

# Ex-situ conservation of Endemic tree species of the region in NOEG, Yercaud

Executing officials: Dr. Mayur Y. Kamble, Scientist 'E' & Shri. B.S. Elango, Bot. Asst.

## Quantifiable deliverables (targets) for 2020 – 2021

Q1. to Q4. Multiplication and maintenance of existing collections.

Q2. Documentation of phenology.

Q3. One Field Tour, Conservation-cum-herbarium Consultation tour to Agasthyamalai Biosphere Reserve and TBGT Herbarium of Jawaharlal Nehru Tropical Botanical Garden and Research Institute, Palode, Thiruvananthapuram, Kerala.

Q4. Documentation of phenology.

Total tours: 1 Field-cum-Herbarium Consultation Tour

## MULTIPLICATION OF EXISTING COLLECTIONS OF ENDEMIC TREE SPECIES:

Multiplied following endemic, endangered and threatened species in experimental garden through seeds or stem cuttings from existing germplasm as well as recently collected seeds from Agasthyamalai Biosphere Reserve, Western Ghats: 2489 nos.

### ENDEMIC TREES: 2050 nos. of seedlings

#### Through seeds (1765 nos.)

*Alstonia venenata* R. Br. (APOCYNACEAE); Not – 1050 nos.

*Arenga wightii* Griff. (ARECACEAE); Vulnerable – 16 nos.

*Bentinckia condapanna* Berry ex Roxb. (ARECACEAE); Endangered – 410 nos.

*Garcinia gummi-gutta* (L.) Robs. (CLUSIACEAE); Least concern – 53 nos.

*Garcinia imberti* Bourd. (CLUSIACEAE); Endangered – 192 nos.

*Goniothalamus wightii* Hook.f. & Thomson (ANNONACEAE); Endangered – 27 nos.

*Ixora brachiata* Roxb. (RUBIACEAE); Least concern – 17 nos.

#### Through stem cuttings (270 nos.)

*Euphorbia vajravelui* Binojk. & N.P. Balakr. (EUPHORBIACEAE); Vulnerable – 270 nos.

#### Through offsets (15 nos.)

*Cyathea nilgirensis* Holttum (CYATHEACEAE); Vulnerable – 15 nos.

### ENDEMIC SHRUBS: 395 nos.

#### Through seeds

*Crotalaria longipes* Wight & Arn. (FABACEAE); Endangered – 165 nos.

#### Through stem cuttings

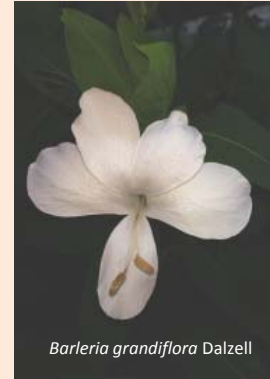
*Barleria acuminata* Nees (ACANTHACEAE) – 110 nos.

*Barleria grandiflora* Dalzell – 120 nos.

### THREATENED LIANA: 44 nos.

#### Through seeds

*Gnetum ula* Brongn (Least Concern) – 44 nos.



*Barleria grandiflora* Dalzell



*Crotalaria longipes* Wight & Arn.



*Alstonia venenata* R. Br.



*Crotalaria longipes* Wight & Arn.



*Alstonia venenata* R. Br.



*Garcinia imberti* Bourd.



*Euphorbia vajravelui*  
Binojk. & N.P. Balakr.

## MAINTENANCE OF ENDEMIC TREE SPECIES IN THE GARDEN:

Saplings of following species developed in the germination trays/beds through seeds or stem cuttings and transferred in earthen pots, nursery bags; maintaining under glass house, shaded areas, etc in experimental garden.

