

A contribution to the study of Gesneriaceae Dum. in the Eastern Himalaya

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Abstract

The present work records 10 genera and 25 species of the Gesneriaceae from Darjeeling, Sikkim and other regions of Eastern Himalaya, the principal abode of the taxon in India. *Didymocarpus* and *Aeschynanthus* are the most dominant genera with eight and six species respectively.

Key words: Gesneriaceae, Eastern Himalaya, Darjeeling, Sikkim, *Didymocarpus*, *Aeschynanthus*.

INTRODUCTION

The Gesneriaceae Dum., a family belonging to the order Scrophulariales of the Subclass Asteridae under Magnoliopsida, is covering about 2500 species (Cronquist 1988). Takhtajan (1997) included 140 genera and 2400 species in the family and according to Watson & Dallwitz (1992 onwards) there are 2000 species. The Angiosperm Phylogeny Group classification (APGII 2003) puts Gesneriaceae in Lamiales under the subgroup Euasterid I of the Clade Asterid of the Core Eudicot, the largest group under Eudicots which is one of the major clades of Angiosperms having tricolpate or tricolpate derived pollen grains. Members of this family are mostly sub-tropical to tropical (rather pantropical) and some are temperate. The evolution of morphological novelty of this taxon has been brought into light by Burt & Jong (1975). Information from such disciplines as cytology (Milne 1975), chemistry (Jensen *et al.* 1975), and ontogeny (Weber 1978) has added much to taxonomy of this family (Theobald & Crupe 1973). In order to contribute towards an exhaustive taxonomic review on the Gesneriaceae in India, this work was undertaken which is based mainly on Darjeeling-Sikkim regions and certain other parts of the Eastern Himalaya; the main abode of this taxon in India.

MATERIALS AND METHODS

This work is based on careful study and scrutiny of pertinent literature, specimens preserved in the Lloyd Botanic Garden (LBG), the Central National Herbarium, Calcutta (CAL) and those collected during field trips in conformity with the earlier work (Mukherjee 1988). Standard taxonomic methods were followed to prepare comprehensive keys to the identification of genera and species and brief descriptions of the species to facilitate their identification. The taxa are arranged alphabetically with correct nomenclature, citations, synonyms and basionyms wherever necessary together with information regarding flowering and fruiting periods, distribution, specimens examined etc.

SYSTEMATIC DISCOURSE

Gesneriaceae is recognized on the basis of the following characters:

Non-laticiferous and non-succulent herbs shrubs or lianas as root climbers (rarely) without coloured latex. Leaves usually opposite, simple, entire, or serrated, or dentate, pinnately veined; cross-venulate,

epulvinate, petiolate, exstipulate. Flowers solitary, or aggregated in terminal cymes (usually), or racemose, medium-sized to large; zygomorphic. Calyx 5; gamosepalous (usually), or polysepalous (rarely); usually valvate. Corolla 5; gamopetalous; imbricate; rotate, or campanulate; bilabiate (usually), or unequal but not bilabiate. Stamens 2, or 4(-5), inserted near the base of the corolla tube, or midway down the corolla tube, or in the throat of the corolla tube; commonly didynamous. *Gynoecium* 2, syncarpous; superior to inferior. Ovary unilocular (usually), or 2 locular due to the fusion of two parietal placentae; ovules many. Fruits mostly dehiscent (usually a non-fleshy capsule), or rarely indehiscent; (usually fleshy berry).

Key to the Genera:

- | | | | | |
|----|--|-------|-------|-----------------------|
| 1. | Seeds with hair | ..... | ..... | 2 |
| 1. | Seeds without hair | ..... | ..... | 3 |
| 2. | Stamens 4 perfect | ..... | ..... | 4 |
| 2. | Stamens 2 perfect | ..... | ..... | <i>Lysionotus</i> |
| 3. | Stamens 4 perfect | ..... | ..... | 5 |
| 3. | Stamens 2 perfect | ..... | ..... | 6 |
| 4. | Leaves fleshy, equal, almost entire | .... | .... | <i>Aeschynanthus</i> |
| 4. | Leaves membranous, unequal, serrate | .... | .... | <i>Loxostigma</i> |
| 5. | Fruit a berry | ..... | ..... | <i>Rhynchotechum</i> |
| 5. | Fruit a capsule | ..... | ..... | 7 |
| 6. | Capsule globose, circumsciss; inflorescence subcapitate | .... | .... | <i>Epithema</i> |
| 6. | Capsule ellipsoidal or linear, longitudinally dehiscent; inflorescence otherwise | ... | ... | 8 |
| 7. | Peduncle filiform and pedicle capillary | .... | .... | <i>Leptobaea</i> |
| 7. | Peduncle not filiform and pedicle rigid | .... | .... | <i>Corallodiscus</i> |
| 8. | Leaves bilaterally unequal | ..... | ..... | 9 |
| 8. | Leaves bilaterally equal | ..... | ..... | <i>Didymocarpus</i> |
| 9. | Flowers bracteate, corolla cylindrical | ..... | ..... | <i>Rhynchoglossum</i> |
| 9. | Flowers bracteolate, corolla funnel shaped | ..... | ..... | <i>Chirita</i> |

