al.*, Fl. India 3:202. 1993.

Fig. 56.

Shrubs or Small trees up to 8 m high; young branches tomentose and scaly. Leaves elliptic, glabrous above and white tomentose beneath. Flowers in axillary cymes, white or pink. Berries globose, red.

Fl. & Fr.: March - Feb.

Distrib.: Changlang, Dibang valley, Siang, Subansiri, Tirap; 800-2400 m, along forest edges.

Use: Ripe fruits are sweet, edible.

Saurauia roxburghii Wallich, Pl. Asiat. Rar. 2:40. 1831; Dyer in Hook. f., Fl. Brit. India 1:287. 1874; Paul in Sharma *et al.*, Fl. India 3:202. 1993.

Local name: Bonposola, Paniposola, Hengunia (Asm.); Nonthler-arong (Mik.); Chepu changne, Chipung-changne (Nishi).

Trees up to 12 m high with lax crown; young parts densely rusty tomentose. Leaves elliptic to oblong-lanceolate, glabrous. Flowers in axillary cymes, pinkish. Berries subglobose, white.

Fl. & Fr.: May - Sept.

Distrib.: Changlang, Kameng, Lohit, Subansiri, Tirap; 200-1500 m, along forest edges.

Use: Leaves are used in preparation of country liquor. Ripe fruits are eaten.

Insufficiently known material

Actinidia callosa var. *pubescens* Dunn in J. Linn. Soc. Bot. 39:106. 1911.

STACHYURACEAE

Stachyurus himalaicus Hook. f. & Thomson ex Benth. In J. Linn. Soc. Bot. 5:55. 1861; Dyer in Hook. f., Fl. Brit. India 1:288. 1874; Raju & Singh in Sharma *et al.*, Fl. India 3:204. 1993.

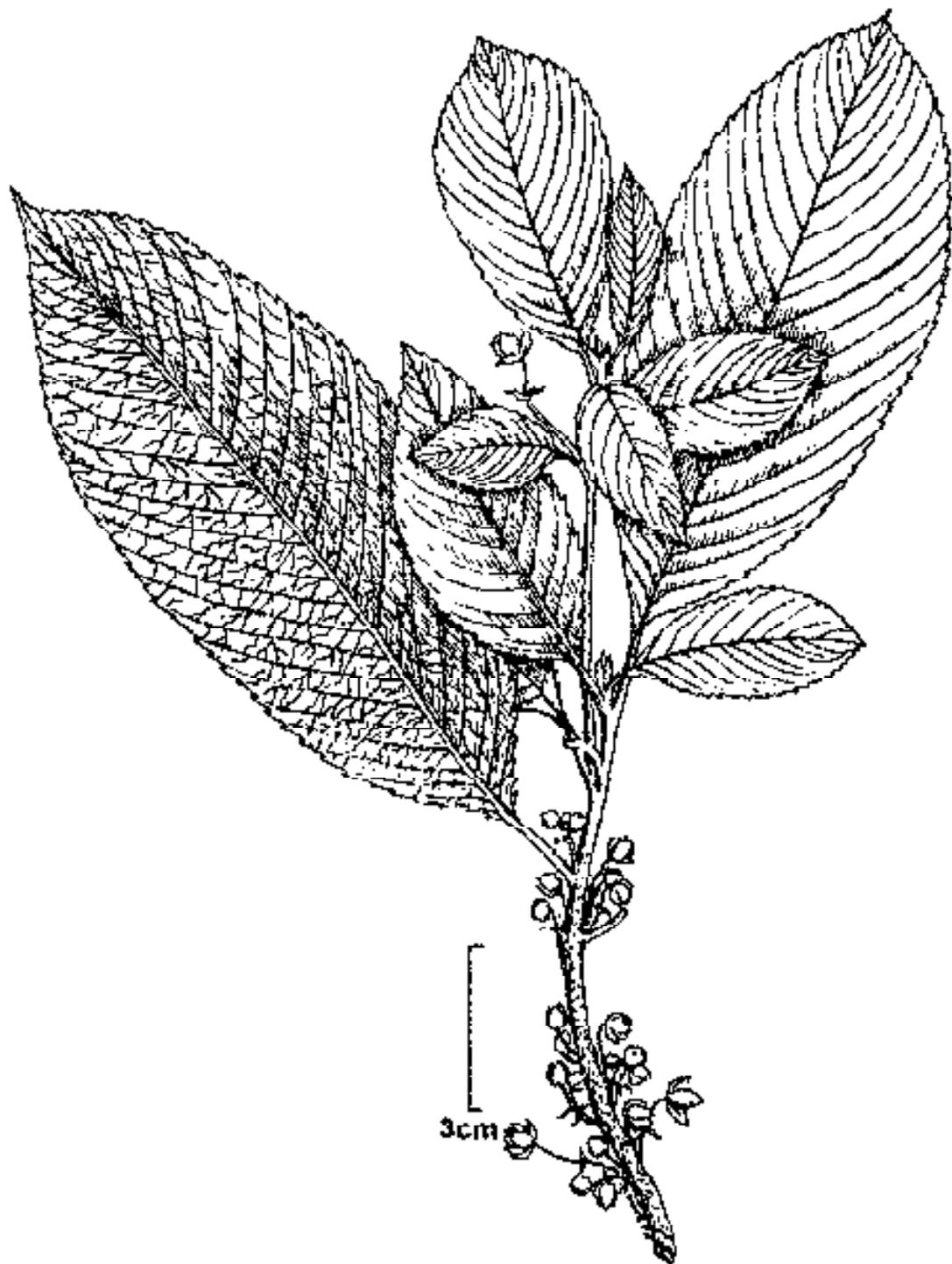


Fig. 56. *Saurauia punduana* Wallich. : Flowering twig.

Shrubs or Small trees; branches straggling, gland dotted, reddish purple. Leaves lanceolate, finely serrate, strongly reticulate beneath. Flowers lateral or axillary, solitary, reddish pink. Berries globose.

Fl. & Fr.: March - July.

Distrib.: Kameng, Subansiri; 200-1000 m, in shades of tall trees on hill slopes.

DIPTEROCARPACEAE

Dipterocarpus gracilis Blume, Bijdr. 5:224. 1825; Janardhanan in Sharma *et al.*, Fl. India 3:212. 1993. *D. pilosus* Roxb., Fl. Ind. 2:615. 1832; Dyer in Hook. f., Fl. Brit. India 1:296. 1874.

Trees ca 40 m high; branchlets rufous tomentose. Leaves elliptic-oblong; margin ciliate. Flowers axillary, pinkish. Fruits ovoid with persistent calyx. Seed winged.

Fl. & Fr.: June - Oct.

Distrib.: Tirap; 150-350 m, in tropical forests.

Dipterocarpus mannii King ex U. N. & P. C. Kanjilal & Das, Fl. Assam 1(1):133. 1934; Janardhanan in Sharma *et al.*, Fl. India 3:217. 1993.

Local name: Hollong or Holong (Asm.).

Trees, 30-50 m high; young shoots stout, green velvety tomentose. Leaves elliptic-oblong or oblong, ciliate, stellate pubescent on nerves beneath. Flowers in axillary panicles. Fruits globose, densely silky.

Fl. & Fr.: June - Jan.

Distrib.: Siang, Subansiri, Tirap; 100-500 m, in tropical primary forests, roadsides.

Dipterocarpus retusus Blume, Catalogus. 77. 1823; Janardhanan in Sharma *et al.*, Fl. India 3:218. 1993. *D. macrocarpus* Vesque, C. R. Ac. Sci. Paris 78:627. 1874.

Local name: Solong (Adi); Holong (Asm.); Silong bang (Nokte).

Trees up to 30 m high with spherical crown; branches pubescent or glabrous. Leaves elliptic-oblong, densely brown ciliate. Flowers solitary, pink. Fruits subglobose, pointed at both ends and with winged seeds.

Fl. & Fr.: Aug. - Nov.

Distrib.: Changlang, Tirap; 100-200 m, in dense tropical forests.

Use : An important timber, used for house building, specially for plank-ing.

Hopea shingkeng (Dunn) Bor in Ind. for. Rec. n.s. Bot. 2:227. 1941; Janardhanan in Sharma *et al.*, Fl. India 3:232. 1993. *Vatica shingkeng* Dunn in Kew Bull. 1920:198. 1920; Burkill in Rec. Bot. Surv. India 10:244. 1924.

Fig. 57.

Local name: Shingkeng (Abor).

Trees up to 18 m tall; young branches brown. Leaves elliptic-oblong, glossy above. Flowers in axillary, glabrous panicles. Fruits globose.

Fl. & Fr.: March - July.

Distrib.: Siang; 300-600 m, in forest hill slopes.

Shorea assamica Dyer in Hook. f., Fl. Brit. India 1:307. 1874; Janardhanan in Sharma *et al.*, Fl. India 3:235. 1993.

Local name: Makai (Asm.); Rap-bang (Nokte).

Trees up to 30 m high with large crown; younger parts tomentose. Leaves elliptic to oblong-lanceolate, shining above. Flowers in axillary or subterminal panicles, white. Fruits fleshy, 1-seeded, winged.

Fl. & Fr.: Sept. - Dec.

Distrib.: Changlang; 100-500 m, in dense tropical forests.

Use : Timber is used for making door, windows, planking and tea chests.

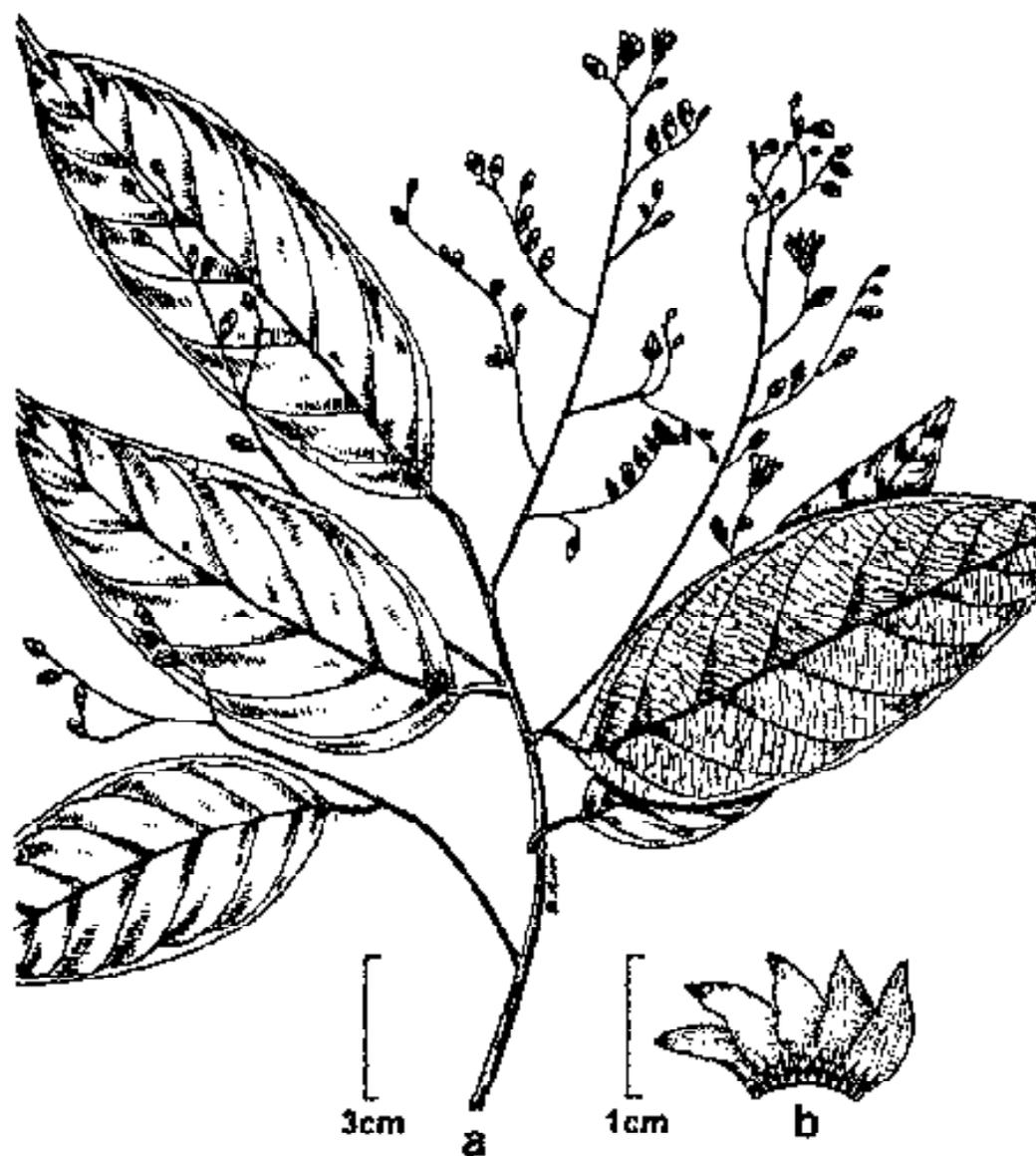


Fig. 57. *Hopea shingkeng* (Dunn) Bor : a. Flowering twig; b. Petals with stamens.

Shorea robusta Roxb. ex Gaertn. f. *Suppl. Carp.* 3:48, t. 186. 1805; Dyer in Hook. f., *Fl. Brit. India* 1:306. 1874; Janardhanan in Sharma *et al.*, *Fl. India* 3:237. 1993. Fig. 58.

Local name: Sal, Hal (Asm.); Hal arong (Mik.).

Deciduous trees up to 40 m high with oval crown. Leaves ovate-oblong, pinkish when young, orange yellow at senescence. Flowers in axillary or terminal cymose panicles, peduncle and rachis densely tomentose, creamy white. Fruits indehiscent, enclosed by accrescent calyx, densely pubescent.

Fl. & Fr.: March - July.

Distrib.: Kameng; 100-500 m, in tropical dense primary forests.

Use : Important timber for making furniture. Brown dye is obtained from bark. The oleo-resin is used for caulking boats and is burned for incense.

Vatica lanceaefolia (Roxb.) Blume, *Mus. Bot. Lugd.-Bat.* 2:31. 1852; Dyer in Hook. f., *Fl. Brit. India* 1:302. 1874; Janardhanan in Sharma *et al.*, *Fl. India* 3:250. 1993. *Vateria lanceaefolia* Roxb., *Fl. Ind.* 2:601. 1832.

Local name: Keuo-asing (Adi); Moral (Asm.); Mir-kom-phor (Mik.); Kalang-asing (Miri).

Deciduous trees up to 12 m high with compact oval crown; young shoots mealy puberulous. Leaves elliptic-lanceolate. Flowers axillary, solitary, or fascicled, white, fragrant. Fruits ovoid, brown velvety.

Fl. & Fr.: May - Sept.

Distrib.: Kameng, Siang; 400-800 m, in primary dense forests.

MALVACEAE

Abelmoschus esculentus (L.) Moench, *Meth. Pl.* 617. 1794; Paul in Sharma *et al.*, *Fl. India* 3:385. 1993. *Hibiscus esculentus* L., *Sp. Pl.* 696. 1753; Masters in Hook. f., *Fl. Brit. India* 1:343. 1874.

Herbs up to 2 m high; young parts stiff hairy. Leaves 5-7 lobed with cordate base. Flowers yellow or whitish yellow with dark purple centre. Capsules exceeding epicalyx.

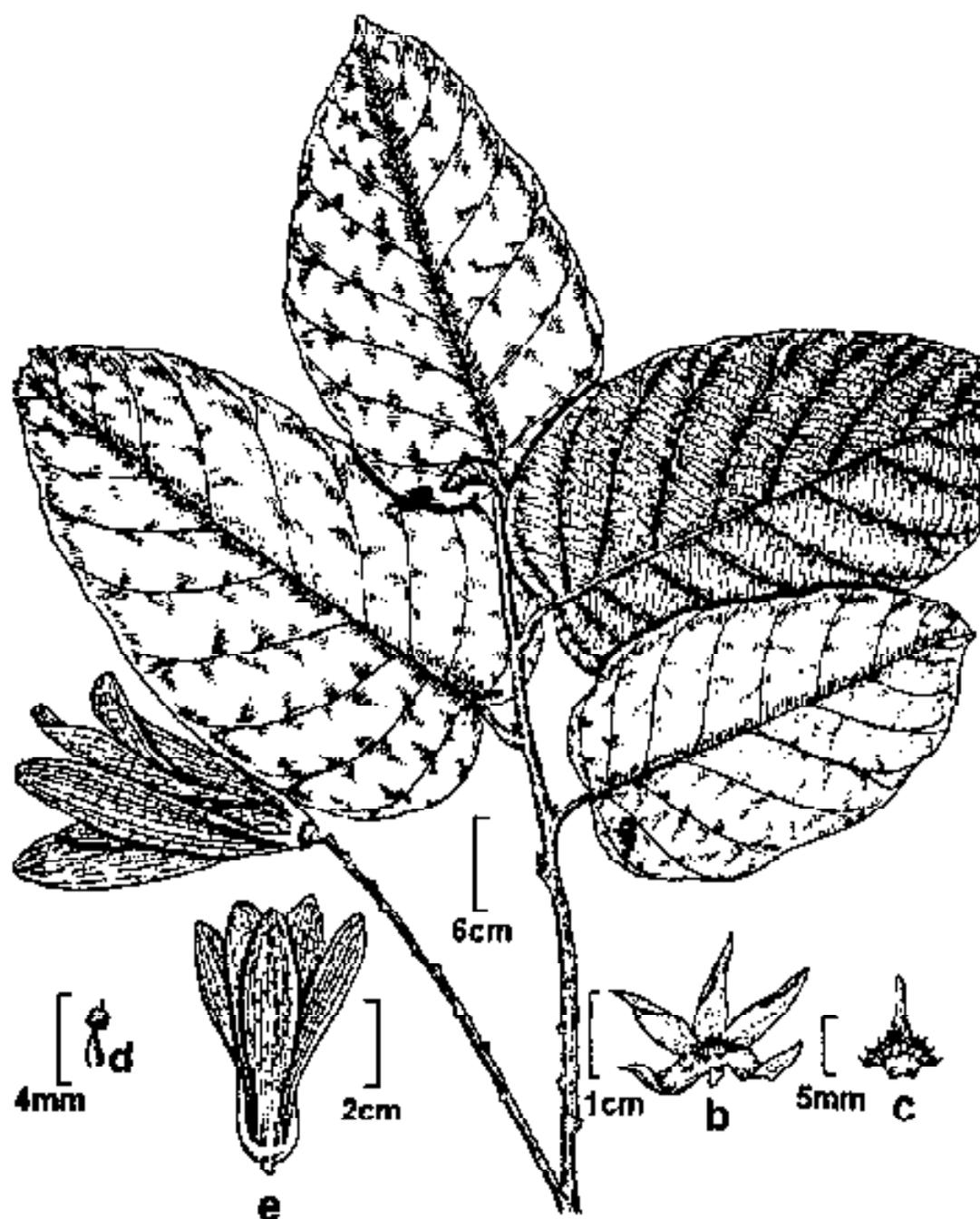


Fig. 58. *Shorea robusta* Roxb. ex Gaertn.f. : a. Fruiting twig; b. Flower; c. Stamens and pistil; d. Stamen; e. Fruit.

Fl. & Fr.: July - Oct.

Distrib.: Tirap; 300-1000 m, in moist valleys or on hill slopes, usually cultivated 'Bhindi or Lady's finger'.

Abelmoschus manihot (L.) Medikus, Malv. 46. 1787; Paul in Sharma *et al.*, Fl. India 3:305,306. 1993. *Hibiscus manihot* L., Sp. Pl. 696. 1753; Masters in Hook. f., Fl. Brit. India 1:341. 1874. subsp. *manihot* var. *manihot*.

Herbs or undershrubs up to 2.5 m high; stem and branches glabrous. Leaves 3-9 lobed. Flowers axillary, solitary, yellow with a small purple centre; epicalyx segments 4-6, ovate. Capsules ovoid-oblong.

Fl. & Fr.: July - Dec.

Distrib.: Changlang, Subansiri; 1500-1800 m, in wastelands, open fields.

Abelmoschus manihot subsp. *tetraphyllus* Roxb. var. *pungens* (Roxb.) Hochr. in Candollea 2:87. 1924; Paul in Sharma *et al.*, Fl. India 3:307. 1993. *Hibiscus pungens* Roxb., Fl. Ind. 3:213. 1832; Masters in Hook. f., Fl. Brit. India 1:341. 1874.

Prickly hairy undershrubs up to 3 m high. Epicalyx segments stiff, simple, hispid hairy margined. Flowers yellow, showy.

Fl. & Fr.: Nov. - Sept.

Distrib.: Kameng, Siang, Subansiri; 500-1300 m, along forest edges.

Abelmoschus moschatus Medikus, Malv. 46. 1787; Paul in Sharma *et al.*, Fl. India 3:308. 1993. *Hibiscus abelmoschus* L., Sp. Pl. 696. 1753; Masters in Hook. f., Fl. Brit. India 1:342. 1874.

Shrubs up to 2 m high, hirsute. Leaves 3-7 palmi lobed. Flowers solitary, axillary, yellow; corolla centrally purple. Capsules exceeding epicalyx, greyish brown, densely hairy, ovoid-oblong.

Fl. & Fr.: April - Aug.

Distrib.: Kameng, Subansiri, Tirap; 600-1500 m, along forest edges, in bamboo forests.

Abutilon indicum (L.) Sweet, Hort. Brit. ed. 1, 54. 1826; Masters in Hook. f., Fl. Brit. India 1:326. 1874; Paul in Sharma *et al.*, Fl. India 3:266. 1993. *Sida indica* L., Cent. Pl. 2:26. 1756. *Abutilon indicum* var. *populifolium* (Lamk.) Wight & Arn. ex Masters in Hook. f., Fl. Brit. India 1:326. 1874.

Local name: Kankatika, Jhapa (Asm.).

Annual or perennial herbs up to 2.5 m high; stems densely stellate pubescent. Leaves ovate to orbicular, base cordate. Flowers axillary, solitary or in 2-3 flowered racemes, orange yellow, fragrant. Schizocarps with 15-25 mericarps.

Fl. & Fr.: Sept. - April.

Distrib.: Subansiri; 300-800 m, in forests.

Abutilon ramosum (Cav.) Guill. & Perr. in Guill. *et al.*, Fl. Seneg. 1:68. 1830; Masters in Hook. f., Fl. Brit. India 1:328. 1874; Paul in Sharma *et al.*, Fl. India 3:371. 1993. *Sida ramosa* Cav., Diss. 1:28, t. 6.f.1. 1785. Fig. 59.

Perennial herbs or undershrubs, 1-3 m high; stems densely stellate hairy. Leaves ovate, cordate, minutely stellate pubescent. Flowers yellow, axillary or terminal, solitary, paired or in dichotomous cymes. Schizocarps with 8-10 mericarps, each with 2 spreading awns.

Fl. & Fr.: Aug. - March.

Distrib.: Lohit; 500-1000 m, in open forests.

Fioria vitifolia (L.) Mattei, Bot. Ort. Bot. Palermo n.s. 2:71. 1916; Paul in Sharma *et al.*, Fl. India 3:310. 1993. *Hibiscus vitifolius* L., Sp. Pl. 696. 1753; Masters in Hook. f., Fl. Brit. India 1:338. 1874. Fig. 60.

Herbs or undershrubs, 1-2 m high. Leaves ovate to orbicular, 3-5 lobed. Epicalyx 7-12 segmented. Flowers axillary, solitary, yellow with purple centre. Capsules winged, shorter than calyx with 5 bristly wings.

Fl. & Fr.: April - Dec.

Distrib.: Siang; 600-1200 m, in open forests.

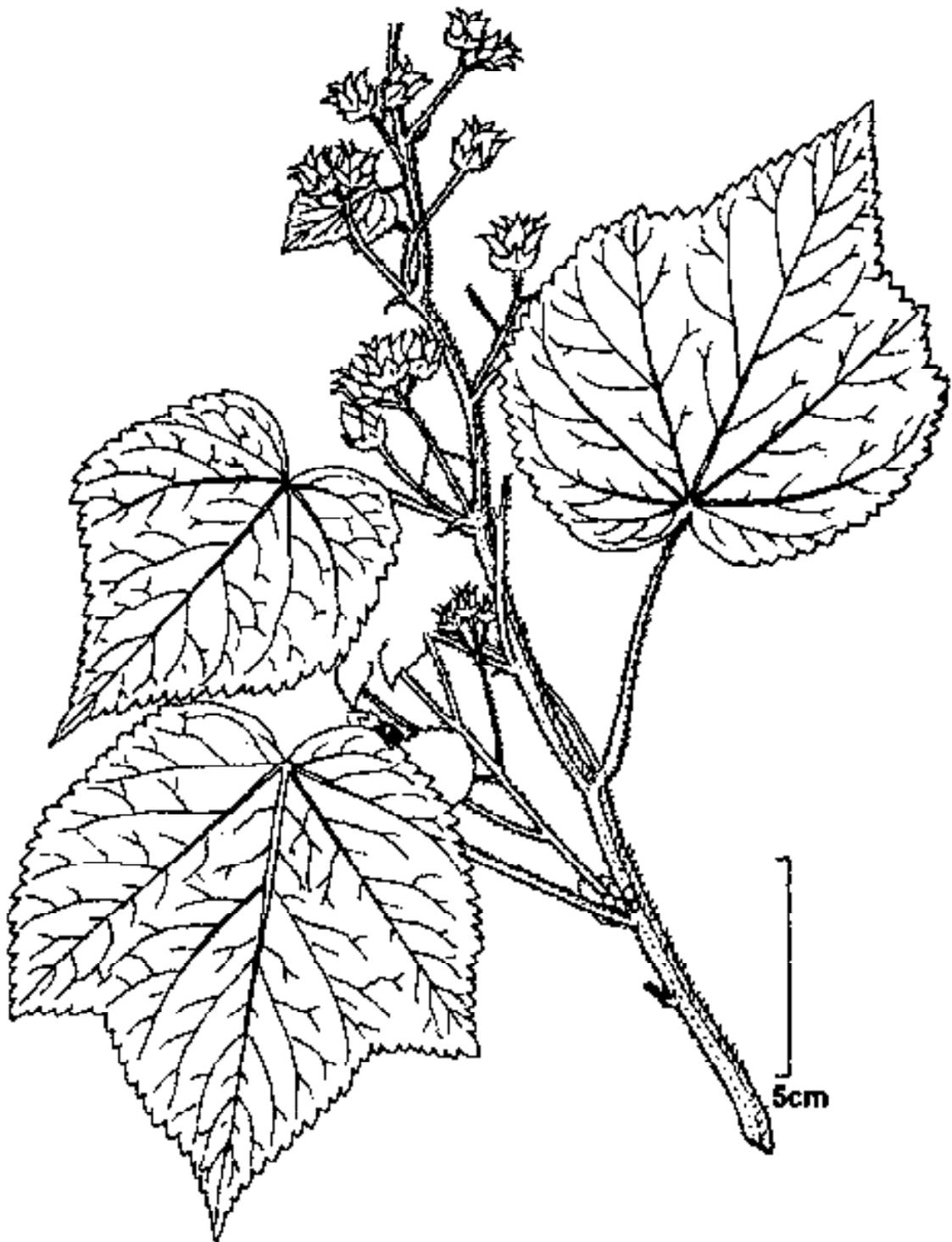


Fig. 59. *Abutilon ramosum* (Cav.) Guill. & Perr.



Fig. 60. *Fioria vitifolia* (L.) Mattei.

Gossypium arboreum L., Sp. Pl. 693. 1753; Masters in Hook. f., Fl. Brit. India 1:347. 1874; Paul in Sharma *et al.*, Fl. India 3:313. 1993. *G. neglectum* Todaro, Relaz. Cult. Cot. 169. 1878. *G. arboreum* var. *neglectum* (Todaro) Watt, Cott. Pl. 95, tt. 10, 11, 12. 1907.

Annual or perennial shrubs, stellate hairy. Leaves ovate to orbicular, 3-5 (-7) lobed, lobes lanceolate. Flowers solitary, axillary, pale yellow. Epicalyx segments subentire. Capsules ovoid or globular.

Fl. & Fr.: April - Jan.

Distrib.: Siang; 500-1200 m, in open forests.

Hibiscus fragrans Roxb., Fl. Ind. 3:195. 1832; Masters in Hook. f., Fl. Brit. India 1:337. 1874; Paul in Sharma *et al.*, Fl. India 3:318. 1993.

Local name: Pichlot-lata (Asm.).

Sprawling shrubs, 4-5 m high; branchlets and petioles stellate hairy. Leaves ovate, stellate hairy. Flowers solitary, axillary, white or pinkish with pale yellow centre, fragrant. Capsules ovoid, densely stellate hairy.

Fl. & Fr.: Oct. - April.

Distrib.: Kameng, Lohit; 700-1400 m, along forest edges.

Hibiscus macrophyllus Roxb. ex Hornem., Hort. Hafn. Suppl. 149. 1819; Masters in Hook. f., Fl. Brit. India 1:337. 1874; Paul in Sharma *et al.*, Fl. India 3:318. 1993. *H. setosus* Roxb., Fl. Ind. 3:194. 1832. *H. vestitus* Griffith, Not. Pl. Asiat. 4:519. 1854.

Trees up to 20 m high with spreading branches, stellate pubescent. Leaves large, orbicular, cordate, brownish stellate pubescent. Flowers in terminal cymes or solitary, yellow. Capsules obovoid with a beak.

Fl. & Fr.: Jan. - May.

Distrib.: Kameng; 100-1000 m, in open forests.

Hibiscus surattensis L., Sp. Pl. 696. 1753; Masters in Hook. f., Fl. Brit. India 1:334. 1874; Paul in Sharma *et al.*, Fl. India 3:327. 1993. **Fig. 61.**

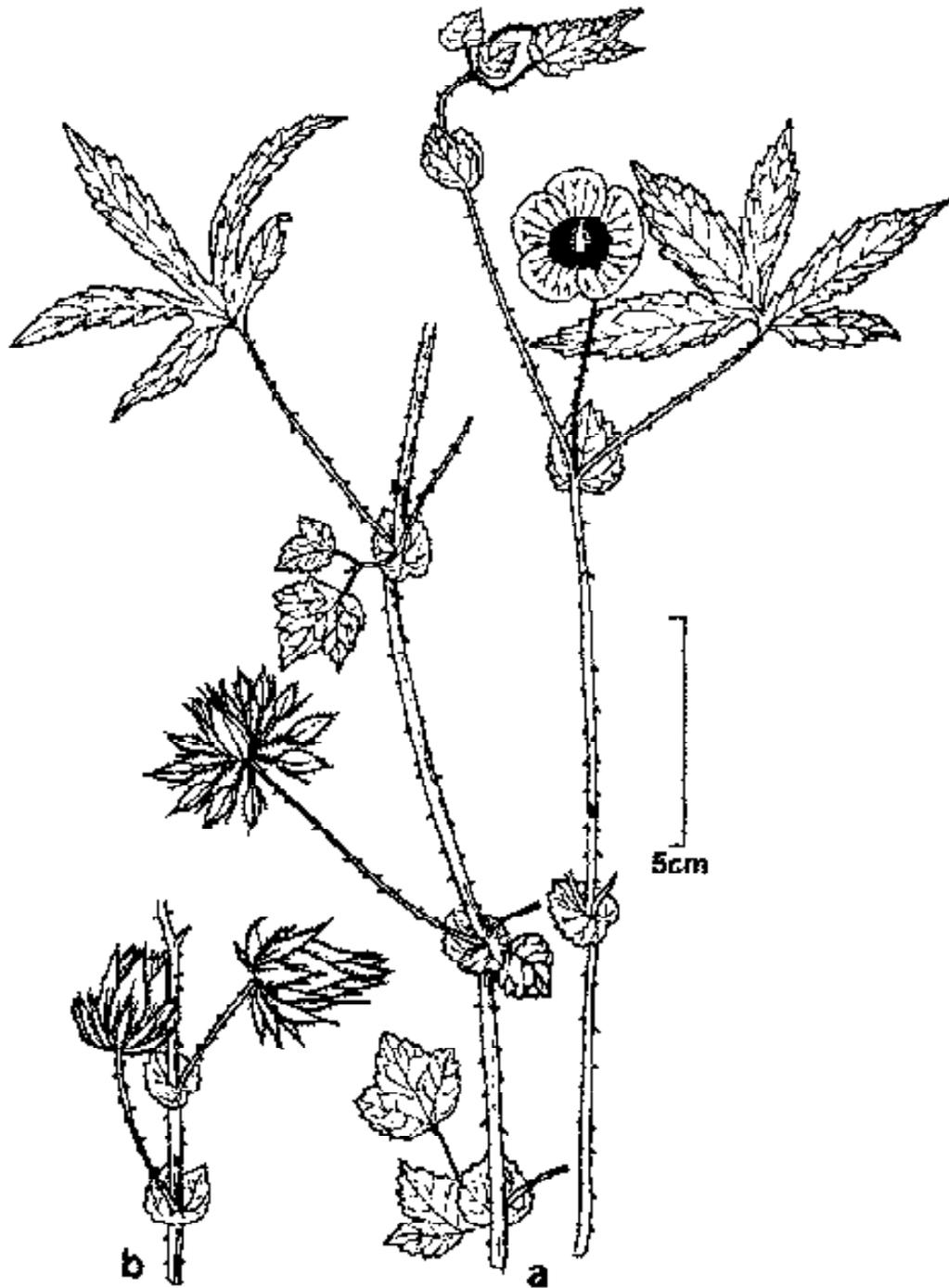


Fig. 61. *Hibiscus surattensis* L. : a. Flowering twig; b. Fruiting twig.

Scandent, sometimes trailing herbs or shrubs; stems with recurved prickles. Leaves ovate, lower ones 3-5 palmilobed. Epicalyx spatulate with 10 segments. Flowers solitary, axillary, yellow with deep purple centre. Capsules ovoid, yellowish bristly hairy.

Fl. & Fr.: Sept. - Feb.

Distrib.: Kameng, Subansiri, Tirap; 200-1000 m, in open places, wastelands.

Hibiscus syriacus L., Sp. Pl. 695. 1753; Masters in Hook. f., Fl. Brit. India 1:344. 1874; Paul in Sharma *et al.*, Fl. India 3:393. 1993.

Erect shrubs, 3-8 m high; young branches stellate hairy. Leaves deltoid-ovate, often 3-lobed. Flowers axillary, solitary, white or purplish. Capsules obtuse or abruptly and shortly beaked.

Fl. & Fr.: June - Oct.

Distrib.: Lohit; 1000-1500 m, in open forest slopes.

Kydia calycina Roxb., Pl. Corom. 3:11, t. 215. 1819; Masters in Hook. f., Fl. Brit. India 1:348. 1874; Paul in Sharma *et al.*, Fl. India 3:344. 1993. *K. fraterna* Roxb., Pl. Corom. 3:12, t. 216. 1819. *K. roxburghiana* Wight, Ic. Pl. Ind. Or. 3:t. 881. 1844.

Local name: Pichhola, Kukuha (Asm.); Tabri-changne (Daff.).

Trees, 15-20 m high with globose crown; young parts densely stellate pubescent. Leaves suborbicular, stellate pubescent beneath. Flowers in panicle cymes, white. Capsules subglobose, yellowish villous.

Fl. & Fr.: Sept. - Feb.

Distrib.: Changlang, Lohit, Siang, Subansiri, Tirap; 600-1400 m, in forests.

Kydia glabrescens Masters in Hook. f., Fl. Brit. India 1:348. 1874; Paul in Sharma *et al.*, Fl. India 3:344. 1993.

Local name: Kukuha (Asm.).

Trees up to 30 m high; branchlets glabrescent. Leaves ovate to suborbicular, glabrous beneath. Epicalyx segments 4. Flowers in axillary or terminal panicles, white. Capsules globose.

Fl. & Fr.: Aug. - Sept.

Distrib.: Changlang, Dibang valley, Lohit; 800-1200 m, in open forests, roadsides and slopes.

Malva parviflora L. in Hoejer, *Demonstr. Pl. Hort. Ups.* 18. 1753 & *Sp. Pl.* ed. 2, 969. 1763; Masters in Hook. f., *Fl. Brit. India* 1:321. 1874; Paul in Sharma *et al.*, *Fl. India* 3:361. 1993.

Annual, semierect to prostrate, stellate hairy herbs up to 50 cm high. Leaves suborbicular, cordate, 3-7 lobed. Flowers in axillary clusters, bluish white. Epicalyx linear. Schizocarps globose; mericarps reniform, keeled.

Fl. & Fr.: Oct. - March.

Distrib.: Kameng; 500-1000 m, in open places along roadsides.

Malva verticillata L., *Sp. Pl.* 689. 1753; Masters in Hook. f., *Fl. Brit. India* 1:320. 1874; Paul in Sharma *et al.*, *Fl. India* 3:363. 1993. *M. neilgherrensis* Wight, *Ic. Pl. Ind. Or.* t. 950. 1845.

Local name: Laffa (Asm.).

Annual or perennial glabrescent herbs up to 2 m high. Leaves suborbicular, cordate, 5-6 lobed. Flowers in dense axillary clusters, pinkish white. Epicalyx linear. Schizocarps globose; mericarps reniform.

Fl. & Fr.: March - May.

Distrib.: Kameng; 1500-1800 m, in open places, cultivated fields and along stream sides.

Sida acuta Burm. f., *Fl. Ind.* 147. 1768; Paul in Sharma *et al.*, *Fl. India* 3:281. 1993. *S. lanceolata* Retz., *Obs. Bot.* 4:119. 1786; Roxb., *Fl. Ind.* 3:175. 1832. *S. carpinifolia auct. non L.f.*: Masters in Hook. f., *Fl. Brit. India* 1:323. 1874.

Fig. 62.

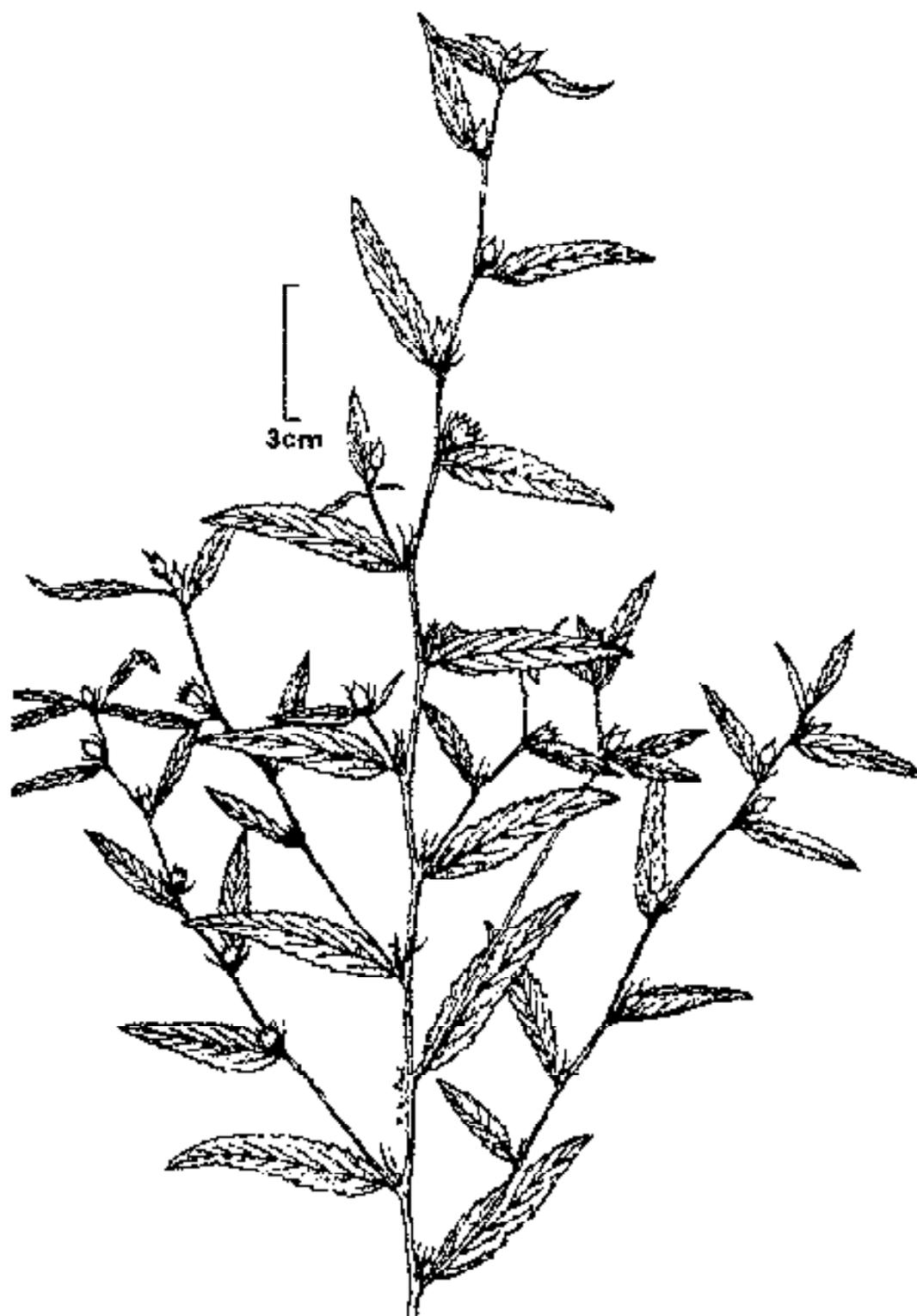


Fig. 62. *Sida acuta* Burm. f.

Herbs or undershrubs up to 2 m high. Leaves lanceolate to ovate-oblong; stipules dissimilar in each pair. Flowers axillary, solitary or in clusters, pale yellow. Schizocarps with 6-10 mericarps.

Fl. & Fr.: Sept. - May.

Distrib.: Changlang, Subansiri; 700-1600 m, along roadsides and forest edges.

Sida rhombifolia L., Sp. Pl. 684. 1753; Masters in Hook. f., Fl. Brit. India 1:323. 1874; Paul in Sharma *et al.*, Fl. India 3:289,290. 1993. *S. rhomboidea* Roxb. ex Fleming in Asiat. Res. 6:178. 1810. *S. rhombifolia* var. *rhomboidea* (Roxb. ex Fleming) Masters in Hook. f., Fl. Brit. India 1:324. 1874. *S. rhombifolia* var. *obovata* Wallich ex Masters in Hook. f., Fl. Brit. India 1:324. 1874. *S. rhombifolia* var. *microphylla* (Cav.) Masters in Hook. f., Fl. Brit. India 1:324. 1824.

Local name: Boriala (Asm.).

Undershrubs up to 1 m high with large tap roots. Leaves ovate to oblong or rhomboid; stipules nearly equal in each pair. Flowers in axillary clusters or solitary, yellow. Mericarps 6-12, each with 2 awns, dehiscent.

Fl. & Fr.: July - Dec.

Distrib.: Kameng, Siang, Subansiri; 800-2000 m, along roadsides near water sources.

Urena lobata L., Sp. Pl., 692. 1753; Masters in Hook. f., Fl. Brit. India 1:329. 1874; Paul in Sharma *et al.*, Fl. India 3:380. 1993.

Local name: Hon-barolua, Sokomaru (Asm.).

Annual or perennial undershrubs up to 1.5 m high, much branched. Leaves shallowly lobed, orbicular. Flowers in axillary dense clusters or solitary, rosy or purple. Schizocarps globular, sharply hooked at top.

Fl. & Fr.: July - Jan.

Distrib.: Changlang, Dibang valley, Kameng, Siang, Subansiri, Tirap; 100-1500 m, along forest edges, roadsides and grasslands.

Use : Roots are made into paste and applied in the form of plaster in snake bite.

Wissadula periplocifolia (L.) Presl. ex Thwaites, Enum. Pl. Zeyl. 27. 1858; Paul in Sharma *et al.*, Fl. India 3:384. 1993. *Sida periplocifolia* L., Sp. PL. 684. 1753. *Wissadula zeylanica* Medikus, Malv. 25. 1787. *W.rostrata* Planch. var. *zeylanica* (Medikus) Masters in Hook. f., Fl. Brit. India 1:325. 1874.

Suffrutescent shrubs up to 2 m high; stems, petioles and pedicels clothed with stellate hairs. Leaves oblong, cordate. Lower flowers axillary, solitary; upper flowers in lax panicles, pale yellow. Schizocarps obconic, mericarps dorsally rounded.

Fl. & Fr.: April - June.

Distrib.: Kameng; 1000-1500 m, in open forests.

BOMBACACEAE

Bombax ceiba L., Sp. Pl. 511. 1753, *p.p.*; Nayar & Biswas in Sharma *et al.*, Fl. India 3:398. 1993. *B.malabaricum* DC., Prodr. 1:479. 1824; Masters in Hook. f., Fl. Brit. India 1:349. 1874. *Salmaalina malabarica* (DC.) Schott in Schott & Endl., Melet. Bot. 35. 1832. Fig. 63.

Local name: Himolu, Himila (Asm.).

Large, deciduous trees up to 40 m high with lax, pyramidal crown and usually buttressed at base; branches in whorls; prickles conical, woody, old prickles blunt. Leaves digitately compound. Flowers from fallen leaf-axils, red, showy. Capsules oblong-ovoid, velvety.

Fl. & Fr.: Feb. - June.

Distrib.: Siang, Subansiri, Tirap; 100-650 m, in tropical mixed evergreen forests.

Use : Wood is widely used in match industry, making tea chests and plywood. Silk cotton obtained from seeds is used for stuffing cushions, pillows, mattresses, etc.

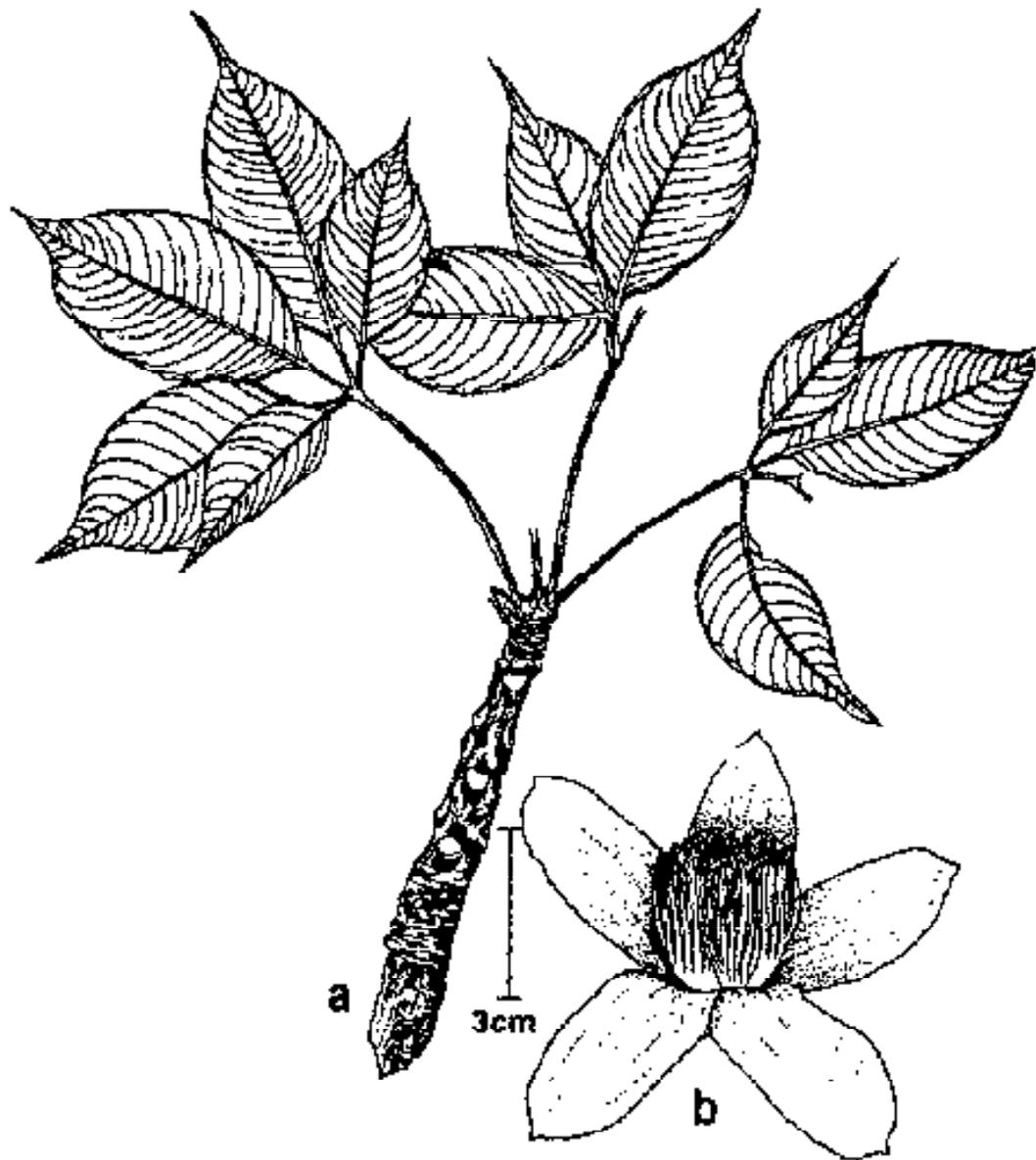


Fig. 63. *Bombax ceiba* L. : a. Leafy twig; b. Flower.

STERCULIACEAE

Abroma augusta (L.) L. f., Suppl. Pl. 341. 1781; Masters in Hook. f., Fl. Brit. India 1:375. 1874; Malick in Sharma *et al.*, Fl. India 3:409. 1993. *Theobroma augusta* L., Syst. Nat. ed. 12:233. 1767.

Local name: Gorukhia-korai, Bon-kopalis (Asm.).

Shrubs or small trees up to 5 m high; branches downy. Leaves ovate-cordate, tomentose or villous beneath. Flowers in leaf-opposed cymes, purple, showy, pendent. Capsules 5-angled, septicidal.

Fl. & Fr.: May - Dec.

Distrib.: Changlang, Dibang valley, Kameng, Lohit, Siang, Subansiri, Tirap; 200-800 m, in secondary forest edges.

Byttneria grandifolia DC., Prodr. 1:486. Jan. 1824; Malick in Sharma *et al.*, Fl. India 3:410, 1993. *Buettneria aspera* Colebr. ex Wallich in Roxb., Fl. Ind. 2:383. March-June 1824; Masters in Hook. f., Fl. Brit. India 1:377. 1874. Fig. 64.

Local name: Tikoni-borua (Asm.).

Lianas, climbing up to 20 m high, old stems longitudinally and spirally furrowed. Leaves suborbicular. Flowers in axillary cymes, minute, purplish. Capsules globose, sharply spiny.

Fl. & Fr.: May - Sept.

Distrib.: Changlang, Siang, Subansiri, Tirap; 300-1000 m, in forests.

Firmiana colorata (Roxb.) R. Brown in Bennett & Brown, Pl. Jav. Rar. 235. 1824; Malick in Sharma *et al.*, Fl. India 3:420. 1993; *Sterculia colorata* Roxb., Pl. Corom. 1:26. t. 25.795, quoad t. 25. descr. excl. 1795; Masters in Hook. f., Fl. Brit. India 1:359. 1874. *S. rubicunda* Wallich ex Masters in Hook. f., Fl. Brit. India 1:360. 1874.

Local name: Jari-udal, Kath-udal (Asm.).

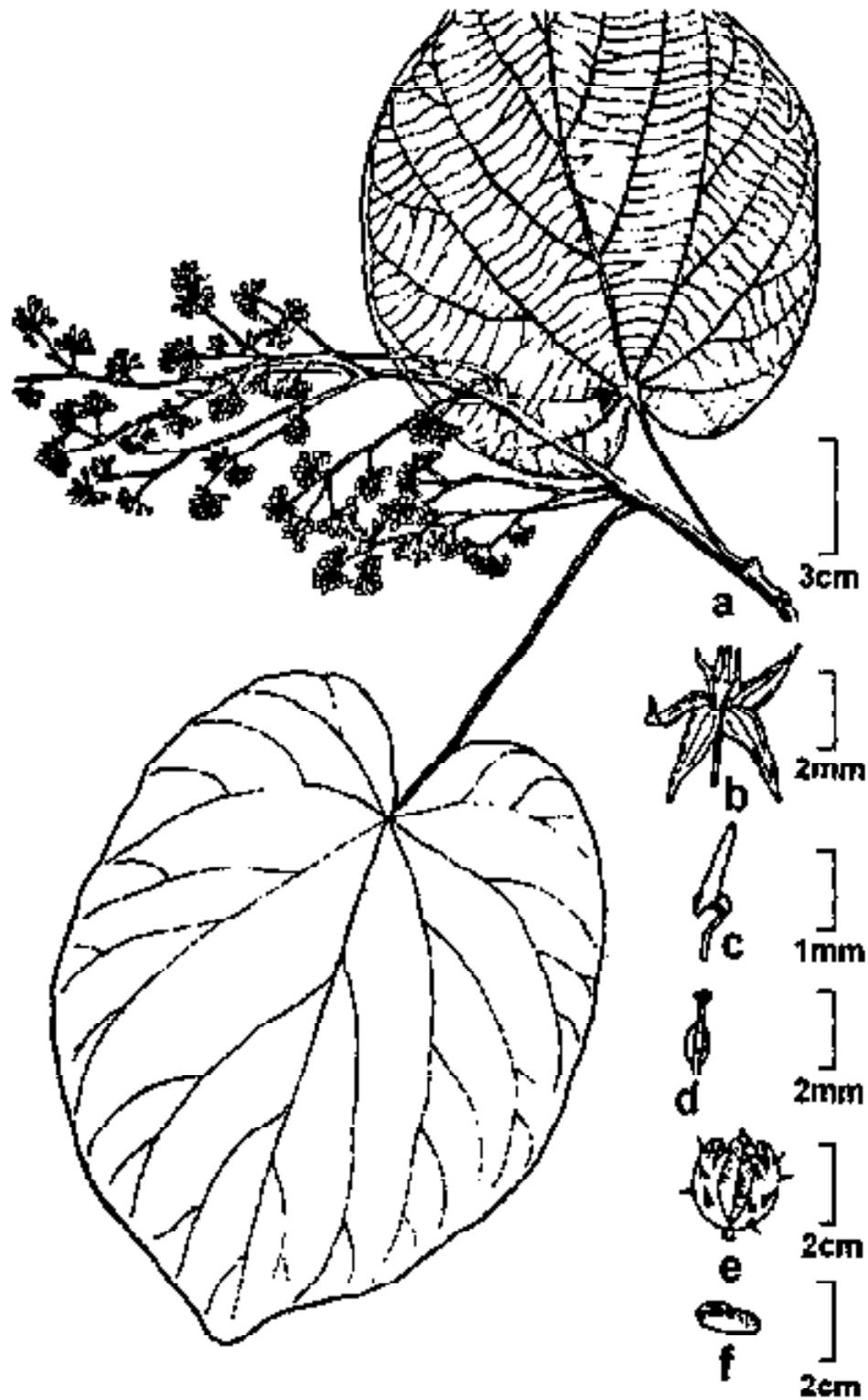


Fig. 64. *Byttneria grandifolia* DC. : a. Flowering part of branch; b. Flower; c. Petals showing hooded limb and long appendage; d. Pistil; e. Fruit; f. Seed.

Trees up to 30 m high with spreading branches, buttressed. Leaves crowded at branch apices, orbicular, cordate, palmately lobed. Flowers in terminal panicles, red. Follicles stipitate, shining black, smooth.

Fl. & Fr.: March - Oct.

Distrib.: Kameng; 200-1000 m, in primary forests.

Heritiera dubia Wallich ex Kurz in J. Bot. 12:65. 1874; Kanjilal *et al.*, Fl. Assam 1:156. 1934; Malick in Sharma *et al.*, Fl. India 3:428. 1993.

Shrubs or small trees. Leaves oblong-lanceolate or ovate, silvery lepidote beneath. Flowers in axillary panicles, rusty villous. Fruits cuneate-oblong, thickly winged, brown.

Fl. & Fr.: March - Oct.

Distrib.: Siang; 800-1200 m, in forests.

Heritiera macrophylla Kurz in J. Asiat. Soc. Bengal 42(2):61. 1873; Kanjilal *et al.*, Fl. Assam 1:155. 1934; Malick in Sharma *et al.*, Fl. India 3:430. 1993.

Local name: Tepop-pomik (Abor).

Large trees up to 50 m high, buttressed and with oval crown. Leaves oblong-lanceolate, densely silvery scaly beneath. Flowers in lax pyramidal panicles, white with purple centre. Fruits winged.

Fl. & Fr.: June - Oct.

Distrib.: Siang; 500-1200 m, in forests.

Melochia corchorifolia L., Sp. Pl. 675. 1753; Masters in Hook. f., Fl. Brit. India 1:374. 1874; Malick in Sharma *et al.*, Fl. India 3:441. 1993.

Undershrubs up to 1.5 m high. Leaves ovate-oblong, rounded or cordate at base. Flowers in dense heads, white or pink. Capsules globose, hispid.

Fl. & Fr.: Feb. - Sept.

Distrib.: Kameng; 500-1500 m, along paddy fields.

Pterigota alata (Roxb.) R. Brown in Bennett & Brown, Pl. Jav. Rar. 234, 1844; Malick in Sharma *et al.*, Fl. India 3:455. 1993. *Sterculia alata* Roxb., Pl. Corom. 3:84, t. 287. 1820.

Local name : Pahari (Asm.).

Large trees up to 35 m high, buttressed, young parts golden stellate pubescent. Leaves broadly ovate to cordate, glabrous. Flowers in axillary panicles; calyx 5-6 lobed; corolla absent. Follicles shortly beaked.

Fl. & Fr. : Dec. - March.

Distrib. : Arunachal Pradesh.

Pterospermum acerifolium (L.) Willd., Sp. Pl. 3:729. 1800; Masters in Hook. f., Fl. Brit. India 1:368. 1874, p.p.; Chandra in Sharma *et al.*, Fl. India 3:448. 1993. *Pentapetes acerifolia* L., Sp. Pl. 698. 1753. Fig. 65.

Local name: Sipop-asing (Ahor.); Moragos (Asm.).

Trees up to 15 m tall with oval crown, young parts densely rusty stellate pubescent. Leaves peltate, ovate-oblong or ovate-elliptic or cordate, tomentose beneath. Flowers in cymes, pale white, fragrant. Capsules oblong, 5-angled, woody with brown tubercles.

Fl. & Fr.: May - Feb.

Distrib.: Subansiri, Tirup; 300-1000 m, in forests.

Pterospermum javanicum Jungh. in Hoev. & De Vriese, Tijdschr., 7:306. 1840; Chandra in Sharma *et al.*, Fl. India 3:449. 1993. *P. blumeianum* Korthals in Ned. Kruidk. Arch. 1:311. 1848; Brandis, Indian trees 92. 1921.

Trees, younger parts tomentose. Leaves obliquely oblong or ovate, cordate or rounded, densely tomentose beneath, stipules with appendages. Flowers axillary, white. Capsules spindle shaped.

Fl. & Fr.: March - April.

Distrib.: Arunachal Pradesh.



Fig. 65. *Pterospermum acerifolium* (L.) Willd.

Pterospermum lancifolium Roxb., Fl. Ind. 3:163. 1832; Masters in Hook. f., Fl. Brit. India 1:368. 1874 'lancaefolium'; Chandra in Sharma *et al.*, Fl. India 3:450. 1993.

Local name: Bon-baguri, Bon-nahor (Asm.).

Evergreen trees up to 15 m high with spreading crown, branchlets white tomentose. Leaves oblong-lanceolate, stellate hairy. Flowers axillary, solitary, pale white, fragrant. Capsules ovoid, buff tomentose, woody.

Fl. & Fr.: April - Sept.

Distrib.: Changlang, Tirap; 500-1000 m, in tropical primary forests.

Reevesia wallichii R. Brown in Bennett & Brown, Pl. Jav. Rar. 231. 1844; Masters in Hook. f., Fl. Brit. India 1:364. 1874; Malick in Sharma *et al.*, Fl. India 3:456. 1993.

Trees, 10-18 m high. Leaves ovate or ovate-oblong, sparsely stellate-pubescent beneath. Flowers in corymbiform paniced cymes, white, fragrant. Capsules obovoid, brown velvety outside.

Fl. & Fr.: April - Feb.

Distrib.: Lohit; 1000-1500 m, in subtropical primary forests.

Sterculia balanghas L. var *glabrescens* Masters in Hook. f., Fl. Brit. India 1:358. 1874; Malick in Sharma *et al.*, Fl. India 3:458. 1993.

Medium sized trees; branchlets rusty tomentose. Leaves simple, oblong-ovate, base rounded, minutely pubescent beneath. Flowers in stellate hairy panicles, yellow or greenish purple. Follicles oblong, woody.

Fl. & Fr.: Jan. - May.

Distrib.: Siang; 500-1000 m, in tropical primary forests.

Sterculia guttata Roxb., Fl. Ind. 3:148. 1832; Masters in Hook. f., Fl. Brit. India 1:355. 1874; Malick in Sharma *et al.*, Fl. India 3:462. 1993.

Fig. 66.

Local name: Hirikh (Asm.).

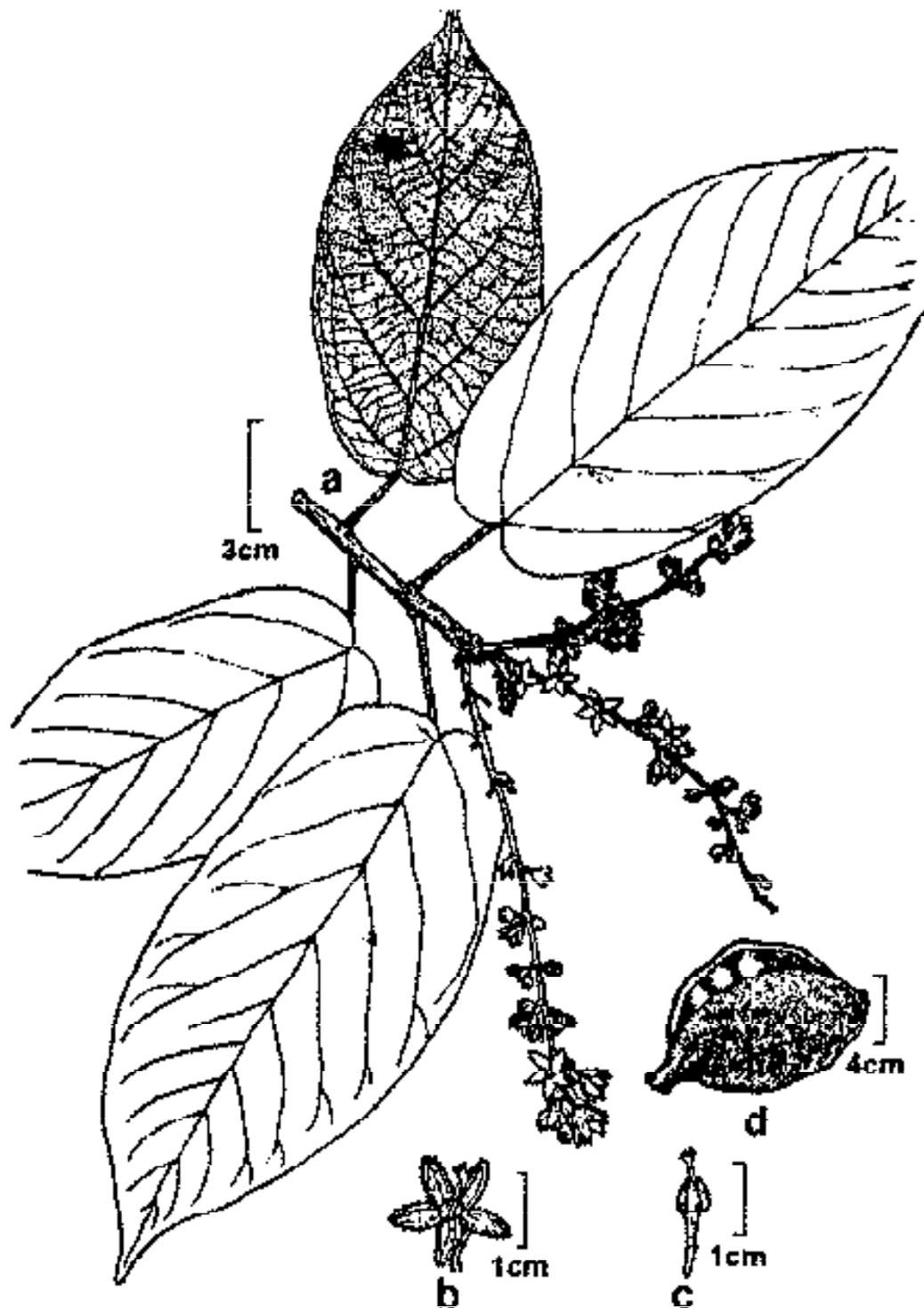


Fig. 66. *Sterculia guttata* Roxb. : a. Flowering part of branch; b. Male flower; c. Female flower with sepals and petals removed; d. Fruit.

Trees, 15-20 m high with oval crown. Leaves simple, chartaceous, ovate-elliptic or obovate, rusty tomentose beneath. Flowers in axillary or terminal racemes, pale white or yellowish. Follicles compressed, tomentose, red when ripe.

Fl. & Fr.: April - Sept.

Distrib.: Lohit; 100-1000 m, in tropical evergreen forests.

Sterculia hamiltonii (O.Ktze.) Adelb. in *Blumea* 5:506. 1945 and in Backer & Bakh. f., *Fl. Java* 1:413. 1964; Malick in Sharma *et al.*, *Fl. India* 3:464. 1993. *Clompanus hamiltonii* O.Ktze., *Rev. Gen. Pl.* 77. 1891. *Sterculia coccinea* Roxb., *Fl. Ind.* 3:151. 1832, *non* Jack 1820: Masters in Hook. f., *Fl. Brit. India* 1:357. 1874.

Local name: Nak-chepta (Asm.).

Shrubs or small trees up to 10 m high. Leaves simple, oblanceolate, chartaceous, minutely hairy beneath. Flowers in axillary pendent panicles, yellow. Follicles spreading, orange yellow to crimson red.

Fl. & Fr.: April - Nov.

Distrib.: Changlang, Kameng, Subansiri, Tirap; 500-1300 m, in tropical primary forests.

Sterculia kingii Prata in *J. Asiat. Soc. Bengal* 73:192. 1904; Malick in Sharma *et al.*, *Fl. India* 3:466. 1993.

Trees up to 10 m high. Leaves simple, oblong to elliptic-oblong, glabrescent. Flowers in axillary racemes, yellowish. Follicles hairy.

Fl. & Fr.: May - Sept.

Distrib.: Kameng; 500-1200 m, in primary forests.

Sterculia maingayi Masters in Hook. f., *Fl. Brit. India* 1:359. 1874.

Lofsy trees up to 40 m high with lax crown. Leaves obovate-oblong. Flowers in erect panicles, yellowish. Follicles oblong, downy.

Fl. & Fr.: April - Oct.

Distrib.: Kameng; 700-1000 m, in dense tropical primary forests.

Sterculia roxburghii Wallich, Pl. Asiat. Rar. 3:t. 262. 1832; Masters in Hook. f., Fl. Brit. India 1:356. 1874; Kanjilal *et al.*, Fl. Assam 1(1): 153. 1934; Malick in Sharma *et al.*, Fl. India 3:468. 1993. *S. lancifolia* Roxb., Fl. Ind. 3:150. 1832.

Local name: Nag-phona (Asm.);

Trees up to 15 m high. Leaves oblanceolate or oblong-elliptic, glabrous. Flowers in axillary racemes, brownish red. Follicles ovoid or ellipsoid, stellately hairy, orange red.

Fl. & Fr.: Feb. - Aug.

Distrib.: Kameng, Subansiri; 500-1200 m, in tropical primary forests along slopes.

Sterculia urens Roxb., Pl. Corom. 1:25, t. 24. 1795; Masters in Hook. f., Fl. Brit. India 1:355. 1874; Malick in Sharma *et al.*, Fl. India 3:470. 1993.

Deciduous trees up to 25 m high. Leaves 3-5 lobed, cordate, velvety beneath. Flowers in terminal panicles, yellow. Follicles ovoid-oblong, woody, densely pubescent.

Fl. & Fr.: March - July.

Distrib.: Siang; 500-1200 m, in forests.

Sterculia villosa Roxb. ex Smith in Rees, Cycl. 34:no. 16. 1816; Roxb., Fl. Ind. 3:153. 1832; Masters in Hook. f., Fl. Brit. India 1:355. 1874; Malick in Sharma *et al.*, Fl. India 3:472. 1993.

Local name: Odlā (Asm.); Sergok-asing (Abor); Udal (Daff.).

Lofty, deciduous trees up to 40 m high with spreading crown. Leaves palmately 5-7 lobed, villous beneath. Flowers in terminal panicles, pendent, brownish yellow. Follicles oblong, spreading, rusty villous.

Fl. & Fr.: Feb. - May.

Distrib.: Kameng, Siang; 600-1200 m, in tropical primary forests.

Insufficiently known materials

Mansonia dipikae Purkayastha in Ind. For. 73:14. 1947.

Sterculia euosma W.W.Smith in Notes Roy. Bot. Gard. Edinburgh 10:72. 1917.

TILIACEAE

Colona floribunda (Wallich ex Kurz) Craib in Bull. Misc. Inform. 1925:21. 1925; Daniel & Chandrabose in Sharma *et al.*, Fl. India 3:482. 1993. *Columbia floribunda* Wallich ex Kurz in J. Asiat. Soc. Bengal 2:63. 1873; Masters in Hook. f., Fl. Brit. India 1:393. 1894. Fig. 67.

Local name: Larubanda (Asm.).

Deciduous trees up to 18 m high, young parts stellate hairy. Leaves ovate-oblong or suborbicular. Flowers in terminal, lax panicles, reddish or yellow. Capsules 2-winged, hairy, 1-seeded.

Fl. & Fr.: July - Oct.

Distrib.: Changlang; 800-1500 m, in forests.

Corchorus aestuans L., Syst. Nat. ed. 10, 2:1079. 1759; Daniel & Chandrabose in Sharma *et al.*, Fl. India 3:485. 1993. *C. acutangulus auct. non* Forsk.: Lamk., Encycl. Meth. Bot. 2:104. 1786; Masters in Hook. f., Fl. Brit. India 1:398. 1874. *C. fuscus* Roxb., Fl. Ind. 2:582. 1832.

Annual, erect or spreading herbs up to 50 cm high, purplish. Leaves ovate; old ones turn red. Flowers in 2-3 flowered racemes, yellow. Capsules elongate to subglobose, 6-angled, terminating into 3, 2-fid tips.

Fl. & Fr.: March - Dec.

Distrib.: Siang; 300-600 m, in moist situations.

Corchorus capsularis L., Sp. Pl. 529. 1753; Masters in Hook. f., Fl. Brit. India 1: 397. 1874; Daniel & Chandrabose in Sharma *et al.*, Fl. India 3:485. 1993.

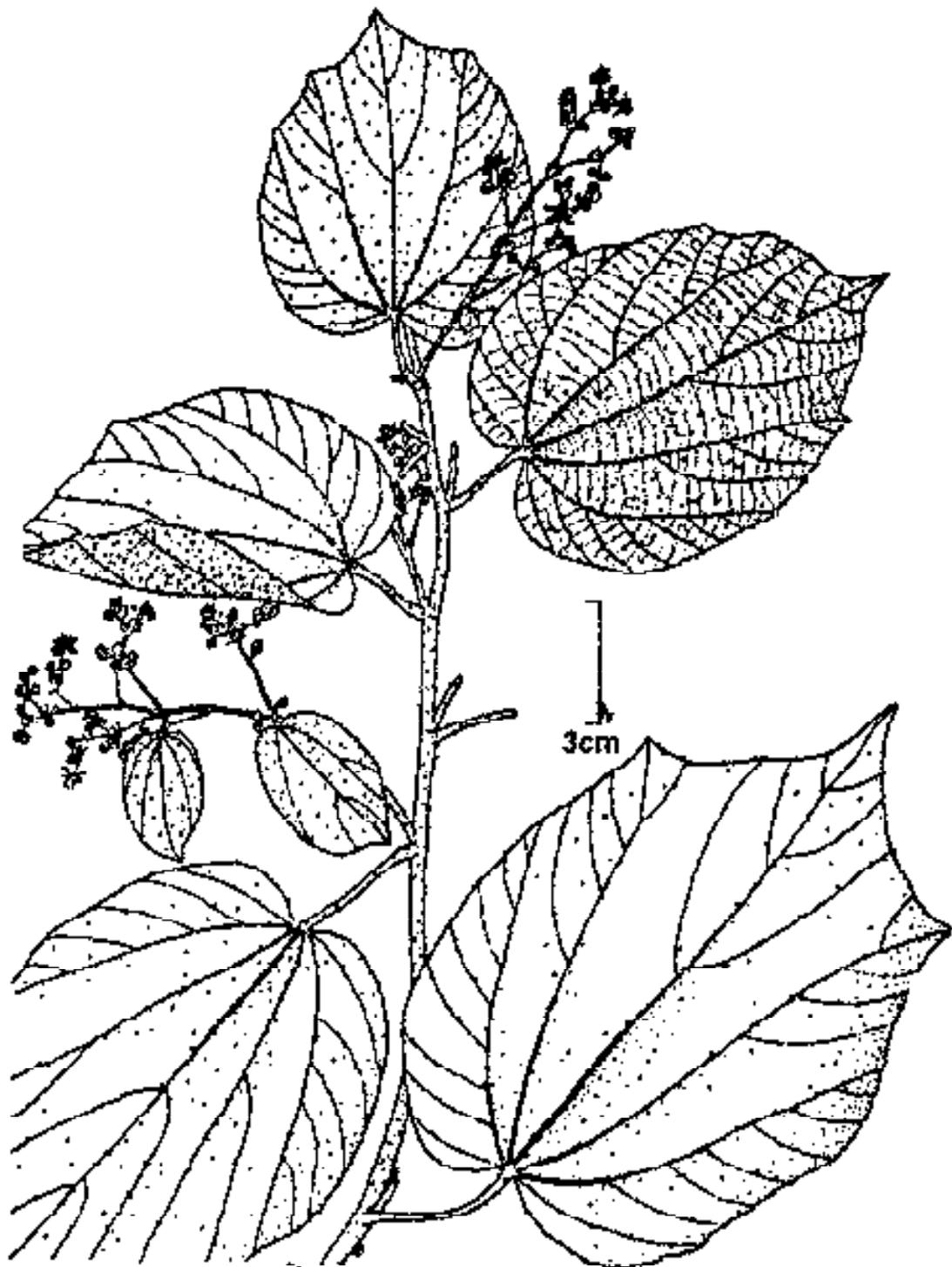


Fig. 67. *Colona floribunda* (Wallich ex Kurz) Craib.

Local name: Tita-mura-pat (Asm.).

Annual erect herbs up to 1 m high. Leaves oblong. Flowers in axillary or leaf-opposed cymes, yellow. Capsules subglobose or globose, depressed at apex.

Fl. & Fr.: May - Sept.

Distrib.: Siang; often cultivated.

Corchorus olitorius L., Sp. Pl. 1:529. 1753; Masters in Hook. f., Fl. Brit. India 1:397. 1874; Daniel & Chandrabose in Sharma *et al.*, Fl. India 3:487. 1993.

Local name: Mura-pat (Asm.).

Annual herbs up to 2 m high. Leaves ovate-lanceolate. Flowers solitary or in threes, axillary, yellow. Capsules elongated or subcylindric, 10-ribbed, beaked.

Fl. & Fr.: May - Sept.

Distrib.: Arunachal Pradesh; often cultivated.

Grewia asiatica L., Mant. Pl. 1:122. 1767; Masters in Hook. f., Fl. Brit. India 1:386. 1874, excl. var *vestita*; Daniel & Chandrabose in Sharma *et al.*, Fl. India 3:494. 1993.

Trees; branches yellowish pubescent. Leaves obliquely ovate-cordate, crenate. Flowers in axillary cymes or panicles, yellow. Drupes globose, 1-2 seeded, pilose, purple.

Fl. & Fr.: Aug. - Nov.

Distrib.: Kameng; 500-1000 m, underneath primary forests.

Grewia denticulata Wallich ex Prain in Ann. Roy. Bot. Gard. Calcutta 9(10): t. 12. 1899; Kanjilal *et al.*, Fl. Assam 1:167. 1934; Daniel & Chandrabose in Sharma *et al.*, Fl. India 3:497. 1993.

Scandent shrubs or small trees. Leaves bifarious, ovate or oblong-lanceolate, stellate-pubescent, crenate, densely pubescent beneath. Flowers in cymes, greenish white. Drupes 3-lobed, globose.

Fl. & Fr.: July - Dec.

Distrib.: Changlang, Tirap; 500-1000 m, in open places amidst grasses.

Grewia eriocarpa A.L. Juss. in Ann. Mus. Natl. Hist. Nat. 4:93. 1804; Daniel & Chandrabose in Sharma *et al.*, Fl. India 3:497. 1993. *G. elastica* Royle, Ill. Bot. Himal. 1:104, t. 22. 1834. *G. vestita* Wallich ex Brandis, For. Fl. N.W. India 40. 1874. *G. asiatica* var. *vestita* (Wallich ex Brandis) Masters in Hook. f., Fl. Brit. India 1:387. 1874. *G. mesopoda* Burret in Notizbl. Bot. Gard. Berlin-Dahlem 9:633. 1926; Nayar & R. Rao in J. Ind. Bot. Soc. 29:179. 1950.

Local name: Phuhura (Asm.).

Small trees; branch apices yellowish hairy. Leaves obovate, obscurely 3-lobed, crenate-serrate, pubescent beneath. Flowers in densely crowded cymes, yellow. Drupes globose, pilose.

Fl. & Fr.: April - Oct.

Distrib.: Changlang; 1000-1600 m, in open forests.

Grewia serrulata DC., Prodr. 1:510. 1824; Daniel & Chandrabose in Sharma *et al.*, Fl. India 3:509. 1993. *G. laevigata* auct. non Vahl 1790: Masters in Hook. f., Fl. Brit. India 1:381. 1874. *G. multiflora* auct. non A.L. Juss. 1804; Masters in Hook. f., Fl. Brit. India 1:388. 1874. *G. disperma* auct. non Rottler ex Spreng. 1825; Dunn in Gamble, Fl. Pres. Madras 118. 1915. *G. glabra* Blume, Bijdr. 115. 1825; Nayar & R. Rao in J. Ind. Bot. Soc. 29:179. 1950.

Large shrubs or trees up to 10 m high with spreading branches. Leaves lanceolate to elliptic-lanceolate, sharply serrate. Flowers in axillary 3-flowered cymes, greenish white. Drupes 2-lobed, globose.

Fl. & Fr.: July - Dec.

Distrib.: Changlang, Kameng, Siang, Subansiri; 200-1000 m, undergrowth in primary forests.

Triumfetta annua L., Mant. Pl. 1:73. 1767; Masters in Hook. f., Fl. Brit. India 1:396. 1874; Daniel & Chandrabose in Sharma *et al.*, Fl. India 3:518. 1993.

Undershrubs up to 1.5 m high; stems with a line of hairs along one side. Leaves ovate, sparsely hairy. Flowers in extra axillary 3-flowered cymes, orange or yellow. Capsules globose, echinate, glabrous.

Fl. & Fr.: June - Sept.

Distrib.: Changlang, Kameng; 1800-2200 m, along roads and forest edges.

Triumfetta oblique Roth, Nov. Sp. Pl. 224. 1821. *T. cana* Blume, Bijdr. 116. 1825; Masters in Hook. f., Fl. Brit. India 1:396. 1874; Daniel & Chandrase in Sharma *et al.*, Fl. India 3:518. 1993.

Shrubs up to 1 m high with hispid or densely tomentose stems. Leaves ovate or lanceolate, stellate-tomentose beneath. Flowers in extra axillary cymes, yellow. Capsules globose with straight spines, densely pubescent.

Fl. & Fr.: Aug. - Dec.

Distrib.: Siang; 100-350 m, weed along roadsides, wastelands.

Triumfetta pilosa Roth, Nov. Sp. Pl. 223. 1821; Masters in Hook. f., Fl. Brit. India 1:394. 1874; Daniel & Chandrase in Sharma *et al.*, Fl. India 3:519. 1993.

Shrubs up to 1.5 m high, hispid hairy or bristly. Leaves ovate-lanceolate, lobed, coarsely serrate, pilose. Flowers in axillary cymes, yellow. Capsules globose or oblong with hooked spines, 6-10 mm across, pubescent.

Fl. & Fr.: Aug. - Jan.

Distrib.: Dibang valley, Tirap; 500-1200 m, in open places amidst grasses.

Triumfetta rhomboidea Jacq., Enum. Syst. Pl. 22. 1760; Masters in Hook. f., Fl. Brit. India 1:395. 1874; Daniel & Chandrase in Sharma *et al.*, Fl. India 3:520. 1993. *T. angulata* Lamk., Encycl. Meth. Bot. 3:421. 1792; Wight & Arn., Prodr. 74. 1834. *T. trilocularis* Roxb., Fl. Ind. 2:462. 1832.

Local name: Agra (Asm.).

Shrubs up to 2 m high, branched. Leaves polymorphous, rhomboid-cordate, 3-lobed, sparsely stellate pubescent. Flowers in dense cymes, yellow. Capsules globose, albido-tomentose between glabrous spines.

Fl. & Fr.: May - Oct.

Distrib.: Dibang valley, Lohit, Subansiri; 300-1000 m, along roadsides, wastelands.

Insufficiently known material

Grewia nana Wallich ex Burkill in Rec. Bot. Surv. India 10:249. 1924. Recorded from Siang.

ELAEOCARPACEAE

Elaeocarpus acuminatus Wallich ex Masters in Hook. f., Fl. Brit. India 1:406. 1874; Murti in Sharma *et al.*, Fl. India 3:531. 1993.

Trees up to 20 m high with oval crown. Leaves lanceolate to elliptic-oblong, dentate-serrate, silky when young. Flowers in racemes from axils of fallen leaves, 1-1.5 cm across, white. Drupes ovoid or oblong, smooth.

Fl. & Fr.: July - Nov.

Distrib.: Subansiri; 500-700 m, in primary forests.

Elaeocarpus aristatus Roxb., Fl. Ind. 2:599. 1832; Masters in Hook. f., Fl. Brit. India 1:405. 1874; Murti in Sharma *et al.*, Fl. India 3:533. 1993.

Fig. 68.

Local name: Gerela-sopa, Bagini (Asm.).

Trees, 20-30 m high with conical, lax crown and buttressed at base. Leaves oblanceolate to obovate, glabrous. Flowers in racemes from fallen leaf axils or nodes, ca 2 cm across, pale white, pendent, fragrant. Drupes oblong, pyrenes compressed, rugose.

Fl. & Fr.: April - July.

Distrib.: Changlang, Subansiri; 300-800 m, in tropical forests.



Fig. 68. *Elaeocarpus aristatus* Roxb. : a. Flowering twig; b. Flower; c. Fruit.

Elaeocarpus braceanus Watt ex Clarke in *J. Linn. Soc. Bot.* 25:8. 1889; Kanjilal *et al.*, *Fl. Assam* 1(1):177. 1934; Murti in Sharma *et al.*, *Fl. India* 3:535. 1993.

Trees up to 12 m high with lax crown, branchlets ferruginous tomentose. Leaves elliptic-lanceolate, ferruginous tomentose beneath. Flowers in axillary racemes, brownish tomentose, white. Drupes ovoid; pyrenes ovoid, terete, rugose.

Fl. & Fr.: April - June.

Distrib.: Tirap; 500-1000 m, in forests.

Elaeocarpus bracteatus Kurz in *J. Asiat. Soc. Bengal* 40:48. 1871; Mast. in Hook. f., *Fl. Brit. India* 1:406. 1874; Murti in Sharma *et al.*, *Fl. India* 3:536. 1993.

Trees up to 30 m high. Leaves elliptic or obovate, glabrous. Flowers in short axillary racemes, white; bracts foliaceous, persistent. Drupes oblong, pyrenes tubercled.

Fl. & Fr.: March - July.

Distrib.: Arunachal Pradesh; 1000-1500 m in forests.

Elaeocarpus floribundus Blume, *Bijdr.* 120. 1825; Mast. in Hook. f., *Fl. Brit. India* 1:401. 1874; Murti in Sharma *et al.*, *Fl. India* 3:536. 1993.

Trees up to 30 m high with buttress. Leaves broadly elliptic, glandular punctate beneath, pustulata and bright red before falling. Flowers in axillary racemes, white. Drupes oblong with rugose pyrenes.

Fl. & Fr.: March - Dec.

Distrib.: Subansiri; 300-600 m, in tropical dense forests.

Elaeocarpus glandulosus Wallich ex Merr. in *J. Arn. Arb.* 32:194. 1951; Murti in Sharma *et al.*, *Fl. India* 3:539. 1993. *E. oblongus* auct. non Gaertn. 1788 & Smith 1809 :Wight, *lc. Pl. Ind. Or.* 46. 1838; Mast. in Hook. f., *Fl. Brit. India* 1:403. 1874.

Trees up to 15 m high with spreading crown. Leaves elliptic, glandular beneath. Flowers in racemes from axils of fallen leaves, white. Drupes oblong, rugose.

Fl. & Fr.: July - Dec.

Distrib.: Siang; 300-800 m, in forests.

Elaeocarpus lanceifolius Roxb., Fl. Ind. 2:598. 1832; Mast. in Hook. f., Fl. Brit. India 1:402. 1874; Murti in Sharma *et al.*, Fl. India 3:543. 1993.

Trees up to 15 m high, branches pubescent. Leaves ovate-lanceolate or elliptic-lanceolate. Flowers in racemes from upper leaf axils, white. Drupes ovoid, pyrenes oblong, terete, rugose.

Fl. & Fr.: March - Nov.

Distrib.: Changlang, Subansiri, Tirap; 1600-2000 m, in dense broad-leaved temperate forests.

Elaeocarpus prunifolius (C.Mueller) Masters in Hook. f., Fl. Brit. India 1:407. 1874; Murti in Sharma *et al.*, Fl. India 3:549. 1993. *Monocera prunifolius* C.Mueller, Anot. de Fam. Elaeocarp. 15. 1849.

Trees up to 20 m high with lax crown, branchlets glabrous. Leaves oblong-lanceolate, glabrous, swollen at apex. Flowers in crowded racemes, 5-10 cm across, whitish. Drupes oblong-ovoid, pyrenes abscurly angled, rugose.

Fl. & Fr.: Feb. - Jan.

Distrib.: Subansiri, Tirap; 1400-1800 m, in dense moist forests.

Elaeocarpus rugosus Roxb. ex G.Don, Gen. Hist. 1:559. 1831; Mast. in Hook. f., Fl. Brit. India 1:405. 1874; Murti in Sharma *et al.*, Fl. India 3:551. 1993. *E. apiculatus* Masters in Hook. f., Fl. Brit. India 1:407. 1874.

Local name: Bor-chopa, Gatronga (Asm.); Tarukpai-asing (Abor).

Trees up to 40 m high, buttressed at base and with pyramidal crown, branchlets rufous hairy. Leaves obovate or obovate-oblongate, glabrous. Flowers in racemes from axils of fallen leaves, 1-1.5 cm across, white. Drupes ellipsoid or obovoid, pyrenes compressed, rugose, 1-seeded.

Fl. & Fr.: Oct. - April.

Distrib.: Subansiri; 400-800 m, in tropical dense forests.

Elaeocarpus sikkimensis Masters in Hook. f., Fl. Brit. India 1:402. 1874; Murti in Sharma *et al.*, Fl. India 3:555. 1993.

Local name: Seleng (Asm.).

Large shrubs or small trees up to 15 m high with lax, oval crown. Leaves elliptic-ovate, distinctly cuspidate. Flowers in axillary racemes, white. Drupes ellipsoid, pyrenes ovoid-ellipsoid, tubercled.

Fl. & Fr.: April - Aug.

Distrib.: Kameng; 500-700 m, in forests.

Elaeocarpus sphaericus (Gaertn.) K.Schum. in Engler & Prantl, Pflanzenfam. 3,6: 5. 1890; Murti in Sharma *et al.*, Fl. India 3:555. 1993. *Ganitrus sphaericus* Gaertn., Fruct. 2:271, t. 139. 1791, *p.p.* *Elaeocarpus ganitrus* Roxb. ex G.Don, Gen. Syst. 1:559. 1831; Mast. in Hook. f., Fl. Brit. India 1:400. 1874.

Local name: Ludurai-asing (Abor); Rudraksha, Rudrai (Asm.).

Trees up to 30 m high, often buttressed at base. Leaves oblanceolate, subentire, glabrous. Flowers in racemes from axils of fallen leaves, drooping, white. Drupes globose, blue, 5-loculed with longitudinal furrows and tubercles.

Fl. & Fr.: May - July.

Distrib.: Changlang, Subansiri; 200-500 m, in tropical forests.

Use: The stones are used as beads for rozaries, bracelets and necklaces.

Elaeocarpus stapfianus Gagnepain in Lecomte, Nat. Syst. 1:136. 1910; Kanjilal *et al.*, Fl. Assam 1:179. 1934; Murti in Sharma *et al.*, Fl. India 3:557. 1993.

Trees up to 20 m tall. Leaves oblong-obovate, subentire, glabrous. Flowers in axillary few-flowered racemes, 1.5-2 cm across, white. Drupes oblong, pyrenes pointed, compressed, unilocular.

Fl. & Fr.: March - Aug.

Distrib.: Arunachal Pradesh; 800-1000 m, in evergreen forests.

Elaeocarpus tectorius (Lour.) Poiret in Lamk., *Encycl. Suppl.* 2:704. 1812; Murti in Sharma *et al.*, *Fl. India* 3:559. 1993. *Craspedum tectorium* Lour., *Fl. Cochinch.* 336. 1790. *Elaeocarpus robustus* Roxb., *Fl. Ind.* 2:597. 1832; Mast. in Hook. f., *Fl. Brit. India* 1:402. 1874, *p.p.* **Fig. 69.**

Local name: Poreng, Seleng (Asm.).

Trees up to 35 m high with oval crown, branchlets rusty pubescent. Leaves ovate-oblong, petioles often with 2 glands at apex. Flowers in racemes from below leaf-axils, white. Drupes ovoid, greenish yellow; pyrenes with 2 longitudinal grooves, rugose.

Fl. & Fr.: April - Oct.

Distrib.: Changlang, Subansiri, Tirap; 100-500 m, in tropical forests.

Elaeocarpus varunus Buch.-Ham. ex Mast. in Hook. f., *Fl. Brit. India* 1:407. 1874; Murti in Sharma *et al.*, *Fl. India* 3:561. 1993.

Local name: Bhadraksha, Niganibual (Asm.).

Trees up to 25 m high with spreading crown, branches grey silky pilose. Leaves oblong-lanceolate, often with glands at axils of lateral veins. Flowers in densely crowded racemes, ca 1.5 cm across, white. Drupes oblong, rounded at ends, pyrenes rugulose, 3-grooved, unilocular.

Fl. & Fr.: April - July.

Distrib.: Siang, Subansiri; 1400-1600 m, in dense forests.

Sloanea dasycarpa (Benth.) Hemsley in Hook., *lc. Pl.* 27:2, t. 2628. 1901; Murti in Sharma *et al.*, *Fl. India* 3:564. 1993. *Echinocarpus dasycarpus* Benth. in *J. Proc. Linn. Soc.* 5. *Suppl.* 2:73. 1861; Mast. in Hook. f., *Fl. Brit. India* 1:400. 1874.

Local name: Bandor-kakoi (Asm.).

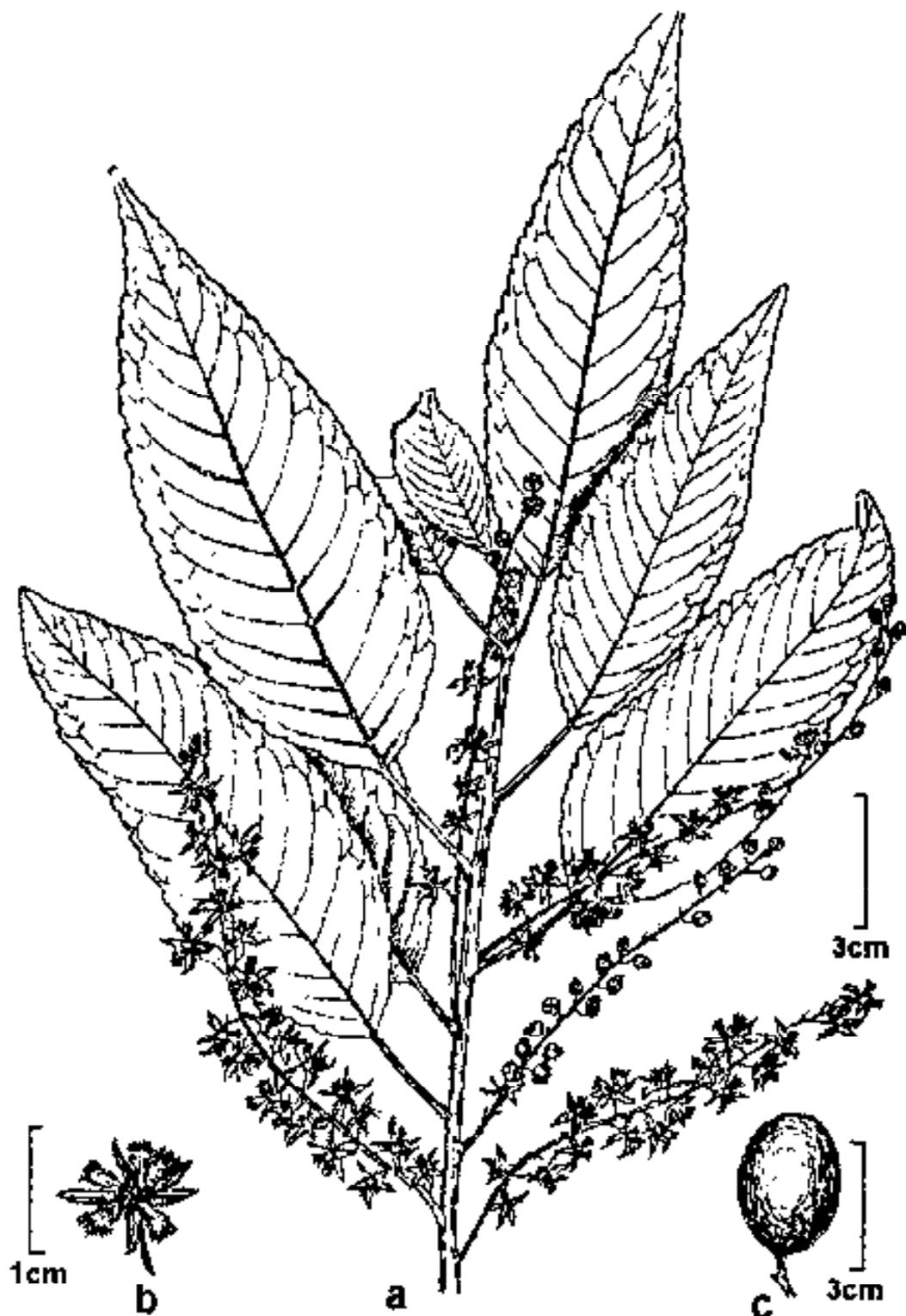


Fig. 69. *Elaeocarpus tectorius* (Lour.) Poiret : a. Flowering twig; b. Flower; c. Fruit

Evergreen trees up to 30 m high. Leaves elliptic or oblong, glabrous beneath. Flowers axillary, solitary, yellowish white. Capsules globose with deciduous spines. Seeds black with red aril.

Fl. & Fr.: July - March.

Distrib.: Changlang; 200-800 m, in tropical moist forests.

Use: Used for planks and making tea chests.

Sloanea sterculiacea (Benth.) Rehder & Wilson var. *assamica* (Benth.) Cooke in Kew Bull. 38:387. 1983; Murti in Sharma *et al.*, Fl. India 3:568. 1993. *Echinocarpus assamica* Benth. in J. Proc. Linn. Soc. 5. Suppl. 2:72. 1861; Mast. in Hook. f., Fl. Brit. India 1:400. 1874. *Sloanea assamica* (Benth.) Rehder & Wilson in Sarg. Pl. Wilson. 2:362. 1916.

Deciduous trees up to 30 m high with spreading crown. Leaves oblong to elliptic-oblong, glabrous or sparsely puberulous beneath. Flowers in fascicles or solitary, pale yellow. Capsules oblong, covered with lax, persistent spines.

Fl. & Fr.: Aug. - Jan.

Distrib.: Subansiri; 400-600 m, in open forests.

Sloanea tomentosa (Benth.) Rehder & Wilson in Sarg., Pl. Wilson. 2:362. 1916; Murti in Sharma *et al.*, Fl. India 3:368. 1993. *Echinocarpus tomentosus* Benth. in J. Proc. Linn. Soc. 5. Suppl. 2:72. 1861; Mast. in Hook. f., Fl. Brit. India 1:400. 1874. Fig. 70.

Lofty trees up to 40 m high, branchlets densely brown tomentose. Leaves elliptic or obovate, tomentose beneath. Flowers solitary, axillary, supported by approximate leaves, yellowish. Capsules ovoid, covered with fine deciduous bristles.

Fl. & Fr.: Sept. - Dec.

Distrib.: Changlang, Dibang valley; 1400-1600 m, in forests.

Insufficiently known material

Elaeocarpus dubius A. DC., Bull. Herb. Boiss. ser. 2,3:366. 1907. Based on a single collection of Kindon Ward from Delei valley, Mishmi.

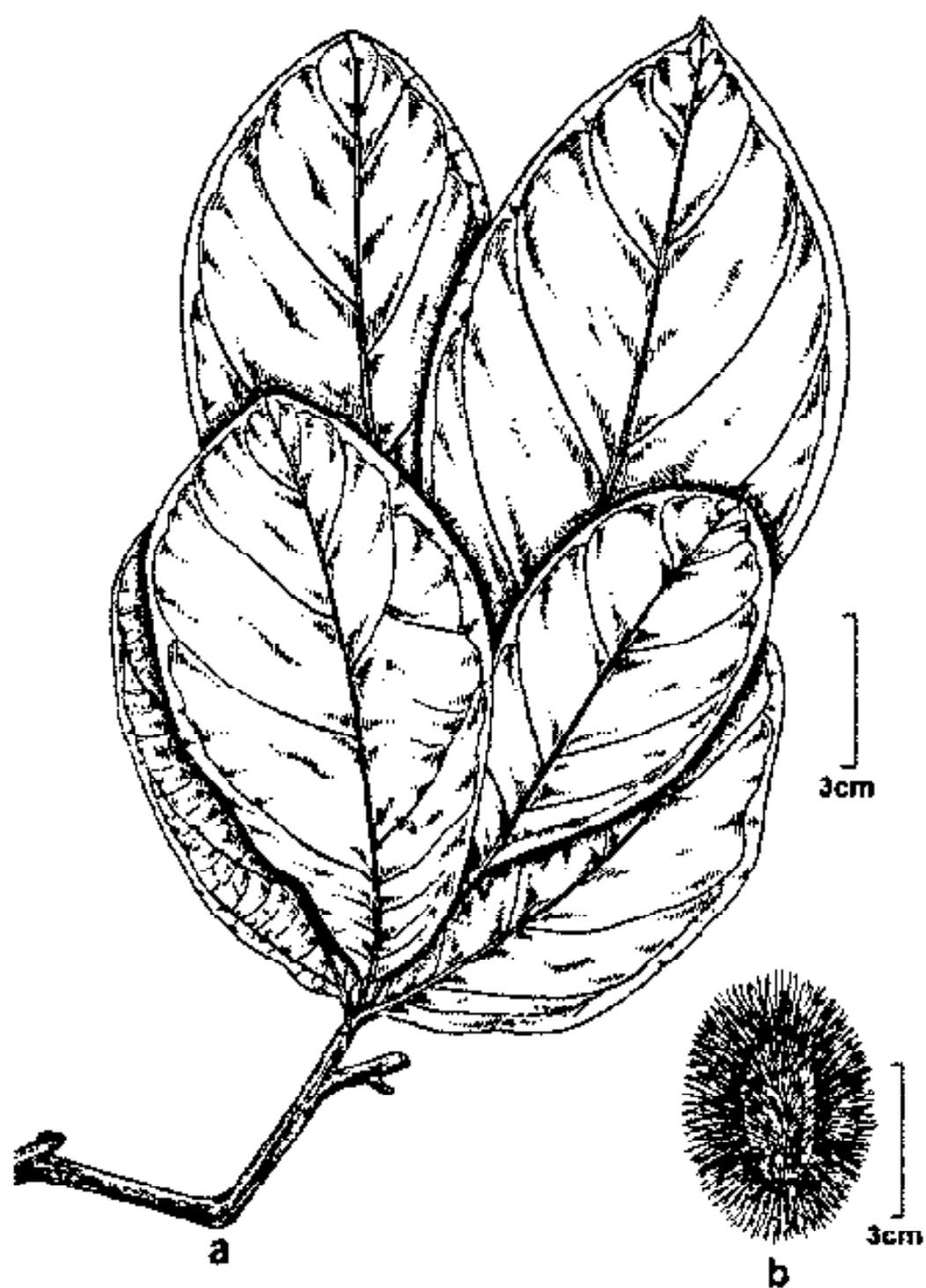


Fig. 70. *Sloanea tomentosa* (Benth.) Rehder & Wilson : a. Leafy twig;
b. Fruit.

LINACEAE

Anisadenia pubescens Griffith in Not. Pl. Asiat. 4:535. 1854; Hook. f., Fl. Brit. India 1:413. 1874; Hajra in Sharma *et al.*, Fl. India 3:573. 1993.

Perennial herbs up to 40 cm high, stems pubescent and leafy throughout. Leaves elliptic. Flowers in terminal few flowered racemes, white. Capsules oblong.

Fl. & Fr.: July - Nov.

Distrib.: Arunachal Pradesh; in subtropical evergreen forests.

Anisadenia saxatilis Wallich ex Meissn., Pl. Vasc. Gen. Comment. 2:96. 1838; Hook. f., Fl. Brit. India 1:412. 1874; Hajra in Sharma *et al.*, Fl. India 3:573. 1993.

Perennial herbs or undershrubs, 12-40 cm high; stems leafy at top. Leaves lanceolate. Flowers in terminal racemes, pink. Capsules oblong.

Fl. & Fr.: July - Nov.

Distrib.: Subansiri; 1600-2000 m, in open moist places.

Linum usitatissimum L., Sp. Pl. 277. 1753; Hook. f., Fl. Brit. India 1:410. 1874; Hajra in Sharma *et al.*, Fl. India 3:580. 1993. *L. trinervium* Roth, Nov. Pl. Sp. 187. 1821.

Annual herbs with erect stems up to 75 cm long. Leaves subsessile, linear or lanceolate, 3-nerved. Flowers in axillary cymes, 2-2.5 cm across, blue. Capsules oblong, mucronate.

Fl. & Fr.: March - Dec.

Distrib.: Siang; found as an escape.

Reinwardtia indica Dumortier, Comm. Bot. 19. 1822; Hajra in Sharma *et al.*, Fl. India 3:581. 1993. *Linum trigynum* Roxb. in Asiat. Res. 6:357. 1799, non L. 1753. *Reinwardtia trigyna* (Roxb.) Planch. in Hook., London J. Bot. 7:522. 1848; Hook. f., Fl. Brit. India 1:412. 1874.

Undershrubs up to 1.5 m high. Leaves oblanceolate or elliptic-obovate, membranous, crenate-serrate. Flowers solitary or in axillary or terminal

cymes, golden yellow, ca 2.5 cm across, fragrant. Capsules globose with thin papery wall.

Fl. & Fr.: Aug. - Jan.

Distrib.: Lohit; 1500-2500 m, in open moist places of forests.

MALPIGHIACEAE

Aspidopterys elliptica (Blume) A. Juss. in Ann. Sci. Nat. ser. 2, 13:266. 1840; Kanjilal *et al.*, Fl. Assam 1(2):190. 1934. *Hiraea elliptica* Blume, Bijdr. 225. 1825.

Large woody climbers; branches lenticellate. Leaves broadly elliptic or ovate-lanceolate. Flowers in axillary or terminal subumbellate panicles, white. Samaras orbicular.

Fl. & Fr.: May - Nov.

Distrib.: Lohit; 100-500 m, in primary dense tropical forests.

Aspidopterys glabriuscula A. Juss. in Archiv. Mus. Hist. Nat. 3:511. 1840. *A. roxburghiana* Juss. var. 2(unnamed): Hook. f., Fl. Brit. India 1:420. 1874.

Woody climbers. Leaves elliptic, elliptic-lanceolate or ovate, cordate at base. Flowers in axillary or terminal, lax panicles, pubescent, yellowish. Samaras ovate-oblong or peltate, finely veined.

Fl. & Fr.: May - Jan.

Distrib.: Kameng, Siang; 100-500 m, in primary tropical forests.

Aspidopterys indica (Willd.) Hochreat in Bull. Inst. Bot. Butzg. 19:45. 1904. *Triopteris indica* Willd., Sp. Pl. ed. 4(2): 744. 1799. *Aspidopterys roxburghiana* A. Juss. in Ann. Sci. Nat. ser. 2, 13: 267. 1840; Hook. f., Fl. Brit. India 1:420. 1874, *p.p.* *A. glabriuscula* auct. non A. Juss.: Kanjilal *et al.*, Fl. Assam 1:189. 1936, non A. Juss.

Woody climbers up to 5 m long. Leaves ovate to elliptic-ovate, cordate. Flowers in axillary panicles, rusty tomentose, greenish. Fruits winged.

Fl. & Fr.: Oct. - Dec.

Distrib.: Changlang, Kameng, Siang, Subansiri, Tirap; 300-500 m, in open forests.

Aspidopterys nutans (Roxb. ex DC.) A. Juss. in Ann. Sci. ser. 2, 13:267. 1840; Hook. f., Fl. Brit. India 1:421. 1874; *Hiraea nutans* Roxb. ex DC., Prodr. 1:585. 1824.

Slender climbers. Leaves ovate-elliptic or orbicular, silky pubescent beneath. Flowers in axillary or terminal panicles, yellowish. Samaras 1-3, winged.

Fl. & Fr.: Sept. - Jan.

Distrib.: Kameng, Lohit, Subansiri; 400-800 m, in open forests.

Hiptage benghalensis (L.) Kurz in J. Asiat. Soc. Bengal 43 (2): 136. 1874. *Banisteria benghalensis* L., Sp. Pl. 437. 1753. *Hiptage madablota* Gaertn., Fruct. 2:169, t. 116. 1791; Hook. f., Fl. Brit. India 1:418. 1874.

Local name: Kerek-lata (Asm.).

Shrubs up to 3 m high with spreading branches. Leaves elliptic or ovate-lanceolate. Flowers in axillary or terminal racemes, pink or white with yellow centre. Fruits 1-3 samaras, middle wing oblanceolate.

Fl. & Fr.: Jan. - May.

Distrib.: Kameng, Siang, Subansiri; 200-1500 m, along forest edges.

AVERRHOACEAE

Averrhoa carambola L., Sp. Pl. 428. 1753; Edgew. & Hook. f. in Hook. f., Fl. Brit. India 1:439. 1874; Kanjilal *et al.*, Fl. Assam 1(2):192. 1934.

Local name: Kordoï (Asm.).

Trees up to 10 m tall, much branched. Leaves compound, 4-10 foliolate; leaflets ovate-lanceolate. Flowers axillary, white or purplish. Berries oblong, yellow.

Fl. & Fr.: March - June.

Distrib. Kameng; 500-1000 m, in forests.

Use: The wood is reddish and fine grained, suitable for scantlings for buildings. Twigs are kept in houses in belief that they keep off measles.

GERANIACEAE

Geranium nepalense Sweet, *Geraniac.* 1:t. 12. 1820; Edgew. & Hook. f., in Hook. f., *Fl. Brit. India* 1:430. 1874.

Decumbent or ascending herbs up to 50 cm high. Leaves orbicular. Flowers axillary, solitary or paired, purplish. Capsules ellipsoid.

Fl. & Fr.: Aug.- Nov.

Distrib. Kameng, Subansiri; 1200-1800 m, on black humus soil along slope of hills in open forests.

Geranium ocellatum Cambess in Jacq., *Voy.* 4(Bot.):33, t. 38. 1835; Edgew. & Hook. f. in Hook. f., *Fl. Brit. India* 1:433. 1874.

Annual herbs with profuse pubescent branches. Leaves orbicular, 5-7 lobed. Flowers axillary, solitary, mauve with purple blotches. Capsules erect.

Fl. & Fr.: April - July.

Distrib. Kameng, Tawang; 2000-3500 m, along moist soil slopes and near water sources.

Geranium polyanthes Edgew. & Hook. f. in Hook. f., *Fl. Brit. India* 1:431. 1874.

Herbs up to 25 cm high, sparsely hairy. Leaves orbicular, 7-9 partite; scapes simple or umbellately branched. Flowers in 3-10 flowered umbels, dark purple. Fruits erect with slender beak.

Fl. & Fr.: Sept. - Jan.

Distrib.: Kameng; 2500-3500 m, in grassy hill slopes.

Insufficiently known material

Geranium procurrens Yoo in Bot. Mag. 179, t. 644. 1973.

BALSAMINACEAE

Impatiens acuminata Benth. ex Hook. f. & Thomson in J. Linn. Soc. Bot. 4:145. 1860; Hook. f., Fl. Brit. India 1:462. 1874.

Perennial herbs up to 50 cm high. Leaves elliptic-lanceolate. Flowers in axillary racemes, deep pinkish to blue. Capsules ellipsoid.

Fl. & Fr.: Sept. - Jan.

Distrib.: Changlang, Tirap; 500-1200 m, in moist places and near water sources in diffused light.

Impatiens amplexicaulis Edgew. in Trans. Linn. Soc. 20:37. 1846; Hook. f., Fl. Brit. India 1:469. 1875.

Very delicate and succulent herbs up to 60 cm high. Leaves oblong-lanceolate, auricled. Flowers in umbels or racemes, pink. Capsules erect, slender.

Fl. & Fr.: July - Sept.

Distrib.: Kameng, Tawang; 2500-3500 m, along waysides in shady places as well as inside forests.

Impatiens angustiflora Hook. f., Fl. Brit. India 1:480. 1875. Fig. 71.

Slender herbs up to 1.25 m high, simple or branched. Leaves elliptic-ovate or lanceolate. Flowers in clusters, yellow. Capsules oblong.

Fl. & Fr.: May - Aug.

Distrib.: Changlang, Kameng, Siang, Tirap; 1000-1500 m, in moist and shaded places.

Impatiens arguta Hook. f. & Thomson in J. Linn. Soc. Bot. 4:137. 1860; Hook. f., Fl. Brit. India 1:470. 1875.

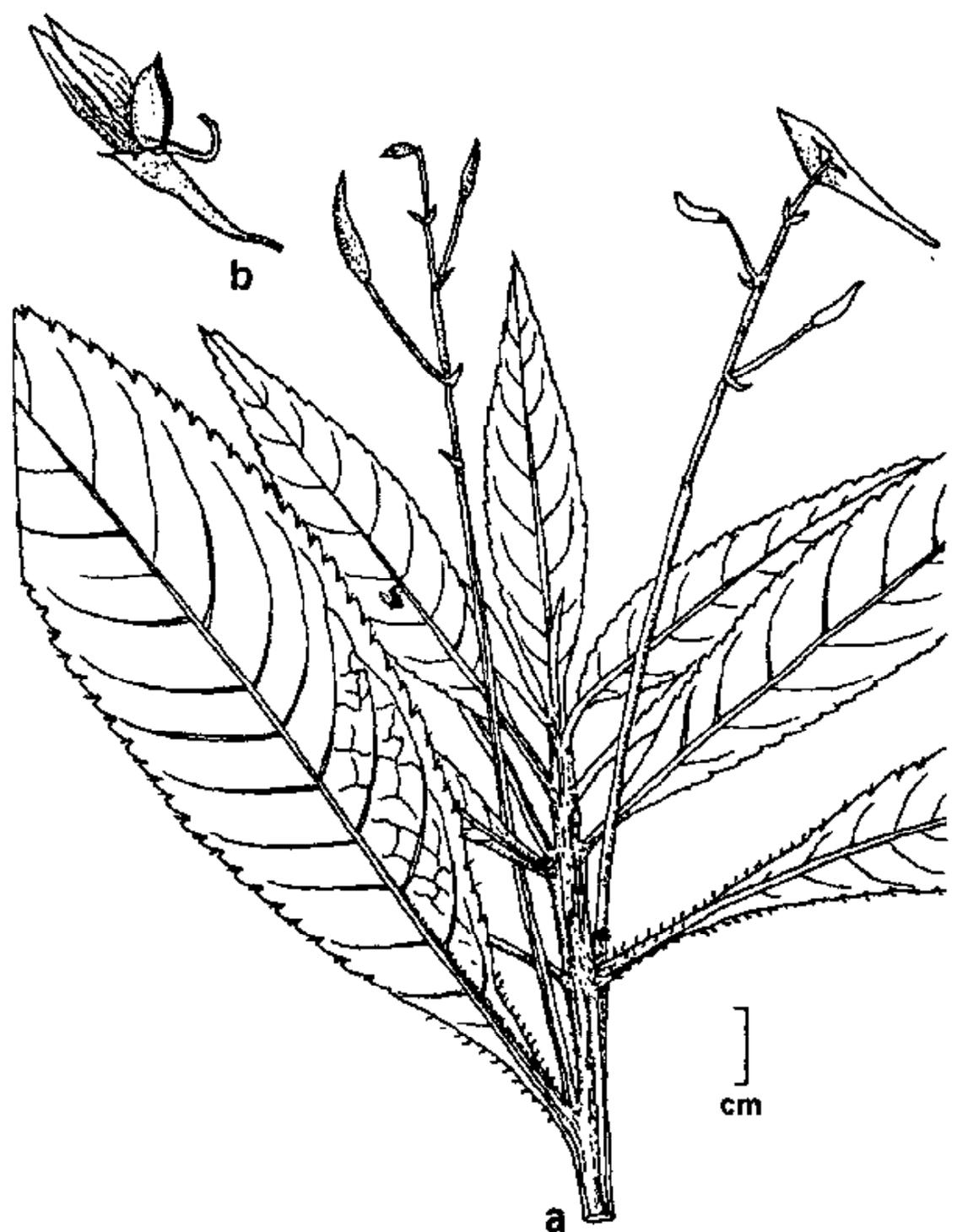


Fig. 71. *Impatiens angustiflora* Hook.f. : a. Flowering twig; b. Flower.

Annual herbs up to 60 cm high; stems succulent, brown at nodes. Leaves ovate or lanceolate. Flowers solitary or in pair, lilac-purple with two orange crests near the throat; spur twisted. Capsules stout.

Fl. & Fr.: Nov. - Jan.

Distrib.: Kameng, Siang, Subansiri; 2500-3500 m, grow in damp and moist places.

Impatiens bella Hook. f. & Thomson in J. Linn. Soc. Bot. 4:138. 1860; Hook. f., Fl. Brit. India 1:458. 1874.

Diffuse herbs up to 25 cm high, hairy. Leaves ovate or orbicular. Flowers solitary or in pair, large, pink, spur pinkish white. Capsules ellipsoid.

Fl. & Fr.: Sept. - Nov.

Distrib.: Changlang; 1000-1500 m, moist and shaded localities in forests.

Impatiens benthamii van Steenis in Bull. Bot. Gard. Btzg. ser. 3, 17:385. 1948; Balakr., Fl. Jowai 1:112. 1981. *I. radicans* Hook. f. & Thomson in J. Linn. Soc. Bot. 4:126. 1860, non Zoll. & Mor. 1854; Hook. f., Fl. Brit. India 1:451. 1874. *I. salicifolia* Hook. f. & Thomson in J. Linn. Soc. Bot. 4:124. 1860, non Turcz. 1859; Hook. f., Fl. Brit. India 1:450. 1874.

Fig. 72.

Herbs up to 50 cm high with crisply hairy stems. Leaves oblong-lanceolate. Flowers K^4 , large, deep purple. Capsules ellipsoid.

Fl. & Fr.: Aug. - Nov.

Distrib.: Kameng; 1500-2000 m, in moist and shaded localities along forest edges.

Impatiens bicornuta Wallich in Roxb., Fl. Ind. 2:460. 1824; Hook. f., Fl. Brit. India 1:475. 1875.

Herbs with stout stems. Leaves elliptic-lanceolate. Flowers in many flowered racemes, light violet. Capsules cylindrical.

Fl. & Fr.: Oct. - Dec.

Distrib.: Dibang valley, Lohit, Tirap; 1200-1500 m, in moist and shaded localities.

