

Note on the addition of *Nervilia macroglossa* (Orchidaceae) to the flora of Assam, India

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Abstract

Nervilia macroglossa (Hooker f.) Schlechter has been recorded for the first time in Assam. This terrestrial orchid, from Karbi Anglong district, is here described and illustrated. Besides a key to the species present in the State is provided.

Résumé

Nervilia macroglossa (Hooker f.) Schlechter a été signalé pour la première fois en Assam. Cette orchidée terrestre, du district de Karbi Anglong, est ici décrite et illustrée. Une clé de toutes les espèces présentes dans l'état est également fournie.

Keywords: angiosperm, Nerviliinae, taxonomy.

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Introduction

During a field trip to the forested area of Karbi Anglong district, Assam on 07 May, 2021, the first author collected a flowering terrestrial orchid. On the basis of available literature (King & Pantling, 1898; Pradhan, 1979; Hegde, S. N. revised, 1917; Chowdhery, 1998; Pearce & Cribb, 2002; Lucksom, 2007; Chen & Gale, 2009; Gogoi, 2014; 2018; 2019; Singh *et al.*, 2019; Misra, 2019) and a critical examination of the flowers, the specimen has been identified as a representative of *Nervilia macroglossa* (Hooker f. 1890: 120) Schlechter (1911: 402). The plant is known from India (Meghalaya, Sikkim, W. Bengal and Jharkhand), Nepal, Bhutan and Myanmar. This new population observed in the district of Karbi Anglong is here added to the flora of the state of Assam. The specimen has been cultivated at Regional Orchid Germplasm Conservation and Propagation Centre (Assam Circle) and deposited in the Herbarium of The Orchid Society of Eastern Himalaya (TOSEHIM, Assam Circle).

The genus *Nervilia* Commerson ex Gaudichaud (1829: 421) groups approximately, according to the authors, 71 (Tang *et al.*, 2018) to 80 (WCSP, 2021) species. This genus is widely distributed in the Old-World tropics, from Australasia and the South-west Pacific Islands to sub-Saharan Africa (Pettersson, 1991; Gale *et al.*, 2015; 2018). In flower *Nervilia* may appear to be fully mycoheterotrophic as they are often leafless at the time of flowering and the flowers are followed by a vegetative stem bearing a single photosynthetic leaf (Niissalo *et al.*, 2020). The leaves in the genus are palmately veined and often polygonal or lobed. The taxonomy of genus is problematic because of the development of flower and leaves in different seasons (Chen & Gale, 2009). The populations are often small, isolated and prone to demographic stochasticity (Gale *et al.*, 2010; 2018).

In Assam the genus was represented so far by 4 species: *Nervilia concolor* (Blume 1825: 416) Schlechter (1911: 404), *Nervilia juliana* (Roxburgh 1832: 63) Schlechter (1911: 402), *Nervilia plicata* (Andrews 1803: 321) Schlechter (1911: 403) (Gogoi *et al.*, 2015; Gogoi, 2018; 2019) and *Nervilia infundibulifolia* Blatter & McCann (1932: 725) (Baro *et al.*, 2019). In the present paper *N. macroglossa* is reported for the first time in Assam.

Taxonomic treatment

Nervilia macroglossa (Hooker f.) Schlechter in *Botanische Jahrbücher für Systematik* 45: 402 (1911).

basionym: *Pogonia macroglossa* Hooker f., *Flora of British India* 6(1): 120 (1890); *Icones plantarum* 23: t.2195 (1894).

