

Distribution of *Eria* Lindley (Orchidaceae) in Lohit District of Arunachal Pradesh, India

K. Chowlu and A.K. Das

Department of Botany, Rajiv Gandhi University, Doimukh, 791111, Arunachal Pradesh, India

Abstract

This paper deals with the distribution of *Eria* species in Lohit District of Arunachal Pradesh. All the species described here are enumerated with brief description, phonological data, collection numbers and distribution.

Keywords: *Eria*, Lohit District, Arunachal Pradesh

INTRODUCTION

Arunachal Pradesh is one of the richest and most interesting floristic regions in India with orchids forming a very noticeable feature of the vegetation. It is therefore considered as one of the mega biodiversity hotspots areas of Asia and is located within the Himalaya Conservation Hotspot of IUCN. The state is well known for its high concentration of orchid wealth and these may be attributed to its ideal natural climatic conditions like high rainfall, high humidity and presence of maximum forest cover comprising of very rich diverse vegetation of tropical, sub-tropical, temperate and alpine types. The extremely variable topography, climate, altitude and vegetation support its high biological diversity.

Eria Lindley represents a large group of epiphytic and terrestrial orchids known for its distinctive shape and range from small to medium flowers of various colours. The word *Eria* is taken from the Greek word *erion* (wool) with reference to the woolly covering of the perianth. Pradhan (1979) reported 28 species of *Eria* genus from India. Out of these, 2 species (*E. dasyphylla* & *E. rufinula*) were included in *Trichotosia*, 25 having valid names and 1 as synonym i.e., *E. flava* is now merged to *E. laciopetalla*. In Arunachal Pradesh it is one of the largest epiphytic genera. The species mentioned here cover their occurrence in different other states of NE India.

MATERIALS AND METHODS

In order to assess the orchid flora of Lohit District good number of field explorations have been carried out in the District during the past 3½ years. Live collections of different species of *Eria* were made at different intervals and maintained at the Botanical Garden of the Department of Botany, Rajiv Gandhi University for ready availability of plants during taxonomic workout. Specimens were processed to mounted herbarium sheets following Jain & Rao (1977) and deposited in the Herbarium of Botany Department, Rajiv Gandhi University. The sample collections have been critically studied after their flowering under cultivation at Rajiv Gandhi University. Correct identification was done by using standard orchid manuals, other regional publications (Hooker 1890; King & Pantling 1898; Pradhan 1979; Hegde 1984; Katakai 1986; Chowdhery 1997; Hynniewta *et al* 2000) and by consulting Herbaria of RGU, ARUN and APFH, State. The study revealed the occurrence 8 species of *Eria* in Arunachal Pradesh are enumerated below.

ENUMERATION OF RECORDED SPECIES

Key to the Species

1. Leaves terete, less than 0.4 cm in diameter *E. pennea*
- 1a. Leaves flat, more than 0.4 cm broad 2

2. Petiole grooved; leaves 1 – 2 3
 2a. Petiole not grooved; leaves 2 – 6 4
 3. Inflorescence arising from apex or base of pseudobulbs; columns straight 5
 3a. Inflorescence arising from axils of leaf-sheaths; columns incurved 6
 4. Inflorescence globose capitate; peduncle pubescent *E. pumila*
 4a. Inflorescence not as above; peduncle puberulous or tomentose 7
 5. Petiole almost missing (± 0.5 mm); lamina oblong-elliptic, acute *E. stricta*
 5a. Petiole 1.6 – 2 cm long; lamina narrowly oblong-elliptic, acute to subacuminate ..
 *E. ferruginea*
 6. Lamina sessile; inflorescence lateral from nodes; flowers 1.2 cm across *E. amica*
 6a. Lamina with 1 – 4 cm long petiole; inflorescence from shoot-tips; flowers
 ± 2 cm across *E. kamlangensis*
 7. Rachis glabrous; pseudobulb stacked to clustered; floral bracts acuminate
 *E. acervata*
 7a. Rachis softly white-tomentose; pseudobulbs not clustered, borne at 5 – 6 cm
 intervals; floral bracts acute *E. laciopetala*