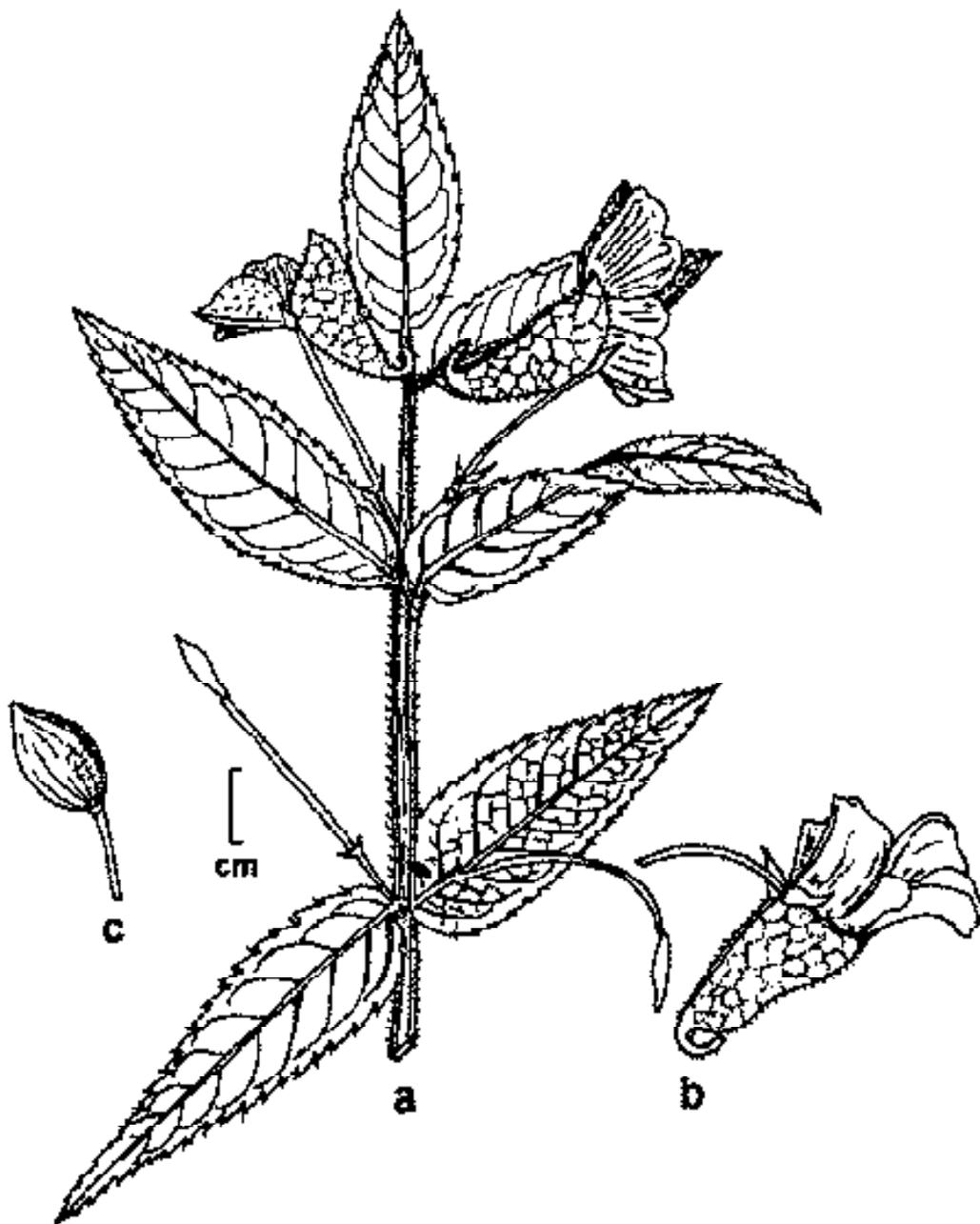


Fig. 72. *Impatiens benthamii* van Steenis : a. Flowering twig; b. Flower
c. Capsule.

Impatiens brachycentra Kar. & Kir. in Bull. Bot. Nat. Mosc. 1:179. 1842; Hook. f., Fl. Brit. India 1:481. 1875.

Local name: Nanchi (Nishi).

Erect herbs up to 80 cm high with purplish-green stems. Leaves ovate or elliptic. Flowers in axillary racemes, yellow. Capsules clavate.

Fl. & Fr.: April - Aug.

Distrib.: Subansiri; 900-1100 m, along secondary forest edges, in moist and shaded places along roadsides.

Impatiens bracteolata Hook. f. in Rec. Bot. Surv. India 4:31,35. 1905.

Annual or perennial small herbs. Flowers very asymmetric, yellow without any mark inside. Capsules narrow, glabrous.

Fl. & Fr.: Oct. - Dec.

Distrib.: Changiang, Dibang valley, Kameng, Lohit, Siang, Tirap; 800-1200 m, in moist localities along forests.

Impatiens cathcartii Hook. f., Fl. Brit. India 1:473. 1875.

Herbs up to 1 m high, woody at base. Leaves elliptic-lanceolate. Flowers in racemes, pink, whitish violet with spot on tip. Capsules linear.

Fl. & Fr.: Oct. - Jan.

Distrib.: Kameng, Subansiri; 400-1000 m, along moist and shaded stream bank in forests.

Impatiens chinensis L., Sp. Pl. 937. 1753; Hook. f., Fl. Brit. India 1:444. 1874.

Herbs up to 50 cm high with angular stems. Leaves linear-oblong to obovate. Flowers solitary or in fascicles, rose purple or white. Capsules ellipsoid, turgid at middle.

Fl. & Fr.: April - Sept.

Distrib.: Kameng; 600-1200 m, in moist and shaded places along forest border.

Impatiens discolor DC., Prodr. 1:687. 1824; Hook. f., Fl. Brit. India 1:471. 1875.

Slender, erect herbs up to 1.75 m high. Leaves opposite, ovate or lanceolate, acuminate. Flowers axillary, 1-3 flowered, blue violet or pinkish purple. Capsules slender, clavate.

Fl. & Fr.: June - Oct.

Distrib.: Kameng; 500-1000 m, on moist forest floor.

Impatiens drepanophora Hook. f. in Rec. Bot. Surv. India 4:17,22. 1905.

Slender herbs up to 50 cm high, often creeping at base. Leaves elliptic-ovate. Flowers in axillary racemes, yellow. Capsules linear-ellipsoid, clavate.

Fl. & Fr.: Sept. - Jan.

Distrib.: Dibang valley, Lohit, Tirap; in shaded moist places.

Impatiens gammiei Hook. f. in Rec. Bot. Surv. India 4:16,20. 1905.

Erect herbs up to 70 cm high. Leaves ovate. Flowers in axillary racemes, yellow. Capsules clavate.

Fl. & Fr.: Sept. - Dec.

Distrib.: Kameng, Subansiri; 1300-1500 m, along secondary forest edges.

Impatiens jurpia Buch.-Ham. ex Hook. f. & Thomson in J. Linn. Soc. Bot. 4:140. 1860; Hook. f., Fl. Brit. India 1:471. 1875.

Herbs up to 1 m high with spreading branches at base. Leaves elliptic. Flowers in axillary, 1-3 flowered racemes, yellow. Capsules linear.

Fl. & Fr.: Aug. - Oct.

Distrib.: Kameng, Siang, Subansiri; 600-1500 m, in open forests and along streams.

Impatiens khasiana Hook. f. in Rec. Bot. Surv. India 4:27,33.1905; Balakr., Fl. Jowai 1:113. 1981. *I. bella* Hook. f. & Thomson var. *major* Hook. f., Fl. Brit. India 1:459. 1874.

Erect to decumbent herbs up to 50 cm high; stems with glandular hairs, pinkish. Leaves ovate. Flowers axillary, solitary, red. Capsules ellipsoid.

Fl. & Fr.: July - Nov.

Distrib.: Subansiri; 1000-1200 m, underneath primary forests, on humus soil.

Impatiens laevigata Wallich ex Hook. f. & Thomson in J. Linn. Soc. Bot. 4:146. 1860; Hook. f., Fl. Brit. India 1:473. 1875.

Shrubby herbs up to 1.25 m high. Leaves oblong. Flowers solitary or in 4-flowered racemes, yellow with reddish streaks within. Capsules narrow oblong.

Fl. & Fr.: April - Sept.

Distrib.: Changlang, Kameng, Siang, Subansiri; 200-1000 m, underneath primary forests along river banks.

Impatiens latiflora Hook. f. & Thomson in J. Linn. Soc. Bot. 4:139. 1860; Hook. f., Fl. Brit. India 1:459. 1874.

Succulent herbs up to 1 m high. Leaves obliquely oblong-lanceolate. Flowers in axillary, 8-10 flowered racemes, pink or red with 2 yellow blotches within. Capsules narrow oblong.

Fl. & Fr.: March - Aug.

Distrib.: Changlang, Kameng, Subansiri, Tirap; 300-1200 m, in forests along stream sides.

Impatiens longipes Hook. f. & Thomson in J. Linn. Soc. Bot. 4:150. 1860; Hook. f., Fl. Brit. India 1:473. 1875.

Delicate herbs up to 1 m high. Leaves elliptic-lanceolate. Flowers in lax racemes, yellow. Capsules oblong.

Fl. & Fr.: Aug. - Dec.

Distrib.: Kameng; 2000-2700 m, on forest slopes, along roadsides in moist situations.

Impatiens lutea Hook. f. in Rec. Bot. Surv. India 4:18,22. 1905.

Herbs up to 40 cm high. Leaves alternate. Flowers solitary or in few flowered short racemes, pink, basal lobes of wing mucicous; sepals cymbiform.

Fl. & Fr.: July - Sept.

Distrib.: Tirap; 1500-2000 m, in moist localities and in forests.

Impatiens mishmiensis Hook. f., Fl. Brit. India 1:476. 1875.

Succulent herbs up to 1 m high with stout base. Leaves elliptic-oblongate. Flowers in umbellate racemes, large, white or yellow. Capsules linear.

Fl. & Fr.: Aug. - Oct.

Distrib.: Tirap; 1500-1800 m, on wet places along foot tracks.

Impatiens peludosa Hook. f., Fl. Brit. India 1:480. 1875.

Succulent herbs up to 1.5 m high with pinkish stems, rooting at base. Leaves lanceolate. Flowers in axillary, 4-10 cm long racemes, pale yellow. Capsules linear.

Fl. & Fr.: Sept. - Nov.

Distrib.: Subansiri; 1600-1800 m, in swampy places.

Impatiens porrecta Wallich ex Hook. f. & Thomson in J. Linn. Soc. Bot. 4:138. 1860; Hook. f., Fl. Brit. India 1:472. 1875 and in Rec. Bot. Surv. India 4:33. 1905. Fig. 73.

Tufted, diffuse herbs, 15-30 cm high, rooting at nodes; stems glandular hairy. Leaves ovate or suborbicular. Flowers solitary or in 2-flowered racemes, pink violet. Capsules ellipsoid.

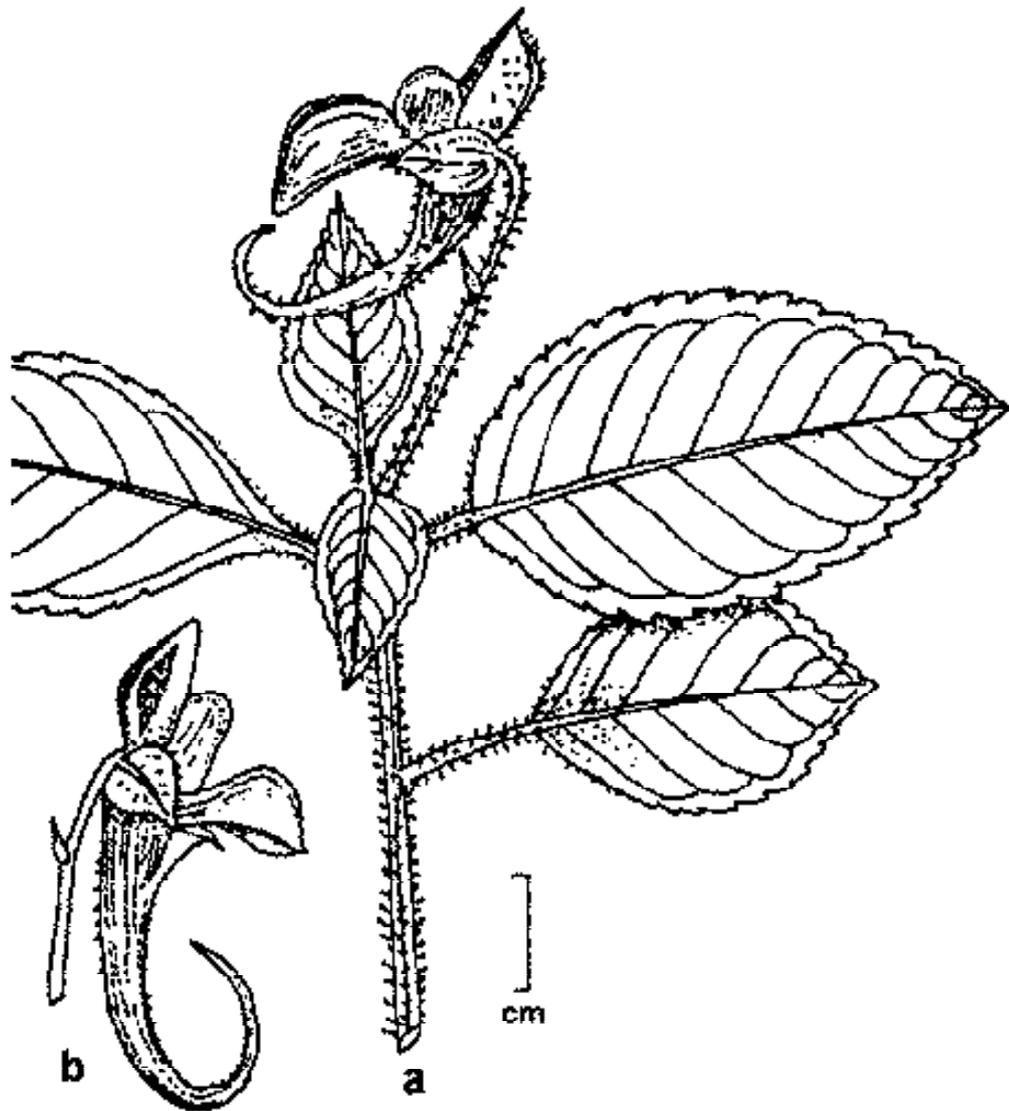


Fig. 73. *Impatiens porrecta* Wallich ex Hook. f. & Thomson : a. Flowering twig; b. Flower.

Fl. & Fr.: Aug. - Nov.

Distrib.: Changlang, Kameng, Subansiri, Tirap; 300-1200 m, on slopes or along stream sides.

Impatiens pulchra Hook. f. & Thomson in J. Linn. Soc. Bot. 4:139. 1860; Hook. f., Fl. Brit. India 1:459. 1874.

Herbs up to 40 cm high. Leaves lanceolate or elliptic. Flowers solitary or 2, axillary, pink or yellow. Capsules ellipsoid.

Fl. & Fr.: Aug. - Oct.

Distrib.: Kameng, Subansiri; 300-1500 m, in moist and shaded places of forests.

Impatiens racemosa DC., Prodr. 1:688. 1824; Hook. f., Fl. Brit. India 1:479. 1875; Hara, Fl. E. Himal. 196. 1966. *I. laxiflora* auct. non Edgew. 1846; Hook. f., Fl. Brit. India 1:479. 1875, p.p.

Local name: Yemchee (Nishi).

Herbs up to 1.5 m high. Leaves elliptic-ovate. Flowers in 6-10 flowered racemes, yellow. Capsules linear-clavate.

Fl. & Fr.: April - May.

Distrib.: Siang, Subansiri; 1500-2000 m, in forests.

Impatiens racemulosa Wallich ex Hook. f. & Thomson in J. Linn. Soc. Bot. 4:138. 1860; Hook. f., Fl. Brit. India 1:468. 1875; Chauhan in J. Meghalaya Sci. Soc. 5 & 6: 5. 1982.

Herbs up to 1 m high. Leaves ovate-lanceolate. Flowers in racemes, violet with semicircular curved spur.

Fl. & Fr.: July - Oct.

Distrib.: Changlang; 800-1500 m, in moist shaded places.

Impatiens radiata Hook. f., Fl. Brit. India 1:476. 1875.

Herbs, 50-60 cm high. Leaves elliptic. Flowers in short interrupted racemes, yellow with deep violet spot on twiner side of calyx and spur.

Fl. & Fr.: Aug. - Dec.

Distrib.: Kameng, Lohit, Subansiri; 600-800 m, along forest fringes next to water course.

Impatiens scabrida DC., Prodr. 1:687. 1824; Hook. f., Fl. Brit. India 1:472. 1875.

Local name: Namcho (Hill Miri).

Herbs up to 60 cm high, much branched. Leaves ovate or lanceolate. Flowers in 2-6 flowered racemes, yellow. Capsules slender, straight.

Fl. & Fr.: April - Sept.

Distrib.: Lohit, Subansiri; 1500-2200 m, along foot track in forests.

Use: Entire plant, preferably the tender leaves are used as vegetable.

Impatiens stenantha Hook. f., Fl. Brit. India 1:478. 1875.

Herbs, 40-50 cm high. Leaves ovate or ovate-elliptic, violet on dorsal surface. Flowers in axillary racemes, yellow. Capsules clavate.

Fl. & Fr.: April - Oct.

Distrib.: Kameng, Subansiri; 1000-2000 m, in moist and shaded places of forests.

Impatiens tripetala Roxb. ex DC., Prodr. 1:687. 1824; Hook. f., Fl. Brit. India 1:470. 1875.

Erect herbs up to 1.5 m high. Stems stout with swollen nodes, mauve coloured. Leaves elliptic-lanceolate. Flowers variegated pink. Capsules narrow-oblong.

Fl. & Fr.: April - Aug.

Distrib.: Changlang, Kameng, Siang, Subansiri, Tirap; 450-1500 m, in moist and shaded places of forests.

Impatiens urticifolia Wallich in Roxb., Fl. Ind. 2:457. 1832; Hook. f., Fl. Brit. India 1:474. 1875.

Succulent herbs up to 90 cm high with deep brown stems. Leaves elliptic-ovate. Flowers in axillary, 3-5 flowered racemes. Capsules linear.

Fl. & Fr.: March - May.

Distrib.: Dibang valley, Kameng, Lohit, Tirap; 600-1200 m, in wet places.

Impatiens violaeiflora Hook. f., Fl. Brit. India 1:457. 1875.

Slender herbs up to 50 cm high. Leaves elliptic-lanceolate, membranous. Flowers axillary, solitary or few, rose purple; standard obcordate; spur not behind. Capsules puberulous.

Fl. & Fr.: March - Sept.

Distrib.: Siang; 200-1000 m, along swampy roadside clearings.

OXALIDACEAE

Biophytum reinwardtii (Zucc.) Klotzsch in Peters, Reise Mossamb. Bot. 1:85. 1862; Edgew. & Hook. f. in Hook. f., Fl. Brit. India 1:437. 1874. *Oxalis reinwardtii* Zucc. in Munch. Abhand. 1:274. 1832. *Biophytum reinwardtii* var. *metziana* Edgew. & Hook. f. in Hook. f., Fl. Brit. India 1:438. 1874.

Herbs. Leaflets 10-20 pairs, oblong. Flowers in terminal peduncles. Capsules ovoid or oblong, equalling sepals. Seeds turbinate. 5-7 furrowed.

Fl. & Fr.: Sept.- Nov.

Distrib.: Kameng; 1500-3000 m, in open moist places, roadsides.

Oxalis acetosella L. subsp. *griffithii* (Edgew. & Hook. f.) Hara in J. Jap. Bot. 30:22. 1955. *O. griffithii* Edgew. & Hook. f. in Hook. f., Fl. Brit. India 1:436. 1874.

Stemless delicate herbs. Rootstocks creeping, scaly. Leaves radical, 3-foliolate; leaflets triangular. Flowers pinkish white. Capsules loculicidal.

Fl. & Fr.: March - Aug.

Distrib.: Kameng, Subansiri, Tawang; 2000-2600 m, along bamboo groves.

Oxalis corniculata L., Sp. Pl. 435. 1753; Edgew. & Hook. f. in Hook. f., Fl. Brit. India 1:436. 1874.

Perennial decumbent herbs, rooting at nodes. Leaves palmately 3-foliolate. Flowers subumbellate, yellow. Capsules cylindric.

Fl. & Fr.: Aug. - Dec.

Distrib.: Changlang, Kameng, Siang, Subansiri, Tirap; 500-2800 m, along edges of forests and on damp walls.

Oxalis debilis H.B.K. var. *corymbosa* (DC.) Lourt. in Ann. Missouri Bot. Gard. 67:840. 1980. *O. corymbosa* DC., Prodr. 1:698. 1824. Fig. 74.

Small, acaulescent herbs. Leaves 3-foliolate, leaflets deeply notched. Flowers in subumbellate corymbs, purplish.

Fl. & Fr.: April - Oct.

Distrib.: Changlang; 1000-1600 m, in open moist and shady places.

RUTACEAE

Acronychia pedunculata (L.) Miq., Fl. Ind. -Bat. Suppl. 532. 1861; Hartley in J. Arn. Arb. 55:549. 1974. *Jambollifera pedunculata* L., Sp. Pl. 349. 1753. *Acronychia laurifolia* auct. non Blume 1823; Hook. f., Fl. Brit. India 1:498. 1875.

Local name: Paling-changne (Daff.); Ing-lang-pharse-arong (Mik.); Paling-changne (Nishi).

Trees up to 8 m high, unarmed. Leaves oblong-lanceolate or obovate-lanceolate. Flowers greenish white. Fruits shortly beaked.

Fl. & Fr.: June - Nov.

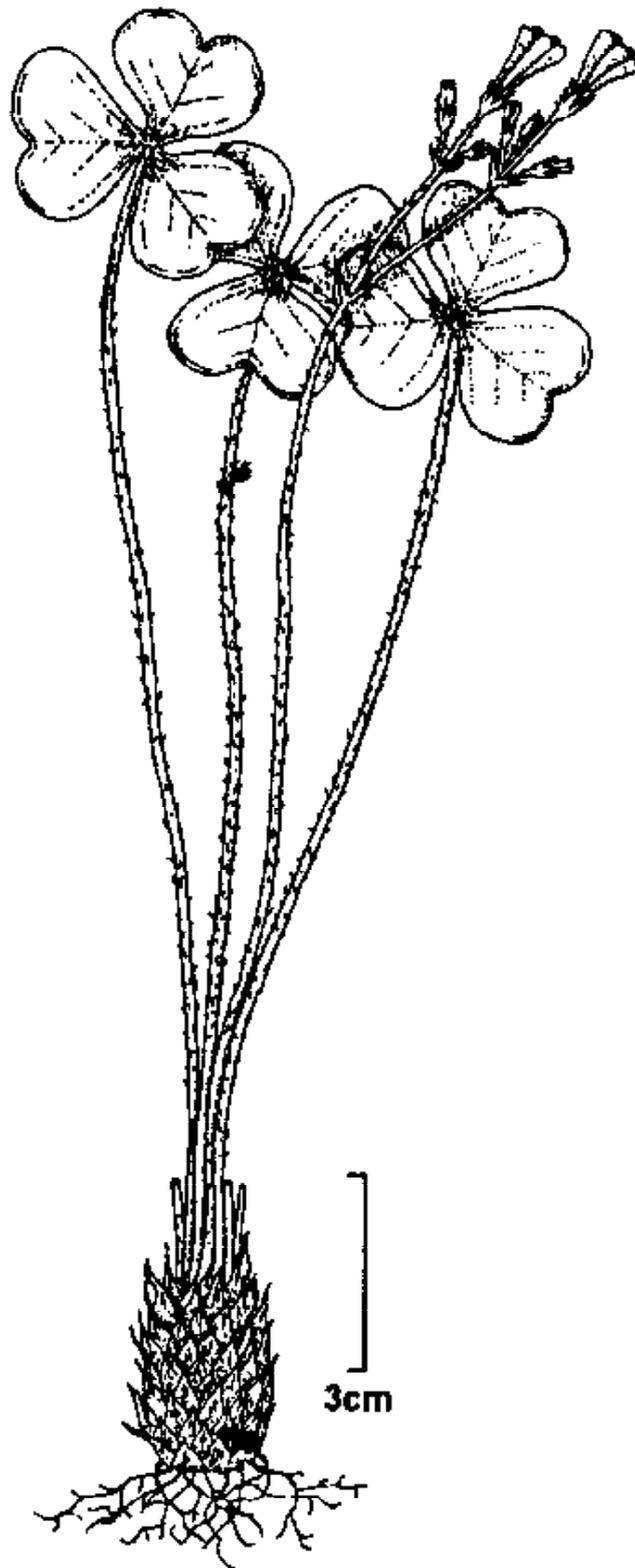


Fig. 74. *Oxalis debilis* H.B.K. var. *corymbosa* (DC.) Lourt.

Distrib.: Kameng; 800-1300 m, in forests.

Aegle marmelos (L.) Correa in Trans. Linn. Soc. London 5:222. 1800; Hook. f., Fl. Brit. India 1:516. 1875. *Crateva marmelos* L., Sp. Pl. 444. 1753.

Local name: Bel (Asm.).

Large, deciduous trees with lax oval crown. Leaflets elliptic or oblanceolate. Flowers in axillary panicles, yellowish. Fruits large, globose, rind woody, yellowish when ripe, sweet pulpy.

Fl. & Fr.: March - May.

Distrib.: Kameng; 100-1000 m, in open deciduous forests.

Use: Ripe fruits are eaten and also used in several gastric disorders.

Atalantia caudata Hook. f., Fl. Brit. India 1:513. 1875.

Unarmed shrubs with slender branches. Leaflets elliptic-lanceolate with 2-lobes. Flowers in short racemes, white, fragrant. Berries subglobose.

Fl. & Fr.: March - Aug.

Distrib.: Kameng; 1500-2000 m, in forests.

Boenninghausenia albiflora (Hook.) Reichenb. ex Meissn., Consp. 197. 1828 & Pl. Vasc. Gen 2:44. 1836; Hook. f., Fl. Brit. India 1:486. 1875, *p.p.* *Ruta albiflora* Hook., Exot. Fl. 1: t. 79. 1823.

Slender herbs, 30-60 cm high with perennial roots. Leaves 2-3 pinnate; leaflets obovate or obcordate, glaucous beneath, membranous. Flowers in many flowered cymes, white. Fruits subglobose.

Fl. & Fr.: Aug. - Sept.

Distrib.: Changlang, Tirup; 1000-1200 m, in open places amidst grasses.

Use: The roots are pounded and made into paste with water and applied on old wounds.

Citrus aurantium L., Sp. Pl. 782. 1753; Hook. f., Fl. Brit. India 1:515.1875; Hassan-ud-din & Ghazanfar in Fl. W. Pakistan 132:24. 1980. *C.aurantium* var. *bigaradia* Hook. f., Fl. Brit. India 1:515. 1875.

Local name : ReboSinkging (Adi); Humutia-tenga (Asm.); Generuay (Miri).

Weak trees or shrubs up to 4 m high. Leaflets elliptic or ovate. Flowers few, axillary, white. Fruits subglobose with six locules. Seeds abundant.

Fl. & Fr. : March - Sept.

Distrib. : Dibang valley, Kameng, Lohit, Siang; 500-1200 m, in forests.

Citrus limetta Risso in Ann. Mus. Paris 20:195. 1813; Hassan-ud-din & Ghazanfar in Fl. w. Pakistan 132:21. 1980. *C.medica* L. var. *limetta* (Risso) Hook. f., Fl. Brit. India 1:515. 1875.

Local name : Jora-tenga (Asm.); Naya-changneyl (Daff.).

Shrubs or small trees up to 10 m high. Leaflets elliptic-oblong. Flowers small in short racemes, white. Fruits globose.

Fl. & Fr. : Aug. - Nov.

Distrib. : Siang; 300-800 m, in forests.

Citrus limon (L.) Burm. f., Fl. Ind. 173. 1768; Press in Hara *et al.*, Enum. Fl. Pl. Nep. 2:81. 1979. *C.medica* L. subsp. *limon* L., Sp. Pl. 782. 1753. *C.medica* L. var. *limonum* Hook. f., Fl. Brit. India 1:515.1875.

Local name : Mo-ri sling-kim (Abor); Jipin (Adi).

Shrubs or small trees up to 8 m high. Leaflets ovate. Flowers in racemes, white. Fruits ovoid with yellow mamillae.

Fl. & Fr. : Aug. - Nov.

Distrib. : Siang; 200-500 m, along river banks. Often cultivated.

Note : This is called lemon tree, found wild in lower parts of hills; ripe fruits are edible, sweet.

Citrus limon (L.) Burm. f. var. *acida* Hook. f., Fl. Brit. India 1:515. 1875. *C. medica* L. var. *acida* Hook. f. in Hook. f., Fl. Brit. India 1:515. 1875.

Small trees up to 10 m high. Leaflets elliptic-oblong; petioles much shorter than leaflets. Flowers white, small, in short racemes. Fruits small, globose.

Fl. & Fr.: Aug. - Dec.

Distrib.: Siang; 500-1200 m, in forests. Often cultivated.

Note: The fruits are very strongly acidic in taste. Rind is twice as thick as the flesh.

Citrus medica L., Sp. Pl. 782. 1753; Hook. f., Fl. Brit. India 1:514. 1875.

Local name: Bakol-khowa-tenga (Asm.); Naya-changney (Nishi).

Shrubs or small trees, 1-5 m high. Leaves elliptic-ovate or lanceolate. Flowers solitary or in axillary racemes, pinkish white. Fruits ellipsoid.

Fl. & Fr.: Jan. - Dec.

Distrib.: Changlang, Kameng, Subansiri; 500-1200 m, in forests.

Clausena excavata Burm. f., Fl. Ind. 87, t. 29.f.2. 1768; Hook. f., Fl. Brit. India 1:504. 1875.

Local name: Nara singha, Bengjuri (Asm.); Theng-sah-soh-arong (Mik.).

Shrubs or small trees up to 8 m high, aromatic; young shoots grey tomentose. Leaflets obliquely oblong or ovate-lanceolate, pubescent beneath. Flowers in axillary or terminal cymose panicles, dull white. Fruits oblong or obovate.

Fl. & Fr.: March - June.

Distrib.: Kameng, Lohit, Siang, Subansiri, Tirap; 100-1000 m, in forests.

Use: The leaves and twigs are used for flavouring curries.

Clausena heptaphylla (Roxb.) Wight & Arn., Prodr. Fl. Pen. Ind. Or. 95. 1834; Hook. f., Fl. Brit. India 1:504. 1875; *Amyris heptaphylla* Roxb., Fl. Ind. 2:248. 1875.

Local name : Kebu-taye (Abor, Adi).

Shrubs or small trees ca 3 m high. Leaflets elliptic-lanceolate, densely pellucid glandular dotted. Flowers in terminal racemes, ca 3 mm across, white to pale yellow. Fruits ellipsoid, dark violet with mango like smell.

Fl. & Fr. : April - May.

Distrib. : Siang, Subansiri; 200-500 m, in tropical damp forests.

Clausena lansium (Lour.) Skeels in U.S. Dept. Agric. Bur. Pl. Ind. Bull. 168:31. 1909; Nair, Fl. Punjab Plains 53. 1978. *Quinaria lansium* Lour., Fl. Cochinch. 272. 1790. *Clausena wampi* Blanco, Fl. Filip. 358. 1837; Hook. f., Fl. Brit. India 1:505. 1875.

Trees up to 10 m high with sweet odour. Leaves 5-9 foliolate; leaflets ovate-elliptic. Flowers in large paniculate racemes, white. Fruits globose.

Fl. & Fr. : March - Sept.

Distrib. : Siang; 500-1200 m, in primary forests.

Euodia glabrifolia (Champ.) Balakr., Fl. Jowai 1:115. 1981. *Boymia glabrifolia* Champ. in Hook., J. Bot. Kew Misc. 3:330. 1851. *Euodia miliaefolia* (Hance) Benth., Fl. Hongk. 58. 1861; Hook. f., Fl. Brit. India 1:490. 1875. *Megabotrya miliaefolia* Hance in Walp., Ann. 2:259. 1851.

Local name : Muka-asing (Abor); Maiphak (Asm.); Namsing-asing (Adi); Theng-hanjan (Mik.); Bora-asing (Miri).

Trees, 5-15 m high with dense crown. Leaflets ovate-lanceolate. Flowers in axillary, large corymbs, greenish white. Capsules 5-celled.

Fl. & Fr. : June - Sept.

Distrib. : Siang, Tirap; 600-1000 m, in forests.

Euodia roxburghiana (Champ.) Benth., Fl. Hongk. 59. 1861; Hook. f., Fl. Brit. India 1:487. 1875. *Zanthoxylum roxburghianum* Champ. in Linnaea 5:58. 1830.

Trees up to 15 m high. Leaflets elliptic-ovate or oblong-lanceolate. Flowers in axillary or terminal cymes, white. Capsules globose.

Fl. & Fr. : Aug. - March.

Distrib. : Changlang; 1000-1800 m, in dense primary forests.

Euodia rutaecarpa (A.Juss.) Benth., Fl. Hongk. 59. 1861; Hook. f., Fl. Brit. India 1:490. 1875. *Boymia rutaecarpa* A.Juss., Mem. Rutaceae 153, t. 25, n. 39. 1825.

Local name : Muka-asing (Adi); Bora-asing (Miri).

Trees, velvety hairy. Leaflets oblong. Flowers in terminal cymes, pubescent within. Fruits subglobose.

Fl. & Fr. : March - July.

Distrib. : Kameng, Lohit, Siang, Subansiri, Tirap; 100-1000 m, in primary forests.

Euodia trichotoma (Lour.) Planch. in Pierre, Fl. Cochinch. t. 187. 1893; Balakr., Fl. Jowai 1:115. 1981. *Tetradium trichotoma* Lour., Fl. Cochinch. 91. 1790. *Rhus fraxinifolium* D.Don, Prodr. Fl. Nep. 248. 1825. *Euodia fraxinifolia* (D.Don) Hook. f., Fl. Brit. India 1:490. 1875.

Local name : Bora-sing (Asm.).

Trees 10-20 m high with dense crown. Leaves 9-11 foliolate, leaflets oblong-lanceolate. Flowers in axillary or terminal corymbiform cymose panicles, greenish white. Capsules 2-valved, reddish.

Fl. & Fr. : May - Dec.

Distrib. : Changlang, Siang; 200-1200 m, in forests, along river banks.

Glycosmis cyanocarpa (Blume) Spreng., Syst. Veg. 4(Curr. Post.): 161. 1827., *Cookia cyanocarpa* Blume, Bijdr. 136. 1825.

Small trees. Leaves ovate-lanceolate or oblong-lanceolate, shining above. Flowers in axillary cymes, dull white. Fruits subglobose.

Fl. & Fr. : Feb. - Oct.

Distrib. : Changlang; 500-1000 m, in forests.

Glycosmis cymosa (Kurz) Narayanaswami in Rec. Bot. Surv. India 14(2):26. 1941. *G. cyanocarpa* var. *cymosa* Kurz in J. Bot. 14:34. 1876. var. *cymosa*.

Shrubs or small trees up to 6 m high. Leaflets narrowly lanceolate or oblong. Flowers in axillary cymes, pale white. Fruits ellipsoid.

Fl. & Fr. : March - Feb.

Distrib. : Changlang, Siang; 400-1000 m, in forests.

Glycosmis cymosa var. *simplicifolia* (Kurz) Narayanaswami in Rec. Bot. Surv. India 14(2):30. 1941. *G. cyanocarpa* var. *simplicifolia* Kurz in J. Bot. 14:35. 1876.

Shrubs up to 3 m high. Leaves ovate-elliptic or linear-lanceolate. Flowers in axillary or terminal cymes, white. Fruits subglobose, pitted.

Fl. & Fr. : Feb. - July.

Distrib. : Kameng; 100-900 m, in forests.

Glycosmis pentaphylla (Retz.) Correa in Ann. Mus. Nat. Hist. Paris 6:386. 1805; Hook. f., Fl. Brit. India 1:499. 1875. *Limonia pentaphylla* Retz., Obs. Bot. 5:24. 1788. *L. arborea* Roxb., Pl. Corom. t. 85. 1798. *Glycosmis arborea* (Roxb.) DC., Prodr. 1:538. 1824.

Local name : Hengna-poka, Tultha-poka, Chaul-dhowa (Asm.); Tasung-change (Daff.); Hiunmucha, theng-loksa-arong (Mik.); Tasung-change (Nishi).

Shrubs or small trees up to 5 m high. Leaflets oblanceolate or elliptic-lanceolate. Flowers in large axillary or terminal racemes, pale white. Fruits globose, pinkish white.

Fl. & Fr. : March - Dec.

Distrib. : Changlang, Dibang valley, Siang; 200-800 m, in tropical humid forests as undergrowth.

Limonia acidissima L., Sp. Pl. ed. 2:554. 1762; Airy-Shaw in Kew Bull. 1939:193. 1939. *Schinus limonia* L., Sp. Pl. 389. 1753. *Feronia elephantum* Correa in Trans. Linn. Soc. London 5:225. 1800; Hook. f., Fl. Brit. India 1:516. 1875. Fig. 75.

Deciduous trees up to 15 m high with ovoid crown. Leaves obovate, crenate at tip. Flowers in axillary racemes, reddish. Fruits globose, pulpy.

Fl. & Fr. : March - Aug.

Distrib. : Kameng; 200-1000 m, in forests.

Micromelum integerrimum (Buch. Ham. ex Coleb.) Wight & Arn. ex M. Roem. in Fam. Nat. Reg. Veg. 1:47. 1846; Hara *et al.*, Enum. Fl. Pl. Nep. 1:82. 1974. *Bergera integerrima* Buch. Ham. ex Colebr. in Trans. Linn. Soc. 15:367. 1827. Roxb., Fl. Ind. 2:376. 1832; Hook. f., Fl. Brit. India 1:501. 1875, *p.p.*

Local name : Gobor-hurta (Asm.).

Small trees, often shrubby. Leaflets ovate-lanceolate or oblong-lanceolate. Flowers in terminal corymbose panicles, white, fragrant. Fruits ellipsoid, reddish yellow when ripe.

Fl. & Fr. : March - June.

Distrib. : Kameng, Lohit, Siang, Subansiri, Tirap; 200-1000 m, in semi-evergreen secondary forests.

Micromelum minutum (Forst. f.) Wight & Arn., Prodr. Fl. Pen. Ind. Or. 1:448. 1834. *Limonia minuta* Forst. f., Fl. Ins. Austr. Prodr. 33:1784. *Micromelum pubescens* Blume, Bijdr. 128. 1825; Hook. f., Fl. Brit. India 1:501. 1875.

Local name : Galing-asing (Ahor, Adi); Hilaguti-gach (Asm.); Thenghase (Mik.).

Small trees up to 5 m high. Leaflets 9-15, ovate or lanceolate. Flowers in terminal decomposed cymes, whitish or yellowish, fragrant. Berries ovoid or oblong, yellow.

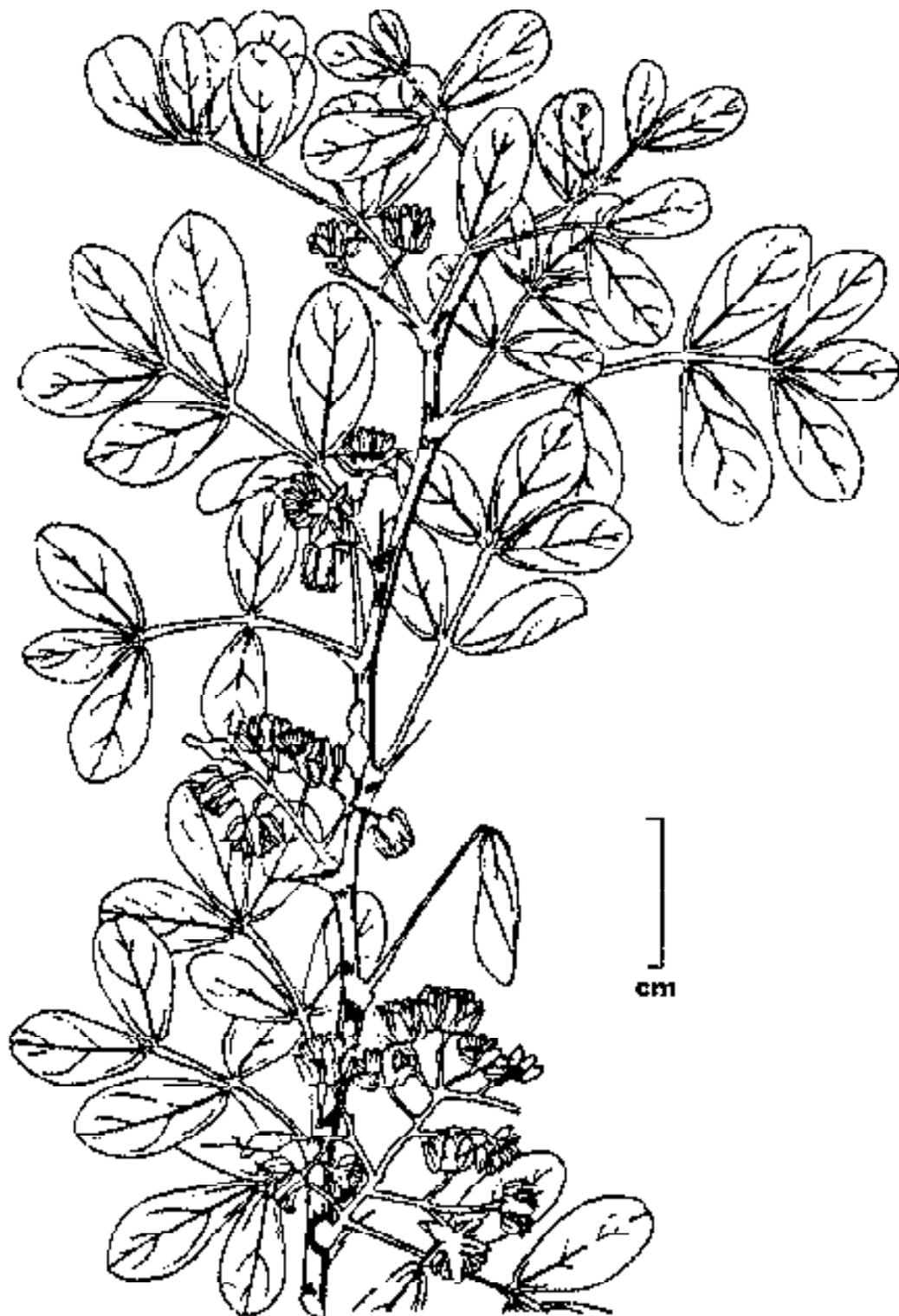


Fig. 75. *Limonia acidissima* L. : Flowering twig

Fl. & Fr. : Nov. - April.

Distrib. : Changlang, Kameng, Lohit, Siang, Subansiri, Tirap; 400-1200 m, in primary forests.

Murraya koenigii (L.) Spreng., Syst. Veg. 2:315. 1825; Hook. f., Fl. Brit. India 1:503. 1875. *Bergera koenigii* L., Mant. Pl. 2:563. 1771.

Local name : Narasingha, Bisha hari (Asm.); Theng sakoo (Mik.); Kairseng (Monpa).

Undershrubs or shrubs. Leaflets 11-35, ovate-lanceolate. Flowers in terminal corymbs, white. Fruits blackish purple, pulpy.

Fl. & Fr. : Feb. - Oct.

Distrib. : Arunachal Pradesh; often cultivated.

Use : Leaves are used for flavouring curries "Curry Leaf". Infusion of leaves is given in Cholera.

Murraya paniculata (L.) Jack in Malay. Misc. 1:31. 1820; Tanaka in J. Ind. Bot. Soc. 16:231. 1937. *Chalcas paniculata* L., Mant. Pl. 1:68. 1767. *Murraya exotica* L., Mant. Pl. 2:563. 1771; Hook. f., Fl. Brit. India 1:502. 1875.

Local name : Nyibumtarum (Adi); Kalong-asing (Adi, Miri); Kamini (Asm.).

Shrubs or small evergreen trees up to 10 m high. Leaves 3-7 foliolate; leaflets ovate to obovate-elliptic. Flowers in terminal corymbs, milky white, highly fragrant. Fruits ellipsoid, orange red when ripe.

Fl. & Fr. : Feb. - Jan.

Distrib. : Changlang, Dibang valley, Kameng, Siang, Subansiri; 400-1000 m, in forests.

Use : Ripe fruits are edible. Cultivated ornamental.

Paramignya griffithii Hook. f., Fl. Brit. India 1:510. 1875; Kanjilal *et al.*, Fl. Assam 1(2):211. 1936.

Local name : Bonjora (Asm.).

Scandent shrubs with axillary recurved spines; young parts tomentose. Leaflets oblong or elliptic with translucent dots. Flowers solitary or in axillary cymes, white. Fruits globose.

Fl. & Fr. : March - Jan.

Distrib. : Kameng, Lohit, Siang, Subansiri, Tirap; 100-1000 m, in primary forests along river bank.

Paramignya monophylla Wight, Ill. Ind. Bot. 1:109, t. 42. 1840; Hook. f., Fl. Brit. India 1:510. 1875.

Climbing shrubs with spines. Leaflets elliptic. Flowers in axillary fascicles, white, fragrant. Berries ovoid, yellow.

Fl. & Fr. : March - Oct.

Distrib. : Kameng; 500-1400 m, in forests.

Skimmia anquetilia Taylor & Airy Shaw in Curtis, Bot. Mag. n.s. 182(4) :169, t. 789. 1979. *S. laureola* (Wallich) Hook. f., Fl. Brit. India 1:499. 1875, p.p.; *Limonia laureola* Wallich, Pl. Asiat. Rar. 3:23, t. 245. 1832.

Shrubs up to 3 m high. Leaves linear-oblong to elliptic-lanceolate. Flowers crowded in terminal panicles, yellowish, fragrant. Drupes ovoid, red.

Fl. & Fr. : April - Oct.

Distrib. : Kameng, Subansiri; 1600-2500 m, in dense humid forests.

Use : Leaves are used in small pox.

Skimmia arunachalensis Goel & Mehrotra in J. Bombay Nat. Hist. Soc. 86(2): 26. 1989.

Small evergreen trees up to 4 m high. Leaves lanceolate to oblong-lanceolate. Flowers in axillary or terminal panicles, yellowish white. Drupes rugose, ovoid.

Fl. & Fr. : March - June.

Distrib. : Kameng; 2000-2500 m, in open and shaded slopes along with *Salix*, along forest edges.

Skimmia kamengensis Goel & Mehrotra in J. Bombay Nat. Hist. Soc. 66(2) :228. 1989.

Small trees up to 7 m high. Leaves obovate-oblong. Flowers in lax terminal panicles, creamy white. Drupes pyriform. Seeds cartilagenous.

Fl. & Fr. : April - June.

Distrib. : Kameng; 2800-3500 m, in open and shaded slopes.

Toddalia asiatica (L.) Lamk., Tab. Encycl. 2:116. 1797; Kanai in Hara, Fl. E. Himal. 171. 1966. *Paullinia asiatica* L., Sp. Pl. 365. 1753. *Toddalia aculeata* Pers., Syn. Pl. 1:249. 1805; Hook. f., Fl. Brit. India 1:497. 1875.

Local name : Mulkiberdukla, Warplap-rikang (Mik.).

Prickly, shrubby stragglars up to 3 m tall. Leaves 3-foliolate; leaflets obovate or oblanceolate, pellucid-punctate. Flowers in axillary cymes, white. Berries globose, orange yellow.

Fl. & Fr. : Nov. - April.

Distrib. : Changlang, Kameng, Lohit, Siang, Subansiri; 1600 m, along stream sides and forest edges.

Use : Fruits are fragrant, edible.

Zanthoxylum acanthopodium DC., Prodr. 1:727. 1824; Hook. f., Fl. Brit. India 1:493. 1875. *Z. acanthopodium* var. *timbor* Hook. f., Fl. Brit. India 1:493. 1875.

Local name : Yokhung (Apat.).

Straggling shrubs or small trees up to 2.5 m high. Leaves 5-9 foliolate; leaflets ovate to elliptic-lanceolate. Flowers in axillary panicles, purplish. Fruits with 3 carpels. Seeds shining black.

Fl. & Fr. : Dec. - May.

Distrib. : Changlang, Kameng, Siang, Subansiri, Tawang, Tirap; 1000-2500 m, on slopes.

Use : Tender leaves are taken as vegetable. Fruits are edible. Pounded fruits are prescribed orally for dysentery and stomach-ache.

Zanthoxylum armatum DC., Prodr. 1:727. 1824; Hartley in J. Arn. Arb. 47. 211. 1966. *Z. alatum* Roxb., Fl. Ind. 3:768. 1832; Hook. f., Fl. Brit. India 1:493. 1875.

Local name : Khang-shing (Monpa).

Shrubs or trees, 15-20 m high with recurved prickles. Leaves 4-12 foliolate; leaflets lanceolate. Flowers in axillary or terminal cymes. Fruits broadly ovoid, reddish.

Fl. & Fr. : April - Oct.

Distrib. : Kameng, Tirap; 1000-1500 m, in forests.

Use : Fruits are used in spices, infusion of seeds mixed with *Allium stivum* and salt is prescribed in case of madness as well as stomach disorder. Bark and fruits are used in treatment of small pox and also used for stupefying fishes.

Zanthoxylum burkillianum Babu in Bull. Bot. Surv. India 16(1-4): 55. (1974) 1977. *Z. hamiltonianum* auct. non Wallich ex Hook. f. 1875: Burkill in Rec. Bot. Surv. India 10:253. 1924.

Climbing or straggling shrubs; branchlets armed. Leaflets 3-4 pairs, elliptic-oblong. Flowers in axillary panicles.

Fl. & Fr. : Sept. - Dec.

Distrib. : Siang; 300-400 m, along hill sides and river banks.

Zanthoxylum nitidum (Roxb.) DC., Prodr. 1:727. 1824; Hartley in J. Arn. Arb. 47. 180. 1966. *Fagara nitida* Roxb., Fl. Ind. 1:439. 1820. *Zanthoxylum hamiltonianum* Wallich ex Hook. f., Fl. Brit. India 1:494. 1875. *Z. hamiltonianum* var. *tomentosum* Hook. f., Fl. Brit. India 1:494. 1875.

Local name : Tejmai-bih (Asm.); Rikamriubi (Miri).

Scandent or climbing, armed shrubs. Leaves 3-foliolate; leaflets broadly ovate-elliptic. Flowers in axillary panicles, dull white. Fruits globose. Seeds pitted.

Fl. & Fr. : Feb. - Oct.

Distrib. : Siang; 400-500 m, in forests.

Use : Fruits are used as fish poison.

Zanthoxylum ovalifolium Wight, Ill. Ind. Bot. 1:169. 1839; Hook. f., Fl. Brit. India 1:492. 1875.

Small, prickly trees or shrubs up to 5 m high. Leaflets elliptic, lanceolate or obovate. Flowers in axillary cymes, yellowish white. Follicles deep red.

Fl. & Fr. : Aug. - Nov.

Distrib. : Tirap; 500-1500 m, in forests.

Zanthoxylum oxyphyllum Edgew. in Trans. Linn. Soc. London 20:42. 1846; Hook. f., Fl. Brit. India 1:494. 1875.

Local name : Marenga (Asm.); Yer (Monpa).

Scandent or climbing, armed shrubs up to 3 m tall. Leaflets 2-9 pairs, ovate-lanceolate. Flowers mostly in terminal, paniced umbels, yellow. Follicles 2-4, tubercled.

Fl. & Fr. : April - Nov.

Distrib. : Kameng, Subansiri; 1500-2000 m, in open forests.

Use : Fruits are used along with tobacco for hukka.

Zanthoxylum rhetsa (Roxb.) DC., Prodr. 1:728. 1824; Hook. f., Fl. Brit. India 1:495. 1875. *Fagara rhetsa* Roxb., Fl. Ind. 1:438. 1820. *Kbudrunga* (Roxb.) DC., Prodr. 1:728. 1824; Hook. f., fl. Brit. India 1:495. 1875.

Local name : Onger-asing (Ahor); Bujar mali (Asm.); Hanjor, Theng-nang-arong (Mik.).

Trees up to 30 m high with conical prickles on trunk. Leaflets 15-25, oblong-lanceolate. Flowers in axillary or terminal, paniced cymes, greenish yellow. Follicles globose, reddish.

Fl. & Fr. : April - Oct.

Distrib. : Kameng; 1200-2000 m, in forests.

Use : Seeds are mixed in curries for flavouring.

Insufficiently known materials

Citrus dimorphocarpa Lush in Ind. For. 34:346. 1910.

Glycosmis boreana Narayanaswami ex Tanaka in J. Ind. Bot. Soc. 14:228. 1937.

Skimmia arborescens T. Anders. ex Gamble in J. Linn. Soc. Bot. 43:491. 1916.

Skimmia melanocarpa Rehder & Wilson in Sarg., Pl. Wilson. 2:138. 1914.

SIMAROUBACEAE

Ailanthus integrifolia Lamk. subsp. *calycina* (Pierre) Nootboom in Fl. Males. ser. 1, 6(2): 218. 1962. *A. calycina* Pierre, Fl. For. Coch. 4: t. 294A. 1892. *A. grandis* Prain in Ind. For. 28: 131. 1902.

Local name : Sileng-asing (Adi, Miri); Borpat (Asm.); Bam-bang (Nokte).

Lofty trees up to 50 m high with lax crown. Leaves up to 1 m long; leaflets ovate-lanceolate. Flowers in panicles, yellowish. Samaras winged. Seeds flat.

Fl. & Fr. : Dec. - March.

Distrib. : Siang; 300-800 m, in primary tropical forests.

Brucea mollis Wallich ex Kurz in J. Asiat. Soc. Bengal 42:64. 1873; Bennett in Hook. f., Fl. Brit. India 1:521. 1875.

Shrubs or small trees, 3-5 m high. Leaflets 7-13, ovate-oblong or oblong-lanceolate. Flowers in 10-25 cm long panicles, greenish white. Drupelets ovoid; stone reticulate.

Fl. & Fr. : April - Aug.

Distrib. : Kameng, Subansiri, Tirap; 100-1000 m, in open forests.

Picrasma javanica Blume, Bijdr. 5. 1825; Bennett in Hook. f., Fl. Brit. India 1:520. 1875; Nootboom in Fl. Males. ser. 1,6(2): 215. 1962. *P.nepalensis* Bennett in Fl. Jav. Rar. 201. 1844 & in Hook. f., Fl. Brit. India 1:520. 1875, *P.andamanica* Kurz ex Bennett in Hook. f., Fl. Brit. India 1:520. 1875.

Local name : Nim-tita, Putichhal (Asm.); Putichal-asing (Miri); Singka-asing (Miri, Adi).

Trees up to 10 m high. Leaflets elliptic-lanceolate, caudate-acuminate. Flowers in axillary panicles, dull white. Berries subglobose, fleshy.

Fl. & Fr. : March - Aug.

Distrib. : Kameng, Siang, Subansiri, Tirap; 300-1000 m, in dense forests.

Picrasma quassioides (D. Don) Bennett, Pl. Jav. Rar. 198. 1844 and in Hook. f., Fl. Brit. India 1:520. 1875; *Simaba quassioides* D. Don, Prodr. Fl. Nep. 248. 1825.

Climbing shrubs or trees. Leaflets usually 9, sometimes 7-11, oblong-ovate to lanceolate. Flowers in axillary or leaf-opposed corymbs, pale yellow. Drupelets globose, black when ripe.

Fl. & Fr. : April - Nov.

Distrib. : Kameng, Subansiri; 1500-2000 m, in forests.

OCHNACEAE

Ochna obtusata DC. in Ann. Mus. Paris 17:411, Pl. 2. t. 11. 1811. *O.squarrosa* auct. non L.: Bennett in Hook. f., Fl. Brit. India 1:523. 1875. *O.squarrosa* var. *cordata* (Thwaites) Bennett in Hook. f., Fl. Brit. India 1:524. 1875.

Trees or shrubs. Leaves oblong-ovate or obovate. Flowers in axillary umbels, ca 1.5 cm across, fragrant. Drupes oblong.

Fl. & Fr. : March - Aug.

Distrib. : Kameng; 1000-1500 m, in forests.

BURSERACEAE

Canarium bengalense Roxb., Fl. Ind. 3:136. 1832; Bennett in Hook. f., Fl. Brit. India 1:534. 1875; Kanjilal *et al.*, Fl. Assam 1(2): 224. 1934.

Local name : Dhuna (Asm.); Kanker-asing (Miri & Adi).

Medium sized trees; branchlets rusty pubescent. Leaves crowded at the end of branchlets; leaflets ovate-oblong or lanceolate. Flowers in axillary, or supra axillary racemes like panicles, hairy. Drupes ellipsoid, aromatic.

Fl. & Fr. : May - Jan.

Distrib. : Kameng, Lohit, Siang, Subansiri, Tirap; 500-1000 m, in tropical primary forests.

Use : Wood is used for making Tea chests. Resin is burnt as incense.

Canarium strictum Roxb., Fl. Ind. 3:138. 1832; Bennett in Hook. f., Fl. Brit. India 1:534. 1875; Leenhouts in Blumea 9:414. 1959. *C. resiniferum* Brace ex King in J. Asiat. Soc. Bengal 52:2, 188, t. 13. 1893.

Local name : Thekok (Adi); Dhuna (Asm.); Silum-pakia (Adi & Miri); Rapthing (Nokte).

Lofty trees up to 40 m high with buttress and umbrella shaped dense crown. Leaflets 5-13, oblong-lanceolate. Flowers in supra-axillary panicles, brownish yellow. Drupes ellipsoid, stony.

Fl. & Fr. : July - Sept.

Distrib. : Siang, Tirap; 1000-1200 m, in primary dense humid forests.

Use : Leaves are crushed and thrown into water to kill fish and to stupefy fish for easy catch.

Garuga gamblei King in Rec. Bot. Surv. India 4:262. 1913; Kanjilal *et al.*, Fl. Assam 1(2): 222. 1934.

Local name : Sibon-asing (Adi); Pani-amora (Asm.); Teji-arong (Mik.) Bankung-asing (Miri).

Trees, 25-35 m high with spreading crown; bole buttressed at base. Leaflets ovate-oblong or oblong-lanceolate, turning yellow when mature. Flowers in terminal racemose panicles. Drupes globose.

Fl. & Fr. : March - Dec.

Distrib. : Kameng, Lohit, Siang, Subansiri, Tirap; 100-1000 m, in primary forests.

Use : Bark is used for tanning and leaves are good for cattle.

Garuga pinnata Roxb., Pl. Corom. 3:5, t. 208. 1819; Bennett in Hook. f., Fl. Brit. India 1:528. 1875. Fig. 76.

Local name : Sibon-asing (Adi); Thotrnota, Rohimola, Pani-amora (Asm.); Teji-arong (Mik.); Bonkung-asing (Miri).

Trees up to 40 m high with subovoid crown. Leaves up to 50 cm long; leaflets oblong to ovate-lanceolate. Flowers in terminal pyramidal panicles, yellow. Drupes globose, 2-3 seeded.

Fl. & Fr. : March - Nov.

Distrib. : Kameng, Siang, Tirap; 100-600 m, in tropical dense forests.

MELIACEAE

Aglaia edulis A.Gray in Bot. U.S. Explor. Exped. 1:237. 1856; Hiern in Hook. f., Fl. Brit. India 1:556. 1875.

Shrubs or small trees, 2-8 m high. Leaflets 5-9, lanceolate or oblong-lanceolat. Flowers in rusty tomentose panicles, yellow. Fruits subglobose, yellowish, pulpy.

Fl. & Fr. : Aug. - Nov.



Fig. 76. *Garuga pinnata* Roxb. : Fruiting twig.

Distrib. : Changlang, Siang; 1200-1400 m. in open forests.

Aglaia hiernii Visw. & Ramach. in Bull. Bot. Surv. India 24:212. 1983. *Amoora wallichii* King in J. Asiat. Soc. Bengal 46(2): 56. 1895, non *Aglaia wallichii* Hiern; Kanjilal *et al.*, Fl. Assam 2:237. 1934.

Local name : Ameri, Bhoto-mayana (Asm.); Dire-asing (Abor, Adi); Galiog-asing (Miri).

Trees up to 25 m high, often buttressed at base. Leaflets 11-13, oblong. Flowers in axillary panicles, whitish. Capsules pyriform, tomentose.

Fl. & Fr. : Aug. - Dec.

Distrib. : Changlang, Siang; 300-600 m, in forests.

Aglaia perviridis Hiern in Hook. f., Fl. Brit. India 1:556. 1875.

Trees up to 15 m high. Leaflets 9-13, lanceolate to ovate-oblong. Flowers in axillary panicles, white. Fruits obliquely globose.

Fl. & Fr. : May - Dec.

Distrib. : Kameng, Siang; 1200-1600 m, in forests.

Aphanamixis chittagonga (Miq.) Haridasan & R.R.Rao in For. Fl. Meghalaya 1:204. 1985. *Aglaia chittagonga* Miq. in Ann. Mus. Lugd. Bat. 4:44. 1864. *Amoora chittagonga* (Miq.) Hiern in Hook. f., Fl. Brit. India 1:559. 1875.

Local name : Gan-changne (Asm.); Gangru-changne (Daff., Nishi).

Shrubs or small trees. 3-8 m high. Leaves 2-6 foliolate; leaflets elliptic to oblong-lanceolate, lepidots along nerves. Flowers in large panicles, white. Fruits obovoid, brownish.

Fl. & Fr. : July - Dec.

Distrib. : Changlang, Kameng, Lohit, Siang, Subansiri, Tirap; 600-1300 m, in forests.

Aphanamixis polystachya (Wallich) Parker in Ind. For. 57. 486. 1931. *Aglaia polystachya* Wallich in Roxb., Fl. Ind. 2:429. 1824. *Amoora rohituka* (Roxb.) Wight & Arn., Prodr. Fl. Pen. Ind. Or. 119. 1834; Hiern in Hook. f., Fl. Brit. India 1:559. 1875. *Andersonia rohituka* Roxb., Fl. Ind. 2:213. 1832.

Local name : Galing (Abor); Amari, Boga-amari, Hakhori-bakhori (Asm.).

Trees, 5-18 m high with umbrella shaped crown. Leaves 7-19 foliolate; leaflets oblong or lanceolate. Flowers in axillary racemes, yellow to dull white. Fruits ovoid, yellow when ripe.

Fl. & Fr. : Oct. - March.

Distrib. : Changlang, Kameng, Siang, Subansiri; 900-1200 m, in open places within forests and outskirts of villages.

Azadirachta indica A. Juss. in Mem. Mus. Nat. Hist. Paris 19:220, t. 2. f. 5. 1830; Whitmore in Hara *et al.*, Enum. Fl. Pl. Nep. 2:85. 1979. *Melia azadirachta* L., Sp. Pl. 383. 1753; Hiern in Hook. f., Fl. Brit. India 1:544. 1875. Fig. 77.

Local name : Nim or Neem (Asm.).

Trees up to 20 m high with lax crown. Leaves 5-13 foliolate; leaflets obliquely lanceolate or ovate-lanceolate. Flowers in axillary panicles, white. Fruits baccate, 1-seeded, pulpy.

Fl. & Fr. : March - July.

Distrib. : Subansiri; 300-700 m, in open forest areas and outskirts of villages.

Use : Almost every part of the plant is used. The fresh and tender twigs are used to clean teeth, particularly in pyorrhoea. The bark is considered useful in skin diseases. The leaves in the form of pultice and decoction is recommended in ulcers and eczema. The dried leaves are generally kept inside clothes, books, etc., to protect them from moth and other insects. Dry flowers are considered tonic and stomachic. The berries are regarded as purgative and anthelmintic. The oil obtained from seeds is used in various skin diseases, eg. scrofula, indolent ulcers, sores, etc. The timber is long lasting and is used for different furniture.

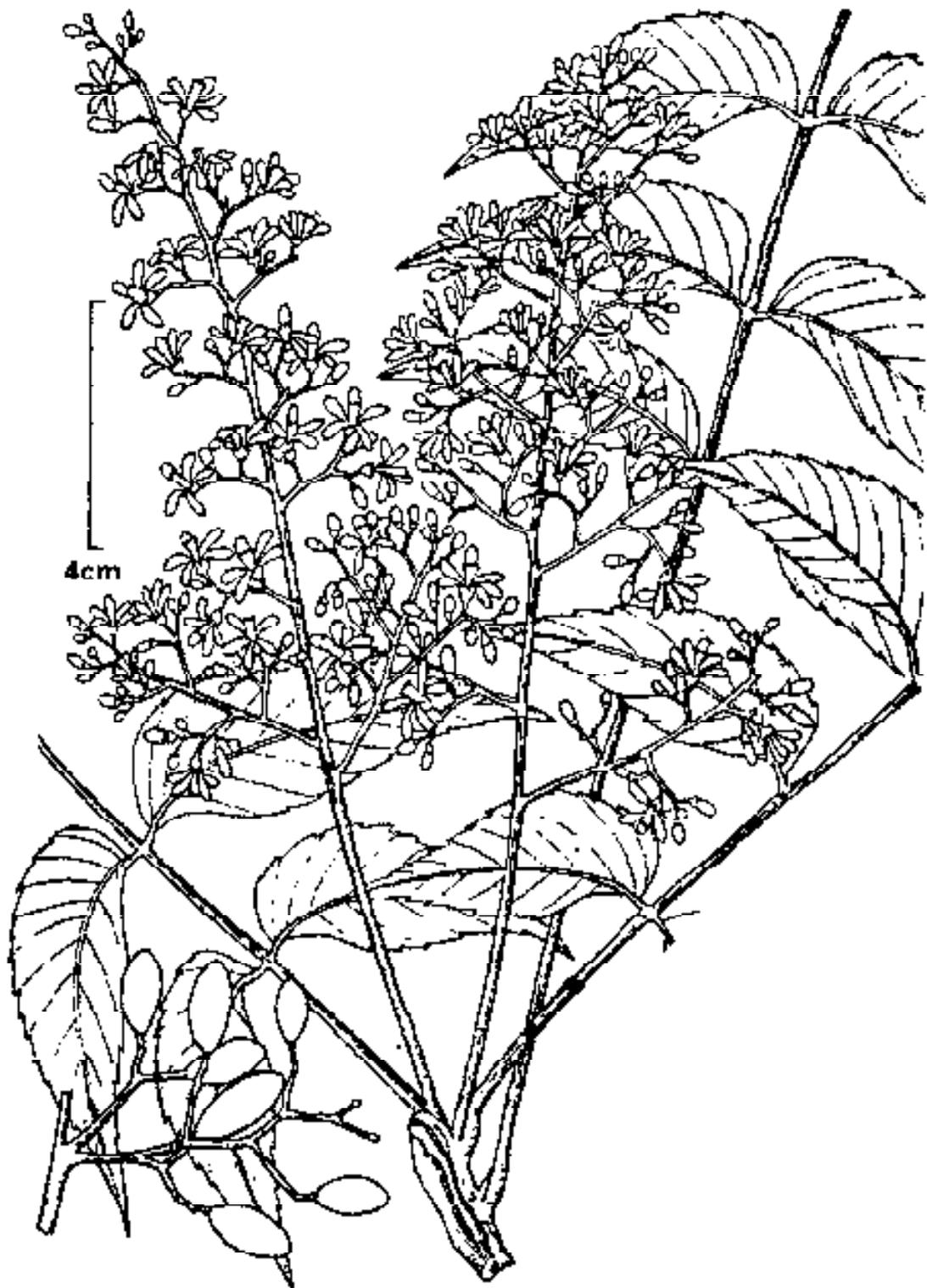


Fig. 77. *Azadirachta indica* A. Juss. : Flowering twig.

Chukrasia tabularis A.Juss. in Mem. Mus. Nat. Hist. Paris 19:251, t. 22. f. 27. 1830; Hiern in Hook. f., Fl. Brit. India 1:568. 1875.

Local name : Boga-poma (Asm.); Silling, Silleng-asing (Miri).

Trees up to 20 m tall. Leaflets 10-16, ovate to lanceolate. Flowers in axillary panicles, yellowish. Capsules ovoid, red.

Fl. & Fr. : Aug. - Dec.

Distrib. : Lohit, Siang, Subansiri; 500-1600 m, in forests.

Chisocheton cumingianus (C. DC.) Harms subsp. **balansae** (C. DC.) Mabberley in Taxon 26:528. 1977. *C. balansae* C. DC. in Bull. Herb. Boiss. 2:578. 1894. *C. paniculatus* Hiern in Hook. f., Fl. Brit. India 1:552. 1875, *nom. illeg.*

Local name : Bandoridima (Asm.).

Large trees, 15-20 m high. Leaves 9-31 foliolate; leaflets oblong-lanceolate. Flowers in drooping lax panicles, 1-5 cm across, yellow. Capsules subglobose, shining, orange red. Seeds with yellow aril.

Fl. & Fr. : June - April.

Distrib. : Changlang, Siang; 500-1200 m, in forests.

Dysoxylum alliarium (Buch. - Ham.) Balakr. in J. Bombay Nat. Hist. Soc. 67:57. 1970. *Guarea alliaria* Buch.-Ham. in Mem. Wern. Soc. 6:305. 1832, *excl. syn.* *Rumph. Dysoxylum hamiltonii* Hiern in Hook. f., Fl. Brit. India 1:547. 1875.

Local name : Situk-payu (Abor, Adi); Gandheli-poma, Keotai (Asm.); Siti-asing (Asm.).

Trees, 15-25 m high with irregular crown. Leaflets 6-16, oblong-lanceolate. Flowers in axillary panicles, greenish white. Capsules subglobose, 4-celled, pale white.

Fl. & Fr. : June- Aug.

Distrib. : Subansiri; 200-600 m, in forests.

Dysoxylum binectariferum (Roxb.) Hook. f. ex Beddome in Trans. Linn. Soc. London 25:212. 1866; Hiern in Hook. f., Fl. Brit. India 1:546. 1875. *Guarea binectarifera* Roxb., Fl. Ind. 2:240. 1832.

Local name : Bandardima (Asm.); Galing-asing (Miri).

Trees, 20-30 m high with oval crown. Leaves 5-9 foliolate; leaflets obliquely ovate-oblong. Flowers in axillary panicles, yellowish or bluish white, fragrant. Capsules obovoid, yellow.

Fl. & Fr. : March - July.

Distrib. : Changlang, Lohit, Tirap; 500-1000 m, in primary and secondary forests.

Dysoxylum gobara (Buch.-Ham.) Merr. in J. Arn. Arb. 23:173. 1942. *Guarea gobara* Buch. -Ham. in Mem. Wern. Nat. Hist. Soc. 6:306, f. 1. 1832. *Dysoxylum procerum* Hiern in Hook. f., Fl. Brit. India 1:547. 1875.

Local name : Lali, Amari (Asm.); Katum-asing (Abor, Adi); Galing-libor (Miri & Adi).

Trees, 10-20 m high with dense oval crown. Leaves 5-13 foliolate; leaflets ovate or ovate-oblong. Flowers in axillary panicles, creamy white, fragrant. Capsules 3-4 celled, pyriform, red. Seeds with orange aril.

Fl. & Fr. : Nov. - Feb.

Distrib. : Changlang, Kameng, Siang, Subansiri; 200-1100 m, in forests.

Use : Timber is much used for doors and windows.

Dysoxylum grande Hiern in Hook. f., Fl. Brit. India 1:547. 1875.

Local name : Boga-Banderdima (Asm.).

Trees, 15-20 m high; young shoots greyish tomentose. Leaflets oblong, caudate-acuminate at apex. Flowers in paniculate cymes. Capsules pyriform.

Fl. & Fr. : June - Jan.

Distrib. : Kameng, Lohit, Siang, Subansiri, Tirap; 500-1200 m, in primary forests.

Use : The timber is used for making boats and houses.

Dysoxylum pallens Hiern in Hook. f., Fl. Brit. India 1:548. 1875.

Local name : Banderdima (Asm.).

Trees, 12-20 m high. Leaves 5-10 foliolate; leaflets elliptic-oblong. Flowers in axillary spicate racemes, pale white. Fruits pyriform.

Fl. & Fr. : Jan. - April.

Distrib. : Changlang, Lohit, Siang; 200-800 m, in tropical dense humid forests.

Dysoxylum reticulatum King in J. Asiat. Soc. Bengal 65(2): 114. 1897; Kanjilal *et al.*, Fl. Assam 1(2): 233. 1934.

Local name : Banderdima (Asm.).

Trees up to 10 m high. Leaves 14-foliate; leaflets ovate or ovate-lanceolate. Flowers in racemes, white. Capsules pyriform, yellow, dark brown when ripe.

Fl. & Fr. : March - May.

Distrib. : Changlang; 500-1200 m, in forests.

Melia azedarach L., Sp. Pl. 384. 1753; Hiern in Hook. f., Fl. Brit. India 1:544. 1875.

Local name : Ghora-nim, Maha-nim (Asm.); Abari-asing (Miri).

Deciduous trees, 10-15 m high with spreading crown. Leaves bipinnate; leaflets obliquely ovate-lanceolate. Flowers in axillary cymes, lilac blue. Drupes globose, yellow when ripe.

Fl. & Fr. : March - Jan.

Distrib. : Arunachal Pradesh; 700-1200 m, often cultivated.

Note : Very fast growing species, suitable for fuel wood. Bark is used as an anthelmintic.

Melia dubia Cav., Diss. 7:364. 1789; Hiern in Hook. f., Fl. Brit. India 1:545. 1875.

Local name : Same as *M. azedarach* L.

Large trees up to 25 m high with oval crown. Leaves 2-3 pinnate; leaflets ovate-lanceolate. Flowers in axillary panicles, white. Drupes yellowish, pulpy.

Fl. & Fr. : May - Aug.

Distrib. : Kameng; 600-1200 m, in open forests.

Melia superba Roxb., Fl. Ind. 2:397. 1824; Kanjilal *et al.*, Fl. Assam 1(2): 229. 1934.

Local name : Mahanim (Asm.); Abari-asing (Abor).

Deciduous trees with spreading crown. Leaves ovate or ovate-cordate. Flowers in axillary or terminal paniculate cymes, greenish pink. Drupes subglobose, yellow when ripe.

Fl. & Fr. : May - Dec.

Distrib. : Changiang; 200-800 m, in open forests.

Sphaerosacme decandra (Wallich) Punnington in Blumea 22:489. 1975. *Aglata decandra* Wallich in Roxb., Fl. Ind. 2:427. 1824. *Amoora decandra* (Wallich) Hiern in Hook. f., Fl. Brit. India 1:562. 1875.

Shrubs up to 5 m high. Leaves 7-13 foliolate; leaflets oblong. Flowers in axillary panicles, white, fragrant. Capsules subglobose, rusty brown with 2 seeds.

Fl. & Fr. : June - Sept.

Distrib. : Kameng; 1400-1600 m, in forests.

Touma ciliata M. Roem., Syn. Hesperid. 1:139. 1846; Hiern in Hook. f., Fl. Brit. India 1:569. 1875. Haridasan & R. R. Rao, For. Fl. Meghalaya 1:212. 1985.

Local name : Poma, Jatipoma (Asm.); Harbi-be-arong, Poma-arong (Mik.); Poma-asing, Banji-asing (Miri).

Lofty trees up to 40 m high with oval crown. Leaves 5-25 foliolate; leaflets obliquely lanceolate. Flowers in large panicles, white. Capsules oblong or ellipsoid, winged.

Fl. & Fr. : Nov. - Sept.

Distrib. : Changlang; 800-1500 m, in forests.

Toona microcarpa (C. DC.) Harms in Engler & Prantl, Pflanzenfam. 3, 4:270. 1896; Kanjilal *et al.*, Fl. Assam 1(2):244. 1936. *Cedrela microcarpa* C.DC. in Monogr. Phan. 1:745. 1878.

Local name : Jatipoma (Asm.).

Evergreen trees, 15-30 m high, aromatic. Leaflets lanceolate or ovate, caudate-acuminate at apex. Flowers in terminal paniculate cymes, pale white. Capsules black when ripe.

Fl. & Fr. : June - Nov.

Distrib. : Kameng, Lohit, Siang, Subansiri, Tirap; 100-1200 m, in primary forests.

Use : Wood is used for making furniture, doors and windows.

Toona sureni (Blume) Merr., Inter. Herb. Rumph. 305. 1917; Bahadur, Monogr. Toona 129. 1988. *Swietenia sureni* Blume, Cat. Hort. Buitenz. 27. (1,2,72) 1-2. 1823. *Cedrela febrifuga* Blume, Bijdr. 180. 1825. *Toona febrifuga* (Blume) Roem. Syn. Hesperid. 1:139. 1846. *Cedrela toona mult. auct.* Miq., Fl. Ind. Bat. 1(2):548. 1855, *p.p.*; Hiern in Hook. f., Fl. Brit. India 1:568. 1875, *p.p. non* Roxb. ex Rottl. & Willd. var. *sureni*. Fig. 78.

Local name : Poma, Jia-poma, Jati-oima (Asm.); Poma-arong (Mik.); Poma-asing (Miri).

Large trees, 15-25 m high. Leaves paripinnate, crowded at branch apices; leaflets 8-26, lanceolate or ovate-lanceolate. Flowers in pyramidal panicles, white, fragrant. Capsules oblanceolate, dark brown when ripe.

Fl. & Fr. : March - July.

Distrib. : Kameng, Lohit, Siang, Subansiri, Tirap; 100-500 m, in dense tropical humid forests.



Fig. 78. *Toona sureni* (Blume) Merr. : Flowering twig.

Use : Timber is used for furniture, doors and windows, etc.

Toona sureni var. *celebica* (Koorders) Bahadur, Monogr. *Toona* 133. 1988. *Cedrela celebica* Koorders, Mdedeel. Pl. 19:384. 1898. *C. febrifuga* var. *assmica* C. DC. in Rec. Bot. Surv. India 3:373. 1908.

Local name : Banji, Keji (Aboz); Jati-poma, Pata-poma (Asm.).

Deciduous trees up to 20 m high. Leaflets 6-20, ovate-oblong or ovate, caudate-acuminate. Flowers in narrow panicles, white. Capsules ovate-oblong, black.

Fl. & Fr. : July - Jan.

Distrib. : Siang; 500-1200 m, in dense tropical forests.

Trichilia connaroides (Wight & Arn.) Benthelzen in Acta Bot. Neerl. 11:13. 1962. *Zanthoxylum connaroides* Wight & Arn., Prodr. Fl. Pen. Ind. Or. 148. 1834. *Heynea trijuga* Roxb. ex Sims. in Curtis, Bot. Mag. 41:t. 1938. 1815; Hiern in Hook. f., Fl. Brit. India 1:565. 1875.

Trees up to 15 m high with dense crown. Leaves 5-11 foliolate; leaflets ovate-lanceolate. Flowers minute in corymbose cymes, white. Capsules globose, red, 1-seeded.

Fl. & Fr. : March - Dec.

Distrib. : Kameng; 600-1500 m, in forests.

Walsura robusta Roxb., Fl. Ind. 2:386. 1832; Hiern in Hook. f., Fl. Brit. India 1:565. 1875.

Local name : Lali (Asm.).

Trees with suboval lax crown; young branches densely white lenticellate. Leaflets ovate-lanceolate, caudate-acuminate. Flowers in axillary or terminal panicles, white. Fruits subglobose.

Fl. & Fr. : March - Dec.

Distrib. : Kameng, Lohit, Siang, Subansiri, Tirap; 100-1000 m, in primary tropical forests.

Use : Timber is used for making agricultural appliances.

DICHAPETALACEAE

Dichapetalum gelonioides (Roxb.) Engler in Engler & Prantl, Pflanzenfam. 3(4): 348. 1896. *Moacurra gelonioides* Roxb., Fl. Ind. 2:69. 1832. *Chailletia gelonioides* (Roxb.) Hook. f., Fl. Brit. India 1:570. 1875, p.p.

Local name : Rokpoletak (Abor).

Trees up to 10 m high. Leaves elliptic-lanceolate. Flowers in cymes. Fruits oblong to obovate. Seeds oblong.

Fl. & Fr. : June - Sept.

Distrib. : Siang; 300-800 m, in forests.

OLACACEAE

Erythropalum scandens Blume, Bijdr. 921. 1826; Masters in Hook. f., Fl. Brit. India 1:578. 1875.

Rambling climbers or lianas. Leaves ovate-oblong or lanceolate. Flowers in axillary cymes, white. Drupes ellipsoid, yellowish, rough.

Fl. & Fr. : Aug. - Nov.

Distrib. : Changlang, Kameng, Lohit, Subansiri; 1200-1600 m, in primary forests.

Erythropalum vagum (Griffith) Masters in Hook. f., Fl. Brit. India 1:578. 1875. *Modocopsis vaga* Griffith, Notul. 4:633. 1854.

Climbing shrubs up to 2 m high. Leaves ovate or oblong. Flowers in axillary racemes, white. Fruits ellipsoid, whitish, smooth.

Fl. & Fr. : July - Oct.

Distrib. : Changlang, Kameng, Siang, Subansiri, Tirap; 1000-1400 m, in forests.

Olax acuminata Benth. in Trans. Linn. Soc. London 18:678. 1841; Masters in Hook. f., Fl. Brit. India 1:576. 1875.

Shrubs up to 5 m high. Leaves ovate-lanceolate to oblong-lanceolate. Flowers in axillary cymes, white or pale yellow. Drupes ellipsoid, orange red.

Fl. & Fr. : May - Sept.

Distrib. : Changlang, Kameng; 1000-1500 m, in forests.

Olax nana Wallich ex Benth. in Trans. Linn. Soc. London 18:678. 1841; Masters in Hook. f., Fl. Brit. India 1:576. 1875; Kanjilal *et al.*, Fl. Assam 1(2): 247. 1936.

Undershrubs up to 1 m high. Leaves oblong-lanceolate or ovate-lanceolate. Flowers axillary, solitary, white. Drupes subglobose with accrescent scarlet calyx.

Fl. & Fr. : March - July.

Distrib. : Kameng; 100-600 m, in tropical dense forests.

Schoepfia fragrans Wallich in Roxb., Fl. Ind. 2:188. 1824; Masters in Hook. f., Fl. Brit. India 1:581. 1875.

Small trees up to 10 m tall. Leaves elliptic-lanceolate. Flowers in axillary racemes, yellow, fragrant. Drupes ellipsoid, white, 1-seeded.

Fl. & Fr. : Aug. - Feb.

Distrib. : Lohit; 300-800 m, in dense tropical forests.

Schoepfia jasminodora Sieb. & Zucc. in Abh. Akad. Muench. 4(3):135. 1846; Deb in Bull. Bot. Surv. India 3:298. 1962.

Trees, 10-15 m high with spreading crown. Leaves lanceolate. Flowers in long racemes, orange brown, fragrant.

Fl. & Fr. : March - June.

Distrib. : Kameng, Lohit, Subansiri; 100-1000 m, in tropical primary forests.

ICACINACEAE

Gomphandra tetrandra (Wallich) Sleumer, Notizbl. Berl. Dahl. 15:238. 1940. *Lasianthera tetrandra* Wallich in Roxb., Fl. Ind. 2:328. 1824. *Gompahndra axillaris* Wallich ex Voigt, Hort. Suburb. Calcut. 31. 1845, *nom. illeg.*; Masters in Hook. f., Fl. Brit. India 1:586. 1875. *G. polymorpha* Wight, Ill. 1:103. 1840, *p.p.*; Masters in Hook. f., Fl. Brit. India 1:586. 1875, *p.p.*

Small trees up to 8 m high. Leaves lanceolate. Flowers in axillary cymes, whitish. Fruits obovoid, reddish brown.

Fl. & Fr. : July - Jan.

Distrib. : Siang, Tirap; 800-1200 m, in forests.

Iodes hookeriana Baill. in Adansonia 10:268. 1872; Masters in Hook. f., Fl. Brit. India 1:596. 1875.

Large climbing shrubs. Leaves obovate, pilose beneath. Flowers in axillary cymes, white. Drupes ellipsoid, orange red.

Fl. & Fr. : Jan. - Oct.

Distrib. : Changlang, Tirap; 800-1200 m, in dense forests.

Iodes ovalis Blume, Bijdr. 30. 1825; Sleumer in van Steenis, Fl. Males. 7(2):68. 1971. *I. oblonga* Planch. ex Masters in Hook. f., Fl. Brit. India 1:597. 1875.

Shrubs. Leaves oblanceolate. Flowers in axillary cymes, minute, densely villous.

Fl. & Fr. : Jan. - May.

Distrib. : Changlang; in forests.

Miquelia kleinii Meissner, Pl. Vasc. Gen. 152. 1839; Masters in Hook. f., Fl. Brit. India 1:593. 1875.

Climbers up to 8 m high. Leaves obovate-lanceolate. Flowers pedunculate, 2-4 together from the tubercled base, dull white. Drupes obliquely ovoid.

Fl. & Fr. : April - Oct.

Distrib. : Siang, Subansiri; 200-500 m, in primary dense tropical forests.

Natsiatum herpeticum Buch.-Ham. ex Arn. in Edinburgh New Philos. J. 16:314. 1834; Masters in Hook. f., Fl. Brit. India 1:595. 1875.

Local name : Target riube (Miri).

Climbers. Leaves ovate or suborbicular. Flowers in axillary or supra axillary racemes, greenish yellow or white. Drupes ovoid.

Fl. & Fr. : Nov. - July.

Distrib. : Changlang, Kameng, Siang, Subansiri; 250-800 m, in primary bamboo forests and hill clearings.

OPILIACEAE

Lepionurus sylvestris Blume, Bijdr. 1148. 1826; Kanjilal *et al.*, Fl. Assam 1(2): 250. 1936. *L. oblongifolius* Masters in Hook. f., Fl. Brit. India 1:583. 1875.

Shrubs up to 2 m high. Leaves oblong-lanceolate, elliptic. Flowers in umbellate cymes, minute, yellowish. Drupes ellipsoid, 1-seeded.

Fl. & Fr. : April - Nov.

Distrib. : Changlang, Kameng, Subansiri; 500-1000 m, forests undergrowth.

CARDIOPTERIDACEAE

Cardiopteris quinqueloba (Hassk.) Hassk., Nat. Tijds. N I(10) 64. 1855; Sleumer in van Steenis, Fl. Males. 7(1):45. 1971. *Peripterygium quinquelobum* Hassk., Tijds. Nat. Gesch. phys. 10:142. 1843; Masters in Hook. f., Fl. Brit. India 1:597. 1875. *Cardiopteris lobata* R. Brown in Benn. & Br., Pl. Jav. Rar. 246, t. 49. 1852, *nom. illeg.*; Masters in Hook. f., Fl. Brit. India 1:597. 1875.

Climbers. Leaves ovate-cordate, membranous. Flowers in axillary racemes, dull white. Fruits oblong-obcordate, winged, golden yellow.

Fl. & Fr. : Sept. - Jan.

Distrib. : Kameng, Subansiri; 500-700 m, in forest clearings and bamboo forests.

AQUIFOLIACEAE

Ilex dipyrrena Wallich in Roxb., Fl. Ind. 1:473. 1820; Hook. f., Fl. Brit. India 1:599. 1875.

Trees, 10-15 m high; young branches pilose. Leaves elliptic-lanceolate, spinous-serrate along margin. Flowers in axillary subglobose clusters, white. Drupes globose, scarlet red when ripe.

Fl. & Fr. : April - Sept.

Distrib. : Kameng; 1000-1500 m, in open forests.

Ilex excelsa (Wallich) Hook. f., Fl. Brit. India 1:603. 1875. *Cassine excelsa* Wallich in Roxb., Fl. Ind. 2:376. 1824. forma *excelsa*.

Trees, 6-20 m high with oval crown. Leaves ovate-lanceolate to elliptic-lanceolate. Flowers in cymose umbels, greenish white. Drupes globose, bright red.

Fl. & Fr. : May - Aug.

Distrib. : Kameng; 2500-3000 m, in open forests, hill slopes.

Ilex excelsa forma *hypotricha* (Loesn.) Hara, Fl. E. Himal. 2:70. 1971. *I. hypotricha* Loesn., Monogr. Aquif. 1:103. 1901.

Branchlets, petioles and undersurfaces of leaves pubescent. Leaves ovate-obtuse.

Fl. & Fr. : May - Aug.

Distrib. : Arunachal Pradesh; 1000-1500 m, in forests.

Ilex insignis Hook. f., Fl. Brit. India 1:599. 1875.

Trees up to 10 m high. Leaves elliptic-lanceolate. Flowers in axillary clusters, greenish. Drupes globose, 1-3 seeded.

Fl. & Fr. : Aug. - Oct.

Distrib. : Kameng, Subansiri; 600-1500 m, on open forest slopes.

Ilex odorata Buch. Ham. ex D. Don, Prodr. Fl. Nep. 189. 1825; Hook. f., Fl. Brit. India 1:599. 1875, *p.p.*; Hara, Enum. Fl. Pl. Nep. 2:88. 1979. *I. theaeifolia* Hook. f., Fl. Brit. India 1:601. 1875.

Trees, 5-7 m high with lax crown. Leaves oblong or ovate-lanceolate. Flowers in umbels, yellowish. Drupes globose, reddish brown.

Fl. & Fr. : April - Oct.

Distrib. : Subansiri; 800-1200 m, on open forest slopes.

Ilex sikkimensis Kurz in J. Asiat. Soc. Bengal 44:202. 1875; Hook. f., Fl. Brit. India 1:599. 1875, *p.p.*

Trees, 8-12 m high. Leaves elliptic-oblong, sparsely spinous along margin. Flowers in axillary globose cymes, white. Berries ovoid or globose, black when ripe.

Fl. & Fr. : April - July.

Distrib. : Arunachal Pradesh; 1500-2000 m, on open forest slopes.

Ilex triflora Blume, Bijdr. 1150. 1826; Balakr., Fl. Jowai 1:128. 1981. *I. griffithii* Hook. f., Fl. Brit. India 1:601. 1875.

Shrubs or small trees up to 5 m high. Leaves obovate-elliptic. Flowers in umbels, white. Drupes globose, black.

Fl. & Fr. : April - Nov.

Distrib. : Subansiri; 800-1200 m, on open hill slopes.

Ilex umbellulata (Wallich) Loesn., Monogr. Aquif. 1:99. 1901; Balakr., Fl. Jowai 1:127. 1981. *Ehretia umbellulata* Wallich in Roxb., Fl. Ind. 2:344.

1824. *Ilex godajam* Colebr. ex Hook. f., Fl. Brit. India 1:604. 1875, *nom. superfl.* *I. sulcata* Wallich ex Hook. f., Fl. Brit. India 1:604. 1875.

Local name : Hati-kerepa, Bou-bokul (Asm.); Cheknan (Mik.).

Trees up to 30 m high. Leaves ovate-elliptic to elliptic-lanceolate. Flowers in cymose umbels, dull white. Drupes globose, crowned by persistent calyx.

Fl. & Fr. : July - Oct.

Distrib. : Kameng; 2000-2500 m, along hill slopes.

Ilex venulosa Hook. f., Fl. Brit. India 1:602. 1875.

Medium sized trees up to 15 m high with oval dense crown. Leaves oblong-lanceolate. Flowers in solitary umbels or racemes, white. Drupes globose, red.

Fl. & Fr. : April - Nov.

Distrib. : Kameng; 1500-2000 m, in open forests.

CELASTRACEAE

Bhesa robusta (Roxb.) Ding Hou in *Blumea* 4(Suppl.): 152. 1958. *Celastrus robustus* Roxb., Fl. Ind. 2:395. 1824. *Kurrimia pulcherrima* Wallich ex Lawson in Hook. f., Fl. Brit. India 1:622. 1875, *nom. illeg.* *K. maingayi* Lawson in Hook. f., Fl. Brit. India 1:622. 1875.

Local name : Hinguri (Asm.); Tamser (Mik.).

Evergreen trees, 25-30 m high with oval crown. Leaves elliptic or oblong-lanceolate. Flowers axillary, paired, white. Capsules 1-seeded; aril fleshy, yellow.

Fl. & Fr. : Sept. - March.

Distrib. : Kameng, Siang, Subansiri; 1000-1500 m, in forests.

Celastrus championii Benth. in Hook., *Kew J. Bot.* 3:334. 1851; Balakr., Fl. Jowai 1:130. 1981.

Lianas; stems lenticellate. Leaves obovate-elliptic or oblanceolate. Flowers in axillary paniculate cymes, greenish white. Capsules obovoid with brilliant orange seeds.

Fl. & Fr. : March - Dec.

Distrib. : Kameng, Siang, Subansiri, Tirap; 1000-1800 m, on black humus rich soil along hill slopes.

Celastrus hindsii Benth. in Hook., Kew J. Bot. 3:334. 1851; Ding Hou in van Steenis, Fl. Males. 6(2):236. 1962. *C. monosperma* auct. non Roxb. 1824; Lawson in Hook. f., Fl. Brit. India 1:618. 1875, p.p.

Local name : Bhoomlati (Asm.).

Undershrubs up to 3 m high. Leaves elliptic, oblong or obovate, oily green. Flowers in peduncled cymes, whitish. Capsules oblong, 3-valved, Seeds red.

Fl. & Fr. : March - Sept.

Distrib. : Subansiri, Tirap; 100-1000 m, amidst low herbs in open forests.

Celastrus hookeri Prain in J. Asiat. Soc. Bengal 73(2): 197. 1904; Hara, Enum. Fl. Pl. Nep. 2:88. 1979. *C. stylosa* auct. non Wallich : Lawson in Hook. f., Fl. Brit. India 1:618. 1875, p.p.

Trees, 15-20 m high. Leaves elliptic or oblong, margin wavy. Flowers small, whitish green. Capsules yellow.

Fl. & Fr. : April - July.

Distrib. : Kameng; 1500-1700 m, in forests.

Celastrus paniculatus Willd., Sp. Pl. 1:1125. 1797; Lawson in Hook. f., Fl. Brit. India 1:617. 1875.

Local name : Pokitai (Miri).

Large woody climbers. Leaves obovate or orbicular. Flowers in lax panicles, dull white. Capsules globose, orange yellow.

Fl. & Fr. : July - Dec.

Distrib. : Kameng; 800-1000 m, in forests.

Celastrus stylosus Wallich in Roxb., Fl. Ind. 2:401. 1824; Lawson in Hook. f., Fl. Brit. India 1:618. 1875, p.p.; Ding Hou in van Steenis, Fl. Males. 6(2):237. 1962. *Gymnosporia neglecta* Wallich ex Lawson in Hook. f., Fl. Brit. India 1:619. 1875.

Woody climbers. Leaves elliptic-oblong or lanceolate. Flowers in axillary or terminal racemose cymes, white. Capsules globose.

Fl. & Fr. : March - Dec.

Distrib. : Kameng; 1600-1800 m, in forests.

Euonymus attenuatus Lawson in Hook. f., Fl. Brit. India 1:610. 1875.

Shrubs or small trees. Leaves oblong-elliptic to oblong-lanceolate. Flowers in axillary dichotomous cymes, purple. Capsules 4-lobed, red. Seeds with yellow aril.

Fl. & Fr. : April - Oct.

Distrib. : Subansiri; 200-600 m, in primary tropical forests.

Euonymus cinereus Lawson in Hook. f., Fl. Brit. India 1:611. 1875; Kanjilal *et al.*, Fl. Assam 1(2):265. 1936.

Scandent or trailing shrubs. Leaves obovate. Flowers in axillary cymes, whitish green. Capsules echinate.

Fl. & Fr. : Jan. - May.

Distrib. : Kameng; 1000-2000 m, in openings of tropical dense forests.

Euonymus echinatus Wallich in Roxb., Fl. Ind. 2:410. 1824; Lawson in Hook. f., Fl. Brit. India 1:611. 1875.

Scandent or trailing shrubs. Leaves elliptic, ovate or lanceolate. Flowers in axillary cymes, greenish white. Capsules globose with tubercles. Seeds with scarlet aril.

Fl. & Fr. : May - Jan.

Distrib. : Kameng; 1300-1400 m, in forests, sometimes on rocks.

Euonymus frigidus Wallich in Roxb., Fl. Ind. 2:409. 1824; Lawson in Hook. f., Fl. Brit. India 1:611. 1875. forma *frigidus*.

Shrubs or small trees, 3-8 m high. Leaves oblong-lanceolate or elliptic. Flowers in axillary or supra-axillary cymes, red. Capsules obconic, 4-lobed, winged, red.

Fl. & Fr. : April - Dec.

Distrib. : Kameng, Subansiri; 500-2500 m, in primary tropical forests.

Euonymus frigidus forma *elongatus* (Cowan & Cowan) Hara, Fl. E. Himal. 189. 1966. *E. frigidus* var. *elongatus* Cowan & Cowan, Trees N. Bengal 35. 1929.

The forma *elongatus* is characterised by larger leaves.

Fl. & Fr. : Sept. - Dec.

Distrib. : Kameng; 1300-2400 m, in open forests.

Euonymus glaber Roxb., Fl. Ind. 1:628. 1820; Lawson in Hook. f., Fl. Brit. India 1:609. 1875.

Trees up to 15 m high. Leaves elliptic-oblong, dark green above and pale green beneath. Flowers in dichotomous cymes, white. Capsules angled, winged.

Fl. & Fr. : April - Oct.

Distrib. : Changlang; 800-1600 m, in forests.

Euonymus griffithii Kurz in J. Asiat. Soc. Bengal pt. 2, 41:73. 1872; Lawson in Hook. f., Fl. Brit. India 1:611. 1875.

Shrubs or small trees with scandent quadrangular branches. Leaves ovate or oblong-lanceolate, serrate, sub-bullate. Flowers in axillary cymes, white.

Fl. & Fr. : April - July.

Distrib. : Kameng; 1200-1800 m, in primary forests.

Euonymus hamiltonianus Wallich in Roxb., Fl. Ind. 2:403. 1832; Lawson in Hook. f., Fl. Brit. India 1:612. 1875.

Trees up to 15 m high with irregular crown. Leaves oblong-lanceolate. Flowers in 2-3-chotomous cymes, dull white. Capsules deeply 3-4 lobed.

Fl. & Fr. : April - Nov.

Distrib. : Kameng; 1400-1600 m, in dense forests.

Euonymus lawsonii Clarke & Prain in J. Asiat. Soc. Bengal 73:195. 1904; Kanjilat *et al.*, Fl. Assam 1(2): 263. 1936.

Shrubs up to 2 m high. Leaves oblong-lanceolate. Flowers in dichotomous cymes, violet or red. Capsules deeply 4-lobed, greenish yellow. Seeds yellowish brown.

Fl. & Fr. : June - Jan.

Distrib. : Kameng, Siang; 1600-2200 m, underneath primary moist forests.

Euonymus theifolius Wallich ex Lawson in Hook. f., Fl. Brit. India 1:612. 1875.

Small trees or shrubs, 2-12 m high. Leaves ovate-lanceolate or elliptic-lanceolate. Flowers in dichotomous cymes, white. Capsules globose. Seeds orange yellow.

Fl. & Fr. : April - Nov.

Distrib. : Changlang, Kameng, Siang, Subansiri; 1500-2500 m, on dry hill slopes.

Euonymus tingens Wallich in Roxb., Fl. Ind. 2:406. 1824; Lawson in Hook. f., Fl. Brit. India 1:610. 1875.

Shrubs up to 2 m high. Leaves ovate-lanceolate, pale green beneath. Flowers red. Capsules globose, 4-angled, pinkish ridged.

Fl. & Fr. : Oct. - Jan.

Distrib. : Siang; 1700-2100 m, in open forests.

Euonymus viburnoides Prain in J. Asiat. Soc. Bengal 73:194. 1904; Hara, Fl. E. Himal. 190. 1966.

Trees, 10-15 m high with spreading crown. Leaves lanceolate or obovate-lanceolate. Flowers in axillary cymes, red. Capsules obconic.

Fl. & Fr. : April - Oct.

Distrib. : Kameng, Subansiri; 1600-2500 m, in dense moist forests.

Lophopetalum wightianum Arnott in Ann. Nat. Hist. 3:151. 1839; Lawson in Hook. f., Fl. Brit. India 1:615. 1875; Ding Hou in van Steenis, Fl. Males. 6(2):267. 1962. *L. fimbriatum* Wight, Ill. Ind. Bot. 1:178. 1840; Lawson in Hook. f., Fl. Brit. India 1:615. 1875; Kanjilal *et al.*, Fl. Assam 1(2):266. 1936.

Local name : Rama, Rumu (Asm.).

Trees up to 40 m high. Leaves ovate or ovate-oblong. Flowers in axillary or terminal, paniculate cymes, dark red. Capsules coriaceous, 3-4 angled.

Fl. & Fr. : April - July.

Distrib. : Kameng; 500-1500 m, on forest slopes.

Maytenus hookeri Loesn. in Engler & Prantl, Pflanzenfam. 206:140. 1942. *Gymnosporia acuminata* Hook. f., Fl. Brit. India 1:619. 1875, *non Maytenus acuminata* (L.f.) Loesn. 1942.

Shrubby trees up to 10 m high. Leaves oblong-lanceolate or elliptic-lanceolate. Flowers in axillary cymes, greenish white. Capsules globose, 2-3 valved, black.

Fl. & Fr. : April - Nov.

Distrib. : Kameng, Lohit, Siang, Subansiri; 300-800 m, in dense forests along river sides.

Microtropis densiflora Wight ex Lawson in Hook. f., Fl. Brit. India 1:614. 1875.

Scandent shrubs. Leaves ovate or oblong-lanceolate. Flowers in axillary or terminal cymes, white. Capsules oblong.

Fl. & Fr. : July - Oct.

Distrib. : Subansiri; 100-300 m, in dense primary forests.

Microtropis discolor (Wallich) Arnott in Ann. Nat. Hist. 3:152. 1839; Kanjital et al., Fl. Assam 1(2):267. 1936. *Cassine discolor* Wallich in Roxb., Fl. Ind. 2:378. 1824.

Trees or large shrubs up to 12 m high. Leaves broadly elliptic-lanceolate. Flowers in axillary corymbose or umbellate cymes, purplish or greenish white. Capsules globose.

Fl. & Fr. : June - Oct.

Distrib. : Changlang, Kameng; 1100-1300 m, in forests.

Reissantia arborea (Roxb.) Hara in J. Jap. Bot. 40:327. 1965. *Hippocratea arborea* Roxb., Fl. Ind. 1:167. 1820; Lawson in Hook. f., Fl. Brit. India 1:625. 1875.

Climbing shrubs. Leaves ovate-elliptic, membranous. Flowers in subumbellate cymes, minute. Fruits oblong.

Fl. & Fr. : Oct. - Jan.

Distrib. : Kameng; 800-1200 m, in dense forests.

Reissantia indica (Willd.) Halle in Mem. Inst. Franc. Afr. Noire 64:85. 1962. *Hippocratea indica* Willd., Sp. Pl. 193. 1797; Lawson in Hook. f., Fl. Brit. India 1:624. 1875.

Scandent shrubs. Leaves ovate or elliptic-ovate. Flowers in dichotomously branched cymes, whitish. Fruits oblong.

Fl. & Fr. : April - Oct.

Distrib. : Kameng; 500-1500 m, on forest hill slopes.

HIPPOCRATEACEAE

Salacia chinensis L., Mant. Pl. 2:293. 1767; Ding Hou in van Steenis, Fl. Males. 6(3):419. 1964. *S. prinoides* DC., Prodr. 1:571. 1824; Lawson in Hook. f., Fl. Brit. India 1:626. 1875.

Sprawling shrubs. Leaves oblong. Flowers axillary, dull orange. Fruits baccate, globose, 1-seeded, black.

Fl. & Fr. : Aug. - Nov.

Distrib. : Siang; 400-500 m, in forests.

Salacia khasiana Purakayastha in Ind. For. 64:277. 1938.

Large woody climbers. Leaves elliptic-oblong. Flowers in small axillary clusters, petals thickened at centre. Fruits obovate, pericarp warty.

Fl. & Fr. : July - Aug.

Distrib. : Arunachal Pradesh.

Salacia roxburghii Wallich ex Wight & Arn., Prodr. Fl. Pen. Ind. Or. 105. 1834; Lawson in Hook. f., Fl. Brit. India 1:627. 1875.

Local name : Ain-kimbel (Abor, Adi).

Large woody climbers. Leaves oblong-lanceolate or elliptic-oblong. Flowers in axillary clusters. Fruits baccate, globose, smooth.

Fl. & Fr. : Sept. - Dec.

Distrib. : Siang; 100-300 m, in dense forests.

RHAMNACEAE

Berchemia floribunda (Wallich) Brongn., Mem. Fam. Rham. 50, t. 2.1. 1826; Lawson in Hook. f., Fl. Brit. India 1:637. 1875. *Ziziphus floribunda* Wallich in Roxb., Fl. Ind. 2:368. 1824.

Scandent or climbing shrubs. Leaves ovate or ovate-lanceolate. Flowers in terminal panicles, greenish. Drupes fleshy, cylindrical, purplish tinged; pyrenes 2-celled.

Fl. & Fr. : May - Nov.

Distrib. : Subansiri; 600-1600 m, in dense forests.

Gouania napalensis Wallich in Roxb., Fl. Ind. 2:417. 1824; Lawson in Hook. f., Fl. Brit. India 1:644. 1875.

Local name : Jwarpat (Asm.).

Climbing shrubs. Leaves ovate. Flowers in terminal racemes, white. Capsules 3-winged, suborbicular.

Fl. & Fr. : June - Nov.

Distrib. : Tirap; 1000-1600 m, along forest edges.

Gouania tiliaefolia Lamk., Encycl. Meth. Bot. 3:5. 1789; Merr. in Contr. Am. Arb. 8:96. 1934. *G. leptostachya* DC., Prodr. 2:40. 1825; Lawson in Hook. f., Fl. Brit. India 1:634. 1875. Fig. 79.

Local name : Jwarpat (Asm.).

Woody climbers with few tendrils. Leaves ovate or ovate-orbicular. Flowers in axillary racemes or terminal panicles, white or greenish yellow. Capsules crowned by persistent calyx.

Fl. & Fr. : Feb. - Nov.

Distrib. : Changlang, Siang, Subansiri; 500-1000 m, in secondary forests, forest edges and along open hill slopes.

Hovenia dulcis Thunb., Nov. Gen. 8. 1781; Lawson in Hook. f., Fl. Brit. India 1:640. 1875, *p.p.*; Sengupta & Safui in Bull. Bot. Surv. India 26:54. 1985. var. *dulcis*.

Local name : Chetia-bola (Asm.); Pike-asing (Abor); Pinke-asing (Miri).

Deciduous trees, 9-20 m high with globose crown. Leaves ovate-cordate. Flowers in axillary or terminal cymes, white. Fruits globose.

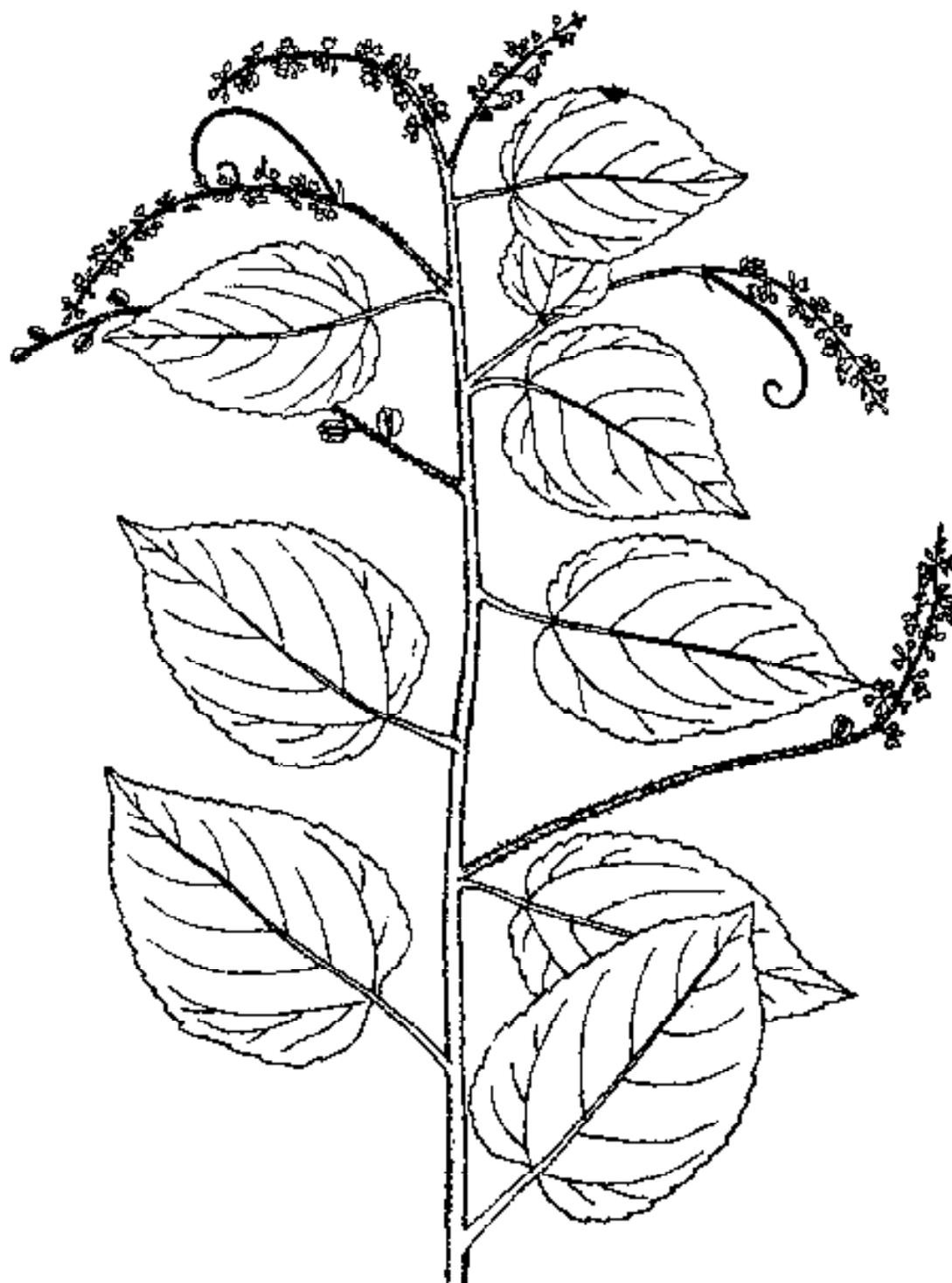


Fig. 79. *Gouania tiliaefolia* Lamk. : Flowering twig.

Fl. & Fr. : May - Jan.

Distrib. : Siang; 1000-1500 m, in forests.

Hovenia dulcis var. *acerba* (Lindley) Sengupta & Safui in Bull. Bot. Surv. India 26:55. 1985. *H. acerba* Lindley in Bot. Reg. 6:t. 501. 1820. *H. dulcis* auct. non Thunb. 1781: Lindley in Bot. Reg. 7: in appendix, 1821; Lawson in Hook. f., Fl. Brit. India 1:640. 1875, p.p. **Fig. 80.**

Deciduous trees with straight bole. Flowers yellowish.

Fl. & Fr. : April - Nov.

Distrib. : Siang; 1000-1500 m, along old forest clearings.

Rhamnus napalensis (Wallich) Lawson in Hook. f., Fl. Brit. India 1:640. 1875, 'nivalensis'. *Ceanothus napalensis* Wallich in Roxb., Fl. Ind. 2:375. 1824. **Fig. 81.**

Local name : Biringa, Biring-guli (Asm.); Nakaling-aron (Mik.); Biring-karinn-astug (Miri).

Small, much branched trees up to 8 m high. Leaves oblong or elliptic-ovate. Flowers in axillary, fascicled panicles, greenish. Drupes obovoid, red.

Fl. & Fr. : Aug. - Nov.

Distrib. : Changlang, Kameng, Lohit, Siang, Subansiri, Tirap; 1600-1800 m, along hill slopes.

Rhamnus virgatus Roxb., Fl. Ind. 2:351. 1824; Kanjilal *et al.*, Fl. Assam 1(2):285. 1936; Momiyama in Hara, Fl. E. Himal. 198. 1966. *R. dahuricus* auct. non Pallas 1776: Lawson in Hook. f., Fl. Brit. India 1:639. 1875.

Shrubs or small trees, 4-6 m high with dense, oval crown. Leaves lanceolate or ovate-oblong. Flowers in axillary fascicles, yellowish. Drupes globose.

Fl. & Fr. : April - Nov.

Distrib. : Kameng, 600-1200 m, in forests.



Fig. 80. *Hovenia dulcis* Thunb. : Flowering twig.

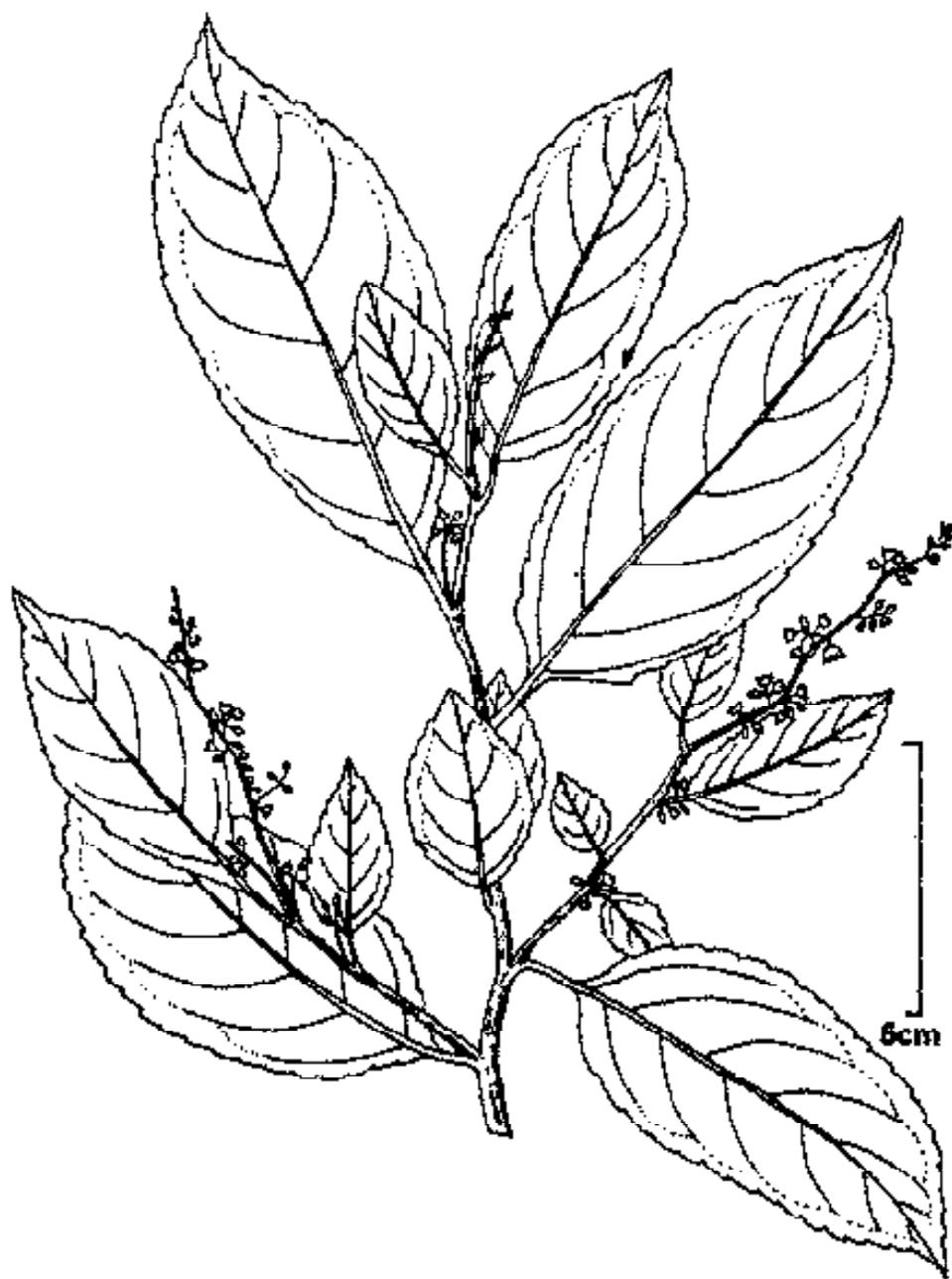


Fig. 81. *Rhamnus napalensis* (Wallich) Lawson : Flowering twig.

Sageretia filiformis (Roth ex Schult.) G. Don, Gen. Syst. 2:29. 1832; Schneid. in Sarg., Pl. Wilson. 2:231. 1914. *Rhamnus filiformis* Roth ex Schult., Syst. Veg. 5:282. 1820. *R. parviflorus* Klein ex Willd. in Schult., Syst. Veg. 5:295. 1820. *Sageretia parviflora* (Klein ex Willd.) G. Don, Gen. Syst. 2:29. 1832. *S. oppositifolia* Brongn., Mem. Fam. Rham. 53. 1826; Lawson in Hook. f., Fl. Brit. India 1:641. 1875.

Small trees, 5-6 m high. Leaves oblong or lanceolate. Flowers in axillary clusters, yellowish. Drupes turbinate, black.

Fl. & Fr. : Sept. - Jan.

Distrib. : Kameng, Subansiri; 600-1800 m, along open forest slopes.

Ventilago denticulata Willd. in Ges. Naturf. Fr. Neue Schr. 3:417. 1801; Banerjee & Mukerjee in Ind. For. 96:209. 1970. *V. madraspatana* auct. non Gaertn. 1788; Lawson in Hook. f., Fl. Brit. India 1:631. 1875, *p.p.*, *quoad* Wallich, Num. List no. 4268. *V. calyculata* Tulsane in Ann. Sci. Nat. Ser. 4,8: 124. 1875; Lawson in Hook. f., Fl. Brit. India 1:631. 1875. *V. madraspatana* var. *calyculata* (Tulsane) King in J. Asiat. Soc. Bengal 65:579. 1897.

Local name : Bor-kalia (Asm.); Riko-riubi (Adi & Miri).

Large woody climbers. Leaves elliptic-ovate or oblong. Flowers in large, dense terminal panicles, greenish grey. Nuts globose, winged, yellow.

