

*Journal of*  
**Threatened**  
**Taxa**

*Building evidence for conservation globally*

10.11609/jott.2021.13.14.20143-20310  
[www.threatenedtaxa.org](http://www.threatenedtaxa.org)

26 December 2021 (Online & Print)  
Vol. 13 | No. 14 | Pages: 20143-20310

ISSN 0974-7907 (Online)  
ISSN 0974-7893 (Print)

*Open Access*





ISSN 0974-7907 (Online); ISSN 0974-7893 (Print)

Publisher  
**Wildlife Information Liaison Development Society**  
www.wild.zooreach.org

Host  
**Zoo Outreach Organization**  
www.zooreach.org

No. 12, Thiruvannamalai Nagar, Saravanampatti - Kalapatti Road, Saravanampatti,  
Coimbatore, Tamil Nadu 641035, India

Ph: +91 9385339863 | [www.threatenedtaxa.org](http://www.threatenedtaxa.org)

Email: [sanjay@threatenedtaxa.org](mailto:sanjay@threatenedtaxa.org)

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Caption: Large Indian Civet *Viverra zibetha*, Tricoloured Munia *Lonchura malacca* and *Hoya wightii* (Medium—pencil crayon on watercolour paper) © Supriya Samanta.



## Nomenclatural notes and report of *Boehmeria penduliflora* Wedd. ex D.G. Long from the Terai region of Uttar Pradesh, India

Amit Gupta<sup>1</sup> , Imtiaz Ahmad Hurrah<sup>2</sup> , Aparna Shukla<sup>3</sup> & Vijay V. Wagh<sup>4</sup>

<sup>1,2,3&4</sup> Plant Diversity, Systematics and Herbarium Division, CSIR–National Botanical Research Institute, Rana Pratap Marg, Lucknow, Uttar Pradesh 226001, India.

<sup>1,2&4</sup> Academy of Scientific and Innovative Research (AcSIR), CSIR–HRDC Campus Ghaziabad, Uttar Pradesh 201002, India.

<sup>1</sup>cnb09695@gmail.com, <sup>2</sup>saithimtiyaz18@gmail.com, <sup>3</sup>aparnashukla602@gmail.com, <sup>4</sup>vijay.wagh@nbri.res.in (corresponding author)

**Abstract:** *Boehmeria penduliflora* Wedd. ex D.G.Long (Urticaceae) is rediscovered after 81 years in Barahi range of Pilibhit Tiger Reserve, Pilibhit district, Uttar Pradesh, India. In the present article, detailed description, digital photographs, illustration, nomenclature update and relevant notes are provided to facilitate easy identification.

**Keywords:** *Boehmeria penduliflora*, Uttar Pradesh, cystoliths, floral cluster.

The family Urticaceae is commonly known as the nettle family, comprising ca. 54 genera and 2,600 species spread throughout the world in tropics, subtropics, and temperate regions (Christenhusz & Byng 2016). This family is represented by 29 genera and 153 species in India (Karthikeyan 2000). The apomictic genus *Boehmeria* (Yahara 1990) is the largest genus in tribe *Boehmerieae*. After revisionary study 47 species were reported from both new world and old world (Wilmot-Dear & Friis 1996, 2013), of which 15–20 species are

known from Indian territory, distributed mostly in tropical regions (Gaur 1999). *Boehmeria penduliflora* Wedd ex D.G.Long mostly occurs in eastern India, with maximum concentration in the Naga and Khasi hills of Assam and Meghalaya (Wilmot-Dear et al. 2013).

During field exploration in Pilibhit district of Uttar Pradesh, a few specimens belonging to the genus *Boehmeria* were collected by the last author (VW). Based on critical microscopic examination and review of literature (Weddell 1854; Lindsat et al. 1874; Hooker 1885; Duthei 1915; Kanjilal 1933, 1940; Wilmot-Dear & Friis 2013) the specimens were identified as *Boehmeria penduliflora* Wedd. ex D.G.Long. From Uttar Pradesh this species was first reported by Kanjilal (1933) in “Forest flora of Pilibhit, Oudh, Gorakhpur, and Bundelkhand”, from Kanjilal onwards; there has been no collection of this species in Uttar Pradesh. Present study reports *B. penduliflora* from Uttar Pradesh after 81 years, and provides detailed description, updated nomenclature,

**Editor:** Anonymity requested.

**Date of publication:** 26 December 2021 (online & print)

**Citation:** Gupta, A., I.A. Hurrah, A. Shukla & V.V. Wagh (2021). Nomenclatural notes and report of *Boehmeria penduliflora* Wedd. ex D.G. Long from the Terai region of Uttar Pradesh, India. *Journal of Threatened Taxa* 13(14): 20261–20265. <https://doi.org/10.11609/jott.6603.13.14.20261-20265>

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**Funding:** University Grant Commission, New Delhi: UGC Ref.No.:768/(CSIR-UGC NET June 2018).