Descriptions

***Eria acervata* Lindley** in Paxt. Fl. Gard. 1: 170. 1850.

Rhizome with fibrous sheaths, stout; *Pseudobulb* 5-7 mm, laterally compressed, narrowly elliptic, furrowed, sheathed with leaf base; *Leaves* 3-5, oblong-lanceolate, acute; *Racemes* 1-3, axillary; *Flowers* few, 4.7 cm across, white, widely opening; *Lip* obovate, 3-lobed, 3 veins arising from the base; *Column* curved in the middle; winged at apex.

Flowering: July – August.

Exsiccatus: Latho (100 m), A.K. Das & K. Chowlu 0571 (under cultivation at Rajiv Gandhi University Botanical Garden).

Distribution: INDIA: Arunachal Pradesh (West Kameng, Lohit, Siang, Subansiri, Tirap, Papum pare), Manipur, Meghalaya (Shillong, Sonapahar), Mizoram, Nagaland, Sikkim; WORLD: Myanmar (Kachin), Laos, Cambodia, Vietnam (Piste de Fyan, Dalat), China (Nam Sa Ho), Tibet, Bhutan.

***Eria amica* Reichb.f.**, Xen. Orch. 2: 162. t. 168. f. 6 – 9. 1870; *E. confusa* Hook.f., Ic. Pl. t. 1850. 1889; Fl. Brit. India, 5: 800. 1890; King & Pantl. Ann. Roy. Bot. Gard. Calcutta 8: 120. t. 169. 1898. *E. andersoni* Hook. f., Fl. Brit. India 5: 795. 1890.

Stem 5-8 mm thick, internodes 3-4 cm long; *Lamina* sessile, oblong-elliptic, acute; *Inflorescence* 6-12 cm long, lateral from nodes, curved, laxly many flowered; *Flowers* 1.2 cm across, widely opening, pale yellow with maroon nerves; *Floral bracts* ovate, 1-veined; *Lips* 2 keeled on the disc in between lateral lobes, 3 lobed.

Flowering: March

Exsiccatus: Wakro (200 m), A.K. Das & K. Chowlu 0568 (under cultivation at Rajiv Gandhi University Botanical Garden).

Distribution: INDIA: Arunachal Pradesh, Assam, Nagaland, Sikkim; WORLD: Bhutan, Cambodia, Laos, Vietnam.

***Eria ferruginea* Lindley** in Bot. Reg. n. s. 25: t. 35. 1839; in J. Linn. Soc. 3: 57. 1859.

Rhizome Creeping, stout, 4-5 mm thick; *Stem* short covered with sheaths; *Leaves* 2, lanceolate, obtuse, thickly coriaceous; *Racemes* lateral, 15-25 cm, brown-tomentose, equal to or longer than leaves, 8-9 flowered, lax; *Flowers* 2.5-3 cm across, widely opening, white; *Lips* 3-lobed; lateral lobes erect, middle 5 x 4 mm, oblong, waxy margined, thick.

Flowering: May

Exsiccatus: Madhuban (100 m), K. Chowlu 0573 (under cultivation at Rajiv Gandhi University Botanic Garden).

Distribution: INDIA: Arunachal Pradesh (Kameng, Lohit,), Meghalaya (Cherapunji).

***Eria kamlangensis* Nageswara Rao, J. Orch. Soc. India, 15(1-2): 61 – 63. 2002.**

Rhizome 3 mm thick, 4-5 noded; *Pseudobulbs* ovoid-oblong; *Lamina* elliptic-oblong, acute-acuminate, coriaceous, many nerved; *Petiole* 1-4 cm long; *Racemes*, from shoot apex, developed from previous year's pseudobulb; *Peduncle* \pm 5 cm long, covered with imbricating bracts and 1-2 leaves; rachis upto 15 cm long, lax, densely clothed with white tomentum; *Flowers* \pm 2 cm across, pedicellate; *Lips* 3-lobed, 6 mm wide across the midlobe and 4 mm across the lateral lobes.