Aeschynanthus W. Jack (*nom. cons.*)

Key to the Species

- | | | | | |
|----|--|-------|-------|-----------------------|
| 1. | Leaves glabrous, corolla shortly two lipped | ..... | ..... | 2 |
| 1. | Leaves hairy, corolla deeply 2-lipped | .... | ..... | <i>A. gracilis</i> |
| 2. | Corolla pubescent, seeds with two hairs near the hilum | ..... | ..... | 3 |
| 2. | Corolla glabrous, seeds with one hair near the hilum | ..... | ..... | 4 |
| 3. | Calyx tube longer than its lobes | ..... | .... | <i>A. hookeri</i> |
| 3. | Calyx tube not longer than its lobes | ..... | ..... | 5 |
| 4. | Flowers scarlet | ..... | ..... | <i>A. bracteatus</i> |
| 4. | Flowers yellow green | ..... | ..... | <i>A. acuminata</i> |
| 5. | Calyx tube shorter than lobes | ..... | ..... | <i>A. parviflorus</i> |
| 5. | Calyx tube as long as lobes | ..... | ..... | <i>A. sikkimensis</i> |

Aeschynanthus acuminatus Wallich ex DC., Prodr. 9: 263. (1845); C.B. Clark in Hook.f., Fl. Brit. India 4: 341 (1884); Sen in Bull. Bot. Surv. Ind. 5: 114 (1963); Hara in Enum. Fl. Pl. Nepal 3: 133 (1882).

A glabrous epiphytic herb; leaves elliptic, 8-10 x 3.5-4 cm, acuminate; peduncles subfasciculate, 1-or few-flowered: calyx deeply lobed; corolla 1.2-1.3 cm, yellow-green, glabrous; capsules linear, up to 15 cm long; seeds with one hair near hilum and one at the apex.

Flowering & Fruiting: August – November

Distribution: Sikkim, Bhutan; Upper Assam, Khasi and Jainti Hills.

Exiccatus: Mungpoo, 600 m, R.M.. Dutta & N.C., Majumdar 369 (CAL); Darjeeling, 2250 m, Ribu & Rhomoo 16 (LBG).

Aeschynanthus bracteatus Wallich ex D.C., Prodr. 9: 261 (1854); C.B. Clarke in Hook.f., Fl. Brit. India 4: 342 (1884); Burt et Davidson in Not. Bot. Gard. Edinb.21: 230 (1995); Hara in Fl. E. Himal. 121 (1971); Matthew, Fl. Pl. Kureseong 74 (1981); Mukherjee, Fl. Pl. Darjiling 165 (1988); Chaturvedi et Moakkum in Pleione 2(1): 107 (2008).

A glabrous epiphytic herb; leaves elliptic, 9-10 x 3.5-4 cm, acuminate, fleshy; peduncle 1-7 flowered, longer than petiole; calyx lobe 0.15-0.18 cm, red; corolla 0.33-0.35 cm, scarlet, almost glabrous, lower lip with reflexed lobes; capsules 10-15 cm long; seeds with 1 hair near the hilum and 1 at the apex.

Flowering & Fruiting: July – October.

Distribution: Temperate regions of Sikkim and Bhutan; upper Assam, Khasia Hills, Nagaland, Burma, South Tibet and Yunnan.

Exiccatus: Darjeeling, 1800 m, G. King 127 (CAL); Tarai, 800 m, YHb 3837 (LBG); Birch Hill (Darjeeling), 2000m, Mukherjee 1308.

Aeschynanthus gracilis Parish ex C.B. Clarke, Comm. & Cyst. Beng. 75, t.48A (1874), in Hook.f., Fl. Brit. India 4 : 340 (1884); Hara in Fl. E. Himal. 1: 297 (1966).

An epiphyte with fulvous or reddish hairy branches; leaves small, broad lanceolate, 1-1.2 x 0.8-0.9 cm, cuneate or rounded at base, hairy; flowers scattered, subsolitary; sepals 0.3-0.4 cm, linear, villous; corolla 2.5 cm, very oblique, villous outside, scarlet with orange black marking at mouth, deeply 2- lipped, lower lip with reflexed margins; capsules 5-5.7 cm long; seeds with 1 hair at hilum and 1 at apex.

Flowering & Fruiting: February – May

Distribution: Sikkim, Bhutan; Assam and Khasi Hills.

Exiccatus: Singhik, 1700 m, R. Seshagiri Rao 6842 (CAL); Birik Dham, 2000 m, YHb (LBG).

