

**FLORA
OF
HIMACHAL PRADESH**

Volume 3

**H. J. CHOWDHERY
&
B. M. WADHWA**

BOTANICAL SURVEY OF INDIA

FLORA OF HIMACHAL PRADESH

ANALYSIS

FLORA OF INDIA

Series 2

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H. J. CHOWDHERY & B. M. WADHWA



BOTANICAL SURVEY OF INDIA

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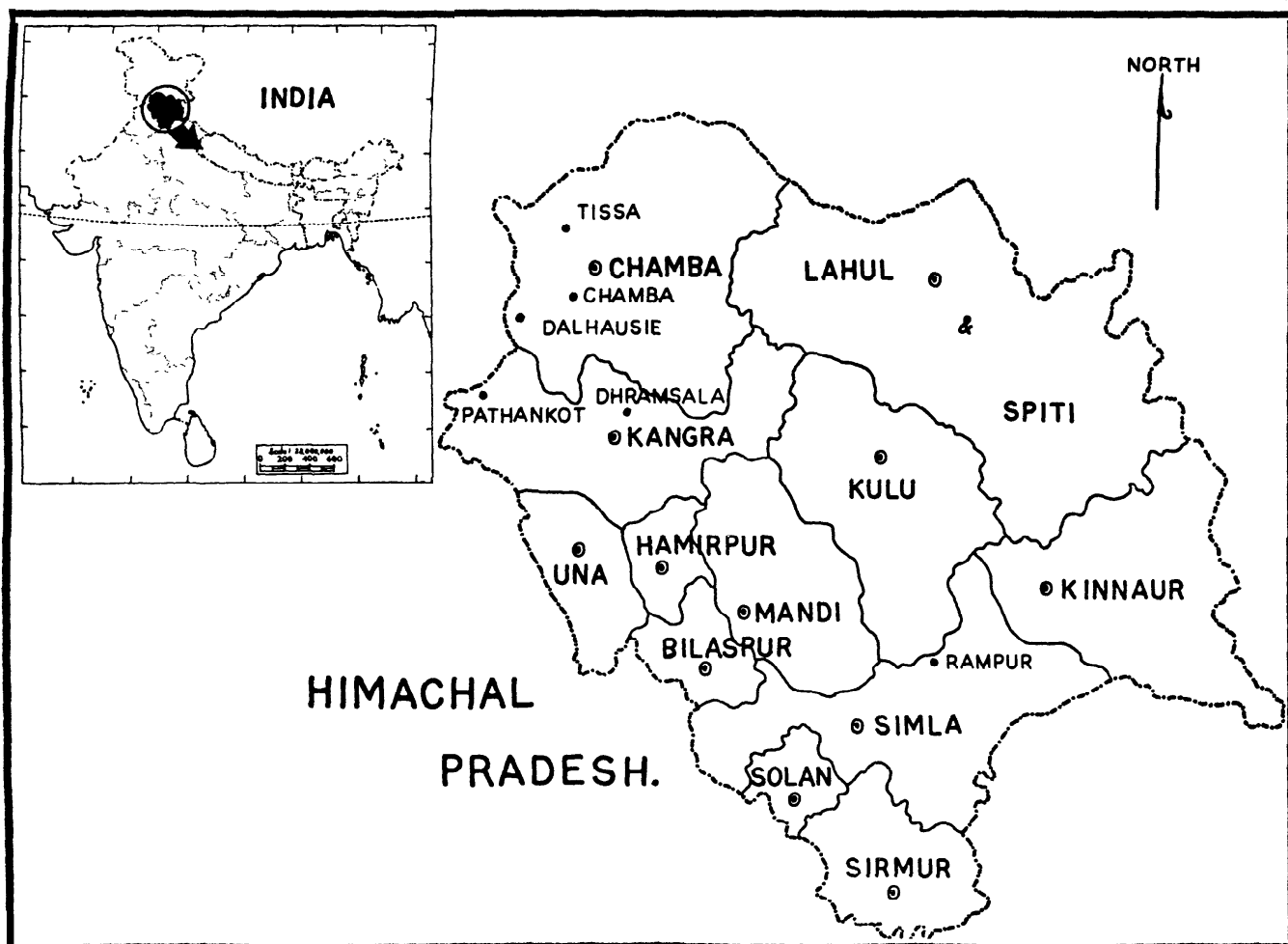
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HYDROCHARITACEAE

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Hydrilla verticillata (L. f.) Royle, Ill. Bot. Himal. Mount. 1 : 376. 1839 ; Hook. f. Fl. Brit. India 5 : 659. 1888 ; Subramanyam, Aquatic Angio. 55. 1962. *Serpicula verticillata* L. f. Suppl. 416. 1781.

Leafy, aquatic herb, usually submerged. Male flowers shortly pedicelled, female sessile. Fruit subulate.

Fl. & Fr. : October – January.

Simla (BSD), Sirmur (BSD).

Throughout India in still and running water.

Vallisneria spiralis L. Sp. Pl. 1015. 1753 ; Hook. f. Fl. Brit. India 5 : 660. 1888 ; Subramanyam, Aquatic Angio. 57. 1962 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 33. 1972.

Submerged, tufted, stemless herb. Leaves radical, linear, ribbon shaped. Flowers dioecious on long or short scapes. Male spathe shortly peduncled, female spathe connate, tubular, borne on a long, slender scape becoming spirally contracted after anthesis.

Fl. & Fr. : October – March.

Sirmur (BSD).

Throughout India.

CERATOPHYLLACEAE

B.M. WADHWA AND H.J. CHOWDHERY

Ceratophyllum demersum L. Sp. Pl. 992. 1753 ; Hook. f. Fl. Brit. India 5 : 639. 1888 ; Subramaniyam, Aqu. Angio. 52. 1962 ; K. Aziz in Fl. West Pakistan 70 : 1. 1974.

Submerged, aquatic herb. Leaves whorled. Flowers minute.

Fl. & Fr. : June – October.

Mandi (BSD).

Throughout India.

ORCHIDACEAE

H.J. CHOWDHERY AND B.M. WADHWA

Aerides multiflorum Roxb. Pl. Corom 3 : 68. t. 271. 1820 et Fl. Ind. ed. 2. 3 : 475. 1832 ; Hook. f. Fl. Brit. India 6 : 44. 1890.

Epiphytes. Flowers rose – purple.

Fl. & Fr. : April – June.

Kangra (DD), Sirmur (BSD).

Tropical Himalaya, from Garhwal eastwards to Assam.

Calanthe plantaginea Wall. ex Lindl. Sp. Orchid. Pl. 250. 1833 ; Hook. f. Fl. Brit. India 5 : 853. 1890 ; Collett, Fl. Siml. 494. 1902 ; Banerjee & Thapa in J. Bombay nat. Hist. Soc. 69 : 285. 1972 ; Nair, Fl. Bash. Himal. 270. 1977.

Terrestrial. Flowers pale-pink, spur long.

Fl. & Fr. : April – July.

Chamba (DD, RRL).

Temperate Western Himalaya, Garhwal to Nepal.

Calanthe puberula Lindl. Gen. Sp. Orchid. Pl. 252. 1833 ; Hook. f. Fl. Brit. India 5 : 848. 1890 ; Collett, Fl. Siml. 495. 1902 ; Nair, Fl. Bash. Himal. 271. 1977.

Terrestrial. Flowers pale – lavender, spur absent.

Fl. & Fr. : May – July.

Chamba (DD).

Subtropical Himalaya.

Calanthe tricarinata Lindl. Gen. Sp. Orchid. Pl. 252. 1833 ; Hook. f. Fl. Brit. India 5 : 847. 1890 ; Collett, Fl. Siml. 494. 1902 ; Banerjee &

Thapa in J. Bombay nat. Hist. Soc. 69 : 285. 1972 ; Nair, Fl. Bash. Himal. 271. 1977.

Terrestrial. Sepals and petals greenish – yellow, lip brown – purple. Spur absent.

Fl. & Fr. : May – July.

Chamba (DD), Kinnaur (DD), Kulu (DD), Simla (BSD, DD).

Temperate Himalaya, Kashmir to Nepal.

Cephalanthera ensifolia Rich. Orch. Annot. 29. 1817 ; Hook. f. Fl. Brit. India 6 : 125. 1890 ; Collett, Fl. Siml. 497. 1902 ; Nair, Fl. Bash. Himal. 271. 1977.

Terrestrial. Flowers white, not spurred.

Fl. & Fr. : May – June.

Chamba (DD), Kinnaur (DD), Kulu (DD), Simla (DD).

Temperate Himalaya, Kashmir to Bhutan.

Cymbidium macrorhizon Lindl. Gen. Sp. Orchid. Pl. 162. 1833 ; Hook. f. Fl. Brit. India 6 : 9. 1890 ; Seidenfaden in Bull. Mus. nat. Hist. Paris ser. 3. no. 71 : 116. 1972.

Terrestrial. Flowers white or pale – yellow with pink stripes.

Fl. & Fr. : August – October.

Chamba (DD), Simla (DD).

North Western India.

Cypripedium cordigerum D. Don, prodr. Fl. Nep. 37. 1825 ; Hook. f. Fl. Brit. India 6 : 170. 1890 ; Collett, Fl. Siml. 508. 1902 ; Nair, Fl. Bash. Himal. 271. 1977.

Terrestrial. Flower greenish – white.

Fl. & Fr. : May – August.

Chamba (DD), Kinnaur (DD), Kulu (DD), Simla (DD).

Temperate Himalaya from Kashmir upto Bhutan.

Cypripedium himalaicum Rolf. in J. Linn. Soc. 29 : 319. 1892 ; Duthie in Ann. Roy. Bot. Gard. Calcutta 9 : 204. 1906. *C. macranthon* (auct non Swartz) Hook. f. Fl. Brit. India 6 : 170. 1890 *p.p.*

Terrestrial. Flowers 1 – 2, purplish – green.

Fl. & Fr. : July – September.

Himalaya – Himachal Pradesh upto Bhutan.

Epipactis royleana Lindl. (in Royle, Ill. Bot. Himal. 7 : 364. 1839. nom. nud) Gen. Sp. Orchid. Pl. 461. 1840 ; Hook. f. Fl. Brit. India 6 : 126. 1890 ; Collett, Fl. Siml. 499. 1902 ; Nair, Fl. Bash. Himal. 272. 1977.

Terrestrial. Flowers red with yellow center.

Fl. & Fr. : May – October.

Chamba (DD), Kinnaur (BSD, DD), Kulu (DD).

Temperate Himalaya – Kashmir to Sikkim.

Epipactis veratrifolia Boiss. et Hohen in Boiss. Diag. Pl. Or. Nov. 2(13) : 11. 1853 ; Nair, Fl. Bash. Himal. 272. 1977 ; Raizada et. al Orch. Muss. 54. 1981. *E. consimilis* Wall. ex Hook. f. Fl. Brit. India 6 : 126. 1890 ; Collett, Fl. Siml. 498. 1902.

Terrestrial. Flowers orange with purplish streaks.

Fl. & Fr. : May – June.

Kinnaur (BSD), Lahul and Spiti (RRL), Simla (BSD).

Temperate Himalaya, Kashmir to Sikkim.

Epipogium aphyllum Sw. Summ. Veg. Scand. 32. 1814 ; Hook. f. Fl. Brit. India 6 : 124. 1890 ; Collett, Fl. Siml. 497. 1902 ; Duthie in Ann. Roy. Bot. Gard. Calcutta 9 : 150. 1906 ; Nair, Fl. Bash. Himal. 297. 1977.

Terrestrial, leafless herb. Flowers yellowish – pink.

Fl. & Fr. : July – October.

Kangra (DD), Kulu (BSD).

Temperate Himalaya – Kashmir to Bhutan.

Epipogium roseum (D. Don) Lindl. in J. Proc. Linn. Soc. Bot. 1 : 177. 1857. *Limodorum roseum* D. Don, Prodr Fl. Nep. 30. 1825. *Epipogium tuberosum* Duthie in Ann. Roy. Bot. Gard. Calcutta 9 : 151. 1906. *E. nutans* (Blume) Reichenb. f. in Bonplandia 5 : 36. 1857 ; Hook. f. Fl. Brit. India 6 : 124. 1890.

Terrestrial. Flowers pale – yellow or pinkish – white.

Fl. & Fr. : June – September.

Kulu (BSD).

Himalaya – Himachal Pradesh to Sikkim.

Eria alba Lindl. Gen. Sp. Orchid. Pl. 67. 1830 ; Hook. f. Fl. Brit. India 5 : 795. 1890 ; Nair, Fl. Bash. Himal. 272. 1977 ; Raizada et al., Orch. Muss. 20. 1981.

Epiphytes. Leaves narrow, strongly nerved. Flowers white, lip yellow and red.

Fl. & Fr. : June – August.

Chamba (DD).

Sub-tropical Himalaya.

Eulophia herbacea Lindl. Gen. Sp. Orchid. Pl. 182. 1833 ; Hook. f. Fl. Brit India 6 : 2. 1890 ; Seiden faden in Bot. Tidskrift 65(1-2) : 142. 1969 ; Nair, Fl. Bash. Himal. 272. 1977 ; Raizada et al., Orch. Muss. 32. 1981.

Terrestrial, glabrous herb. Flowers white, purple-yellow.

Fl. & Fr. : July – August.

Jeori (BSD).

North – Western Himalaya and Nepal.

Gastrodia orobanchoides (Falc.) Benth. in Gen. Pl. 3 : 617. 1883 ; Hook. f. Brit. India 6 : 122. 1890 ; Collett, Fl. Siml. 497. 1902 ; Duthie in Ann. Royl. Bot. Gard. Calcutta 9 : 155 1906 ; Nair, Fl. Bash. Himal. 273. 1977. *Gamoplexis orobanchoides* Falc. in Trans. Linn. Soc. 20 : 293. t. 13. 1883.

Terrestrial, leafless herb with large tuberous root. Scape yellow – brown.

Fl. & Fr. : June – September.

Chamba (BSD, DD), Kinnaur (DD), Kulu (BSD), Simla (DD).

Temperate Himalaya, Kashmir to Garhwal.

Goodyera biflora (Lindl.) Hook. f. Fl. Brit. India 6 : 114. 1890 ; Collett, Fl. Siml. 496. 1902 ; Nair, Fl. Bash. Himal. 273. 1977 ; Raizada et al., Orch. Muss. 56. 1981. *Georchis biflora* Lindl. Gen. Sp. Orchid. Pl. 496. 1840.

Terrestrial. Flowers yellow, not spurred. Lip hairy inside.

Fl. & Fr. : June August.

Chamba (BSD), Simla (DD).

Temperate Western Himalaya, Nepal and Tibet.

Goodyera repens (L.) R. Br. in Ait. Hort. Kew. ed. 2.5 : 198. 1813 ; Hook. f. Fl. Brit. India 6 : 111. 1890 ; Collett, Fl. Siml. 496. 1902 ; Nair, Fl. Bash. Himal. 273. 1977 ; Raizada et al., Orch. Muss. 59. 1981. *Satyrium repens* L. Sp. Pl. 945. 1753.

Terrestrial herb with white leaves. Lip smooth within.

Fl. & Fr. : April – September.

Kinnaur (BSD, DD), Kulu (BSD), Simla (BSD, DD).

Temperate Himalaya – Simla eastward to Sikkim.

Habenaria acuminata Thw. in Trimen. J. Ceylon Br. Roy. Asiat. Soc. 9 : 91. 1885 ; Hook. f. Fl. Brit. India 6 : 133. 1890 ; Nair, Fl. Bash. Himal. 273. 1977.

Terrestrial. Flowers dark purple.

Fl. & Fr. : August – September.

Kulu (BSD).

North – Western Himalaya.

Habenaria arietina Hook. f. Fl. Brit. India 6 : 138. 1890 ; Collett, Fl. Siml. 502. 1902 ; Nair, Fl. Bash. Himal. 273. 1977.

Terrestrial.

Fl. & Fr. : July – August.

Simla (DD).

Temperate Himalaya – Simla eastward to Sikkim.

Habenaria commelinifolia (Roxb.) Wall. ex Lindl. Gen. Sp. Orch. Pl. 325. 1835 ; Hook. f. Fl. Brit. India 6 : 143. 1890. *Orchis commelinaejolia* Roxb. Fl. Ind. ed. 2. 3 : 451. 1832.

Terrestrial. Flowers white.

Fl. & Fr. : June – September.

Tropical Western Himalaya upto Nepal.

Habenaria densa Wall. ex Lindl. Gen. Sp. Orchid. Pl. 326. 1835 ; Hook. f. Fl. Brit. India 6 : 153. 1890 ; Collett, Fl. Siml. 504. 1902 ; Nair, Fl. Bash. Himal. 274. 1977.

Terrestrial, glabrous herb. Flowers yellow - green.

Fl. & Fr. : August - September.

Kulu (BSD).

Temperate Himalaya, Simla to Sikkim.

Habenaria digitata Lindl. Gen. Sp. Orchid. Pl. 307. 1835 ; Hook. f. Fl. Brit. India 6 : 134. 1890 *p.p.* ; Raizada et al., Orch. Muss. 75. 1981.

Terrestrial Flowers green.

Fl. & Fr. : June - August.

Kainthli (LWG).

Himalaya and Western Ghats.

Habenaria edgeworthii Hook. f. ex Collett, Fl. Siml. 504. t. 166. 1902 ; Duthie in Ann. Royl. Bot. Gard. Calcutta 9 : 187. 1906 ; Nair, Fl. Bash. Himal. 274. 1977 ; Raizada et al., Orch. Muss. 96. 1981. *Platanthera edgeworthii* (Hook. f. ex Collett) Gupta, Fl. Nainital. 349. 1968.

Terrestrial. Flowers yellowish - green.

Fl. & Fr. : July - October.

Chamba (BSD), Kinnaur (DD), Kulu (BSD, DD), Simla (DD).

North - Western Himalaya.

Habenaria elisabethae Duthie in Journ. Asist. Soc. Bengal 71 : 44. 1902 ; Collett, Fl. Siml. 505. 1902 ; Nair, Fl. Bash. Himal. 274. 1977.

Terrestrial. Flowers very small, green.

Fl. & Fr. : June - September.

Simla (DD).

North Western Himalaya.

Habenaria ensifolia Lendl. Gen. Sp. Orchid. Pl. 231. 1835 ; Collett, Fl. Siml. 504. 1902 ; Duthie in Ann. Royl. Bot. Gard. Calcutta 9 : 179. 1906 ; Nair, Fl. Bash. Himal. 274. 1977. *H. pectinata* Hook. f. Fl. Brit. India 6 : 137. 1890 (non D. Don, 1825. *p.p.*)

Terrestrial. Flowers white.

Fl. & Fr. : August – October.

Kinnaur (DD), Simla (DD).

Temperate Himalaya, Simla eastward to Sikkim.

Habenaria galeandra (Reichb.) Benth. Fl. Hongk. 263. 1863 ; Hook. f. Fl. Brit. India 6 : 163. 1890 ; Collett, Fl. Siml. 506. 1902 ; Nair, Fl. Bash. Himal. 274. 1977. *Platanthera galeandra* Reichb. f. in Linnaea 25 : 226. 1852.

Terrestrial. Flowers purple.

Fl. & Fr. : August – September.

Simla (DD).

Western Himalaya and Nepal.

Habenaria goodyeroides D. Don, Prodr. Fl. Nep. 25. 1825 ; Hook. f. Fl. Brit. India 6 : 161. 1890 ; Collett, Fl. Siml. 505. 1902 ; Nair, Fl. Bash. Himal. 274. 1977.

Terrestrial. Flowers yellow – green.

Fl. & Fr. : August – September.

Chamba (DD).

Subtropical Himalaya – Kumaon to Bhutan,

Habenaria intermedia D. Don, Prodr. Fl. Nep. 24. 1825 ; Hook. f. Fl. Brit. India 6 : 138. 1890 ; Collett, Fl. Siml. 502. 1902 ; Nair, Fl. Bash. Himal. 275. 1977.

Terrestrial. Flowers greenish – white.

Fl. & Fr. : July – August.

Chamba, (BSD, DD), Kinnaur (DD), Simla (DD).

Temperate Himalaya – Kashmir to Sikkim.

Habenaria latilabris (Lindl.) Hook. f. Fl. Brit. India 6 : 153. 1890 ; Nair, Fl. Bash. Himal. 275. 1977. *Platanthera latilabris* Lindl. Gen. Sp. Orchid. Pl. 289. 1835. *P. acuminata* Lindl. Gen. Sp. Orchid. Pl. 289. 1835.

Terrestrial. Flowers yellow – green.

Fl. & Fr. : July – October.

Chamba (BSD, DD), Kinnaur (DD), Kulu (BSD), Simla (BSD).

Temperate Himalaya – Kashmir to Sikkim.

Habenaria marginata Colebr. in Hook. f. Exot. Fl. 2. t. 136. 1824 ; Hook. f. Fl. Brit. India 6 : 150. 1890 ; Duthie in Ann. Royl. Bot. Gard. Calcutta 9 : 184. t. 136. 1906.

Terrestrial. Flowers yellow green.

Fl. & Fr. : August – September.

Chamba (DD).

Himalaya – Kashmir to Bhutan.

Habenaria pectinata D. Don, Prodr. Fl. Nep. 1825 ; Hook. f. Fl. Brit. India 6 : 137. 1890 ; Collett, Fl. Siml. 501. 1902 ; Duthie in Ann. Roy. Bot. Gard. Calcutta 9 : 178. 1906 ; Nair, Fl. Bash. Himal. 275. 1977.

Terrestrial. Flowers white or greenish.

Fl. & Fr. : July – September.

Temperate Himalaya – from Simla eastwards to Sikkim.

Habenaria susannae R. Br. Prodr. 312. 1810 ; Hook. f. Fl. Brit. India 6 : 137. 1890 ; Collett, Fl. Siml. 501. 1902 ; Nair, Fl. Bash. Himal. 275. 1977.

Terrestrial. Flowers white, fragrant.

Fl. & Fr. : July – September.

Simla (DD).

Tropical Himalaya.

Hemipilia cordifolia Lindl. Gen. Sp. Orchid. Pl. 296. 1830 ; Hook. f. Fl. Brit. India 6 : 167. 1890 ; Collett, Fl. Siml. 506. 1902 ; Nair, Fl. Bash. Himal. 275. 1977.

Terrestrial herb with tuberous roots. Flowers purple.

Fl. & Fr. : August – September.

Simla (DD).

Western temperate Himalaya upto Nepal.

Herminium angustifolium Benth. ex Hook. f. Fl. Brit. India 6 : 129. 1890 ; Collett, Fl. Siml. 499. 1902 ; Nair, Fl. Bash. Himal. 276. 1977.

Terrestrial, tuberous herb. Flowers green.

Fl. & Fr. : July – October.

Chamba (BSD, DD), Kinnaur (DD), Kulu (BSD), Simla (BSD, DD).

Temperate Himalaya.

Herminium monophyllum (D. Don) Hunt et Summerhayes in Kew Bull. 20 : 51. 1966. *Fcottia monophylla* D. Don, Prodr. Fl. Nepal. 27. 1825. *Herminium gramineum* Lindl. Gen. Sp. Orchid. Pl. 305. 1835 ; Hook. f. Fl. Brit. India 6 : 131. 1890.

Terrestrial. Flowers minute.

Fl. & Fr. : August – September.

Simla (DD).

Western and Central Himalaya.

Herminium monorchis (L.) R. Br. in Ait. Hort. Kew. ed. 2. 5 : 191. 1818 ; Hook. f. Fl. Brit. India 6 : 128. 1890 ; Nair, Fl. Bash. Himal. 276. 1977.

Terrestrial herb. Flowers yellow green.

Fl. & Fr. : July – September.

Chamba (BSD, DD), Kinnaur (BSD), Kulu (BSD), Lahul & Spiti (BSD, DD).

Alpine Himalaya, Kashmir to Sikkim.

Herminium pugioniforme Lindl. ex Hook. f. Fl. Brit. India. 6 : 130. 1890 ; Tuyama in Hara, Fl. E. Himal. 2 : 190. 1971.

Terrestrial. Flowers minute.

Fl. & Fr. : August – October.

Kulu (BSD).

Alpine Himalaya, Kashmir to Sikkim.

Liparis glossula Reichb. f. in Linnæa 41 : 44. 1877 ; Hook. f. Fl. Brit. India 5 : 693. 1890 ; Nair, Fl. Bash. Himal. 276. 1977 ; Raizada et al., Orch. Muss. 10. 1981.

Pseudobulb large.

Fl. & Fr. : August – September.

Simla (DD).

Western and Central Himalaya.

Liparis nervosa (Thunb.) Lindl. Gen. Sp. Orchid. Pl. 26. 1830. *Ophrys nervosa* Thunb. Fl. Jap. 27. 1784. *Liparis paradoxa* (Lindl.) Reichb. f. in Walp. Ann. 6 : 218. 1861 ; Hook. f. Fl. Brit. India 5 : 697. 1890 ; Collett, Fl. Siml. 492. 1902 ; Nair, Fl. Bash. Himal. 276. 1977 ; Raizada et al., Orch. Muss. 11. 1981. *Empusa paradoxa* Lindl. in Bot. Reg. 10 : sub. t. 825. 1824.

Variable in habit. Flowers striped, yellow purple.

Fl. & Fr. : August September.

Simla (DD).

Temperate and subtropical Himalaya.

Liparis rostrata Reichb. f. in Linnaea 41 ; 44. 1877 ; Hook. f. Fl. Brit. India 5. 694. 1890 ; Collett, Fl. Siml. 492. 1902 ; Duthie in Ann. Royl. Bot. Gard. Calcutta 96. 1906 ; Nair, Fl. Bash. Himal. 276. 1977 ; Raizada et al., Orch. Muss. 11. 1981.

Flowers yellow - green.

Fl. & Fr. : July August.

Kinnaur (DD), Simla (DD).

Temperate Himalaya, Himachal Pradesh to Nepal.

Malaxis acuminata D. Don, Prodr. Fl. Nepal. 29. 1825 ; Tuyame in Hara, Fl. E. Himal. 1 : 443. 1966 ; Nair, Fl. Bash. Himal. 276. 1977 ; Raizada et. al., Orch. Muss. 7. 1981. *Microstylis wallichii* Lindl. Gen. Sp. Orchid. Pl. 20. 1830 ; Hook. f. Fl. Brit. India 5 : 686. 1888 ; Duthie in Ann. Royl. Bot. Gard. Calcutta 9 : 87. 1906 ; Collett, Fl. Siml. 491. 1902.

Terrestrial or epiphytic. Flowers greenish purplish or yellowish.

Fl. & Fr. : July August.

Chamba (DD).

Temperate and subtropical Himalaya, from Himachal Pradesh to Sikkim.

Malaxis cylindrostachya (Lindl.) Kuntze, Rev. Gen. Pl. 2 : 673. 1891 ; Nair, Fl. Bash. Himal. 277. 1977 ; Raizada et. al., Orch. Muss. 8. 1981. *Dienia cylindrostachya* Lindl. Gen. Sp. Orchid. Pl. 21. 1830. *Microstylis cylindrostachya* Reichb. f. in Walp. Ann. Bot. Syst. 6 : 207. 1861 ; Hook. f. Fl. Brit. India 5 : 689. 1890 ; Collett, Fl. Siml. 492. 1902 ; Duthie in Ann. Royl. Bot. Gard. Calcutta 6 : 88. 1906.

Terrestrial or epiphytic. Flowers pale yellow.

Fl. & Fr. : July August.

Kangra (BSD), Kulu (BSD), Simla (DD).

Temperate Himalaya, Himachal Pradesh to Sikkim.

Malaxis muscifera (Lindl.) Kuntze, Rev. Gen. Pl. 2 : 673. 1891 ; Tuyemen in Fl. E. Himal. 1 : 444. 1966 ; Nair, Fl. Bash. Himal. 277. 1977. *Dienia muscifera* Lindl. Gen. Sp. Orchid. Pl. 23. 1830. *Microstylis muscifera* (Lindl.) Ridley in Jour. Linn. Soc. Bot. 24 : 33. 1888 ; Hook. f. Fl. Brit. India 5 : 689. 1890 ; Collett, Fl. Siml. 491. 1902.

Terrestrial or epiphytic. Flowers pale yellow green.

Fl. & Fr. : July October.

Chamba (BSD, DD), Kinnaur (BSD), Kulu (BSD, DD), Lahul and Spiti (BSD), Simla (DD).

Himalaya, Kashmir to Bhutan.

Neottia listeroides Lindl. in Royle, Ill. Bot. Himal. Mount. 1 : 368. 1838 et Gen. Sp. Orchid. Pl. 458. 1840 ; Hook. f. Fl. Brit. India 6 : 103. 1890 ; Collett, Fl. Siml. 495. 1902 ; Nair, Fl. Bash. Himal. 177. 1977 ; Raizada et al., Orch. Muss. 45. 1981. *Listera lindleyana* (Decne.) King & Prantl. Ann. Roy. Bot. Gard. 8 : 258. t. 343. 1898. *Neottia lindleyana* Decne. in Jacquem. Voy. Bot. 163 & Atlas 2 : t. 163. 1844.

Terrestrial. Flowers red brown.

Fl. & Fr. : July September.

Kangra (DD), Kinnaur (BSD, DD), Kulu (BSD, DD), Simla (DD).

Temperate Himalaya, Kashmir eastward Sikkim.

Orchis latifolia L. Sp. Pl. 941. 1753 ; Hook. f. Fl. Brit. India 6 : 127. 1890 ; Collett, Fl. Siml. 499. 1902 ; Duthie in Ann. Roy. Bot. Gard. Calcutta 9 : 172. 1906 ; Nair, Fl. Bash. Himal. 277. 1977 ; Raizada et al., Orch. Muss. 64. 1981.

Terrestrial, erect herb with tuberous roots. Flowers dull purple, spurred, spotted.

Fl. & Fr. : June October.

Chamba (BSD, DD), Kinnaur (BSD), Kulu (DD), Lahul and Spiti (BSD, DD, RRL), Simla (DD).

Western temperate Himalaya, Kashmir to Nepal.

Orchis spathulata Reichp. ex Benth. in Journ. Linn. Soc. Bot. 18 : 355. 1880 ; Hook. f. Fl. Brit. India 6 : 127. 1890 ; Tuyama in Hara, Fl. E. Himal 3 : 162. 1975 ; Nair, Fl. Bash. Himal. 277. 1977.

Terrestrial. Flowers pink.

Fl. & Fr. : July August.

Alpine Himalaya.

Oreorchis foliosa (Lindl.) Lindl. in Journ. Linn. Soc. Bot. 3 : 27. 1859 ; Hook. f. Fl. Brit. India 5 : 709. 1890 ; Tuyama in Hara, Fl. E. Himal. 3 : 446. 1966 ; Nair, Fl. Bash. Himal. 278. 1977. *Corallorhiza foliosa* Lindl. Gen. Sp. Orchid. Pl. 535. 1840.

Terrestrial herb, root a tuber. Leaf only one. Flowers deep red.

Fl. & Fr. : July September.

Chamba (BSD), Simla (DD).

Temperate Himalaya.

Oreorchis indica (Lindl.) Hook. f. Fl. Brit. India 5 : 709. 1890 ; Collett, Fl. Siml. 493. 1902 ; Duthie in Ann. Roy. Bot. Gard. Calcutta 9 : 131. t. 112. 1906 ; Nair, Fl. Bash. Himal. 278. 1977 ; Raizada et al., Orch. Muss. 36. 1981. *Corallorhiza indica* Lindl. in Journ. Linn. Soc. Bot. 3 : 26. 1859 (non Decne.)

Terrestrial. Flowers large.

Fl. & Fr. : May August.

Simla (DD).

Temperate Western Himalaya, Simla to Garhwal.

Oreorchis micrantha Lindl. in Journ. Linn. Soc. Bot. 3 : 27. 1859 ; Hook. f. Fl. Brit. India 5 : 709. 1890 ; Collett, Fl. Siml. 493. 1902 ; Duthie in Ann. Roy. Bot. Gard. Calcutta 9 : 132. 1906 ; Tuyama in Hara, Fl. E. Himal. 1 : 446. 1966 ; Nair, Fl. Bash. Himal. 278. 1977 ; Raizada et al., Orch. Muss. 37 : 1981.

Terrestrial herb with 2 leaves. Flowers white.

Fl. & Fr. : June - July.

Simla (DD).

Western Himalaya.

Rhynchosstylis retusa Bl. Bijdr. 166. t. 49. 1825 ; Hook. f. Fl. Brit. India 6 : 32. 1890 ; Duthie in Ann. Royl. Bot. Gard. Calcutta 9 : 143. 1906 ; Raizada et al., Orch. Muss. 42. 1981.

Epiphytic. Flowers pink white in drooping, cylindric racemes.

Fl. & Fr. : June September.

Kangra (RRL).

Tropical Himalaya.

Satyrium nepalensis D. Don, Prodr. Fl. Nepal. 26. 1825 ; Hook. f. Fl. Brit. India 6 : 168. 1890 ; Collett, Fl. Siml. 507. t. 168. 1902 ; Tuyama in Hara, Fl. E. Himal. 1 : 450. 1966 ; Nair, Fl. Bash. Himal. 278. 1977 ; Raizada et al., Orch. Muss. 89. 1981.

Terrestrial. Flowers fragrant, dark pink.

Fl. & Fr. : July September.

Kinnaur (DD), Simla (BSD, DD).

Temperate Himalaya.

Spiranthes sinensis (Pers.) Ames, Orch. 2 : 53. 1908 var. **amoena** (M. Bieb.) Hara in J. Jap. Bot. 44 : 59. 1969. *Neottia amoena* M. Bieb. Fl. Taur. Cauc. 3 : 606. 1819. *Spiranthes australis* (R. Br.) Lindl. in Edw. Bot. Regist. 10 : sub. t. 823. 1824 ; Hook. f. Fl. Brit. India 6 : 102. 1890. *S. sinensis* subsp. *australis* (R. Br.) Kitamura in Acta Phytotax. Geobot. 21 : 23. 1964.

Terrestrial herb. Spikes spirally twisted. Flowers pink or red.

Fl. & Fr. : May October.

Chamba (DD), Kinnaur (BSD, DD), Kulu (BSD), Simla (BSD, DD).

Throughout India.

Vanda testacea (Lindl.) Reichb. f. in Gard. Chron. 2 : 166. 1877 ; Raizada et. al., Orch. Muss. 43. 1981. *Aerides testaceam* Lindl. Gen. Sp. Orchid. Pl. 238. 1833. *Vanda parviflora* Lindl. in Bot. Reg. 30 : Misc. 45. 1844 ; Hook. f. Fl. Brit. India 6 : 50. 1890 ; Duthie in Ann. Royl. Bot. Gard. Calcutta 9 : 144. 1906 ; Banerji et Thapa in J. Bombay. nat. Hist. Soc. 70(1) : 34. 1973.

Epiphyte. Flowers yellow.

Fl. & Fr. : April June.

Kangra (BSIP), Sirmur (BSD).

Western Himalaya.

ZINGIBERACEAE

H.J. CHOWDHERY

Cautleya gracilis (Sm.) Dandy in J. Bot. 70 : 328. 1932. *Roscoeia gracilis* Sm. in Trans. Linn. Soc. 13 : 460. 1822. *C. lutea* Royle, Ill. Bot. Himal. Mount. 361. 1839 ; Baker in Hook. f. Fl. Brit. India 6 : 208. 1890 ; Collett, Fl. Siml. 511. 1902.

Leafy herbs. Leaves narrow, sessile. Flowers yellow in drooping spikes, bracts green.

Fl. & Fr. : July August.

Simla (DD).

Temperate Himalaya Kashmir to Sikkim.

Cautleya spicata (Smith) Baker in Hook. f. Fl. Brit. India 6 : 209. 1890 ; Collett, Fl. Siml. 512. 1902. *Roscoeia spicata* Smith in Trans. Linn. Soc. Lond. 13 : 461. 1822.

Leafy herbs. Leaves broad. Bracts red. Flowers many in erect spikes. Seeds black, enclosed in white aril.

Fl. & Fr. : July September.

Simla (DD).

Himalaya.

Curcuma angustifolia Roxb. in Asiat. Research 11 : 338. t. 3. 1810 et Fl. Ind. 1 : 31. 1820 ; Baker in Hook. f. Fl. Brit. India 6 : 210. 1890 ; Collett, Fl. Siml. 512. 1902.

Herbs with tuberous root-stocks. Flowers yellow, crowded in a spike, bracts pink.

Fl. & Fr. : May August.

Kangra (RRL).

Himalaya.

Curcuma aromatica Salisb. Parad. Lond. 2 : t. 96. 1808 ; Baker in Hook. f. Fl. Brit. India 6 : 210. 1890.

Herbs with tubers that are yellow and aromatic inside. Flowers pinkish white, bracts pale green.

Fl. & Fr. : June – August.

Kangra (LWG).

Throughout India.

Costus speciosus (Koenig) Smith in Trans. Linn. Soc. Lond. 1 : 249. 1791 ; Baker in Hook. f. Fl. Brit. India 6 : 249. 1892. *Banksea speciosa* Koenig in Retz. Obs. Bot. 3 : 75. 1783.

Tall, leafy herbs with tuberous root stock. Flowers white in spike, bracts bright, red.

Fl. & Fr. : July – September.

Kangra (RRL).

Throughout India.

Hedychium coronarium Koenig in Retz. Obs. Bot. 3 : 73. 1793 ; Baker in Hook. f. Fl. Brit. India 6 : 225. 1892

Herbs with horizontal, tuberous root stocks. Leaves long. Flowers fragrant, white, tinged with yellow.

Fl. & Fr. : August – October.

Simla (LWG).

Throughout India.

Hedychium spicatum Smith in Rees. Cyclop. 17 : *Hedychium* n. 3. 1811 ; Baker in Hook. f. Fl. Brit. India 6 : 227. 1892. var. **spicatum**.

Herbs with long leaves and tuberous root-stocks. Flowers white.

Fl. & Fr. : May – September.

Simla (DD, LWG).

Himalaya Himachal Pradesh to Nepal.

Hedychium spicatum Smith var. **acuminatum** (Roscoe) Wall. in Hook. J. Bot. Kew Gard. Misc. 5 : 328. 1853 ; Baker in Hook. f. Fl. Brit. India 6 : 227. 1892. *H. acuminatum* Roscoe, Monandr. Pl. : t. 47. 1825 ; Collett, Fl. Siml. 512. 1902.

Robust, leafy herbs. Leaves broadly lanceolate. Flowers pale - yellow, fragrant.

Fl. & Fr. : August - October.

Chamba (CDRI, RRL), Simla (DD).

Himalaya - Himachal Pradesh to Sikkim.

Kaempferia rotunda L. Sp. Pl. 3. 1753 ; Roxb. Fl. Ind. 1 : 15. 1820 ; Baker in Hook. f. Fl. Brit. India 6 : 222. 1890.

Herbs with tuberous root stock. Leaves erect, variegated. Flowers lilac - red.

Fl. & Fr. : March - June.

Throughout India.

Roscoea alpine Royle, Ill. Bot. Himal. Mount. 361. t. 89. f. 1. 1839 ; Baker in Hook. f. Fl. Brit. India 6 : 207. 1892 ; Collett, Fl. Siml. 503. 1902 ; Nair, Fl. Bash. Himal. 279. 1977.

Leafy herbs. Leaves sessile, oblong - lanceolate. Flowers dark purple. Corolla tube longer than calyx.

Fl. & Fr. : May - July.

Chamba (BSD, DD, LWG), Kinnaur (DD), Kulu (DD), Simla (BSD, DD, LWG).

Himalaya - Kashmir to Bhutan and Tibet.

Roscoea purpurea J. E. Smith var. **gigantea** Wall. Pl. As. Rar. 3 : 22. 1832. *Roscoea procera* Wall. Pl. As. Rar. 3. t. 242. 1832 ; Baker in Hook. f. Fl. Brit. India 6 : 208. 1892 ; Collett, Fl. Siml. 509. 1902 ; Nair, Fl. Bash. Himal. 279. 1977.

Herbs with leafy stems. Leaves lanceolate. Flowers several, lilac, streaked and tinged with pink.

Fl. & Fr. : June - August.

Lahul and Spiti (BSD), Simla (DD).

Western Himalaya.

Zingiber zerumbet (L.) Smith in Exot. Bot. 2 : 105. t. 112. 1806 ; Baker in Hook. f. Fl. Brit. India 6 : 247. 1892. *Amomum zerumbet* L. Sp. Pl. 1. 1753.

Herbs with tuberous, root stocks, pale yellow inside. Spikes very dense. Flowers white and sulphur yellow.

Fl. & Fr. : June September.

Kangra (RRL).

Throughout India.

CANNACEAE

B.M. WADHWA AND H.J. CHOWDHERY

Canna indica L. Sp. Pl. 1. 1753. *Canna orientalis* Roscoe, Monandr. Pl. t. 12. 1828. *C. indica*. var. *orientalis* (Roscoe) Baker in Hook. f. Fl. Brit. India 6 : 260. 1892.

Leafy herbs. Leaves oblong, acute. Flowers greenish - bright red.

Fl. & Fr. : July October.

Kangra (RRL).

Throughout India.

MUSACEAE

B.M. WADHWA AND H.J. CHOWDHERY

Musa sapientum L. Sp. Pl. 1477. 1753 ; Baker in Hook. f. Fl. Brit. India 6 : 262. 1892.

Stem of convolute leaf sheaths. Flowers in an erect or decurved spike, bracts large, spathaceous, red. Fruits oblong, trigonous.

Fl. & Fr. : Throughout the year.

Kinnaur (DD).

Cultivated throughout India,

IRIDACEAE

H.J. CHOWDHERY

Belamcanda chinensis (L.) DC. in Redoute, Liliac. 3 : t. 121. 1805 ;
Hook. f. Fl. Brit. India 6 : 277. 1892. *Ixia chinensis* L. Sp. Pl. 36.
1753.

Fl. & Fr. : June ~ August.

Kinnaur (DD), Kulu (BSD).

Cultivated all over India.

Iris decora Wall. Pl. Asiat. Rarior. 1 : 77. t. 86. 1830.

Fl. & Fr. : May August.

Simla (DD).

Himalaya - Himachal Pradesh to Assam.

Iris germanica L. Sp. Pl. 38. 1753.

Common purple Iris cultivated throughout hills and plains.

Fl. & Fr. : April June.

Kulu (DD).

Cultivated.

Iris hookeriana M. Foster in Gard. Chron. 1887. 1 : 611. 1883 ;
Hook. f. Fl. Brit. India 6 : 275. 1892.

Flowers purplish blue, blotched with darker blue shade.

Fl. & Fr. : May July.

Lahul and Spiti (RRL).

Western Himalaya.

Iris kemaonensis D. Don ex Royle, Ill. Bot. Himal. Mount. 1 : 372.
1839 ; D. Don in Trans. Linn. Soc. 18 : 311. 1840 ; Hook. f. Fl. Brit.
India 6 : 274. 1892 ; Collett, Fl. Siml. 516. 1902 ; Nair, Fl. Bash. Himal.
280. 1977.

Herbs with thick creeping root stock. Flowers bright lilac.

Fl. & Fr. : May August.

Chamba (BSD, DD), Kangra (BSD), Kinnaur (BSD, DD), Kulu (DD, RRL), Lahul and Spiti (BSD, DD), Simla (BSD).

Himalaya.

Iris milesii M. Foster in Gard. Chron. 20 : 231. 1883 ; Hook. f. Fl. Brit. India 6 : 273. 1892.

Tall herbs. Flowers white with purple blotches and yellow crest.

Fl. & Fr. : April August.

Kinnaur (DD), Kulu (BSD, DD).

Western Himalaya.

Iris nepalensis D. Don, Prodr. Fl. Nepal. 54. 1825 ; Hook. f. Fl. Brit. India 6 : 273. 1892 ; Collett, Fl. Siml. 516. 1902 ; Nair, Fl. Bash. Himal. 281. 1977.

Herbs with cylindric, fleshy roots. Leaves streaked with purple lines and dots. Flowers pale - lilac.

Fl. & Fr. : June August.

Kinnaur (DD), Simla (BSD).

Temperate Himalaya, Punjab and Tibet.

AMARYLLIDACEAE

H.J. CHOWDHERY

Allium carolinianum DC. in Redoute Liliac. 2. t. 101. 1804. *A. blandum* Wall. Pl. Asiat. Rar. 3 : 38. t. 260. 1832 ; Hook. f. Fl. Brit. India 6 : 339. 1892.

Tall, stout herbs with large bulbs. Flowers campanulate, pale pink.

Fl. & Fr. : May - October.

Kinnaur (BSD, DD), Lahul and Spiti (BSD, DD).

Western Himalaya and Nepal.

Allium humile Kunth, Enum. Pl. 4 : 443. 1843. *Allium govanianum*

Wall. ex Baker in Journ. Bot. 293. 1874 ; Hook. f. Fl. Brit. India 6 : 344. 1892 ; Collett, Fl. Siml. 526. 1902 ; Nair, Fl. Bash. Himal. 293. 1977.

Herbs with clustered bulbs. Scapes acutely angled. Flowers white, stellate.

Fl. & Fr. : May October.

Chamba (BSD, DD), Kinnaur (DD), Kulu (DD), Simla (BSD, DD).

Temperate Himalaya.

Allium cepa L. Sp. Pl. 300. 1753 ; Hook. f. Fl. Brit. India 6 : 337. 1892.

Onion.

Fl. & Fr. : April - September.

Kangra (RRL).

Cultivated throughout India.

Allium lilacinum Royle ex Regal. All. Monogr. 89. 1874 ; Hook. f. Fl. Brit. India 6 : 339. 1852 ; Collett, Fl. Siml. 525. 1902 ; Nair, Fl. Bash. Himal. 283. 1977.

Bulbs solitary. Leaves and scapes teret. Flowers bell shaped, pale red.

Fl. & Fr. : May September.

Lahul and Spiti (DD), Simla (DD).

Western Himalaya.

Allium prattii C. H. Wright in Foreb & Hemsley in Journ. Linn. Soc. Bot. 36 : 124. 1903. *Allium victorialis* (auct non L.) Baker in Journ. Bot. 12 : 291. 1874 ; Hook. f. Fl. Brit. India 6 : 342. 1892 ; Nair, Fl. Bash. Himal. 283. 1977.

Herbs with bulbs clustered on an oblique root stock. Flowers greenish - white or yellowish.

Fl. & Fr. : May October.

Chamba (DD), Kinnaur (DD), Lahul and Spiti (BSD), Simla (DD).

Temperate Himalaya.

Allium przewalskianum Regel, Allior. Monogr. 164. 1875. *Allium jacquemontii* Regel 1. c. 162. 1875 (non Kunth) ; Hook. f. Fl. Brit. India 6 : 342. 1892.