Fl. & Fr. : Sept. - Jan.

Distrib. : Siang; 300-1300 m, in dense forests.

Ventilago madraspatana Gaertn., Fruct. 1:223, t. 49. f. 2. 1788; Lawson in Hook. f., Fl. Brit. India 1:631. 1875, *p.p.*, *excl.* Wallich, Num. List no 4268.

Local name : Riko-riubi (Abor); Bor-kalia (Asm.).

Lianas. Leaves elliptic to oblong-lanceolate. Flowers in terminal panicles, greenish yellow. Nuts winged.

Fl. & Fr. : Sept. - April.

Distrib. : Siang; 100-1300 m, on tree tops in forests.

Ziziphus apetata Hook. f. ex Lawson in Hook. f., Fl. Brit. India 1:635. 1875.

Local name : Bon-goguri, Bon-boguri (Asm.).

Climbing shrubs; young branches ferruginous tomentose. Leaves obliquely ovate or elliptic, ferruginous pubescent beneath. Flowers in axillary, dichotomous cymes, pale yellow. Drupes compressed, 1-celled.

Fl. & Fr. : March - June.

Distrib. : Kameng; 100-500 m, along village outskirts and open roadsides.

Ziziphus funiculosa Buch. - Ham. ex Lawson in Hook. f., Fl. Brit. India 1:636. 1875.

Local name : Tatke-riubi (Abor, Adi, Miri); Bon-boguri (Asm.); Insudompo (Mik.).

Large climbing or scandent shrubs. Leaves obliquely ovate or elliptic-oblong. Flowers in panicles, greenish white. Drupes oval, orange yellow.

Fl. & Fr. : June - March.

Distrib. : Tirap; 500-1000 m, in forests.

Ziziphus mauritiana Lamk., Encycl. Meth. Bot. 3:319. 1789; Bailey, Man. Cult. Pl. 646. 1949. *Z. jujuba* Lamk., Encycl. Meth. Bot. 3:318. 1789, non Miller 1768; Lawson in Hook. f., Fl. Brit. India 1:632. 1875.

Local name : Boguri (Asm., Miri); Gange-asing (Abor, Adi); Thakri-aron (Mik.).

Trees, up to 10 m high with umbrella shaped crown. Leaves obliquely ovate or orbicular. Flowers in short fascicles or cymes, greenish yellow. Drupes globose, orange yellow.

Fl. & Fr. : March - Dec.

Distrib. : Changlang, Siang, Subansiri; 100-600 m, on open hill slopes; often cultivated.

Use : Fruits are edible and the bark is said to be useful in diarrhoea.

Ziziphus oenopia (L.) Miller, Gard. Dict. ed. 8:3. 1768; Lawson in Hook. f., Fl. Brit. India 1:634. 1875. *Rhamnus oenopia* L., Sp. Pl. 282. 1753.

Straggling, densely rusty tomentose shrubs. Leaves obliquely ovate-lanceolate with long silky appressed hairs beneath. Flowers in cymes, yellowish. Drupes globose, black and shining when ripe.

Fl. & Fr. : Aug. - March.

Distrib. : Kameng; 100-500 m, in open dry places.

Ziziphus rugosa Lamk., Encycl. Meth. Bot. 3:319. 1789; Lawson in Hook. f., Fl. Brit. India 1:636. 1875. var. *rugosa*.

Local name : Bon-boguri, Dhidhao-boguri (Asm.); Khusuguchhi (Aka).

Sprawling deciduous shrubs, 3-6 m high. Leaves ovate to obovate or obliquely orbicular, tomentose beneath. Flowers in rusty panicles, dull yellow. Drupes obovoid to globose, reddish, shining.

Fl. & Fr. : March - July.

Distrib. : Siang; 500-1200 m, in forests.

Use : Fruits are edible.

Ziziphus rugosa var. *glabrescens* Prain in Kanjilal *et al.*, Fl. Assam 1:282. 1935; Bhandari & Bhansali in Fasc. Fl. India 20:110. 1990.

Stragglers. Leaves ovate-elliptic, sparsely hairy on nerves beneath. Fruits glabrous.

Fl. & Fr. : Jan. - May.

Distrib. : Kameng; 100-500 m, along roadsides in secondary forests.

VITACEAE

Ampelocissus barbata (Wallich) Planch. in DC., Monogr. Phan. 5:375. 1887. *Vitis barbata* Wallich in Roxb., Fl. Ind. 2:478. 1824; Lawson in Hook. f., Fl. Brit. India 1:651. 1875.

Large climbers. Leaves ovate-cordate. Flowers in axillary paniculate cymes, whitish green. Berries ellipsoid, 1-2 seeded.

Fl. & Fr. : April - Sept.

Distrib. : Kameng, Tirap; 1000-1500 m, in forests.

Use : Fruits are palatable and believed to be a possible new source of grapes.

Ampelocissus divaricata (Wallich ex Lawson) Planch. in DC., Monogr. Phan. 5:378. 1887. *Vitis divaricata* Wallich ex Lawson in Hook. f., Fl. Brit. India 1:657. 1875.

Spreading climbers. Leaves 3-foliolate; leaflets elliptic or lanceolate, oblique, rusty pubescent beneath. Flowers in 2-3-choromous cymes, reddish brown. Berries globose, black when ripe.

Fl. & Fr. : June- Dec.

Distrib. : Kameng; 500-1500 m, in open forest and forest edges.

Ampelocissus sikkimensis (Lawson) Planch. in DC., Monogr. Phan. 5:371. 1887. *Vitis sikkimensis* Lawson in Hook. f., Fl. Brit. India 1:650. 1875.

Tendrils climbers. Leaves orbicular-ovate with reddish tinge, rugose. Flowers in umbellate cymes, whitish. Berries obovoid, 2-seeded, red.

Fl. & Fr. : July - Sept.

Distrib. : Kameng; 1700-2000 m, along edges of forests, amidst bushes.

Cayratia japonica (Thunb.) Gagnepain in Lecomte, Notul. Syst. (Paris) 1:349. 1911; Ramam. in Nair & Henry, Fl. Tamil Nadu 1:79. 1983. *Vitis japonica* Thunb., Fl. Jap. 104. 1784. *V. tenuifolia* auct. non Wight & Arn.: Lawson in Hook. f., Fl. Brit. India 1:660. 1875, p.p.

Climbers. Leaves pedately 5-foliolate; leaflets ovate or lanceolate. Flowers in axillary subcorymbiform cymes, whitish green. Berries turbinate-globose.

Fl. & Fr. : May - Nov.

Distrib. : Changlang, Kameng, Lohit, Siang, Subansiri, tirap; 1500-2000 m, along forest hill slopes.

Cayratia mollissima (Wallich) Gagnepain in Lecomte, Notul. Syst. (Paris) 1:345. 1911. *Vitis mollissima* Wallich in Roxb., Fl. Ind. 2:482. 1824; Lawson in Hook. f., Fl. Brit. India 1:656. 1875.

Large climbing shrubs with stout tendrils. Leaves 3-foliolate; leaflets ovate-lanceolate or lanceolate. Flowers in axillary umbellate-cymes, white. Berries globose, black.

Fl. & Fr. : March - Aug.

Distrib. : Subansiri; 100-500 m, in dense tropical forests.

Cayratia pedata (Lamk.) Juss. ex Gagnepain in Lecomte, Notul. Syst. (Paris) 1:346. 1911. *Cissus pedata* Lamk., Encycl. Meth. Bot. 1:31. 1783. *Vitis pedata* Vahl ex Lawson in Hook. f., Fl. Brit. India 1:661. 1875.

Woody climbers. Leaves pedately 5-7 foliolate; leaflets elliptic or oblong-lanceolate. Flowers in axillary corymbose-cymes, whitish green. Berries depressed globose, 4-seeded.

Fl. & Fr. : March - Jan.

Distrib. : Changlang, Subansiri, Tirap; 500-1000 m, in dense tropical forests.

Cayratia trifolia (L.) Domin in Bibl. Bot. 89. 371. 1927; Momiyama in Hara, Fl. E. Himal. 199. 1966. *Vitis trifolia* L., Sp. Pl. 203. 1753. *Cissus carnosa* Lamk., Encycl. Meth. Bot. 1:31. 1789. *Vitis carnosa* Wallich ex Lawson in Hook. f., Fl. Brit. India 1:654. 1875.

Local name : Chepta-lot (Asm.); Taki go iyang (Miri).

Climbing shrubs. Leaves 3-foliolate; leaflets ovate or obliquely oblanceolate. Flowers in axillary cymes, greenish. Berries obovoid, turbinate, black.

Fl. & Fr. : May - Oct.

Distrib. : Changlang, Subansiri, Tirap; 1200-1500 m, in open forests.

Cissus adnata Roxb., Fl. Ind. 2:423. 1824; Momiyama in Hara & Williams, Enum. Fl. Pl. Nep. 2:94. 1979. *Vitis adnata* (Roxb.) Wallich ex Lawson in Hook. f., Fl. Brit. India 1:649. 1875.

Slender climbers. Leaves ovate or orbicular, palmately 3-5 angled. Flowers in axillary umbelliform cymes, pale yellow. Berries obovoid, blue black.

Fl. & Fr. : June - Oct.

Distrib. : Kameng, Subansiri; 1400-1700 m, in open forests, forest edges and roadsides.

Cissus assamica (Lawson) Craib in Kew Bull. 1911:30. 1911. *Vitis assamica* Lawson in Hook. f., Fl. Brit. India 1:648. 1875.

Climbing shrubs. Leaves ovate or suborbicular. Flowers in axillary umbelliform cymes, pale yellow. Berries obovoid turbinate, bluish black.

Fl. & Fr. : July - Dec.

Distrib. : Changlang, Subansiri, Tirap; 600-1500 m, in primary forests and forest edges.

Cissus heyneana Planch. in DC., Monogr. Phan. 5:476. 1887; Ramam. in Nair & Henry, Fl. Tamil Nadu 1:80. 1983. *Vitis heyneana* Wallich ex Lawson in Hook. f., Fl. Brit. India 1:647. 1875, non R. & S. 1820.

Large climbers with stout tendrils. Leaves ovate-cordate. Flowers in umbellate cymes, greenish. Berries pyriform, 1-2 seeded.

Fl. & Fr. : April - Oct.

Distrib. : Siang; 500-1200 m, in forests.

Cissus javana DC., Prodr. 1:628. 1824; Momiyama in Hara & Williams, Enum. Fl. Pl. Nep. 2:94. 1979. *C. discolor* Blume, Bijdr. 181. 1825. *Vitis discolor* (Blume) Dalz. in Hook., Kew J. Bot. 2:39. 1830; Lawson in Hook. f., Fl. Brit. India 1:647. 1875.

Slender climbers. Leaves ovate or oblong. Flowers in compound umbels, yellowish. Berries obovoid-turbinate, black.

Fl. & Fr. : June - Oct.

Distrib. : Siang, Subansiri; 400-1400 m, along forest edges.

Cissus repanda Vahl, Symb. 3:18. 1794; Deb, Fl. Tripura 1:413. 1981. *Vitis repanda* (Vahl) Wight & Arn. Prodr. Fl. Pen. Ind. Or. 125. 1834; Lawson in Hook. f., Fl. Brit. India 1:648. 1875.

Local name : Medmedia-lot (Asm.).

Large climbers. Leaves suborbicular-cordate, 5-7 lobed. Flowers in leaf-opposed, lax, subcorymbiform cymes, reddish brown. Berries pyriform, apiculate, 1-seeded.

Fl. & Fr. : April - Aug.

Distrib. : Kameng, Lohit, Siang, Subansiri, Tirap; 100-1100 m, in primary forests.

Cissus repens Lamk., Encycl. Meth. Bot. 1:31. 1789. *Vitis repens* (Lamk.) Wight & Arn., Prodr. Fl. Pen. Ind. Or. 124. 1834; Lawson in Hook. f., Fl. Brit. India 1:646. 1875.

Local name : Taru-beku (Apat.); Medmedia-lot (Asm.).

Herbaceous climbers. Leaves ovate or triangular. Flowers in axillary compound cymes, reddish. Berries ellipsoid, red, black at maturity.

Fl. & Fr. : July - Dec.

Distrib. : Changlang, Subansiri, Tirap; 500-1000 m, in secondary and bamboo forests.

Use : Ripe fruits are edible.

Parthenocissus himalayana (Royle) Planch. in DC., Monogr. Phan. 5:450. 1887. *Ampelopsis himalayana* Royle, Ill. Bot. Himal. 159. 1835. *Vitis himalayana* (Royle) Brandis, For. Fl. Ind. 100. 1874; Lawson in Hook. f., Fl. Brit. India 1:655. 1875.

Climbers up to 10 m long, often hanging from tree with robust stems. Leaflets ovate or obovate. Flowers in axillary subcorymbiform cymes, creamy white. Berries globose black.

Fl. & Fr. : April - July.

Distrib. : Kameng; 1400-1500 m, in dense forests.

Tetrastigma bracteolatum (Wallich) Planch. in DC., Monogr. Phan. 5:428. 1887. *Vitis bracteolata* Wallich in Roxb., Fl. Ind. 2:483. 1824; Lawson in Hook. f., Fl. Brit. India 1:654. 1875.

Climbers ca 5 m long, spreading over top of shrubs; stems reddish. Leaves 3-foliolate, leaflets ovate or ovate-lanceolate. Flowers in axillary corymbiform cymes, white. Berries globose, black when ripe.

Fl. & Fr. : Sept. - Feb.

Distrib. : Changlang, Siang, Subansiri; 700-1800 m, in open places and forest edges.

Tetrastigma dubium (Lawson) Planch. in DC., Monogr. Phan. 5:437. 1887. *Vitis dubia* Lawson in Hook. f., Fl. Brit. India 1:661. 1875.

Slender climbers. Leaves 3-foliolate; leaflets ovate or elliptic. Flowers in axillary cymes, pale green. Berries globose, black, 1-4 seeded.

Fl. & Fr. : Sept. - Feb.

Distrib. : Lohit, Subansiri; 300-800 m, moist shady places in forests.

Tetrastigma lanceolarium (Roxb.) Planch. in DC., Monogr. Phan. 5:423. 1887. *Cissus lanceolaria* Roxb., Fl. Ind. 2:412. 1824. *Vitis lanceolaria* (Roxb.) Lawson in Hook. f., Fl. Brit. India 1:660. 1875, p.p.

Large woody climbers. Leaves 3-5 foliolate; leaflets elliptic or lanceolate. Flowers in axillary, subcorymbosely compound cymes, yellowish. Berries globose.

Fl. & Fr. : Feb. - Sept.

Distrib. : Tirap; 600-1200 m, in forests.

Use : The ripe fruits are edible.

Tetrastigma leucostaphylum (Dennst.) Balakr., Fl. Jowai 1:138. 1981. *Vitis leucostaphylum* Dennst. in Schluss., Hort. Malab. 33. 1818. *V. lancea-*

laria (Roxb.) Wight & Arn., Prodr. Fl. Prn. Ind. Or. 128. 1834; Lawson in Hook. f., Fl. Brit. India 1:660. 1875, p.p.

Local name : Tadi-ripam (Asm.).

Lianas with flat, warty stems. Leaves 5-foliolate; leaflets ovate or ovate-lanceolate. Flowers in axillary cymes, ca 5 mm across, pale green. Berries smooth, reddish black.

Fl. & Fr. : April - Sept.

Distrib. : Changlang; 100-1500 m, in open forests.

Tetrastigma obovatum (Lawson) Gagnepain in Lecomte, Notul. Syst. 1:266. 1911. *Vitis obovata* Lawson in Hook. f., Fl. Brit. India 1:658. 1875.

Hanging climbers. Leaves 3-foliolate; leaflets obovate or elliptic. Flowers in corymbose, 3-chotomously branched cymes, whitish green. Berries globose, black.

Fl. & Fr. : Oct. - Jan.

Distrib. : Changlang, Lohit, Siang; 1200-1500 m, in forests.

Tetrastigma obtectum (Wallich ex Lawson) Planch. ex Franch. in Bull. Sec. Bot. France 33:458. 1886. *Vitis obtecta* Wallich ex Lawson in Hook. f., Fl. Brit. India 1:657. 1875.

Climbers up to 13 m long; internodes short and brown. Leaflets ovate or obovate. Flowers in axillary cymes, pale green. Berries globose, deep blue when ripe.

Fl. & Fr. : April - Oct.

Distrib. : Kameng; 1600-2000 m, in forests.

Tetrastigma planicaule (Hook. f.) Gagnepain in Lecomte, Notul. Syst. 1:3 1911. *Vitis planicaulis* Hook. f., in Bot. Mag. 94:t. 5685. 1868; Lawson in Hook. f., Fl. Brit. India 1:658. 1875.

Local name : Chepeta-lota, Pani-lota (Asm.).

Large climbers. Leaves digitately 5-foliolate; leaflets oblong-lanceolate. Flowers in axillary corymbose cymes, greenish yellow, fragrant. Berries globose, orange yellow when ripe.

Fl. & Fr. : July - Nov.

Distrib. : Changlang, Siang, Subansiri; 200-600 m, grow near water sources in forests.

Tetrastigma runicispermum (Lawson) Planch. in DC., Monogr. Phan. 5:429. 1887. *Vitis runicisperma* Lawson in Hook. f., Fl. Brit. India 1:661. 1875.

Large climbers, trailing over forest canopy. Leaves pedately 3-5 foliolate; leaflets obovate or oblanceolate. Flowers in axillary or terminal subcorymbiform cymes, whitish green. Berries turbinate-globose, violet or black when ripe.

Fl. & Fr. : April - Nov.

Distrib. : Changlang, Kameng, Lohit, Siang, Subansiri, Tirap; 500-1200 m, in dense forests.

Tetrastigma serrulatum (Roxb.) Planch. in DC., Monogr. Phan. 5:432. 1887; Momiyama in Hara & Williams, Enum. Fl. Pl. Nep. 2:95. 1979. *Cissus serrulata* Roxb., Fl. Ind. 2:414. 1824. *Vitis capreolata* D. Don, Prodr. Fl. Nep. 188. 1825; Lawson in Hook. f., Fl. Brit. India 1:659. 1875.

Wiry climbers, rooting at nodes. Leaves 4-5 foliolate; leaflets rhomboid or lanceolate. Flowers in axillary or terminal cymes, greenish. Berries globose, reddish brown.

Fl. & Fr. : May - Dec.

Distrib. : Changlang, Kameng, Lohit, Siang, Subansiri, Tirap; 1500-2000 m, in dense evergreen forests, along roadsides and cultivated fields.

Tetrastigma thomsonianum Planch. in DC., Monogr. Phan. 5:438. 1887; Balakr., Fl. Jowai 1:137. 1981. *Cissus angustifolia* Roxb., Fl. Ind. 1:408. 1820. *Vitis angustifolia* (Roxb.) Wight, Ic. 1:9, t. 176. 1839; Lawson in Hook. f., Fl. Brit. India 1:654. 1875.

Local name : Kang-thipu (Mik.); Nekung-riubi (Miri).

Woody climbers. Leaves 3-foliolate; leaflets lanceolate or elliptic-lanceolate. Flowers in axillary cymes, greenish white. Berries globose, dark violet.

Fl. & Fr. : Sept. - Jan.

Distrib. : Lohit; 100-600 m, in humid forests.

Use : Tender stems and leaves are used as vegetable.

Insufficiently known material

Parthenocissus semicordata (Wallich) Planch. var. *roylei* (King ex Parker) Nazimuddin & Qaiser in Nasir & Ali, Fl. Pakistan 147:10. 1982.

LEEACEAE

Leea aequata L., Syst. Nat. ed. 12,2:627. 1767; Ridsdale in Blumea 22:90.1974. *L. hirta* Roxb. ex Hornem, Hort. Hafn. 1:231. 1813; Lawson in Hook. f., Fl. Brit. India 1:668. 1875.

Herbs or undershrubs up to 3 m high. Leaves bipinnate; leaflets oblong-lanceolate. Flowers in leaf-opposed umbels, white or reddish brown. Berries depressed globose, 5-6 lobed.

Fl. & Fr. : May - Nov.

Distrib. : Kameng, Subansiri, Tirap; 400-1000 m, in primary forests.

Leea alata Edgew. in Trans. Linn. Soc. London 20:36. 1845; Lawson in Hook. f., Fl. Brit. India 1:665. 1875.

Local name : Bon-ou (Asm.).

Undershrubs with annual stems up to 1.5 m high. Leaflets 5-9, oblong or oblong-lanceolate. Flowers in subterminal corymbose cymes, red. Fruits globose, red, turning bluish purple when ripe.

Fl. & Fr. : July - Nov.

Distrib. : Kameng, Subansiri; 500-1000 m, in primary forests.

Leea asiatica Ridsdale in Manilal, Bot. Hist. Hort. Malab. 189. 1980. *Phytolacca asiatica* L., Sp. Pl. 474. 1753. *L. aspera* Edgew. in Trans. Linn. Soc. London 20:36. 1846, *nom. illeg.*; Lawson in Hook. f., Fl. Brit. India 1:665. 1875. *L. edgeworthii* Santapau in Rec. Bot. Surv. India 16(2):54. 1953.

Shrubs up to 3 m high. Leaves bipinnate; leaflets elliptic to elliptic-oblong. Flowers in axillary corymbose cymes, dull green. Berries globose, black when ripe.

Fl. & Fr. : March - Sept.

Distrib. : Changlang, Siang, Subansiri, Tirap; 400-1200 m, in secondary forests.

Leea compactiflora Kurz in J. Asiat. Soc. Bengal 42(2): 65. 1873; Ridsdale in Blumea 22:88. 1974. *L. trifoliata* Lawson in Hook. f., Fl. Brit. India 1:666. 1875. *L. robusta auct. non Roxb.*: Lawson in Hook. f., Fl. Brit. India 1:667. 1875, *p.p.* *L. bracteata* Clarke in J. Bot. 19:164. 1881; Kanjilal *et al.*, Fl. Assam 1:308. 1936.

Shrubs or small trees. Leaves unipinnate or bipinnate, 7-13 foliolate; leaflets ovate-lanceolate to oblong-lanceolate. Flowers in cymes, yellowish white. Berries depressed globose, 1-5 seeded, black when ripe.

Fl. & Fr. : May - Dec.

Distrib. : Changlang, Kameng, Siang, Tirap; 500-700 m, in forests.

Leea crispa L., Syst. Nat. ed. 12, 2. 627. 1767 and Mant. Pl. 124. 1767; Lawson in Hook. f., Fl. Brit. India 1:655. 1875.

Undershrubs up to 4 m high. Leaves 3-5 foliolate; leaflets oblong or oblong-elliptic. Flowers in terminal corymbs, dull white to pale yellow. Berries turning black when ripe.

Fl. & Fr. : June - Dec.

Distrib. : Changlang; 800-1200 m, in forests.

Leea erecta (Thwaites) Leenhouts in *Blumea* 17:69. 1969. *Nephelium erectum* Thwaites, Enum. Pl. Zeyl. 57. 1858, p.p. *Sapindus erectus* (Thwaites) Hiern in Hook. f., Fl. Brit. India 1:683. 1875, p.p.

Shrubs with spreading branches, 3-4 m high. Leaves 6-10 foliolate; leaflets narrowly elliptic. Flowers in terminal panicles, dark red. Fruits fleshy, yellow. Seeds with fleshy aril.

Fl. & Fr. : Dec. - April.

Distrib. : Changlang; 1000-1500 m, in secondary and primary forests.

Leea guineense G. Don., Gen. Syst. 1:712. 1831; Ridsdale in *Blumea* 22:92. 1974. *L. acuminata* Wallich ex Clarke in J. Bot. 19:102. 1881; Kanjilal et al., Fl. Assam (2):304. 1936.

Local name : Bajion, Kath-thengia (Asm.).

Robust, herbaceous stragglars up to 15 m high. Leaves 3-7 foliolate; leaflets elliptic-lanceolate or oblong-lanceolate. Flowers in leaf-opposed corymbs, yellowish. Berries globose, orange red.

Fl. & Fr. : May - Nov.

Distrib. : Lohit, Tirap; 400-1000 m, in forests.

Leea indica (Burm. f.) Merr. in Philipp. J. Sci. Bot. 14:245. 1919; Ridsdale in *Blumea* 22:95. 1974. *Staphylea indica* Burm. f., Fl. Ind. 75, t. 24. f. 2. 1768. *Leea sambucina* (L.) Willd., Sp. Pl. 1:1177. 1797; Lawson in Hook. f., Fl. Brit. India 1:666. 1875. *L. umbracaulifera* Clarke in J. Bot. 141. 1881.

Local name : Rakki baing asing (Adi, Miri); Kukura Thengia, Ahina, Gach-gangma (Asm.); Dibadian-asing (Miri); Demborang land-changne (Nishi).

Small trees up to 8 m high. Leaves 2-3 pinnate; leaflets lanceolate or elliptic. Flowers in axillary corymbose cymes, pale white or greenish. Berries subglobose, 3-6 seeded, black.

Fl. & Fr. : May - Nov.

Distrib. : Changlang, Kameng, Siang, Subansiri, Tirap; 500-1000 m, in tropical dense forests, along roadsides.

Lees macrophylla Roxb. ex Hornem, Hort. Hafn. 1:231. 1813; Lawson in Hook. f., Fl. Brit. India 1:664. 1875; Ridsdale in Blumea 22:85. 1974. *L. robusta* Roxb., Fl. Ind. 1:655. 1820; Lawson in Hook. f., Fl. Brit. India 1:667. 1875, p.p. *L. diffusa* Lawson in Hook. f., Fl. Brit. India 1:667. 1875. *L. cinerea* Lawson in Hook. f., Fl. Brit. India 1:665. 1875. *L. coriacea* Lawson in Hook. f., Fl. Brit. India 1:665. 1875.

Shrubs up to 5 m high. Leaves 1-3 pinnate; leaflets oblong or elliptic. Flowers in axillary cymes, dull green. Berries globose, 1-6 seeded, blue to black when ripe.

Fl. & Fr. : July - Nov.

Distrib. : Kameng, Lohit, Siang, Subansiri, Tirap; 400-800 m, in primary forest edges.

HIPPOCASTANACEAE

Aesculus assamica Griffith, Notul. 4:540. 1854; Merr. in Brittonia 4:110. 1941. *A. punduana* Wallich ex Hiern in Hook. f., Fl. Brit. India 1:675. *A. khasyana* (Voigt) Das & Majumder in Rec. Bot. Surv. India 3:207. 1961. *Pavia khasyana* Voigt, Hort. Sub. Calc. 97. 1845., *nom. nud.*

Local name : Raman-bih (Asm.); Sarlok-asing (Abox, Adi); Ramon-asing (Miri); Phaklang-jan-arong (Mik.).

Deciduous trees, 10-20 m tall. Leaves palmately 6-8 foliolate; leaflets obovate or oblong-lanceolate. Flowers in thyrsoid panicles, ca 2 cm across, white. Capsules ovoid, 2-3 valved.

Fl. & Fr. : Jan. - July.

Distrib. : Changlang, Siang, Subansiri; 400-800 m, in open forests.

SAPINDACEAE

Allophylus cobbe (L.) Roemsch., Nomen. ed. 31:108. 1797; Hiern in Hook. f., Fl. Brit. India 1:673. 1875. *Ornitrophe cobbe* L., Sp. Pl. 322. 1753.

Shrubs or small trees up to 6 m high. Leaves 3-foliolate; leaflets elliptic-obovate or lanceolate. Flowers in axillary clusters, white. Fruits globose, orange-red when ripe.

Fl. & Fr. : April - Dec.

Distrib. : Tirap; 600-1200 m, in forests as undergrowth.

Allophylus serratus (Roxb.) Kurz in J. Asiat. Soc. Bengal 44(2):185. 1876. *Ornitrophe serrata* Roxb., Pl. Corom. 1:44, t. 61. 1795. *Allophylus cobbe* forma *serratus* (Roxb.) Hiern in Hook. f., Fl. Brit. India 1:674. 1875.

Scrambling shrubs. Leaflets serrate-denticulate. Fruits brilliant orange-red.

Fl. & Fr. : May - Oct.

Distrib. : Siang; 700-1200 m, on forest hill slopes.

Allophylus triphyllus (Burm. f.) Merr. in Philipp. J. Sci. Bot. 19:363. 1921. *Usubis triphyllus* Burm. f., Fl. Ind. 89, t. 32. f. 1. 1768. *Allophylus cobbe* forma *glaber* Hiern in Hook. f., Fl. Brit. India 1:674. 1875.

Shrubs or small trees. Leaflets oval-oblong or lanceolate-acuminate, subentire or serrulate. Flowers in axillary racemes, yellowish or white. Fruits globose, red when ripe.

Fl. & Fr. : March - July.

Distrib. : Kameng, Lohit; 500-1000 m, in forests.

Allophylus zeylanicus L., (Nov. Pl. Gen. in Amoen. Acad. 1. 398. 1747.) Sp. Pl. 348. 1753; Hiern in Hook. f., Fl. Brit. India 1:673. 1875. var. *zeylanicus*.

Small trees up to 10 m high. Leaves ovate or obovate. Flowers in axillary racemes, whitish. Fruits globose, red when ripe.

Fl. & Fr. : June - Sept.

Distrib. : Siang, Subansiri, Tirap; 500-1200 m, in primary forests as undergrowth.

Allophylus zeylanicus var. *grandifolia* Hiern in Hook. f., Fl. Brit. India 1:673. 1875.

Shrubs. Leaves obovate, toothed or widely repand denticulate.

Fl. & Fr. : April - Aug.

Distrib. : Subansiri; 200-1000 m, as undergrowth in primary forests.

Allophylus zeylanicus var. *hispida* Hiern in Hook. f., Fl. Brit. India 1:673. 1875.

Shrubs or small trees. Branches and leaf-margins hispid.

Fl. & Fr. : May - Oct.

Distrib. : Tirap; 300-1000 m, as undergrowth in primary forests.

Cardiospermum halicacabum L., Sp. Pl. 366. 1753; Hiern in Hook. f., Fl. Brit. India 1:670. 1875. Fig. 82.

Local name : Kapal phuta (Asm.).

Wiry climbing herbs. Leaves biternate, ovate; leaflets coarsely dentate. Flowers in umbellate-cymes, white. Capsules broadly pyriform, 3-celled. Seeds arillate.

Fl. & Fr. : Aug. - Nov.

Distrib. : Tirap; 1000-1500 m, amidst grasses and as undergrowth in forests.

Use : Seeds and roots have valuable medicinal properties.

Dimocarpus longan Lour., Fl. Cochinch. 233. 1790. *Nephelium longana* (Lamk.) Camb. in Mem. Mus. Hist. Nat. 18:30. 1829; Hiern in Hook. f., Fl. Brit. India 1:688. 1875. *Euphoria longana* Lamk., Dict. 3:574. 1790.

Local name : Naga-lichi, Catha-litit (Asm.); Tagang-asing (Adi); Marli arong (Mik.).

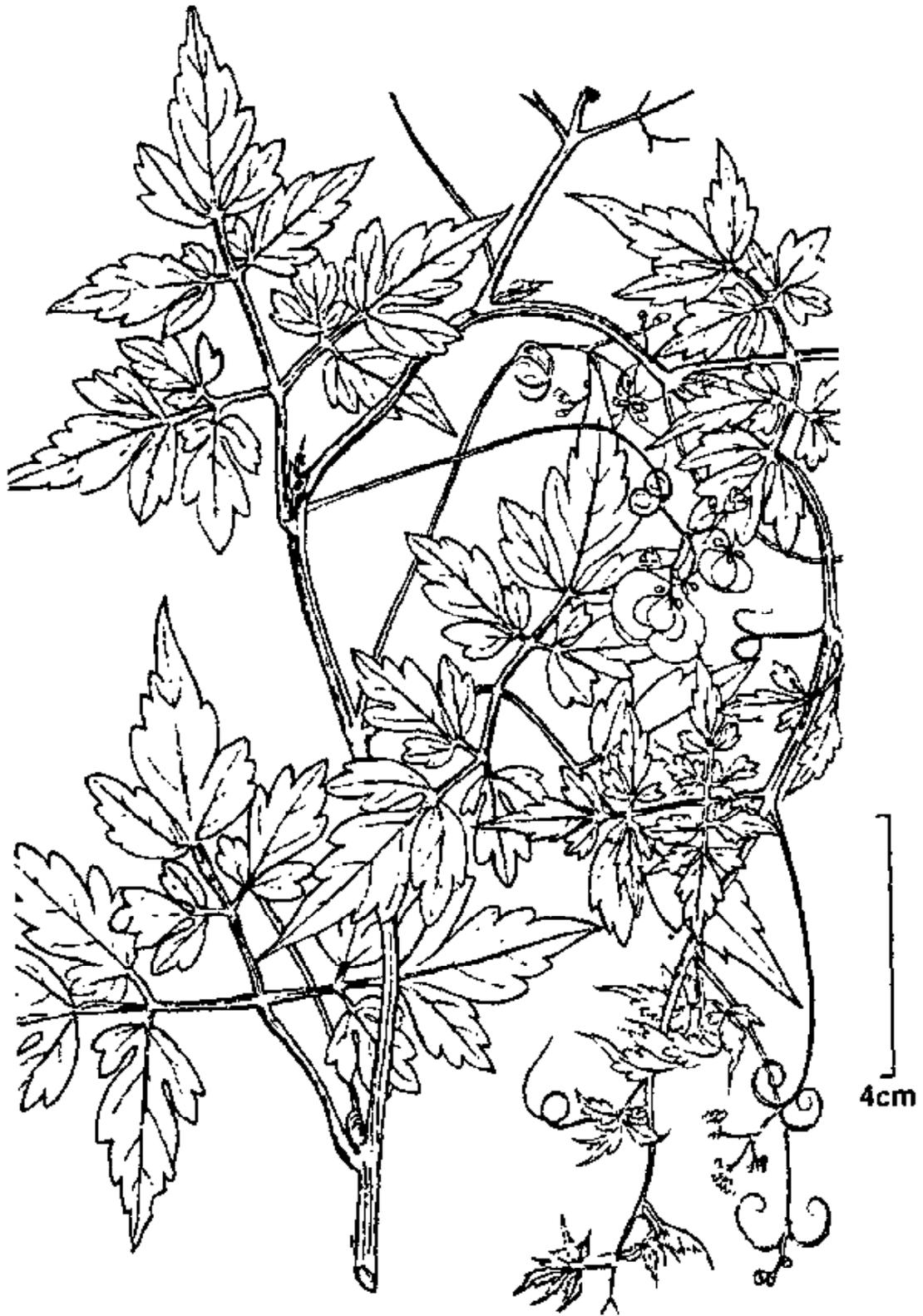


Fig. 82. *Cardiospermum halicacabum* L. : Flowering twig.

Trees 10-15 m high with spreading branches and oval crown. Leaflets obliquely lanceolate, oblong or oblanceolate, glaucous beneath. Flowers in axillary or terminal panicles, pale yellow. Fruits globose, purplish-red when ripe.

Fl. & Fr. : March - Nov.

Distrib. : Kameng; 100-500 m, in tropical forests.

Lepisanthes erecta (Thwaites) Leenhouts in Blumea 17:69. 1969. *Nephelium erectum* Thwaites, Enum. Pl. Zeyl. 57. 1858, p.p. *Sapindus erectus* (Thwaites) Hiern in Hook. f., Fl. Brit. India 1:683. 1875, p.p.

Shrubs up to 2 m high. Leaves 6-10 foliolate; leaflets elliptic. Flowers in terminal panicles, reddish. Fruits drupaceous, fleshy, yellow.

Fl. & Fr. : May - Aug.

Distrib. : Kameng, Tirap; 1500-1800 m, in forests.

Lepisanthes senegalensis (A. Juss. ex Poiret) Leenhouts in Blumea 17:85. 1969. *Sapindus senegalensis* A. Juss. ex Poiret, Encycl. 6:666. 1805. *S. danura* (Roxb.) Vingt, Hort. Suburb. Calcut. 94. 1845; Hiern in Hook. f., Fl. Brit. India 1:684. 1875. *S. attenuatus* Wallich ex Hiern in Hook. f., Fl. Brit. India 1:684. 1875. *Otophora paucijuga* Hiern in Hook. f., Fl. Brit. India 1:680. 1875. *Aphania rubra* (Roxb.) Radlk., Sap. Holl.-Ind. 21, 69. 1877-1878. *Scytalia rubra* Roxb., Fl. Ind. 2:272. 1832. .oj off

Local name : Tang-ting, Bonderdima (Asm.); Bongadhia (Mik.).

Shrubs or small trees up to 5 m high. Leaves simple or pinnate, 2-4 foliolate; leaflets ovate, lanceolate or elliptic. Flowers in axillary or terminal panicles, red or yellowish. Fruits ellipsoidal, 1-2 lobed, red or purple when ripe.

Fl. & Fr. : Nov. - Jan.

Distrib. : Siang, Subansiri; 300-1000 m, in open forests, bamboo thickets.

Lepisanthes tetraphylla (Vahl) Radlk., Sitz. Ber. K. Bayer. A.K. Wiss. M. Phi. Kl. Munch. 8:276. 1878; Leenhouts in Blumea 17:63. 1969. *Sapindus tetraphylla* Vahl, Symb. Bot. 3:54. 1794. *Hemigyrosa canescens* (Roxb.) Blume, Rumphia 3:166. 1849; Hiern in Hook. f., Fl. Brit. India 1:671. 1875.

H. deficiens Beddome, Fl. Sylv. t. 231. 1872; Hiern in Hook. f., Fl. Brit. India 1:671. 1875. *H. longifolia* Hiern in Hook. f., Fl. Brit. India 1:671. 1875. *Lepisanthes montana* Blume, Bijdr. 238. 1825; Hiern in Hook. f., Fl. Brit. India 1:679. 1875. *L. browniana* Hiern in Hook. f., Fl. Brit. India 1:680. 1875. *L. assamica* Radlk. in Rec. Bot. Surv. India 3:343. 1907. *L. listeri* King ex Radlk. in Rec. Bot. Surv. India 3:344. 1907.

Trees up to 13 m high. Leaves pinnately compound, 2-14 foliolate; leaflets, ovate, oblong or elliptic-oblong. Flowers in axillary or supra-axillary, solitary, crowded or branched racemes, white. Drupes ellipsoid, trigonous.

Fl. & Fr. : July - Dec.

Distrib. : Siang, Tirap; 1300-1600 m, in forests.

Litchi chinensis Sonner., Voy. Ind. Chin. 2.230, t.129. 1782; Mukerjee in J. Econ. Tax. Bot. 1:80. 1980. *Nephelium litchi* (Lour.) Camb. in Mem. Mus. Hist. Nat. Hist. Paris 18:30. 1829; Hiern in Hook. f., Fl. Brit. India 1:687. 1875.

Local name : Naga-lichi, Takra (Asm.); Togong-asing (Abor).

Trees, up to 15 m high with dense ovoid crown. Leaflets oblong-lanceolate, or elliptic-oblong, glaucous beneath. Flowers in terminal panicles, pale white. Drupes fleshy with brown muricated rind, turning red when ripe.

Fl. & Fr. : Jan. - June.

Distrib. : Kameng; 100-300 m, in forests. Usually cultivated.

Use : Ripe fruits "Litchi" are edible.

Nephelium mutabile Blume, Rumphia 3. 104. 1849; Hiern in Hook. f., Fl. Brit. India 1:686. 1875. *N. griffithianum* Kurz in J. Asiat. Soc. Bengal 2:303. 1872.

Local name : Lesugula (Chakma).

Trees ca 10 m high. Leaves pinnately compound, 4-8 foliolate; leaflets oblong or oblong-elliptic. Flowers in axillary racemes, dull white or yellowish. Fruits with tooth like projections all over pericarpa.

Fl. & Fr. : Aug. - Dec.

Distrib. : Changlang, Siang; 600-900 m, in forests.

Sapindus mukorossi Gaertn., *Fruct. & Sem.* 1:342, t. 70. f. 3g, h. 1788; Hiern in Hook. f., *Fl. Brit. India* 1:683. 1875.

Local name : Ritha (Asm.); Thidak-dak-arong (Mik.); Haitaguti (Miri).

Trees up to 15 m high with globose crown. Leaves 10-16 foliolate; leaflets oblong-lanceolate, turning yellow before falling. Flowers in terminal panicles, white or purple. Drupes globose, 1-seeded, yellow when ripe; young fruits brownish.

Fl. & Fr. : June - Dec.

Distrib. : Lohit; 400-1000 m, in dense tropical forests.

Sapindus rarak DC., *Prodr.* 1:608. 1824; Balakr., *Fl. Jowai* 1:143. 1981. *Dittelasma rarak* (DC.) Hiern in Hook. f., *Fl. Brit. India* 1:672. 1875.

Local name : Am-seleng (Asm.).

Trees, 15-20 m high. Leaflets falcately lanceolate or oblong-lanceolate, pubescent when young. Flowers in axillary or terminal panicles, pale white or yellowish. Fruits fleshy.

Fl. & Fr. : June - Dec.

Distrib. : Kameng, Subansiri; 100-1000 m, in wet primary forests.

Xerospermum glabratum (Kurz) Radik., *Sap. Holl. Ind.* 23:93. 1877; Balakr., *Fl. Jowai* 1:142. 1981. *Cupania glabrata* Kurz in *J. Asiat. Soc. Bengal* 44(2):186. 1875. *Xerospermum noronhianum* auct. non Blume 1847; Hiern in Hook. f., *Fl. Brit. India* 1:686. 1875.

Local name : Bhela-ansling (Hill Miri).

Trees, 20-35 m high with oval dense crown. Leaflets lanceolate or elliptic-lanceolate. Flowers in paniced racemes, white or pale yellow. Fruits oblong or ovoid, muricate, yellowish when ripe.

Fl. & Fr. : April - Dec.

Distrib. : Arunachal Pradesh; 500-1000 m, in tropical forests.

ACERACEAE

Acer acuminatum Wallich ex D. Don, Prodr. Fl. Nep. 249. 1825.
A. caudatum Wallich, Pl. Asiat. Rar. 2(4):28, t. 132. 1831, *p.p.*; Hiern in Hook. f., Fl. Brit. India 1:695. 1875, *p.p.*

Trees, 25-30 m high. Leaves 5-lobed, cordate or truncate at base, serrate. Flowers in terminal cymes, white. Fruits subglaucous; wings pink.

Fl. & Fr. : March - Aug.

Distrib. : Kameng, Lohit; 1500-2500 m, in forests along slopes.

Acer campbellii Hook. f. & Thomson ex Hiern in Hook. f., Fl. Brit. India 1:696. 1875.

Local name : Kapathi (Monpa).

Trees up to 30 m high. Leaves palmately 5-7 lobed, truncate-cordate at base. Flowers in terminal corymbs, greenish white. Samaras winged.

Fl. & Fr. : April - Aug.

Distrib. : Kameng; 1600-1800 m, in forests.

Acer cappadocicum Gleditsch in Schrift., Ges. Naturf. Freunde Berl. 6:116, t. 2. 1785; Murray in Nasir & Ali, Fl. W. Pakistan 92:3. 1975.
A. pictum auct. non Thunb.: Hiern in Hook. f., Fl. Brit. India 1:696. 1875.

Large, deciduous trees, 12-20 m high. Leaves ovate, lobed, truncate or subcordate at base. Flowers in corymbose panicles, yellowish green. Samaras with widely divergent wings.

Fl. & Fr. : April - Sept.

Distrib. : Kameng; 1500-1800 m, along slopes in forests and river valleys.

Acer hookeri Miq. in Arch. Neerl. Sci. Nat. 2:471. 1852; Hiern in Hook. f., Fl. Brit. India 1:694. 1875.

Local name : Karsing (Monpa).

Trees, 20-25 m high with spreading crown. Leaves ovate-cordate. Flowers in axillary racemes appearing with leaves, white or pale yellow. Samaras with widely divergent wings.

Fl. & Fr. : April - Sept.

Distrib. : Subansiri; 1800-2100 m, in dense evergreen forests.

Acer laevigatum Wallich, Pl. Asiat. Rar. 2:3-4, t. 104. 182. 1830; Hiern in Hook. f., Fl. Brit. India 1:693. 1875.

Local name : Dieng-than, dieng-sob-tyrkhun (Kh.).

Large trees, 15-20 m high with spreading crown. Leaves ovate or oblong. Flowers in terminal panicles or racemes, white. Samaras winged, rosy red.

Fl. & Fr. : March - July.

Distrib. : Changlang, Kameng, Subansiri; 1500-2500 m, along moist soil slopes.

Acer laurinum Hassk. *apud* Hoeven de Vriese in Tijdschr. Natuurl. Geschied. Phys. 10:138. 1843. *A. niveum* Blume in Jaarb. K. Nederl. Maatsch. Aanmoed. Twinbouw. 1844:84. 1845; Hiern in Hook. f., Fl. Brit. India 1:693. 1875.

Local name : Mota-bhe (Asm.).

Trees, 30-45 m tall. Leaves ovate-elliptic, shining green above and snow white or grey beneath. Flowers appear with leaves, yellowish. Samaras glabrous; mericarps unequal.

Fl. & Fr. : Aug. April.

Distrib. : Kameng; 500-1000 m, in tropical dense forests.

Acer oblongum Wallich ex DC., Prodr. 1:593. 1824; Hiern in Hook. f., Fl. Brit. India 1:693. 1875. var. *oblongum*.

Local name : Dieng-soh-khru (Kh.).

Trees, 8-15 m high, often buttressed at base. Leaves oblong or ovate-lanceolate, glaucous beneath. Flowers in terminal or lateral panicles appearing with leaves, ca 8 mm across, yellowish green. Samaras 2-winged, divergent.

Fl. & Fr. : April - July.

Distrib. : Changlang, Kameng; 1400-2000 m, along rocky slopes in forests and river bank.

Acer oblongum var. *microcarpa* Hiern in Hook. f., Fl. Brit. India 1:693. 1875.

Trees, 15-18 m high. Leaves ovate-lanceolate. Inflorescence appear with leaves, pubescent. Flowers greenish white or yellow green. Carpels smaller than var. *oblongum*.

Fl. & Fr. : April - June.

Distrib. : Lohit; 500-1200 m, in forests.

Acer pectinatum Wallich [Cat. No. 1226 1829, *nom. nud.*; Nicholson in Gard. Chron. 1881 (1): 365, t. 69. 1881, *nom. illeg.*] ex Pax in Bot. Jahrb. 7:249. 1886; Hara in Hara & Williams, Enum. Fl. Pl. Nep. 2:98. 1979. *A. caudatum* auct. non Wallich : Hiern in Hook. f., Fl. Brit. India 1:695. 1895, *p.p. A. caudatum* forma *pectinatum* Hiern in Hook. f., Fl. Brit. India 1:695. 1875.

Trees, 10-15 m high. Leaves 3-lobed, ovate-caudate; petioles pink. Flowers in terminal racemes, appearing with leaves, purplish white. Samaras horizontal winged, pink.

Fl. & Fr. : July - Oct.

Distrib. : Kameng, Lohit, Subansiri, Tawang; 3000-3700 m, along edges of forest down the hills.

Acer pinnatinervium Merr. in Brittonia 4:109. 1941; Sahni & Naithani in Ind. For. 114 (1): 48-50. 1988.

Trees up to 25 m high. Leaves elliptic or oblong-elliptic, snow white beneath. Samaras with divergent wings, coppery pink.

Fl. & Fr. : Sept. - Oct.

Distrib. : Kameng; 2000-2500 m, in forests.

Acer sikkimensis Miq. in Arch. Neerl. Sci. Nat. 2:471. 1852; Hiern in Hook. f., Fl. Brit. India 1:694. 1875. var. *sikkimensis*.

Trees up to 30 m high. Leaves suborbicular-cordate, lobed, dark green above. Flowers in densely spicate, yellowish green. Samaras up to 1.8 cm long with divergent wings.

Fl. & Fr. : Oct. - April.

Distrib. : Changlang, Lohit; 1500-2500 m, in forests.

Acer sikkimensis var. *serrulatum* Pax in Bot. Jahrb. 7:215. 1886; Nayar & Dutta in Fasc. Fl. India 9:16. 1982.

Leaves suborbicular, cordate, serrulate at margin.

Fl. & Fr. : Oct. - April.

Distrib. : Lohit, Tirap; 1500-2200 m, in forests.

Acer thomsonii Miq. in Arch. Neerl. Sci. Nat. 2:470. 1867; Hara in Hara & Williams, Enum. Fl. Pl. Nep. 2:98. 1979. *A. villosum* Wallich var. *thomsonii* (Miq.) Hiern in Hook. f., Fl. Brit. India 1:695. 1875. Fig. 83.

Deciduous trees up to 20 m high. Leaves 3-lobed, cordate at base. Flowers in lateral, spicate racemes appearing with leaves, pale yellow. Samaras with straight wings, brown.

Fl. & Fr. : April - Aug.

Distrib. : Kameng, Subansiri; 1500-1800 m, in dense, moist forests.

Insufficiently known materials

Acer forrestii Diels in Notes Roy. Bot. Gard. Edinburgh 5:165. 1912.

Acer wardii W. W. Smith in Notes Roy. Bot. Gard. Edinburgh 10:8. 1917.

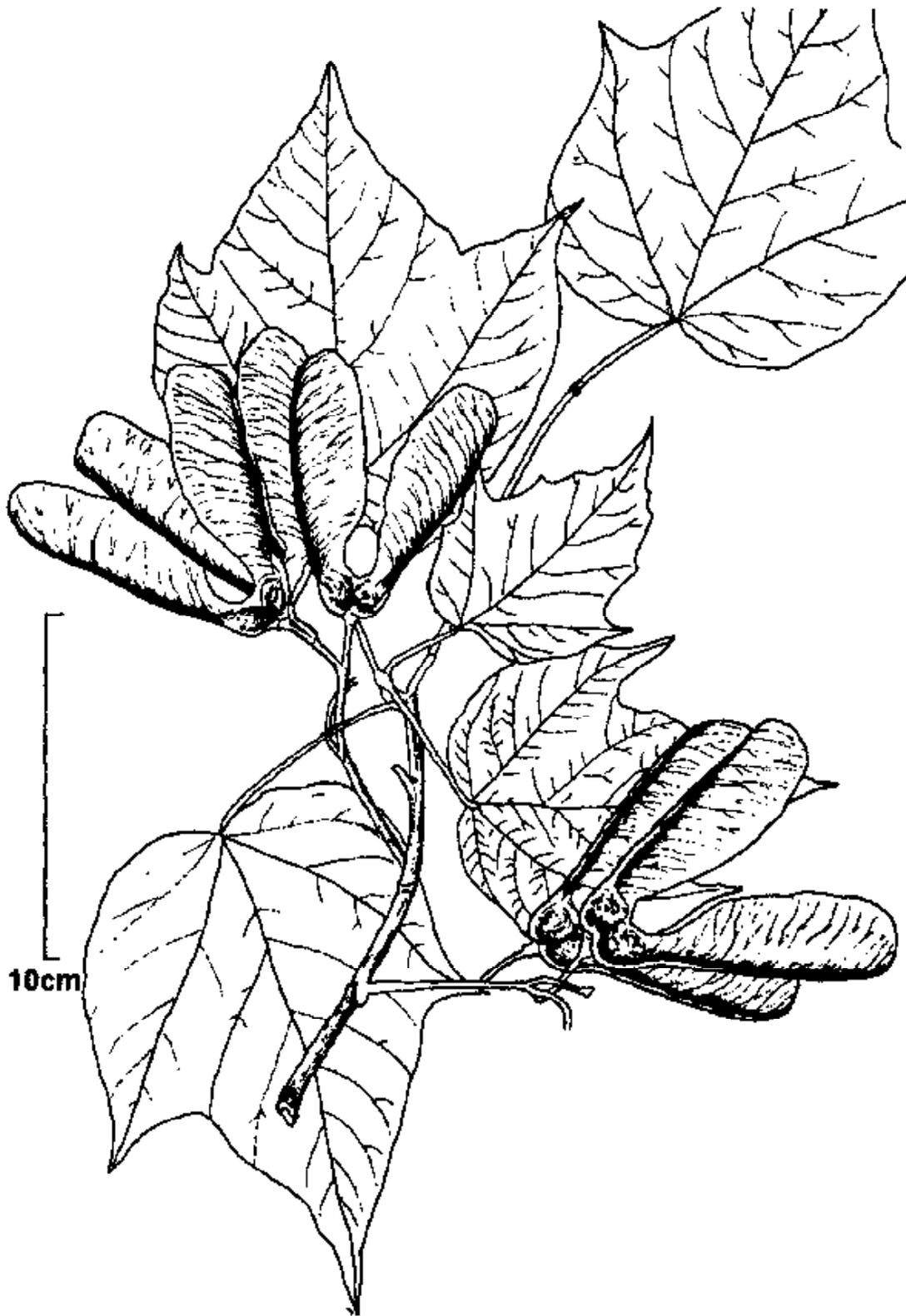


Fig. 83. *Acer thomsonii* Miq. : Fruiting twig.

STAPHYLEACEAE

Turpinia nepalensis Wallich ex Wight & Arn., Prodr. Fl. Pen. Ind. Or. 156, 1834. *T. pomifera* auct. non (Roxb.) DC.: Hiern in Hook. f., Fl. Brit. India 1:698, 1875, p.p.

Local name : Pani-latecu, Bon-keseru, Gobar khutla (Asm.); Takku-asing (Adi); Sidumbull-asing (Miri); Piyo-nekphi, Takre-changne (Nishi).

Large shrubs up to 3 m high. Leaves 3-5 foliolate; greenish white. Flowers in axillary or terminal panicles. Nuts globose, fleshy.

Fl. & Fr. : May - Dec.

Distrib. : Changlang, Kameng; 1000-1200 m, in forests.

Turpinia pomifera (Roxb.) DC., Prodr. 2:3, 1825; Hiern in Hook. f., Fl. Brit. India 1:144, 1875, p.p. *Dalrympelia pomifera* Roxb., Pl. Corom. 3:76, t. 299, 1819.

Local name : Pani-leteku, Bon-keseru, Gobar-kutla (Asm.); Takku-asing (Abor).

Trees, 10-20 m high with oval crown. Leaves 7-9 foliolate; leaflets ovate-oblong or oblong-lanceolate. Flowers in terminal panicles, ca 5 mm across, yellowish white. Nuts globular, 2-3 grooved, fleshy. Seeds very hard with brown testa.

Fl. & Fr. : Sept. - Dec.

Distrib. : Changlang, Kameng, Tirap; 300-800 m, in outskirts of villages.

SABIACEAE

Meliosma dillenifolia (Wallich ex Wight & Arn.) Walp., Repert. 1:423, 1842; Hook. f., Fl. Brit. India 2:4, 1876. *Millingtonia dillenifolia* Wallich ex Wight & Arn. in Edinburgh New Phil. J. 15:179, 1833.

Trees, 10-15 m high. Leaves obovate, elliptic or oblong. Flowers in axillary panicles, white. Drupes globose.

Fl. & Fr. : Jyly - Oct.

Distrib. : Siang; 1800-2000 m, in forests.

Meliosma pinnata (Roxb.) Maxim. in Bull. Acad. Sci. St. Pet. 12:64. in Obs. 1867; Hook. f., Fl. Brit. India 2:6. 1876. *Millingtonia pinnata* Roxb., Fl. Ind. 1:103. 1820. Fig. 84.

Local name : Banpasola, Mamoi (Asm.); Dermi-asing (Miri) Naumuchangne (Nishi).

Small trees, 8-12 m high. Leaves imparipinnate; leaflets ovate, elliptic or obovate. Flowers in terminal panicles, white. Fruits globose.

Fl. & Fr. : April - Sept.

Distrib. : Changlang, Siang, Subansiri, Tirap; 100-600 m, in dense primary forests.

Meliosma simplicifolia (Roxb.) Walp., Repert. 1:423. 1842; Hook. f., Fl. Brit. India 2:5. 1876. *Millingtonia simplicifolia* Roxb., Pl. Corom. 3:50, t. 254. 1820. subsp. *simplicifolia*. Fig. 85.

Local name : Pichola, Larubandha, Sankonaro (Asm.); Gurban-asing (Ahor, Adi, Miri); Nitak-asing (Miri).

Trees, 10-20 m high with dense compact crown. Leaves obovate to obovate-lanceolate. Flowers in terminal panicles, yellow or dull white. Drupes globose, yellowish when ripe.

Fl. & Fr. : April - July.

Distrib. : Changlang, Kameng, Siang, Subansiri, Tirap; 300-1000 m, along dry hill slopes.

Meliosma simplicifolia subsp. *yunnanensis* (Franch.) Beus. in Blumea 19:471. 1971. *M. yunnanensis* Franch. in Bull. Soc. Bot. France 33:465. 1886.

Trees, 8-10 m high. Leaves oblong obovate, glabrous. Flowers in lax or dense panicles. Fruits globose.

Fl. & Fr. : April - June.



Fig. 84. *Meliosma pinnata* (Roxb.) Maxim. : Flowering twig.

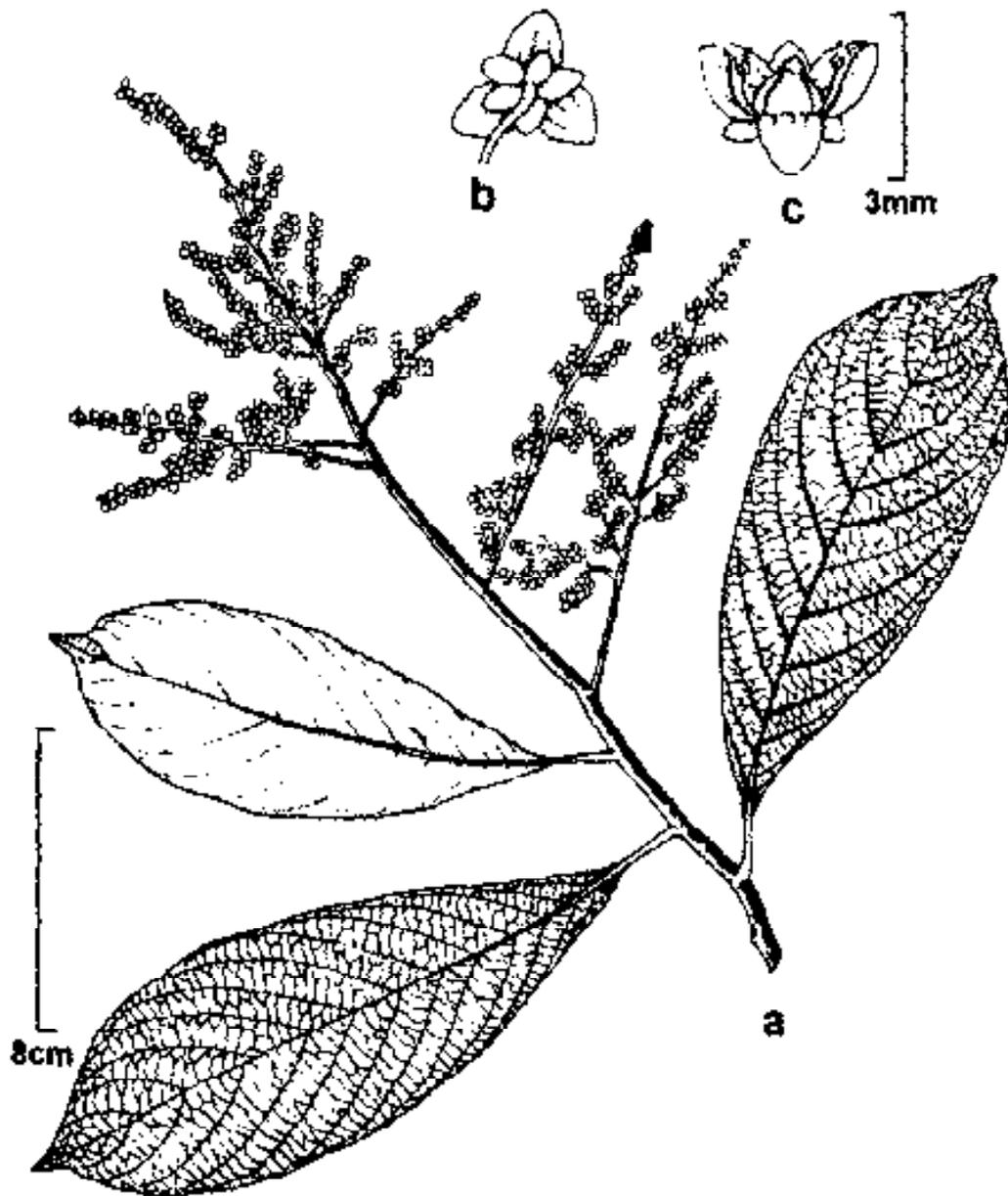


Fig. 85. *Meliosma simplicifolia* (Roxb.) Walp. ssp. *simplicifolia*. :
a. Flowering twig; b. Flower showing Calyx; c. Flower.

Distrib. : Kameng; 1800-2200 m, on forest hill slopes.

Sabia campanulata Wallich ex Roxb., Fl. Ind. 2:311. 1824; Hook. f., Fl. Brit. India 2:1. 1876; Van de Water & Sutton in Hara & Williams, Enum. Fl. Pl. Nep. 2:100. 1979. *S. leptandra* Hook. f. & Thomson, Fl. Ind. 1:209. 1855; Hook. f., Fl. Brit. India 2:2. 1876.

Woody climbers or scandent shrubs. Leaves oblong-ovate or lanceolate. Flowers solitary, dull white; calyx greenish with violet tinge. Drupes reniform, wrinkled.

Fl. & Fr. : Sept. - Nov.

Distrib. : Dibang Valley, Kameng, Subansiri; 800-1200 m, in open forests.

Sabia lanceolata Colebr. in Trans. Linn. Soc. London 12:355. 1818; Hook. f., Fl. Brit. India 2:2. 1876; Van de Water in Blumea 26:41. 1980. *S. tomentosa* Hook. f., Fl. Brit. India 2:3. 1876.

Woody climbers or scandent shrubs, 5-6 m tall. Leaves oblong-lanceolate or elliptic-oblong. Flowers in axillary, many flowered compound cymes, dull white or yellowish. Drupes distinctly obovoid.

Fl. & Fr. : Nov. - March.

Distrib. : Changlang, Kameng, Siang, Subansiri; 500-900 m, along forest edges.

Sabia parviflora Wallich in Roxb., Fl. Ind. 2:310. 1824; Hook. f., Fl. Brit. India 2:2. 1876.

Scandent or climbing shrubs. Leaves ovate-lanceolate or oblong-ovate. Flowers in axillary cymes, whitish or yellowish. Drupelets globular.

Fl. & Fr. : June - Oct.

Distrib. : Kameng; 500-1100 m, in open as well as in dense forests.

Sabia purpurea Hook. f. & Thomson, Fl. Ind. 1:209. 1855; Hook. f., Fl. Brit. India 2:2. 1876.

Local name : Jermineirang-chhai (Asm.).

Shrubs or climbers up to 5 m high. Leaves oblong to oblong-ovate. Flowers solitary or in axillary cymes, purplish. Drupelets globular or obovoid, blue when fully ripe.

Fl. & Fr. : April - Sept.

Distrib. : Kameng, Subansiri; 2000-2500 m, in primary forests.

ANACARDIACEAE

Choerospondias axillaris (Roxb.) Burt & Hill in Ann. Bot. n.s. 1:254. 1937; Kanai in Hara, Fl. E. Himal. 186. 1966. *Spondias axillaris* Roxb., Fl. Ind. 2:453. 1832; Hook. f., Fl. Brit. India 2:42. 1876.

Local name : Hamoi-tenga (Asm.); Belam-asing (Abor, Adi, Miri); Belam-changne (Daff.); Belam changne (Nishi).

Trees up to 25 m high, crown with horizontal branches. Leaves compound; leaflets oblong-lanceolate to elliptic-lanceolate. Flowers in axillary panicles, white. Drupes oblong, yellow when ripe.

Fl. & Fr. : Feb. - Oct.

Distrib. : Siang; 1000-1300 m, in dense primary moist forests.

Dohinea vulgaris Buch.-Ham. ex D. Don, Prodr. Fl. Nep. 249. 1825; Hiern in Hook. f., Fl. Brit. India 1:696. 1875.

Aromatic shrubs up to 5 m high. Leaves elliptic-lanceolate. Flowers in large terminal panicles, greenish, become yellowish when fully open. Fruits ovoid, compressed.

Fl. & Fr. : June - Nov.

Distrib. : Lohit, Tirap; 500-1500 m, in forests.

Dracontomelum mangiferum Blume, Mus. Bot. 1:231, t. 42. 1850; Hook. f., Fl. Brit. India 2:43. 1876.

Trees, 15-20 m high. Leaves compound; leaflets 10-16, oblong lanceolate. Flowers in large axillary panicles, dull white. Drupes globose, depressed.

Fl. & Fr. : March - Sept.

Distrib. : Kameng; 500-1000 m, in tropical evergreen forests.

Drimycarpus racemosus (Roxb.) Hook. f. in Benth. & Hook. f., Gen. Pl. 1:424. 1862; Hook. f., Fl. Brit. India 2:36. 1876; Hara & Press in Hara & Williams, Enum. Fl. Pl. Nep. 2:101. 1979. *Holigarna racemosa* Roxb., Fl. Ind. 2:82. 1832.

Local name : Amsla, Am-selenga (Asm.).

Trees, 8-20 m high. Leaflets ovate-lanceolate or oblong-lanceolate, glaucous beneath. Flowers in axillary fascicles, brownish, white or greenish yellow. Drupes ovoid-oblong, red when fully ripe.

Fl. & Fr. : Aug. - Oct.

Distrib. : Changlang, Kameng, Siang, Tirap; 300-1000 m, in tropical evergreen forests along shady places.

Use : Wood is used for canoes and planking.

Holigarna longifolia Roxb., Pl. Corom. 3:79, t. 82. 1819; Hook. f., Fl. Brit. India 2:37. 1876.

Large trees, 35-40 m high, widely buttressed at base. Leaves crowded at branch apices, cuneiform-oblong, obtusely acuminate. Flowers in axillary panicles, dull white, rusty tomentose. Drupes ovate-oblong, enclosed by calyx-tube.

Fl. & Fr. : Dec. - Jan.

Distrib. : Kameng, Lohit, Siang; 100-500 m, in evergreen primary forests.

Lannea coromandelica (Houtt.) Merr. in J. Arn. Arb. 19:353. 1938; Hara & Press in Hara & Williams, Enum. Fl. Pl. Nep. 2:101. 1979. *Dialium coromandelicum* Houtt., Nat. Hist. 2:39. 1774. *Odina wodier* Roxb., Fl. Ind. 2:293. 1832; Hook. f., Fl. Brit. India 2:29. 1876.

Local name : Jia (Asm.).

Deciduous trees up to 20 m high; young parts clothed with stellate hairs. Leaflets 5-11, ovate, elliptic or lanceolate. Flowers in terminal fascicles, purplish to greenish yellow. Drupes oblong, red when ripe.

Fl. & Fr. : March - June.

Distrib. : Kameng; 100-1200 m, in forests.

Mangifera indica L., Sp. Pl. 200. 1753; Hook. f., Fl. Brit. India 2:13. 1876.

Local name : Am (Asm.); Kei-asing (Miri); Tagung-changne (Nishi).

Evergreen trees, 10-20 m high with dense, oval crown. Leaves crowded at the ends of branches, oblong to elliptic-lanceolate. Flowers in axillary, pubescent panicles, ca 4 mm across, greenish or reddish yellow. Drupes ovoid with curved tip, fleshy, yellow to orange yellow when ripe.

Fl. & Fr. : Jan. - Aug.

Distrib. : Kameng, Siang, Subansiri; cultivated at lower elevations.

Use : The young and unripe fruits are used in pickles, chutney and amchur preparations. Ripe fruits are delicious and used in manufacture of juice, squash, jams, jellies, moraba, etc. The ash of the burnt leaves is used in remedy for burns. The bark is used as substitute for rosy pink dye.

Mangifera sylvatica Roxb., Fl. Ind. 1:644. 1820; Hook. f., Fl. Brit. India 2:15. 1876.

Local name : Bon-am (Asm.).

Lofty trees up to 30 m high with dense, globose crown. Leaves oblong-lanceolate or elliptic-lanceolate. Flowers in large axillary, glabrous panicles, ca 5 mm across, brownish white. Drupes obliquely ovoid, acuminate.

Fl. & Fr. : June - March.

Distrib. : Changlang, Kameng, Siang, Subansiri; 1200-1400 m, in open forests.

Use : Timber is used for tea chests.

Pegia nitida Colebr. in Trans. Linn. Soc. London 15:364. 1827; Hara & Press in Hara & Williams, Enum. Fl. Pl. Nep. 2:101. 1979. *Robergia hirsuta* Roxb., Fl. Ind. 2:455. 1832. *Tapiria hirsuta* (Roxb.) Hook. f. in Benth. & Hook. f., Gen. Pl. 1:423. 1862 and Fl. Brit. India 2:28. 1876.

Local name : Dhindau-baguri lata (Asm.); Midi-takhir (Abor, Adi, Miri).

Large, scandent shrubs ca 3 m high. Leaves 5-7 foliolate; leaflets oblong. Flowers in axillary or terminal large, villous panicles, brownish, yellowish or white, fragrant. Drupes obliquely oblong, black when ripe.

Fl. & Fr. : Jan. - Aug.

Distrib. : Changlang, Kameng, Lohit, Siang, Subansiri, Tirap; 200-1000 m, in dry open forests.

Pistacia chinensis Bunge subsp. *integerrima* (Stewart) Rech. f. in Fl. Iranica 63:8. 1969. *P. integerrima* Stewart in Brndis, For. Fl. 122,t. 22. 1874; Hook. f., Fl. Brit. India 2:13. 1876, *p.p.*

Trees, 12-15 m high. Leaves 8-10 foliolate; leaflets lanceolate. Flowers in axillary panicles. Drupes subglobose, rugose.

Fl. & Fr. : March - Sept.

Distrib. : Arunachal Pradesh; up to 1200 m.

Rhus griffithii Hook. f., Fl. Brit. India 2:12. 1876.

Local name : Darmi-asing (Miri); Triseng (Monpa).

Trees up to 16 m high. Leaves imparipinnate, crowded at branch apices; leaflets oblong, ovate-oblong, acuminate, glabrous beneath. Flowers in axillary panicles, greenish yellow. Drupes orbicular, compressed.

Fl. & Fr. : March - June.

Distrib. : Kameng; 100-1200 m, in open forests, along roadsides.

Rhus hookeri Sahnii & Bahadur in Ind. For. 96: 769. 1970. *R. insignis* Hook. f., Fl. Brit. India 2:11. 1876, *non* Oliver 1868.

Trees ca 16 m high with spreading crown. Leaves 7-11 foliolate; leaflets ovate or oblong-lanceolate, pubescent beneath. Flowers in axillary panicles, ca 3 mm across, greenish yellow. Drupes globose.

Fl. & Fr. : March - Sept.

Distrib. : Subansiri; 1400-1600 m, in dense forests.

Rhus javanica L., Sp. Pl. 1:265. 1753, *p.p.*; Banerjee in J. Bombay Nat. Hist. Soc. 55:154. 1958. *R. semialata* Murray in Comm. Soc. Sci. Goetting 6:27, t. 3. 1784; Hook. f., Fl. Brit. India 2:10. 1876. *R. chinensis* Miller, Gard. Dict. ed. 8. Rhus n. 7. 1768; Joseph, Fl. Nongpoh 76. 1981.

Local name : Naga-tenga (Asm.).

Small trees, 5-10 m high with lax crown. Leaves imparipinnate, 8-12 foliolate; leaflets ovate or oblong-lanceolate, pubescent beneath. Flowers in terminal panicles, dull white. Drupes subglobose, compressed, pink when ripe, sour in taste.

Fl. & Fr. : May - March.

Distrib. : Changlang, Kameng, Lohit, Siang, Subansiri, Tirap; 100-600 m, along roadsides and hill slopes.

Rhus succedanea L., Mant. Pl. 2:221. 1767; Hook. f., Fl. Brit. India 2:12. 1876 incl. vars. *himalaica* Hook. f., *sikkimensis* Hook. f. & *acuminata* (DC.) Hook. f.

Trees up to 15 m high. Leaves crowded at branch apices, 6-12 foliolate; leaflets oblong-elliptic or ovate-lanceolate, caudate-acuminate, glabrous beneath. Flowers in axillary panicles, yellowish green. Drupes orbicular, compressed, rugose, shining yellow.

Fl. & Fr. : June - Oct.

Distrib. : Changlang, Tirap; 600-1000 m, in forests.

Semecarpus anacardium L. f., Suppl. Pl. 182. 1781; Hook. f., Fl. Brit. India 2:30. 1876; Kanjilal *et al.*, Fl. Assam 1(2):333. 1936. **Fig. 86.**

Local name : Bhela, Bar-bhola (Asm.).

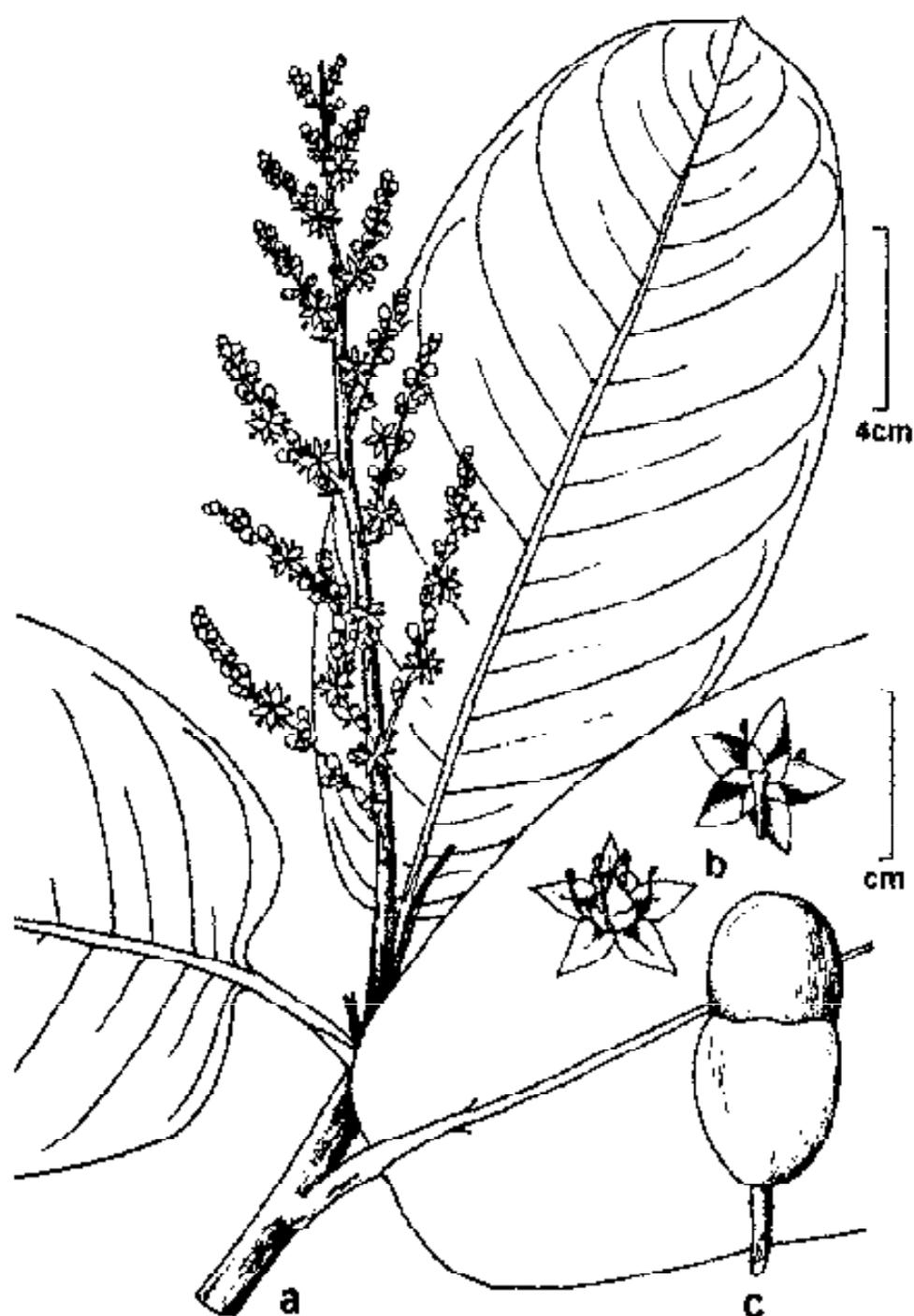


Fig. 86. *Semecarpus anacardium* L. f. : a. Flowering twig; b. Fertile flower (front & back view); c. Fruit.

Deciduous trees up to 15 m high with dense oval crown. Leaves obovate or elliptic-oblong, tomentose and glaucous beneath. Flowers in panicles, greenish white. Drupes obliquely ovoid, black when ripe.

Fl. & Fr. : July - March.

Distrib. : Kameng; 100-800 m, in tropical dense forests.

Spondias pinnata (L. f.) Kurz, Prelim. Rep. For. Veg. Pegu Append. A. 44, App. B. 42. 1875; Airy Shaw & Forman in Kew Bull. 21:8. 1967. *Mangifera pinnata* L. f., Suppl. Pl. 156. 1781. *Spondias mangifera* Willd., Sp. Pl. 2:751. 1799; Hook. f., Fl. Brit. India 2:42. 1876; Kanjilal *et al.*, Fl. Assam 1(2):340. 1936. *S. accuminata* Roxb., Fl. Ind. 2:453. 1832; Hook. f., Fl. Brit. India 2:42. 1876. *S. macrophylla* Wallich ex Hook. f., Fl. Brit. India 2:43. 1876.

Local name : Amora, Amra-tenga, Amor (Asm.); Dongi-asing (Abor, Adi, Miri).

Deciduous trees up to 20 m high with lax crown. Leaves up to 45 cm long; leaflets oblong-lanceolate. Flowers in axillary, large, conical panicles, white or yellow. Drupes oblong-ovoid, yellowish when ripe.

Fl. & Fr. : March - Nov.

Distrib. : Changlang, Lohit, Tirap; 500-800 m, in open forests.

Insufficiently known material

Semecarpus prainii King in J. Asiat. Soc. Bengal 65:509. 1896.

CORIARIACEAE

Coriaria nepalensis Wallich, Pl. Asiat. Rar. 3:67, t. 289. 1832; Hook. f., Fl. Brit. India 2:44. 1876.

Bushy herbs up to 5 m high; stems brownish red. Leaves usually rounded-cordate, rarely ovate-oblong or elliptic. Flowers in axillary racemes, reddish. Fruits subglobose, black when fully ripe.

Fl & Fr. : April - Aug.

Distrib. : Kameng; 1500-1900 m, in open dry localities.

MORINGACEAE

Moringa oleifera Lamk., *Encycl. Meth. Bot.* 1:398. 1785; van Steenis, *Fl. Males.* 5:554. 1953. *M. pterygosperma* Gaertn., *Fruct.* 2:314. 1791; Hook. f., *Fl. Brit. India* 2:45. 1876.

Local name : Sojina (Asm.).

Deciduous trees up to 10 m high with spreading crown. Leaves imparipinnate; leaflets obovate-orbicular or obovate-oblong, glandular at base. Flowers in panicles, white, fragrant. Capsules linear-oblong. Seeds trigonous, winged.

Fl. & Fr. : Jan. - June.

Distrib. : Kameng, Lohit, Siang; 100-300 m, in open localities and forest openings. Often cultivated.

Use : Flower buds and fruits are used as vegetable.

CONNARACEAE

Connarus paniculatus Roxb., *Fl. Ind.* 3:139. 1832; Hook. f., *Fl. Brit. India* 2:52. 1876.

Local name : Makoi-lota (Asm.).

Lianas. Leaflets ovate or elliptic-lanceolate, glabrous beneath. Flowers in terminal, conical panicles, white or pinkish white. Follicles slightly compressed. Seeds black arillate.

Fl. & Fr. : March - June.

Distrib. : Kameng; 100-1000 m, in mixed evergreen forests.

Rourea minor (Gaertn.) Leenhouts in *Fl. Males.* ser. 1,5:514. 1958. *Aegiceras minor* Gaertn., *Fruct.* 1:216. 1788. *Rourea caudata* Planch. in

Linnaea 23:419. 1850; Hook. f., Fl. Brit. India 2:48. 1876. *R. commutata* Planch. in Linnaea 23:420. 1850; Hook. f., Fl. Brit. India 2:47. 1876.

Scandent shrubs. Leaflets 4-10, oblong or oblanceolate, glaucous beneath. Flowers in axillary panicles, white. Follicles obliquely tapering, brownish when ripe. Seeds with red aril.

Fl. & Fr. : April - Sept.

Distrib. : Kameng, Lohit, Subansiri, Tirap; 1500-1600 m, in dense forests on moist soil.

FABACEAE

Abrus precatorius L., Syst. Nat. ed. 2,2:472. 1767; Baker in Hook. f., Fl. Brit. India 2:175. 1876.

Local name : Latur-mani, Ratur-mani (Asm.).

Perennial climbers. Leaflets oblong, ligulate. Flowers reddish. Pods turgid, oblong, deflexed, beaked, 3-5 seeded. Seeds bright scarlet with a black spot on hilum.

Fl. & Fr. : Aug. - Nov.

Distrib. : Tirap; on hedges and bushes.

Use : Decoction of leaves and roots are used for cough, cold and colic ailments and also said to be used for abortion. Seeds are used as weight by goldsmith and also made into necklaces.

Aeschynomene indica L., Sp. Pl. 713. 1753; Baker in Hook. f., Fl. Brit. India 2:151. 1876.

Local name : Kuhila (Asm.).

Perennial, erect herbs, 30-100 cm high; stems much branched. Leaves paripinnate; leaflets 8-35 paired, linear-oblong. Flowers yellowish or white. Pods 4-13 jointed, straight or slightly curved, sutures indented; joints compressed with sparse, short tubercular based deciduous hairs.

Fl. & Fr. : Aug. - Dec.

Distrib. : Tirap; in wet places, swamps, ponds and river banks or grasslands.

Alysicarpus glumaceus (Vahl) DC., Prodr. 2:353. 1825. *Hedysarum glumaceum* Vahl, Symb. Bot. 2:106. 1791. *Alysicarpus wallichii* Wight & Arn., Prodr. Fl. Pen. Ind. Or. 234. 1934; Kanjilal *et al.*, Fl. Assam 2:43. 1938.

Erect, moderately branched herbs, 30-50 cm high. Leaves 1-foliolate; leaflets variable in shape. Flowers white; calyx glumaceous, violet. Pods 5-6 jointed, enclosed within calyx, deeply constricted between joints; joints orbiculate, transversely rugose, compressed.

Fl & Fr. : Sept. - Nov.

Distrib. : Kameng; up to 1600 m.

Apios carnea (Wallich) Benth. ex Baker in Hook. f., Fl. Brit. India 2:188. 1876. *Cyrtotropis carnea* Wallich, Pl. Asiat. Rar. 1:50, t. 62. 1830.

Climbers. Leaves 3-7 foliolate; leaflets membranous, oblong. Flowers reddish. Pods straight, grey black, 12-16 seeded.

Fl. & Fr. : Feb. - May.

Distrib. : Kameng.

Atylosia goensis (Dalz.) Dalz. in J. Linn. Soc. Bot. 13:186. 1873; Bakkr., Fl. Jowai 1:164. 1981. *Cajanus goensis* Dalz. in Kew J. Bot. 2:264. 1850. *Dunbaria barbata* Benth. in Miq., Pl. Jungh. 242. 1852. *Atylosia barbata* (Benth.) Baker in Hook. f., Fl. Brit. India 2:216. 1876; Kanjilal *et al.*, Fl. Assam 2:97. 1938.

Woody climbers. Stems and leaves densely rusty brown pubescent. Leaflets orbiculate, acuminate, subcoriaceous. Flowers yellowish orange with chocolate network on sepals. Pods compressed, shortly beaked with spreading brown pubescent.

Fl. & Fr. : May - Feb.

Distrib. : Kameng; in secondary forests and forest edges.

Atylosia scarabaeoides (L.) Benth. in Miq., Pl. Jungh. 245. 1852; Baker in Hook. f., Fl. Brit. India 2:215. 1876. *Dolichos scarabaeoides* L., Sp. Pl. 726. 1753.

Trailing or twining herbs, densely grey downy pubescent. Leaflets obovate-oblong, subcoriaceous. Flowers yellow. Pods straight, distinctly lineate, finely spreading pubescent.

Fl. & Fr. : Aug. - Dec.

Distrib. : Siang, Subansiri.

Atylosia volubilis (Blanco) Gamble, Fl. Pres. Madras 369. 1918. *Cytisus volubilis* Blanco, Fl. Filip. 599. 1837. *Atylosia crassa* Prain in J. Asiat. Soc. Bengal 66:47. 1897.

Downy tomentose climbers. Leaflets rhomboid, rugose above. Flowers yellow marcescent in paniced racemes. Pods with strong oblique furrows, 3-6 seeded.

Fl. & Fr. : April - July.

Distrib. : Changlang, Kameng.

Butea buteiformis (Voigt) Grierson & Long in Notes Roy. Bot. Gard. Edinburgh 37:346. 1979. *Meizotropis buteiformis* Voigt, Hort. Suburb. Calcutt. 239. 1845. *Butea minor* Buch.-Ham. ex Baker in Hook. f., Fl. Brit. India 2:195. 1876; Kanjilal *et al.*, Fl. Assam 2:74. 1938.

Erect or scandent shrubs, 3-5 m tall; branches densely appressed yellowish brown tomentose. Leaves 3-foliolate. Flowers orange red. Pods velvety when young.

Fl. & Fr. : April - Jan.

Distrib. : Arunachal Pradesh 1000-2000 m, on dry slopes, open grasslands, along river banks and streams.

Butea monosperma (Lamk.) O.Ktze., Rev. Gen. Pl. 1:202. 1891; Santapau in Bull. Bot. Surv. India 3:12. 1962. *Erythrina monosperma* Lamk., Encycl. Meth. Bot. 1:391. 1785. *Butea frondosa* Koen. ex Roxb. in Asiat. Res. 3:469. 1792; Baker in Hook. f., Fl. Brit. India 2:194. 1876.

Local name : Polah, Polak (Asm.).

Deciduous trees; branches grey tomentose. Leaves trifoliolate, pubescent. Flowers orange yellow, orange red or even yellow. Pods velvety when young.

Fl. & Fr. : Jan. - May.

Distrib. : Arunachal Pradesh; up to 1000 m, generally grow in open grasslands and scattered in mixed forests.

Butea parviflora Roxb., Fl. Ind. 2:248. 1832; Deb, Fl. Tripura State 1:147. 1981. *Spatholobus roxburghii* Benth. in Miq., Pl. Jungh. 238. 1852; Baker in Hook. f., Fl. Brit. India 2:193. 1876. *S. parviflorus* (Roxb.) O.Ktze., Rev. Gen. Pl. 1:205. 1891.

Local name : Hallot, Pan-lota (Asm.).

Climbing shrubs; branches densely grey downy. Leaves 3-foliolate; leaflets obovate or elliptic, cuspidate. Flowers creamish or bright red in terminal panicles. Pods oblong, 1-seeded, flat, densely brown velvety.

Fl. & Fr. : Feb. - May.

Distrib. : Changlang.

Use : Fibre is used as rope.

Cajanus cajan (L.) Huth in Helios 11:133. 1893; Millsp. in "Field Columb. Mus. Bot. 2:53. 1900. *Cytisus cajan* L., Sp. Pl. 739. 1753. *Cajanus indicus* Spreng., Syst. Veg. 3:248. 1826; Baker in Hook. f., Fl. Brit. India 2:217. 1876.

Local name : Arhar (Asm.); Tan-gun, Dayil (Abor).

Erect shrubs, 1.5-3 m high; branches slender, sulcate, grey silky hairy. Leaves 3-foliolate; leaflets narrowly elliptic, oblong, lanceolate, silky velvety, gland dotted. Flowers reddish yellow in corymbs. Pods torulose, obliquely depressed in between seeds, 3-6 seeded.

Fl. & Fr. : April - Feb.

Distrib. : Siang; 700-2000 m. Cultivated.

Use : Leaves are used in diabetes. A very commonly used pulse, 'Arhar' dal.

Campylotropis eriocarpa (DC.) Schindl. in Fedde, Repert. 11:347. 1912; Ali in Biologia 12(2):45. 1966. *Lespedeza eriocarpa* DC. in Ann. Sci. Nat. Paris 4:102. 1825; Baker in Hook. f., Fl. Brit. India 2:144. 1876, p.p.

Shrubs up to 5 m high. Leaflets oblong-elliptic, margin revolute, brown pubescent beneath. Flowers pinkish violet, bright rosy. Pods semielliptic or oblong-lanceolate, shortly mucronate, densely adpressed reddish brown pubescent.

Fl. & Fr. : April - Nov.

Distrib. : Kameng, Lohit; in rock crevices or on grassy hill slopes of humid areas.

Canavalia ensiformis (L.) DC., Prodr. 2:404. 1825; Baker in Hook. f., Fl. Brit. India 2:195. 1876. *Dolichos ensiformis* L., Sp. Pl. 725. 1753.

Local name : Kamtal-urhai (Asm.).

Climbers on trees, ca 13 m long. Flowers pink. Pods flat, green.

Fl. & Fr. : Sept. - Oct.

Distrib. : Kameng, Tirap.

Caragana crassicaulis Benth. ex Baker in Hook. f., Fl. Brit. India 2:117. 1876.

Woody, tufted creepers with very deep, thick rootstocks. Leaves in lax rosette; leaflets linear-oblong, truncate, pubescent. Flowers solitary yellow with brick red streaks on the outside of petals. Pods linear-oblong, finely pubescent.

Fl. & Fr. : May - Aug.

Distrib. : Tawang; 4200 m, on moist soil slopes along rocky corners.

Cicer arietinum L., Sp. Pl. 728. 1753; Baker in Hook. f., Fl. Brit. India 2:176. 1876.

Annual herbs. Leaves imparipinnate; leaflets oblanceolate or oblong, rigid, deeply toothed. Flowers pink or bluish purple, solitary. Pods turgid, oblong, 2-seeded.

Fl. & Fr. : Sept. - Nov.

Distrib. : Changlang, Kameng; up to 2300 m, along forest edges amidst grasses; often cultivated.

Clitoria mariana L., Sp. Pl. 753. 1753; Baker in Hook. f., Fl. Brit. India 2:208. 1876.

Climbers, generally 2-3 m long. Leaves 3-foliolate; leaflets ovate-elliptic, chartaceous, glabrous. Flowers blue, large, solitary, axillary. Pods slightly compressed, glabrous, septate, 1-3 seeded with long persistent style.

Fl. & Fr. : Sept. - Oct.

Distrib. : Subansiri.

Codariocalyx motorius (Houtt.) Ohashi in J. Jap. Bot. 40:367. 1965. *Hedysarum motorium* Houtt., Hist. II, 10:246. 1779. *H. gyrans* L. f., Suppl. Pl. 332. 1781. *Desmodium gyrans* (L. f.) DC., Prodr. 2:326. 1825; Baker in Hook. f., Fl. Brit. India 2:174. 1876. *D. motorium* (Houtt.) Merr. in J. Arn. Arb. 19:345. 1938. Fig. 87.

Perennial undershrubs, 2-3 m high; stems woody. Flowers dull purple or yellow. Pods flat, indented, 6-10 jointed.

Fl. & Fr. : Sept. - Nov.

Distrib. : Kameng, Subansiri; 1100-1800 m, along roadside slopes.

Use : Leaves boiled in water, dried and are used as tea leaf.

Crotalaria alata Buch.-Ham. ex D. Don, Prodr. Fl. Nep. 24. 1825; Baker in Hook. f., Fl. Brit. India 2:69. 1876. *C. bialata* auct. non Schrant: Roxb. Fl. Ind. 2:274. 1832.

Undershrubs, 1-1.5 m high; stems and leaves pubescent. Flowers faint yellow. Pods turgid, black.

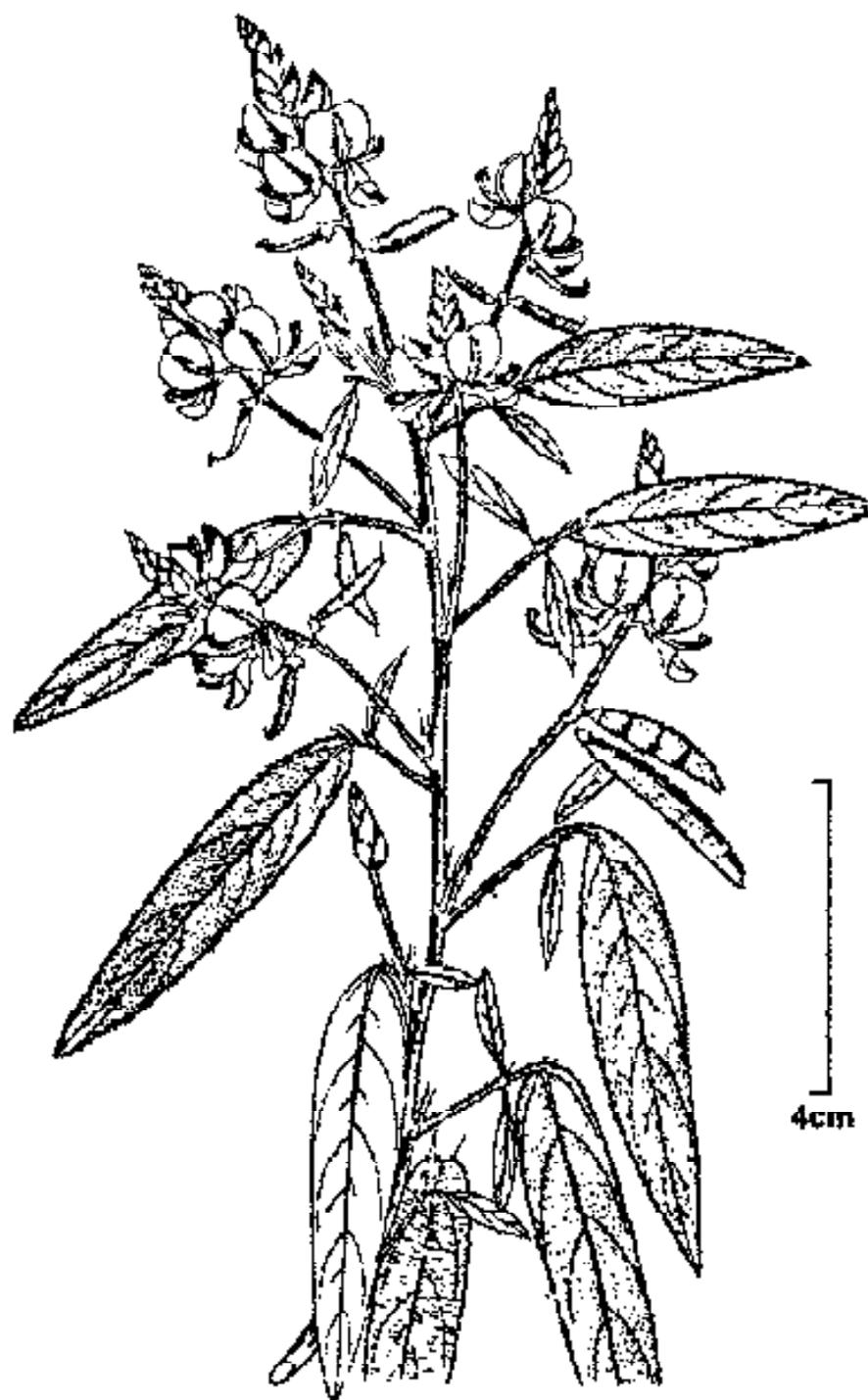


Fig. 87. *Codariocalyx motorius* (Houtt.) Ohashi : Flowering twig.

Fl. & Fr. : Sept. - Dec.

Distrib. : Lohit, Siang, Subansiri; 300-1200 m.

Crotalaria albida Heyne ex Roth, Nov. Pl. Ind. Or. 333. 1821; Baker in Hook. f., Fl. Brit. India 2:71. 1876.

Herbs or undershrubs up to 75 cm high. Leaves linear-oblong, subacute. Flowers in terminal racemes, pale yellow. Pods oblong-cylindric, 6-12 seeded.

Fl. & Fr. : Sept. - Dec.

Distrib. : Changlang, Kameng; 450-2000 m, amidst grasses in shaded river banks along secondary forests.

Crotalaria capitata Benth. ex Baker in Hook. f., Fl. Brit. India 2:74. 1876.

Scandent, hispid herbs. Leaves simple, oblanceolate, subcoriaceous, silky beneath. Flowers pink or violet blue; calyx densely brown silky hairy. Pods oblong, sessile, glabrous, included.

Fl. & Fr. : Sept. - Jan.

Distrib. : Kameng, Lohit; up to 2000 m.

Crotalaria ferruginea R. Grah. ex Benth. in Hook., London J. Bot. 2:476. 1843; Baker in Hook. f., Fl. Brit. India 2:68. 1876.

Annual herbs up to 1 m high. Leaves sessile, oblong, obovate, subacute, spreading brown pubescent. Flowers yellow. Pods linear-oblong, many seeded.

Fl. & Fr. : July - Feb.

Distrib. : Kameng, Lohit, Siang, Tirap; 1200-1600 m.

Crotalaria juncea L., Sp. Pl. 714. 1753; Baker in Hook. f., Fl. Brit. India 2:79. 1876.

Local name : Ausa (Astm.).

Shrubs, 1.4-2 m high; branches slender, silky. Leaves linear or oblong, obtuse, densely silky. Flowers bright yellow; calyx with dense ferruginous hairs. Pods terete, rusty velvety, 10-15 seeded.

Fl. & Fr. : Dec. - March.

Distrib. : Subansiri.

Crotalaria laburnifolia L., Sp. Pl. 715. 1753; Baker in Hook. f., Fl. Brit. India 2:84. 1876.

Shrubs, 1-1.2 m high, glabrous. Leaflets obovate-oblong, acute, membranous. Flowers bright yellow. Pods cylindrical, glabrous, 20-30 seeded.

Fl. & Fr. : Sept. - Jan.

Distrib. : Subansiri.

Crotalaria mysorensis Roth, Nov. Pl. Ind. Or. 338. 1821; Baker in Hook. f., Fl. Brit. India 2:70. 1876; Kanjilal *et al.*, Fl. Assam 2:12. 1938.

Erect herbs, 25-70 cm high. Leaves oblong, elliptic-ovate; stipules linear. Flowers yellow in lax racemes. Pods oblong, many seeded.

Fl. & Fr. : July - Dec.

Distrib. : Changlang, Lohit; 200-1500 m.

Crotalaria pallida Aiton, Hort. Kew 3:20. 1789; Polhill in Kew Bull. 22:262. 1968. *C. striata* DC., Prodr. 2:131. 1825; Baker in Hook. f., Fl. Brit. India 2:84. 1876.

Local name : Ghantakaran (Asm.).

Shrubs, 60-120 cm high. Leaves 3-foliolate; leaflets obovate-oblong, obtuse, membranous, finely silky beneath. Flowers yellow with red striped petals. Pods cylindrical, glabrous, 20-30 seeded.

Fl. & Fr. : Oct. - Dec.

Distrib. : Arunachal Pradesh.

Use : Decoction of roots mixed with *Piper nigrum*, *Allium stivum* and salt is given to mother after child birth to relieve pain and stop bleeding.

Crotalaria retusa L., Sp. Pl. 715. 1753; Baker in Hook. f., Fl. Brit. India 2:75. 1876.

Annual herbs up to 1 m high; branches spreading, stout. Leaves oblanceolate-oblong, obtuse, glabrous above, puberulent below. Flowers yellow in lax racemes. Pods linear-oblong, 15-20 seeded.

Fl. & Fr. : Nov. - Dec.

Distrib. : Siang, Subansiri; 200-800 m.

Crotalaria sericea Retz., Obs. Bot. 5:26. 1789; Baker in Hook. f., Fl. Brit. India 2:75. 1876.

Shrubs, 1.5-2.5 m high. Leaves oblanceolate, subcoriaceous, glabrous above, finely silky beneath. Flowers yellow or purplish; bracts ovate, foliaceous. Pods linear-oblong, thinly silky, 20-40 seeded.

Fl. & Fr. : Aug. - March.

Distrib. : Kameng; in swampy localities and grasslands.

Crotalaria sessiliflora L., Sp. Pl. ed. 2, 1004. 1763; Baker in Hook. f., Fl. Brit. India 2:73. 1876.

Herbs up to 2 m high. Leaves linear, lanceolate, acute. Flowers solitary, light violet. Pods oblong, 5-25 seeded, hairy.

Fl. & Fr. : Oct. - Jan.

Distrib. : Lohit, Subansiri; 200-2400 m, along forest edges and shady grasslands.

Crotalaria tetragona Andrews, Bot. Rep. 10, t. 593. 1810; Baker in Hook. f., Fl. Brit. India 2:78. 1876.

Shrubs, 1-2 m high. Flowers large, golden-yellow. Pods turgid, black when ripe.

Fl. & Fr. : Sept. - Dec.

Distrib. : Kameng, Subansiri; 200-1200 m, along roadsides amidst grasses.

***Dalbergia clarkei* Thoth. in J. Jap. Bot. 46(3):73. 1971. Fig. 88.**

Climbing shrubs; branchlets glabrous. Leaves imparipinnate; leaflets 19-28, elliptic-oblong, glabrous. Flowers in axillary short panicles. Pods indehiscent, ovate-oblong, glabrous, 1-seeded.

Fl. & Fr. : Oct. - Jan.

Distrib. : Kameng; up to 1400 m.

Dalbergia lanceolaria L. f., Suppl. Pl. 316. 1781; Baker in Hook. f., Fl. Brit. India 2:235. 1876. *D. assamica* Benth in Miq., Pl. Jungh. 1:256. 1852; Baker in Hook. f., Fl. Brit. India 2:235. 1876. *D. laceolaria* var. *assamica* (Benth.) Thoth. in Bull. Bot. Surv. India 25:171. (1983) 1985.

Local name : Meda-luwa, Mouhit (Asm.).

Spreading trees; branches glabrous. Leaves imparipinnate; leaflets 13-17, oblong-elliptic, sparsely puberulous. Flowers white. Pods indehiscent, oblong, glabrous, faintly veined, 1-2 seeded.

Fl. & Fr. : Jan. - July.

Distrib. : Changlang, Kameng, Subansiri, Tirap; up to 1000 m, in evergreen forests.

***Dalbergia oliveri* Gamble ex Prain in J. Asiat. Soc. Bengal 66:451. 1893.**

Medium sized trees; branchlets glabrous. Leaves imparipinnate; leaflets 9-15, elliptic-oblong, glabrous above, glaucous beneath. Flowers white. Pods indehiscent, oblong, tapering at both ends, glabrous, 1-2 seeded.

Fl. & Fr. : April - Dec.

Distrib. : Siang; up to 500 m.

Use : The hard wood is used for making furniture.

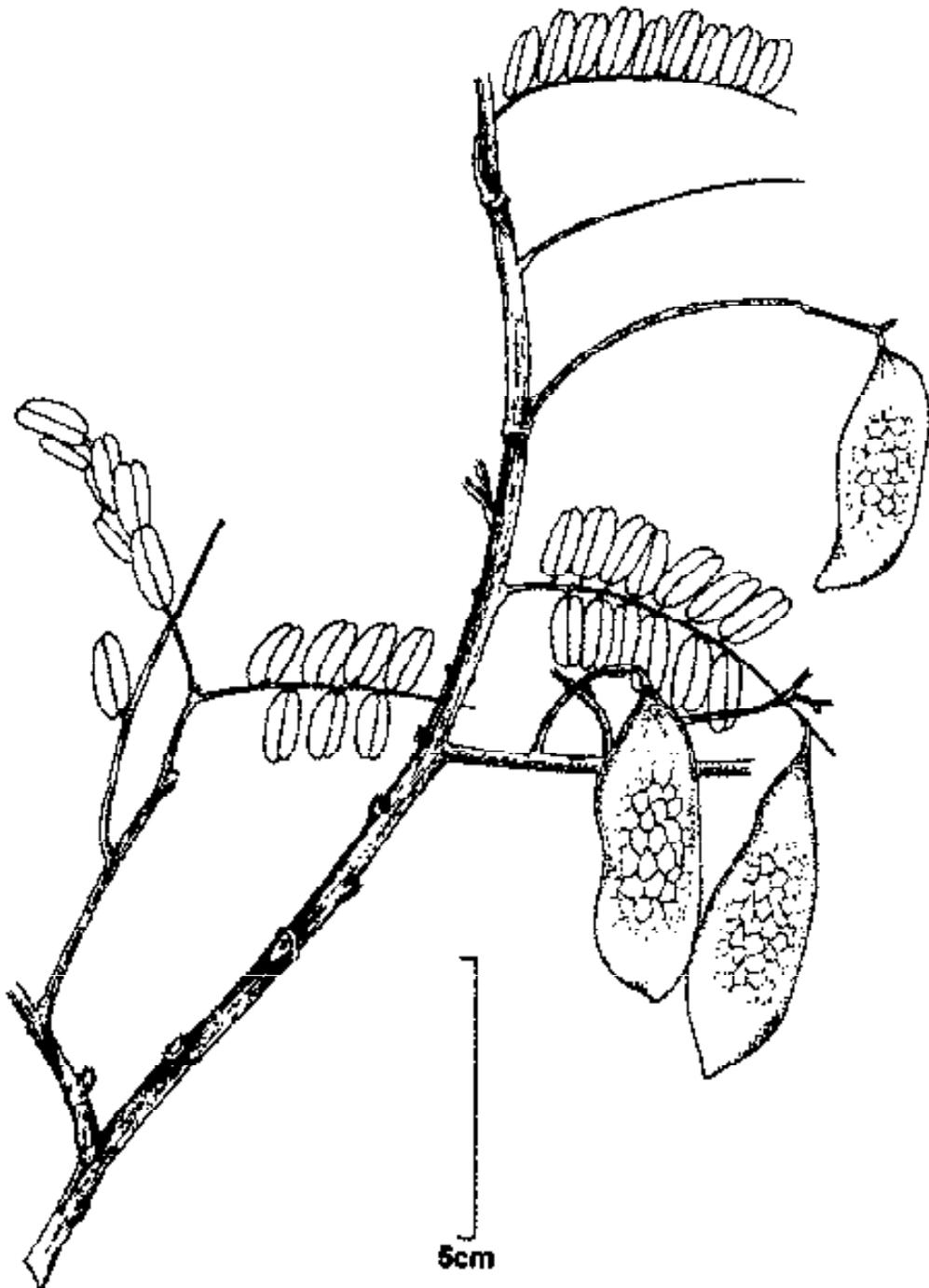


Fig. 88. *Dalbergia clarkei* Thoth. : Flowering twig.

Dalbergia pinnata (Lour.) Prain in Ann. Roy. Bot. Gard. Calcutta 10(1):48. 1904; Merr. in Philipp. J. Sci. Bot. 5:96. 1910. *Derris pinnata* Lour., Fl. Cochinch. 432. 1790. *Dalbergia tamarindifolia* Roxb., Fl. Ind. 233. 1832; Baker in Hook. f., Fl. Brit. India 2:234. 1876.

Local name : Laleng-chhali, Dat-bijli (Asm.).

Woody climbers or scandent shrubs; young branchlets pubescent. Leaves imparipinnate; leaflets 25-41, trapezoid-oblong, obtuse or retuse. Flowers white. Pods indehiscent, strap shaped, reddish brown, glabrous, finely reticulate.

Fl. & Fr. : March - June.

Distrib. : Siang, Subansiri; 600-800 m.

Dalbergia rimosa Roxb., Fl. Ind. 3:233. 1832; Baker in Hook. f., Fl. Brit. India 2:232. 1876.

Local name : Gajai-latau, Mermerilata (Asm.).

Straggling shrubs with 3-8 m long branches. Leaflets oblong-elliptic, 10-15 pairs. Flowers white in axillary or terminal panicles. Pods obliquely oblong-elliptic.

Fl. & Fr. : April - Nov.

Distrib. : Subansiri; 100-1000 m.

Dalbergia sericea G. Don, Gen. Syst. 2:357. 1832; Kanjilal *et al.*, Fl. Assam 2:103. 1938; Ohashi in Hara, Fl. E. Himal. 148. 1966. *D. hircina* Wallich ex Benth. in Miq., Pl. Jungh. 1:256. 1852; Baker in Hook. f., Fl. Brit. India 2:236. 1876. *D. stenocarpa* Kurz in J. Asiat. Soc. Bengal 44:205. 1875; Baker in Hook. f., Fl. Brit. India 2:238. 1876.

Local name : Mouhit, Medaluwa (Asm.); Pered-asing (Miri).

Medium sized trees; branches silky tomentose. Leaflets 13-25, ovate-elliptic, oblong, glabrescent above, pubescent beneath. Flowers white to purple. Pods flat, narrowly ligulate, glabrous, 1-2 seeded.

Fl. & Fr. : April - Sept.

Distrib. : Kameng, Lohit, Siang.

Dalbergia sissoo Roxb. ex DC., Prodr. 2:416. 1825; Baker in Hook. f., Fl. Brit. India 2:231. 1876.

Local name : Sissoo, Shisham (Asm.); Sessor (Nokhte).

Deciduous trees, 10-30 m high; young shoots tomentose. Leaf-rachis zig-zag; leaflets 5, pubescent, ovate to obliquely linear-oblong, strap shaped, indehiscent, glabrous.

Fl. & Fr. : March - Nov.

Distrib. : Siang.

Use : The fine timber is used for various purpose including high class furniture. Decoction of leaves is used in gonorrhoea and in eruptive diseases.

Dalbergia stipulacea Roxb., Fl. Ind. 3:233. 1832; Baker in Hook. f., Fl. Brit. India 2:237. 1876.

Local name : Dat-bijla, Bijuli (Asm.).

Small, spreading trees up to 10 m high. Leaflets 18-23, elliptic-oblong, glabrescent. Flowers whitish pink in axillary panicles. Pods oblong, glabrous, 1-seeded.

Fl. & Fr. : April - Dec.

Distrib. : Kameng, Tirap; on hill slopes.

Dalhousiea bracteata (Roxb.) Baker in Hook. f., Fl. Brit. India 2:248. 1878. *Podalyria bracteata* Roxb., Pl. Corom. 3:t.259. 1820.

Local name : Nirang-riubi (Ahor); Pahari-lata, Tekala-lata, Telilat (Asm.).

Evergreen, woody climbers. Leaves simple, oblong, acute or acuminate, subcoriaceous, glabrous. Flowers white in lax corymbs. Pods turgid, tapering at both ends, 1-3 seeded.

Fl. & Fr. : May - Nov.

Distrib. : Siang, Subansiri; 300-400 m.

***Dendrolobium triangulare* (Retz.) Schindl.** in Fedde, Repert. 20:279. 1924; Ohashi in Hara, Fl. E. Himal. 148. 1966. *Hedysarum triangulare* Retz., Obs. Bot. 3:40. 1783. *H. cephalotes* Roxb., Fl. Ind. 3:360. 1832. *Desmodium cephalotes* (Roxb.) Wight & Arn., Prodr. Fl. Pen. Ind. Or. 224. 1834; Baker in Hook. f., Fl. Brit. India 2:161. 1876.

Local name : Bon-landu, Gohate-jhar, Mak-samrong-thep (Kach.).

Large shrubs or small trees. Flowers white, slightly fragrant.

Fl. & Fr. : Aug. - Dec.

Distrib. : Siang; up to 200 m.

***Derris acuminata* Benth. var. *sikkimensis* Thoth.** in J. Jap. Bot. 51(5):143. 1976 and Fasc. Fl. India 8:7. 1982. *D. microptera* Benth. in J. Linn. Soc. Bot. 4(Suppl.):113. 1960; Baker in Hook. f., Fl. Brit. India 2:243. 1878.

Climbers up to 12 m long. Leaflets oblong, cuneate, entire, glabrous. Flowers in axillary panicles, showy racemes, purple. Pods broadly oblong, glabrous.

Fl. & Fr. : April - Aug.

Distrib. : Kameng; up to 2000 m.

***Derris cuneifolia* Benth.** in Miq., Pl. Jungh. 1:253. 1852; Baker in Hook. f., Fl. Brit. India 2:243. 1878.

Large climbers; branches glabrescent. Leaflets 5-9, obovate-oblong or elliptic-oblong, acuminate, coriaceous. Flowers red or purple in axillary racemes. Pods obliquely elliptic-obovate or oblong, turgid, 1-3 seeded.

Fl. & Fr. : April - Dec.

Distrib. : Subansiri; up to 2000 m.

***Derris ferruginea* (Roxb.) Benth.** in Miq., Pl. Jungh. 1:252. 1852; Baker in Hook. f., Fl. Brit. India 2:245. 1878. *Robinia ferruginea* Roxb., Fl. Ind. 3:329. 1832.

Woody climbers; young parts pubescent. Leaflets 7-9, finely pubescent beneath. Flowers in panicles; vexillum without callosities, white with pink tinge. Pods winged along upper and lower sutures, brown.

Fl. & Fr. : March - Aug.

Distrib. : Changlang, Lohit.

Derris polystachya Benth. in J. Linn. Soc. Bot. 4:(Suppl.)114. 1860; Baker in Hook. f., Fl. Brit. India 2:247. 1878.

Climbers. Leaves imparipinnate; leaflets 7-9, ovate to ovate-cordate, acuminate, lateral nerves ridged on back. Flowers pedicellate, in terminal and axillary, much branched panicles; rachis finely silky; bracts ovate; calyx cup finely silky. Pods thin, flat, ligulate, oblong, reticulately veined, sutures winged; 1-2 seeded.

Fl. & Fr. : July - March.

Distrib. : Arunachal Pradesh; 500-1500 m.

Derris pseudorobusta Thoth. in Bull. Bot. Surv. India 3:181. 1961.

Fig. 89.

Scandent shrubs up to 5 m long. Leaves imparipinnate; leaflets 15, oblong to obovate. Flowers in panicles or racemes. Pods oblong, strap shaped, curved, pointed at apex, distinctly winged, brown, silky hairy.

Fl. & Fr. : May - Aug.

Distrib. : Tirap.

Derris robusta (Roxb. ex DC.) Benth. in J. Linn. Soc. Bot. 4(Suppl.):104. 1860; Baker in Hook. f., Fl. Brit. India 2:241. 1878. *Dalbergia robusta* Roxb. ex DC., Prodr. 2:417. 1825.

Local name : Kothia-koroï, Mouhita, Sirkhi, Hit-kura (Asm.).

Erect trees, 10-24 m high. Leaflets 7-23, thin. Flowers whitish in panicles or racemes; stamens monadelphous. Pods narrow at both ends, distinctly winged; 1-5 seeded.

Fl. & Fr. : April - Sept.

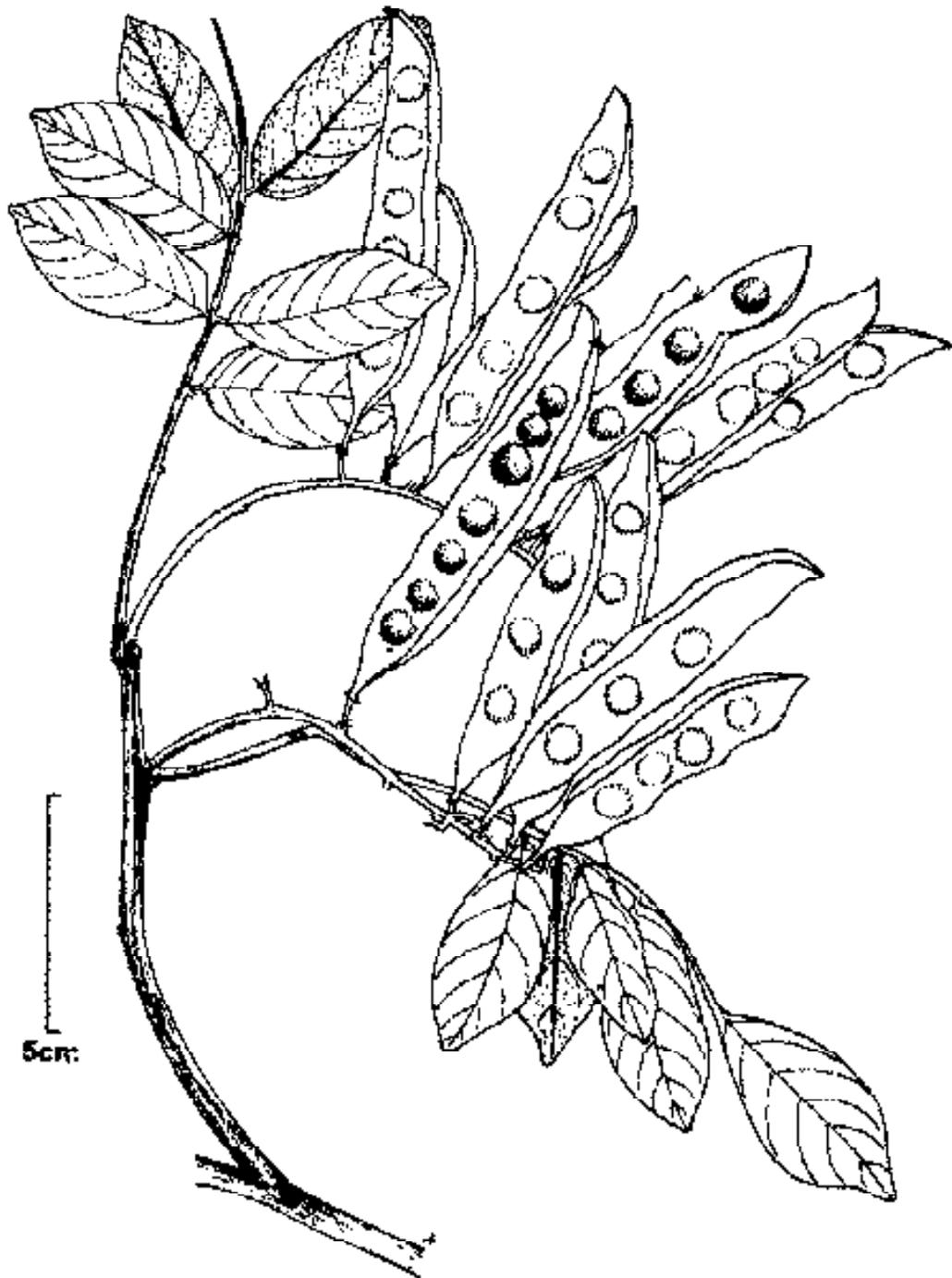


Fig. 89. *Derris pseudorobusta* Thott. : Flowering twig.

