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Cover: A Warty Hammer Orchid *Drakaea livida* gets pollinated by a male thynnine wasp through 'sexual deception' — a colour pencil reproduction of photos by ron_n_beths (flickr.com) and Rod Peakall; Water colour reproduction of Flame Lily *Gloriosa superba* — photo by Passakoran_14; and a bag worm and its architectural genius (source unknown). Art work by Pannagarsi G.



Hygrophila phlomoides Nees (Acanthaceae), a new record to the flora of northern India from Suhelwa Wildlife Sanctuary, Uttar Pradesh

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Abstract: *Hygrophila phlomoides* Nees is reported as a new distribution record to the flora of northern India from Bhagwanpur forest of Suhelwa Wildlife Sanctuary, Uttar Pradesh. In India, the distribution of this species is previously reported only from the eastern Himalaya (Assam, Arunachal Pradesh, Manipur, Meghalaya, West Bengal) and Karnataka State of Western Ghats.

Keywords: Angiosperm flora, Balrampur and Shravasti, Bhagwanpur forest, Indo-Nepal border, marshy areas, tropical and subtropical regions.

Hygrophila R.Br. (Acanthaceae: Ruellieae) is a cosmopolitan genus, commonly found in swamp areas of tropical and subtropical regions of the world (Hu & Daniel 2011). Around 77 species of the genus are reported worldwide (POWO 2025), of which, 17 taxa have been documented from India (Arisdason et al. 2020).

While working on the floristic diversity of Suhelwa

Wildlife Sanctuary, the first author encountered an interesting population of a *Hygrophila* species near a water body in Bhagwanpur forest area, Tulsipur range at an elevation of 178 m. The detailed taxonomic study of the collected specimens using relevant taxonomic literature (Clarke 1884; Cook 1996; Jaseela et al. 2024) and consultation with experts, the identity of the specimen was confirmed as *Hygrophila phlomoides* Nees (Nees 1832). Based on the review of literature (Duthie 1960; Maheshwari 1963; Parker 1973; Kachroo & Sapru 1977; Bhandari 1978; Osmaston 1978; Sharma & Kachroo 1981; Chowdhery & Wadhwa 1984; Khanna et al. 2020; Kumar 2001; Singh & Prakash 2002; Mohan 2006) it revealed that, the species has not been reported from any states and union territories of northern India (Himachal Pradesh, Uttarakhand, Haryana, Punjab, Uttar Pradesh, Rajasthan, Jammu & Kashmir, Delhi, Chandigarh, Ladakh). Therefore, the present collection

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of this plant species from Uttar Pradesh reports the extended distribution to the angiosperm flora of northern India.

MATERIAL AND METHODS

Study area: During the present study, *H. phlomoides* has been collected from the marshy areas of Bhagwanpur forest, Suhelwa Wildlife Sanctuary, Uttar Pradesh. The Suhelwa Wildlife Sanctuary, encompassing an area of 452 sq km, is situated in the Balrampur and Shravasti districts of northern Uttar Pradesh near Indo-Nepal border. The sanctuary ranges from 27.500–27.928° N and 81.927–82.809° E at an altitude of 120–200 m (Khanna 2015).

The live specimens were collected from the Bhagwanpur forest areas of Suhelwa Wildlife Sanctuary. Micro morphological characters were examined by using Leica S8 APO stereo microscope. The nomenclatural corrections were made according to Shenzhen code (Turland et al. 2018). Abbreviated author citations were given by following authors of plant names (Brummitt &

Powell 1992), and acronyms of herbaria were provided according to Index Herbariorum (Thiers 2025). The specimens of appropriate size with relevant plant parts were collected from the field and the herbarium specimens were prepared following the standard methods (De Vogel 1987; Bridson & Forman 1998). The voucher specimens were deposited in the herbarium of CSIR-National Botanical Research Institute (LWG) for future reference.

Botanical description

Hygrophila phlomoides Nees, N.Wallich, Pl. Asiat. Rar. 3: 80(1832). (Images 1, 2).

Type (Lectotype designated by Jaseela et al. 2024): Bangladesh, Sillet, G. Gomez, Wall Cat n. 2376 (GZU [GZU000250031 digital image!]; isolectotypes GZU [GZU, K, E, P, PH, G-DC, C, CAL].

