

Research Article

**AESCHYNANTHUS GRACILIS PARISH EX C.B. CLARKE
(GESNERIACEAE): A NEW ANGIOSPERMIC RECORD FOR
MEGHALAYA AND ITS IUCN STATUS, INDIA**

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INTRODUCTION

The genus *Aeschynanthus* Jack was first described by Jack (1823) with only two species, *A. volubilis* Jack and *A. radicans* Jack from Sumatra (Middleton 2007). At present, the genus comprises of approximately 160 species distributed from Sri Lanka and India through southern China and southeast Asia to New Guinea and the Solomon Islands (Burt 2002; Middleton 2007). The estimated number of species, however, will undoubtedly change over time as more of the species are revised.

The first account of the genus *Aeschynanthus* in India was by C.B. Clarke in Hooker's 'Flora of British India, Volume 4' in 1884 which included 23 species. Later on Kanjilal and Bor (1939) published the 'Flora of Assam, Volume 3' which included only 13 species viz., *A. acuminatus*, *A. bracteatus*, *A. deleiensis*, *A. gracilis*, *A. grandiflorus*, *A. linearifolius*, *A. maculatus*, *A. mannii*, *A. micranthus*, *A. parasiticus*, *A. sikkimensis* and *A. superbus* in the North-east India. The literatures and housed specimens in ASSAM herbarium reveals the floristic work carried out in the Meghalaya state by Joseph (1968), Balakrishnan (1983), Haridasan and Rao (87), Singh *et al.*, (2011) reported only 8 species viz., *A. acuminatus*, *A. bracteatus*, *A. grandiflorus*, *A. maculatus*, *A. micranthus*, *A. parasiticus*, *A. sikkimensis* and *A. superbus*.

Popularly known in Garo Hills by local Garo tribes in Meghalaya state as *Machuk-nachil*, is an epiphytic herb, of the family Gesneriaceae, was collected in 2010 from Nokrek Biosphere Reserve (25°15' to 25°29' N, 90°13' to 90°35' E) at 1327 m altitude, while studying the floristic diversity in the protected areas of undisturbed vegetation in the state of North-east India. The species was recorded on the branches of big trees along the river side, mainly characterized by its stems with dense long hairs, leaves densely pubescent beneath, corolla glabrous inside with red flower. After critical observation of the newly collected specimens, and comparison with the existing herbarium specimens housed at ASSAM, along with the original description, the identity of the species was confirmed as *Aeschynanthus gracilis* Parish ex C.B. Clarke.

Scrutiny of literatures reveals that *A. gracilis* was reported only from the states of Arunachal Pradesh, Assam and Sikkim. The record of its presence in the Nokrek Biosphere Reserve extended its distribution in eastern Himalayas. The species also recorded from Bhutan, Nepal, Myanmar and Thailand (Middleton 2009). The new locality record for the species in the Meghalaya state highlights the importance of floristic studies in determining species distributions as well as the importance of protecting forest fragments containing species in danger of extinction.

The paper deals in taxonomic enumeration, IUCN threat status and conservation of the *A. gracilis*. It is also provided with live photographs showing habitat characteristics and distribution of the species in Figures 1 and detail of the IUCN categorization in Table 1.

Aeschynanthus gracilis Parish ex C.B. Clarke, Commelyn. Cyrtandr. Bengal. 75. 1874; C.B. Clarke in A.DC. and C.DC, Monogr. Phan. 5(1): 27. 1883; C.B. Clarke in Hook.f, Fl. Brit. India 4: 340. 1884; Giri and al., Mat. Fl. Arunachal Pradesh 2: 224. 2008. *Trichosporum gracile* (Parish ex C.B. Clarke) Kuntze, Revis. Gen. Pl. 477. 1891. *Aeschynanthus novogracilis* W.T. Wang, Acta Phytotax. Sin. 13(2): 65. 1975, nom. illeg. 'Local name: *Machuk-nachil* (Garo Tribes)'