Herbs with tufted, elongate bulbs. Flowers campanulate, lilac.

Fl. & Fr. : July September.

Lahul and Spiti (BSD).

Western Tibet and Himachal Pradesh.

Allium rubellum M. Bieb. Fl. Taur. Cauc. 1 : 264. 1808 ; Hook. f. Fl. Brit. India 6 : 339. 1892 ; Collett, Fl. Siml. 525. 1902 ; Nair, Fl. Bash. Himal. 293. 1977.

Herbs with solitary bulbs. Leaves and scapes terete. Flowers bell shaped, pink.

Fl. & Fr. : June October.

Chamba (BSD), Kinnaur (BSD, DD), Lahul and Spiti (BSD, DD).

North - Western Himalaya.

Allium sativum L. Sp. Pl. 296. 1753 ; Hook. f. Fl. Brit. India 6 : 337. 1892.

Garlic.

Fl. & Fr. : June September.

Lahul and Spiti (BSD).

Cultivated.

Allium semenovii Regel in Bull. Soc. Mosc. 41(1) : 449. 1868 ; Hook. f. Fl. Brit. India 6 : 338. 1892.

Herbs with tufted, cylindric bulbs. Flowers campanulate, pink or pale purple.

Fl. & Fr. : July October.

Chamba (BSD, DD).

Western Himalaya.

Allium sikkimense Baker in Journ. Bot. 12 : 292. 1874 ; Hook. f. Fl. Brit. India 6 : 341. 1892.

Herbs with tufted, cylindric bulbs. Flowers campanulate, lilac - purple.

Fl. & Fr. : July September.

Lahul and Spiti (RRL).

Nepal to Sikkim Himalaya and Himachal Pradesh.

Allium stracheyi Baker in Journ. Bot. 12 : 293. 1874 ; Hook. f. Fl. Brit. India 6 : 340. 1892.

Herbs with small, clustered bulbs. Flowers campanulate, rosy pale - yellow.

Fl. & Fr. : June September.

Chamba (BSD), Lahul and Spiti (DD, RRL).

Western Himalaya.

Allium thomsonii Baker in Journ. Bot. 12 : 294. 1874 ; Hook. f. Fl. Brit. India 6 : 340. 1892 ; Nair, Fl. Bash. Himal. 283. 1977.

Herbs with narrowly ovoid, tufted bulbs. Leaves and scapes teret. Flowers red purple, campanulate.

Fl. Fr. : July September.

Lahul and Spiti (BSD).

Western Himalaya.

Allium tuberosum Rottl. ex Sprengel, Syst. Veg. ed. 16. 2 : 38. 1825. *A. tuberosum* Roxb. Fl. Ind. ed. 2. 2 : 141. 1832. non Rottl. ex Sprengel 1825 ; Hook. f. Fl. Brit. India 6 : 343. 1892.

Scapigerous herbs with elongate bulbs. Leaves concave and twisted. Flowers small, white or pink, stellate.

Fl. & Fr. : June August.

Chamba (DD), Kulu (DD).

Himalaya and Assam.

Allium wallichii Kunth, Enum. Pl. 4 : 443. 1843 ; Hook. f. Fl. Brit. India 6 : 341. 1892 ; Collett, Fl. Siml. 526. 1902.

Herbs with small, clustered bulbs. Leaves narrowly sword shaped. Scapes acutely 3 angled. Flowers stellate, purple.

Fl. & Fr. : June October.

Kangra (DD), Simla (DD).

Temperate Himalaya.

Narcissus tazetta L. Sp. Pl. 290. 1753.

Fl. & Fr. : August December.

Kulu (DD), Simla (DD).

Cultivated.

Zephyranthes carinata Herbert in Curtis, Bot. Mag. 52. t. 2594. 1825,

Fl. & Fr. : July October.

Lahul and Spiti (DD).

Cultivated.

Zephyranthes candida Lindl. Bot. Reg. 821. 1824.

Fl. & Fr. : June August.

Kangra (BSD), Simla (DD).

Cultivated.

HYPOXIDACEAE

H.J. CHOWDHERY

Curculigo orchioides Gaertn. Fruct. 1 : 63. t. 13. 1788 ; Hook. f. Fl. Brit. India 6 : 279. 1892.

Herbs with tuberous roots. Flowers subsessile, lower bisexual and rest all male.

Fl. & Fr. : June - August.

Kulu (DD).

Himalaya Kashmir to Assam.

Hypoxis aurea Lour. Fl. Cochin. 200. 1790 ; Hook. f. Fl. Brit. India 6 : 277. 1892 ; Collett, Fl. Siml. 516. 1902 ; Nair, Fl. Bash. Himal. 281. 1977.

Stemless perennial, hairy herbs with tubers which are covered with black fibres and pale, fleshy roots.

Flowers yellow on thread like scapes. Capsule oblong, crowned by the withered perianth.

Fl. & Fr. : June September.

Chamba (BSD, DD), Kinnaur (BSD, DD), Kulu (BSD, DD), Simla (BSD, DD).

Sub-tropical Himalaya.

AGAVACEAE

H. J. CHOWDHERY

Agave cantula Roxb. Fl. Ind. ed. 2. 2 : 167. 1832. *A. cantula* Roxb. Hort. Bengal. 25. 1814 (nom. nud) ; Parker, For. Fl. Punj. ed. 3. 511. 1956. *A. americana* auct. (non. L.) Hook. f. Fl. Brit. India 6 : 277. 1892.

Herbs. Leaves in lax rosette, up to 1 m long. Scape with panicle 4 to 6 m high. Bulbils present.

Fl. & Fr. : July September.

Kinnaur (DD), Solan (DD).

North Western Himalaya. Planted and sometimes occur as an escape.

Agave wightii Drumond & Prain in Beng. Agric. Bull. no. 8 : 15 1906 ; Parker, For. Fl. Punj. ed. 3. 511. 1956.

Herbs. Leaves forming a stiff, compact rosette. Bulbils present.

Kangra (Parker, 1956).

Planted and sometimes occur as an escape.

DIOSCOREACEAE

B.M. WADHWA AND H.J. CHOWDHERY

Dioscorea belophylla Voigt ex Haines, For. Fl. Chota Nagpur 530. 1910 ; Parker, For. Fl. Punjab ed. 3. 515. 1956 ; Siddiqi, Fl. West Pakistan 53 : 3. 1973 ; Nair, Fl. Bash. Himal. 281. 1977. *D. glabra* auct. (non Roxb.) Hook. f. Fl. Brit. India 6 : 294. 1892 (in-part).

Climber. Leaves ovate lanceolate. Male spike clustered. Seeds winged all around.

Fl. & Fr. : September November.

Chamba (DD), Mandi (LWG), Bilaspur (LWG), Simla (BSD, DD).

Sub-tropical Himalaya.

Dioscorea bulbifera L. Sp. Pl. 1033. 1753 ; Parker, For. Fl. Punjab ed. 3. 516. 1956 ; Siddiqi in Fl. West Pakistan 53 : 5. 1973 ; Nair, Fl. Bash. Himal. 282. 1977. *D. sativa* auct. (non L.) Hook. f. Fl. Brit. India 6 : 295. 1892 ; Collett, Fl. Siml. 519. 1902.

Glabrous climbers. Flowers in drooping, clustered spikes. Seeds winged at the base.

Fl. & Fr. : July September.

Chamba (DD), Kangra (BSD), Kinnaur (BSD), Simla (DD, LWG).

Cultivated throughout Northern India.

Dioscorea deltoidea Wall. ex Kunth, Enum. 5 : 340. 1850 ; Hook. f. Fl. Brit. India 6 : 291. 1892 ; Collett, Fl. Siml. 518. 1902 ; Parker, For. Fl. Punjab ed. 3. 514. 1956 ; Siddiqi in Fl. West Pakistan 53 : 5. 1973 ; Nair, Fl. Bash. Himal. 282. 1977.

Climber. Leaves ovate lanceolate, acuminate, base deeply cordate. Male spike paniculate and often branched. Seeds usually winged all around.

Fl. & Fr. : May September.

Chamba (BSD, DD), Kinnaur (BSD, DD), Kulu (BSD, CDRI, DD, RRL, LWG), Simla (BSD, DD, LWG).

Temperate Himalaya.

Dioscorea melanophyma Prain & Burkill in Jour. As. Soc. Beng. 4 : 452. 1908 ; Parker, For. Fl. Punjab ed. 3. 515. 1956 ; Siddiqi in Fl. West Pakistan 53 : 3. 1973 ; Nair, Fl. Bash. Himal. 282. 1977. *D. kumaonensis* auct. (non Kunth) Hook. f. Fl. Brit. India 6 : 290. 1892 ; Collett, Fl. Siml. 518. 1902.

Climber. Leaves 3-5 foliate. Inflorescence pubescent. Seeds winged at the top.

Fl. & Fr. : July October.

Chamba (BSD), Kinnaur (DD), Kulu (BSD, DD), Simla (BSD, DD).

Temperate Himalaya.

Dioscorea pentaphylla L. Sp. Pl. 1032. 1753 ; Wight, Icon. t. 814. 1844 ; Hook. f. Fl. Brit. India 6 : 289. 1892.

Climber. Stem prickly at the base. Leaves 3 5 foliate, glabrous. Male panicles and flowers glabrous, fragrant.

Fl. & Fr. : August September.

Chamba (DD), Kangra (RRL).

Throughout tropical India.

LILIACEAE

H.J. CHOWDHERY

Asparagus adscendens Roxb. Fl. Ind. 2 : 153. 1832 ; Hook. f. Fl. Brit. India 6 : 317. 1892 ; Collett, Fl. Siml. 523. 1902 ; Parker, For. Fl. Punj. ed. 3. 519. 1956 ; Nair, Fl. Bash. Himal. 284. 1977.

Tall, stout, suberect, smooth, white, creeping herbs with straight spines. Cladodes densely crowded in tufts. Flowers in numerous racemes.

Fl. & Fr. : August November.

Kangra (DD, RRL), Kinnaur (DD), Mandi (BSD, BSIP), Solan (RRL).

Western Himalaya.

Asparagus filicinus Buch. Ham. ex D. Don, Prodr. Fl. Nepal. 49. 1825 ; Hook. f. Fl. Brit. India 6 : 314. 1892 ; Collett, Fl. Siml. 523. 1902 ; Parker, For. Fl. Punj. ed. 3. 520. 1956 ; Nair, Fl. Bash. Himal. 284. 1977.

Tall, erect, unarmed shrubs. Cladode curved, flat. Flowers single or in pairs.

Fl. & Fr. : May September.

Chamba (DD), Kinnaur (BSD, DD), Kulu (DD), Mandi (LWG), Simla (DD, LWG).

Temperate and tropical Himalaya.

Asparagus gracilis Royle, Ill. Bot. Himal. Mount. 393. 1840 ; Hook. f. Fl. Brit. India 6 : 315. 1892 ; Collett, Fl. Siml. 523. 1902 ; Parker, For. Fl. Punj. ed. 3. 519. 1956 ; Nair, Fl. Bash. Himal. 284. 1977.

Tall, much branched undershrubs with prickly lower branches. Cladode straight, stiff. Flowers in clusters.

Fl. & Fr. : May October.

Kinnaur (BSD, DD), Kulu (CDRI).

North Western India.

Asparagus griffithii Baker in Journ. Linn. Soc. Bot. 14 : 604. 1875 ; Nair, Fl. Bash. Himal. 284. 1977.

Kinnaur (DD).

(Nair, 1977).

Asparagus neglectus Kar. & Kir. in Bull. Soc. Nat. Mosc. 14 : 48. 1844.

Climbing shrubs.

Fl. & Fr. : June September.

Kinnaur (DD).

Temperate and tropical Himalaya.

Asparagus officinalis L. Sp. Pl. 313. 1753 ; Parker, For. Fl. Punj. ed. 3. 520. 1950 ; Nair, Fl. Bash. Himal. 284. 1977.

Climbing shrubs. Perianths greenish yellow.

Fl. & Fr. : June September.

Chamba (DD), Kinnaur (BSD).

Cultivated as vegetable in gardens.

Asparagus racemosus Willd. Sp. Pl. 2 : 152. 1799 ; Hook. f. Fl. Brit. India 6 : 316. 1892 ; Collett, Fl. Siml. 523. 1902 ; Parker, For. Fl. Punj. ed. 3. 519. 1956.

Tall, scandent, woody, climbing, excessively branched undershrubs. Spines recurved. Cladode curved, terete. Flowers in racemes.

Fl. & Fr. : April – August.

Sirmur (BSD).

Throughout tropical and subtropical parts of India.

Asphodelus tenuifolius Cav. in Anal. Cienc. Nat. 3 : 46. t. 27. 1801 ; Hook. f. Fl. Brit. India 6 : 332. 1892 ; Collett, Fl. Siml. 524. 1902 ; Nair, Fl. Bash. Himal. 285. 1977.

Erect, glabrous herbs. Leaves radical, linear. Flowers racemed, greenish white.

Fl. & Fr. : July October.

Simla (DD).

Throughout the plain and hills of India.

Campylandra aurantiaca Baker in Journ. Linn. Soc. Bot. 14 : 582. t. 20. 1875. *Tupistra aurantiaca* (Baker) Wall. ex Hook. f. Fl. Brit. India 6 : 325. 1892.

Herbs with long, stout roots. Leaves flaccidly coriaceous, sessile. Flowers in spike, yellow.

Fl. & Fr. : June September.

Kinnaur (BSD).

Himachal Pradesh, Nepal and Eastern Himalaya.

Cardiocrinum giganteum (Wall.) Makino in Bot. Mag. Tokyo 27 : 125. 1913. *Lilium giganteum* Wall. Tent. Fl. Nepal. 21. t. 12 13. 1824 ; Hook. f. Fl. Brit. India 6 : 349. 1892 ; Collett, Fl. Siml. 527. 1902 ; Nair, Fl. Bash. Himal. 286. 1977.

Very tall herbs with tufted bulbs and hollow, tapering upward stems. Leaves broadly cordate ovate. Flowers in racemes, purple white.

Fl. & Fr. : May August.

Kinnaur (DD), Kulu (DD), Simla (DD).

Temperate Himalaya.

Clintonia udensis Trautv. & Meyer var. **alpina** (Kunth ex Baker) Hara in J. Jap. Bot. 38 : 72. 1963. *Clintonia alpina* Kunth (Enum. Pl. 5 : 159. 1850 nom. nud.) ex Baker in Journ. Linn. Soc. Bot. 14 : 585. 1875 ; Hook. f. Fl. Brit. India 6 : 361. 1892.

Herbs with creeping root - stocks and narrow, costate leaves. Flowers loosely racemose, white.

Fl. & Fr. : May - September.

Kangra (DD).

Temperate Himalaya.

Colchicum luteum Baker in Gard. Chron. 33. 1874 ; Hook. f. Fl. Brit. India 6 : 356. 1892.

Herbs with gibbously ovoid corms, coats dark brown. Flowers large, 1 - 2, golden yellow.

Fl. & Fr. : May August.

Chamba (DD).

North Western temperate Himalaya.

Disporum cantoniense (Lour.) Merr. in Philipp. J. Sci. 15 : 229. 1920 ; Nair, Fl. Bash. Himal. 285. 1977. *Fritillaria cantoniense* Lour. Fl. Cochin. 1 : 206. 1790. *Disporum pullum* Salisb. in Trans. Hort. Soc. London 1 : 331. 1812 ; Hook. f. Fl. Brit. India 6 : 360. 1892 ; Collett, Fl. Siml. 530. 1902.

Glabrous, erect herbs with creeping root stocks. Leaves alternate, sessile, long - pointed. Flowers white, tinged with green, perianth bell-shaped.

Fl. & Fr. : May August.

Kinnaur (DD), Simla (DD).

Temperate Himalaya.

Dipcadi hysudricum (Edgew.) Baker in J. Linn. Soc. Bot. 11 : 397. 1817 ; Hook. f. Fl. Brit. India 6 : 347. 1892 ; Collett, Fl. Siml. 526. 1902 ; Nair, Fl. Bash. Himal. 285. 1977. *Uropetalum hysudricum* Edgew. in Trans. Linn. Soc. Bot. Lond. 20 : 88. 1846.

Glabrous, bulbous herbs. Leaves radical, narrow. Flowers in racemes, with white green streaks.

Fl. & Fr. : June August.

Simla (Collett, 1902).

Western Himalaya and Nepal.

Eremurus himalaicus Baker in Journ. Linn. Soc. Bot. 15 : 283. 1876 ; Hook. f. Fl. Brit. India 6 : 332. 1892 ; Collett, Fl. Siml. 525. 1902 ; Nair, Fl. Bash. Himal. 285. 1977.

Glabrous, scapose herbs. Leaves flat. Flowers in dense raceme, white.

Fl. & Fr. : June September.

Chamba (DD), Kinnaur (BSD, DD), Lahul and Spiti (BSD, DD).

Temperate Western Himalaya.

Fritillaria roylei Hook. Icon. Pl. 9 : t. 860. 1852 ; Hook. f. Fl. Brit. India 6 : 353. 1892 ; Collett, Fl. Siml. 528. 1902 ; Nair, Fl. Bash. Himal. 285. 1977.

Glabrous, erect, unbranched, bulbous herbs. Leaves whorled. Flowers solitary or few, nodding, campanulate, yellow green.

Fl. & Fr. : May September.

Chamba (BSD, DD), Kinnaur (BSD,) Kulu (DD), Simla (DD).

Western temperate Himalaya.

Gagea elegans Wall. ex D. Don in Royle, Ill. Bot. Himal. Mount. 1 : t. 95. f. 2. 1839. *Gagea lutea* (auct. non Schultz f.) Hook. f. Fl. Brit. India 6 : 355. 1892 ; Collett, Fl. Siml. 529. 1902 ; Nair, Fl. Bash. Himal. 286. 1977.

Small, bulbiferous herbs. Leaves lanceolate. Flowers umbellate, yellow.

Fl. & Fr. : April August.

Chamba (BSD, DD), Kinnaur (DD), Kulu (DD), Lahul and Spiti (BSD, DD).

Western Himalaya upto Nepal.

Gagea gageoides (Zucc.) Vved. Fl. Turkm. 1. 2 : 261. 1932 ; Nair, Fl. Bash. Himal. 286. 1977. *Bulbillaria gageoides* Zucc. in Abdhndl. Akad. Wiss. Bay. 3 : 230. t. 2. f. 1. 1863. *G. persica* Boiss. Diag. Ser. 1. 7 : 108. 1846 ; Hook. f. Fl. Brit. India 6 : 355. 1892 ; Collett, Fl. Siml. 529. 1902.

Small herbs with solitary bulbs. Flowers many, cymose.

Fl. & Fr. : May July.

Lahul and Spiti (BSD, DD).

Western Himalaya.

Gagea pseudoreticulata Vved. in Fl. Turkm. 1(2) : 268. 1932. *Gagea reticulata* Schult. f. Syst 7 : 542. 1829 30 ; Hook. f. Fl. Brit. India 6 : 356. 1892 ; Collett, Fl. Siml. 529. 1902.

Small, glabrous herbs with grass like leaves. Flowers several in umbels, white green.

Fl. & Fr. : April August.

Chamba (DD), Kinnaur (DD).

Western Himalaya.

Gloriosa superba L: Sp. Pl. 305. 1753 ; Hook. f. Fl. Brit. India 6 : 358. 1892 ; Collett, Fl. Siml. 530. 1902 ; Nair, Fl. Bash. Himal. 286. 1977.

Herbs, climbing with the help of leaves and fleshy, creeping root-stocks. Leaves with cirrhose tips. Flowers solitary, large, yellow bright red, perianth segments crisped waved.

Fl. & Fr. : August October.

Simla (DD).

Throughout tropical India.

Hemerocallis fulva (L.) L. Sp. Pl. ed. 2. 1 : 462. 1762 ; Hook. f. Fl. Brit. India 6 : 326. 1892 ; Nair, Fl. Bash. Himal. 286. 1977. *H. lilioasphodelus* L. var. *fulva* L. Sp. Pl. 324. 1753.

Herbs with fleshy root fibres. Leaves costate, narrowly linear. Flowers large, suberect, yellow red to orange yellow.

Fl. & Fr. : May August.

Chamba (DD).

Himalaya and Khasia hills. Cultivated throughout India.

Iphigenia indica (L.) Kunth, Enum. Pl. 4 : 213. 1843 ; Hook. f. Fl. Brit. India 6 : 357. 1892 ; Collett, Fl. Siml. 529. 1902 ; Nair, Fl. Bash. Himal. 286. 1977. *Melanthium indicum* L. Mant. Pl. Alt. 226. 1771.

Erect, leafy herbs with solid bulbs or corms. Flowers few, erect, purple.

Fl. & Fr. : May October.

Chamba (DD), Simla (BSD).

Throughout India.

Lilium nanum Klotzsch in Klotzsch & Garcke in Bot. Reise Pr. Waldemar 53. 1862 ; Hook. f. Fl. Brit. India 6 : 352. 1892. *Nomacharis nana* (Klotzsch) E. H. Wilson, Lil. E. Asia 13. 1925.

Bulbous herbs with linear, grassy leaves. Flowers small, drooping, campanulate, white.

Fl. & Fr. : June August.

Simla (BSD).

Western Himalaya upto Assam.

Lilium nepalense D. Don in Mem. Werner. Nat. Hist. Soc. 3 : 412. 1821 ; Hook. f. Fl. Brit. India 6 : 350. 1892.

Slender herbs. Flowers drooping, sweet scented, orange yellow with purple dots.

Fl. & Fr. : May August.

Chamba (DD).

Western Himalaya upto Assam.

Lilium polyphyllum D. Don ex Royle, Ill. Bot. Himal. Mount. 388. 1839 ; Hook. f. Fl. Brit. India 6 : 351. 1892 ; Collett, Fl. Siml. 527. 1902 ; Nair, Fl. Bash. Himal. 287. 1977.

Tall, bulbous herbs. Leaves sessile, whorled or opposite. Flowers whorled or solitary or in racemes, pale pink.

Fl. & Fr. : June - September.

Chamba (DD), Kinnaur (DD), Kulu (DD), Simla (DD).

Western temperate Himalaya.

Lilium thomsonianum Royle, Ill. Bot. Himal. Mount. t. 92. 1839 ; Hook. f. Fl. Brit. India 6 : 325. 1892 ; Collett, Fl. Siml. 527. 1902 ; Nair, Fl. Bash. Himal. 287. 1977.

Tall, bulbose herbs with sessile, thin leaves. Flowers numerous in terminal raceme, pale pink or rose-purple, sweet scented.

Fl. & Fr. : April July.

Simla (Collett, 1902).

Western Himalaya.

Lloydia longiscapa Hook. Icon. Pl. 9 : t. 834. 1852. *L. serotina* (auct non L.) Hook. f. Fl. Brit. India 6 : 354. 1892. *p.p.*

Small, slender herbs with elongate bulbs. Leaves filiform. Flowers white with violet veins or yellow – purple at the base.

Fl. & Fr. : June August.

Simla (BSD).

Alpine Himalaya and Tibet.

Lloydia serotina (L.) Reichenb. Fl. German. Excur. 102. 1830 ; Hook. f. Fl. Brit. India 6 : 354. 1892 *p.p.* ; Collett, Fl. Siml. 528. 1902 ; Nair, Fl. Bash. Himal. 287. 1977. *Bulbocodium serotinum* L. Sp. Pl. 294. 1753. *Lloydia himalensis* Royle, Ill. Bot. Himal. Mount. t. 93. f. 2. 1839.

Small, glabrous herbs with bulbous roots. Flowers 1 to 2, erect, campanulate, white with violet veins.

Fl. & Fr. : May August.

Chamba (DD), Kinnaur (DD), Kulu (DD), Lahul and Spiti (BSD, DD), Simla (BSD, DD).

Alpine Himalaya.

Notholirion thomsonianum (Royle) Stapf. in Kew Bull. 1934 : 95. 1934. *Fritillaria thomsonianum* Royle, Ill. Bot. Himal. Mount. t. 92. f. 1. 1839. *Lilium roseum* Wall. ex Hook. f. in Curtis Bot. Mag. 79. t. 4725. 1853 ; Hook. f. Fl. Brit. India 6 : 352. 1892 *p.p.*

Small, bulbous herbs. Flowers rose – pink to pale – lilac.

Fl. & Fr. : April – August.

Chamba (DD), Mandi (DD).

Temperate Himalaya.

Paris polyphylla Smith in Rees, Cyclop. 26 : Paris n. 2. 1813 ; Hook. f. Fl. Brit. India 6 : 362. 1892 ; Collett, Fl. Siml. 531. 1902 ; Nair, Fl. Bash. Himal. 287. 1977.

Glabrous, erect, unbranched herbs with thick, creeping root - stocks. Leaves whorled, long pointed.

Flowers yellow or yellow – green.

Fl. & Fr. : May – September.

Chamba (LWG), Kinnaur (DD), Simla (BSIP, DD).

Temperate Himalaya.

Polygonatum cirrhifolium (Wall.) Royle, Ill. Bot. Himal. Mount. 1 : 380. 1839 ; Hook. f. Fl. Brit. India 6 : 322. 1892 ; Collett, Fl. Siml. 524. 1902 ; Nair, Fl. Bash. Himal. 288. 1977. *Convallaria cirrhifolia* Wall. in Asiat. Research. 13 : 382. t. 1820.

Weak, flexuous herbs, climbing with the help of the tips of the leaves. Leaves whorled, sessile. Flowers in racemes, white, tinged with green or purple.

Fl. & Fr. : May – September.

Kinnaur (BSD, DD), Kulu (BSD, DD, RRL), Simla (DD).

Temperate Himalaya.

Polygonatum geminiflorum Decne. in Jacqum. Voy. Inde Or. 170. t. 179. 1844 ; Hook. f. Fl. Brit. India 6 : 320. 1892.

Tall, puberulous herbs. Leaves membranous, linear - oblong. Flowers white.

Fl. & Fr. : June – August.

Kulu (DD), Lahul & Spiti (DD).

Western Himalaya.

Polygonatum graminifolium Hook. Icon. Pl. t. 833. 1871 ; Hook. f. Fl. Brit. India 6 : 319. 1892 ; Nair, Fl. Bash. Himal. 288. 1977.

Dwarf herbs with fleshy rootstocks, constricted at the internodes. Flowers violet.

Fl. & Fr. : June – September.

Kinnaur (DD), Lahul and Spiti (BSD).

Western Himalaya.

Polygonatum multiflorum (L.) All. Fl. Pedemont. 1 : 131. 1785 ; Hook. f. Fl. Brit. India 6 : 319. 1892 ; Collett, Fl. Siml. 524. 1902 ; Nair, Fl. Bash. Himal. 288. 1977. *Convallaria multiflora* L. Sp. Pl. 315 1753.

Herbs with arching stems. Leaves alternate, oblong - ovate. Flowers few in a raceme, white to greenish - yellow.

Fl. & Fr. : May – September.

Chamba (DD), Kinnaur (BSD, DD), Lahul & Spiti (DD), Simla (BSD, DD).

Western temperate Himalaya.

Polygonatum verticillatum (L.) All. Fl. Pedemont. 1 : 131. 1785 ; Hook. f. Fl. Brit. India 6 : 321. 1892 ; Collett, Fl. Siml. 524. 1902 ; Nair, Fl. Bash. Himal. 288. 1977. *Convallaria verticillata* L. Sp. Pl. 315. 1753.

Tall, angled, grooved herbs. Leaves in whorls, sessile. Racemes 2 – 5 flowered, greenish white.

Fl. & Fr. : May – September.

Chamba (BSD, DD, RRL), Kinnaur (BSD, DD), Kulu (BSD, DD, RRL), Lahul and Spiti (BSD, DD).

Temperate Himalaya.

Polygonatum verticillatum (L.) All. var. **gracile** Baker ex Aitch. in Journ. Linn. Soc. Bot. 18 : 103. 1880.

Fl. & Fr. : June – September.

Kinnaur (DD).

Temperate Himalaya.

Smilacina purpurea Wall. Pl. Asiat. Rar. 2 : 38. t. 144. 1831. *Smilacina pallida* Hook. f. Fl. Brit. India 6 : 323. 1892 (*p.p.* non Royle) ; Collett, Fl. Siml. 524. 1902 ; Nair, Fl. Bash. Himal. 289. 1977.

Stout herbs with creeping rootstocks. Leaves alternate, lower side pale – pubescent.

Fl. & Fr. : April – August.

Chamba (DD), Kinnaur (DD), Kulu (DD), Simla (DD).

Temperate Himalaya.

Smilax aspera L. Sp. Pl. 1028. 1753 ; Hook. f. Fl. Brit. India 6 : 306. 1892 ; Collett, Fl. Siml. 521. 1902 ; Parker, For. Fl. Punj. ed. 3. 517. 1956 ; Nair, Fl. Bash. Himal. 289. 1977.

Climbing, large, prickly shrubs with grooved, zigzag branches. Leaves sometimes with prickly teeth on the margins and bearing a pair of long tendrils near the base. Flowers small, white, fragrant. Berry blue-black when ripe.

Fl. & Fr. : May – September.

Chamba (DD), Kangra (DD), Kinnaur (DD), Kulu (DD), Mandi (LWG), Simla (BSD, DD).

Throughout India.

Smilax glaucophylla Klotzsch in Klotzsch & Garcke, Bot. Reise Pr. Waldemar. 45. t. 91. 1862 ; Nair, Fl. Bash. Himal. 289. 1977. *Smilax parvifolia* Wall. ex Hook. f. Fl. Brit. India 6 : 304. 1892 ; Collett, Fl. Siml. 521. 1902 ; Parker, For. Fl. Punj. ed. 3. 518. 1956. *Smilax elegans* Wall. ex Kunth, Enum. Pl. 5 : 163. 1850.

Slender, terete, smooth, unarmed herbs. Leaves thin, highly reticulate. Flowers minute, purple.

Fl. & Fr. : May – September.

Chamba (BSD, DD RRL), Kangra (RRL), Kinnaur (BSD, DD, RRL), Kulu (DD, RRL), Simla (BSD, DD).

Temperate Himalaya.

Smilax menispermoides A. DC. Monogr. Phan. 1 : 108. 1878. *Smilax elegans* Wall. ex Hook. f. Fl. Brit. India 6 : 305. 1892 (non Wall. ex A. DC.).

Smooth, slender, teret, small shrubs.

Fl. & Fr. : May – August.

Chamba (DD), Kulu (DD).

Temperate Himalaya.

Smilax ovalifolia Roxb. ex D. Don, Prodr. Fl. Nepal. 49. 1825. *Smilax macrophylla* Roxb. Fl. Ind. ed. Carey, 3 : 793. 1832 (non Willd.) ; Hook. f. Fl. Brit. India 6 : 310. 1892 ; Parker, For. Fl. Punj. ed. 3. 516. 1956.

Stout, scandant, prickly shrubs. Leaves glossy above.

Fl. & Fr. : May – July.

Simla (DD).

Tropical Himalaya.

Smilax vaginata Decne. in Jacquem. Voy. Bot. 4 : 169. 1844 ; Hook. f. Fl. Brit. India 6 : 305. 1892 ; Collett, Fl. Siml. 521. 1902 ; Parker, For. Fl. Punj. ed. 3. 518. 1956 ; Nair, Fl. Bash. Himal. 289. 1977.

Smooth, unarmed shrubs. Leaves without tendrils. Flowers minute, purple.

Fl. & Fr. : May – September.

Kinnaur (DD), Simla (LWG).

Western Himalaya.

Theropogon pallidus (Kunth) Maxim. in Bull. Acad. Imp. Sci. St. Petersb. 15 : 90. 1871 ; Hook. f. Fl. Brit. India 6 : 324. 1892. *Ophiopogon pallidus* Wall. ex Kunth, Enum. Pl. 5 : 300. 1850.

Herbs with thick root - fibres. Leaves radical, erect, recurved, grassy. Flowers in terminal racemes, drooping, white, tinged with pink.

Fl. & Fr. : June – August.

Chamba (DD).

Temperate Himalaya.

Trillidium govanianum (D. Don) Kunth, Enum. Pl. 5 : 120. 1850. *Trillium govanianum* Wall. ex D. Don in Royle, Ill. Bot. Himal. Mount. 384. t. 93. f. 1. 1839 ; Hook. f. Fl. Brit. India 6 : 361. 1892 ; Collett, Fl. Siml. 531. 1902 ; Nair, Fl. Bash. Himal. 289. 1977.

Glabrous herbs with creeping root stocks and erect, unbranched stems. Leaves 3, in a whorl at the top of the stem with a solitary flowers in the centre. Flowers lurid purple.

Fl. & Fr. : May – September.

Chamba (BSD, DD), Kangra (DD), Kinnaur (BSD, DD), Kulu (DD), Lahul and Spiti (BSD), Simla (DD).

Temperate Himalaya.

Tulipa stellata Hook. f. Bot. Mag. t. 2762. 1827 ; Hook. f. Fl. Brit. India 6 : 355. 1892 ; Collett, Fl. Siml. 528. 1902 ; Nair, Fl. Bash. Himal. 290. 1977.

Glabrous, bulbous herbs. Leaves linear, acute, channelled. Flowers terminal, usually one, white, tinged with red and base yellow inside.

Fl. & Fr. : May – August.

Simla (BSD, DD).

Western Himalaya.

Urginea indica (Roxb.) Kunth, Enum. Pl. 4 : 333. 1843 ; Hook. f.

Fl. Brit. India 6 : 347. 1892 ; Collett, Fl. Siml. 526. 1902. *Scilla indica* Roxb. Fl. Ind. ed. Carey 2 : 147. 1832.

Glabrous, bulbous, scapigerous herbs. Leaves radical, linear, flat. Flowers drooping, in a terminal raceme, white with green ribs.

Fl. & Fr. : May – July.

Simla (DD).

Western Himalaya and Nepal.

***Yucca gloriosa* L. Sp. Pl. 319. 1753.**

Shrubs. Leaves leathery with pointed apex. Flowers white, in a crown like inflorescences.

Fl. & Fr. : August – October.

Kulu (BSD).

Cultivated and also as an escape.

HAEMODORACEAE

B.M. WADHWA AND H.J. CHOWDHERY

***Aletris pauciflora* (Klotz.) Hand. Mazz. Symb. Sin. 7 : 1120. 1936.**
Stachyopogon pauciflorus Klotz. in Klotz. and Garcke, Bot. Reise Waldemar. 49. t. 94. 1862. *Aletris nepalensis* Hook. f. Fl. Brit. India 6 : 264. 1892 ; Collett, Fl. Siml. 514. 1902 ; Nair, Fl. Bash. Himal. 280. 1977.

Small, scapose herbs. Leaves radical, grass – like. Scape tomentose near the top. Flowers white or pale – pink. Seeds minute.

Fl. & Fr. : June – September.

Chamba (BSD), Kinnaur (BSD, DD), Kulu (BSD, DD), Lahul and Spiti (BSD, DD), Simla (BSD, DD).

Temperate and alpine Himalaya.

***Liriope graminifolia* (L.) Baker in Journ. Linn. Soc. Bot. 17 : 499. 1879.** *Ophiopogon graminifolia* L. Sp. Pl. ed. 2. 450. 1762.

Fl. & Fr. : June – July.

Simla (DD).

Himalaya.

Ophiopogon intermedius D. Don, Prodr. Fl. Nepal. 48. 1825 ; Hook. f. Fl. Brit. India 6 : 269. 1892 ; Collett, Fl. Siml. 541. 1902 ; Nair, Fl. Bash. Himal. 280. 1977. *Mondo intermedium* (D. Don) L.H. Bailey, Gentes Herb. 2 : 25. t. 12. 1929. *Mondo wallichianum* (Kunth) L.H. Bailey, Gentes Herb. 2 : 21. t. 11. 1929. *Flueggea wallichiana* Kunth, Enum. Pl. 5 : 303. 1850.

Scapigerous herbs with short stem. Leaves tufted, linear, margins minutely toothed. Flowers white, tinged with lilac. Seeds bright blue.

Fl. & Fr. : June – August.

Chamba (BSD), Kangra (BSD), Kinnaur (DD), Kulu (BSD, DD), Simla (BSD, DD, LWG).

Throughout India.

PONTEDERIACEAE

B.M. WADHWA AND H.J. CHOWDHERY

Monochoria hastata (L.) Solms. in A. DC. Mono. Phan. 4 : 523. 1883 ; Baker in Fl. Male. Ser. 1. 4L258. f. 1. 1951 ; Subramaniam, Aqu. Angios. 69. 1962. *Pontederia hastata* L. Sp. Pl. 288. 1753. *Monochoria hastaefolia* Presl, Rel. Haenk. 2 : 128. 1827 ; Hook. f. Fl. Brit. India 6 : 362. 1892.

Aquatic herb with spongy root stock. Flowers violet – blue, dotted with red, filaments squarred. Anthers blue and yellow.

Fl. & Fr. : July – September.

Kangra (DD).

Common throughout India

COMMELINACEAE

H.J. CHOWDHERY AND B.M. WADHWA

Commelina beghalensis L. Sp. Pl. 41. 1753 ; Clarke in A. DC. Monog. Phan. 3 : 159. 1881 ; Hook. f. Fl. Brit. India 6 : 370. 1894 ; M. Quaiser

and S.M.H. Jafri in Fl. West Pakis. 84 : 10. 1975 ; Collett, Fl. Siml. 532. 1902 ; Nair, Fl. Bash. Himal. 190. 1977.

Herb. Flowers pale – blue, one petal is nearly white. Capsule 5 – seeded with wrinkled seeds.

Fl. & Fr. : July – October.

Chamba (BSD, DD), Kangra (BSD), Kinnaur (BSD, DD), Simla (BSD).

Throughout India.

Commelina paludosa Bl. Enum. Pl. Jav. 1 : 2. 1827 ; Rao in Notes Roy. Bot. Gard. Edinb. 25 : 181. 1964 ; M. Quiser and S.M.H. Jafri in Fl. West Pak. 84 : 12. 1975 ; Nair, Fl. Bash. Himal. 290. 1977. *C. obliqua* auct. (non Vahl) Ham. ex. D. Don, Prodr. Fl. Nep. 45. 1827 ; Hook. f. Fl. Brit. India 6 : 372. 1874 ; Collett, Fl. Siml. 532. 1902.

Herb. Leaves sessile. Flowers pale – blue. Capsule 3 – seeded, with minutely dotted seeds.

Fl. & Fr. : July – September.

Chamba (BSD).

Throughout India.

Commelina paludosa Bl. var. ***mathewii*** (Clarke) Rolla et Kammathy in Bull. Bot. Surv. of India 3 : 168. 1962 ; Nair, Fl. Bash. Himal. 291. 1977. *C. obliqua* Buch. – Ham. ex D. Don var. *mathewii* Clarke in DC. Mon. Phan. 3 : 878. 1881.

Fl. & Fr. : July – October.

Kulu (BSD), Kinnaur (DD).

Throughout India.

Commelina paludosa Bl. var. ***viscida*** (Clarke) Rolla et Kammathy in Bull. Bot. Surv. India 3 : 168. 1962. *C. obliqua* Buch. – Ham. var. *viscida* Clarke in DC. Mono. Phan. 3 : 178. 1881.

Fl. & Fr. : June – October.

Simla (LWG).

Throughout India.

Cyanotis cristata (L.) Schul. f. Syst. 7 : 1150. 1830 ; Clarke in DC. Monogr. Phan. 3 : 247. 1881 ; Hook. f. Fl. Brit. India 6 : 385. 1892 ; Collett, Fl. Siml. 534. 1902 ; M. Quaiser & S.M.H. Jafri in Fl. West Pakistan 84 : 7. 1975 ; Nair, Fl. Bash. Himal. 291. 1977. *Commelina*

cristata L. Sp. Pl. 42. 1753. *Tradescantia cristata* (L.) Jacq. Hort. Vindob 2 : 67. t. 137. 1844. *T. imbricata* Roxb. Fl. Ind. 2 : 120. 1824.

Herb. Leaves sessile. Flowers blue.

Fl. & Fr. : August – October.

Chamba (DD), Kangra (BSD), Kinnaur (BSD, DD).

Throughout tropical India.

Cyanotis vaga (Lour.) J.A. & J.H. Schultes, Syst. Veg. 7 : 1153. 1830 ; Rao in Notes Royl. Bot. Gard. Edin. 25 : 186. 1964 ; Nair, Fl. Bash. Himal. 291. 1977. *Tradescantia vaga* Lour. Fl. Cochinch. 1 : 193. 1790. *Cyanotis barbata* D. Don, Prodr. Fl. Nepal. 46. 1825 ; Hook. f. Fl. Brit. India 6 : 385. 1892 ; Collett, Fl. Siml. 534. 1902. *Tradescantia radicans* Royle, Illustr. Bot. Himal. Mount. 403. 1839.

Herb. Stems often tufted, hairy. Flowers dark – blue. Capsule quadrate. Seeds brown.

Fl. & Fr. : July – October.

Kulu (BSD).

Sub-tropical Himalaya.

Floscopa scandens Lour. Fl. Cochinch. 1 : 193. 1790 ; Hook. f. Fl. Brit. India 6 : 390. 1892. *Dithyrocarpus rothii* Wight, Icon. t. 208. 1839.

Herb with stout, erect stem. Flowers small, subglobose, white or rosy. Capsule compressed with glaucous seeds.

Fl. & Fr. : September – October.

Kangra (DD).

Throughout tropical India.

Murdannia divergens (Clarke) Bruckn. in Engler & Prantle, Pflanzenfam. ed. 2. 15A : 159. 1830 ; Nair, Fl. Bash. Himal. 291. 1977. *Aneilema divergens* Clarke, Comm. & Cyrt. Beng. t. 16. 1874 ; Hook. f. Fl. Brit. India 6 : 376. 1892 ; Collett, Fl. Siml. 533. 1902.

Herb. Panicle terminal. Bracts persistent. Capsule 3 – angled, seeds yellow.

Fl. & Fr. : August – October.

Simla (DD).

Tropical and subtropical Himalaya.

Murdannia nudiflora (L.) Brenan in Kew Bull. 1950 : 189. 1952 et in Hutch. & Dalz. Fl. W. & Trop. Afr. ed. 2. 3(1) : 24. 1068 ; M. Quiser & S.M.H. Jafri in Fl. West Pakistan 84 : 6. 1975 ; Nair, Fl. Bash. Himal. 291. 1977. *Commelina nudiflora* L. Sp. Pl. 41. 1753 p.p. *Aneilema nudiflorum* Clarke in DC. Monogr. Phan. 3 : 210. 1811 ; Hook. f. Fl. Brit. India 6 : 378. 1892.

Herb. Panicles terminal, small, compact. Bracts caducous. Flowers crowded.

Fl. & Fr. : August – October.

Kangra (RRL), Kinnaur (BSD).

Throughout India.

Murdannia scapiflora (Roxb.) Royle, Illust. Bot. Himal. Mount. 403. t. 95. f. 3. 1839. *Commelina scapiflora* Roxb. Fl. Ind. 1 : 178. 1820.

Fl. & Fr. : June – September.

Kulu (DD).

Throughout India.

Murdannia vaginata (L.) Bruckner in Engl. & Prantle, Planzefam. ed. 2 : 15A : 173. 1930. *Aneilema vaginatum* (L.) R. Br. Prodr. 271. 1810.

Fl. & Fr. : September – October.

Kangra (DD).

Himalaya.

JUNCACEAE

H.J. CHOWDHERY

Juncus articulatus L. Sp. Pl. 327. 1753. *Juncus lampocarpus* Ehrh. ex Hoffm. Deutsch. Fl. 1800 : 166. 1800 ; Hook. f. Fl. Brit. India 6 : 395. 1892 ; Collett, Fl. Siml. 536. 1902 ; Nair, Fl. Bash. Himal. 292. 1977.

Densely tufted, stout herbs. Leaves compressed, acute or terete. Capsule green or brown, oblong – ovoid.

Fl. & Fr. : May – October.

Kinnaur (BSD, DD), Kulu (BSD), Lahul and Spiti (BSD, DD), Simla (BSD).

North – Western India and Himalaya.

Juncus bufonius L. Sp. Pl. 328. 1753 ; Hook. f. Fl. Brit. India 6 : 392. 1892 ; Collett, Fl. Siml. 535. 1902 ; Nair, Fl. Bash. Himal. 292. 1977.

Glabrous, densely clustered, dichotomously branched, pale – green herbs. Leaves setaceous. Cymes numerous. Flowers pale – green. Capsule obovoid, mucronate, pale.

Fl. & Fr. : April – October.

Chamba (BSD, DD), Kinnaur (BSD, DD), Kulu (DD, LWG), Lahul and Spiti (BSD, DD), Mandi (LWG).

Northern India and Himalaya.

Juncus compressus Jacqum. En. Stirp. Vind. 60 & 235. 1762.

Slender, 1 – 2 leaved, tufted, subcompressed, striate herbs. Capsule 3 – celled, shining.

Fl. & Fr. : June – August.

Chamba (DD), Simla (DD).

Western Himalaya.

Juncus concinnus D. Don, Prodr. Fl. Nepal. 44. 1825 ; Hook. f. Fl. Brit. India 6 : 399. 1892 ; Collett, Fl. Siml. 536. 1902. *J. elegans* Royle ex D. Don in Trans. Linn. Soc. Lond. 18 : 321. 1840 ; Nair, Fl. Bash. Himal. 292. 1977.

Herbs with tuberous root stocks and hollow stem. Leaves flat. Flowers white. Anthers protruding. Capsule ovoid, 3 – sided.

Fl. & Fr. : June – October.

Chamba (BSD, DD), Kinnaur (DD), Kulu (BSD, DD), Simla (DD).

Temperate and alpine Himalaya – Kashmir to Sikkim.

Juncus glaucus Ehrh. Beitr. 6 : 83. 1789 ; Hook. f. Fl. Brit. India 6 : 393. 1892 ; Collett, Fl. Siml. 536. 1902 ; Nair, Fl. Bash. Himal. 292. 1977.

Herbs with barren stem appearing like leaves. Panicles drooping.

Fl. & Fr. : May – September.

Simla (DD).

Western Himalaya.

Juncus himalensis Klotzsch et Garcke in Bot. Reise Pr. Waldemar. 60. t. 97. 1862 ; Hook. f. Fl. Brit. India 6 : 398. 1892 ; Collett, Fl. Siml. 536 ; Nair, Fl. Bash. Himal. 293. 1977.

Tufted herb with cylindric, hollow stem bearing a single leaf near the middle. Flowers dark – brown. Capsule 3 – angled, ovoid, dark – brown, shining, beaked.

Fl. & Fr. : May – October.

Chamba (DD), Kinnaur (BSD, DD), Kulu (DD, RRL), Lahul and Spiti (BSD, DD), Simla (DD).

Alpine and subalpine Himalaya.