Erect unarmed herb, 55–92 cm high. Stem branched, quadrangular, green, strigose; internodes swollen, 2–10 cm long, strigose. Leaves sub-sessile, obovate, elliptic, 5–10 × 2–2.8 cm, obtuse or acute at apex, margin entire,



Image 1. *Hygrophila phlomoides* Nees.: a—habitat | b—flower | c—bracts. © Pankaj Bharti.

undulate or crenate, cuneate at base, hairy on both surfaces; midrib prominent adaxially and conspicuous abaxially; lateral nerves 7–13 pairs; cystoliths present; petiole 3–7 mm long, hairy. Flowers axillary in dense villous whorls, 8–10; bracts in three series; outer bracts large, foliaceous, obovate, 18–22 × 5–6 mm, obtuse at apex, margins entire, base cuneate, green, hairy on both surfaces; middle series of bracts ovate-lanceolate, 12–14 × 4–4.5 mm, sub-acute at apex, margins entire, base cuneate, green, hairy on both surfaces; inner series of bracts oblong, 8–10 × 2–2.5 mm, sub-acute at apex, margins entire, base cuneate, green, hairy on both surfaces; bracteoles linear, 5.5–5.8 × 1.2–1.3 mm, hirsute, obtuse at apex, margin entire, cuneate at base, hairy on both surfaces. Calyx tubular, 5-lobed, 1–12 × 11–12 cm, divided halfway down reddish-brown; teeth linear, 6–6.5 mm long, dissimilar, one segment larger than others, hairy. Corolla bilabiate, 15–16 mm long, pink and dark purple streaks on the mouth, glandular hairy; tube 4.5–4.8 mm long, tube white to light pink, glabrous; upper lip 2-lobed, glandular hairy outside, glabrous inside; lower lip oblong, 3-lobed, glandular hairy outside, glabrous inside except at mouth hairy, middle lobe sub-orbicular, larger than the lateral lobes, purple-stripes at centre. Stamens didynamous, adnate at the base of the corolla tube; filaments white, glabrous on the upper part and hairy beneath; posterior filaments 3.5–3.8 mm long; anterior filaments 4.5–4.8 mm long; anther thecae elliptic, 1.8–2.2 mm long, pubescent at the base otherwise glabrous. Ovary 2-loculed, oblong, 2.5–2.8 mm long, glabrous; style filiform, 15–17 mm long, white, glandular hairy at base; stigma white, glabrous. Capsule linear-oblong, 14–16 mm long, exceeding the calyx, green, glabrous; seeds many, 18–24, ovoid, 1.7–1.9 × 1.2–1.4 mm, brownish, woolly, attached on the prominent retinacula.

Specimens examined: India: Uttar Pradesh, Balrampur District, Suhelwa Wildlife Sanctuary, Tulsipur, Bhagwanpur, elevation 178 m, 27.585° N, 82.457° E, 06.xi.2023, Pankaj Bharti 349037 (LWG).

Phenology: Flowering and fruiting was observed from October to February.

Distribution: Globally the species is distributed in India, Bangladesh, China, Cambodia, Laos, Malaya, Myanmar, Philippines, Thailand, and Vietnam (Govaerts et al. 2025). In India, the occurrence of this species is so far recorded from eastern Himalaya (Assam, Arunachal Pradesh, Manipur, Meghalaya, West Bengal), Karnataka, and Uttar Pradesh (present study). While compiling the Flora of Bihar Analysis, Singh et al. (2001) included the name *H. phlomoides* and mentioned the locality

as 'Purnia'. The inclusion of this species in Bihar was not based on any collection but a cross citation from Haines (1961) publication, Botany of Bihar and Orissa. In Hayne's publication, the author is not confident about the locality, and mentioned as 'Marshes. Sikkim Tarai and Duars close to our area! Probably in Purnea'. The recent publication of Jaseela et al. (2024) also confirmed that, there are no voucher specimens available in any of the Indian herbaria from the state of Bihar. Hence the previous report of *H. phlomoides* from Bihar is without any scientific evidence and excluded during the study.