Flowering: July – August

Exsiccatus: Kamlang Wild Life Sanctuary

Distribution: INDIA: Endemic; Arunachal Pradesh (Lohit).

***Eria lasiopetala* (Willdenow) Ormerod, Op. Bot. 124: 22. 1995. *Dendrobium pubescens* Hook., Exot. Fl. 2:t. 124. 1824. *E. flava* Lindl., Gen. Sp. Orch. 65. 1830; *Pinalia pubscens* (Hook.) Kze. Rev. Gen. 2: 679, 1891.**

Plants up to 40 cm high; *Pseudobulb* elliptic, laterally compressed, sheathing at base and borne on stout rhizomes; *Lamina* lanceolate-oblong, acute; *petiole* short; *Inflorescence* arising from the base of pseudobulb, stout, erect, densely covered with soft hairs; *Flowers* many, \pm 2.2 cm across, well spaced, light yellow, widely opening; *Lip* deflected from the middle, 3-lobed;

Flowering: February – March.

Exsiccatus: Chowkham, A.K. Das & K. Chowlu, 0565 (under cultivation at Rajiv Gandhi University Botanic Garden).

Distribution: INDIA: Arunachal Pradesh (Kameng, Lohit, Siang, Subansiri, Tirap), N. W. Himalaya (Dehradun, Garwal), Sikkim, Central India (Chotanagar), Manipur. WORLD: Nepal (Hitauri & Dhuriberi), Myanmar (Myitkyina), Laos, Cambodia, Vietnam, China (Hainan, Hongkong).

***Eria pannea* Lindley in Bot. Reg. 64. Misc. 79. 1842. *E. teretifolia* Griff., Notul. 3: 298. 1851. *E. odoratissima* Tejism. & Binn. in Tijdsch. Nederl. Ind. 27: 17. 1864.**

Rhizomes slender, creeping, woolly, few leaved; *Leaves* fleshy, terete, straight or arched, obtuse; *Spike* 2-3 flowered, terminal; *Flowers* 1.5 cm across, white, woolly; *Bracts* ovate, longer than the pedicellate ovary, woolly; *Lips* yellowish brown, oblong, obtuse, disc with an oblong callus.

Flowering: April.

Exsiccatus: Dewan, A.K. Das & K. Chowlu, 0569 (under cultivation at Rajiv Gandhi University Botanic Garden).

Distribution: INDIA: Arunachal Pradesh (Kameng, Lohit, Siang, Subansiri) Sikkim, Meghalaya, Manipur, Nagaland. WORLD: Bhutan, Borneo, China, Myanmar, Malaya, Thailand.

***Eria pumila* Lindley, Gen. Sp. Orch. 68. 1830.**

Rhizome stout, sheathed; *Pseudobulbs* thick, subterete or slightly curved, compressed, pendulous; *Leaves* 3-4, linear-lanceolate, acute; *Flowers* 8-11 mm across, minute, in dense capitate heads; *Bracts* oblong, subacute, tomentose; *Lips* 3 lobed, oblong, acute, margins hairy; lobules rounded, pubescent; *lip* base with two short keels.

Flowering: July.

Exsiccatus: Madhuban, A.K. Das & K. Chowlu, 0567

Distribution: INDIA: Arunachal Pradesh (Kameng, Lohit, Subansiri), Sikkim, Meghalaya, Sikkim. WORLD: Myanmar, Thailand.

***Eria stricta* Lindley, Coll. Bot. Pl. 41. B. 1826; *E. secundiflora* Griff., Ic. Pl. Asiat. t. 30. 1847. *Mycaranthues stricta* Lindl., Gen. & Sp. Orch. 63. 1830; Wight, Ic. Pl. t. 1737. 1856.**

Epiphytic, upto 30 cm high; *Pseudobulbs* terete, tufted, fibrous sheaths at base, closely attached to each other; *Leaves* 2; lamina oblong, acute; *Racemes* 7 – 10 cm long, between the leaves, solitary, terminal, erect, many flowered; *Flowers* 3-5 m across, pale yellow, secund, tomentose; *Lips* sub-orbicular, 3 lobed.

