

Strobilanthes sunhangii (Acanthaceae) – a new addition to the flora of India from Arunachal Pradesh

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Abstract: *Strobilanthes sunhangii* T.Deng, J.T.Chen & Y.F.Deng is reported as an addition to the flora of India from Pakke Kessang district of Arunachal Pradesh with a detailed description and photo plate for the precise identification.

Keywords: Acanthaceae, China, New Record, Northeast, *Strobilanthes divaricata*, Tibet.

Introduction

The genus *Strobilanthes* Blume, consisting of approximately 450 species, is the second largest genus in the family Acanthaceae followed by *Justicia* L. (Wood & Scotland, 2009; Hu *et al.*, 2011; POWO, 2023), mainly distributed in the tropical parts of Asia, from China, Indomalaya to Melanesia (Mabberley, 2017). In India, there are 167 species of *Strobilanthes* distributed in the Western Ghats and the Himalayas, with 41 species recorded from Arunachal Pradesh (Arisdason *et al.*, 2020). Reproductive parts play a key role in the species identification, but due to the infrequent flowering and monocarpic nature of the genus, species identification is difficult and thus many *Strobilanthes* species are still kept undescribed.

During expeditions in the Pakke Kessang district of Arunachal Pradesh in August 2021 and July 2022, the first author found a population of *Strobilanthes* plants with about 40–60 mature individuals. After observations of wild living plants, herbarium specimens, laboratory studies and consultation of the relevant literature (Blume, 1826; Clarke, 1885; Wood, 1994, 2001, 2014; Carine & Scotland, 2002; Deng *et al.*, 2006; Hu *et al.*, 2011; Adhikari, 2018;

Augustine, 2018; Thomas *et al.*, 2019, Chen *et al.*, 2020) the plants were identified as *S. sunhangii* T.Deng, J.T.Chen & Y.F.Deng, a species recently described by Chen *et al.* (2020) from Medog county, Tibet, China. Further, it was found that this species has so far not been reported from India (Anderson, 1867; Arisdason *et al.*, 2020) and hence, a detailed description, distribution and color photographs are provided.

Taxonomic Treatment

Strobilanthes sunhangii T.Deng, J.T.Chen & Y.F.Deng, *PhytoKeys* 166: 119. 2020. *Type:* CHINA, Tibet, Medog county, Beibeng town, N 29.23319, E 95.17693, c. 1470 m, 05.10.2018, H. Sun, T. Deng & Z.M. Li *Sunhang* 19964 (holo KUN [KUN1345286 digital image!]; iso KUN [KUN1345287!, KUN1345288 digital images!]).

Fig. 1

Undershubs, 1–2 m high, profusely branched. Stems sub-terete, glabrous with swollen internodes. Leaves opposite, anisophyllous, petioles 3–6 mm long, sulcate, glabrous; blades ovate to lanceolate-ovate, larger ones 4.5–10.5 × 2.1–3.5 cm long, smaller ones 3.2–8.5 × 0.8–1.2, base rounded to broadly cuneate, slightly oblique, apex acuminate to narrowly caudate, margins serrulate, both surfaces glabrous; secondary veins 3–6 on each side of midvein and prominent on both surfaces. Inflorescences of axillary spikes, simple, slender, 6–21 cm long, rachis glabrous; bracts linear, 2–3.5 mm long, caducous, bracteoles not seen. Flowers 1.2–3.5 cm apart on rachis. Calyx 0.8–1.2 × 0.1–0.2 cm long, glabrous, 5-lobed to middle; lobes linear-lanceolate, finely acuminate at apex, equal. Corolla 2.6–3.2 cm long, campanulate, outside and lobes pinkish-white, inside purplish-pink, outside

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Fig. 1. *Strobilanthes sunhangii* T.Deng, J.T.Chen & Y.F.Deng: a. Habit; b. Single flower and abaxial surface of leaves; c. Adaxial surface of leaves; d. Flower–front view; e. Flower–side view; f. Corolla split open with epipetalous stamen (from *K. Chowlu* 41103; photos by K. Chowlu).