REFERENCES

- Arisdason, W., P. Lakshminarasimhan, K. Karthigeyan, G. Krishna, D.W. Albertson, P. Venu, D. Panja, T. Ghosh, H.S. Debnath, G. Gnanasekaran, G.V.S. Murthy & D.K. Roy (2020). Acanthaceae: pp. 270-319. In: Mao, A.A. & S.S. Dash, (eds.). *Flowering Plants of India: An Annotated Checklist (Dicotyledons)*, vol. 2. Botanical Survey of India, Kolkata, 705 pp.
- Bhandari, M.M. (1978). *Flora of the Indian Desert*. United Book Traders, Jodhpur, 471 pp.
- Bridson, D.M. & L. Forman (1998). *Herbarium Handbook*. Royal Botanic Gardens, Kew, England, 300 pp.
- Brummitt, R.K. & C.E. Powell (1992). Authors of Plant Names Standard. International Working Group on Taxonomic Databases (TDWG) <http://www.tdwg.org/standards/101>
- Chowdhery, H.J. & B.M. Wadhwa (1984). *Flora of Himachal Pradesh (Analysis)*, vol.2, Flora of India Series 2. Howrah: Botanical Survey of India, 550 pp.
- Clarke, C.B. (1884). Acanthaceae: pp. 406-408 In: Hooker, J.D. (eds). *The Flora of British India*, vol.4. London: L. Reeve & Co. Ltd, 780pp.
- Cook, C.D. (1996). *Aquatic and Wetland Plants of India*. A Reference Book and Identification Manual for the Vascular Plants Found in Permanent or Seasonal Fresh Water in the Subcontinent of India South of the Himalayas. Oxford University Press, 394 pp.
- De Vogel, E.F. (1987). *Manual of Herbarium Taxonomy*. United Nations Educational, Scientific and Cultural Organization, 164 pp.
- Duthie, J.F. (1960). *Flora of The Upper Gangetic Plain and of the adjacent Siwalik and Sub-Himalayan tracts*. vol. 2 reprint. Calcutta: Botanical Survey of India, pp. 55–57.
- Govaerts, R. (2025). The World Checklist of Vascular Plants (WCVP). Royal Botanic Gardens, Kew. Checklist dataset. <https://doi.org/10.15468/6h8ucr> Accessed via GBIF.org on 03.x.2025.
- Haines, H.H. (1961). The Botany of Bihar and Orissa, vol. 2. Botanical Survey of India, pp. 703–704.
- Hu, J.Q. & T.F. Daniel (2011). Acanthaceae, pp. 430–432. In: Wu, Z.Y., P.H. Raven & D.Y. Hong, (eds.). *Flora of China*, vol. 19. Beijing: Science Press; St. Louis: Missouri Botanical Garden Press, 884 pp.
- Jaseela, V.T., E.K. Sinisha & N.S. Pradeep (2024). Taxonomy, typification and distribution of *Hygrophila phlomoides* (Acanthaceae) in India. *Rheedeia* 33(4): 382–388.
- Kachroo, P. & B.L. Sapru (1977). *Flora of Ladakh. Dehra Dun*. Bishen Singh Mahendra Pal Singh, pp. 1–172.
- Khanna, K.K. (2015). Floristic diversity of Sohelwa Wildlife Sanctuary, Uttar Pradesh. *Phytotaxonomy*, 15, pp. 166–191.
- Khanna, K.K. (2020). Family Acanthaceae: Uttar Pradesh, pp. 271–310. In: Singh, K.P., A.A. Ansari, K.K. Khanna, G.P. Sinha, B.K. Shukla, Anand Kumar, U.S. Vaish, A.N. Shukla & V.K. Madhukar. *Flora of Uttar Pradesh*, vol. 2. Botanical Survey of India, Kolkata, 519 pp.
- Kumar, S. (2001). *Flora of Haryana (Materials)*. Dehradun: Bishen Singh Mahendra Pal Singh, 291 pp.
- Maheshwari, J.K. (1963). *The Flora of Delhi*. New Delhi: Council of Scientific & Industrial Research, 447 pp.
- Mohan, S. (2006). *Flora of Chandigarh UT*. PhD Thesis. Panjab

Image 2. Voucher specimen of *Hygrophila phlomoides* Nees deposited at LWG herbarium. © Pankaj Bharti.

- University, 328pp.
- Nees von Esenbeck, C.G.D. (1832).** *Acanthaceae Indiae Orientalis*: pp. 70-117. In: Wallich, N. *Plantae Asiaticae Rariores*, vol. 3. London: Treuttel, Würtz & Ritter.
- Osmaston, A.E. (1978).** *A Forest Flora for Kumaon*. Reprinted. Dehra Dun: Bishen Singh Mahendra Pal Singh, pp. 387–403.
- Parker, R.N. (1973).** *A Forest Flora for the Punjab with Hazara and Delhi*. Dehra Dun: Bishen Singh Mahendra Pal Singh, pp. 381–393.
- POWO (2025).** Plants of the World Online. Facilitated by the Royal Botanic Gardens, Kew. Available at: <http://www.plantsoftheworldonline.org/>. Accessed on 15.i. 2025.
- Sharma, B.M. & P. Kachroo (1981).** *Flora of Jammu and Plants of Neighbourhood*. Vol.1. Bishen Singh Mahendra Pal Singh, Dehradun, 246 pp.
- Singh, K.K. & A. Prakash (2002).** *Flora of Rajaji National Park Uttarakhand*. Bishen Singh Mahendra Pal Singh, Dehradun, 164 pp.
- Singh, N.P., V. Mudgal, K.K. Khanna, S.C. Srivastava, A.K. Sahoo, S. Bandopadhyay, N. Aziz, M. Das, R.P. Bhattacharya & P.K. Hajra (2001).** *Flora of Bihar Analysis*. Botanical Survey of India, pp. 386–387.
- Thiers, B. (2020).** *Index Herbariorum*. A Global Directory of Public Herbaria and Associated Staff. New York Botanical Garden's virtual herbarium. Available at: <http://sweetgum.nybg.org/ih>. Accessed on 15.i.2025.
- Turland, N.J., J.H. Wiersema, F.R. Barrie, W. Greuter, D.L. Hawksworth, P.S. Herendeen S. Knapp, W.H. Kusber, W.H., Li, D.-Z., K. Marhold, T.W. May, J. McNeill, A.M. Monro, J. Prado, M.J. Price & G.F. Smith (2018).** *International Code of Nomenclature for Algae, Fungi, and Plants (Shenzhen Code)*. Regnum Vegetabil 159. Glashütten: Koeltz Botanical Books. <https://doi.org/10.12705/Code.2018>. Accessed on 15.i.2025.



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