Flowering: January – February.

Exsiccatus: Dewan (200 m), A.K. Das & K. Chowlu 0571 (under cultivation at Rajiv Gandhi University Botanic Garden).

Distribution: INDIA: Arunachal Pradesh (Kameng, Lohit, Siang, Subansiri, Tirap, betⁿ 100 – 1000m), Meghalaya (Cherapunji & Chunay), Nagaland (Tseminyu), Sikkim. WORLD: Cambodia, Laos, Vietnam

DISCUSSION AND CONCLUSION

The climate of Arunachal Pradesh supports occurrence of a large number of beautiful and important species of orchids. Eight species of *Eria* has been recorded for the state (Table 1) of these *Eria kamlangensis* is reported only from the Kamlang Wildlife Sanctuary and is endemic for the state of Arunachal Pradesh. *E. ferrugina* is also one endemic plant for the NE India and is recorded from Arunachal Pradesh and Meghalaya only. On the other hand, the distribution of *Eria acervata* and *E. lasiopetala* are quite widely distributed species and are found to be very common. The disturbance in the habitat is gradually pushing these plants towards the rarity. Proper steps should be taken immediately to save the entire orchid flora of this region.

LITERATURE CITED

- Biswas, K. 1941. The Flora of Aka Hills. *Ind. For. Rec. Bot.* 3(1): 49 – 52.
- Chauhan, A.S. 2001. A Conspectus of orchids of Manipur: their status and conservation. In: *Orchids, Science & Commerce* (eds. P. Pathak, R.N. Sehgal, N. Shekhar, M. Sharma & A. Sood) pp. 81 – 99. Bishem Singh Mahendra Pal Singh. Dehra Dun.
- Chowdhery, H.J. 1997. *Orchid Flora Arunachal Pradesh*. Botanical Survey of India, Calcutta.
- Clarke, C.B. 1889. On the plants of Kohima and Muneypore. *J. Linn. Soc.* 25: 71 – 74.
- Hegde, S.N. 1980. Preliminary observations and list of Orchids of Arunachal Pradesh. *Arunachal Forest News* 3(3): 1 – 11.
- Hegde, S.N. 1984. *Orchids of Arunachal Pradesh*. Itanagar, India.
- Hooker, J.D. 1890. *Flora of British India*. Vol. 5. L. Reeve and Co., Ashford, Kent.
- Hyniewata, T.M.; Kataki, S.K & Wadhwa, S.K. 2000. *Orchids of Nagaland* (Eds. P.K. Hajra & U. Chatterjee) Botanical Survey of India, Calcutta.
- Kataki, S.K. 1986. *Orchids of Meghalaya*. Govt. of Meghalaya.
- Jain, S.K. & Rao, R.R. 1977. *A Hand Book of Field and Herbarium Techniques*, 30-45. Today and Tomorrows Publishers, New Delhi.
- King, G. & Pantling, R. 1898. The orchids of the Sikkim. Himalaya. *Ann. Roy. Bot. Gard. Calc.* 8(1): 1 - 342; 8 (2 -4): 1 - 448.
- Mehra, P.N. & Sehgal, R.N. 1974. In IOBP Chromosome number report 46. *Taxon* 23: 802 – 804.
- Panigrahi, G. & Joseph, J. 1966. A botanical tour to Tripura Frontier Division NEFA. *Bull. Bot. Surv. India* 8: 142 - 157.
- Panigrahi, G. & Naik, V.N. 1961 (1962). A botanical tour in Subansiri Frontier Division of NEFA. *Bull. Bot. Surv. India* 3 (3-4): 361 – 388.
- Pradhan, U.C. 1979. *Indian Orchids Guide to Identification and Culture*. Vol. II. Kalimpong, India.
- Rao, R.S. & Joseph, J. 1965. Observation on the flora of Siang Frontier Division NEFA. *Bull. Bot. Surv. India* 7 (1-4): 138 – 161.
- Rao, A.S. & Deori, C. 1980. A preliminary census of the Orchids of Kameng District Arunachal Pradesh. *J. India. For.* 3(3-4): 255 – 260, 328 – 335.
- Sathish Kumar, C. 2001. Orchids of Sikkim – A Historical Perspective. In: *Orchids, Science & Commerce* (eds. P. Pathak, R.N. Sehgal, N. Shekhar, M. Sharma & A. Sood) pp.100 – 143. Bishem Singh Mahendra Pal Singh. Dehra Dun.
- Singh, D.K.; Wadhwa, B.M. & Singh, K.P. 1990. *J. Orch. Soc. India* 4(1,2): 51 – 64.