Aeschynanthus hookeri C. B. Clarke in DC., Monogr. Phaner. 5:21 (1883), in Hook.f., Fl. Brit. India 4: 338 (1889); Hara in Fl. E. Himal. 297 (1966), 121 (1971) and in Enum. Fl. Pl. Nepal 3: 133 (1982); Mukherjee, Fl. Pl. Darjiling 166 (1988).

A. parasitica C.B. Clarke, Comm. & Cyst. Beng. T. 49, not of wall. (1874).

Epiphytic herb, glabrous except corolla; leaves oblong-lanceolate, 8.7 x 2.5 cm, acuminate, fleshy, nerves obscure; flowers terminally umbelled; calyx tubular, scarlet, very shortly lobed; corolla more than 2.5 cm long, curved, orange red; seeds with 2 hairs near the hilum and 1 at the apex.

Flowering & Fruiting: June – September

Distribution: Himalaya (Nepal to NEFA), Assam, North Myanmar and West China.

Exiccatus: Sittong; 1400 m, W. G. Craib 159; Birch Hill, Darjiling, 2000m, Mukherjee 1309; Lepchajagat 2300 m (LBG).

Aeschynanthus parviflorus (D. Don) G. Don, Syst. Veg. 4 : 238 (1827); Hara in Fl. E. Himal. 297 (1966), in Enum . Fl. Pl. Nepal 3: 133 (1982); Chaturvedi et Moakkum in Pleione2(1): 108 (2008). *Trichosporum parviflorum* D. Don in Edinb. Philos. J. 7: 85 (1822), Prodr. Fl. Nep. 125 (1825). *Aeschynanthus ramosissima* Wall. [Cat. 24, n 799 (1829), *nom. nud.*], Pl . As. Rar. 1: 55, t .71 (1829), C. B. Clarke in Hook.f., Fl. Brit. India 4: 339 (1884); Sen in Bull. Bot. Surv. Ind. 5: 114 (1963); Banerjee in Rec. Bot. Surv. Ind. 19(2): 72 (1966).

A glabrous epiphyte; leaves broadly lanceolate, 10 x 4 cm; pedicels clustered; calyx ca. 0.8 cm, lobes lanceolate and shorter than tube; corolla ca. 2.5 cm, bright red pubescent; fruit a long narrow loculicidally 2-valved capsule; seeds tiny, numerous, with 2 hairs near the hilum and 1 at the apex.

Flowering & Fruiting: September – December.

Distribution: Kumaon, Nepal, Sikkim and Nagaland.

Exiccatus: Rongbee, 1700m, YHb 553 (LBG); Lepchakhowa 1500 m, J.K. Sikdar 948 (CAL).

Aeschynanthus sikkimensis (C.B. Clarke) Stapf in Bot. Mag. t . 8938 (1922); Spring, Fl. Sikkim Himal. f. 76 (1963); Hara in Enum. Fl. Pl. Nepal 3: 133 (1982), Mukherjee in Fl. Pl. Darjiling 166 (1988); Chaturvedi et Moakkum in Pleione 2(1): 108 – 110 (2008). *A. maculatus* var. *sikkimensis* C.B. Clarke in DC., Monogr . Phaner. 5: 24 (1883). *A. maculatus* Lindley: C.B. Clarke in Hook.f., Fl. Brit . India 4: 399 (1884).

A glabrous epiphyte; leaves lanceolate, 9.5-10 x 3.8-4 cm; flowers clustered; calyx 0.6-0.7 cm, lobes lanceolate, as long as tube; corolla pubescent, narrow, 1.8-2.0 cm long, bright red; capsules linear; seeds numerous, minute, with 2 hair near the hilum and 1 hair at the apex.

Flowering & Fruiting: June – September

Distribution: Nepal to Sikkim and Bhutan; Khasi Hills, Nagaland.

Exiccatus: Lachen, 2000 m; Rammam, 1800 m; Darjeeling, 2300 m (LBG); Birch Hill (Darjeeling), 2000 m, Mukherjee 1307.

Chirita Buch.– Ham. ex D. Don

Key to the Species

1. Peduncles many flowered *C. macrophylla*
1. Peduncles 1-5 flowered 2
2. Calyx 5-cleft two –third way down *C. pumila*
2. Calyx 5-cleft half way down *C. urticaefolia*

Chirita macrophylla Wallich, Pl. As. Rar. 1: 56, t. 72 (1830); DC., Prodr. 9: 269 (1845); C.B. Clarke, Comm. & Cyrt. Beng. T. 71 (1874), in Hook.f., Fl. Brit. India 4: 358 (1884); Hara in Fl. E. Himal. 297 (1966), 121 (1971); Matthew, Fl. Pl. Kurseong 75 (1981); Hara in Enum. Fl. Pl. Nepal 3: 133 (1982); Mukherjee, Fl. Pl. Darjiling 166-167 (1988).