Distrib. : Tirap.

Derris scandens (Roxb.) Benth. in J. Linn. Soc. Bot. 4(Suppl.):103. 1860; Baker in Hook. f., Fl. Brit. India 2:140. 1876. *Dalbergia scandens* Roxb., Pl. Corom. 2:29, t. 192. 1805.

Woody climbers. Leaflets 9-15, oblong or obovate-oblong, glabrous above, puberulous below. Flowers white or pink. Pods narrowly oblong, constricted between seeds.

Fl. & Fr. : June - Dec.

Distrib. : Arunachal Pradesh.

Derris secunda Baker in Hook. f., Fl. Brit. India 2:247. 1878.

Climbers. Leaves imparipinnate, stipulate; leaflets ovate, cuspidate, rigidly coriaceous; petiolules glabrous. Flowers in pubescent, axillary racemes; calyx campanulate, 5-toothed, pubescent without.

Fl. : Jan. - March.

Distrib. : Kameng, Subansiri; ca 2500 m. Endemic.

Desmodium caudatum (Thunb.) DC., Prodr. 2:337. 1825; van Meeuwen in Reinwardtia 6:248. 1962. *Hedysarum caudatum* Thunb., Fl. Jap. 286. 1784. *H. laburnifolium* Poiret, Encycl. Meth. Bot. 6:422. 1804. *Desmodium laburnifolium* (Poiret) DC., Prodr. 2:337. 1825; Baker in Hook. f., Fl. Brit. India 2:163. 1876.

Scandent shrubs up to 1 m high; branches slender. Leaves 3-foliolate; leaflets oblong-lanceolate, subcoriaceous, minutely hairy on midrib beneath. Flowers white. Pods 6-8 jointed, compressed, minutely hooked and spreading pubescent.

Fl. & Fr. : Sept. - Feb.

Distrib. : Siang, Subansiri, Tirap; 500-1200 m.

Desmodium concinnum DC. in Ann. Sci. Nat. ser. 1,4:101. (Jan.)1825; Baker in Hook. f., Fl. Brit. India 2:170. 1876, p.p.

Undershrubs; branches drooping. Leaflets oblong, entire, obtuse, subcoriaceous, adpressed grey or brownish silky hairy. Flowers pink, turning blue when mature. Pods 4-6 jointed, minutely downy.

Fl. & Fr. : Sept. - Nov.

Distrib. : Kameng, Subansiri; 1000-2000 m, along roadsides or near hilly streams.

Desmodium confertum DC. in Ann. Sci. Nat. ser. 1,4:101. (Jan.)1825; Baker in Hook. f., Fl. Brit. India 2:167. 1876; Ohashi in Hara, Fl. E. Himal. 149. 1966. *Hedysarum dioicum* Buch.-Ham. ex D. Don, Prodr. Fl. Nep. 244. (Feb.)1825. *Desmodium dioicum* (Buch.-Ham. ex D. Don) DC., Prodr. 2:338. (Nov.)1825; Kanjilal *et al.*, Fl. Assam 2:61. 1938.

Woody undershrubs; stems reddish brown, glabrous. Leaves 1-3 foliolate; leaflets elliptic, acute, coriaceous, glabrous. Flowers in copious axillary racemes. Pods moniliform, 3-4 jointed, densely villous.

Fl. & Fr. : Oct. - Dec.

Distrib. : Kameng; 300-1800 m.

Desmodium gangeticum (L.)DC., Prodr. 2:327. 1825; Baker in Hook. f., Fl. Brit. India 2:168. 1876. *Hedysarum gangeticum* L., Sp. Pl. 746. 1753.

Suberect shrubs up to 1 m high. Leaves 3-foliolate; leaflets oblong, entire, acute, finely downy beneath. Flowers white in copious ascending racemes. Pods falcate, 6-8 jointed, usually minute hooked hairy.

Fl. & Fr. : Sept. - Dec.

Distrib. : Subansiri; up to 2000 m.

Desmodium gyroides (Roxb. ex Link) DC., Prodr. 2:326. 1825; Baker in Hook. f., Fl. Brit. India 2:175. 1876. *Hedysarum gyroides* Roxb. ex Link, Enum. Alt. 2:247. 1822.

Shrubs, 1-2.5 m high. Leaves 1-(-3) foliolate. Flowers purple pink in terminal or axillary racemes. Pods linear, 3-10 jointed, densely long hairy.

Fl. & Fr. : Sept. - Jan.

Distrib. : Changlang, Subansiri; up to 1200 m, along forest edges.

Desmodium heterocarpon (L.)DC., Prodr. 2:337. 1825 'heterocarpon'; van Meeuwen in Reinwardtia 6:95. 1961. *Hedysarum heterocarpon* L., Sp. Pl. 747. 1753. *H. polycarpum* Poiret, Encycl. Meth. Bot. 6:413. 1805. *Desmodium polycarpum* (Poiret)DC., Prodr. 2:334. 1825; Baker in Hook. f., Fl. Brit. India 2:171. 1876. *D. trichocaulon* DC., Prodr. 2:335. 1825. *D. polycarpum* var. *trichocaulon* DC. Baker in Hook. f., Fl. Brit. India 2:172. 1876.

Trailing undershrubs, 1-1.5 m long; stems and leaves covered with spreading hairs. Leaves 3-foliolate; leaflets elliptic-oblong, retuse. Flowers pinkish violet in terminal or axillary racemes. Pods 5-8 jointed.

Fl. & Fr. : June - Oct.

Distrib. : Subansiri, Tirap; 200-1500 m, along river banks and grassy edges of forest tracks.

Desmodium laxum DC. in Ann. Sci. Nat. Paris ser. 1,4:102. (Jan.)1825; van Meeuwen in Reinwardtia 6:253. 1962. *D. gardneri* Benth. in Miq., Pl. Jungh. 1:226. 1852; Baker in Hook. f., Fl. Brit. India 2:165. 1876. *D. podocarpum* var. *laxum* (DC.) Baker in Hook. f., Fl. Brit. India 2:165. 1876.

Undershrubs up to 2 m high; stems unbranched, minutely pubescent. Leaves 3-foliolate; leaflets obliquely lanceolate to ovate-lanceolate, acuminate, membranous. Flowers pink. Pods 1-3 jointed; joints rhomboidal, upper suture thickened.

Fl. & Fr. : Aug. - Jan.

Distrib. : Siang; 600-800 m.

*Desmodium likabaliu*m Bennet & Chandra in J. Econ. Tax. Bot. 3:993. 1982.

Shrubs or undershrubs up to 1 m high; branches pendulous. Leaves 3-foliolate; leaflets elliptic-ovate or elliptic-lanceolate. Flowers solitary or paired in racemes. Pods jointed.

Fl. & Fr. : Feb. - April.

Distrib. : Siang.

Desmodium microphyllum (Thunb.) DC., Prodr. 2:337. 1825; van Meeuwen in Reinwardtia 6:254. 1962. *Hedysarum microphyllum* Thunb., Fl. Jap. 284. 1784. *Desmodium parvifolium* DC. in Ann. Sci. Nat. Paris ser. 1,4:100. 1825; Baker in Hook. f., Fl. Brit. India 2:174. 1876.

Annual, decumbent herbs; stems much branched, forming dense entangled mass. Leaves 1-3 foliolate; leaflets ovate or oblong-ovate, mucronate, lateral ones orbiculate. Flowers purplish pink. Pods 1-4 jointed; joints as broad as long, finely downy, sutures indented.

Fl. & Fr. : Sept. - Nov.

Distrib. : Siang, Subansiri; up to 1600 m.

Desmodium multiflorum DC. in Ann. Sci. Nat. ser. 1,4:101. (Jan.)1825; Ohashi in Hara *et al.*, Fl. E. Himal. 2:65,272. 1971. *Hedysarum floribundum* D. Don, Prodr. Fl. Nep. 243. (Feb.)1825. *D. floribundum* (D. Don) Sweet ex G. Don, Gen. Syst. 2:297. 1832; Baker in Hook. f., Fl. Brit. India 2:167. 1876.

Shrubs up to 1.5 m high. Leaves 3-foliolate; leaflets oblong, obovate, acute. Flowers pink or white in paniced racemes. Pods 6-8 jointed, appressed silky hairy, green when young.

Fl. & Fr. : Aug. - Oct.

Distrib. : Kameng, Siang, Subansiri; 600-2000 m, amidst grasses on black humus soil, along hill slopes.

Desmodium oblongum Wallich ex Benth. in Miq., Pl. Jungh. 1:224. 1852; Baker in Hook. f., Fl. Brit. India 2:166. 1876; Kanjilal *et al.*, Fl. Assam 2:61. 1838.

Slender, finely downy undershrubs. Leaflets oblong, obtuse, subcoriaceous, silky beneath. Flowers bright violet in lax paniced racemes. Pods 6-7 jointed, thinly silky.

Fl. & Fr. : Sept. - Nov.

Distrib. : Kameng.

Desmodium podocarpum DC. subsp. *oxyphyllum* (DC.) Ohashi in Hara *et al.*, Fl. E. Himal. 2:65. 1971. *D. oxyphyllum* DC. in Ann. Sci. Nat. ser. 1,4:102. 1825; Baker in Hook. f., Fl. Brit. India 2:167. 1876.

Perennial herbs; stems brown, smooth. Flowers small, white. Pods flat, short, 1-jointed.

Fl. & Fr. : Sept. - Oct.

Distrib. : Subansiri, Tirap; up to 1500 m.

Desmodium renifolium (L.) Schindl. in Fedde, *Repert.* 22:262. 1926; Ohashi in *Ginkgoana* 1:230, t. 34. 1973. *Hedysarum renifolium* L., *Syst. Nat.* ed. 10, 2: 1169. 1759. *H. reniforme* L., *Sp. Pl.* ed. 2, 1051. 1763. *Desmodium reniforme* (L.) DC., *Prodr.* 2:327. 1825; Baker in Hook. f., *Fl. Brit. India* 2:173. 1876. *D. oblatum* Baker ex Kurz in *J. Asiat. Soc. Bengal* 42:230. 1874; Baker in Hook. f., *Fl. Brit. India* 2:166. 1876.

Shrubs or undershrubs, often prostrate. Leaves 1-foliolate; leaflets chartaceous, transversely elliptic or broadly ovate. Flowers white, pale yellow, blue or purple. Pods compressed, 5-jointed, apiculate, reticulate veined.

Fl. & Fr. : Sept. - Nov.

Distrib. : Kameng; up to 1200 m.

Desmodium repandum (Vahl) DC., *Prodr.* 2:334. 1825; van Meeuwen in *Reinwardtia* 6:258. 1962. *Hedysarum repandum* Vahl, *Symb. Bot.* 2:82. 1791. *Desmodium scalpe* DC., *Prodr.* 2:334. 1825; Baker in Hook. f., *Fl. Brit. India* 2:165. 1876.

Undershrubs, 60-120 cm high. Leaflets 3, suborbicular, often emarginate, membranous, finely downy beneath. Flowers violet or bright red in lax racemes. Pods 1-3 jointed; joints obtriangular, sparsely pubescent, scarcely reticulate-veined.

Fl. & Fr. : Oct. - Dec.

Distrib. : Kameng.

Desmodium sequax Wallich, *Pl. Asiat. Rar.* 2:46, t. 157. 1831; Baker in Hook. f., *Fl. Brit. India* 2:170. 1876; van Meeuwen in *Reinwardtia* 6:100. 1961. *D. strangulatum* Wight & Arn. var. *sinuatum* Miq., *Fl. Ind. Bat.* 1, 1:225. 1855. *D. sinuatum* (Miq.) Blume ex Baker in Hook. f., *Fl. Brit. India* 2:166. 1876.

Local name : Horu-biyoni (Asm.).

Shrubs, 1-3 m high. Leaves 3-foliolate; leaflets ovate-orbicular, acuminate. Flowers in terminal and axillary racemes, reddish violet or pale purple. Pods 6-12 jointed, densely minute hooked hairy.

Fl. & Fr. : July - Jan.

Distrib. : Changlang.

Desmodium tiliaefolium (D. Don) G. Don, Gen. Syst. 2:297. 1832; Baker in Hook. f., Fl. Brit. India 2:168. 1876, *excl. syn. D. nutans* Prain; Schindl. in Fedde, Repert. 22:264. 1926. *Hedysarum tiliaefolium* D. Don, Prodr. Fl. Nep. 244. 1825.

Shrubs up to 2 m high. Flowers pink violet. Pods flat, jointed, hairy.

Fl. & Fr. : Sept. - Nov.

Distrib. : Lohit, Subansiri; up to 1500 m, on stiff slopes, along roadsides.

Desmodium triangulare (Retz.) Merr. in J. Arn. Arb. 23:170. 1942; Balakr., Fl. Jowai 1:156. 1981. *Hedysarum triangulare* Retz., Obs. Bot. 3:40. 1783. *H. cephalotes* Roxb., Fl. Ind. 3:360. 1832. *Desmodium cephalotes* (Roxb.) Wight & Arn., Prodr. Fl. Pen. Ind. Or. 224*. 1834; Baker in Hook. f., Fl. Brit. India 2:161. 1876.

Erect shrubs, 1-2 m tall. Leaves 3-foliolate; leaflets oblong-elliptic or lanceolate, densely silky beneath. Flowers axillary, pale red. Pods sessile, appressed silky hairy.

Fl. & Fr. : June - Nov.

Distrib. : Changlang; 200-1000 m, in shaded places.

Desmodium triflorum (L.) DC., Prodr. 2:334. 1825; Baker in Hook. f., Fl. Brit. India 2:173. 1876. *Hedysarum triflorum* L., Sp. Pl. 749. 1753, *p.p. excl. vars.*

Creeping or prostrate herbs up to 60 cm long. Leaves 3-foliolate; leaflets ovate, truncate, appressed hairy beneath. Flowers pink, whitish purple. Pods 3-5 jointed, falcate, indented; joints glabrescent, reticulate veined.

Fl. & Fr. : Sept. - Nov.

Distrib. : Subansiri; up to 1200 m, grow in patches in moist places.

Desmodium triquetrum (L.) DC., Prodr. 2:326. 1825; Baker in Hook. f., Fl. Brit. India 2:163. 1876; Balakr., Fl. Jowai 1:157. 1981. *Hedysarum triquetrum* L., Sp. Pl. 746. 1753. *Tadehagi triquetrum* (L.) Ohashi in Ginkgoana 1:290. 1973.

Local name : Uluche (Asm.).

Undershrubs up to 2 m high. Leaves 3-foliolate; leaflets ovate-oblong or lanceolate. Flowers in terminal or axillary racemes, purplish pink. Pods strapshaded, hairy all over.

Fl. & Fr. : July - March.

Distrib. : Changlang; 400-1200 m, in primary forest edges.

Desmodium velutinum (Willd.) DC., prodr. 2:328. 1825; Roxb. ex Ker-Gawl. in Bot. Reg. 5:t.355. 1819; van Meeuwen in Reinwardtia 6:264. 1962. *Desmodium latifolium* (Roxb. ex Ker-Gawl.) DC., Prodr. 2:328. 1825; Baker in Hook. f., Fl. Brit. India 2:168. 1876.

Shrubs or undershrubs, 1-2 m high. Leaves 1-foliolate; leaflets broadly ovate, obtuse, mucronate, chartaceous, hispid hairy. Flowers purplish. Pods 3-6 jointed, falcate, indented, densely hooked hairy.

Fl. & Fr. : Sept. - Dec.

Distrib. : Subansiri; 300-1500 m.

Dumasia villosa DC. in Ann. Sci. Nat. Paris ser. 1,4:257,t. 44. 1825; Baker in Hook. f., Fl. Brit. India 2:183. 1876.

Slender twining herbs. Leaves 3-foliolate; leaflets ovate, obtuse, mucronulate. Flowers yellow or purple in axillary racemes. Pods velvety torulose between seeds.

Fl. & Fr. : Oct. - June.

Distrib. : Siang; up to 450 m.

Dysolobium grande (Wallich ex Benth.) Prain in J. Asiat. Soc. Bengal 66:427. 1897. *Phaseolus grandis* Wallich ex Benth. in Miq., Pl. Jungh. 1:239. 1852. *P. velutinous* Grah. ex Baker in Hook. f., Fl. Brit. India 2:204. 1876.

Local name : Bahdar-Kakua (Asm.).

Woody climbers. Leaflets orbiculate, cuspidate, thin, minute bristly hairy. Flowers reddish in long peduncled racemes. Pods woody, subcylindric, straight, densely brown velvety.

Fl. & Fr. : March - Dec.

Distrib. : Arunachal Pradesh.

Dysolobium leucens (Wallich ex Benth.) Prain in J. Asiat. Soc. Bengal 66:427. 1897. *Phaseolus leucens* Wallich ex Benth. in Miq., Pl. Jungh. 1:239. 1852. *adnota*. *Vigna leucens* (Wallich ex Benth.) Baker in Hook. f., Fl. Brit. India 2:207. 1876.

Trailing perennials, greyish hairy. Leaves deltoid, rounded at base, glabrous. Flowers reddish. Pods beaked, many seeded.

Fl. & Fr. : June - Dec.

Distrib. : Arunachal Pradesh.

Eriosema himalaicum Ohashi in J. Jap. Bot. 41:96. 1966. *E. chinense* auct. non Vogel 1843; Baker in Hook. f., Fl. Brit. India 2:219. 1876, p.p.

Undershrubs up to 70 cm high. Leaves simple, linear, mucronate, pilose-ciliate. Flowers yellowish with purple to reddish purple nerved corolla. Pods oblong or orbicular, densely hairy.

Fl. & Fr. : July - Nov.

Distrib. : Lohit; up to 1000 m, in grasslands and in partially shady places.

Use : Root-tubers are eaten raw; cortex is medicinal.

Erythrina stricta Roxb., Fl. Ind. 3:251. 1832; Baker in Hook. f., Fl. Brit. India 2:189. 1876.

Local name : Ta-gat or T-gat (Abor); Gadling (Adi); Madar or Mandar (Asm.); Tagat-asing (Miri, Adi).

Fairly large trees; branchlets with incurved prickles. Leaflets rhomboid-orbicular or ovate, membranous, glabrous. Flowers coral red. Pods obscurely torulose, spindle shaped, white silky inside, 2-3 seeded.

Fl. & Fr. : Jan. - May.

Distrib. : Siang.

Flemingia macrophylla (Willd.) Merr. in Philipp. J. Sci. Bot. 5:130. 1910. *Crotalaria macrophylla* Willd., Sp. Pl. 3:982. 1802. *Flemingia congesta* Roxb. ex Aiton, Hort. Kew. ed. 2,4:349. 1812; Baker in Hook. f., Fl. Brit. India 2:228. 1876. *F. semialata* Roxb., Fl. Ind. 2:340. 1832. *Moghania macrophylla* (Willd.) O.Ktze., Rev. Gen. Pl. 1:199. 1891. *Flemingia congesta* var. *semialata* (Roxb.) Baker in Hook. f., Fl. Brit. India 2:229. 1876.

Erect or trailing shrubs up to 3.5 m high. Leaves 3-foliolate; leaflets ovate-lanceolate, 3-nerved at base. Flowers purplish; calyx silky hairy. Pods turgid, brown velvety, gland dotted, 2-seeded.

Fl. & Fr. : Aug. - Dec.

Distrib. : Changlang, Lohit, Siang, Subansiri, Tirap; 200-1200 m; in sunny places along primary and secondary forests.

Flemingia strobilifera (L.) R. Brown in Aiton, Hort. Kew. ed. 2,4:350. 1812; Baker in Hook. f., Fl. Brit. India 2:227. 1876; Ohashi in Hara & Williams, Enum. Fl. Pl. Nep. 2:121. 1979. *Hedysarum strobiliferum* L., Sp. Pl. 763. 1753. *Moghania strobilifera* (L.) St. Hill. ex O.Ktze., Rev. Gen. Pl. 1:199. 1891.

Local name : Makhloti (Asm.).

Erect shrubs up to 3 m high. Leaflets ovate-lanceolate, acuminate, silky pubescent and gland dotted beneath. Flowers pale yellow with pink streaks; bract concave, brown papery and large; calyx velvety. Pods oblong, turgid, 2-seeded.

Fl. & Fr. : April - Oct.

Distrib. : Kameng; up to 1200 m, on rocky substratum along forest edges.

Glycine max (L.) Merr., *Interpr. Rumph. Herb. Amboin.* 274. 1917; *Verdc. in Kew Bull.* 24. 256. 1970. *Phaseolus max* L., *Sp. Pl.* 725. 1753. *G. soja auct. non Sieb. & Zucc.* 1843; Baker in *Hook. f., Fl. Brit. India* 2:184. 1876, p.p.

Local name : Palni - Jokra (Asm.).

Annual herbs up to 1.4 m high; stems angular, brown hairy. Leaves 3-foliolate; leaflets narrowly oblong-ovate, apiculate. Flowers white; calyx reddish. Pods linear, yellowish brown hairy.

Fl. & Fr. : Sept. - Nov.

Distrib. : Siang; 500-1100 m; often cultivated.

Indigofera arrecta Hochst. ex A. Rich., *Tent. Fl. Abyss.* 1:184. 1847; Haines, *Bot. Bih & Or.* 2:239. 1922.

Erect shrubs or undershrubs, 90-180 cm high. Leaves imparipinnate; leaflets 17, narrowly elliptic-oblong, subacute. Flowers pink or red, solitary. Pods straight or reflexed, 8-seeded, sparsely appressed hairy.

Fl. & Fr. : June - Oct.

Distrib. : Kameng.

Indigofera cylindracea Wallich ex Baker in *Hook. f., Fl. Brit. India* 2:99. 1876.

Perennial, erect shrubs; branches glabrous. Leaflets membranous, oblong, obtuse, appressed hairy. Flowers pale red. Pods straight, turgid, glabrescent, 8-10 seeded.

Fl. & Fr. : Aug. - Sept.

Distrib. : Tirap.

Indigofera dosua Buch.-Ham. ex D. Don, *Prodr. Fl. Nep.* 244. (Feb.) 1825; Baker in *Hook. f., Fl. Brit. India* 2:102. 1876.

Local name : Zia-shing (Monpa).

Woody shrubs, 50-150 cm high. Leaflets 21-31, elliptic-oblong, acute or apiculate. Flowers bright red or purplish pink. Pods terete, 8-12 seeded.

Fl. & Fr. : June - Dec.

Distrib. : Subansiri; 200-1200 m along forest edges.

Indigofera heterantha Wallich ex Brandis, For. Fl. N.W. & C. Ind. 135. 1874; Ali in Bot. Not. 111:566. 1958. *I. gerardiana* Wallich ex Baker in Hook. f., Fl. Brit. India 2:100. 1876. *I. gerardiana* var. *heterantha* (Wallich ex Brandis) Baker in Hook. f., Fl. Brit. India 2:100. 1876.

Shrubs up to 1.5 m high; stems much branched. Leaflets 15-31, obovate to oblong-lanceolate, mucronate. Flowers pale red or purple; corolla hairy outside. Pods subcylindric, 4-10 seeded, appressed pubescent.

Fl. & Fr. : May - Oct.

Distrib. : Lohit; up to 800 m, in open grasslands.

Indigofera linifolia (L.f.) Retz., Obs. Bot. 4:29. 1786; Baker in Hook. f., Fl. Brit. India 2:92. 1876. *Hedysarum linifolium* L.f., Suppl. Pl. 331. 1781.

Herbs up to 30 cm high, silvery hoary throughout. Leaves simple, linear to obovate, mucronate. Flowers white or bright red. Pods 1-seeded, globose, mucronate.

Fl. & Fr. : June - Oct.

Distrib. : Kameng; 900-1200 m.

Indigofera nigrescens Kurz ex King & Prain in J. Asiat. Soc. Bengal 67. 186. 1898; Balakr., Fl. Jowai 1:166. 1981.

Erect shrubs. 0.5-1 m high. Leaflets 7-15, oblong-ovate, often emarginate at apex. Flowers crimson red in dense axillary racemes. Pods terete, 6-8 seeded.

Fl. & Fr. : Aug. - Dec.

Distrib. : Changlang, Kameng, Tirap; 200-1200 m, along forest edges.

Indigofera sesquipedalis Clake ex Sanjappa in J. Econ. Tax. Bot. 5(5): 1035. 1984.

Undershrubs up to 60 cm high, branched from base, appressed pubescent. Leaves 7-11 foliolate. Flowers pink in compact racemes. Pods linear, cylindrical, 6-8 seeded, appressed pubescent.

Fl. & Fr. : May - Sept.

Distrib. : Kameng.

Indigofera stachyodes Lindley in Bot. Reg. 1843:14,t. 14. 1843; Ohashi in Hara, Fl. E. Himal. 158. 1966. *I. dosua* var. *tomentosa* Baker in Hook. f., Fl. Brit. India 2:102. 1876.

Bushy shrubs up to 3 m high, dense brown silky. Leaflets 41-51, linear-oblong, subacute. Flowers pink. Pods terete, straight, 8-12 seeded, brown, glabrescent.

Fl. & Fr. : Sept. - Dec.

Distrib. : Kameng, Subansiri; up to 800 m.

Indigofera tinctoria L., Sp. Pl. 751. 1753; Baker in Hook. f., Fl. Brit. India 2:99. 1876.

Erect shrubs, 120-160 cm high. Leaves imparipinnate; leaflets broadly elliptic. Flowers red in slender axillary racemes. Pods straight, 10-12 seeded, reflexed.

Fl. & Fr. : Sept. - Dec.

Distrib. : Arunachal Pradesh.

Use : Powdered roots are applied on wounds infected with worms and foul ulcers.

Indigofera trifoliata L., Cent. Pl. 2:29. 1756; Baker in Hook. f., Fl. Brit. India 2:96. 1876.

Perennial, trailing or suberect herbs up to 60 cm long. Leaves 3-foliolate; leaflets oblanceolate, glaucous with black dots beneath. Flowers red. Pods straight, deflexed, sutures keeled, 6-8 seeded.

Fl. & Fr. : May - Oct.

Distrib. : Kameng; up to 900 m, in grasslands.

Indigofera trita L.f., *Suppl. Pl.* 335. 1781; Baker in Hook. f., *Fl. Brit. India* 2:96. 1876.

Erect undershrubs; branches appressed white pubescent. Leaves pinnately trifoliolate, appressed grey pubescent. Flowers pink. Pods tetragonous.

Fl. & Fr. : Sept. - Dec.

Distrib. : Arunachal Pradesh.

Lablab purpureus (L.) Sweet, *Hort. Brit. ed.* 1,481. 1827. *Dolichos purpureus* L., *Sp. Pl. ed.* 2,1021. 1763. *D. lablab* L., *Sp. Pl.* 72. 1753; Baker in Hook. f., *Fl. Brit. India* 2:209. 1876.

Local name : Urohi (Asm.); Shim (Beng.).

Climbers. Leaves 3-foliolate; leaflets broadly ovate, acuminate. Flowers pink or red, purple or white. Pods cylindrical, recurved, oblong, 2-4 seeded. Seeds oval, reddish.

Fl. & Fr. : Oct. - Feb.

Distrib. : Kameng, Siang; 500-1300 m, along roadsides in open places; often cultivated.

Lathyrus sativus L., *Sp. Pl.* 730. 1753; Baker in Hook. f., *Fl. Brit. India* 2:179. 1876.

Local name : Khesari, Teora (Asm.).

Annual herbs; stems prostrate, obscurely downy. Leaves paripinnate, ending in tendril, rusty brown; leaflets 8-12, lanceolate. Flowers bright blue or white; petals pink inside, blue outside. Pods 4-5 seeded, compressed, glabrous.

Fl. & Fr. : March - Dec.

Distrib. : Kameng; 1235 m. Cultivated as pulse crop.

Lens culinaris Medic., Vorles. Churpf. Phys. Ges. 2:361. (1787) 1788; Ohashi in Hara & Williams, Enum. Fl. Pl. Nep. 2:124. 1979. *L. esculenta* Moench., Meth. Pl. 136. 1794; Kanjilal *et al.*, Fl. Assam 2:24. 1938. *Ervum lens* L., Sp. Pl. 738. 1753; Baker in Hook. f., Fl. Brit. India 2:179. 1876.

Annual herbs up to 3 m high. Leaflets 4-6 pairs, lanceolate. Flowers whitish blue or purple. Pods compressed, rhomboid-oblong. Seeds compressed.

Fl. & Fr. : Feb. - March.

Distrib. : Kameng, Siang, Subansiri.

Lespedeza elliptica Benth. ex Maxim. in Act. Hort. Petrop. 2:353. 1873; Baker in Hook. f., Fl. Brit. India 2:143. 1876; Kanjilal *et al.*, Fl. Assam 2:33. 1938.

Undershrubs up to 4 m high. Leaflets broadly elliptic, grey or finely downy below. Flowers in robust paniculate racemes. Pods oblong-elliptic, appressed brown pubescent.

Fl. & Fr. : Aug. - Oct.

Distrib. : Kameng, Lohit; up to 600 m.

Lespedeza juncea (L. f.) Pers. var. *sericea* (Thunb.) Forbes & Hemsley in J. Linn. Soc. Bot. 23:181. 1887. *Hedysarum sericeum* Thunb., Fl. Jap. 287. 1784. *Lespedeza sericea* (Thunb.) Miq. in Ann. Mus. Bot. Lugd.-Bat. 3:49. 1867; Baker in Hook. f., Fl. Brit. India 2:142. 1876.

Undershrubs up to 1 m high with deffused branches; stems brown. Leaflets linear, obovate-oblong, base cuneate, apex truncate-emarginate. Flowers yellowish white, minute in axillary racemes. Pods minute, orbiculate, ridged margins, sparsely white pubescent.

Fl. & Fr. : Aug. - Nov.

Distrib. : Subansiri; on the hills along roadsides.

Use : Used for pasturing and soil improvement.

Lespedeza striata (Thunb.) Hook. & Arn. in Bot. Voy. 262. 1838. *Hedysarum striatum* Thunb., Fl. Jap. 289. 1784. *Kummerowia striata* Schindl. in Fedde, Repert. 10:404. 1911, p.p.

Small, prostrate, annual herbs up to 15 cm high, Leaves 3-foliolate. Flowers apetalous; calyx-teeth broadly obovate, ridged reticulate veined; bracteoles 3 or 4. Pods orbiculate, compressed. Seeds minute, obliquely oblong.

Fl. & Fr. : Aug. - Jan.

Distrib. : Subansiri, Tirap; 350-1000 m, prefers shady, moistened, grassy hill slopes.

Use : Useful as pasture, hay, in erosion control and green manure.

Leucaena leucocephala (Lamk.) De Wit in Taxon 10:54. 1961. *Mimosa leucocephala* Lamk., Encycl. Meth. Bot. 1:12. 1783. *Leucaena glauca* Benth. in Hook., J. Bot. 4:416. 1841; Baker in Hook. f., Fl. Brit. India 2:290. 1878.

Erect trees. Leaflets 20-30, linear, membranous, finely downy. Flowers in dense globose heads, white. Pods flat, straight, 15-20 seeded.

Fl. & Fr. : Aug. - Dec.

Distrib. : Siang.

Mastertia assamica Benth. in Trans. Linn. Soc. London 25:300, t. 34. 1865; Kanjilal *et al.*, Fl. Assam 2:76. 1938. *M. cleistocarpa* Baker in Hook. f., Fl. Brit. India 2:195. 1876.

Woody climbers. Leaves 3-foliolate; leaflets subcoriaceous, sparsely downy beneath. Flowers in long racemes, red. Pods linear, flat, depressed between seeds.

Fl. & Fr. : Aug. - Sept.

Distrib. : Changlang, Kameng, Lohit, Siang, Subansiri; up to 300 m, on hill slopes in open sunny places.

Melilotus indica (L.) All., Fl. Pedem. 1:308. 1785; Ohashi in Hara &

Williams, Enum. Fl. Pl. Nep. 2:125. 1979. *Trifolium indicum* L., Sp. Pl. 765. 1753. *Mellilotus parviflora* Desf., Fl. Atlant. 2:192. 1799; Baker in Hook. f., Fl. Brit. India 2:89. 1876.

Annual herbs, 30-45 cm high. Leaves 3-foliolate; leaflets obovate or oblanceolate, retuse. Flowers pale yellow. Pods 1-seeded, oblong, glabrous.

Fl. & Fr. : Aug. - Nov.

Distrib. : Kameng.

Millettia caudata Baker in Hook. f., Fl. Brit. India 2:109. 1876.

Small trees up to 5 m high. Leaflets oblong to lanceolate, acuminate, glabrous beneath. Flowers small, densely brownish silky. Pods flat, 3-5 seeded, appressed pubescent.

Fl. & Fr. : June - Dec.

Distrib. : Changlang; up to 1000 m.

Millettia cinerea Benth. in Miq., Pl. Jungh. 249. 1852; Baker in Hook. f., Fl. Brit. India 2:106. 1876.

Large climbers. Leaflets 5-7, obovate-oblong or elliptic, cuspidate. Flowers reddish pink. Pods 1-3 seeded, swollen at seeds; joints globose, velvety when young.

Fl. & Fr. : June - Jan.

Distrib. : Changlang, Subansiri; up to 1500 m.

Millettia extensa (Benth.) Baker in Hook. f., Fl. Brit. India 2:109. 1876; Ohashi in J. Jap. Bot. 50:307. 1975. *Otosema extensa* Benth. in Miq., Pl. Jungh. 249. 1852. *Millettia auriculata* Baker ex Brandis, For. Fl. N.W. & C. Ind. 138. 1874; Baker in Hook. f., Fl. Brit. India 2:108. 1876.

Robust climbers. Leaves 3-foliolate; leaflets obovate, obtuse, membranous, thinly silky. Flowers whitish, petals silky throughout. Pod: yellowish green, straight, woody, brown velvety, 2-4 seeded.

Fl. & Fr. : April - Dec.

Distrib. : Siang; 200-1500 m.

Millettia pachycarpa Benth. in Miq., Pl. Jungh. 250. 1852; Baker in Hook. f., Fl. Brit. India 2:106. 1876.

Local name : Bokoa-bih, Bokol-bih, Holosj (Asfn.); Hapulung (Nishi).

Large climbers. Leaflets 11-13, obovate, oblong-lanceolate, chartaceous, brown tomentose beneath. Flowers light mauve in fascicles. Pods 1-3 seeded, woody, rugose, glabrous.

Fl. & Fr. : Aug. - Dec.

Distrib. : Changlang, Siang, Subansiri, Tirap.

Use : Roots and pods are used as fish poison.

Millettia piscidia Wight, Icon. t. 86. 1840; Baker in Hook. f., Fl. Brit. India 2:107. 1876.

Woody climbers. Leaves finely silky; leaflets 5-7, ovate-oblong, caudate, thinly coriaceous, glabrous. Flowers white. Pods 2-4 seeded, thin, compressed, oblong, glabrous.

Fl. & Fr. : Aug. - Feb.

Distrib. : Changlang, Siang.

Millettia pulchra Benth. ex Baker in Hook. f., Fl. Brit. India 2:104. 1876.

Trees, 4-20 m high. Leaflets oblong-lanceolate, acute to acuminate, silky pubescent, bluish grey beneath. Flowers white or reddish purple with centrally green spotted vexillum. Pods 2-3 seeded, flat, minutely appressed hairy.

Fl. & Fr. : March - Nov.

Distrib. : Siang; up to 1000 m.

**Mucuna gigantea* DC., Prodr. 2:405. 1825; Baker in Hook. f., Fl. Brit. India 2:186. 1876.

Woody climbers. Leaflets oblong-cuspidate, subcoriaceous, glabrous. Flowers yellow. Pods flat, 2-6 seeded, densely clothed with yellowish brown irritating bristles.

Fl. & Fr. : Aug. - Sept.

Distrib. : Tirap.

Mucuna macrocarpa Wallich, Pl. Asiat. Rar. 1:41, t. 47. 1830; Baker in Hook. f., Fl. Brit. India 2:186. 1876.

Woody climbers; branches slender. Leaves 3-foliolate; leaflets ovate, acuminate, subcoriaceous, glabrous. Flowers yellowish purple in fascicled racemes with densely brown velvety rachis; calyx with irritating bristles. Pods woody, torulose, 8-12 seeded, finely velvety. Seeds ellipsoid, brown.

Fl. & Fr. : March - Nov.

Distrib. : Arunachal Pradesh.

Mucuna nigricans (Lour.) Steud., Nom. Bot. ed. 2, 163. 1841; Tateishi & Ohashi in Bot. Mag. Tokyo 94:100. 1981. *Citta nigricans* Lour., Fl. Cochinch. 455. 1790. *Mucuna imbricata* DC., Prodr. 2:406. 1825; Baker in Hook. f., Fl. Brit. India 2:185. 1876. *M. momosperma* DC., Prodr. 2:406. 1825; Baker in Hook. f., Fl. Brit. India 2:185. 1876. Fig. 90.

Local name : Mekuri-ghila (Asm.); Tapo-tapi-rubi (Adi).

Woody climbers. Leaves 3-foliolate; leaflets oblong-cuspidate, glabrous, membranous. Flowers dull purple. Pods oblong, 2-4 seeded, clothed with deciduous irritating bristles.

Fl. & Fr. : March - Nov.

Distrib. : Changlang, Tirap; up to 700 m.

Mucuna pruriens (L.) DC., Prodr. 2:405. 1825; Baker in Hook. f., Fl. Brit. India 2:187. 1876. *Dolichos pruriens* L., Stickm. Diss. Herb. Amb. 23. 1754. var. *pruriens*.

Annual climbers; branches slender, glabrescent. Leaflets ovate-rhomboid, membranous, fine grey silky beneath. Flowers purplish. Pods 5-6 seeded, turgid, green, flat with thick coating of reddish brown hairs.

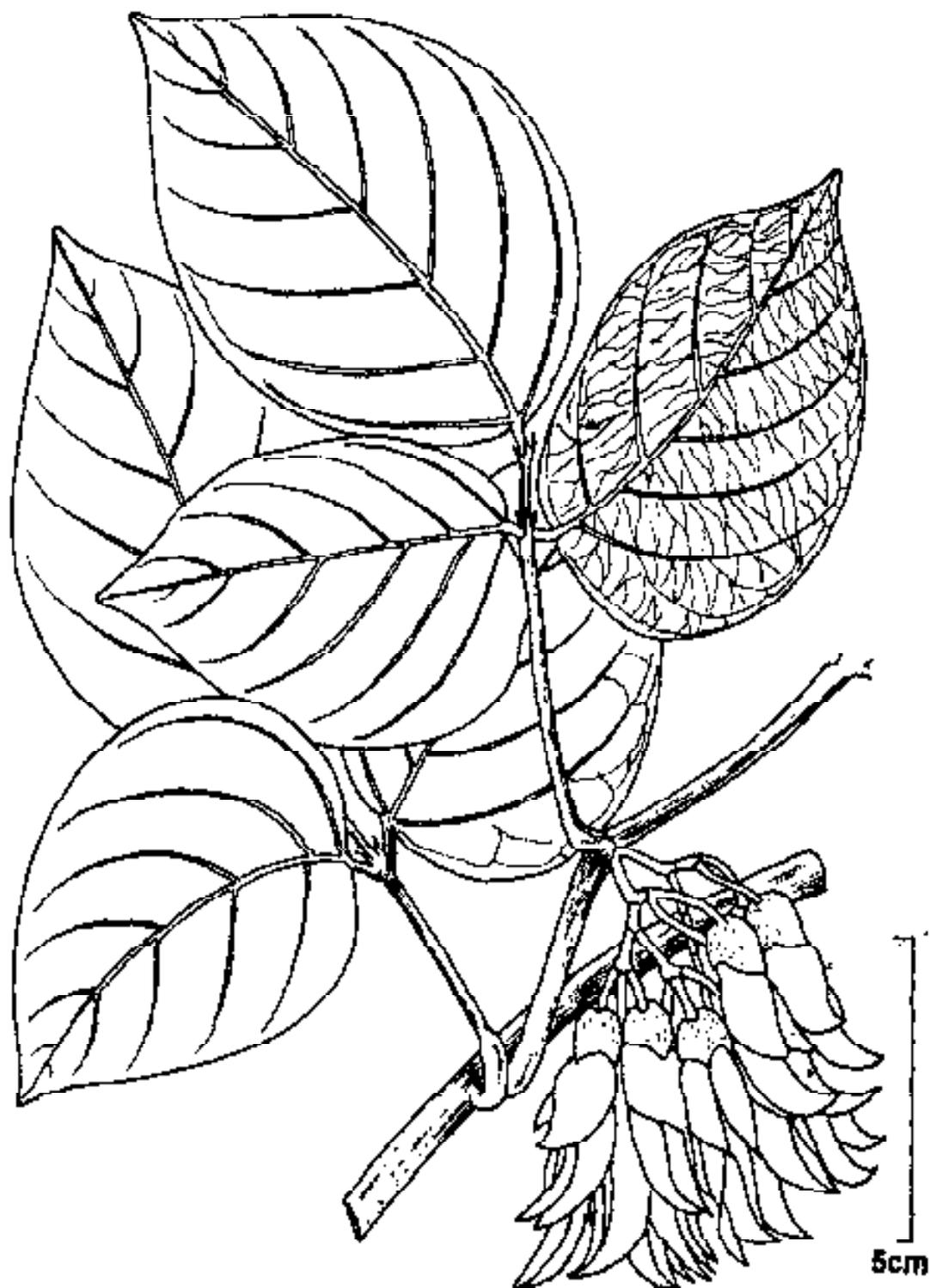


Fig. 90. *Mucuna nigricans* (Lour.) Steud. : Part of flowering branch.

Fl. & Fr. : Sept. - Nov.

Distrib. : Siang, Subansiri; 450-900 m.

Use : Stem juice is applied on eyes to relieve pain.

Mucuna pruriens var. *utilis* (Wallich ex Wight) Baker ex Burck., Ann. Jard. Bot. Buitenz. 11:187. 1893; Haines, For. Fl. Chotanagpur 325. 1910. *M. utilis* Wallich ex Wight, Icon. t. 280. 1840. *Carpopogon capitatum* Roxb., Fl. Ind. 3:284. 1832. *Mucuna capitata* (Roxb.) Wight & Arn., Prodr. Fl. Pen. Ind. Or. 255. 1834; Baker in Hook. f., Fl. Brit. India 2:187. 1876. *M. pruriens* var. *capitata* (Roxb.) Burck., Ann. Jard. Bot. Buitenz. 11:187. 1893; Haines, For. Fl. Chotanagpur 325. 1910.

Annual climbers up to 3 m long. Leaflets ovate-rhomboid, membranous, scattered appressed hairy. Flowers purplish. Pods 5-6 seeded, turgid, dull green, clothed with short, deciduous bristles.

Fl. & Fr. : Aug. - Sept.

Distrib. : Tirap.

Ormosia robusta (Wight) Baker in Hook. f., Fl. Brit. India 2:252. 1878. *Sophora robusta* Wight, Icon. t. 245. 1840.

Local name : Porghum (Miri).

Lofty trees up to 30 m high. Leaflets 7-11, elliptic-oblong or lanceolate, acuminate, coriaceous, glabrous. Flowers dull white; calyx rusty tomentose. Pods oblong, 3-seeded, thick, hard, orange yellow, glabrous.

Fl. & Fr. : Nov. - Feb.

Distrib. : Subansiri; up to 150 m.

Pachyrhizus angulatus Rich. ex DC., Prodr. 2:402. 1825; Baker in Hook. f., Fl. Brit. India 2:207. 1878.

Climbing herbs. Leaves 3-foliolate; leaflets as broad as long, membranous, glabrous. Flowers reddish. Pods large, linear, turgid, 8-12 seeded, straight, glabrous.

Fl. & Fr. : Aug. - Dec.

Distrib. : Siang.

Parochetus communis Buch.-Ham. ex D. Don, Prodr. Fl. Nep. 240. 1825; Baker in Hook. f., Fl. Brit. India 2:86. 1876.

Annual creeping herbs; stems brown. Leaves 3-foliolate; leaflets obovate, obtriangular, emarginate, membranous, grey silky beneath, ciliate. Flowers bluish white. Pods linear, straight, glabrous, many seeded.

Fl. & Fr. : May - Sept.

Distrib. : Kameng; up to 2500 m, on sandy river banks or forest paths.

Phaseolus torosus Roxb., Fl. Ind. 3:298. 1832; Baker in Hook. f., Fl. Brit. India 2:204. 1876.

Twining herbs; stems short, suberect. Leaflets broad, ovate-acute, membranous. Flowers yellow in subsessile congested racemes. Pods cylindrical, 8-12 seeded, glabrous.

Fl. & Fr. : Sept. - Dec.

Distrib. : Subansiri.

Phyllodium pulchellum (L.) Desv. in J. de Bot. ser. 2, 1:124, t. 5, f. 24. 1813; Ohashi in Hara, Fl. E. Himal. 161. 1966. *Hedysarum pulchellum* L., Sp. Pl. 747. 1753. *Desmodium pulchellum* (L.) Benth., Fl. Hongk. 83. 1861; Baker in Hook. f., Fl. Brit. India 2:162. 1876.

Undershrubs, 1-2 m high. Leaves 3-foliolate; leaflets ovate-elliptic to ovate-oblong, obtuse. Flowers white in axillary or terminal racemes, subtended by persistent bracts. Pods 2-7 jointed, glabrous.

Fl. & Fr. : June - Dec.

Distrib. : Kameng; 200-700 m, along forest edges, on black humus soil.

Piptanthus nepalensis (Hook.) D. Don in Sweet, Brit. Fl. Gard. 3:t. 264. 1828; Baker in Hook. f., Fl. Brit. India 2:62. 1876. *Baptisia nepalensis* Hook., Exot. Fl. t. 131. 1825.

Scandent shrubs. Leaves 3-foliolate. Flowers yellow. Pods long, 5-8 seeded, long stalked.

Fl. & Fr. : May - Sept.

Distrib. : Kameng; 2400-3300 m.

Pongamia pinnata (L.) Pierre, Fl. For. Cochinch. sub. t. 385. 1899. *Cytisus pinnatus* L., Sp. Pl. 741. 1753. *Pongamia glabra* Vent., Jard. Malm. t. 28. 1803; Baker in Hook. f., Fl. Brit. India 2:240. 1876.

Small trees; branches spreading, bark grey. Leaves imparipinnate; leaflets ovate-elliptic, acuminate, chartaceous, glabrous. Flowers white or purple in axillary racemes. Pods woody, flattened, oblong, glabrous, 1-2 seeded. Seeds reniform.

Fl. & Fr. : Feb. - Dec.

Distrib. : Arunachal Pradesh.

Use : Leaves are used as manure. Fruits are edible. Seed oil is medicinal and used in soap manufacture.

Pueraria bella Prain in J. Asiat. Soc. Bengal 67:288. 1898.

Climbers. Flowers pinkish white; calyx yellowish green.

Fl. & Fr. : Aug. - Dec.

Distrib. : Changlang, Lohit.

Pueraria peduncularis (Benth.) Grah. ex Benth. in J. Linn. Soc. Bot. 9:124. 1867; Baker in Hook. f., Fl. Brit. India 2:197. 1876. *Neustanthus peduncularis* Benth. in Miq., Pl. Jungh. 235. 1852.

Twining herbs. Leaflets ovate-rhomboid, softly pubescent beneath, membranous. Flowers pink. Pods turgid, straight, strap shaped, membranous, glabrous, 4-8 seeded.

Fl. & Fr. : Sept. - Feb.

Distrib. : Dibang valley, Kameng, Lohit, Siang, Subansiri, Tirap; up to 1100 m.

Pueraria phaseoloides (Roxb.) Benth. in J. Linn. Soc. Bot. 9:125. 1867; Baker in Hook. f., Fl. Brit. India 2:199. 1876; Ohashi in Hara & Williams, Enum. Fl. Pl. Nep. 2:128. 1979. *Dolichos phaseoloides* Roxb., Fl. Ind. 3:316. 1832. *Pueraria subspicata* Benth. in J. Linn. Soc. Bot. 9:125. 1867.

Annual, large climbing herbs or shrubs. Leaflets broadly ovate, obtuse, membranous, appressed hairy. Flowers blue violet. Pods linear, reflexed, subterete, appressed hairy, 10-20 seeded.

Fl. & Fr. : Aug. - Sept.

Distrib. : Changlang, Dibang valley, Kameng, Lohit, Siang, Subansiri, Tirap; 700-1200 m.

Pueraria thunbergiana (Sieb. & Zucc.) Benth. in J. Linn. Soc. Bot. 9:125. 1867; Kanjilal *et al.*, Fl. Assam 2:81. 1938. *Pachyrhizus thunbergiana* Sieb. & Zucc. in Abh. Akad. Munch. 4(3):237. 1846. *Pueraria thomsoni* Benth. in J. Linn. Soc. Bot. 9:122. 1867; Baker in Hook. f., Fl. Brit. India 2:198. 1876.

Climbing shrubs, deflexed fine brownish hairy. Leaflets ovate, acuminate, membranous, appressed hairy beneath. Flowers purple or reddish, fragrant. Pods flat, straight, 8-16 seeded, patent rusty hairy.

Fl. & Fr. : Aug. - Nov.

Distrib. : Siang, Subansiri; 500-1200 m.

Sesbania bispinosa (Jacq.) W.F. Wight in U.S. Dept. Agr. Bur. Pl. Ind. Bull. 137:15. 1909; Gillet in Kew Bull. 17:129. 1963. *Aeschynomene bispinosa* Jacq., Ic. Pl. Rar. 3:13, t. 564. 1793. *Sesbania aculeata* (Willd.) Poiret in Lamk., Encycl. Meth. Bot. 7:128. 1806; Baker in Hook. f., Fl. Brit. India 2:114. 1876.

Annual herbs up to 1 m high. Leaflets 41-81, linear-oblong. Flowers yellow; petals black dotted. Pods long, stout, straight to falcate, beaked, many seeded.

Fl. & Fr. : Sept. - Jan.

Distrib. : Subansiri.

Shutteria involucrata (Wallich) Wight & Arn. var. *glabrata* (Wight & Arn.) Ohashi in J. Jap. Bot. 50:305. 1975. *S. glabrata* Wight & Arn., Prodr. Fl. Pen. Ind. Or. 207. 1834. *Shutteria vestita* Wight & Arn., Prodr. Fl. Pen. Ind. Or. 207. 1834; Baker in Hook. f., Fl. Brit. India 2:181. 1876. *S. vestita* var. *glabrata* (Wight & Arn.) Baker in Hook. f., Fl. Brit. India 2:182. 1876.

Woody climbers; stems glabrescent. Leaflets ovate, obtuse, cuspidate, appressed grey pubescent beneath. Flowers reddish, purple or greenish magenta. Pods linear, compressed, rusty hairy, 5-6 seeded.

Fl. & Fr. : Oct. - April.

Distrib. : Changlang, Lohit, Subansiri.

Smithia ciliata Royle, Ill. Bot. Himal. t. 35.f. 2. 1834; 201. 1835; Baker in Hook. f., Fl. Brit. India 2:150. 1876.

Prostrate or suberect herbs up to 5 cm high. Leaves sensitive; leaflets subsessile, 4-10 pairs, bristly along midrib beneath and margins; stipules with sheathing auricled base. Flowers yellow or white. Pods spirally folded; joints minute, orbiculate, smooth, dark brown.

Fl. & Fr. : Oct. - Nov.

Distrib. : Kameng, Tirap; 300-1200 m, in open places forming thick mats, prefers hilly slopes.

Smithia grandis Benth. ex Baker in Hook. f., Fl. Brit. India 2:151. 1876.

Stout, erect herbs, 90-120 cm high. Leaflets 20-24, linear-obtuse. Flowers yellowish in subsecund corymbose paniced racemes. Pods 20-25 jointed, twisted, distinctly nerved.

Fl. & Fr. : Aug. - Dec.

Distrib. : Arunachal Pradesh.

Smithia sensitiva Aiton, Hort. Kew. ed. 1,3:496. 1789; Baker in Hook. f., Fl. Brit. India 2:148. 1876.

Decumbent or tufted ascending herbs up to 45 cm high. Stipules with two long auricles at base; leaflets opposite, 3-7 pairs, obovate-oblong, base

obliquely cuneate; brown ciliate. Flowers bright yellow to reddish brown. Pods 2-7 jointed; joints oval to orbiculate.

Fl. & Fr. : Oct. - Dec.

Distrib. : Kameng, Siang; up to 1000 m, in grasslands and on moist pasture lands.

Sophora acuminata Benth. ex Baker in Hook. f., Fl. Brit. India 2:250. 1878.

Shrubs, 1.8-3 m high; branchlets thinly grey silky. Leaves imparipinnate; leaflets 9-19, oblong-elliptic, acuminate, chartaceous, glaucous, appressed silky hairy beneath. Flowers bright yellow. Pods moniliform, 1-4 seeded, glabrous, strongly veined.

Fl. & Fr. : Aug. - Dec.

Distrib. : Subansiri.

Tephrosia candida DC., Prodr. 2:249. 1825; Baker in Hook. f., Fl. Brit. India 2:111. 1876.

Local name : Bilakhani, Bilokhoni (Asm.).

Woody shrubs, 1.8-3 m high. Leaflets 15-29, narrowly oblong to obovate-oblong or ligulate, mucronate, subcoriaceous, silky beneath. Flowers creamy white in fascicles. Pods 10-12 seeded, linear, recurved, appressed brown silky hairy, beaked.

Fl. & Fr. : Aug. - Dec.

Distrib. : Changlang, Subansiri, Tirap; 300-1100 m.

Uraria crinita (L.) Desv. ex DC., Prodr. 2:324. 1825; Baker in Hook. f., Fl. Brit. India 2:155. 1876. *Hedysarum crinitum* L., Mant. Pl. 1:102. 1767.

Shrubs up to 4 m high; stems woody. Leaves 3-7 pairs; petioles and inflorescence deep brown pubescent, straight, mixed with minute hooked hairs. Flowers pretty large, rose coloured. Pods 3-6 jointed; joints orbicular, glossy, black, minutely hairy.

Fl. & Fr. : July - Aug.

Distrib. : Changlang, Lohit, Subansiri.

Uraria lagopus DC. in Ann. Sci. Nat. ser. 1,4:100. 1825; Baker in Hook. f., Fl. Brit. India 2:156. 1876.

Undershrubs, densely brown or ferruginous hirsute throughout. Young inflorescence strobilaceous; bracts overlapping, caducous. Flowers greenish. Pods 2-6 jointed; joints dark or pale grey, oblong, puberulous.

Fl. & Fr. : June - Dec.

Distrib. : Kameng; up to 2000 m.

Uraria rufescens (DC.) Schindl. in Fedde, Repert. 21:14. 1925; van Meeuwen in Reinwardtia 5:453. 1961. *Desmodium rufescens* DC. in Ann. Sci. Nat. ser. 1,4:101. 1825. *Doodia hamosa* Roxb., Fl. Ind. 3:367. 1832. *Uraria hamosa* (Roxb.) Wight & Arn., Prodr. Fl. Pen. Ind. Or. 222. 1834; Baker in Hook. f., Fl. Brit. India 2:156. 1876. var. *rufescens*. Fig. 91.

Diffuse shrubs; stems woody, young parts clothed with shorter hooked hairs intermixed with longer straight hairs. Leaves 1-3 foliolate; leaflets variable in shape. Flowers pale red. Pods 4-6 jointed, brown or black with minute hooked hairs.

Fl. & Fr. : Sept. - Dec.

Distrib. : Kameng.

Use : Decoction of leaves is useful in remedy of fever.

Uraria rufescens var. *neglecta* (Prain) Pramanik & Thoth. in J. Ind. Bot. Soc. 69:467. 1990. *U. neglecta* Prain in J. Asiat. Soc. Bengal 66(2):383. 1897.

Diffuse shrubs; stems woody. Leaves 3-foliolate; leaflets orbicular. Flowers in yellowish pubescent racemes, pale red; pedicels horizontally patent, curved at apex. Pods 4-8 jointed; joints glabrous or occasionally sparsely puberulous.

Fl. & Fr. : Aug. - Nov.

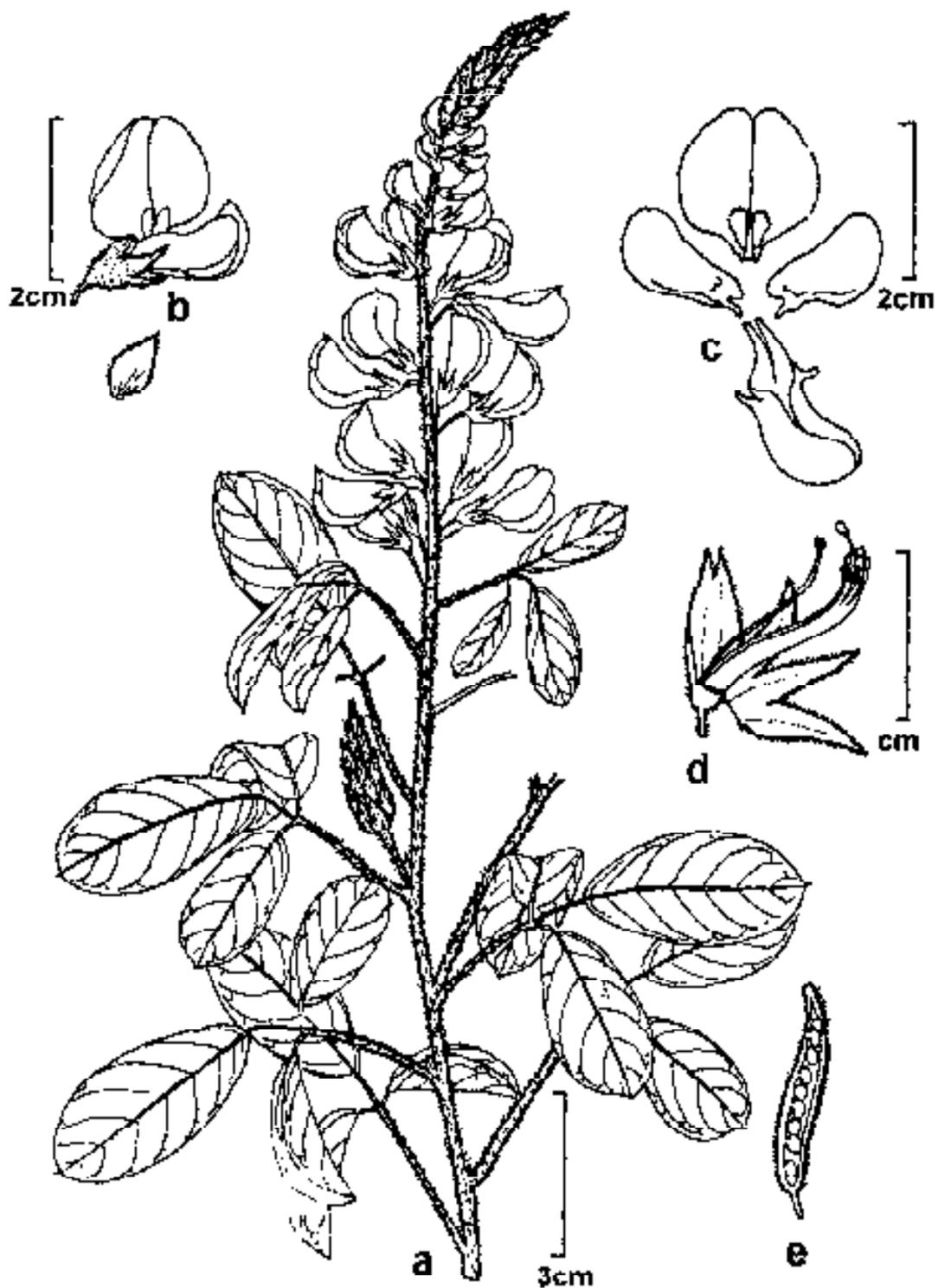


Fig. 91. *Uraria rufescens* (DC.) Schindl. : a. Flowering twig; b. Flower & bract; c. Corolla (dissected); d. Calyx stamens & Stigma (dissected); e. Pod (open).

Distrib. : Kameng; 600-1800 m.

Vicia hirsuta (L.) S.F. Gray, Nat. Arr. Brit. Pl. 2:614. 1821; Baker in Hook. f., Fl. Brit. India 2:177. 1876. *Ervum hirsutum* L., Sp. Pl. 738. 1753.

Annual herbs; stems pubescent. Leaves equally pinnate, ending in a tendril; leaflets 5-8 pairs, obovate, truncate. Flowers scarcely exerted from calyx. Pods oblique, turgid, black, 2-seeded, hairy.

Fl. & Fr. : Dec. - Feb.

Distrib. : Siang; 600 m.

Vicia sativa L. Sp. Pl. 736. 1753; Baker in Hook. f., Fl. Brit. India 2:178. 1876.

Annual, suberect or prostrate, obscurely downy herbs. Leaflets obovate, oblong or linear-ligulate, hairy; rachis ending in tendril. Flowers solitary, reddish blue. Pods 8-10 seeded, glabrescent.

Fl. & Fr. : March - Sept.

Distrib. : Kameng; up to 1316 m.

Vigna clarkei Prain in J. Asiat. Soc. Bengal 66:429. 1897.

Climbers; stems rigid, reflexed hairy. Leaves pinnately 3-foliolate; leaflets eglandular. Flowers yellow in fasciculate racemes. Pods linear, subterete, appressed hairy.

Fl. & Fr. : Aug. - Dec.

Distrib. : Kameng.

Vigna mungo (L.) Hepper in Kew Bull. 11:128. 1956. *Phaseolus mungo* L., Mant. Pl. 1:101. 1767; Baker in Hook. f., Fl. Brit. India 2:203. 1876.

Annual, suberect herbs, 30-60 cm high; copiously branched from base, brownish silky hairy. Leaflets membranous, roundish, acute, appressed hairy. Flowers yellow, brownish silky hairy. Pods subcylindric, recurved, 10-15 seeded, spreading silky hairy.

Fl. & Fr. : Sept. - Dec.

Distrib. : Tirap; up to 1100 m; often cultivated.

Vigna umbellata (Thunb.) Ohwi & Ohashi in J. Jap. Bot. 44:31. 1969; Ohashi, Fl. E. Himal. 3:71. 1975. *Dolichos umbellatus* Thunb. in Trans. Linn. Soc. London 2:339. 1832. *Phaseolus calcaratus* Roxb., Fl. Ind. 3:289. 1832; Baker in Hook. f., Fl. Brit. India 2:203. 1876.

Twining or suberect herbs, spreading grey hairy. Leaves 3-foliolate; leaflets broadly ovate-acute, membranous, glabrescent. Flowers yellow. Pods cylindrical or slightly compressed, 8-12 seeded, recurved, glabrous.

Fl. & Fr. : Aug. - Nov.

Distrib. : Lohit, Siang, Subansiri; 500-1200 m.

Vigna unguiculata (L.) Walp., Repert. 1:779. 1842; Ohashi, Fl. E. Himal. 3:71. 1975. *Dolichos unguiculata* L., Sp. Pl. 725. 1753. *Vigna sinensis* (L.) Savi ex Hassk., Cat. Hort. Bogor. 209. 1844. *Dolichos sinensis* L., Cent. Pl. 2. 1756. *D. catjang* Burm. f., Fl. Ind. 161. 1768. *Vigna catjang* (Burm. f.) Walp. in Linnaea 13:533. 1839; Baker in Hook. f., Fl. Brit. India 2:205. 1876.

Annual, suberect or twining herbs. Leaflets ovate-rhomboid, slightly lobed, membranous. Flowers yellow or reddish. Pods linear, subterete, 10-20 seeded.

Fl. & Fr. : Sept. - Nov.

Distrib. : Siang; up to 1800 m.

Zornia gibbosa Spanoghe in Linnaea 15:192. 1841; Ohashi in Hara, Fl. E. Himal. 165. 1966. *Z. diphylla* auct. non (L.) Pers. ; Baker in Hook. f., Fl. Brit. India 2:147. 1876, *p.p.*

Perennial, prostrate or suberect herbs, 30-60 cm long, glabrous. Leaves 2-foliolate; petioles larger than leaflets; leaflets similar in shape, broadly ovate, acute. Bracts broadly lanceolate, reticulate veined, punctate. Flowers yellow, exerted. Pods 4-jointed; joints woody, spinescent, spines retrorse hairy.

Fl. & Fr. : July - Dec. .oj off

Distrib. : Kameng; up to 2000 m.

CAESALPINIACEAE

Bauhinia acuminata L., Sp. Pl. 375. 1753; Baker in Hook. f., Fl. Brit. India 2:276. 1878.

Local name : Mati-katota (Asm.).

Erect shrubs; branches angular. Leaves cordate, 9-11 nerved, lobes acute to subobtusate. Flowers in axillary, short peduncled corymbs, whitish. Pods stout, straight, 8-12 seeded.

Fl. & Fr. : April - Dec.

Distrib. : Arunachal Pradesh. Roadside ornamentals.

Bauhinia divergens Baker in Hook. f., Fl. Brit. India 2:282. 1878.

Scandent, glabrescent herbs. Leaves cordate, subcoriaceous, sinus reaching half way down. Flowers in copious racemes. Pods narrow, glabrous.

Fl. & Fr. : Aug. - Dec.

Distrib. : Siang.

Bauhinia glauca Wallich ex Benth. subsp. *tenuiflora* (Watt ex Clarke) Larsen & Larsen in Nat. Hist. Bull. Siam. Soc. 25 (102):10. 1973. *B. tenuiflora* Watt ex Clarke in J. Linn. Soc. Bot. 25:18, t.6. 1889; Kanjilal *et al.*, Fl. Assam 2:146. 1938. *Phanera tenuiflora* (Watt ex Clarke) de Wit in Rienwardtia 3(4):490. 1956.

Monoecious, tendrilled climbers. Leaves ovate-orbicular, bilobed. Buds completely enclosed by calyx; calyx 2-3 lobed. Flowers white. Pods flattened, oblong, acuminate, up to 33-seeded. Seeds ovate, orbicular.

Fl. & Fr. : Aug. - April.

Distrib. : Kameng, Tirap; up to 1800 m.

Bauhinia khasiana Baker in Hook. f., Fl. Brit. India 2:281. 1878. *Phanera khasiana* (Baker) Thoth. in Bull. Bot. Soc. Bengal 19(2):131. 1965.

Scandent, tendrilled climbers. Leaves ovate to subrotundate, bifid, base cordate. Flowers brownish red. Pods flat, oblong, wavy at margin, green, 3-4 seeded. Seeds orbicular to elliptic.

Fl. & Fr. : May - Sept.

Distrib. : Changlang, Tirap; 500-1500 m.

Bauhinia malabarica Roxb., Fl. Ind. 2:321. 1832; Baker in Hook. f., Fl. Brit. India 2:277. 1878; Ohashi in Hara, Fl. E. Himal. 141. 1966. *Ptilostigma malabaricum* (Roxb.) Benth. in Miq., Pl. Jungh. 261. 1852.

Small trees. Leaves broadly ovate, deeply lobed above, base cordate or truncate, lobes rounded. Flowers in axillary and terminal racemes, white. Pods flat, straight or shortly falcate, beaked, 20-30 seeded. Seeds ovoid, dark brown.

Fl. & Fr. : April - Dec.

Distrib. : Arunachal Pradesh.

Use : Leaves are used for flavouring food stuff; bark is useful for tanning; young buds and seeds are edible; flowers are medicinal.

Bauhinia ornata Kurz var. *kerrii* (Gagnepain) Larsen & Larsen in Aubreville & Leroy, Fl. Cambodia, Laos & Vietnam 18:208. 1980, *B. kerrii* Gagnepain in Lecomte, Nat. Syst. 2:173. 1912. *Phanera rufa* Benth. in Miq., Pl. Jungh. 263. 1852. *Bauhinia rufa* (Benth.) Baker in Hook. f., Fl. Brit. India 2:280. 1878, non Steud. 1840.

Local name : Hambioikalik-arong, Hambio-okalik-arikang (Mikir).

Large, cirrhose climbers, densely ferruginous tomentose. Leaves rigidly subcoriaceous, ovate to orbicular, bifid, cordate at base, sinus deltoid. Flowers white in simple corymbs; petals much exerted, densely silky.

Fl. & Fr. : March - April.

Distrib. : Siang; up to 500 m, in moist mixed and moist deciduous forests.

Bauhinia ovatifolia T.Chen in Guihaia 8(1):50. 1988.

Tendrilled climbers. Leaves ovate, entire, obtuse. Pods oblong, flattened, veined, up to 20-seeded. Seeds ovate-orbicular, blackish brown.

Fl. & Fr. : July - Dec.

Distrib. : Lohit.

Bauhinia purpurea L., Sp. Pl. 1:375 1753; Baker in Hook. f., Fl. Brit. India 2:284. 1878.

Local name : Og-yok (Abor); Kurial, Boga-kanchan (Asm.).

Trees up to 15 m high. Leaves ovate to suborbicular, bifid. Flowers pinkish purple to deep violet with red streaks; calyx spathaceous. Pods narrowly oblong, acuminate, glabrous. Seeds light brown, suborbicular.

Fl. & Fr. : Sept. - Dec.

Distrib. : Dibang valley, Lohit, Siang, Subansiri; 400-1500 m.

Use : Leaves are used as fodder; bark used for dyeing and tanning. Flowers are used as pot-herb in curries & pickles. Wood is utilized for making agricultural implements and in interior construction work.

Bauhinia scandens L. var. **horsfieldii** (Miq.) Ohashi in Hara *et al.*, Enum. Fl. Pl. Nep. 2:108. 1979. *Lasiobema horsfieldii* Miq., Fl. Ind. Bat. 1(1):71. 1855. *Bauhinia anguina* Roxb., Pl. Corom. 3:82, t. 285. 1819; Baker in Hook. f., Fl. Brit. India 2:284. 1878.

Local name : Deo-jokhola (Asm.).

Large climbers with tendrils; stems flat, alternately convex and concave on flexure; branches terete. Leaves deeply bilobed; lobes acuminate or caudate, glabrous, 5-7 nerved. Flowers in terminal paniced racemes. Pods obliquely oblong, beaked, thin, flat, glabrous, 1-2 seeded.

Fl. & Fr. : March - Oct.

Distrib. : Arunachal Pradesh.

Use : The bark is used in making ropes.

Bauhinia touranensis Gagnepain in Lecomte, Not. Syst. 2:181. 1912.

Tendrilled climbers. Leaves ovate to suborbicular, 9-nerved, bifid, lobes obtuse, base shallowly cordate. Pods oblong, glabrous.

Fl. & Fr. : Sept. - June.

Distrib. : Tirap.

Bauhinia vahlii Wight & Arn., Prodr. Fl. Pen. Ind. Or. 297. 1834; Baker in Hook. f., Fl. Brit. India 2:279. 1878.

Local name : Nak-kali-lewa (Asm.).

Large climbers with circinate tendrils; branchlets densely grey pubescent. Leaves subcoriaceous, broader than long, deeply cordate, 11-13 nerved, downy beneath, lobes obtuse. Flowers with densely pilose petals in terminal sub-corymba. Pods woody, grey hairy, 8-12 seeded.

Fl. & Fr. : Aug. - Dec.

Distrib. : Arunachal Pradesh.

Use : Fibre yield from bark is used for cordage; leaves are used as plates; roasted seeds are edible.

Bauhinia variegata L., Sp. Pl. 1:375. 1753; Baker in Hook. f., Fl. Brit. India 2:284. 1878.

Local name : Boga-katra, Kotora, Kuroa (Asm.); Gal-pacham (Hill-Miri).

Small trees, 3-5 m high. Leaves ovate to subrotundate, bifid, lobes obtuse. Flowers bright mauve to rosy in terminal racemes. Pods narrowly oblong, acuminate, glabrous, 6-12 seeded. Seeds orbicular, whitish brown.

Fl. & Fr. : March - May.

Distrib. : Dibang valley, Kameng, Lohit, Siang, Subansiri; up to 1750 m.

Use : Tender leaves and flowers are used as vegetables.

Bauhinia wallichii Macbride in Contrib. Grey herb. n.s. 3(59):23. 1919.
B. macrostachya Wallich ex Baker in Hook. f., Fl. Brit. India 2:281. 1878.

non Benth. 1840. *Phanera wallichii* (Macbride) Thoth. in Bull. Bot. Surv. India 10:131. 1965.

Local name : Ram-jakhola, Makhori-ghila (Asm.).

Tendrilled shrubs; branches glabrous. Leaves orbicular-cordate, subcoriaceous, deeply bilobed above, lobes deltoid. Flowers with densely silky petals. Pods ligulate, flattened, 2-4 seeded, tomentose.

Fl. & Fr. : March - Sept.

Distrib. : Arunachal Pradesh.

Caesalpinia bonduc (L.) Roxb., Fl. Ind. 2:362. 1832; Baker in Hook. f., Fl. Brit. India 2:255. 1878; Dandy & Exell in J. Bot. 76:179. 1938. *Guilandina bonduc* L., Sp. Pl. 381. 1753. *Caesalpinia crista* L., Sp. Pl. 380. 1753. *Guilandina bonducella* L., Sp. Pl. ed. 2,545. 1762. *Caesalpinia bonducella* (L.) Fleming in Asiat. Res. 2:159. 1810; Baker in Hook. f., Fl. Brit. India 2:254. 1878.

Local name : Lataguti (Asm.).

Scandent prickly shrubs. Leaves bipinnate; stipules foliaceous; leaflets 6-10 pairs, oblong, mucronate, puberulous. Flowers yellow with red spots on petals. Pods oblong, coriaceous, thin, wing prickly throughout.

Fl. & Fr. : Dec. - Jan.

Distrib. : Arunachal Pradesh.

Use : Leaves and seeds are medicinal.

Caesalpinia cucullata Roxb., Fl. Ind. 2:358. 1832; Hattink in Reinwardtia 9:22. 1974. *Mezonevron cucullatum* (Roxb.) Wight & Arn., Prodr. Fl. Pen. Ind. Or. 283. 1834; Baker in Hook. f., Fl. Brit. India 2:258. 1878. *M. cucullatum* var. *grandis* Baker in Hook. f., Fl. Brit. India 2:258. 1878.

Local name : Baghasora, Bagh-anchora (Asm.); Kempu-riubi (Abor); Paniphigag-taraw (Daff.).

Large, woody, prickly climbers. Leaves bipinnate; leaflets 8-10, ovate-acute, subcoriaceous, glabrous. Flowers bright yellow in simple or forked

racemes. Pods oblong, flat, thin with broad papery wing along upper suture, 1-seeded.

Fl. & Fr. : Nov. - July.

Distrib. : Changlang, Siang, Subansiri; 200-1000 m.

Caesalpinia enneaphylla Roxb., Fl. Ind. 2:358. 1832. *Mezoneuron enneaphyllum* (Roxb.) Wight & Arn., Prodr. Fl. Pen. Ind. Or. 283. 1834; Baker in Hook. f., Fl. Brit. India 2:258. 1878.

Local name : Erachora, Kochra, Kaint (Asm.); Dadu-asing (Abor).

Large, woody, prickly climbers; branches slender. Leaves bipinnate; leaflets 18-22, oblong, obtuse, membranous, glabrous, sensitive. Flowers bright yellow. Pods oblong, flat, thin, winged along upper suture, 4-6 seeded.

Fl. & Fr. : Jan. - April.

Distrib. : Arunachal Pradesh.

Caesalpinia pulcherrima (L.) Sweet, Obs. Bot. Ind. Occ. 166. 1791; Baker in Hook. f., Fl. Brit. India 2:255. 1878. *Poinciana pulcherrima* L., Sp. Pl. 380. 1753.

Shrubs or small trees up to 9 m high, scattered prickly. Leaflets 8-12 pairs, broadly oblong or obovate-oblong, emarginate, mucronate. Flowers orange or reddish yellow. Pods compressed, nearly straight.

Fl. & Fr. : Aug. - Sept.

Distrib. : Tirap; often cultivated.

Caesalpinia tortuosa Roxb., Fl. Ind. 2: 365. 1832; Baker in Hook. f., Fl. Brit. India 2: 257. 1878; Hattink in Reinwardtia 9: 57. 1974. *C. cinclidocarpa* Miq., Fl. Ind. Bat. 1:110. 1855; Baker in Hook. f., Fl. Brit. India 2: 256. 1878.

Climbing shrubs with uniformly scattered prickles. Leaflets 28-36, rigid, subcoriaceous, obliquely linear-oblong, ligulate, caducous. Flowers bright yellow in copious panicles. Pods oblong, fleshy, glabrous, 3-4 seeded. Seeds obovoid, black.

Fl. & Fr. : Dec. - Jan.

Distrib. : Changlang, Subansiri.

Cassia alata L., Sp. Pl. 378. 1753; Baker in Hook.f., Fl. Brit. India 2: 264. 1878. **Fig. 92.**

Shrubs; branches stout, finely downy. Leaflets obliquely oblong, obtuse, glabrous. Flowers bright yellow with distinctly veined petals. Pods compressed, membranous, straight, glabrous with crenulate wings.

Fl. & Fr. : Sept. - Feb.

Distrib. : Changlang, Subansiri.

Use : Leaves in the form of paste is applied in ringworm infections.

Cassia fistula L., Sp. Pl. 377. 1753; Baker in Hook.f., Fl. Brit. India 2: 262. 1878; Kanjilal *et al.*, Fl. Assam 2: 128. 1938.

Local name : Sonaru, Sonari, Honalu, Honaru (Asm.).

Trees, 8-10 m high, glabrous throughout. Leaflets 8-16, large, ovate, acute, subcoriaceous, distinctly veined. Flowers yellow. Pods cylindrical, indehiscent, smooth, 40-100 seeded. Seeds flat, ovate.

Fl. & Fr. : Oct. - Dec.

Distrib. : Subansiri.

Use : Heartwood is hard and durable. The pulp of fruit is a powerful purgative. The bark is used as a tanning material.

Cassia floribunda Cav., Descr. 132. 1802; Ohashi in Hara & Williams, Enum. Fl. Pl. Nep̄. 2: 111. 1979. *C. laevigata* Willd., Enum. Hort. Berol. 441. 1809; Kanjilal *et al.*, Fl. Assam 2: 132. 1938.

Shrubs, 1-3 m high. Leaves 3-5 pinnate; leaflets ovate or elliptic. Flowers yellow. Pods linear-cylindric. Seeds subcompressed.

Fl. & Fr. : March - April.

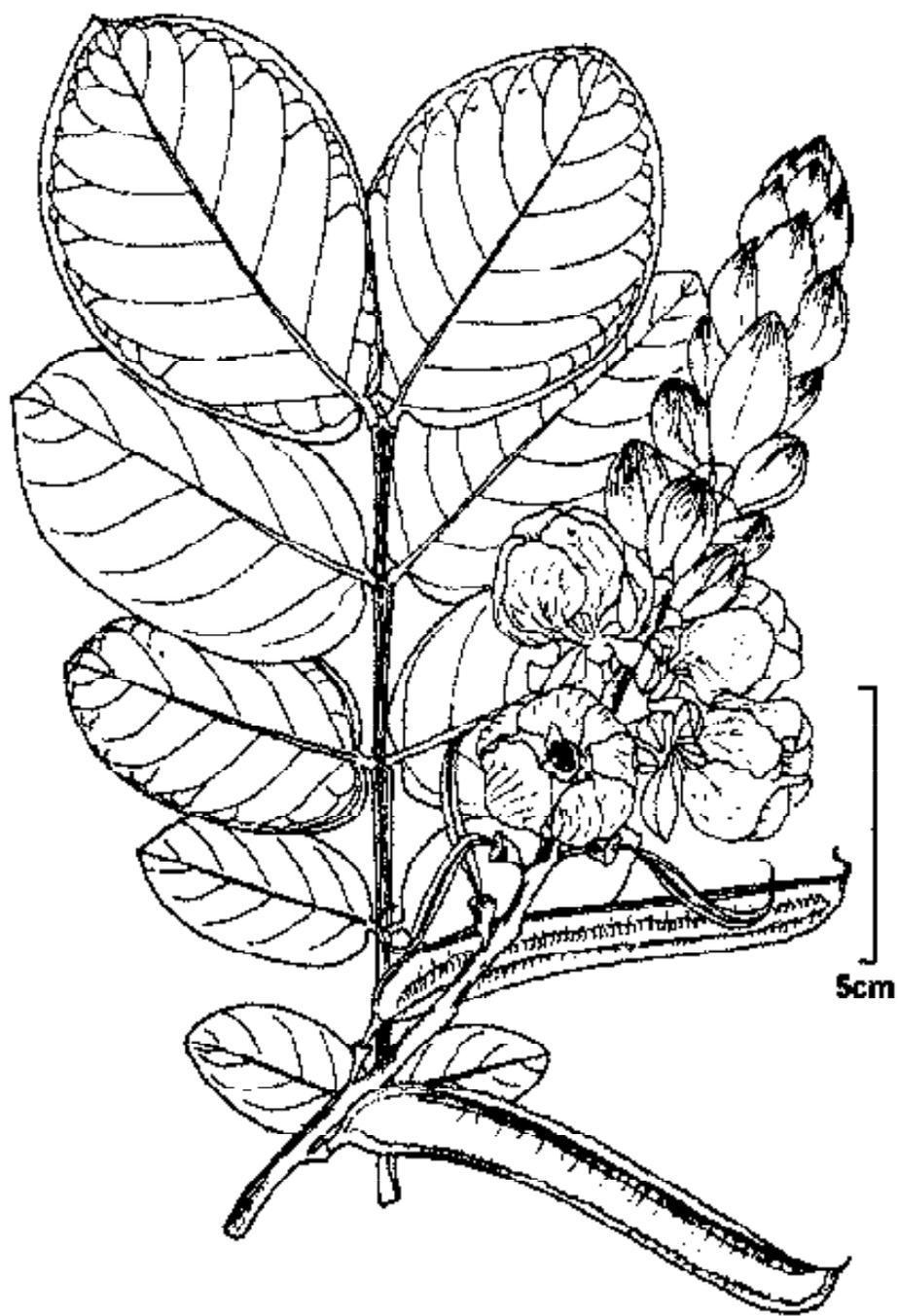


Fig. 92. *Cassia alata* L. : a. Inflorescence; b. Leaf.

Distrib. : Siang; 500 - 1600 m.

Cassia hirsuta L., Sp. Pl. 378. 1753; Baker in Hook.f., Fl. Brit. India 2: 263. 1878; Kanjilal *et al.*, Fl. Assam 2: 131. 1938.

Densely spreading, hirsute undershrubs ca 1.5 m high. Leaf rachis with solitary gland at base. Leaflets 3-5 pairs, ovate to oblong-lanceolate, acuminate, base unequal. Flowers yellow; petals pubescent outside. Pods slender, flat, hirsute. Seeds broadly ovate.

Fl. & Fr. : Oct. - March.

Distrib. : Changlang.

Cassia mimosoides L., Sp. Pl. 379. 1753; Baker in Hook.f., Fl. Brit. India 2: 266. 1878. var. *mimosoides*.

Prostrate herbs. Leaves with a sessile gland below leaflets; leaflets 45-70 pairs, oblique, linear-oblong. Flowers yellow. Pods flat, hairy.

Fl. & Fr. : July - Nov.

Distrib. : Kameng, Tirap; up to 2000 m.

Cassia mimosoides var. *auricoma* Benth. in Trans. Linn. Soc. Bot. 27. 580. 1871; Baker in Hook.f., Fl. Brit. India 2:266. 1878.

Undershrubs, 60-70 cm high; branches densely fine spreading hairy. Leaves with solitary gland on rachis; leaflets sensitive, linear, coriaceous. Flowers yellow. Pods flat, strap-shaped, hairy.

Fl. & Fr. : Aug. - Nov.

Distrib. : Subansiri; along roadsides.

Cassia nodosa Buch.-Ham. ex Roxb., Fl. Ind. 2: 336. 1832; Baker in Hook.f., Fl. Brit. India 2: 261. 1878.

Trees, ca 15 m high; branches slightly downy. Leaflets 12-24, oblong, acute, base oblique, subcoriaceous. Flowers reddish pink. Pods cylindric, glabrous.

Fl. & Fr. : April - Nov.

Distrib. : Arunachal Pradesh. Often planted as ornamental and avenue tree.

Cassia occidentalis L., Sp. Pl. 377. 1753; Baker in Hook.f., Fl. Brit. India 2: 262. 1878.

Local name : Hant-thenga (Asm.).

Herbs or undershrubs up to 2 m high. Leaflets 3-5 pairs, ovate or oblong, acuminate. Flowers yellow in 2-4 flowered corymbs. Pods linear, 20-30 seeded. Seeds roundish.

Fl. & Fr. : May - Dec.

Distrib. : Changlang, Subansiri; 200-1000 m.

Cassia tora L., Sp. Pl. 376. 1753; Baker in Hook.f., Fl. Brit. India 2: 263. 1878.

Local name : Dari-diga, Bon-medelua (Asm.).

Herbs or undershrubs up to 1.5 m high. Leaflets 3-pairs, ovate-oblong, obliquely cuneate acute; stipules linear, curved. Flowers yellow. Pods terete, subtetragonous, 20-30 seeded. Seeds rhomboid.

Fl. & Fr. : Aug. - Dec.

Distrib. : Lohit, Siang, Subansiri; 100-500 m, common along waterlands and roadsides.

Use : Infusion of leaves and seeds are given to women in case of low blood pressure particularly during pregnancy.

Gleditsia horrida Willd. subsp. *delavayi* (Franchet) Pach in Taxon 33: 101. 1984. *G. delavayi* Franchet, Pl. Delav. 189. 1890; Burkill in Rec. Bot. Surv. India 10: 273. 1924.

Large trees up to 37 m high, girth 2 m.

Fl. & Fr. : March - Aug.

Distrib. : Siang.

Gymnocladus assamicus P.C.Kanjilal in Assam For. Rec. 1:7. 1934; Kanjilal *et al.*, Fl. Assam 2: 125. 1938.

Trees, 10-15 m high. Leaves bipinnate; rachis terete, swollen at base; leaflets 25-27, oblong to ovate-oblong, glabrescent above, finely brown pubescent on midrib beneath. Flowers purplish, grey on shaggy racemes. Pods 6-8 seeded, compressed, turgid along seeds. Seeds ovoid or subglobose.

Fl. & Fr. : Feb. - Nov.

Distrib. : Arunachal Pradesh; 1500-1800 m.

Gymnocladus chinensis Baill. in Bull. Soc. Linn. (Part 1): 34. 1875; Burkill in Rec. Bot. Surv. India 10:269. 1924.

Trees, 12-15 m high. Leaves bipinnate; leaflets ovate-oblong. Flowers purplish grey. Pods compressed, 6 or more seeded.

Fl. & Fr. : Nov. - Jan.

Distrib. : Siang; up to 1200 m.

Maniltoa polyandra (Roxb.) Harms in Pfamilien. Nachtr. 1: 194. 1897; Meeuwen in Blumea 18: 43. 1970. *Cynometra polyandra* Roxb., Pl. Corom. 3:t. 286. 1820; Baker in Hook.f., Fl. Brit. India 2: 268. 1878.

Trees, 3-12 m high. Leaflets 2-3 pairs, oblong, elliptic, emarginate or acuminate, base unequal, cuneate. Flowers in axillary corymbs, white. Pods compressed, falcate, beaked. Seeds ovoid.

Fl. & Fr. : Feb. - Aug.

Distrib. : Arunachal Pradesh.

Peltophorum pterocarpum (DC.) Backer ex K. Heyne, Nutt. Pl. Need. Ind. ed. 2,2:755. 1927. *Inga pterocarpa* DC., Prodr. 2:441. 1825. *Peltophorum ferrugineum* Benth., Fl. Austral. 2:279. 1864; Baker in Hook. f., Fl. Brit. India 2:257. 1878.

Large trees, young branches reddish brown tomentose. Leaves bipinnate; leaflets 20-30, ligulate, oblong, obtuse, subcoriaceous. Flowers yellow. Pods oblong, flat, thin, hard, 1-4 seeded, glabrous, sutures broad, winged.

Fl. & Fr. : June - Sept.

Distrib. : Lohit, Siang.

Saraca asoca (Roxb.) De Wilde in *Blumea* 15:393. 1967. *Jonesia asoca* Roxb., in *Asiat. Res.* 4:355, t. 252-253. 1799. *Saraca indica auct. non L.* : Beddome, *Fl. Sylv.* 1:57, t. 57. 1869; Baker in Hook. f., *Fl. Brit. India* 2:271. 1878, p.p.

Local name : Ahok, Asok (Asm.).

Small trees; bark blackish. Leaves paripinnate; leaflets 4-6 pairs, oblong-lanceolate, coriaceous, glabrous. Flowers in panicles of corymb, orange-scarlet, fragrant. Pods oblong, thick, 4-8 seeded. Seeds oblong, compressed.

Fl. & Fr. : Feb. - Oct.

Distrib. : Arunachal Pradesh; often planted as ornamentals.

Use : Bark is medicinal. The flower is considered to be an excellent uterine tonic, also used in various uterine diseases. The flowers are very beautiful and sacred and are used frequently in religious ceremonies.

Tamarindus indica L., *Sp. Pl.* 34. 1753; Baker in Hook. f., *Fl. Brit. India* 2:273. 1878.

Local name : Tetuli (Asm.).

Medium sized trees. Leaves paripinnate; leaflets 10-20 pairs, linear-oblong, glabrescent. Flowers in short terminal racemes, creamish or pale yellow. Pods curved, compressed, glossy.

Fl. & Fr. : May - Jan.

Distrib. : Arunachal Pradesh; also cultivated for both fruits and as avenue tree.

Use : Fruits are edible. The pulp from fruits is largely used for the preparation of curries and chutneys and believed to possess digestive, curminative and laxative properties. It is also medicinally used for tartaric acid. The tender leaves and young seedlings are also used as vegetable. Bark and leaves are used for tanning.

Insufficiently known material

Gleditsia assamica Bor in Ind. For. Rec., n.s. Bot. 2:231. 1941.

MIMOSACEAE

Acacia caesia (L.) Willd., Sp. Pl. 4:1090. 1876; Neilson in Adansonia 2, 19:348. 1980. *Mimosa caesia* L., Sp. Pl. 522. 1753. *M. intsia* L., Sp. Pl. 522. 1753. *Acacia intsia* var. *caesia* (L.) Wight & Arn., Prodr. Fl. Pen. Ind. Or. 278. 1834; Baker in Hook. f., Fl. Brit. India 2:297. 1878. var. *caesia*

Large stragglers. Leaflets 40-60, subcoriaceous, ligules oblong, obtuse. Flowers in white or yellowish heads. Pods straight, glabrous, 8-12 seeded.

Fl. & Fr. : Oct. - March.

Distrib. : Changlang, Subansiri, Tirap; up to 250 m, along roadsides.

Acacia caesia var. *subnuda* (Craib) Neilson in Adansonia 2, 19:348. 1980. *A. oxyphylla* var. *subnuda* Craib, Fl. Siam. Enum. 1:550. 1928. *A. oxyphylla* Grah. ex Benth. in London J. Bot. 1:514. 1842. *A. intsia* var. *oxyphylla* (Grah. ex Benth.) Baker in Hook. f., Fl. Brit. India 2:297. 1878.

Local name : Kecheri-kant, Pochui-kant (Asm.).

Woody, armed shrubs. Leaflets 40-50, thinly membranous, sharply acute. Flowers creamy white in globose heads. Pods dark brown, glabrous.

Fl. & Fr. : Sept. - Feb.

Distrib. : Changlang, Dibang valley, Siang, Subansiri; 450-600 m along roadsides.

Acacia catechu (L.f.) Willd., Sp. Pl. 4:1079. 1806; Baker in Hook. f., Fl. Brit. India 2:295. 1878; Ohashi in Hara *et al.*, Enum. Fl. Pl. Nep. 2:103. 1979. *Mimosa catechu* L.f., Suppl. Pl. 439. 1781. *Acacia catechuoides* Wallich ex Prain, Bengal Pl. 1:458. 1903.

Local name : Khair (Asm.).

Trees with recurved prickles inserted below leaf base. Flowers pale yellowish. Pods stalked, oblong, glabrous.

Fl. & Fr. : May - July.

Distrib. : Siang; up to 1500 m.

Use : The heart wood is dark red, very hard and durable. Cutch and Katha (Khair) is widely used with betel and are obtained by boiling chips of heart wood.

Acacia farnesiana (L.) Willd., Sp. Pl. 4:1083. 1805; Baker in Hook. f., Fl. Brit. India 2:292. 1878; Ohashi, Fl. E. Himal 3:54. 1975. *Mimosa farnesiana* L., Sp. Pl. 521. 1753. *Vachellia farnesiana* (L.) Wight & Arn., Prodr. Fl. Pen. Ind. Or. 272. 1834. Fig. 93.

Local name : Tarua-kadam (Asm.).

Shrubs or small trees; branches slender. Leaves bipinnate; stipules spinescent; leaflets 20-40, coriaceous. Flowers bright yellow, fragrant in globose heads. Pods thick, cylindric, glabrous, pale brown with dense horizontal striae.

Fl. & Fr. : Sept. - July.

Distrib. : Arunachal Pradesh.

Use : Flowers are used in preparation of cassie perfume.

Acacia pennata (L.) Willd., Sp. Pl. 4:1090. 1806; Baker in Hook. f., Fl. Brit. India 2:297. 1878, p.p., excl. *Mimosa torta* Roxb. *Mimosa pennata* L., Sp. Pl. 1507. 1753. *Acacia pennata* var. *arrophula* D. Don ex Baker in Hook. f., Fl. Brit. India 2:298. 1878.

Local name : Tat-kung (Abor); Kuchai (Asm.).

Large prickly climbers. Leaflets thin, linear-oblong; pinnae more than 50 pairs. Flowers in elongate compound panicles, pale white. Pods star shaped, dark brown, 8-14 seeded.

Fl. & Fr. : Sept. - Dec.

Distrib. : Siang; up to 500 m.

Use : Bark is used for fish poisoning.

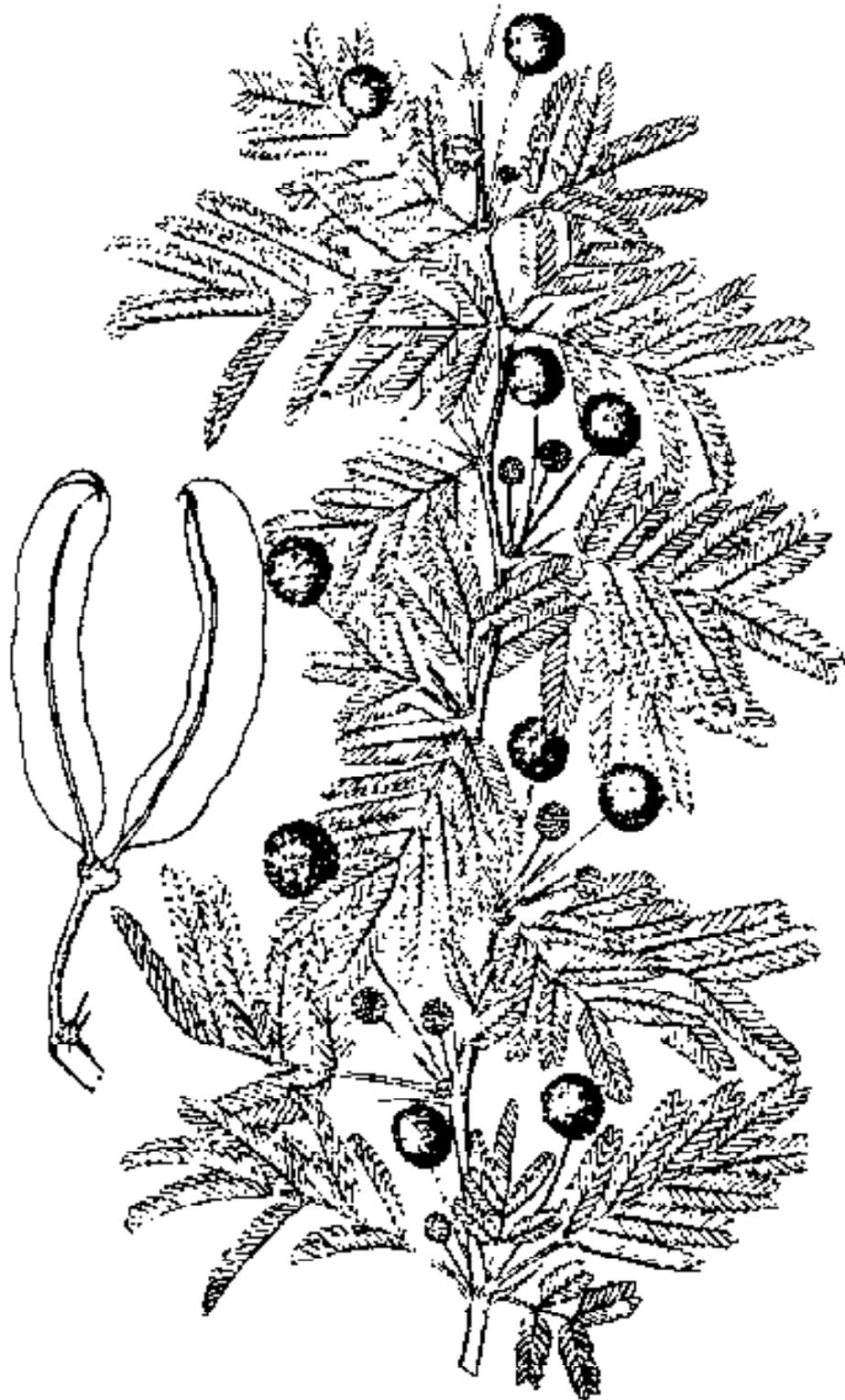


Fig. 93. *Acacia farnesiana* (L.) Willd. : a. Flowering twig; b. Pods.

Acacia pruinescens Kurz in J. Asiat. Soc. Bengal 45(2):296, 298. 1876; Kanjilal *et al.*, Fl. Assam 2:155. 1938.

Local name : Rampet-ruibi (Abor, Miri).

Large climbers with recurved prickles. Leaflets 40-60 pairs, linear-oblong. Flowers yellow in many flowered globose heads.

Fl. & Fr. : April - Jan.

Distrib. : Lohit; 300-1000 m, along primary forest edges.

Acacia rugata (Lamk.) Voigt, Hort. Suberb. Calcut. 263. 1845; Ohashi in Hara *et al.*, Enum. Fl. Pl. Nep. 2:104. 1979. *Mimosa rugata* Lamk., Encycl. Meth. Bot. 1:20. 1783. *M. concinna* Willd., Sp. Pl. 4:1039. 1806. *Acacia concinna* (Willd.) DC., Prodr. 2:464. 1825; Baker in Hook. f., Fl. Brit. India 2:296. 1878.

Local name : Pasoi-tenga, Kusia-Kaint, Amsikira (Asm.).

Straggling, prickly shrubs. Leaflets 30-50, membranous, oblong. Flowers brick-red to white. Pods thick, fleshy, 6-10 seeded.

Fl. & Fr. : Nov. - Jan.

Distrib. : Subansiri.

Use : The paste prepared from powdered stems is used to stupefy fish.

Acacia torta (Roxb.) Craib in Kew Bull. 410. 1915. *Mimosa torta* Roxb., Fl. Ind. 2:566. 1832. *A. pennata auct. non* (L.) Willd. ; Baker in Hook. f., Fl. Brit. India 2:297. 1878, *p.p. quoad A. torta* Roxb.

Large climbers with hooked prickles. Flowers pale yellow in dense globose heads. Pods thin, flat, tomentose.

Fl. & Fr. : Aug. - Sept.

Distrib. : Changlang, Tirap; up to 1000 m, along foot track and in valleys.

Albizia arunachalensis Sahnj & Naithani in Ind. For. 105(4):274. 1985.

Fig. 94.

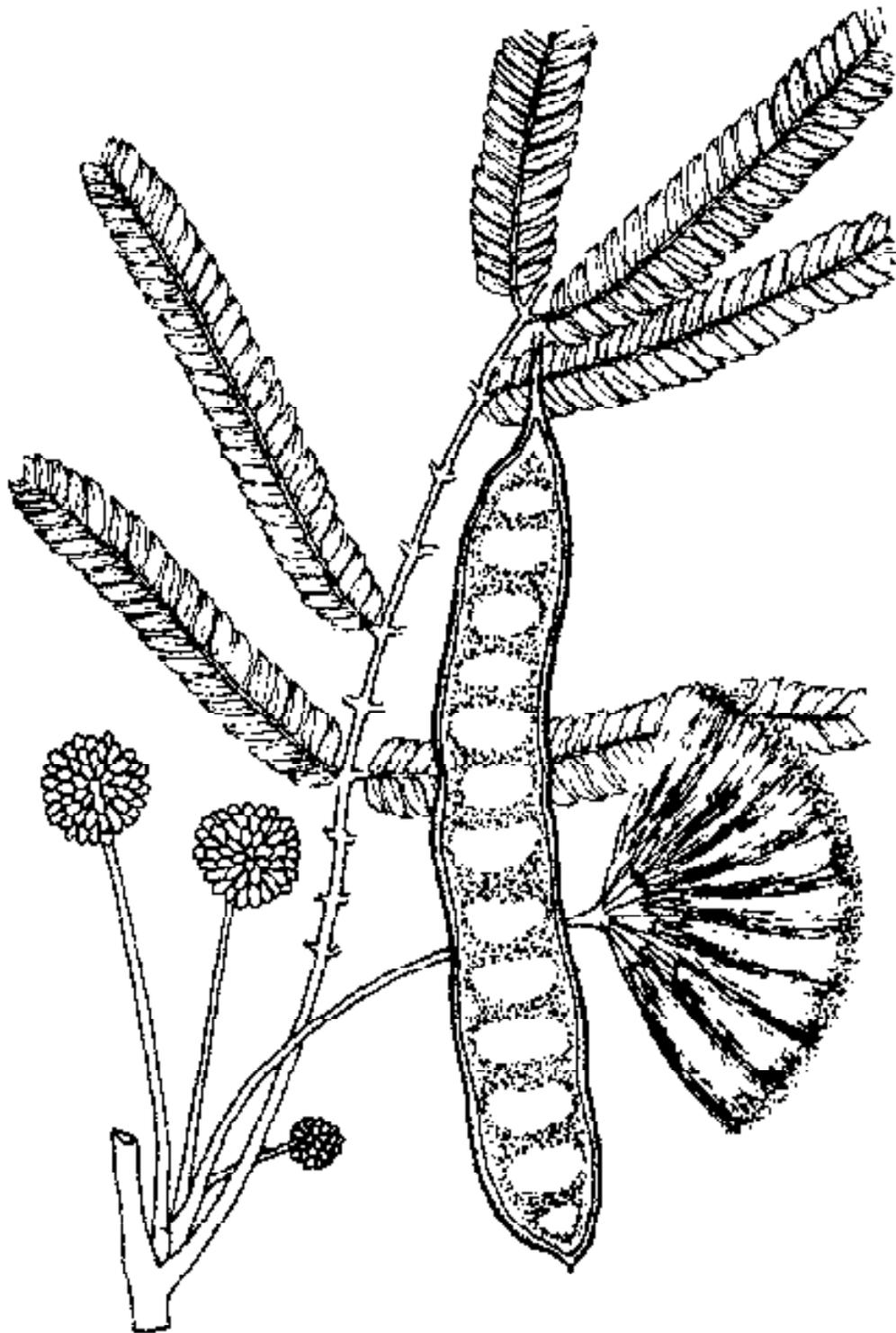


Fig. 94. *Albizia arunachalensis* Sahní & Naithani : a. Flowering twig;
b. Pod. (After Sahní & Naithani 1979).

Trees, 5-10 m high. Leaves bipinnate; leaflets 10-26 pairs, narrow-oblong, acute, base truncate. Flowers creamish yellow in 5-6 flowered globose heads. Pods oblong, compressed, pubescent, 20-seeded. Seeds oblong, smooth.

Fl. & Fr. : Oct. - May.

Distrib. : Kameng; up to 1000 m.

Albizia chinensis (Osbeck) Merr. in Amer. J. Bot. 3:575. 1916; Ohashi in Hara & Williams, Enum. Fl. Pl. Nep. 2:104. 1979. *Mimosa chinensis* Osbeck, Dagbok Ostind. Resa 233. 1757. *Albizia stipulata* Boiv., Encycl. Meth. 19(2):33. 1838; Baker in Hook. f., Fl. Brit. India 2:300. 1878.

Local name : Sau, Saw-koroi (Asm.); Tat-kung-asing (Abor, Adi); Gur-gong-asing (Miri).

Large trees, 10-20 m high. Bark dark brown. Leaves with many glands on the rachis; pinnae 6-20 pairs; leaflets 20-40 pairs, falcate-oblong. Flowers in terminal and axillary paniced racemes, yellowish white; calyx and corolla silky pubescent. Pods thin, light brown, glabrous, 4-10 seeded.

Fl. & Fr. : Aug. - Oct.

Distrib. : Changlang, Subansiri, Tirap; 200-1800 m.

Albizia gamblei Prain in J. Asiat. Soc. Bengal 66(2): 513. 1897; Kanjilal *et al.*, Fl. Assam 2:169. 1938.

Trees up to 12 m high. Leaves with a large gland near base of rachis; pinnae 2-3 pairs with large projecting glands; leaflets 3-7 pairs, ovate-lanceolate. Flowers in axillary panicles. Pods flat, brown, 6-8 seeded.

Fl. & Fr. : Dec. - March.

Distrib. : Kameng; 700-2100 m.

Albizia julibrissin Durazz subsp. *mollis* (Wallich) Ali & Saeeda Quaraishi in Pakistan J. For. 17(3):368. 1967. *Acacia mollis* Wallich, Pl. Asiat. Rar. 2:76, t. 177. 1831. *Albizia mollis* (Wallich) Boiv., Encycl. Meth. 19(2):33. 1838. *Acacia julibrissin* Willd. var. *mollis* (Wallich) Benth. ex Baker in Hook. f., Fl. Brit. India 2:300. 1878.

Small trees. Leaflets coriaceous, pubescent. Flowers whitish. Pods flat, membranous, glabrous, grey to pale brown.

Fl. & Fr. : June - Aug.

Distrib. : Changlang, Siang, Tirap.

Albizia kalkora (Roxb.) Prain in J. Asiat. Soc. Bengal 66(2):511. 1897; Kanjilal *et al.*, Fl. Assam 2:166. 1838. *Mimosa kalkora* Roxb., Fl. Ind. 2:547. 1824.

Trees up to 10 m high. Leaf-rachis with a large elongate gland at base; pinnae 3-8 pairs; leaflet 10-22 pairs. Flowers white, fragrant. Pods strap shaped, firm, dark brown, 6-10 seeded.

Fl. & Fr. : May - Aug.

Distrib. : Kameng.

Albizia lebbeck (L.) Benth. in Hook., London J. Bot. 3:87. 1844; Baker in Hook. f., Fl. Brit. India 2:298. 1878. *Mimosa lebbeck* L., Sp. Pl. 516. 1753.

Local name : Kothia-oroi (Asm.).

Trees, 16-20 m high. Leaf-rachis with oblong gland at base; leaflets 5-12 pairs, oblong, emarginate, base unequal. Flowers solitary or in fascicles, greenish white. Pods 3-12 seeded.

Fl. & Fr. : April - Dec.

Distrib. : Arunachal Pradesh.

Use : Useful in veneering and also for turnery; exported largely for decorative furniture work.

Albizia lucidior (Steud.) Nielsen in Adansonia 19:222. 1979. *Inga lucidior* Steud., Nom. Bot. ed. 2,810. 1840. *Albizia lucida* (Roxb.) Benth. in Hook., London J. Bot. 3:86. 1844; Baker in Hook. f., Fl. Brit. India 2:299. 1878. *Mimosa lucida* Roxb., Fl. Ind. 2:544. 1832, *non* Vahl 1807.

Local name : Dumkol-asing (Abor); Moj, Michha-gach (Asm.); Lang-git-asing, Tage, Dumbre (Miri).

Evergreen trees; bark brown. Leaf-rachis with cup shaped gland; pinnae 1(-2) pairs with glands; leaflets 2(-4), oblong-lanceolate. Flowers yellow. Pods thin, shining, 6-8 seeded.

Fl. & Fr. : Sept. - Dec.

Distrib. : Subansiri; 100-1200 m.

Albizia odoratissima (L.f.) Benth. in Hook., London J. Bot. 3:88. 1844; Baker in Hook. f., Fl. Brit. India 2:299. 1878. *Mimosa odoratissima* L.f., Suppl. Pl. 437. 1781. *Albizia odoratissima* var. *mollis* Benth. ex Baker in Hook. f., Fl. Brit. India 2:299. 2878.

Local name : Hiharu, Goroi (Asm.).

Deciduous trees, 8-9 m high; bark nearly black. Leaf-rachis finely downy with large gland; leaflets 7-20 pairs, obliquely oblong. Flowers solitary or in fascicles, yellow, fragrant. Pods thin, reddish brown, flexible, 8-12 seeded.

Fl. & Fr. : April - June.

Distrib. : Changlang, Kameng.

Albizia procera (Roxb.) Benth. in Hook., London J. Bot. 3:89. 1844; Baker in Hook. f., Fl. Brit. India 2:299. 1878. *Mimosa procera* Roxb., Pl. Corom. 2:12, t. 121. 1798.

Local name : Sidak (Abor); Korai (Asm.); Tantari-asing (Miri).

Subdeciduous trees up to 24 m high; bark smooth, yellowish grey. Pinnae 2-6 pairs; leaflets 6-16 pairs, obliquely oblong, green to reddish brown, glabrous, 6-12 seeded.

Fl. & Fr. : Aug. - Dec.

Distrib. : Changlang, Dibang valley, Lohit, Siang; up to 200 m.

Entada phaseoloides (L.) Merr. in Philipp. J. Sci. Bot. 9:86. 1914. *Lens phaseoloides* L. in Stickman, Herb. Amboin. 18. 1754. *Ensada pursaetha* DC., Prodr. 2:425. 1825. *E. scandens* Benth. in Hook. London J. Bot. 4:332. 184; Baker in Hook. f., Fl. Brit. India 2:287. 1878.

Local name : Gila-lewa, Bor-ghilla, Ghila (Asm.).

Woody climbers, 30-150 m long; stems angular, twisted. Leaves bipinnate, terminal pairs often modified into tendrils; leaflets 2-5 pairs, obovate or oblong, acuminate. Flowers pale yellow in spikes. Pods woody, flat, curved, constricted between seeds. Seeds lenticular, shining brown.

Fl. & Fr. : July - Nov.

Distrib. : Siang, Subansiri; 500-800 m.

Use : Roasted seeds are eaten and also used as substitute for shampoo.

Mimosa pudica L., Sp. Pl. 518. 1753; Baker in Hook. f., Fl. Brit. India 2:291. 1878.

Decumbent, straggling, spiny herbs, 30-50 cm long. Leaves bipinnate; leaflets 5-26 pairs, oblique, narrowly oblong, acute. Flowers pink. Pods generally 4-seeded, linear-oblong, flat, constricted between seeds, sutures long, bristly hairy.

Fl. & Fr. : Sept. - Dec.

Distrib. : Kameng, Subansiri, Tirap; up to 450 m.

Mimosa rubicaulis Lamk. subsp. *himalayana* (Gamble) Ohashi in Hara & Williams, Enum. Fl. Pl. Nep. 2:126. 1979. *M. himalayana* Gamble in Kew Bull. 1920:4. 1920. *M. rubicaulis auct. non* Lamk.: Baker in Hook. f., Fl. Brit. India 2:291. 1878.

Small trees; branches slender, grey-downy mixed with minute, scattered hooked spines. Leaves bipinnate; leaflets 12-24 pairs, sensitive, ligulate, caducous, membranous. Flowers reddish in dense globose heads. Pods falcate, 6-10 seeded, scarsely prickly.

Fl. & Fr. : July - Oct.

Distrib. : Arunachal Pradesh.

Parkia roxburghii G. Don, Gen. Syst. 2:397. 1832; Baker in Hook. f., Fl. Brit. India 2:289. 1878.

Medium sized trees; branches spreading. Leaves bipinnate, rachis with glands beneath; leaflets 40-80 pairs, sessile, linear-oblong, falcate. Flowers pale yellow in dense long peduncled heads. Pods flat, strap shaped, coriaceous.

Fl. & Fr. : Oct. - April.

Distrib. : Arunachal Pradesh.

Use : Young fruits are consumed as vegetables.

Pithecellobium bigeminum (L.) Mart., *Flora* 20(2), *Beibl.* 8:115. 1837; Ohashi in Hara & Williams, *Enum. Fl. Pl. Nep.* 2:128. 1979. *Mimosa bigemina* L., *Sp. Pl.* 517. 1753; Baker in Hook. f., *Fl. Brit. India* 2:303. 1878. *M. monadelphum* Roxb., *Fl. Ind.* 2:544. 1832. *Pithecellobium monadelphum* (Roxb.) Kosterm. in *Reinwardtia* 3:11. 1954.

Medium sized trees, 3-8 m high; branchlets angular. Leaves bipinnate; leaf-rachis stout; leaflets 1-3 pairs, elliptic to oblong-lanceolate, acuminate, glabrous, puberulous along nerves beneath. Flowers white to pale creamy in terminal or axillary pedunculate heads. Pods twisted, rigidly coriaceous, slightly downy, 8-12 seeded. Seeds bluish black.

Fl. & Fr. : Sept. - Feb.

Distrib. : Siang; ca 350 m.

Pithecellobium clypearia (Jack.) Benth. in Hook., *London J. Bot.* 3:209. 1844; Baker in Hook. f., *Fl. Brit. India* 2:305. 1878. *Inga clypearia* Jack. in *Malay Misc.* 2(7):78. 1822.

Trees, 5-12 m high. Leaves bipinnate; leaflets 5-16 pairs, ovate-obtuse. Flowers white. Pods circinate, 8-10 seeded.

Fl. & Fr. : May - Jan.

Distrib. : Siang; up to 1350 m.

Pithecellobium dulce (Roxb.) Benth. in Hook., *London J. Bot.* 3:199. 1844; Baker in Hook. f., *Fl. Brit. India* 2:302. 1878. *Mimosa dulcis* Roxb., *Pl. Corom.* 1:67, t. 99. 1798. *Inga dulcis* (Roxb.) Willd., *Sp. Pl.* 4:1005. 1806.

Fig. 95.

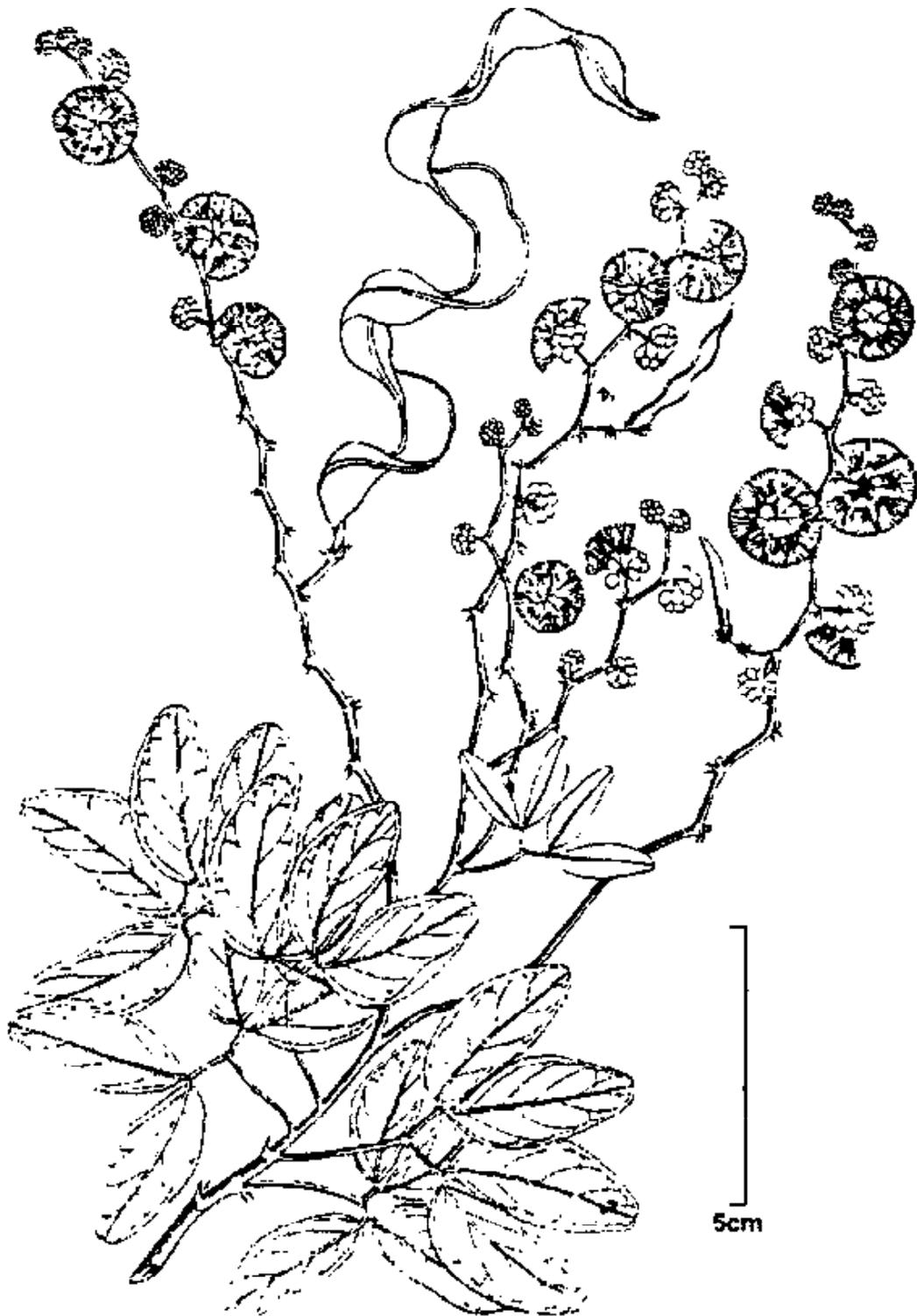


Fig. 95. *Pithecellobium dulce* (Roxb.) Benth. : Twig with flowers and fruit.