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Epiphytic herbaceous plants with hanging stems; stems spreading, reddish-brown, with dense long hairs; rooting at nodes. Leaves opposite; petiole 0.1-0.2 cm long, with dense long hairs; leaflets coriaceous to fleshy, bluish green above, pale green beneath, elliptic-lanceolate or narrowly obovate, 1.5-3.2 cm long, 0.5-1.1 cm wide, acuminate at apex, base cuneate to rounded; glabrous above, densely pubescent beneath, drying wrinkled, entire along margin; lateral nerves invisible. Inflorescence axillary, 1-flowered; peduncle absent; bracts deciduous. Flowers red, villous. Calyx pale green, with long hairs; lobes linear or narrowly triangular, 0.3-0.4 cm long, acuminate at apex. Corolla bright red on tube, central abaxial lobes yellow spotted, 2.1-2.4 cm long, hairy outside, inside glabrous, mouth strongly oblique; limb distinctly 2-lipped. Stamens long exserted, fused in 2 pairs, filaments cream, with glandular hairs, 1.4-1.8 cm long; anthers coherent in pairs at apex, ca 0.2 cm long. Disk irregular with one side much shorter than other and toothed. Pistil 2.4-2.8 cm long, glabrous; ovary green, glabrous; style green. Capsules linear, 6.9-14.7 cm long. Seed grain minute, ca 0.1 cm, warty, hilar appendage a single filiform hair; appendages 1.5-2 cm long, papillose.

Phenology: *Flowering*. October-November, *Fruiting*: February-April.

Material examined: INDIA. Meghalaya: Nokrek Biosphere Reserve, Daribokgre, 5-3-2007, B Singh *et al.* 114819 (ASSAM).

IUCN threat status —Middleton (2007) proposed the *A. gracilis* under 'Least Concern (LC)' category for Thailand only, but in India, this species is recorded only from Arunachal Pradesh, Assam and Sikkim in North-eastern states and in these areas the species is endangered. In spite of repeated search in the entire North-eastern state in 10 km x 10 km grids, only 7 population with <250 individuals of the species could be located. We classified the species from threat perspective based on field observation, population size, extent of occurrence, area of occupancy, and habitat quality (Table 1) following the criteria of IUCN (2010), Version 8.1. The species was classified as "Endangered" [A1.(a,b,c,d); B2. a,b(ii, iv,v); C2.a(i)].

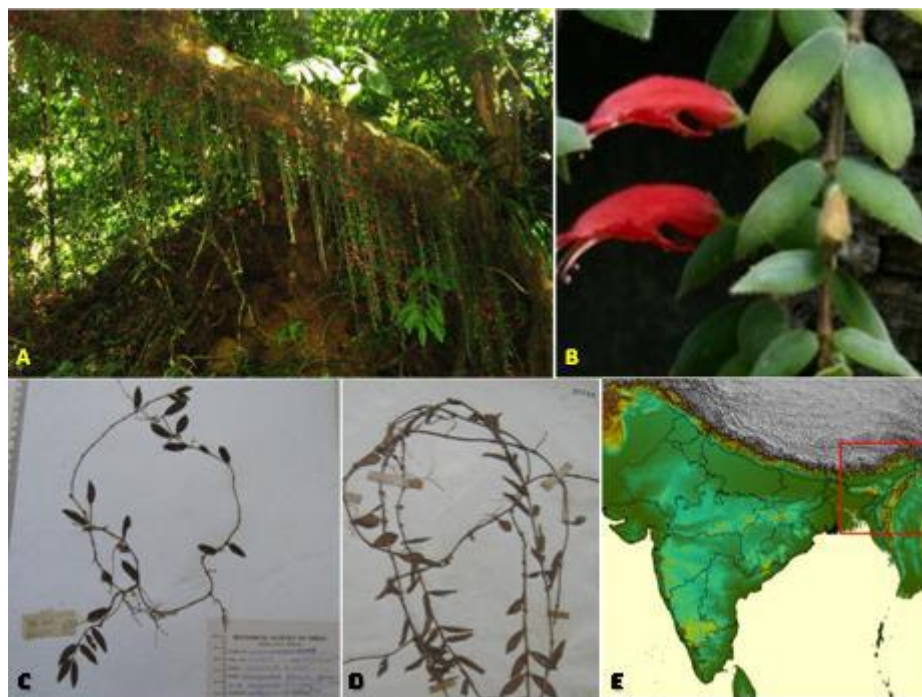


Figure 1: Natural habit, herbarium record and distribution of *Aeschynanthus gracilis* in India (A: Natural habitat, B: Close view of flower, C-D: Herbarium record, E: restricted distribution in India)