Juncus himalensis Klotzsch & Garcke var. ***schlagentweitii*** Buchen. Monogr. Jonc. 405. 1890 ; Hook. f. Fl. Brit. India 6 : 399. 1892.

Fl. & Fr. : July – August.

Lahul and Spiti (DD).

Himalaya.

Juncus inflexus L. Sp. Pl. 326. 1753. *Juncus glaucus* Ehrh. Beitr. 6 : 83. 1791 (nom nud.) ex Sibth. Fl. Oxon. 113. 1794 ; Hook. f. Fl. Brit. India 6 : 393. 1892 ; Collett, Fl. Siml. 536. 1902 ; Nair, Fl. Bash. Himal. 292. 1977.

Rigid, glaucous, deeply striate, leafless herbs. The leafless stem look like leaf. Flowers sessile, brown. Capsule ovoid, pointed.

Fl. & Fr. : May – July.

Kinnaur (BSD, DD), Kulu (BSD, DD), Simla (BSD, DD).

Western Himalaya up to Nepal and Nilghiri hills.

Juncus leschenaultii Gay in Laharpe, Mongr. Jonc. 137. 1827. *Juncus prismatocarpus* R. Br. sensu Hook. f. Fl. Brit. India 6 : 395. 1892 *p.p.* ; Collett, Fl. Siml. 536. 1902 ; Nair, Fl. Bash. Himal. 293. 1977.

Caespitose herbs. Leaves filiform, compressed or terete. Capsule prismatic.

Fl. & Fr. : May – July.

Kinnaur (BSD, DD).

Throughout India.

Juncus leucomelas Royle ex D. Don in Trans. Linn. Soc. Lond. 18 : 319. 1840 ; Hook. f. Fl. Brit. India 6 : 397. 1892.

Tufted herbs with hollow, filiform stem. Heads white. Capsule one celled.

Fl. & Fr. : August – October.

Kangra (DD), Lahul and Spiti (DD), Simla (LWG).

Western Himalaya, Tibet and Sikkim.

Juncus leucanthus Royle ex D. Don in Trans. Linn. Soc. Lond. 18 : 319. 1840 ; Hook. f. Fl. Brit. India 6 : 397. 1892.

Slender, tufted herbs. Leaves filiform. Capsule obovoid – oblong, cuspidately beaked.

Fl. & Fr. : July – August.

Lahul and Spiti (BSD).

Alpine Himalaya Himachal Pradesh to Sikkim.

Juncus membranaceus Royle ex D. Don in Trans. Linn. Soc. Lond. 18 : 317. 1840 ; Hook. f. Fl. Brit. India 6 : 397. 1892.

Tufted, stoloniferous herbs. Cyme white. Capsule far exserted, long beaked. Seeds with very long tails.

Fl. & Fr. : June – August.

Chamba (DD), Kulu (DD), Lahul and Spiti (BSD, DD, RRL), Simla (BSD).

Temperate and subalpine Himalaya, Kashmir to Sikkim.

Juncus sphacelatus Decaisne in Jacquem. Voy. 4. Bot. 172. t. 172. 1835 ; Hook. f. Fl. Brit. India 6 : 398. 1892.

Tufted, smooth, stout, leafy herbs. Cymes erect, dark – brown. Capsule dark brown, obtuse, mucronate.

Fl. & Fr. : July – September.

Kulu (BSD), Lahul and Spiti (BSD).

Himalaya – Kashmir to Bhutan.

Juncus thomsoni Buchenau in Bot. Zeit. 25 : 148. 1867. *J. leucomelas* auct (non Royle) Hook. f. Fl. Brit. India 6 : 397. 1892.

Tufted herbs with hollow, filiform, naked stem. Leaves tubular, very short. Cyme white. Capsule ovoid – oblong. Seeds long tailed.

Fl. & Fr. : June – August.

Lahul and Spiti (BSD, DD).

Himalayas and Western Tibet.

Juncus triglumis L. Sp. Pl. 328. 1753 ; Hook. f. Fl. Brit. India 6 : 396. 1892.

Tufted, slender herbs. Leaves small. Capsule exerted, obtuse or mucronate. Seeds with long, white tail.

Fl. & Fr. : July – September.

Alpine Himalaya, Kashmir to Sikkim and Tibet.

Lujula campestris (L.) DC. Fl. Franc. 3 : 161. 1815 ; Hook. f. Fl. Brit. India 6 : 401. 1892 ; Collett, Fl. Siml. 538. 1902 ; Nair, Fl. Bash. Himal 193. 1977. *Juncus campestris* L. Sp. Pl. 329. 1753.

Small, hairy herbs with creeping root – stocks. Leaves near the base of the stem, fringed with long, white hairs. Flowers dark – brown, sessile. Capsule ovoid – oblong, pointed.

Fl. & Fr. : June – September.

Kinnaur (DD).

Throughout India.

Lujula spicata (L.) DC. Fl. Franc. 3 : 161. 1805. *Juncus spicata* L. Sp. Pl. 329. 1753.

Herbs with densely fascicled, hairy leaves and a solitary, oblong, drooping cyme or a nodding, bracteate head.

Fl. & Fr. : July – August.

Lahul and Spiti (BSIP, DD).

Alpine Himalaya.

TYPHACEAE

B.M. WADHWA AND H.J. CHOWDHERY

Typha angustata Bory & Chaub. in Bory Exp. Sc. Moree 3 : 338. 1832 ; Hook. f. Fl. Brit. India 6 : 489. 1893 ; Subramaniyan, Aqu. Angios. 74. 1962.

Tall, marshy herbs. Leaves erect, spongy. Flowers minute, densely crowded in bracteate spikes.

Fl. & Fr. : July – October.

Kulu (BSD).

Northern India.

ARACEAE

H.J. CHOWDHERY AND B.M. WADHWA

Acorus calamus L. Sp. Pl. 324. 1753 ; Hook. f. Fl. Brit. India 6 : 555. 1893 ; Collett, Fl. Siml. 544. 1902 ; Y.J. Nasir in Fl. West Pakistan 120 : 3. 1978 ; Nair, Fl. Bash. Himal. 293. 1977.

Aromatic, erect herbs of marshes. Spadix not prolonged nor enclosed in the spathe. Flowers yellow – green, 2 – sexual.

Fl. & Fr. : April – August.

Kinnaur (BSD), Kulu (BSD, CDRI, DD, RRL), Mandi (BSIP), Simla (BSD, DD).

Throughout India.

Arisaema costatum (Wall.) Mart. in Flora 14 : 458. 1831 ; Hook. f. Fl. Brit. India 6 : 501. 1893. *Arum costatum* Wall. Tent. Fl. Nep. 28. t. 19. 1824.

Herb. Spathe white, striped with dull – purple.

Fl. & Fr. : June – October.

Chamba (DD), Simla (DD).

Western and Central Himalaya.

Arisaema flavum (Forsk.) Schott, Prodr. Syst. Aroid. 40. 1860 ; Hook. f. Fl. Brit. India 6 : 503. 1893 ; Collett, Fl. Siml. 540. 1902 ; Nair, Fl. Bash. Himal. 293. 1977 ; Y.J. Nasir in Fl. West Pakistan 120 : 13. 1978. *Arum flavum* Forsk. Fl. Aeg. - Arab. 157. 1775. *Arisaema abbreviatum* Schott in Oesterr. Bot. Wochenb. 7 : 382. 1857 et Prodr. 39. 1860.

Herbs. Leaves usually 2, sometimes only one. Spathe purple inside, tube very short, green, limb pointed, yellow. Spadix short, thick, prolonged into a yellow, club-shaped appendage.

Fl. & Fr. : June – September.

Kinnaur (BSD, DD), Kulu (BSD, RRL), Simla (DD).

Temperate Himalaya and Western Tibet.

Arisaema intermedium Blume in Rumphia 1 : 102. 1836 ; Hook. f. Fl. Brit. India 6 : 500. 1893 ; Collett, Fl. Siml. 539. 1902 ; Nair, Fl. Bash. Himal. 294. 1977.

Herbs. Leaf single, digitately compound. Spathe green, striped with purple and white. Spadix prolonged, green, purple at the base.

Fl. & Fr. : June – July.

Chamba (DD), Kinnaur (DD), Kulu (DD), Simla (DD).

Temperate Western Himalaya up to Sikkim.

Arisaema jacquemontii Blume in Rumphia 1 : 95. 1836 ; Hook. f. Fl. Brit. India 6 : 506. 1893 ; Collett, Fl. Siml. 541. 1902 ; Nair, Fl. Bash. Himal. 294. 1977 ; Y.J. Nasir in Fl. West Pakistan 120 : 11. 1978. *A. exile* Schott in Bonpl. 7 : 26. 1859 ; Hook. f. Fl. Brit. India 6 : 506. 1893. *A. cornutum* Schott in Bonpl. 7 : 27. 1859.

Herbs. Leaves digitately compound, usually 2. Spathe green, striped white with a long, green or purple thread like tale. Male and female flowers on different plants.

Fl. & Fr. : June – September.

Chamba (BSD, DD), Kinnaur (BSD, DD), Kulu (BSD, DD), Lahul and Spiti (BSD), Simla (BSD, DD).

Temperate Himalaya.

Arisaema propinquum Schott in Oesterr. Bot. Wochenbl. 7 : 333. 1857 ; Hook f. Fl. Brit. India 6 : 501. 1893 ; Y.J. Nasir in Fl. West Pakistan 120 : 9. 1978. *A. wallichianum* Hook. f. Fl. Brit. India 6 : 500. 1893 ; Nair, Fl. Bash. Himal. 295. 1977. *A. intermedium* var. *propinquum*

Schott) Engler in DC. Monogr. Phaner. 2 : 541. 1879. *A. sikkimense* Stapf ex Chatterjee in Bull. Bot. Soc. Bengal 3 : 18. 1949. *A. wallichianum* var. *sikkimense* (Stapf) Hara *et al* forma *propinquum* (Schott) Hara in Journ. Jap. Bot. 40 : 21. 1965.

Herbs. Leaf single, digitately compound. Spathe dark - brown, streaked with green.

Fl. & Fr. : May - September.

Chamba (RRL), Kinnaur (BSD, DD), Kulu (BSD, CDRI, DD, RRL), Simla (BSD, CDRI).

Temperate Himalaya.

Arisaema tortuosum (Wall.) Schott in Schott and Endl. Melet. Bot. 1 : 17. 1832 ; Hook. f. Fl. Brit. India 6 : 502. 1893 ; Nair, Fl. Bash. Himal. 294. 1977. *Arum tortuosum* Wall. Pl. Asia. Rar. 2 : 10. t. 114. 1831. *Arisaema helleborifolium* Schott, Synop. 29. 1856. et Prodr. 36. 1860 ; Collett, Fl. Siml. 540. 1902. *A. tortuosum* var. *helleborifolium* (Schott) Engler in DC. Monogr. Phaner. 2 : 545. 1879 ; Nair, Fl. Bash. Himal. 295. 1977. *A. curvatum* Kunth sensu Hook. f. in Bot. Mag. t. 5931. 1871.

Herbs. Stem mottled with purple. Spathe green, finely ribbed. Spadix long, purple with green tip. Anthers white or pale - yellow.

Fl. & Fr. : June - September.

Chamba (BSD, DD), Kinnaur (BSD, DD), Simla (BSD, DD).

Temperate, subtropical Himalaya.

Arisaema tortuosum (Wall.) Schott var. *curvatum* (Roxb.) Engl. in Pflanze. 4 : 23. 1920 ; Nair, Fl. Bash. Himal. 294. 1977 ; Y.J. Nasir in Fl. West Pakistan 120 : 13. 1978. *Arum curvatum* Roxb. Fl. Ind. ed. 2. 3 : 506. 1832 ; Collett, Fl. Siml. 540. 1902. *Arisaema curvatum* (Roxb.) Kunth, Enum. Pl. 3 : 20. 1841.

Herbs. Leaves pedately compound. Spathe pale - green, finely ribbed. Anthers purple or blue.

Fl. & Fr. : July - August.

Kinnaur (BSD).

Temperate Himalaya.

Arisaema utile Hook. f. ex Schott, Prodr. Syst. Aroid. 30. 1860 ; Hook. f. Fl. Brit. India 6 : 499. 1893 ; Y.J. Nasir in Fl. West Pakistan 120 : 9. 1978.

Herbs. Leaves pale – green with undulate, golden margins. Spathe red – brown or purplish and coarsely reticulated.

Fl. & Fr. : June – September.

Kinnaur (DD).

Temperate Himalaya.

Gonatanthus pumilus (D. Don) Engl. ex Kr. in Engler, Pflanzenr. 4. 23. E. Heft 71 : 19. f. 5 (A.M.) 1920 ; Nair, Fl. Bash. Himal. 295. 1977. *Caladium pumilum* D. Don, Prodr. Fl. Nepal. 21. 1825. *Gonatanthus sarmentosus* Klotzch and Otto in Link and Klotzch, Icon. Pl. Rar. 1 : 33. t. 14. 1841 ; Hook. f. Fl. Brit. India 6 : 522. 1893 ; Collett, Fl. Siml. 543. 1902.

Herbs. Root stock tuberous, producing long slender branches bearing small bulbils covered with fibres. Spathe yellow. Flowers fragrant.

Fl. & Fr. : June – August.

Simla (DD).

Temperate Himalaya.

Remusatia hookeriana Schott in Oester. Bot. Wochenb. 7 : 133. 1857 ; Hook. f. Fl. Brit. India 6 : 522. 1893 ; Collett, Fl. Siml. 543. 1902 ; Nair, Fl. Bash. Himal. 295. 1977.

Herbs. Spathe yellow – green. Limb of the spathe erect. Flowers fragrant.

Fl. & Fr. : June – August.

Kangra (DD).

Temperate Himalaya.

Remusatia vivipara (Lodd.) Schott, Melet. 1 : 18. 1832 ; Hook. f. Fl. Brit. India 6 : 521. 1893 ; Nair, Fl. Bash. Himal. 296. 1977. *Caladium viviparum* Lodd. Bot. Cat. 3 : t. 291. 1818.

Tuberous herbs. Spathe green to golden – yellow. Limb of spathe reflexed.

Fl. & Fr. : June – September.

Chamba (DD).

Subtropical Himalaya.

Sauromatum venosum (Aiton) Kunth, Enum. Pl. 3 : 28. 1841 ; Schott, Prodr. Syst. Aroid. 71. 1860 ; Y.J. Nasir in Fl. West Pakistan 120 : 14. 1978. *Arum venosum* Aiton in Hort. Kew. 3 : 315. 1789. *A. pedatum* Willd. Enum. Suppl. 54. 1809. *A. guttatum* Wall. Pl. As. Rar. 2 : 10. t. 115. 1831 (non Salisbury, 1796). *Sauromatum guttatum* Schott in Schott & Endl. Melet. Bot. 1 : 17. 1832 ; Hook. f. Fl. Brit. India 6 : 508. 1893 ; Collett, Fl. Siml. 542. 1902 ; Nair, Fl. Bash. Himal. 296. 1977. *S. pedatum* (Willd.) Schott in Schott & Engl. Melet. Bot. 1 : 17. 1832.

Tuberous herbs. Stem spotted with purple. Spathe green - purple outside. Spadix tapering into a dark purple appendage.

Fl. & Fr. : April - May.

Chamba (RRL), Kulu (BSD, DD, RRL), Simla (BSD, DD).

Western and Central Himalaya.

Typhonium diversifolium Wall. ex Schott, Ic. Aroid 1 : 13. t. 20. 1853 ; Hook. f. Fl. Brit. India 6 : 510. 1893 ; Collett, Fl. Siml. 542. 1902 ; Nair, Fl. Bash. Himal. 296. 1977.

Tuberous herbs. Spathe erect, green striped, tinged with purple. Spadix with dark purple appendage. Female flowers purple.

Fl. & Fr. : June - October.

Kinnaur (BSD, DD), Simla (BSD).

Western and Central Himalaya.

LEMNACEAE

H.J. CHOWDHERY

Lemna gibba L. Sp. Pl. 970. 1753 ; Hook. f. Fl. Brit. India 6 : 556. 1893 ; Collett, Fl. Siml. 545. 1902 ; Nair, Fl. Bash. Himal. 296. 1977.

Root fibre single. Fronds orbicular, upper surface flat, lower swollen, hemispherical.

Fl. & Fr. : May – August.

Simla (Collett, 1902).

Throughout India.

Lemna minor L. Sp. Pl. 970. 1753 ; Hook. f. Fl. Brit. India 6 : 556. 1893 ; Collett, Fl. Siml. 544. 1902 ; Nair, Fl. Bash. Himal. 296. 1977.

Minute, floating herbs with a single root fibre. Fronds broadly ovate, both surfaces flat.

Fl. & Fr. : May – September.

Kinnaur (BSD, DD), Kulu (BSD).

Throughout India.

Lemna perpusilla Torrey, Fl. State New York 2 245. 1843. *L. paucicostata* Hegelm. Lemnac. 139. 1868 ; Hook. f. Fl. Brit. India 6 : 556. 1893.

Small, floating herbs.

Fl. & Fr. : May – August.

Kinnaur (BSD), Kulu (BSD), Simla (BSD).

Himachal Pradesh and temperate and tropical regions of India.

Spirodela polyrhiza (L.) Schleiden in Linnaea 13 : 392. 1839 ; Nair, Fl. Bash. Himal. 296. 1977. *L. polyrhiza* L. Sp. Pl. 970. 1753 ; Hook. f. Fl. Brit. India 6 : 557. 1893 ; Collett, Fl. Siml. 545. 1902.

Root fibres several, clustered. Fronds broadly ovate or orbicular.

Fl. & Fr. : May – August.

Kulu (BSD), Simla (BSD).

Throughout India.

Wolffia globosa (Roxb.) den Hartog & Plas in Blumea 18 : 367. 1970. *Lemna globosa* Roxb. Fl. Ind. ed. 2. 3 : 565. 1832. *W. arrhiza* (auct non Horkel ex Wimmer) Hook. f. Fl. Brit. India 6 : 557. 1892 ; Collett, Fl. Siml. 545. 1902.

Floating herbs without root – fibres.

Simla (Collett, 1902).

Throughout India.

ALISMATACEAE

B.M. WADHWA AND H.J. CHOWDHERY

Alisma plantago-aquatica L. Sp. Pl. 342. 1753 ; Hook. f. Fl. Brit. India 6 : 559. 1893 ; Collett, Fl. Siml. 545. 1902 ; Nair, Fl. Bash. Himal. 297. 1977.

Aquatic herb. Root stock fleshy. Leaves erect or spreading. Flowers in paniced whorls. Petals pink or rose with a yellow claw. Achenes 20 – 30, in whorl.

Fl. & Fr. : March – September.

Chamba (BSD, DD), Hamirpur (DD), Kangra (DD), Kinnaur BSD, DD), Kulu (BSD, DD), Mandi (BSD), Simla (BSD, DD).

Marshes in the lower Himalaya from Kashmir to Assam.

Sagittaria guyanensis H.B. & Kunth, Nov. Gen. & Sp. Pl. 1 : 250 1816 ; Hook. f. Fl. Brit. India 6 : 561. 1893 ; Hara, Fl. E. Himal. 1 : 348. 1966 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 32. 1972.

An aquatic, scapigerous herb. Leaves floating. Scape stout. Flowers white. Achenes encircled by toothed wing.

Fl. & Fr. : August – November.

Kangra (DD).

In marshy places throughout the plains of India ascending to sub Himalayan regions.

Sagittaria trifolia L. Sp. Pl. 993. 1753. *Sagittaria sagittifolia* non L. (Sp. Pl. 993. 1753) Hook. f. Fl. Brit. India 6 : 561. 1893 ; Subramanyam, Aquatic Ang. 87. 1962 ; Stewart, Ann. Cat Vas. Pl. W. Pak. & Kash. 32. 1972.

Aquatic, scapigerous herb. Leaves sagittate. Petals white, with a distinct basal purple claw. Achenes dorsally winged.

Fl. & Fr. : February – May.

Chamba (BSIP).

In marshy places throughout the plains of India and sub Himalayan tracts.

JUNCAGINACEAE

B.M. WADHWA AND H.J. CHOWDHERY

Triglochin maritimum L. Sp. Pl. 339. 1753 ; Hook. f. Fl. Brit. India 6 : 563. 1893.

Scapigerous, marshy herbs. Leaves slightly flattened at the tip. Flowers small, bisexual. Carpels grooved on the back.

Fl. & Fr. : June – August.

Lahul and Spiti (BSD, DD).

Temperate and alpine Himalaya and Western Tibet.

Triglochin palustre L. Sp. Pl. 338. 1753 ; Hook. f. Fl. Brit. India 6 : 563. 1893 ; Kitamura in Kihara, Fauna & Flora Nepal Himal. 83. 8955.

Scapigerous, tuberous and stoloniferous, marshy herbs. Leaves flaccid. Perianth green, margins purplish. Anthers purple. Carpels dorsally terete.

Fl. & Fr. : April – August.

Chamba (BSD), Kinnaur (BSD, DD), Lahul and Spiti (BSD, DD).

Temperate Himalaya and Western Tibet.

POTAMOGETONACEAE

H.J. CHOWDHERY

Potamogeton crispus L. Sp. Pl. 126. 1753 ; Hook. f. Fl. Brit. India 6 : 566. 1893 ; Collett, Fl. Siml. 457. 1902.

Leaves stem – clasping, linear – oblong, margins very wavy, finely toothed.

Fl. & Fr. : March – May.

Sirmur (BSD).

Throughout India.

Potamogeton lucens L. Sp. Pl. 126. 1753 ; Hook. f. Fl. Brit. India 6 : 567 1893 ; Collett, Fl. Siml. 548. 1902.

Robust, aquatic plants. Leaves sessile, lanceolate, margins very slightly wavy, finely toothed. Spike with crowded flowers.

Fl. & Fr. : May – July.

Lahul and Spiti (DD).

Temperate Himalaya – Kashmir to Sikkim.

Potamogeton natans L. Sp. Pl. 126. 1753 ; Hook. f. Fl. Brit. India 6 : 565. 1893 ; Collett, Fl. Siml. 547. 1902.

Leaves ovate – oblong, entire. Flowers crowded on spikes.

Fl. & Fr. : May – October.

Chamba (BSD).

North-Western India and Eastern Himalaya.

Potamogeton nodosus Poir. Encycl. Suppl. 4 : 535. 1816. *P. indicus* Roxb. Fl. Ind. 1 : 471. 1820 ; Hook. f. Fl. Brit. India 6 : 565. 1893.

Stem teret. Upper leaves coriaceous, oblong – elliptic, lower ones long, narrow, membranous.

Fl. & Fr. : April – July.

Chamba (DD), Kulu (RRL).

Throughout India.

Potamogeton octandrus Poir. Encycl. Suppl. 4 : 534. 1816. *Potamogeton javanicus* Hassk. in Verh. Natuurk. ver. Ned. Ind. 1 : 26. 1856 ; Hook. f. Fl. Brit. India 6 : 566. 1893 ; Collett, Fl. Siml. 547. 1902 ; Nair, Fl. Bash. Himal. 297. 1977.

Stem very slender. Leaves stalked, ovate – oblong, pointed at both ends, entire. Flowers minute in interrupted whorls.

Fl. & Fr. : April – June.

Simla (DD).

Throughout India.

Potamogeton pectinatus L. Sp. Pl. 127. 1753 ; Hook. f. Fl. Brit. India 6 : 567. 1893 ; Collett, Fl. Siml. 548. 1902.

Much branched, thread like stem. Leaves very narrow, grass – like, with sheathing base. Flowers in small clusters.

Fl. & Fr. : June – August.

Lahul and Spiti (BSD, DD).

Throughout India.

Potamogeton perfoliatus L. Sp. Pl. 126. 1753 ; Hook. f. Fl. Brit. India 6 : 566. 1893 ; Collett, Fl. Siml. 547. 1902.

Stem robust. Leaves broadly ovate, stem clasping, entire. Flowers crowded on the spikes.

Fl. & Fr. : July – September.

Kinnaur (BSD), Lahul and Spiti (BSD, DD), Mandi (BSD), Simla (BSIP).

Western Himalaya.

ZANNICHELLIACEAE

B.M. WADHWA AND H.J. CHOWDHERY

Zannichellia palustris L. Sp. Pl. 969. 1753 ; Hook. f. Fl. Brit. India 6 : 568. 1893.

Submerged herbs in salt marshes. Leaves linear. Flowers minute, enclosed in the leaf – sheathes. Achenes sessile, tubercled.

Fl. & Fr. : May – August.

Lahul and Spiti (BSD).

Throughout India, in salt marshes.

ERIOCAULACEAE

B.M. WADHWA AND H.J. CHOWDHERY

Eriocaulon cinereum R. Br. Prodr. 254. 1810. *E. sieboldianum* Sieb. & Zucc. ex Steud. Sys. Pl. Cyp. 272. 1855 ; Hook. f. Fl. Brit. India 6 : 577. 1893 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 36. 1972. *E. cinereum* R. Br. var. *sieboldianum* (Sieb. & Zucc.) Koyema & Ohwi, Fl. Jap. Engl. 266. 1965.

Aquatic or marshy herb. Leaves short setaceous. Ovary long, stipitate.

Fl. & Fr. : September – October.

Kinnaur (DD).

Temperate Himalaya.

Eriocaulon nepalense Prescott ex Bong. in Act. Acad. Petrop. ser. 6. 1 : 610. 1831 ; Hook. f. Fl. Brit. India 6 : 581. 1883 ; Satake in Hara, Fl. E. Himal. 2 : 158. 1971.

Marshy or aquatic herbs. Leaves opaque or translucent, many nerved. Flowers minute.

Fl. & Fr. : September – October.

Kangra (DD), Kulu (BSD, DD).

Temperate Himalaya.

Eriocaulon quinquangulare L. Sp. Pl. 87. 1753 ; Hook. f. Fl. Brit. India 6 : 582. 1893 ; Raghawan *et al.* in Rec. Bot. Surv. India 21 (2) : 91. 1981.

Aquatic or marshy herb. Leaves opaque or sub – translucent, bright red when dry.

Fl. & Fr. : July – September.

Simla (DD).

Throughout India.

Eriocaulon sollyanum Royle, Ill. Bot. Himal. Mount. 409. t. 97. f. 1. 1839; Babu, Herb. Fl. D. Dun 548. 1977. *E. trilobum* Buch. – Ham. in Wall. Cat. No. 6072 (*nom. nud.*) Hook. f. Fl. Brit. India 6 : 583. 1893.

Aquatic or marshy herbs. Leaves broadly subulate.

Fl. & Fr. : September – October.

Kangra (DD).

Throughout India.

CYPERACEAE

B.M. WADHWA AND H.J. CHOWDHERY

Bulbostylis barbata (Rottb.) Clarke in Hook. f. Fl. Brit. India 6 : 651. 1893; Collett, Fl. Siml. 563. 1902; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 73. 1972; Nair, Fl. Bash. Himal. 298. 1977. *Scirpus barbatus* Rottb. in Desr. et. Icon. 52 : t. 17. f. 4. 1773.

Chamba (DD), Simla (DD).

Throughout India.

Bulbostylis densa (Wall.) Hand. – Mazz. in Karsten & Schenck, Vegetationsb. 20. Heft. 7 : 16. 1930; Kern in Backer et Bakh. f. Fl. Java 3 : 468. 1968; Nair, Fl. Bash. Himal. 298. 1977. *Scirpus densa* Wall. in Roxb. Fl. Ind. 1 : 231. 1820. *B. capillaris* var. *trifida* Clarke in Hook. f. Fl. Brit. India 6 : 652. 1893.

Kinnaur (DD), Kulu (BSD), Simla (DD).

Very common in Himalaya.

Carex alpina Sw. in Liljeb. Svensk. Fl. ed. 2. 26. 1798; Clarke in Hook. f. Fl. Brit. India 6 : 730. 1894; Nair, Fl. Bash. Himal. 298. 1977.

Chamba (BSD), Kinnaur (BSD, DD), Kulu (DD), Lahul and Spiti (BSD, DD).

Western Himalaya, Kashmir to Kumaon.

Carex alta Boott in Proc. Linn. Soc. 1 : 254. 1845 et in Trans. Linn. Soc. 20 : 130. 1846; Clarke in Hook. f. Fl. Brit. India 6 : 707. 1894
p.p.

Kulu (DD).

Temperate Himalaya.

Carex atrata L. (*sensu lat.*) Clarke in Hook. f. Fl. Brit. India 6 : 731. 1894 ; Nair, Fl. Bash. Himal. 298. 1977.

Chamba (BSD), Kulu (DD), Lahul and Spiti (DD), Simla (DD).

Subalpine and alpine Himalaya.

Carex artofusca Schkuhr, Riedgr. 1 : 106. t. y. f. 82. 1801 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 74. 1972.

Lahul and Spiti (DD).

Western Himalaya.

Carex borii Nelves in Kew Bull. 1946. 18 : 1946. in clavi & in adnot ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 74. 1972.

Lahul and Spiti (DD).

Western Himalaya.

Carex breviculmis R. Br. Prodr. 242. 1810 ; Collett, Fl. Siml. 570. 1902 ; Kern in Backer et Bakh. f. Fl. Java 3 : 488. 1968 ; Nair, Fl. Bash. Himal. 298. 1977. *Carex royleana* Nees ex Wt. Contrib. Bot. Ind. 127. 1834.

Simla (DD).

Western Himalaya.

Carex curta Gooden. in Trans. Linn. Soc. 2 : 145. 1794 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 75. 1972. *C. canescens* auct (non L.) Clarke in Hook. f. Fl. Brit. India 6 : 706. 1894.

Lahul and Spiti (DD).

Kashmir to Himachal Pradesh.

Carex cardiolepis Nees in Wt. Contrib. Bot. Ind. 127. 1834 ; Clarke in Hook. f. Fl. Brit. India 6 : 744. 1894 ; Collett, Fl. Siml. 570. 1902 ; Nair, Fl. Bash. Himal. 299. 1977.

Kinnaur (BSD, DD), Kulu (DD).

North-Wertern Himalaya.

Carex cruciata Wahlenb. in Vet. Akad. Handl. Stockh. 24 : 149. 1803 (non Nees) ; Clarke in Hook. f. Fl. Brit. India 6 : 715. 1894. *C. condensata*

Nees in Wt. Contrb. Bot. Ind. 123. 1934 ; Clarke in Hook. f. Fl. Brit. India 6 : 716. 1894 ; Collett, Fl. Siml. 568. 1902 ; Nair, Fl. Bash. Himal. 299. 1977.

Kinnaur (DD), Kulu (DD), Simla (DD).

Himalaya – Himachal Pradesh to Bhutan.

Carex cruenta Nees in Wt. Contrb. Bot. Ind. 128. 1834 ; Clarke in Hook. f. Fl. Brit. India 6 : 734. 1893. *C. ferruginea* Clarke in Hook. f. Fl. Brit. India 6 : 738. 1894 (non Scop.).

Chamba (DD), Kulu (DD), Lahul and Spiti (DD).

Common in Himalaya.

Carex dimorpholepis Steud. Synop. Cyper. 1 : 214. 1855. *Carex cernua* Boott, Ilustr. Carex 4 : 171. t. 578. 1867 incl. var. *minor* Clarke in Hook. f. Fl. Brit. India 6 : 708. 1894.

Kulu (DD).

Assam and Himachal Pradesh.

Carex filicina Nees in Wt. Contrb. Bot. Ind. 123. 1834 ; Clarke in Hook. f. Fl. Brit. India 6 : 717. 1894 ; Collett, Fl. Siml. 569. 1902 ; Nair, Fl. Bash. Himal. 299. 1977.

Chamba (BSD, DD), Kinnaur (DD), Simla (DD).

Throughout Khasia and Naga hills and temperate Himalaya.

Carex foliosa D. Don in Trans. Linn. Soc. 14 : 327. 1825 ; Collett, Fl. Siml. 572. 1902 ; Nair, Fl. Bash. Himal. 299. 1977. *C. muricata* L. var. *foliosa* (D. Don) Clarke in Hook. f. Fl. Brit. India 6 : 703. 1893. *C. muricata* L. var. *indica* Boott, Ilustr. Carex 4 : 193. 1867.

Chamba (DD), Kinnaur (DD).

Himalaya.

Carex gracilentia Boott apud. Strachey, Cat. Pl. Kumaon 73. 1854 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 77. 1972. *C. alpina* var. *gracilentia* (Strachey) Clarke in Hook. f. Fl. Brit. India 6 : 730. 1893.

Lahul and Spiti (BSD, DD).

Western Himalaya.

Carex haematostoma Nees in Wt. Contrib. Bot. Ind. 125. 1834 ; Clarke in Hook. f. Fl. Brit. India 6 : 744. 1894 ; Collett, Fl. Siml. 569. 1902 ; Nair, Fl. Bash. Himal. 300. 1977.

Kinnaur (DD), Lahul and Spiti (DD).

Himalaya and Western Tibet.

Carex inanis Kunth, Enum. Pl. 2 : 522. 1837 ; Clarke in Hook. f. Fl. Brit. India 6 : 743. 1894 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 77. 1972.

Kulu (DD).

Himalaya, Kashmir to Sikkim.

Carex infusata Nees in Wt. Contrib. Bot. Ind. 125. 1834. *p.p.* excl. b. *Carex alpina* Sw. var. *infusata* (Nees) Boott, Illustr. Carex 3 : 112. 1862 ; Clarke in Hook, f. Fl. Brit. India 730. 1894. *p.p.*

Lahul and Spiti (DD).

Western Himalaya.

Carex longicruris Nees in Wt. Contrib. Bot. Ind. 124. 1834 ; Clarke in Hook. f. Fl. Brit. India 6 : 705. 1894 ; Collett, Fl. Siml. 568. 1902 ; Nair, Fl. Bash. Himal. 300. 1977.

Simla (DD).

Western Himalaya.

Carex maritima Gunn. Fl. Norv. 2 : 131. 1772 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 79. 1972. *C. incurva* Lightf. Fl. Scot. 2 : 544. t. 24. fig. 1. 1777 ; Clarke in Hook. f. Fl. Brit. India 6 : 700. 1894.

Lahul and Spiti (DD).

North-Western Himalaya.

Carex melanantha C.A. Mey. in Ledeb. Fl. Alt. 4 : 216. 1833 ; Clarke in Hook. f. Fl. Brit. India 6 : 733. 1894 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 79. 1972.

Kulu (DD), Lahul and Spiti (DD).

Kashmir to Nepal.

Carex microglochin Wahlenb. in Vet. Akad. Stockh. 24 : 140. 1803 ; Clarke in Hook. f. Fl. Brit. India 6 : 711. 1894 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 79. 1972.

Lahul and Spiti (BSD).

North-Western Himalaya and Western Tibet.

Carex moorcroftii Falc. ex Boott in Trans. Linn. Soc. 20 : 140. 1851 ; Clarke in Hook. f. Fl. Brit. India 6 : 733. 1893 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 79. 1972.

Lahul and Spiti (DD).

Himalaya and Tibet.

Carex nivalis Boott in Trans. Linn. Soc. 20 : 136. 1846 ; Clarke in Hook. f. Fl. Brit. India 6 : 732. 1893 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 80. 1972.

Kulu (DD), Lahul and Spiti (BSD, DD).

Himalaya and Western Tibet.

Carex notha Kunth, Enum. Pl. 2 : 421. 1837 ; Clarke in Hook. f. Fl. Brit. India 6 : 709. 1894 ; Nair, Fl. Bash. Himal. 300. 1977.

Chamba (BSD), Kinnaur (DD), Lahul and Spiti (DD).

Himalaya.

Carex nubigena D. Don in Trans. Linn. Soc. 14 : 326. 1825 ; Clarke in Hook. f. Fl. Brit. India 6 : 702. 1894 ; Baker in Fl. Java 3 : 494. 1968 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 80. 1972 ; Nair, Fl. Bash. Himal. 300. 1977.

Chamba (BSD), Kinnaur (DD), Kulu (BSD, DD), Simla (BSD, DD).

Himalaya.

Cyperus nutans Vahl, Enum. Pl. 2 : 363. 1806. var. **eleusinoides** (Kunth) Haines, Bot. Bihar and Orissa 5 : 898. 1924. *C. eleusinoides* Kunth, Enum. Pl. 2 : 39. 1837 ; Clarke in Hook. f. Fl. Brit. India 6 : 608. 1893.

Chamba (DD), Simla (DD).

Throughout India.

Cyperus paniceus (Rottb.) Boeck. in Linnaea 36 : 38. 1870. *p.p.* ; Nair, Fl. Bash. Himal. 304. 1977. *Kyllinga panicea* Rottb. Descr & Icon 15. t. 4. f. 1. 1773. *Mariscus paniceus* Vahl, Enum. Pl. 2 : 373. 1806 ; Clarke in Hook. f. Fl. Brit. India 6 : 620. 1893 ; Collett, Fl. Siml. 558. 1902.

Kangra (RRL), Simla (BSD).

Throughout India.

Carex obscura Nees in Wt. Contrib. Bot. Ind. 126. 1834 ; Clarke in Hook. f. Fl. Brit. India 6 : 731. 1894 ; Nair, Fl. Bash. Himal. 300. 1977.

Kinnaur (DD), Lahul and Spiti (DD), Simla (DD).

Western Himalaya.

Carex oliveri Boeck. in Fl. 63 : 455. 1880 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 81. 1972. *C. nivalis* Boott. f. *cinnamomea* (Boott.) Kukenth. Monogr. 533. 1909.

Lahul and Spiti (DD).

Himalaya.

Carex orbicularis Boott in Proc. Linn. Soc. 1 : 254. 1845. *C. vulgaris* Clarke in Hook. f. Fl. Brit. India 6 : 711. 1894. (non Pries) ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 81. 1972.

Lahul and Spiti (BSD, DD).

Himalaya and Western Tibet.

Carex phacota Spreng. Syst. 3 : 826. 1826; Clarke in Hook. f. Fl. Brit. India 6 : 708. 1894 ; Kern in Backer et Bakh. f. Fl. Java 3 : 494. 1968.

Kinnaur (BSD).

Himalaya.

Carex praelonga Clarke in Hook. f. Fl. Brit. India 6 : 707. 1894. var. *angustior* Clarke in Hook. f. Fl. Brit. India 6 : 707. 1894 ; Verma and V. Chandra in Rec. Bot. Surv. India 21 (2) : 229. 1981.

Lahul and Spiti (DD).

Himalaya.

Carex plectobasis V. Krecz. in Not. Syst. Harb. Inst. Bot. Acad. Sci. URSS 9 : 192. 1946 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 82. 1972.

Lahul and Spiti (BSD, DD).

Kashmir and Himachal Pradesh.

Carex polyphylla Kar. & Kir. in Bull. Soc. Nat. Mosc. 14 : 859. 1841 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 82. 1972. *C. muricata* (non L.) auct. plur. Clarke in Hook. f. Fl. Brit. India 6 : 703. 1894.

Chamba (BSD), Kinnaur (BSD), Lahul and Spiti (BSD, DD).

Kashmir and Himachal Pradesh.

Carex pseudofetida Kuk. ex Ostenf. in Bot. Tidskr. 28 : 225. f. 1. 1907 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 83. 1972.

Lahul and Spiti (DD).

Western Himalaya.

Carex psychrophila Nees in Wt. Contrib. Bot. Ind. 127. 1834 ; Clarke in Hook. f. Fl. Brit. India 6 : 733. 1894 ; Collett, Fl. Siml. 569. 1902 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 83. 1972.

Chamba (DD), Kulu (DD), Simla (DD).

Himalaya.

Carex remota L. Sp. Pl. 1383. 1753 ; Clarke in Hook. f. Fl. Brit. India 6 : 706. 1894.

Chamba (DD), Kinnaur (DD), Simla (DD).

Temperate Himalaya.

Corex rochebrunii Franch. et. Sav. Enum. Pl. Jap. 2 : 555. 1878 ; Collett, Fl. Siml. 568. 1902 ; Nair, Fl. Bash. Himal. 301. 1977. *C. remota* L. var. *rochebrunii* (Branch. et Sav.) Clarke in Hook. f. Fl. Brit. India 6 : 706. 1894.

Simla (DD).

Temperate Himalaya.

Carex sanguinea Boott in Proc. Linn. Soc. 1 : 285. 1877 ; Clarke in Hook. in f. Fl. Brit. India 6 : 720. 1894 ; Nair, Fl. Bash. Himal. 301. 1977.

Kinnaur (DD).

Western Himalaya.

Carex setigera D. Don in Trans. Linn. Soc. 14 : 330. 1824 ; Clarke in Hook. f. Fl. Brit. India 6 : 743. 1894 ; Collett, Fl. Siml. 569. 1902 ; Nair, Fl. Bash. Himal. 301. 1977.

Kinnaur (BSD, DD), Simla (BSD).

Himalaya.

Carex setigera D. Don var. **schlagintweitiana** (Boeck.) Kuken. Monogr. 419. 1909 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 84. 1972. *C. schlagintweitiana* Boeck. Cyp. Nov. 1 : 48. 1888 ; Clarke in Hook. f. Fl. Brit. India 6 : 743. 1894.

Kulu (DD).

North-Western Himalaya.

Carex setosa Boott, Ill. Carex 3 : 108. t. 327-329. 1862 ; Clarke in Hook. f. Fl. Brit. India 6 : 745. 1894 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 84. 1972.

Lahul and Spiti (DD).

Himalya.

Carex stenophylla Wahlenb. in Vet. Akad. Stockh. 24 : 142. 1803 ; Clarke in Hook. f. Fl. Brit. India 6 : 700. 1894 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 84. 1972.

Kinnaur (DD), Lahul and Spiti (BSD, DD).

North-Western Himalaya.

Carex tristis M. Bieb. Fl. Tour. Caus. 3 : 615. 1819 ; Clarke in Hook. f. Fl. Brit. India 6 : 738. 1894 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 85. 1972.

Lahul and Spiti (DD).

Western Himalaya.

Carex vulpinaris Nees in Wt. Contrib. Bot. Ind. 121. 1834 ; Clarke in Hook. f. Fl. Brit. India 6 : 702. 1894 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 85. 1972.

Kinnaur (DD), Lahul and Spiti (DD).

North-Western Himalaya.

Cyperus alulatus Kern in Rainwardtia 1 : 463 - 466. f. 1. 1952 ; Verma et V. Chandra in Rec. Bot. Surv. India 21(2) : 236. 1981. *C. iria* sensu Clarke in Ill. Cyp. t. 14. 1909.

Chamba (DD), Kulu (BSD), Simla (BSD).

Northern India and Nepal.

Cyperus atkinsonii Clarke in Journ. Linn. Soc. 21 : 109. 1885 et Hook. f. Fl. Brit. India 6 : 603. 1893 ; Collett, Fl. Siml. 555. 1902 ; Nair, Fl. Bash. Himal. 302. 1977.

Simla (DD).

Kashmir and Himachal Pradesh.

Cyperus brevifolia (Rottb.) Hassk. Cat. Hort. Bog. 24. 1844 ; Nair, Fl. Bash. Himal. 302. 1977. *Kyllinga brevifolia* Rottb. Descr. & Icon. 13. t. 4. f. 3. 1773 ; Clarke in Hook. f. Fl. Brit. India 6 : 588. 1893.

Simla (BSD, DD).

Throughout India.

Cyperus compressus L. Sp. Pl. 46. 1753 ; Clarke in Hook. f. Fl. Brit. India 6 : 605. 1893 ; Collett, Fl. Siml. 555. 1902 ; Nair, Fl. Bash. Himal. 302. 1977 ; Kern in Backer & Bakh. f. Fl. Java 3 : 480. 1968.

Kinnaur (BSD), Simla (DD).

Throughout India.

Cyperus cyperoides (L.) O. Ktze. Rev. Gen. Pl. 3. 2 : 333. 1898 ; Kern in Backer & Bakh. f. Fl. Java 3 : 474. 1968. *Scirpus cyperoides* L. Mant. 2 : 181. 1771. *Mariscus seiberianus* Nees ex Clarke in Hook. f. Fl. Brit. India 6 : 622. 1893 ; Collett, Fl. Siml. 559. 1902.

Kangra (BSD), Chamba (DD), Kinnaur (DD), Simla (DD).

North-Western Himalaya.

Cyperus diaphanus Schrad. ex R. & S. Mant. 2 : 447. 1824 var. **latespicatus** (Boeck.) Kern in Fl. Males. Ser. 1. 7(3) : 653. 1974 ; Verma & V. Chandra in Rec. Bot. Surv. India 21(2) : 238. 1981. *C. latespicatus* Boeck. in Flora 42 : 441. 1859. *Pycneus latespicatus* Clarke in Hook. f. Fl. Brit. India 6 : 590. 1893.

Kangra (DD).

Himachal Pradesh eastwards to Khasia hills.

Cyperus difformis L. Cent. Pl. 2 : 6. 1756 ; Clarke in Hook. f. Fl. Brit. India 6 : 599. 1893 ; Collett, Fl. Siml. 554. 1902 ; Kern in Backer et Bakh. f. Fl. Java 3 : 475. 1968 ; Nair, Fl. Bash. Himal. 302. 1977.

Kangra (DD), Kinnaur (DD), Kulu (DD).

Throughout India.

Cyperus flavidus Retz. Obs. 5 : 13. 1789 ; Kern in Fl. Males. ser. 1. 7(3) : 648. 1974. *Pycneus capillaris* Nees in Linnaea 9 : 283. 1834 ; Clarke in Hook. f. Fl. Brit. India 6 : 591. 1893 ; Collett, Fl. Siml. 552. 1902.

Chamba (BSD, DD), Kinnaur (BSD, DD), Kulu (BSD, DD), Simla (BSD, DD), Una (BSD), Solon (DD).

Northern India.

Cyperus iria L. Sp. Pl. 45. 1753 ; Clarke in Hook. f. Fl. Brit. India 6 : 606. 1893 ; Collett, Fl. Siml. 556. 1902 ; Nair, Fl. Bash. Himal. 303. 1977.

Kinnaur (BSD).

Throughout India.

Cyperus kyllingia Endl. Cat. Hort. Acad. Vindob. 1 : 94. 1842 ; Kern in Backer & Bakh. f. Fl. Java 3 : 469. 1968 ; Nair, Fl. Bash. Himal. 303. 1977. *Kyllinga monocephala* Rottb. Descr. & Icon. 13. t. 4. f. 4. 1773 ; Clarke in Hook. f. Fl. Brit. India 6 : 588. 1893.

Kangra (BSD), Mandi (BSIP), Simla (DD).

Throughout India.

Cyperus metzii (Hochst. ex Steud.) Mattf. & Kuentz. Pflanz. Heft. 101 : 612. 1936 ; Verma et V. Chandra in Rec. Bot. Surv. India 21 (2) : 242. 1981. *Kyllinga metzii* Hochst. ex Steud. Syn. Cyp. 70. 1855. *L. squamulata* Vahl, Enum. Pl. 2 : 381. 1806 ; Clarke in Hook. f. Fl. Brit. India 6 : 589. 1893.