An erect herb, about 10-45 cm high; leaves ovate or elliptic, 15-16 x 8-8.5 cm, crenate-serrate, acute, sparsely hairy above and more densely on nerves beneath; peduncles many flowered, bracts almost glabrous; calyx connate at base or up to middle, nearly glabrous; corolla tubular, 5 cm, yellow.

Flowering & Fruiting: June – October

Distribution: Temperate Himalaya – Nepal to NEFA.

Exiccatus: Sonada, 2200 m, YHb 503 (LBG); Jalapahar (Darjeeling), 2200 m, Mukherjee 1992.

Chirita pumila D. Don, Prodr .Fl. Nepal. 90 (1825); DC., Prodr . 9:269 (1945); C.B. Clarke, Comm. & Cyrt. Beng . t. 74 (1874), in Hook.f., Fl. Brit. India 4: 357 (1884); Matthew, Fl. Pl. Kurseong 75 (1981); Hara in Enum. Fl. Pl. Nepal 3: 134 (1982); Mukherjee, Fl. Pl. Darjiling 167 (1988).

A low, erect undershrub, about 50 cm high; leaves elliptic acuminate, 14 x 5 cm, distinctly unequal, serrate, mature pillose on both surface; peduncles 1-5 flowered, bracts ciliate; calyx deeply 5-fid, hirsute with white hairs; corolla tubular funnel- shaped, 3-3.5 cm, purple blue, yellowish below.

Flowering & Fruiting: August – November

Distribution: Subtropical Himalaya (Simla to NEFA), Southwest Tibet, North Myanmar, Thailand, Indo-China, West China.

Exiccatus: Sittong, 1000 m, YHb 3835; Brich Hill, 2100 m, Mungpoo, 1500 m, (LBG); Lebong Cart Road , 1900 m, Mukherjee 1985.

Chirita urticaefolia Buch.-Ham. ex D. Don, Prodr. 90 (1825); DC., Prodr. 9: 268 (1945); Clarke, Comm. & Cyrt. Beng. t. 69 (1874) in Hook.f., Fl. Brit. India 4: 358-359 (1884); Matthew, Fl. Pl. Kurseong 75 (1981); Hara in Enum. Fl. Pl. Nepal 3: 134 (1982); Mukherjee, Fl. Pl. Darjiling 167 (1988).

An erect herb, up to 45 cm high; leaves elliptic, 12.5 x 5.0 cm, serrate, acuminate, sparsely hispid above and villous on nerves beneath; peduncles 1-5 flowered, bracts nearly glabrous; calyx 5-fid, half way down, hispid; corolla funnel shaped, 5 cm, purple with yellow line inside.

Flowering & Fruiting: August – December

Distribution: Nepal to Bhutan; Assam North Myanmar and West China.

Exiccatus: Darjeeling town, 2000 m, J. Parks 730 (LBG); Senchal , 1900 m (LBG); Jalapahar (Darjeeling), 2200 m, Mukherjee 464.

***Corallodiscus* Batalin**

Corallodiscus lanuginosa (Wallich ex DC.) Burt in G. Chron Ser. 3, 122: 212 (1947); Hara in Fl. E. Himal. 298 (1966) and in Enum. Fl. Pl. Nepal 3: 134 (1982); Mukherjee, Fl. Pl. Darjiling 167 (1988). *Didymocarpus lanuginose* Wall. ex DC., Prodr. 9: 268 (1845); C.B. Clarke, Comm. & Cyrt. Beng. 97, t. 67 (1874). *Didissandra lanuginose* (DC.) C.B. Clarke in DC., Monogr. Phan. 5: 66 (1883), in Rec. Bot. Surv. Ind. 19(2): 73 (1966).

A scapigerous, acaulescent herb; leaves elliptic to ovate, 7.5-8.0 x 3.5-4.0 cm, crowded, radical, hirsute above and fulvous wooly beneath when young; cymes ultimately glabrous; corolla pale blue or purple, 1.8-2.0 cm, hairy; stamens 4 perfect; capsules often curved; seeds glabrous.

Flowering & Fruiting: June – November

Distribution: Temperate Himalaya – Kumaon to Bhutan, Khasi Hills.

Exiccatus: Chenugdua, 1600 m, W. Smith 3345 (LBG); Darjeeling 2200 m, YHb 3416 (LBG), Observatory Hill (Darjeeling), 2150 m, Mukherjee 1356.