glabrous, finely pubescent inside at base of corolla were lower lip forms and continues till second bend; tube cylindrical with *c.* 90° twist at base and middle of corolla; lobes broadly elliptic, emarginate at apex. Stamens 4, didynamous, included; united part of filaments dense villous at base, glabrous on middle, upper and margin; shorter pair *c.* 3 mm long; longer pair *c.* 6 mm long; anther thecae oblong, *c.* 3 mm long. Ovary *c.* 4.5 mm long, glabrous; style *c.* 1.8 cm long, with sparse gland-tipped trichomes. Fruits and seeds not seen.

Flowering & fruiting: Flowering from June to October, fruiting not seen.

Habitat: The plants grow in tropical semi-evergreen forest patches at an elevation of 1300–1600 m.

Distribution: China, and now in India.

Specimens examined: INDIA, **Arunachal Pradesh**, Pakke Kessang district, Pakke WLS, N 27°09'28", E 93°12'55", 1350 m, 08.08.2021. *K. Chowlu* 41103 (ARUN000028868); *Ibid.*, N 27°09'47", E 93°14'29", 1350 m, 30.07.2022. *K. Chowlu* 41528 (ARUN!); Upper Subansiri district, Muri, near Daporijo, *Kumar Ambrish* 17238 (ARUN!).

Conservation Status: *Strobilanthes sunhangii* is so far known from two locations in India other than its type locality. The Extent of Occurrence (EOO) of the species is estimated to be less than 5,000 km² (*c.* 3585.820 km²) with an Area of Occupancy (AOO) of 12 km² (AOO based on IUCN standard cell width of 2 km²). Due to various anthropogenic activities and natural calamities, habitat degradation was observed in the localities. Based on available data, the species is assigned to the category Endangered (EN B1ab(iii) & B2ab(iii)) according to the IUCN Criteria (IUCN 2012, 2022).

Notes: The present collection exhibits some minor variations in calyx and stamen characters compared to those for *S. sunhangii* reported by Chen *et al.* (2020). In the present material, the calyx is 8–12 mm long and linear-lanceolate (*vs.* 7–8 mm long and ovate), the filaments of the shorter pair are *c.* 3 mm long and those of the longer pair *c.* 6 mm long (*vs.* shorter pair *c.* 2 mm, longer pair *c.* 4 mm). The calyx characters of this taxon are matching well with those of *S. divaricata* (Nees) T. Anderson but Chen's specimens are showing variations. While consulting ARUN, the second author (AS) found the collection *Kumar Ambrish* 17238

(Ambrish, 2013) identified as *S. divaricata*. On close examination, however, the authors identified it as *S. sunhangii* and both the specimens collected by KC and KA showing the same variations could be due to ecological or phytogeographical factors.

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Literature Cited

- ADHIKARI B. 2018. *Strobilanthes*. In: WATSON M.F., AKIYAMA S., IKEDA H., PENDRY C., RAJBHANDARI K.R., & K.K. SHRESTHA (eds.), *Flora of Nepal Acanthaceae*: Web edition 2. Royal Botanic Garden Edinburgh, Edinburgh, pp. 36–49.
- AMBRISH K. 2013. *Floristic diversity of Arunachal Pradesh (Upper Subansiri District)*. Bishen Singh Mahendra Pal Singh, Dehradun.
- ANDERSON T. 1867. An enumeration of the Indian species of Acanthaceae. *Journal of the Linnean Society of London. Botany* 9(40): 425–526. <https://doi.org/10.1111/j.1095-8339.1867.tb01309.x>
- ARISDASON W., LAKSHMINARASIMHAN P., KARTHIGEYAN K., KRISHNA G., ALBERTSON D., VENU P., PANJA D., GHOSH T., DEBNATH H.S., GNANASEKARAN G., MURTHY G.V.S. & D.K. ROY 2020. *Acanthaceae*. In: MAO A.A. & S.S. DASH (eds.), *Flowering Plants of India: an annotated checklist (Dicotyledons)* Vol II. Botanical Survey of India, Kolkata, p. 119.
- AUGUSTINE J. 2018. *Strobilanthes* Blume in the Western Ghats. Malabar Natural History Society, Kozhikkode.
- BLUME C.L. 1826. Bijdragen tot de Flora van Nederlandsch Indië 14. Ter Lands Drukkerij, Batavia. <https://doi.org/10.5962/bhl.title.395>
- CARINE M.A. & R.W. SCOTLAND 2002. Classification of Strobilanthinae (Acanthaceae): trying to classify the unclassifiable? *Taxon* 51(2): 259–279. <https://doi.org/10.2307/1554897>