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CONSERVATION

In North-eastern states of India, the population of *A. gracilis* is increasingly exposed to disturbance due to forest clearance for jhum cultivation, mining and small timber purposes. These factors together are threatening habitat and the existence of the species in the wild. In view of high intensity of disturbance to its natural habitat, the species might become extinct in the near future, unless adequate conservation measures for the species are taken. The species can be conserved *in situ* through habitat protection as well as undertaking several *ex situ* conservation measures such as multiplying and introducing the species in the wild through micro-propagation, establishing field gene banks and conserving the species in the existing institutional botanical gardens.

Table 1: Population data for *Aeschynanthus gracilis* used for classification of threatened categories of species as per IUCN (2010), Version 8.1

A. Population Reduction	A1. $\geq 70\%$ decline three generation (a) Direct observation: less occurrences (b) Density per 1 m ² : 12 individual (c) Quality of habitat: disturbed forest, fragmented (d) Exploitation: deforestation, limestone extraction
B. Geographic Range	B2. Area of occupancy (AOO): < 500 km ² (a) Severely fragmented, 7 locations (b) Continuing decline, (ii) Area of occupancy: 100 m ² (IV) Number of locations: 7 (v) Number of mature individuals: 35 per locations
C. Small Population Size and Decline	Number of mature Individuals: <250 C2. Continuing decline (a i) Number of mature individuals in each sub population: <50

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REFERENCES

- Balakrishnan NP (1983).** Botanical Survey of India. *Flora of Jowai, Meghalaya, Vol-2* (Howrah, India).
Burt BL (2002). *Aeschynanthus*. *Thai Forest Bulletin (Botany)* **30** 167-168.
Clarke CB (1883). Cyrtandreae. In A.L.L.P. De Candolle and A.C.P.De Candolle (Ed.). *Monog. Phanerog* 5 301-303.
Giri GS, Pramanik A and Chowdhery HJ (2008). Botanical Survey of India. *Materials for the Flora of Arunachal Pradesh, 2* (Kolkata, India).
Haridasan K and Rao RR (1987). *Forest Flora of Meghalaya*, 2 Bishen Singh Mahendra Pal Singh (DehraDun, India).
Hooker JD (1872-1897). *The Flora of British India*, 7. L. Reeve and Co. (London).
Iucn [International Union for Conservation of Nature and Natural Resources] Standards and Petitions Subcommittee (2010). *Guidelines for Using the IUCN Red List Categories and Criteria*, Version 8.1. Prepared by the Standards and Petitions Subcommittee in March 2010. Downloaded from [http://intranet.iucn.org/webfiles/doc/SSC/RedList/RedList Guidelines.pdf](http://intranet.iucn.org/webfiles/doc/SSC/RedList/RedList%20Guidelines.pdf)
Jack W (1823). On Cyrtandraceae, a new natural order of plants. *Transactions of the Linnean Society of London* **14** 23-44.

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Joseph J (1982). *Flora of Nongpoh and Its Vicinity*. Gauhati University (Guwahati, Assam, India).

Kanjilal UN and Bor NL (1938). *Flora of Assam*, 3. Government Press (Shillong, India).

Middleton DJ (2007). A revision of *Aeschynanthus* (Gesneriaceae) in Thailand. *Edinburgh Journal of Botany* **64**(3) 363-429.

Middleton DJ (2009). A revision of *Aeschynanthus* (Gesneriaceae) in Cambodia, Laos and Vietnam. *Edinburgh Journal of Botany* **66** 391-446.

Singh B, Phukan S, Sinha BK, Singh VN and Borthakur SK (2011). Conservation Strategies for *Nepenthes khasiana* in the Nokrek Biosphere Reserve of Garo Hills, Northeast, India. *International Journal of Conservation Science* **2**(1) 55-64.