Specimen examined: India, Assam, Karbi Anglong, 07/05/2021, *Gogoi 00952* (TOSEHIM). (Fig. 1 & 2)

Terrestrial plant with globose tuber, 1.2–1.5 × 1.2–1.4 cm. Leaf 3.8–4.7 × 4–4.5 cm, green, orbicular-cordate, petiolate, apex acuminate, margins entire; petiole 5.5–7 cm long, channeled at base of lamina and terete below, pale green, suffused with purple. Inflorescence 6–13 cm long, erect, terete, slender, glabrous; peduncle 5–12 cm, with 2–3, 2–3 cm long tubular, stem clasping sheaths; rachis 2–3 cm long with a solitary drooping flower; pedicel and ovary 0.4–0.7 cm long, drooping, ribbed, glabrous; floral bract linear-lanceolate, acute, 0.35–0.4 × 0.02–0.03 cm. Flower 2–4 cm across; sepals and petals white flushed with pink. Sepals and petals subsimilar, linear-lanceolate, acute to acuminate; dorsal sepal 2.5–3.3 × 0.2–0.4 cm; lateral sepals 2.8–3 × 0.2–0.4 cm. Petals 2.5–2.8 × 0.2–0.3 cm, 1-nerved. Lip 2.4–3.5 × 0.5–0.8 cm, obscurely 3-lobed, narrowly oblong or spatulate; lateral lobes convolute around the column; apical lobe lanceolate, apex subacute or obtuse, margins slightly undulate, softly pubescent. Column 0.5–1.3 cm long, slender, apex clavate. Anther 0.3 × 0.3 cm, bilobulate. Pollinia 2, bipartite, yellow.



Fig. 1: leaves and flower of *Nervilia macroglossa* *in situ*

[Photos: Khyanjeet Gogoi]