Didymocarpus Wallich

Key to the Species

1. Stem inconspicuous, never exceeding 4 cm, leaves mostly radical 2
1. Stem conspicuous, exceeding 4 cm, leaves cauline 4
2. Leaves ashy pubescent above, capsule stalked *D. cinereus*
2. Leaves not ashy pubescent above, capsule sessile 3
3. Leaves all radical, corolla 1.2-1.8 cm long, deep purple *D. macrophylla*
3. Leaves cauline, corolla exceeding 2.5 cm, rose-purple *D. andersonii*
4. Leaves alternate – opposite, scattered on stem *D. subalternans*
4. Leaves opposite, 2-4 gathered at apex 5
5. Stem ashy pubescent *D. aurantiacus*
5. Stem not ashy pubescent 6
6. Corolla orange red, capsules exceeding 4 cm in length *D. aurantiacus*
6. Corolla dark purple; capsules less than 1.5 cm long 7
7. Calyx lobes white, corolla violet-purple *D. albicalyx*
7. Calyx lobes not white, corolla dark purple *D. oblonga*

Didymocarpus albicalyx C.B. Clarke in DC. Monogr. Phaner. 5: 78 (1883); Hara in Fl. E. Himal. 298 (1966); Matthew, Fl. Pl. Kurseong 75 (1981); Hara in Enum. Fl. Pl. Nepal 3: 134 (1982); Mukherjee, Fl. Pl. Darjiling 168 (1988). *D. villosa auct. non* D. Don: C.B. Clarke, Comm. & Cyrt. Beng. 89, t. 59 (1874). *D. leucocalyx* C.B. Clarke in Hook.f., Fl. Brit. India 4: 348 (1884).

A soft, caulescent herb; stem 2-leaved at the apex, hairs patent or deflexed; leaves ovate, 15 x 10 cm, serrate, villous above; cymes subumbellate; bracts caduceous; calyx deeply divided, white; corolla 0.9-1.2 cm, violet purple; capsules 1.0-1.3 cm, subsessile.

Flowering & Fruiting: June – December

Distribution: East Nepal to Bhutan.

Exiccatus: Darjeeling town, 2200 m, N.C. Majumdar 327 (CAL); Kalimpong, 1600 m, YHb 993 (LBG); Pulmajoa 2200 m, K. Biswas 5679 (CAL); Batasia, 2300m, S. Kurz 12723 (CAL).

Didymocarpus andersonii C.B. Clarke, Comm. & Cyrt. Beng. 92, t. 62 (1874); in Hook.f., Fl. Brit. India 4: 346 (1884), Hara in Fl. E. Himal. 298 (1966), 122 (1971), in Enum. Fl. Nepal 3: 134 (1982).

Caulescent herbs with very short stem, 2-4 leaved; lamina ovate, 15 x 10 cm, hairy above and on the nerves beneath; inflorescence capitate; bracts connate, concealing pedicel, purple; calyx teeth short, obtuse; corolla exceeding 2.5 cm, tube narrow, rose purple; capsules 2.5 cm long, sessile.

Flowering & Fruiting: June – November

Distribution: Eastern Himalaya

Exiccatus: Dikeha valley, 2200 m, Smith & Cave 833(LBG); Kurseong, 1500 m, YHB (LBG); Batasia, 2400 m (LBG); Kalimpong, 1600 m, Thornton 36 (CAL).

Didymocarpus aurantiaca C.B. Clarke, Comm. & Cyrt. Beng. 90, t.60 (1874); in Hook.f., Fl. Brit. India 4: 346 (1884); Hara in Enum. Fl. Pl. Nepal 3: 134 (1982).

Herb with short stem, villous, 2-4 leaved; lamina 7.5-15.0 cm, ovate, villous above; flowers pedicellate; bracts scarcely connate; calyx lobe half way down, purplish; corolla funnel shaped, orange red; capsules linear, pedicellate, ca. 2 cm long.

Flowering & Fruiting: June – October

Distribution: Nepal, Sikkim

Exiccatus: Rongbee Jhora, on rock, 1200 m, Choo 181 (CAL); Badamtam Road, 1300 m (LBG); Mongpoo, 1400 m(LBG); Reang, 1200 m, Ribu & Rhomoo 5 (LBG).

Didymocarpus cinereus D. Don, Prodr. Fl. Nep. 122 (1825), “*cinerea*”; C.B. Clarke in Hook.f., Fl. Brit. Ind. 4: 346 (1884); Hara in Enum. Fl. Pl. Nepal 3: 34 (1982). *Didymocarpus obtuse* Wallich ex R. Br. in Bennett, Pl. Jav. Rar. 118 (1840); DC., Prodr. 9: 267 (1845); C.B. Clarke, Comm. & Cyrt. Beng. 91, t.61 (1874).

A herb with short or no stem, ashy pubescent; leaves radical or opposite when cauline, ovate-cordate, obtuse, crenate, glabrate beneath, peduncles hardly exceeding leaves; flowers in cyme; calyx subcampanulate, sparsely pubescent, lobes ovate, obtuse; corolla purple, paler below, tubular; capsules pedicellate, 3.5-3.8 cm long.