Kulu (DD), Kangra (RRL), Simla (BSD).

North-Western India.

Cyperus niveus Retz. Obs. 5 : 12. 1788 ; Clarke in Hook. f. Fl. Brit. India 6 : 601. 1893 ; Collett, Fl. Siml. 555. 1902 ; Nair, Fl. Bash. Himal. 303. 1977.

Chamba (BSD, DD), Kangra (RRL), Kulu (BSIP, DD), Kinnaur (BSD, DD), Simla (BSD, DD).

Kashmir to Assam.

Cyperus pilosus Vahl, Enum. Pl. 2 : 354. 1806 ; Clarke in Hook. f. Fl. Brit. India 6 : 609. 1893 ; Kern in Backer & Bakh. f. Fl. Java 3 : 477. 1968 ; Verma & V. Chandra in Rec. Bot. Surv. India 21(2) : 244. 1981.

Choor (DD).

Throughout India.

Cyperus rotundus L. Sp. Pl. 45. 1753 ; Clarke in Hook. f. Fl. Brit. India 6 : 614. 1893 ; Collett, Fl. Siml. 557. 1902 ; Nair, Fl. Bash. Himal. 304. 1977.

Chamba (BSD), Kinnaur (BSD), Simla (BSD).

Warmer parts of India.

Cyperus rotundus L. ssp. **tuberosus** (Rottb.) Kukenth. in Engl. Pflanzenr. Heft. 101 : 113. 1935 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 91. 1972. *C. tuberosus* Rottb. Descr. et. Icon. 28. t. 7. f. 1. 1773 ; Clarke in Hook. f. Fl. Brit. India 6 : 616. 1893.

Chamba (DD).

Tropical and subtropical parts.

Cyperus sanguinolentus Vahl, Enum. Pl. 2 : 351. 1806 ; Kern in Backer & Bakh. f. Fl. Java 3 : 471. 1968 ; Nair, Fl. Bash. Himal. 304. 1977. *Pycneus sanguinolentus* Nees in Linnaea 9 : 283. 1834 ; Clarke in Hook. f. Fl. Brit. India 6 : 590. 1893 ; Collett, Fl. Siml. 553. 1902.

Chamba (DD), Kinnaur (BSD), Kulu (BSD), Simla (BSD, DD).

Throughout India.

Cyperus serotinus Rottb. Descr. Pl. Rar. Progr. 18. 1772 et Descr. Nov. Pl. 31. 1873 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 92. 1972. *Juncellus serotinus* (Rottb.) Clarke in Hook. f. Fl. Brit. India 6 : 594. 1893.

Kulu (DD).

Kashmir and Himachal Pradesh.

Cyperus squarrosus L. Cent. Pl. 2 : 6. 1756 ; Kern in Backer & Bakh. Fl. Java 3 : 473. 1968. *Cyperus aristatus* Rottb. Descr. Pl. Rar. Prodr. 22. 1772 ; Clarke in Hook. f. Fl. Brit. India 6 : 606. 1893 ; Nair, Fl. Bash. Himal. 301. 1977. *Mariscus squarrosus* Clarke in Hook. f. Fl. Brit. India 6 : 623. 1893 *quoad. syn.*

Chamba (BSD, DD), Kulu (BSD, DD), Lahul and Spiti (BSD), Simla (BSD, DD).

Throughout India.

Cyperus tenuispica Steud. Syn. Pl. Glum. 2 : 11. 1854 ; Kern in Fl. Males. Ser. 17 (3) : 625. 1974. *C. flavidus* Clarke in Hook. f. Fl. Brit. India 6 : 600. 1893 (non Retz.).

Throughout India.

Cyperus triceps (Rottb.) Endl. Cat. Hort. Ac. Vindob. 1 : 94. 1842 ; Kern in Fl. Males. Ser. 17(3) : 659. 1974. *Kyllinga triceps* Rottb. Descr. & Icon. 14. t. 4. f. 6. 1773 ; Clarke in Hook. f. Fl. Brit. India 6 : 578. 1893.

Kulu (DD), Una (BSD).

Throughout India.

Eleocharis atropurpurea (Retz.) Presl. Ref. Haenk. 1 : 196. 1828 *excl. specim. cit.* ; Clarke in Hook. f. Fl. Brit. India 6 : 627. 1893 ; Kern in Backer & Bakh. f. Fl. Java 3 : 461. 1968. *Scirpus atropurpureus* Retz. Obs. 5 : 14. 1789.

Chamba (BSD).

Western Himalaya to Assam.

Eleocharis congesta D. Don, Prodr. Fl. Nepal. 41. 1825 ; Clarke in Hook. f. Fl. Brit. India 6 : 620. 1893 ; Collett, Fl. Siml. 559. 1902 ; Kern in Backer & Bakh. f. Fl. Java 3 : 461. 1968 ; Nair, Fl. Bash. Himal. 304. 1977. *E. afflata* Steud. Syn. 2 : 299. 1855 ; Clarke in Hook. f. Fl. Brit. India 6 : 629. 1893. *E. subvivipara* Boeck. in Linnaea 36 : 424. 1870 ; Clarke in Hook. f. Fl. Brit. India 6 : 629 1893.

Kangra (DD), Kinnaur (BSD), Kulu (BSD), Simla (DD).

Throughout India.

Eleocharis palustris (L.) R. Br. Prodr. 224. 1810. emend. Roemer & Schultes, Syst. Veg. 2 : 151. 1817. ssp. aggr. ; Clarke in Hook. f. Fl. Brit. India 6 : 628. 1893 ; Nair, Fl. Bash. Himal. 304. 1977. *Scirpus palustris* L. Sp. Pl. 47. 1753.

Chamba (BSD), Kinnaur (BSD, DD), Kulu (RRL), Lahul and Spiti (BSD), Simla (DD).

Throughout India.

Eleocharis retroflexa (Poir.) Urb. Symb. Ant. 2 : 165. 1900 ; Kern in Backer & Bakh. f. Fl. Java 3 : 460. 1968. *Scripus retroflexus* Poir. in Lamk. Encycl. 6 : 753. 1804. *E. chaetaria* Roem. & Schul. Syst. Veg. 2 : 154. 1817 ; Clarke in Hook. f. Fl. Brit. India 6 : 629. 1893.

Lahul and Spiti (DD).

Tropical and subtropical parts of India.

Eleocharis tetraquetra Nees in Wt. Contrib. Bot. Ind. 113. 1834 ; Clarke in Hook. f. Fl. Brit. India 6 : 630. 1893 ; Collett, Fl. Siml. 559. 1902 ; Kern in Backer & Bakh. f. Fl. Java 3 : 401. 1968 ; Nair, Fl. Bash. Himal. 305. 1977.

Kinnaur (BSD).

Throughout India.

Eriophorum comosum (Wall.) Wall. ex Nees in Wt. Contrib. Bot. Ind. 110. 1834 ; Clarke in Hook. f. Fl. Brit. India 6 : 664. 1893 ; Collett, Fl. Siml. 565. 1902 ; Nair, Fl. Bash. Himal. 305. 1977. *Scirpus comosum* Wall. in Roxb. Fl. Ind. 1 : 234. 1820.

Chamba (BSD, DD), Kangra (BSIP), Kinnaur (BSD, DD), Kulu (DD, LWG), Mandi (LWG), Simla (BSD, DD), Sirmur (BSD).

Common in India.

Eriophorum microstachyum Boeck. in Linnaea 38 : 399. 1874 ; Clarke in Hook. f. Fl. Brit. India 6 : 664. 1893 ; Nair, Fl. Bash. Himal. 305. 1977.

Kulu (DD), Simla (BSD, DD).

Alpine Himalaya.

Fimbristylis aphylla Steud. Syn. 2 : 114. 1855 ; Kern in Backer & Bakh. f. Fl. Java 3 : 464. 1968. *F. quinquangularis* Kunth var. *crassa* Clarke in Hook. f. Fl. Brit. India 6 : 644. 1893.

Una (BSD).

Throughout India.

Fimbristylis bisumbellata (Forssk.) Bub. Dodec. 30. 1850 ; Kern in Backer & Bakh. f. Fl. Java 3 : 466. 1968 ; Nair, Fl. Bash. Himal. 305. 1977. *Scirpus bisumbellatus* Forssk. Fl. Aeg. Arb. 1 : 15. 1775. *Fimbristylis dichotoma* (non Vahl) Kunth, Enum. Pl. 2 : 225. 1837 ; Clarke in Hook. f. Fl. Brit. India 6 : 635. 1893 ; Collett, Fl. Siml. 561. 1902.

Mandi (BSD), Sirmur (BSD).

Throughout India.

Fimbristylis complanata (Retz.) Link. Hort. Bot. Berol. 1 : 292. 1827 ; Clarke in Hook. f. Fl. Brit. India 6 : 646. 1893 ; Kern in Backer & Bakh. f. Fl. Java 3 : 464. 1968 ; Nair, Fl. Bash. Himal. 305. 1977. *Scirpus complanatus* Retz., Obs. 5 : 14. 1789.

Chamba (DD), Simla (DD).

Throughout India.

Fimbristylis dichotoma (L.) Vahl, Enum. Pl. 2 : 287. 1806. excl. var. ; Kern in Backer & Bakh. f. Fl. Java 3 : 466. 1968 ; Nair, Fl. Bash. Himal. 306. 1977. *Scirpus dichotomus* L. Sp. Pl. 50. 1753. *Fimbristylis diphylla* (Retz.) Vahl, Enum. Pl. 2 : 289. 1806 ; Clarke in Hook. f. Fl. Brit. India 6 : 636. 1893 excl. var. *pluristriata*.

Kinnaur (DD), Kulu (DD), Simla (DD).

Throughout India.

Fimbristylis falcata (Vahl) Kunth, Enum. Pl. 2 : 239. 1837 ; Kern in Fl. Males. Ser. 1. 7 (3) : 557. 1974. *Scirpus falcatus* Vahl, Enum. Pl. 2 : 275. 1806. *E. junciformis* Kunth, Enum. Pl. 2 : 239. 1837 ; Clarke in Hook. f. Fl. Brit. India 6 : 647. 1893 ; Collett, Fl. Siml. 562. 1902 ; Nair, Fl. Bash. Himal. 306. 1977.

Chmba (DD), Kinnaur (DD), Simla (DD).

Throughout India.

Fimbristylis littoralis Gaud. in Freyc. Voy. Bot. 413. 1826 ; Kern in Fl. Males. Ser. 1. 7 (3) : 551. 1974. *F. miliacea* Vahl, Enum. Pl. 2 : 287. 1806. excl. basion. ; Clarke in Hook. f. Fl. Brit. India 6 : 644. 1893.

Kangra (DD).

Throughout India.

Fimbristylis miliacea (L.) Vahl, Enum. Pl. 2 : 287. 1806 *quod-basion.* ; Kern in Fl. Males. ser. 1. 7 (3) : 552. 1974 ; Nair, Fl. Bash. Himal. 306. 1977. *Scirpus miliaceus* L. Syst. Veg. 10 : 868. 1759. *F. quinqueangularis* Kunth, Enum. Pl. 2 : 229. 1837 ; Clarke in Hook. f. Fl. Brit. India 6 : 644. 1893.

Kulu (BSD, DD).

Throughout India.

Fimbristylis pierotii Miq. in Ann. Mus. Bot. Lugd. 2 : 145. 1865 ; Clarke in Hook. f. Fl. Brit. India 6 : 642. 1893 ; Kern in Fl. Males. ser. 1. 7 (3) : 555. 1974 ; Nair, Fl. Bash. Himal. 306. 1977.

Simla (DD).

North - Western Himalaya and Nepal.

Fimbristylis tomentosa Vahl, Enum. Pl. 2 : 290. 1806. *F. podocarpa* Nees et Meyen ex Nees in Wt. Contrib. Bot. Ind. 98. 1834 *p. p.* ; Clarke in Hook. f. Fl. Brit. India 6 : 638. 1893 ; Kern in Backer & Bakh. f. Fl. Java 3 : 466. 1968. *F. diphylla* var. *pluristriata* Clarke in Hook. f. Fl. Brit. India 6 : 637. 1893.

Simla (DD).

Himalaya and Assam.

Fimbristylis rigidula Nees in Wt. Contrib. Bot. Ind. 99. 1834 ; Clarke

in Hook. f. Fl. Brit. India 6 : 640. 1893 ; Collett, Fl. Siml. 561. 1902 ; Kern in Blumea 8 : 141. 1955 ; Nair, Fl. Bash. Himal. 306. 1977.

Kinnaur (DD), Simla (DD).

Western Himalaya to Bengal.

Fimbristylis schoenoides (Retz.) Vahl, Enum Pl. 2 : 286. 1806 ; Clarke in Hook. f. Fl. Brit. India 6 : 634. 1893 ; Collett, Fl. Siml. 560. 1902 ; Nair, Fl. Bash. Himal. 307. 1977. *Scirpus schoenoides* Retz. Obs. 5 : 14. 1789.

Simla (DD), Una (BSD).

Throughout India.

Fimbristylis squarrosa Vahl, Enum. Pl. 2 : 289. 1806 ; Clarke in Hook. f. Fl. Brit. India 6 : 635. 1893 ; Collett, Fl. Siml. 560. 1902 ; Nair, Fl. Bash. Himal. 307. 1977.

Simla (DD).

Himalaya and Assam.

Fuirena pubescens Kunth, Enum. Pl. 2 : 182. 1837 ; Clarke in Hook. f. Fl. Brit. India 6 : 665. 1893 ; Nair, Fl. Bash. Himal. 307. 1977.

Kinnaur (DD).

Western Himalaya.

Kobresia capillifolia (Decne.) Clarke in Journ. Linn. Soc. 20 : 378. 1883 ; Clarke in Hook. f. Fl. Brit. India 6 : 697. 1894 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 97. 1972. *Elyna capillifolia* Decne. in Jacq. Voy. Bot. 4 : 173. t. 174. 1835 1840.

Lahul and Spiti (BSD, DD).

Western Himalaya and Nepal.

Kobresia duthiei Clarke in Hook. f. Fl. Brit. India 6 : 697. 1894 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 97. 1972. *K. rostrata* Clarke ex Ivanova in Jour. Bot. URSS. 24 : 490. 1939.

Kulu (DD).

Western Himalaya, Himachal Pradesh to Kumaon and Nepal.

Kobresia filicina (Clarke) Clarke in Hook. f. Fl. Brit. India 6 : 696. 1894 ; Collett, Fl. Siml. 565. 1902 ; Nair, Fl. Bash. Himal. 307. 1977. *Hemicarex filicina* Clarke in Journ. Linn. Soc. 20 : 384. 1883.

Simla (DD).

Western Himalaya.

Kobresia hookeri Boeck. in Linnaea 39 : 4. 1874 ; Clarke in Hook. f. Fl. Brit. India 6 : 695. 1894.

Simla (BSD).

Western Himalaya and Sikkim.

Kobresia laxa Nees in Wt. Contrib. Bot. Ind. 119. 1834 ; Clarke in Hook. f. Fl. Brit. India 6 : 698. 1894 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 97. 1972.

Chamba (DD), Kinnaur (BSD, DD), Lahul and Spiti (BSD, DD).

Alpine Himalaya.

Kobresia nepalensis (Nees) Kükenth. in Engl. Pflanzenr. IV. 20. Heft 38 : 40. 1909 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 98. 1972. *Uncinia nepalensis* Nees in Wt. Contrib. Bot. Ind. 129. 1834. *Carex linearis* Boott, Illustr. Carex 1 : 51. t. 136. 1858 ; Clarke in Hook. f. Fl. Brit. India 6 : 712. 1894. var. **nepalensis**.

Lahul and Spiti (DD).

Himalaya.

Kobresia nepalensis (Nees) Kükenth. var. **vaginosa** (Clarke) Kükenth. in Engl. Pflanzenr. IV-20 Heft. 38 : 40. 1909 ; Stewart, Ann. Cat. Vas. Pl. West Pak. & Kash. 98. 1972. *K. vaginosa* Clarke in Hook. f. Fl. Brit. India 6 : 695. 1894.

Chamba (DD), Lahul and Spiti (DD).

Western Himalaya to Sikkim.

Kobresia nitens Clarke in Journ. Linn. Soc. 20 : 379. t. 30. f. 7. 1883 et in Hook. f. Fl. Brit. India 6 : 697. 1894 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 98. 1972.

Lahul and Spiti (DD).

Western Himalaya.

Kobresia pygmaea (Clarke) Clarke in Hook. f. Fl. Brit. India 6 : 696. 1894 ; Nair, Fl. Bash. Himal. 307. 1977. *Hemicarex pygmaea* Clarke in Journ. Linn. Soc. 20 : 383. 1883.

Kinnaur (Clarke, 1883).

Himalaya and Tibet.

Kobresia royleana (Nees) Boeck. in *Linnaea* 39 : 8. 1875 ; Clarke in Hook. f. *Fl. Brit. India* 6 : 698. 1894 ; Nair, *Fl. Bash. Himal.* 307. 1977. *Trilepis royleana* Nees in *Edinb. N. Phil. Journ.* 17 : 263. 1834. et in *Wt. Contrib. Bot. Ind.* 119. 1834.

Kinnaur (BSD), Kulu (DD), Lahul and Spiti (BSD, DD).

Himalaya and Tibet.

Kobresia seasyi Clarke in *Kew Bull. Add. Ser.* 8 : 68. 1908. *K. schoenoides* Clarke (non Boeck.) in Hook. f. *Fl. Brit. India* 6 : 697 1894.

Kinnaur (DD), Kulu (DD), Lahul and Spiti (DD), Simla (DD).

Himalaya.

Kobresia seticulmis Boeck. in *Linnaea* 39 : 3. 1875 ; Clarke in Hook. f. *Fl. Brit. India* 6 : 695. 1894 ; Koyama in *Ohashi, Fl. E. Himal.* 3 : 128. 1975.

Lahul and Spiti (DD).

Western Himalaya and Sikkim.

Kobresia trinervis (Nees) Boeck. in *Linnaea* 39 : 4. 1875 *in nota* ; Clarke in Hook. f. *Fl. Brit. India* 6 : 695. 1894 ; Nair, *Fl. Bash. Himal.* 308. 1977.

Kinnaur (DD), Simla (BSD).

Western Himalaya and Nepal.

Lipocarpa chinensis (Os.) Kern in *Blumea, Suppl.* 4 : 167. 1958 et in *Backer & Bakh. f. Fl. Java* 3 : 457. 1968 ; Nair, *Fl. Bash. Himal.* 308. 1977. *Scirpus chinensis* Osb. *Dagb. Ostind. Resa.* 220. 1757. *L. argentea* (Vahl) R. Br. ex Nees in *Linnaea* 9 : 287. 1835 ; Clarke in Hook. f. *Fl. Brit. India* 6 : 667. 1893 ; Collett, *Fl. Siml.* 565. 1902.

Kangra (DD).

Western Himalaya extending to Asaam.

Scirpus affinis Roth. in *R. & S. Syst. Veg.* 2 : 140. 1817 ; Stewart, *Ann. Cat. Vas. Pl. W. Pak. & Kash.* 100. 1972. *S. maritimus* L. var. *affinis* (Roth.) Clarke in Hook. f. *Fl. Brit. India* 6 : 659. 1893.

Sirmur (BSD), Una (BSD).

Throughout Northern India.

Scirpus juncoides Roxb. *Fl. Ind.* 1 : 218. 1820 ; Kern. in *Fl. Male.*

Ser. 17(3) : 512. 1974. *S. erectus* (non Poir.) Clarke in Hook. f. Fl. Brit. India 6 : 656. 1893.

Kangra (BSD), Kulu (DD).

Throughout India.

Scirpus lacustris L. Sp. Pl. 72. 1753 ; Clarke in Hook. f. Fl. Brit. India 6 : 658. 1893 ; Collett, Fl. Siml. 564. 1902 ; Nair, Fl. Bash. Himal. 308. 1977.

Kinnaur (BSD).

Ladakh to Kumaon.

Scirpus littoralis Schrad. Fl. Germ. 1 : 142. 1806 ; Clarke in Hook. f. Fl. Brit. India 6 : 659. 1893 ; Kern in Fl. Males. Ser. 1. 7(3) : 510. 1974.

Mandi (BSIP).

Tropical and subtropical parts of India.

Scirpus mucronatus L. Sp. Pl. 50. 1753 ; Clarke in Hook. f. Fl. Brit. India 6 : 657. 1893 ; Collett, Fl. Siml. 564. 1902 ; Kern in Fl. Males. Ser. 1. 7(3) : 510. 1974 ; Nair, Fl. Bash. Himal. 308. 1977.

Kinnaur (BSD, BSIP), Kulu (BSD), Simla (BSD), Una (BSD).

Throughout India.

Scirpus plainfolius Grimm. in Nova Acta Cur. 3 : 259. 1767 ; Nair, Fl. Bash. Himal. 308. 1977. *S. caricis* Retz. Fl. Scand. 11. 1799 ; Clarke in Hook. f. Fl. Brit. India 6 : 660. 1893.

Kinnaur (BSD, DD), Lahul and Spiti (BSD, DD).

Western Himalaya.

Scirpus pumilus Vahl, Enum. Pl. 2 : 243. 1806 ; Clarke in Hook. f. Fl. Brit. India 6 : 654. 1893 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 103. 1972.

Lahul and Spiti (DD).

Western Himalaya.

Scirpus roylei (Nees) Parker in Duthie, Fl. Upper Gangetic Plain 3 : 361. 1929. *Isolepis roylei* Nees in Wt. Contrib. Bot. Ind. 107. 1834. *Scirpus quinquefarius* Buch. Ham. ex Boeck. in Linnaea 36 : 701. 1870; Clarke in Hook. f. Fl. Brit. India 6 : 657. 1893.

Choor (DD).

Northern India.

Scirpus setaceus L. Sp. Pl. 49. 1753 ; Clarke in Hook. f. Fl. Brit. India 6 : 654. 1893 ; Nair, Fl. Bash. Himal. 308. 1977.

Chamba (BSD, DD), Kinnaur (BSD, DD), Kulu (BSD, DD), Simla (BSD), Lahul and Spiti (BSD, DD).

Temperate and alpine Himalaya.

Scirpus squarrosus L. Mant. Pl. 2 : 181. 1771 ; Clarke in Hook. f. Fl. Brit. India 6 : 663. 1893 ; Kern in Fl. Males. Ser. 1. 7(3) : 516. 1974.

Kangra (RRL).

Tropical and subtropical parts of India.

POACEAE

B.M. WADHWA AND H.J. CHOWDHERY

Key to the sub-families of Poaceae :

1. Spikelets 2-flowered, falling entire at maturity, usually with the upper floret hermaphrodite and the lower male or barren and if the latter often reduced to the lemma or rarely the lemma entirely absent, all alike or more often differing in size, shape and structure, frequently dorsally compressed ... *Panicoideae*
- 1.A. Spikelets 1-to many-flowered, breaking up at maturity above the more or less persistent glumes, or if falling entire, then not 2-flowered with the lower floret male or barren and the upper hermaphrodite, usually more or less laterally compressed or terete ... *Pooideae*

Key to the tribes of Panicoideae :

1. Male and female spikelets in separate inflorescences or in different parts of the same inflorescence and of different appearance ; lemmas hyaline or membranous and thinner than the glumes ... *Maydeae*
- 1A. Spikelets all hermaphrodite or with male or barren and hermaphrodite spikelets mixed in the same inflorescence and so arranged that a male or barren spikelet

- is near a hermaphrodite spikelet or if unisexual then the lemma or the fertile floret indurated ... 2
2. Spikelets often paired, with one sessile and the other pedicelled, those of each pair similar or dissimilar, rarely solitary and all alike ; glumes as long as the spikelet and enclosing the florets, more or less rigid and firmer than the lemmas which are both hyaline or membranous ; upper lemma usually awned ... *Andropogoneae*
- 2A. Spikelets solitary or paired, more or less similar ; glumes usually membranous, the lower usually smaller or sometimes suppressed ; lower lemma mostly resembling the upper glume in texture ; upper lemma papery to very tough and rigid, usually awnless ... *Paniceae*
- Tribe Andropogoneae :**
1. Spikelets arranged in pairs or threes, similar or dissimilar, a sessile and a pedicelled or one short, the other long pedicelled, rarely the pedicel reduced ... 2
2. Spikelets of each pair similar, both hermaphrodite, joints of the panicle thin, linear or somewhat expanded at the top ... 3
3. Spikelets arranged in more or less ample panicle or compound racemes arranged along a central axis ; upper lemma awnless or awned from the entire tip or between the two terminal teeth ... 4
4. Rhachis of the racemes tough or tardily breaking up ; spikelets deciduous from the pedicels ... 5
5. Lemmas unawned ; spikelets a sessile and a pedicelled ; panicle contracted, silvery ... *Imperate*
- 5A. Lemmas awned ; all spikelets pedicelled ; panicle loose, golden - yellow ... *Miscanthus*
- 4A. Rhachis of the racemes breaking up ... 6
6. Spikelets awned ... *Spodiopogon*
- 6A. Spikelets unawned ... *Saccharum*
- 3A. Spikelets arranged in solitary or in several racemes, the latter being digitate or arranged along a short main axis ... 7
7. Lower glume deeply furrowed on the back ... 8
8. Racemes solitary ; axis flat, tough ... *Ischnochloa*
- 8A. Racemes several ; rhachis fragile, joints clavate to bucciniform ... *Microstegium*

- 7A. Lower glume more or less flat, very shallowly depressed but not furrowed or rounded on the back ... 9
9. Upper lemma 2-toothed, awned ; stamens 3 ... *Eulaliopsis*
- 9A. Upper lemma deeply cleft, awned in the cleft, rarely stipitiform ... 10
10. Lower glume 2 - keeled, depressed between the keels ; racemes several ; upper glume unawned or shortly aristate ... *Eulalia*
- 10A. Lower glume convex ; racemes solitary ; upper glume awned ... *Pogonatherum*
- 2A. Spikelets in each pair dissimilar, the sessile hermaphrodite, the pedicelled male or sterile or reduced or if more or less similar, then the joints of the racemes and the pedicels thick and swollen ... 11
11. Joints of the rhachis and pedicel of the pedicelled spikelets swollen, 3-angled, rounded or flattened ... 12
12. Sessile spikelet with a male and a hermaphrodite floret ; upper lemma awned ... 13
13. Racemes many noded espatheate ; spikelets in pairs, one sessile and the other pedicelled ; lower glume coriaceous below often transversally wrinkled, furrowed or with marginal nodules ... *Ischaemum*
- 13A. Racemes 1-noded, reduced to 3 heteromorphous spikelets enclosed in a boat shaped spathe ... *Apluda*
- 12A. Sessile spikelet with a hermaphrodite floret one or occasionally with a male floret below ; upper lemma unawned ... 14
14. Racemes solitary, terminating the culm and branches ... 15
15. Lessile spikelet spherical, lower glume pitted all over ; pedicelled spikelet reduced ... *Hackelochloa*
- 15A. Sessile spikelet not spherical in shape ... 16
16. Axis tough, not breaking up ; spikelets paired, one sessile, the other pedicelled ... *Hemarthria*
- 16A. Axis fragile ... 17
17. Sessile spikelets in pairs at each node of the axis ... *Mnesithea*
- 17A. Sessile spikelets solitary at each node ; spikelets paired, one sessile and the other pedicelled ... *Rottboellia*
- 14A. Racemes at the top of the peduncle ; lower glume of the pedicelled spikelet keeled, prolonged into an awn—like mucro ... *Phacelurus*

- 11A. Joints of the rhachis and the pedicel narrow, seldom thickened upwards, occasionally with translucent longitudinal groove ... 18
18. Inflorescence of racemes not interrupted by spathes ... 19
19. Spikelet in pairs, dorsally compressed ; lower glume of the sessile spikelet rounded on the sides, 2 - keeled at tip ... *Sorghum*
- 19A. Spikelets in threes, one sessile, two pedicelled, laterally compressed ... *Chrysopogon*
- 18A. Inflorescence of racemes which are interrupted by spathes or the espatheate racemes digitate, in pairs or solitary, sometimes joints and pedicels with a translucent median furrow ... 20
20. Upper lemma of the sessile spikelet with a basal awn ; sessile spikelet compressed from the side ; pedicelled spikelet reduced ... *Arthraxon*
- 20A. Upper lemma of the sessile spikelet awned from the tip or from the cleft or reduced to the hyaline base of an awn, rarely unawned ... 21
21. Margins of the lower glume of the sessile spikelets sharply infolded, 2 - keeled and glabrous ... 22
22. Upper lemma of the sessile spikelet not cleft, often stipitate and passing into the awn ... 23
23. Spikelets arranged in false racemes terminating the branch and branchlets of a true panicle ; pedicels with a median translucent furrow ... *Capillipedium*
- 23A. Spikelets arranged in false racemes which are solitary and terminal or sub-sessile, arranged along a central axis but not at the tip of capillary branches ... 24
24. Racemes solitary at the ends of the branches supported by the spathes ; sessile spikelets not overlapping ; lower glumes pitted or not ... *Eremopogon*
- 24A. Racemes several to many, if solitary then the sessile spikelets overlapping ... 25
25. Joints and pedicels with a translucent longitudinal furrow ; all pairs of spikelets heterogamous, rarely one pair homogamous ; glumes often pitted ... *Bothriochloa*
- 25A. Joints and pedicels without a translucent furrow ; lowest 1-3 pairs of spikelets homogamous ; glumes not pitted ... *Dichanthium*
- 22A. Upper lemma of the sessile spikelet 2-lobed or 2-cleft, awned in the sinus ... 26
26. Aromatic grasses ; racemes in pairs supported by spathes,

often collected in huge panicles ; one pair of spikelets in each raceme homogamous, male or neuter, all other pairs heterogamous ...

Cymbopogon

26A. Grasses not aromatic ; racemes in pairs or rarely digitate ; usually all pairs of spikelets heterogamous and all sessile spikelets hermaphrodite and alike or the lowest more or less reduced or barren, but still resembling the upper fertile spikelets ...

Andropogon

21A. Margins of the lower glume inturned at the sides, at the most keeled upwards ; awn usually hairy, racemes solitary, without an involucre ; glumes often with tuber based hairs ...

Heteropogon

1A. Spikelets arranged in whorls of 4, sessile, 1-flowered or sterile ...

Themeda

APLUDA Linn.

Apluda mutica L. Sp. Pl. ed. 1. 82. 1753 ; Bor, Gr. Burma, Ceylon, India & Pak. 93. 1960 ; Nair, Fl. Bash. Himal. 309. 1977. *A. varia* Hack. in DC. Monogr. Phan. 196. 1889 ; Hook. f. Fl. Brit. India 7 : 150. 1897. *A. aristata* L. in Amoen. Acad. 4 : 303. 1756 ; Collett, Fl. Siml. 598. 1902. *A. mutica* var. *aristata* (L.) Pilger in Naturl. Pflanzenf. 140. 130. 1945.

Bilaspur (BSD), Chamba (BSD, DD), Kangra (DD), Kinnaur (DD), Kulu (DD), Mandi (BSD), Simla (BSIP, LWG), Sirmur (BSD).

Distrib. : Throughout India.

ANDROPOGON Linn.

Andropogon munroi C. B. Clarke in J. Linn. Soc. Bot. 25 : 87. 1899 ; Shukla et Jain in Bull. Bot. Surv. India 20 : 65. 1978. *A. tristis* Nees ex Hack. in DC. Monogr. Phan. 6 : 439. 1889 ; Bor, Gr. Burma, Ceylon, India & Pak. 93. 1960.

Chamba (DD), Kinnaur (DD), Kulu (DD), Simla (DD).

Distrib. : Common in North-Western Himalaya.

ARTHRAOXON P. Beauv.

Key to the species :

- | | | | |
|-----|--|-----|------------------------|
| 1. | Sessile spikelets awnless or the awn almost concealed. | ... | <i>A. submuticus</i> |
| 1A. | Sessile spikelets distinctly awned | ... | 2 |
| 2. | Stamens 2 | ... | 3 |
| 3. | Pedicelled spikelet present | ... | 4 |
| 4. | Sessile spikelet 5.0 — 6.5 mm long | ... | 5 |
| 5. | Culms hairy below the inflorescence ; sessile spikelet almost linear 5.0 - 5.5 mm long ; nerves in the lower glume uniform all over | ... | <i>A. micans</i> |
| 5A. | Culms glabrous below the inflorescence, sessile spikelet lanceolate, 5.0 - 6.5 mm long ; nerves marked and crowded in the upper half of the lower glume | ... | <i>A. hookeri</i> |
| 4A. | Sessile spikelet 2.5-3.0 mm long | ... | <i>A. lancifolius</i> |
| 3A. | Pedicelled spikelet absent ; the sessile about 3 mm long ; leaves pilose with tubercle based hairs | | <i>A. quartinianus</i> |
| 2.A | Stamens 3 ; glume rounded at the back or 2-keeled | ... | 6 |
| 6. | Spikelets laterally compressed, 3 mm long ; lower glume scaberulous or almost smooth, not keeled ; anthers 0.5 mm long | ... | <i>A. quartinianus</i> |
| 6A. | Spikelets not or slightly laterally compressed, 5.0 - 5.5 mm long ; lower glume puberulous, 2-keeled ; tubercled or toothed on the keeled nerves ; anthers 3 mm long | ... | <i>A. prionedes</i> |

Arthraxon hookeri (Hack.) Henr. in Blumea 4. 3 : 526. 1941 ; Bor, Gr. Burma, Ceylon, India & Pak. 99. 1960. *A. ciliaris* ssp. *quartinianus* Hack. var. *hookeri* Hack. in DC. Monogr. Phan. 6 : 357. 1889.

Simla (DD).

Distr. : North Western Himalaya to Sikkim.

Arthraxon lancifolius (Trin.) Hochst. in Flora 39 : 188. 1856 ; Bor, Gr. Burma, Ceylon, India & Pak. 100. 1960. *Andropogon lancifolius* Trin. in Mem. Acad. Sci. Petersb. Ser. 6. 2 : 271. 1832.

Chamba (DD), Kinnaur (DD), Simla (DD), Sirmur (DD), Solan (DD).

Distrib. : Hilly regions of India.

Arthraxon micans (Nees) Hochst. in Flora 39 : 188. 1856 ; Bor, Gr. Burma, Ceylon, India & Pak. 101. 1960. *Bathratherum micans* Nees in Edinb. New Phil. J. 18 : 182. 1835.

Simla (DD).

Distrib. : North-Western India and Himachal Pradesh.

Arthraxon prionodes (Steud.) Dandy in Andrews, Fl. Pl. Sudan. 3 : 399. 1956 ; Bor, Gr. Burma, Ceylon, India & Pak. 101. 1960 ; Nair, Fl. Bash. Himal. 310. 1977. *Andropogon prionodes* Steud. Syn. Pl. Glum. 1 : 383. 1854.

Chamba (BSD, DD), Kinnaur (BSD), Solan (DD).

Distrib. : North and North-Western India.

Arthraxon quartinianus (A. Rich.) Nash in N. Amer. Fl. 17 : 99. 1912 ; Bor, Gr. Burma, Ceylon, India & Pak. 102. 1960 ; Nair, Fl. Bash. Himal. 310. 1977. *Alectoridia quartiniana* A. Rich. Tent. Fl. Abyss. 2 : 448. t. 99. 1851.

Lipa (DD), Nair, (1977).

Distrib. : Peninsular India and Western Himalaya.

Arthraxon submuticus (Nees ex Steud.) Hochst. in Flora 39 : 188. 1856 ; Bor, Gr. Burma, Ceylon, India & Pak. 102. 1960. *Andropogon submuticus* Nees ex Steud. Syn. Pl. Glum. 1 : 382. 1854.

Kinnaur (DD).

Distrib. : Himalaya from Nepal westwards.

BOTHRIOCHLOA O. Ktze.

Key to the species :

- | | | |
|---|-----|---------------------|
| 1. Lower racemes longer than the rhachis | ... | 2 |
| 2. Lower glume of the sessile spikelet with one, rarely two pits... | | 3 |
| 3. Leaves mostly cauline ; racemes 9 - 15, up to 9 cm long | ... | <i>B. kuntzeana</i> |

- | | | |
|--|-----|---|
| 3A. Leaves mostly at the base ; racemes 2 - 8, up to 5 cm long | ... | <i>B. pertusa</i> |
| 2A. Lower glume of the sessile spikelet without pits | ... | 4 |
| 4. Leaves mostly cauline, racemes 9 - 15, up to 8 cm long | ... | <i>B. kuntzeana</i> |
| 4A. Leaves mostly at the base ; racemes 2 - 7, up to 5 cm long | ... | <i>B. ischaemum</i> |
| 1. Lower racemes shorter than the rhachis | ... | 5 |
| 5. Primary axis of the panicle mostly 3-7 (rarely 2 or upto 10) cm long ; branches simple, rarely one of the lower divided ; racemes 3-7 cm long | ... | 6 |
| 6. Sessile spikelet pitted | | <i>B. intermedia</i> var. <i>punctata</i> |
| 6A. Sessile spikelet not pitted | | <i>B. intermedia</i> var. <i>intermedia</i> |
| 5A. Primary axis of the panicle 5-10 cm. long ; branches more or less divided, or if undivided, very fine and naked upto 1.5 cm, from the base ; racemes 2 - 5 cm long ; sessile spikelet pitted or not ; coarse grasses, with blades 0.4 - 1.0 cm broad | ... | <i>B. glabra</i> |

Bothriochloa glabra (Roxb.) A. Camus in Ann. Soc. Linn. Lyon, 1930. n. s. 76 : 164. 1931 ; Bor, Gr. Burma, Ceylon, India and Pak. 107. 1960. *Andropogon glaber* Roxb. Fl. Ind. 1. 271. 1820.

Solan (DD).

Distrib. : India, hills upto 2000 m. Used as fodder.

Bothriochloa intermedia (R. Br.) A. Camus in Ann. Soc. Linn. Lyon, 1930. n. s. 76 : 164. 1931 ; Bor, Gr. Burma, Ceylon, India & Pak. 108. 1960. *Andropogon intermedius* R. Br. Prodr. 202. 1810. var. *intermedia*

Sirmur (DD).

Distrib. : India - common fodder.

Bothriochloa intermedia (R. Br.) A. Camus var. **punctata** (Roxb.) Keng, Clav. Gram. Prim. Sin. 244. 1957. *Andropogon punctatus* Roxb. Fl. Ind. 1 : 268. 1820.

Kulu (DD), Simla (DD).

Distrib. : Tropical parts of India. Used as fodder.

Bothriochloa ischaemum (L.) Keng in Contr. Biol. Lab. Sci. Soc. China, Bot. Ser. 10 : 201. 1936 ; Bor, Gr. Burma, Ceylon, India & Pak.

108. 1960 ; Nair, Fl. Bash. Himal. 311. 1977 ; *Andropogon ischaemum* L. Sp. Pl. 1047. 1753.

Kinnaur (DD), Lahul and Spiti (DD).

Distrib. : North-Western Himalaya.

Bothriochloa kuntzeana (Hack.) Henr. in Blumea 3 : 456. 1940 ; Bor, Gr. Burma, Ceylon, India & Pak. 108. 1960. *Andropogon kuntzeanus* Hack. in DC. Monogr. Phan. 6 : 478. 1889.

Chamba (BSD).

Distrib. : Western Himalaya, Madhya Pradesh, Bombay and Deccan Peninsula.

Bothriochloa pertusa (L.) A. Camus in Ann. Soc. Linn. Lyon 1930. n.s. 76. 164. 1931 ; Bor, Gr. Burma, Ceylon, India & Pak. 109. 1960 ; Nair, Fl. Bash. Himal. 311. 1977. *Holcus pertusus* L. Mant. Alt. 301. 1771. *Andropogon pertusus* (L.) Willd. Sp. Pl. 4. 922. 1806.

Chamba (BSD), Hamirpur (BSD), Simla (DD), Solan (DD).

Distrib. : Bengal, Tamil Nadu and Himachal Pradesh.

CAPILLIPEDIUM Stapf

Key to the species :

1. Lower glume of the sessile spikelet channelled ; leaves rounded or slightly narrowed at the base ; panicle large, diffuse ... *C. parviflorum*
- 1A. Lower glume of the sessile spikelet flat on the back ; leaves conspicuously narrowed at the base ; panicle often somewhat open ... *C. assimile*

Capillipedium assimile (Steud.) A. Camus in Lecomte, Fl. Gen. de. 1' Indo-China 7 : 314. 1922. Bor, Gr. Burma, Ceylon, India & Pak. 110. 1960. *Andropogon assimilis* Steud. in Zoll. Syst. Verz. 58. 1854 and in Syn. Pl. Glum. 1 : 397. 1854. *A. subrepens* Steud. loc. cit. 397. 1854.

Chamba (DD), Kinnaur (BSD), Simla (DD), Solan (DD).

Distrib. : Common in India.

Capillipedium parviflorum (R. Br.) Stapf in Prain, Fl. Trop. Afri. 9 : 169. 1917 ; Bor, Gr. Burma, Ceylon, India & Pak. 112. 1960. *Holcus parviflorus* R. Br. Prodr. 199. 1810.

Chamba (DD), Kangra (DD), Kulu (DD), Simla (DD, LWG), Solan (DD).

Distrib. : Very common species in the hills.

CHRYSOPOGON Trin.

Key to the species :

- | | | |
|---|-----|-----------------------|
| 1. Pedicels half the length of the sessile spikelets or longer | ... | 2 |
| 2. Panicle large, lax, 18-30 cm long, 6 - 10 cm wide ; awns 2.5 - 3.5 cm. long | ... | <i>C. gryllus</i> |
| 2A. Panicle contracted, 6-18 cm long, wide ; awn 1.2-1.8 cm long | ... | <i>C. echinulatus</i> |
| 1A. Pedicels less than half the length of the sessile spikelets | ... | 3 |
| 3. Upper glume of the sessile spikelet keeled, pectinate - ciliate in the lower two - third of three quarters with long, golden or golden-brown rigid hairs e spikelets 4-6 mm ; pedicelled spikelets 4 mm long | ... | <i>C. fulvus</i> |
| 3A. Upper glume of the sessile spikelet rounded in the lower three-quarters, keeled and ciliate in the upper quarter ; sessile spikelets 6-7 mm long ; pedicelled spikelets 6-7 mm long | ... | <i>C. serrulatus</i> |

Chrysopogon echinulatus (Nees) W. Wats. in Atkins. Gaz. N. W. Ind. 392. 1882 ; Bor, Gr. Burma, Ceylon, India & Pak. 116. 1960 ; Nair, Fl. Bash. Himal. 312. 1977. *Rahphis echinulata* Nees ex Royle, Ill. Bot. Himal. Mount. 417. 1849. *Andropogon echinulatus* (Nees) Steud. Syn. Pl. Glum. 1 : 397. 1854.

Chamba (BSD), Kinnaur (BSD), Kulu (BSD).

Distrib. : North-Western Himalaya.

Chrysopogon fulvus (Spreng.) Chiov. Fl. Somalia 1 : 327. 1929 ; Bor, Gr. Burma, Ceylon, India & Pak. 116. 1960. *Pollinia fulva* Spreng. Pugill.

2 : 10. 1815. *Andropogon montanus* Koen. ex Trin. in Spreng. Neue Entdeck. 2 : 93. 1821. *Chrysopogon montanus* Trin. ex Spreng. loc. Cit. 93.

Chamba (DD), Kinnaur (DD), Kulu (DD), Lahul and Spiti (DD), Simla (DD, LWG), Solon (DD).

Distrib. : Tropical forests of India.

Chrysopogon gryllus (L.) Trin. Fund. Agrost. 188. 1820 ; Bor, Gr. Burma, Ceylon, India & Pak. 117. 1960. *Andropogon gryllus* L. Cent Pl. 2 : 32. 1756.

Chamba (DD), Kinnaur (DD), Kulu (DD), Simla (DD, LWG).

Distrib. : Temperate Himalaya.

Chrysopogon serrulatus Trin. in Mem. Acad. Sci. Petersb. Ser. 6. 2 : 318. 1832 ; Bor, Gr. Burma, Ceylon, India & Pak. 118. 1960. *Andropogon monticola* Schult. var. *trinii* Hook. f. Fl. Brit. India 7 : 193. 1896.

Chamba (DD), Kinnaur (BSD), Mandi (DD), Simla (BSD, DD).

Distrib. : North-Western India.

CYMBOPOGON Spreng.

Key to the species :

1. Panicle narrow, of short dense fascicles of raceme pairs; joints and pedicels villous all over ; hairs long, more or less concealing the sessile spikelet ... 2
2. Lower glum of the sessile spikelets pubescent in the groove ; pedicel of the lowest pedicelled spikelet in the sessile raceme swollen, hard, shining or hairy; basal sheath woolly ; pedicelled spikelets hairy on the nerves ... *C. parkeri*
- 2A. Lower glume of the sessile spikelet smooth and glabrous ; pedicels of the lowest pedicelled spikelet not swollen ; basal sheaths not woolly ; pedicelled spikelets glabrous ... 3
3. Leaf-blades more or less filiform and flexuous ; basal sheaths widened and thickened below, the old ones never curled in a spiral ... *C. olivieri*
- 3A. Leaf blades flat ; basal sheaths when old slipping from the culm and becoming curled in spiral ... *C. jwarancusa*

- 1A. Panicle often very large, decompound or compound, drooping, sometimes narrow but then with hairs not covering the joints and pedicels but confined to the edges of the joints and pedicels, increasing in length from below upwards and not concealing the sessile spikelets ... 4
- 4. Lower glume of the sessile spikelets with a deep slot like depression ... 5
- 5. Lower glume puberulent in the slot or glabrous, with a boss at the lower end of the slot ... *C. gidarba*
- 5A. Lower glume quite glabrous, boss reduced to a slight swelling ... *C. stracheyi*
- 4A. Lower glume without a slot, either flat, convex, shallowly concave or with a deep narrow slit in the lower half ... 6
- 6. Lower glume of the sessile spikelet with a narrow slit like groove in lower half; leaves cordate and amplexicaule at the base, linear-lanceolate to lanceolate tapering ... *C. martinii*
- 6A. Lower glume of the sessile spikelet flat on the back, shallowly depressed in the lower-half, leaves filiform, flexuous ... *C. distans*

Cymbopogon distans (Nees) Wats. in Atkins. Gaz. N. W. Prov. Ind. 392. 1882; Bor, Gr. Burma, Ceylon, India & Pak. 126. 1960. *Andropogon distans* Nees ex Steud. Syn. Pl. Glum. 1. 387. 1854; Hook. f. Fl. Brit. India 7 : 207. 1896.