*Actinodaphne bourdillonii* Gamble (LAURACEAE); Not Evaluated  
*Alstonia venenata* R. Br. (APOCYNACEAE); Not Evaluated  
*Arenga wightii* Griff. (ARECACEAE); Vulnerable  
*Artocarpus hirsutus* Lam. (MORACEAE); Least Concern  
*Baccaurea courtallensis* (Wight) Muell.-Arg. (EUPHORBIACEAE); Near Threatened  
*Bentinckia condapanna* Berry ex Roxb. (ARECACEAE); Endangered  
*Bentinckia nicobarica* (Kurz) Becc. (ARECACEAE); Endangered  
*Calophyllum apetalum* Willd. (CLUSIACEAE); Vulnerable  
*Cinnamomum malabratrum* (Burm.f.) J. Presl. (LAURACEAE); Not Evaluated  
*Cullenia exarillata* A. Robyns (BOMBACACEAE); Vulnerable  
*Dipterocarpus indicus* Bedd. (DIPTEROCARPACEAE); Endangered  
*Garcinia gummi-gutta* (L.) Robs. (CLUSIACEAE); Least Concern  
*Garcinia imberti* Bourd.; Endangered  
*Garcinia indica* (Thouars) Choisy; Vulnerable  
*Garcinia talbotii* Raizada ex Santapau; Least Concern  
*Gluta travancorica* Bedd. (ANACARDIACEAE); Endangered  
*Goniothalamus wightii* Hook.f. & Thomson (ANNONACEAE) Endangered  
*Hardwickia binata* Roxb. (FABACEAE); Not Evaluated  
*Holigarna arnottiana* Hook. f. (ANACARDIACEAE); Least Concern  
*Holigarna grahamii* (Wight) Kurz; Least Concern  
*Hopea parviflora* Bedd. (DIPTEROCARPACEAE); Near Threatened  
*Humboldtia decurrens* Bed. ex Oliv. (FABACEAE); Near Threatened  
*Hydnocarpus pentandrus* (Buch.-Ham.) Oken (FLACOURTIACEAE); Least Concern  
*Ixora brachiata* Roxb. (RUBIACEAE); Least Concern  
*Kingiodendron pinnatum* (Roxb. ex DC.) Harms (FABACEAE); Endangered  
*Knema attenuata* (Hook.f. & Th.) Warb. (MYRISTICACEAE); Least Concern  
*Monosis travancorica* (Hook.f.) H. Rob. & Skvarla; Endangered  
*Palaquium ellipticum* (Dalz.) Baill. (SAPOTACEAE); Least Concern  
*Pinanga dicksonii* (Roxb.) Blume (ARECACEAE); Vulnerable  
*Pterospermum reticulatum* Wight & Arn. (STERCULIACEAE); Vulnerable  
*Sageraea laurina* Dalzell (ANNONACEAE); Near Threatened  
*Syzygium mundagam* (Bourd.) Chithra (MYRTACEAE); Vulnerable  
*Syzygium palodense* Shareef, E.S.S. Kumar & Shaju (MYRTACEAE); Vulnerable  
*Syzygium stocksii* (Duthie) Gamble (MYRTACEAE); Not Evaluated  
*Syzygium travancoricum* Gamble (MYRTACEAE); Critically endangered  
*Tabernaemontana gamblei* Subram. & Henry (APOCYNACEAE); Endangered  
*Vateria indica* L. (DIPTEROCARPACEAE); Critically endangered  
*Vernonia shevaroyensis* Gamble (ASTERACEAE); Not Evaluated  
*Xanthophyllum arnottianum* Wight (XANTHOPHYLLACEAE); Vulnerable



*Gluta travancorica* Bedd.



*Hopea parviflora* Bedd.



*Syzygium travancoricum* Gamble



*Arenga wightii* Griff.



*Gnetum ula* Brongn



*Garcinia talbotii* Raizada ex Santapau



*Bentinckia condapanna* Berry ex Roxb.



*Kingiodendron pinnatum* (Roxb. ex DC.) Harms



## Plantation of Endemic tree species in Arboretum and garden premises:

Following species has been planted and being maintained: 376 NOS.