Flowering & Fruiting: July – December

Distribution: Sikkim, Nepal

Exiccatus: Great Rangeet, 1200 m, YHB 974 (CAL).

Didymocarpus macrophyllus Wallich ex D Don, Prodr. Fl. Nep. 122 (1825), “*macrophylla*” Wall., Cat. 23 n 784 (1829); C.B. Clarke in Hook.f., Fl. Brit. India 4: 346 (1884); Hara in Enum. Fl. Pl. Nepal 3: 134 (1982). *D. plicata* D. Don, Prodr. Fl. Nep. 122 (1825). *D. aromatica* Wall., Pl. As. Rr. 2:t. 141. quoad f. 4-7 tantum (1831).

An acaulescent herb; leaves all radical, ovate, crenate-serrate; cymes subcorymbose; bracts ovate; calyx funnel shaped, upper one third lobed, lobes obtuse; corolla 1-2 cm, deep purple; capsules sessile, 2.5 cm long.

Flowering & Fruiting: May – August

Distribution: Nepal and Bhutan

Exiccatus: Sonada, 2200 m (LBG) ; Sikkim, 1800 m, G. King 2114 (CAL).

Didymocarpus oblongus Wallich ex D. Don, Prodr. Fl. Nep. 123 (1825), “*oblonga*” Wall., Pl. As. Rar. 2: 34, t. 140 (1831); C.B. Clarke, Comm. & Cyrt. Beng. 86, t. 56 (1874), in Hook.f., Fl. Brit. India 4: 346 (1884); Banerjee in Rec. Bot. Surv. Ind. 19(2): 73 (1966); Hara in Fl. E. Himal. 3: 1055 (1975), in Enum. Fl. Pl. 3: 134 (1982). *D. verticillata* Wall. [Cat. 23, n. 783 (1829, *nom. nud.*).

An erect herb with distinct stem, up to 12 cm high, villous pubescent, with 4 leaves at apex; lamina oblong or elliptic; coarsely crenate. pillose; cymes subcorymbose, glabrous; bracts coloured, connate; calyx lobes one third of tube; corolla 0.8-1.0 cm, dark purple; capsules subsessile, less than 1.5 cm long.

Flowering & Fruiting: June – September

Distribution: Nepal and Sikkim

Exiccatus: Gangtok, 2300 m, G. King 119 (CAL); Chimangton, 1700 m (LBG).

Didymocarpus podocarpus C.B. Clarke in DC., Manogr. Phaner. 5: 76 (1883), ut
podocarpa in Hook.f., Fl. Brit. India 4: 347 (1884) p.p.; Banerjee in Rec. Bot. Surv. Ind. 19(2): 73
(1966); Hara in Enum. Fl. Pl. Nepal 3: 134-135 (1982); Mukherjee, Fl. Pl. Darjiling 168 (1988).

An erect herb with distinct stem, up to 20 cm high, ashy pubescent, 4-leaves at the apex; leaves ovate elliptic, crenate, minutely pillose above; cymes 2-4 flowered; bracts glabrous; calyx campanulate, upper one third lobed, lobes obtuse; corolla 2.5 cm long, purple; capsules on long stalks, 2.5- 3.8 cm long.

Flowering & Fruiting: August – November

Distribution: Eastern Nepal to Bhutan

Exiccatus: Zemu Valley, 2500 m, Smith & Cave 2791 (CAL); Kalimpong, 2200 m; Senchal, 2300 m (LBG); Jalapahar (Darjeeling), 2200 m, Mukherjee 1355.

Didymocarpus subalternans C.B. Clarke, Comm. & Cyrt. Beng. 85,t. 55 (1874); in Hook.f., Fl. Brit. India 4: 347 (1884); Hara in Enum. Fl. Pl. Nepal 3: 135 (1982).

An erect herb with distinct stem, up to 30 cm high, almost glabrous; leaves cauline, scattered, opposite, alternate; peduncle subumbelled; bracts purplish, ovate; calyx funnel-shaped, semi 5-fid, purplish, lobes somewhat triangular; corolla tubular; ca. 1.3 cm long, purple; capsules stalked, 2.5 cm long.

Flowering & Fruiting: June – November

Distribution: Himalayas (Nepal to Bhutan)

Exiccatus: Way from Kalimpong to Gangtok, 2500m, D. Chatterjee 206 (CAL); Lechen, 2300m, G. A. Gammie 690 (LBG).

Epithema (Blume) Bentham

Epithema carnosum Bentham, Scroph. Ind. 57 (1835); “*carnosum*” C.B. Clarke, Comm. & Cyrt. Beng. 129. t. 90 (1874), in Hook.f., Fl. Brit. India 4: 339 excl. var.; Hara in Enum. Fl. Pl. Nepal 3: 135 (1982).