**Competing interests:** The authors declare no competing interests.

**Acknowledgements:** The authors are thankful to: the director CSIR-National Botanical Research Institute, Lucknow for facilities and encouragement; the curators of various Indian herbaria for allowing us to study the specimens (CAL, LWG, ASSAM); the curators of K, BM, G, KATH, and M herbaria for providing access to the herbarium specimens online; the forest department of Pilibhit Tiger Reserve, Uttar Pradesh (India) for giving us permission for surveying the localities. The first author thanks the University Grant Commission, New Delhi for financial support (NBRI communication number: CSIR-NBRI\_MS/2020/07/13).



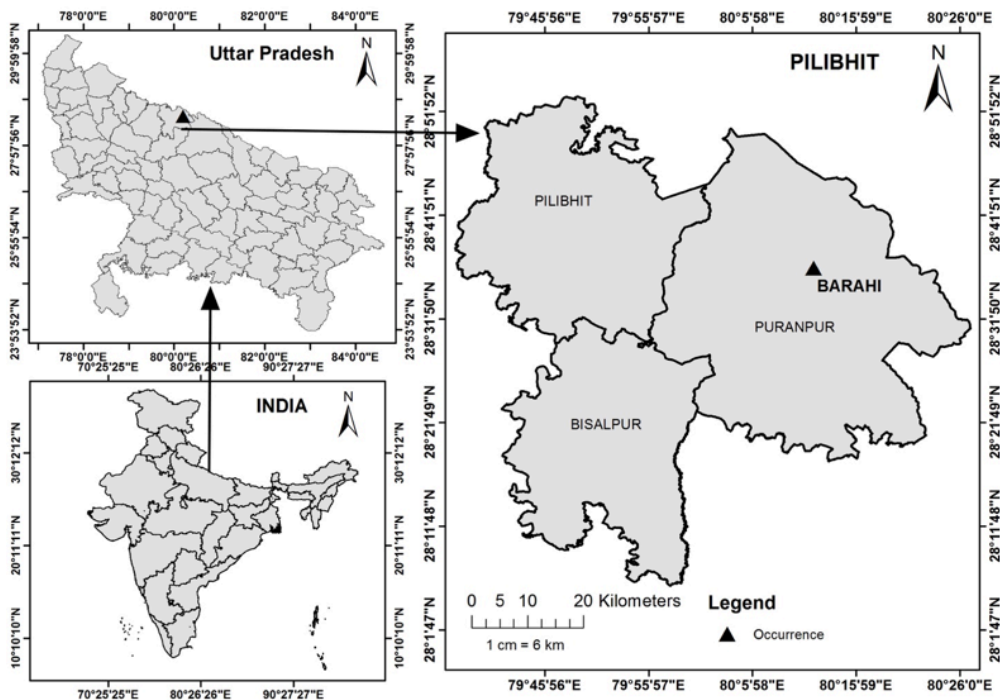


Figure 1. Collection locality of *Boehmeria penduliflora* Wedd. ex D.G.Long in Uttar Pradesh, in India.

phenology, photographs, illustration, and relevant notes to facilitate easy identification.

#### MATERIAL AND METHODS

Fresh plant materials of *Boehmeria* were collected during field surveys conducted in Barahi forest range of Pilibhit Tiger Reserve, Uttar Pradesh, in 2014 (Figure 1). The habit, habitat features and the geo-coordinates (latitude/longitude/elevation) of each specimen were recorded. Macro and micro-morphological characters were examined critically in freshly collected and herbarium specimens. Plant parts were carefully studied under a stereomicroscope (Leica S8APO). Comparative studies were made by examining the relevant taxonomic literature (Yahara 1981; Friss 1993; Wilmot-Dear & Friis 1996, 2013; Acharya et al. 2002). Specimens housed in ASSAM, BSD, BSHC, CAL, DD, and LWG were studied and digital specimen images were accessed from virtual herbaria of BM, E, G, K, NHNM, and NYBG. The Shenzhen Code (Turland et al. 2018) was followed for nomenclature updates and lectotypification of the plant names.