*Arenga wightii* Griff. (ARECACEAE); Vulnerable – 10 nos.  
*Bentinckia condappana* Berry ex Roxb.; Endangered – 85 nos.  
*Bentinckia nicobarica* (Kurz) Becc. (ARECACEAE); Endangered – 9 nos.  
*Cinnamomum malabattrum* (Burm.f.) J. Presl. (LAURACEAE) – 1 no.  
*Cynometra travancorica* Bedd.; (FABACEAE); Endangered – 2 no.  
*Crotalaria longipes* Wight & Arn.; Endangered – 155 nos.  
*Euphorbia vajravelui* Binojk. & N.P. Balakr. (Vulnerable) – 10 nos.  
*Garcinia gummi-gutta* (L.) Robs.; Least Concern – 10 nos.  
*Garcinia imberti* Bourd.; Endangered – 6 nos.  
*Garcinia indica* (Thouars) Choisy; Vulnerable – 9 nos.  
*Garcinia talbotii* Raizada ex Santapau (CLUSIACEAE); Least Concern – 14 nos.  
*Gluta travancorica* Bedd. (ANACARDIACEAE); Endangered – 16 nos.  
*Holigarna arnottiana* Hook. f. (ANACARDIACEAE); Least Concern – 7 nos.  
*Hopea parviflora* Bedd. (DIPTEROCARPACEAE); Near Threatened – 9 nos.  
*Kingiodendron pinnatum* (Roxb. ex DC.) Harms (FABACEAE); Endangered – 6 nos.  
*Knema attenuata* (Hook.f. & Th.) Warb. (MYRISTICACEAE); Least Concern – 4 nos.  
*Monosis travancorica* (Hook.f.) H. Rob. & Skvarla (ASTERACEAE); Endangered – 4 nos.  
*Palaquium ellipticum* (Dalz.) Baill. (SAPOTACEAE); Least Concern – 2 nos.  
*Syzygium mundagam* (Bourd.) Chithra (MYRTACEAE); Vulnerable – 4 nos.  
*Syzygium palodense* Shareef, E.S.S. Kumar & Shaju (MYRTACEAE); Vulnerable – 2 nos.  
*Syzygium travancoricum* Gamble (MYRTACEAE); Critically endangered – 4 nos.  
*Syzygium stocksii* (Duthie) Gamble; Endangered – 2 nos.  
*Tabernaemontana gamblei* Subram. & Henry (APOCYNACEAE); Endangered – 3 nos.  
*Xanthophyllum arnottianum* Wight (XANTHOPHYLLACEAE); Vulnerable – 2 nos.

**Indigenous tree planted: 1 no.**

*Mesua ferrea* L. (CLUSIACEAE) – 2 nos.



## Field Tour:

One Field Tour, Conservation-cum-herbarium Consultation tour to Agasthyamalai Biosphere Reserve and TBGT Herbarium of Jawaharlal Nehru Tropical Botanical Garden and Research Institute, Palode, Thiruvananthapuram, Kerala.

Due to Covid-19 pandemic situation and budget issues, One Field Tour, Conservation-cum-herbarium Consultation tour to Agasthyamalai Biosphere Reserve and TBGT Herbarium of Jawaharlal Nehru Tropical Botanical Garden and Research Institute, Palode, Thiruvananthapuram, Kerala could not be conducted.

## Phenology:

**Documentation of flowering and fruiting phenology of tree species in NOEG**

**Yercaud:**

Documented flowering and fruiting phenology of tree species growing in NOEG Yercaud during Q2.to Q4.

**Distribution of saplings of Endemic, Endangered and Threatened species multiplied in the garden to other botanical gardens, research organizations and State Forest Departments for reintroduction in forest areas and plantation in their gardens and ex-situ conservation.**

**Horticultural Research Station, Tamil Nadu Agriculture University, Yercaud on 16/09/2020 for plantation.**

*Bentinckia condapanna* Berry ex Roxb. (ARECACEAE) – 20 nos.

**Botanic Garden of India Republic, BSI, Noida for introduction and ex situ conservation.**

Total no. of saplings of EET and exotic species distributed – 78 nos.

**Trees: saplings 47 nos.**

*Arenga wightii* Griff. – 2 nos.

*Bentinckia condapanna* Berry ex Roxb. – 10 nos.

*Euphorbia vajravelui* Binojk. & N.P. Balakr. – 2 nos.

*Filicium decipiens* (Wight & Arn.) Thw. – 2 nos.

*Garcinia gummi-gutta* (L.) Robs.– 2 nos.

*Garcinia imberti* Bourd. – 2 nos.

*Garcinia indica* (Thouars) Choisy – 2 nos.

*Garcinia talbotii* Raizada ex Santapau – 2 nos.

*Gluta travancorica* Bedd. – 1 no.

*Goniothalamus wightii* Hook.f. & Thomson – 2 nos.

*Holigarna arnottiana* Hook. f. – 2 nos.

*Hopea parviflora* Bedd.– 2 nos.

*Kingiodendron pinnatum* (Roxb. ex DC.) Harms – 2 nos.

*Knema attenuata* (Hook.f. & Th.) Warb. – 2 nos.

*Mesua ferrea* L. – 2 nos.

*Monosis travancorica* (Hook.f.) H. Rob. & Skvarla – 1 nos.

*Syzygium mundagam* (Bourd.) Chithra – 2 nos.

*Syzygium palodense* Shareef, E.S.S. Kumar & Shaju – 2 nos.

*Syzygium travancoricum* Gamble – 2 nos.