Erect trees. Leaves bipinnate, glabrous; leaflets oblique, obovate-oblong, obtuse, subcoriaceous. Flowers pale yellow. Pods 6-8 seeded, strap shaped, falcate, sutures indented with pulpy aril.

Fl. & Fr. : May - Nov.

Distrib. : Lohit, Siang.

Pithecellobium heterophyllum (Roxb.) Macbride in Contrib. Gray herb. n.s. 59:3. 1919. *Mimosa heterophylla* Roxb., Fl. Ind. 2:545. 1832. *Pithecellobium angulatum* Benth. in Hook., London J. Bot. 3:208. 1844; Baker in Hook. f., Fl. Brit. India 2:306. 1878.

Small trees. Leaves bipinnate with glands at base and between pair of leaflets; leaflets 5-10 pairs, oblong-lanceolate to elliptic, subcoriaceous, glabrescent. Flowers white or yellowish white in umbellate corymbs. Pods spirally twisted, constricted between seeds, 8-10 seeded, velvety when young.

Fl. & Fr. : May - June.

Distrib. : Changlang, Subansiri; up to 500 m.

Use : Fruits are used for dyeing clothes.

Pithecellobium montanum Benth. in Hook., London J. Bot. 3:209. 1844; Baker in Hook. f., Fl. Brit. India 2:306. 1878.

Trees; branchlets acute-angular. Leaves bipinnate, raised glands between pair of leaflets; leaflets 24-32 pairs, rigidly subcoriaceous, acute or subacute, glossy above, densely silky pubescent beneath. Flowers in axillary and terminal panicles, whitish. Pods twisted, rigid, 6-12 seeded.

Fl. & Fr. : March - Nov.

Distrib. : Arunachal Pradesh.

Insufficiently known materials

Acacia mollissima Willd., Enum. Hort. Berol. 1053. 1809.

Albizia sherriffii Baker f. in J. Bot. London 76:20. 1938.

Entada pursaetha DC. subsp. *sinohimalensis* Grierson & Long in Notes Roy. Bot. Gard. Edinburgh 37:348. 1979.

ROSACEAE

Agrimonia pilosa Ledeb. in Ind. Sem. H. Dorpat. Suppl. 1. 1823; Hook. f., Fl. Brit. India 2:361. 1878; Hara & Williams, Enum. Fl. Pl. Nep. 2:133. 1979. *A. eupatorium auct. non L.*: Hook. f., Fl. Brit. India 2:361. 1878, p.p. var. *pilosa*.

Local name : Taniom (Nishi).

Perennial sparsely hairy herbs up to 1.25 m high. Leaves 5-9 foliolate; leaflets obovate. Flowers in terminal spicate racemes, yellow. Achenes enclosed in bristly obconical hypanthium.

Fl. & Fr. : Aug; - Nov.

Distrib. : Kameng, Siang, Subansiri, Tirap; 1500-2500 m, along roadsides, wastelands and pine forests.

Agrimonia pilosa var. *nepalensis* (D. Don) Nakai in Bot. Mag. Tokyo 47:247. 1933. *A. nepalensis* D. Don, Prodr. Fl. Nep. 229. 1825; Hook. f., Fl. Brit. India 2:361. 1878.

Herbs up to 1 m high, pilose throughout. Leaflets obovate. Flowers in spicate racemes, yellowish. Achenes bristly, boconical.

Fl. & Fr. : July - Nov.

Distrib. : Kameng, Subansiri; 1500-2800 m, along roadsides and forest edges.

Cotoneaster acuminatus Lindley in Trans. Linn. Soc. London 13:101, t. 9. 1821; Hook. f., Fl. Brit. India 2:385. 1878.

Deciduous shrubs up to 5 m high. Leaves ovate-acuminate, pubescent beneath. Flowers in few flowered cymes. Fruits turbinate, red.

Fl. & Fr. : Sept. - Nov.

Distrib. : Kameng; 2000-3500 m, in open forests.

Cotoneaster assamensis Klotz in *Wiss. Zeits. Univ. Halle, Math. Nat.* 21(5-6): 996. 1972; Panigrahi *et al.* in *Bull. Bot. Surv. India* 28(1-4): 66.(1986) 1988.

Shrubs up to 3 m high. Leaves ovate-lanceolate, downy beneath. Flowers in axillary cymes, yellowish. Fruits turbinate.

Fl. & Fr. : Oct. - Jan.

Distrib. : Kameng; 2500-3500 m, along roadsides and hill slopes.

Cotoneaster bacillaris Wallich ex Lindley in *Edw., Bot. Reg.* 15:t. 1229. 1829; Hook. f., *Fl. Brit. India* 2:384. 1878.

Shrubs, 2-3 m high. Leaves obovate to elliptic-oblong. Flowers in axillary or terminal cymes, 6-8 mm across, white. Fruits globose, brown.

Fl. & Fr. : March - Sept.

Distrib. : Kameng, Lohit, Siang, Subansiri; 1600-2000 m, along bamboo plantation areas, forest cleared hill slopes.

Cotoneaster frigidus Wallich ex Lindley in *Edw., Bot. Reg.* 15:t. 1229. 1829; Hook. f., *Fl. Brit. India* 2:385. 1878; Hara in Hara & Williams, *Enum. Fl. Pl. Nep.* 2:135. 1979.

Trees, 6-8 m high, much branched. Leaves oblong-lanceolate. Flowers in many flowered cymes, white. Berries globose, scarlet.

Fl. & Fr. : May - Sept.

Distrib. : Kameng; 2500-3500 m, on open hill slopes.

Cotoneaster microphyllus Wallich ex Lindley in *Edw., Bot. Reg.* 13:t. 1114. 1827; Hook. f., *Fl. Brit. India* 2:387. 1878; Hara in Hara & Williams, *Enum. Fl. Pl. Nep.* 2:135. 1979.

Bushy shrubs. Leaves ovate or obovate, pubescent or tomentose beneath. Flowers solitary, white. Fruits globose, scarlet when ripe.

Fl. & Fr. : May - Sept.

Distrib. : Lohit; 2000-4000 m, in rock crevices, grasslands.

Cotoneaster rotundifolius Wallich ex Lindley in Edw., Bot. Reg. 15:t. 1229. in nota 1829; Hook. f., Fl. Brit. India 2:386. 1878; Hara in Hara & Williams, Enum. Fl. Pl. Nep. 2:135. 1979.

Shrubs ca 2 m tall with spreading branches. Leaves orbicular or orbicular-obovate with appressed hairs. Flowers solitary, rosy. Fruits turbinate, scarlet.

Fl. & Fr. : May - Sept.

Distrib. : Tawang; 3100-3300 m, on open hill slopes.

Cotoneaster sanguineus Yu in Bull. Brit. Mus. (Nat. Hist.) Bot. 1:135. 1954; Panigrahi & Kumar in Bull. Bot. Surv. India 28:78. 1986.

Deciduous erect herbs, 2-3 m high; young shoots pale pubescent. Leaves ovate-elliptic, pubescent beneath. Flowers solitary. Fruits obovoid.

Fl. & Fr. : June - Sept.

Distrib. : Tawang; 2500-4000 m, in open forests along slopes.

Docynia indica (Wallich) Decne. in Nouv. Arch. Mus. Paris 10:131, t. 14. 1874; Hook. f., Fl. Brit. India 2:369. 1878. *Pyrus indica* Wallich, Pl. Asiat. Rar. 2:56, t. 173. 1831.

Local name : Losu (Monpa).

Trees up to 20 m high with thorns at base of trunks. Leaves ovate-lanceolate or ovate-oblong. Flowers in 1-3 flowered cymes, white, densely wooly. Fruits ovoid.

Fl. & Fr. : Feb. - Dec.

Distrib. : Subansiri; 1500-1800 m, in open places.

Duchesnea indica (Andr.) Focke in Engler & Prantl, Pflanzenfam. 3(3):33. 1888. *Fragaria indica* Andr., Bot. Rep. 7:t. 479. 1807; Hook. f., Fl. Brit. India 2:343. 1878.

Fig. 96.

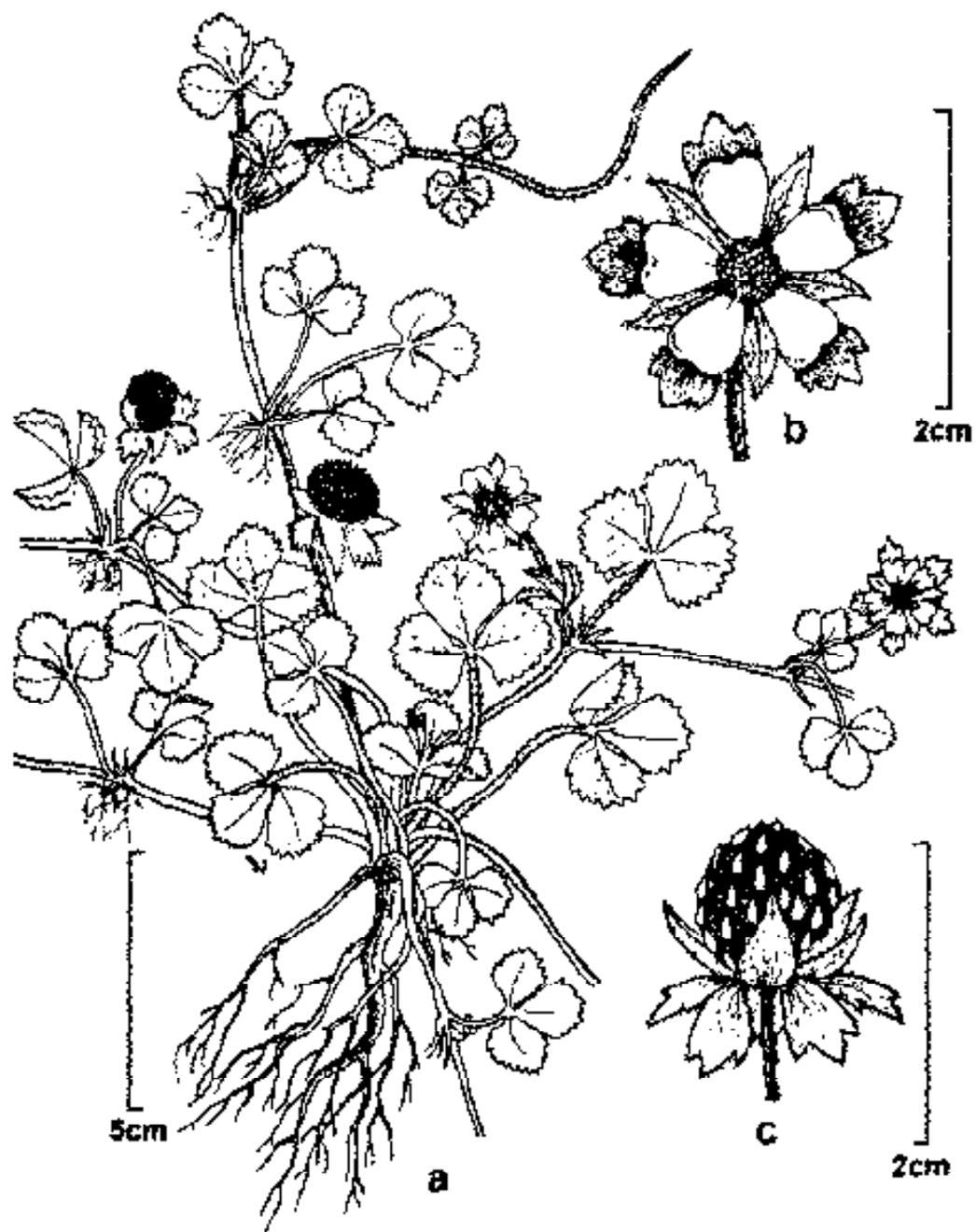


Fig. 96. *Duchesnea indica* (Andr.) Focke : a. Habit; b. Flower; c. Fruit.

Scapigerous herbs up to 20 cm high. Rootstocks stout, densely hairy. Lower leaves radical, 3-4 foliolate; leaflets obovate. Flowers axillary, solitary or in 2-3 flowered racemes, yellow. Fruits ellipsoid, red.

Fl. & Fr. : April - March.

Distrib. : Changlang, Subansiri, Tirap; 1500-1800 m, on grassy hills, moist sandy open fields and in paddy fields.

Eriobotrya bengalensis (Roxb.) Hook. f., Fl. Brit. India 2:371. 1878.
Mespilus bengalensis Roxb., Fl. Brit. India 2:510. 1824.

Local name : Laru-bandha (Asm.).

Trees up to 25 m high with oval, dense crown. Leaves oblong-lanceolate. Flowers in panicles, ca 1 cm across, white, fragrant. Fruits obovoid.

Fl. & Fr. : Feb. - Oct.

Distrib. : Changlang, Kameng, Tawang; 2000-3500 m, along bridle path.

Eriobotrya dubia (Lindley) Decne. in Nouv. Arch. Mus. Paris 10:145. 1874, p.p.; Hook. f., Fl. Brit. India 2:371. 1878. *Photinia dubia* Lindley in Trans. Linn. Soc. London 13:104, t. 10. 1821.

Trees, 7-15 m high with oval crown. Leaves elliptic-oblong, shining above. Flowers in panicles, ca 7 mm across, white. Fruits subglobose, orange red, 1-seeded. Seeds whitish.

Fl. & Fr. : Feb. - June.

Distrib. : Kameng; 1200-1600 m, in forests.

Eriobotrya petiolata Hook. f., Fl. Brit. India 2:370. 1878.

Trees, 8-12 m tall. Leaves long petioled, elliptic-lanceolate. Flowers in appressed tomentose thyrsoid panicles, white. Berries 2-3 seeded.

Fl. & Fr. : April - Sept.

Distrib. : Kameng; 2000-2500 m, in evergreen forests.

Fragaria daltoniana J. Gay in Ann. Sci. Nat. Bot. ser. 4, 8:204. 1857; Hook. f., Fl. Brit. India 2:345. 1878.

Prostrate, slender, sparsely hairy herbs; runners filiform; roots stout. Leaflets pinnatifid, teeth few. Flowers solitary, creamy. Fruits fusiform, bright red, fragrant.

Fl. & Fr. : May - Aug.

Distrib. : Kameng, Tawang; 2500-4500 m, along grassy slopes.

Fragaria nilgerrensis Schlecht. ex J. Gay in Ann. Sci. Nat. bot. ser. 4, 8:206. 1857; Hook. f., Fl. Brit. India 2:344. 1878.

Stout, creeping herbs. Leaves digitately 3-5 lobed; petioles and peduncles clothed with long spreading hairs. Fruits globose, white with pale pink tinge.

Fl. & Fr. : Sept. - Jan.

Distrib. : Kameng; 2000-3000 m, in open places along slopes.

Fragaria nubicola (Lindley ex Hook. f.) Lacaita in J. Linn. Soc. Bot. 43:467, 1916. *F. vesca* L. var. *nubicola* Lindley ex Hook. f., Fl. Brit. India 2:344. 1878.

Prostrate, slender, silvery hairy herbs with filiform runners. Leaflets sessile, obovate, many toothed. Flowers in few flowered peduncles, snow white. Fruits elongate.

Fl. & Fr. : April - June.

Distrib. : Kameng, Tawang; 1800-2500 m, on slopes along roadsides.

Fragaria vesca L., Sp. Pl. 494. 1753; Hook. f., Fl. Brit. India 2:344 1878, p.p.

Silvery hairy herbs. Leaves 3-5 foliolate, leaflets sessile, many toothed petioles and peduncles hairy. Fruits globose.

Fl. & Fr. : Sept. - Jan.

Distrib. : Kameng; 2000-3000 m.

Malus sikkimensis (Wenz.) Koehne, Gatt. Pomac. 27. 1890; Ohashi in Hara & Williams, Enum. Fl. Pl. Nep. 2:138. 1979. *Pyrus pashia* Buch.-Ham. ex D. Don var. *sikkimensis* Wenz. in Linnaea 38:49. 1874. *P. sikkimensis* (Wenz.) Hook. f., Fl. Brit. India 2:373. 1878.

Shrubs, 2-3 m high. Leaves ovate or ovate-lanceolate, tomentose beneath. Flowers in axillary corymbs, pink.

Fl. & Fr. : April - Sept.

Distrib. : Kameng; 2500-3500 m, in open forests.

Neillia rubiflora D. Don, Prodr. Fl. Nep. 229. 1825; Hook. f., Fl. Brit. India 2 (addenda):1. 1879; Purohit & Panigrahi in J. Econ. Tax. Bot. 4(3):952. 1983.

Shrubs, 1-3 m tall. Leaves cordate, 3-lobed, caudate-acuminate. Flowers in simple racemes, 6-8 mm across, white or pinkish red. Follicles oblong.

Fl. & Fr. : Aug. - Oct.

Distrib. : Kameng; 1600-2500 m, in forests and open places.

Neillia thyrsoflora D. Don, Prodr. Fl. Nep. 228. 1825; Hook. f., Fl. Brit. India 2 (addenda):1. 1879; Purohit & Panigrahi in J. Econ. Tax. Bot. 4(3):954. 1983.

Shrubs, 3-4 m high. Leaves 3-lobed, ovate-cordate. Flowers in axillary or terminal panicles, 4-6 mm across, white. Follicles oblong.

Fl. & Fr. : July - Feb.

Distrib. : Subansiri, Tirap; 1500-2500 m, in open forests, roadsides.

Neillia thyrsoflora var. *tunkinensis* (Vidal) Vidal in Adansonia 3:153, Pl. 1, f. 7-8. 1963; Purohit & Panigrahi in J. Econ. Tax. Bot. 4(3):956. 1983. *N. tunkinensis* Vidal in Nat. Syst. Paris 13(5):292. 1948.

Shrubs. Leaves ovate-cordate. Flowers in slightly branched panicles, white. Ovaries and follicles pilose throughout.

Fl. & Fr. : May - Nov.

Distrib. : Subansiri, Tirap; 1000-1500 m, in forests.

Photinia cuspidata (Bertol.) Balakr., Fl. Jowai 1:192. 1981. *Pyrus cuspidata* Bertol., Plant. Nouv. Asiat. 2:9, t. 1. 1865; Hook. f., Fl. Brit. India 2:378. 1878.

Trees, 10-15 m high with lax crown; branchlets lenticellate. Leaves ovate-lanceolate, caudate-acuminate, floccose woolly when young. Flowers in pyramidal panicles, white. Fruits obovoid.

Fl. & Fr. : March - Dec.

Distrib. : Kameng, Lohit, Siang, Subansiri, Tirap; 1500-2200 m, in dense evergreen forests and forest margins.

Photinia griffithii Decne., Mem. & Fam. Pom. 142. 1874; Hook. f., Fl. Brit. India 2:381. 1878.

Trees up to 20 m high; branches woolly. Leaves oblong-lanceolate, membranous. Flowers in axillary or terminal corymbs, yellowish white, woolly. Fruits globose.

Fl. & Fr. : April - Aug.

Distrib. : Kameng; 1500-2000 m, in open forests.

Photinia hookeri (Decne.) Merr. in Brittonia 4:82. 1941. *Pourthiaea hookeri* Decne., Nouv. Arch. Mus. Hist. Nat. Paris 10:148. 1874. *P. arguta* Decne. var. *hookeri* (Decne.) Hook. f., Fl. Brit. India 2:382. 1878.

Trees up to 15 m high with oval, lax crown. Leaves oblong-lanceolate or ovate-elliptic. Flowers in corymbose panicles, dull white, fragrant. Drupes obovoid, yellowish when ripe.

Fl. & Fr. : April - Nov.

Distrib. : Subansiri; 800-1200 m, along hill slopes, in open forests.

Photinia integrifolia Lindley in Trans. Linn. Soc. London 13:103. 1821; Hook. f., Fl. Brit. India 2:381. 1878; Kalkman in Blumea 21:419. 1973. *P. notoniana* Wight & Arn., Prodr. Fl. Pen Ind. Or. 302. 1834; Hook. f., Fl. Brit. India 2:381. 1878. *P. notoniana* var. *macrophylla* Hook. f., Fl. Brit. India 2:381. 1878. var. *integrifolia*.

Shrubs or small trees up to 7 m high. Leaves oblong or elliptic-oblong. Flowers in terminal corymbose panicles, ca 5 mm across, white. Fruits globose, black.

Fl. & Fr. : March - Dec.

Distrib. : Kameng, Siang, Subansiri; 1500-2500 m, in forests.

Photinia integrifolia var. *sublanceolata* Miq., Fl. Ind. Bat. 1(1):387. 1855; Kalkman in Blumea 21:423. 1973. *P. notoniana* var. *eugenifolia* (Lindley) Hook. f., Fl. Brit. India 2:381. 1878. *P. eugenifolia* Lindley in Edw., Bot. Reg. 23:t. 1956. 1837.

Shrubs or trees. Leaves lanceolate or broadly oblong. Flowers in hairy corymbs. Fruits ovoid, black.

Fl. & Fr. : Jan. - June.

Distrib. : Subansiri; 1600-2000 m, in open forests.

Photinia wardii C.E.C. Fischer in Kew Bull. 1936: 281. 1936.

Large climbers, branchlets purplish brown, glabrous. Leaves elliptic, cuspidate, rounded at base, margin entire, glabrous except hairy midrib. Flowers in corymbs, creamy, fragrant.

Fls : April.

Distrib. : Arunachal Pradesh; Delei-valley; 1350-1650 m.

Potentilla coriandrifolia D. Don, Prodr. Fl. Nep. 232. 1825; Hook. f., Fl. Brit. India 2:353. 1878.

Perennial herbs with stout rootstocks. Leaflets many, broadly ovate, deeply cut into spreading, linear, pointed lobes. Flowers in subumbellate corymbs, yellow. Achenes smooth.

Fl. & Fr. : April - Nov.

Distrib. : Kameng; 2000-3500 m, on grassy slopes, in rock crevices.

Potentilla fruticosa L. var. *rigida* (Wallich ex Lehm.) Wolf, Monogr. Pot. 57. 1908. *P. rigida* Wallich ex Lehm., Pugill. 3:3, 1831; *P. fruticosa* auct.

non L. : Hook. f., Fl. Brit. India 2:347. 1878, *p.p. quoad P. rigida* Wallich ex Lehm.

Erect or prostrate, much branched shrubs up to 1.25 m high. Leaflets 3-7, linear or oblong-lanceolate. Flowers solitary, 1.5-3 cm across, white. Achenes hairy.

Fl. & Fr. : April - July.

Distrib. : Kameng; 1800-2500 m, along forest edges and roadsides.

Potentilla griffithii Hook. f. var. *decurrens* Sojak in Candollea 43:452. 1988.

Herbs, 30-100 cm high, hairy. Leaflets 5-7, white appressed pubescent beneath. Flowers in panicled corymbs, shortly pedicelled, yellow. Achenes numerous, smooth.

Fl. & Fr. : Sept. - Dec.

Distrib. : Arunachal Pradesh; 2000-3000 m, in grasslands.

Potentilla khasiana Clarke ex B.K. Dixit & Panigrahi in Bull. Surv. India 21:136. (1979) 1981. *P. khasiana* Clarke, in sched. *Potentilla* sp. Hook. f., Fl. Brit. India 2:360. 1878. *P. wallichiana* Delile ex Lehm. var. *ternata* Wolf in Bibl. Bot. 71:412. 1908, *non P. ternata* C. Koch 1847, *nec.* Freyn 1902. Fig. 97.

Local name : Laru-bandha (Asm.).

Perennial, puberulous, woody, unbranched herbs. Leaves ternate, usually radical, few; cauline leaves with long petioles. Flowers in corymbose cymes, 1-1.5 cm across, yellow. Achenes glabrous.

Fl. & Fr. : March - July.

Distrib. : Kameng; 1600-2200 m, in open forests and grassy fields.

Potentilla leuconota D. Don, Prodr. Fl. Nep. 230. 1825; Hook. f., Fl. Brit. India 2:352. 1878.

Perennial herbs with stout rootstocks. Leaflets many, oblong, closely serrate, appressed shining silky beneath. Flowers in subumbellate corymbs, yellow. Achenes sparsely hairy.

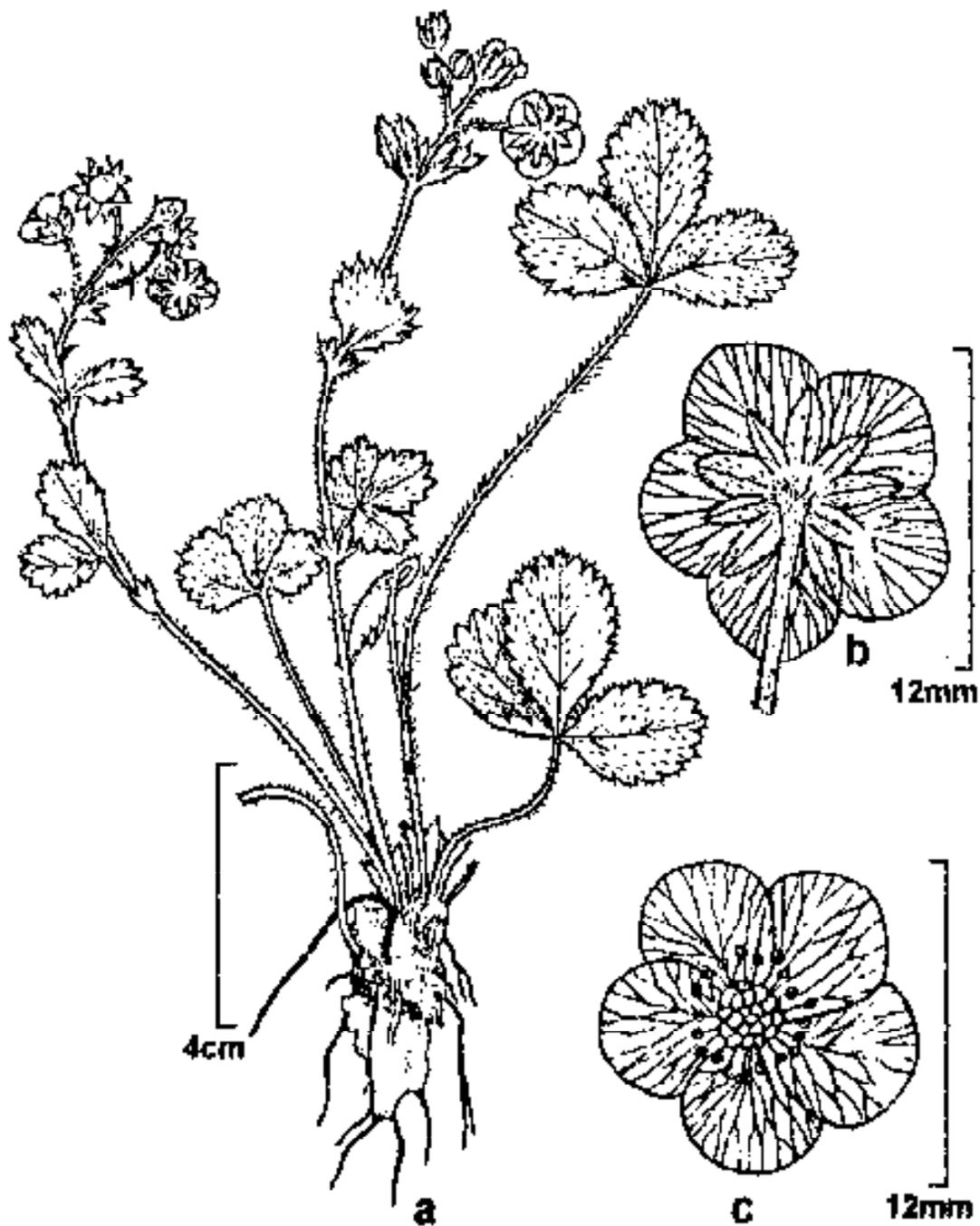


Fig. 97. *Potentilla khasiana* C.B. Clarke ex B.K. Dixit et Panigrahi :
 a. Habit; b. Dorsal view of a flower showing 5 bracteoles alternating
 with 5 sepals; c. Ventral view of flower showing 20 stamens. (After
 Dixit & Panigrahi 1979).

Fl. & Fr. : April - Aug.

Distrib. : Kameng; 2000-3500 m, in grasslands.

Potentilla lineata Trevir ex Reich., Ic. Bot. Cent. 17:t. 8. 1824; Grierson & Long, Fl. Bhutan 1(3):571. 1987. *P. fulgens* Wallich ex Lehm., Revis. Potent. 54. 1856; Hook. f., Fl. Brit. India 2:249. 1878.

Prostrate, softly silky herbs. Leaflets elliptic-oblong or obovate, silvery hairy beneath. Flowers in erect panicles or corymbs, yellow. Achenes hairy.

Fl. & Fr. : April - Sept.

Distrib. : Kameng, Tawang; 2500-4200 m, along open meadows and grassy slopes in alpine region, sometimes gregarious in recent clearings of mountain slopes and oak forests.

Use : Roots chewed with 'Pan' (Betel leaf) for strengthening gums (tooth tonic) and to cure diarrhoea.

Potentilla microphylla D. Don, Prodr. Fl. Nep. 231. 1825; Hook. f., Fl. Brit. India 2:352. 1878; Ohashi in Hara *et al.*, Enum. Fl. Pl. Nep. 2:140. 1979. *P. microphylla* var. *latiloba* Wallich ex Hook. f., Fl. Brit. India 2:353. 1878.

Densely tufted herbs, somewhat woody nature. Leaflets numerous, oblong or rounded, glabrous beneath. Flowers solitary or in 2-3 flowered scapes, bright yellow. Achenes smooth.

Fl. & Fr. : May - Aug.

Distrib. : Kameng, Tawang; 2500-4500 m, on moist soil slopes along rocky corners.

Potentilla monanthes Wallich ex Lehm. var. *sibthorpioides* Hook. f., Fl. Brit. India 2:358. 1878.

Perennial herbs up to 15 cm high with filiform branches. Leaves radical or cauline, 3-foliolate; leaflets broadly obtuse, glandular hairy. Flowers axillary, solitary, ca 6 mm across, yellow. Achenes globose, hairy.

Fl. & Fr. : April - Aug.

Distrib. : Tawang; 3000-4500 m, on moist soil slopes.

Potentilla nepalensis Hooker, Exot. Fl. t.88. 1824; Hook. f., Fl. Brit. India 2:355. 1878.

Suberect herbs, more or less clothed with hairs; rootstocks woody. Leaves 5-foliolate; leaflets obovate or elliptic-obovate. Flowers in dichotomous panicles, yellowish. Achenes globose, hairy.

Fl. & Fr. : July - Sept.

Distrib. : Kameng, Siang, Subansiri, Tawang, Tirap; 1500-2500 m, on carboniferous rocks, sand stones, along stony path and open slopes of temperate forests.

Use : Roots impart a red colour to wool and wood are used as a part of dyestuff. Its ash mixed with oil is applied on burn injuries.

Potentilla peduncularis D. Don, Prodr. Fl. Nep. 230. 1825; Hook. f., Fl. Brit. India 2:351. 1878; Ohashi in Hara *et al.*, Enum. Fl. Pl. Nep. 2:140. 1979. *P. peduncularis* var. *obscura* Hook. f., Fl. Brit. India 2:352. 1878. *P. peduncularis* var. *clarkei* Hook. f., Fl. Brit. India 2:352. 1878.

Herbs up to 30 cm high; rootstocks long and hard. Leaflets linear or obovate-oblong, white, hairy beneath. Flowers in few flowered corymbs, yellow. Achenes oblong, brown.

Fl. & Fr. : May - Aug.

Distrib. : Lohit, Tawang; 3000-4000 m, in open places along rocky corners.

Potentilla polyphylla Wallich ex Lehm., Nov. et Min. Cogn. Stirp. Pugill. 3:13. 1831; Kalkman in Blumea 16:338. 1968. *P. mooniana* Wight, Ic. Pl. Ind. Or. 1:t.233. 1840; Hook. f., Fl. Brit. India 2:349. 1878.

Herbs, hirsute or villous. Leaflets many, elliptic or orbicular, coriaceous, silky. Flowers in corymbose panicles, pale white. Achenes smooth.

Fl. & Fr. : Oct. - Dec.

Distrib. : Tawang; 3000-4000 m, on open moist slopes along rocky corners.

Potentilla saundersiana Royle, Ill. Bot. Himal. 207, t. 41. f. 1. 1835. *P. multifida* L. var. *saundersiana* (Royle) Hook. f., Fl. Brit. India 2:354. 1878.

Herbs. Leaves palmately 3-5 foliolate; leaflets linear-oblong, deeply incised, tomentose or silky beneath. Flowers in corymbose panicles, yellow. Achenes many, small.

Fl. & Fr. : Sept. - Nov.

Distrib. : Kameng, Siang, Subansiri, Tawang; 180-3000 m, in open moist places.

Potentilla sundaica (Blume) O. Ktze., Rev. Gen. Pl. 1:219. 1891; Kalkman in Blumea 16:343. 1968. *Fragaria sundaica* Blume, Bijdr. 17:1106. 1826. *Potentilla kleiniana* Wight & Arn. in Wight, Ill. Ind. Bot. 1:t. 85. 1831; Hook. f., Fl. Brit. India 2:359. 1878.

Diffuse herbs with woody rootstocks; runners up to 40 cm long. Leaves 3-foliolate; leaflets obovate. Flowers axillary, solitary, ca 1.5 cm across, yellow. Fruits globose, red.

Fl. & Fr. : March - Sept.

Distrib. : Kameng, Siang, Subansiri, Tirap; 600-1600 m, in marshy cultivated fields, grassy localities and along river sides.

Use : The plant is considered as astringent. Fresh leaves are pounded and applied to abscesses. Roots and stems are pounded and applied as an antidote in snake and centipede bites.

Prunus arborea (Blume) Kalkman var. *montana* (Hook. f.) Kalkman in Blumea 13:99. 1965. *Pygeum montanum* Hook. f., Fl. Brit. India 2:321. 1878. *P. capitellatum* Hook. f., Fl. Brit. India 2:321. 1878. *P. ciliatum* Koehne in Bot. Jahrb. 51:184. 1913; Calder *et al.* in Rec. Bot. Surv. India 11(1):121. 1926. *P. ocellatum* Koehne in Bot. Jahrb. 51. 184. 1913; Calder *et al.* in Rec. Bot. Surv. India 11(1):121. 1926.

Trees up to 13 m high. Leaves oblong-lanceolate, caudate-acuminate. Flowers solitary or in crowded racemes, white. Drupes bilobed.

Fl. & Fr. : March - June.

Distrib. : Kameng; 1500-2500 m, in forests.

Prunus cerasoides D. Don, Prodr. Fl. Nep. 239. 1825; Hara in Hara *et al.*, Enum. Fl. Pl. Nep. 2:141. 1979. *P. puddum* Roxb. ex Brandis, For. Fl. N.W. & C. India 194. 1874; Hook. f., Fl. Brit. India 2:314. 1878. *Maddenia pedicellata* Hook. f., Fl. Brit. India 2:318. 1878.

Deciduous trees up to 15 m high. Leaves ovate or oblong-lanceolate; stipules finely cut, ends glandular. Flowers from the axils of fallen leaves, corymbose, 2-5 cm across, light pink. Drupes ellipsoid, yellow.

Fl. & Fr. : April - Aug.

Distrib. : Kameng, Lohit, Subansiri, Tawang; 1200-3100 m, in outskirts of villages.

Prunus ceylanica (Wight) Miq., Fl. Ind. Bat. 1(1):366. 1855; Kalkman in Blumea 13(1):52, f. 18. 1965. *Polydontia ceylanica* Wight, Ill. Ind. Bot. 1:203. 1840. *Pygeum glaberrimum* Hook. f., Fl. Brit. India 2:319. 1878.

Trees up to 12 m high, much branched. Leaves oblong-lanceolate. Flowers in slender racemes, white. Drupes elongate.

Fl. & Fr. : Nov. - Jan.

Distrib. : Kameng, Siang; 500-1200 m, in forests.

Prunus cornuta (Wallich ex Royle) Steud., Nom. Bot. ed. 2,2:403. 1841; Hara in Hara *et al.*, Enum. Fl. Pl. Nep. 2:141. 1979. *Cerasus cornuta* Wallich ex Royle, Ill. Bot. Himal. t. 38.f. 2. 1834. *Padus cornuta* (Wallich ex Royle) Carr. in Rev. H. 1869: 275. 1869; Singh in Ind. For. 100:497. 1974. *Prunus padus auct. non L.*: Hook. f., Fl. Brit. India 2:315. 1878.

Trees up to 18 m high. Leaves oblong-obovate. Flowers in racemes from axils of fallen leaves, white. Drupes subglobose, glabrous, red.

Fl. & Fr. : April - June.

Distrib. : Subansiri; 1500-2500 m, in open forests.

Prunus domestica L., Sp. Pl. 475. 1753; Ghora & Panigrahi in Fasc. Fl. India 18:6. 1984. *P. communis* Huds., Fl. Angl. ed. 2(1):212. 1778.

P. communis var. *domestica* (L.) Huds., Fl. Angl. ed. 2(1):212. 1778; Hook. f., Fl. Brit. India 2:315. 1878.

Trees ca 12 m high. Leaves ovate-lanceolate, pubescent beneath. Flowers in pairs. Drupes smooth, fleshy.

Fl. & Fr. : Feb. - July.

Distrib. : Tirap; in forests.

Use : Decoction of leaves is given in case of dysentery.

Prunus napaulensis (Seringe) Steud., Nom. Bot. ed. 2,2:403. 1841 'napaulensis'; Hook. f., Fl. Brit. India 2:316. 1878, p.p. 'nepalensis'. *Cerasus napaulensis* Seringe in DC., Prodr. 2:540. 1825.

Trees up to 17 m high. Leaves oblong-lanceolate or lanceolate. Flowers in terminal racemes, 7-8 mm across, white. Drupes oblong, fleshy, black.

Fl. & Fr. : April - May.

Distrib. : Subansiri; 1500-1800 m, in forests.

Prunus persica (L.) Batsch, Beytr. Entw. Pragm. Gesch. Natur. - Reiche 1:30. 1801; Hook. f., Fl. Brit. India 2:313. 1878. *Amygdalus persica* L., Sp. Pl. 472. 1753.

Local name : Kom-bong (Abor).

Shrubs or trees ca 8 m high. Leaves lanceolate, glandular at base. Flowers in fascicles, occur with new leaves, ca 2 cm across, white. Drupes ellipsoid, velutinous, fleshy.

Fl. & Fr. : Jan. - June.

Distrib. : Siang, Tirap; 800-1500 m, around outskirts of villages.

Note : Cultivated peach tree. Fruits are edible.

Prunus phaeosticta (Hance) Maxim. in Bull. Ac. Imp. Sc. St. Petersburg 29:110. 1883; Kalkman in Blumea 13(1):40. 1965. *Pygeum phaeostictum* Hance in J. Bot. 8:72. 1870. *Prunus punctata* Hook. f., Fl. Brit. India 2:317. 1878, p.p.

Shrubs or trees up to 12 m high. Leaves oblong, black gland dotted beneath. Flowers in axillary subcorymbiform racemes, 6-8 mm across, white. Drupes globose, black.

Fl. & Fr. : May - Oct.

Distrib. : Subansiri; 1500-2500 m, in open forests.

Prunus rufa Steud. ex Hook. f., Fl. Brit. India 2:314. 1878; Ghora & Panigrahi in Fasc. Fl. India 18:23. 1984. *Prufa* Steud., Nom. B. ed. 2,2:404. 1941, *nom nud.*

Local name : Gonde (Apat.).

Trees up to 8 m high; young branches rufous, densely tomentose. Leaves oblong-obovate, glandular. Flowers axillary, solitary, pink. Drupes ellipsoid, fleshy, red.

Fl. & Fr. : April - May.

Distrib. : Subansiri; 1500-2000 m.

Use : Fruits are edible.

Prunus salicina Lindley, Trans. Hort. Soc. London 7:239. 1829; Ghora & Panigrahi in Fasc. Fl. India 18:9. 1984. *P. triflora* Roxb., Fl. Ind. 2:501. 1832; Hook. f., Fl. Brit. India 2:315. 1878.

Small trees. Leaves oblanceolate. Flowers usually on 3-flowered peduncles, white. Drupes ovoid-cordiform, smooth, purple.

Fl. & Fr. : March - Aug.

Distrib. : Tirap; 1500-2000 m, along forest edges.

Prunus undulata Buch.-Ham. ex D. Don, Prodr. Fl. Nep. 239. 1825; Ghora & Panigrahi in Fasc. Fl. India 18:36. 1984. *Cerasus acuminata* Wallich, Pl. Asiat. Rar. 2:78, t. 181. 1831. *P. acuminata* (Wallich) Dietr., Syn. 3:42. 1842; Hook. f., Fl. Brit. India 2:317. 1878.

Trees up to 12 m high. Leaves oblong-lanceolate. Flowers in axillary racemes, 5-8 mm across, creamy, fragrant. Drupes ovoid, pointed at apex.

Fl. & Fr. : Aug. - Dec.

Distrib. : Lohit, Subansiri, Tirap; 1500-2500 m, along sandy stream sides in dense forests.

Pyracantha crenulata (D. Don) Roemer, Syn. 3:220. 1847; Kitam. in F. & Fl. Himal. 155. 1955. *Mespilus crenulata* D. Don, Prodr. Fl. Nep. 238. 1825; *Crataegus crenulata* (D. Don) Roxb., Fl. Ind. 2:509. 1832; Hook. f., Fl. Brit. India 2:384. 1878.

Shrubs, 2-3 m high with rigid spines. Leaves crowded at branch apices, linear-oblong or obovate. Flowers in many flowered corymbs, 6-8 mm across, white. Fruits globose, orange red when ripe.

Fl. & Fr. : April - Aug.

Distrib. : Kameng; 1500-1800 m, in forests.

Pyrus expansa (Koehne) Bennet in Ind. J. For. 4:68. 1981. *Sorbus expansa* Koehne in Sargent, Pl. Wilson. 1:457. 1913; Kanjilal *et al.*, Fl. Assam 2:375. 1938.

Shrubs or small trees.

Fl. & Fr. : Aug. - Nov.

Distrib. : Arunachal Pradesh; 1800-2500 m, in forests.

Pyrus griffithii Decne., Mem. Fam. Pom. 170. 1874; Hook. f., Fl. Brit. India 2:377. 1878.

Trees up to 10 m high. Leaves elliptic, woolly beneath. Flowers in many flowered corymbs, white. Fruits globose, 2-seeded.

Fl. & Fr. : July - Oct.

Distrib. : Subansiri; 1600-1800 m, in dense forests.

Pyrus pashia Buch. - Ham. ex D. Don, Prodr. Fl. Nep. 236. 1825; Hook. f., Fl. Brit. India 2:374. 1878; Hara in Hara *et al.*, Enum. Fl. Pl. Nep. 2:143. 1979.

Local name : Semo (Apat.).

Trees up to 15 m high. Leaves ovate-elliptic or lanceolate. Flowers in axillary or terminal umbels or fascicles, ca 1.5 cm across, white or pinkish. Fruits globose, black when ripe.

Fl. & Fr. : March - Oct.

Distrib. : Subansiri; 1600-1800 m, in open forests and village outskirts.

Use : Fruits are edible.

Pyrus polycarpa Hook. f., Fl. Brit. India 2:378. 1878.

Trees up to 10 m high. Leaves ovate-lanceolate. Flowers in axillary or terminal corymbs, ca 1 cm across, pinkish. Fruits ovoid.

Fl. & Fr. : March - Sept.

Distrib. : Subansiri; 1500-1800 m, in forests and forest edges.

Pyrus wenzigiana (Schneid.) Bennet in Ind. J. For. 4:68. 1981. *Sorbus ursina* Decne. var. *wenzigiana* Schneid. in Bull. Herb. Boiss. ser. 2.6:316. 1906. *S. wenzigiana* (Schneid.) Koehne in Fedde Repert. 10:516. 1912; Kanjilal *et al.*, Fl. Assam 2:375. 1938.

Shrubs. Leaves lanceolate, ferruginous, serrulate towards apex. Flowers reddish crimson.

Fl. & Fr. : June - Sept.

Distrib. : Arunachal Pradesh; 3000-4000 m, in open hill slopes.

Rosa brunonii Lindley, Monogr. Rosa 120, t. 14. 1820; Hara in Hara *et al.*, Enum. Fl. Pl. Nep. 2:142. 1979. *R. moschata* auct. non Miller: Hook. f., Fl. Brit. India 2:367. 1878.

Straggling, prickly shrubs. Leaves imparipinnate; leaflets 5-9, ovate or lanceolate. Flowers in simple or compound terminal corymbs, ca 4 cm across, white. Fruits obovoid, yellowish brown.

Fl. & Fr. : April - Jan.

Distrib. : Kameng, Subansiri; 1600-2500 m, along small streams, amidst low herbs.

Rosa indica L., Sp. Pl. 492. 1753; Hook. f., Fl. Brit. India 2:364. 1878.

Spiny shrubs ca 2 m high. Leaves imparipinnate; leaflets ovate, serrate. Flowers axillary, solitary or in terminal corymbs, large, pink. Fruits brown.

Fl. & Fr. : April - Nov.

Distrib. : Subansiri; 1400-1800 m, often cultivated.

Rosa leschenaultiana Red & Thory ex Wight & Arn., Prodr. Fl. Pen. Ind. Or. 301. 1834; Hook. f., Fl. Brit. India 2:368. 1878. *R. sempervirens* Hook. f. & Thomson ex Hook. f., Fl. Brit. India 2:368. 1878.

Climbing, prickly shrubs. Leaflets elliptic-ovate, glandular beneath. Flowers in corymbs, whitish or pinkish. Fruits subglobose.

Fl. & Fr. : April - Dec.

Distrib. : Subansiri; 1500-2000 m, in open forests.

Rosa omeiensis Rolfe in Bot. Mag. 138:t. 8471. 1912; Ward in J. Roy. Hort. Soc. 77:212. 1952.

Erect shrubs, 1-4 m high; main stems with broad prickles, ca 2 cm at base. Leaflets 7-11(-17), oblong or obovate. Flowers solitary on short lateral shoots, yellow or creamy white.

Fl. & Fr. : April - June.

Distrib. : Kameng, Tawang; 2000-4000 m, in open forests.

Rosa sericea Lindley, Monogr. Rosa 105, t. 12. 1820; Hook. f., Fl. Brit. India 2:367. 1878.

Shrubs ca 1 m high with pinkish, prickly stems. Leaves imparipinnate; leaflets oblong. Flowers axillary, ca 10 cm across, yellow. Fruits subglobose or pyriform.

Fl. & Fr. : May - Sept.

Distrib. : Tawang; 3000-4000 m, on dry soil slopes.

Rubus acuminatus Smith in Rees, Cyclop. 30: Rubus no. 43. 1819; Hook. f., Fl. Brit. India 2:327. 1878.

Climbing or erect, sparsely prickly shrubs. Leaves ovate-lanceolate, caudate-acuminate, midrib prickly beneath. Flowers in fascicles, ca 1 cm across, white. Fruits enclosed by calyx, scarlet.

Fl. & Fr. : Aug. - Dec.

Distrib. : Kameng; 1500-2000 m, underneath evergreen and primary forests.

Rubus alceifolius Poiret, Encycl. Meth. Bot. 6:247. 1804; Balakr., Fl. Jowai 1:186. 1981. *R. moluccanus* auct. non L. 1753; Hook. f., Fl. Brit. India 2:330. 1878, p.p.

Subscandent shrubs with deflexed prickles. Leaves ovate or suborbicular, 3-7 lobed; lobes ovate-triangular. Flowers in racemes, ca 1.5 cm across, white. Fruits globose, scarlet.

Fl. & Fr. : May - Nov.

Distrib. : Changlang; 1200-2000 m, in dense forests.

Rubus assamensis Focke in Bremen, Abh. Nat. Ver. 4:197. 1874; Hook. f., Fl. Brit. India 2:328. 1878; Kanjilal *et al.*, Fl. Assam 2:192. 1938.

Local name : Fideging (Nishi).

Climbing shrubs. Leaves oblong to oblong-lanceolate. Flowers in axillary or terminal panicles, ca 5 mm across, white. Fruits globose.

Fl. & Fr. : May - Sept.

Distrib. : Kameng, Subansiri; 1200-2000 m, in forests, amidst grasses in black soil.

Rubus biflorus Buch.-Ham. ex Smith in Rees, Cyclop. 30. Rubus no. 9. 1819; Hook. f., Fl. Brit. India 2:338. 1878.

Straggling shrubs on bushes. Upper leaves sometimes 1-foliolate, 3-lobed;; lower leaves compound; leaflets 3-5, ovate, lobulate, white tomentose beneath. Flowers in axillary panicles, ca 2 cm across, pinkish. Fruits yellow, fleshy.

Fl. & Fr. : Aug. - Nov.

Distrib. : Kameng, Tawang; 3000-3500 m, in rock crevices along waysides near lake.

Rubus birmanicus Hook. f., *Fl. Brit. India* 2:331. 1878.

Scandent prickly shrubs up to 3 m high. Leaves palmately 3-5 lobed, ovate to ovate-oblong, appressed downy beneath. Flowers in axillary or terminal panicles, ca 2 cm across, white. Fruits globose.

Fl. & Fr. : Aug. - Feb.

Distrib. : Subansiri, Tirap; 1000-1500 m, near primary forest edges and roadsides.

Rubus burkillii Rolfe in *Kew Bull.* 1920:109. 1920.

Large sprawlers. Leaves suborbicular, 3-5 lobulate, base cordate. Flowers in axillary or terminal corymbs. Fruits small, bright red when ripe.

Fl. & Fr. : Aug. - Nov.

Distrib. : Changlang, Siang, Tirap; 900-1500 m, in open forests and forest edges.

Rubus calycinus Wallich ex D. Don, *Prodr. Fl. Nep.* 235. 1825; Hook. f., *Fl. Brit. India* 2:327. 1878.

Prostrate herbs, 15-20 cm long, rooting at nodes. Leaves 3-5 lobed, orbicular, reniform in outline, often cordate. Flowers axillary, solitary. Fruits globose, scarlet.

Fl. & Fr. : April - Aug.

Distrib. : Kameng, Subansiri; 1500-2000 m, in open forest floor on loose humus soil.

Rubus duthieanus Balakr. in J. Bombay Nat. Hist. Soc. 67:58. 1970.
R. fasciculatus Duthie in Ann. Roy. Bot. Gard. Calcutta 9:39, t. 48. 1901, non Muller 1858.

Straggling, prickly shrubs up to 4 m high. Leaves 3-foliolate; leaflets ovate-oblong to oblong or suborbicular. Flowers in 1-5 flowered axillary fascicles. Fruits globose.

Fl. & Fr. : April - Aug.

Distrib. : Kameng, Subansiri.

Rubus ellipticus Smith in Rees, Cyclop. 30. Rubus no. 16. 1819; Hook. f., Fl. Brit. India 2:336. 1878.

Local name : Jillying (Apat.).

Scandent shrubs up to 4 m high. Leaves pinnately 3-foliolate; leaflets ovate, elliptic or suborbicular. Flowers in axillary or terminal panicles, ca 1 cm across, white. Fruits globose, yellow.

Fl. & Fr. : Dec. - May.

Distrib. : Siang, Subansiri; 600-1500 m, along forest edges, stream sides.

Use : Ripe fruits are eaten, sweet.

Rubus fairholmianus Gardner in Calcutta J. Nat. Hist. 8:6. 1847.
R. moluccanus L., Sp. Pl. 1197. 1753; Hook. f., Fl. Brit. India 2:330. 1878, p.p.

Scandent shrubs up to 5 m tall, rusty tomentose. Leaves 3-7 lobed, broadly ovate, cordate. Flowers in axillary or terminal racemes, ca 1.5 cm across, white. Fruits globose, scarlet red.

Fl. & Fr. : Aug. - Jan.

Distrib. : Subansiri; 1500-1800 m, in open forests and along foot tracks inside dense forests.

Rubus ghanakantae Rolla Rao & Joseph in Bull. Bot. Surv. India 12(1-4):261. 1970.

Prickly shrubs up to 2 m high; prickles sparse, hooked, mature stems glabrous. Leaves ovate. Flowers in subcorymbose panicles, creamy white.

Fl. & Fr. : May - Sept.

Distrib. : Kameng; 2000-2500 m, along moist hill slopes.

Rubus gigantiflorus Hara in J. Jap. Bot. 40:327. 1965. *R. hookeri* Focke in Bremen, Abh. Nat. Ver. 4:198. 1874; Hook. f., Fl. Brit. India 2:334. 1878, non Koch 1853.

Straggling shrubs up to 3 m high. Leaves 3-foliolate; leaflets obliquely ovate or suborbicular. Flowers axillary, solitary or in 2-3 flowered racemes, ca 4 cm across, white or yellow. Fruits globose.

Fl. & Fr. : April - Aug.

Distrib. : Kameng, Subansiri; 2000-3000 m, in dense broad leaved temperate forests, along slopes.

Rubus hamiltonii Hook. f., Fl. Brit. India 2:328. 1878; Focke in Bibl. Bot. 17:72:63. 1910.

Scandent shrubs up to 3 m high; prickles hooked, reddish brown. Leaves oblong to oblong-lanceolate. Flowers usually in axillary or terminal racemes, sometimes axillary, solitary, ca 1.2 cm across, white. Fruits globose, black.

Fl. & Fr. : Aug. - Nov.

Distrib. : Changlang, Siang, Subansiri; 1500-1800 m, in secondary forests along roadsides.

Rubus hexagynus Roxb., Fl. Ind. 2:516. 1832; Hook. f., Fl. Brit. India 2:327. 1878.

Scandent shrubs up to 5 m high with stout, recurved prickles. Leaves oblong to ovate-oblong, whitish tomentose beneath. Flowers in axillary or terminal panicles, ca 1.2 cm across, white. Fruits globose, black.

Fl. & Fr. : July - Oct.

Distrib. : Subansiri; 1600-2000 m, in open forests, roadsides.

Rubus indotibetanus Koidz., Fl. Symb. Or. Asiat. 65. 1930. *R. rosaefolius* auct. non Smith: Hook. f., Fl. Brit. India 2:341. 1878, p.p.

Scrambling shrubs 1-2 m high. Stems and petioles with sparse to dense, short, straight gland tipped bristles. Leaflets mostly 5 with short stalked glands, especially beneath. Flowers white. Fruits oblong-globose, red when ripe.

Fl. & Fr. : March - May.

Distrib. : Arunachal Pradesh; 1400-3000 m, in broad leaved evergreen forests.

Rubus insignis Hook. f., Fl. Brit. India 2:329. 1878.

Local name : Tape-tare (Adi); Bor-sereli-kaint (Asm.); Cheche-nimri (Nishi).

Scandent, rusty tomentose shrubs, up to 5 m high, prickles red. Leaves ovate or oblong, cordate at base. Flowers in axillary or terminal racemes, ca 1 cm across, red. Fruits globose.

Fl. & Fr. : Sept. - April.

Distrib. : Changlang, Subansiri, Tirap; 300-800 m, in tropical primary forests.

Use : Leaves are eaten with bark of *Callicarpa arborea* var. *ovalifolia* as a substitute of peper betel. Ripe fruits are eaten, sweet.

Rubus kurzii Balakr. in J. Bombay Nat. Hist. Soc. 67:58. 1970. *R. ferox* Wallich ex Kurz, For. Fl. Brit. Burma 1:437. 1877, non Boenn. 1824; Hook. f., Fl. Brit. India 2:329. 1878.

Scandent shrubs; stems densely tomentose, prickles hooked. Leaves ovate-lanceolate, cordate at base, 5-7 lobed. Flowers in lax flowered panicles, white.

Fl. & Fr. : July - Oct.

Distrib. : Tirap; 1500-2500 m, along forest margin.

Rubus lasiocarpus Smith var. *furfuraceus* Hook. f., Fl. Brit. India 2:339. 1878.

Scandent shrubs. Leaves 5-9 foliolate; leaflets narrowly lanceolate, whitish or greyish downy beneath. Flowers in large paniculate corymbs, greenish. Fruits globose, hoary.

Fl. & Fr. : May - Aug.

Distrib. : Kameng; 1500-2500 m, in open forests along slopes.

Rubus lineatus Reinw. in Blume, Bijdr. 1108. 1827; Hook. f., Fl. Brit. India 2:333. 1878; Trivengadam in Dassannayake & Fosberg, Fl. Ceylon 3:315. 1981. *R. lineatus* var. *angustifolia* Hook. f., 2:333. 1878.

Large shrubs; young branches silky. Leaves 3-5 foliolate; leaflets elliptic-oblong or lanceolate. Flowers in axillary or terminal, silvery panicles, 2.5-3 cm across, white. Fruits red.

Fl. & Fr. : April - Sept.

Distrib. : Changlang, Siang, Tirap; 1000-1500 m, in forest hill slopes.

Rubus lucens Focke, Bremen. Abh. Nat. Ver. 4:199. 1874; Hook. f., Fl. Brit. India 2:338. 1878.

Local name : Jhejhelu (Apat.); Jejeru-poka, Thejhelu (Asm.).

Scandent, prickly shrubs up to 4 m tall. Leaves 3-foliolate; leaflets ovate-oblong or elliptic-oblong. Flowers in axillary or terminal panicles, ca 1 cm across, pink. Fruits globose, red.

Fl. & Fr. : Aug. - Feb.

Distrib. : Changlang, Siang, Subansiri, Tirap; 500-1000 m, in primary and secondary forests, along stream sides.

Rubus macilentus Camb. in Jacq., Voy. 4(Bot.):49, t. 60. 1835; Hook. f., Fl. Brit. India 2:336. 1878.

Bushy shrubs up to 3 m tall with scandent branches; stems reddish brown, prickly. Leaflets ovate or ovate-lanceolate. Flowers in axillary peduncles, white. Fruits globose.

Fl. & Fr. : April - July.

Distrib. : Kameng; 1800-2200 m, in open forest areas and along river sides.

Rubus mesogaucus Focke in Bot. Jahrb. 29:399. 1900; Hara & Ohashi in Hara, Fl. E. Himal. 130. 1966. *R. niveus* auct. non Thunb. 1813: Hook. f.; Fl. Brit. India 2:335. 1878, p.p. *R. niveus* var. *microcarpa* Hook. f., Fl. Brit. India 2:335. 1878.

Scandent, nearly glabrous shrubs. Leaflets ovate, lobulate, crenate, membranous. Flowers solitary or in axillary corymbs, white. Fruits globose.

Fl. & Fr. : July - Nov.

Distrib. : Kameng; 1500-2000 m, along primary forest edges.

Rubus moluccanus L. var. *macrocarpa* Gardner in Calcutta J. Nat. Hist. 8:6. 1847. *R. moluccanus* auct. non L. :Hook. f., Fl. Brit. India 2:330. 1878, p.p. *quoad syn. R. macrocarpa* Gardner.

Straggling shrubs with hooked thorns all over. Leaves broadly ovate or orbicular, 3-7 lobed, yellow woolly beneath. Flowers in axillary or terminal panicles, white. Fruits globose.

Fl. & Fr. : May - Sept.

Distrib. : Tirap; 500-1200 m, along forest edges.

Rubus niveus Thunb., Diss? Bot. Med. de Rubo. 7&9, f. 3. 1813; Zandee & Kalkman in Blumea 27(1):107. 1981. *R. lasiocarpus* Smith in Rees, Cyclop. 30. Rubus no. 6. 1819, p.p. Hook. f., Fl. Brit. India 2:339. 1878.

Local name : Nikhee (Apat); Kiblupum (Hill Miri).

Scandent shrubs up to 5 m tall. Leaves 5-11 foliolate; leaflets ovate-lanceolate, white tomentose beneath. Flowers in axillary or terminal paniced corymbs, ca 1 cm across, pink. Fruits ovoid or globose, black.

Fl. & Fr. : April - Sept.

Distrib. : Kameng, Siang, Subansiri, Tirap; 300-1100 m, in open places along roadsides.

Rubus paniculatus Smith in Rees, Cyclop. 30. Rubus no. 41. 1819; Hook. f., Fl. Brit. India 2:329. 1878.

Local name : Cheche-nimri (Nishi); Taptara (Adi).

Scandent shrubs up to 4 m tall. Leaves ovate-cordate or oblong, white tomentose beneath. Flowers in axillary or terminal lax panicles, ca 1.5 cm across, white. Fruits globose.

Fl. & Fr. : Nov. - March.

Distrib. : Changlang, Subansiri; 200-600 m, in primary forests along hill slopes.

Use : Leaves are used by Adi people as a substitute of peper betel. Fruits are eaten, sweet.

Rubus pectinarius Focke, Bibl. Bot. 72:21. 1910; Fischer in Kew Bull. 1932:348. 1932; Kanjilal *et al.*, Fl. Assam 2:379. 1938.

Creeping herbs with erect flowering shoots. Flowers dark-pink.

Fl. & Fr. : Aug. - Oct.

Distrib. : Kameng, Tawang; 2000-3500 m, forming a loose carpet on open slopes.

Rubus pentagona Wallich ex Focke in Bibl. Bot. 17:145. 1911; Hara & Ohashi in Hara, Fl. E. Himal. 131. 1966. *R. alpestris auct. non* Blume : Hook. f., Fl. Brit. India 2:332. 1878.

Scandent shrubs up to 3 m tall. Leaves digitately 3-5 foliolate; leaflets lanceolate to elliptic. Flowers axillary, solitary, ca 2.5 cm across, white. Fruits globose.

Fl. & Fr. : July - Dec.

Distrib. : Subansiri; 2000-3000 m, in forests.

Rubus rosifolius Smith, Pl. Ic. Ined. 3:t. 60. 1791, 'rosaeifolius'; Hook. f., Fl. Brit. India 2:341. 1878.

Local name : Hitimbulum (Apat.); Kebo-lepum (Adi); Ta-shin-ta (Abor).

Erect shrubs with spreading branches, 2-4 m high; hairs dense, stiff, gland tipped, intermixed with prickles. Leaves 5-9 foliolate; leaflets ovate or ovate-oblong. Flowers in axillary, lax panicles, ca 3 cm across, white. Fruits subglobose, yellow.

Fl. & Fr. : Sept. - Feb.

Distrib. : Subansiri, Siang; 600-1100 m, along moist and shaded forest edges.

Use : Fruits are edible, sour in taste.

Rubus sumatranus Miq., Fl. Ind. Bat. Suppl. 307. 1861; Hara & Ohashi in Hara, Fl. E. Himal. 132. 1966. *R. sorbifolius* Maxim. in Bull. Acad. Sci. St. Petersb. 17:158. 1871.

Shrubs up to 3 m high, spinescent. Stems covered with stiff brown hairs. Flowers solitary, white.

Fl. & Fr. : March - April.

Distrib. : Kameng, Subansiri; 1000-1500 m, in forests.

Sibbaldia cuneata Hornem. ex O.Ktze. in Linnaea 20:59. 1847; Ohashi in Hara *et al.*, Enum. Fl. Pl. Nep. 2:147. 1979. *S. parviflora* Edgew. in Trans. Linn. Soc. London 20:44. 1846. *Potentilla sibbaldi* Hook. f., Fl. Brit. India 2:345. 1878.

Perennial herbs with woody rootstocks and depressed branches. Leaves radical; leaflets 3, obovate. Flowers in branched cymes, yellow. Achenes ovoid, smooth.

Fl. & Fr. : Sept. - Jan.

Distrib. : Kameng; 2500-4500 m, in rock crevices, grasslands.

Sorbus cuspidata (Spach) Hedlund in Svenska Vet. Akad. Handl. 37:89. 1901; Ohashi in Hara *et al.*, Enum. Fl. Pl. Nep. 2:147. 1979. *Crataegus cuspidata* Spach, Hist. Nat. Veg. 2:106. 1834. *Pyrus vestita* Wallich ex Hook. f., Fl. Brit. India 2:375. 1878.

Trees up to 10 m high; branchlets stout, lenticellate. Leaves elliptic, white woolly beneath. Flowers in densely woolly corymbs, creamy or white. Fruits pyriform

Fl. & Fr. : Jan. - Sept.

Distrib. : Kameng, Tirwang; 3000-4000 m, in forests along roadsides.

Sorbus foliolosa (Wallich) Spach, *Hist. Nat. Veg.* 2:96. 1834; Ohashi in Hara *et al.*, *Enum. Fl. Pl. Nep.* 2:148. 1979. *Pyrus foliolosa* Wallich, *Pl. Asiat. Rar.* 2:81.t. 189. 1831; Hook. f., *Fl. Brit. India* 2:376. 1878, *p.p.*

Trees up to 10 m high. Leaflets linear-oblong, rusty pubescent beneath, sharply serrate at margin. Flowers densely crowded in rusty brown corymbs, creamy or white. Fruits globose or turbinate, bluish red when ripe.

Fl. & Fr. : May - Sept.

Distrib. : Kameng; 1500-2500 m, in forests.

Sorbus insignis (Hook. f.) Hedlund in *Kongl. Svenska Vet. Akad. Handl.* 35:89. 1901; Ohashi in Hara *et al.*, *Enum. Fl. Pl. Nep.* 2:148. 1979. *Pyrus insignis* Hook. f., *Fl. Brit. India* 2:377. 1878.

Trees up to 10 m high; young parts clothed with long, silky, rusty brown hairs. Leaves 8-12 foliolate; leaflets narrowly oblong, glaucous beneath. Flowers in corymbs, appearing with young leaves, ca 8 mm across, white. Fruits globose.

Fl. & Fr. : April - Dec.

Distrib. : Kameng; 1500-2000 m, along forest slopes.

Sorbus microphylla Wenzig in *Linnaea* 38:76. 1873; Ohashi in Hara *et al.*, *Enum. Fl. Pl. Nep.* 2:148. 1979. *Pyrus microphylla* Wallich ex Hook. f., *Fl. Brit. India* 2:376. 1878.

Herbs. Leaves imparipinnate with winged rachis; leaflets linear-oblong, deeply serrate. Flowers in corymbs, purple. Drupes globose, red.

Fl. & Fr. : July - Oct.

Distrib. : Kameng, Lohit, Tawang; 3500-4500 m, along roadsides, on forest floor.

Sorbus wallichii (Hook. f.) Yu in Fl. Reip. Pop. Sin. 36:329. 1974; Ohashi in Hara *et al.*, Enum. Fl. Pl. Nep. 2:148. 1979. *Pyrus wallichii* Hook. f., Fl. Brit. India 2:376. 1878.

Small trees up to 10 m high; young parts white woolly. Leaves 10-18 foliolate; leaflets narrowly oblong or lanceolate, densely woolly beneath. Flowers in axillary corymbs, ca 8 mm across, white, fragrant. Fruits ovoid.

Fl. & Fr. : April - Sept.

Distrib. : Kameng, Subansiri; 2000-2500 m, along forest edges, swampy forest clearings.

Spiraea arcuata Hook. f., Fl. Brit. India 2:325. 1878.

Shrubs up to 3 m high with deeply grooved branches. Leaves obovate, sharply toothed or shortly lobed towards apex. Flowers in densely flowered corymbs, ca 8 mm across, red. Follicles turbinate.

Fl. & Fr. : Sept. - Jan.

Distrib. : Kameng, Tawang; 2500-4000 m, in forests and scrubs.

Spiraea arunachalensis Panigrahi & Purohit in Bull. Bot. Surv. India 26 (1-2):83. (1984) 1985. Fig. 98.

Shrubs, 1.5-3 m high; branches minutely pubescent when young. Leaves elliptic-rhomboid, appressed hairy on veins beneath. Flowers in terminal compound corymbs. Follicles erect, parallel.

Fr. : May - June.

Distrib. : Kameng; 1500-2500 m, in open forests.

Spiraea callosa Thunb., Fl. Jap. 209. 1784; Hook. f., Fl. Brit. India 2:324. 1878.

Shrubs; branches reddish or dark brown. Leaves ovate, obovate or elliptic-lanceolate, puberulous beneath. Flowers in corymbs, ca 6 mm across, white. Fruits of 5-follicles, recurved at top.

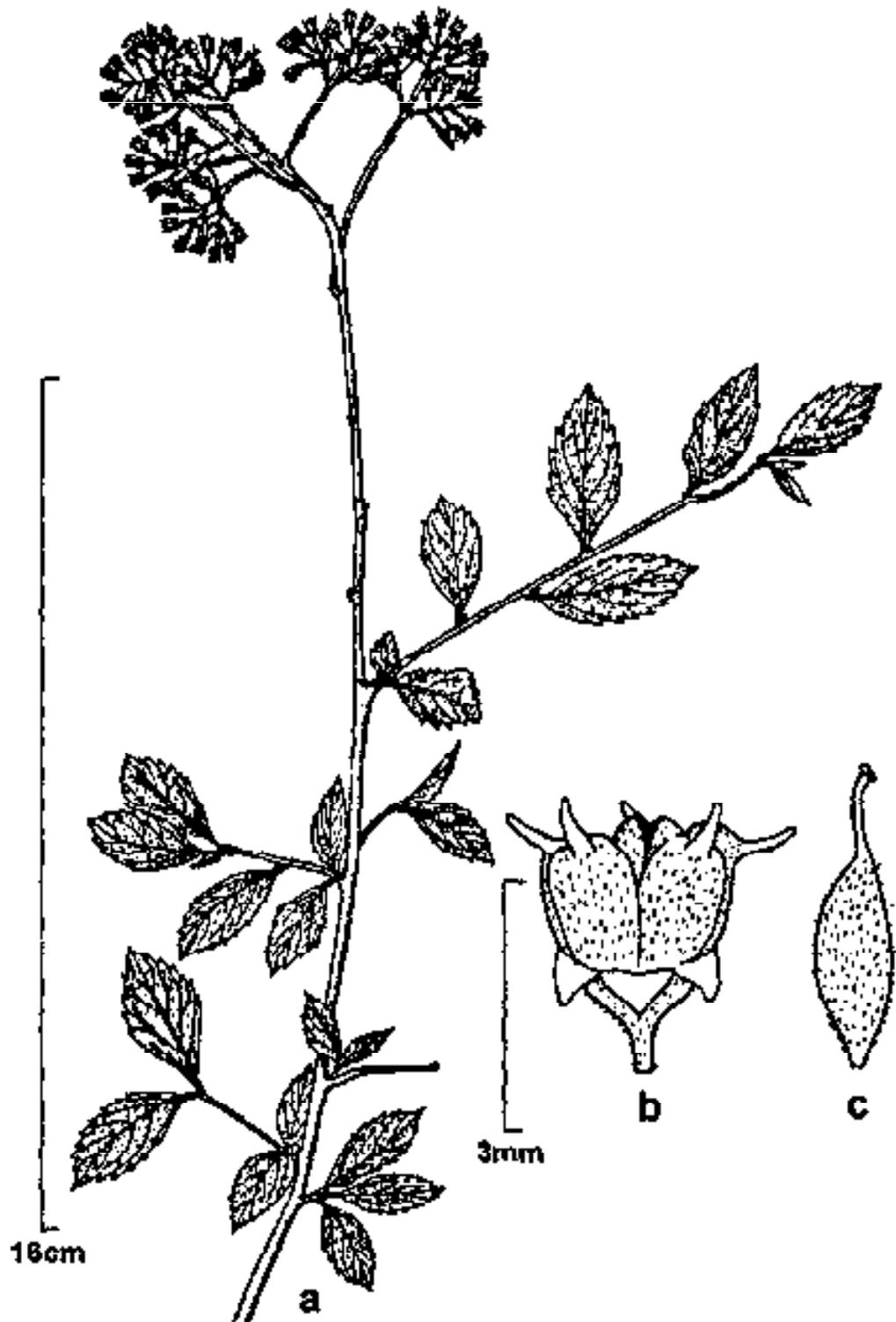


Fig. 98. *Spiraea arunachalensis* Panigrahi et Purohit : a. A fruit bearing branch; b. Fruit with five follicles; c. Follicle (After Panigrahi & Purohit 1984).

Fl. & Fr. : June - Nov.

Distrib. : Kameng; 1500-2500 m, along forest hill slopes.

Spiraea canescens D. Don, Prodr. Fl. Nep. 227. 1825; Hook. f., Fl. Brit. India 2:325. 1878.

Shrubs up to 7 m high with densely leafy, softly tomentose branches. Leaves sessile, obovate. Flowers in lax corymbs, ca 5 mm across, white. Follicles turbinate.

Fl. & Fr. : April - July.

Distrib. : Kameng; 1800-2200 m, in open forests.

Spiraea cantoniensis Lour., Fl. Cochinch. 322. 1790; Hook. f., Fl. Brit. India 2:326. 1878.

Shrubs, 2-3 m high. Leaves rhomboid ovate or elliptic-oblong. Flowers in axillary or terminal, 10-20 flowered umbels, ca 6 mm across, white. Follicles oblong.

Fl. & Fr. : Aug. - Nov.

Distrib. : Tawang; 3000-4000 m, along roadsides.

Spiraea micrantha Hook. f., Fl. Brit. India 2:325. 1878; Hara in Hara & Williams, Enum. Fl. Pl. Nep. 2:149. 1979. *S. japonica* var. *himalaica* Kitam. in Acta Phytotax. Geobot. 15:160. 1954. *Spiraea japonica* subsp. *micrantha* (Hook. f.) Kitam. in Acta phytotax. Geobot. 26:5. 1974.

Shrubs. Leaves ovate or obovate, pubescent beneath. Flowers in axillary or terminal corymbs, ca 6 mm across, white or pinkish. Follicles recurved at tip.

Fl. & Fr. : Aug. - Dec.

Distrib. : Kameng; 2000-3000 m, along edges of forests.

Spiraea subdioica Purohit & Panigrahi in Bull. Bot. Surv. India 26 (1&2): 86. (1984) 1985.

Shrubs; stems hoary pubescent. Leaves rhomboid-elliptic, sparsely pubescent above. Flowers in terminal compound corymbs, white. Follicles pubescent.

Fl. & Fr. : July - Oct.

Distrib. : Kameng; 2500-2800 m, along the edges of forests.

Spiraea vacciniifolia D. Don, Prodr. Fl. Nep. 227. 1825; Hook. f., Fl. Brit. India 2:325. 1878; Purohit & Panigrahi in Bull. Bot. Surv. India 24 (1-4): 226. (1982) 1983.

Shrubs up to 3 m high with hoary branches. Leaves ovate or elliptic-lanceolate, serrulate. Flowers in dense flowered corymbs, dull white. Follicles minute, glabrous.

Fl. & Fr. : May - Aug.

Distrib. : Kameng; 1500-2500 m, in open places along river banks.

Insufficiently known materials

Cotoneaster moupinensis Franch. in Nouv. Arch. Mus. Paris ser. 3, 8:224. 1886.

Prunus campanulata Maxim. in Bull. Acad. Ptersb. 29. 103. 1883.

Pyracantha angustifolia Schneid., Ill. Handl. Laubholz. 1:761. 1906.

Rosa moyesii Hemsley & Wilson in Kew Bull. 1906:159. 1906.

Rosa setipoda Hemsley & Wilson in Kew Bull. 1906:158. 1906.

SAXIFRAGACEAE

Astilbe rivularis Buch.-Ham. ex D. Don, Prodr. Fl. Nep. 211. 1825; Clarke in Hook. f., Fl. Brit. India 2:389. 1878.

Erect herbs; stems and leaves with long hairs; leaflets ovate-acuminate, scabrid along nerves. Flowers in panicles, rachis hairy, apetalous, sepals

greenish yellow. Fruits ovate-acuminate or acute. Seeds small, many, narrowly oblong.

Fl. & Fr. : Aug. - March.

Distrib. : Kameng, Lohit, Subansiri, Tirap; 2000-3600 m.

Astilbe rubra Hook. f. & Thomson ex Hook. in Curtis, Bot. Mag. 83:t. 4959. 1857; Clarke in Hook. f., Fl. Brit. India 2:389. 1878.

Erect, reddish brown hairy, perennial herbs up to 90 cm high. Leaves 2-3 pinnate; leaflets ovate, acute, doubly serrate, scarbrous on nerves. Flowers pale pink in terminal panicles.

Fl. & Fr. : July - Sept.

Distrib. : Kameng.

Bergenia ciliata (Haw.) Sternb., Rev. Saxifr. Suppl. 2:2. 1831; Yeo in Kew Bull. 20. 132. 1966 & 26:52. 1971. *Megasea ciliata* Haw., Saxifr. Enum 7. 1821. *Saxifraga ciliata* Royle. Ill. Bot. Himal. 225,t. 49. f.2. 1835. *S. ligulata* Wallich var. *ciliata* (Royle) Hook. f. & Thomson in J. Linn. Soc. Bot. 2:61. 1858; Clarke in Hook. f., Fl. Brit. India 2:398. 1878. forma *ciliata*.

Herbs with stout rootstocks. Leaves many, large, orbicular or obovate, entire, hirsute, gland dotted beneath. Flowers white, rose or purplish. Fruits subglobose.

Fl. & Fr. : March - April.

Distrib. : Kameng; on dry rocky slopes, in rock crevices.

Use : Used in cough and cold.

Bergenia ciliata forma *ligulata* Yeo in Kew Bull. 20. 134. 1966. *Saxifraga ligulata* Wallich in Asiat. Res. 13:398. 1820, *nom. illeg.*; Clarke in Hook. f., Fl. Brit. India 2:398. 1878, *non* Murr. 1781. Fig. 99.

Perennial herbs. Leaves simple, broadly obovate, thick, dense ciliate, glabrous. Flowers white or pink on long scapes.

Fl. & Fr. : March - Aug.

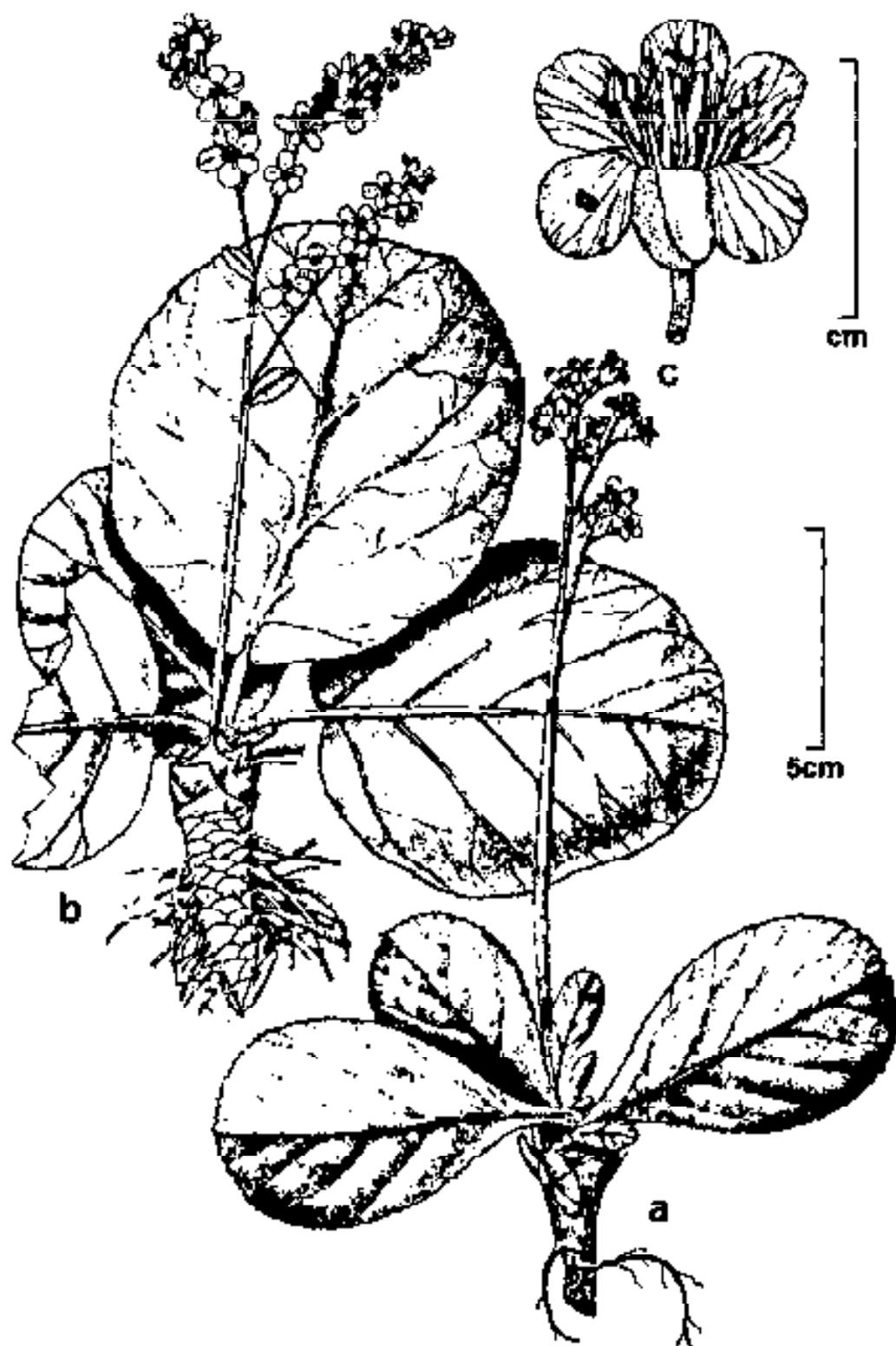


Fig. 99. *Bergenia ciliata* (Haw.) Sternb. forma *ligulata* Yeo : a. & b. Habit; c. Flower (After Ghazanfar 1977).

Distrib. : Kameng; on rocks, in cool shady places.

Use : Leaves and roots are used to stop bleeding due to injury.

Bergenia purpruascens (Hook. f. & Thomson) Engler in Bot. Zeit. 26: 841. 1868. *Saxifraga purpurascens* Hook. f. & Thomson in J. Linn. Soc. Bot. 2:61. 1857; Clarke in Hook. f., Fl. Brit. India 2:398. 1878.

Perennial herbs. Leaves obovate, undulate, entire, glabrous, punctate beneath. Flowers nodding, white. Capsules elliptic-lanceolate, erect.

Fl. & Fr. : May - July.

Distrib. : Kameng, Lohit; 3700-4800 m.

Chrysosplenium lanuginosum Hook. f. & Thomson in J. Linn. Soc. Bot. 2:74. 1857; Clarke in Hook. f., Fl. Brit. India 2:401. 1878.

Erect, succulent, erect herbs, 7.5-20 cm high, brown red, woolly pubescent. Leaves alternate, elliptic, slightly crenate. Flowers in sparingly leafy terminal corymbs, greenish or yellowish.

Fl. & Fr. : May - June.

Distrib. : Kameng, Subansiri; 2500-3500 m.

Chrysosplenium nepalense D. Don, Prodr. Fl. Nep. 210. 1825; Clarke in Hook. f., Fl. Brit. India 2:400. 1878.

Small, weak, decumbent herbs. Leaves opposite, ovate or subcordate, entire or finely crenate. Flowers sessile in terminal corymbs, greenish or yellowish. Fruits capsular. Seeds small, ellipsoid, smooth, shining brown.

Fl. & Fr. : March - June.

Distrib. : Kameng, Siang, Subansiri; 2000-4000 m, in marshy places.

Dichroa febrifuga Lour., Fl. Coghinch. 1:301. 1790; Clarke in Hook. f., Fl. Brit. India 2:406. 1878.

Local name : Morru-tow-tong (Abor).

Shrubs or undershrubs, 1-2.5 m high. Leaves lanceolate, acuminate, dentate. Flowers blue in paniced cymes. Berries globose, crimson to black.

Fl. & Fr. : April - Sept.

Distrib. : Kameng, Lohit, Siang, Subansiri, Tirap; up to 2500 m, along forest clearings, in oak forests.

Parnassia chinensis Franch. in Bull. Soc. Bot. France 44:252. 1897; Hara in Hara *et al.*, Enum. Fl. Pl. Nep. 2:156. 1979; *P. mysorensis auct. non* Heyne : Clarke in Hook. f., Fl. Brit. India 2:402. 1878; Hara in F. & Fl. Nep. Himal. 143. 1955.

Perennial herbs, 7.5-20 cm high. Leaves reniform, deeply cordate. Flower solitary, white. Capsules 3-celled, triquetrous, obcordate. Seeds ellipsoid.

Fl. & Fr. : Aug. - Oct.

Distrib. : Kameng.

Saxifraga hookeri Engler & Irmsch. in Bot. Jahrb. 48:582. 1912; Hara in Hara *et al.*, Enum. Fl. Pl. Nep. 2:152. 1979. *S. corymbosa* Hook. f. & Thomson in J. Linn. Soc. Bot. 2:70. 1857; Clarke in Hook. f., Fl. Brit. India 2:393. 1878.

Perennial herbs, 7.5-20 cm high. Radical leaves long petioled, oblong or ovate, glabrous, shining; stem leaves often sessile, clasping, oblong. Flowers solitary or in 3-flowered corymbs. Capsules ovate. Seeds ellipsoid, smooth.

Fl. & Fr. : Aug. - Sept.

Distrib. : Kameng; 3000-4500 m.

Saxifraga pullida Wallich ex Seringe in DC., Prodr. 4:38. 1830; Clarke in Hook. f., Fl. Brit. India 2:394. 1878; Hara in Hara *et al.*, Enum. Fl. Pl. Nep. 2:154. 1979; *S. micrantha* Edgew. in Trans. Linn. Soc. London 20:50. 1846; Clarke in Hook. f., Fl. Brit. India 2:394. 1878. *S. himalaica* Balakr. in J. Bombay Nat. His. Soc. 67:59. 1970.

Perennial, pubescent herbs. Radical leaves ovate, dentate-crenate. Flowers white in corymbs. Capsules small, ovate. Seeds ellipsoid, longitudinally striate.

Fl. & Fr. : July - Sept.

Distrib. : Kameng; 3200-4800 m.

Tiarella polyphylla D. Don, Prodr. Fl. Nep. 210. 1825; Clarke in Hook. f., Fl. Brit. India 2:399. 1878.

Slender, erect herbs, 15-45 cm tall. Leaves alternate, radical leaves long petioled; stem leaves shortly petioled, cordate, ovate, crenate, pilose throughout. Flowers in terminal racemes, white. Fruits cernuous. Seeds many, ellipsoid.

Fl. & Fr. : April - Jan.

Distrib. : Kameng, Subansiri, Tawang, Tirap; 2000-4000 m.

GROSSULARIACEAE

(incl. Iteaceae)

Itea chinensis Hook. & Arn., Bot. Beech. Voy. 189, t. 39. 1841; Clarke in Hook. f., Fl. Brit. India 2:408. 1878.

Small trees or shrubs; bark dark grey. Leaves elliptic-oblong, glandular, serrulate, glabrous. Flowers in many flowered axillary or terminal racemes, pale white. Capsules tapering, often included within persistent calyx-tube.

Fl. & Fr. : Sept. - Nov.

Distrib. : Subansiri, Tirap.

Itea macrophylla Wallich in Roxb., Fl. Ind. 2:419. 1824; Clarke in Hook. f., Fl. Brit. India 2:408. 1878.

Small trees or shrubs; bark dark grey. Leaves broadly ovate to elliptic, coriaceous, glandular, serrate. Flowers in axillary racemes, white with pale pink tinge. Capsules narrowed above.

Fl. & Fr. : June - Sept.

Distrib. : Changlang, Kameng, Tirap.

Ribes griffithii Hook. f. & Thomson in J. Linn. Soc. Bot. 2:88. 1857; Clarke in Hook. f., Fl. Brit. India 2:411. 1878.

Shrubs up to 2.5 m high. Leaves 5-lobed, lobes acuminate or caudate, serrate, membranous, pubescent on nerves beneath. Flowers in long flexuous racemes, brownish. Berries ovoid or ellipsoid, glabrous, red.

Fl. & Fr. : May - July.

Distrib. : Kameng; 2500-4000 m.

Ribes takare D. Don, Prodr. Fl. Nep. 208. 1825; Hara in Hara *et al.*, Enum. Fl. Pl. Nep. 2:159. 1979. *R. acuminatum* Wallich ex G. Don, Gen. Syst. 3:187. 1834. *R. glaciale* Wallich in Roxb., Fl. Ind. 2:513. 1824, *p.p.*; Clarke in Hook. f., Fl. Brit. India 2:410. 1878, *p.p.*

Erect shrubs, 1.5-2.5 m high; branches glabrous, glossy. Leaves ovate, membranous, 3-5 lobed, lobes acuminate, pubescent beneath along nerves. Flowers in elongate, pubescent racemes, greenish or brownish to reddish. Berries ovoid, smooth, glabrous.

Fl. & Fr. : April - Aug.

Distrib. : Kameng; 2000-3300 m.

HYDRANGEACEAE

Deutzia compacta Craib in Kew Bull. 1913:264. 1913; Hara in Hara *et al.*, Enum. Fl. Pl. Nep. 2:157. 1979. *D. corymbosa* R. Brown var. *hookeriana* Schneid. in Mitt. Deuts. Dendr. Ges. 13:184. 1904. *D. hookeriana* (Schneid.) Airy Shaw in Kew Bull. 1934:180. 1934. *D. corymbosa auct. non R. Brown* : Clarke in Hook. f., Fl. Brit. India 2:406. 1878.

Shrubs, branches with stellate pubescence. Leaves oblong or narrowly lanceolate, stellate hairy beneath. Flowers in many flowered corymbs; petals glabrous, often stellately pubescent, white. Capsules ovoid, 3-5 celled, many seeded.

Fl. & Fr. : Sept. - Nov.

Distrib. : Kameng; 2000-3500 m.

Deutzia staminea R. Brown ex Wallich, Pl. Asiat. Rar. 2:82, t. 191. 1831; Clarke in Hook. f., Fl. Brit. India 2:407. 1878.

Shrubs. Leaves oblong or elliptic-lanceolate, grey tomentose with stellate hairs beneath. Flowers in many flowered corymbs, white. Capsules 3-5 celled, ovoid.

Fl. & Fr. : Sept. - Nov.

Distrib. : Kameng.

Hydrangea angustipetala Meyer ex Hayata in J. Coll. Sci. Tokyo 30: art. 1, 107. 1911.

Trees. Leaves small. Flowers with narrow petals in hispid corymbs. Capsules subhemispheric, many seeded.

Fl. & Fr. : Aug. - Oct.

Distrib. : Kameng.

Hydrangea anomala D. Don, Prodr. Fl. Nep. 211. 1825; Clarke in Hook. f., Fl. Brit. India 2:405. 1878; Hara in Hara *et al.*, Enum. Fl. Pl. Nep. 2:157. 1979. *H. altissima* Wallich, Tent. Fl. Nep. 2:t. 50. 1926; Clarke in Hook. f., Fl. Brit. India 2:406. 1878.

Shrubs, 2.5-5 m high, climbing by adventitious roots. Leaves ovate-lanceolate, serrate, glabrous, brown hairy along nerves beneath. Upper petioles often winged and woolly hairy. Inflorescence pilose corymbs. Capsules compressed with persistent calyx-limbs and styles.

Fl. & Fr. : May - June.

Distrib. : Kameng, Subansiri; 1800-2700 m.

Hydrangea heteromalla D. Don, Prodr. Fl. Nep. 211. 1825; Hara, Fl. E. Himal. 114. 1966. *H. vestita* Wall., Tent. Fl. Nep. 2:t. 49. 1826, *excl. f.* 5-8; Clarke in Hook. f., Fl. Brit. India 2:405. 1878.

Deciduous trees or shrubs up to 5 m high; bark grey. Leaves ovate or orbiculate, irregularly dentate. Flowers greenish white in hirsute corymbs. Capsules with persistent styles.

Fl. & Fr. : June - Nov.

Distrib. : Kameng, Subansiri; 2400-3300 m.

Hydrangea robusta Hook. f. & Thoms. in J. Linn. Soc. Bot. 2:76. 1857; Clarke in Hook. f., Fl. Brit. India 2:404. 1878; Hara, Fl. E. Himal. 114. 1966. *H. aspera* D. Don subsp. *robusta* (Hook. f. & Thoms.) Mc Clintock in J. Arn. Arb. 37:373. 1956. *H. robusta* var. *griffithii* Clarke in Hook. f., Fl. Brit. India 2:404. 1878.

Shrubs. 2.5-5 m high; branches hairy. Leaves narrowly oblong to broadly ovate-cordate, coarsely serrate; upper petioles often winged. Flowers blue in hirsute paniced corymbs. Capsules compressed, broader than long.

Fl. & Fr. : Nov. - June.

Distrib. : Changlang, Kameng, Siang, Subansiri, Tirap; up to 2500 m.

Philadelphus tomentosus Wall. ex G. Don, Gen. Syst. 2:807. 1832; Royle, Ill. Bot. Himal. t. 46. f. I. 1834 & 216. 1835. *P. coronarius* L. var. *tomentosus* (Wall. ex G. Don) Hook. f. & Thoms. in J. Linn. Soc. Bot. 2:83. 1857; Clarke in Hook. f., Fl. Brit. India 2:407. 1878.

Small trees up to 9 m high. Leaves deciduous ovate-oblong, hairy beneath. Flowers in many flowered, terminal, paniced cymes, white. Capsules with flat crown.

Fl. & Fr. : Sept. - Dec.

Distrib. : Subansiri; up to 1800 m.

Pileostegia subansiriana Naithani & Bennet in Ind. For. 110(5): 518. 1984. Fig. 100.

Small trees. Leaves mostly obovate or ovate-oblong. Flowers in terminal, many flowered branched paniced cymes. Capsules with flat crown.

Fl. & Fr. : Oct. - Nov.

Distrib. : Subansiri; ca. 1800 m.

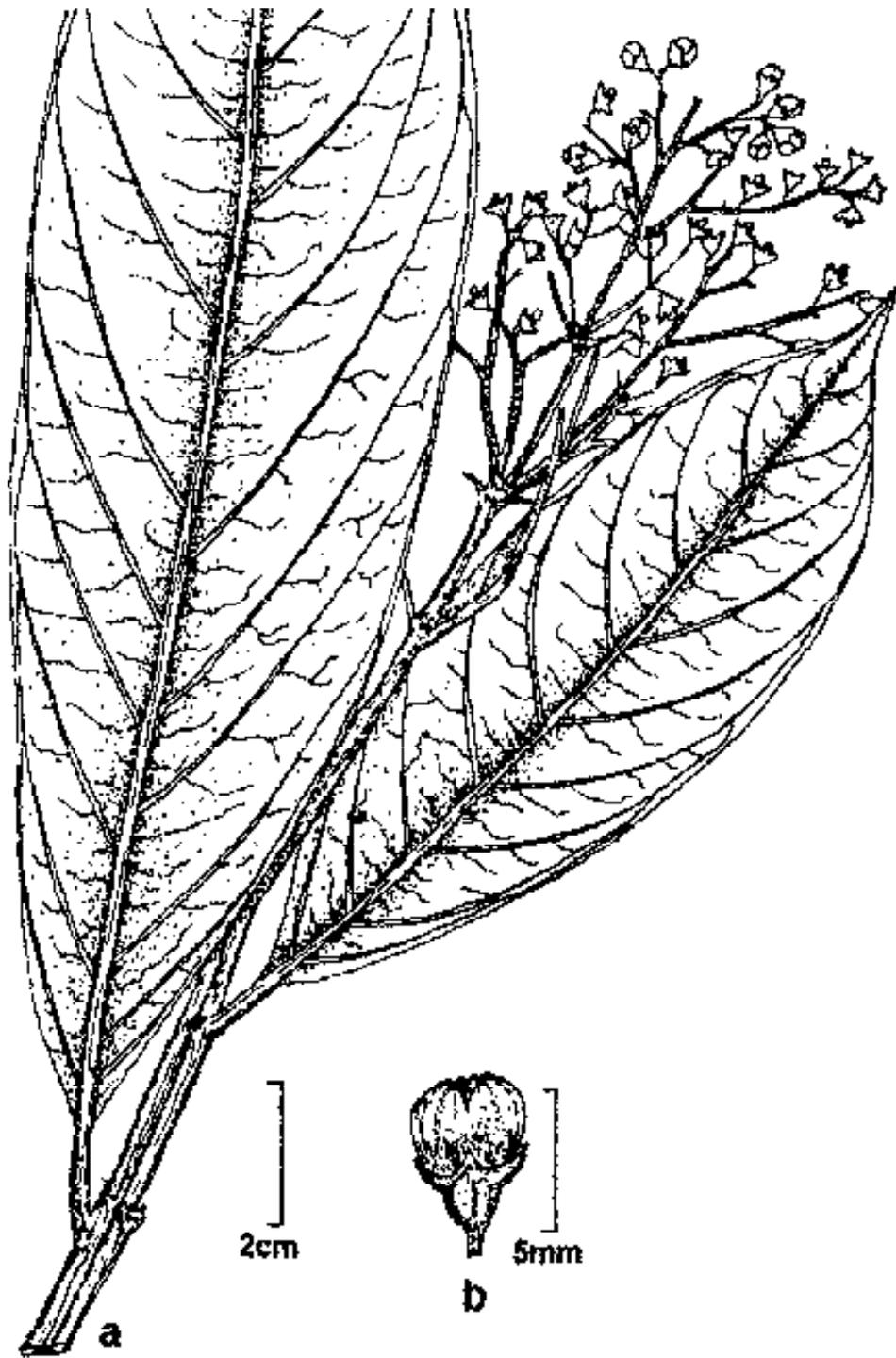


Fig. 100. *Pileostegia subansiriana* Naithani & Bennet : a. Flowering twig; b. Flower (After Naithani & Bennet 1984).

CRASSULACEAE

Kalanchoe laciniata (L.) DC., Hist. Pl. Grasses 2:t. 100. 1802 quoad nomen; Wickens in Kew Bull. 36:673. 1982; Clarke in Hook. f., Fl. Brit. India 2:415. 1878. *Cotyledon laciniata* L., Sp. Pl. 403. 1753.

Erect, perennial herbs. Leaves pinnatifid, lacinate, lobes incise-crenate. Flowers yellow in subpaniculate cymes. Follicles 4, many seeded. Seeds oblong, ellipsoid, striated.

Fl. & Fr. : April - Sept.

Distrib. : Kameng.

Kalanchoe pinnata (Lamk.) Pers., Syn. 1:446. 1805; Santapau & Wagh. in Bull. Bot. Surv. India 5:107. 1964. *Cotyledon pinnatum* Lamk., Encycl. Meth. Bot. 2:141. 1786. *Bryophyllum calycinum* Salisb., Parad. London 1:t. 3. 1805; Clarke in Hook. f., Fl. Brit. India 2:413. 1878.

Erect, succulent herbs. Leaves simple or 3-partite; leaflets oblong or elliptic, crenate. Flowers large, green, reddish-purple, pendent, in spreading panicles. Follicles 4, many seeded, covered with persistent papery calyx and corolla. Seeds oblong-ellipsoid, smooth, longitudinally obscure striate.

Fl. & Fr. : May - Sept.

Distrib. : Siang; exotic, now naturalised.

Rhodiola bupleuroides (Wall. ex Hook. f. & Thoms.) Fu in Acta Phytotax. Sin. Addit. 1:124. 1965; Ohba in Hara *et al.*, Enum. Fl. Pl. Nep. 2:160. 1979. *Sedum bupleuroides* Wall. ex Hook. f. & Thoms. in J. Linn. Soc. Bot. 2:98. 1858; Clarke in Hook. f., Fl. Brit. India 2:418. 1878. *S. cooperi* Praeger in J. Bot. 57:49. 1919, non Clemenc. 1868; Calder *et al.* in Rec. Bot. Surv. India 11(1):134. 1926. *S. elongatum* Wall. ex Hook. f. & Thoms. in J. Linn. Soc. Bot. 2:98. 1858, non Ledeb. 1834; Clarke in Hook. f., Fl. Brit. India 2:419. 1878. *Rhodiola hookeri* Fu in Acta Phytotax. Sin. Addit. 1:125. 1965. *Sedum hookeri* (Fu) Balakr. in J. Bombay Nat. Hist. Soc. 67:59. 1970.

Succulent herbs, 20-45 cm high. Leaves oblong or elliptic, sessile, glabrous. Flowers black purple in puberulous, lax cymes. Follicles 4-5, many seeded.

Fl. & Fr. : May - Sept.

Distrib. : Kameng; 3000-5000 m.

Rhodiola himalensis (D. Don) Fu in Acta Phytotax. Sin. Addit. 1:121. 1965. *Sedum himalense* D. Don, Prodr. Fl. Nep. 212. 1825; Clarke in Hook. f., Fl. Brit. India 2:418. 1878.

Herbs, 8-45 cm high, pubescent. Leaves narrowly obovate or lanceolate, finely dentate at apex. Flowers deep purple in large leafy cymes. Follicles black purple.

Fl. & Fr. : May - Aug.

Distrib. : Kameng; 3500-5000 m.

Rhodiola quadrifida (Pallas) Fischer & Meyer in Schrenk, Enum. Pl. Nov. 1:69. 1841; Ohba in Hara *et al.*, Enum. Fl. Pl. Nep. 2:162. 1979. *Sedum quadrifidum* Pallas, Reise 3:730, t.6, f. 1. 1776; Clarke in Hook. f., Fl. Brit. India 2:418. 1878. *Sedum cocotneum* Royle, Ill. Bot. Himal. 223, t. 48, f. 3. 1835.

Glabrous or puberulous herbs, stems many together. Leaves oblong, crowded. Flowers red in few flowered cymes; sepals oblong. Follicles usually recurved.

Fl. & Fr. : July - Aug.

Distrib. : Kameng; 3300-4200 m.

Rhodiola sinuata (Royle ex Edgew.) Fu in Acta Phytotax. Sin. Addit. 1:127. 1965; Ohba in Hara *et al.*, Enum. Fl. Pl. Nep. 2:162. 1979. *Sedum sinuatum* Royle ex Edgew. in Trans. Linn. Soc. London 20:47. 1846. *S. linearifolium* Royle, Ill. Bot. Himal. 222, t. 48. 1835; Clarke in Hook. f., Fl. Brit. India 2:420. 1878. *Rhodiola linearifolia* (Royle) Fu in Acta Phytotax. Sin. Addit. 1:126. 1965, *non* Boriss. 1939. *Sedum trifidum* Wall. ex Hook. f. & Thoms. in J. Linn. Soc. Bot. 2:100. 1858, *nom. illegit.*, *p.p.*; Clarke in Hook. f., Fl. Brit. India 2:420. 1878, *p.p.*

Herbs. Leaves narrowly oblong, sinuate-pinnatifid, lobes linear, dentate. Flowers purplish white or pinkish.

Fl. & Fr. : June - July.

Distrib. : Kameng; 1500-3700 m.

Sedum multicaule Wall. ex Lindl. in Bot. Reg. 1840. Misc. 58. 1840; Clarke in Hook. f., Fl. Brit. India 2:422. 1878.

Glabrous herbs, much divided or branched from base. Leaves linear-oblong. Flowers yellow in paniced cymes.

Fl. & Fr. : July - Oct.

Distrib. : Kameng; 1500-3200 m.

Sedum triactina Berger in Engler & Prantl, Pflanzenfam. ed. 2, 18a: 460. 1930. *Triactina verticillata* Hook. f. & Thoms. in J. Linn. Soc. Bot. 2:103. 1858; Clarke in Hook. f., Fl. Brit. India 2:423. 1878. *Sedum verticillatum* (Hook. f. & Thoms.) R. -Hamet in Rev. Gen. Bot. 55:92. 1913, non L. 1753.

Weak, succulent, glabrous herbs, 10-25 cm long. Leaves entire, narrowly obovate. Flowers yellow, subsessile in lax leafy cymes. Follicles 3, connate below, divaricate above, 1-seeded.

Fl. & Fr. : June - Sept.

Distrib. : Kameng; 2500-3900 m.

Simocrassula indica (Decne) Berger in Engler & Prantl, Pflanzenfam. ed. 2, 18a:463. 1930. *Crassula indica* Decne. in Jacq. Voy. Bot. 4:61, t. 73, f. 1. 1844; Clarke in Hook. f., Fl. Brit. India 2:413. 1878.

Biennial herbs up to 30 cm high; roots fibrous; stems glabrous, densely leafy. Basal rosette leaves spatulate-obovate, cauline leaves subdecurrent, narrowly oblong, acute. Flowers in compound paniced cymes, purple. Seeds oblong ellipsoid, finely striate.

Fl. & Fr. : Sept. - Nov.

Distrib. : Changlang, Kameng, Lohit; 1000-2500 m.

DROSERACEAE

Drosera peltata Smith in Willd., Sp. Pl. 1: 1546. 1797; Clarke in Hook. f., Fl. Brit. India 2:424. 1878.

Insectivorous, erect herbs, 10-25 cm high. Leaves peltate, orbiculate or semilunar, lobes cordate at base, margin upturned, tentacled. Flowers white, solitary or in terminal or axillary racemes. Capsules 3-5 valved, many seeded. Seeds ovoid black.

Fl. & Fr. : May - Oct.

Distrib. : Kameng; on moist rocky cliffs, in grassland and marshy places.

HAMAMELIDACEAE

Altingia excelsa Noronha in Verh. Bat. Genootsch. ed. 5. 2:41. 1827; Clarke in Hook. f., Fl. Brit. India 2:429. 1878.

Local names : Siri-asing, Shi-rih (Abor); Duang, Jutuli (Asm.); Hare (Hill Miri); Yogir-asing (Miri); Junkli (Nishi); Raysong (Nokte).

Aromatic, lofty trees up to 35 m tall, much branched at top. Leaves lanceolate, caudate. Flowers unisexual, male in dense racemose heads, female in solitary heads, apetalous. Capsules globose, brown, tomentose, many seeded.

Fl. & Fr. : Jan. - May.

Distrib. : Changlang, Kameng, Siang, Subansiri; 300-1250 m.

Use : The wood is useful for indoor work.

Corylopsis himalayana Griffith in J. Asiat. Soc. Bengal 23:642. 1854; Clarke in Hook. f., Fl. Brit. India 2:427. 1878.

Deciduous shrubs or small trees up to 3 m tall, much branched; stems grey. Leaves plicate in bud, broadly ovate or ovate-oblong to orbicular, silky beneath. Flowers bisexual, pale yellow in pendulous racemes. Capsules woody. Seeds narrowly elliptic with black testa.

Fl. & Fr. : Jan. - June.

Distrib. : Kameng, Subansiri; up to 3150 m, on bare hill top.

Use : The flowers are cooked as vegetable.

Exbucklandia populnea (R.Br. ex Griffith) R.W. Brown in J. Wash. Acad. Sci. 36:348. 1946; Hara in Hara *et al.*, Enum. Fl. Pl. Nep. 2:166. 1979. *Bucklandia populnea* R. Brown ex Griffith in Asiat. Res. 19(1):95, tt. 13-14. 1836; Clarke in Hook. f., Fl. Brit. India 2:429. 1878. *Symingtonia populnea* (R.Br. ex Griffith) van Steenis in Acts Bot. Neerl. 1:444, 1952.

Trees, 15-35 m high. Leaves ovate or orbiculae, acute to acuminate, palmately nerved; stipules large, oblong. Flowers polygamous, in 10-20 flowered heads. Capsules woody, subglobose.

Fl. & Fr. : Oct. - May.

Distrib. : Changlang; up to 2000 m.

Loropetalum chinense Oliv. in Trans. Linn. Soc. London 23:459. 1862; Clarke in Hook. f., Fl. Brit. India 2:428. 1878.

Local name : Marri (Apat.).

Evergreen trees or shrubs, 6-7 m tall. Leaves lanceolate to obovate, acute, stellate hairy; stipules membranous, caducous. Flowers bisexual, sessile in terminal pedunculate heads, greenish white to yellowish. Capsules woody, ovoid, rusty stellate-tomentose.

Fl. & Fr. : March - Sept.

Distrib. : Subansiri; up to 1000 m.

Use : Plants are used in religious ceremony.

HALORAGIDACEAE

Haloragis micrantha R. Brown in Flinders Voy. 2:550. 1814; Clarke in Hook. f., Fl. Brit. India 2:430. 1878.

Branched, wiry, prostrate or suberect herbs, 10-40 cm high. Leaves opposite, upper ones often alternate, ovate, acute, denticulate. Flowers small, pink

in terminal subpaniculate racemes. Fruits small, glossy, glabrous, ribbed, 1-seeded.

Fl. & Fr. : Sept. - Dec.

Distrib. : Subansiri; 1500-3000 m.

RHIZOPHORACEAE

Carallia brachiata (Lour.) Merr. in Philipp. J. Sci. 15:249. 1919. *Diatoma brachiata* Lour., Fl. Cochinch. 296. 1790. *Carallia lanceaefolia* Roxb. ex DC., Prodr. 3:33. 1828; Henslow in Hook. f., Fl. Brit. India 2:439. 1878. *C. integerrima* DC., Prodr. 3:33. 1828; Henslow in Hook. f., Fl. Brit. India 2:439. 1878.

Local name : Mahi-thekra, Kathal-boula, Daini-wam (Asm.).

Evergreen trees up to 22 m tall. Leaves elliptic or elliptic-obovate, coriaceous; subentire to serrulate. Flowers white in compound cymes. Berries globose, 1-seeded.

Fl. & Fr. : Aug. - Feb.

Distrib. : Kameng, Siang, Tirap; up to 1500 m.

Use : Wood is used for furniture.

COMBRETACEAE

Calycopteris floribunda Lamk., Dict. Suppl. 2:41. 1811; Clarke in Hook. f., Fl. Brit. India 2:449. 1878.

Diffuse, scandent shrubs; bark light brownish grey with drooping, hairy branches. Leaves ovate or elliptic, glabrous. Flowers in terminal panicles, greenish; bracts leafy. Fruits 5-angled, narrow elliptic-oblong, wings oblanceolate, membranous.

Fl. & Fr. : Jan. - April.

Distrib. : Siang.

Combretum acuminatum Roxb., Fl. Ind. 2:228. 1832; Clarke in Hook. f., Fl. Brit. India 2:455. 1878.

Local name : Nahar-lata (Asm.).

Large, scandent shrubs. Leaves ovate-lanceolate, densely glandular-punctate beneath. Flowers small in axillary and sparingly leafy terminal paniced racemes. Fruits narrowly oblong, brown with thick ridges.

Fl. & Fr. : April - Sept.

Distrib. : Subansiri; up to 300 m.

Combretum alatum Pers., Syn. Pl. 411. 1805; Gang. & T.Chakrab. in J. Econ. Tax. Bot. 14(1):223, 1990. *C.roxburghii* Spreng., Syst. Veg. 2:331. 1825. *C.decandrum* Roxb., Pl. Corom. 1:t. 59. 1795, non Jacq. 1760; Clarke in Hook. f., Fl. Brit. India 2:452. 1878.

Local name : Teriseok (Adi); More-ai (Apat.); Lota-chali, Jonari-lowa; Bain-lowa (Asm.).

Woody climbers. Stems brown pubescent; branchlets drooping. Leaves lanceolate, scanty pubescent beneath. Flowers greenish white in terminal dense, large condense paniced spikes. Fruits axillary, papery winged.

Fl. & Fr. : Nov. - April.

Distrib. : Subansiri; up to 450 m.

Use : The bark is chewed as substitute of betel nut.

Combretum pilosum Roxb., Fl. Ind. 2:231. 1832; Clarke in Hook. f., Fl. Brit. India 2:453. 1878.

Straggling shrubs, 8-10 m high; young parts rusty villous. Leaves oblong-lanceolate, dark green. Flowers greenish in terminal, paniced racemes, densely pilose or villous. Fruits winged, usually puberulous.

Fl. & Fr. : Sept. - Nov.

Distrib. : Subansiri; along roadsides.

Combretum punctatum Blume var. **squamosum** (Roxb. ex G. Don) Gang. & T. Chakrab. in J. Econ. Tax. Bot. 17(3):680. 1993. *C. squamosum* Roxb. ex G. Don in Trans. Linn. Soc. London 15:412. 1827; Clarke in Hook. f., Fl. Brit. India 2:456. 1878. *C. punctatum* subsp. *squamosum* (Roxb. ex G. Don) Exell in van Steenis, Fl. Males. 4:539. 1954.

Local name : Setta-abung-taru (Daff. & Nishi).

Large woody climbers; bark dark brown. Leaves oblong-elliptic or orbiculate, apiculate, coriaceous, glandular scaly. Flowers yellowish white in paniced spikes. Fruits broadly 4-winged with scales, glabrous.

Fl. & Fr. : Oct. - April.

Distrib. : Changlang, Kameng.

Combretum wallichii DC. var. **flagocarpum** (Clarke) Gang. & T. Chakrab. in J. Econ. Tax. Bot. 17(3):681. 1993. *C. flagocarpum* Clarke in Hook. f., Fl. Brit. India 2:455. 1878.

Small trees or straggling shrubs up to 3 m high. Leaves elliptic-oblong, resinous gland dotted throughout. Flowers yellow in paniced spikes. Fruits 4-winged with dotted resinous glands.

Fl. & Fr. : April - Dec.

Distrib. : Changlang, Kameng, Siang, Tirap; up to 1200 m.

Combretum wallichii var. **griffithii** (Heurck. & Muell.-Arg.) Gang. & T. Chakrab. in J. Econ. Tax. Bot. 17(3):681. 1993. *C. griffithii* Heurck. & Muell. Arg. in Heurck., Obs. Bot. 231. 1871. *C. dasystachyum* Kurz in J. Asiat. Soc. Bengal 43(2):187. 1874; Clarke in Hook. f., Fl. Brit. India 2:457. 1878.

Local name : Lolok-lota (Asm. & Miri).

Scandent shrubs or woody climbers; younger parts rusty villous. Leaves oblong-lanceolate, densely pubescent particularly along nerves beneath. Flowers yellow or greenish yellow in small spikes. Fruits stipitate, winged.

Fl. & Fr. : March - Dec.

Distrib. : Changlang, Lohit, Siang; up to 700 m.

Quisqualis indica L., Sp. Pl. ed. 2,556. 1762; Clarke in Hook. f., Fl. Brit. India 2:459. 1878.

Scandent shrubs or large climbers. Leaves oblong-elliptic, acuminate, pubescent beneath. Flowers white or pinkish red in axillary and terminal dense spikes, mild fragrant. Fruits ovoid, acute, coriaceous, 5-winged, glabrous, black, 1-seeded.

Fl. & Fr. : Aug. - Dec.

Distrib. : Kameng; usually cultivated as ornamentals.

Terminalia alata Heyne ex Roth, Nov. Pl. Ind. Or. 379. 1821; Kanai in Hara, Fl. E. Himal 220. 1966. *Pentaptera tomentosa* Roxb., Fl. Ind. 2:440. 1832. *Terminalia tomentosa* (Roxb.) Wight & Arn., Prodr. Fl. Pen. Ind. Or. 314. 1834; Clarke in Hook. f., Fl. Brit. India 2:447. 1878. Fig. 101.

Medium sized, deciduous trees. Leaves oblong or elliptic, obtuse or shortly acuminate, serrulate, silky pubescent beneath. Flowers pale yellow in panicle spikes. Drupes angular, 5-winged, coriaceous with horizontal striations.

Fl. & Fr. : Aug. - Dec.

Distrib. : Kameng.

Terminalia arjuna Beddome, Fl. Sylv. t. 28. 1869; Clarke in Hook. f., Fl. Brit. India 2:447. 1878.

Large trees, 20-26 m high. Leaves oblong or elliptic, abruptly narrowed at base, glabrous beneath; petioles with two subapical glands. Flowers in panicle spikes. Fruits ovoid or ovoid-oblong, glabrescent, 5-winged.

Fl. & Fr. : Aug. - Oct.

Distrib. : Subansiri; often planted.

Use : The bark is said to be diuretic and cardiotonic.