Chamba (DD), Kinnaur (DD), Simla (DD), Solan (DD).

Distrib. : Himalaya.

Cymbopogon gidarba (Ham. ex Hook. f.) Haines, Bot. Bihar & Orissa 1048. 1924; Bor, Gr. Burma, Ceylon, India & Pak. 128. 1960. *Andropogon gidarba* Ham. ex Hook. f. Fl. Brit. India 7 : 208. 1896.

Simla (DD), Solan (DD).

Distrib. : Himalaya, Bihar and Orissa.

Cymbopogon jwarancusa (Jones) Schult. Sys. Veg. 2. Mant. 458. 1824; Bor, Gr. Burma, Ceylon, India & Pak. 128. 1960. *Andropogon jwarancusa* Jones in Asiat. Res. 4 : 109. 1795.

Simla (DD).

Distrib. : Common all over India.

Cymbopogon martinii (Roxb.) Wats. in Atkins. Gaz. N. W. Prov Ind. 392. 1882 ; Bor, Gr. Burma, Ceylon, India & Pak. 129. 1960 ; Nair, Fl. Bash. Himal. 313. 1977. *Andropogon martinii* Roxb. Fl. Ind. 1 ; 280. 1820. *A. schoenanthus* var. *martinii* Hook. f. Fl. Brit. India 7 : 204. 1896.

Chamba (DD), Kangra (RRL), Simla (DD), Solan (DD).

Distrib. : Very common.

Cymbopogon olivieri (Boiss.) Bor. in Notes Roy. Bot. Gard. Edinb. 25 : 62. 1972 ; Shukla et Jain in Bull. Bot. Surv. India 20 : 66. 1978 ; Bor, Gr. Burma, Ceylon, India & Pak. 122. 1960. *Andropogon olivieri* Boiss. Diagn. Ser. 1. 5 : 16. 1844.

Chamba (RRL).

Distrib. : Northern India.

Cymbopogon parkeri Stapf in Kew Bull. 1929 : 10. 1929 : Bor. Gr. Burma, Ceylon, India & Pak. 131. 1960.

Kinnaur (DD).

Distrib. : Endemic to Uttar Pradesh, now reported from Himachal Pradesh.

Cymbopogon stracheyi (Hook. f.) Raizada & Jain in Indian For. 80 : 44. 1954 ; Bor, Gr. Burma, Ceylon, India & Pak. 131. 1960. *Andropogon nardus* var. *stracheyi* Hook. f. Fl. Brit. Ind. 7 : 207. 1896.

Kinnaur (DD), Kulu (DD).

Distrib. : North – Western Himalaya.

DICHANTHIUM Willemet

Dichanthium annulatum (Forssk.) Stapf in Prain, Fl. Trop. Afri. 9 : 178. 1917 ; Bor, Gr. Burma, Ceylon, India & Pak. 133. 1960. *Andropogon annulatum* Forssk. Fl. Aegypt. Arab. 173. 1775.

Kinnaur (DD), Kulu (DD), Simla (DD).

Distrib. : Widespread in India.

EREMOPOGON (Hack.) Stapf

Eremopogon foveolartus (Del.) Stapf in Prain, Fl. Trop. Africa 9 : 183. 1917 ; Bor, Gr. Burma, Ceylon, India & Pak. 149. 1960. *Andropogon foveolatus* Del. Fl. d' Egypte 16. t. 8. f. 2. 1812.

Una (BSD).

Distrib. : Drier parts of North – Western, Central & Southern India.

EULALIA Kunth

Key to the species :

- | | |
|---|------------------------|
| 1. Rhachis and pedicels covered with long silvery - white hairs which conceal the spikelets ; racemes 3 - 5 cm long ... | <i>E. mollis</i> |
| 1A. Rhachis and pedicels covered with short, golden, pale - gold or even pale-violet hairs which do not conceal the spikelets ; racemes up to 20 cm long or more ... | 2 |
| 2. Perennials ... | 3 |
| 3. Sessile spikelets 4.0 - 6.5 mm ; long hairs on the rhachis and pedicels coloured, not white ... | 4 |
| 4. Hairs on the rhachis golden or silvery grey or pale - gold ; lower glume of the sessile spikelet 4 - nerved, hispid on the keels ; nerves green and anastomosing above ... | <i>E. quadrinervis</i> |
| 4A. Hairs on the rhachis pale - violet ; lower glume of the sessile spikelet obscurely 4 - nerved, villous on the keels | <i>E. hirtifolia</i> |
| 3A. Sessile spikelet 2.5 - 3.5 (4.0) mm long ; hairs on the pedicel and rhachis white ... | <i>E. trispicata</i> |
| 2A. Annuals ; stem very slender, shining ... | <i>E. fimbriata</i> |

Eulalia fimbriata (Hack.) O. Ktze. Rev. Gen. Pl. 2 : 775. 1891 ; Bor, Gr. Burma, Ceylon, India & Pak. 155. 1960 ; Nair, Fl. Bash. Himal. 317. 1977. *Pollinia fimbriata* Hack. in DC. Monogr. Phan. 6 : 164. 1889.

Simla (Nair, 1977).

Distrib. : Western Himalaya and South India.

Eulalia hirtifolia (Hack.) A. Camus in Ann. Soc. Linn. Lyon. n. s. 68 : 202. 1922 ; Bor, Gr. Burma, Ceylon, India & Pak. 155. 1960 ; Nair, Fl. Bash. Himal. 317. 1977. *Pollinia hirtifolia* Hack. in DC. Monogr. Phan. 6 : 165. 1889.

Kinnaur (DD), Simla (DD), Solan (DD).

Distrib. : North - Western Himalaya.

Eulalia mollis (Griseb.) O. Ktze. Rev. Gen. Pl. 2 : 775. 1891 ; Bor, Gr. Burma, Ceylon, India & Pak. 156. 1960 ; Nair, Fl. Bash. Himal. 317. 1977. *Erianthus mollis* Griseb. in Nachr. Ges. Wiss. Gottingen 92. 1868.

Kinnaur (DD), Simla (DD), Sirmur (DD).

Distrib. : Simla to Sikkim.

Eulalia quadrinervis (Hack.) O. Ktze. Rev. Gen. Pl. 2. 775. 1891 ; Bor, Gr. Burma, Ceylon, India & Pak. 156. 1960. *Pollinia quadrinervis* Hook. in DC. Monogr. Phan. 6 : 158. 1889.

Solan (DD).

Distrib. : Eastern Himalaya and Himachal Pradesh.

Eulalia trispicata (Schult.) Henr. in Blumea 3 : 453. 1940 ; Bor, Gr. Burma, Ceylon, India & Pak. 157. 1960. *Andropogon trispicata* Schult. Syst. Veg. 2. Mant. 452. 1824. *Pollinia argentea* Trin. Bull. Acad. Sci. St. Petersb. 1 : 7. 1836 ; Hook. f. Fl. Brit. India 7 : 193. 1896.

Kangra (DD), Kinnaur (DD), Kulu (DD), Simla (DD), Solan (DD).

Distrib. : Widely distributed.

EULALIOPSIS Honda

Eulaliopsis binata (Retz.) C.E. Hubbard in Hook. Ic. Pl. sub. tab. 3262. 1935 ; Bor, Gr. Burma, Ceylon, India & Pak. 158. 1960. *Andropogon binatus* Retz. Obs. Bot. 5 : 21. 1789. *Ischaemum angustifolium* (Trin.) Hack. in DC. Monogr. Phan. 6 : 241. 1889 ; Hook. f. Fl. Brit. India 7 : 129. 1896.

Solan (DD).

Distrib. : Widely distributed in North India.

HACHELOCHLOA O. Ktze.

Hackelochloa granularis (L.) O. Ktze. Rev. Gen. Pl. 776. 1891 ; Bor, Gr. Burma, Ceylon, India & Pak. 159. 1960 ; Nair, Fl. Bash. Himal. 318. 1977. *Cenchrus granularis* L. Mant. 2. App. 575. 1771. *Manisuris granularis* (L.) L. f. Nov. Gram. Gen. 40. 1779 ; Hook. f. Fl. Brit. India 7 : 159. 1896.

Chamba (DD), Kinnaur (BSD), Simla (DD).

Distrib. : Throughout the tropics.

HEMARTHRIA R. Br.

Hemarthria compressa (L.f.) R. Br. Prodr. 207. 1810 ; Bor, Gr. Burma, Ceylon, India & Pak. 161. 1960. *Rottboellia compressa* L.f. Suppl. 114. 1781 ; Hook. f. Fl. Brit. India 7 : 153. 1896.

Simla (DD).

Distrib. : Throughout the hotter parts of India.

HETEROPOGON Pers.

Heteropogon contortus (L.) P. Beauv. ex R. & S. Syst. Veg. 2 : 836. 1817 ; Bor, Gr. Burma, Ceylon, India & Pak. 163. 1960 ; Nair, Fl. Bash. Himal. 319. 1977. *Andropogon contortus* L. Sp. Pl. 1045. 1753 ; Hook. f. Fl. Brit. India 7 : 207. 1896.

Bilaspur (BSD), Chamba (DD), Hamirpur (BSD), Kinnaur (DD), Mandi (BSD), Simla (DD), Una (BSD).

Distrib. : In tropical parts and Himalaya.

IMPERATA Cyr.

Imperata cylindrica (L.) P. Beauv. Ess. Agrost. 165. 1812 ; Bor, Gr. Burma, Ceylon, India & Pak. 169. 1960. *Lagurus cylindricus* L. Syst.

Nat. ed. 10. 878. 1759. *Imperata arundinacea* Cyr. Pl. Rar. Neap. 2 : 26. 1792 ; Hook. f. Fl. Brit. India 7 : 106. 1896.

Hamirpur (BSD), Kulu (DD), Simla (DD, BSD), Una (BSD).

Distrib. : Warm and temperate parts of India.

ISCHAEMUM L.

Key to the species :

1. Margins of the lower glume of the sessile spikelets expanded below the middle ; spikelets 5 mm long ... *I. duthie*
- 1A. Margins of the lower glume of the sessile spikelet narrowly and evenly inturned from base to apex ; spikelets up to 6 mm long ... *I. rugosum*

Ischaemum duthie Stapf ex Bor in Kew Bull. 1950 : 188. 1950 ; Bor, Gr. Burma, Ceylon, India & Pak. 178. 1960.

Kangra (DD).

Distrib. : Madhya Pradesh, Bengal, Bihar and Himachal Pradesh.

Ischaemum rugosum Salisb. Icon. Strip. Rar. 1. t. 1. 1791 ; Hook f. Fl. Brit. India 7 : 127. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 184. 1960.

Bilaspur (BSD), Kangra (DD), Kinnaur (DD).

Distrib. : All over plains and lower hills of India.

ISCHNOCHLOA Hook. f.

Ischnochloa falconeri Hook. f. in Hook. Icons. Pl. t. 2466. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 186. 1960.

Simla (LWG).

Distrib. : North-Western Himalaya.

MICROSTEGIUM Nees

Key to the species :

- | | | | |
|-----|---|-----|--------------------|
| 1. | Anthers 0.3-0.5 mm long | ... | <i>M. vimineum</i> |
| 1A. | Anthers over 1 mm long | ... | 2 |
| 2. | Racemes spaced at right angles on the rhachis ; stamens 2 ;
upper lemma 1-2 mm long | ... | <i>M. nudum</i> |
| 2A. | Racemes usually not spaced at right angles on the
rhachis ; stamens 3 ; upper lemma minute | ... | <i>M. ciliatum</i> |

Microstegium ciliatum (Trin.) A. Camus in Ann. Soc. Linn. Lyon. n.s. 68. 201. 1921 ; Bor, Gr. Burma, Ceylon, India & Pak. 193. 1960. *Pollinia ciliata* Trin. in Mem. Acad. Sci. Petersb. Ser. 6.2 : 306. 1832 ; Hook. f. Fl. Brit. India 7 : 116. 1896, *p.p.*

Kinnaur (DD), Solan (DD).

Distrib. : Hills of India.

Microstegium nudum (Trin.) A. Camus in Ann. Soc. Linn. Lyon. n.s. 68 : 201. 1921 ; Bor, Gr. Burma, Ceylon, India & Pak. 194. 1960 ; Nair, Fl. Bash. Himal. 319. 1977. *Pollinia nuda* Trin. in Mem. Acad. Sci. Petersb. Ser. 6.2 : 307. 1832 ; Hook. f. Fl. Brit India 7 : 117. 1896.

Chamba (DD), Kangra (DD), Simla (DD).

Distrib. : Widely distributed in India.

Microstegium vimineum (Trin.) A. Camus in Ann. Soc. Linn. Lyon. n.s. 68 : 201. 1921 ; Bor, Gr. Burma, Ceylon, India & Pak. 195. 1960 ; Nair, Fl. Bash. Himal. 320. 1977. *Andropogon vimineus* Trin. in Mem. Acad. Sci. Petersb. Ser. 6.2 : 268. 1832.

Simla (Nair, 1977).

Distrib. : North – Eastern India and Himachal Pradesh.

MISCANTHUS Anderss.

Miscanthus nepalensis (Trin.) Hack. in DC. Monogr. Phan. 6 : 109. 1889 ; Bor, Gr. Burma, Ceylon, India & Pak. 196. 1960 ; Nair, Fl. Bash. Himal. 320. 1977. *Eulalia nepalensis* Trin. in Mem. Acad. Sci. Petersb. ser. 6.2. : 333. 1832.

Chamba (DD), Simla (DD).

Distrib. : All along the Himalaya.

MNESITHEA Kunth

Mnesithea leavis (Retz.) Kunth. Rev. Gram. 1 : 154. 1829 ; Bor, Gr. Burma, Ceylon, India & Pak. 197. 1960. *Rottboellia laevis* Retz. Obs. Bot. 3 : 11. 1783.

Bilaspur (BSD), Kangra (DD), Mandi (BSD), Simla (DD), Solan (DD).

Distrib. : Throughout India.

PHACELURUS Griseb.

Phacelurus speciosus (Steud.) C.E. Hubbard in Kew Bull. 1928 : 35. 1928 ; Bor, Gr. Burma, Ceylon, India & Pak. 199. 1960. *Andropogon speciosus* Steud. Syn. Pl. Glum. 1 : 375. 1854.

Chamba (BSD, DD), Kinnaur (BSD), Kulu (BSD, DD), Lahul & Spiti (DD, BSD), Simla (DD).

Distrib. : North - Western India.

POGONATHERUM P. Beauv.

Key to the species :

- | | | |
|--|-----|--------------------|
| 1. Spikelets 2.5 - 3.0 mm long ; callus hairs upto 1.5 mm long ; lower floret male ; upper floret with 2 stamens | ... | <i>P. panicum</i> |
| 1A. Spikelets upto 2 mm long ; callus hairs ca 2 mm long ; lower floret sterile or obsolete ; upper floret with 1 (rarely 2) stamens | ... | <i>P. crinitum</i> |

Pogonatherum crinitum (Thunb.) Kunth, Enum. Pl. 1 : 478. 1833 ; Bor, Gr. Burma, Ceylon, India & Pak. 200. 1960. *Andropogon crinitus* Thunb. Fl. Jap. t. 7. 1784.

Hamirpur (BSD), Mandi (BSD).

Distrib. : Common throughout India.

Pogonatherum paniceum (Lamk.) Hack. in Allg. Bot. Z. 12 : 178. 1906 ; Bor, Gr. Burma, Ceylon, India & Pak. 202. 1960 ; Nair, Fl. Bash. Himal. 326. 1977. *Saccharum paniceum* Lamk. Encycl. Meth. Bot. 1 : 595. 1785. *Pogonatherum saccharoideum* P. Beauv. Agrost. 176. 177. 1782 ; Hook. f. Fl. Brit. India 7 : 141. 1896.

Chamba (DD), Kinnaur (DD, BSD), Kulu (DD), Simla (DD).

Distrib. : Common throughout India.

ROTTBOELLIA L. f.

Rottboellia exaltata L. f. Nov. Gram. Gen. 40. t. 1. 1779 ; Hook. f. Fl. Brit. India 7 : 156. 1896. *p.p.* ; Bor, Gr. Burma, Ceylon, India & Pak. 206. 1960.

Chamba (DD).

Distrib. : Common in tropical parts of India.

SACCHARUM Linn.

Key to the species :

- | | | |
|--|-----|----------------------|
| 1. Spikelets awned. | ... | 2 |
| 2. Panicle decompound ; culms glabrous below the panicle | ... | <i>S. ravennae</i> |
| 2A. Panicle of long simple branches, sparingly divided ; culms pubescent below the panicle | ... | 3 |
| 3. Spikelets 3.0-3.5 mm long ; upper lemma entire at the apex, awned from the tip | ... | <i>S. rufipilum</i> |
| 3A. Spikelets 4.0-6.0 mm long ; upper lemma 2-fid at the apex, awned in the sinus | ... | <i>S. filifolium</i> |

- 1A. Spikelets not awned .. 4
4. Peduncle hairy below the panicle ; rhachis very fragile ; lower glume of the sessile spikelet glabrous on the back ... *S. spontaneum*
- 4A. Peduncle not hairy below the panicle ; rhachis less fragile ; lower glume of the sessile spikelet hairy on the back ... *S. bengalense*

Saccharum bengalense Retz. Obs. Bot. 5 : 16. 1789 ; Bor, Gr. Burma, Ceylon, India & Pak. 211. 1960. *S. munja* Roxb. Fl. Ind. 1 : 250. 1820. *S. arundinaceum* Hook. f. Fl. Brit. India 7 : 119. 1896. in part (non Retz.).

Chamba (DD).

Distrib. : North and North-Western India.

Saccharum filifolium Steud. Syn. Pl. Glum. 1 : 409. 1855 ; Bor, Gr. Burma, Ceylon, India & Pak. 211. 1960. *Erianthus filifolium* Nees ex Steud. Syn. Pl. Glum. 1 : 409. 1855 ; Nair, Fl. Bash. Himal. 316. 1977.

Kinnaur (BSD), Kulu (DD), Simla (DD).

Distrib. : North-western Himalaya.

Saccharum ravennae (L.) Murray, Syst. Veg. 88. 1774 ; Bor, Gr. Burma, Ceylon, India & Pak. 213. 1960. *Andropogon ravennae* L. Sp. Pl. ed. 2. 1481. 1763.

Chamba (BSD, DD), Kinnaur (DD), Kulu (DD).

Distrib. : North India.

Saccharum rufipilum Steud. Syn. Pl. Glum. 1 : 409. 1855 ; Bor, Gr. Burma, Ceylon, India & Pak. 213. 1960. *Erianthus fulvus* Nees ex Hack. in DC. Monogr. Phan. 6 : 147. 1889 ; Hook. f. Fl. Brit. India 7 : 123. 1896.

Kinnaur (BSD, DD), Kulu (BSD, DD), Mandi (DD), Kangra (RRL), Simla (DD), Solan (DD).

Distrib. : Hills of North and North-Eastern India.

Saccharum spontaneum L. Mant. Alt. 183. 1771 ; Bor, Gr. Burma, Ceylon, India & Pak. 214. 1960 ; Hook. f. Fl. Brit. India 7 : 118. 1896 ; Nair, Fl. Bash. Himal. 327. 1977.

Chamba (DD), Kinnaur (DD), Kulu (DD), Mandi (BSD).

Distrib. : Widely distributed in India.

SORGHUM Moench

Key to the species :

- | | | | |
|-----|---|-----|---------------------|
| 1. | Sheath-nodes finely pubescent, not bearded ; primary branches of the panicle branched | ... | 2 |
| 2. | Racemes fragile ; pedicelled spikelets deciduous when mature ; sessile spikelets more or less obtuse, elliptic to sub-elliptic or elliptic-lanceolate | ... | 3 |
| 3. | Leaf-blades 0.5-2 cm wide (rarely more) ; culms slender, 0.5 - 1.5 cm tall ; panicle upto 25 cm long and 5 cm wide ; lower branches 5-8 cm long | ... | <i>S. halepense</i> |
| 3A. | Leaf-blades 2-4 cm wide ; culms slender to robust, usually 2-3 cm tall ; panicle 25-55 cm long and 10-25 cm wide ; lower branches 10-25 cm long | ... | <i>S. miliaceum</i> |
| 2A. | Racemes tough ; pedicelled spikelets persistent when mature ; sessile spikelets broadly ovate to slightly obovate | ... | <i>S. cernuum</i> |
| 1A. | Sheath-nodes densely bearded ; primary branches of the panicle simple, unbranched, upto 10 cm long | ... | <i>S. nitidum</i> |

Sorghum cernuum Host, Gram. Austr. 4 : 2. t. 3. 1809 ; Bor, Gr. Burma, Ceylon, India & Pak. 228. 1960.

Una (BSD).

Cultivated.

Sorghum halepense (L.) Pers. Syn. Pl. 1 : 101. 1805 ; Bor, Gr. Burma, Ceylon, India & Pak. 222. 1960. *Holcus halepensis* L. Sp. Pl. 1047. 1753. *Andropogno halepensis* (L.) Brot. Fl. Lusit. 1 : 89. 1804 ; Hook. f. Fl. Brit. India 7 : 183. 1896. *p.p.*

Bilaspur (BSD), Chamba (DD), Kinnaur (DD).

Distrib. : Tropical parts of India.

Sorghum miliaceum (Roxb.) Snowden in J. Linn. Soc. Bot. 55 : 207. 1955 ; Bor, Gr. Burma, Ceylon, India & Pak. 223. 1960. *Andropogon miliaceus* Roxb. Fl. Ind. 1 : 276. 1820.

Mandi (BSD).

Throughout India.

Sorghum nitidum (Vahl.) Pers. Syn. Pl. 1 : 101. 1805 ; Bor, Gr. Burma, Ceylon, India & Pak. 245. 1960. *Holcus nitidus* Vahl. Symb. Bot. 2 : 102. 1791.

Kangra (DD), Solan (DD).

Distrib. : Tropical parts of India.

SPODIOPOGON Trin.

Spodiopogon dubius Hack. in DC. Monogr. Phaner. 6 : 186. 1889 ; Bor, Gr. Burma, Ceylon, India & Pak. 246. 1960 ; Nair, Fl. Bash. Himal. 328. 1977.

Kinnaur (DD), Kulu (DD), Simla (DD), Solan (DD).

Distrib. : North – Western Himalaya.

THEMEDA Forssk.

Key to the species :

- | | | |
|---|-----|-----------------------|
| 1. Sessile spikelets not awned, 5 mm long | ... | <i>T. anathera</i> |
| 1A. Sessile spikelets awned, 7-10 mm long | ... | 2 |
| 2. Racemes less than 1.5 cm. long ; involucre spikelets 9 mm long | .. | <i>T. triandra</i> |
| 2A. Racemes more than 1.5 cm long ; involucre spikelets 12-20 mm long | ... | <i>T. arundinacea</i> |

Themeda anathera (Nees) Hack. in DC. Monogr. Phan. 6 : 669. 1889 ; Bor, Gr. Burma, Ceylon, India & Pak. 249. 1960 ; Nair, Fl. Bash. Himal. 329. 1977. *Anthistiria anathera* Nees ex Royle, 111. Bot. Himal. 417. 1839 nom. nudum ; Nees ex Steud, Syn. Pl. Glum. 1 : 402. 1855 ; Hook. f. Fl. Brit. India 7 : 215. 1896.

Chamba (DD), Kinnaur (BSD, DD), Simla (DD), Solan (DD).

Distrib. : Western Himalaya.

Themeda arundinacea (Roxb.) Ridley in Trans. Linn. Soc. ser. 2. 3 : 401. 1893 ; Bor, Gr. Burma, Ceylon, India & Pak. 250. 1960. *Anthistiria arundinacea* Roxb. Fl. Ind. 1 : 256. 1820. *A. gigantea* Hack. ssp.

arundinacea (Roxb.) Hack. in DC. Monogr. Phan. 6 : 674. 1889 ; Hook. f. Fl. Brit. India 7 : 217. 1896.

Mandi (DD), Sirmur (DD).

Distrib. : Himalaya and plains of India.

Themeda triandra Forssk. Fl. Aegypt Arab 123 et 178. 1775 ; Bor, Gr. Burma, Ceylon, India & Pak. 254. 1960 ; Nair, Fl. Bash. Himal. 329. 1977.

Simla (DD).

Distrib. : Warmer and tropical parts of India.

Tribe – *Maydeae*.

- | | | |
|--|-----|-------------|
| 1. Female spikelets completely enclosed in a metamorphosed bead-like leaf sheath ; male spikelets in twos or threes on a continuous rachis | ... | <i>Coix</i> |
| 1A. Female spikelets in crowded longitudinal rows on a very thick rhachis enclosed in the sheath or a leaf surrounded by bracts ; male spikelets in terminal ample panicle | ... | <i>Zea</i> |

COIX L.

Coix lacryma – jobi L. Sp. Pl. 972. 1753 ; Hook. f. Fl. Brit. India 7 : 100. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 264. 1960 ; Nair, Fl. Bash. Himal. 313. 1977.

Kangra (DD,RRL), Kinnaur (BSD, DD).

Distrib. : Tropical Parts of India.

ZEAL.

Zea mays L. Sp. Pl. 971. 1753 ; Hook. f. Fl. Brit. India 7 : 102. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 270. 1960 ; Nair, Fl. Bash. Himal. 330. 1977.

Kinnaur (BSD).

Widely cultivated.

Tribe – *Paniceae*.

- | | | |
|---|-----|---------------------|
| 1. Spikelets arranged in open panicle or panicles contracted and spike-like | ... | 2 |
| 2. Spikelets arranged in open or contracted panicles | ... | <i>Panicum</i> |
| 2A. Spikelets arranged in cylindrical spike like panicles | ... | 3 |
| 3. Spikelets gibbous, not subtended by bristles | ... | <i>Sacciolepis</i> |
| 3A. Spikelets not gibbous, subtended by 1 - several bristles | ... | 4 |
| 4. Bristles persistent, barbed | ... | <i>Setaria</i> |
| 4A. Involucre of bristles usually falling with the spikelet, naked or ciliate | ... | <i>Pennisetum</i> |
| 1A. Spikelets arranged in one-sided spikes or spike-like racemes ; spikes or racemes digitate or scattered, rarely solitary | ... | 5 |
| 5. Lemma of the upper floret more or less crustaceous or coriaceous, usually with narrow inrolled margins, exposing much of the palea | ... | 6 |
| 6. Lower glume turned away from the rhachis of the raceme or spike, the back of the lemma facing it i.e. spikelet abaxial | ... | 7 |
| 7. Lower glume developed, although sometimes small | ... | 8 |
| 8. Glumes acuminate or awned, rarely acute ; upper lemma not mucronate | ... | 9 |
| 9. Leaf-blades linear ; racemes dense ; culms erect or sub-erect | ... | <i>Echinochloa</i> |
| 9A. Leaf-blades lanceolate to ovate ; racemes loose to moderately dense ; culms creeping and ascending | ... | <i>Oplismenus</i> |
| 8A. Glumes unawned, if acuminate then with the upper lemma obtuse, mucronate | ... | 10 |
| 10. Upper lemma acute, not mucronate | ... | <i>Paspalidium</i> |
| 10A. Upper lemma obtuse, mucronate or very short awned | ... | <i>Urochloa</i> |
| 7A. Lower glume usually absent, spikelets plano-convex | ... | <i>Paspalum</i> |
| 6A. Lower glume turned towards the rhachis; the back of the upper lemma turned away from it i.e. spikelet adaxial... | | <i>Brachiaria</i> |
| 5A. Lemma of the upper floret thinly cartilaginous, usually with a flat, hyaline margin | ... | 11 |
| 11. Spikelets awned | ... | <i>Alloteropsis</i> |
| 11A. Spikelets awnless | ... | <i>Digitaria</i> |

ALLOTEROPSIS J. S. Presl

Alloteropsis cimicina (L.) Stapf. in Prain, Fl. Trop. Africa 9 : 487. 1919 ; Bor, Gr. Burma, Ceylon, India & Pak. 276. 1960. *Milium cimicinum* L. Mant. Alt. 184. 1771.

Bilaspur (BSD), Hamirpur (BSD), Mandi (BSD), Una (BSD).

Throughout India in the plains and lower foot hills.

BRACHIARIA Griseb.

Key to the species :

- | | | |
|---|-----|-----------------------|
| 1. Panicle linear with erect racemes of closely crowded, softly hairy spikelets, 2.0-2.5 mm long ; rhachis hairy ; lower glume a minute scale | ... | <i>B. eruciformis</i> |
| 1A. Panicle various | ... | 2 |
| 2. Spikelets 1.25 - 2.0 mm long, paired, pedicles with long white hairs | ... | <i>B. reptans</i> |
| 2A. Spikelets 2.5-3.0 mm long, solitary or paired | ... | 3 |
| 3. Spikelets elliptic tapering to both ends, 2.5 mm long, solitary ; all parts more or less hairy | ... | <i>B. villosa</i> |
| 3A. Spikelets broadly elliptic or broadly obovate-elliptic, 2.5-3.0 mm long, in pairs ; pedicles & rhachis with long colourless hairs | ... | <i>B. ramosa</i> |

Brachiaria eruciformis (J. E. Sm.) Griseb. in Ledeb. Fl. Rose. 4, 469. 1853 ; Bor, Gr. Burma, Ceylon, India & Pak. 283. 1960. *Panicum eruciformis* J. E. Sm. in Sibth. et J. E. Sm. Fl. Graeca 1. 44. t. 59. 1806.

Chamba (DD).

Distrib. : Western India.

Brachiaria ramosa (L.) Stapf. in Prain, Fl. Trop. Afri. 9 : 542. 1919 ; Bor, Gr. Burma, Ceylon, India & Pak. 284. 1960. *Panicum ramosum* L. Mant. Pl. 1 : 29. 1767 ; Hook. f. Fl. Brit. India 7 : 36. 1896 *p.p.*

Bilaspur (BSD), Hamirpur (BSD), Kinnaur (BSD), Una (BSD).

Distrib. : Tropical parts of India.

Brachiaria reptans (L.) Gard. et C. E. Hubb. in Hook. Icon. Pl. subtab. 3363. 1938 ; Bor, Gr. Burma, Ceylon, India & Pak. 285. 1960. *Panicum reptans* L. Syst. Nat. ed. 10. 870. 1759.

Una (BSD).

A weed of cultivated and waste places throughout the country.

Brachiaria villosa (Lamk.) A. Camus in Lecomte, Fl. Gen. de l' Indo-Chine 7 : 433. 1922 ; Bor, Gr. Burma, Ceylon, India & Pak. 286. var. **villosa** *Panicum villosum* Lamk. Tab. Encycl. Meth. Bot. 1 : 173. 1791 *in part*.

Simla (DD).

Distrib. : Tropical parts of India.

DIGITARIA Haller

Key to the species :

- | | | |
|--|-----|----------------------|
| 1. Hairs on the spikelets verrucose i. e. covered with minute warty growth if sprinkled with fine grains of sand ; culms creeping and rooting at the nodes ; racemes 2 - 3 in number, 1.5 - 7.0 cm long ; spikelets upto 1.5 mm long | ... | <i>D. longifolia</i> |
| 1A. Hairs on the spikelets never verrucose | ... | 2 |
| 2. Hairs on the spikelets clavate | ... | 3 |
| 3. Tips of pedicels eupuliform with a rim of hairs ; rhachis narrowly winged ; spikelets ca 1 mm long... | | <i>D. stricata</i> |
| 3A. Tips of pedicels somewhat thickened, without a rim of hairs ; rhachis broadly winged ; spikelets 2 mm long | ... | 4 |
| 2. Hairs on the spikelets not clavate | ... | 5 |
| 5. Spikelets in triads in the centre of the racemes | ... | <i>D. ischaemum</i> |
| 5A. Spikelets in pairs in the centre of the racemes | ... | 6 |
| 6. Fruits apiculate | ... | <i>D. cruciate</i> |
| 6A. Fruits not apiculate | ... | 7 |
| 7. Nerves of the lower lemma smooth, without minute, triangular spines | ... | 8 |
| 8. Spikelets either homomorphous and bristled or heteromorphous | ... | <i>D. bicornis</i> |

8A. Spikelets homomorphous in the entire raceme,
nerves bristled ...

D. ciliaris

7A. Nerves of the lower lemma with minute
triangular spines on the upper part of the
nerves ...

D. sanguinalis

Digitaria abludens (Roem. et Schult.) Veldk. in *Blumea* 21 : 53. 1973. *Panicum abludens* Roem. et Schult. Syst. Veg. 2 : 457. 1817. *Digitaria granularis* (Trin.) Henr. Monogr. Gen. *Digitaria* 302. 1950 ; Bor, Gr. Burma, Ceylon, India & Pak. 301. 1960. *Paspalum granulare* Trin. ex Spreng. Neue Entdeck 2 : 47. 1821.

Una (BSD).

Distrib. : Subtropical parts of Himalaya and Manipur.

Digitaria ciliaris (Retz.) Koel. Descr. Gram. 27. 1802 ; Veldkamp in *Blumea* 21 : 32. 1973. *Paspalum ciliare* Retz. Obs. 4 : 16. 1789. *pro. specim. chin. adscendens* (HBK.) Henr. in *Blumea* 1 : 92. 1934 ; Bor, Gr. Burma, Ceylon, India & Pak. 298. 1960 ; Nair, Fl. Bash. Himal. 314. 1977. *Panicum adscendens* HBK. Nov. Gen. et Sp. Pl. 1 : 97. 1816. ssp. **adscendens**.

Bilaspur (BSD), Kinnaur (DD), Mandi (BSD).

Distrib. : Tropical regions and hills.

Digitaria bicornis (Lamk.) Roem. et Schult. Syst. Veg. 2 : 470. 1817 ; Veldkamp in *Blumea* 21 : 30. 1973. *Paspalum bicornis* Lamk. Encycl. 1 : 176. 1791. *Digitaria biformis* Willd. Enum. Pl. Hort. Berol. 92. 1809 ; Bor, Gr. Burma, Ceylon, India & Pak. 299. 1960.

Hamirpur (BSD), Simla (Collett. 1902), Una (BSD).

Distrib. : North-Western Himalaya.

Digitaria cruciata (Nees) A. Camus in Lecomte, Fl. Gen. de l'Indo-Chine 7 : 399. 1922 ; Bor, Gr. Burma, Ceylon, India & Pak. 300. 1977. *Panicum cruciatum* Nees ex Steud. Syn. Pl. Glum. 1 : 39. 1854. *Paspalum sanguinale* Lamk. var. *cruciatum* Hook. f. Fl. Brit. India 7 : 14. 1896.

Chamba (DD), Kinnaur (DD), Kulu (DD), Simla (DD, LWG).

Distrib. : Extremely common in the hills.

Digitaria ischaemum (Schreb.) Schreb. ex Muhl. Descr. Gram.

Plant. Calam. 131. 1817 ; Bor, Gr. Burma, Ceylon, India & Pak. 302. 1960. *Panicum ischaemum* Scrib in Schw. Fl. Erlang. 16. 1804.

Kulu (Bor, 1960).

Distrib. : Himalaya and Tibet.

Digitria longiflora (Retz.) Pers. Syn. Pl. 1 : 85. 1805 ; Bor, Gr. Burma, Ceylon, India & Pak. 302. 1960. *Paspalum longiflorum* Retz. Obs. Bot. 4 : 15. 1786.

Una (BSD).

Distrib. : Widely distributed in India.

Digitaria sanguinalis (L.) Scop. Flor. Carn ed. 2. 1 : 52. 1772 ; Bor, Gr. Burma, Ceylon, India and Pak. 304. 1960. *Panicum sanguinalis* L. Sp. Pl. ed. 1. 57. 1753.

Chamba (DD), Kinnaur (DD), Simla (DD).

Distrib. : Widely distributed in temperate and warm regions of India.

Digitaria stricta Roth. ex R. & S. Syst. Veg. 2 : 474. 1817 ; Bor. Gr. Burma, Ceylon, India & Pak. 305. 1960.

Chamba (DD).

Distrib. : Tropical parts of India.

ECHINOCHLOA P. Beauv.

Key to the species :

- | | | |
|--|-----|---|
| 1. Spikelets 2.5-3.0 mm long ; lower lemma and upper glume equally acute or cuspidate, not awned | ... | <i>E. colonum</i> |
| 1A. Spikelets 3.0-4.0 mm long | ... | 2 |
| 2. Lower lemma awned ; awn upto 2 cm long | ... | <i>E. crusgalli</i> var. <i>crusgalli</i> |
| 2A. Lower lemma cuspidate or shortly awned | ... | 3 |
| 3. Spikes rather distant ; lower lemma cuspidate or awned ; awn upto 2 mm long | ... | <i>E. crusgalli</i> var. <i>submutica</i> |
| 3A. Spikes closely packed ; lower lemma cuspidate, unawned ; robust grass | ... | <i>E. frumentacea</i> |

Echinochloa colonum (L.) Link. Hort. Berol. 2 : 209. 1833 ; Bor, Gr. Burma, Ceylon, India & Pak. 308. 1960 ; Nair, Fl. Bash. Himal. 314. 1977. *Panicum colonum* L. Syst. Nat. ed. 10. 2 : 870. 1759 ; Hook. f. Fl. Brit. India 7 : 32. 1897 ; Collett, Fl. Siml. 582. 1902.

Kinnaur (BSD), Simla (BSD).

Distrib. : Widely spread in tropical parts of India.

Echinochloa crusgalli (L.) P. Beauv. Ess. Agrost. 53, 161. 1812 ; Bor, Gr. Burma, Ceylon, India & Pak. 310. 1960 ; Nair, Fl. Bash. Himal. 315. 1977. *Panicum crusgalli* L. Sp. 56. 1753. *Pennisetum crusgalli* (L.) Baumg. Enum. Strip. Transsilv. 3 : 377. 1816 ; Hook. f. Fl. Brit. India 7 : 30. 1896 ; Collett, Fl. Siml. 581. 1902. var. *crusgalli*

Chamba (DD), Kinnaur (BSD, DD), Kulu (BSD, DD), Lahul and Spiti (DD), Simla (BSD, DD), Solan (DD).

Distrib. : Very common throughout India.

Echinochloa crusgalli (L.) P. Beauv. var. *submutica* Neilr. Fl. Nied. Ost. 31. 1859 ; Shukla et Jain in Bull. Bot. Surv. India 20 : 66. 1978. *E. crusgalli* (L.) P. Beauv. var. *brevisetata* (Doell) Neilr. Fl. Nied. Ost. 31. 1859 ; Bor, Gr. Burma, Ceylon, India & Pak. 310. 1960. *Panicum crusgalli* var. *brevisetum* Doell, Fl. Bad. 1. 232. 1857.

Kinnaur (BSD).

Distrib. : Very common, throughout India.

Echinochloa frumentacea Link, Hort. Berol. 1 : 204. 1827 ; Bor, Gr. Burma, Ceylon, India & Pak. 311. 1960. *Panicum frumentaceum* Roxb. Fl. Ind. 1 : 307. 1820. (non Salisb. 1796). *Echinochloa colonum* var. *frumentacea* Ridley. Fl. Malay Penin. 5 : 223. 1925.

Chamba (DD), Mandi (BSD).

Distrib. : Cultivated in hotter parts of India.

OPLISMENUS P. Beauv.

Key to the species :

- | | |
|---|--------------------------|
| 1. Inflorescence of racemes of spikelets alternate along the axis ... | 2 |
| 2. Awns reddish, smooth, viscid, filiform, stiff ... | <i>O. compositus</i> |
| 2A. Awns pale, barbellate, capillary often flexuous ... | <i>O. burmannii</i> |
| 1A, Inflorescence of groups of fascicled spikelets alternate along the axis ... | <i>O. undulatifolius</i> |

Oplismenus burmannii (Retz.) P. Beauv. Ess. Agrost. 54 : 168, 169. 1812 ; Hook. f. Fl. Brit. India 7 : 68. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 317. 1960. *Panicum burmannii* Retz. Obs. Bot. 3 : 10. 1783.

Bilaspur (BSD).

Distrib. : Widely distributed in the tropical and subtropical parts of India.

Oplismenus compositus (L.) P. Beauv. Ess. Agrost. 54, 168, 169. 1812 ; Hook. f. Fl. Brit. India 7 : 66. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 317. 1960 ; Nair, Fl. Bash. Himal. 321. 1977. *Panicum compositus* L. Sp. Pl. 57. 1753.

Chamba (DD), Kinnaur (DD), Mandi (BSD), Simla (DD), Solan (DD).

Distrib. : Tropical parts of India.

Oplismenus undulatifolius (Ard.) P. Beauv. Ess. Agrost. 54. 1812 ; Bor, Gr. Burma, Ceylon, India & Pak. 318. 1960 ; Nair, Fl. Bash. Himal. 321. 1977. *Panicum undulatifolium* Ard. Animad. Spec. Alt. 14. t. 4. 1764.

Chamba (DD), Kinnaur (DD), Kulu (BSD, DD), Simla (DD), Solan (DD).

Distrib. : Western temperate parts of India and Himachal Pradesh.

PANICUM L.

Key to the species :

- | | | |
|---|-----|---------------------|
| 1. Lower glume cuspidate-acuminate, spikelets widely gaping at anthesis | ... | <i>P. trypheron</i> |
| 1A. Lower glumes not cuspidate-acuminate ; spikelets not gaping | | 2 |
| 2. Spikelets narrowly lanceolate, acute, 3 mm long ; lower glume orbicular ; culms spongy, floating | ... | <i>P. paludosum</i> |
| 2A. Spikelets oblong, ovate-oblong to elliptic, acute or obtuse ; lower glume not orbicular ; culms tough | ... | 3 |
| 3. Lower glume one-quarter to half the length of the spikelets | ... | 4 |
| 4. Nodes and leaf-sheaths hairy ; spikelets persistent | ... | <i>P. miliaceum</i> |

- | | | |
|--|-----|--------------------------|
| 4A. Nodes and leaf-sheaths glabrous ; spikelets persistent or deciduous | ... | 5 |
| 5. Annuals | ... | 6 |
| 6. Spikelets persistent, 2.0 - 3.5 mm long, panicle contracted ; lower glume orbicular apiculate | ... | <i>P. miliare</i> |
| 6A. Spikelets deciduous, 2-3 mm long ; panicle effuse, often diseased, and the spikelets giant and deformed ; lower glumes ovate-apiculate | | <i>P. psilapodium</i> |
| 5A. Perennial, with villous, stout creeping root stock | ... | <i>P. antidotale</i> |
| 3A. Lower glume half to three-quarters the length of the spikelet or more | ... | 7 |
| 7. Perennial grass, culms glabrous | ... | <i>P. antidotale</i> |
| 7A. Annual grass, culms hairy | ... | <i>P. atrosanguineum</i> |

Panicum antidotale Retz. Obs. Bot. 4 : 17. 1786 ; Bor, Gr. Burma, Ceylon, India & Pak. 322. 1960.

Una (BSD).

Distrib. : North - Western India and Tamil Nadu.

Panicum atrosanguineum Hochst. ex A. Rich. Tent. Fl. Abyss. 2 : 375. 1851 ; Bor, Gr. Burma, Ceylon, India & Pak. 322. 1960.

Distrib. : Madhya Pradesh to North-Western India.

Panicum miliaceum L. Sp. Pl. 58. 1753 ; Hook. f. Fl. Brit. India 7 : 45. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 327. 1960 ; Nair, Fl. Bash. Himal. 322. 1977.

Chamba (DD), Kinnaur (BSD, DD), Simla (DD).

Distrib. : North-western India.

Panicum miliare Lamk. Tab. Encycl. Meth. Bot. 1 : 173. 1791 ; Bor, Gr. Burma, Ceylon, India & Pak. 329. 1960.

Simla (DD).

Distrib. : Central, South India and Himachal Pradesh.

Panicum paludosum Roxb. Fl. Ind. 1 : 310. 1820 ; Hook. f. Fl. Brit. India 7 : 46. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 329. 1960.

Kangra (DD), Mandi (BSD).

Distrib. : Eastern India and Himachal Pradesh.

Panicum psilopodium Trin. Gram. panic. 217. 1826. Hook. f. Fl. Brit. India 7 : 47. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 329. 1960; Nair, Fl. Bash. Himal. 323. 1977.

Hamirpur (BSD), Simla (DD).

Distrib. : Common in India.

Panicum trypheron Schult. Syst. Veg. 2. Mant. 244. 1824 ; Bor, Gr. Burma, Ceylon, India & Pak. 331. 1960.

Una (BSD).

Distrib. : Commonly distributed.

PASPALIDIUM Stapf

Paspalidium flavidum (Retz.) A. Camus in Lecomte, Fl. Gen. de l'Indo-Chine 7 : 419. 1922 ; Bor, Gr. Burma, Ceylon, India & Pak. 333. 1960. *Panicum flavidum* Retz. Obs. Bot. 4 : 15. 1786.

Hamirpur (BSD), Mandi (BSD), Una (BSD).

Distrib. : In moist parts of the plains and hills of India.

PASPALUM L.

Key to the species :

- | | | |
|--|-----|-------------------------|
| 1. Spikelets ciliate on the margins of the upper glume | ... | <i>P. dilatatum</i> |
| 1A. Spikelets glabrous or pubescent, not ciliate on the margins of the upper glume | ... | 2 |
| 2. Spikelets broadly elliptic, acute | ... | <i>P. paspaloides</i> |
| 2A. Spikelets obovate-elliptic, ovate-orbicular to almost orbicular, obtuse | ... | <i>P. scrobiculatum</i> |

Paspalum dilatatum Poir in Lamk. Encycl. Meth. Bot. 5 : 35. 1804 ; Bor, Gr. Burma, Ceylon, India & Pak. 338. 1960.

Kulu (BSD), Mandi (BSD).

Distrib. : Introduced, grows on nearly all the hilly regions of India.

Paspalum paspaloides (Michx.) Scribn. in Mem. Torr. Bot. Cl. 5 : 29. 1894 ; Shukla et Jain in Bull. Bot. Surv. India 20 : 67. 1978. *Digitaria paspaloides* Michx. Fl. Bor. Amer. 1 : 46. 1803. *Paspalum distichum* L. Sys. Nat. ed. 10. 2 : 855. 1759 ; Bor, Gr. Burma Ceylon, India & Pak. 338. 1960.

Hamirpur (BSD), Kinnaur (BSD), Simla (DD), Una (BSD).

Distrib. : Tropical and subtropical parts of India.

Paspalum scrobiculatum L. Mant. Pl. 1 : 29. 1767 ; Hook. f. Fl. Brit. India 7 : 10. 1896 *p. p.* ; Bor, Gr. Burma, Ceylon, India & Pak. 340. 1960 ; Clayton in Kew Bull. 30 : 101. 1975. *P. commersonii* Lamk. Tab. Encycl. Math. Bot. 1 : 175. t. 43. f. 1. 1791.