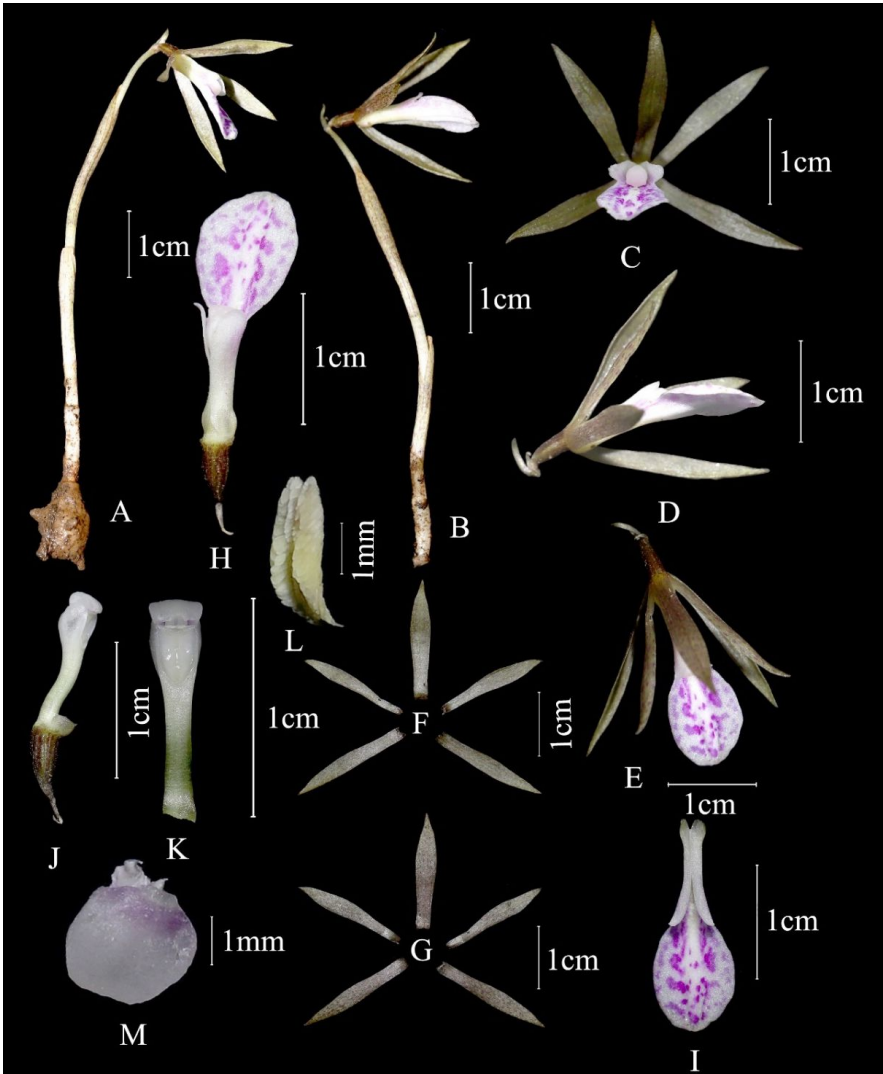


Fig. 2: *Nervilia macroglossa*

A: tuber with inflorescence; B: inflorescence, C, D, E: different view of flower; F, G: perigone, ventral and dorsal views; H: lip with ovary and column; I: lip; J: ovary and column. K: column; L: pollinia; M: anther

Habitat: Terrestrial growing during monsoon in evergreen deciduous forests and the bamboo forests at an elevation of 400 m. The species was found only in a single locality. Degradation of habitat due to shifting

cultivation, illegal logging possibly will make the species threatened in near future.

Flowering: May-June.

Distribution: India (Assam, Meghalaya, Sikkim, West Bengal and Jharkhand), Nepal, Bhutan and Myanmar.

Key to the species of *Nervilia* from Assam state

1a. Inflorescence with 1 flower

2a. Leaves with purple-maroon streaks along the veins *N. infundibulifolia*

2b. Leaves without purple-maroon streaks along the veins

3a. Leaves green both sides, orbicular-cordate..... *N. macroglossa*

3b. Leaves light purplish green, purple beneath, ovate-cordate.. *N. juliana*

1b. Inflorescence with 2 flowers

4a. Inflorescence with 2 or rarely 3 flowers, sepals and petals brownish yellow; lip brownish or pale purple..... *N. plicata*

4b. Inflorescence with 4-15 flowers, sepals and petals yellowish green; lip white..... *N. concolor*

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References

- Andrews, H. C., 1803. *Arethusa plicata*. *Botanist's Repository, for new, and rare plants* 5: 321.
- Baro, D., A. Bawri, A. Adhikari & S.K. Borthakur, 2019. Orchid flora of Manas National Park, India. *Asian Journal of Conservation Biology* 8 (2): 143-148.
- Blatter, E. & C. McCann, 1932. Revision of the Flora of Bombay Presidency. *Journal Bombay natural history society* 35: 722-736.
- Blume, C. L., 1825. *Cordyla concolor*. *Bijdragen tot de flora van Nederlandsch Indië* 416.

- Chowdhery, H.J., 1998. *Orchid Flora of Arunachal Pradesh*. Bishen Singh Mahendra Pal Singh, Dehra Dun, India 824 p.
- Gale, S.W., A. Maeda, C.I. Chen & T. Yukawa, 2010. Inter-specific relationships and hierarchical spatial genetic structuring in *Nervilia nipponica*, an endangered orchid in Japan. *Journal of Plant Research* 123: 625–637.
- Gale, S.W., J. Li, A. Kinoshita & T. Yukawa, 2015. Studies in Asian *Nervilia* (Orchidaceae) V: *N. futago*, a cryptic new species from southwest Japan confirmed by morphological, cytological and molecular analyses. *Systematic Botany* 40: 413–425.
- Gale, S.W., S. Duangjai, J. Li, Y. Ito, S. Watthana, P. Termwutthipreecha, M. L. Cheuk & S. Suddee, 2018. Integrative analyses of *Nervilia* (Orchidaceae) section *Linervia* reveal further undescribed cryptic diversity in Thailand. *Systematics and Biodiversity* 16(4): 377–396.
- Gale, S.W., S. Rueangruea & S. Suddee, 2014. Studies in Asian *Nervilia* (Nervilieae, Epidendroideae, Orchidaceae) IV: *N. umphangensis*, a new species from the Thai–Myanmar border. *Phytotaxa* 166(2): 139–144.
- Gaudichaud-Beaupré, C. 1826. *Voyage autour du monde, entrepris par ordre du roi, . . . exécuté sur les corvettes de S. M. l'Uranie et la Physicienne, pendant les années 1817, 1818, 1819 et 1820; . . . Botanique*, Paris pp 421-427, pl. 32-38.
- Gogoi, K. 2014a. Orchids of Garampani Wildlife Sanctuary, Karbi Anglong district, Assam (Part-I) in: *The McAllen International Orchid Society Journal*, Vol. 15(6): 8–16.
- Gogoi, K. 2014b. Orchids of Garampani Wildlife Sanctuary, Karbi Anglong district, Assam (Part-II) in: *The McAllen International Orchid Society Journal*, Vol. 15(7): 11–24.
- Gogoi, K., 2018. *Wild Orchids of Assam - A Pictorial Guide*. Assam State Biodiversity Board, Guwahati, Assam 473 p.
- Gogoi, K. 2019. *Orchids of Assam - A Pictorial Guide*. Dibrugarh University, Dibrugarh, Assam 588 p.
- Gogoi K., R. Das & R. Yonzon, 2015. Orchids of Assam, North East India – An annotated checklist. *International Journal of Pharmacy and Life Sciences* 6(1): 4123–4156.
- Hegde, S., N. revised by N. Tam, J. Tsering & O. Apang, 2017. *Orchids of Arunachal Pradesh*. Department of Environment and Forest, Govt. of Arunachal Pradesh, Itanagar, India 168 p.