Terminalia bellirica (Gaertn.) Roxb., Pl. Corom. 2:54, t. 198. 1805 *bellerica*; Clarke in Hook. f., Fl. Brit. India 2:445. 1878; Exell in van

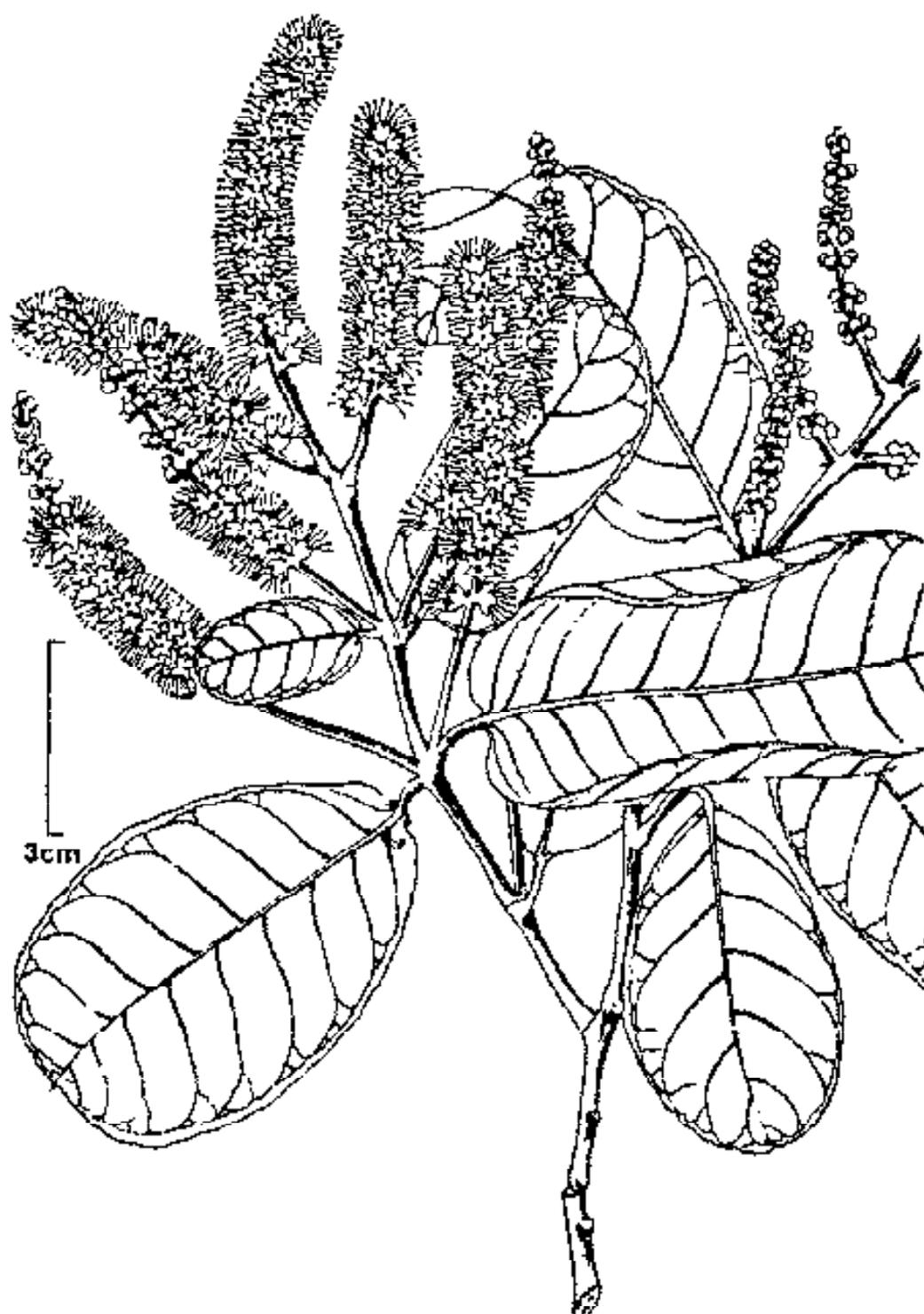


Fig. 101. *Terminalia alata* Heyne ex Roth : Flowering twig.

Steenis, Fl. Males. 4:445. 1954. *Myrobalanus bellirica* Gaertn., Fruct. 2:90, t. 97.f. a-d. 1791. *Terminalia bellirica* var. *laurinoides* Clarke in Hook. f., Fl. Brit. India 2:445. 1878.

Local name : Bhoira, Bowa, Dubong, Silli (Asm.); Logio-asing (Miri).

Trees, 25-40 m high with buttress. Leaves obovate to broadly elliptic, acuminate. Flowers yellow in solitary, axillary spikes. Drupes globose, closely fulvous tomentose.

Fl. & Fr. : April - Aug.

Distrib. : Kameng.

Use : The fruit is used in indigenous medicinal practice. The kernel is edible but is said to have narcotic properties.

Terminalia catappa L., Syst. Nat. ed. 12, 2:674. 1767; Clarke in Hook. f., Fl. Brit. India 2:444. 1878.

Tall trees, often with buttress. Leaves obovate or obovate-oblong, shortly petioled, crowded towards end of branches, base narrowly cordate, softly deciduous pubescent. Flowers white in axillary spikes. Drupes ellipsoid, subcompressed, glabrous, keeled.

Fl. & Fr. : March - June.

Distrib. : Kameng.

Use : Kernel edible, oily.

Terminalia chebula Retz., Obs. Bot. 5:31. 1789; Clarke in Hook. f., Fl. Brit. India 2:446. 1878.

Local name : Hilika (Asm.), Likkha (Nokte).

Large, deciduous trees, 25-35 m high; bark grey. Leaves elliptic, rounded at base, silky when young. Flowers in terminal panicles or fascicles; yellow with offensive smell. Drupes obovoid, glabrous, yellowish green when ripe.

Fl. & Fr. : Feb. - June.

Distrib. : Changlang, Kameng, Siang, Subansiri.

Use : A good timber yielding plant. Fruits are used in tanning; decoction of fruits is given in asthmatic trouble and in malaria.

Terminalia citrina (Gaertn.) Flem. in *Asiat. Res.* 11:183. 1810; Clarke in *Hook. f., Fl. Brit. India* 2:446. 1878; Exell in van Steenis, *Fl. Males.* 4:555. 1954. *Myrobalanus citrina* Gaertn., *Fruct. 2.t.* 97. 1791. *Terminalia citrina* var. *malayana* Clarke in *Hook. f., Fl. Brit. India* 2:447. 1878.

Local name : Logio-asing, Hil kang-asing (Adi & Miri); Hilikha (Asm.).

Trees, 20-30 m high with buttress. Leaves oblong-elliptic, acuminate, narrowed into the petiole. Flowers yellow in terminal panicles. Drupes ellipsoid, 5-angled, glabrous.

Fl. & Fr. : June - Feb.

Distrib. : Changlang, Kameng.

Terminalia myriocarpa Van Heurck & Muell. Arg. in Van Heurck., *Obs. Bot.* 215. 1871; Clarke in *Hook. f., Fl. Brit. India* 2:448. 1878.

Local name : Solok, Gilak (Adi), Shu-ilek (Abor); Holok (Asm.), Silok (Miri & Adi), Lakbang (Nokte).

Evergreen trees, 16-17 m high; bark chocolate coloured. Leaves oblong or elliptic, acute with numerous parallel nerves. Spikes paniced, flowers yellow. Fruits yellow, 3-winged.

Fl. & Fr. : Sept. - March.

Distrib. : Changlang, Lohit, Siang, Subansiri, Tirap; 750-1150 m, on steep slopes.

Use : Timbers durable and are used in various house-hold constructions.

HERNANDIACEAE

Illigera khasiana Clarke in *Hook. f., Fl. Brit. India* 2:461. 1878.

Woody climbers; stems striate, glabrescent. Leaves 3-foliolate, leaflets elliptic-lanceolate, tuft of yellowish hairs occur in nerve axils beneath. Flowers in elongate, lax paniced cymes. Fruits 2-winged, wings brown, glabrous.

Fl. & Fr. : Nov. - Jan.

Distrib. : Kameng, Siang; up to 1600 m.

Illigera villosa Clarke in J. Linn. Soc. Bot. 25:22, t. 9.1889.

Scandent shrubs or woody climbers; stems setose hairy. Leaves 3-foliolate, leaflets unequal sided, hairy. Flowers in axillary few flowered corymbs. Fruits 2-winged.

Fl. & Fr. : May - Sept.

Distrib. : Tirap.

MYRTACEAE

Callistemon citrinus (Curtis) Skeels in U.S. Dept. Agri., Bur. Pl. Industr. Bull. 282:49. 1913; Stapf in Bot. Mag. 150, t. 9050. 1925. *Metrosideros citrina* Curtis, Bot. Mag. 8:t. 260. 1794. *Callistemon lanceolatus* (Smith) Sweet, Fl. Austr. sub. t. 29. (January) 1828; DC., Prodr. 3:223. (March) 1828; Gamble, Man. Ind. Timb. ed. 2. 351. 1902.

Small trees up to 4 m tall; branches drooping. Leaves lanceolate, narrowed at both ends. Flowers crimson red.

Fl. & Fr. : March - June.

Distrib. : Subansiri; 400-600 m, introduced, now naturalised.

Cleistocalyx operculatus (Roxb.) Merr. & Perry in J. Arn. Arb. 18:337, t. 215. f. 41-48. 1937. *Eugenia operculata* Roxb., Fl. Ind. 2:486. 1832; Duthie in Hook. f., Fl. Brit. India 2:498. 1879.

Local name : Godhajam (Asm.).

Large trees, branches subquadrangular. Leaves broadly ovate-elliptic, obtuse, subcoriaceous, pelucid dotted. Flowers small, greenish in thyrsoidal panicles, fragrant. Berries globose or ovoid, rugose, juicy.

Fl. & Fr. : March - Aug.

Distrib. : Kameng.

Use : Timber is used for building and agricultural implements. Fruits are edible.

Decaspermum fruticosum Forst., Char. Gen. 74. t. 37. 1776; Balakr., Fl. Jowai 1:198. 1981. *Eugenia parviflora* Lamk., Encycl. Meth. Bot. 3:200. 1789. *Nelitris paniculata* Lidley, Coll. Bot. 4:t. 16. 1821. *Decaspermum paniculatum* (Lidley) Kurz in J. Asiat. Soc. Bengal 46(2): 61. 1877; Duthie in Hook. f., Fl. Brit. India 2:470. 1878. *D.paniculatum* var. *finlaysoniana* Duthie in Hook. f., Fl. Brit. India 2:470. 1878. *D.paniculatum* var. *khasiana* Duthie in Hook. f., Fl. Brit. India 2:470. 1878. Fig. 102.

Trees or subscandent shrubs, 6-12 m high; younger parts silky pubescent. Leaves elliptic-lanceolate or oblong, acuminate. Flowers white in paniculate cymes. Berries globose with persistent calyx.

Fl. & Fr. : July - Dec.

Distrib. : Kameng.

Eucalyptus tereticornis Smith in Trans. Linn. Soc. London 3:284. 1797.

Trees up to 40 m tall; bark grey. Leaves narrow-lanceolate, falcate. Flowers yellowish on axillary, short peduncled umbels. Fruits subglobose.

Fl. & Fr. : March - April.

Distrib. : Subansiri; introduced.

Eugenia balsamea Wight, Ill. Ind. Bot. 2:16. 1850; Duthie in Hook. f., Fl. Brit. India 2:499. 1879.

Local name : Joldubuli, Thoiranguli (Asm.).

Small trees ca 7 m tall. Leaves ovate or ovate-lanceolate, pelucid punctate. Flowers small in short, lateral compact cymes. Berries round.

Fl. & Fr. : Aug. - Jan.

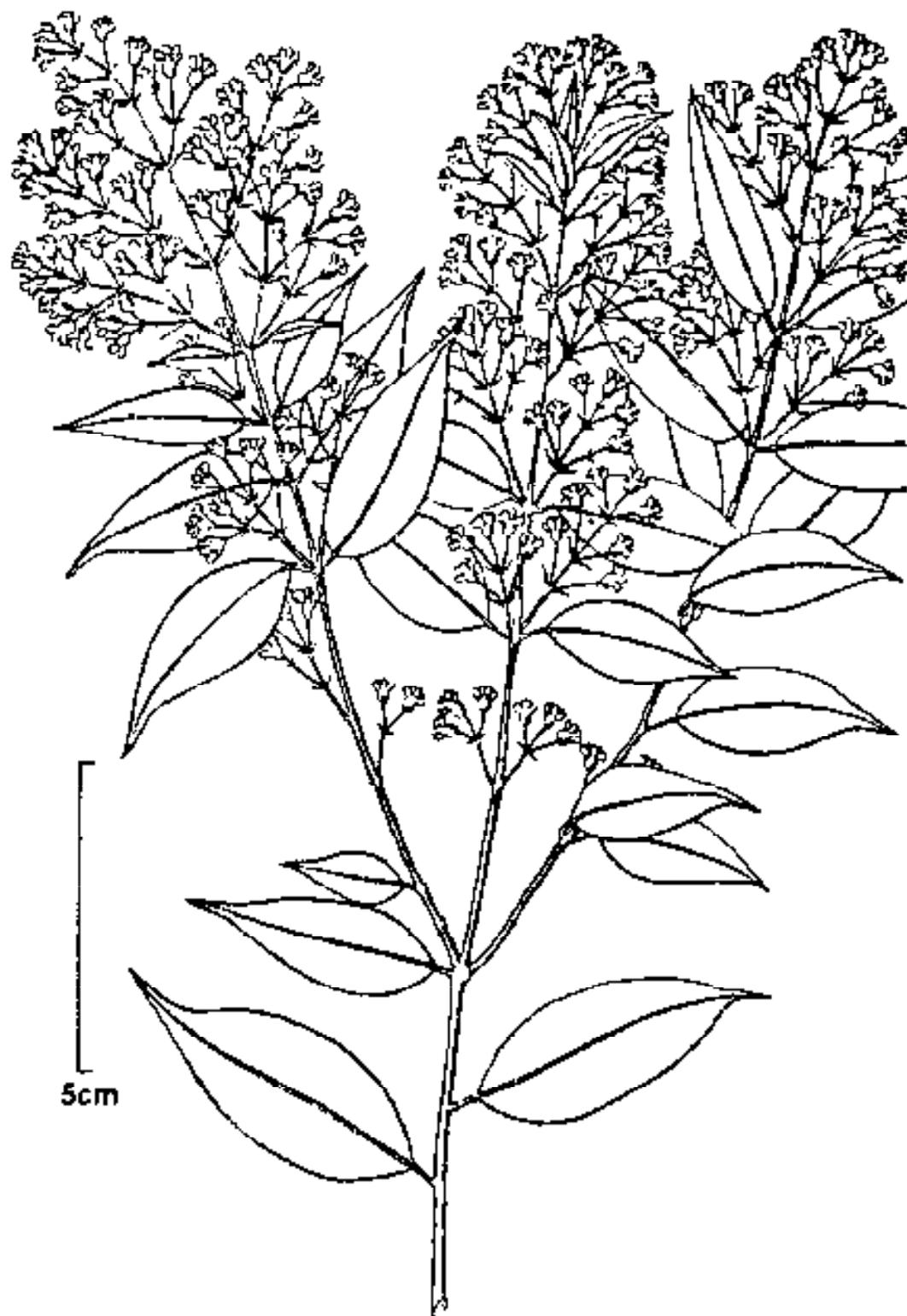


Fig. 102. *Decaspermum fruticosum* Forst. ; Flowering twig.

Distrib. : Siang, Tirap; up to 1000 m.

Eugenia oblata Roxb., Fl. Ind. 2:493. 1832; Duthie in Hook. f., Fl. Brit. India 2:492. 1878.

Trees, branchlets terete, reddish or brownish. Leaves oblong or elliptic-lanceolate, acuminate, coriaceous, distinct gland dotted. Flowers white in axillary and terminal trichotomous corymbose cymes, fragrant. Berries globose.

Fl. & Fr. : Jan. May.

Distrib. : Kameng.

Psidium guajava L., Sp. Pl. 470. 1753; Duthie in Hook. f., Fl. Brit. India 2:468. 1878.

Small trees up to 10 high; young branchlets quadrangular, shortly pubescent. Leaves ovate-oblong, acuminate, softly pubescent beneath. Flowers white, axillary, 1-3 flowered. Berries globose or pear shaped, many seeded.

Fl. & Fr. : April - Nov.

Distrib. : Kameng, Siang; exotic, cultivated, often wild.

Use : Fruits are edible.

Syzygium aborense (Dunn) Rathakr. & Nair in J. Econ. Tax. Bot. 34(1): 287. 1983 'arborense'. *Eugenia aborensis* Dunn in Kew Bull. 1920: 109. 1920; Burkill in Rec. Bot. Surv. India 10(1): 281. 1924.

Local name : Pon-kar (Abor); Pankala-sing (Adi).

Trees up to 10 m tall; branches horizontal. Leaves oblong-lanceolate, subsessile, base cordate. Flowers in terminal or axillary, few flowered cymes, white. Fruits globose.

Fl. & Fr. : Dec. - April.

Distrib. : Kameng, Siang, Subansiri; 640-762 m, Endemic.

Syzygium anisopetalum (Parker) Balakr. in Bull. Bot. Surv. India 22:174. 1982. *Eugenia anisopetala* Parker in Fedde, Report. 31:125. 1932.

Erect trees 10-15 m tall; bark dark grey. Leaves elliptic-oblong to oblanceolate. Flowers white in axillary or terminal cymose panicle, outer petals larger. Fruits subglobose, 1-2 seeded.

Fl. & Fr. : Nov. - March.

Distrib. : Subansiri.

Syzygium assamicum (Biswas & Purakayastha) Raizada in Ind. For. 74:336. 1948. *Eugenia assamica* Biswas & Purakayastha in Kew Bull. 1938: 262. 1939.

Medium sized trees up to 20 m tall. Leaves obovate to obovate-elliptic, abruptly cuspidate at apex. Flowers in lax cyme, white. Fruits oblong-ellipsoid, brown.

Fl. & Fr. : April - June.

Distrib. : Siang; up to 800 m.

Syzygium cumini (L.) Skeels in U.S. Deptt. Agr. Bur. Pl. Industr. Bull. 248: 25. 1912; Hara in Hara *et al.*, Enum. Fl. Pl. Nep. 2:169. 1979. *Myrtus cumini* L., Sp. Pl. 471. 1753. *Eugenia jambolana* Lamk., Encycl. Meth. Bot. 3:198. 1789; Duthie in Hook. f., Fl. Brit. India 2:499. 1879.

Local name : Jankeng-asing (Abor); Kothia-jam, Kutai or Katahi-jamuk, Lohajam, Barjamuk (Asm.); Jam-asing (Miri).

Large evergreen trees; bark light green, tough. Leaves variable, elliptic-oblong to ovate, acuminate, smooth, glossy. Flowers white to greenish white, fragrant in panicles of compound cymes. Berries globose, purple black, 1-seeded.

Fl. & Fr. : March - July.

Distrib. : Changlang, Lohit, Tirap; gregarious in swamps.

Use : Fruits are edible. Its juice is very efficacious in dyspepsia, enlargement of spleen, etc. Seeds are used in treatment of diabetes while the bark is used in preparation of astringent decoctions, gargles and mouth washes.

Syzygium cuneatum (Wallich ex Duthie) Balakr., Fl. Jowai 1:199. 1981. *Eugenia cuneata* Wallich ex Duthie in Hook. f., Fl. Brit. India 2:495. 1878.

Shrubs or trees, 6-10 m high. Leaves narrowly elliptic to linear-lanceolate. Flowers white or greenish white in trichotomous, subcorymbose cymes. Berries globose with persistent calyx-tube, reddish.

Fl. & Fr. : Aug. - Dec.

Distrib. : Changlang, Kameng.

Syzygium formosum (Wallich) Masamune, Enum. Pham. Born. 528. 1942; Balakr., Fl. Jowai 1:199. 1981. *Eugenia formosa* Wallich, Pl. Asiat. Rar. 2:6, t. 108. 1830; Duthie in Hook. f., Fl. Brit. India 2:471. 1878.

Local name : Bhykua-chepa, Labung-gorai (Asm.); Kurak (Nishi).

Trees, 5-10 m high. Leaves elliptic-oblong, abruptly acuminate. Flowers pale pinkish to red in corymbose cymes. Berries globose, white, reddish or pinkish, glossy.

Fl. & Fr. : March - Aug.

Distrib. : Kameng.

Syzygium fruticosum DC., Prodr. 3:260. 1828; Bennet, Fl. Howrah 264. 1979. *Eugenia fruticosa* Roxb., Fl. Ind. 2:487. 1832; Duthie in Hook. f., Fl. Brit. India 2:499. 1878.

Local name : Kathiya-jamuk (Asm.).

Large trees, 15-31 m tall. Leaves opposite, broadly oblong to oval, shining green above and yellowish green beneath. Flowers violet green in lateral panicles. Berries small, ovoid.

Fl. & Fr. : Dec. - June.

Distrib. : Subansiri, Tirap.

Syzygium jambos (L.) Alston in Trimen, Handb. Fl. Ceylon 6:115. 1931; Banerjii in Rec. Bot. Surv. India 19(2):46. 1966. *Eugenia jambos* L., Sp. Pl. 470. 1753; Duthie in Hook. f., Fl. Brit. India 2:474. 1878.

Local name : Boga-jamuk, Golapi-jamuk (Asm.).

Medium sized trees; branchlets tetragonous. Leaves narrowly elliptic, acuminate, coriaceous. Flowers large, white in short, terminal racemes. Berries subglobose with persistent calyx-lobes.

Fl. & Fr. : March - Aug.

Distrib. : Tirap.

Syzygium kurzii (Duthie ex Kurz) Balakr. in Bull. Bot. Surv. India 22(1-4): 174. 1980. *Eugenia kurzii* Duthie ex Kurz in J. Asiat. Soc. Bengal 46(2): 68. 1877; Duthie in Hook. f., Fl. Brit. India 2:478. 1878.

Local name : Bogi-jamuk (Asm.).

Large trees, bark brownish grey; branchlets subquadrangular, whitish. Leaves lanceolate to oblanceolate, abruptly acuminate, glabrous, coriaceous, pellucid dotted. Flowers white in paniced cymes. Berries globose with persistent calyx-limbs.

Fl. & Fr. : May - Sept.

Distrib. : Changlang, Kameng, Lohit.

Use : Timber is used for making tea-chests.

Syzygium malaccense (L.) Merr. & Perry in J. Am. Arb. 19:215. 1938. *Eugenia malaccensis* L., Sp. Pl. 470. 1753; Duthie in Hook. f., Fl. Brit. India 2:471. 1878.

Local name : Pani-jamuk (Asm.).

Shrubs, 18-25 m high; branchlets terete. Leaves ovate or elliptic-oblong, coriaceous, glossy pellucid punctate. Flowers red in lateral, dense racemes. Berries subglobose with persistent, incurved calyx-lobes, juicy.

Fl. & Fr. : March - Aug.

Distrib. : Tirap.

Use : Ripe fruits are edible.

Syzygium megacarpum (Craib) Rathakr. & Nair in J. Econ. Tax. Bot. 4:487. 1983. *Eugenia megacarpa* Craib, Fl. Siam. Enum. 1:652. 1931. *E. macrocarpa* Roxb., Fl. Ind. 2:497. 1832, non Schlecht. 1830; Duthie in Hook. f., Fl. Brit. India 2:474. 1878. *Syzygium macrocarpum* (Roxb.) Bahadur & Gaur in Ind. J. For. 1:349. 1978; Balakr., Fl. Jowai 1:201. 1981.

Fig. 103.

Local name : Prandab (Mik.).

Trees, 3-8 m high, branchlets tetragonous. Leaves oblong-elliptic, acuminate. Flowers sessile, purplish in few to many flowered terminal or lateral cymes. Berries subglobose.

Fl. & Fr. : Sept. - March.

Distrib. : Arunachal pradesh.

Syzygium mishmiensis Chatterjee in Kew Bull. 1948: 61. 1948.

Shrubs ca 4 m high, younger parts greyish white. Leaves narrowly-elliptic, margin reflexed. Flowers in axillary racemes, whitish.

Fl. & Fr. : May - Aug.

Distrib. : Lohit.

Syzygium praecox (Roxb.) Rathakr. & Nair in J. Econ. Tax. Bot. 4(1):288. 1983. *Eugenia praecox* Roxb., Fl. Ind. 2:488. 1832; Kanjilal *et al.*, Fl. Assam 2:267. 1938. *E. wallichii* Wight, Ill. Ind. Bot. 2:17. 1850; Duthie in Hook. f., Fl. Brit. India 2:475. 1878. *Syzygium wallichii* Walp., Repert. 2:180. 1843.

Local name : Serbai-boga-jamuk (Asm.).

Large trees up to 25 m high, bark grey; branchlets quadrangular. Leaves lanceolate, acuminate, coriaceous, rusty coloured beneath. Flowers white in axillary and terminal short corymbs. Berries oblong, crowned with cup shaped calyx-limb.

Fl. & Fr. : Nov. - Jan.

Distrib. : Kameng, Siang.

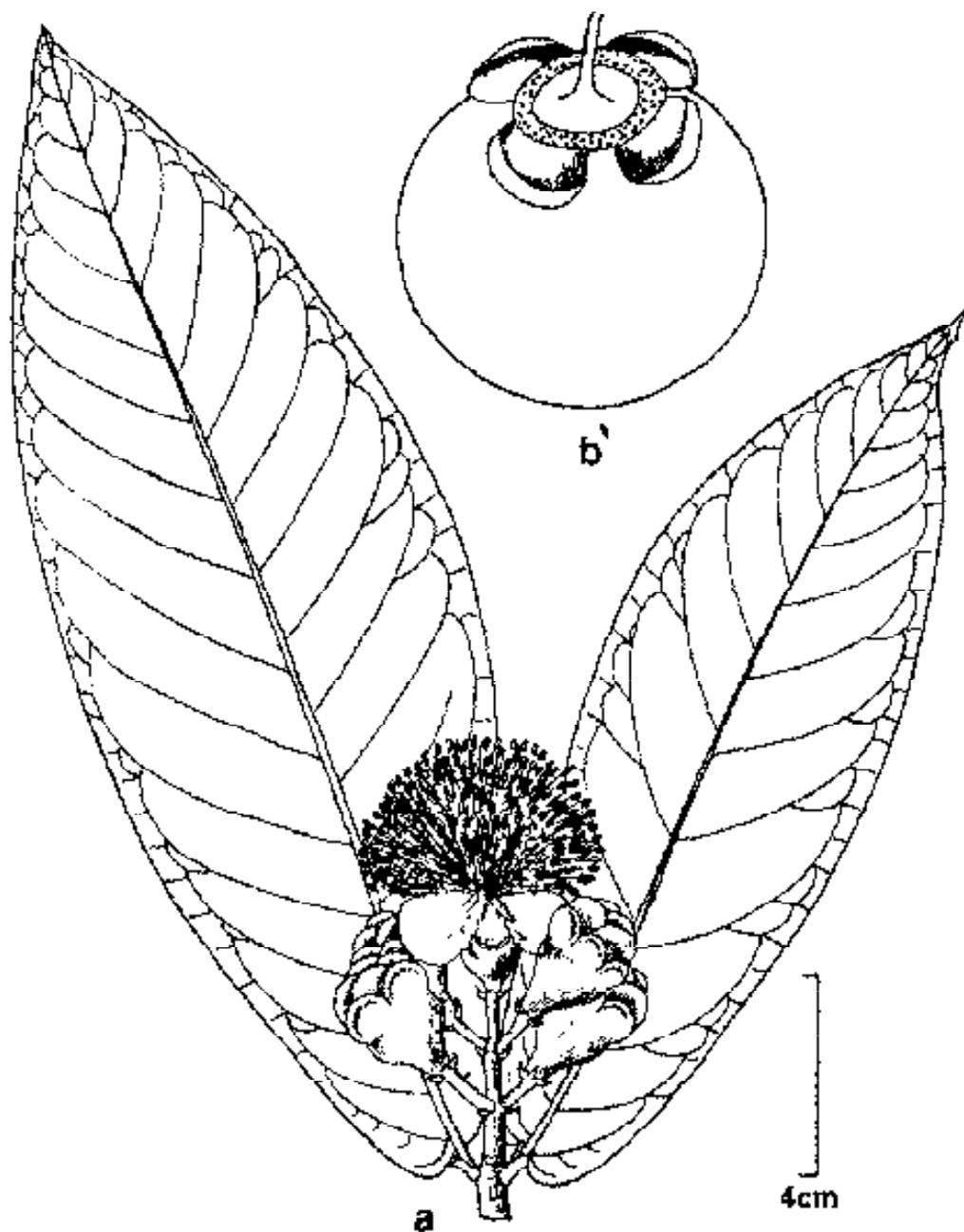


Fig. 103. *Syzygium megacarpum* (Craib) Rathakr. & Nair : a. Flowering twig; b. Fruit.

Syzygium syzygioides (Miq.) Merr. & Perry in J. Arn. Arb. 19:109 1938; Balakr., Fl. Jowai 1:200. 1981. *Jambosa syzygioides* Miq., Fl. Ind. Bat. ser. 1, 1:341. 1855. *Eugenia cymosa* Wight, Ill. Ind. Bot. 2:97. 1841, non Lamk. 1789; Duthie in Hook. f., Fl. Brit. India 2:482. 1878. Fig. 104.

Local name : Panijam (Asm.).

Trees, 10-20 m high. Leaves elliptic-oblong, acuminate. Flowers white in axillary or terminal, short paniculate cymes. Berries subglobose, red or pinkish black.

Fl. & Fr. : Dec. - July.

Distrib. : Lohit; along forest edges.

Syzygium tetragonum Wallich ex Kurz in J. Asiat. Soc. Bengal 46(2):66. 1877; Tuyama in Hara, Fl. E. Himal. 221. 1966. *Eugenia tetragona* Wight, Ill. Ind. Bot. 2:16. 1850; Duthie in Hook. f., Fl. Brit. India 2:497. 1878.

Large trees, 15-20 m tall, much branched, branchlets acutely tetragonous and often winged. Leaves ovate-oblong. Inflorescence axillary, short racemes. Flowers greenish white. Berries small, globose.

Fl. & Fr. : Nov. - June.

Distrib. : Kameng, Siang, Subansiri; up to 200 m, in Oak forests.

LECYTHIDACEAE

Barringtonia acutangula (L.) Gaertn., Fruct. 2:97, t. 101. 1790; Clarke in Hook. f., Fl. Brit. India 2:508. 1879. *Eugenia acutangula* L., Sp. Pl. 673. 1753.

Local name : Pani-amra, Bhe-hinsol (Asm.).

Trees, 9-12 m high. Leaves elliptic, cuneate, finely denticulate-crenate. Flowers pink in elongate, pendulous racemes. Fruits oblong, quadrangular.

Fl. & Fr. : April - Aug.

Distrib. : Kameng.

Careya arborea Roxb., Pl. Corom. 3:14, t. 218. 1811; Clarke in Hook. f., Fl. Brit. India 2:511. 1879.



Fig. 104. *Syzygium syzygioides* (Miq.) Merr. & Perry : a. Flowering twig; b. Flower.

Local name : Kumbhi, Kumari, Godhajam, Kum (Asm.); Bholu-changne (Nishi).

Deciduous trees, 5-15 m high. Leaves oblanceolate, obtuse, crenulate. Flowers white to pale pink in terminal spikes. Berries globose, greenish yellow, many seeded.

Fl. & Fr. : March - Aug.

Distrib. : Kameng.

MELASTOMATACEAE

Blastus cochinchinensis Lour., Fl. Cochinch. 527. 1790; Clarke in Hook. f., Fl. Brit. India 2:528. 1879. Fig. 105.

Local name : Phutkola (Asm.).

Woody shrubs, 2-5 m high; younger parts covered with yellowish orbicular glands. Leaves lanceolate to elliptic-lanceolate. Flowers in axillary fascicles, glandulose; petals reflexed, white. Capsules broadly campanulate, dehiscent irregularly.

Fl. & Fr. : Aug. - March.

Distrib. : Tirap; 300-800 m, in moist forest sholas or along edges of primary forests.

Medinilla erythrophylla Lidley in Edgew., Bot. Reg. 24. 85. 1838; Merr. in Brittonia 4:127. 1941. *Melastoma? erythrophylla* Wallich, Num. List No. 4085. 1830, *nom. nud.* *Medinilla rubicunda* auct. *non* Blume 1831; Clarke in Hook. f., Fl. Brit. India 2:547. 1879. Fig. 106.

Epiphytic or rarely terrestrial shrubs up to 6 m high; branches subquadrate, reddish. Leaves elliptic, petiolate, 3-nerved, reddish. Flowers in axillary cymose, 4-10 flowered fascicles or umbellate, petals fleshy, rose pink to pinkish white. Berries globose, black.

Fl. & Fr. : April - Dec.

Distrib. : Lohit, Siang, Tirap; 600-1500 m, often frequent on moist hilly slopes or in moss covered rock crevices.

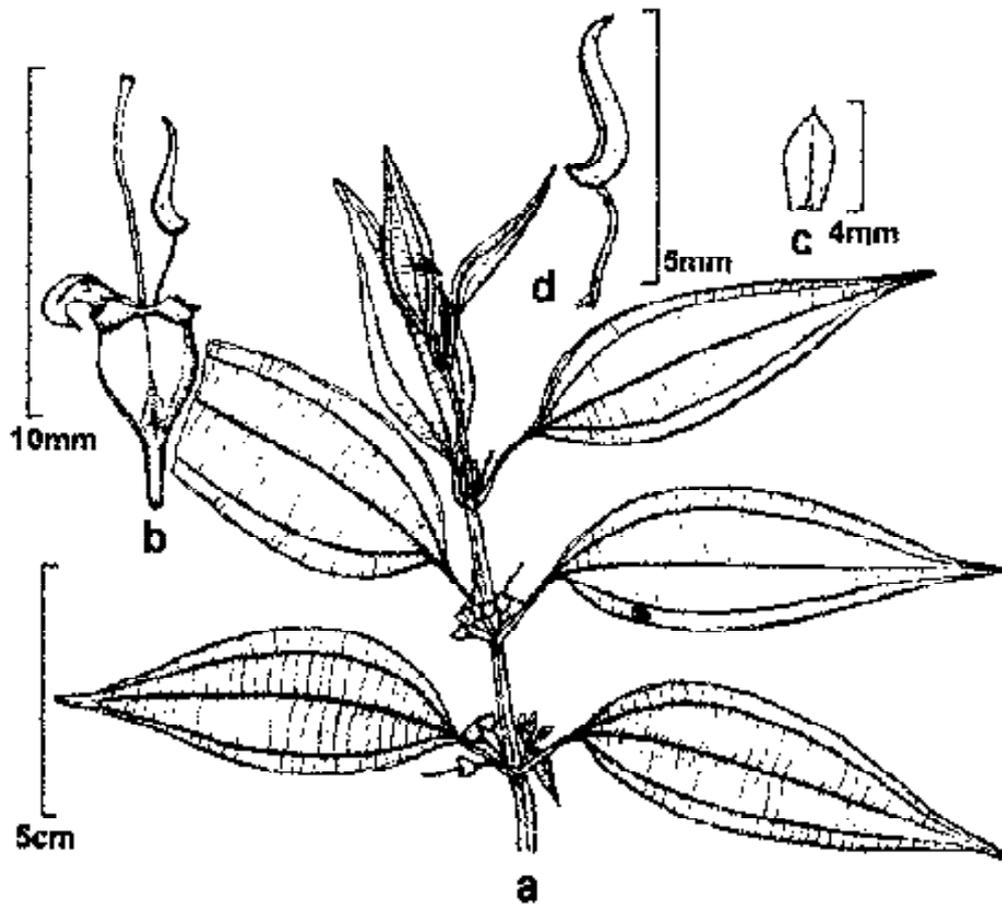


Fig. 105. *Blastus cochinchinensis* Lour. : a. Flowering twig; b. Flower (with one petal and one stamen); c. Petal; d. Stamen.

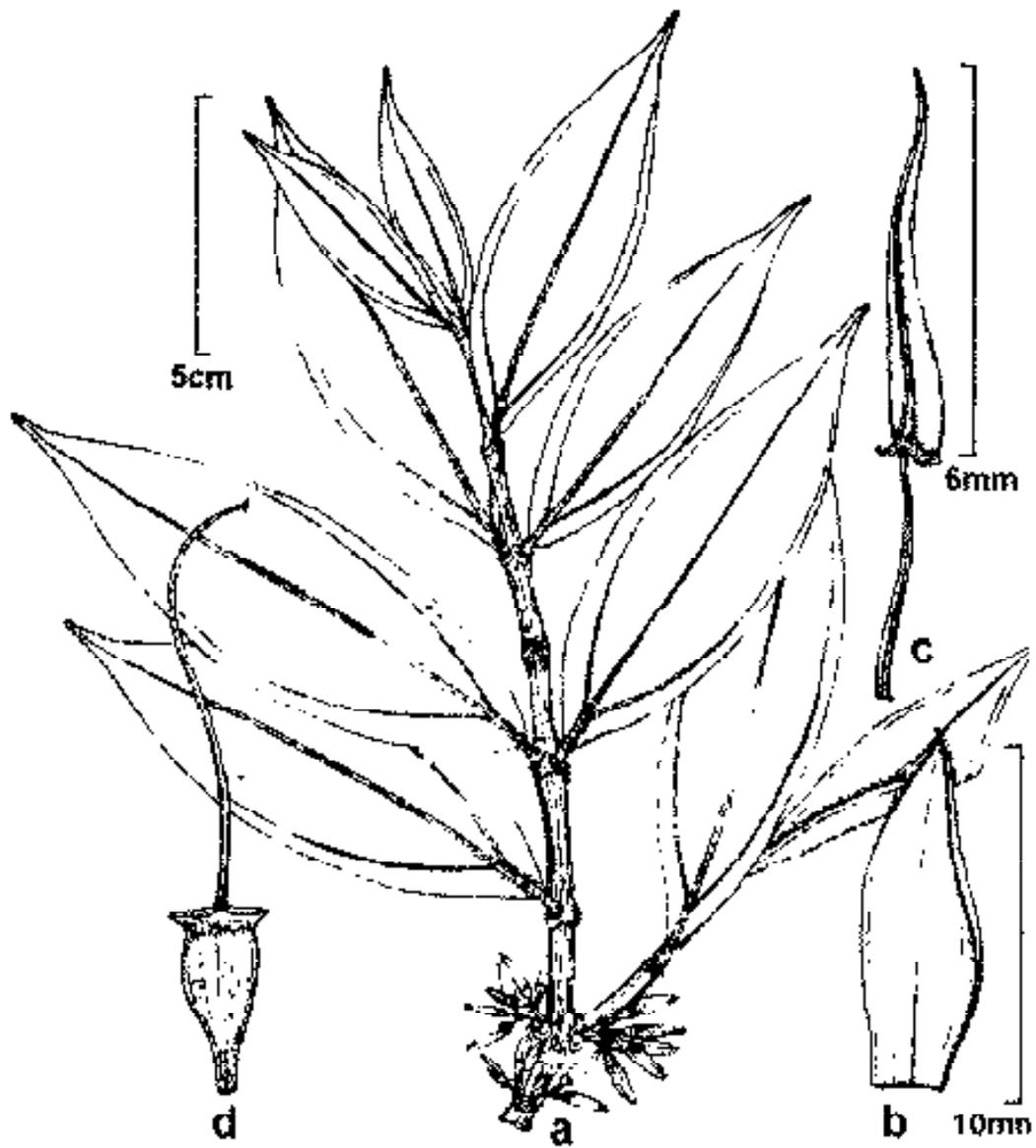


Fig. 106. *Medinilla erythrophylla* Lidley : a. Flowering twig; b. Petal; c. Stamen; d. Gynoecium.

Medinilla himalayana Hook. f. ex Triana in Trans. Linn. Soc. London 28(1):88. 1871; Clarke in Hook. f., Fl. Brit. India 2:549. 1879. Fig. 107.

Local name : Da-vat (Abor); Bogitenga (Asm.).

Shrubs or small trees; branches terete. Leaves elliptic or ovate-elliptic, 5-nerved. Flowers in terminal, many flowered, trichotomously branched paniculately umbellate, pink or purple. Berries globose, black.

Fl. & Fr. : June - Dec.

Distrib. : Siang; 500-2000 m, in humid places near streams.

Melastoma imbricatum Wallich ex Clarke in Hook. f., Fl. Brit. India 2:524. 1879.

Shrubs; younger parts densely fringed scaly, compressed. Leaves ovate-oblong, softly strigillose. Flowers in terminal fascicles, large, pink purple; bracts broadly ovate. Fruits purplish, rusty brown scaly.

Fl. & Fr. : March - Sept.

Distrib. : Siang; in humid tropical forests.

Melastoma malabathricum L., Sp. Pl. 390. 1753 'malabathrica'; Clarke in Hook. f., Fl. Brit. India 2:523. 1879.

Local name : Ke-seng, Ke-chi-aing (Abor); Phutka, Phutkala, Phutki (Asm.); Choulishy (Pahari).

Bushy shrubs, 2-4 m high, appressed bristly and rusty brown scaly, scales triangular. Leaves elliptic or elliptic-oblong, densely strigillose. Flowers in condensed terminal panicles, purple-mauve; bracts ovate-lanceolate. Berries covered with scales, purple.

Fl. & Fr. : Throughout the year.

Distrib. : Changlang, Siang; 400-1500 m, along humid forest edges, in open grassy or hilly slopes or along water courses.

Use : It is known as the "Indian Rhododendron" for its handsome flowers. Decoction of leaves and shoots is used in diarrhoea; powdered leaves are

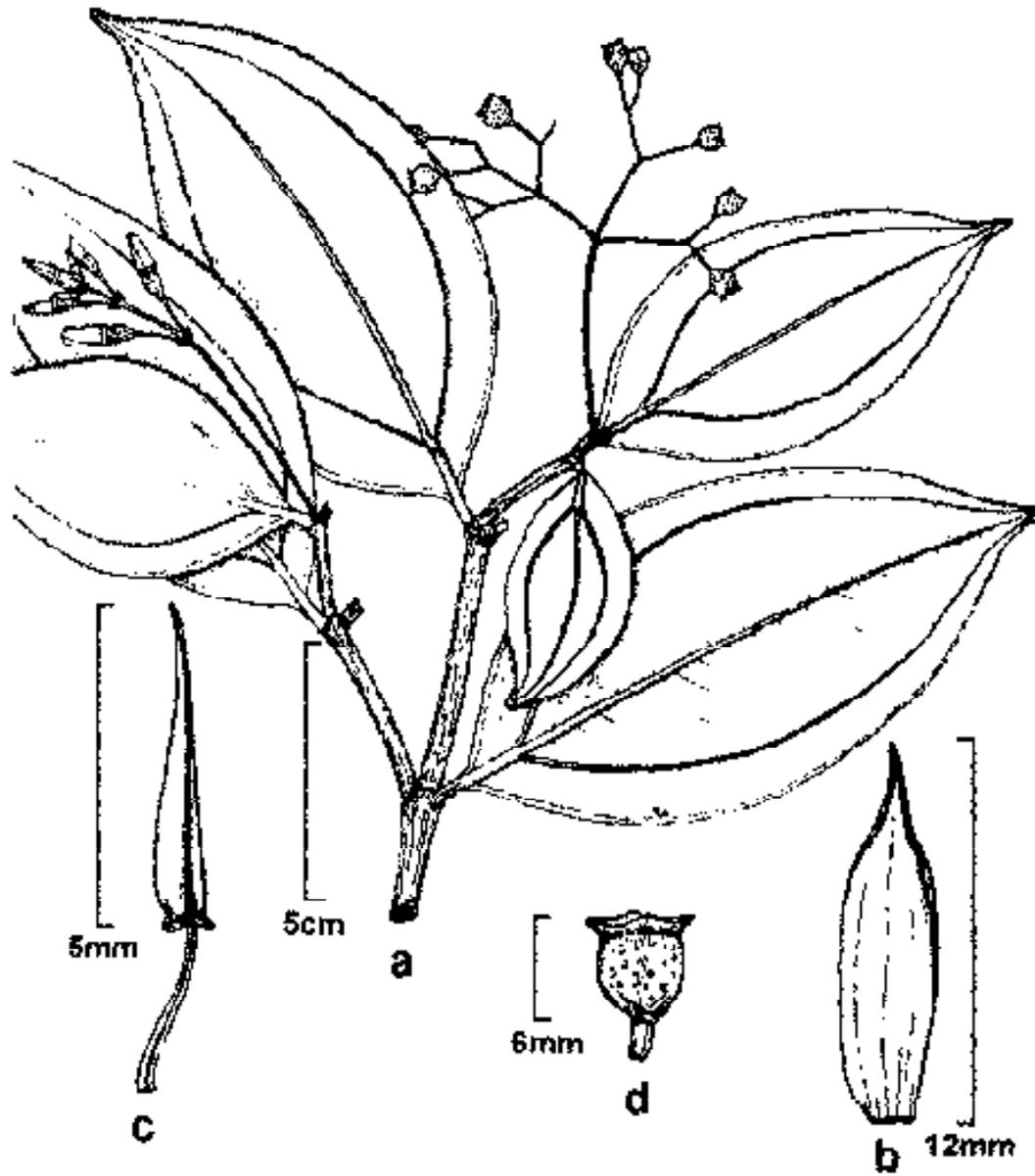


Fig. 107. *Medinilla himalayana* Hook. f. ex Triana: a. Fruiting twig; b. Petal; c. Stamen; d. Fruit.

astringent; used in dysentery, for healing wounds and in skin diseases. Roots and leaves are also used in gargle as mouthwash for toothache. Fruits yield black purple dye.

Metastoma normale D. Don, Prodr. Fl. Nep. 220. 1825 *normalis*; Clarke in Hook. f., Fl. Brit. India 2:524. 1879.

Local name : Pudiraju (Adi); Akysanyi (Apat.); Die-sengne (Nishi).

Small, bushy shrubs, 1-2.5 m high; branches rusty scaly, scales linear. Leaves ovate-lanceolate, densely appressed hairy or shaggy. Flowers in terminal, condensed panicles, purple or rosy; bracts broadly ovate; calyx teeth longer than calyx tubes. Fruits densely scaly, reddish.

Fl. & Fr. : March - Aug.

Distrib. : Kameng, Siang, Subansiri; 350-2000 m, on moist rocky slopes or sometimes found abundant at several spots along water courses.

Use : Leaves are said to be applied to wounds to stop bleeding; fruits are edible.

Memecylon celastrinum Kurz, Pegu Rep. App. B. 53. 1875 and For. Fl. Brit. Burma 1:515. 1877; Fischer in Rec. Bot. Surv. India 12(2):95. 1938. *M. grande* var. *horsfieldii* Clarke in Hook. f., Fl. Brit. India 2:558. 1879. *M. grande* Retz. var. *khasianum* Clarke in Hook. f. Fl. Brit. India 2:558. 1879.

Local name : Koyo-asing (Abor, Miri).

Small trees. Leaves elliptic, coriaceous, drying yellowish. Flowers in axillary cymose umbels, blue; peduncles long, angular or ridged. Anthers crescent shaped with prominent gland at centre of connective. Berries 1-seeded.

Fl. & Fr. : April - July.

Distrib. : Siang; in evergreen forests.

Osbeckia chinensis L., Sp. Pl. 345. 1753; Clarke in Hook. f., Fl. Brit. India 2:515. 1879.

Annual or perennial rhizomatous herbs, 20-60 cm high; stem and branches appressed, softly hairy. Leaves ovate, ovate-elliptic, elliptic-oblong to narrowly lanceolate, hairy. Flowers in terminal clusters, pink, subtended by approximate leaves. Capsules glabrous.

Fl. & Fr. : Aug. - Dec.

Distrib. : Siang; common in moist shady places of forest edges.

Osbeckia crinita Benth. ex Naudin in Ann. Sci. Nat. Bot. ser. 3, 14:72. 1850; Clarke in Hook. f., Fl. Brit. India 2:517. 1879. *Melastoma crinitum* Roxb., Fl. Ind. 2:402. 1832, non Vahl 1807. *Osbeckia sikkimensis* Craib in Notes Roy. Bot. Gard. Edinburgh 10:56. 1917. *O. stellata* D. Don var. *crinita* (Benth. ex Naudin) Hansen in Ginkgoana 4:31. 1977.

Suffruticose shrubs, 1-2.5 m high; branches densely patent hairy. Leaves ovate-elliptic, densely appressed hairy. Flowers in axillary or terminal panicles, pink. Capsules covered with gland-tipped or eglandular hairs and emergences.

Fl. & Fr. : July - Dec.

Distrib. : Changlang, Siang, Tirap; 2000-2500 m, in swampy and marshy places of evergreen forests, on hill slopes and along streams.

Osbeckia glauca Benth. ex Naudin in Ann. Sci. Nat. ser. 3, 14:68. 1850, non Benth. ex Triana 1871; Clarke in Hook. f., Fl. Brit. India 2:516. 1879; Rao & Kharkongar in J. Bombay Nat. Hist. Soc. 75(2):280. 1979. *O. captata* Benth. ex Naudin in Ann. Sci. Nat. ser. 3, 14: 68. 1850, *p.p.*

Perennial, small herbs up to 50 cm high, often rhizomatous at base; branches quadrangular, appressed hairy. Leaves sessile, ovate to broadly ovate, 1.5-3 cm long, subcordate. Flowers in terminal clusters, subtended by approximate leaves, pink or purple. Hypanthium and sepals glabrous.

Fl. & Fr. : May - Nov.

Distrib. : Kameng; in moist places amidst grasses and on hill slopes.

Osbeckia nepalensis Hooker, Exot. Fl. 1:t. 31. 1822; Clarke in Hook. f., Fl. Brit. India 2:521. 1879.

Local name : Pudirasa (Adi), Kakuchi (Asm.).

Perennial, woody herbs or undershrubs, 1-2 m high; stems appressed hairy, quadrangular. Leaves almost sessile, ovate-lanceolate, 5-15 cm long, base subcordate, thinly hairy. Flowers in terminal or axillary panicles, pinkish, light mauve or white. Capsules covered with convex emergences with bristles.

Fl. & Fr. : May - Dec.

Distrib. : Lohit, Siang, Subansiri, Tirap; 200-1500 m, on sandy, rocky or clayey soil in subtropical rain forests, in open grassy fields or along streams.

Use : Ripe fruits are edible.

Osbeckia nutans Wallich ex Clarke in Hook. f., Fl. Brit. India 2:521. 1879.

Erect or scandent shrubs 1-1.5 m high; branches reddish and sparsely appressed hairy when young. Leaves subsessile, narrowly lanceolate, 2-6 cm long with prominent lines of crystalliferous cells. Flowers in terminal few flowered drooping clusters, subtended by reduced leaves, pink or purple. Capsules glabrous.

Fl. & Fr. : Aug. - April.

Distrib. : Kameng, Siang, Subansiri, Tirap; 300-2000 m, common on exposed rocky slopes or among grasses at edges of forests.

Osbeckia rostrata D. Don, Prodr. Fl. Nep. 221. 1825; Clarke in Hook. f., Fl. Brit. India 2:517. 1879; Hara in Hara *et al.*, Enum. Fl. Pl. Nep. 2:170. 1979. *Melastoma pulchellum* Roxb., Fl. Ind. 2:403. 1832. *Osbeckia rostrata* var. *pulchella* Triana in Trans. Linn. Soc. London 28(1):54. 1871. *O. stellata* var. *rostrata* (D. Don) Hansen in Ginkgoana 4:28. 1977.

Local name : Phutki (Asm.).

Small shrubs, 1-1.5 m high; branches patent or deflexed hairy. Leaves ovate-lanceolate, appressed hairy on nerves. Flowers in terminal or axillary panicles, pink; calyx-tubes covered with gland-tipped emergences and hairs. Capsules with crown of bristles.

Fl. & Fr. : May - Dec.

Distrib. : Kameng, Siang, Tirap; 200-2500 m, common in open, marshy grasslands, hill slopes and along waysides.

Osbeckia stellata Buch.-Ham. ex Ker-Gawl. in Edgew., Bot. Reg. 8, t. 674. 1822; Hansen in Ginkgoana 4:23. 1977. *O. stellata* D. Don, Prodr. Fl. Nep. 221. 1825, p.p. *O. stellata* Wallich ex Clarke in Hook. f., Fl. Brit. India 2:517. 1879, p.p.

Local name : Didasa (Nishi).

Suffruticose shrubs, 1-2 m high; branches rigid or crooked hairy. Leaves ovate, ovate-oblong or ovate-lanceolate, strigillose. Flowers usually in terminal cymose panicles, pink or purple. Capsules covered with stalked emergences.

Fl. & Fr. : May - Oct.

Distrib. : Siang, Subansiri; 300-2000 m, common in wastelands, grassy hill slopes, old clearings, along edges of rain forests and sunny water courses.

Oxyspora cernua (Roxb.) Hook. f. & Thomson ex Triana in Trans. Linn. Soc. 28(1):73, t. 6. f. 62 b. 1871; Clarke in Hook. f., Fl. Brit. India 2:526. 1879. *Melastoma cernua* Roxb., Fl. Ind. 2:404. 1832. *Oxyspora vagans* var. B Wallich, Pl. Asiat. Rar. 1:78. 1830.

Shrubs, 2-3 m tall; branches quadrangular, rubiginose, glabrous. Leaves unequal in pair, ovate-lanceolate, 10-35 cm long, margin entire, base deeply cordate, lower surfaces turning reddish on drying. Flowers in long pendulous panicles, pinkish purple; stamens unequal, distinctly spurred. Fruits reddish, glabrous.

Fl. & Fr. : Sept. - March.

Distrib. : Kameng, Lohit, Siang, Subansiri, Tirap; on moist hill slopes.

Oxyspora paniculata (D. Don) DC., Prodr. 3:123. 1828; Clarke in Hook. f., Fl. Brit. India 2:525. 1879. *Arthrostemma paniculatum* D. Don in Mem. Wern. Soc. 4:299. 1823. var. *paniculata*. Fig. 108.

Local name : Porkejale (Adi).

Bushy shrubs, 2-5 m high; younger parts densely stellate hairy. Leaves petiolate, nearly equal in pair, ovate or ovate-elliptic, margin serrulate-

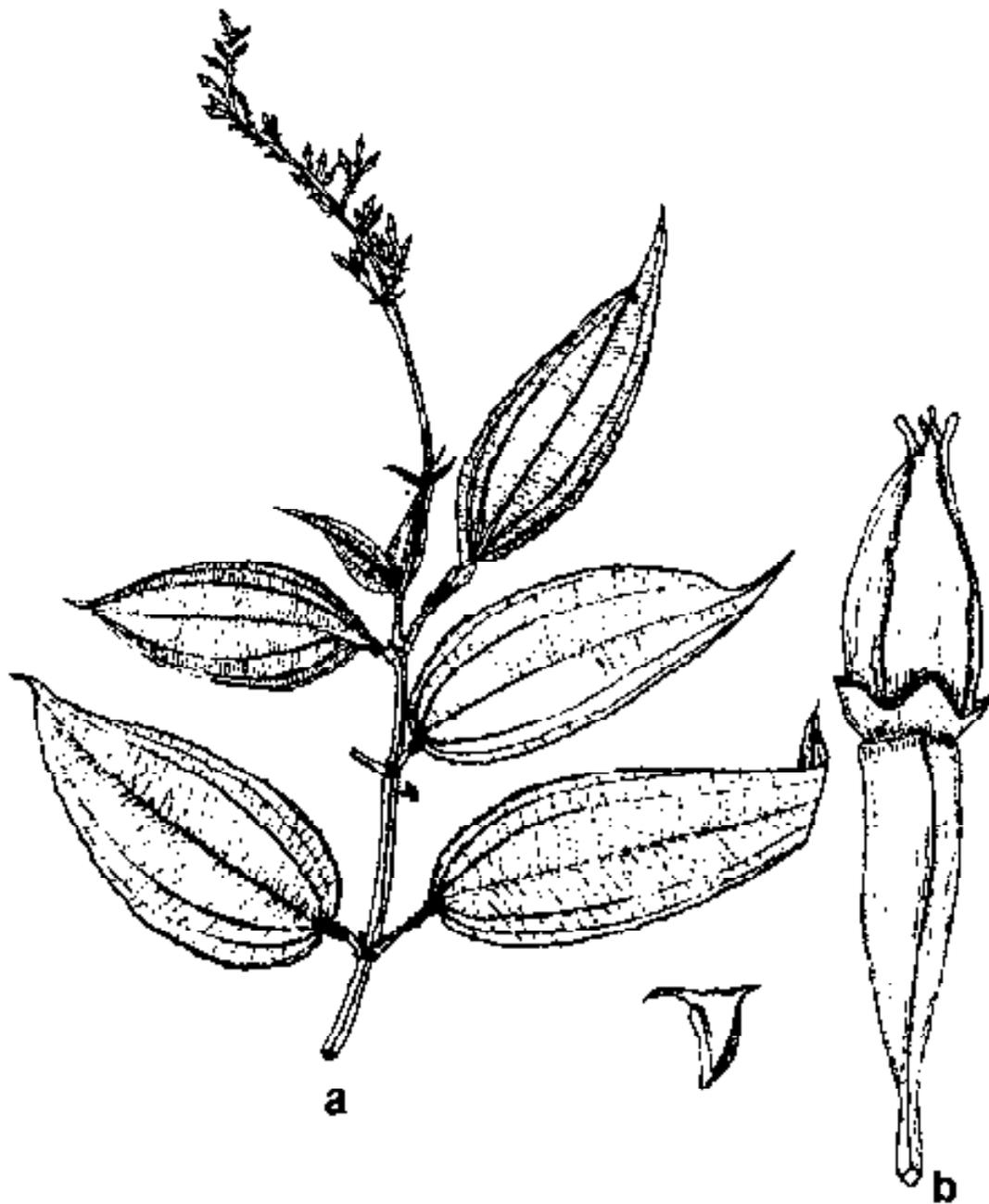


Fig. 108. *Oxyspora paniculata* (D.Don) DC. var. *paniculata* : a. Flowering twig; b. Flower.

denticulate, stellate hairy. Flowers in panicles, pinkish purple; bracts and bracteoles very small, 1-3 mm long, persistent or caducous; anthers distinctly spurred. Capsules narrowly urceolate.

Fl. & Fr. : July - March.

Distrib. : Changlang, Kameng, Siang, Tirap; 1000-2000 m, in forest edges under shades or along streams and river banks.

Use : Bark is removed and raw stem is eaten; sweetish.

Oxyspora paniculata var. *bracteata* Maxw. in Gard. Bull. Singapore 35(2): 217. 1982.

Leaves very unequal in pairs. Flowers in lax panicles; bracts large, 8-15 mm long; bracteoles 5-7 mm long, persistent.

Fl. & Fr. : Aug. - Sept.

Distrib. : Lohit; along forest edges under shades.

Oxyspora vagans (Roxb.) Wallich, Pl. Asiat. Rar. 1:78 (excl. var. B) 1830; Clarke in Hook. f., Fl. Brit. India 2:526. 1879. *Melastoma vagans* Roxb., Fl. Ind. 2:404. 1832. *Oxyspora paniculata* var. *vagans* (Roxb.) Maxw. in Gard. Bull. Singapore 35(2):217. 1982.

Local name : Sinka-asing, Jogir-migjir (Abor).

Bushy shrubs, 1.5-3 m tall; younger parts densely stellate hairy. Leaves petiolate, ovate to ovate-lanceolate, rounded at base, sparsely hairy to glabrous. Flowers in terminal long panicles, purplish. Capsules urn shaped with a distinct neck.

Fl. & Fr. : Sept. - March.

Distrib. : Siang, Tirap; 300-800 m, in shaded places of primary forests, in thickets of open hilly slopes or along river courses.

Pseudodissochaeta assamica (Clarke) Nayar in J. Bombay Nat. Hist. Soc. 65(3): 559. 1969. *Anplectrum assamicum* Clarke in Hook. f., Fl. Brit. India 2:546. 1879. *Medinilla assamica* (Clarke) C. Cheih in Acta. Phytotax. Sin. 21(4):419. 1983, *syn. nov.* Fig. 109.

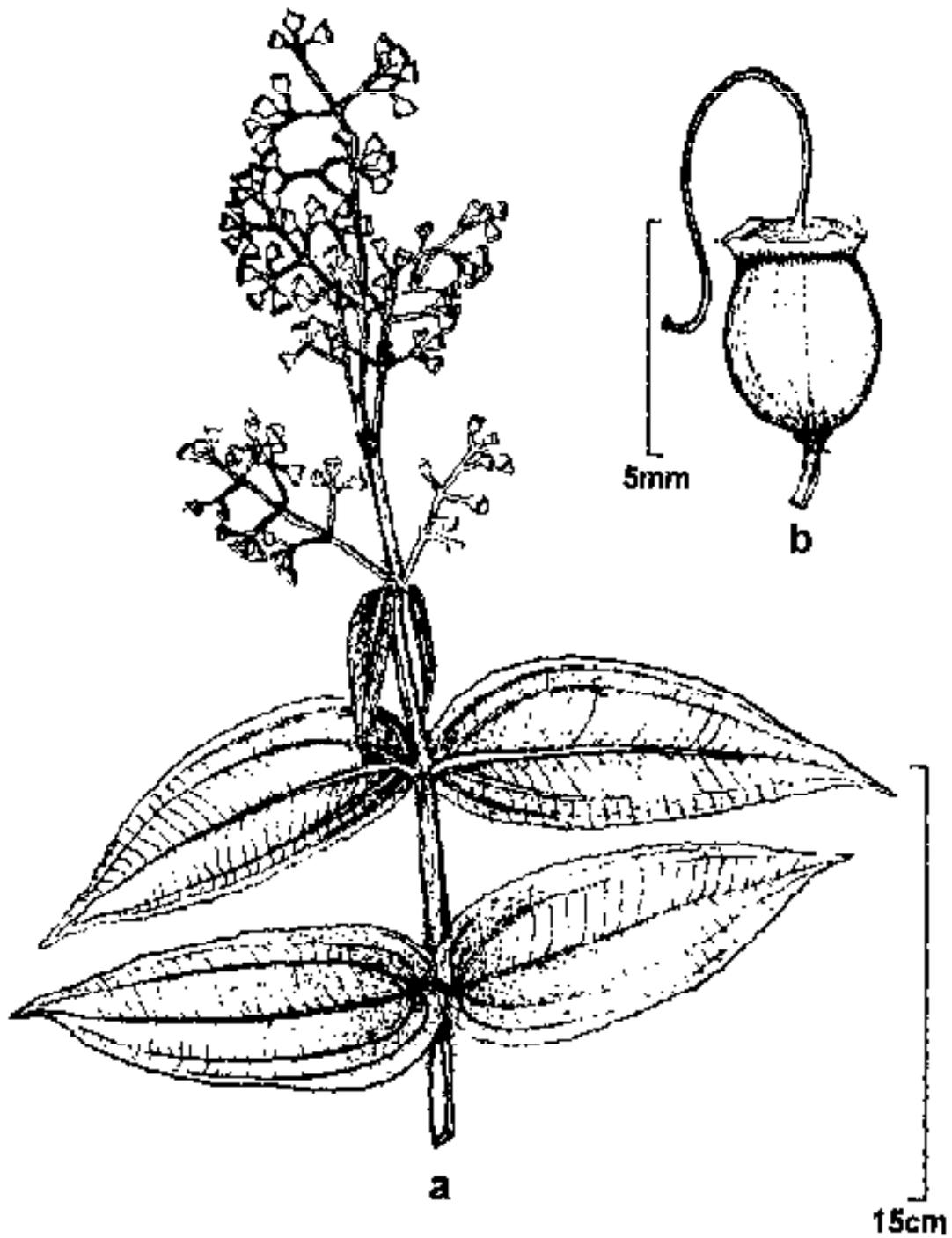


Fig. 109. *Pseudodissochaeta assamica* (Clarke) Nayar : a. Flowering twig; b. Capsule with style.

Local name : Lota-phukola (Asm.).

Shrubs, 3-4 m high, curved hairy at swollen internodes; branches strongly quadrangular. Leaves lanceolate, 10-28 cm long, deeply cordate at base. Flowers in terminal or axillary up to 30 cm long panicles, rachis often strongly winged, dull pinkish or light pinkish violet. Berries brownish red.

Fl. & Fr. : June - Nov.

Distrib. : Siang, Subansiri, Tirap; 300-1500 m, in marshy habitat along streams or on hill slopes.

Use : Stems are often chewed for juice by the Aborees.

Sarcopyramis nepalensis Wallich, Tent. Fl. Nep. 32, t. 23. 1824; Clarke in Hook. f., Fl. Brit. India 2:540. 1879; Hansen in Bot. Tidss. Krift 73, hft. 3-4:180. 1979. 'nepalensis', 'nipaulensis' (orth. mut.).

Annual or perennial, glabrous or sparsely glandular hairy, rhizomatous, fleshy herbs, 10-25 cm high, stems often white spotted. Leaves unequal sided, usually lanceolate, margin entire to remote serrulate, often maculated. Flowers in terminal or axillary few flowered clusters, subtended by leafy bracts, delicate, pinkish or whitish, 4-merous; sepals variously lobed. Capsules oval.

Fl. & Fr. : May - Dec.

Distrib. : Siang, Tirap; 450-2500 m, usually on moist shady places in forest floor and less common along roadsides, rivers or streams.

Note : It is a variable species so far the leaves and flowers are concerned. A large number of species described by different authors under the genus *Sarcopyramis* Wallich, but all are merged under *S. nepalensis* Wallich (Hansen 1979).

Sonerila arunachalensis Giri, Pramanik & Chowdhery in Ind. J. For. 15(1): 95. 1992. Fig. 110.

Small, erect herbs up to 15 cm high; stems unbranched, densely covered with ferruginous hairs. Leaves ovate to ovate-lanceolate, sparsely brownish hairy beneath. Flowers yellowish pink in axillary or terminal scorpioid racemes. Capsules obconical, 6-ribbed, brownish pubescent intermixed with curved, stiff hairs.

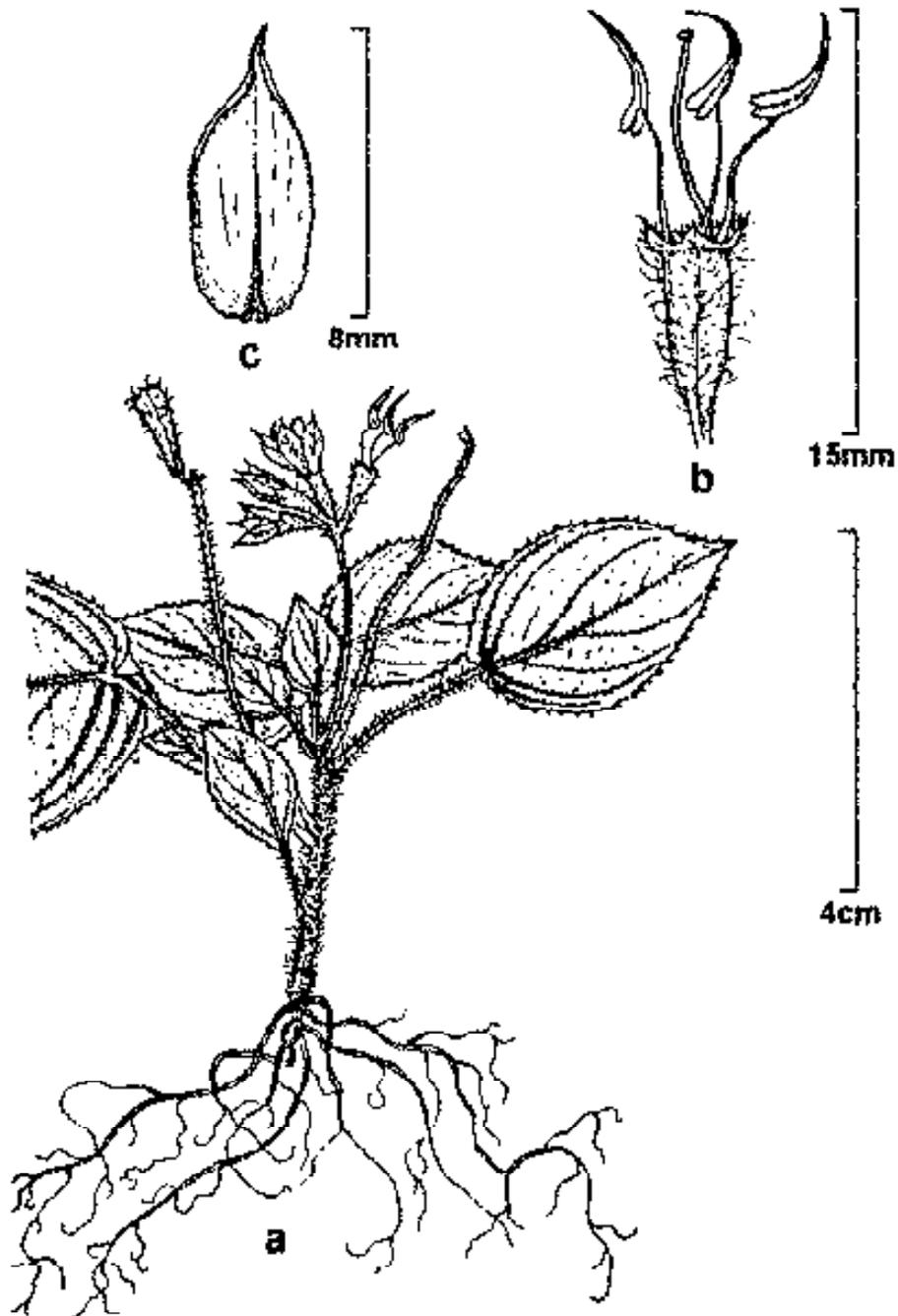


Fig. 110. *Sonerila arunachalensis* Giri, Pramanik & Chowdhery : a. Habit; b. Flower (petals removed); c. Petal.

Fl. & Fr. : July - Sept.

Distrib. : Dibang valley; 1400-1600 m, in moist shady places.

Sonerila khasiana Clarke in Hook. f., Fl. Brit. India 2:539. 1879; Nayar in J. Bombay Nat. Hist. Soc. 65: 805. 1968. *S. villosa* Fischer in Kew Bull. 1932: 199. 1932.

Rhizomatous, creeping or decumbent herbs; stems up to 5 cm long, reddish, linear scaly at base. Leaves small, fascicled at apices of stems, long petioled, ovate. Flowers in terminal cymes or umbels, pinkish. Capsules faintly ribbed, turbinate, glabrous.

Fl. & Fr. : July - Sept.

Distrib. : Siang; 500-1200 m, in moist and shady places along roadsides, in rock crevices or sometimes found on moss covered over hanging rocks.

Sonerila maculata Roxb., Fl. Ind. 1:180. 1820; Clarke in Hook. f., Fl. Brit. India 2:537. 1879. *S. angustifolia* Roxb., Fl. Ind. 1:181. 1820. *S. emaculata* Roxb., Fl. Ind. 1:181. 1820. *S. dharii* Ved Prākash & B.N.Mehrotra in Candollea 43(1):143. 1988., *syn. nov.*

Local name : Jakmalo (Nishi).

Erect or decumbent, glabrous or sparsely hairy herbs, 10-50 cm high. Leaves much variable, usually 5-12 cm long with maculate dots, sparsely to densely hairy. Flowers in axillary or terminal, few flowered scorpioid racemes, pinkish. Capsules brownish, faintly ribbed, glabrous.

Fl. & Fr. : June - Feb.

Distrib. : Subansiri, Tirap; 100-1100 m, common on humid rocky slopes, forest edges, along river courses and less often in damp open localities.

Use : Leaves are cooked and eaten as vegetable.

CRYPTERONIACEAE

Crypteronis paniculata Blume, Bijdr. 1151. 1826; Osinga in van Steenis, Fl. Males. 8(2):194. 1977. *C. glabra* (Wallich ex Planch.) Endl., Gen. Pl.

Suppl. 4(2): 39. 1847; Clarke in Hook. f., Fl. Brit. India 2:574. 1879. *Henslowia glabra* Wallich ex Planch. in Hooker, London J. Bot. 4:478. 1845.

Local name : Goru-mora (Assm.).

Large trees, 10-15 m high with spreading branches. Leaves lanceolate or elliptic-lanceolate, membranous. Inflorescence greenish, elongated, paniculately branched raceme. Flowers minute, green; calyx persistent. Capsules broad.

Fl. & Fr. : Sept. - March.

Distrib. : Tirap; 200-800 m.

LYTHRACEAE

Cuphea carthagensis (Jacq.) Macbride in Publ. Field. Mus. Nat. Hist. Chicago, Bot. ser. 8:124. 1930; Naithani, Fl. Pl. India, Nep. & Bhutan 172. 1990. *Lythrum carthagensis* Jacq., Strip. Amer. Hist. 148. 1763. *Cuphea balsamona* Cam. & Schult. in Linnaea 2:363. 1827; Deb & Dutta in J. Bombay Nat. Hist. Soc. 70:88. 1973.

Erect or prostrate herbs, 20-60 m high with small, short, spiny, glandular hairy throughout. Leaves elliptic, glandular hairy. Flowers in axillary or terminal fascicles, pink.

Fl. & Fr. : Aug. - Dec.

Distrib. : Changlang, Subansiri; 300-800 m, in open grasslands or swampy areas and often very gregarious.

Lagerstroemia minuticarpa Debbarman ex P.C. Kanjilal in Assam For. Rec. Bot. 1:9. 1934; Kanjilal *et al.*, Fl. Assam Fl. 2:311. 1938.

Local name : Singkut-polut (Abor, Adi); Sinkrit-asing, kunari-asing (Miri).

Large trees, 30-40 m tall. Leaves elliptic or oblong to ovate-lanceolate, acuminate, subcoriaceous, puberulous along midrib. Flowers white in terminal panicles. Fruits long, persistent.

Fl. & Fr. : Aug. - Jan.

Distrib. : Siang.

Lagerstroemia parviflora Roxb., Pl. Corom. 1:47, t. 66. 1795; Clarke in Hook. f., Fl. Brit. India 2:575. 1879; Furtado & Montien in Gard. Bull. Singapore 24:195. 1969. *L. parviflora* var. *benghalensis* Clarke in Hook. f., Fl. Brit. India 2:576. 1879. *P. parviflora* var. *majuscula* Clarke in Hook. f., Fl. Brit. Ind. 2:575. 1879.

Local name : Sida, dhauli (Asm.).

Trees up to 20 m tall. Leaves oblong, acute or acuminate, glabrous on upper surfaces, pubescent on midrib beneath. Flowers in panicles, pinkish brown; calyx persistent. Capsules variable in size.

Fl. & Fr. : May - July.

Distrib. : Kameng; 200-800 m.

Lagerstroemia reginae Roxb., Pl. Corom. 1:46, t. 65. 1795; Furtado & Montien in Gard. Bull. Singapore 24:261. 1969. *L. flos-reginae* auct. non Retz. 1789; Clarke in Hook. f., Fl. Brit. India 2:577. 1879, *p.p.* *L. flos-reginae* Retz. var. *angusta* Wallich ex Clarke in Hook. f., Fl. Brit. India 2:577. 1879.

Local name : Ajar, Ajhar (Asm.).

Trees, 15-20 m high. Leaves broadly elliptic to lanceolate. Flowers scattered, mauve coloured in large panicles; calyx woody in fruit, ribbed, lobes triangular, spreading. Fruits large.

Fl. & Fr. : June - Dec.

Distrib. : Subansiri; 600-1000 m.

Rutala densiflora (Roth ex Roem. & Schult.) Koehne in Bot. Jahrb. 1:164. 1880; Leeuwen in Blumea 19:55. 1971. *Ammania densiflora* Roth ex Roem. & Schult., Syst. Veg. 3:304. 1818. *A. pentandra* Roxb., Fl. Ind. 1:488. 1820, *p.p.*; Clarke in Hook. f., Fl. Brit. India 2:568. 1879.

Annual herbs, 15-30 cm high. Leaves cauline, opposite, elliptic-oblong, sessile. Flowers sessile, solitary, axillary. Capsules spherical.

Fl. & Fr. : July - Dec.

Distrib. : Kameng; in moist places.

Rotala indica (Willd.) Koehne in Bot. Jahrb. 1:172. 1880; Blatter & Hallb. in J. Bombay Nat. Hist. Soc. 26:711. 1918. *Peplis indica* Willd., Sp. Pl. 2:244, 1799. *Ammania peploides* Spreng., Syst. Veg. 1:444. 1825; Clarke in Hook. f., Fl. Brit. India 2:566. 1879.

Annual, decumbent or erect, glabrous herbs, 2.5-30 cm high. Leaves opposite, elliptic, cauline. Flowers in axillary spikes, minute. Capsules ellipsoid. Seeds pink.

Fl. & Fr. : Nov. - Jan.

Distrib. : Subansiri; 200-1400 m, in damp places.

Rotala rotundifolia (Buch. - Ham. ex Roxb.) Koehne in Bot. Jahrb. 1:175. 1880. *Ammania rotundifolia* Buch. - Ham. ex Roxb., Fl. Ind. 1:446. 1820; Clarke in Hook. f., Fl. Brit. India 2:566. 1879, *p.p.* Fig. 111.

Annual, glabrous, aquatic herbs; extensively rooting, creeping and forming large patches, 10-15 cm high. Leaves orbicular, opposite, sessile or shortly petioled. Flowers bright mauve in axillary, pedunculate, dense spikes. Capsules ellipsoid. Seeds brown yellow.

Fl. & Fr. : April - May.

Distrib. : Kameng, Subansiri, Tawang; along marshy water logged paddy fields and in stagnant water.

Woodfordia fruticosa (L.) Kurz in J. Asiat. Soc. Bengal 40(2):56. 1871; Dar in Nasir & Ali, Fl. W. Pakistaq 78. 6. 1975. *Lythrum fruticosum* L., Syst. Nat. ed. 10, 1045. 1759. *Woodfordia floribunda* Salisb., Parad. London t. 42. 1806; Clarke in Hook. f., Fl. Brit. India 2:572. 1879.

Shrubs up to 2 m high with long spreading branches. Leaves opposite, subsessile, entire, lanceolate, rounded or cordate at base. Flowers scarlet in short paniced cymes on axillary peduncles. Capsules ellipsoid.

Fl. & Fr. : Jan. - May.

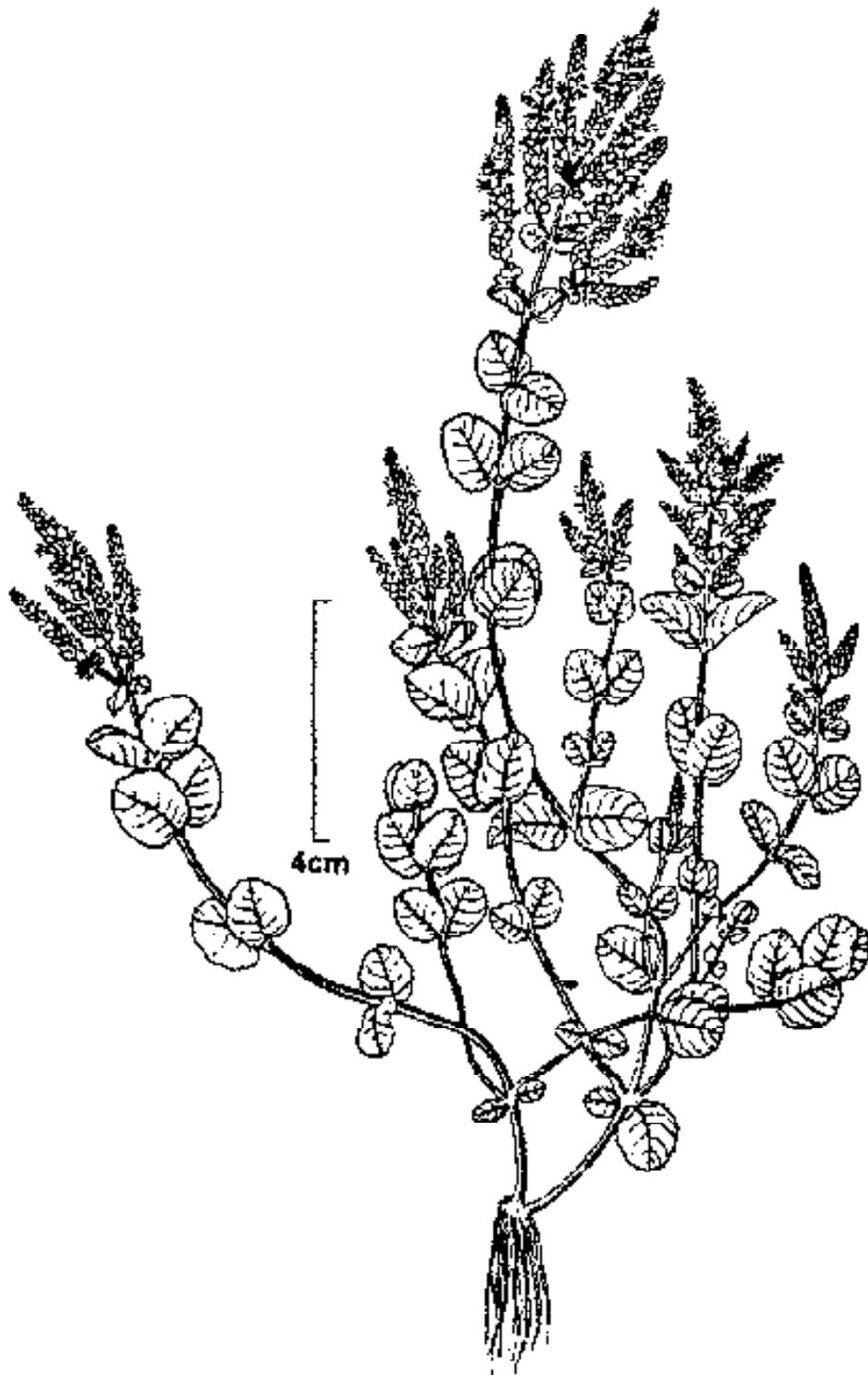


Fig. 111. *Rotala rotundifolia* (Buch. - Ham. ex Roxb.) Koehoe.

Distrib. : Kameng; 300-1400 m.

Note : Flowers yield reddish or yellowish dye used in dying silk.

SONNERATIACEAE

Duabanga grandiflora (Roxb. ex DC.) Walp., Repert. 2:114. 1843; Jayaweera in J. Arn. Arb. 48:96. 1967. *Lagerstroemia grandiflora* Roxb. ex DC. in Mem. Soc. Hist. Nat. Geneva 32:84. 1826. *Duabanga sonneratioides* Buch. - Ham. in Trans. Linn. Soc. London 17:177. 1843; Clarke in Hook. f., Fl. Brit. India 2:579. 1879.

Local name : Khukan, Hokul (Asm.).

Tall trees up to 30 m high with drooping branches and narrow crown. Flowers white; petals caducous. Fruits dirty brown.

Fl. & Fr. : Feb. - Oct.

Distrib. : Changlang, Dibang valley, Lohit, Siang, Subansiri, Tirap; 300-400 m, exceedingly common along river sides.

PUNICACEAE

Punica granatum L., Sp. Pl. 676. 1753; Clarke in Hook. f., Fl. Brit. India 2:581. 1879.

Local name : Dalim (Asm.).

Deciduous shrubs, 3-4 m tall. Leaves oblong or obovate, obtuse, entire. Flowers axillary, solitary or somewhat clustered, large, orange red; calyx lobes persistent. Berries globose.

Fl. & Fr. : May - Aug.

Distrib. : Kameng; 500-700 m.

Use : Cultivated for fruits.

ONAGRACEAE

Circaea alpina L., Sp. Pl. 9. 1753; Clarke in Hook. f., Fl. Brit. India 2:589. 1879, p.p.

Erect, delicate herbs, 15-20 cm high. Leaves ovate, almost glabrous, membranous, long petioled. Flowers white in terminal, peduncled racemes. Fruits very small, pyriform with hooked hairs.

Fl. & Fr. : Aug. - Sept.

Distrib. : Subansiri; 1600-3300 m, in shady forests amidst grasses.

Circaea repens Wallich ex Asch. & Magnus in Bot. Zeit. 28:761. 1870; Hara, Fl. E. Himal. 223. 1966. *C. lutetiana* auct. non L. : Clarke in Hook. f., Fl. Brit. India 2:589. 1879. *C. alpina* var. *himalaica* Clarke in Hook. f., Fl. Brit. India 2:589. 1879.

Annual, erect or decumbent herbs, woody below, 30-60 cm high. Leaves ovate-lanceolate, more or less pubescent. Flowers white or pinkish. Fruits echinate, green, obovoid with hooked hairs.

Fl. & Fr. : July - Sept.

Distrib. : Subansiri; 1600-3000 m, in and around cultivated rice fields.

Epilobium angustifolium L. subsp. *circumvagum* Mosquin in Brittonia 18:169. 1966. *E. angustifolium* auct. non L.: Clarke in Hook. f., Fl. Brit. India 2:582. 1879, p.p. Fig. 112.

Herbs, 60-120 cm tall. Leaves narrowly lanceolate, obscurely denticulate. Flowers rose purple; calyx-tube covered with tomentum. Capsules pubescent. Seeds obovoid, smooth.

Fl. & Fr. : Sept. - Jan.

Distrib. : Kameng; up to 2400 m.

Epilobium brevifolium D. Don, Prodr. Fl. Nep. 222. 1825; Hara, Fl. E. Himal. 223. 1966. subsp. *brevifolium*.

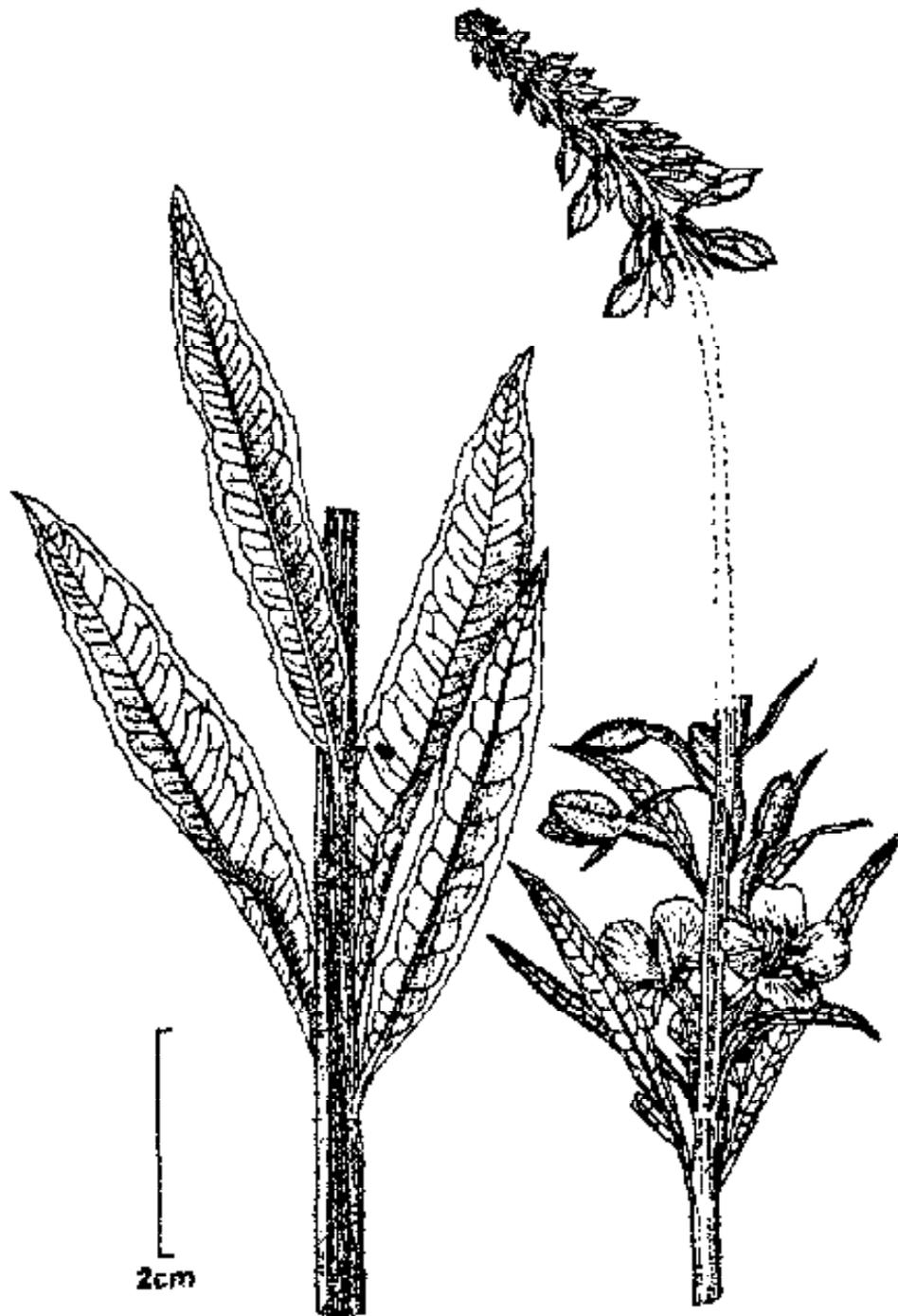


Fig. 112. *Epilobium angustifolium* L. subsp. *circumvagum* Moequin :
a. Part of Branch; b. Flowering twig.

Herbs up to 1 m tall, pubescent on angles. Leaves ovate or ovate-elliptic, glabrous, hairy on raised nerves beneath, denticulate to serrulate. Flowers small, rose or purple. Capsules narrowly elliptic.

Fl. & Fr. : July - Nov.

Distrib. : Subansiri; 1800-2000 m.

Epilobium brevifolium subsp. *trichoneurum* (Hausskn.) Raven in Bull. Brit. Mus. Nat. Hist. Bot. 2: 362. 1962. *E. trichoneurum* Hausskn., Oesterr. Bot. Zeit. 29:54. (Feb.) 1879. *E. hookeri* Clarke in Hook. f., Fl. Brit. India 2:585. 1879.

Perennial, erect or ascending herbs or undershrubs up to 1 m high; stems reddish, pubescent. Flowers pink or purple. Capsules linear. Seeds oblong, pale brown.

Fl. & Fr. : Sept. - Jan.

Distrib. : Subansiri; 1300-1600 m, along roadsides near water sources.

Epilobium cylindricum D. Don, Prodr. Fl. Nep. 222. 1825; Raven in Bull. Brit. Mus. Nat. Hist. Bot. 2:355. 1962. *E. roseum* Schreb. var. *cylindricum* (D. Don) Clarke in Hook. f., Fl. Brit. India 2:585. 1879.

Glabrescent herbs with distinct hairy lines on stem. Flowers pale pink to purple or white. Capsules long peduncled. Seeds obovoid, minutely papillose.

Fl. & Fr. : Aug. - Dec.

Distrib. : Kameng, Lohit; 1600-3200 m.

Ludwigia adscendens (L.) Hara in J. Jap. Bot. 28:291. 1953. *Jussiaea adscendens* L., Mant. Pl. 1:69. 1767. *J. repens* L., Sp. Pl. 388. 1753, non *Ludwigia repens* Forst. 1771; Clarke in Hook. f., Fl. Brit. India 2:587. 1879.

Creeping herbs. Leaves obovate or oblanceolate, obtuse, narrowed at base. Flowers yellow or white, axillary, solitary. Capsules linear, cylindrical. Seeds smooth.

Fl. & Fr. : Sept. - Dec.

Distrib. : Kameng; up to 200 m, in swamps, ponds.

Ludwigia hyssopifolia (G. don) Exell in Gracia de Orta 5:471 & 474, t. 2. 1957; Khan & Shamsbujahar in Fl. Bangladesh 6:4. 1977. *Jussiaea hyssopifolia* G. Don, Gen. Syst. 2:693. 1832. *Fissendocarpa linifolia* (Vahl) Bennet in J. Bombay Nat. Hist. Soc. 67:126. 1970. *Jussiaea linifolia* Vahl Eclog. Amer. 2:32. 1798, non *Ludwigia linifolia* Poiret 1813.

Slender herbs up to 60 cm high; branches narrowly winged, glabrous. Leaves lanceolate. Flowers yellow. Capsules linear. Seeds 1-seriate.

Fl. & Fr. : Sept. - Jan.

Distrib. : Kameng, Subansiri; 200-500 m, in moist places along roadsides.

Ludwigia octovalvis (Jacq.) Raven subsp. *sessiliflora* (Micheli) Raven in Kew Bull. 15:476. 1962. *Jussiaea actonervia* forma *sessiliflora* Micheli in Martius, Fl. Bras. 13(2):171. 1875. *Jussiaea suffruticosa* L., Sp. Pl. 388. 1753; Clarke in Hook. f., Fl. Brit. India 2:587. 1879.

Erect, undershrubs or annual herbs, 60-80 cm high. Leaves lanceolate. Flowers large, yellow or pinkish yellow. Capsules pubescent, red. Seeds multiseriate, round, brown.

Fl. & Fr. : Throughout the year.

Distrib. : Changlang, Siang, Subansiri, Tirap; 200-900 m, abundant in swampy places, stream beds.

Ludwigia prostrata Roxb., Fl. Ind. 1:441. 1820; Clarke in Hook. f., Fl. Brit. India 2:588. 1879. Fig. 113.

Prostrate, decumbent or erect, glabrous herbs, 20-60 cm high. Leaves lanceolate. Flowers sessile, axillary, solitary. Capsules linear. Seeds numerous, ovoid, smooth.

Fl. & Fr. : Sept. - Nov.

Distrib. : Changlang, Tirap; up to 700 m, in marshy places.

Oenothera rosea L. Herit. ex Aiton, Hort. Kew. ed. 1, 2:3. 1789; Clarke in Hook. f., Fl. Brit. India 2:582. 1879.



Fig. 113. *Ludwigia prostrata* Roxb. : a. Habit; b. Fruit.

Small herbs ca 30 cm high. Leaves elliptic, sinuate pinnatifid. Flowers pink or rosy. Capsules clavate. Seeds granulate.

Fl. & Fr. : Aug. - Nov.

Distrib. : Kameng; 700-2000 m, usually cultivated.

TRAPACEAE

Trapa maximowiczii Korshincy in Acta. Hort. Petrop. 12:336. 1892; Subaramanyan, Aquat. Angios. 21. 1962.

Floating aquatic herbs. Leaves rhomboid, long petioled, floating, pinnatisect, villous beneath, submerged. Flowers solitary, axillary, white. Fruits large, woody or bony, nut with large seed.

Fl. & Fr. : Dec. - April.

Distrib. : Kameng; in ditches.

PASSIFLORACEAE

Adenia trilobata (Roxb.) Engler in Bot. Jahrb. 14:376. 1891. *Modecca trilobata* Roxb., Pl. Corom. t. 297. 1820; Masters in Hook. f., Fl. Brit. India 2:602. 1879.

Large, glabrous, herbaceous, twining climbers; branches terate. Leaves palmately 3 or 5 lobed, membranous, cordate. Flowers white; peduncles terminating in tendrils. Fruits oblong, scarlet when ripe. Seeds reniform.

Fl. & Fr. : Aug. - Nov.

Distrib. : Changlang, Kameng, Lohit, Subansiri, Tirap; 700-2000 m.

Use : Leaves are made into paste and applied in snake bite.

Modecca cardiophylla Masters in Hook. f., Fl. Brit. India 2:602. 1879.

Climbers. Leaves membranous, long petioled, cordate-ovate, acute or shortly acuminate, entire, rarely palmately lobed. Inflorescence a cyme on long cylindrical peducles. Flowers many.

Fl. & Fr. : June - Aug.

Distrib. : Tirap; 1200-1800 m.

Modecca cordifolia Blume, Bijdr. 937. 1825; Masters in Hook. f., Fl. Brit. India 2:602. 1879.

Twining herbs. Leaves membranous, glandular, cordate-roundish, acute, shortly petioled, slightly glaucous beneath. Flowers in axillary, long pedunculate, many flowered cymes. Fruits elongate.

Fl. & Fr. : July - Nov.

Distrib. : Subansiri; 700-2000 m.

Passiflora foetida L., Sp. Pl. 595. 1753; Kanjilal *et al.*, Fl. Assam 2:322. 1938.

Slender, climbing shrubs. Leaves 3-lobed, membranous, margin ciliate, base broadly cordate. Flowers greenish white. Fruits globose.

Fl. & Fr. : July - Nov.

Distrib. : Kameng; 700-2000 m, along roadsides.

Passiflora leschenaultii DC., Prodr. 3:326. 1828; Masters in Hook. f. Fl. Brit. India 2:599. 1879. Fig. 114.

Climbing shrubs with slender, angular branches. Leaves suborbicular, truncate, palmi-nerved, shortly 3-lobed, pubescent beneath. Flowers large in paired peduncles from leaf axils, white. Fruits ovoid, glabrous, yellowish.

Fl. & Fr. : Aug. - Dec.

Distrib. : Subansiri; 700-2000 m.

Passiflora nepalensis Wallich, Tent. Fl. Nep. 20, t. 11. 1824; Masters in Hook. f., Fl. Brit. India 2:600. 1879; Sutton in Hara *et al.*, Enum. Fl. Pl. Nep. 2:177. 1979. *P. geminiflora* D. Don, Prodr. Fl. Nep. 63. 1825.

Glabrous climbers. Leaves ovate or ovate-lanceolate, glaucescent beneath. Flowers in solitary, pedunculate, pale yellow. Fruits subglobose, green when young, purplish when ripe.

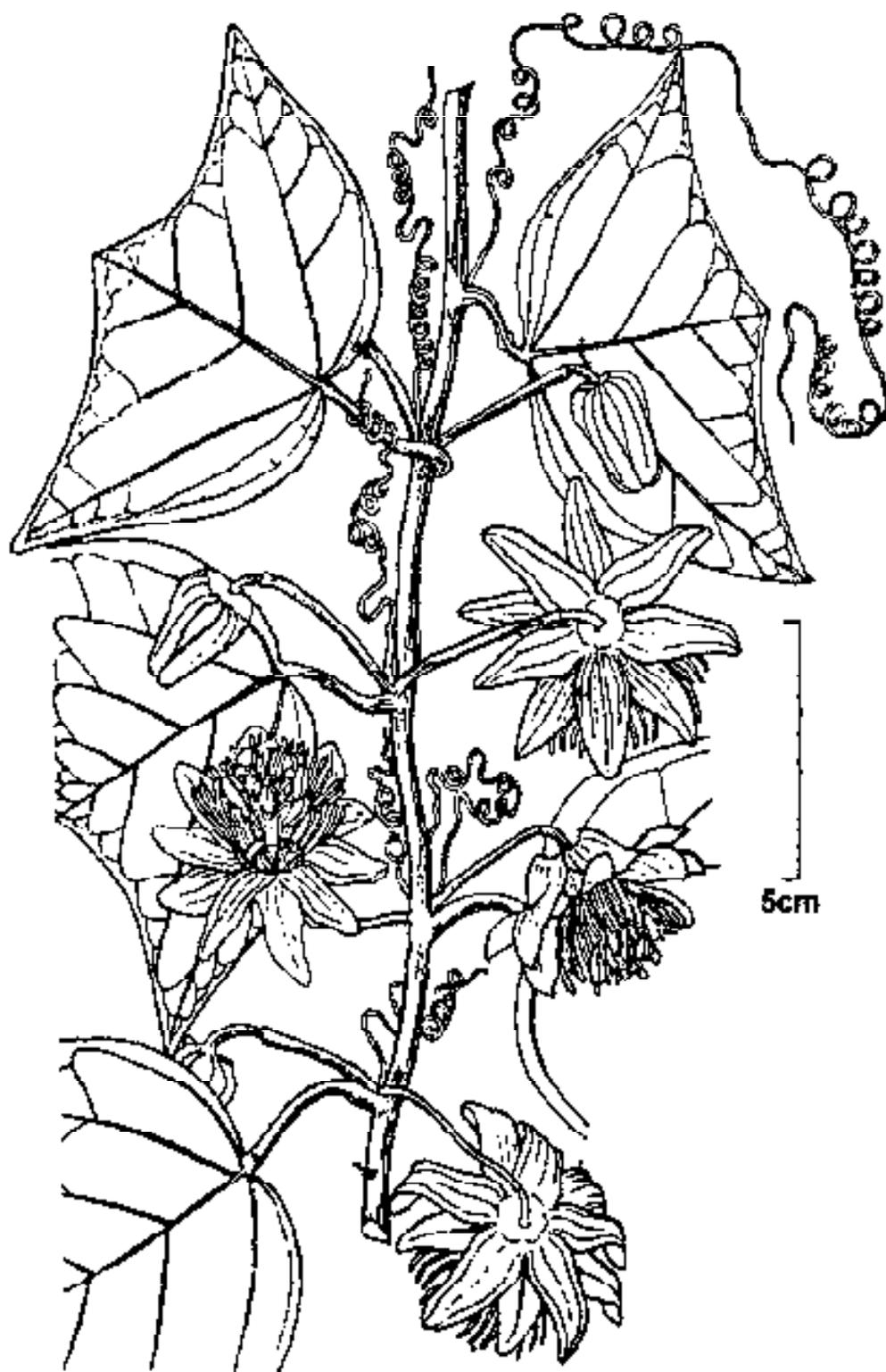


Fig. 114. *Passiflora leschenaultii* DC. : Part of branch with flowers.

Fl. & Fr. : July - Nov.

Distrib. : Kameng; 1200-1800 m, along hill slopes amidst bushes.

Passiflora perpera Masters in Hooker, Ic. Pl. 18: sub. t. 1768. 1888; de Wilde in Blumea 20:235. 1972. *P. assamica* Chakravarty in Bull. Bot. Soc. Bengal 3:48. 1951.

Climbers with simple tendrils. Flowers white. Fruits globose.

Fl. & Fr. : May - July.

Distrib. : Tirap; 700-2000 m.

CARICACEAE

Carica papaya L., Sp. Pl. 1036. 1753; Masters in Hook. f., Fl. Brit. India 2:599. 1879.

Slender, generally unbranched shrubs ca 3 m tall with apical crown of leaves. Leaves palmately lobed; petioles long, cylindric. Male flowers green or yellow; females flower greenish white. Fruits large, subglobose to pyriform or ovoid, yellowish to orange on ripening.

Fl. & Fr. : Sept. - April.

Distrib. : Kameng, Subansiri; up to 700 m, at outskirts of villages as an escape. Cultivated throughout tropical regions for fruits.

Use : Fruits are edible and also medicinal. The latex contains 'papain' has got various medicinal properties.

CUCURBITACEAE

Actinostemma tenerum Griffith, Pl. Cantor. 25, t. 3. 1836; Clarke in Hook. f., Fl. Brit. India 2:633. 1879.

Herbaceous, monoecious climbers with simple or bifid tendrils. Leaves petioled, deeply cordate or hastate, toothed. Flowers in panicles, small. Capsules ovoid, conical, verrucose. Seeds compressed, ovate.

Fl. & Fr. : May - Sept.

Distrib. : Dibang valley, Lohit, Siang; 550-1200 m.

Benincasa hispida (Thunb.) Cogn. in DC. Monogr. Phan. 3:513. 1881; Chakravarty in Rec. Bot. Surv. Ind. 17(1): 84. 1959. *Cucurbita hispida* Thunb., Fl. Jap. 322. 1784. *Benincasa cerifera* Savi in Bibl. Ital. 9:158. 1818; Clarke in Hook. f., Fl. Brit. India 2:616. 1879.

Local name : Chalkumra (Asm.).

Large, hairy, monoecious climbers, tendrils bifid. Leaves cordate, reniform-orbicular, 5-lobed. Flowers large, yellow, solitary. Fruits large, fleshy, oblong, pubescent. Seeds many, oblong, compressed.

Fl. & Fr. : April - Dec.

Distrib. : Siang, Subansiri, Tirap; 500-1400 m; often cultivated.

Use : Young and ripe fruits are used as vegetable. The fruits are considered as tonic, nutritive and diuretic.

Cucumis melo L., Sp. Pl. 1010. 1753; Clarke in Hook. f., Fl. Brit. India 2:620. 1879.

Annual, monoecious climbing or creeping herbs. Leaves large, softly hairy. Flowers small, yellow. Fruits spherical, ovoid, elliptic, fleshy, varying in colours, often bright green, blotched with white along longitudinal line.

Fl. & Fr. : April - Sept.

Distrib. : Dibang valley, Siang; often cultivated.

Use : Extensively used as dessert fruits. Sometimes the young fruits are used as vegetable.

Cucumis sativus L., Sp. Pl. 1012. 1753; Clarke in Hook. f., Fl. Brit. India 2:620. 1879.

Trailing or climbing annuals with tendrils. Flowers small, yellow. Fruits elongate, cylindrical, thick, fleshy, dull yellow.

Fl. & Fr. : May - Sept.

Distrib. : Dibang valley, Lohit, Siang; often cultivated.

Cucurbita maxima Duch. ex Lamk., *Encycl. Meth. Bot.* 2:151. 1786; Clarke in Hook. f., *Fl. Brit. India* 2:622. 1879.

Trailing, annual herbs with long, prickly hairy stems. Leaves orbicular or reniform with 5-rounded shallow lobes. Fruits variable in size, brownish yellow.

Fl. & Fr. : April - Oct.

Distrib. : Kameng, Siang, Subansiri; often cultivated.

Use : All parts of the plants are edible. The seeds are anthelmintic, diuretic and tonic.

Cucurbita moschata (Duch. ex Lamk.) Duch. ex Poiret, *Dict. Sci. Nat.* 8:234. 1818; Clarke in Hook. f., *Fl. Brit. India* 2:622. 1879. *C. pepo* L. var. *moschata* Duch. ex Lamk., *Encycl. Meth. Bot.* 2:152. 1786. **Fig. 115.**

Local name : Lal-kumra (Abor).

Trailing or climbing herbs; stems prickly hairy. Leaves large, orbicular or reniform, lobed. Flowers pale yellow. Fruits round or oval, bluntly ribbed, brownish yellow, fleshy. Seeds numerous, white.

Fl. & Fr. : May - Oct.

Distrib. : Dibang valley, Lohit, Siang, Subansiri; 400-700 m. Often cultivated for edible fruits.

Use : The yellow pulp of the fruits is cooked and eaten.

Cucurbita pepo L., *Sp. Pl.* 1010. 1753; DC., *Prodr.* 3:317. 1828; Clarke in Hook. f., *Fl. Brit. India* 2:622. 1879.

Local name : Lal-kumra (Abor).

Trailing or climbing annual herbs with stout, hispid, angular stems and branched tendrils. Leaves orbicular, 5-lobed, prickly hairy. Flowers yellow. Fruiting peduncles woody, deeply furrowed.

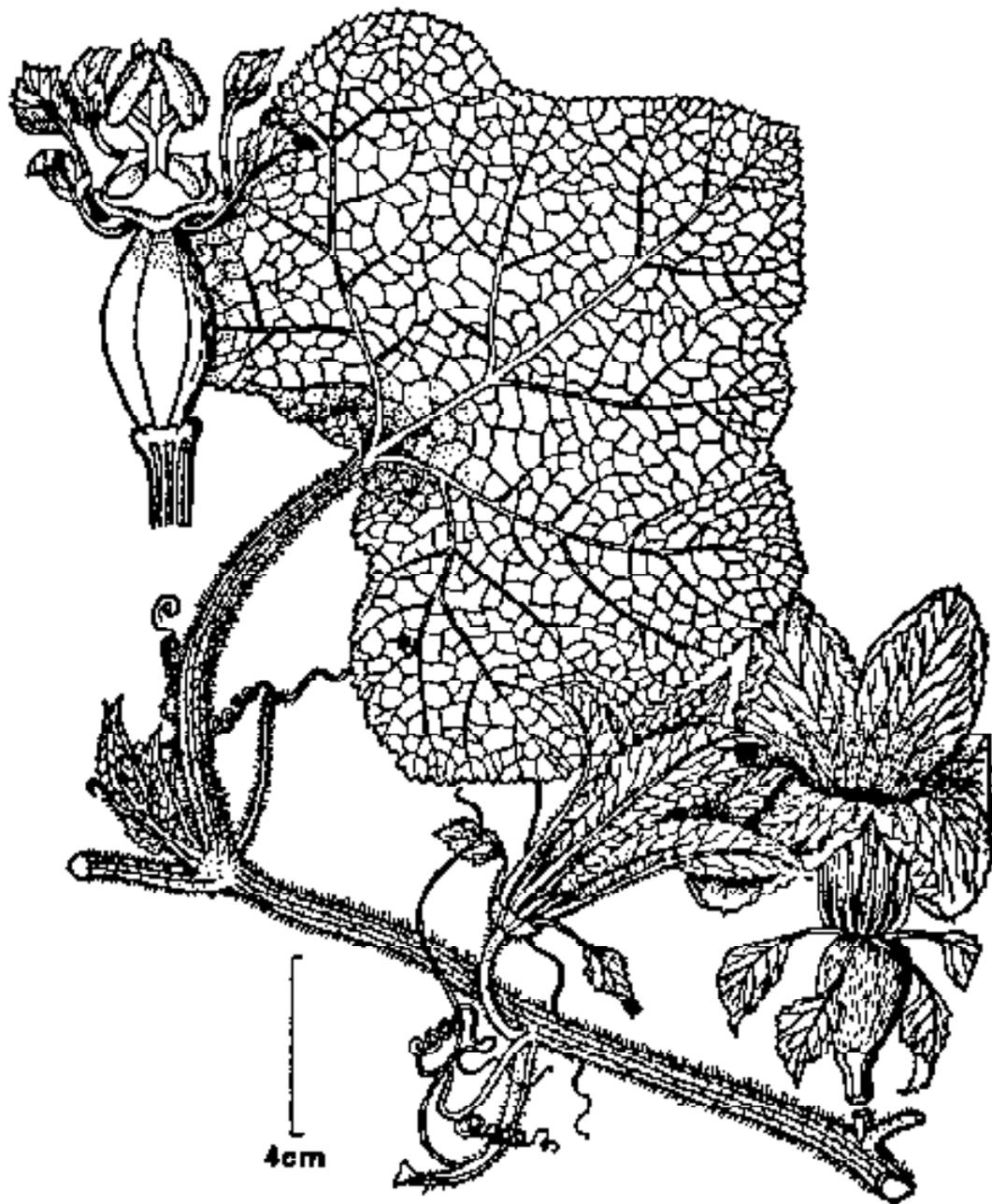


Fig. 115. *Cucurbita moschata* (Duch. ex Lamk.) Duch. ex Poiret : a. Habit with male flower; b. Female flower; c. Female flower (corolla removed).

Fl. & Fr. : Nov. - April.

Distrib. : Dibang valley, Lohit, Siang, Subansiri; 400-700 m. Often cultivated.

Use : Fruits are edible. The fresh seeds are anthelmintic.

Edgaria darjeelingensis Clarke in J. Linn. Soc. Bot. 15:113. 1876 and in Hook. f., Fl. Brit. India 2:632. 1879.

Large, dioecious, scandent herbs; tendrils bifid. Leaves ovate, deeply cordate, serrate-denticulate, acute, long petioled. Flowers large, yellow. Fruits large, broadly fusiform trigonous. Seeds compressed, large.

Fl. & Fr. : June - Sept.

Distrib. : Kameng; 1500-2500 m.

Gomphogyne cissiformis Griffith, Pl. Cantor. 26:t. 4. 1837; Clarke in Hook. f., Fl. Brit. India 2:632. 1879.

Weak, herbaceous climbers, tendrils filiform. Leaves pedate, leaflets 5-7. Female flowers in axillary fascicles. Fruits trigonous, obovoid. Seeds oblong.

Fl. & Fr. : Sept. - Nov.

Distrib. : Arunachal Pradesh; 1500-2400 m.

Gomphogyne macrocarpa Cogn. in Engler, Pflanzenr. 4:40. 1916; Chakravarty, Fasc. Fl. India 11:52. 1982.

Weak, slender herbs; tendrils filiform. Leaves pedate, leaflets 5-7. Male flowers in racemes, female flowers fasciculate. Fruits yellow, subcylindric. Seeds irregularly obovate.

Fl. & Fr. : July - Sept.

Distrib. : Tirap.

Gymnopetalum cochinchinense (Lour.) Kurz in J. Asiat. Soc. Bengal 40:59. 1871; Clarke in Hook. f., Fl. Brit. India 2:611. 1879; Chakravarty in Rec. Bot. Surv. India 17(1):62. 1959. *Bryonia cochinchinensis* Lour., Fl. Cochinch. 595. 1790. *Momordica tubiflora* Roxb., Fl. Ind. 3:711. 1832.

Twining or climbing, monoecious herbs; tendrils bifid; stems slender, 5-angular. Leaves 5-lobed, scabrous on both surfaces. Flowers white, large. Fruits orange red with longitudinal band, ovoid-oblong.

Fl. & Fr. : Aug. - Nov.

Distrib. : Kameng; up to 600 m.

Use : Fruits are poisonous; decoction of roots is used as antidote in ripe fruits poisoning and for tetanus after miscarriage.

Gymnostemma pedata Blume, Bijdr. 23. 1825; Clarke in Hook. f., Fl. Brit. India 2:633. 1879; Chakravarty, Fasc. Fl. India 11:56. 1982.

Climbing herbs, 2-4 m long; tendrils simple. Leaves pedately 3-foliolate. Flowers minute in lax panicles, greenish or white, caducous. Berries greenish, globose.

Fl. & Fr. : Aug. - Dec.

Distrib. : Changlang, Subansiri, Tirap; 700-2600 m, abundant near river banks.

Hemsleya graciliflora (Harms) Cogn. in Engler, Pflanzenr. 4:275. 1916; Chakravarty, Fasc. Fl. India 11:58. 1982. *Alsomitra graciliflora* Harms in Engler, Bot. Jahrb. 29:602. 1901.

Scandent, glabrous herbs with deeply sulcate branches. Male flowers in panicles, female flowers in racemes. Fruits attenuate.

Fl. & Fr. : Aug. - March.

Distrib. : Arunachal Pradesh.

Hodgsonia macrocarpa (Blume) Cogn. in DC., Monogr. Phan. 3:349. 1881; Chakravarty, Fasc. Fl. India 11:60. 1982. *Trichosanthes macrocarpa* Blume, Bijdr. 953. 1826. *Hodgsonia heteroclita* Hook. f. & Thomson in Proc. Linn. Soc. 2:257. 1853; Clarke in Hook. f., Fl. Brit. India 2:606. 1879.

Local name : Thekrai (Abor); Tapouguti, Thebou-lata (Asm.); Tatar-riube (Miri); Thapo (Nokte).

Large, dioecious climbers extending up to 35 m long, glabrous, tendrils 2-3 fid. Leaves long petioled, 3-5 lobed. Flowers large, yellow outside, white inside; male flowers in long racemes. Fruits large, 12-grooved, globular, reddish brown.

Fl. & Fr. : Feb. - Aug.

Distrib. : Changlang, Dibang valley, Siang; 100-200 m.

Use : Oil is used as drug; leaves are used to feed silk worm.

Indofevillea khasiana Chatterjee in Nature 158:345. 1946 and in Kew Bull. 1947:119. 1948; Chakravarty, Fasc. Fl. India 11:62. 1982.

Woody climbers on tall trees; stems sulcate, scabrid. Leaves large, simple, cordate at base. Inflorescence axillary, branched corymbs. Flowers yellow. Fruits oblong, green.

Fl. & Fr. : April - July.

Distrib. : Kameng, Siang; 1500-2000 m.

Lagenaria siceraria (Molina) Standl. in Publ. Field. Mus. Nat. Hist. Chicago Bot. ser. 3, 3:435. 1930; Mizushima in Hara, Fl. E. Himal. 323. 1966. *Cucurbita siceraria* Molina, Sagg. Storia Nat. Chile 133. 1782. *Lagenaria vulgaris* Seringe in Mem. Soc. Phys. Hist. Nat. Geneve 3(1):25, t. 2. 1825; Clarke in Hook. f., Fl. Brit. India 2:613. 1879.

Large, annual, scandent, monoecious or dioecious climbers; tendrils pubescent, bifid. Leaves long-petioled, clothed with spreading hairs. Flowers large, orange yellow or white, solitary, tomentose to villous. Fruits large, variable in-shape, greenish yellow.

Fl. & Fr. : July - Dec.

Distrib. : Siang, Subansiri; up to 200 m. Often cultivated.

Use : Fruits are used as vegetable; hard fruit shells are used as bottles, bowels, pipes, etc., shells are also used in musical instruments; fruit pulp is used as emetic and purgative; fruit juice is also used in curing pimples.

Luffa acutangula (L.) Roxb., Fl. Ind. 3:713. 1832; Jeffrey in Kew Bull. 34:792. 1980. *Cucumis acutangula* L., Sp. Pl. 1011. 1753. *Luffa acutangula* var. *amara* (Roxb.) Clarke in Hook. f., Fl. Brit. India 2:615. 1879. *L. amara* Roxb., Fl. Ind. 3:715. 1832. Fig. 116.

Local name : Jhinga (Asm.).

Large, herbaceous, monoecious climbers; tendrils 2-5 fid. Leaves cordate, 5-angular. Flowers yellow. Fruits large, strongly ribbed. Seeds many, oblong, compressed.

Fl. & Fr. : April - Sept.

Distrib. : Dibang valley, Siang, Subansiri. Often cultivated.

Use : Young fruits are used as vegetable.

Luffa cylindrica (L.) Roem., Fam. Syn. 2:63. 1846; Chakravarty, Fasc. Fl. India 11:70. 1982. *Momordica cylindrica* L., Sp. Pl. 1009. 1753. *Luffa aegyptica* Miller, Gard. Dict. ed. 8, 4:500. 1785; Clarke in Hook. f., Fl. Brit. India 2:614. 1879.

Local name : Ghiyatori, Bhol (Asm.).

Large, monoecious climbers, extensively spreading; tendrils 2-3 fid. Leaves reniform, orbicular, 5-angled or 5-lobed, dentate, long petioled. Flowers yellow; female flowers solitary with long peduncles; male flowers in clusters on long peduncles and with short pedicles. Fruits large, cylindrical, smooth. Seeds usually black, narrowly winged.

Fl. & Fr. : May - Dec.

Distrib. : Siang, Subansiri. Often cultivated.

Use : Fruits are used as vegetable, dried fibrous fruits are used as brush and as pumice stone.