*Tabernaemontana gamblei* Subram. & Henry – 1 nos.

*Xanthophyllum arnottianum* Wight – 2 nos.

**Shrubs/climbers: saplings 15 nos.**

*Barleria acuminata* Nees – 3 nos.

*Barleria grandiflora* Dalzell – 2 nos.

*Crotalaria longipes* Wight & Arn. – 3 nos.

*Thunbergia mysorensis* (Wight) T. And. – 7 nos.

**Threatened Liana: saplings 3 nos.**

*Gnetum ula* Brongn; Least Concern – 3 nos.

**Exotic plants: Saplings 13 nos.**

*Agave americana* L.– 5 nos

*Barleria lupulina* Lindl. – 3 nos.

*Solandra maxima* (Moc. & Sesse ex Dunal) P.S. Green– 3 nos.

*Thunbergia coccinea* Wall. – 2 nos.

**Institute of Forest Genetics & Tree Breeding, Coimbatore for introduction and ex situ conservation.**

Total no. of saplings of EET and exotic species distributed – 15 nos.

**EET tree species:**

*Alstonia venenata* R. Br. – 2 nos.

*Bentinckia condapanna* Berry ex Roxb. – 5 nos.

*Euphorbia vajravelui* Binojk. & N.P. Balakr. – 2 nos.

*Garcinia gummi-gutta* (L.) Robs.– 2 nos.

*Kingiodendron pinnatum* (Roxb. ex DC.) Harms – 2 nos.

**Ornamental species:**

*Solandra maxima* (Moc. & Sesse ex Dunal) P.S. Green – 2 nos.

**Indian Institute of Management, Pudukottai Main Road, Tiruchirappalli, Tamil Nadu**

**Total no. of saplings of EET Tree species distributed – 127 nos.**

*Alstonia venenata* R. Br. - 25 nos.

*Bentinckia condappana* Berry ex Roxb. - 50 nos.

*Euphorbia vajravelui* Binojk. & N.P. Balakr. - 20 nos.

*Garcinia gummi-gutta* (L.) Robs. - 5 nos.

*Garcinia indica* (Thouars) Choisy - 5 nos.

*Garcinia talbotii* Raizada ex Santapau - 5 nos.

*Hopea parviflora* Bedd - 5 nos.

*Knema attenuata* (Hook.f. & Th.) Warb. - 5 nos.

*Syzygium palodense* Shareef, E.S.S. Kumar & Shaju - 2 nos.

*Xanthophyllum arnottianum* Wight - 5 nos.

**Publications: 6 nos.**

**Book: 1 no. (in press)**

**Kamble M.Y. 2021:** Mao A.A., Dash S.S. (eds.) Flora of North Andaman Islands (in reference to six Wildlife Sanctuaries). Botanical Survey of India, Kolkata.

**Book chapters: 2 nos.**

**Kamble M.Y.** and S. Kaliamoorthy. 2020. “Endemic Trees of South India” in L.J. Singh & V. Ranjan (eds.), “New Vistas in Indian Flora”, Chapter 22. Bishen Singh Mahendra Pal Singh, Dehradun. 403-417. ISBN No. 9788194332350.

Kaliamoorthy S. and **M.Y. Kamble.** 2020. “Orchids of South India” in L.J. Singh & V. Ranjan (eds.), “New Vistas in Indian Flora”, Chapter 33. Bishen Singh Mahendra Pal Singh, Dehradun. 639-666. ISBN No. 9788194614715.

**Papers published: 2 nos.**

Chandore A.N., Auti S.G., Gosavi, K.V.C., Shendage, S.M. and **M.Y. Kamble.** 2020. *Eleocharis equisetina* C. Presl (Cyperaceae) An extended distribution to Andaman & Nicobar Islands and notes on its identity. Indian Forester 146(3): 261-262.

Mane S.S., Rath C., Susmitha B., Gaur S.K., Ratna J.G.V., Srikanth N., Tripathi A.K. and **M.Y. Kamble.** 2020. Ethnomedicinal Knowledge among Nicobarese Tribes of Car Nicobar Island of Andaman and Nicobar Islands, India. Journal of Drug Research in Ayurvedic Sciences. 5(1):13–24.

**Paper accepted: 1 no. (in press)**

Kaliamoorthy S., T.S. Saravanan and **M.Y. Kamble.** Extended distribution of *Impatiens scapiflora* (Balsaminaceae) to the flora of Eastern Ghats. in *Journal of Threatened Taxa*.