Hamirpur (BSD), Kangra (DD), Una (BSD).

Distrib. : Tropical and subtropical parts of India. Cultivated in plains of India.

PENNISETUM Rich.

Key to the species :

- | | | |
|--|-----|---------------------|
| 1. Anther cells bearded at the apex ; cultivated grass | ... | <i>P. typhoides</i> |
| 1A. Anther cells not bearded at the apex ; wild grasses | ... | 2 |
| 2. Rhachis of the spike villous or woolly ; involucre bristles unbranched ; inner ones ciliate | ... | <i>P. orientale</i> |
| 2A. Rhachis of the spikes glabrous often scabrid ; involucre bristles branched | ... | 3 |
| 3. Bristles ciliate | ... | <i>P. lanatum</i> |
| 3A. Bristles scabrid, sometimes sparingly ciliate | ... | <i>P. flaccidum</i> |

Pennisetum flaccidum Griseb. in Goett. Nachr. 86. 1868 ; Bor, Gr. Burma, Ceylon, India & Pak. 344. 1960.

Chamba (BSD, DD), Kangra (RRL), Kinnaur (BSD, DD), Lahul and Spiti (BSD, DD), Simla (DD).

Distrib. : High alpine slopes in Himalaya and Tibet.

Pennisetum lanatum Klotzsch in Bot. Erg. Waldom. Reise 65. 1862 ; Bor, Gr. Burma, Ceylon, India & Pak. 345. 1960.

Chamba (BSD, DD), Kinnaur (BSD, DD), Lahul and Spiti (BSD, DD).

Distrib. : Western Himalaya and Tibet.

Pennisetum orientale L. C. Rich. in Pers. Syn. Pl. 1 : 72. 1805 ; Bor, Gr. Burma, Ceylon, India & Pak. 345. 1960 ; Nair, Fl. Bash. Himal. 323. 1977.

Bilaspur (BSD), Chamba (DD), Kinnaur (BSD, DD), Kulu (BSD, BSIP, DD), Mandi (BSD).

Distrib. : Western Himalaya, Northern parts of W. Ghats and Bihar.

Pennisetum orientale L. C. Rich. var. **triflorum** Stapf in Hook. f. Fl. Brit. India 7 : 86. 1896.

Chamba (DD), Kinnaur (DD), Simla (DD).

Pennisetum typhoides (Burma. f.) Stapf et C.E. Hubb. in Kew Bull. 1933 : 271. 1933 ; Bor, Gr. Burma, Ceylon, India & Pak. 350. 1960. *Alopecurus typhoides* Burm. f. Fl. Ind. 27. 1768.

Una (BSD).

Distrib. : Cultivated.

SACCIOLEPIS Nash

Sacciolepis myosuroides (R. Br.) A. Camus in Lecomte Fl. Gen. de l. Indo-China 7 : 460. 1922 ; Bor, Gr. Burma, Ceylon, India and Pak. 358. 1960. *Panicum myosuroides* R. Br. Prodr. 189. 1810.

Kangra (DD).

Distrib. : Tropical and subtropical parts of India.

SETARIA P. Beauv.

- | | |
|---|------------------------|
| 1. Leaves folded or flat ; inflorescence a cylindric and dense or sometimes lobed, spiciform panicle ; annual or perennials ... | 2 |
| 2. Perennials ; Panicle cylindric, dense ... | <i>S. geniculata</i> |
| 2A. Annual with a cylindric panicle or perennial with a loose often lobed panicle ... | 3 |
| 3. Bristles retrorsely barbed ... | <i>S. verticillata</i> |
| 3A. Bristles antrorsely barbed ... | 4 |
| 4. Upper glume as long as the lemma ; the latter smooth or minutely rugulose ... | 5 |
| 5. Spikelets persistent in large often lobed, false spikes ; lower lemmas epaleate ... | <i>S. italica</i> |
| 5A. Spikelets deciduous ; false spikes not lobed or interrupted but cylindric ; lowest lemma paleate ... | <i>S. viridis</i> |
| 4A. Upper glume shorter than the upper lemma ; the latter rugose ... | 6 |
| 6. Inflorescence a cylindric, false spike ; spikelets 3 mm long ... | <i>S. glauca</i> |
| 6A. Inflorescence a narrow panicle, sometimes loosely lobed below and tapering upwards ; spikelets upto 2 mm long ... | <i>S. tomentosa</i> |
| 1A. Leaves folded fan-fashion between the longitudinal nerves ; inflorescence a dense or loose narrow or spreading panicle ... | 7 |
| 7. Perennial, robust grass ... | <i>S. paniculifera</i> |
| 7A. Annual, slender grass ... | <i>S. homonyma</i> |

Setaria geniculata (Lam.) P. Beauv. Ess. Agrost. 51. 169. 178. 1812 ; Bor, Gr. Burma, Ceylon, India & Pak. 360. 1960. *Panicum geniculatum* Lam. Encycl. Meth. Bot. 4 : 727. (err type 737) 1798.

Kinnaur (BSD).

Distrib. : Tropical and subtropical parts of India.

Setaria glauca (L.) P. Beauv. Ess. Agrost. 51. 169. 178. 1812 ; Hook. f. Fl. Brit. India 7 : 78. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 360. 1960 ; Nair, Fl. Bash. Himal. 327. 1977. *Panicum glaucum* L. Sp. Pl. 56. 1753.

Bilaspur (BSD), Hamirpur (BSD), Kangra (DD), Kinnaur (BSD, DD), Kulu (BSD, DD), Mandi (DD), Simla (DD), Solan (DD).

Distrib. : Warmer parts of India.

Setaria homonyma (Steud.) Chiov. in Nuovo. Giorn. Bot. Ital. n. s. 26. 78. 1919 ; Bor, Gr. Burma, Ceylon, India & Pak. 361. 1960. *Panicum homonymum* Steud. Syn. Pl. Glum. 1 : 48. 1854. *P. rhachitrichum* Hook. f. Fl. Brit. India 7 : 56. 1896(non Hochst., 1844).

Hamirpur (BSD), Kangra (DD), Mandi (BSD), Una (BSD).

Distrib. : North-Western India.

Setaria intermedia Roem. et Schult. Syst. Veg. 2 : 489. 1817 ; Shukla et Jain in Bull. Bot. Surv. India 20 : 68. 1978. *S. tomentosa* (Roxb.) Kunth, Rev. Gram. 1 : 47. 1829 ; Bor, Gr. Burma, Ceylon, India & Pak. 365. 1960 ; Nair, Fl. Bash. Himal. 327. 1977. *Panicum tomentosum* Roxb. Fl. Ind. 1 : 303. 1820.

Bilaspur (BSD), Chamba (BSD), Kinnaur (DD), Mandi (BSD), Simla (DD), Una (BSD).

Distrib. : Plains and hills of India.

Setaria italica (L.) P. Beauv. Ess. Agrost. 51. 170. 178. 1812 ; Hook. f. Fl. Brit. India 7 : 78. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 362. 1960. *Panicum italicum* L. Sp. Pl. 56. 1753.

Chamba (BSD), Kinnaur (BSD, DD).

Setaria paniculifera (Steud.) Fourr. ex Hemsl. Biol. Centr. Amer. Bot. 3 : 505. 1885 ; Bor, Gr. Burma, Ceylon, India & Pak. 363. 1960. *Panicum paniculiferum* Steud. Syn. Pl. Glum. 1 : 54. 1854.

Mandi (BSD).

Cultivated.

Setaria viridis (L.) P. Beauv. Ess. Agrost. 51. 171. 178. 1812 ; Bor, Gr. Burma, Ceylon, India & Pak. 365. 1960 ; Nair, Fl. Bash. Himal. 328. 1977. *Panicum viride* Syst. Nat. ed. 10. 2 : 1870. 1759.

Chamba (DD), Kinnaur (BSD), Kulu (DD), Lahul & Spiti (DD, BSD).

Distrib. : Temperate parts of Himalaya.

Setaria verticillata (L.) P. Beauv. Ess. Agrost. 51. 178. 1812 ; Hook. f. Fl. Brit. India 7 : 80. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 365. 1960 ; Nair, Fl. Bash. Himal. 328. 1977. *Panicum verticillatum* L. Sp. Pl. ed. 2. 82. 1762.

Bilaspur (BSD), Kinnaur (BSD, DD).

Distrib. : Widely distributed throughout India.

UROCHLOA P. Beauv.

Urochloa panicoides P. Beauv. Ess. Agrost. 53. t. 11. f. 1. 1812 ;
Bor, Gr. Burma, Ceylon, India & Pak. 372. 1960.

Chamba (BSD), Simla (DD).

Distrib. : Tropical parts of India.

Key to the tribes of Pooideae

1. Spikelets borne in open or contracted or spike-like panicles,
less often in racemes or spikes ... **2**
2. Spikelets usually with 2 or more fertile florets or if with
one fertile floret then with sterile florets above it ... **3**
3. Lemma and rachilla glabrous or hairy, but with
hairs not enveloping the lemma, or if so then the
lemma with a geniculate awn ; low or moderately tall
grasses ... **4**
4. Glumes usually shorter than the lowest floret and
with the upper floret distinctly exserted, rarely
longer and then with firm dull margins like the
lemmas or curved awn from the bifid apex, or
several-awned or -lobed ...
5. Lemmas usually 5 - to many - nerved, awnless
or awned ; awn usually simple, not knee'd or
twisted below the knee ... **6**
6. Lemmas if awned, with one awn (if more
awned, tip of ovary hairy) if awnless, lem-
mas not 7 - 9 nerved or strongly com-
pressed ... **7**
7. Ovary with a hairy appendage at the
apex ; styles borne laterally below the
appendage ... **8**
8. Inflorescence of racemes or pani-
cles ; awn inserted below the entire or
2 - lobed tip ... **Bromeae**
- 8A. Inflorescence a raceme ; awn
terminal ... **Brachypodeae**
- 7A. Ovary glabrous at the apex, or if hairy at
least without a hairy appendage ... **9**
9. Lemmas dull, membranous to coria-
ceous, exserted from the glumes,
glumes 2 or 1 (in *Lolium* sp.) ... **Festuceae**

- 9A. Lemmas membranous and shining, the upper represented by a bundle of empty rudimentary lemmas; glumes 2... *Meliceae*
- 6A. Lemmas 9 - awned, if awnless, lemma 7 - 9 nerved, sub terete or slightly compressed ; ovary not hairy ... 10
10. Lemmas 7 - 9 nerved, unawned ... *Glycerieae*
- 10A. Lemmas 9 - nerved, nerves produced as 9 - awns ... *Pappophoreae*
- 5A. Lemmas 1 - 3 nerved ; awned or awnless ... 11
11. Spikelets 2 - several flowered, all hermaphrodite, strongly laterally compressed ... *Eragrosteae*
- 11A. Spikelets 1 - several flowered, one or more florets, hermaphrodite, others imperfect, slightly laterally compressed ... *Chlorideae*
- 4A. Glume usually as long as or longer than the lowest, floret, often as long as the spikelet and enclosing the florets ... 12
12. Lemmas awnless or awned from the back, rarely from the tip ; awn usually kneed ; ligule membranous ... *Aveneae*
- 12A. Lemmas awned from the sinus between the two terminal lobes or unawned, often only a mucro ligule a hairy rim ... *Danthonieae*
- 3A. Lemmas or rhachilla bearing long silky hairs which envelop the lemma (at least in fertile florets) ; lemmas awnless or with a straight awn from the tip, often thin; tall grasses with large plume - like panicles ... *Arundineae*
- 2A. Spikelets with one fertile floret (male or female in unisexual 1 - flowered spikelets), with or without one or two male or barren florets below it, the latter often much reduced ... 13
13. Glumes minute (usually represented by two semi-circular inconspicuous lips) or suppressed ; fertile lemma and palea very similar in shape and texture ; spikelets firmly compressed ... *Oryzeae*
- 13A. Glumes well developed ; fertile lemma and palea dissimilar ... 14
14. Spikelets with 3 florets, lower two florets barren and reduced to lemmas, occasionally one or both absent ... *Phalarideae*
- 14A. Spikelets with 1 or 2 florets ... 15

- | | | |
|---|-----|-----------------------|
| 15. Spikelets 2 - flowered, the lower male or barren, the upper hermaphrodite | ... | 16 |
| 16. Lower floret empty, epaleate ; upper glume about half the length of spikelet ; rhachilla produced beyond the upper floret, sometimes bearing an empty lemma ; spikelets falling with the glumes | ... | <i>Thysanolaeneae</i> |
| 16A. Lower floret male, paleate ; upper glume as long as the spikelet ; rhachilla not produced beyond the upper floret ; glumes more or less persistent | ... | 17 |
| 17. Glumes equal, obtuse or mucronate ; upper lemma unawned | ... | <i>Isachneae</i> |
| 17 A. Glumes unequal, the lower acute, the upper acuminate ; upper lemma awned or atleast a bristle | ... | <i>Arundinelleae</i> |
| 15A. Spikelets 1 - flowered | ... | 18 |
| 18. Spikelets rarely falling, entire and then with firmly membranous to coriaceous, awned or 1 - 5 nerved lemmas | ... | 19 |
| 19. Lemmas hyaline or membranous at maturity, rarely indurated and then laterally compressed, awnless or awned from low down on the back or from the middle or from the entire or bifid tip | ... | 20 |
| 20. Lemmas 3 - 5 nerved, frequently awned ; glumes longer and firmer than the hyaline lemma or when the lemma longer than the latter, indurated ; grains usually with an adhering pericarp | ... | <i>Agrostideae</i> |
| 20A. Lemmas 1 - 3 nerved, awnless ; glumes and lemmas very similar in texture, hyaline or thinly membranous, shining ; grains usually with a free pericarp | ... | <i>Sporoboleae</i> |
| 19A. Lemmas indurated or rigid at maturity, terete or dorsally compressed | ... | 21 |
| 21. Spikelets awned | ... | 22 |
| 22. Awns trifid | ... | <i>Aristideae</i> |

- 22A. Awns simple, sometimes
flanked with 2 bristles ... *Stipeae*
- 21 A. Spikelets unawned ... *Milieae*
- 18A. Spikelets falling entire at maturity either
singly or in clusters from the axis ; lem -
mas delicate, 1 - 3 nerved ... 23
- 23. Spikelets fascicled or solitary ;
glumes not awned ... *Zoysieae*
- 23A. Spikelets solitary ; glumes awned... *Perotideae*
- 1A. Spikelets sessile or shortly pedicelled along one side of the
the rhachis of solitary, digitate, or scattered spikes, spike-
like racemes or in opposite sides of the rhachis of solitary
spikes or racemes ... 24
- 24. Spikelets on opposite sides of the rhachis of solitary
spikes or spike - like racemes ; inflorescence spike -
lemmas 3 - 5 or more nerved ... *Triticeae*
- 24A. Spikelets secund on a tough rhachis ; inflorescence of
digitate or solitary spikes or panicle of spikes ; lem -
mas 1 3 nerved ... *Chlorideae*
- Tribe - *Agrostideae*
- 1. Panicle Cylindric, spiciform ... 2
- 2. Spikelets firmly flattened ; glumes truncate at the top
with the media never produced as a mucro ; lemma
unawned ... *Phleum*
- 2A. Spikelets slightly flattened ; glumes acute ; lemma
shortly awned ... *Alopecurus*
- 1A. Panicle spreading, if dense, then not spiciform ... 3
- 3. Glumes long awned ; spikelets articulate below the
glumes ... *Polypogon*
- 3A. Glumes unawned ; spikelets disarticulating above or
below the glumes ... 4
- 4. Rhachilla always produced, long penicillate ;
glumes firm, often scabrid, lanceolate-acute ; lemma
indurated, often scabrid ... *Deyeuxia*
- 4A. Rhachilla produced or not, if produced} other
characters not associated ... 5
- 5. Glumes equal to or shorter than the lemma ;
rhachilla not produced ; lemma hyaline, hairy
below the middle, long awned ... *Muhhlenbergia*

- | | | |
|--|-----|----------------------|
| 5A. Glumes longer than the lemma ; rhachilla produced or not | ... | 6 |
| 6. Glumes lanceolate acuminate, much longer than the lemma ; callus hairs longer than the lemma. | ... | <i>Calamagrostis</i> |
| 6A. Glumes lanceolate or elliptic, acute ; callus hairs short or absent. | ... | <i>Agrostis</i> |

AGROSTIS L.

Key to the Species :

- | | | |
|--|-----|-----------------------|
| 1. Lemmas unawned, glabrous (if hairy, see <i>A. munroana</i>) | ... | 2 |
| 2. Paleas absent or minute, less than half the length of lemma | ... | 3 |
| 3. Anthers less than 1 mm long | ... | <i>A. micrantha</i> |
| 3A. Anthers 1.0-1.5 mm long | ... | <i>A. canina</i> |
| 2A. Paleas half as long as lemma or longer | ... | 4 |
| 4. Panicle very dense ; branches spiculate to the base, verticillate | ... | 5 |
| 5. Rhizome present ; stolons absent | ... | <i>A. tenuis</i> |
| 5A. Rhizome absent ; stolons present | ... | <i>A. stolonifera</i> |
| 4A. Panicle very effuse ; branches bare at the base | ... | 6 |
| 6. Rhizomes present ; panicle open in fruit ; ligule truncate, toothed | ... | <i>A. gigantea</i> |
| 6A. Rhizomes absent ; panicle closed in fruit, ligule obtuse | ... | <i>A. stolonifera</i> |
| 1A. Lemmas awned | ... | 7 |
| 7. Lemmas glabrous, awned, awns basal to median ; palea less than half the length of lemma ; anthers 1.0 - 1.5 mm long | ... | <i>A. canina</i> |
| 7A. Lemmas hairy all over the dorsal surface ; awned or unawned | ... | 8 |
| 8. Palea more than half the length of the lemma ; unawned or shortly awned | ... | <i>A. munroana</i> |

- 8A. Palea less than half the length of the lemma ... 9
9. Panicle very effuse ; branches 6 - 10 cm long ; spikelets green or greenish - yellow ... *A. pilosula* var. *pilosula*
- 9A. Panicle contracted ; branches very much shorter ; spikelets often purple ... *A. pilosula* var. *royleana*

Agrostis canina L. Sp. Pl. ed. 1. 62. 1753 ; Bor, Gr. Burma, Ceylon, India & Pak. 386. 1960.

Chamba (DD), Kangra (DD), Kinnaur (DD), Lahul & Spiti (DD, BSD), Simla (DD).

Distrib. : From Kashmir to Himachal Pradesh.

Agrostis gigantea Roth. Fl. Germ. 1 : 31. 1788 ; Bor, Gr. Burma, Ceylon, India & Pak. 387. 1960.

Kinnaur (BSD), Kulu (BSD)

Distrib. : Temperate Himalaya.

Agrostis micrantha Steud. Syn Pl. Glum. 1 : 170. 1854 ; Bor, Gr. Burma, Ceylon, India & Pak. 388. 1960.

Lahul and Spiti (DD), Mandi (DD).

Distrib. : Eastern Himalaya and Himachal Pradesh.

Agrostis munroana Aitch. et Hemsl. in J. Linn. Soc. Bot. 19 : 192. 1881 ; Bor, Gr. Burma, Ceylon, India & Pak. 388. 1960. *Calamagrostis munroana* (Aitch. et Hemsl.) Boiss. Fl. Orient. 5 : 523. 1883.

Chamba (DD), Kinnaur (BSD, DD), Kulu (BSD), Simla (LWG)

Distrib. : North-Western Himalaya.

Agrostis pilosula Trin. in Mem. Acad. Sci. Petersb. ser. 6. 6 : 372. 1841. var. *pilosula* Bor, Gr. Burma, Ceylon, India & Pak. 388. 1960 ; Nair, Fl. Bash. Himal. 309. 1977. *Calamagrostis pilosula* (Trin.) Hook. f. Fl. Brit. India 7 : 263. 1896.

Chamba (DD), Kulu (BSD, DD)

Distrib. : North Western India.

Agrostis pilosula Trin. var. *royleana* (Trin.) Bor in Kew Bull. 1954 : 459. 1945 ; Bor, Gr. Burma, Ceylon, India & Pak. 389. 1960 ; Nair, Fl. Bash. Himal. 309. 1977. *Agrostis royleana* Trin. in Mem. Acad. Sci. Petersb. ser. 6. 6 : 371. 1841.

Kulu (BSD), Simla (LWG)

Distrib. : North Western India.

Agrostis stolonifera L. Sp. Pl. 62. 1753 ; Bor, Gr. Burma, Ceylon, India & Pak. 390. 1960. *A. alba* (auct non L.) Sp. Pl. 63. 1753.

Chamba (DD), Kulu (DD), Lahul and Spiti (BSD, DD), Mandi (DD), Simla (DD).

Distrib. ; Hills of India.

Agrostis tenuis Sibth. Fl. Oxon. 36. 1794 ; Bor, Gr. Burma, Ceylon, India & Pak. 391. 1960.

Lahul and Spiti (BSD).

Distrib. Temperate parts of India.

ALOPECURUS Linn.

Key to the Species :

- | | |
|--|------------------------|
| 1. Perennials ; panicles broad, ovoid or oblong ; awn short ... | <i>A. arundinaceus</i> |
| 1A. Annuals ; panicles cylindrical ... | 2 |
| 2. Awn stout, twisted and kneed, about twice the length of the spikelets, 2.5 - 3.0 mm long ... | <i>A. geniculatus</i> |
| 2A. Awn slender, straight, very shortly visible or altogether imperceptible anthers ; minute, plump, 0.8 - 1.0 mm long, yellow ; spikelets 2.0 - 2.5 mm long ... | <i>A. aequalis</i> |

Alopecurus aequalis Sobol. Fl. Petrop. 16. 1799 ; Bor, Gr. Burma, Ceylon, India & Pak. 392. 1960.

Kinnaur (BSD).

Distrib. : Temperate Western Himalaya.

Alopecurus geniculatus L. Sp. Pl. 60. 1753 ; Bor, Gr. Burma, Ceylon, India & Pak. 393. 1960.

Kinnaur (DD).

Distrib. : Temperate and subtropical Himalaya.

Alopecurus arundinaceus Poir. in Lamk. Encyc. Meth. Bot. 8 : 776. 1808 ; Bor, Gr. Burma, Ceylon, India & Pak. 393. 1960.

Chamba (DD), Kinnaur (BSD), Kulu (DD), Lahul and Sptii (BSD, DD).

Distrib. : Western Himalaya, Kashmir to Garhwal.

CALAMAGROSTIS Adans.

Key to the Species :

- | | | |
|--|-----|--|
| 1. Rhachilla produced, very short or sometimes longer with a few hairs | ... | <i>C. garhwalensis</i> |
| 1A. Rhachilla not produced | ... | 2 |
| 2. Awn of the lemma basal or median | ... | <i>C. epigejos</i> |
| 2A. Awn of the lemma terminal or sub - terminal | ... | 3 |
| 3. Awn exerted ; palea almost equal to lemma in length | ... | <i>C. emodensis</i> |
| 3A. Awn included or shortly exerted ; palea half to three - quarters the length of the lemma | ... | 4 |
| 4. Panicle very large, plume - like ; leaves flat ; spikelets light - coloured | ... | <i>C. pseudophragmites</i>
var. <i>pseudophragmites</i> |
| 4A. Panicle strict, dense ; leaves convolute ; spike - lets purplish | ... | <i>C. pseudophragmites</i>
var. <i>tartarica</i> |

Calamagrostis emodensis Griseb. in Goett. Nachr. 80. 1868 ; Bor, Gr. Burma, Ceylon, India & Pak. 395. 1960.

Kulu (DD), Lahul and Spiti (BSD).

Distrib. : Endemic to Himalaya.

Calamagrostis epigejos (L.) Roth. Tent. Fl. Germ. 1. 34. 1788 ; Bor, Gr. Burma, Ceylon, India & Pak. 396. 1960. *Arundo epigeios* L. Sp. 81. 1753.

Kinnaur (DD).

Distrib. Western India and Himachal Pradesh.

Calamagrostis garhwalensis C. E. Hubb. et Bor in Indian For. 68 : 355. 1942 ; Bor, Gr. Burma, Ceylon, India & Pak. 399. 1960.

Lahul (Bor, 1960).

Distrib. : Himalaya-Nepal Westward.

Calamagrostis pseudophragmites (Hall. f.) Koeler, Descr. Gram. 106. 1802 ; Bor, Gr. Burma, Ceylon, India & Pak. 396. 1960. var. **pseudophragmites**. *Arundo pseudophragmites* Hall. f. in Koem. Arch. fur Bot. 1. 2. 11. 1797. *Calamagrostis littorea* P. Beauv. Ess. Agrost. 15. 1812.

Chamba (DD), Kinnaur (DD, BSD), Lahul & Spiti (BSD, DD), Simla (DD), Mandi (DD).

Distrib. : All along Himalaya.

Calamagrostis pseudophragmites (Hall. f.) Koeler var. **tartarica** (Hook. f.) Bor, Gr. Burma, Ceylon, India & Pak. 396. 1960. *C. littorea* P. Beauv. var. *tartarica* Hook. f. Fl. Brit. India 7 : 261. 1866.

Kinnaur (BSD), Lahul and Spiti (BSD), Simla (LWG)

Distrib. : North Western Himalaya.

DEYEUXIA Clar.

Key to the Species :

- | | | |
|--|-----|-----------------------|
| 1. Ligules about 2.5 cm long | ... | <i>D. simlensis</i> |
| 1A. Ligules not more than 1 cm long | ... | 2 |
| 2. Lemmas awned from the base of the dorsal surface | ... | 3 |
| 3. Panicle congested, over 15 cm long | ... | <i>D. arundinaeea</i> |
| 3A. Panicle congested or suffuse, not more than 6 cm long | ... | <i>D. holciformis</i> |
| 2A. Lemmas awned from the middle of the dorsal surface or above this point | ... | 4 |
| 4. Awn inserted above the middle point ; stout, low grass, decumbent at the base to a woody root-stock | ... | <i>D. pulchella</i> |
| 4A. Awn median or sub - median ; robust grass, erect from the base | ... | <i>D. scabrescens</i> |

Deyeuxia arundinacea (L.) P. Beauv. Ess. Agrost. 160. 1812 ; Bor, Gr. Burma, Ceylon, India & Pak. 398. 1960. *Agrostis arundinacea* L. sp. Pl. ed. 1. 61, 1753.

Kinnaur (Bor, 1960)

Distrib. North-western India.

Deyeuxia holciformis (Jaub. et Spach.) Bor, Gr. Burma, Ceylon, India & Pak. 398. 1960. *Calamoagrostis holciformis* Jaub. et Spach. Ill. Pl. Or. 4 : 61. 1851.

Lahul and Spiti (BSD, DD).

Distrib. : North - Western Himalaya.

Deyeuxia pulehella (Griseb.) Hook. f. Fl. Brit. India 7 : 268. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 399. 1960. *Calamoagrostis pulehella* Griseb. in Goett. Nachr. 78. 1868.

Kulu (DD), Lahul & Spiti (BSD, DD).

Distrib. ; Lahul eastwards to Sikkim.

Deyeuxia scabrscens (Griseb.) Munro ex Duthie in Atkins. Gaz. N. W. Ind. 628. 1882 ; Bor, Gr. Burma, Ceylon, India & Pak. 399. 1960. *Calamoagrostis scabrescens* Griseb. in Goett. Nachr. 79. 1868.

Kinnaur (DD), Kulu (DD).

Distrib. : Hills of North and East India.

Deyeuxia simlensis Bor in Indian For. Rec. No. 3. Bot. 149. 1941 ; Bor, Gr. Burma, Ceylon, India & Pak. 400. 1960.

Simla (DD) Col. D.M. Strong 45. TYPE

Distrib. : Endemic to Simla.

MUHLENBERGIA Schreb.

Key to the Species :

- | | | |
|--|-----|------------------------|
| 1. Spikelets congested in the raceme ; glumes very attenuate, almost awned | ... | <i>M. duthieana</i> |
| 1A. Spikelets spaced on the racemes ; glumes acute to acuminate | ... | 2 |
| 2. Lemmas twice as long as the glumes | ... | <i>M. huegelli</i> |
| 2A. Lemmas as long as or slightly longer than the glumes | ... | <i>M. himalayensis</i> |

Muhlenbergia duthieana Hack. in Ost. Bot. Z. 52. 11. 1902 ; Bor, Gr. Burma, Ceylon, India & Pak. 401. 1960 ; Nair, Fl. Bash. Himal. 320. 1977.

Chamba (DD), Kinnaur (BSD, DD), Kulu (BSD, DD), Simla (DD).

Distrib. : Himalaya.

Muhlenbergia himalayensis Hack. ex Hook. f. Fl. Brit. India 7 : 259. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 401. 1960 ; Nair, Fl. Bash. Himal. 321. 1977.

Kinnaur (DD), Kulu (DD), Lahul & Spiti (DD), Simla (DD).

Distrib. : North Western Himalaya.

Muhlenbergia huegelli Trin. in Mem. Acad. Sci. Petersb. Ser. 6. 6(2) : 293. 1841 ; Bor, Gr. Burma, Ceylon, India & Pak. 401. 1960 ; Nair, Fl. Bash. Himal. 321. 1977.

Kulu (DD), Simla (DD).

Distrib. : Hills of North-Eastern India.

PHLEUM L.

Key to the Species :

- | | | |
|---|-----|-----------------------|
| 1. Perennials | ... | 2 |
| 2. Panicle not more than four times as long as broad (rarely longer) ; awns as long as the glumes | ... | <i>P. alpinum</i> |
| 2A. Panicle over four times as long as broad ; awns about one third the length of the glumes | ... | <i>P. pratense</i> |
| 1A. Annuals | ... | 3 |
| 3. Glumes lanceolate, finely acuminate, hardly awned ; keels with cilia spaced above | ... | <i>P. himalaicum</i> |
| 3A. Glumes cuneately obovate - truncate, cuspidate keels scabrid | ... | <i>P. paniculatum</i> |

Phleum alpinum L. Sp. Pl. 59. 1753 ; Bor, Gr. Burma, Ceylon, India & Pak. 402. 1969 ; Nair, Fl. Bash. Himal. 324. 1977.

Chamba (BSD, DD), Kinnaur (BSD, DD), Kulu (DD), Lahul and Spiti (BSD, DD), Simla (BSD, DD)

Distrib. ; Cosmopolitan.

Phleum himalaicum Mez. in Fedds. Rep. Sp. Nov. 17 : 293. 1921 ; Bor, Gr. Burma, Ceylon, India & Pak. 402. 1960 ; Nair, Fl. Bash. Himal. 324. 1977.

Kinnaur (BSD), Kulu (DD).

Distrib. ; North Western India.

Phleum paniculatum Huds. Fl. Angl. 23. 1762 ; Bor, Gr. Burma, Ceylon, India & Pak. 403. 1960 ; Nair, Fl. Bash. Himal. 324. 1977.

Kinnaur (BSD), Kulu (DD).

Distrib. North-western India.

Phleum pratense L. Sp. Pl. 59. 1753 ; Bor, Gr. Burma, Ceylon, India & Pak. 403. 1960.

Kulu (BSD).

Distrib. : Introduced in India as fodder grass.

POLYPOGON Desf.

Key to the Species :

- | | | |
|--|-----|-------------------------|
| 1. Glumes sub - aristate | ... | <i>P. subaristatus</i> |
| 1A. Glumes awned | ... | 2 |
| 2. Awns 5.0 - 9.7 mm long, 2 - 3 times the length of the glumes | ... | <i>p. monspeliensis</i> |
| 2A. Awns 1.25 - 3.7 mm long, as long as, or shorter than the glumes. | ... | <i>P. fugax</i> |

Polypogon subaristatus (Aitch. et Hemsl.) Sunanda Bhattacharya et Jain in Curr. Sci. 49. (11) : 44. 1980. *Agrostis subaristata* Aitch. et Hemsl. in Journ. Linn. Soc. (Bot.) 19 : 192. t. 29. 1881.

Mandi (BSD).

Distrib. : Hills of North - Western India.

Polypogon fugax Nees ex Steud. Syn. Pl. Glum. 1 : 184. 1854 ; Bor, Gr. Burma, Ceylon, India & Pak. 403. 1960 ; Nair, Fl. Bash. Himal. 326. 1977.

Chamba (DD), Kinnaur (BSD, DD), Kulu (DD), Simla (BSD, DD).

Distrib. : All along the Himalaya.

Polypogon monspeliensis (L.) Desf. Fl. Atlant. 1 : 67. 1798 ; Hook. f. Fl. Brit. India 7 : 245. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 403. 1960 ; Nair, Fl. Bash. Himal. 326. 1977. *Alopecurus monspeliensis* L. Sp. Pl. 61. 1753.

Kinnaur (BSD), Lahul and Spiti (BSD), Mandi (BSD), Sirmur (BSD).

Distrib. : Widely distributed in temperate parts of India.

Tribe Aristide

ARISTIDA L.

Key to the Species :

1. Articulation exists between the lemma and the awns, either at the tip or centre of the lemma or at the top of a prolongation ... 2
2. Articulation between the awn and the lemma situated just below the spreading awns ... *A. mutabilis*
- 2A. Articulation between the awns and the lemma situated between the tip of the lemma and base of the column ... *A. royleana*
- 1A. Articulation does not exist between the lemma and the awn either at its tip or at the top of a prolongation (column) ; lower glume shorter than the upper glume ... 3
3. Panicles contracted ... 4
4. Glumes long awned with awns 3 - 5 mm long ; lower glume up to 1.7 cm ; upper glume upto 2.0 long ... *A. setacea*
- 5A. Glumes not awned ; lower glume 5 - 8 mm long, upper 6 - 9 mm long ... *A. adscensionis*
- 3A. Panicles effuse, often as broad as long ; glumes upto 5 mm long, awned, lower glume 1.5 cm long ; upper glume upto 2 cm long, spikelets often purplish ... *A. cyanantha*

Aristida adscensionis L. Sp. Pl. 82. 1753. Bor, Gr. Burma, Ceylon, India & Pak. 407. 1960.

Solan (DD).

Distrib. : North Western India (very rare).

Aristida cyanantha Nees ex Steud. Syn. Pl. Glum. 1 : 141. 1854 ; Hook. f. Fl. Brit. India 7 : 225. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 109. 1960.

Chamba (BSD, DD), Mandi (DD).

Distrib. : Plains and foot-hills of North Western India.

Aristida mutabilis Trin. et. Rupr. Sp. Gram. Stip. 150. 1842 ; Bor, Gr. Burma, Ceylon, India & Pak. 411. 1960.

Una (BSD).

Distrib. : North Western India and Tamil Nadu.

Aristida royleana Trin. et. Rupr. Sp. Gram. Stip. 160. 1842 *et in* Mem. Acad. Sci. Petersb. Ser. 6. 7 : 160. 1843 ; Bor, Gr. Burma, Ceylon, India & Pak. 412. 1960. *A. funiculata* var. *royleana* Hook. f. Fl. Brit. India 7 : 227. 1896.

Distrib. : North-Western India (Endemic).

Aristida setacea Retz. Obs. Bot. 4 : 22. 1786 ; Bor, Gr. Burma, Ceylon, India & Pak. 412. 1960.

Mandi (DD).

Distrib. : Western India and Himachal Pradesh.

Tribe - Arundineae :

ARUNDO L.

1. Lemmas glabrous ; rhachilla long, villous ... *Phragmites*

1A. Lemmas hairy all over the back ; rhachilla glabrous ... *Arundo*

Arundo donax L. Sp. Pl. 81. 1753 ; Bor, Gr. Burma, Ceylon, India & Pak. 413. 1960.

Bilaspur (BSD), Chamba (BSD, DD), Kinnaur (BSD, DD), Kulu (DD), Mandi (DD), Simla (BSD).

Distrib. : Tropical parts of India.

PHRAGMITES Trin.

Key to the species :

1. Lowest lemma 1.5 - 1.7 cm long ; joints of the rhachilla 0.6 mm long ; ligule upto 1.5 mm long ... *P. communis*
- 1A. Lowest lemma 0.9 - 1.3 cm long ; joints of the rhachilla 0.8 mm long ; ligule upto 0.5 mm long ... *P. karka*

Phragmites communis Trin. Fund. Agrost. 134. 1820 ; Bor, Gr. Burma, Ceylon, India & Pak. 416. 1960.

Chamba (BSD, DD), Mandi (DD), Simla (DD), Sirmur (DD).

Distrib : Widespread in temperate regions, extending to North Western India.

Phragmites karka (Retz.) Trin. ex Steud. Nom. Bot. ed. 2. 2 : 324. 1841 ; Hook. f. Fl. Brit. India 7 : 304. 1896. *p. p.* ; Bor, Gr. Burma, Ceylon, India & Pak. 416. 1960. *Arundo karka* Retz. Obs. Bot. 4. 21. 1786. var. **Karka**

Kinnaur (DD), Mandi (BSD, BSIP), Simla (BSD, DD).

Distrib. : Throughout India.

Tribe *Arundinelleae*

ARUNDINELLA Raddi

Key to the species :

1. Upper lemma with two setae, one on each side of the awn at the tip ... 2
2. Perennials ; spikelets 4.5 - 7.5 mm long ; upper glume acuminate ... *A. setosa*
- 2A. Annuals ; spikelets 5 - 6 mm long ; upper glume long acuminate ... *A. nervosa*
- 1A. Upper lemma without setae ; awned ... 3
3. Upper lemma shortly awned ; awn upto 2 mm long ; panicle contracted ; spikelets secund ... *A. bengalensis*

- 3A. Upper lemma bearing a geniculate awn ; panicle effuse ;
spikelets not secund ... 2
4. Spikelets upto 2 mm long ; leaf blades elliptic -
acuminate, contracted at the base ; annuals ... *A. pumila*
- 4A. Spikelets 3 - 5 mm long ; leaves linear, tapering to
the base ; perennials ... *A. nepalensis*

Arundinella bengalensis (Spreng.) Druce in Rep. Bot. Exchng. Club, Brit. Isle. 605. 1916 ; Bor, Gr. Burma, Ceylon, India & Pak. 421. 1960 ; Nair, Fl. Bash. Himal. 310. 1977. *Panicum bengalensis* Spreng. Syst. Veg. 1 : 311. 1825. *Arundinella wallichii* Nees ex Steud. Syn. Pl. Glum. 1 : 114. 1854 ; Hook. f. Fl. Brit. India 7 : 75. 1896.

Kangra (DD).

Distrib. : Widely distributed in India.

Arundinella nepalensis Trin. Gram. Panic. 62. 1826 ; Bor, Gr. Burma, Ceylon, India & Pak. 423. 1960. *A. brasiliensis* sensu Hook. f. Fl. Brit. India 7 : 73. 1896 *p. p.*

Chamba (DD), Kinnaur (DD), Kulu (DD), Simla (DD, LWG) Solan (DD)

Distrib. : Widely distributed in India

Arundinella nervosa (Roxb.) Nees ex Hook. & Arn. Bot. Beechey Voy. 237. 1836 ; Bor, Gr. Burma, Ceylon, India & Pak. 424. 1960. *Holcus nervosus* Roxb. Fl. Ind. 1 : 32. 1820.

Simla (DD).

Distrib. : Western peninsula and Himachal Pradesh.

Arundinella pumila (Hochst.) Steud. Syn. Pl. Glum. 1 : 114. 1854 ; Bor, Gr. Burma, Ceylon, India & Pak. 423. 1960. *Acratherum pumilum* Hochst. ex A. Rich. Tent. Fl. Abyes. 2 : 414. t. 100. 1851. *Arundinella tenella* Nees. ex Steud. Syn. Pl. Glum. 1 : 114. 1854 ; Hook. f. Fl. Brit. India 7 : 71. 1896.

Chamba (DD).

Distrib. : North Western Himalaya.

Arundinella setosa Trin. Gram. Panic. 63. 1826 ; Bor, Gr. Burma, Ceylon, India & Pak. 424. 1960 ; Nair, Fl. Bash. Himal. 311. 1977. *Arundinella capillaris* Hook. f. Fl. Brit. India 7 : 74. 1896.

Simla (DD, LWG).

Distrib. : Throughout India.

Tribe - *Aveneae*

- | | |
|--|-----------------------|
| 1. Glumes chartaceous; golden-brown, unequal, 5 - 9 nerved with a few cross nerves, longer than the lemmas ; styles 3... | <i>Pseudodentonia</i> |
| 1A. Above characters not associated ; styles 2 or 1 ... | 2 |
| 2. Lower floret male or neuter ... | 3 |
| 3. Spikelets subterete, lanceolate ; lodicules absent ... | <i>Anthoxanthum</i> |
| 3A. Spikelets strongly compressed, urn-shaped ; lodicules present ... | <i>Hierochloa</i> |
| 2A. Lowest floret bisexual, the succeeding similar or reduced ... | 4 |
| 4. Lemmas awned from between the lobes of the lemma ; style very long, single ... | <i>Duthiea</i> |
| 4A. Lemmas awnless or awned from the back ... | 5 |
| 5. Ovary hairy above or all over ; awns mostly twisted at the base ; spikelets over 8 mm long. ... | 6 |
| 6. Spikelets nodding ; annuals ; glumes 7 - 11 nerved ... | <i>Avena</i> |
| 6A. Spikelets erect ; perennials ; glumes 1 - 7 nerved ... | <i>Helictotrichon</i> |
| 5A. Ovary glabrous ; awns not twisted at the base ; spikelets less than 8 mm long ... | 7 |
| 7. Lemmas finely erose-dentate or lobed, awned dorsally ; spikelets 2, rarely 3 flowered ... | <i>Deschampsia</i> |
| 7A. Lemmas cleft 2 toothed or 2-lobed, with lobes sometimes prolonged into an awn ; rachilla of spikelets pubescent or ciliate ... | 8 |
| 8. Perennials ... | 9 |
| 9. Panicles spiciform, silvery ; lemmas awnless or with a minute bristle ... | <i>Koeleria</i> |
| 9A. Panicles effuse ; lemmas with a perfect awn ... | <i>Trisetum</i> |
| 8A. Annuals ... | <i>Lophochloa</i> |

ANTHOXANTHUM Linn.

Anthoxanthum odoratum L. Sp. Pl. 28. 1753 ; Bor, Gr. Burma, Ceylon, India & Pak. 431. 1960.

Kulu (BSD, DD), Lahul and Spiti (DD).

Distrib. ; Temperate Himalaya.

AVENA L.

Key to the species :

1. Lemmas densely bearded at the base of the lowest floret, awned, often hairy all over except towards the apex ; rhachilla readily disarticulating between upper glume and lowest floret ; lowest lemma with a thickened, smooth callus at the base ; spikelets 2.0 - 2.5 cm long ... *A. fatu*
- 1A. Lemmas glabrous only with a few hairs at the base of the lowest floret ; rhachilla not disarticulating but breaking with an irregular fracture ; no lip like scar at the base of the lemma ... 2
2. Lowest floret breaking from the rhachilla with an almost horizontal fracture ; spikelets 17 - 28 mm long ... *A. sativa*
- 2A. Lowest floret breaking from the rhachilla with an oblique (about 45°) fracture ; spikelets 23 - 26 mm long ... *A. byzantina*

Avena byzantina C. Koch in Linnaea 21 : 392. 1848 ; Bor, Gr. Burma, Ceylon, India & Pak. 433. 1960.

Simla (cited from Bor, 1960), Lahul and Spiti (BSD).

Distrib. : Cultivated.

Avena fatua L. Sp. Pl. 80. 1753 ; Hook. f. Fl. Brit. India 7 : 275. Bor, 1896 ; Gr. Burma, Ceylon. India & Pak. 434. 1960.

Kulu (DD), Kinnaur (BSD), Lahul & Spiti (BSD), Simla (DD).

Distrib. : Temperate Himalaya.

Avena sativa L. Sp. Pl. 79. 1753 ; Bor, Gr. Burma, Ceylon India & Pak. 434. 1960.

Kulu (DD).

Distrib. : Cultivated.

DESCHAMPSIA P. Beauv.

Deschampsia caespitosa (L.) P. Beauv. Ess. Agrost. 91 : 160. 1812 ; Bor, Gr. Burma, Ceylon, India & Pak. 435. 1960. *Aira caespitosa* L. Sp. Pl. 64. 1753.

Kulu (DD), Lahul & Spiti (BSD, DD).

Distrib. : Temperate regions from Kashmir to Sikkim.

DUTHIEA Hack.

Duthiea bromoides Hack. in Verh. Zool. Bot. Ges. Wien. 45 : 200. 1895 ; Bor, Gr. Burma, Ceylon, India & Pak. 436. 1960.

Kinnaur (DD), Kulu (DD).

Distrib. : Kashmir westward upto Afghanistan and Himachal Pradesh.

HELICTOTRICHON Bess.

Key to the species :

- | | | |
|--------------------------------------|-----|---------------------|
| 1. Lemmas smooth, shining, green | ... | <i>H. virescens</i> |
| 1A. Lemmas more or less scabrid dull | ... | <i>H. asperum</i> |

Helictotrichon asperum (Munro) Bor in Indian For. Rec. N. S. I. Bot. 68. 1938 ; Bor, Gr. Burma, Ceylon, India & Pak. 438. 1960. *Avena aspera* Munro ex Thwaiter, Enum. Pl. Zeyl. 372. 1864.

Kinnaur (DD).

Distrib. : Eastern India and Himachal Pradesh.

Helictotrichon virescens (Nees ex Steud.) Henr. in *Blumea* 3 : 425. 1940 ; Bor, Gr. Burma, Ceylon, India & Pak. 439. 1960 ; Nair, Fl. Bash. Himal. 318. 1977. *Trisetum virescens* Nees ex Steud. Syn. Pl. Glum. 1 : 226. 1854.

Kinnaur (BSD, DD), Kulu (DD), Simla (DD).

Distrib. : Central and Western Himalaya.

HIEROCHLOE R. Br.

Hierochloe laxa R. Br. ex Hook. f. Fl. Brit. India 7 : 222. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 441. 1960.

Chamba (DD), Kinnaur (BSD), Kulu (DD), Lahul & Spiti (DD).

Distrib. : Western Himalaya.

KOELERIA Pers.

Key to the species :

- | | | |
|--|-----|--------------------|
| 1. Lemmas definitely awned on the dorsal surface ; lower sheaths more or less scarious, shining, silvery | ... | <i>K. argentea</i> |
| 1A. Lemmas not awned ; lower sheaths not scarious | ... | <i>K. gracilis</i> |

Koeleria argentea Griseb. in Goett. Nachr. 77. 1868 ; Bor, Gr. Burma, Ceylon, India & Pak. 444. 1960. var. *nepalensis* Domin in Bibltoth. Bot, 14. Heft. 65. 125. 1007.

Lahul (Bor, 1960).

Distrib. : North Western India.