A small, succulent, caulescent, pubescent herb; lower leaf petiolate and upper leaves sessile, sinuate –crenate, thinly pubescent; racemes scorpioid, bracts truncate, bracteoles small, linear; calyx campanulate, pubescent; corolla tubular, 2-lipped, bluish; stamens 2-perfect; capsules globose, 2-3 mm wide, circumscissile.

Flowering & Fruiting: July – November

Distribution: Eastern Himalaya – Nepal to Bhutan; Khassi Hills

Exiccatus: Darjeeling, 1200 m, G. King 123000 (CAL); Rishap, 1000 m (LBG).

Leptobaea Gamble

Leptobaea multiflora (C.B. Clarke) Bentham ex Gamble, List Tr. Darjiling 58 (1878); C.B. Clarke in DC., Manogr. Phaner. 5: 165 (1833), in Hook.f., Fl. Brit. India 4: 368 (1884); Hara in Fl. E. Himal. 298-299 (1966). *Championia multiflora* C.B. Clarke, Comm & Cyrt. Beng. T. 68. (1874).

A shrub up to 1.5 m high; leaves opposite, crowded, elliptic acuminate, minutely crenate, pubescent; peduncles few flowered, often fascicled on short lateral branches; calyx persistent, teeth linear, pubescent; corolla glabrous, white; stamens 4- perfect; capsules beaked with style, 2-valved.

Flowering & Fruiting: February – June

Distribution: Sikkim, Bhutan; Assam, Khasi Hills

Exiccatus: Labha, 1000 m YHb 974 (LBG), Mungpoo, 1200 m YHb 1003(LBG); Kurseong, 1300 m, YHb 1104 (LBG).

Loxostigma C.B. Clarke

Loxostigma griffithii (Wight) C.B. Clarke in DC. Monogr. Phaner. 5: 60 (1883), in Hook.f., Fl. Brit. India 4: 344 (1884); Sen in Bull. Bot. Surv. India 5: 114 (1963); Hara in Fl. E. Himal. 229 (1966); Matthew., Fl. Pl. Kurseong 76 (1981); Hara in Enum Fl. Pl. Nepal 3: 135 (1982); Mukherjee, Fl. Pl. Darjiling 169 (1988). *Didymocarpus griffithii* Wight, Ill. Ind. Bot. 2 :182, t. 159 (1850). *Didymocarpus griffithii* C. B. Clarke, Comm. & Cyrt. Beng. 79, t. 51 (1874).

A thinly pubescent herb; leaves opposite, unequal sided, subfalcate, serrate, acuminate, base acute or unequally rhomboid; cymes peduncled, bracts and bracteoles small; sepals oblong, acute, green; corolla tubular, inflated above base, yellow; stamens 4, anthers conniving in pairs; capsules linear, loculicidal; seeds with one hair at apex.

Flowering & Fruiting: August – December

Distribution: Subtropical Himalaya – Khasi Hills.

Exiccatus: Ramvi Jhora, 2200 m, W. Smith 339 (LBG); Kurseong, 1500 m (LBG); Rimbick, 2300 m (LBG); Birch Hill (Darjeeling), 2000 m, Mukherjee 1311.

Lysionotus D. Don

Lysionotus serratus D. Don in Edinb. Phil. Journ. 7: 85 (1822), Prodr. Fl. Nepal 124 (1825); C.B. Clarke in Hook.f., Fl. Brit. Ind. 4:344 (1884); Hara in Fl. E. Himal. 299 (1966), p.p; 106 (1975); Matthew, Fl. Pl. Kurseong 76 (1981); Hara in Enum . Fl. Pl. Nepal 3: 135 (1982); Mukherjee, Fl. Pl. Darjiling 169 (1988). *L. ternifolia* Wall., Pl. As. Rar. 2: 20, t 118 (1931); C.B. Clarke, Cornm. & Cyrt. Beng. T. 52 (1874).

Glabrous epiphytic herb; leaves narrow, lanceolate-elliptic, 15 x 5 cm, closely serrate or sinuate, nerves conspicuous, oblique; cymes peduncled, many flowered; bracts inconspicuous and bracteoles small; sepals narrowly lanceolate; corolla purple or white with purple veins; stamens 2-perfect, connective with an oblong process.

Flowering & Fruiting: August – December

Distribution: Himalayas (Kumaon to NEFA); Assam, North Myanmar

Exiccatus: Kurseong, 1500 m, Barin Ghose (LBG); Gangtok, 1200 m, G. King 1990 (LBG); Jalapahar (Darjeeling), 2250, Mukherjee 1354.