- Hooker, J. D. 1890. *POGONIA*, Griff., Sect. *Nervilia*. *The Flora of British India* 6: 120.
- King, G. & R. Pantling, 1898. *The orchids of the Sikkim Himalayas*. Annals of the Royal Botanic Garden. Calcutta 8: 1–342, tt. 1–448.
- Lucksom, S.Z., 2007. *The Orchids of Sikkim and North East Himalaya*. Development Area, Jiwan Thing Marg, Gangtok, East Sikkim, India 984 p.
- Misra, S., 2019. *Orchids of India - A hand book*. Bishen Singh Mahendra Pal Singh, Dehra Dun, India 652 p.
- Niissalo M.A., L.M. Choo, H. Kurzweil, T.W. Yam & G.S. Khew. 2020. A new species of *Nervilia* (Orchidaceae) from Singapore in *Gardens' Bulletin Singapore* 72(1): 1–14.
- Pearce, N.R. & Cribb, P.J., 2002. *Orchids of Bhutan: Flora of Bhutan*. Vol. 3, No. 3. Royal Botanical Garden, Edinburgh 643 p.
- Petterson, B., 1991. *The genus Nervilia (Orchidaceae) in Africa and the Arabian Peninsula*. Orchid Monographs. Leiden: Rijksherbarium/Hortus Botanicus 5(1): 68 p.
- Pradhan, U.C., 1979. *Indian Orchids Guide to Identification and Culture*. Bharat Lithographing Co., Calcutta, India Vol-I 188 p.
- Roxburgh, W., 1832. *Hortus Bengalensis, or a catalogue . . .* 63.
- Schlechter F. R. R., 1911. Die polychondreae (Neottiane Pfitz.) und ihre systematische einteilung. *Botanische Jahrbücher für Systematik, Pflanzengeschichte und Pflanzengeographie* 45: 375–410.
- Schlechter, F. R. R., 1911. *Nervilia* Comom. *Botanische Jahrbücher für Systematik, Pflanzengeschichte und Pflanzengeographie* 45: 402–404.
- Singh, S.K., D.K. Agrawala, S.S. Das, A.A. Mao & P. Singh, 2019. *Orchids of India- A pictorial guide*. Botanical Survey of India, Ministry of Environment, Forest & Climate change, Kolkata, India 546 p.
- Tang, F. X., J. W. Li, B. Pan, X.-F. Wu, Y. Luo & Q. Liu, 2018. New and Newly Record Orchids of *Nervilia* (Nervilieae, Epidendroideae, Orchidaceae) in China. *Phytotaxa* 379 (2): 162–168.
- WCSP, 2021. World Checklist of Selected Plant Families. Facilitated by the Royal Botanic Gardens, Kew. <http://wcsp.science.kew.org/> [Accessed 27 June 2021].