Koeleria gracilis Pers. Syn. Pl. 1 : 97. 1805 ; Shukla et Jain in Bull. Bot. Surv. India 20 : 67. 1978. *K. cristata* (L.) Pers. Syn. Pl. 1 : 97. 1805 ; Bor, Gr. Burma, Ceylon, India & Pak. 444. 1960 ; Nair, Fl. Bash. Himal. 319. 1977. *Aira cristata* L. Sp. Pl. 63. 1753 p. p.

Chamba (BSD, DD), Kulu (DD) ; Lahul and Spiti (BSD, DD) ; Simla (DD), Sirmur (DD).

Distrib. : North Western Himalaya.

LOPHOCHLOA Reichb.

Lophochloa pumila (Desf.) Bor, Gr. Burma, Ceylon, India & Pak. 445. 1960. *Avena pumila* Desf. Fl. Atlant. 1. 103. 1798. Simla (DD).

Distrib. : North Western India.

PSEUDODANTHONIA Bor et Hubbard

Pseudodanthonia himalaica (Hook. f.) Bor et Hubberd in Kew Bull. 1957 : 427. 1958 ; Bor, Gr. Burma, Ceylon, India & Pak. 445. 1960. *Danthonia himalaica* Hook. f. Fl. Brit. India 7 : 281. 1896.

Kinnaur (DD).

Distrib. : North Western Himalaya.

TRisetum Pers.

Key to the species :

- | | | |
|---|-----|--------------------|
| 1. Stem below the panicle hairy ; axis also hairy | ... | 2 |
| 2. Leaves glabrous and rigid ; spikelets silvery, lower glume lanceolate or oblong - acuminate, 4.0 - 5.5 mm long | ... | <i>T. micans</i> |
| 2A. Leaves more or less hairy ; spikelets not silvery ; lower glume lanceolate or oblong or elliptic - acute, 3.0 - 4.5 mm long | ... | 3 |
| 3. Panicle spiciform or ovoid, strict, erect, densely spiculate ; spikelets shortly pedicelled | ... | <i>T. spicatum</i> |
| 3A. Panicle rather loose, if more or less dense, then long and narrow ; spikelets often brownish ; sheaths hairy | ... | <i>T. clarkei</i> |
| 1A. Stem below the panicle glabrous ; axis also glabrous | ... | <i>T. aeneum</i> |

Trisetum aeneum (Hook. f.) R. R. Stewart in Brittonia 5 : 4. 431. 1945 ; Bor, Gr. Burma, Ceylon, India & Pak. 447. 1960. *Avena aenea* Hook. f. Fl. Brit. India 7 : 279. 1896.

Kulu (DD), Simla (DD).

Distrib. : Western Himalaya Kashmir to Kumaon.

Trisetum clarkei (Hook. f.) R. R. Stewart in Brittonia 5 : 4. 431. 1945 ; Bor, Gr. Burma, Ceylon, India & Pak. 447. 1960. *Avena clarkei* Hook. f. Fl. Brit. India 7 : 278. 1896.

Lahul and Spiti (DD).

Distrib. : North Western Himalaya.

Trisetum micans (Hook. f.) Bor, Gr. Burma, Ceylon, India & Pak. 448. 1960. *Avena micans* Hook. f. Fl. Brit. India 7 : 279. 1896. Kulu (DD)

Distrib. : North Western Himalaya.

Trisetum spicatum (L.) Richt. Pl. Eur. 1 : 59. 1890 ; Bor, Gr. Burma, Ceylon, India & Pak. 448. 1960. *Aira spicata* L. Sp. Pl. 64. 1753.

Kinnaur (DD), Lahul & Spiti (BSD, DD), Mandi (DD) Simla (DD).

Distrib. : Alpine region, from Sikkim to Kashmir.

Tribe *Brachypodeae*

BRACHYPODIUM P. Beauv.

Brachypodium sylvaticum (Huds.) P. Beauv. Ess. Egröst. 101 : 155. 1812 ; Bor, Gr. Burma, Ceylon, India & Pak. 450. 1960 ; Nair, Fl. Bash. Himal. 312. 1977. *Festuca sylvatica* Huds. Fl. Angl. 1 : 38. 1762.

Chamba (BSD, DD), Kinnaur (BSD, DD), Kulu (BSD, DD), Lahul and Spiti (DD), Simla (BSIP, DD), Mandi (DD), Solan (DD).

Distrib. : Temperate parts.

Tribe *Bromeae*

BROMUS L.

Key to the species :

1. Lemmas rounded on the back	...	2
2. Perennials	...	3
3. Awns less than half the length of the lemma or absent	...	4
4. Spikelets awnless, glabrous	...	<i>B. inermis</i>
4A. Spikelets awned, villous	...	<i>B. confinis</i>
3A. Awns half the length of the lemma or as long	...	<i>B. ramosus</i>
2A. Annuals	...	1
5. Spikelets cuneiform	...	<i>B. tectorum</i>
5A. Spikelets elliptic - oblong or tapering towards the tip	...	6
6. Lower glume 1 - nerved ; upper 3 - nerved	...	7
7. Awn 4 - 5 times as long as the lemma ; lemma 4 mm long	...	<i>B. gracillimus</i>
7A. Awn 1 - 2 times as long as the lemma ; lemma 7 - 9 mm long	...	<i>B. japonicus</i> var. <i>falconeri</i>
6A. Lower glume 3 - 5 nerved ; upper 5 - 7 nerved ; awn about as long as the lemma or twice as long	...	8
8. Panicle spreading with drooping branches which are generally much longer than the spikelets	...	9
9. Palea 1.5 - 2.0 mm, shorter than the lemma ; anthers ca 1 mm long ; awn flexuous	...	<i>B. japonicus</i> var. <i>japonicus</i>
9A. Palea equal to the lemma or slightly shorter ; anthers 4 mm long, awn straight	...	<i>B. arvensis</i>
8A. Panicle compact to very dense, crowded with short, straight branches which are generally shorter than the spikelets	...	10

10. Spikelets glabrous ; lower glume 5 - nerved ;
1.1 - 1.2 cm long ; lemma 1.4 - 1.7 cm long

...

B. oxyodon

- 10A. Spikelets appressedly hairy to almost glabrous ; lower glume 3 - 5 nerved, 6 - 7 mm long ; upper glume 7 - 9 nerved, 8 mm long ; lemma 0.8 - 1.1 cm long

...

B. mollis

- 1A. Lemmas keeled on the back

...

B. unioloides

Bromus arvensis L. Sp. Pl. 77. 1753 ; Bor, Gr. Burma, Ceylon, India & Pak. 453. 1960.

Solan (DD).

Distrib. : Temperate Europe and Asia.

Bromus gracillimus Bunge in Mem. Acad. Petersb. Sav. Etrang. 7 : 527. 1851 ; Bor, Gr. Burma, Ceylon, India & Pak. 454. 1960. *B. crinitus* Boiss. et Hoh. in Boiss. Diag. ser. 1. 13. 64. 1853 et in Boiss. Fl. Orient. 5 : 647. 1884.

Lahul and Spiti (DD).

Distrib. : North Western Himalaya.

Bromus inermis Leyss. Fl. Hal. ed. 1. 16. 1761 ; Bor, Gr. Burma, Ceylon, India & Pak. 454. 1960.

Lahul and Spiti (DD).

Distrib. : North Western India.

Bromus confinis Nees ex Steud. Syn. Pl. Glum 1 : 320. 1854 ; Shukla et Jain in Bull. Bot. Surv. India 20 : 66. 1978. *B. inermis* Leyes. Fl. Hal. ed. 1 : 16. 1761. var. *confinis* (Nees ex Steud.) Stapf in Hook. f. Fl. Brit. India 7 : 358. 1896.

Lahul and Spiti (DD).

Distrib. : North Western India.

Bromus mollis L. Sp. Pl. ed. 2. 112. 1762 ; Bor, Gr. Burma, Ceylon, India & Pak. 455. 1960.

Chamba (DD, LWG), Simla (BSD).

Distrib. : Common in Western Himalaya.

Bromus japonicus Thunb. Fl. Jap. 52. t. 11. 1714 ; Bor, Gr. Burma, Ceylon, India & Pak. 455. 1960 ; Nair, Fl. Bash. Himal. 312. 1977. *B. batulus*. Mert. et Koch. in Roehl. Deutsch, Fl. 1. 685. 1823; Hook. f. Fl. Brit. India 7 : 361. 1896 ; Collett, Fl. Siml: 630. 1902. var. **japonicus**.

Chamba (BSD, DD), Kinnaur (BSD, DD), Kulu (DD), Lahul and Spiti (BSD, DD), Simla (DD).

Distrib. : Common North Western Himalaya.

Bromus japonicus Thunb. var. **falconeri** (Stapf) Stewart in Brittonia 5. 4 : 413. 1945. *B. patulus* Mert. et Koch. var. *falconeri* in Hook. f. Fl. Brit. India 7 : 361. 1896.

Lahul and Spiti (BSD).

Distrib. : North Western Himalaya.

Bromus oxyodon Schrenk. in Bull. Scient. Acad. Petersb. 13 : 355. 1842 ; Bor. Gr. Burma, Ceylon, India & Pak. 455. 1960.

Lahul and spiti (DD)

Distrib. North Western Himalaya.

Bromus ramosus Huds. Fl. Angl. 40. 1762 ; Bor, Gr. Burma, Ceylon, India & Pak. 456. 1960 ; Nair, Fl. Bash. Himal. 321. 1977. *B. asper* Murray, Prodr. Stirp. Goetting. 42. 1770 ; Hook. f. Fl. Brit. India 7 : 361. 1896 ; Collett, Fl. Siml. 630. 1902.

Kinnaur (DD), Kulu (DD), Lahul and Spiti (DD), Simla (DD, LWG)

Distrib. : Kashmir to Sikkim and Naga hills.

Bromus tectorum L. Sp. Pl. 77. 1753 ; Bor, Gr. Burma, Ceylon India & Pak. 456. 1960.

Lahul & Spiti (DD).

Distrib. : Western Himalaya.

Bromus unioloides H. B. K. Nov. Gen. et. Sp. 1 : 151. 1816 ; Bor, Gr. Burma, Ceylon, India & Pak. 456. 1960.

Simla (DD, LWG), Solan (DD).

Distrib. : Common as escape in India.

Tribe *Chlorideae*

- | | | |
|--|-----|-------------------|
| 1. Spikelets with 1 - fertile floret and no imperfect florets, unawned | ... | <i>Cynodon</i> |
| 1A. Spikelets with 1 or more fertile florets and one or more imperfect florets above them, awned | ... | 2 |
| 2. Spikes 1 - 3 ; fertile florets 2 or more | ... | <i>Tetrapogon</i> |
| 2A. Spikes 4 or more ; fertile floret one only | ... | <i>Chloris</i> |

CHLORIS Sw.

Key to the species :

- | | | |
|---|-----|--------------------------|
| 1. Spikes upto 25 cm long, widely spreading ; upper glume 5.0 - 7.5 mm long ; empty lemma represented by a fine awn, upto 1.25 cm long ; culm erect from the base | ... | <i>C. dolichostachya</i> |
| 1A. Spikes upto 6.5 cm long, closely crowded, not spreading ; upper glume 3.0 - 3.6 mm long ; empty lemma oblanceolate - truncate with an arista 4 mm or more long ; culm prostrate, rooting at the nodes | ... | <i>C. virgata</i> |

Chloris dolichostachya Lagasca, Gen. et. Sp. Pl. 5. 1816 ; Bor, Gr. Burma, Ceylon, India & Pak. 466. 1960. *Chloris incompleta* Roth. Nov. Pl. Sp. 60. 1821.

Kulu (DD).

Distrib. : Throughout India.

Chloris virgata Sw. Fl. Ind. Occ. 1 : 203. 1797 ; Bor, Gr. Burma, Ceylon, India & Pak. 468. 1960.

Solan (DD).

Distrib. North Western India.

CYNODON Rich.

Cynodon dactylon (L.) Pers. Syn. Pl. 1 : 85. 1805 ; Hook. f. Fl. Brit. India 7 : 288. 1896 ; Collett, Fl. Siml. 620. 1902 ; Bor, Gr. Burma, Ceylon,

India & Pak. 469. 1960 ; Nair, Fl. Bash. Himal. 313. 1960. *Panicum dactylon* L. Sp. Pl. 58. 1753.

Kinnaur (BSD, DD), Kulu (DD), Simla (BSD, DD), Sirmur (BSD).

Distrib. : Widely distributed.

TETRAPOGON Desf.

Tetrapogon villosus Desf. Fl. Atlant. 2 : 389. t. 255. 1799 ; Bor, Gr. Burma, Ceylon, India & Pak. 475. 1960. *Chloris villosa* (Desf.) Pers. Syn. Pl. 1 : 87. 1805.

Kinnaur (DD).

Distrib. : North Western India.

Tribe *Danthonieae*

DANTHONIA DC.

Key to the species :

1. Slender grass ; panicles very short, congested ; anthers 1.25 - 1.5 mm long ; lemmas with tufts of hairs between the nerves at the base of the lobes ... *D. cachemyriana*
- 1A. Robust grass ; panicles long, congested or racemose ; anthers 4.5 - 5.0 mm long ; lemmas hairy on the margins ... *D. schneideri*

Danthonia cachemyriana Jaub. et Spach. Ill. Pl. Or. 4 : 46. 1851 ; Bor, Gr. Burma, Ceylon, India & Pak. 478. 1960 ; Nair, Fl. Bash. Himal. 314. 1977.

Kinnaur (BSD, DD), Kulu (DD), Lahul and Spiti (BSD DD), Simla (DD).

Distrib. : North Western Himalaya.

Danthonia schneideri Pilger in Fedde Repert. 17 : 131. 1921 ; Shukla et Jain in Bull. Bot. Surv. India 20 : 66. 1978. *D. jacquemontii* Bor in

Kew Bull. 1952 : 80. 1952 ; Bor, Gr. Burma, Ceylon, India & Pak. 478.
1960. var. *jacquemontii*.

Kinnaur (BSD, DD), Kulu (DD).

Distrib. : Himalaya from Himachal Pradesh to Sikkim.

Tribe *Eragrostae*

- | | | |
|--|-----|-----------------------|
| 1. Spikelets in dense, globose clusters, awned | ... | <i>Elytrophorus</i> |
| 1A. Spikelets in open or contracted or spike - like panicles,
rarely in solitary secund spikes, awned or unawned | ... | 2 |
| 2. Spikelets in solitary secund spikes | ... | 3 |
| 3. Spikelets unawned | ... | <i>Eragrostiella</i> |
| 3A. Spikelets awned | ... | <i>Tripogon</i> |
| 2A. Spikelets in open or contracted panicle or in sessile or
short pedicelled, loose to dense imbricate, digitate
spikes or spike - like racemes | ... | 4 |
| 4. Spikelets in open or contracted panicle | ... | 5 |
| 5. Slender grasses ; lemmas entire, more or less
acute, unawned | ... | <i>Eragrostis</i> |
| 5A. Stout, reed - like grasses ; lemmas ending in 2 -
setaceous points, awned | ... | <i>Neyraudia</i> |
| 4A. Spikelets arranged in digitate or racemosely arranged
spikes or spike - like racemes, rarely in solitary
spike (<i>Eleusine</i> sp.) | ... | 6 |
| 6. Spikelets in slender, secund, racemosely arrang -
ed racemes | ... | <i>Leptochloa</i> |
| 6A. Spikelets in digitate, sub - digitate, pseudo -
whorled or scattered spikes | ... | 7 |
| 7. Axis and branches ending in a spikelet | ... | 8 |
| 8. Spikes digitate or sub - digitate, spikelets
3 - 6 flowered ; lemmas entire at apex ;
grain oblong to globose, grooved | ... | <i>Eleusine</i> |
| 8A. Spikes in pseudo - whorles or scattered ;
spikelets 8 - 23 flowered ; lemmas 2 -
toothed ; grain coarsely rugose, grooved
or hollowed on one side | ... | <i>Acrachne</i> |
| 7A. Axis terminating in a sharp point ; spikes
digitate, rarely racemose | ... | <i>Dactyloctenium</i> |

ACRACHNE Wt. et Arn.

Acrachne racemosa (Heyne) Ohwi in Bull. Tokyo Sci. Mus. n. 18. 11. 1947 ; Bor, Gr. Burma, Ceylon, India & Pak. 487. 1960. *Eleusine racemosa* Heyne ex R. & S. Sys. Veg. 2 : 583. 1817. *E. verticillatta* Roxb. Fl. Ind. 1 : 346. 1820.

Chamba (DD), Kinnaur (BSD), Una (BSD).

Distrib. : Tropical parts of India.

DACTYLOCTENIUM Willd.

Dactyloctenium aegyptium (L.) P. Beauv. Ess. Agrost. Expl. Pl. 15. 1812 ; Bor, Gr. Burma, Ceylon, India and Pak. 489. 1960 ; Nair, Fl. Bash. Himal. 314. 1977. *Cynosurus aegyptius* L. Sp. Pl. 72. 1753. *Eleusine aegyptia* (L.) Desf. Fl. Atlant. 1 : 85. 1798 ; Hook. f. Fl. Brit. India 7 : 295. 1896.

Bilaspur (BSD), Hamirpur (BSD), Kinnaur (DD), Mandi (BSD), Una (BSD).

Distrib. : Tropical parts of India.

ELEUSINE Gaertn.

Key to the species :

- | | | |
|---|-----|---------------------|
| 1. Annuals ; basal sheaths glabrous at base | ... | 2 |
| 2. Spikes <i>ca</i> 5 mm wide, straight, nearly glabrous at the base ; seeds oblong, obtusely trigonous | ... | <i>E. indica</i> |
| 2A. Spikes <i>ca</i> 1.0 cm wide, incurved, hairy at the base ; seeds globose | ... | <i>E. coracana</i> |
| 1A. Perennials, basal sheaths woolly at the base ; culms creeping and rooting at the nodes, glaucous | ... | <i>E. compressa</i> |

Eleusine compressa (Forssk.) Aschers. et Schw. einf. ex C. Christensen in Densk. Bot. Archiv. 4 No. 3. 12. 1922 ; Bor, Gr. Burma, Ceylon, India & Pak. 492. 1960. *Panicum compressum* Forssk. Fl Aegypt. Arab. 18. 1775.

Chichawatni (DD).

Distrib. : North Western India.

Eleusine coracana (L.) Gaertn. Fruct. 1. 8. t. 1. f. 11. 1789 ; Hook. f. Brit. India 7 : 294. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 482. 1960 ; Nair; Fl. Bash. Himal. 315. 1977. *Cynosurus coracana* L. Syst. Nat. ed. 10. 2 : 1875. 1759.

Chamba (DD), Kinnaur (BSD, DD), Kulu (Bor, 1960).

Distrib. : Widely cultivated.

Eleusine indica (L.) Gaertn. Fruct. 1 : 8. 1789 ; Bor, Gr. Burma, Ceylon, India & Pak. 493. 1960 ; Nair, Fl. Bash. Himal. 315. 1977. *Cynosurus indica* L. Sp. Pl. 72. 1753.

Chamba (DD, BSD)

Distrib. : Tropical and subtropical regions.

ELYTROPHORUS P. Beauv.

Elytrophorus spicatus (Willd.) A. camus in Lecomte, Fl. Gen. de l' Indo Chine 7 : 547. 1923 ; Bor, Gr. Burma, Ceylon, India & Pak. 493. 1960. *Dactylis spicata* Willd. in Ges. Naturf. Freude Berlin, Neue Schrift 3 : 416. 1801.

Kangra (DD).

Distrib. : Widely distributed in tropical parts of India.

ERAGROSTIELLA Bor

Key to the species :

- | | |
|--|------------------------|
| 1. Leaves from the basal sheaths very long, narrow, reaching to the base of the inflorescence with long, white hairs ... | <i>E. nardoides</i> |
| 1A. Leaves from the basal sheaths very much short, never reaching the base of the inflorescence, without long, white hairs ... | <i>E. brachyphylla</i> |

Eragrostiella brachyphylla (Stapf) Bor in Ind. For. 66 : 270. 1940 ; Bor, Gr. Burma, Ceylon, India & Pak. 494. 1960. *Eragrostis brachyphylla* Stapf apud Hook. f. Fl. Brit. Ind. 7 : 327. 1896.

Chitriana village, (DD).

Distrib. : Bengal, Bihar, Bombay, Madras and Himachal Pradesh.

Eragrostiella nardoides (Trin.) Bor in India For. 66 : 270. 1940 ; Bor, Gr. Burma, Ceylon, India & Pak. 495. 1960. *Eragrostis nardoides* Trin. in Mem. Acad. Sci. Petersb. Ser. 6. 1. 415. 1830 ; Hook. f. Fl. Brit. India 7 : 326. 1896.

Simla (DD).

Distrib. : Western Himalaya.

ERAGROSTIS P. Beauv.

Key to the species :

- | | | |
|--|-----|--------------------|
| 1. Spikelets breaking up from above downwards ; rhachis fragile | ... | 2 |
| 2. Keels of palea more or less ciliate | ... | 3 |
| 3. Culms and leaves more or less viscous | ... | <i>E. viscosa</i> |
| 3A. Culms and leaves not viscous | ... | <i>E. tenella</i> |
| 2A. Keels of palea smooth, not ciliate | ... | <i>E. japonica</i> |
| 1A. Spikelets breaking up from below up wards ; rhachis tough | ... | 4 |
| 4. Annuals | ... | 5 |
| 5. Lemmas upto 1.5 mm long | ... | 6 |
| 6. Plants glandular ; the glands may be raised, glands on the keel of the lemma or on the margins of the leaves or sheaths or are sunk or band - like on the pedicel or band - like patches on the culms below the nodes | ... | 7 |
| 7. Lowest branches of the panicle fascicled or sub whorled ; spikelets ca 1 mm broad ; glumes very unequal | ... | <i>E. pilosa</i> |

- 7A. Lowest branches of the panicle not whorled ;
spikelets 2.0 - 2.5 mm broad ; glumes sub -
equal ... *E. minor*
- 6A. Plants eglandular ... 8
8. Spikelets over 1 mm wide, more or less fasci -
cled on primary or secondary branches or
shortly pedicelled, in a rather crowded
panicle ; long, white hairs absent in the axils
of panicle branches ; glumes subequal ... *E. gangetica*
- 8A. Spikelets 0.75 - 1 mm wide, not fascicled,
seated on long pedicels in ample panicles with
filiform branches ; long, white hairs usually
present in the axils of the panicle branches ;
glumes very unequal ... *E. pilosa*
- 5A. Lemmas over 1.5 mm long ... 9
9. Plants with glands ; gland conical or pitted on
pedicels and margins of leaves or as large patches
on the culm below the panicle ... 10
10. Pedicels without a crateriform gland ; spike -
lets 2 - 4 mm wide ; lemmas 2.0 - 2.2 mm
long ; grain globose ... *E. cilianensis*
- 10A. Pedicels with a crateriform gland ; spikelets
1.3 - 2.0 mm wide ; lemmas 1.5, - 2.0 mm
long ; grain oblong ... *E. minor*
- 2A. Plants without glands ... 11
11. Spikelets 2 mm or more wide, not curved ... 12
12. Sheaths not bearded at the mouth ;
spikelets ovate - oblong, green to red -
dish - purple in colour, lemmas 2 mm
long ; obovoid or ellipsoid, compressed
... *E. unioloides*
- 12A. Sheaths bearded at the mouth ; spikelets
oblong or ovate - oblong leaden - grey in
colour ; lemmas 2.0 - 2.0 mm long ;
grains sub - globose ... *E. cilianensis*
- 11A. Spikelets 1.5 - 2.0 mm wide, often curved ... *E. tremula*
- 4A. Perennials ... 13
13. Spikelets 1.75 - 2.5 mm wide ; panicle contracted or
effuse ; paleas deciduous ... 14
14. Panicle more or less contracted ; spikelets
shortly pedicelled, 2.0 - 2.5 mm wide ... *E. atrovirens*

- | | | |
|---|-----|-------------------|
| 14A. Panicle effuse | ... | 15 |
| 15. Leaves filiform, curved at the tips ; spike -
lets olive - grey ; robust grass | ... | <i>E. robusta</i> |
| 15A. Leaves not filiform with curved tips ;
spikelets slaty - grey to black ; slender
grass | ... | <i>E. nigra</i> |
| 13A. Spikelets 1.0 - 1.25 mm wide, crowded ; panicle
contracted ; paleas persistent | ... | <i>E. nutans</i> |

Eragrostis atrovirens (Desf.) Trin. ex Steud. Nom. Bot. ed. 2. 1 : 562. 1840 ; Bor, Gr. Burma, Ceylon, India & Pak. 503. 1960. *Poa atrovirens* Desp. Atlant. 1 : 73. t. 14. 1798.

Kangra (DD), Sirmur (BSD).

Distrib. : Tropical parts of India.

Eragrostis cilianensis (All.) Vignolo Lutati in Malpighia 18 : 386. 1904 ; Bor, Gr. Burma, Ceylon, India & Pak. 503. 1960. *Poa cilianensis* All. Fl. Pedem. 2 : 246. t. 91. f. 2. 1785.

Chamba (DD), Kinnaur (DD), Kulu (DD), Simla (BSD, DD),

Distrib. : Widely distributed in India.

Eragrostis gangetica (Roxb.) Steud. Syn. Fl. Glum. 1 : 226. 1854 ; Bor, Gr. Burma, Ceylon, India & Pak. 508. 1960. *Poa gangetica* Roxb. Fl. Ind. 1 : 341. 1820. *Eragrostis stenophylla* Hochst. ex. Mip. Verh. Konink. Nederl. Inst. 3 : 4. 39. 1851 *p.p.* Hook. f. Fl. Brit. India 7 : 318. 1896. *p.p.*

Kangra (DD, RRL), Kulu (DD).

Distrib. : Tropical and sub - tropical parts of India

Eragrostis japonica (Thunb.) Trin. in Mem. Acad. Sci. Petersb. Ser. 6. 1. 405. 1831 ; Bor, Gr. Burma, Ceylon, India & Pak. 509. 1960. *Poa japonica* Thunb. Fl. Jap. 51. 1784. *Eragrostis interrupta* var. *tenuissima* Stapf ex Hook. f. Fl. Brit. India 7 : 316. 1896.

Simla (Nair, 1977).

Distrib. : Tropical parts of India.

Eragrostis minor Host, Gram. Austr. 4 : 15. 1809 ; Shukla et Jain in Bull. Bot. Surv. India 20 : 67. 1978. *E. poaeoides* P. Beauv. Ess. Agrost. 162. 1812 ; Bor, Gr. Burma, Ceylon, India & Pak. 512. 1960 ; Nair, Fl. Bash. Himal. 316. 1977.

Bilaspur (BSD), Chamba (BSD), Kinnaur (BSD, DD), Kulu (BSD, DD), Lahul & Spiti (BSD), Mandi (BSIP), Simla (DD), Solan (DD), Una (BSD).

Distrib. : Widely distributed in India.

Eragrostis nigra Nees ex Steud. Syn. Pl. Glum. 1 : 267. 1854 ; Bor, Gr. Burma, Ceylon, India & Pak. 511. 1960 ; Nair, Fl. Bash. Himal. 315. 1977.

Kangra (RRL), Kinnaur (DD), Kulu (BSD), Mandi (BSD), Simla (DD).

Distrib. : Widespread in India.

Eragrostis nutans (Retz.) Nees ex Steud. Nom. Bot. ed. 2. 563. 1840 ; Bor, Gr. Burma, Ceylon, India & Pak. 511. 1960. *Poa nutans* Retz. Obs. Bot. 4 : 19. 1786.

Sirmur (DD).

Distrib. : Tamil Nadu, Bihar and Himachal Pradesh.

Eragrostis pilosa P. Beauv. Ess. Agrost. 71 : 162. 1812 ; 1854 Bor, Gr. Burma, Ceylon, India & Pak. 512. 1960 ; Nair, Fl. Bash. Himal. 316. 1977.

Chamba (BSD), Kinnaur (BSD, DD), Kulu (BSD, DD), Lahul and Spiti (BSD), Mandi (BSIP), Simla (DD), Solan (DD).

Distrib. : Widely distributed in India

Eragrostis robusta Stent in Bothalia 2 : 288. 1927 ; Bor, Gr. Burma, Ceylon, India & Pak. 513. 1960.

Simla (DD).

Distrib. : Introduced in India

Eragrostis tenella (L). P. Beauv. ex Roem. et Schult. Syst. Veg. 2 : 576. 1817 ; Hook. f. Fl. Brit. India 7 : 325. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 513. 1960. *Poa tenella* L. Sp Pl. 69. 1753.

Kinnaur (BSD, DD), Solan (DD)

Distrib. : Widely distributed in tropical parts of India.

Eragrostis tremula Hochst. ex Steud. Syn. Pl. Glum. 1 : 269. 1854 ; Bor, Gr. Burma, Ceylon, India & Pak. 514. 1960. *Poa tremula* Lamk. Tab Encycl. Meth. Bot. 1 : 185. 1751.

Simla (Bor, 1960).

Distrib. : Tropical parts of India.

Eragrostis unioloides (Retz.) Nees ex Steud. Syn. Pl. Glum. 1 : 264. 1854 ; Bor, Gr. Burma, Ceylon, India & Pak. 515. 1960. *Poa unioloides* Retz. Obs. Bot. 5 : 19. 1789. *Eragrostis amabilis* Hook. f. Fl. Brit. India 7 : 317. 1896 (non L.).

Kangra (DD).

Distrib. : All over India.

Eragrostis viscosa (Retz.) Trin. in Mem. Acad. Sci Petersb. Ser. 6. 1 : 397. 1830 ; Bor, Gr. Burma, Ceylon, India & Pak. 515. 1960. *Poa viscosa* Retz. Obs. Bot. 4 : 20. 1786.

Kinnaur (BSD).

Distrib. : Tropical and sub - tropical, parts and North Western Himalaya.

LEPTOCHLOA P. Beauv.

Leptochloa chinensis (L.) Nees in Syll. Ratisb. 1 : 4. 1824 ; Bor, Gr. Burma, Ceylon, India & Pak. 516. 1960. *Poa chinensis* L. Sp. Pl. 69. 1753.

Una (BSD).

Distrib. : Subtropical parts of Bengal, Tamil Nadu and Himachal Pradesh.

NEYRAUDIA Hook. f.

Neyraudia arundinacea (L.) Henr. in Meded. Herb. Leid no 58 : 8. 1929 in Obs. ; Bor, Gr. Burma, Ceylon, India & Pak. 518. 1960. *Aristida arundinacea* L. Mant. Pl. Alt. 186. 1771. *Neyraudia madagascariensis* (Kunth) Hook. f. Fl. Brit. India 7 : 305. 1896.

Bilaspur (BSD), Chamba (DD), Kinnaur (DD).

Distrib. : North - Western India.

TRIOGON Roem. et Schult

- | | | |
|--|-----|-------------------------|
| 1. Lemmas cleft at the apex into 2 lobes ; awned in the cleft ; lobes awned or not | ... | 2 |
| 2. Median awn twice the length of the lemma ; lower glume lobed on one side | ... | <i>T. trifidus</i> |
| 2A. Median awn shorter than the lemma, occasionally absent | ... | 3 |
| 3. Spikelets 2 rarely 3 - flowered ; upper glume 3.0 - 3.5 mm long ; lemma 2.5 - 3.0 mm long ; whole plant with a purple tinge | ... | <i>T. purpureascens</i> |
| 3A. Spikelets 4 - 5 - flowered ; upper glume 4.0 - 4.5 mm long ; lemma 3.5 mm long | ... | <i>T. hookerianus</i> |
| 1A. Lemmas cleft at the apex into 4 lobes ; median awn twice the length of the lemma or longer | ... | <i>T. filiformis</i> |

Tripogon filiformis Nees ex Steud. Syn. Pl. Glum. V. 301. 1854 ; Hook. f. Fl. Brit. India 7 : 288. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 521. 1960.

Chamba (DD), Kinnaur (BSD, DD), Kulu (DD), Simla (DD), Solan (DD)

Distrib. : North & North - Eastern India.

Tripogon hookerianus Bor, Gr. Burma, Ceylon, India & Pak. 522 1960.

Chamba (DD), Simla (DD)

Distrib. : North Western India.

Tripogon purpurascens Duthie in Ann. Roy. Bot. Gard. Cal. 9 : 75. 1901 ; Bor, Gr. Burma, Ceylon, India & Pak. 522. 1960. *T. abyssinicus* Hook. f. Fl. Brit. India 7 : 287. 1896, *p.p.* (non Nees ex Steud, 1854).

Chamba (DD), Kulu (DD), Simla (DD).

Distrib. : Western India Gujrat, Deccan peninsula and Himachal Pradesh.

Tripogon trifidus Munro ex Stapf in Kew Bull. 1892 : 85. 1892 et in Hook. f. Fl. Brit. India 7 : 286. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 524. 1960.

Simla (DD).

Distrib. : Hills of eastern India and Himachal Pradesh.

Tribe *Festuceae*

1. Plants dioecious	...	<i>Leucopoa</i>
1A. Plants hermaphrodite	...	2
2. Inflorescence a spike ; lower glume absent	...	<i>Lolium</i>
2A. Inflorescence a panicle ; both glumes present	...	3
3. Lemmas firmly keeled on the back	...	4
4. Spikelets broadly ovate, pendulous ; lemmas inflated, awnless, closely imbricate, boat - shaped, many nerved, horizontally spreading	...	<i>Briza</i>
4A. Spikelets and lemmas not as above	...	5
5. Spikelets borne in dense, 1 - sided clusters on the branches of a panicle ; lemmas tipped with a rather stout awn, upto 1.5 mm long ; tufted perennials	...	<i>Dactylis</i>
5A. Spikelets borne in loose or contracted panicles ; lemmas not awned	...	<i>Poa</i>
3A. Lemmas rounded on the back	...	6
6. Florets with 1 - stamen ; panicles rather dense, erect, of long, awned spikelets	...	<i>Vulpia</i>
6A. Florets with 3 - stamens	...	7
7. Lemmas rounded, hyaline at the apex	...	8
8. Glumes shorter, often much shorter than the lowest lemma	...	<i>Puccinellia</i>
8A. Glumes at least half as long as the lowest lemma or as long as or longer than the spikelet	...	<i>Colpodium</i>
7A. Lemmas apiculate, acute or awned	...	9
9. Delicate annuals ; lemmas rolled, acute or acuminate ; hilum punctiform	...	<i>Eremopoa</i>
9A. Perennials ; lemmas chartaceous to cartilaginous, awned or unawned ; hilum linear	...	<i>Festuca</i>

BRIZA L.

Briza media L. Sp. Pl. 70. 1753 ; Bor, Gr. Burma, Ceylon, India & Pak. 528. 1960.

Chamba (DD), Kulu (DD), Lahul and Spiti (DD).

Distrib. : North Western India.

COLPODIUM Trin.

Key to the species :

1. Inflorescence spikelets, congested ; lemma 4 mm long ... *C. himalaicum*

1A. Inflorescence paniculate ; lemma 5.5 mm long ... *C. nutans*

Colpodium himalaicum (Hook. f.) Bor, Gr. Burma, Ceylon, India & Pak. 529. 1960. *Phippsia himalaicum* Hook. f. Fl. Brit. India 7 : 240. 1896.

Lahul and Spiti (DD).

Distrib. : North Western India.

Colpodium nutans Griseb. in Goett. Nachr. 76. 1868 ; Bor, Gr. Burma, Ceylon, India & Pak. 529. 1960. *Catabrosa nutans* (Griseb.) Stapf. in Hook. f. Fl. Brit. India 7 : 312. 1896.

Lahul (Bor, 1960).

Distrib. : North - Western India, at very high altitudes.

DACTYLIS L.

Dactylis glomerata L. Sp. Pl. 71. 1753 ; Bor, Gr. Burma, Ceylon, India & Pak. 530. 1960 ; Nair, Fl. Bash. Himal. 313. 1977.

Chamba (BSD, DD, LWG), Kinnaur (BSD, DD), Kulu (BSD, DD), Lahul and Spiti (BSD, DD) & Simla (BSD, DD).

Distrib. : Temperate regions of India introduced.

EREMOPOA Roshev.

1. Tip of the lemma seen from the side oblique, abruptly tapering to an acute tip ... *E. persica*
var. *persica*
- 1A. Tip of the lemma gradually tapering to an acute tip ... *E. persica*
var. *songarica*

Eremopoa persica (Trin.) Roshev. in Komarov. FL. USSR 2 : 430. 1934 ; Bor, Gr. Burma, Ceylon, India & Pak. 532. 1960. *Poa persica* Trin. in Mem. Acad. Sci. Petersb. Ser. 6. 1. 373. 1830. var. *persica*.

Chamba (DD), Lahul and Spiti (BSD, DD).

Distrib. : Western Himalaya.

Eremopoa persica (Trin.) Roshev. var. *songarica* (Schrenk.) Bor, Gr. Burma, Ceylon, India & Pak. 532. 1960. *Glyceria songarica* Shrenk. Enum. Pl. Nov. 1 : 1. 1841.

Lahul and Spiti (DD).

Distrib. : Western Himalaya.

FESTUCA L.

Key to the species :

1. Leaves involute or convolute, broad or narrow, finally flat, at least 3 mm broad ... 2
2. Lemmas hairy ... *F. rubra* var. *villosa*
- 2A. Lemmas not hairy ... 3
3. Top of the ovary glabrous ; leaf - auricled ... 4
4. Lemmas awned ; awn 1.0 - 1.8 mm long ; auricles glabrous ; leaf blade bright green, glossy beneath ... *F. gigantea*
- 4A. Lemmas awnless or awn upto 4 mm long ; auricles minutely ciliate ; leaf - blades green or somewhat glaucous ... *F. arundinacea*
- 3A. Top of the ovary hispidulous ; leaf - bases without auricles ... 5

5. Lemmas 4.5 - 6.0 mm long ; anthers 2 - 3 mm long ... *F. rubra*
- 5A. Lemmas more than 7 mm long ; anthers-2.5 - 4.0 mm long ... 6
6. Anthers 4 mm long ; lemmas 7.0 - 7.5 mm long ; ligules 5 - 8 mm long ... *F. lucida*
- 6A. Anthers 2 mm long ; lemmas 9 mm long, ligules upto 5 mm long ... *F. modesta*
- 1A. Leaves especially those of the vegetative shoots tightly folded ; if flat under 3 mm long ... 7
7. Top of the ovary hairy ... 8
8. Lemmas acute or mucronate, not awned ; anthers longer than half the length of palea ; lower branches geminate ; spikelets variegated, yellow & purple ... *F. altaica*
- 8A. Lemmas awned ; anthers upto 3 mm long ; lower branches solitary, rarely geminate ... *F. kashmiriana*
- 7A. Top of the ovary glabrous ... 9
9. Panicle not linear or dense much longer and broader ... 10
10. Panicle stiff with an undulate axis ; upper glume 3 mm long ; anthers 1.5 mm long ... *F. polycolea*
- 10A. Panicle not stiff, but nodding ; Upper glume 3.0 - 4.5 mm long ; anthers 2 - 3 mm long ; slender creeping rhizome present ... *F. rubra* var. *rubra*
- 9A. Panicle linear, dense, 2.0 - 9.5 mm long, 1 cm broad ... 11
11. Anther about one third the length of the palea ... *F. valesiaca* var. *tibetica*
- 11A. Anthers longer than half the length of the palea ... *F. valesiaca* var. *valesiaca*

Festuca altaica Trin. in Ledeb. Fl. Alt. 1 : 109. 1829 ; Bor, Gr. Burma, Ceylon, India & Pak. 537. 1960 ; Nair, Fl. Bash. Himal. 317. 1977. Lahul and Spiti (DD).

Distrib. : Himalaya at very high altitudes.

Festuca arundinacea Schreb. Spic. Fl. Lips. 57. 1771 ; Bor, Gr. Burma, Ceylon, India & Pak. 538. 1960.

Kinnaur (BSD).

Distrib. : Himachal Pradesh.

Festuca gigantea (L.) Vill. Hist. Pl. Dauph. 2 : 110. 1787 ; Bor, Gr. Burma, Ceylon, India & Pak. 538. 1960 ; Nair, Fl. Bash. Himal. 318. 1977.
Bromus giganteus L. Sp. Pl. 77. 1753.

Kinnaur (BSD), Kulu (BSD, DD), Simla (DD).

Distrib. : Temperate and alpine Himalaya.

Festuca kashmiriana Stapf in Hook. f. Fl. Brit. India 7 : 351. 1896 ; Bor, Gr. Burma, Ceylon, India and Pak. 538. 1960 ; Nair, Fl. Bash. Himal. 318. 1977.

Kinnaur (DD), Lahul and Spiti (BSD, DD), Simla (DD).

Distrib. : Temperate and alpine Himalaya.

Festuca lucida Stapf in Hook. f. Fl. Brit. India 7 : 355. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 538. 1960.

Kinnaur (DD), Lahul & Spiti (DD).

Distrib. : Western Himalaya.

Festuca modesta Steud. Syn. Pl. Glum. 1 : 316. 1854 ; Hook. f. Fl. Brit. India 7 : 354. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 539. 1960 ; Nair, Fl. Bash. Himal. 318. 1977.

Simla (DD).

Distrib. : Western Himalaya.

Festuca polycolea Stapf in Hook. f. Fl. Brit. India 7 : 349. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 540. 1960.

Lahul and Spiti (DD).

Distrib. : Sikkim, Bhutan & Tibet & Himachal Pradesh.

Festuca rubra L. Sp. Pl. ed. 1. 74. 1753 ; Bor, Gr. Burma, Ceylon, India & Pak. 540. 1960. var. **rubra**.

Kinnaur (DD), Kulu (DD), Lahul & Spiti (BSD, DD), Simla (DD).

Distrib. : North - Western Himalaya.

Festuca rubra L. var. **villosa** Mert. et Koch ex Roehl. Deutsch. Fl. ed. 3. 1. 645. 1823 ; Bor, Gr. Burma, Ceylon, India & Pak. 541. 1960.

Lahul and Spiti (DD).

Distrib. : North Western Himalaya.

Festuca valesiaca Schleich. ex Gaud. Agrost. Helvet. 1 : 242. 1811 ; Bor, Gr. Burma, Ceylon, India & Pak. 542. 1960.

Kinnaur (DD), Lahul & Spiti (BSD, DD), Simla (DD).

Distrib. : All along Himalaya.

Festuca valesiaca Schleich. ex Gaud. var. **tibetica** Stapf in Hook. f. Fl. Brit. India 7 : 349. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 542. 1960.

Chamba (DD), Kulu (DD).

Distrib. : Himalaya Sikkim and Himachal Pradesh.

LEUCOPOA Griseb.

Leucopoa albida (Turcz.) V. Krecz. et Bobr. in Komarov, Fl. USSR 2 : 495. 1934 ; Bor, Gr. Burma, Ceylon, India & Pak. 544. 1960. *Poa albida* Turcz. ex Trin. in Mem. Acad. Sci. Petersb. Ser. 6. 1. 387. 1831.

Lahul and Spiti (DD), Mandi (DD).

Distrib. : North Western Himalaya.

LOLIUM L.

Key to the species :

- | | | |
|---|-----|-----------------------|
| 1. Upper glume about half the length of the spikelet | ... | <i>L. multiflorum</i> |
| 1A. Upper glume more than half the length of the spikelet | ... | <i>L. temulentum</i> |
| 2. Spikelets awned ; lemmas 3 - 4 mm long | ... | 2 |
| 2A. Spikelets not awned ; lemmas 3 - 4 mm long | ... | <i>L. remotum</i> |

Lolium multiflorum Lam. Fl. Franc. 3 : 621. 1778 ; Bor, Gr. Burma, Ceylon, India & Pak. 545. 1960.

Simla (DD).

Distrib. : Temperate parts of India. Introduced.

Lolium remotum Schrank, Baier. Fl. 1 : 382. 1789 ; Bor, Gr. Burma, Ceylon, India & Pak. 546. 1960.

Kulu (DD).

Distrib. : North Western India.

Lolium temulentum L. Sp. Pl. ed. 1. 83. 1753. var. **arvense** Lilj. Sv. Fl. 80. 1816 ; Hook. f. Fl. Brit. India 7 : 309. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 546. 1960.

Chamba (DD), Kulu (DD)

Distrib. : Introduced.

POA L.