Rhynchoglossum Blume

Rhynchoglossum obliquum Blume, Bijdra 741 (1826) ; C.B. Clarke, Comm. & Cyrt. Beng.124, t. 88 (1874), in Hook.f., Fl. Brit. India 4: 367 (1884); Banerjee in J. Bombay Nat. Hist. Soc. 55: 264

160 A contribution to the study of Gesneriaceae Dum. in the Eastern Himalaya (1958); in Rec. Bot. Surv. India 19 (2): 73 (1966); Hara in Fl. E. Himal. 299 (1966), in Enum. Fl. Pl. Nepal 3: 135-136 (1982). *R. obliquum* (Wall. ex. D. Don.) A.DC. in DC., Prodr. 9: 274 (1845). *R. obliquum* var. *parviflora* C.B. Clarke in DC., Monogr. Phan. 5:162 (1883) in Hook.f., Fl. Brit. India 4: 367 (1884).

A succulent membranous herb, up to 50 cm; leaves alternate, elliptic, acuminate, unequal sided, cordate on one side of unequal base; racemes long; bract 0, bracteoles minute; calyx campanulate; corolla tubular, 2-lipped, lower lip much longer than upper and ovate; stamens 2- perfect; capsules ellipsoid.

Flowering & Fruiting: July – September

Distribution: Eastern Himalaya, Myanmar

Exiccatus: Loddah, 1000 m, *YHb 1000* (LBG); Darjeeling, 1300 m, *G. King 13722* (CAL).

***Rhyncholechum* Blume**

Key to the species

1. Stem tomentose or wooly at apex; leaves whitened beneath, above tawny, silkily wooly; corolla less than 0.5 cm ... *R. ellipticum*
1. Stem patently hispid upwards, leaves hirsute on both surfaces; corolla 0.7-0.9 cm
..... *R. vestitum*

Rhyncholechum ellipticum (Wallich) A. DC. in DC., Prodr. 9: 285 (1845), "*Rhyncholechum*" Hook.f. in Bot. Mag. 96: t 5832 (1870); C.B. Clarke, Comm. & Cyrt. Beng. 131, t. 91 (1874), in Hook.f., Fl., Brit. India. 4: 373 (1884); Hara in Fl. E. Himal. 299 (1966), in Enum. Fl. Pl. Nepal 3: 136 (1982). *Corysanthera elliptica* Wall. ex Dietrich, Syn. Pl. 3: 582.

An erect undershrub; stem tomentose upward; leaves opposite, elliptic, acute, base cuneate, minutely dentate, whitened ventrally; cymes in lower axils, many flowered, somewhat umbellate; sepals ca. 0.4 cm, lanceolate; corolla subcampanulate, 0.4-0.5 cm, rose-purple; fruit a subglobose berry.

Flowering & Fruiting: February – May

Distribution: Nepal to Bhutan

Exiccatus: Mongpoo, 1000 m, C. Biswas 1411 (CAL); Rishap, 1200 m, *YHb 739* (LBG).

Rhyncholechum vestitum Hook.f. et Thoms. ex C.B. Clarke, Comm. & Cyrt. Beng.t. 92 (1874), in Hook.f., Fl. Brit. India 4: 373-374 (1884).

An undershrub; stem patently hispid upward; leaves opposite, elliptic, acuminate, slightly dentate, hirsute on both surfaces, base caudate; cymes much hirsute; sepals ca. 0.6 cm, lanceolate; corolla subcampanulate, 0.7-0.9 cm, purple; fruits somewhat spherical berries.

Flowering & Fruiting: August – December

Distribution: Sikkim, Bhutan, NEFA

Exiccatus: Rishap, 1200 m, *YHb 769* (LBG); Rimbik, 2100 m, *YHb 434* (LBG); Sikkim, l. Hosunkill 37296 (CAL).

DISCUSSION

The present work records 10 genera and 25 species which are mostly endemic to the subtropical to temperate conditions prevailing in the Eastern Himalaya. Among these species, only two species each of *Aeschynanthus* (*A. bracteatus* and *A. hookeri*) and *Chirita* (*C. pumila* and *C. urticaefolia*) extend up to West China. *Didymocarpus* and *Aeschynanthus* are the most dominant genera each with eight and six species respectively. Species of *Aeschynanthus* and *Lysionotus* are epiphytes, while others are mostly litho- or chasmo-phytes growing in damp habitats with subdued illumination. Species of *Aeschynanthus*, *Rhynchoglossum*, *Epithema* and *Leptobaea* are sciophilous which can be seen in damp forest covered areas. Although economic importance of the Gesneriaceae is little known there are some ethnic uses. Leaves of *Rhynchotechum ellipticum* are used locally as vegetable. Decoctions of leaves of some species of *Didymocarpus* (*D. albicalyx*, *D. andersoni* etc.) are used as diuretic agent in treatment of urine retention. Most of the representatives of the Gesneriaceae have become rare due to progressive derangement and depletion of their optimum habitat. Active steps to their conservation under proper surveillance are deemed essential since a thorough scientific research is certain to reveal their benevolent aspects as well as ecological functions.

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