#### TAXONOMIC TREATMENTS

##### *Boehmeria penduliflora* Wedd. ex D.G.Long

in Notes Roy. Bot. Gard. Edinb. 40(1): 130. 1982. (Image 1–2; Figure 2–3)

= *Boehmeria macrophylla* D.Don (1825) 60, nom. illeg., non *B. macrophylla* Hornem. (1815).

= *Boehmeria penduliflora* Wedd. (1854) Ann. Sci. Nat., Bot. sér. 4, 1: 199 (1854).

= *Boehmeria densiflora* Hook & Arn. var. *penduliflora* (Wedd. ex D.G.Long) Acharya & Yonek., Acta Phytotax. Geobot. 53(1): 6.

Type: Nepal, Narainhetty, 5.ix.1802. Buchanan-Hamilton s.n. Lectotype BM barcode BM000641028 (digital image !), selected by Long 1982: 130.

= *Boehmeria densiflora* Hook. & Arn. var. *intermedia* Acharya & Yonek., Acta Phytotax. Geobot. 53(1): 8(2002).

Type: Nepal, Gandaki Zone, Gorkha Dist., Dobremez 673; Holotype BM barcode BM00641035 (digital image !)

= *Urtica penduliflora* Wall., Numer. List [Wallich] n. 4595 (1831).

Lectotype (designated here): Nepal. Wallich, Numer. List.: No. 4595a, (G barcode G00354049 [digital image !]; isolectotype: K barcode K000741291 [digital image !])

Perennial, evergreen, small tree or undershrub, ca. 2 m tall. Ultimate stem 1–2 mm diameter, with appressed minute hairs. Leaves simple, opposite, superposed, slightly asymmetric; petiole 0.6–2.4 cm long, cylindrical, pubescent; lamina 9.4–24.6 × 1.6–3.3 cm, lanceolate-ovate, obtuse or shortly attenuate base, acuminate apex, 3-veined at base, serrate-dentate



Image 1 . A—Habit | B—Flowering twig of *Boehmeria penduliflora* Wedd. ex D.G. Long. © Amit Gupta.

margins, adaxially with fine appressed eglandular hairs at young but nearly glabrate during maturation, dark green, leathery, fairly rough with punctate cystoliths, abaxially having short dense thick hairs along main vein and lateral veins in younger and sparse in older ones, rest with tomentose hairs. Stipules  $17 \times 2.3$  mm, falcate, free lateral, glabrate. Inflorescence borne on leaf axile, each inflorescence bearing axis unbranched or branched at base, having clusters of unisexual flowers; male axis towards the base of branches and comparatively shorter, 5–7 cm, pubescent, 5–10 flowers per cluster. Female axis 10–23 cm long, densely pubescent, each cluster  $1.95\text{--}2.30 \times 1.6\text{--}2.8$  mm,  $0.69\text{--}23$  mm apart consisting 40–74 flowers. Bract triangular,  $2.5\text{--}3.4 \times 1.19\text{--}1.23$  mm, pubescent in centre and ciliate along margin; bracteoles inconspicuous. Male flower sessile or subsessile, tetramerous; tepals 4, elliptical, pubescent, fused in bud condition but open at maturity due to physical force applied by stamens; stamen 4 inflexed in bud, filament flattened, anther ditheous, basifixed, longitudinal dehiscent, surrounding the rudimentary carpel. Female flower  $1.02\text{--}1.76 \times 0.21\text{--}0.48$  mm, sessile or subsessile, hypogynous; tepal attached with ovary, hairy  $0.12\text{--}0.18$  mm long; ovary  $0.55\text{--}0.53$  mm long, obovate, style  $0.38\text{--}0.75$  mm, stigma penicillate. Fruit not seen.

**Phenology:** August to September

**Notes:** *Boehmeria penduliflora* is distinct having flower clusters sparse, from *B. densiflora* with dense flower clusters. In addition, the upper surface of the leaf bears distinct punctate cystoliths. Young leaves and petiole are more pubescent than the older ones.