Key to the species :

- | | |
|---|-----------------------|
| 1. Basal sheaths with a bulbous thickening at the base ... | 2 |
| 2. Lemmas with a few hairs on side nerves and keels ... | <i>P. bulbosa</i> |
| 2A. Lemmas entirely glabrous ... | 3 |
| 3. Panicle contracted, 1.5 cm long, 0.5 cm broad ;
plant upto 15 cm tall ... | <i>P. glabriflora</i> |
| 3A. Panicle spreading, 4 - 6 cm long, 1.5 - 2 cm broad ;
plants upto 40 cm tall ... | <i>P. bactriana</i> |
| 1A. Basal sheaths without any thickening at the base ... | 4 |
| 4. Lemmas hairy between the nerves, often this reduced to
a few hairs at the base of the lemma and scabrid
dorsally ... | 5 |
| 5. Spikelets ovate ; keels of the palea long ciliate ... | <i>P. alpina</i> |
| 5A. Spikelets oblong, elliptic, lanceolate or wedge -
shaped ... | 6 |
| 6. Panicle spreading ... | 7 |
| 7. Lemmas broadly hyaline ; spikelets pale ;
basal sheaths scarious ; rhachilla joints not
conspicuous ... | <i>P. polycolea</i> |

- 7A. Lemmas not broadly hyaline ; spikelets often purple ; basal sheaths not scarious ; rhachilla joints conspicuous from side ... 8
8. Lemmas more or less scabrid or dull all over the dorsal surface ; ligule 2.0 - 3.5 mm long or more ... 9
9. Slender grass ; basal leaves setaceous ; upper glume 3.0 - 3.5 mm long ...
- 9A. Robust grass ; basal leaves flat ; upper glume 4.5 - 5.0 mm long ... *P. falconeri*
- 8A. Lemmas smooth, often shining on the dorsal surface, often glandular - punctate, upto 5 mm or more ... 10
10. Keels of the palea ciliate below ; lemmas at most 4 mm long ... *P. stapfiana*
- 10A. Keels of the palea scabrid or ciliate ... 11
11. Lemmas 4.5 - 5.0 mm long ; palea scabrid on the keels, anthers over 2 mm long ... *P. falconeri*
- 11A. Lemmas *ca* 2.5 mm long ; palea ciliate on keels ; anthers under 2 mm long ... *P. nepalensis*
- 6A. Panicle contracted, upto 1 mm broad ... 12
12. Dwarf plants upto 15 cm tall ; keels of palea semi - pilose ; wool present ... *P. koelzii*
- 12A. Tall plants ; keels of palea shortly semi - pilose, cilia often reduced to a few hairs below ; scabrid above, wool absent or very sparse ... *P. lahulensis*
- 4A. Lemmas not hairy between the nerves but occasionally scabrid (*P. himalayana*) ... 13
13. Anthers 2 mm long or over ... 14
14. Ligule upto 2 mm long ; lemmas prominently nerved, ciliate on keels and side nerves ... *P. polycolea*
- 14A. Ligules 2.5 - 4.5 mm long ; lemmas inconspicuously nerved ... 15
15. Panicle contracted ; branches erect ; margins of upper glume ciliate below ... *P. tibetica*
- 15A. Panicle lax ; branches spreading ; margins of upper glume eciliate ... 16
16. Lemmas scabrid, broadly hyaline ; glumes and lemmas very dull, green or purplish ... *P. pagophila*

- 16A. Lemmas smooth, hyaline on margine
glumes and lemmas shining, pale or
yellowish ; lemmas often with a yellow
streak below the hyaline portion ... *P. sterilis*
- 13A. Anthers upto 2 mm long (or a little longer) ... 17
17. Wool present on the callus ... 18
18. Ligules upto 1 mm long ; keels of palea
scabrid ... *P. nemoralis*
- 18A. Ligules over 1 mm long or if less ; keels of
palea semi - pilose or ciliate ... 19
19. Keels of palea ciliate below, scabrid
above ... *P. stewartiana*
- 19A. Keels of palea either scabrid or ciliate
throughout ... 20
20. Keels of palea ciliate throughout ... 21
21. Panicle - branches whorled in
fours ; keels and lateral nerves
of lemma ciliate ; wool scanty ;
panicle green ... *P. nephelophila*
- 21A. Panicle - branches in pairs, keel
and lateral nerves of lemma
densely ciliate ; wool copious ;
panicle silvery ... *P. nepalensis*
- 20A. Keels of palea scabrid throughout
... 22
22. Stems and sheaths compres -
sed ... *P. compressa*
- 22A. Stems and sheaths terete ... 23
23. Lemmas very broad, hya -
line at the tips ; palea
with distant teeth on the
keels ... *P. calliopsis*
- 23A. Lemmas not broad, acute
or narrowly obtuse at the
tip ... 24
24. Lowest branches of
panicle 3 - 6 - nate ;
rhizomatous or
stoloniferous grasses
... 25
25. Perennial grass with short stolons ; ligules
pointed ... *P. trivialis* var. *trivialis*
- 25A. Perennial, non - stoloniferous grasses with
widely creeping rhizomes ; ligules truncate ... 26

26. Basal leaves narrow, almost setaceous ;
lemmas 2.5 - 3.0 mm long ... *P. angustifolia*
- 26A. Basal leaves broad ; lemmas 3.0 -
4.5 mm long ... 27
27. Ligules upto 2 mm long ; lem -
mas 3.0 - 3.5 mm long ... *P. pratensis*
- 27A. Ligules 2.5 - 6.0 mm
long ; lemmas 3.5 - 4.5
mm long ... *P. jaunsarensis*
- 24A. Lowest branches of panicle 2 - 3 - nate ; plants
non - rhizomatous or with a thick horizontal or
inclined rootstock ... 28
28. Lower glume equal to or longer than the
lowest lemma ; panicle narrow ... *P. setulosa*
- 28A. Lower glume shorter than the lowest lemma
... 29
29. Panicle very narrow ... 30
30. Plants very glaucous ... *P. litwinowiana*
- 30A. Plants not at all glaucous ... 31
31. Branches up to 2 cm long ;
spikelets elliptic or lanceolate,
usually suffused with violet ;
base of the plant reddish -
mauve ; root - stock rhizoma -
tous, stout ... *P. araratica*
- 31A. Branches over 3 cm long ;
spikelets wadge - shaped ;
green or yellowish - green ;
base of the plant green or pale ;
without stout rootstock ... *P. sterilis*
- 29A. Panicle spreading ... 32
32. Lower glume upto half the length
of the lowest lemma ; lemmas
4.0 - 4.5 mm long ... *P. himalayana*
- 32A. Lower glume longer than half the
length of the lowest lemma ; lem -
mas 3 - 4 mm long ... *P. sterilis*
- 17A. No wool on the callus ... 33
33. Keels of the palea ciliate below, scabrid above ... *P. sikkimense*

- 33A. Keels of the palea either ciliate or scabrid throughout ... 34
34. Keels ciliate ... 35
35. Intermediate nerves of the lemma glabrous ; anthers 1.2 - 1.6 mm long ... *P. supina*
- 35A. All nerves of the lemma hairy ; anthers 0.6 - 0.8 mm long ... *P. annua*
- 34A. Keels scabrid ... 36
36. Culms smooth below the panicle, compressed ... *P. compressa*
- 36A. Culms scabrid below the panicle ... 37
37. Spikelets wedge - shaped, 5 - 6 mm long ; 4 - several - flowered ; panicle widely spreading ; lemmas broadly hyaline at the tip, obtuse, sparsely pubescent on the nerves ; a yellowish band present below the tip ; plants green, 30 - 60 cm tall ... *P. sterilis*
- 37A. Spikelets elliptic or lanceolate, 4 - 5 mm long, 2 - 3 (4) - flowered ; panicle of closely crowded spikelets ; lemmas not broadly hyaline at the tip, acute, markedly pubescent on the nerves ; no yellowish band below the tip ; plants very glaucous, upto 30 cm tall ... *P. litwinowiana*

Poa alpina L. Sp. Pl. 67. 1753 ; Bor, Gr. Burma, Ceylon, India & Pak. 555. 1960.

Chamba (DD), Lahul and Spiti (BSD, DD).

Distrib. : Common in Himalaya.

Poa angustifolia L. Sp. Pl. 67. 1753 ; Bor, Gr. Burma, Ceylon, India & Pak. 555. 1960.

Chamba (DD), Kinnaur (DD), Kulu (DD), Lahul & Spiti (DD), Simla (DD)

Distrib. : Himalaya Kashmir to Garhwal.

Poa annua. L. Sp. Pl. 68. 1753 ; Hook. f. Fl. Brit. India 7 : 345. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 555. 1960 ; Nair, Fl. Bash. Himala. 325. 1977.

Chamba (BSD), Kangra (RRL), Kinnaur (BSD, DD), Kulu (BSD, DD), Simla (DD).

Distrib. : Cosmopolition.

Poa araratica Trautv. in Act. Hort. Petrop. 2 : 486. 1873 ; Bor, Gr. Burma, Ceylon, India & Pak. 555. 1960.

Lahul and Spiti (DD).

Distrib. : North - Western India.

Poa bactriana Roshev. in Not. Syst. Herb. Hort. Petrop. 4 : 93. 1923 ; Bor, Gr. Burma, Ceylon, India & Pak. 556. 1960.

Lahul and Spiti (DD).

Distrib. : Himachal Pradesh.

Poa bulbosa L. Sp. Pl. 70. 1753 ; Bor, Gr. Burma, Ceylon, India & Pak. 556. 1960.

Lahul and Spiti (BSD, DD).

Distrib. : High alpine meadows of Himalaya.

Poa calliopsis Litw. ex Komarov, Fl. USSR 2 : 755. 1934 ; Bor, Gr. Burma, Ceylon, India & Pak. 556. 1960.

Lahul and spiti (DD)

Distrib. : Western Himalaya and Tibet.

Poa compressa L. Sp. Pl. 69. 1753 ; Bor, Gr. Burma, Ceylon, India & Pak. 556. 1960 ; Nair, Fl. Bash. Himal. 525. 1977.

Simla.

Distrib. : Himachal Pradesh.

Poa falconeri Hook. f. Fl. Brit. India 7 : 542. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 556. 1960.

Kulu (DD).

Distrib. Alpine meadows of Western Himalaya.

Poa glabriflora Roshev. in Acta Inst. Bot. Acad. Sci. USSR. Ser. 1. 2. 97, 1934 ; Bor, Gr. Burma, Ceylon, India & Pak. 557. 1960.

Lahul & Spiti (DD).

Distrib. : Himachal Pradesh and Ladakh.

Poa himalayana Nees ex Steud. Syn. Pl. Glum. 1 : 256. 1854 ; Bor, Gr. Burma, Ceylon, India & Pak. 557. 1960 ; Nair, Fl. Bash. Himal. 325. 1977.

Simla (Collett, 1902).

Distrib. : Western Himalaya upto Sikkim.

Poa jaunsarensis Bor in Kew Bull. 1948 : 143. 1948 ; Bor, Gr. Burma, Ceylon, India & Pak. 557. 1960.

Lahul and Spiti (DD).

Distrib. : High Himalaya Kumaon and Himachal Pradesh.

Poa koelzii Bor in Kew Bull. 1948 : 139. 1948 ; Bor, Gr. Burma, Ceylon, India & Pak. 557. 1960.

Lahul and Spiti (BSD, DD).

Distrib. : Kashmir & Ladakh.

Poa lahulensis Bor in Kew Bull. 1948 : 138. 1948 ; Bor, Gr. Burma, Ceylon, India & Pak. 558. 1960.

Kulu (DD), Lahul and Spiti (DD Type N. L. Bor. 15024 & BSD).

Distrib. : Very Common in Lahul valley Himachal Pradesh.

Poa litwinowiana Ovez. in Bull. Tadjik. Acad. Sci. 1 : 1. 22. 1933 ; Bor, Gr. Burma, Ceylon, India & Pak. 558. 1960.

Lahul & Spiti (DD).

Distrib. : Himachal Pradesh.

Poa nemoralis L. Sp. Pl. 69. 1753 ; Bor, Gr. Burma, Ceylon, India & Pak. 558. 1960 ; Nair, Fl. Bash. Himal. 325. 1977.

Chamba (BSD), Kinnaur (BSD), Lahul and Spiti (BSD) Simla (DD).

Distrib. : Wide spread in temperate regions.

Poa nepalensis Wall. ex Duthie, Grasses of North Western India 40. 1883 ; Bor, Gr. Burma, Ceylon, India & Pak. 558. 1960 ; Nair, Fl. Bash. Himal. 325. 1977.

Chamba (BSD, DD), Kinnaur (DD), Kulu (DD).

Distrib. : Western Himalaya.

Poa nephelophila Bor in Kew. Bull. 1948 : 140. 1948 ; Bor, Gr. Burma, Ceylon, India & Pak. 558. 1960.

Lahul and Spiti (BSIP).

Distrib. : Himachal Pradesh.

Poa pagophila Bor in Kew Bull. 1949 : 239. 1949 ; Bor, Gr. Burma, Ceylon, India & Pak. 558. 1960.

Kulu (DD), Lahul and Spiti (DD).

Distrib. : Himalaya-Himachal Pradesh towards Sikkim.

Poa polycolea Stapf in Hook. f. Brit. India 7 : 342. 1896 ; Bor, Gr. Burma, Ceylon India & Pak. 559. 1960 ; Nair, Fl. Bash. Himal. 325. 1977.

Chamba (Bor, 1960).

Distrib. : Western Himalaya.

Poa pratensis L. Sp. Pl. 67. 1753 ; Bor, Gr. Burma Ceylon, India & Pak. 559. 1960.

Kulu (DD), Lahul and Spiti (DD), Simla (DD).

Distrib. : Temperate spart of India.

Poa setulosa Bor in Kew Bull. 1948 : 142. 1948 ; Bor, Gr. Burma, Ceylon, India & Pak. 560. 1960 ; Nair, Fl. Bash. Himal. 326. 1977.

Kinnaur (Bor, 1960).

Distrib. : North - Western Himalaya.

Poa sikkimensis Bor in Kew Bull. 1952 : 130 1952 ; Bor, Gr. Burma, Ceylon, India & Pak 560. 1960.

Lahul and Spiti (DD).

Distrib. : So far this species is known only from Sikkim and Himachal Pradesh.

Poa stapfiana Bor in Kew Bull. 239 : 1949 ; Bor, Gr. Burma, Ceylon, India & Pak. 560.

Kulu (DD), Lahul and Spiti (DD), Simla (DD).

Distrib. : Western Himalaya.

Poa sterilis M. B. Fl. Taur.- Cauc. 1 : 62 1808 ; Bor, Gr. Burma, Ceylon, India & Pak. 560. 1960.

Chamba (DD), Lahul and Spiti (DD).

Distrib. : North Western India.

Poa stewartiana Bor in Kew Bull. 1951 :185. 1951 ; Bor, Gr. Burma, Ceylon, India & Pak. 561. 1960.

Kulu (DD), Lahul and Spiti (DD).

Distrib. : North - Western Himalaya.

Poa supina Schrad. Fl. Germ. 1 : 289. 1806 ; Bor, Gr. Burma, Ceylon, India & Pak. 561. 1960.

Chamba (DD), Kinnaur (BSD), Kulu (BSD, DD), Lahul and Spiti (BSD, DD).

Distrib. : Western Himalaya.

Poa tibetica Munro ex Stapf in Hook. f. Fl. Brit. India 7 : 339. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 561. 1960.

Lahul & Spiti (DD).

Distrib. : Himachal Pradesh and Tibet.

Poa trivialis L. Sp. Pl. 67. 1753 ; Bor, Gr. Burma, Ceylon, India & Pak. 561. var. *trivialis*.

Chamba (BSD), Lahul & Spiti (BSD).

Distrib. : Widespread in temperate parts of Himalaya.

PUCCINELLIA Parl.

Key to the species :

- | | | |
|---|-----|-----------------------|
| 1. Tips of lemma acute ; lemma 2.75 - 3.0 mm long ;
anthers 0.6 - 0.8 mm long | ... | <i>P. kashmeriana</i> |
| 1A. Tips of lemma obtuse ; lemma 1.5 - 3.0 mm long ;
anthers 0.5 - 1.5 mm long | ... | <i>P. himalaica</i> |

Puccinellia himalaica Tzvel. in Not. Syst. 17 : 66. 1955 ; Bor, Gr. Burma, Ceylon, India & Pak. 562. 1960.

Lahul and Spiti (BSD).

Distrib. : Kashmir, Tibet and Himachal Pradesh.

Puccinella kasmiriana Bor, in Kew Bull. 1953 : 270. 1953 ; Bor, Gr. Burma, Ceylon, India & Pak. 562. 1960.

Lahul and Spiti (DD).

Distrib. : Kashmir and Himachal Pradesh.

VULPIA C. C. Gmel.

Key to the species :

- | | | |
|--|-----|-------------------|
| 1. Inflorescence very bristly ; lemmas covered all over the dorsal surface with short, stiff hairs | ... | <i>V. ciliata</i> |
| 1A. Inflorescence glabrous ; lemmas glabrous | ... | <i>V. myuros</i> |

Vulpia ciliata Link. Hort. Berol. 1 : 147. 1827 ; Bor, Gr. Burma, Ceylon, India & Pak. 564. 1960.

Simla (DD).

Distrib. : Himachal Pradesh.

Vulpia myuros (L.) Gmel. Fl. Bad. 1.8. 1806 ; Bor, Gr. Burma, Ceylon India & Pak. 564. 1860. *Festuca myuros* L. Sp. Pl. 74. 1753.

Kulu (DD), Simla (DD).

Distrib. : Temperate parts of India.

Tribe *Glycerieae*.

GLYCERIA R. Br.

Glyceria tonglensis C. B. Clarke in J. Linn. Soc. Bot. 15 : 119. 1876 ; Bor, Gr. Burma, Ceylon, India & Pak. 571. 1960.

Chamba (DD), Kinnaur (BSD).

Distrib. : North-Western Himalaya.

Tribe - *Isachneae*.

ISACHNE R. Br.

Isachne albens Trin. Sp. Gram. 1 : t. 85. 1826 ; Bor, Gr. Burma, Ceylon, India & Pak. 579. 1960 ; Nair, Fl. Bash. Himal. 319. 1977. var. **albans**.

Kangra (DD), Simla (DD).

Distrib. : Widely distributed in Himalaya.

Tribe *Meliceae*.

MELICA L.

Key to the species

- | | | |
|--|-----|------------------------|
| 1. Inflorescence of congested spike-like panicles ; lateral nerves of lemmas more or less ciliate with long straight hairs | ... | 2 |
| 2. Upper glume 8 - 10 mm long ; sheaths covered with whitish hairs | ... | <i>M. persica</i> |
| 2A. Upper glume 6 - 7 mm long | ... | 3 |
| 3. Sheaths completely glabrous more or less scabrid | ... | <i>M. jacquemontii</i> |
| 3A. Sheaths more or less pilose | ... | <i>M. canescens</i> |
| 1A. Inflorescence with spreading branches upto 15 cm long ; lemmas glabrous | ... | <i>M. scaberrima</i> |

Melica canescens (Regl.) Lavrenko in Komarov, Fl. U. S. S. R. 2 : 752. 1934 ; Bor, Gr. Burma, Ceylon, India & Pak. 590. 196.

Lahul and Spiti (BSD).

Distrib. : North Western India.

Melica jacquemontii Decne in Jacquem. Voy. Bot. 4 : 175. 1844 ; Bor, Gr. Burma, Ceylon, India & Pak. 590. 1960. *M. cupani* Hook. f. Fl. Brit. India 7 : 329. 1896 *in part* (non Guss. 1896).

Lahul and Spiti (BSD, DD).

Distrib. : North Western India.

Melica persica Kunth Rev. Gram. 1 : 122: 351. t. 89. 1830 ; Bor, Gr. Burma, Ceylon, India & Pak. 592. 1960. *M. cupani* Hook. f. Fl. Brit. India 7 : 329. 1896. *in part* (non Guss. 1896).

Chamba (DD), Lahul & Spiti (DD).

Distrib. : North Western India.

Melica scaberrima (Nees) Hook. f. Fl. Brit. India 7 : 330. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 692. 1960. *Glyceria scaberrima* Nees ex Steud, Son. Pl. Glum. 1 : 287. 1854.

Chamba (DD), Kinnaur (DD), Kulu (DD), Simla (DD).

Distrib. : North Western Himalaya.

Tribe *Milieae*.

MILIUM L.

Milium effusum L. Sp. Pl. 61. 1753 ; Hook. f. Fl. Brit. India 7 : 235. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 593. 1960 ; Nair, Fl. Bash. Himal. 390. 1977.

Simla (Nair, 1977).

Distrib. : Grown for ornamental purposes.

Tribe *Oryzeae*.

- | | | |
|--|-----|----------------|
| 1. Fertile lemma supported by 2 empty scales ; tip of pedicel with 2 lips | ... | <i>Oryza</i> |
| 1A. Fertile lemma solitary ; tip of pedicel without lips ; spikelets imbricate | ... | <i>Leersia</i> |

LEERSIA Soland. ex Sw.

Leersia haxandra Sw. Prod. Veg. Ind. Occ. 21. 1788 ; Bor, Gr. Burma, Ceylon, India & Pak. 599. 1960.

Kangra (DD).

Distrib. : Tropical parts of India.

ORYZA L.

Oryza sativa L. Sp. Pl. 333, 1753 ; Bor, Gr. Burma, Ceylon, India & Pak. 605. 1960 ; Nair, Fl. Bash. Himal. 398. 1977.

Chamba (DD), Kinnaur (BSD, DD), Kulu (DD).

Distrib. : Cultivated.

Tribe - *Pappophoreae*.

ENNEAPOGON Desv.

Enneapogon persicus Boiss. Diag. ser. 1. 5 : 71. 1144 ; Bor, Gr. Burma, Ceylon, India & Pak. 610. 1960.

Kinnaur (DD).

Distrib. : North Western India.

Tribe - *Perotideae*

PEROTIS Ait.

Perotis indica (L.) O. Ktze. Rev. Gen. Pl. 2 : 787. 1898 ; Bor, Gr. Burma, Ceylon, India & Pak. 611. 1964 ; Nair, Fl. Bash. Himal. 323. 1977.
Anthoxanthum indicum L. Sp. Pl. 28. 1753.

Kinnaur (BSD, DD).

Distrib. : Widely distributed in South India and Himachal Pradesh.

Tribe - *Phalarideae*.

PHALAROIDES Wolf

Phalaroides arundinacea (L.) Rauschert in Fedde. Repert. 79 : 409. 1969. Shukla et Jain in Bull. Bot. Surv. India 20 : 67. 1978. *Phalaris arundi*

nacea L. Sp. 55. 1753 ; Bor, Gr. Burma, Ceylon, India & Pak. 615, 1960.

Kulu (DD).

Distrib. : Widely distributed in temperate parts of India.

Tribe *Sporoboleae*.

SPOROBOLUS R. Br.

Key to the species :

- | | | |
|--|-----|---------------------|
| 1. Panicle effuse ; spikelets hardly 1.75 mm long ; slatey - grey in colour ; stamens 2 | ... | <i>S. diander</i> |
| 1A. Panicle contracted | ... | 2 |
| 2. Upper glume shorter than the lemma ; spikelets ca 2 mm long ; stamens 3 | ... | <i>S. fertilis</i> |
| 2A. Upper glume as long as or longer than the lemma ; spikelets 1.25 - 1.5 mm long ; stamens 2 | ... | <i>S. piliferus</i> |

Sporobolus diander (Retz.) P. Beauv. Ess. Agrost. 269. 147. 178. 1812 ; Hook. f. Fl. Brit. India 7 : 247. 1869 ; Bor, Gr. Burma, Ceylon, India & Pak. 629. 1960 ; Nair, Fl. Bash. Himal. 328. 1977. *Agrostis diander* Retz. Obs. Bot. 5 : 19. 1789.

Chamba (DD).

Distrib. : Commonly distributed throughout India.

Sporobolus fertilis (Steud.) Clayton in Kew Bull. 19 : 291. 1965 ; Nair, Fl. Bash. Himal. 328. 1977. *Agrostis fertilis* Steud. Syn. Pl. Glum. 1 : 170. 1854.

Simla (DD), Solan (DD).

Distrib. : Tropical parts of India and Himachal Pradesh.

Sporobolus piliferus (Trin.) Kunth, Enum. Pl. 1 : 211. 1833 ; Bor, Gr. Burma, Ceylon, India & Pak. 632. 1960 ; Nair, Fl. Bash. Himal. 329. 1877. *Vilfa pilifera* Trin. Diss. Bot. 157. 1824.

Kangra (DD), Kinnaur (DD), Simla (DD), Solan (DD).

Distrib. : Temperate parts of India.

Tribe - *Stipeae*

- | | | |
|---|-----|------------------|
| 1. Lemma narrowly linear, long, slender ; awn kneed, usually twisted below ; callus long and sharp pointed ; lodicules 3, large | ... | <i>Stipa</i> |
| 1A. Lemma elliptic, plump ; awn deciduous, not twisted but curved ; callus short, obtuse, not pointed ; lodicules 2 (rarely 3), hyaline | ... | <i>Oryzopsis</i> |

ORYZOPSIS Michx.

Key to the species :

- | | | |
|---|-----|-----------------------|
| 1. Branches of the panicle long ; widely spreading, 7 - 10 cm long | ... | 2 |
| 2. Fruit longer than half the length of the glumes ; lemma hairy | ... | 3 |
| 3. Glumes and lemmas equal in size | ... | <i>O. aequiglumis</i> |
| 3A. Glumes longer than the lemma | ... | <i>O. munroi</i> |
| 2A. Fruit about half the length of the glumes ; lemma glabrous, 2.5 - 3.00 mm long, shining, brown | ... | <i>O. microcarpa</i> |
| 1A. Branches of the panicle short, not widely spreading, or if widely spreading, panicle few - spiculate | ... | 4 |
| 4. Panicle nodding ; glumes 4.0 - 4.5 mm long ; lemma 3 mm long, covered on back and sides with silky hairs | ... | <i>O. stewartiana</i> |
| 4A. Panicle erect, not nodding | ... | 5 |
| 5. Leaves filiform, very glaucous, collected at the base of the plants ; lemma 3.5 mm long, covered all over base and sides with grey pubescence | ... | <i>O. gracilis</i> |
| 5A. Leaves flat, green, not collected at the base of the plants ; lemma 3.5 - 4.0 mm long, covered on the back and sides with a short pubescence... | | <i>O. lateralis</i> |

Oryzopsis aequiglumis Duthie, Grasses of N. W. India 27. 1883 ; Bor, Gr. Burma, Ceylon, India & Pak. 639. 1960.

Chamba (DD), Kinnaur (BSD, DD), Kulu (DD), Lahul & Spiti (DD), Simla (DD), Solon (DD).

Distrib. : North Western Himalaya.

Oryzopsis gracilis (Mez.) Pilger in Notizbl. Bot. Gart. Berlin 14 : 347. 1939 ; Bor, Gr. Burma, Ceylon, India & Pak. 639. 1960. *Piptatherum gracile* Mez. in Fedde Rep. Sp. Nov. 17 : 211. 1921.

Lahul and Spiti (BSD).

Distrib. : North Western India.

Oryzopsis lateralis (Regel) Stapf in Hook. f. Fl. Brit. India 7 : 234. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 640. 1960. *Milium laterale* Regel in Act. Hort. Petrop. 7 : 645. 1880.

Kinnaur (BSD, DD), Kulu (BSD, DD), Lahul and Spiti (BSD, DD).

Distrib. : North - Western India.

Oryzopsis microcarpa Pilger in Notizbl. Bot. Gart. Berlin 14 : 346. 1939 ; Bor, Gr. Burma, Ceylon, India and Pak. 640. 1960 ; Nair, Fl. Bash. Himal. 322. 1977.

Chamba (BSD), Kinnaur (BSD).

Distrib. : North Western Himalaya.

Oryzopsis munroi Stapf ex Hook. f. Fl. Brit. India 7 : 234. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 640. 1960 ; Nair, Fl. Bash. Himal. 322. 1977,

Chamba (BSD, DD), Kinnaur (BSD, DD), Kulu (DD), Lahul & Spiti (BSD, DD), Simla (DD).

Distrib. : Western Himalaya and Tibet.

Oryzopsis stewartiana Bor in Kew Bull. 1953 : 272. 1953 ; Bor, Gr. Burma, Ceylon, India & Pak. 641. 1960.

Parbatti valley, Kulu (Bor, 1960).

Distrib. : Endemic.

STIPA L.

Key to the species :

- | | | |
|--|-----|---|
| 1. Column of awn twisted | ... | 2 |
| 2. Awn plumose or hairy throughout its entire length or nearly | ... | 3 |

- | | | |
|---|-----|------------------------|
| 3. Glumes hyaline or partly hyaline and partly membranous | ... | <i>S. orientalis</i> |
| 3A. Glumes purple with hyaline tips | ... | 4 |
| 4. Lemma hairy all over the dorsal surface ; spikelets 8 - 5 mm long | ... | <i>S. mongholica</i> |
| 4A. Lemma glabrous over most of the dorsal surface, pilose at base only ; spikelets 6 mm long | ... | <i>S. concinna</i> |
| 2A. Awn glabrous or scaberulous throughout or plumose above twisted column or at the base | ... | 5 |
| 5. Awn glabrous on the column, column and bristle together 15 - 25 cm long | ... | <i>S. himalaica</i> |
| 5A. Awn glabrous or scaberulous throughout or hairy on the column or only at base | ... | 6 |
| 6. Tip of the lemma entire | ... | 7 |
| 7. Awn glabrous throughout its length | ... | <i>S. capillata</i> |
| 7A. Awn hairy at the base only or scabrid, 16 mm long | ... | <i>S. sibirica</i> |
| 6A. Tip of the lemma bifid ; awn geniculate, scabrid and hairy at the very base | ... | <i>S. jacquemontii</i> |
| 1A. Column of awn not twisted | ... | <i>S. roylei</i> |

***Stipa capillata* L.** Sp. Pl. ed. 2 : 116. 1762 ; Bor, Gr. Burma, Ceylon, India & Pak. 644. 1960.

Lahul & Spiti (DD).

Distrib. : Temperate regions of North Western Himalaya.

***Stipa concinna* Hook. f.** Fl. Brit. India 7 : 230. 1896 ; Bor, Gr. Burma, Ceylon, India & Pak. 644. 1960.

Lahul and Spiti (DD).

Distrib. : Sikkim, Kashmir and Himachal Pradesh.

***Stipa himalaica* Roshev.** in Not. Syst. Hort. Bot. Petr. 5 : 11. 1924 ; Bor, Gr. Burma, Ceylon, India & Pak. 644. 1960.

Kinnaur (BSD).

Distrib. : Western Himalaya.

Stipa jacquemontii Jaub. et Spach Ill. Pl. Or. 4 : 60. t. 339. 1851 ; Bor, Gr. Burma, Ceylon, India & Pak. 645. 1960.

Lahul and Spiti (DD), Simla (DD).

Distrib. : North Western Himalaya.

Stipa mongholica Turcz. ex Trin. in Bull. Sci. Acad. Petersb. 1 : 67. 1836 ; Bor, Gr. Burma, Ceylon, India & Pak. 645. 1860.

Lahul (Bor, 1960).

Distrib. : High altitudes in Himalaya.

Stipa orientalis Trin. in Ledeb. Fl. Alt. 1 : 83. 1829 ; Bor, Gr. Burma, Ceylon, India & Pak. 645. 1960.

Lahul and Spiti (DD).

Distrib. : North - Western Himalaya, at higher altitudes.

Stipa roylei (Nees) Mez in Fedde. Rep. Sp. Nov. 17 : 207. 1921 ; Bor, Gr. Burma, Ceylon, India & Pak. 646. 1960 ; Nair, Fl. Bash. Himal. 329. 1977. *Orthoraphium roylei* Nees in Proc. Linn. Soc. 1 : 94. 1841.

Chamba (DD), Simla (DD).

Distrib. : Himalaya.

Stipa sibirica (L.) Lam. Tab. Encycl. Bot. 1 : 158. 1791 ; Bor, Gr. Burma, Ceylon, India & Pak. 646. 1960 ; Nair, Fl. Bash. Himal. 329. 1977. *Avena sibirica* L. Sp. Pl. 79. 1753.

Kangra (DD), Kulu (DD), Simla (DD).

Distrib. : North Western Himalaya.

Tribe *Thysanolaeneae*.

THYSANOLAENA Nees

Thysanolaena maxima (Roxb.) O. Ktze. Rev. Gen. Pl. 2 : 794. 1891 ; Bor, Gr. Burma, Ceylon, India & Pak. 650. 1960. *Agrostis maxima* Roxb. Fl. Ind. 1 : 319. 1820. *Thysanolaena agrostis* Nees, Edinb. New Phil. Journ. 18 : 180. 1835 ; Hook. f. Fl. Brit. India 7 : 61. 1895.

Sirmur (BSD).

Distrib. : Throughout India.

Tribe - *Triticeae*

- | | |
|--|------------------|
| 1. Spikelets normally solitary at each node of the spike - axis ... | 2 |
| 2. Spikelets 2 - flowered ; glumes very narrow, subulate, 1 - nerved ; lemmas stiff hairy on the keels or midrib ... | <i>Secale</i> |
| 2A. Spikelets usually more than 2 flowered ; glumes broad, more than 1 - nerved ; lemmas not stiff hairy on the keels or midrib ... | 3 |
| 3. Nerves of the lemmas not confluent at the tip ; annuals ; glumes keeled on the back ... | <i>Triticum</i> |
| 3A. Nerves of the lemmas confluent at the tip ; perennials ; glumes not keeled ... | <i>Agropyron</i> |
| 1A. Spikelets more than one at each of the spike - axis ... | 4 |
| 4. Spikelets 1 - flowered, usually with a rudiment of the second floret ... | 5 |
| 5. Spikelets 3 at each node of the spike - axis, central sessile, fertile, the lateral pair pedicelled, barren (in wild species) or sessile, fertile or barren (in cultivated species) ; glumes standing in front of the spikelets ... | <i>Hordeum</i> |
| 5A. Spikelets 2 at each node of the spike axis, sessile ; glumes standing more or less laterally ... | <i>Hystrix</i> |
| 4A. Spikelets 2 - 7 - flowered ... | <i>Elymu</i> |

AGROPYRON Gaertn.

(The modern concept of *Agropyron* restricts to those species with keeled glumes and all other species have been transferred to *Elymus*, Cope, 1982.)

Key to the species :

- | | |
|--|--------------------|
| 1. Lemma awnless or short - awned (awns shorter or as the lemma) ... | 2 |
| 2. Glumes large (the lower three quarters to four - fifth the length of the lower floret), with a broad scarious margin, usually broadly lanceolate, blunt, obliquely truncate, 1 - or 2 - toothed or mucronate, rarely short awned, usually 5 - 7 - nerved, nearly glabrous or minutely hairy ... | <i>A. dentatum</i> |
| 2A. Glumes not as above, lanceolate, tapering into a short mucro or awn, slightly scabrous on the mid rib towards the tip ... | <i>A. repens</i> |

- 1A. Lemma awned ; awn longer than the lemma ... 3
3. Awn of the lemma erect or slightly flexuous ... 4
4. Palea three - fourth the length of the lemma or less ... 5
5. Spikelets distant on the spike - axis ; glumes linear - lanceolate (the lower half to two - third the length of the lower floret), more or less blunt or acute ; plant slender ... *A. semicostatum*
- 5A. Spikelets more approximate or contracted ; glumes linear - oblong or oblong - lanceolate (the lower nearly as long as the lower floret), acuminate ; plant usually robust and tall ... *A. striatum*
- 4A. Palea nearly as long as the lemma or longer ; truncate or notched at the tip ; lower glume distinctly shorter than the lower floret ... *A. caninum*
- 3A. Awn of the lemma curved at maturity ... 5
5. Rhachilla twisted at the base, bringing the florets dorsiventral to the spike - axis (the mid - rib of the lower glume is not in the same line with that of the lower floret) ; spike often dense, one - sided ... *A. schrenkianum*
- 5A. Rhachilla not twisted at the base ; florets not placed dorsiventral to the spike - axis (the mid - rib of the lower glume is in the same line with that of the lower floret) ... 6
6. Spikelets slightly compressed laterally, not readily disarticulating when dried immature ; awn of the lemma not conspicuously dilated at the base nor furrowed ; glumes usually not irregularly toothed ; spike with a flexuous spike - axis, 5 - 10 cm long ; spikelets purplish or purple - green ; leaves densely short hairy on both surfaces ... *A. schugnicum*
- 6A. Spikelets laterally compressed, readily disarticulating when dried immature ; awn of the lemma conspicuously dilated at the base and furrowed ; glumes often irregularly toothed ; spike erect, somewhat flexuous or nodding, short or long ; leaves not as above ... 7
7. Leaf - sheaths long ciliate at the margins ; leaf - blades flat with scattered long hairs on the upper surface and at the margins, especially towards the base ; awn of the lemma 2.5 - 3.5 cm long, slender ... *A. duthiei*
- 7A. Leaf - sheaths not ciliate at the margins ; leaf blades usually convolute, densely minutely hairy on the upper surface, not long hairy at the margins ; awns longer, more robust ... *A. canaliculatum*

Key to the varieties of A. striatum

1. Spike slender, with spikelets reaching the middle of the next spikelet on the opposite side of the spike - axis ; glumes linear - lanceolate, acuminate, scabrous on the nerves, not hairy along the margins ; lemmas with scattered very short appressed hairs on the whole surface ; awn of the lemma 1.5 - 2.0 cm long ... *A. striatum*
var. striatum
- 1A. Spike usually erect, dense with contracted spikelets ; glumes oblong - lanceolate, very firm, rigid, acute or slightly blunt, less scabrous on the nerves, often with fairly dense pubescence of minute hairs along the margins ; lemmas usually glabrous on the back, short or long hairy along the margins and towards the tip ; awn of the lemma often shorter than 1.5 cm ... *A. striatum*
var. validum

Agropyron canaliculatum Nevski in Bull. Jard., Bot. Acad. Sci. U. R. S. S. 30 : 509. 1932 ; Bor, Gr. Burma, Ceylon, India & Pak. 659. 1960. *A. longe aristatum* auct. Fl. Ind. *A. longe - aristatum* var. *aitchisoni* Boiss. Fl. Or. 5 : 66. 1884.

Lahul and Spiti (BSD, DD), Simla (DD).

Distrib. : Himalaya and Tibet.

Agropyron caninum (L.) P. Beauv. Ess. Agrost. 102 : 146. 1812 ; Bor, Gr. Burma, Ceylon, India & Pak. 660. 1960. *Triticum caninum* L. Sp. Pl. 86. 1753.

Simla (DD).

Distrib. : North - Western India.

Agropyron dentatum Hook. f. Fl. Brit. India 7 : 370. 1896 ; Bor, Gr. Burma, Ceylon. India & Pak. 661. 1960.

Lahul and Spiti (BSD).

Distrib. : Himalaya and Tibet.

Agropyron duthiei Melderis in Bor, Gr. Burma, Ceylon, India & Pak. Appendix 690. 1960.

Kinnaur (DD), Simla (J. F. Duthie 10123, ISOTYPE DD).

Distrib. : Western Himalaya.

Agropyron repens (L.) P. Beauv. Ess. Agrost. 102. 1912 ; Bor, Gr. Burma, Ceylon, India & Pak. 664. 1960. *Triticum repens* L. Sp. Pl. 86. 1753.

Lahul & Spiti (BSIP, DD).

Distrib. : Kashmir and Himachal Pradesh.

Agropyron schrenkianum (Fisch. et Mey.) Drobov in Trav. Bot. Mus. Bot. Acad. Sc. Petrogr. 16 : 136. 1916 ; Bor, Gr. Burma, Ceylon, India & Pak. 665. 1960. *Triticum schrenkianum* Fisch. et Mey. in Bull. Phys. Math. del. Acad. de Sci. Petersb. 3 : 305. 1845.

Lahul and Spiti (BSD).

Distrib. : Himalaya.

Agropyron semicostatum Nees ex Steud. Syn. Pl. Glum. 1 : 346. 1854. Bor, Gr. Burma, Ceylon, India & Pak. 665. 1960.

Kinnaur (DD), Kulu (DD), Lahul and Spiti (DD), Simla (DD).

Distrib. : North - Western Himalaya and Western Tibet.

Agropyron striatum Nees ex Steud. Syn. Pl. Glum. 1 : 346. 1854. var. **striatum** ; Bor, Gr. Burma, Ceylon, India & Pak. 666. 1960.

Lahul and Spiti (BSD).

Distrib. : North Western India.

Agropyron striatum Nees ex Steud. var. **validum** Melderis in Bor, Gr. Burma, Ceylon, India & Pak. Appendix 696. 1960.

Lahul and Spiti (BSD).

Distrib. : North - Western India.

Agropyron schugnanicum Nevski in Bull. Jard. Bot. Acad. Sci. 30 : 512. 1932 ; Bor, Gr. Burma, Ceylon, India & Pak. 665. 1960.

Lahul (Bor 1960).

Distrib. : Himachal Pradesh and Western Tibet.

ELYMUS L.

Key to the species :

1. Tufted plants ; spikes nodding, flexuous, one - sides or erect, usually loose ; spikelets usually in two ; lemmas usually scabrous tapering into a more or less bent awn, usually 1.3 - 2.3 cm long ; anthers 1.5 - 2.5 mm long ...

2. Glumes usually 3 - 5 nerved, nearly as long as the lower floret ; spike erect, dense ... *E. dahuricus*
- 2A. Glumes 1 - 3 nerved, much shorter than the lower floret (excluding awns) ... 3
3. Spikes more or less dense, flexuous or one - sided, 5.5 - 13.0 cm long, glumes tipped with an awn which is usually shorter than the glume ; spikelets pedicel - led ... 4
4. Lemma scabrous, spike - axis scabrous on the margins ... *E. nutans* var. *nutans*
- 4A. Lemma hairy on the back ; spike axis hairy ... *E. nutans* var. *albidus*
- 3A. Spike loose, nodding, drooping or flexuous, 10 - 24 cm long ; glumes tipped with an awn which is as long as or longer than the glume ; spikelets sessile ... *E. sibiricus*
- 1A. Plant with long creeping rhizomes ; spike erect, dense ; spikelets in twos to four at a each node of the spike - axis ; lemma more or less silky villous, rarely almost glabrous, tapering into an awn, 1 - 3 mm long ; anthers ca. 4 mm long ... *E. dasystachys*

Elymus dahuricus Turcz. in Bull. Soc. Nat. Mosc. 29 (1) : 61. 1856 ; Bor, Gr. Burma, Ceylon, India & Pak. 669. 1960. *Clinelymus dahuricus* Nevski in Bull. Jard. Bot. Acad. Sci. U. R. S. S. 30 : 645. 1932.

Lahul and Spiti (DD).

Distrib. : North - Western India.

Elymus dasystachys Trin. Ledeb. Fl. Alt. 1 : 120. 1829 ; Bor, Gr. Burma, Ceylon, India & Pak. 669. 1969. *E. thomsonii* Hook. f. Fl. Brit. India 7 : 374. 1896.

Lahul and Spiti (BSD, DD).

Distrib. : North - Western India.

Elymus nutans Griseb. in Goett. Nachr. 72. 1868 ; Bor, Gr. Burma, Ceylon, India & Pak. 670. 1960. var. *nutans*.

Kinnaur (DD), Kulu (Bor, 1960), Lahul & Spiti (BSD).

Distrib. : North - Western Himalaya and Tibet.

Elymus nutans Griseb. var. *albidus* Melderis in Bor, Gr. Burma, Ceylone, India & Pak. Appendix, 697. 1960.

Kinnaur (Bor, 1960).

Distrib. : Western Himalaya.

Elymus sibiricus L. Sp. Pl. 83. 1753 ; Bor, Gr. Burma, Ceylon, India & Pak. 671. 1960.

Lahul & Spiti (DD).

Distrib. : Western Himalaya.

HORDEUM L.

Key to the species :

- | | | |
|--|-----|---------------------|
| 1. Wild grasses i.e. with the axis readily disarticulating at maturity ; florets falling | ... | <i>H. murinum</i> |
| 1A. Cultivated grasses i.e. with the central axis tough ; florets persisting | ... | 2 |
| 2. Tip of the lemma produced into a dilated trifid appendage with the lateral lobes deflexed | ... | <i>H. aegiceras</i> |
| 2A. Tip of the lemma not so produced | ... | <i>H. vulgare</i> |

Hordeum aegiceras Nees ex Royle, Ill. Bot. Himal. 418. t. 97, f. 2. 1839 ; Bor, Gr. Burma, Ceylon, India & Pak. 675. 1960.

Lahul & Spiti (BSD).

Distrib. : North - Western India and Tibet.

Hordeum murinum L. Sp. Pl. 85. 1753 ; Bor, Gr. Burma, Ceylon, India & Pak. 676. 1960.

Chamba (BSD).

Distrib. : Western Himalaya,

Hordeum vulgare L, Sp. Pl. 84. 1753 ; Bor, Gr. Burma, Ceylon, India & Pak. 677. 1960 ; Nair, Fl. Bash. Himal. 319. 1977.

Kulu (DD), Kinnaur (BSD).

Distrib. : Cultivated.

HYSTRIX Moench

Hystrix duthiei (Stapf) Bor in Indian For. 66 : 544. 1940 ; Bor, Gr. Burma, Ceylon, India & Pak. 677. 1960. *Asperella duthiei* Stapf ex Hook. f. Fl. Brit. India 7 : 373. 1896.

Simla (DD).

Distrib. : North Western Himalaya and Nepal.

SECALE L.

Secale cereale L. Sp. Pl. 84. 1753 ; Bor, Gr. Burma, Ceylon, India & Pak. 677. 1960. *Triticum cereale* Salisb. Prodr. Strip. 97. 1796.

Lahul & Spiti (BSD, DD).

Cultivated.

TRITICUM L.

Triticum aestivum L. Sp. Pl. 85. 1753 ; Bor, Gr. Burma, Ceylon, India & Pak. 679. 1960 ; Nair, Fl. Bash. Himal. 330. 1977. *T. vulgare* Vill. Hist. Pl. Dauph. 2 : 153. 1717.

Kinnaur (BSD), Kulu (DD), Lahul and Spiti (BSD),

Distrib. : Cultivated.

TRAGUS Scop.

Tragus biflorus Schult. Syst. Veg. 2. Mant. 205. 1824 ; Bor, Gr. Burma, Ceylon, India & Pak. 682. 1960 ; Nair, Fl. Bash. Himal. 330. 1977.

Kinnaur (BSD).

Distrib. : Common in plains of India and Himachal Pradesh.

BAMBUSACEAE

B. M. WADHWA AND H. J. CHOWDHERY

Arundinaria falcata Nees in Linnaea 9 : 478. 1834 ; Gamble in Hook. f. Fl. Brit. India 7 : 381. 1896 ; Collett, Fl. Siml. 634. 1932 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 179. 1792.

Erect shrub. Nodes much swollen.

Fl. & Fr. : May November.

Kangra (DD), Kinnaur (DD), Simla (DD).

Distrib. : Western Himalaya to Nepal.

Arundinaria spathiflora Trin. in Mem. Acad. Petersb. Ser. 6. 3 : 2. 617. 1835 ; Gamble in Hook. f. Fl. Brit. India 7 : 382. 1896 ; Collett, Fl. Siml. 634. 1902.

Gregarious shrub.

Fl. & Fr. : June October.

Chamba (DD), Simla (DD).

Distrib. : Western Himalaya.

Bambusa nutans Wall. ex Munro in Trin. Linn. Soc. Bot. 26 : 92. 1868 ; Gamble in Hook. f. Fl. Brit. India 7 : 387. 1896.

Trees, 7 14 m high.

Fl. & Fr. : September (Spikelets).

Kangra (DD).

Distrib. : Lower Himalaya, Jammu to Assam.

Dendrocalamus hamiltonii Nees & Arn. ex Munro in Trans. Linn. Soc. Bot. 26 : 151. 1868 ; Gamble in Hook. f. Fl. Brit. India 7 : 405. 1896 ; Collett, Fl. Siml. 636. 1902.

Arborescent bamboo upto 29 m high.

Fl. & Fr. : February - September.

Hamirpur (DD), Kangra (DD).

Distrib. : Tropical Himalaya.

Dendrocalamus strictus (Roxb.) Nees in Linnaea 9 : 476. 1834 ; Gamble in Hook. f. Fl. Brit. India 7 : 404. 1896 ; Stewart, Ann. Cat. Vas. Pl. W. Pak. & Kash. 178. 1972. *Bambusa stricta* Roxb. Coroman. Pl. 1 : 58. t. 89. 1795.

Arborescent bamboo upto 17 m high.

Fl. & Fr. : June - (spikelets).

Mandi (BSD).

Distrib. : Dry hills of Northern India.

Phyllostachys bambusoides Sieb. et Zucc. in Abh. Akad. Munch 3 : 745. t. 5. f. 3. 1843 ; Gamble in Hook. f. Fl. Brit. India 7 : 386. 1896.

Caespitose herb. Stem smooth, yellow, ca 4 m high.

Kinnaur (DD).

Distrib. : Himachal Pradesh.