- CHEN J.T., HUANG X.H., LV Z.Y., KUANG T.H., LUO J., DENG Y.F. & T. DENG 2020. *Strobilanthes sunhangii* (Acanthaceae), a new species from Tibet, China. *PhytoKeys* 166: 117–127. <https://doi.org/10.3897/phytokeys.166.58831>
- CLARKE C.B. 1885. Acanthaceae. In: HOOKER J.D. (ed.), *Flora of British India*. Volume 4. Reeve & Co., London, pp. 387–558.
- DENG Y.F., WOOD J.R.I. & SCOTLAND R.W. 2006. New and reassessed species of *Strobilanthes* (Acanthaceae) in the flora of China. *Botanical Journal of the Linnean Society* 150(3): 369–390.
- HU J., DENG Y.F. & J.R.I. WOOD 2011. *Strobilanthes* Blume In: WU Z.Y., RAVEN P.H. & D.Y. HONG (eds.), *Flora of China*. Volume 19. (Cucurbitaceae through Valerianaceae, with Annonaceae and Berberidaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis, pp. 381–429.
- IUCN 2012. *IUCN Red List Categories and Criteria*. Version 3.1. Second edition. IUCN, Species Survival Commission, Gland & Cambridge.
- IUCN 2022. *Guidelines for using the IUCN Red List Categories and Criteria*. Version 15.1. Prepared by the Standards and Petitions Committee. Available at: <https://www.iucnredlist.org/documents/RedListGuidelines.pdf> (Accessed on 18.08.2023)
- MABBERLEY D.J. 2017. *Mabberley's plant-book: a portable dictionary of plants, their classification and uses*. Fourth edition. Cambridge University Press, Cambridge.
- POWO 2023. *Plants of the World Online*. Facilitated by the Board of Trustees of Royal Botanic Gardens, Kew. Available at: <https://powo.science.kew.org/> (Accessed on 22.05.2023).
- THOMAS S., MANI B., BRITTO S.J. & P.I. PAVK 2019. *Strobilanthes tricostata*, a new species of Acanthaceae from the Western Ghats, India. *Phytotaxa* 413(3): 244–250. <https://doi.org/10.11646/phytotaxa.413.3.5>
- WOOD J.R.I. 1994. Notes relating to the flora of Bhutan: XXIX. Acanthaceae, with special reference to *Strobilanthes*. *Edinburgh Journal of Botany* 51(2): 175–274. <https://doi.org/10.1017/S0960428600000871>
- WOOD J.R.I. 2001. Family 175. *Acanthaceae*. In: SPRINGATE L.S. (ed.), *Flora of Bhutan, including a record of plants from Sikkim and Darjeeling*. Volume 2(3). Royal Botanic Garden, Edinburgh and Royal Government of Bhutan, pp. 1243–1293.
- WOOD J.R.I. 2014. New names and combinations in Indian Acanthaceae. *Novon* 23(3): 385–395. <https://doi.org/10.3417/2013046>
- WOOD J.R.I. & R.W. SCOTLAND 2009. New and little-known species of *Strobilanthes* (Acanthaceae) from India and South East Asia. *Kew Bulletin* 64: 3 – 47. <https://doi.org/10.1007/S12225-009-9098-2>