#### NOMENCLATRUAL UPDATES

*Boehmeria macrophylla* D. Don was described by Don (1825) citing the type of Buchanan-Hamilton collection, mentioning type locality Narainhetty, Nepal. Exactly 10 year before, Hornemann in 1815 had described a new species with same name, i.e., *Boehmeria macrophylla* Hornem., and interestingly the two different specimens cited by D. Don and Hornemann individually, were collected by Buchanan Hamilton from same locality. As such D. Don's (1825) assigned name became the later homonym for Hornemann (1815) species and according to ICN later homonyms are illegitimates (Art. 53).

After that Wallich listed *Urtica penduliflora* Wall. (1831) in his numerical list publication, citing the specimen with collection number 4595a. As per www.plantlist.com database, and the current taxonomic status of *U. penduliflora* is considered as an unresolved name. Weddell (1854) gave a manuscript name *Boehmeria penduliflora* Wedd., without any description and was the first to cite *Urtica penduliflora* Wall. as a synonym

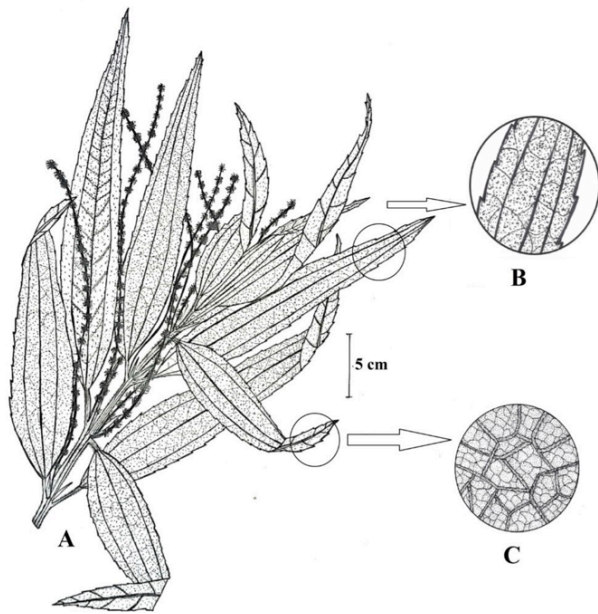


Figure 2. A—Flowering twig | B—Dorsal surface of the leaf | C—Ventral surface of the leaf of *Boehmeria penduliflora* Wedd. ex D.G.Long.

of *B. penduliflora*. But Weddell's name was not validly published (Art. 38.1). Later D.G. Long provided the detailed description and validly published *Boehmeria penduliflora* Wedd. ex D.G.Long (1982).

In the revisionary study of *Boehmeria* Jacq. in southeastern Asia, Acharya followed Wang's view (1995) and recognised *B. densiflora* as an accepted name and treated *B. penduliflora* as a variety of the former (Acharya et al. 2002). Acharya therefore proposed two varieties of *B. densiflora*, viz., *B. densiflora* var. *penduliflora* and *B. densiflora* var. *intermedia* which failed to get recognition and later rendered as synonyms of *B. penduliflora* as it gets the priority over *Boehmeria densiflora*.

The detailed critical study of *Urtica penduliflora*, based on the literature and virtual specimens, we were able to locate Wallich's collection of *Urtica penduliflora* from three different herbaria with same collection number 4595a, housed in K, G, and M herbarium (with barcodes K000741291, G00354049, and M0244322, respectively). As per ICN (Art. 9.6) the specimens deposited in K, G, and M becomes syntypes (Turland et al. 2018) and it is required to select one specimen as a lectotype amongst the three (Art 9.3, Note 2). Here we are designating the specimen housed at Geneva herbarium [G00354049] (Image 4) as lectotype and the one with barcode K000741291 as an isolectotype (Turland et al. 2018).

**Habitat:** In Barahi range of Pilibhit Tiger Reserve,

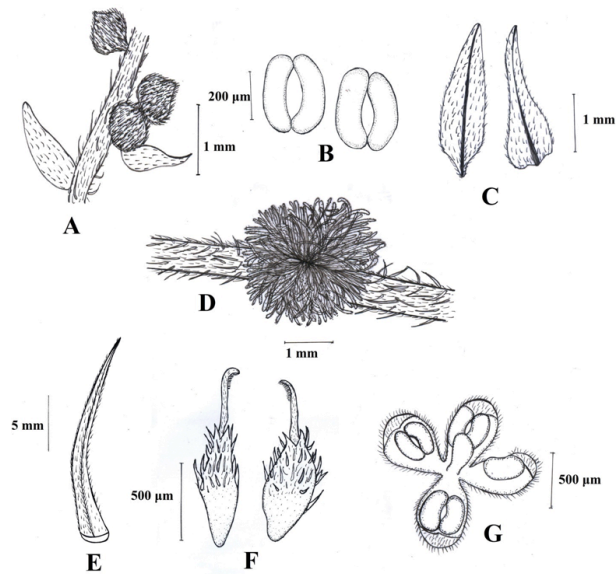


Figure 3. A—Male glomerulus | B—Anther | C—Bract | D—Female glomerulus | E—Stipule | F—Female flower | G—Male flower.