Table 1: List of *Eria* spp. occur in Lohit District and their distribution in other states of North-East India.

[Abbreviations used: B=Biswas; C=Common; Ch=Chauhan; Cl=Clarke; Cw=Chowdhery; E=Endemic; H.f.=Hook.f.; Hd=Hegde; K= Katakai; K&P=King & Pantl.; H,W&K=Hynniewta, Katakai & Wadha; LC=Less Common; Li=Lindley; M&S=Mehra & Sehgal; NR=No Record; P&J=Panigrahi & Joseph; P & N =Panigrahi & Naik; Pr= Pradhan; R=Rare; R&D= Rao & Deori; R&J= Rao & Joseph; SK=Sathish Kumar; SWS=Singh, Wadha & Singh]

The species	Status	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura
<i>Eria acervata</i>	C	B 1941; P&J 1966 P&N 1962, R&J 1965; Hd 1980; R& D 1980; Cw 1997	NR	Ch 2001	H.f. 1890; Pr 1979; K 1986	SWS 1990	H, W&K 2000	H.f. 1890; K&P 1898; Pr 1979; SK 2001	NR
<i>E. amica</i>	C	B 1941(<i>E. confuse</i>); R&J 1965; Hd 1980; R&D 1980; Cw 1997	H.f.1890	Ch 2001	M&S 1974	SWS 1990	Cl 1889; H W&K 2000	H.f. 1890; K&P 1898 (<i>E. andersoni</i> , <i>E. confuse</i>); Pr 1979; SK 2001	NR
<i>E. ferruginea</i>	E, R	Hd 1980; Cw 1997	NR	NR	H.f. 1890; K 1986	SWS 1990	NR	NR	NR
<i>E. kamlangensis</i>	E, R	Rao 2002	NR	NR	NR	NR	NR	NR	NR
<i>E. lasiopetala</i>	C	Hd 1980 <i>E. flava</i> ; Cw 1997 <i>E. pubescence</i>	NR	NR	K 1986 <i>E. pubescent</i> ; Pr 1979 <i>E. flava</i>	SWS 1990	NR	H.f. 1890; K& P 1890 <i>E.flava</i> ; SK 2001	NR
<i>E. pannea</i>	R	Hd 1980; Cw 1997	NR	Ch 2001	K 1986	SWS 1990	H,W&K 2000	H.f. 1890; K&P 1890; Pr 1979; SK 2001	NR
<i>E. pumila</i>	LC	Cw 1997	NR	NR	H.f. 1890; K&P 1890; Pr 1979	NR	NR	K&P 1890; Pr 1979; SK 2001	NR
<i>E. stricta</i>	C	Hd 1980; Cw 1997	H.f. 1890; K&P 1890	K 1986	H.f. 1890; K&P 1890; Pr 1979	NR	H.f. 1890; K&P 1890; Pr 1979; H,W&K 2000	H.f. 1890; K&P 1890; Pr 1979; SK 2001	NR