Melothria heterophylla (Lour.) Cogn. in DC., Monogr. Phan. 3:618. 1881; Chakravarty, Fasc. Fl. India 11:79. 1982. *Solena heterophylla* Lour., Fl. Cochinch. 1:514. 1790. *Zehneria umbellata* Thwaites, Enum. Pl. Zeyl. 125. 1853; Clarke in Hook. f., Fl. Brit. India 2:625. 1879, *p.p.*

Scandent, herbaceous, dioecious climbers on bushes; stems angular; tendrils simple. Leaves polymorphous, short petioled. Inflorescence axillary

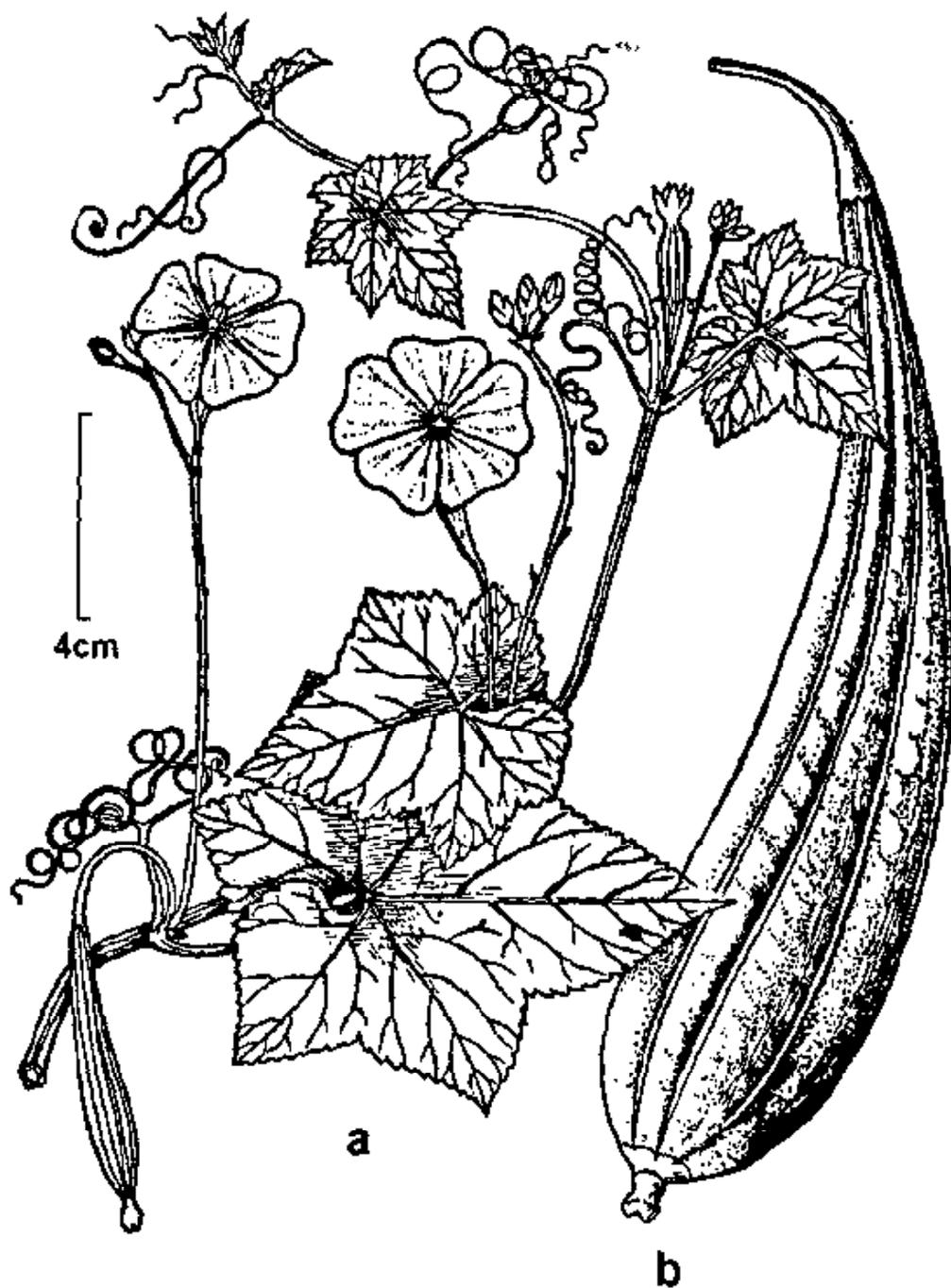


Fig. 116. *Luffa acutangula* (L.) Roxb. : a. Flowering twig; b. Fruit.

corymbs in male, solitary in female. Flowers dull green or white, puberulous. Fruits oblong, brown or bright red.

Fl. & Fr. : May - Nov.

Distrib. : Changlang, Kameng, Lohit, Siang, Tirap; 200-2200 m, near hilly streams. Widely cultivated.

Use : Roots, stems and leaves are used as vegetable. Roots are used as stimulant and purgative and also in gonorrhoea.

Melothria leucocarpa (Blume) Cogn. in DC., Monogr. Phan. 3:601. 1881; Chakravarty, Fasc. Fl. India 11:82. 1982. *Bryonia leucocarpa* Blume, Bijdr. 924. 1826. *Melothria odorata* Hook. f. & Thomson ex Clarke in Hook. f., Fl. Brit. India 2:626. 1879.

Annual, slender herbaceous climbers, glabrous to sparsely hispid. Leaves entire or somewhat lobed, triangular-oblong, basal lobes rounded, lower surfaces glabrous. Male flowers fasciculate, female flowers solitary. Fruits subglobose, mucronate, glabrous, brownish.

Fl. & Fr. : Oct. - Jan.

Distrib. : Changlang.

Melothria maderaspatana (L.) Cogn. in DC., Monogr. Phan. 3:623. 1881; Chakravarty, Fasc. Fl. India 11:83. 1982. *Cucumis maderaspatana* L., Sp. Pl. 1012. 1753. *Bryonia scabrella* L.f., Suppl. Pl. 424. 1781. *Mukia scabrella* (L.f.) Arnott in Hooker, J. Bot. 3:276. 1941; Clarke in Hook. f., Fl. Brit. India 2:623. 1879.

Annual, herbaceous climbers; stems angular, slender, scandent, hispid or scabrid; tendrils simple. Leaves 3-7 angular, cordate, petioled, serrate. Flowers small, yellow; male flowers subumbellate at apex of peduncles, female sub-fasciculate. Fruits globose, small, brownish yellow.

Fl. & Fr. : July - Dec.

Distrib. : Dibang valley, Lohit, Siang; 200-1200 m.

Use : Tender, bitter leaves are used as medicine for vertigo and biliousness.

Melothria perpusilla (Blume) Cogn. in DC., Monogr. Phan. 3:607. 1881; Chakravarty, Fasc. Fl. India 11:85. 1982; *Cucurbita perpusilla* Blume, Cat. Hort. Buitenz. 105. 1823. *Bryonia hookeriana* Wight & Arn., Prodr. Fl. Pen. Ind. Or. 345. 1834. *Zehneria hookeriana* (Wight & Arn.) Arn. in Hooker, J. Bot. 3:275. 1841; Clarke in Hook. f., Fl. Brit. India 2:624. 1879, excl. syn. *Z. exasperata* Miq.

Scandent herbs; branches sulcate. Leaves simple to 3-5 lobed, cordate at base. Inflorescence long peduncled, female flowers solitary or rarely subumbellate. Fruits globose, reticulate.

Fl. & Fr. : June - Dec.

Distrib. : Dibang valley, Lohit, Siang, Tirap; 1300-2200 m, in forest clearings.

Momordica charantia L., Sp. Pl. 1009. 1753; Clarke in Hook. f., Fl. Brit. India 2:616. 1879.

Local name : Tita-karela (Asm.).

Monoecious climbers, 1-1.5 m long; tendrils simple. Leaves orbicular with 5-7 narrow, sinuate or subpinnatifid lobes from the base. Flowers yellow. Fruits ovoid, narrowed at both ends, many ribbed with triangular tubercles. Seeds compressed.

Fl. & Fr. : May - Dec.

Distrib. : Subansiri; 200-1200 m, along roadsides. Often cultivated.

Momordica cochinchinensis (Lour.) Spreng., Syst. Veg. 3:14. 1827; Clarke in Hook. f., Fl. Brit. India 2:618. 1879. *Muricia cochinchinensis* Lour., Fl. Cochinch. 2:596. 1790.

Local name : Bhat-karela (Asm.).

Large, dioecious climbers with perennial rootstocks and simple tendrils. Leaves cordate or suborbicular, 3-lobed, glabrous. Flowers whitish, tinged yellow. Fruits ovate or oblong, covered with conical pointed spines, green in young, bright red when ripe.

Fl. & Fr. : May - Oct.

Distrib. : Siang, Subansiri; often cultivated, sometimes as escape.

Use : Young fruits are used as vegetable.

Momordica dioica Roxb. ex Willd., Sp. Pl. 4:605. 1805; Clarke in Hook. f., Fl. Brit. India 2:617. 1879, (*excl. syn.*); Chakravarty, Fasc. Fl. India 11:94. 1982.

Perennial, herbaceous, small climbers up to 1 m long with simple tendrils and tuberous roots. Leaves cordate, ovate, acute, entire, denticulate, 3-5 lobed, glabrous. Flowers yellow in female, pale brown in male. Berries ovoid, rounded at base. Seeds ovoid, yellow.

Fl. & Fr. : Aug. - Dec.

Distrib. : Changlang, Dibang valley, Siang, Subansiri, Tirap. Often cultivated.

Use : Young green fruits are edible; mucilagenous tuber is used as medicine to stop bleeding in piles and also as an expectorant.

Neosalsmitra clavigera (Wallich) Hutch. in Ann. Bot. n.s. 6:100. 1942; Chakravarty, Fasc. Fl. India 11:96. 1982. *Zanonia clavigera* Wallich, Pl. Asiat. Rar. 2:28. 1831. *Alsomitra clavigera* (Wallich) Roem., Fam. Syn. 2:118. 1846; Clarke in Hook. f., Fl. Brit. India 2:634. 1879.

Large, dioecious, woody climbers or creepers; tendrils simple or bifid. Leaflets 3, oblong, entire, acute, petiolulate. Inflorescence compound panicle. Flowers small, white, peduncled. Fruits subcylindric, large, yellow. Seeds yellowish white.

Fl. & Fr. : Oct. - March.

Distrib. : Changlang, Dibang valley, Kameng, Lohit, Siang, Subansiri; 1200-1800 m.

Thladiantha cordifolia (Blume) Cogn. in DC., Monogr. Phan. 3:424. 1881; Chakravarty, Fasc. Fl. India 11:102. 1982; *Luffa cordifolia* Blume, Bijdr. 929. 1826. *Thladiantha dubia auct. non* Bunge :Hook. f. in Bot. Mag. t. 5469. 1864, *p.p.*; Clarke in Hook. f., Fl. Brit. India 2:631. 1879. *T. calcarata* Clarke in J. Linn. Soc. Bot. 15:126. 1876.

Large, herbaceous climbers, reaching up to 3 m; tendrils simple. Leaves deeply cordate, ovate, denticulate, petiolate, densely villous. Flowers deep yellow. Fruits oblong, glabrous, longitudinally 12-15 furrowed.

Fl. & Fr. : May - Oct.

Distrib. : Changlang, Dibang valley, Lohit, Siang; 1300-2600 m.

Thladiantha hookeri Clarke in Hook. f., Fl. Brit. India 2:631. 1879; Chakravarty, Fasc. Fl. India 11:103. 1982.

Large climbers; stems angular, sulcate; tendrils simple. Leaves deeply cordate-ovate, acute, entire and sometimes tripartite with lanceolate segments. Inflorescence raceme in males; females solitary. Flowers golden yellow. Fruits oblong.

Fl. & Fr. : May - July.

Distrib. : Changlang, Subansiri, Tirap; 1200-1800 m.

Trichosanthes anguina L., Sp. Pl. 1008. 1753; Clarke in Hook. f., Fl. Brit. India 2:610. 1879; Chakravarty, Fasc. Fl. India 11:108. 1982. *Cucumis anguina* L., Syst. ed 10:1279. 1759.

Climbers; stems angular, puberulous. Leaves cordate, subreniform, 5-7 lobed, puberulous on both surfaces. Male flowers in pedunculate umbels, female solitary. Fruits elongate, cylindrical. Seeds corrugated.

Fl. & Fr. : June - Aug.

Distrib. : Kameng. Often cultivated.

Trichosanthes bracteata Voigt var. *tomentosa* (Heyne ex Clarke) Chakravarty, Fasc. Fl. India 11:110. 1982. *T. palmata* Roxb. var. *tomentosa* Heyne ex Clarke in Hook. f., Fl. Brit. India 2:607. 1879. *T. burmensis* var. *alba* Kundu in J. Bombay Nat. Hist. Soc. 43:381. 1943.

Extensive climbers on small trees. Leaves variable, 3-7 lobed, tomentose beneath, forks close to base, lobes acuminate or acute. Flowers white; male flowers umbellate on long, robust peduncles; female usually axillary, solitary. Fruits globose, red with orange streaks.

Fl. & Fr. : June - Sept.

Distrib. : Kameng, Subansiri; 800-1800 m.. PA

Trichosanthes cordata Roxb., Fl. Ind. 3:703. 1832; Clarke in Hook. f., Fl. Brit. India 2:608. 1879; Chakravarty, Fasc. Fl. India 11:110. 1982. *T. microsiphon* Kurz in J. Asiat. Soc. Bengal 2:308. 1892.

Dioecious climbers, spreading up to 10 m on trees; roots tuberous. Leaves ovate-cordate, dentate-serrate. Flowers yellow; male flowers on long peduncled racemes, large bracteate; female solitary, ebracteate. Fruits blood red with orange streaks, globose, smooth.

Fl. & Fr. : June - Dec.

Distrib. : Changlang, Dibang valley, Lohit, Siang, Subansiri; 100-500 m.

Trichosanthes cucumerina L., Sp. Pl. 1008. 1753; Clarke in Hook. f., Fl. Brit. India 2:609. 1879; Chakravarty, Fasc. Fl. India 11:112. 1982. *T. pachyrrhachis* Kundu in J. Bot. 77:9. 1939. *T. brevibracteata* Kundu in J. Bot. 77:10. 1939.

Scandent, dioecious herbs; stems twining, pubescent; tendrils bifid. Leaves cordate, subreniform, 5-7 lobed or 5-angular. Flowers white; male peduncles in pairs, 1-flowered or short raceme, bracts minute; female solitary. Fruits ovoid-conical.

Fl. & Fr. : June - Dec.

Distrib. : Changlang, Kameng, Tirap; 200-1500 m, on shady forest floor.

Use : Fruits are used as vegetable. Roots are used in bronchites, headache and boils. Leaves are used in biliousness, juice is emetic.

Trichosanthes dicnelosperma Clarke in Hook. f., Fl. Brit. India 2:609. 1879.

Herbaceous creepers up to 3 m long; tendrils bifid. Leaves cordate-ovate, acute, denticulate, pubescent on both surfaces. Male flowers in ebracteate racemes; female flowers axillary, solitary. Fruits round, orange or red, pulpy. Seeds compressed.

Fl. & Fr. : Jan. - March.

Distrib. : Kameng; 600-1500 m.

Trichosanthes dioica Roxb., Fl. Ind. 3:701. 1832; Clarke in Hook. f., Fl. Brit. India 2:609. 1879; Chakravarty, Fasc. Fl. India 11:114. 1982.

Herbaceous climbers; stems slender, extensively twining. Leaves cordate, oblong-acute. Both male and female flowers solitary. Fruits oblong, glabrous, smooth, orange red when ripe.

Fl. & Fr. : April - Sept.

Distrib. : Kameng, Siang, Subansiri; 200-1000 m.

Use : Fruits and leaves are commonly used as vegetable.

Trichosanthes himalensis Clarke in Hook. f., Fl. Brit. India 2:608. 1879; Chakravarty, Fasc. Fl. India 11:115. 1982.

Extensive climbers; branches sulcate. Leaves palmately 3-lobed, deeply cordate, pubescent beneath. Male flowers in racemes, bracts villous; female flowers axillary, solitary. Fruits globose, attenuate at both ends. Seeds turgid with longitudinal marks.

Fl. & Fr. : Aug. - Oct.

Distrib. : Changlang, Tirap.

Trichosanthes tricuspida Lour., Fl. Cochinch. 589. 1790; Hara & Sutton in Hara *et al.*, Enum. Fl. Pl. Nep. 2:180. 1979. *T. palmata* Roxb., Fl. Ind. 3:704. 1832; Clarke in Hook. f., Fl. Brit. India 2:606. 1879. *T. bracteata* (Lamk.) Voigt, Hort. Sub. Calcutt. 58. 1845; Chakravarty, Fasc. Fl. India 11:109. 1982. *Modecca bracteata* Lamk., Encycl. Meth. Bot. 4:210. 1796.

Large, woody climbers, climbing often 9-10 m high; tendrils 3-fid. Leaves palmate, 3-7 lobed, tomentose. Bracts conspicuous, green. Corolla fimbriate. Fruits bright orange red with 10 orange streaks. Seeds many.

Fl. & Fr. : Aug. - Oct.

Distrib. : Changlang, Dibang valley, Kameng, Lohit, Siang, Subansiri, Tirap; 300-1500 m.

Use : Fruits are considered as poison.

Trichosanthes truncata Clarke in Hook. f., Fl. Brit. India 2:608. 1879; Chakravarty, Fasc. Fl. India 11:122. 1982.

Extensive, twining climbers up to 7 m high; tendrils 2-3 fid. Leaves glabrous, coriaceous or membranous, polymorphous, ovate or ovate-oblong; base subpeltate, margin subentire to irregularly tricuspid denticulate. Male flowers in racemes; female flowers solitary. Fruits oblong. Seeds oblong-ovate, base truncate.

Fl. & Fr. : April - Oct.

Distrib. : Kameng, Subansiri, Tirap; 300-1200 m.

Trichosanthes wallichiana (Seringe) Wight in Ann. & mag. Nat. Hist. 8:270. 1842; Chakravarty, Fasc. Fl. India 11: 1982. *Involucraria wallichiana* Seringe in Mem. Soc. Phys. Hist. Nat. Geneve 3:t. 5. 1825. *Trichosanthes multiloba* auct. non Miq. : Clarke in Hook. f., Fl. Brit. India 2:607. 1879. *T. palmata* var. *scoianthes* Clarke in Hook. f., Fl. Brit. India 2:607. 1879.

Large, scandent, dioecious, herbaceous climbers, rambling extensively; tendrils 3-fid. Leaves deeply palmate, 3-9 lobed, narrowed near base. Flowers solitary, white; male peduncles paired. Fruits ovoid or oblong-acute, bright red with orange streaks.

Fl. & Fr. : July - Nov.

Distrib. : Changlang, Tirap; 600-1800 m, forming extensive patches on roadsides.

Zehneria indica (Lour.) Keraudren-Aymonin in Fl. Camb., Laos & Viet. 15:52, t. 9, f. 5-8, 1975; Hara & Sutton in Hara *et al.*, Enum. Fl. Pl. Nep. 2:181. 1979. *Melothria indica* Lour., Fl. Cochinch. 35. 1790; Clarke in Hook. f., Fl. Brit. India 2:626. 1879, *excl. syn. M. regelii* Naudin.

Glabrous, slender, climbing herbs with simple tendrils. Leaves cordate, entire or 3-lobed. Male pedicels clustered in axils; female solitary. Flowers small, creamy white to whitish. Fruits white to green, ellipsoid to globular, very small.

Fl. & Fr. : Oct. - Jan.

Distrib. : Kameng, Lohit, Subansiri, Tirap; ascending up to 2100 m.

Insufficiently known materials

Cucumis hystrix Chakravarty in J. Bombay Nat. Hist. Soc. 50:896. 1952.

Schizopepon wardii Chakravarty in J. Bombay Nat. Hist. Soc. 50:900. 1952.

Thladiantha hookeri var. *palmatifolia* forma *trifoliata* (Cogn.) Chakravarty in Notes Roy Bot. Gard. Edinburgh 20:122. 1948.

Trichosanthes anaimalaiensis Bedd. in Madras J. Sci. ser. 3(1):47. 1864.

T. lepiniana (Naud.) Cogn. in DC., Monogr. Phan. 3:377. 1881.

BEGONIACEAE

Begonia aborensis Dunn in Kew Bull. 1920: 109. 1920; Burkill in Rec. Bot. Surv. India 10(1):289. 1924.

Rhizomatous, small herbs with stinging hairy stems. Leaves large, shining with many white lines and stinging hairs; often variegated, obliquely ovate-cordate. Flowers many, pale pink, rosy or whitish. Fruits globose, reddish hairy.

Fl. & Fr. : Jan. - June.

Distrib. : Changlang, Dibang valley, Lohit, Siang, Subansiri; 400-1200 m, in more illuminated clearings. Endemic.

Begonia annulata Koch, Berliner Allg. Garten. 1:76. 1837; Golding & Karegeannes in Smith *et al.*, Smithsonian Contr. Bot. 60:139. 1986. *B. griffithii* Hooker in Curtis, Bot. Mag. 8:t. 4984. 1837. *B. barbata* Wallich ex DC., Prodr. 15:348. 1864; Clarke in Hook. f., Fl. Brit. India 2:646. 1879.

Herbs with creeping rootstocks and without tubers; stems decumbent with brown hairs. Leaves ovate, acuminate, unequally cordate, hispid beneath.

denticulate or entire, ciliate. Inflorescence few flowered, axillary. Flowers white to pink. Capsules winged, hairy.

Fl. & Fr. : Nov. - Jan.

Distrib. : Changlang, Dibang valley, Kameng, Siang, Subansiri; 300-2100 m, on well drained shady slopes.

Begonia burkillii Dunn in Kew Bull. 1920:110. 1920; Burkill in Rec. Bot. Surv. India 10(1):288. 1924. Fig. 117.

Acaulis, glabrous herbs with creeping or prostrate rhizomes. Leaves blue green, obliquely cordate-ovate or lanceolate, sometimes considerably variegated or blackish blotched. Male flowers appear first on branched peduncles and female flowers later, solitary on slender scapes. Fruits rhomboid, acute at both ends.

Fl. & Fr. : Dec. - Feb.

Distrib. : Dibang valley, Siang; 200-1200 m, in dark shady places.

Begonia cathcartii Hook. f. & Thomson, Ill. Him. Pl. t. 13. 1855; Clarke in Hook. f., Fl. Brit. India 2:646. 1879. *B. nemophila* Kurz in J. Asiat. Soc. Bengal (part II): 108. 1877.

Herbs with creeping rootstocks. Stems brownish, decumbent with numerous scattered deflexed hairs. Leaves cordate-ovate, acute, entire, pink. Flowers few, white to pink. Capsules green, hairy.

Fl. & Fr. : June - Sept.

Distrib. : Changlang, Tirap; up to 600 m.

Begonia griffithiana (DC.) Warb. in Engler & Prantl, Pflanzenfam. 3.6a. 142. 1894; Golding & Karegeannes in Smith *et al.*, Smithsonian Contr. Bot. 60: 174. 1986. *Meziera griffithiana* DC., Prodr. 15(1):407. 1864. *Begonia episcopalis* Clarke in Hook. f., Fl. Brit. India 2:644. 1879.

Local name : Sudum-meku (Adi).

Slender, tall, much branched herbs, pubescent upwards. Leaves narrowly lanceolate, cordate, toothed, membranous. Inflorescence axillary, short, dichotomous panicle. Flowers numerous, small.

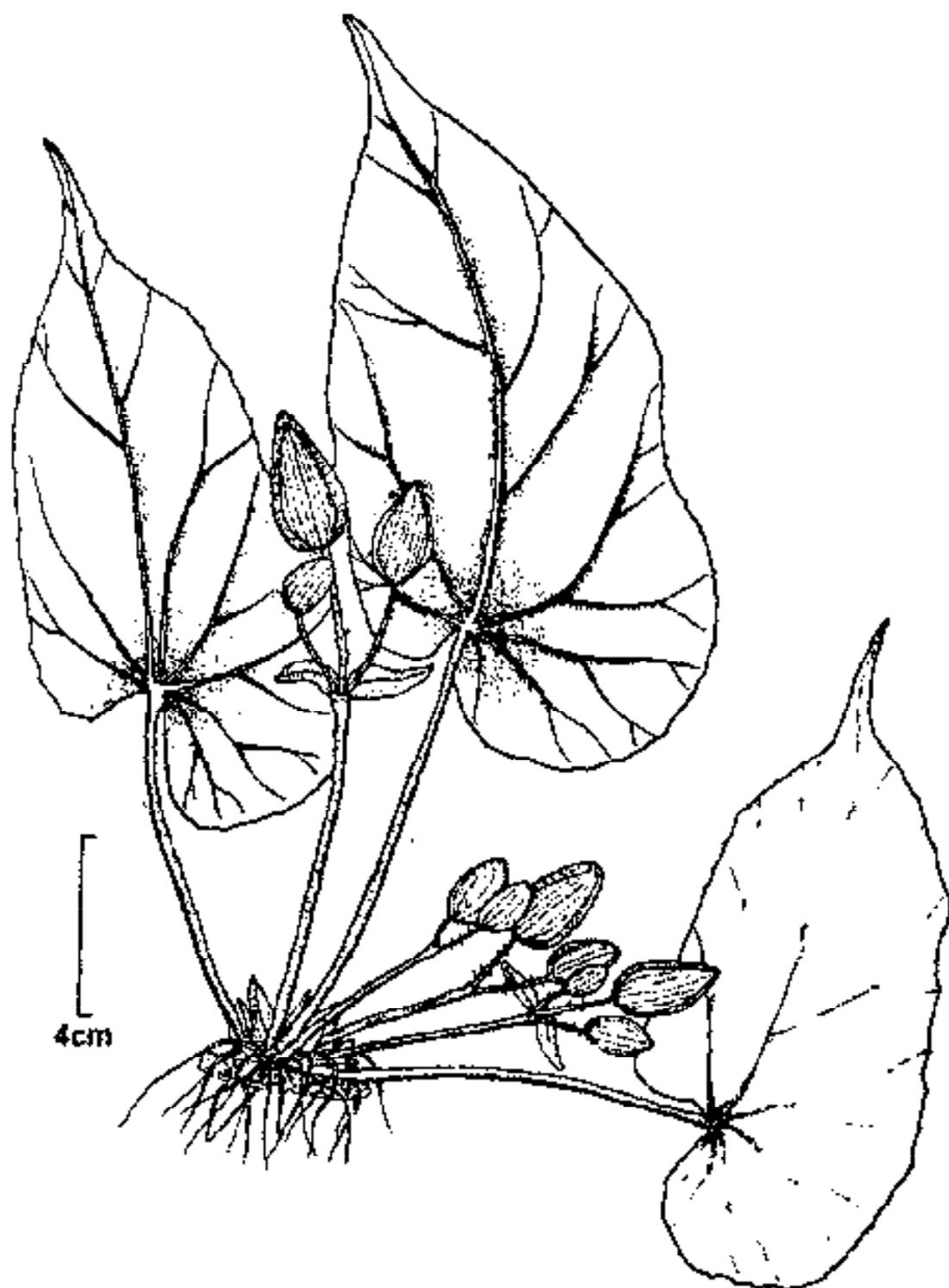


Fig. 117. *Begonia burkillii* Dunn.

Fl. & Fr. : Nov. - Jan.

Distrib. : Siang; 500-1200 m, along moist shady places.

Use : Leaves are sour and used as vegetable.

Begonia hatacoa Buch. Ham. ex D. Don, Prodr. Fl. Nep. 223. 1825; Hara in J. Jap. Bot. 47:143. 1972. *B. rubro-venia* Hooker in Curtis, Bot. Mag. 79:t. 4689. 1853; Clarke in Hook. f., Fl. Brit. India 2:645. 1879.

Annual herbs, 20-40 cm high with thick rootstocks. Leaves elliptic-lanceolate, acuminate, entire or slightly angular, undulate, glabrous, pubescent on nerves beneath, base unequal or cordate, lower surfaces pink or brown. Flowers in axillary peduncles, outer perianth segments whitish with red or purple veins.

Fl. & Fr. : April - Sept.

Distrib. : Kameng, Subansiri; 1200-2500 m, on moist rocks.

Begonia inflata Clarke in Hook. f., Fl. Brit. India 2:636. 1879.

Erect herbs up to 1 m tall; stems elongate, branched. Leaves oblong-lanceolate, glabrous or glabrate, sinuate-dentate or serrate, acuminate, very unequally cordate. Inflorescence axillary, dichotomously branched short cymes; outer perianth segment of male flowers white. Young fruits reddish.

Fl. & Fr. : March - May.

Distrib. : Siang; 250-1600 m, along side of streams.

Begonia iridescens Dunn in Kew Bull. 1920:110. 1920.

Prostrate, monoecious herbs with red, succulent stems covered with red hairs. Leaves blue green, iridescent, often up to 40 cm in length and with big blotches between veins, lower surfaces hairy, red. Flowers salmon pink.

Fl. & Fr. : Nov. - Jan.

Distrib. : Changlang, Dibang valley, Kameng, Lohit, Siang, Tirap; 500-1900 m, in dark shady places.

Begonia josephi A.DC. in Ann. Sci. Nat. ser. 4, 11:126. 1859; Clarke in Hook. f., Fl. Brit. India 2:639. 1879; Golding & Karegeannes in Smith *et al.*, Smithsonian Contr. Bot. 60:184. 1986. *B. picta* auct. non Smith 1805: Clarke in Hook. f., Fl. Brit. India 2:638. 1879, *p.p.*

Herbs, variable in size or often stemless; rootstocks with few tubers. Leaves ovate-peltate, acuminate, acutely 3-lobed, orbicular, serrate, doubly serrate, or entire, glabrous or pubescent. Flowers small, red. Capsules 3-winged, one wing much longer, glabrous.

Fl. & Fr. : Sept. - Jan.

Distrib. : Kameng, Siang, Subansiri.

Use : Bulbs are used in stomachache.

Begonia megaptera A.DC. in Ann. Sci. Nat. ser. 4, 11:134. 1859; Clarke in Hook. f., Fl. Brit. India 2:646. 1879.

Erect herbs with thick, woody rootstocks. Leaves ovate, cordate, unequal at base, acuminate, undulate, serrate. Flowers large, few, pink in axillary, elongate peduncles.

Fl. & Fr. : Aug. - Dec.

Distrib. : Kameng; 600-2500 m.

Begonia nepalensis (DC.) Warb. in Engler & Prantl, Pflanzenfam. 3.6a. 142. 1894; Hara, Fl. E. Himal. 214. 1966. *Mezierea nepalensis* DC., Prodr. 15(1):406. 1864. *Begonia gigantea* Wallich ex Clarke in Hook. f., Fl. Brit. India 2:643. 1879.

Herbs up to 1 m tall; rootstocks thick, woody. Leaves caudate-acuminate, undulate, toothed, pubescent on nerves beneath. Flowers in short, dichotomously branched peduncles, white or pale pink. Capsules oblong, winged.

Fl. & Fr. : Nov. - Feb.

Distrib. : Kameng, Lohit; 1000-1800 m.

Begonia palmata D.Don, Prodr. Fl. Nep. 223. 1825; Hara, Fl. E. Himal. 215. 1966. *B. laciniata* Roxb., Fl. Ind. 3:649. 1832; Clarke in Hook. f., Fl. Brit. India 2:645. 1879. Fig. 118.

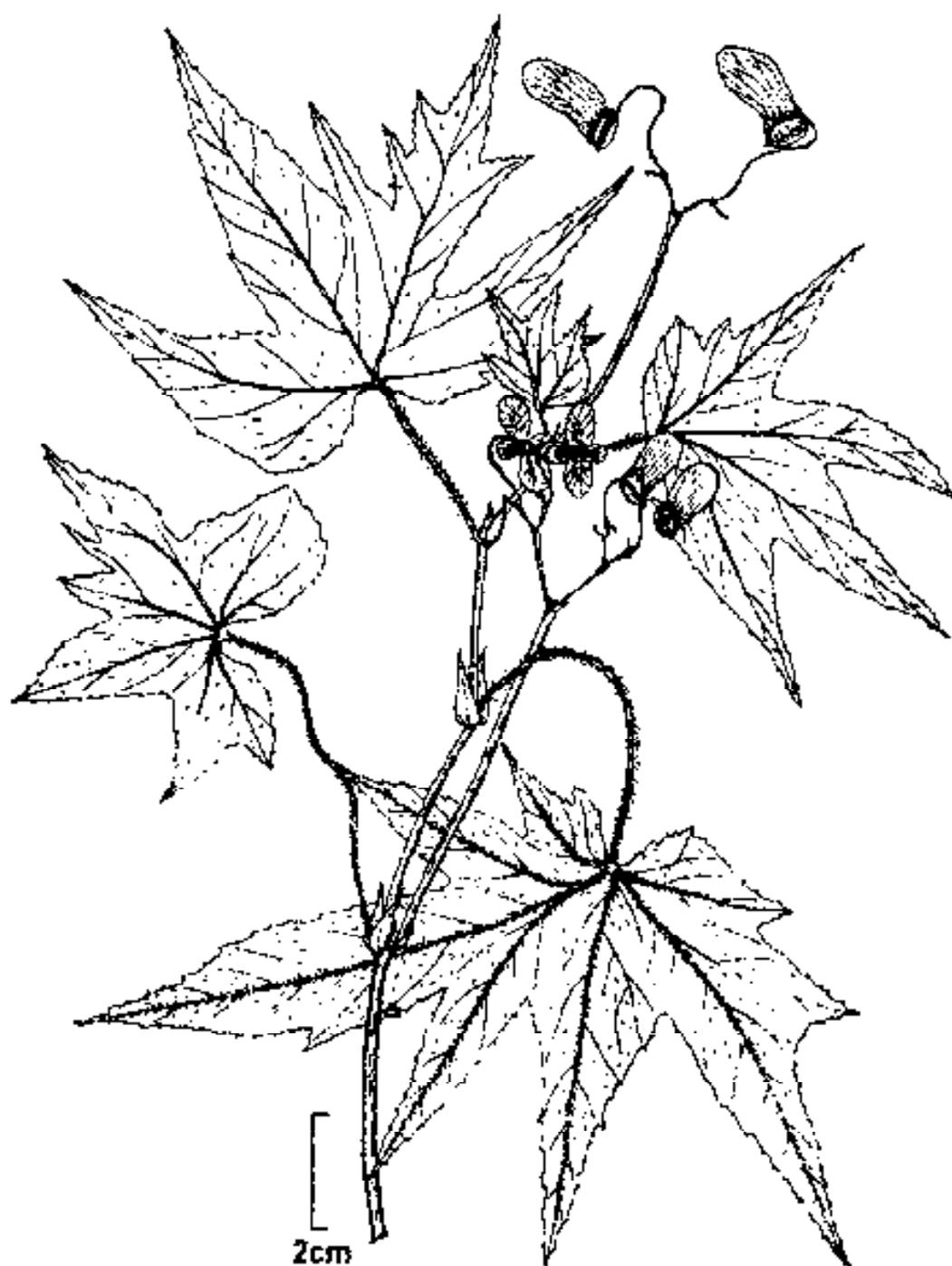


Fig. 118. *Begonia palmata* D. Don : Twig with flowers and fruits.

Herbs with long creeping rootstocks, 15-60 cm high, brown tomentose. Leaves roundish ovate, acutely lobed, pubescent, silvery above and red underneath. Flowers white to deep rose. Capsules 3-winged.

Fl. & Fr. : March - May.

Distrib. : Changlang, Dibang valley, Lohit, Siang, Tirap; 200-1700 m, in shady places.

Begonia pedunculosa Wallich, Pl. Asiat. Rar. 1:82, t. 97. 1830; Clarke in Hook. f., Fl. Brit. India 2:639. 1879.

Herbs with tuberous or elongate rootstocks and erect, woody stems. Leaves narrowly oblong, acute, unequal, base cordate, hairy above. Inflorescence subterminal. Flowers small, rose red.

Fl. & Fr. : Sept. - Jan.

Distrib. : Kameng; 1000-1800 m.

Begonia picta Smith, Exot. Bot. 2:81, t. 101. 1805; Clarke in Hook. f., Fl. Brit. India 2:638. 1879, *p.p.*; Grierson in Grierson & Long, Fl. Bhutan 2.1:142. 1991. *B. echinata* Royle, Ill. Bot. Himal. 1:313. t. 80. 1970 (repr. ed.).

Prostrate herbs; stems succulent, red, covered with red hairs. Flowers rosy red. Capsules with one wing.

Fl. & Fr. : Nov. - Jan.

Distrib. : Changlang, Siang; 1150-1750 m.

Begonia rex Putzeys in Fl. des. Serres 2:141, t. 1255 & 1256. 1857; Clarke in Hook. f., Fl. Brit. India 2:647. 1879.

Stemless herbs. Leaves cordate-ovate, acute, unequal at base, undulate, pubescent on nerves beneath, upper surfaces dark green, lower red. Flowers medium, rose, glabrous. Capsules 3-winged, wings often recurved in fruits.

Fl. & Fr. : Jan. - March.

Distrib. : Dibang valley, Lohit, Siang; 2-9 m, in deep shades.

Begonia roxburghii (Miq.) DC., Prodr. 15(1):398. 1864; Clarke in Hook. f., Fl. Brit. India 2:635. 1879. *Diploclitum roxburghii* Miq., Fl. Ind. Bat. 1(1):692. 1856. *Begonia malabarica* Roxb., Fl. Ind. 3:648. 1832, non Lamk. 1785.

Perennial, erect, succulent herbs up to 1 m high, glabrous; roots fibrous. Leaves broadly ovate, glabrate, sinuate, toothed or serrate. Inflorescence axillary, dichotomously branched short cyme, few flowered. Flowers pink red. Fruits subpyramidal, pendent with 4 small horns.

Fl. & Fr. : March - Nov.

Distrib. : Changlang, Kameng, Siang, Tirap; 500-800 m, abundant on moist soil, rocks, near water source and streams.

Begonia scintillans Dunn in Kew Bull. 1920: 111. 1920.

Monoecious creeping herbs with long, slender rhizomes. Leaves obliquely cordate-rotundate, dark green above with or without silvery and yellowish spots and hispid hairs, crimson red beneath. Flowers coral pink in terminal peduncle, sparsely pilose. Fruits nearly rhomboid, 3-winged.

Fl. & Fr. : Feb. - April.

Distrib. : Dibang valley, Siang, Tirap; 500-2000 m. Endemic.

Begonia sikkimensis A. DC. in Ann. Sci. Nat. ser. 4, 11:134. 1859; Clarke in Hook. f., Fl. Brit. India 2:646. 1879.

Succulent herbs. Leaves trilobed, lobes often incised or divided again, denticulate-ciliate. Flowers rosy, pink or brick red in axillary, elongate peduncles. Capsules 3-winged, wings papery.

Fl. & Fr. : Nov. - Jan.

Distrib. : Kameng, Lohit; 1000-2300 m, in moist shady rock crevices.

Begonia silhetensis (DC.) Clarke in Hook. f., Fl. Brit. India 2:636. 1879; Golding & Karegeannes in Smith *et al.*, in Smithsonian Contr. Bot. 60:233. 1986. *Casparya silhetensis* DC., Prodr. 15(1):277. 1864.

Succulent, stemless herbs with short, thick, fibrous, sometimes tuberous rootstocks. Leaves broadly ovate, petiolate, hairy, finely denticulate. Inflores-

cence shorter than petioles. Fruits globose or ovoid, densely brownish hairy without prominent angles.

Fl. & Fr. : March - May.

Distrib. : Changlang, Tirap; up to 800 m, on moist slopes.

CACTACEAE

Opuntia monacantha (Willd.) Haw., Suppl. Pl. Succ. 81. 1819; Hara in Hara *et al.*, Enum. Fl. Pl. Nep. 2:183. 1979. *Cactus monacanthus* Willd., Enum. Pl. Berol. Suppl. 33. 1813. *Opuntia dillenii auct. non* Haw. 1819; Wight & Arn., Prodr. Fl. Pen. Ind. Or. 363. 1834, *p.p.*; Clarke in Hook. f., Fl. Brit. India 2:657. 1879.

Prickly, succulent Herbs or shrubs; spines stout, divericating. Corolla yellow, twice as long as the stamens. Berries subglobose.

Fl. & Fr. : May - July.

Distrib. : Siang.

MOLLUGINACEAE

Mollugo nudicaulis Lamk., Dict. 4:234. 1797; Clarke in Hook. f., Fl. Brit. India 2:664. 1879.

Small, dichotomously branched herbs; stems many, leafless. Radical leaves oblanceolate. Capsules ellipsoid. Seeds smooth or obscurely reticulate.

Fl. & Fr. : June - Aug.

Distrib. : Subansiri; up to 500 m.

Mollugo pentaphylla L., Sp. Pl. 89. 1753; Backer in van Steenis, Fl. Males. 4:268. 1951. *M. stricta* L., Sp. Pl. ed. 2:131. 1762; Clarke in Hook. f., Fl. Brit. India 2:663. 1879. *M. pentaphylla* var. *stricta* (L.) Hochr. in Candollea 2:356. 1925.

Erect, much branched, glabrous, annual herbs up to 30 cm high. Leaves whorled or opposite, lanceolate, acute to obovate, base narrowed, petioles

obscure. Flowers green or white in compound cymes. Capsules globose. Seeds dark chestnut coloured.

Fl. & Fr. : May - Sept.

Distrib. : Dibang valley, Siang, Tirap; 300-700 m, in open places.

APIACEAE

Acronema tenerum (DC.) Edgew. in Trans. Linn. Soc. London 20:51. 1851; Cannon in Hara *et al.*, Enum. Fl. Pl. Nep. 2:184. 1979. *Heliosciadium tenerum* DC., Prodr. 4:105. 1830. *Pimpinella tenera* (DC.) Clarke in Hook. f., Fl. Brit. India 2:686. 1879. *P. tenera* var. *dissecta* Clarke in Hook. f., Fl. Brit. India 2:686. 1879.

Herbs, 15-35 cm high. Cauline leaves pinnate, segments ovate. Flowers in compound umbels; petals elongate. Fruits ovate-oblong, narrowed.

Fl. & Fr. : Aug. - Oct.

Distrib. : Siang; 500-1500 m, in shady forest floor.

Angelica sikkimensis (Clarke) P.K.Mukherjee in Bull. Bot. Surv. India 24:43. 1983. *Peucedanum sikkimensis* Clarke in Hook. f., Fl. Brit. India 2:710. 1879.

Perennial herbs. Segments of lower leaves ovate-lanceolate, upper narrowly lanceolate. Fruits broadly winged and deeply emarginate at both ends.

Fl. & Fr. : Aug. - Dec.

Distrib. : Kameng.

Bupleurum falcatum L., Sp. Pl. 237. 1753; Clarke in Hook. f., Fl. Brit. India 2:676. 1879.

Undershrubs up to 1 m high. Radical leaves spatulate oblong, cauline leaves oblanceolate, amplexicaul, sessile. Flowers in compound umbels, dull green. Fruits brownish; carpels narrowly oblong.

Fl. & Fr. : May - Aug.

Distrib. : Kameng; 1000-1800 m, in shady forest floor over rich humus.

Centella asiatica (L.) Urban in Mart., Fl. Bras. 11(1):287, t. 78. f. 1. 1879. *Hydrocotyle asiatica* L., Sp. Pl. 234. 1753; Clarke in Hook. f., Fl. Brit. India 2:669. 1879. Fig. 119.

Local name : Bor-mani-muni (Asm.).

Perennial, creeping herbs. Leaves, suborbicular, or reniform, usually crenate. Flowers in axillary, solitary umbels, red. Fruits laterally compressed.

Fl. & Fr. : April - Nov.

Distrib. : Changlang, Siang, Subansiri; 300-1700 m, common along forest edges, in paddy fields and wastelands.

Chaerophyllum reflexum Lindley. in Royle, Ill. Bot. Himal. 232. 1835; Clarke in Hook. f., Fl. Brit. India 2:691. 1879; Hedge & Lamond in Notes Roy. Bot. Gard. Edinburgh 38. 258. 1980. *C. cachemiricum* Clarke in Hook. f. Fl. Brit. India 2:691. 1879. *C. villosum auct. non DC.* 1830; Clarke in Hook. f., Fl. Brit. India 2:690. 1879, p.p.

Annual herbs, glabrous or sparsely hairy. Leaves 2-3 pinnate. Flowers in compound umbels, white, usually polygamous; bracteoles white margined, reflexed. Fruits oblong.

Fl. & Fr. : May - Oct.

Distrib. : Kameng.

Coriandrum sativum L., Sp. Pl. 256. 1753; Clarke in Hook. f., Fl. Brit. India 2:717. 1879.

Local name : Dhania (Asm.).

Annual, slender herbs with foetid smell. Leaves pinnately decomposed; leaflets ovate or lanceolate, upper linear. Flowers in unequal compound umbels, white or purplish. Fruits globose, ridged.

Fl. & Fr. : Jan. - June.

Distrib. : Kameng; in moist places, also widely cultivated.

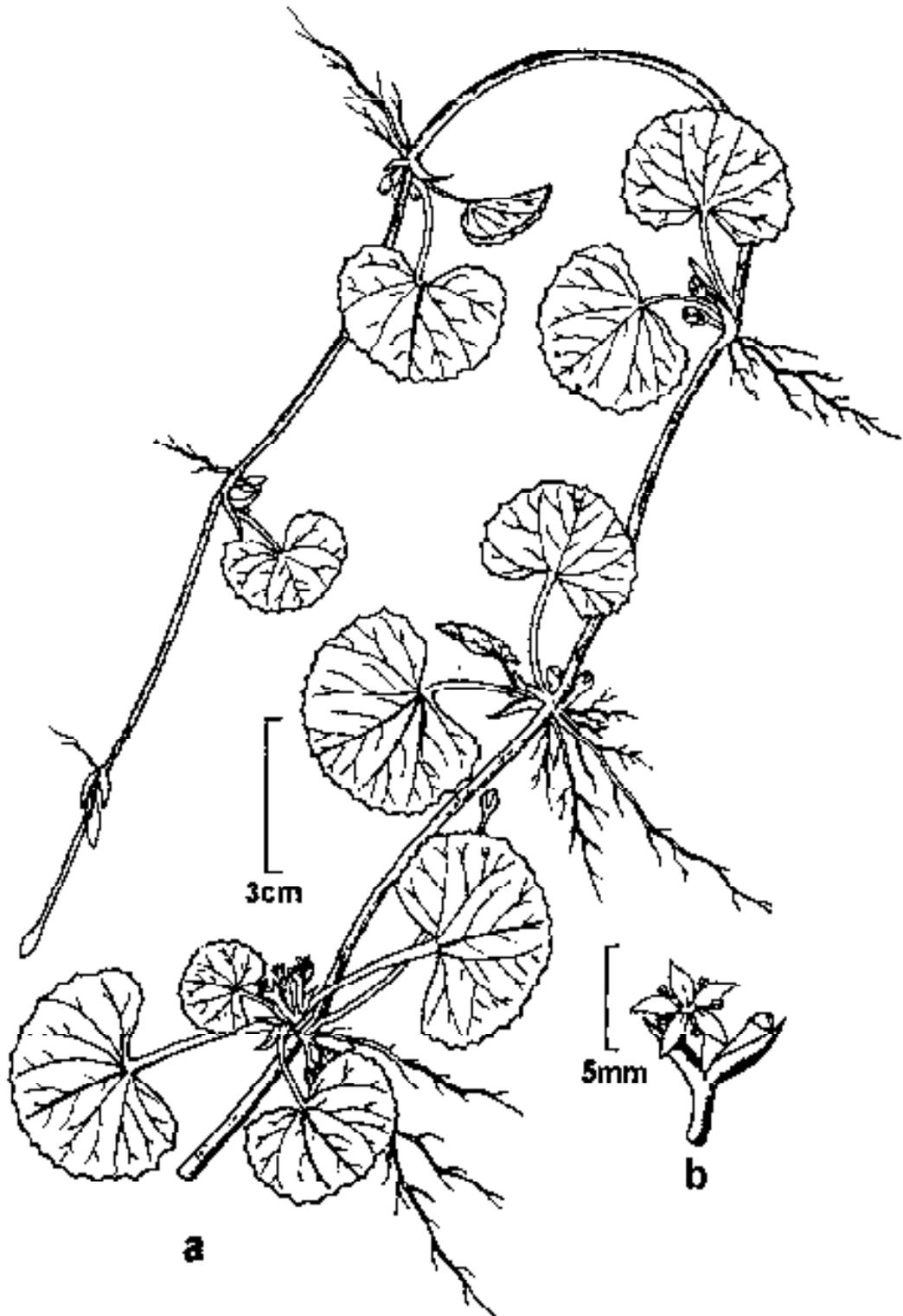


Fig. 119. *Centella asiatica* (L.) Urban : a. Habit; b. Flower.

Use : Fruits and leaves are used as condiment and spice. fruits have medicinal value.

Eryngium foetidum L., Sp. Pl. 232. 1753; Kanjilal *et al.*, Fl. Assam 2:340. 1938; Banerjee in Candollea 19:219. 1966.

Local name : Ori (Abor), Jongali-memedo (Asm.).

Perennial, diffuse, aromatic herbs. Leaves spatulate, spinous toothed. Flowers in umbellate heads, white. Fruits ellipsoid.

Fl. & Fr. : May - Sept.

Distrib. : Changlang, Lohit, Siang, Tirap; 300-1500 m, in open places preferably in Jhummed areas admist grasses.

Heracleum candicans Wallich ex DC., Prodr. 4:192. 1870; Clarke in Hook. f., Fl. Brit. India 2:714. 1879.

Pubescent or closely villous or glabrate herbs up to 1 m high. Leaves pinnatifid, pubescent to thickly white tomentose, serrate. Flowers whitish. Fruits compressed, obovate, greenish.

Fl. & Fr. : July - Oct.

Distrib. : Kameng; 1500-2500 m, in moist places.

Heracleum wallichii DC., Prodr. 4:195. 1830; Clarke in Hook. f., Fl. Brit. India 2:712. 1879; Cannon in Hara *et al.*, Enum. Fl. Pl. Nep. 2:186. 1979. *H. sublineare* Clarke in Hook. f., Fl. Brit. India 2:713. 1879. var. *wallichii*.

Pubescent or glabrescent herbs, 1-2 m high; hirsute below nodes. Leaves 2-3 partite or pinnate; pinnae linear or lanceolate, pubescent. Bract solitary, rays 6-8. Flowers whitish. Fruits glabrous, brown, broadly winged.

Fl. & Fr. : July - Oct.

Distrib. : Changlang; 1500-2000 m, in moist soil slopes.

Heracleum wallichii var. *elatior* Clarke in Hook. f., Fl. Brit. India 2:713. 1879.

Densely hairy herbs; upper leaves lobed, not divided; bracts 4-6, rays 20-30.

Fl. & Fr. : July - Oct.

Distrib. : Tirap.

Hydrocotyle himalaica P.K. Mukherjee in Ind. For. 95:470, t. 1. 1969; Cannon in Hara *et al.*, Enum. Fl. Pl. Nep. 2:186. 1979. *H. javanica auct. non* Thunb. 1798 : Clarke in Hook. f., Fl. Brit. India 2:667. 1879. *H. nepalensis* Hook., Exot. Fl. 1:t. 30. 1823. *H. podantha* Molk. in Miq., Pl. Jungh. 89. 1851. *H. javanica var. podantha* (Molk.) Clarke in Hook. f., Fl. Brit. India 2:668. 1879.

Prostrate herbs, spreading by runners. Leaves reniform, crenate, sometimes lobed. Flowers many in umbels, leaf opposed, greenish. Mericarps compressed, reddish brown.

Fl. & Fr. : June - Nov.

Distrib. : Changlang, Kameng, Lohit, Siang, Subansiri, Tirap; 300-1600 m, common in moist soil slopes, along forest edges and in paddy fields.

Use : Used as medicine in snake bite.

Hydrocotyle sibthorpioides Lamk., Encycl. Meth. Bot. 3:153. 1789; Cannon in Hara *et al.*, Enum. Fl. Pl. Nep. 2:186. 1979. *H. rotundifolia* Roxb., Fl. Ind. 2:38. 1824; Clarke in Hook. f., Fl. Brit. India 2:668. 1879.

Local name : Haru-manimuni (Asm.).

Prostrate, diffuse herbs. Leaves small, orbicular-cordate, subentire, hairy. Flowers in solitary pedunculate umbels, pink. Fruits broadly orbicular, smooth.

Fl. & Fr. : April - Aug.

Distrib. : Siang, Tirap; in moist open places, amidst grasses.

Use : Used as a medicinal plant.

Oenanthe javanica (Blume) DC., Prodr. 4:138. 1830; Suwulda in van Steenis, Fl. Males. 4(2):136. 1949. *Sium javanicum* Blume, Bijdr. 15:881.

1826; *Oenanthe benghalensis* (DC.) Benth. & Hook. f., Gen. Pl. 1:906. 1867; Clarke in Hook. f., Fl. Brit. India 2:696. 1879. *O.stolonifera* Wallich ex DC., Prodr. 4:138. 1830; Clarke in Hook. f., Fl. Brit. India 2:696. 1879. *O.linearis* Wallich ex DC., Prodr. 4:138. 1830; Clarke in Hook. f., Fl. Brit. India 2:696. 1879. *O.thomsonii* Clarke in Hook. f., Fl. Brit. India 2:697. 1879.

Local name : Aguhama (Apat.).

Perennial, aromatic, sometimes stoloniferous herbs. Leaves pinnate; pinnae lanceolate, serrate, ultimate segments linear. Flowers in terminal or leaf opposed compound umbels, white. Mericarps compressed, subquadrate, greenish.

Fl. & Fr. : March - Oct.

Distrib. : Kameng, Siang, Subansiri, Tirap; 1000-2000 m, in marshy places, along forest edges and streams.

Use : The whole plant is used as vegetable.

Pimpinella diversifolia DC., Prodr. 4:122. 1830; Clarke in Hook. f., Fl. Brit. India 2:688. 1879. Fig. 120.

Villous or subtomentose herbs up to 2 m high. Cauline leaves 3-partite; leaflets ovate to lanceolate, cordate. Flowers greenish white. Fruits narrowed upward, papillose when young.

Fl. & Fr. : April - Aug.

Distrib. : Kameng; 1500-2000 m, on moist, shady hill slopes.

Pimpinella sikkimensis Clarke in Hook. f., Fl. Brit. India 2:685. 1879.

Glabrous or sparsely setulose herbs. Cauline leaves 2-3 pinnate, ultimate segments oblong, serrate. Flowers in compound umbels, pale green. Fruits narrowed upward, compressed.

Fl. & Fr. : May - Aug.

Distrib. : Kameng, Tirap; 1000-2000 m, along moist and shady forest edges.

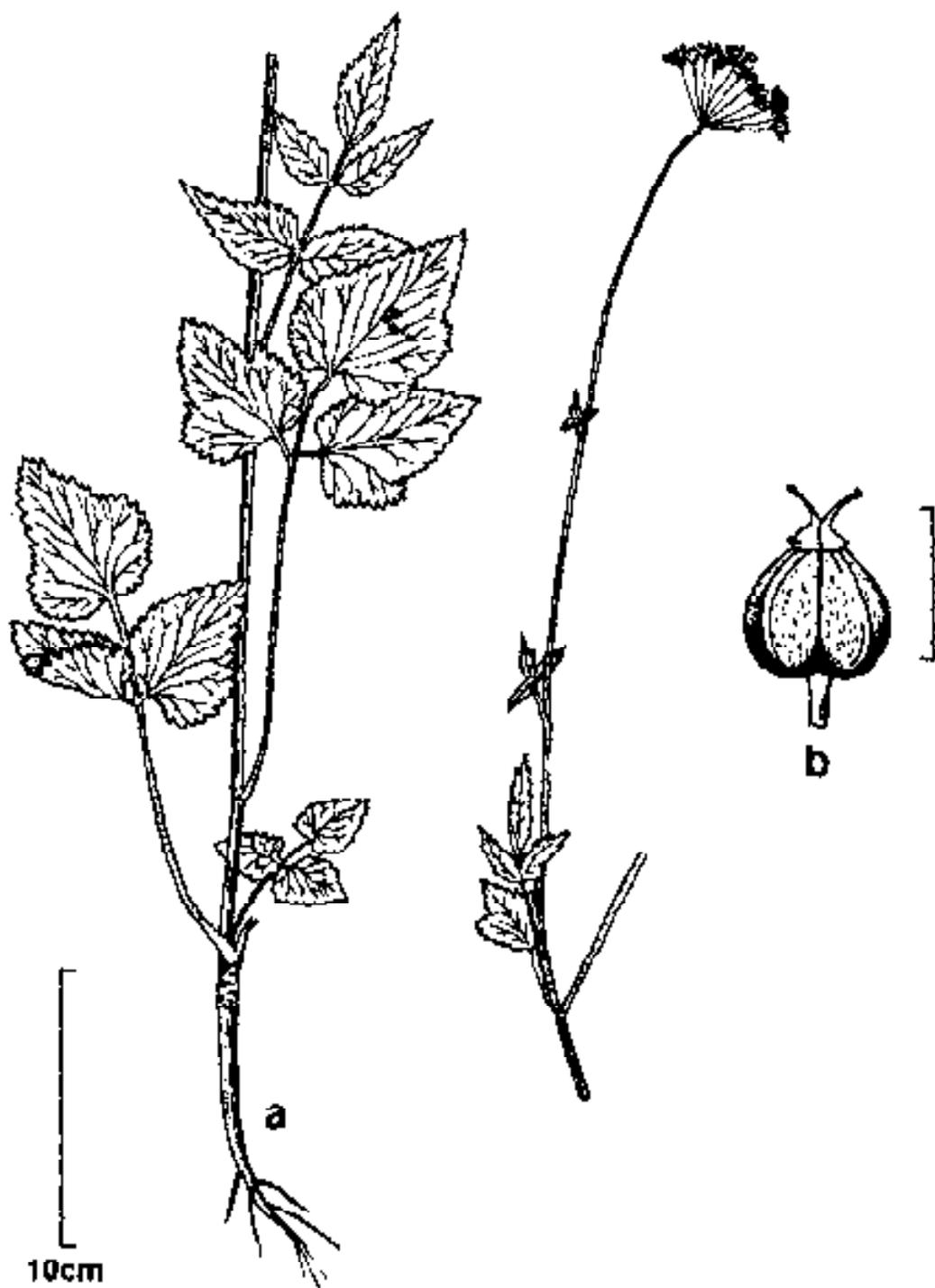


Fig. 120. *Pimpinella diversifolia* DC. : a. Habit; b. Fruit.
(After E. Nasir, 1972).

Pleurospermum dentatum (DC.) Clarke in Hook. f., Fl. Brit. India 2:704. 1879. *Hymenolaena dentata* DC., Prodr. 4:245. 1830. *H. pumila* DC., Prodr. 4:245. 1830. *Pleurospermum pumilum* (DC.) Clarke in Hook. f., Fl. Brit. India 2:704. 1879.

Annual or perennial herbs up to 1.5 m high. Leaves bipinnate; segments oblong or ovate, serrate. Flowers in many rayed compound umbels, whitish. Fruits ellipsoid, compressed with thin ridges.

Fl. & Fr. : May - Oct.

Distrib. : Kameng; in shady hill slopes at higher altitudes.

Pternopetalum senii Deb & Dutta in (J.Sen Memorial vol.) Bull. Bot. Soc. Bengal 421. 1969.

Erect herbs 30-40 cm high; rhizomes terete, subterranean, fleshy. Leaves usually basal, 3-pinnate, petiole longer than lamina, sparsely hispidulous beneath. Flowers in long peduncled compound umbels, purple. Fruits oblong, laterally compressed.

Fl. & Fr. : June - July.

Distrib. : Tirap.

Pternopetalum vulgare (Dunn) Hand. Mazz., Symb. Sin. 6. 718. 1933. *Cryptotaeniopsis vulgaris* Dunn in Hook. f., Ic. 8. t. 2737. 1902. *Pimpinella clarkeana* Watt ex Banerjee in J. Bombay Nat. Hist. Soc. 50:88. 1953.

Small, erect herbs, 15-30 cm high. Radical leaves long petioled, 3-foliate, leaflets ovate; cauline leaves smaller. Flowers in terminal umbel, white. Fruits oblong; slightly asymmetrical; carpophore bifid.

Fl. & Fr. : April - Aug.

Distrib. : Kameng, Subansiri; 1500-2000 m, in moist rocky slopes.

Sanicula elata Buch. - Ham. ex D. Don, Prodr. Fl. Nep. 183. 1825; Nasir in Nasir & Ali, Fl. W. Pakistan 20:13. 1972. *S. europea auct. non L.* 1753; Clarke in Hook. f., Fl. Brit. India 2:670. 1879.

Annual or perennial, erect or creeping herbs, 15-75 cm high. Leaves orbicular, palmately 3-5 partite. Flowers in compound umbels, white. Fruits echinate; mericarps bristled.

Fl. & Fr. : Aug. - March.

Distrib. : Changlang, Dibang valley, Lohit, Siang, Subansiri, Tirap; 200-1600 m, in marshy places amidst grasses.

Selinum candollii DC., Prodr. 4:165. 1830; Clarke in Hook. f., Fl. Brit. India 2:700. 1879; Cannon in Hara *et al.*, Enum. Fl. Pl. Nep. 2:189. 1979. *Peucedanum wallichianum* DC., Prodr. 4:181. 1830. *Selinum wallichianum* (DC.) Raizada & Saxena in Ind. For. 92:323. 1966. Fig. 121.

Perennial herbs. Leaves 3-4 pinnate, broadly elliptic, segments narrowly lanceolate. Flowers in compound umbels, white. Fruits subquadrate, compressed with distinct redges.

Fl. & Fr. : June - Oct.

Distrib. : Kameng; 1500-2500 m, in moist shady places.

Selinum striatum Clarke in Hook. f., Fl. Brit. India 2:699. 1879.

Perennial herbs; stems fistular. Leaves 3-4 pinnate; segments ovate or oblong-lanceolate, uppermost sheaths often extending whole length of petiole. Flowers in compound umbels, white. Fruits dorsally compressed, winged.

Fl. & Fr. : June - Oct.

Distrib. : Kameng; 1500-2000 m, on moist shady hill slopes.

Torilis japonica (Houtt.) DC., Prodr. 4:219. 1830; Buwalda in Blumea 2:169. 1936. *Tordylium anthriscus* L., Sp. Pl. 240. 1753. *Caucaulis japonica* Houtt., Nat. Hist. 26. 42. 1777. *C. anthriscus* (L.) Hudson, Fl. Angl. ed. 1, 99. 1762; Clarke in Hook. f., Fl. Brit. India 2:718. 1879. *Torilis anthriscus* (L.) Gmelin, Fl. Bad. 1:615. 1806, non Gaertn. 1788.

Annual herbs, adpressedly hispid. Leaves 2-4 pinnate, lobes lanceolate. Flowers in long peduncled, 8-12 rayed compound umbels, white or purplish. Fruits elliptic or oblong, compressed laterally.

Fl. & Fr. : May - Dec.

Distrib. : Kameng; in moist localities.

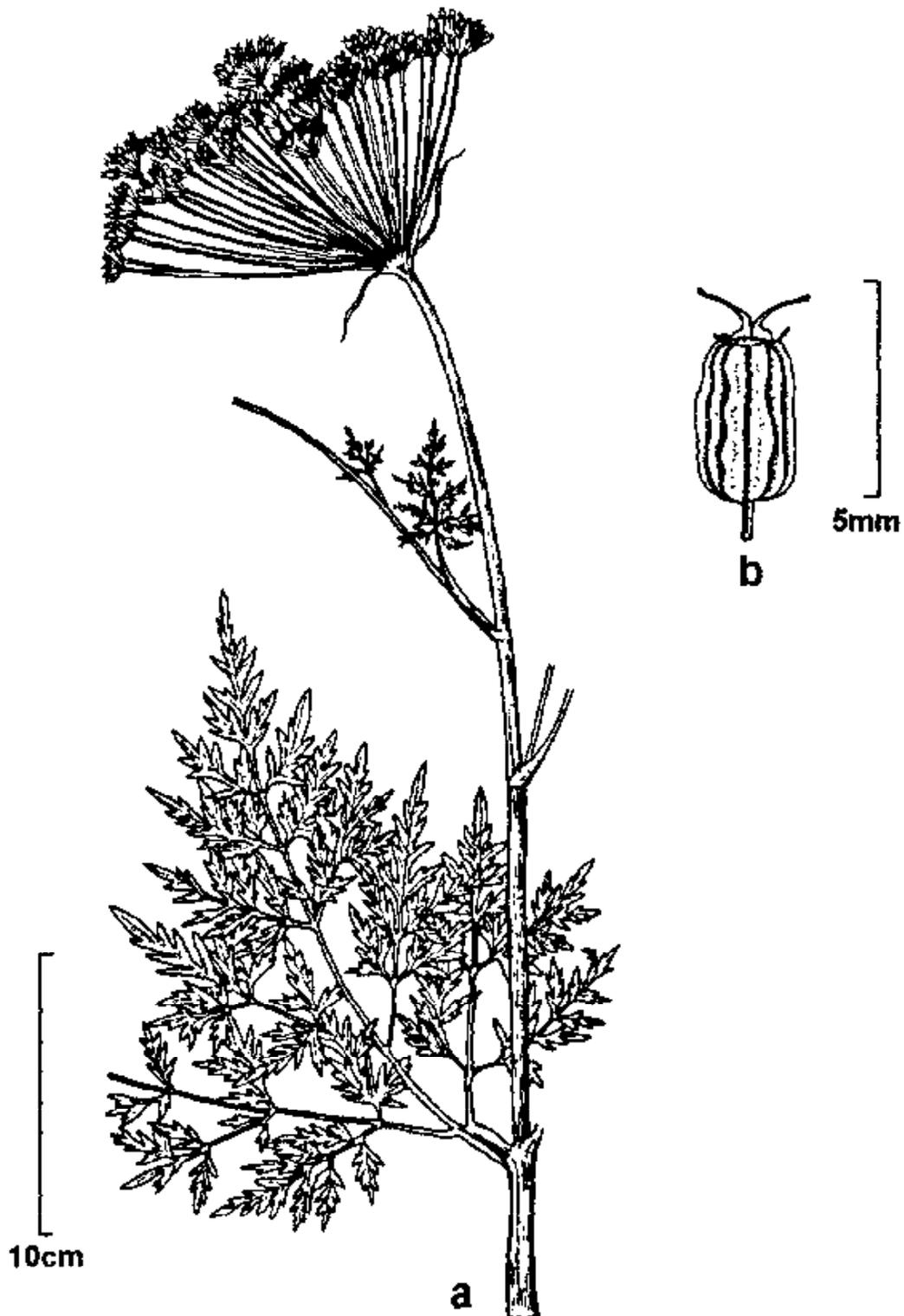


Fig. 121. *Selinum candollei* DC. : a. Habit; b. Fruit.
(After E. Nasir, 1972).

Trachyspermum ammi (L.) Sprague in Kew Bull. 1929:228. 1929; Buwalda in Blumea 2:183. 1936. *Sison ammi* L., Sp. Pl. 252. 1753. *Ammi copticum* L., Mant. Pl. 56. 1767. *Carum copticum* (L.) Clarke in Hook. f., Fl. Brit. India 2:682. 1879. *Ligusticum ajowan* Roxb., Fl. Ind. 2:91. 1832.

Local name : Joan (Asm.).

Slender, minutely pubescent herbs up to 1 m high. Leaves 2-3 pinnate; segments linear or filiform. Flowers in compound umbels, white. Fruits ovoid, muciculate, distinctly ridged.

Fl. & Fr. : Aug. - Dec.

Distrib. : Arunachal Pradesh; also cultivated.

Use : Extract from fruits known as "Joan arak" cures pain in chest, liver and spleen; colic pain is relieved by applying hot fomentation.

ARALIACEAE

Aralia cachemirica Decne. in Jacq., Voy. Bot. 72, t. 81. 1844; Clarke in Hook. f., Fl. Brit. India 2:722. 1879.

Shrubs or small trees, unarmed, 3-7 m high. Leaves 1-3 pinnate, leaflets elliptic, acuminate, pilose. Flowers in long paniced umbels. Fruits subglobose, ridged.

Fl. & Fr. : Sept. - Nov.

Distrib. : Tirap; 900-2000 m, in moist open places.

Aralia foliosa Seem. in J. Bot. 4:134. 1868; Clarke in Hook. f., Fl. Brit. India 2:723. 1879.

Large prickly shrubs, 4-7 m high. Leaves pinnately decomposed, leaflets in pair at each division of rachis, ovate-lanceolate or oblong with few bristles on nerves. Flowers in large decomposed prickly panicles, greenish. Fruits ridged.

Fl. & Fr. : Oct. - Jan.

Distrib. : Siang, Subansiri; 300-1000 m, in marshy places.

Aralia montana Blume, Bijdr. 870. 1826; Philipson in van Steenis, Fl. Males. 9(1):22. 1979. *A. armata* Seem. in J. Bot. 6:134. 1868; Clarke in Hook. f., Fl. Brit. India 2:723. 1879. *A. thomsonii* Seem. in J. Bot. 6:134. 1868; Clarke in Hook. f., Fl. Brit. India 2:723. 1879.

Shrubs, often prickly and softly villous throughout, up to 6 m high. Leaves 2-3 pinnate; leaflets in pair at each division, ovate or ovate-lanceolate, serrate, ciliate. Flowers in paniced umbels, small, whitish or greenish yellow. Fruits purplish black.

Fl. & Fr. : Aug. - Jan.

Distrib. : Tirap; 600-1200 m, in open places.

Brassaiopsis aculeata (Buch. Ham. ex D.Don) Seem. in J. Bot. 2:293. 1864; Clarke in Hook. f., Fl. Brit. India 2:738. 1879. *Hedera aculeata* Buch. - Ham. ex D.Don, Prodr. Fl. Nep. 187. 1825.

Medium sized trees, 8-12 m high, prickly, brownish tomentose. Leaves digitately 3-9 foliolate; leaflets oblong or oblanceolate, serrate, stellate hairy on both surfaces. Flowers in large, terminal, compound, paniculate umbels, stellate rusty tomentose. Fruits subglobose or globose.

Fl. & Fr. : Feb. - June.

Distrib. : Kameng, Lohit, Siang; 1500-2000 m, in primary forests.

Brassaiopsis alpina Clarke in Hook. f., Fl. Brit. India 2:736. 1879.

Unarmed trees up to 10 m high; young branches densely yellowish or brownish stellately villous. Leaves simple, ovate-cordate, densely stellate tomentose. Flowers in densely tomentose panicles, buds often remain enclosed in thick stellate wool.

Fl. & Fr. : Jan. - June.

Distrib. : Kameng, Tawang; along edges of forest at higher elevations.

Brassaiopsis glomerulata (Blume) Regel, Gartenfl. 12:275, t. 411. 1863; Maheshwari in Bull. Bot. Surv. India 2:375. 1960. *Aralia glomerulata* Blume,

Bijdr. 872. 1825. *Brassaiopsis speciosa* Decne. & Planch., Rev. Hort. ser. 4, 3:106. 1854; Clarke in Hook. f., Fl. Brit. India 2:737. 1879. var. **glomerulata**.

Local name : Kurila (Asm.).

Small trees, often prickly and rusty brown, stellate tomentose. Leaves digitate, leaflets oblong or ovate-lanceolate, subentire, stellate hairy when young. Flowers in large, terminal, stellate tomentose, paniced umbels, white or greenish white. Fruits subglobose, juicy.

Fl. & Fr. : June - March.

Distrib. : Kameng, Subansiri, Tirap; 200-1600 m, in primary forests.

Brassaiopsis glomerulata var. *serrata* (Clarke) Maheshwari in Bull. Bot. Surv. India 2:376. 1960. *B. speciosa* var. *serrata* Clarke in Hook. f., Fl. Brit. India 2:737. 1879.

Leaflets elliptic-lanceolate, dentate-serrate. Panicles sparingly woolly.

Fl. & Fr. : June - Dec.

Distrib. : Lohit, Tirap; in primary forests.

Brassaiopsis griffithii Clarke in Hook. f., Fl. Brit. India 2:736. 1879.

Small trees up to 7 m high. Leaves palmatifid, pubescent on nerves, serrate-denticulate. Flowers in terminal large compound paniculate umbels, tomentose. Fruits globose.

Fl. & Fr. : June - Dec.

Distrib. : Siang, Subansiri; along edges of forests.

Brassaiopsis hainla (Buch. Ham. ex D. Don) Seem. in J. Bot. 2:291. 1864; Clarke in Hook. f., Fl. Brit. India 2:735. 1879. *Hedera hainla* Buch. Ham. ex D. Don, Prodr. Fl. Nep. 187. 1825.

Small, prickly trees; younger parts tomentose. Leaves divided to half-way, segments triangular cuspidate, spinose-toothed. Flowers in long terminal panicles; buds often covered with dense stellate tomentum. Fruits globose or broadly orbicular, 1-seeded.

Fl. & Fr. : Feb. - Oct.

Distrib. : Changlang, Kameng, Lohit, Tirap; in primary forests.

***Brassaiopsis magnifica* Dunn in Kew Bull. 1920:132. 1920; Burkill in Rec. Bot. Surv. India 10(1):293. 1924.**

Small trees up to 3 m high; stems with both brownish filiform deciduous spines and conical persistent spines. Leaves large, peltate, 5-lobed, lobes ovate-caudate, tomentose along nerves beneath. Flowers in long terminal peduncle. Fruits ovoid, glabrous, 1-seeded.

Fl. & Fr. : Dec. - Jan.

Distrib. : Siang; 200-1000 m, along streams.

***Brassaiopsis simplicifolia* Clarke in Hook. f., Fl. Brit. India 2:735. 1879; Burkill in Rec. Bot. Surv. India 10(1):292. 1924.**

Small prickly, glabrous or sparsely hairy trees up to 4 m high. Upper leaves simple, undivided, lanceolate; lower leaves sometimes divided. Flowers in compound paniced umbels.

Fl. & Fr. : Oct. - Feb.

Distrib. : Siang; 1000-1500 m, in forest clearings.

Note : The species was described on the basis of a single specimen collected by Griffith from Mishmi and then reported by Burkill (1924) from Abor.

***Eleutherococcus trifolius* (L.) Hu in J. Arn. Arb. 61:110. 1980; Daniel in Ind. J. For. 6:245. 1983. *Zanthoxylum trifoliatum* L., Sp. Pl. 270. 1753. *Acanthopanax aculeatum* (Aiton) Seem. in J. Bot. 5:238. 1867; Clarke in Hook. f., Fl. Brit. India 2:726. 1879.**

Shrubs or small trees, glabrous or prickly. Leaves digitately 3-5 foliolate; leaflets lanceolate or oblanceolate, denticulate, often bristly on nerves beneath. Flowers in globose umbels, greenish. Fruits subglobose.

Fl. & Fr. : Oct. - Jan.

Distrib. : Dibang valley, Lohit, Siang; 1000-1200 m.

Gamblea ciliata Clarke in Hook. f., Fl. Brit. India 2:240. 1879.

Unarmed trees. Leaves digitately 3-5 foliolate; leaflets oblanceolate, margin bristly, hairy above; petioles rusty villous. Flowers in terminal paniced umbels. Fruits globose, glabrous.

Fl. & Fr. : April - May.

Distrib. : Kameng, Subansiri.

Hedera nepalensis K.Koch., Dendrol. 284, t. 75. 1853; Ghazanfar in Nasir & Ali, Fl. W. Pakistan 86:3. 1975. *H. himalaica* Tobler, Gatt. Hedera 67, f. 31-38. 1912; Calder *et al.* in Rec. Bot. Surv. India 11(1):63. 1926. *H. helix auct. non L.* 1753 : Clarke in Hook. f., Fl. Brit. India 2:739. 1879.

Fig. 122.

Large, woody climbers, glabrous. Leaves polymorphic, entire. Flowers in terminal paniced umbels, greenish or yellowish green. Fruits orange yellow, 3-seeded.

Fl. & Fr. : Nov. - June.

Distrib. : Kameng, Subansiri; 1500-3000 m, along hill slopes.

Helwingia himalaica Hook. f. & Thomson ex Clarke in Hook. f., Fl. Brit. India 2:726. 1879; Hara, Fl. E. Himal. 232 & 645, t. 4a. 1966. *H. lanceolata* Watt ex Kanjilal *et al.*, Fl. Assam 2:373. 1938. *H. himalaica* var. *lanceolata* (Watt ex Kanjilal *et al.*) Deb in Bull. Bot. Surv. India 3:273. 1962.

Small, glabrous, usually epiphytic shrubs. Leaves lanceolate or ovate-lanceolate, serrate. Flowers unisexual in sessile umbels, borne on midrib of leaves. Fruits ovoid or ellipsoid, red.

Fl. & Fr. : April - Aug.

Distrib. : Kameng, Subansiri; in marshy or shady places.

Heteropanax fragrans (Roxb. ex DC.) Seem., Fl. Vitis. 114. 1865; Clarke in Hook. f., Fl. Brit. India 2:734. 1879. *Panax fragrans* Roxb. ex DC., Prodr. 4:254. 1830, excl. syn.; Roxb., Fl. Ind. 2:76. 1832.

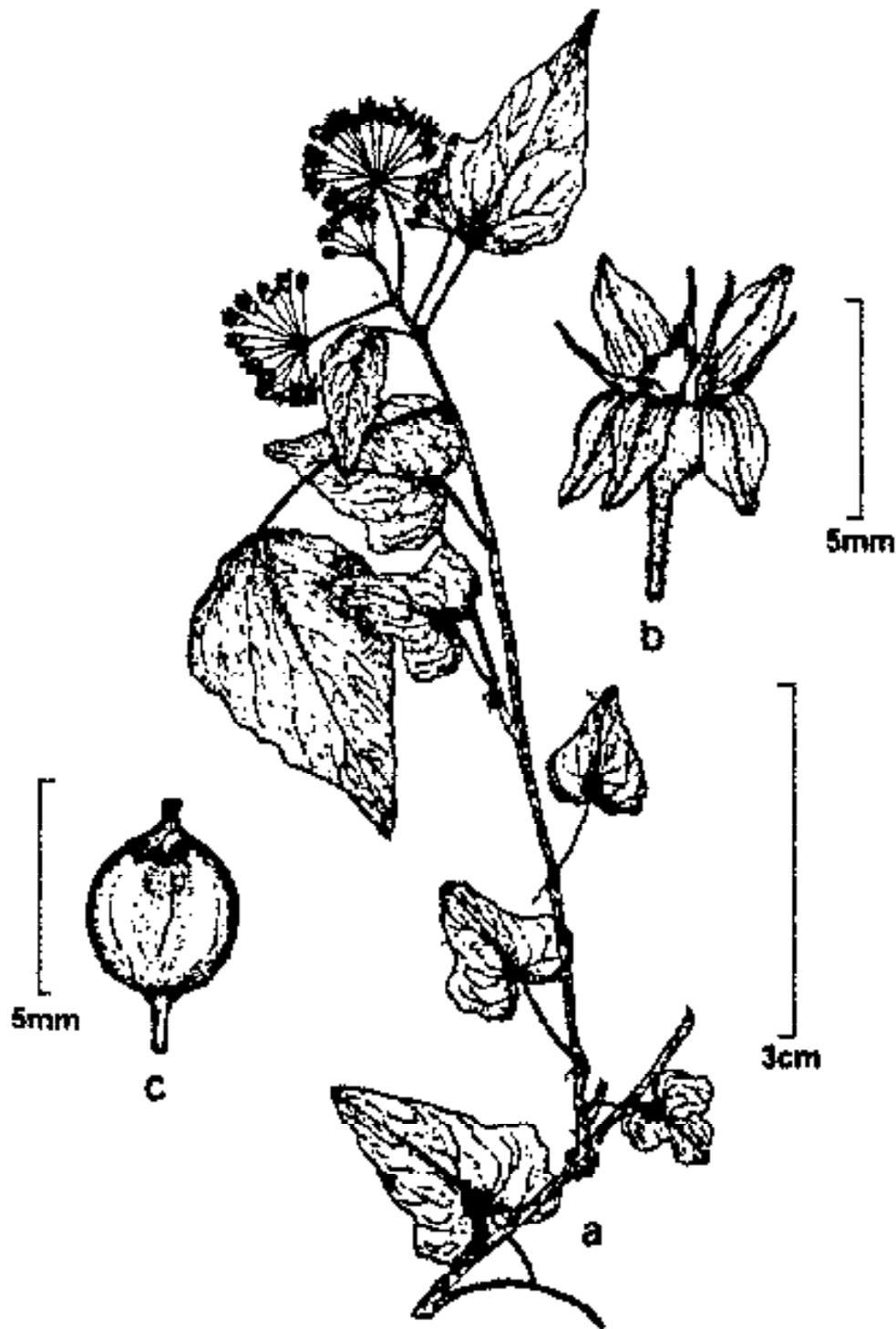


Fig. 122. *Hedera nepalensis* K.Koch. : a. Fruiting twig; b. Flower; c. Fruit.
(After Ghazanfar 1975)

Local name : Keseru, Karangiya, Koronda (Asm.).

Small trees, unarmed, up to 10 m high. Leaves large, tripinnate; leaflets in opposite pairs at each node of rachis, elliptic or lanceolate, glabrous. Flowers in terminal paniced umbels. Fruits laterally compressed, glaucous.

Fl. & Fr. : Dec. - April.

Distrib. : Kameng, Siang; 450-1200 m, in primary forests and along forest edges.

Macropanax dispermus (Blume) O.Ktze., Rev. Gen. Pl. 1:271. 1891; Balakr., Fl. Jowai 1:226. 1981. *Aralia disperma* Blume, Bijdr. 872. 1826. *Macropanax oreophilus* Miq., Fl. Ind. Bat. 1(1):764. 1855; Clarke in Hook. f., Fl. Brit. India 2:738. 1879.

Local name : Pani-kesuri (Asm.).

Medium sized trees, unarmed. Leaves digitately 3-5 foliolate; leaflets lanceolate or elliptic-lanceolate, denticulate or serrulate. Flowers in terminal stellately rusty-tomentose paniced umbels, greenish yellow. Fruits ellipsoid.

Fl. & Fr. : Sept. - March.

Distrib. : Siang, Tirap; 1500-2000 m, in forests or along forest edges.

Macropanax undulatus (Wallich ex G.Don) Seem. in J. Bot. 2:294. 1864; Clarke in Hook. f., Fl. Brit. India 2:738. 1879 'undulatum'. *Hedera undulata* Wallich ex G.Don, Gen. Syst. 3:394. 1834.

Local name : Bon-keseru (Asm.).

Small trees, 5-6 m high. Leaves digitately 3-5 foliolate; leaflets oblong to lanceolate, entire or subentire. Flowers in terminal panicles, greenish yellow. Fruits ellipsoid, black.

Fl. & Fr. : June - Feb.

Distrib. : Changlang, Kameng, Lohit, Siang, Tirap; 400-1500 m, in primary forests.

Merriliopanax listeri (King) Li in Sargentia 2:63, f. 10. 1942; Maheshwari in Bull. Bot. Surv. India 2:377. 1960. *Dendropanax listeri* King in J. Asiat. Soc. Bengal 67:294. 1898.

Shrubs. Leaves unifoliate. Flowers in terminal paniced umbels, small, white; pedicels inarticulate.

Fl. : May - June.

Distrib. : Tirap.

Panax bipinnatifidus Seem. in J. Bot. 6:54. 1868; Bennet & Sharma in Ind. For. 109: 840-845. 1983. *P.pseudoginseng* Wallich var. *bipinnatifidus* (Seem.) Li in Sargentia 2:118. 1942. *Aralia bipinnatifida* (Seem.) Clarke in Hook. f., Fl. Brit. India 2:722. 1879.

Tuberous herbs, 15-50 cm high. Leaves usually in whorls; leaflets bipinnatifid, lanceolate, acuminate, pilose above. Flowers in umbellate heads. Fruits reddish.

Fl. & Fr. : May - Aug.

Distrib. : Kameng; 2500-3500 m, usually in damp, shady places.

Panax pseudo-ginseng Wallich in Trans. Med. Phys. Soc. Calcutta. 4:117. 1829; Cannon in Hara *et al.*, Enum. Fl. Pl. Nep. 2:192. 1979. *Aralia pseudo-ginseng* (Wallich) Benth. ex Clarke in Hook. f., Fl. Brit. India 2:721. 1879, *p.p.* *Aralia quinquefolia* Decne. & Planch. var. *pseudo-ginseng* (Wallich) Burkill in Kew Bull. 1902:7. 1902.

Tuberous herbs, 15-75 cm high. Leaves digitate, usually in whorls at apices of stems; leaflets narrowly lanceolate, serrate, hairy. Flowers in terminal umbellate heads, orange yellow. Fruits drupaceous, dull green to black.

Fl. & Fr. : May - Sept.

Distrib. : Kameng, Subansiri, Tirap; 1500-2000 m, in humus covered forest floor.

Use : The 'Ginseng' popularly known as the elixir of life and is an extremely popular rejuvenating and revitalising tonic and considered to be a panacea. The Korean Ginseng (*P.ginseng*) is widely used world wide and more familiar, while the Indian Ginseng is perhaps least understood (Mehta & Haridarsan 1992).

Pentapanax leschenaultii (DC.) Seem. in J. Bot. 2:296. 1864; Clarke in Hook. f., Fl. Brit. India 2:724. 1879; Cannon in Hara *et al.*, Enum. Fl. Pl.

Nep. 2:192. 1979. *Panax leschenaultii* DC., Prodr. 4:254. 1830. *Pentapanax leschenaultii* var. *umbellatum* (Seem.) Clarke in Hook. f., Fl. Brit. India 2:725. 1879. *P.umbellatum* Seem., Rev. Heder. 22. 1864.

Trees or scandent shrubs. Leaves simple pinnate, leaflets 3-5, elliptic base rounded or cordate, bristly serrate. Flowers in paniced umbelled, heads 3-6, glabrous o pubescent. Fruits ovoid, 4-5 celled, angular.

Fl. & Fr. : March - Aug.

Distrib. : Kameng, Siang, Subansiri; 500-1500 m.

Pentapanax parasiticus (Buch. Ham. ex D. Don) Seem. in J. Bot. 2:296. 1864; Clarke in Hook. f., Fl. Brit. India 2:724. 1879 'parasiticum'; Cannon in Hara *et al.*, Enum. Fl. Pl. Nep. 2:192. 1979. *Hedera parasitica* Buch. - Ham. ex D. Don, Prodr. Fl. Nep. 188. 1825. *Pentapanax parasiticus* var. *khasiana* Clarke in Hook. f., Fl. Brit. India 2:724. 1879.

Slender, glabrous or pubescent shrubs or small trees. Leaves pinnate with usually 5 leaflets; leaflets lanceolate, glaucous beneath. Flowers in paniced umbels. Fruits subglobose.

Fl. & Fr. : Jan. - Aug.

Distrib. : Kameng; 500-1500 m, in primary forests.

Pentapanax racemosus Seem. in J. Bot. 2:295. 1864; Clarke in Hook. f., Fl. Brit. India 2:724. 1879 'racemosum'.

Trees or large climbers, 12-15 m high. Leaves large, pinnately 3-5 foliolate; leaflets ovate, acuminate. Flowers unisexual in clustered paniced racemes. Fruits subglobose.

Fl. & Fr. : April - Aug.

Distrib. : Kameng; 800-1500 m, in primary forests.

Pseudobrassaiopsis hispida (Seem.) R.N. Banerjee in J. Bombay Nat. Hist. Soc. 72:72. 1975. *Brassaiopsis hispida* Seem. in J. Bot. 2:292. 1864; Clarke in Hook. f., Fl. Brit. India 2:736. 1879.

Prickly shrubs, 2-5 m high. Leaves deeply, digitately 7-9 lobed; segments oblong-lanceolate. Flowers in large terminal panicles, tomentose, greenish white. Fruits obtuse, 10-angled, subglobose.

Fl. & Fr. : March - Nov.

Distrib. : Siang; 300-500 m, along forest edges.

Schefflera clarkiana Craib, Fl. Siam. Enum. 1:977. 1931; Rajan in Nair & Henry, Fl. Tamil Nadu 1:182. 1983. *Heptapleurum venulosum* var. *macrophylla* Clarke in Hook. f., Fl. Brit. India 2:730. 1879.

Woody climbers. Leaves digitately compound; leaflets large. Flowers in terminal paniculate umbels, reddish brown or orange yellow.

Fl. & Fr. : April - Nov.

Distrib. : Kameng, Siang; 800-200 m, in primary forests.

Schefflera impressa (Clarke) Harms in Engler & Prantl, Pflanzenfam. 3(8):38. 1894; Cannon in Hara *et al.*, Enum. Fl. Pl. Nep. 2:193. 1979. *Heptapleurum impressum* Clarke in Hook. f., Fl. Brit. India 2:728. 1879. *Hedera tomentosa* D. Don, Prodr. Fl. Nep. 187. 1825, non *Schefflera tomentosa* (Seem.) Harms.

Trees. Leaves digitately compound; leaflets lanceolate, nerves impressed above, stellate woolly beneath. Flowers in paniculate umbels.

Fl. & Fr. : April - May.

Distrib. : Kameng.

Schefflera venulosa (Wight & Arn.) Harms in Engler & Prantl, Pflanzenfam. 3(8):39. 1894; Cannon in Hara *et al.*, Enum. Fl. Pl. Nep. 2:193. 1979. *Paratropia venulosa* Wight & Arn., Prodr. Fl. Pen. Ind. Or. 337. 1834. *Heptapleurum venulosum* (Wight & Arn.) Seem. in J. Bot. 3:80. 1865; Clarke in Hook. f., Fl. Brit. India 2:729. 1879, *p.p.*

Local name : Jokhuni-hata, Dhobailata, Dhovalata (Asm.).

Scandent shrubs or climbers, sometimes epiphytic. Leaves digitately 3-7 foliolate; leaflets elliptic-oblong. Flowers in terminal, paniced umbels or racemes, pale green or yellowish.

Fl. & Fr. : Feb. - Oct.

Distrib. : Kameng, Siang, Tirap; 800-1500 m, in primary forests.

Schefflera wallichiana (Wight & Arn.) Harms in Engler & Prantl, Pflanzenfam. 3(8): 39. 1894; Balakr. in Fl. Jowai 1:224. 1981. *Paratropia wallichiana* Wight & Arn., Prodr. Fl. Pen. Ind. Or. 337. 1834. *Heptapleurum khasianum* Clarke in Hook. f., Fl. Brit. India 2:730. 1879. *H. wallichianum* (Wight & Arn.) Clarke in Hook. f., Fl. Brit. India 2:730. 1879. *Schefflera khasiana* (Clarke) Viguiier in Ann. Sci. Nat. Bot. 9:351. 1909.

Scandent shrubs or small trees, 4-10 m high. Leaves digitately 7-9 foliolate; leaflets oblong, acute to acuminate. Flowers in racemose panicles, greenish white or greenish brown. Fruits globose.

Fl. & Fr. : Sept. - May.

Distrib. : Kameng, Tirap; 1500-2000 m, in primary forests.

Trevesia palmata (Roxb.) Vis. in Mem. Acad. Torin. 2, 4:262. 1842; Clarke in Hook. f., Fl. Brit. India 2:732. 1879. *Gastonia palmata* Roxb., Fl. Ind. 2:407. 1824.

Local name : Tago (Adi); Bhotola (Asm.).

Shrubs or trees with short bristles and reddish hairs. Leaves orbicular in outline, palmatifid or palmatisect, lobes serrate; petioles prickly. Flowers in terminal paniced umbels or corymbs, white. Fruits subglobose, fleshy, crowned by persistent style.

Fl. & Fr. : Feb. - May.

Distrib. : Subansiri; 500-1000 m, in primary forests.

Use : Fruits are used to stupify fish for easy catch.

Tupidanthus calyptratus Hook. f. & Thomson in Curtis, Bot. Mag. 82:t. 4908. 1856; Clarke in Hook. f., Fl. Brit. India 2:740. 1879.

Woody, glabrous shrubs or climbers, 4-10 m high. Leaves digitately 7-11 foliolate; leaflets obovate or narrowly oblong, entire. Flowers in terminal, paniced umbels, light green. Fruits globose, depressed.

Fl. & Fr. : Sept. - Feb.

Distrib. : Kameng; in damp, shady places of primary forests.

CORNACEAE

Aucuba himalaica Hook. f. & Thoms ex Hook. f., Ill. Himal. Pl. t. 12. 1855; Clarke in Hook. f., Fl. Brit. India 2:747. 1879.

Shrubs, 3-4 m tall, sometimes scandent, branches glabrous. Leaves lanceolate, acuminate, denticulate. Panicles terminal on short lateral branches; flowers dull purple. Berries ellipsoid, crowned by persistent calyx-teeth, reddish.

Fl. & Fr. : June - March.

Distrib. : Kameng, Tirap; in deciduous forests.

Benthamidia capitata (Wallich) Hara in J. Arn. Arb. 29:115. 1948 and Fl. E. Himal. 2:92. 1971. *Cornus capitata* Wallich in Roxb., Fl. Ind. 1:434. 1820; Clarke in Hook. f., Fl. Brit. India 2:745. 1879. *Dendrobenthamia capitata* (Wallich) Hutch. in Ann. Bot. n.s. 6:93. 1942.

Shrubs or small trees, 6-8 m high. Leaves elliptic, crowded at apices of branches, minutely hairy. Flowers white in terminal, condense, hemispheric heads, subtended by large white bracts. Drupes coalescing into red globose heads.

Fl. & Fr. : April - Jan.

Distrib. : Kameng; 1500-1800 m.

Use : Fruits are edible and are often preserved as pickles.

Cornus controversa Hemsl. ex Prain in Bot. Mag. t. 8261 in textu (Jan.) 1909; Hemsl. in Kew Bull. 1909. 331. (Oct.)1909. Hara, Fl. E. Himal. 2:92. 1971. *C. macrophylla* auct. non Wallich : Clarke in Hook. f., Fl. Brit. India 2:744. 1879, p.p.

Medium sized trees, 8-10 tall. Leaves alternate, broadly ovate, appressed hairy below. Flowers in terminal cymose panicles, yellowish white or white. Drupes globose, purple or violet.

Fl. & Fr. : March - July.

Distrib. : Kameng; 2500-3000 m.

Use : Fruits are edible; wood yields excellent charcoal for gun powder.

Cornus oblonga Wallich in Roxb., Fl. Ind. 1:432. 1820; Clarke in Hook. f., Fl. Brit. India 2:744. 1879.

Small trees, 6-10 m tall. Leaves oblong, narrowly oblong to elliptic-lanceolate, glabrous to minutely hairy. Flowers in terminal branched cymes, pale yellow. Drupes ellipsoid, brownish when ripe.

Fl. & Fr. : Sept. - April.

Distrib. : Kameng, Lohit; in deciduous forests.

Mastixia pentandra Blume subsp. *chinensis* (Merr.) Matthew in Blumea 23:83. 1977 and Fasc. Fl. India 19:27. 1988. *M. chinensis* Merr. in Sunyatsenia 3:256. 1937. *M. arborea* auct. non (Wight) Beddome 1872; Clarke in Hook. f., Fl. Brit. India 2:745. 1879.

Local name : Goch-dimoru (Asm.).

Trees up to 20 m tall. Leaves alternate, elliptic or elliptic-oblong. Flowers in terminal, pubescent thyrse or cymose panicles, greenish. Drupes ovoid to oblong, purplish green.

Fl. & Fr. : March - Aug.

Distrib. : Kameng.

ALANGIACEAE

Alangium barbatum (R. Brown) Bailon ex O. Ktze., Rev. Gen. Pl. 273. 1891; Matthew, Fasc. Fl. India 19:3. 1988. *Marlea barbata* R. Brown, Misc. Bot. works 2:534. 1867; Hook. f., Fl. Brit. India 2:743. 1879.

Shrubs or small trees, 3-6 m high; branchlets usually hirsute. Leaves ovate to oblong, lobed or toothed. Flowers in dichotomous cymes, white. Fruits deeply grooved, 1-seeded, bluish when ripe.

Fl. & Fr. : June - Feb.

Distrib. : Tirap; in deciduous and evergreen forests.

Alangium chinense (Lour.) Harms in Ber. Deutsch. Bot. Ges. 15:24. 1897; Matthew, Fasc. Fl. India 19:3. 1988. *Stylidium chinense* Lour., Fl. Cochinch. 1:221. 1790. *Marlea begoniifolia* Roxb., Pl. Corom. 3:80, t. 283. 1820 and Fl. Ind. 2:261. 1832; Clarke in Hook. f., Fl. Brit. India 2:743. 1879.

Local name : Chika-maruli, Chagali-gach; Kodal-kania, Bangalmani, Chika-amrulia (Asm.).

Deciduous trees, 3-20 m tall, glabrous. Leaves orbicular to broadly oblong, base rounded to subcordate. Flowers in axillary dichotomous cymes, creamy white. Drupes dark purple when ripe.

Fl. & Fr. : April - Oct.

Distrib. : Changlang, Kameng, Siang, Tirap; 1500-2000 m. common in deciduous forests.

Use : Leaves are used as fodder for cattle and wood is used for building purpose.

CAPRIFOLIACEAE (incl. Carlemanniaceae)

Carlemannia griffithii Benth. in Hooker, Kew J. Bot. 5:308. 1853; Clarke in Hook. f., Fl. Brit. India 3:85. 1880.

Annual branched herbs up to 2 m high. Leaves obliquely elliptic, caudate-acuminate, crenate-serrate. Flowers in cymose panicles or corymbs, white, yellowish or pinkish. Capsules pyramidal, 4-lobed, brownish.

Fl. & Fr. : July - Oct.

Distrib. : Kameng, Siang, Subansiri, Tirap; in moist places along forest edges and roadsides.

Carlemannia tetragona Hook. f., Fl. Brit. India 3:85. 1880.

Ascending shrubs; branches pubescent, often rooting from nodes. Leaves obliquely elliptic, pubescent. Flowers sessile, white in terminal pubescent, branched cymes. Capsules pyramidal, stellately 4-lobed.

Fl. & Fr. : Aug. - Nov.

Distrib. : Dibang valley, Kameng, Lohit; 200-900 m, in moist shady places over black humus soil.

Leycesteria dibangvalliensis Das & Giri in J. Bombay Nat. Hist. Soc. 88(2):265. 1991. Fig. 123.

Scandent shrubs, 1.5-2.5 m tall; branches fistulose, glandular pubescent at nodes. Leaves ovate to ovate-lanceolate, dentate, reticulations prominent, alveolate and pubescent beneath. Flowers in axillary pseudovercillate spikes, whitish, glandular pubescent without. Berries oblong.

Fl. & Fr. : Dec. - Jan.

Distrib. : Dibang valley; 1400-1600 m. in secondary forests.

Leycesteria formosa Wallich in Roxb., Fl. Ind. 2:181. 1824; Clarke in Hook. f., Fl. Brit. India 3:16. 1880.

Shrubs or undershrubs; branches hollow. Leaves opposite, ovate to ovate-lanceolate, pubescent beneath. Flowers in terminal, pseudovercillate spikes, purplish. Berries subglobose, dark purple.

Fl. & Fr. : April - Aug.

Distrib. : Kameng, Lohit; 1200-1800 m, in secondary forests.

Leycesteria glaucophylla (Hook. f. & Thomson) Hook. f., Fl. Brit. India 3:16. 1880; Hara in Hara *et al.*, Enum. Fl. Pl. Nep. 2:195. 1979. *Lonicera glaucophylla* Hook. f. & Thomson in J. Linn. Soc. Bot. 2:165. 1858; *Leycesteria belliana* W.W. Smith in Trans. Bot. Soc. Edinburgh 24:173, t. 13. 1911.

Slender herbs; branches fistulose. Leaves ovate-lanceolate to lanceolate, sinuate toothed, glaucous beneath. Flowers in pairs on short axillary or lateral branches, whitish. Berries 8-celled.

Fl. & Fr. : April - Aug.

Distrib. : Kameng; 1000-1500 m, in primary forests.

Lonicera acuminata Wallich in Roxb., Fl. Ind. 2:176. 1824; Clarke in Hook. f., Fl. Brit. India 3:10. 1880.

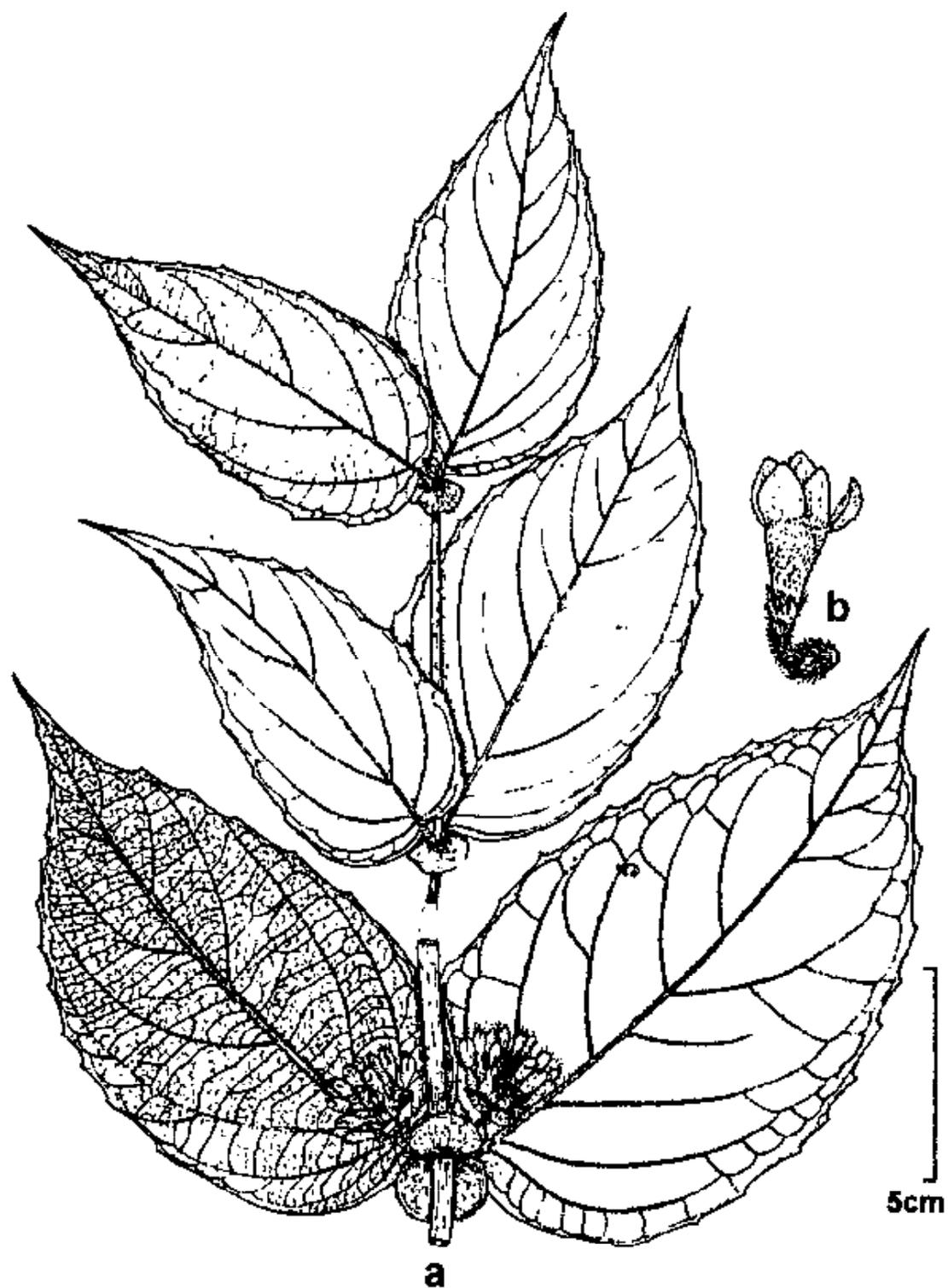


Fig. 123. *Leycesteria dibangvalliensis* Das & Giri : a. Flowering twig; b. Flower.

Climbers with crowded, hairy branchlets. Leaves ovate-oblong, cordate at base, glabrescent. Flowers in terminal or axillary panicles, green with brownish tip; corolla tube hairy. Berries oblong, crowned with calyx-teeth.

Fl. & Fr. : April - Aug.

Distrib. : Kameng, Tawang; 2000-2500 m, in marshy or shady places.

Lonicera angustifolia Wallich ex DC., Prodr. 4:337. 1830; Clarke in Hook. f., Fl. Brit. India 3:13. 1880.

Shrubs, 1-2 m high. Leaves narrowly lanceolate, glaucous beneath. Flowers in axillary peduncles, white or pale green with violet tip; bracts foliaceous, bracteoles connate. Berries paired, confluent.

Fl. & Fr. : May - Sept.

Distrib. : Kameng, Tawang; 2500-3000 m, on moist mossy slopes.

Lonicera braccana Hemsley in J. Linn. Soc. Bot. 38, in Obs. 1890; Kanjilat *et al.*, Fl. Assam 3:7. 1939.

Straggling shrubs or climbers. Leaves elliptic or oblong-lanceolate, glabrous, coriaceous. Flowers in axillary peduncles, paired, reddish outside, yellow inside, bilabiate, glabrous. Berries paired, confluent.

Fl. & Fr. : May - Nov.

Distrib. : Tirap.

Lonicera glabrata Wallich in Roxb., Fl. Ind. 2:175. 1824; Clarke in Hook. f., Fl. Brit. India 3:10. 1880.

Scandent shrubs or climbers, glabrous. Leaves ovate or ovate-lanceolate, cordate. Flowers in short, axillary or terminal panicles, orange yellow, glabrous; bracts lanceolate, bracteoles subulate. Fruits paired, crowned with calyx-teeth.

Fl. & Fr. : July - Dec.

Distrib. : Tirap.

Lonicera macrantha (D. Don) Spreng., Syst. Veg. 4(2):82. 1827. *Caprifolium macranthum* D. Don, Prodr. Fl. Nep. 140. 1825. *Lonicera macrantha* (D. Don) DC., Prodr. 4:333. 1830; Clarke in Hook. f., Fl. Brit. India 3:10. 1880.

Climbing shrubs, ca 3 m high; young parts silky villous. Leaves ovate to ovate-lanceolate, villous beneath. Flowers in terminal or subterminal panicles, white, yellowish white or even yellow; corolla tube and lobes hirsute. Berries crowned with calyx-teeth.

Fl. & Fr. : April - Sept.

Distrib. : Kameng, Tawang, Tirap; 1500-2000 m, in damp places or along nullas.

Note : Very attractive when flowering and can be introduced as an ornamental plant in garden.

Sambucus hookeri Rehder in Sarg., Pl. Wilson. 1:308. 1913; Yamazaki in Hara, Fl. E. Himal. 319. 1966. *S. javanica* auct. non Reinw. ex Blume 1826; Clarke in Hook. f., Fl. Brit. India 3:2. 1880.

Local name : Hoklati (Asm.).

Shrubs or small trees. Leaves imparipinnate; leaflets ovate to linear lanceolate. Flowers in terminal, 3-5 rayed corymbs, white or yellowish white. Fruits ovoid, black or blue black when ripe.

Fl. & Fr. : June - Dec.

Distrib. : Changlang, Kameng, Lohit, Siang, Subansiri, Tirap; 300-1100 m, in moist sandy places, along forest edges.

Silvianthus bracteatus Hook. f. in Hooker, Ic. Pl. 11:36, t. 1048. 1868; Clarke in Hook. f., Fl. Brit. India 3:86. 1880.

Small, glabrous shrubs or undershrubs, 2-3.5 m high. Leaves elliptic-ovate or lanceolate. Flowers in axillary or terminal cymes, brownish or purplish; calyx creamy white. Capsules globose, creamy white.

Fl. & Fr. : May - Nov.

Distrib. : Changlang, Lohit, Siang, Subansiri, Tirap; in moist places and in rock crevices.

Viburnum betulifolium Batalin in Act. Hort. Petrop. 13:371. 1894; Naithani & Bennet in Ind. For. 110(7):682. 1984.

Shrubs up to 1.25 m high. Leaves ovate or ovate-rhomboid. Flowers in dense terminal corymbs, white. Fruits globose, red.

Fl. & Fr. : July - Dec.

Distrib. : Kameng, Lohit; in swampy areas of forest edges.

Viburnum colebrookianum Wallich ex DC., Prodr. 4:325. 1830; Clarke in Hook. f., Fl. Brit. India 3:5. 1880.

Large, spreading, shrubs or trees, 4-13 m high. Leaves drooping, elliptic-oblong, crenate-serrate, glabrous or very sparsely hairy. Flowers in corymbose cymes on short axillary, stellate-hairy branches, white. Fruits ovoid or ellipsoid, reddish.

Fl. & Fr. : March - Nov.

Distrib. : Changlang, Kameng, Lohit, Siang, Subansiri, Tirap; 300-1000 m, in swampy places on the edges of forests.

Use : Pounded leaves are used to cure the old sores.

Viburnum corylifolium Hook. f. & Thomson in J. Linn. Soc. Bot. 6:174. 1854; Clarke in Hook. f., Fl. Brit. India 3:3. 1880.

Shrubs or small trees, 3-6 m high, branches rufous hairy. Leaves ovate, elliptic to elliptic-lanceolate, densely hairy beneath. Flowers in corymbs on short lateral branches, white. Fruits globose, bright red.

Fl. & Fr. : March - Dec.

Distrib. : Changlang, Kameng; on moist slopes.

Use : Fruits are edible.

Viburnum cylindricum Buch. - Ham. ex D. Don, Prodr. Fl. Nep. 142. 1825; Hara in Hara *et al.*, Enum. Fl. Pl. Nep. 2:198. 1979. *V. coriaceum* Blume, Bijdr. 656. 1826; Clarke in Hook. f., Fl. Brit. India 3:5. 1880.

Large shrubs or small trees, 3-8 m high. Leaves ovate, oblong or lanceolate, coriaceous, glabrous and hairy at nerve axils beneath. Flowers in terminal corymbs, white or purplish white. Fruits ovoid-ellipsoid, dull green or bluish black.

Fl. & Fr. : June - Nov.

Distrib. : Changlang, Kameng, Subansiri, Tirap; 1000-2000 m, along forest edges.

Viburnum erubescens Wallich ex DC., Prodr. 4:329. 1830; Clarke in Hook. f., Fl. Brit. India 3:7. 1880.

Small trees, young parts pubescent. Leaves ovate or oblong, serrulate, pubescent on nerves beneath. Flowers in paniced cymes or pendulous corymbs at the end of short lateral branches, white. Fruits succulent, reddish.

Fl. & Fr. : April - Aug.

Distrib. : Kameng, Tawang; 1000-2000 m, on moist hill slopes.

Viburnum foetidum Wallich, Pl. Asiat. Rar. 1:49, t. 61. 1830; Clarke in Hook. f., Fl. Brit. India 3:4. 1880.

Shrubs, 3-5 m high with stellate hairy branches; bark chocolate coloured. Leaves rhomboid to elliptic-lanceolate, remotely dentate, tuft hairy at nerve axils beneath. Flowers in terminal corymbs, white. Fruits scarlet red.

Fl. & Fr. : May - Nov.

Distrib. : Changlang, Kameng, Subansiri; on moist hill slopes and along forest edges.

Viburnum mullah Buch. Ham. ex D. Don, Prodr. Fl. Nep. 141. 1825; Hara, Fl. E. Himal. 320. 1966. *V. stellulatum* Wallich ex DC., Prodr. 4:327. 1830; Clarke in Hook. f., Fl. Brit. India 3:4. 1880. var. *mullah*.

Shrubs, 2-3 m high, branches puberulous. Leaves elliptic-lanceolate, toothed, parallel veined, sparsely stellate pubescent beneath. Flowers in terminal, rufous pubescent corymbs. Drupes broadly oblong, reddish.

Fl. & Fr. : May - Dec.

Distrib. : Kameng, Subansiri; 2800-3000 m, on moist slopes.

Viburnum mullah var. *glabrescens* (Clarke) Kitamura in *Fauna & Fl. Nep. Himal.* 235. 1955. *V. stellulatum* Wallich ex DC. var. *glabrescens* Clarke in Hook. f., *Fl. Brit. India* 3:4. 1880.

Climbers. Leaves glabrescent except on nerves beneath. Corymbs with a few scattered hairs.

Fl. & Fr. : May - Dec.

Distrib. : Tirap.

Viburnum nervosum D. Don, *Prodr. Fl. Nep.* 141. 1825; Clarke in Hook. f., *Fl. Brit. India* 3:8. 1880; Hara in Hara *et al.*, *Enum. Fl. Pl. Nep.* 2:199. 1979. *V. cordifolium* Wallich ex DC., *Prodr.* 4:327. 1830; Clarke in Hook. f., *Fl. Brit. India* 3:6. 1880.

Large shrubs or small trees. Leaves elliptic to elliptic-oblong, cordate, sharply serrate, parallel-veined, stellate pubescent on nerves beneath, rugose. Flowers in dense terminal or axillary subcapitate cymes or corymbs, whitish. Fruits ellipsoid, red.

Fl. & Fr. : June. - Sept.

Distrib. : Kameng; 3000-4000 m, in dense primary forests.

Viburnum odoratissimum Ker in *Bot. Reg.* 6:t. 456. 1820; Clarke in Hook. f., *Fl. Brit. India* 3:7. 1880.

Shrubs or small trees, 3-4 m high. Leaves elliptic, coriaceous, subentire, nearly glabrous. Flowers in terminal corymbs, white or yellowish white; bracts lanceolate, woolly. Fruits ovoid-oblong, reddish.

Fl. & Fr. : May - Sept.

Distrib. : Tirap.

Viburnum semprvirens K. Koch, *Hort. Dendr.* 300. 1853; Naithani & Bennet in *Ind. For.* 110(7):682. 1984. *V. nervosum* auct. non D. Don 1825; Hook. & Arn., *Bot. Voy. Beect.* 190. 1833.

Shrubs. Leaves elliptic or elliptic-ovate. Flowers in terminal corymbs, dull white. Fruits globose, red.

Fl. & Fr. : Aug. - Dec.

Distrib. : Subansiri; 1600-2000 m.

Viburnum simonsii Hook. f. & Thomson in J. Linn. Soc. Bot. 2:177. 1858; Clarke in Hook. f., Fl. Brit. India 3:7. 1880.

Shrubs or small trees. Leaves ovate-elliptic to lanceolate, coriaceous, subentire to denticulate; tuft of hairs at nerve axils beneath. Flowers white or white with pinkish tinge in terminal, pyramidal, pubescent panicles. Fruits ellipsoid, red.

Fl. & Fr. : March - Oct.

Distrib. : Tirap; in shady places of primary forests.

RUBIACEAE

Acranthera tomentosa R. Brown ex Hook. f., Fl. Brit. India 3:92. 1880.

Shrubs; stems short, hirsute or tomentose. Leaves elliptic or oblanceolate, hirsute. Flowers in subterminal, short peduncled cymes. Berries with persistent calyx lobes.

Fl. & Fr. : July - Oct.

Distrib. : Tirap.

Anthocephalus chinensis (Lamk.) A. Rich. ex Walp., Repert. 2:491. 1843; Bakh. f. in Taxon 19:469. 1970. *Cephalanthus chinensis* Lamk., Encycl. Meth. Bot. 1:678. 1785. *Nauclea cadamba* Roxb., Fl. Ind. 2:121. 1824. *Anthocephalus cadamba* (Roxb.) Miq., Fl. Ind. Bat. 2:135. 1856; Hook. f., Fl. Brit. India 3:23. 1880. *A. indicus* A. Rich. in Mem. Soc. Hist. Nat. Paris 5:237. 1834.

Local name : Roghu (Asm.); Nipang-lulang-asing (Miri).

Large trees up to 30 m high; branches horizontal, forming a crown. Leaves ovate to oblong-elliptic, coriaceous; stipules lanceolate, caducous.

Flowers in terminal, peduncled, solitary globose heads, yellow or orange yellow. Pseudocarps long, fleshy, orange.

Fl. & Fr. : Dec. - Oct.

Distrib. : Kameng, siang, Tjrap; in tropical forests at lower elevations.

Note : Often cultivated for its characteristic horizontal branches and flowers in large beautiful heads. Wood is soft and used for making matchboxes and packing boxes.

Brachytome wallichii Hook. f. in Hooker, Ic. Pl. t. 1088. 1871 & Fl. Brit. India 3:108. 1880.

Shrubs or small trees; branches horizontal. Leaves oblong or ovate-lanceolate, sparsely puberulous beneath. Flowers in axillary branched lax flowered cymes, white. Berries ellipsoid.

Fl. & Fr. : March - Oct.

Distrib. : Kameng, Siang; 600-700 m.

Canthium dicoccum (Gaertn.) Teysmann & Binnendijk, Cat. Herb. Bogor. 113. 1866; Kanjilal *et al.*, Fl. Assam 3:64. 1939. *Psydrax dicoccum* Gaertn., Fruct. t. 26. 1788. *Canthium didymum* Roxb., Fl. Ind. 1:536. 1832; Hook. f., Fl. Brit. India 3:132. 1880.

Large shrubs or trees up to 20 m high. Leaves elliptic, ovate-lanceolate or oblong-lanceolate, glabrous. Flowers in axillary, subsessile or shortly peduncled cymose umbels, white, fragrant. Fruits globose, black purple.

Fl. & Fr. : April - Dec.

Distrib. : Changlang; in moist places of evergreen forests.