this species growing with ca. 10–15 individuals along the forest margins, on river bank and road side. The associated species are *Cassia tora*, *Hyptis suaveolens*, also growing under the *Shorea robusta* trees.

**Specimen examined:** Nepal, Narainhetty, 05.ix.1802, Buchanan, # s.n., BM000641028 (BM); Wallich, N., 1821, #4595a, G00354049 (G!), K000741291 (K!), M0244322 (M!); Jagat (Marsyandi), 28.483N,84.366E; 1300 m, 28.xi.1970, Dobremez, J. F., #673, BM006641028 (BM!), KATH01222 (KATH!); India, West Bengal, Jalpaiguri, Chilapata, 10.ix.1981, B. Jafari & Party, 10456 (CAL); Assam, Pynursla, 25.xi.1956, G. Panigrahi, 4595; K & G hills, Mawrynklang, 27.i.1957, G.K. Deka, 5233 (ASSAM); Khasi hill, 4000 ft., 09.x.1913, U. Kanjilal, 2668 (ASSAM); Rial khwan, Khasi Hill, 4500 ft, 29.x.1913, U. Kanjilal, 2463 (ASSAM); K & J hill, Syndai, 500 m., 17.viii.1968, Balakrishnan, 46177 (ASSAM); K & J hill, Mawrynklang, 27.i.1957, G.K. Deka, 5333 (ASSAM); K & J hill, Unsav forest, 26.x.1938, S.R. Sharma 1729 (ASSAM); Meghalaya, Garo hill, Amchigiri, 220 m., 29.xi.1996, Sankar Dash, 105213 (ASSAM); Sensong, 25.ii.2007, 114288 (ASSAM); South Garo hill, Romper, 01.ii.2014, D.K. Roy, 91351 (ASSAM); K & J hill, Barapani, 01.i.1930, P.C. Kanjilal, 8766 (ASSAM); K & J hill, Nongpoh, 26.x.1938, S.R. Sharma, 17928 (ASSAM); Arunachal Pradesh, Tirap, Rusa, 08.ix.1958, G. Panigrahi, 17011 (ASSAM); Titap, Nonpong, 10.iii.1958, G.K. Murthy, 12995 (ASSAM); Kameng, 24.iii.1957, G. Panigrahi, 5937 (ASSAM); Siang, Koppu, 731 m., 08.xi.1958, R.S. Rao, 17454 (ASSAM); Siang, Kappu, 731 m., 08.xi.1958, R.S.



**Image 2. Lectotype of *Urtica penduliflora* Wall. (G00354049).  
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Rao, 17459 (ASSAM); Kheti, 22.viii.1958, G. Panigrahi, 14601 (ASSAM); Tirap, Nampong, 12.x.1959, R.S. Rao, 20158 (ASSAM); Tirap, Nompong, 12.x.1959, R.S. Rao, 20005 (ASSAM); Kimin, Subansiri, 230 m., 24.ix.1954, G. Panigrahi, 19345 (ASSAM); Uttar Pradesh, Pilibhit district, Barahi Forest range, 28.602N, 80.182E, 275 m. 11.ix.2014, Vijay V. Wagh, 258047 (LWG).

**Distribution:** *Boehmeria penduliflora* is widely distributed in southeastern Asia (Acharya et. al. 2002). In India this species is mainly distributed in northeastern region of India like Assam, Meghalaya, Nagaland, Manipur (Wilmot-Deary & Friis 2013) and also in terai region of Uttar Pradesh (Kanjilal 1933). We collected this species from Barahi range of Uttar Pradesh, on the bank of Sharada water canal (28.602N, 80.182E, 275 m).

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NAAS rating (India) 5.64

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ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)

December 2021 | Vol. 13 | No. 14 | Pages: 20143–20310

Date of Publication: 26 December 2021 (Online & Print)

DOI: 10.11609/jott.2021.13.14.20143-20310

[www.threatenedtaxa.org](http://www.threatenedtaxa.org)

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