Canthium glabrum Blume, Bijdr. 967. 1826; Hook. f., Fl. Brit. India 3:133. 1880.

Local name : Bhela (Asm.).

Evergreen trees up to 20 m high; branches glabrous, upper ones compressed. Leaves elliptic, ovate-oblong or oblong-lanceolate, glabrous. Flowers

in short peduncled cymes, greenish white. Fruits globose or ellipsoid with 2 trigonous pyrenes.

Fl. & Fr. : July - March.

Distrib. : Kameng, Siang; 1500-1800 m, in tropical primary forests.

Catunaregam nutans (DC.) Tiruveng. in Nord. J. Bot. 3:456. 1983. *Randia nutans* DC., Prodr. 4:386. 1830. *R. dumetorum* auct. non Lamk.: Hook. f., Fl. Brit. India 3:110. 1880, *p.p.*

Rigid shrubs; spines stout, horizontal. Leaves obovate, glabrous or softly puberulous; stipules ovate. Flowers solitary or rarely 2-3 together, greenish yellow or white. Berries globose, yellow, crowned with persistent calyx-limb.

Fl. & Fr. : March - Nov.

Distrib. : Kameng; 500-1200 m, in moist tropical forests.

Catunaregam uliginosa (Retz.) Sivarajan, Fl. Calicut 132. 1982. *Gardenia uliginosa* Retz., Obs. Bot. 2:14. 1781. *Randia uliginosa* (Retz.) Poiret in Lamk., Encycl. Meth. Bot. Suppl. 2:829. 1811; Hook. f., Fl. Brit. India 3:110. 1880. *Xeromphis uliginosa* (Retz.) Maheshwari in Bull. Bot. Surv. India 3:92. 1961. Fig. 124.

Local name : Bon-bongana (Asm.).

Shrubs or small trees; branchlets quadrangular, pubescent. Leaves obovate to oblong, crowded at end of branches; stipules triangular. Flowers solitary, axillary, white. Fruits spherical, yellow.

Fl. & Fr. : May - Sept.

Distrib. : Tirap.

Use : Fruits are edible.

Cephalanthus tetrandra (Roxb.) Ridsdale & Bakh. f. in Blumea 23:182. 1976. *Nauclea tetrandra* Roxb., Fl. Ind. 1:125. 1824. *Cephalanthus naucleoides* DC., Prodr. 4:539. 1830; Hook. f., Fl. Brit. India 3:24. 1880, *excl. syn.* *C. aralioides* Zoll. & Mor. *C. occidentalis* auct. non L. 1753 : Kanjilal *et al.*, Fl. Assam 3:369. 1939.

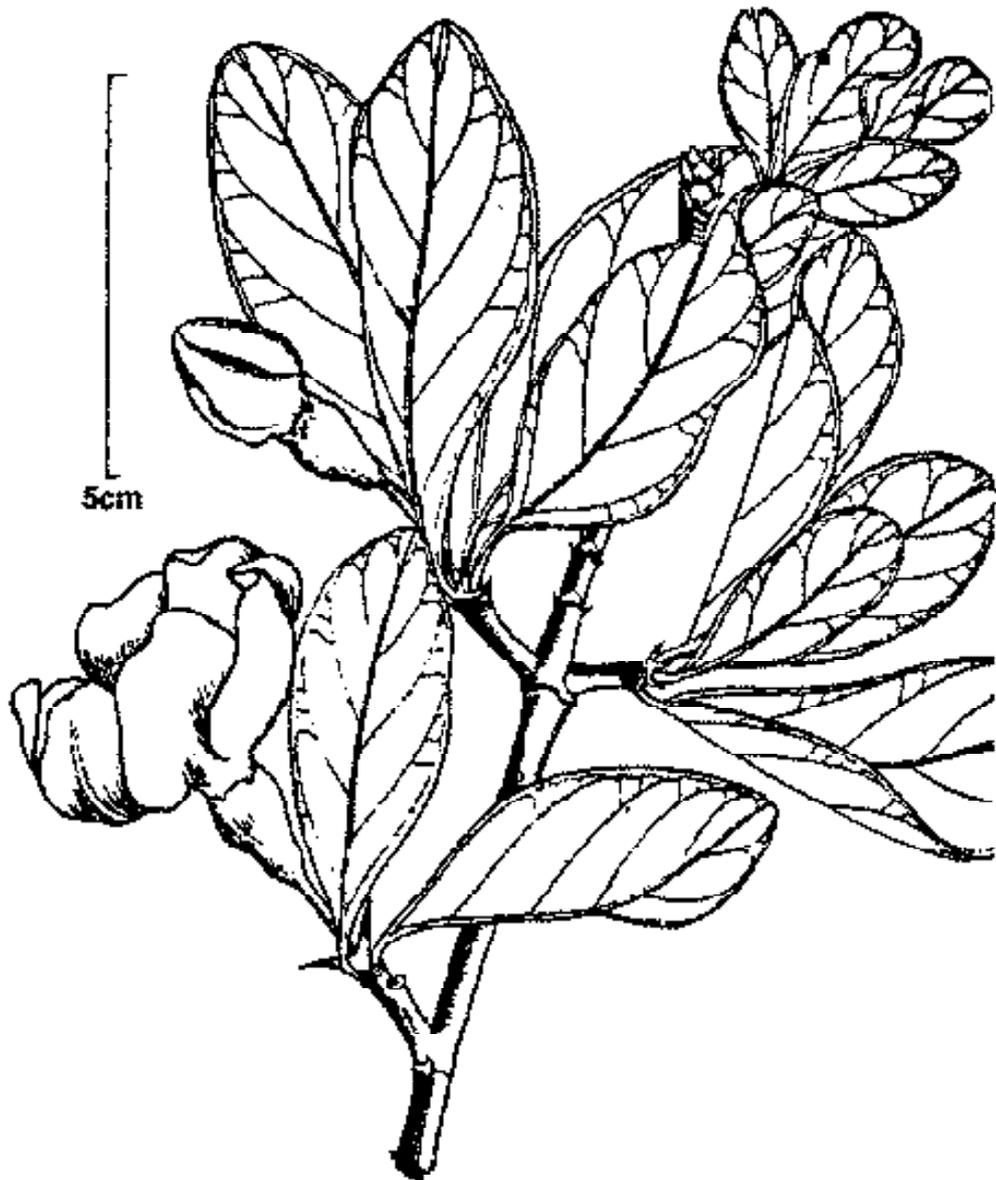


Fig. 124. *Catunaregam uliginosa* (Retz.) Sivaraajan : Flowering twig.

Local name : Panikadam (Asm.).

Small evergreen trees. Leaves opposite or in whorl of 3-4, elliptic to ovate-lanceolate, pubescent beneath; stipules often gland-tipped. Flowers in globose heads, sessile, yellowish, fragrant. Fruits compressed of several 1-seeded cocci.

Fl. & Fr. : March - Dec.

Distrib. : Kameng; 600-1200 m, in moist tropical forests.

Chassalia curviflora (Wallich) Thwaites, Enum. Pl. Zeyl. 150. 1864; Hook. f., Fl. Brit. India 3:176. 1880, p.p. *Psychotria curviflora* Wallich Roxb., Fl. Ind. 1:167. 1824. var. *curviflora*.

Evergreen, weak, glabrous shrubs up to 1.5 m high. Leaves elliptic to ovate-lanceolate or oblanceolate; stipules triangular, entire or bifid, often connate at base, persistent. Flowers in terminal trichotomous cymes, purplish; corolla tube curved. Fruits globose, smooth.

Fl. & Fr. : March - Sept.

Distrib. : Kameng, Lohit, Subansiri; 500-1500 m, inside forests.

Chassalia curviflora var. *ophioxylodes* (Wallich) Deb & Krishna in Bull. Bot. Surv. India 24(1-4) :222. 1983. *Psychotria ophioxylodes* Wallich in Roxb., Fl. Ind. 2:167. 1824. *Chassalia ophioxylodes* (Wallich) Craib in Gard. Bull. Straits Sett. 6:474. 1930.

Shrubs or undershrubs up to 2 m high. Leaves elliptic to ovate-lanceolate. Flowers in terminal, trichotomously branched corymbose panicles, white or pinkish. Fruits globose, black.

Fl. & Fr. : March - Sept.

Distrib. : Kameng, Lohit, Siang, Subansiri; 600-1200 m, inside moist shaded forests.

Coffea arabica L., Sp. Pl. 172. 1753; Kanjilal *et al.*, Fl. Assam 3:74. 1939.

Small or medium sized trees or bushy shrubs. Leaves broadly elliptic to oblanceolate, shining, glabrous. Flowers in axillary fascicles, subtended by foliaceous bracts, white. Drupes oblong, purple when ripe.

Fl. & Fr. : March - Dec.

Distrib. : Tirap.

Use : The seeds yield well known beverage "coffee".

Coffea benghalensis Heyne ex Roem. & Schult., Syst. Veg. 5:200. 1819.
C. bengalensis Roxb., Fl. Ind. 1:540. 1820; Hook. f., Fl. Brit. India 3:153.
1880.

Local name : Akhaji, Kothnaphul (Asm.).

Subscandent shrubs; branchlets compressed. Leaves elliptic to broadly ovate or ovate-lanceolate. Flowers at apices of axillary or terminal branches, white, fragrant; appearing before leaves. Drupes subglobose, blackish.

Fl. & Fr. : Feb. - Nov.

Distrib. : Changlang, Dibang valley, Kameng, Lohit, Siang, Subansiri; 200-2000 m, on moist sandy soil.

Use : Seeds are used as substitute for coffee.

Darnacanthus indicus Gaertn. f., Fl. Fruct. 18, t. 182. 1805; Hook. f., Fl. Brit. India 3:158. 1880.

Small, rigid, spinous shrubs; branches pubescent. Leaves sessile, ovate, glabrous; stipules 3-cuspidate. Flowers axillary, solitary or in pairs, white. Fruits globose, orange.

Fl. & Fr. : July - March.

Distrib. : Changlang, Lohit, Siang; 1500-2200 m, fairly abundant at limited spots.

Dentella repens (L.) J.R. & G. Forst., Char. Gen. Pl. 26, t. 13. 1776; Hook. f., Fl. Brit. India 3:42. 1880. *Oldenlandia repens* L., Mant. Pl. 1:40. 1767, non Burm. f. 1768. *Hedyotis repens* Lamk., Encycl. Meth. Bot. 1:171. 1791.

Prostrate herbs, rooting at nodes. Leaves elliptic or obovate, spatulate, glabrous, often ciliate; stipules connate. Flowers axillary, solitary, minute, white. Fruits globose, hispid.

Fl. & Fr. : May - Aug. ☞

Distrib. : Kameng; in open moist, waste places.

Fagerlindia fasciculata (Roxb.) Tiruveng. in Nord. J. Bot. 3:458. 1983.
Posoqueria fasciculata Roxb., Fl. Ind. 2:568. 1824. *Randia fasciculata*
 (Roxb.) DC., Prodr. 4:386. 1830; Hook. f., Fl. Brit. India 3:109. 1880.
Oxyceros fasciculata (Roxb.) Yamazaki in J. Jap. Bot. 45. 340. 1970.

Local name : Pulikaint (Asm.).

Shrubs or medium sized trees; branchlets drooping, pubescent, often with axillary spines. Leaves elliptic or ovate, glabrous. Flowers in long terminal cymes, yellow or yellowish white. Fruits globose, pinkish black.

Fl. & Fr. : May - Dec.

Distrib. : Changlang, Kameng, Siang; 600-1200 m.

Galium aparine L. var. *echinospermum* (Wallroth) Cufodontis in Oesterr. Bot. Zeits. 89:245. 1940; Hara & Gould in Hara *et al.*, Enum. Fl. Pl. Nep. 2:201. 1979. *G. agreste* var. *echinospermon* Wallroth, Sched. Crit. Fl. Halem 59. 1822. *G. aparine auct. non L.* 1753 :Hook. f., Fl. Brit. India 3:205. 1881.

Small, climbing, scabrid herbs; stems and branches quadrangular. Leaves sessile, 8 in a whorl, narrowly obovate-oblong, pubescent. Flowers in axillary peduncles, 3-flowered, greenish. Fruits hooked bristled.

Fl. & Fr. : May - Sept.

Distrib. : Kameng; 2500-3000 m.

Galium asperifolium Wallich in Roxb., Fl. Ind. 1:381. 1820; Yamazaki in Hara, Fl. E. Himal. 308. 1966. *G. mollugo auct. non L.* 1753 :Hook. f., Fl. Brit. India 3:207. 1881.

Scandent or rambling herbs; stems quadrangular, scabrous. Leaves sessile or shortly petioled, linear, oblanceolate or elliptic, scabrous. Flowers in axillary or terminal, many flowered cymes, minute, white or yellowish brown. Fruits glabrous, verrucose, reddish brown on ripening.

Fl. & Fr. : July - Nov.

Distrib. : Changlang, Kameng, Subansiri, Tirap; common along pathways and in rock crevices at higher elevations.

Galium asperuloides Edgew. in Trans. Linn. Soc. London 20:61. 1846; Hara & Gould in Hara *et al.*, Enum. Fl. Pl. Nep. 2:201. 1979. *G. triflorum* auct. non Michx. :Hook. f., Fl. Brit. India 3:205. 1881. subsp. *asperuloides*.

Small, decumbent, annual herbs up to 50 cm tall. Leaves sessile, 6 in whorl at each node, narrowly elliptic to lanceolate, penninerved. Flowers in axillary or terminal, few flowered cymes, white. Fruits covered with hooked bristles.

Fl. & Fr. : May - Oct.

Distrib. : Kameng, Subansiri; 2200-3200 m, on moist rocks.

Galium asperuloides subsp. *hoffmeisteri* (Klotz.) Hara in Hara *et al.*, Enum. Fl. Pl. Nep. 2:201. 1979. *Asperula hoffmeisteri* Klotz., B.Reise Pr. Walden 87, t. 75. 1862. *Galium triflorum* Michx. var. *hoffmeisteri* (Klotz.) Hook. f., Fl. Brit. India 3:205. 1881.

The subspecies differs by ovate-spathulate leaves, rounded at tips.

Fl. : Jan. - March.

Distrib. : Siang, 200-300 m.

Galium elegans Wallich in Roxb., Fl. Ind. 1:382. 1824; Yamazaki in Hara, Fl. E. Himal. 308. 1966. *G. rotundifolium* auct. non L. 1753 :Hook. f., Fl. Brit. India 3:204. 1881.

Scandent, diffuse, perennial herbs; branches quadrangular, hairy. Leaves elliptic-oblong or ovate-lanceolate, hairy, 3-nerved. Flowers in terminal cymes, yellowish or yellowish green. Fruits reddish when ripe, covered with hooked hairs.

Fl. & Fr. : July - Nov.

Distrib. : Kameng, Subansiri; 1200-2000 m, in primary forests as undergrowth, along forest margins.

Gardenia campanulata Roxb., Fl. Ind. 1:710. 1832; Hook. f., Fl. Brit. India 3:118. 1880.

Local name : Bitmara (Asm.).

Shrubs or small trees up to 8 m high; branches puberulous, spinescent. Leaves elliptic-obovate or oblanceolate, glabrous; stipules triangular. Flowers dimorphic; male flowers in fascicles, bisexual flowers usually solitary, campanulate. Fruits globose or ellipsoid.

Fl. & Fr. : March - Dec.

Distrib. : Kameng, Siang. Rare.

Use : Fruits are edible.

Haldina cordifolia (Roxb.) Ridsdale in Blumea 24. 361. 1978. *Nauclea cordifolia* Roxb., Pl. Corom. 1:40. 1795. *Adina cordifolia* (Roxb.) Hook. f. ex Brandis, For. Fl. N.W. & C. India 263. 1874; Hook. f., Fl. Brit. India 3:24. 1880.

Local name : Tarakchapa (Asm.).

Large trees with lax, spreading crown, up to 35 m high. Leaves ovate or ovate-orbicular, cordate, abruptly acuminate, greyish pubescent beneath, deciduous; stipules broadly ovate or orbicular. Flowers in globose, axillary, pedunculate heads, yellow or pinkish yellow. Capsules aggregate, downy.

Fl. & Fr. : April - Dec.

Distrib. : Kameng; 500-1200 m, in primary forests.

Use : Wood is yellow and used for furniture.

Hedyotis auricularia L., Sp. Pl. 101. 1753; Hook. f., Fl. Brit. India 3:58. 1880; Rao & Hemadri in Ind. For. 99:375. 1973. *Oldenlandia auricularia* (L.) K. Schum. in Engler & Prantl, Pflanzenfam. 4(4):25. 1891. *Exallage auricularia* (L.) Bremek. in Verh. Kon. Ned. Akad. Wet. II. 48(2):142. 1952.

Annual, decumbent or creeping herbs. Leaves sessile, ovate or ovate-lanceolate, glabrous or pubescent. Flowers in axillary, sessile or shortly peduncled cymes, white or greenish yellow. Capsules globose, sparsely hairy, brownish green.

Fl. & Fr. : June - March.

Distrib. : Kameng; common in open places.

Hedyotis brunnis Merr. in Philipp. J. Sci. Bot. 60:35. 1936. *H. monocephala* R. Brown ex Hook. f., Fl. Brit. India 3:63. 1880, non Miq. 1869.

Slender, annual herbs ca 1 m high; branches quadrangular, grooved, dark brown when dry, hairy along ridges. Leaves elliptic-lanceolate, sessile or shortly petioled; stipules recurved, toothed or bristled. Flowers usually in terminal, capitate, sessile cymes, white. Fruits many seeded.

Fl. & Fr. : Feb. - May.

Distrib. : Kameng; along roadsides.

Hedyotis corymbosa (L.) Lamk., Encycl. Meth. Bot. 1:272. 1791; Yamazaki in Hara, Fl. E. Himal. 309. 1966. *Oldenlandia corymbosa* L., Sp. Pl. 119. 1753; Hook. f., Fl. Brit. India 3:64. 1880.

Profusely branched annual herbs, 10-50 cm high; branches quadrangular, glabrous or hairy. Leaves narrowly elliptic to elliptic-lanceolate; stipules incised. Flowers in axillary, 1-4 flowered, pedunculate cymes or fascicles, white or pale purple. Capsules didymous, subglobose or ovoid.

Fl. & Fr. : April - Nov.

Distrib. : Subansiri; 1000-2000 m, in moist waste places, rice fields, along forest edges and roadsides.

Hedyotis costata (Roxb.) Kurz in J. Asiat. Soc. Bengal 45(2):135. 1876. *Spermacoce costata* Roxb., Fl. Ind. 1:376. 1820; Deb, Fl. Tripura State 2:54. 1983. *Hedyotis vestita* R. Brown ex G. Don, Gen. Syst. 3:526. 1834; Hook. f., Fl. Brit. India 3:58. 1880.

Annual, diffuse, villous herbs, 30-60 cm high. Leaves elliptic-lanceolate, scabrid along margin. Flowers in crowded, axillary, trichotomous cymes, lilac or greenish white. Capsules globose, hard, hairy.

Fl. & Fr. : Aug. - Dec.

Distrib. : Kameng, Subansiri, Tirap; 400-1200 m, in open grasslands, along forest edges and roadsides.

Hedyotis diffusa Willd., Sp. Pl. 1:566. 1797; Yamazaki in Hara, Fl. E. Himal. 309. 1966. *Oldenlandia diffusa* (Willd.) Roxb., Fl. Ind. 1:444. 1820; Hook. f., Fl. Brit. India 3:65. 1880.

Diffuse, glabrous herbs, profusely branched, up to 20 cm high. Leaves linear or linear-lanceolate, subsessile, scabrid. Flowers axillary, solitary or in pairs, white. Capsules didymous.

Fl. & Fr. : May - Sept.

Distrib. : Kameng, Subansiri, Tirap; at lower elevations along roadsides and in moist waste places.

Hedyotis glabra (Roxb.) Miq., Fl. Ind. Bat. 2:183. 1857; Hook. f., Fl. Brit. India 3:59. 1880. *Spermacoce glabra* Roxb., Fl. Ind. 1:368. 1820. *Knoxia glabra* (Roxb.) DC., Prodr. 4:569. 1830.

Diffuse or subscandent shrubs, 50-100 cm long, glabrous or hispid along furrows. Leaves ovate-lanceolate to linear-lanceolate, subsessile, sparsely pubescent along nerves beneath. Flowers in axillary cymose panicles, white. Capsules globose, indehiscent.

Fl. & Fr. : Aug. - Feb.

Distrib. : Subansiri; 400-600 m, in open places along river banks.

Hedyotis herbacea L., Sp. Pl. 102. 1753; Rao & Hemadri in Ind. For. 99:376. 1973. *Oldenlandia herbacea* (L.) Roxb., Fl. Ind. 1:424. 1820. *O. heyneii* R. Brown ex G. Don, Gen. Syst. 3:531. 1834; Hook. f., Fl. Brit. India 3:65. 1880.

Annual, prostrate or erect herbs. Leaves linear or linear-lanceolate. Peduncles solitary, capillary, 1-flowered, white. Capsules didymous, globose or ovoid.

Fl. & Fr. : Aug. - Sept.

Distrib. : Subansiri; in moist places at lower elevations.

Hedyotis macrophylla Wallich ex Wight & Arn., Prodr. Fl. Pen. Ind. Or. 408. 1834; Hook. f., Fl. Brit. India 3:54. 1880.

Annual herbs ca 2 m high; branches quadrangular. Leaves ovate or lanceolate; stipules broad, toothed. Flowers in axillary cymes, white. Capsules minute.

Fl. & Fr. : Aug. - Sept.

Distrib. : Tirap; 100-1400 m, forming large patches in open grasslands.

Hedyotis pumila L. f., Suppl. Pl. 119. 1781; Rao & Hemadri in Ind. For. 99. 377. 1973. *Oldenlandia pumila* (L. f.) DC., Prodr. 4:425. 1830. *O. crystallina* Roxb., Fl. Ind. 1:443. 1820; Hook. f., Fl. Brit. India 3:65. 1880.

Annual or perennial, diffuse herbs. Leaves elliptic or elliptic-lanceolate. Flowers in axillary, solitary peduncles, 1-2 flowered, whitish. Capsules ovoid.

Fl. & Fr. : May - Oct.

Distrib. : Tirap; often forming mat over moist rock surfaces.

Hedyotis scandens Roxb. ex D. Don, Prodr. Fl. Nep. 134. 1825; Hook. f., Fl. Brit. India 3:57. 1880.

Local name : Bhedeli (Asm.).

Perennial, woody, climbing shrubs. Leaves elliptic, oblong or lanceolate; stipules connate into a cup. Flowers in terminal, subumbellate or trichotomous cymes, white or pale yellow. Capsules obovoid, greenish black.

Fl. & Fr. : Aug. - March.

Distrib. : Changlang, Dibang valley, Kameng, Lohit, Siang, Subansiri, Tirap; 500-2400 m, common in moist shady places amidst grasses and along forest edges.

Use : Used as local medicine for gastric trouble, eye disease.

Hedyotis tenelliflora Blume, Bijdr. 971. 1826; Hook. f., Fl. Brit. India 3:60. 1880.

Diffuse undershrubs; branches quadrangular. Leaves linear-lanceolate, sessile. Flowers in few flowered clusters or solitary. Capsules ovoid, glabrous.

Fl. & Fr. : May - Aug.

Distrib. : Kameng; in waste places.

Hedyotis uncinella Hook. & Arn., Bot. Beech. Voy. 192. 1833; Hook. f., Fl. Brit. India 3:56. 1880.

Undershrubs; branches quadrangular. Leaves ovate or ovate-lanceolate. Flowers in cymose panicles, pale white or bluish. Capsules broadly ovoid.

Fl. & Fr. : July - March.

Distrib. : Kameng; in moist shaded localities.

Hedyotis verticillata (L.) Lamk., Encycl. Meth. Bot. 1:271. 1791; Yamazaki in Hara, Fl. E. Himal. 310. 1966. *Oldenlandia verticillata* L., Mant. Pl. 1:40. 1767. *Hedyotis hispida* Retz., Obs. Bot. 4:23. 1786; Hook. f., Fl. Brit. India 3:60. 1880.

Diffuse, annual, hispid herbs up to 35 cm high. Leaves sessile, lanceolate or linear-lanceolate, hispid beneath. Flowers in axillary clusters, white. Capsules minute, ovoid, hispid.

Fl. & Fr. : June - Dec.

Distrib. : Changlang, Kameng, Tirap; 500-1000 m, amongst grasses and in open places particularly in Jhum land.

Himalrandia tetrasperma (Wallich ex Roxb.) Yamazaki in J. Jap. Bot. 45:340. 1970. *Gardenia tetrasperma* Wallich ex Roxb., Fl. Ind. 2:559. 1824. *Randia tetrasperma* Roxb. ex Hook. f., Fl. Brit. India 3:109. 1880. *Adina tetrasperma* (Roxb.) Yamazaki in Hara, Fl. E. Himal. 1:307. 1966.

Small, rigid, erect shrubs ca 1 m high; branches subspinescent. Leaves ovate to oblanceolate, glabrous. Flowers solitary, greenish white or greenish yellow, fragrant. Berries globose, purple.

Fl. & Fr. : May - Sept.

Distrib. : Kameng; 1800-2200 m.

Hymenodictyon excelsum (Roxb.) Wallich in Roxb., Fl. Ind. 2:149. 1824; Hook. f., Fl. Brit. India 3:35. 1880; Hara in Hara *et al.*, Enum. Fl. Pl.

Nep. 2:203. 1979. *Cinchona excelsa* Roxb., Pl. Corom. 2:4, t. 106. 1799. *C. thyriflora* Roxb., Fl. Ind. 2:151. 1824.

Local name : Kodom, Bhurkundi (Asm.).

Medium sized deciduous trees, crown with horizontal branches. Leaves elliptic, ovate or oblong, greyish tomentose beneath. Flowers in terminal, branched panicles, white, fragrant. Capsules ellipsoid, reddish.

Fl. & Fr. : June - Dec.

Distrib. : Kameng; in deciduous forests.

Use : Wood is used for packing-boxes and match spints. Bark is medicinal and used in tanning.

Hymenopogon assamicus Hook. f., Fl. Brit. India 3:34. 1880.

Small straggling shrubs. Leaves lanceolate or elliptic-lanceolate, glabrous; stipules ovate, persistent. Flowers in branched terminal racemes, peduncles longer than leaves, whitish; bracts large, white, leafy, distinctly reticulate, persistent. Capsules crowned with calyx-lobes.

Fl. & Fr. : May - Oct.

Distrib. : Kameng; 500-1500 m, in primary forests.

Hyptianthera stricta (Roxb.) Wight & Arn.; Prodr. Fl. Pen. Ind. Or. 399. 1834; Hook. f., Fl. Brit. India 3:121. 1880. *Randia stricta* Roxb., Fl. Ind. 2:145. 1824.

Profusely branched shrubs. Leaves linear-lanceolate to elliptic; sparsely pubescent on nerves beneath; stipules persistent. Flowers in axillary, dense cymes, white. Berries globose, black.

Fl. & Fr. : April - Dec.

Distrib. : Kameng, Subansiri; 300-1000 m, along forest margins.

Ixora acuminata Roxb., Fl. Ind. 1:383. 1832; Hook. f., Fl. Brit. India 3:137. 1880. Fig. 125.

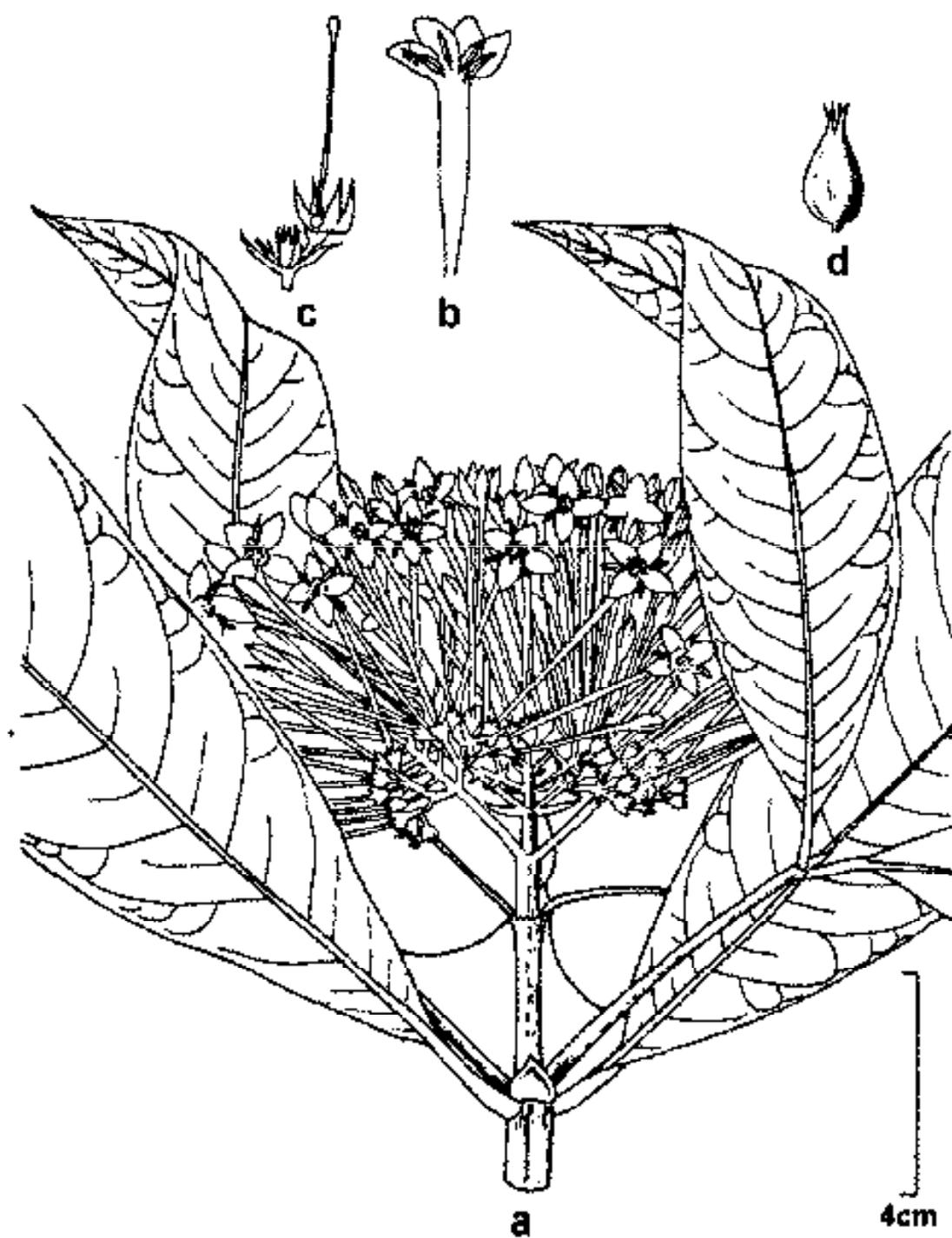


Fig. 125. *Ixora acuminata* Roxb. : a. Flowering twig; b. Corolla (dissected); c. Gynoecium with calyx; d. Fruit.

Bushy shrubs; branches ribbed. Leaves elliptic or obovate-oblong, coriaceous, glabrous; stipules broad, subacute. Flowers in subsessile or shortly peduncled corymbs, white, fragrant. Drupes ovoid or ellipsoid with persistent calyx-teeth.

Fl. & Fr. : April - Jan.

Distrib. : Kamang, Siang; up to 600 m, forest undergrowth.

Use : Infusion of tender twigs mixed with salt and *Piper nigrum* is given in fever.

Ixora cuneifolia Roxb. ex Hook. f., *Fl. Brit. India* 3:144. 1880.

Fig. 126.

Evergreen shrubs. Leaves elliptic-lanceolate to oblong-lanceolate, glabrous or minutely puberulous beneath. Flowers in terminal, short peduncled cymes, articulate at forking, pubescent, reddish, fragrant. Fruits globose or ellipsoid red.

Fl. & Fr. : April - Dec.

Distrib. : Kamang; 500-1200 m, forest undergrowth.

Ixora nigricans R. Brown ex Wight & Arn., *Prodr. Fl. Pen. Ind. Or.* 428: 1834; Hook. f., *Fl. Brit. India* 3:148. 1880; Bremekamp in *J. Bot.* 75:296. 1937. *I. nigricans* var. *arguta* Hook. f., *Fl. Brit. India* 3:149. 1880. *I. erubescens* Wallich ex G. Don, *Gen. Syst.* 3:571. 1834; Hook. f., *Fl. Brit. India* 3:140. 1880, *excl. syn. I. memecylifolia* Kurz.

Small trees or tall shrubs. Leaves elliptic-oblong to elliptic-lanceolate, stipules cuspidate. Flowers in lax paniculate cymes, white. Fruits subglobose, black.

Fl. & Fr. : April - Nov.

Distrib. : Changlang, Lohit.

Ixora subsessilis Wallich ex G. Don, *Gen. Syst.* 3:573. 1834; Hook. f., *Fl. Brit. India* 3:139. 1880.

Shrubs or small trees with pendulous branches, 1.5-3 m high. Leaves elliptic-lanceolate to oblanceolate; stipules sheathing. Flowers in terminal,

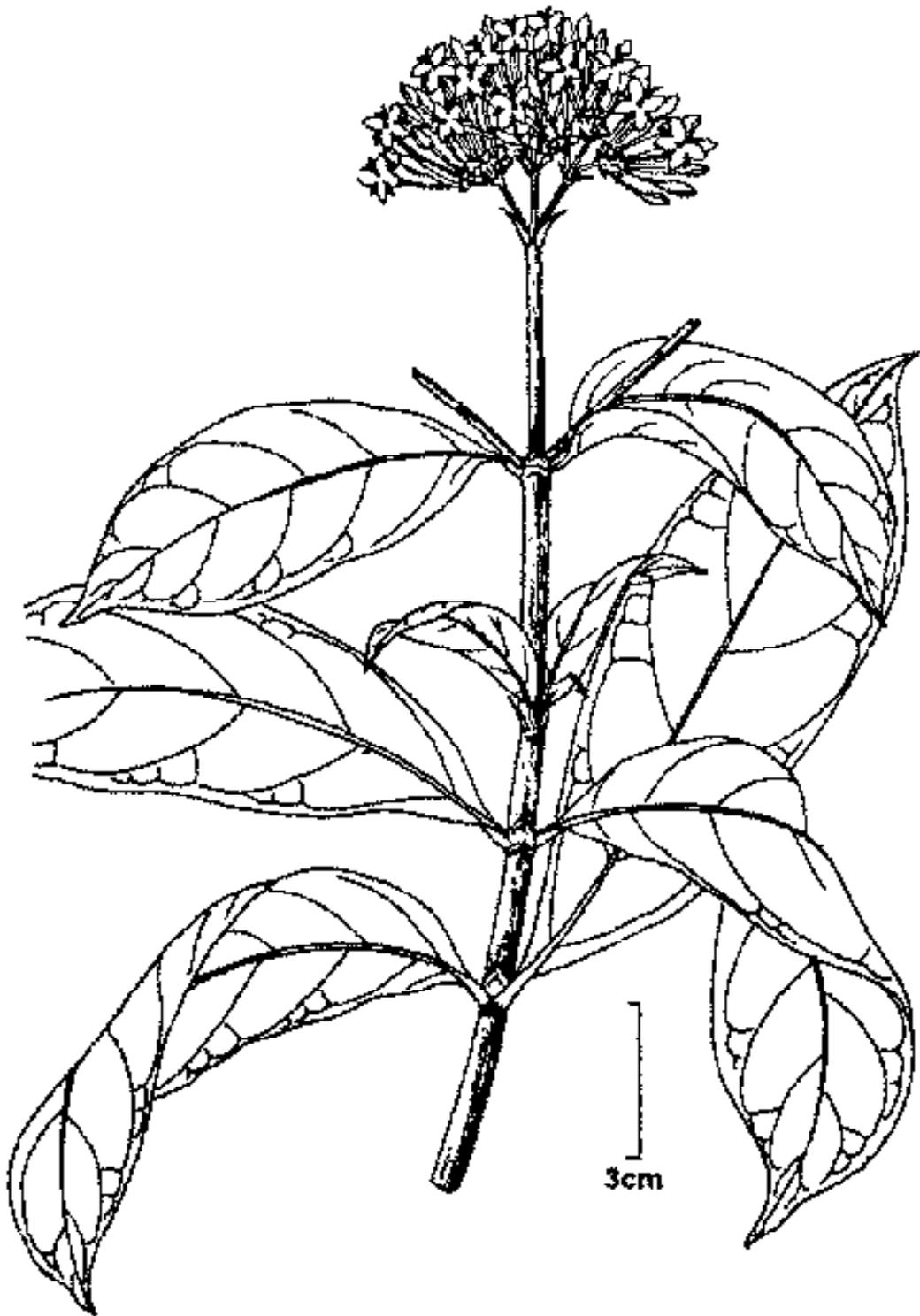


Fig. 126. *Ixora cuneifolia* Roxb. ex Hook. f. : a. Flowering twig; b. Flower (dissected); c. Fruit.

subsessile corymbiform cymes, white with pinkish tinge. Drupes oblong, pinkish when ripe or dull red.

Fl. & Fr. : April - Dec.

Distrib. : Changlang, Kameng, Siang, Subansiri; 400-1400 m, on shady forest floor or sometimes in forest openings amidst grasses.

Ixora undulata Roxb., *Fl. Ind.* 1:385. 1832; Hook. f., *Fl. Brit. India* 3:147. 1880.

Large shrubs or small trees, 3-8 m high. Leaves elliptic to linear-lanceolate, glabrous, margin undulate. Flowers in laxly fascicled or branched corymbose cymes, white. Fruits ellipsoid, bright red when ripe.

Fl. & Fr. : May - Sept.

Distrib. : Kameng; on moist sandy soil.

Khasiaculnea oligocephala (Havil.) Ridsdale in *Blumea* 24:347. 1978. *Adina oligocephala* Havil. in *J. Linn. Soc. Bot.* 33:46. 1897; Brandis, *Indian trees* 368. 1906.

Medium sized trees. Leaves oblong or elliptic, sparsely puberulous beneath. Flowers in axillary or terminal, trichotomous paniced heads. Capsules obovoid.

Fl. & Fr. : Jan. - April.

Distrib. : Kameng.

Knoxia sumatrensis (Retz.) DC., *Prodr.* 4:569. 1830; Deb in *Fl. Tripura State* 2:63. 1983. *Spermacoce sumatrensis* Retz. *Obs. Bot.* 4:23. 1786. *Knoxia corymbosa* Willd., *Sp. Pl.* 1:582. 1797; Hook. f., *Fl. Brit. India* 3:128. 1880.

Herbs, 30-60 cm high; stems obscurely angled with 2 lines of hairs. Leaves linear-lanceolate or lanceolate, pubescent; stipules connate into a bristly sheath. Flowers in terminal, corymbiform cymes, white. Fruits ellipsoid, quadrangular.

Fl. & Fr. : Oct. - Jan.

Distrib. : Changlang, Kameng, Siang, Subansiri; at lower elevations, in moist places.

Lasianthus hiemannii King ex Hook. f., Fl. Brit. India 3:190. 1880.

Shrubs or small trees, 3-5 m high; branches horizontal. Leaves elliptic or lanceolate, strigose along nerves beneath. Flowers in axillary pedunculate cymes, bluish; corolla lobes villous. Fruits subglobose, pale blue.

Fl. & Fr. : March - Dec.

Distrib. : Changlang, Kameng, Siang, Subansiri, Tirap; 700-2300 m, in primary forests.

Lasianthus hookeri Clarke ex Hook. f., Fl. Brit. India 3:184. 1880.

Shrubs or small trees up to 6 m high with pendulous or horizontal branches. Leaves elliptic to oblong-lanceolate, strigose beneath. Flowers in axillary sessile, cymose clusters, white or greenish white. Fruits subglobose, green.

Fl. & Fr. : March - Jan.

Distrib. : Changlang, Kameng, Subansiri; usually along streams.

Lasianthus longicauda Hook. f., Fl. Brit. India 3:190. 1880.

Local name : Santupaya (Apat.).

Bushy shrubs, 3-4 m high. Leaves lanceolate, long caudate-acuminate, glabrous. Flowers in axillary, short peduncled cymes, white or bluish white. Fruits globose, blue violet on ripening.

Fl. & Fr. : Aug. - Jan.

Distrib. : Lohit, Subansiri.

Use : Fruit extract is used as gum for praying birds.

Lasianthus lucidus Blume, Bijdr. 997. 1826; Hook. f., Fl. Brit. India 3:184. 1880.

Shrubs or small trees up to 5 m high. Leaves lanceolate or ovate-lanceolate, caudate-acuminate, sparsely hairy beneath. Flowers in sessile or subsessile, axillary cymes, white. Fruits globose, pale blue.

Fl. & Fr. : Feb. - Dec.

Distrib. : Changlang, Subansiri; 300-1000 m, forest undergrowth or on tree trunks associated with mosses.

Lasianthus sikkimensis Hook. f., *Fl. Brit. India* 3:180. 1880.

Undershrubs, 2-3 m high. Leaves lanceolate or oblong-lanceolate, tomentose beneath. Flowers in axillary, sessile or subsessile cymes, white. Fruits subglobose.

Fl. & Fr. : April - Oct.

Distrib. : Changlang, Tirap; in primary forests.

Lasianthus tubiferus Hook. f., *Fl. Brit. India* 3:183. 1880.

Small, spreading shrubs, 3-5 m high. Leaves elliptic, lanceolate or oblanceolate, hairy beneath. Flowers in axillary, sessile clusters, whitish to pale purple. Fruits ellipsoid, brownish red when ripe.

Fl. & Fr. : Feb. - Dec.

Distrib. : Changlang, Tirap; 500-1500 m, in primary forests.

Lasianthus wallichii Wight in *Calcutta J. Nat. Hist.* 6:503. 1846; Hook. f., *Fl. Brit. India* 3:180. 1880.

Shrubs up to 2 m high; branches villous. Leaves elliptic or lanceolate, glabrous above, hairy beneath. Flowers in axillary, sessile fascicles, white or purplish. Berries globose, blue.

Fl. & Fr. : April - Aug.

Distrib. : Subansiri; 1500-1600 m, in primary forests as undergrowth.

Leptodermis griffithii Hook. f., *Fl. Brit. India* 3:198. 1880.

Rigid, bushy shrubs, 1-3 m high; younger parts pubescent or furfuraceous. Leaves ovate or elliptic, pubescent along nerves beneath. Flowers solitary or fascicled, terminal, almost sessile, whitish or pinkish. Capsules ovoid, brown.

Fl. & Fr. : May - Nov.

Distrib. : Kameng; 1000-2000 m, on dry slopes and in rock crevices.

Leptodermis lanceolata Wallich in Roxb., Fl. Ind. 2:191. 1924; Hook. f., Fl. Brit. India 3:198. 1881.

Rigid, erect shrubs; branches glabrous or hispid. Leaves elliptic or elliptic-lanceolate, puberulous or hispid. Flowers in terminal fascicles or on short lateral branches, white or light violet. Capsules cylindrical, truncate.

Fl. & Fr. : Sept. - March.

Distrib. : Kameng.

Luculia grandifolia Ghose in Bengal Nat. Hist. Soc. 25(8):156. 1952; Naithani & Bennet in Ind. J. For. 4(2):163. 1981.

Shrubs up to 2 m high; branches profusely lenticelled. Leaves large, elliptic. Flowers in corymbs, pinkish.

Fl. & Fr. : Sept. - Feb.

Distrib. : Kameng; 800-1200 m, in primary forests.

Luculia gratissima Sweet, Brit. Fl. Gard. t. 145. 1826; Hook. f., Fl. Brit. India 3:36. 1880; Cowan, Tr. North Bengal 76. 1929.

Spreading shrubs, 3-5 m high. Leaves elliptic to oblanceolate, often pubescent beneath. Flowers in many flowered, subsessile pubescent corymbs, pink. Capsules woody, obovoid, 2-valved.

Fl. & Fr. : Oct. - March.

Distrib. : Lohit, Subansiri; 1500-2000 m, in primary forests.

Luculia pinceana Hooker in Curtis, Bot. Mag. ser. 3. 1, t. 4132. 1845; Hook. f., Fl. Brit. India 3:37. 1880.

Shrubs or small trees up to 8 m tall. Leaves oblanceolate or elliptic-lanceolate. Flowers in terminal or axillary, glabrous, corymbose cymes, pink or pinkish white, fragrant. Capsules ovoid-ellipsoid, black.

Fl. & Fr. : Aug. - Feb.

Distrib. : Dibang valley, Kameng, Lohit, Siang; 1100-1800 m, in primary forest.

Meyna laxiflora Robins. in Bull. Jard. Bot. Brux. 11:228. 1928. *Vangueria spinosa* auct. non Roxb. 1824 :Hook. f., Fl. Brit. India 3:136. 1880, p.p.

Medium sized trees ca 10 m high. Leaves ovate-elliptic, pubescent at nerve axils beneath. Flowers in axillary, shortly peduncled cymes or fascicles, greenish white. Drupes yellowish when ripe.

Fl. & Fr. : April - Nov.

Distrib. : Kameng, Tirap; at lower elevation.

Meyna spinosa Roxb. ex Link in Jahrb. Cewachsk 1(3):32. 1820; Yamazaki in Hara, Fl. E. Himal. 312. 1966. *Vangueria spinosa* Roxb., Fl. Ind. 2:172. 1824; Hook. f., Fl. Brit. India 3:186. 1880, p.p.

Local name : Ketkora, Mon (Asm.).

Shrubs or small trees; spines supra-axillary. Leaves ovate-elliptic, glabrous or sparsely pilose beneath. Flowers in axillary or supra-axillary, short peduncled cymes, white. Drupes globose, green.

Fl. & Fr. : April - Dec.

Distrib. : Kameng, Siang.

Mitracarpus verticillatus (Schum. & Thonn.) Vatke in Linnaea 40:196. 1876; Sebastine & Rammamurthy in Bull. Bot. Surv. India 9:291. 1967. *Staurospermum verticillatum* Schum. & Thonn. Beskr. Guin. Pl. 73. 1827.

Local name : Talu (Hill - Miri).

Erect herbs up to 60 cm tall; younger parts sparsely puberulous. Leaves sessile, elliptic-lanceolate, lanceolate or oblong, puberulous beneath; stipules

linear-ciliate, connate with leaf base. Flowers verticillate in axillary fascicles or clusters, white. Capsules brown with a stalk.

Fl. & Fr. : Aug. - April.

Distrib. : Subansiri; 200-1000 m, common in open waste lands and along roadsides.

Morinda angustifolia Roxb., Pl. Corom 3(2):t. 237. 1815. and Fl. Ind. 1:547. 1820; Hook. f., Fl. Brit. India 3:156. 1880.

Local name : Asugoch, Asu (Asm.).

Shrubs or small trees up to 10 m high. Leaves elliptic-oblong to oblanceolate, narrowed into the petiole, glabrous or sparsely hairy along nerves beneath. Flowers in axillary cymes or leaf-opposed globose heads, white, fragrant; corolla tube long. Fruits turbinate, bluish white turning blackish.

Fl. & Fr. : Feb. - Oct.

Distrib. : Changlang, Kameng, Tirap; in tropical forests at lower altitudes.

Morinda pubescens Smith in Rees, Cyclop. 24. n. 3. 1813; Verdcourt in Kew Bull. 37:543. 1983. *M. tomentosa* Roth, Nov. Pl. Sp. 147. 1821; Santapau & Merchant in Bull. Bot. Surv. India 3:108. 1916. *M. tinctoria* Roxb. var. *tomentosa* Hook. f., Fl. Brit. India 3:156. 1880.

Bushy shrubs. Leaves elliptic, tomentose beneath. Flowers in leaf opposed, pedunculate globose heads, white; corolla tube long. Fruits globose.

Fl. & Fr. : March - Oct.

Distrib. : Kameng; 500-1500 m, in primary forests.

Morinda umbellata L., Sp. Pl. 176. 1753; Hook. f., Fl. Brit. India 3:157. 1880.

Scandent shrubs; branches subquadrangular. Leaves elliptic, lanceolate or obovate-lanceolate. Flowers in terminal umbels, white; corolla tube short. Fruits pyriform, irregularly lobed, orange red.

Fl. & Fr. : March - Oct.

Distrib. : Tirap; along edges of primary forests.

Morinda villosa Hook. f., Fl. Brit. India 3:158. 1880; Kanjilal *et al.*, Fl. Assam 3:80. 1939.

Climbing shrubs; branches more or less hirsute. Leaves elliptic to elliptic-lanceolate, pubescent above, hirsute beneath. Flowers in terminal, long pedunculate umbels, white; corolla tube short. Drupes confluent, reddish.

Fl. & Fr. : April - Oct.

Distrib. : Kameng, Tirap; 500-800 m, in primary forests.

Mussaenda frondosa L., Sp. Pl. 177. 1753; Hook. f., Fl. Brit. India 3:89. 1880; Jayaweera in J. Arn. Arb. 44. 236. 1963. *M. frondosa* var. *ingrata* Hook. f., Fl. Brit. India 3:89. 1880. *M. tomentosa* Wight ex Hook. f., Fl. Brit. India 3:88. 1880. *M. villosa* Wallich ex Hook. f., Fl. Brit. India 3:91. 1880.

Scandent shrubs, 3-5 m high; younger parts hirsute. Leaves variable, ovate, elliptic or oblong, tomentose beneath; stipules simple or bifid. Flowers in terminal cymes, yellow or orange; petaloid sepals white. Berries globular.

Fl. & Fr. : June - Nov.

Distrib. : Tirap; in moist shady places.

Mussaenda glabra Vahl, Symb. Bot. 3:38. 1790; Hook. f., Fl. Brit. India 3:90. 1880.

Local name : Charai-atha, Sonarupa (Asm.); Charbu-taru (Daff.).

Scandent or climbing shrubs, 2-3 m high, glabrous. Leaves oblong or elliptic-lanceolate; stipules simple or bifid. Flowers in terminal cymes, yellow or orange; petaloid sepals yellowish white. Berries globose, red.

Fl. & Fr. : May - Dec.

Distrib. : Changlang, Kameng, Lohit, Siang, Subansiri, Tirap; 600-1500 m, in primary forests amongst bamboos.

Mussaenda incana Wallich Roxb., Fl. Ind. 2:229. 1824; Hook. f., Fl. Brit. India 3:87. 1880.

Undershrubs; branches densely hairy. Leaves ovate, villous; stipules triquetrous, glabrous. Flowers in densely hairy, terminal, corymbose cymes, pale yellow; petaloid sepals creamy or yellowish white. Berries globose, pubescent when young.

Fl. & Fr. : May - Oct.

Distrib. : Changlang, Subansiri; 6--1200 m, in moist places.

Mussaenda macrophylla Wallich Roxb., Fl. Ind. 2:228. 1824; Hook. f., Fl. Brit. India 3:89. 1880.

Erect or subscandent shrubs up to 3 m high; branches pubescent. Leaves elliptic or elliptic-lanceolate, densely hairy; stipules simple or bifid, often recurved. Flowers in terminal, compact, trichotomous nearly villous cymes, yellow or orange yellow; petaloid sepals white. Berries broadly ellipsoid, dark purple, hairy.

Fl. & Fr. : May - Dec.

Distrib. : Changlang, Kameng, Siang, Subansiri, Tirap; 600- 1200 m, on moist hilly slopes and along streams.

Mussaenda roxburghii Hook. f., Fl. Brit. India 3:87. 1880.

Local name : Akshap (Abor); Tangmeng (Adi).

Erect, spreading shrubs, 3-5 m high; branches hairy. Leaves elliptic to oblong-lanceolate, hairy beneath; stipules triangular. Flowers hairy in terminal, dense subcapitate cymes, orange yellow; petaloid sepals white. Berries globose, glabrous.

Fl. & Fr. : April - Nov.

Distrib. : Kameng, Siang, Subansiri, Tirap; 450-1500 m, common in moist places of forests, forest edges.

Use : Leaves are used as vegetable.

Mussaenda wallichii D. Don, Gen. Syst. 3:490. 1834; Hook. f., Fl. Brit. India 3:88. 1880.

Glabrous, robust shrubs. Leaves elliptic-ovate or lanceolate, pubescent along nerves beneath; stipules gradually narrowed from base, often bifid. Flowers in lax-flowered, glabrous cymes; petaloid sepals white. Berries globose or subglobose.

Fl. & Fr. : May - Dec.

Distrib. : Tirap.

Mycetia listeri Deb in Blumea 14(1):241. 1966 & in Bull. Bot. Surv. India 28 (1-4):120. 1988.

Small shrubs up to 2 m high; branches pubescent when young. Leaves broadly linear. Flowers in axillary or terminal cymose panicles, white. Berries ovoid.

Fl. & Fr. : Jan. - June.

Distrib. : Kameng, Subansiri; 250-1200 m.

Mycetia longifolia (Wallich) O. Ktze., Rev. Gen. Pl. 289. 1891; Yamazaki in Hara Fl. E. Himal. 312. 1966. *Rondeletia longifolia* Wallich in Roxb., Fl. Ind. 2:137. 1824, p.p. *Adenosacme longifolia* Wallich ex Hook. f., Fl. Brit. India 3:95. 1880, p.p.

Local name : Tangmge (Adi).

Springly branched shrubs up to 3 m high; branches tetragonal, young parts puberulous. Leaves elliptic to elliptic-lanceolate, pubescent beneath. Flowers in terminal or axillary cymose panicles, yellow. Berries globose, white.

Fl. & Fr. : May - Jan.

Distrib. : Changlang, Dibang valley, Kameng, Lohit, Siang, Subansiri, Tirap; 700-1800 m, in primary forests and along streams.

Use : Leaves are cooked and eaten as vegetables.

Mycetia mukherjiana Deb & Dutta in Ind. For. 91(5):272, t. 1. 1965.

Semideciduous, small shrubs up to 60 cm high. Leaves anisophyllous, elliptic or lanceolate, glabrous. Flowers from leafless nodes in congested dichasial cymes, yellow or whitish. Berries hemispheric.

Fl. & Fr. : June - July.

Distrib. : Subansiri.

Mycetia nepalensis Hara in J. Jap. Bot. 52:198. 1977; Deb in Bull. Bot. Surv. India 28 (1-4): 294. 1988. *Adenosacme longifolia* Wallich ex Hook. f., Fl. Brit. India 3:95. 1880, p.p. *Rondeletia longifolia* Wallich in Roxb., Fl. Ind. 2:137. 1824, p.p.

Shrubs, 1.5-2.5 m tall; branches thinly pubescent. Leaves ovate, abruptly attenuate at base, tomentose beneath. Flowers in axillary or terminal cymose panicles, yellow, pubescent.

Fl. & Fr. : June - Jan.

Distrib. : Lohit, Siang; 500-1500 m, in primary forests.

Mycetia radciflora (Clarke) Airy Shaw in Kew Bull. 19(3): 509. 1965; Deb in Bull. Bot. Surv. India 28 (1-4):124. 1988. *Silvianthus radciflora* Clarke in J. Linn. Soc. Bot. 25:32. 1889; Burkill in Rec. Bot. Surv. India 10:51, 78, 79, 297. 1925.

Weak undershrubs. Leaves narrowly oblong-elliptic, sparsely pilose when young. Flowers frequently from below the leaves and rarely at branch apices, white or yellowish.

Fl. & Fr. : July - Jan.

Distrib. : Siang; 200-300 m.

Mycetia stipulata (Hook. f.) O.Ktze., Rev. Gen. Pl. 289. 1891. *Adenosacme stipulata* Hook. f., Fl. Brit. India 3:95. 1880. subsp. *stipulata*.

Small shrubs; branches pubescent. Leaves elliptic or elliptic-lanceolate, pubescent along nerves beneath. Flowers in terminal, corymbose cymes, pubescent, white.

Fl. & Fr. : July - Nov.

Distrib. : Siang; in humid places.

Mycetia stipulata subsp. *macrostachya* (Hook. f.) Deb in Bull. Bot. Surv. India 28 (1-4): 129. 1988. *Adenosacme macrostachya* Hook. f., Fl. Brit. India 3:96. 1880. *Mycetia macrostachya* (Hook. f.) O.Ktze., Rev. Gen. Pl. 1:289. 1891.

Shrubs; branches glabrous. Leaves glabrous. Inflorescence axillary or terminal panicles or corymbose cymes, longer than leaves.

Fl. & Fr. : July - Nov.

Distrib. : Kameng; in moist places.

Myrioneuron nutans Wallich ex Kurz., For. Fl. Brit. Burma 2:55. 1877; Hook. f., Fl. Brit. India 3:96. 1880.

Shrubs, 1-3 m high with spongy bark. Leaves elliptic-ovate or obovate, abruptly acuminate, subscabrid beneath; stipules large, triangular. Flowers in terminal or axillary, condensed corymbose cymes, white. Fruits globose, white.

Fl. & Fr. : July - March.

Distrib. : Changlang, Kameng, Lohit, Siang, Subansiri, Tirap; 1000-1500 m, on moist slopes and along streams.

Neanotis hirsuta (L. f.) W.H.Lewis in Ann. Missouri Bot. Gard. 53:38. 1966. *Oldenlandia hirsuta* L. f., Suppl. Pl. 127. 1781. *Hedyotis stipulata* R. Brown ex Hook. f., Fl. Brit. India 3:63. 1880.

Annual diffuse herbs; branches glabrous or puberulous, sometimes rooting below. Leaves ovate or lanceolate; stipules with long bristles. Flowers in axillary or terminal cymes, white. Fruits globose.

Fl. & Fr. : Aug. - Nov.

Distrib. : Kameng, Tirap; on soil cover rocks, in open sunny slopes, along foot track and forest edges.

Neanotis ingrata (Wallich ex Hook. f.) W.H.Lewis in Ann. Missouri Bot. Gard. 53:39. 1966; Yamazaki in Hara, Fl. E. Himal. 313. 1966. *Anotis ingrata* Wallich ex Hook. f., Fl. Brit. India 3:71. 1880.

Annual or perennial, weak or stout stemmed, pubescent herbs or undershrubs up to 50 cm high. Leaves ovate-lanceolate, puberulous; stipules bristly. Flowers in terminal, lax cymes, white. Capsules didymous, hemispheric.

Fl. & Fr. : Sept. - Dec.

Distrib. : Changlang, Subansiri, Tirap; 800-1500 m.

Neanotis wightiana (Wallich ex Wight & Arn.) W.H.Lewis in Ann. Missouri Bot. Gard. 53:40. 1966. *Hedyotis wightiana* Wallich ex Wight & Arn., Prodr. Fl. Pen. Ind. Or. 410. 1834. *Anotis wightiana* (Wallich ex Wight & Arn.) Hook. f., Fl. Brit. India 3:75. 1880, p.p., excl. *Spermacoce compressa* Wallich.

Perennial, diffuse, prostrate or suberect, pubescent herbs up to 60 cm high. Leaves ovate, subsessile, hairy. Flowers in terminal or axillary, shortly pedicelled cymes, white or pale purple. Fruits orbiculate, compressed.

Fl. & Fr. : Feb. - Nov.

Distrib. : Kameng, Subansiri, Tirap; in moist and shady wastelands.

Neohymenopogon parasiticus (Wallich) Bennet in Ind. For. 107. 436. 1981. *Hymenopogon parasiticus* Wallich in Roxb., Fl. Ind. 1:157. 1824; Hook. f., Fl. Brit. India 3:34. 1880.

Straggling, epiphytic shrubs. Leaves oblanceolate to ovate-lanceolate, puberulous; stipules ovate, acute. Flowers in axillary or terminal corymbs, peduncles shorter than leaves, white. Capsules oblong-ellipsoid.

Fl. & Fr. : June - Oct.

Distrib. : Kameng.

Neonauclea gageana (King) Merr. in J. Wash. Acad. Sci. 5:540. 1915. *Nauclea gageana* King in J. Asiat. Soc. Bengal 72(2):123. 1903.

Small trees, 5-7 m tall. Flowers in terminal, globose heads, white.

Fl. : Nov. - Jan.

Distrib. : Siang; 500-700 m, in primary and secondary forests.

Neonauclea griffithii (Hook. f.) Merr. in J. Wash. Acad. Sci. 5:540. 1915. *Adina griffithii* Hook. f., Fl. Brit. India 3:24. 1880.

Lofty trees up to 35 m high. Leaves petioled, obovate, oblanceolate, glabrous; stipules obovate-oblong. Flowers in terminal, solitary peduncled heads, white or pinkish white. Capsules tetragonous.

Fl. & Fr. : Sept. - March.

Distrib. : Changlang, Kameng, Tirap; in tropical evergreen forests.

Neonauclea sessilifolia (Roxb.) Merr. in J. Wash. Acad. Sci. 5:542. 1915. *Nauclea sessilifolia* Roxb., Fl. Ind. 2:124. 1824. *Adina sessilifolia* (Roxb.) Hook. f. ex Brandis, For. Fl. N.W. & C. India 264. 1874; Hook. f., Fl. Brit. India 3:24. 1880.

Shrubs or small trees. Leaves sessile, ovate or elliptic-oblong; stipules broadly oblong. Flowers in terminal, peduncled, solitary heads, silky shaggy, white.

Fl. & Fr. : Nov. - March.

Distrib. : Siang; 600-800 m, in tropical evergreen forests.

Use : Wood yellowish brown, hard and is used in making posts, beams and planks.

Nertera sinensis Hemsley in J. Linn. Soc. Bot. 23:391, t. 10. 1888; Sastry in Bull. Bot. Surv. India 9 (1-4):285. 1967.

Perennial, decumbent herbs up to 15 cm tall. Leaves elliptic-lanceolate, lepidote on both surfaces. Flowers terminal, solitary, green. Fruits subglobose, black.

Fl. & Fr. : July. - Oct.

Distrib. : Subansiri, Tirap; 1200-1500 m, forming mat on rock surfaces in running water or on mossy rock boulder in rivers.

Nostolachma jenkinsii (Hook. f.) Deb & Lahiri in Bull. Bot. Surv. India 17 (1-4):162. 1978. *Coffea jenkinsii* Hook. f., Fl. Brit. India 3:155. 1880.

Shrubs or small trees up to 10 m high, branches glabrous. Leaves lanceolate to elliptic-lanceolate, pubescent beneath. Flowers in axillary fascicles, pale yellow. Fruits ellipsoid.

Fl. & Fr. : March - Oct.

Distrib. : Kameng, Subansiri; 1000-1500 m, in dense primary forests.

Nostolachma khasiana (Korth.) Deb & Lahiri in Bull. Bot. Surv. India 17:152. 1978. *Lachnostoma khasiana* Korth. in Nederl. Kruidk. Arch. 2:202. 1851. *Coffea khasiana* (Korth.) Hook. f., Fl. Brit. India 3:154. 1880.

Shrubs, younger parts appressed pubescent. Leaves elliptic-lanceolate or oblong, pubescent on nerves beneath. Flowers in axillary, dense capitate cymes, orange red. Drupes oblong, green.

Fl. & Fr. : April - Dec.

Distrib. : Changlang, Kameng, Lohit; 1000-1200 m, inside forests on black humus soil.

Ophiorrhiza fasciculata D. Don, Prodr. Fl. Nep. 136. 1825; Hook. f., Fl. Brit. India 3:83. 1880.

Local name : Akhap (Abor).

Shrubs up to 2 m tall; branches slender, pubescent; stipules lanceolate. Leaves elliptic, ovate-lanceolate, pubescent. Flowers in terminal or axillary, spreading cymes, white; bracteoles linear-lanceolate, pubescent, persistent. Capsules pubescent, brownish pink.

Fl. & Fr. : Sept. - March.

Distrib. : Siang; 500-1000 m, on moist slopes.

Use : Fruits are edible.

Ophiorrhiza harrisiana Heyne ex Wight & Arn., Prodr. Fl. Pen. Ind. Or. 405. 1834; Hook. f., Fl. Brit. India 3:78. 1880.

Prostrate herbs up to 35 cm tall; rooting at lower nodes. Leaves ovate to ovate-lanceolate, glabrous. Flowers in terminal cymes, white; bracteoles absent or caducous. Capsules glabrous.

Fl. & Fr. : April - Aug.

Distrib. : Kameng, Subansiri; 2000-2200 m, in moist shady areas over clayey soil with black humus or along stream.

Ophiorrhiza hetrostyla Dunn in Kew Bull. 133. 1920; Deb & Mondal in J. Bombay Nat. Hist. Soc. 80:669. 1983. *O.seshagiriana* Sikdar & Maiti in J. Bombay Nat. Hist. Soc. 78:142. 1981.

Small, slightly woody herbs. Leaves lanceolate, acuminate, membranous. Flowers in puberulous terminal aggregate cymes, corolla tube hairy inside, style inserted or exerted.

Fl. & Fr. : Feb. - March.

Distrib. : Siang; 500-1500 m, in deep shades.

Ophiorrhiza hispida Hook. f., Fl. Brit. India 3:83. 1880.

Erect or procumbent herbs; hairs stiff, white, spreading. Leaves elliptic-lanceolate, hispid beneath, stipules large, oblong. Flowers in terminal, capitate cymes, greenish white; bracteoles linear, ciliate, persistent. Capsules hispid.

Fl. & Fr. : April - Oct.

Distrib. : Changlang, Kameng; 500-1000 m, on rocky slopes or along streams.

Ophiorrhiza mungos L., Sp. Pl. 150. 1753; Hook. f., Fl. Brit. India 3:77. 1880.

Local name : Igar (Apor).

Erect herbs or suffrutescent shrubs up to 1 m tall. Leaves elliptic or elliptic-lanceolate, long acuminate, glabrescent or pubescent beneath. Flowers in glabrescent cymes, white. Capsules somewhat winged, brownish.

Fl. & Fr. : July - Jan.

Distrib. : Kameng, Lohit, Siang, Subansiri, Tirap; 1000-2500 m, on humus forest floor or on moss covered bark of trees inside forests.

Ophiorrhiza nutans Clarke ex Hook. f., Fl. Brit. India 3:84. 1880.

Small, succulent, puberulous herbs; rooting at lower nodes. Leaves elliptic or oblanceolate, pubescent beneath. Flowers in cymose-umbels, white or yellowish white; bracteoles lanceolate, ciliate, persistent. Capsules hispid.

Fl. & Fr. : June - Oct.

Distrib. : Kameng, Tirap; 500-1000 m, in shaded moist forests.

Ophiorrhiza ochroleuca Hook. f., Fl. Brit. India 3:78. 1880.

Small shrubs; branchlets soft, glabrous. Leaves elliptic to elliptic-lanceolate, glabrous; stipules bifid. Flowers in axillary or terminal umbellate or dichotomous cymes, greenish yellow; bracteoles absent or caducous. Capsules compressed, glabrous.

Fl. & Fr. : Dec. - May.

Distrib. : Kameng, Lohit; 600-1500 m, on moist soil.

Ophiorrhiza pauciflora Hook. f., Fl. Brit. India 3:84. 1880; Deb & Mondal in J. Bombay Nat. Hist. Soc. 79(3): 647. 1983.

Creeping or ascending, pubescent herbs; rooting at nodes. Leaves ovate, puberulous on nerves beneath. Flowers in lax terminal, few flowered cymes, white; bracteoles linear, ciliate, persistent. Capsules subglobose, puberulous.

Fl. & Fr. : May - Sept.

Distrib. : Kameng, Lohit, Tirap; 1000-2000 m, in shaded places of forests and along streams.

Ophiorrhiza repens (Wallich ex G. Don) Bennet in Ind. For. 108:302. 1982. *Mussaenda repens* Wallich ex G. Don, Gen. Syst. 3:491. 1834. *Ophiorrhiza calcarata* Hook. f., Fl. Brit. India 3:84. 1880.

Undershrubs up to 1 m high; stems rusty pubescent. Leaves ovate-elliptic to ovate-lanceolate, pubescent on nerves beneath. Flowers in terminal, con-

tracted cymes, white with pink tinge; bracteoles linear, pubescent, persistent. Capsules pubescent.

Fl. & Fr. : Oct. - April.

Distrib. : Changlang, Kameng, Siang; 1000-1500 m, in moist shaded places.

Ophiorrhiza rugosa Wallich var. *argentea* (Wallich ex Hook. f.) Deb & Mondal in Bull. Bot. Surv. India 24:228. 1983. *O. harrisiana* Heyne ex Wight & Arn. var. *argentea* Wallich ex Hook. f., Fl. Brit. India 3:78. 1880. *O. argentea* (Wallich ex Hook. f.) Balakr., Fl. Jowai 1:247. 1981.

Erect, slightly pubescent herbs. Leaves lanceolate, glabrous. Flowers in terminal, contracted cymes, white or pinkish white. Capsules reniform, compressed.

Fl. & Fr. : March - Aug.

Distrib. : Changlang, Kameng, Siang, Subansiri, Tirap; in moist, shady localities.

Ophiorrhiza rugosa Wallich var. *prostrata* (D. Don) Deb & Mondal in Bull. Bot. Surv. India 24:228. 1983. *O. prostrata* D. Don, Prodr. Fl. Nep. 136. 1825, p.p.

Annual, densely tomentose, prostrate herbs up to 30 cm long with spreading branches. Leaves ovate-lanceolate, scattered hairy. Flowers in terminal cymes, pinkish white.

Fl. & Fr. : March - Aug.

Distrib. : Kameng, Subansiri, Tirap; at higher elevations in moist, shady places.

Ophiorrhiza subcapitata Wallich ex Hook. f., Fl. Brit. India 3:83. 1880; Balakr., Fl. Jowai 1:248. 1981.

Prostrate or creeping herbs, softly hairy; rooting at nodes. Leaves ovate to elliptic-lanceolate, softly hairy beneath. Flowers in axillary, subcapitate cymes, white. Capsules glabrous.

Fl. & Fr. : April - Sept.

Distrib. : Subansiri; 500-800 m, in primary forests as undergrowth over rich humus.

Ophiorrhiza succirubra King ex Hook. f., Fl. Brit. India 3:82. 1880.

Slender, glabrous herbs, 50-75 cm high. Leaves elliptic to elliptic-lanceolate or oblong-lanceolate, red or purple beneath, glabrous. Flowers in terminal cymes or corymbs, white with pinkish tinge or purple; bracteoles linear-lanceolate, glabrous, persistent. Capsules puberulous.

Fl. & Fr. : June - Oct.

Distrib. : Changlang, Kameng, Siang, Subansiri, Tirap; 1400-2000 m, in shady places of dense forests.

Ophiorrhiza talevalliensis Pal & Giri in J. Bombay Nat. Hist. Soc. 87(3):433. 1991. Fig. 127.

Erect or suberect glabrous herbs, 20-45 cm high; rooting from lower nodes. Leaves ovate-elliptic to elliptic-lanceolate, glabrous. Flowers in 4-8 flowered terminal cymose panicles, milky white.

Fl. & Fr. : April - May.

Distrib. : Subansiri; 2500-3000 m, in primary forests as undergrowth on humus rich soil or along forest edges.

Ophiorrhiza thomsonii Hook. f., Fl. Brit. India 3:82. 1880.

Slender, glabrous or sparsely puberulous herbs, creeping and rooting below. Leaves ovate or ovate-elliptic; stipules filiform. Flowers in small axillary or terminal cymes. Capsules glabrous.

Fl. & Fr. : May - June.

Distrib. : Subansiri; 500-1000 m, on moist forest floor.

Ophiorrhiza tingens Clarke ex Fischer in Kew Bull. 1940:33. 1940; Deb, Fl. Tripura state 2:76. 1983.

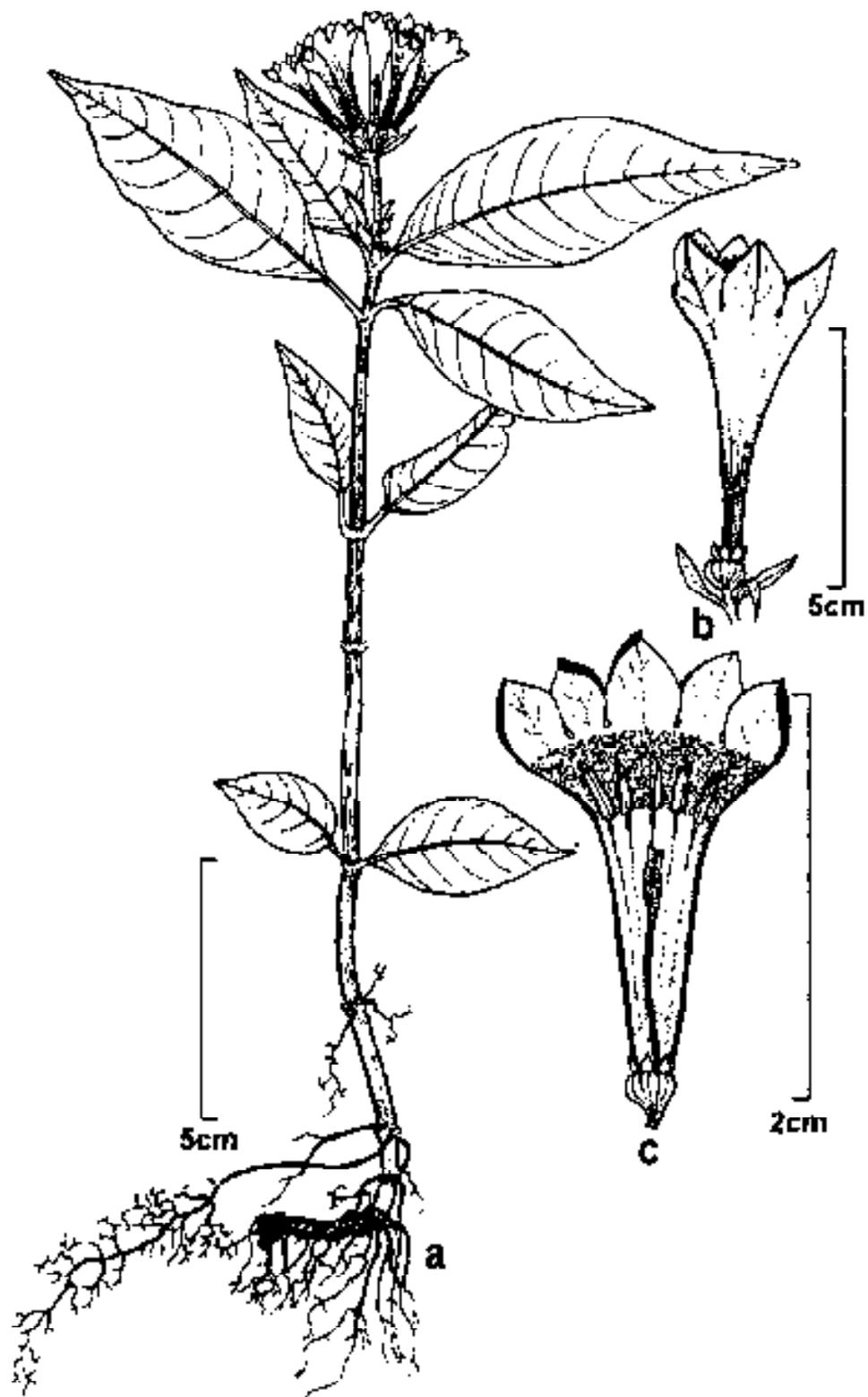


Fig. 127. *Ophiorrhiza talevalliensis* Pal & Giri : a. Habit; b. Flower; c. Flower split open.

Woody herbs, 30-50 cm high; younger parts puberulous. Leaves lanceolate or ovate-lanceolate, puberulous, reddish beneath. Flowers in terminal, puberulous corymbs. Capsules obcordate, compressed.

Fl. & Fr. : May - Aug.

Distrib. : Kameng.

Ophiorrhiza treutleri Hook. f., *Fl. Brit. India* 3:83. 1880.

Succulent undershrubs up to 3 m tall; branches pubescent, hairs crisped. Leaves elliptic-ovate or lanceolate; stipules lanceolate. Flowers in terminal, many flowered cymes, white; peduncles hairy; bracteoles linear, hairy, persistent. Capsules shorter than pinkish bracts, violet.

Fl. & Fr. : April - Oct.

Distrib. : Changlang, Lohit, Subansiri, Tirap; in shady moist forests and along roadsides.

Ophiorrhiza trichocarpa Blumea, *Bijdr.* 977. 1826; Hook. f., *Fl. Brit. India* 3:78. 1880.

Decumbent herbs up to 35 cm high; rooting at nodes. Leaves ovate. Flowers in terminal, 2-4 flowered clusters, greenish white.

Fl. & Fr. : April - July.

Distrib. : Subansiri; 1500-2500 m, on moist shaded forest floor, over clay humus.

Ophiorrhiza villosa Roxb., *Fl. Ind.* 1:702. 1832; Hook. f., *Fl. Brit. India* 3:79. 1880.

Erect stout herbs. Leaves ovate or ovate-lanceolate, densely tomentose or pubescent beneath. Flowers in ferruginously pubescent, dense capitate cymes. Capsules pubescent.

Fl. & Fr. : April - July.

Distrib. : Kameng.

Paederia foetida L., Mant. Pl. 7:52. 1767; Hook. f., Fl. Brit. India 3:195. 1880.

Local name : Padurilata (Asm.).

Slender, pubescent twiners. Leaves ovate, ovate-lanceolate or orbicular, glabrescent beneath; foetid when bruised. Flowers in axillary or terminal paniculate cymes, greyish purple to pinkish. Fruits compressed, winged, brownish, pyrenes winged.

Fl. & Fr. : June - Dec.

Distrib. : Changlang, Kameng, Lohit, Siang, Subansiri, Tirap; 300-1300 m, in marshy places along roadsides.

Use : Juice of leaves is given to children in diarrhoea.

Paederia scandens (Lour.) Merr. in Contr. Arn. Arb. 8:163. 1934; Balakr., Fl. Jowai 1:251. 1981. *Gentiana scandens* Lour., Fl. Cochinch. 171. 1790. *Paederia tomentosa* Blume, Bijdr. 968. 1826; Hook. f., Fl. Brit. India 3:197. 1881. Fig. 128.

Local name : Padurilata (Asm.).

Climbers or twiners. Leaves ovate or ovate-lanceolate. Flowers in axillary or terminal, widely branched panicles, white floccose outside, dark purple inside. Fruits subglobose, compressed, orange, pyrenes not winged.

Fl. & Fr. : Oct. - Feb.

Distrib. : Changlang, Dibang valley, Lohit, Tirap; 100-1500 m, in secondary forests, forest margins and over bushes and hedges.

Pavetta crassicaulis Bremek. in Fedde, Repert. 37. 112. 1934; Santapau & Merchant in Bull. Bot. Surv. India 3:109. 1961. *P. indica auct. non L.* 1753; Hook. f., Fl. Brit. India 3:150. 1880, *p.p.*

Local name : Sam-suku (Asm.).

Shrubs or small trees, 3-10 m high. Leaves obovate or oblanceolate, glabrous beneath. Flowers in terminal or lateral corymbose panicles, white. Drupes globose, blackish green or bluish black.

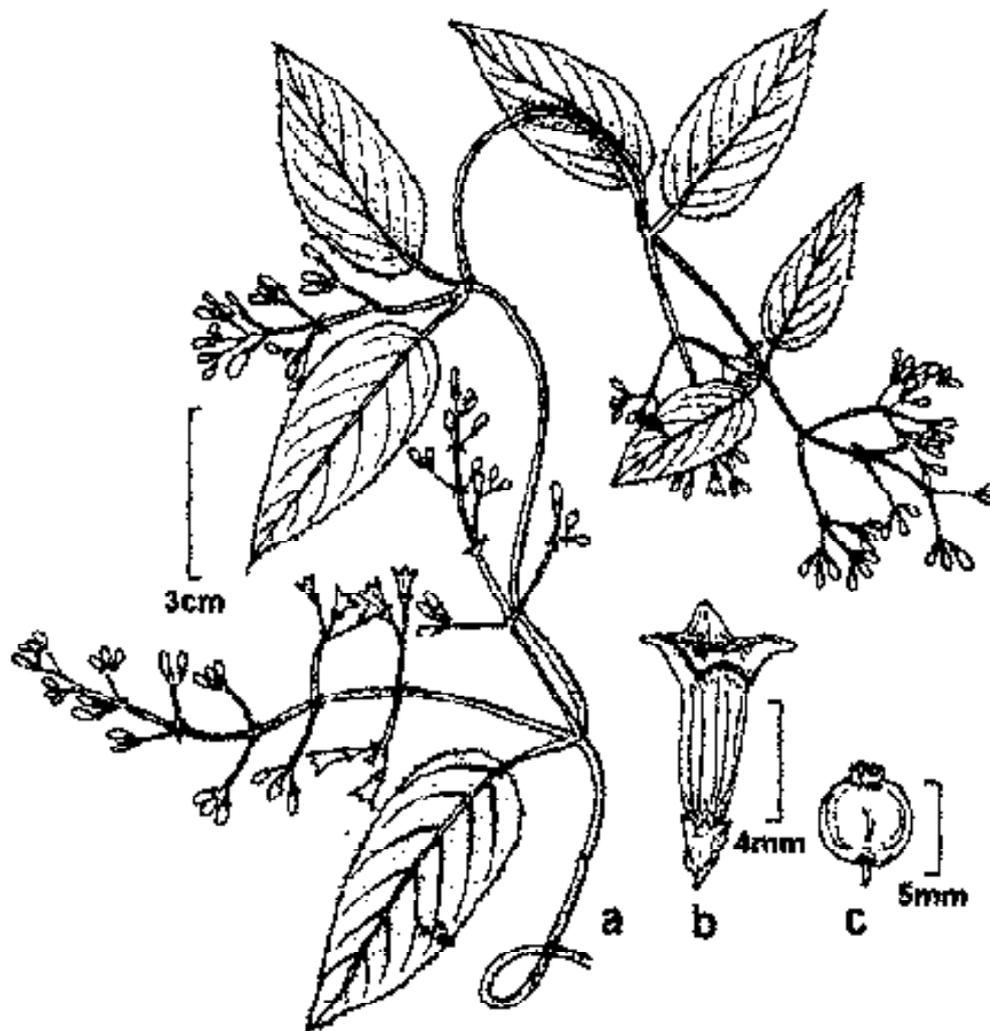


Fig. 128. *Paederia scandens* (Lour.) Merr. : a. Flowering twig; b. Flower; c. Fruit.

Fl. & Fr. : April - Nov.

Distrib. : Changlang, Kameng, Subansiri; in shady and swampy localities at lower altitudes.

Pavetta indica L. subsp. *tomentosa* (Roxb. ex Smith) Bennet, Fl. Howrah 356. 1979. *P. tomentosa* Roxb. (Hort. Beng. 10. 1814, *nom. nud.*) ex Smith in Rees. Cyclop. 26. *Pavetta* n. 2. 1819. *Ixora tomentosa* Roxb., Fl. Ind. 1:396. 1820. *P. indica* var. *tomentosa* (Roxb. ex Smith) Hook. f., Fl. Brit. India 3:150. 1880. *Ixora tomentosa* var. *roxburghii* Kurz, For. Fl. Brit. Burma 2:19. 1877.

Large shrubs or small trees, 5-8 m high. Leaves obovate to elliptic-oblongate, densely tomentose beneath. Flowers in axillary or terminal tomentose corymbs, white. Drupes subglobose, bluish green when ripe.

Fl. & Fr. : May - Oct.

Distrib. : Changlang, Kameng; in moist shady places at lower altitudes.

Pavetta indica L. var. *polyantha* Wallich ex Hook. f., Fl. Brit. India 3:150. 1880.

Puberulous or tomentose shrubs. Leaves elliptic, elliptic-lanceolate or ovate, sparsely tomentose. Flowers in densely crowded, terminal, puberulous cymes, white.

Fl. & Fr. : May - Oct.

Distrib. : Kameng; in moist shady places.

Pavetta subcapitata Hook. f., Fl. Brit. India 3:150. 1880.

Shrubs up to 6 m high. Leaves elliptic-lanceolate to elliptic-obovate, finely pubescent beneath. Flowers in terminal or lateral, many flowered, capitate cymes, white or bluish white. Fruits globose.

Fl. & Fr. : April - Nov.

Distrib. : Kameng, Tirap; in marshy and shady localities.

Polyura geminata Hook. f., Ic. Pl. ser. 3, 11, t. 1049. 1868 and Fl. Brit. India 3:77. 1880.

Perennial, puberulous herbs up to 30 cm high. Leaves opposite or falsely whorled, elliptic or elliptic-lanceolate; stipules filiform. Flowers in axillary, peduncled, scorpioid cymes, white; bracts leafy. Capsules small, subglobose.

Fl. & Fr. : May - Dec.

Distrib. : Changlang, Lohit, Subansiri, Tirap; 1000-1500 m, on moist sandy soil, in rock crevices or along roadsides.

Psychotria aborensis Dunn in Kew Bull. 1920:133. 1920; Deb & Gang. in Nayar & Sastry (ed.) Red Data Book Ind. Pl. 1:343. 1987.

Shrubs ca 2 m high. Leaves broadly ovate or elliptic, glabrous above, brownish pubescent beneath. Flowers unknown. Fruits sessile, ovoid or ellipsoid-ovoid, crowned with persistent calyx lobes, puberulous.

Fr. : Sept. - Dec.

Distrib. : Siang; in deep shades, 300-1200 m. Endemic.

Psychotria adenophylla Wallich in Roxb., Fl. Ind. 2:166. 1824; Hook. f., Fl. Brit. India 3:164. 1880. *P. connata* Kurz, For. Fl. Brit. Burma 2:10. 1877, non Wallich 1824.

Scandent, glabrous shrubs up to 3 m high. Leaves elliptic or oblong-lanceolate, coriaceous; upper stipules connate, sheathing. Flowers in axillary or terminal, opposite or subopposite, pedunculate cymes or racemose cymes, white. Fruits ovoid or ellipsoid, purplish black.

Fl. & Fr. : Feb. - Oct.

Distrib. : Subansiri; 1400-1600 m, in moist places of primary forest.

Psychotria burkillii Deb & Gang. in Bull. Bot. Surv. India 25:213. 1985.

Fig. 129.

Trees up to 20 m high. Leaves obovate, slightly unequal at base, pubescent below. Flowers in axillary, subsessile cymes. Drupes globose with persistent calyx.

Fl. & Fr. : Nov. - March.

Distrib. : Siang, Subansiri; 300-1000 m, in moist shady localities of primary forest.

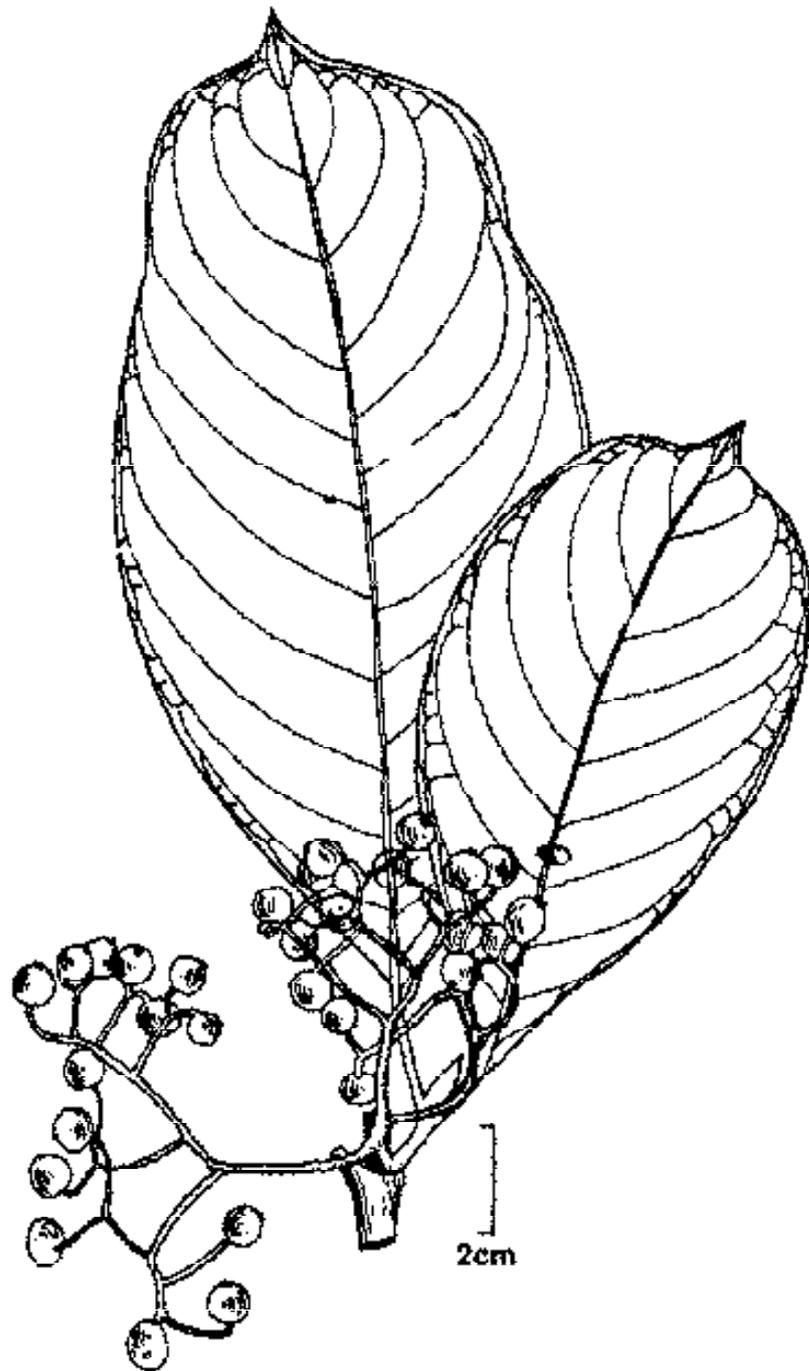


Fig. 129. *Psychotria burkillii* Deb & Gang. : Flowering branch.

Psychotria calocarpa Kurz in J. Asiat. Soc. Bengal 41(2):315. 1872; Hook. f., Fl. Brit. India 3:173. 1880. *P. asiatica auct. non L.* 1753 :Roxb., Fl. Ind. 2:160. 1824.

Small, puberulous shrubs up to 2.5 m tall. Leaves ovate or oblong, puberulous, crisped hairy beneath; stipules ovate, often bifid. Flowers in axillary or terminal, short peduncled cymes, yellow. Berries globose or subglobose, yellow or purplish when ripe.

Fl. & Fr. : June - Dec.

Distrib. : Changlang, Dibang valley, Kameng, Lohit, Siang, Subansiri; 500-1500 m, in moist places.

Psychotria denticulata Wallich in Roxb., Fl. Ind. 2:166. 1824; Hook. f., Fl. Brit. India 3:173. 1880; Hara & Gould in Hara *et al.*, Enum. Fl. Pl. Nep. 2:206. 1979. *P. nervosa* D. Don, Prodr. Fl. Nep. 137, 1825; Hook. f., Fl. Brit. India 3:175. 1880.

Large shrubs ca 6 m tall. Leaves broadly elliptic to oblanceolate, puberulous beneath, denticulate. Flowers in axillary or terminal, whorled or oppositely branched corymbose cymes. Fruits globose, greenish or creamy white.

Fl. & Fr. : May - Dec.

Distrib. : Changlang, Kameng, Lohit, Siang, Subansiri, Tirap; 600-1200 m, in moist places under shades.

Psychotria erratica Hook. f., Fl. Brit. India 3:168. 1880.

Erect, glabrous shrubs up to 5 m high. Leaves elliptic or oblanceolate, glabrous; stipules with 2 recurved lobes. Flowers in axillary or terminal, sessile cymes, white or brownish white. Fruits globose, reddish or yellowish.

Fl. & Fr. : March. - Nov.

Distrib. : Kameng, Subansiri, Tirap; 2000-2500 m, forest undergrowth in deep shade.

Psychotria montana Blume, Bijdr. 960. 1826; Hook. f., Fl. Brit. India 3:174. 1880.

Erect, subherbaceous shrubs up to 2 m high. Leaves elliptic-lanceolate or oblanceolate; stipules triangular, acute. Flowers in terminal or axillary subcorymbose cymes with whorled peduncles, white or greenish yellow. Fruits ellipsoid or subglobose.

Fl. & Fr. : May - Feb.

Distrib. : Tirap; 200-1000 m, in shady places.

Psychotria monticola Kurz. in J. Asiat. Soc. Bengal 2:315. 1872; Balakr., Fl. Jowai 1:241. 1981. *P. fulva* Hook. f., Fl. Brit. India 3:169. 1880.

Small shrubs, 1-2 m high. Leaves large, elliptic, ovate or oblong, glabrous or thinly puberulous beneath along nerves. Flowers in axillary or subterminal peduncled cymes, white or pinkish white. Fruits ellipsoid, reddish brown to orange red.

Fl. & Fr. : March - Feb.

Distrib. : Changlang, Kameng, Siang, Tirap; 1500-3000 m, undergrowth in moist, shady forests.

Psychotria nicobarica Kurz in London J. Bot. 328. 1875; Hook. f., Fl. Brit. India 3:172. 1880.

Stout, rusty pubescent herbs up to 1 m high. Leaves large, elliptic, pubescent beneath. Flowers crowded in puberulous, sessile cymes. Fruits broadly ellipsoid.

Fl. & Fr. : March - Nov.

Distrib. : Tirap.

Psychotria silhetensis Hook. f., Fl. Brit. India 3:174. 1880.

Shrubs. Leaves elliptic or elliptic-oblong, puberulous beneath; stipules broadly ovate. Flowers in axillary or terminal, peduncled, pubescent corymbiform cymes. Fruits globose or ellipsoid.

Fl. & Fr. : March - Dec.

Distrib. : Changlang, Subansiri; 500-1000 m, in open forests or undergrowth in secondary forests.

Psychotria symplocifolia Kurz, For. Fl. Brit. Burma 2:11. 1877; Hook. f., Fl. Brit. India 3:172. 1880.

Shrubs or small trees, 3-5 m high. Leaves elliptic-lanceolate to elliptic-obovate, glabrous. Flowers in axillary or terminal, oppositely branched, trichotomous cymes, white. Fruits globose or ellipsoid, blackish when ripe.

Fl. & Fr. : April - Oct.

Distrib. : Changlang, Tirap; 1000-1500 m, in shaded places. Rare.

Psychotria thomsonii Hook. f., Fl. Brit. India 3:173. 1880.

Bushy shrubs. Leaves narrowly elliptic, serrulate, pubescent along nerves; stipules nearly orbicular, bicuspidate. Flowers in axillary or terminal, pubescent, trichotomous cymes, white. Fruits ellipsoid, pointed at both ends.

Fl. & Fr. : May - Oct.

Distrib. : Tirap.

Randia cochinchinensis (Lour.) Merr. in Trans. Amer. Phil. Soc. ser. 2, 24(2):365. 1935. *Aidia cochinchinensis* Lour., Fl. Cochinch. 143. 1790. *Webera densiflora* Wallich in Roxb., Fl. Ind. 2:536. 1824. *Randia densiflora* (Wallich) Benth., Fl. Hongk. 155: 1861; Hook. f., Fl. Brit. India 3:112. 1880.

Large shrubs or trees, 8-20 m high; branches drooping, glabrous. Leaves elliptic or ovate-lanceolate; stipules triangular. Flowers in leaf opposed cymes, white. Fruits globose, black.

Fl. & Fr. : Feb. - Sept.

Distrib. : Changlang, Subansiri; 1000-1200 m, in dense forest over clayey humus soil.

Randia griffithii Hook. f., Fl. Brit. India 3:112. 1880.

Shrubs or small trees with ascending spines; branches straggling. Leaves ovate or ovate-lanceolate, glabrous. Flowers in terminal or axillary, few flowered cymes, white or pale yellow. Berries globose, black.

Fl. & Fr. : March - Nov.

Distrib. : Subansiri, Tirap; 200-500 m, in primary forests.

Randia longiflora Lamk., *Encycl. Meth. Bot.* 3:26. 1791; Hook. f., *Fl. Brit. India* 3:111. 1880. *Posoqueria longiflora* Roxb., *Fl. Ind.* 1:718. 1832. *Webera scandens* Roxb., *Fl. Ind.* 1:698. 1832.

Climbing or straggling shrubs with recurved spines. Leaves ovate-elliptic, oblong or obovate-lanceolate, glabrous. Flowers in axillary or leaf opposed, shortly peduncled, trichotomous cymes, white, fragrant. Berries subglobose, black.

Fl. & Fr. : April - Dec.

Distrib. : Kameng; undergrowth in primary forests at lower elevations.

Randia wallichii Hook. f., *Fl. Brit. India* 3:113. 1880.

Subscandent, glabrous, unarmed shrubs or small trees. Leaves elliptic or elliptic-lanceolate, coriaceous, glabrous or sparsely pubescent beneath. Flowers in leaf-opposed or axillary cymes, yellowish, fragrant. Berries globose.

Fl. & Fr. : May - Jan.

Distrib. : Siang, Tirap; 1100-1200 m, in primary forests.

Rubia cordifolia L., *Sp. Pl.* 397. 1753; Hook. f., *Fl. Brit. India* 3:202. 1881; Deb & Malick in *Bull. Bot. Surv. India* 10:6. 1968. *R. munjista* Roxb., *Fl. Ind.* 1:384. 1820. var. *cordifolia* forma *cordifolia*.

Scabrid or hispid climbers; stems and branches quadrangular. Leaves ovate or ovate-lanceolate, cordate, scabrid or strigose; veins impressed. Flowers in axillary or terminal, branched panicles, whitish, pinkish or yellowish. Fruits globose, purplish black.

Fl. & Fr. : Feb. - Dec.

Distrib. : Changlang, Kameng, Subansiri; 2000-4000 m, in primary forests and along forest margins.

Use : Extract from crushed plant is used in skin diseases. Extract from stems and leaves is also used to colour canes and clothes.

Rubia cordifolia var. *cordifolia* forma *strigosa* Deb & Malick in J. Bombay Nat. Hist. Soc. 63(3):782. 1966 and in Bull. Bot. Surv. India 10:9. 1968.

Differs from forma *cordifolia* in having leaves strigose on both surface, more so along veins beneath and also in hispid stems and pitioles.

Fl. & Fr. : Feb. - Dec.

Distrib. : Kameng; in primary forests.

Rubia cordifolia var. *hasiana* Watt, Econ. Prod. Ind. 6:1. B. 571. 1892; Deb & Malick in Bull. Bot. Surv. India 10:10. 1968. *R. khasiana* Kurz ex Maheshwari & Singh, Dict, Econ. Pl. India 138. 1965 *nom. nud.*

The var. *hasiana* differs from var. *cordifolia* by 5, sometimes 3 and rarely 7 veins, not impressed and smooth surface of leaves.

Fl. & Fr. : March - Dec.

Distrib. : Kameng, Subansiri.

Rubia sikkimensis Kurz in J. Asiat. Soc. Bengal 43(2):188. 1874; Hook. f., Fl. Brit. India 3:203. 1881; Deb & Malick in Bull. Bot. Surv. India 10:12. 1968.

Profusely branched climbing herbs; stems and branches quadrangular, scabrid. Leaves 4 in whorls, elliptic-lanceolate, scabrid. Flowers in axillary or terminal panicles, creamy white with greenish tinge. Fruits globose, green.

Fl. & Fr. : Sept. - Feb.

Distrib. : Changlang, Kameng, Lohit, Siang, Tirap; 500-1500 m, on moist soil.

Use : Extract from plants is used for dyeing woolen cloths by Mishmi people.

Saprosma ternatum (Wallich) Hook. f. in Benth. & Hook. f., Gen. Pl. 2:131. 1873 and Fl. Brit. India 3:193. 1880. *Paederia ternata* Wallich in Roxb., Fl. Ind. 2:520. 1824.

Local name : Bhedeli (Asm.).

Shrubs or small trees. Leaves usually ternately whorled, elliptic or oblanceolate. Flowers in axillary corymbose cymes, white. Fruits globose, pulpy, black when ripe.

Fl. & Fr. : March - Oct.

Distrib. : Changlang, Kameng, Subansiri; 1200-1500 m, in primary forests and along river banks.

Spermacoce decandollei Deb & Dutta in J. Econ. Tax. Bot. 5(5): 1044. 1984.

Annual, procumbent or erect herbs, 10-30 cm long; branches quadrangular. Leaves elliptic to elliptic-lanceolate, glabrous or minutely scabrid above, sparsely pubescent along nerves beneath. Flowers in axillary or terminal, many flowered heads. Capsules urn shaped.

Fl. & Fr. : Throughout the year.

Distrib. : Kameng, Subansiri; in moist shady places over black humus soil amidst grasses.

Spermacoce hispida L., Sp. Pl. 102. 1753; Hook. f., Fl. Brit. India 3:200. 1881; Deb, Fl. Tripura State 2:83. 1983. *S. articularis* L. f., Suppl. Pl. 119. 1781. *Borreria hispida* (L.) K.Schum. in Engler & Prantl, Pflanzenfam. 4(4):144. 1891, non Spruce ex K.Schum. 1888. *B. articularis* (L. f.) F. N. Williams in Bull. Herb. Boiss. II. 5:956. 1905.

Procumbent, scabrid or hispid herbs; branches quadrangular. Leaves obovate, oblong or elliptic, sessile, scabrid above. Flowers in axillary or terminal whorls, pale pink or whitish. Capsules septifragal, hispid.

Fl. & Fr. : Throughout the year.

Distrib. : Changlang; in waste places and along roadsides.

Use : Roots are medicinal. Seeds are considered as substitute for coffee.

Spermacoce latifolia Aubl. Hist. Pt. Guiane Fr. 55, t. 194. 1775; Deb & Dutta in Bull. Bot. Surv. India 18:217. 1976. *Borreria eradii* Ravi in J. Bombay Nat. Hist. Soc. 66(3):589. 1970.

Erect or suberect herbs up to 1 m high, white hirsute all over. Leaves elliptic, spatulate to lanceolate. Flowers in axillary, 4-5 flowered clustered, white. Fruits ellipsoid.

Fl. & Fr. : Aug. - July.

Distrib. : Subansiri, Tirap; 100-1500 m, in open forests and along roadsides.

Spermacoce ocymoides Burm. f., Fl. Ind. 34, t. 13, f. 1. 1768; Hook. f., Fl. Brit. India 3:200. 1880. *Borreria ocymoides* (Burm. f.) DC., Prodr. 4:544. 1830.

Erect, profusely branched, glabrous or hispid herbs. Leaves ovate or elliptic, glabrous or scabrid above. Flowers few in axillary or terminal heads, white. Capsules dehiscent ventrally.

Fl. & Fr. : Aug. - Dec.

Distrib. : Changlang, Kameng, Subansiri, Tirap; in moist shady places preferably on sandy humus soil at lower altitudes.

Spermacoce pusilla Wallich in Roxb., Fl. Ind. 1:379. 1820; Deb & Dutta in J. Econ. Tax. Bot. 5(5):1057. 1984. *S. stricta* L. f., Suppl. Pl. 120. 1781; Hook. f., Fl. Brit. India 3:200. 1881. *Borreria pusilla* (Wallich) DC., Prodr. 4:543. 1830.

Erect or prostrate herbs, 10-50 cm tall; branches quadrangular, glabrous or retrorsely hairy. Leaves linear-lanceolate. Flowers in terminal or axillary heads, white. Capsules ellipsoid.

Fl. & Fr. : July - Dec.

Distrib. : Kameng; 100-4500 m, on hill slopes, amidst grasses.

Spermadictyon suaveolens Roxb., Pl. Corom. 3:32, t. 236. 1815; Santapau & Merchant in Bull. Bot. Surv. India 3:110. 1962. *Hamiltonia suaveolens* Roxb., Fl. Ind. 2:223. 1824; Hook. f., Fl. Brit. India 3:197. 1881.

Undershrubs up to 3 m tall with spreading branches; young parts pubescent. Leaves ovate or elliptic-lanceolate, slightly pubescent. Flowers in terminal subglobose heads or panicles, white. Capsules ellipsoid, sparsely hairy, finely reddish veined.

Fl. & Fr. : Oct. - Dec.

Distrib. : Kameng.

Spiradiclis bifida Wallich ex Kurz in J. Asiat. Soc. Bengal 41(2):311. 1872; Hook. f., Fl. Brit. India 3:76. 1880.

Local name : Sokho (Adi); Byan-kat (Abor).

Delicate, puberulous herbs, 1-5 m high. Leaves elliptic to elliptic-lanceolate, puberulous on midnerve. Flowers in terminal, dichotomous paniced cymes, pinkish white or creamy. Fruits ovoid or oblong, pale green.

Fl. & Fr. : Aug. - Nov.

Distrib. : Changlang, Kameng, Siang, Subansiri, Tirap; 300-1000 m, in moist, shady places or in rock crevices.

Use : Leaves are used as vegetable.

Spiradiclis cylindrica Wallich ex Hook. f., Fl. Brit. India 3:76. 1880.

Branched, creeping herbs or undershrubs up to 1 m high. Leaves elliptic-lanceolate, puberulous on nerves. Flowers in simple or forked cymes, creamy white or pale purple. Capsules clavate.

Fl. & Fr. : June - Oct.

Distrib. : Changlang, Kameng, Lohit, Siang, Subansiri, Tirap; 500-1000 m, in moist shady places, in rock crevices and along river banks.

Tarenna asiatica (L.) O.Ktze. ex K.Schum., Bot. Tidsskr. 24:332. 1902. *Rondeletia asiatica* L., Sp. Pl. 172. 1753. *Webera corymbosa* Willd., Sp. Pl. 1:1224. 1798; Hook. f., Fl. Brit. India 3:102. 1880.

Shrubs or small trees up to 5 m high. Leaves elliptic or oblong-lanceolate, glaucous beneath. Flowers in terminal, trichotomous cymes, white, fragrant. Berries globose or ellipsoid, blackish.

Fl. & Fr. : May - Jan.

Distrib. : Arunachal Pradesh; 1000-1500 m, in primary forests.

Use : Decoction of leaves mixed with rice-beer is given as stimulant in injuries. Leaves in the form of paste is applied for healing wounds.

Tarennia disperma (Hook. f.) Pitard in Lecomte, Fl. Gen. Indo-China 3:208. 1923. *Webera disperma* Hook. f., Fl. Brit. India 3:102. 1880.

Shrubs or small trees. Leaves elliptic or lanceolate; stipules lanceolate. Flowers in shortly peduncled, pubescent cymes. Berries globose.

Fl. & Fr. : May - Dec.

Distrib. : Changlang, Kameng.

Tarennia odorata (Roxb.) Robins. in Pol. Amer. Acad. Sci. 45:405. 1910. *Webera odorata* Roxb., Fl. Ind. 1:569. 1832; Hook. f., Fl. Brit. India 3:102. 1880.

Shrubs or small trees, 2-8 m high. Leaves elliptic-lanceolate, glabrous. Flowers in corymbiform, pubescent cymes, white. Berries subglobose, black.

Fl. & Fr. : April - Dec.

Distrib. : Siang, Subansiri, Tirap; 500-1200 m, in primary forests and along river banks.

Uncaria homomalla Miq., Fl. Ind. Bat. 2:343. 1857; Hook. f., Fl. Brit. India 3:30. 1880.

Stragglers or woody climbers; branches pubescent. Leaves ovate, suborbicular to ovate-lanceolate, sparsely hairy beneath. Flowers in axillary, solitary, short peduncled heads, yellow, fragrant. Capsules clavate.

Fl. & Fr. : Feb. - April.

Distrib. : Subansiri, Tirap; 200-500 m, in forest openings.

Uncaria macrophylla Wallich in Roxb., Fl. Ind. 2:132. 1824; Hook. f., Fl. Brit. India 3:32. 1880.

Local name : Bararilata (Asm.).

Large, woody climbers up to 10 m tall; younger parts rusty pubescent. Leaves ovate, oblong or elliptic-obovate, entire, tomentose beneath. Flowers in axillary and terminal peduncled heads, greenish, hairy without.

Fl. & Fr. : Sept. - Feb.

Distrib. : Changlang, Tirap; in marshy places, often along river sides at lower elevation.

Uncaria scandens (Smith) Hutch. in Sarg. Pl. Wils. 3:406. 1916; Ridsdale in *Blumea* 24:94. 1978. *Nauclea scandens* Smith in Rees, *Cyclop.* 24:Nauclea no. 9. 1819. *Uncaria pilosa* Roxb., *Fl. Ind.* 2:130. 1824; Hook. f., *Fl. Brit. India* 3:32. 1880.

Large, climbing shrubs up to 5 m tall. Leaves ovate or elliptic, pubescent or hirsute beneath; stipules recurved, caducous. Flowers in axillary, pedunculate heads, dull yellow, fragrant. Capsules clavate, sessile.

Fl. & Fr. : May - Sept.

Distrib. : Kameng, Subansiri, Tirap; in dense evergreen, deciduous, primary or secondary forests.

Uncaria sessilifructus Roxb., *Fl. Ind.* 2:130. 1824; Hook. f., *Fl. Brit. India* 3:30. 1880.

Local name : Borakhilata (Asm.).

Extensive climbers; branchlets quadrangular with axillary hooks. Leaves ovate-elliptic, glabrous or sometimes glaucous beneath. Flowers in axillary or terminal, paniced globose heads, greenish yellow, fragrant. Capsules ellipsoid, tomentose.

Fl. & Fr. : Sept. - May.

Distrib. : Changlang, Kameng, Siang, Subansiri, Tirap; 200-1100 m, in primary and secondary forests along river banks.

Vangueria madagascariensis Gmel., *Syst. Nat.* ed. 13, 2:367. 1791; Verdcourt in *Kew Bull.* 36. 548. 1981. *Vangueria edulis* Vahl, *Symb. Bot.* 3:36. 1794; Hook. f., *Fl. Brit. India* 3:136. 1880.

Small trees, unarmed. Leaves ovate or oblong. Flowers in shortly peduncled cymes, greenish. Drupes subglobose, smooth, fleshy.

Fl. & Fr. : April - Oct.

Distrib. : Tirap.

Use : Fruits are edible.

Wendlandia grandis (Hook. f.) Cowan in Notes Roy. Bot. Gard. Edinburgh 16:261, t. 233. f.6. 1932. *W.tinctoria* (Roxb.) DC. var. *grandis* Hook. f., Fl. Brit. India 3:38. 1880.

Small or medium sized evergreen trees, 6-10 m high with spreading, glabrous branches. Leaves elliptic or ovate-elliptic, glabrous. Flowers in terminal, pubescent panicles, greenish white. Capsules bluish black.

Fl. & Fr. : Jan. - Nov.

Distrib. : Changlang, Kameng, Siang; 600-1300 m, common in evergreen forests.

Wendlandia puberula DC., Prodr. 4:412. 1830; Hook. f., Fl. Brit. India 3:37. 1880, *p.p.*; Hara & Gould in Hara *et al.*, Enum. Fl. Pl. Nep. 2:208. 1979. *W.sikkimensis* Cowan in Notes Roy. Bot. Gard. Edinburgh 16:246, t.232. f.4. 1932.

Local name : Papka-changne (Asm.).

Small trees; younger parts puberulous. Leaves elliptic or oblong, pubescent along nerves beneath. Flowers in terminal or axillary panicles, brownish green. Capsules nearly glabrous.

Fl. & Fr. : March - July.

Distrib. : Kameng, Subansiri; 800-1200 m, in tropical forests.

Wendlandia scabra Kurz in J. Asiat. Soc. Bengal 12:31. 1872; Cowan in Notes Roy. Bot. Gard. Edinburgh 16:291. 1932. *W.puberula auct. non DC.* 1830 : Hook. f., Fl. Brit. India 3:37. 1880, *p.p.* *W.paniculata auct. non DC.* 1830 : Hook. f., Fl. Brit. India 3:39. 1880, *p.p.*

Large shrubs. Leaves elliptic to oblanceolate, pubescent beneath. Flowers in terminal panicles, greenish white or white.

Fl. & Fr. : May - Sept.

Distrib. : Kameng; 1800-2200 m, in open forests.

Wendlandia speciosa Cowan in Notes Roy. Bot. Gard. Edinburgh 16:254. 1932; Naithani in Ind. For. 112(5):426. 1986.

Shrubs or small trees, 7-10 m high. Leaves broadly ovate; stipules orbicular. Flowers in terminal panicles, creamy, fragrant.

Fl. & Fr. : Aug. - Dec.

Distrib. : Kameng; 600-1200 m, in open forests.

Wendlandia tinctoria (Roxb.) DC., Prodr. 4:411. 1830; Hook. f., Fl. Brit. India 3:38. 1880. *Rondeletia tinctoria* Roxb., Fl. Ind. 2:134. 1824.

Local name : Gauni-kewta, Rangapatiogach (Asm.).

Small or medium sized trees up to 6 m high with spreading branches. Leaves elliptic or oblanceolate, sparsely pubescent beneath. Flowers in terminal pyramidal panicles, white. Capsules globose, reddish brown.

Fl. & Fr. : Nov. - April.

Distrib. : Changlang, Subansiri; 1000-1500 m, inside secondary forests, along forest edges and pathways.

Wendlandia wallichii Wight & Arn., Prodr. Fl. Pen. Ind. Or. 402. 1834; Hook. f., Fl. Brit. India 3:38. 1880.

Local name : Raglu (Apor).

Shrubs or medium sized trees, 5-10 m high. Leaves elliptic to elliptic-lanceolate; stipules ovate, caducous. Flowers in terminal or axillary pubescent panicles, white, fragrant. Capsules small, globose with persistent calyx.

Fl. & Fr. : Sept. - Feb.

Distrib. : Changlang, Kameng, Tirap; common in primary forests at higher elevation.

Xeormpnis spinosa (Thunb.) Keay in Bull. Jard. Bot. Brux. 28:37. 1958; Maheshwari in Bull. Bot. Surv. India 3:91. 1961; Yamazaki in J. Jap. Bot. 45:339. 1970. *Gardenia spinosa* Thunb., Diss. Gard. no. 7:1780. *Gardenia dumetorum* Retz. Obs. Bot. 2:14. 1781. *Randia dumetorum* (Retz.) Lamk., Encycl. Meth. Bot. 2:227. 1794. 1812 :Hook. f., Fl. Brit. India 3:110. 1880.

Local name : Behmona, Mou (Asm.).

Shrubs or small trees up to 10 m high, often with axillary thorns. Leaves obovate or oblanceolate; stipules ovate. Flowers at branch tips, bright yellow, violet or greenish white; corolla densely appressed silky hairy. Berries fleshy, globose, yellowish.

Fl. & Fr. : March - Nov.

Distrib. : Kameng; in forests and along forest edges.

Use : Fruits are used for poisoning fish and is considered to be one of the best and safest edetics in Indian medicine.

VALERIANACEAE (incl. Triplostegiaceae)

Triplostegia glandulifera Wallich ex DC., Prodr. 4:642. 1830; Clarke in Hook. f., Fl. Brit. India 3:215. 1881.

Perennial, erect, glandular pubescent herbs. Leaves sessile, ovate-lanceolate, toothed or pinnatifid, puberulous or villous beneath. Flowers in bi- or trichotomous glandular pubescent cymes, pink purple. Achenes shortly beaked.

Fl. & Fr. : June - Feb.

Distrib. : Kameng; 2500-3000 m, in forests.

Valeriana hardwickii Wallich in Roxb., Fl. Ind. 1:166. 1820; Clarke in Hook. f., Fl. Brit. India 3:213. 1881.

Herbs or undershrubs up to 2 m high; branches fistular. Radical leaves long petioled, usually undivided, ovate, disappear before fruiting; cauline leaves pinnatifid; leaflets lanceolate, sparsely glandular strigose beneath. Flowers in corymbosely paniced cymes, white or pinkish white. Fruits angular, hairy.

Fl. & Fr. : Aug. - Dec.

Distrib. : Kameng, Subansiri, Tirap; 2000-3000 m, in moist and shady places.

Valeriana jatamansii Jones in Asiat. Res. 2:405, f. & 416. 1790; Hara in Hara *et al.*, Enum. Pl. Pl. Nep. 2:209. 1979. *V. walltchii* DC., Prodr. 4:640. 1830; Clarke in Hook. f., Fl. Brit. India 3:213. 1881.

Soft, succulent herbs ca 50 cm tall, branches pubescent. Radical leaves persistent, ovate; cauline leaves entire or pinnatifid. Flowers in dense capitate heads, white or pinkish white. Fruits hairy.

Fl. & Fr. : April - Sept.

Distrib. : Kameng, Siang; 2000-2800 m in damp, shaded places of forests and waste lands.

DIPSACACEAE

Dipsacus atratus Hook. f. & Thomson ex Clarke in Hook. f., Fl. Brit. India 3:218. 1881; Yamazaki in Hara, Fl. E. Himal. 321. 1966.

Erect, prickly or bristly as well as villous herbs. Leaves pinnatifid or upper trifid, densely hairy, apex long mucronate. Flowers in terminal, pedunculate heads, intense blue black, slightly pilose without.

Fl. & Fr. : July - Dec.

Distrib. : Kameng; 2500-3200 m, in forests.

Dipsacus inermis Wallich var. *mitis* (D. Don) Nasir in Nasir & Ali, Fl. W. Pakistan 94:10. 1975; Hara in Hara *et al.*, Enum. Fl. Pl. Nep. 2:210. 1979. *D. mitis* D. Don, Prodr. Fl. Nep. 161. 1825. *D. inermis auct. non.* Wallich 1820 :Clarke in Hook. f., Fl. Brit. India 3:217. 1881, *p.p.*

Tall, erect, bristly-hirsute or prickly herbs or undershrubs. Leaves pinnatifid, hairy on both surfaces. Flowers in dense heads, white. Fruits 8-ribbed.

Fl. & Fr. : Aug. - Dec.

Distrib. : Kameng; 2000-3000 m, in forests or amidst grasses in damp situation.

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