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## NOTE

### *PTERNOPETALUM LATIPINNULATUM* (APIACEAE), A NEW RECORD FOR THE FLORA OF INDIA

Licha Jeri, Nazir Ahmad Bhat & Yogendra Kumar

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Genus *Pternopetalum* Franch. belongs to the family Apiaceae, consists of about 32 species and is mainly restricted to East Asia (Wu 1991; Wu et al. 2006). A recent review of the genus has revealed that there are only 15 authentic species which are distributed throughout China, Japan, Korea, and eastern Himalaya (Wang 2012), with the center of diversity in China (Shu & Sheh 2001). In India, seven species of the genus have been recorded and all of them are distributed only in northeast India (Hassler 2017). The species in this genus can be recognized by the petals being scrotiform at the base, the umbellules usually with 2–4(–5) flowers, and by the reflexed styles and rays in fructescence (Pu & Phillippe 2005; Wang 2012).

*Pternopetalum latipinnulatum* (Shan) J.B. Tan & X.J. He was first described from China as a variety of *Pternopetalum botrychioides* as *P. botrychioides* var. *latipinnulatum* R.H. Shan (Shan 1940). Later, species status was assigned to it, based on detailed taxonomic investigations (Tan et al. 2015). So far *Pternopetalum latipinnulatum* had been reported only from China (Sichuan, Chongqing, Guizhou, Yunnan, Guangxi), where it is found growing in grassy slopes under forests, along streamsides at an altitude of about 700–2400 m. This species is reported here for the first time for India from Arunachal Pradesh as an extended distribution. For scientific authentication, the present paper provides a detailed taxonomic description and microphotographs of diagnostic characteristics of *P. latipinnulatum* (Fig. 1),

***PTERNOPETALUM LATIPINNULATUM* (APIACEAE),  
A NEW RECORD FOR THE FLORA OF INDIA**

Licha Jeri <sup>1</sup>, Nazir Ahmad Bhat <sup>2</sup> & Yogendra Kumar <sup>3</sup>

<sup>1,2,3</sup>Centre for Advanced Studies in Botany, North Eastern Hill University, Umshing Mawkyndroh, Shillong, Meghalaya 793022, India

<sup>1</sup>lichajeri2013@gmail.com, <sup>2</sup>nazirsultan786@gmail.com  
(corresponding author), <sup>3</sup>yktaxo786@gmail.com

and key delimiting characters with its allied species *P. botrychioides* and *P. vulgare* (Table 1), which in turn will facilitate its easier field recognition.

**Materials and Methods**

While exploring the flora of Talle Valley Wildlife Sanctuary (27.50–27.66°N & 93.95–94.20°E), Arunachal Pradesh, some unidentified plant species of family Apiaceae were collected. The specimens were packed and brought to the laboratory for analysis. A thorough review of literature (Shan 1940; Mukherjee & Constance 1993; Hajara et al. 1996; Wang 2012; Tan et al. 2015; Pimenov 2017), detailed morphological and consultation of herbarium housed at Botanical Survey of India, Eastern Regional Centre, Shillong (ASSAM), Arunachal Pradesh (ARUN) and herbaria of Botany department, North Eastern Hill University (NEHU), revealed that the specimen to be *Pternopetalum latipinnulatum* (Shan) J.B. Tan & X.J. He. This species was not reported earlier and is a new addition to the flora of India. The pressing and mounting of herbarium specimen were done using standard taxonomic procedures (Jain & Rao 1977; Bridson & Forman 1998). The voucher specimens

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were deposited at "ASSAM" Herbaria, Botanical Survey of India, Shillong. The photographs of the diagnostic characteristics were taken under a zoom stereo microscope (ISM-ZS50T, India) fitted with a camera.

#### Taxonomic enumeration

***Pternopetalum latipinnulatum*** (R.H. Shan) J.B. Tan & X.J. He, (2015: 233–244).

*Basionym*: *P. botrychioides* var. *latipinnulatum* Shan. (1940: 158–159).

Type: China, altitude 1,100m (ca. 3600ft), W.P. Fang 2062 (holotype: NAS-00029522; isotype: NAS-00039199). (Image 2).

Description: Perennial herb, 22–60 cm tall. Rhizome distinct, with leaf-sheath at the base. Stems erect, simple or 1–2 branched, glabrous. Leaves 5–8, mostly basal; basal leaves papyraceous, petiolate, with ca. 15 cm long petioles; blade quadrilateral, 3–6 × 5–8 cm in outline, ternate 2-pinnate; pinnae 3 paired, ultimate leaf segments lanceolate, rhomboidal or ovate, 2–3.5 × 1.2–1.5 cm broad. Blades strigose along margins, margin incised-serrate, apex acute; terminal ultimate segments rhomboidal to ovate, usually acute at the apex and cuneate (wedge-shaped) at the base. Cauline leaves 1 in each stem, ternate-pinnate, homomorphic with basal leaves, with brief and broad sheath, membranous. Umbels terminal, usually 1 on each stem; bracts absent; rays 12–35, unequal, 1.3–3.6 cm in flowering, 2.5–4 cm in fruiting; bracteoles 2–3 linear, 0.4–0.8 mm long; umbellules unequal 2–3 flowered; pedicels ca. 2mm. Calyx teeth distinct, lanceolate to linear, ca. 0.4mm. Petals white, ca. 1.6 × 0.8 mm, with inflexed tip. Stylopodium conic; styles erect about twice the length of the stylopodium. Fruit green, ovoid or oblong, 2–3 ×

0.8–1.5 mm; ribs finely scabrid; Vittae 1 in each furrow, 2 on commissure (Image 1).

Flowering and Fruiting: May–August

Distribution: China (Sichuan, Chongqing, Guizhou, Yunnan, Guangxi) and India (Arunachal Pradesh).

Specimen examined: 92323 (ASSAM), 18.v.2017, India, Arunachal Pradesh, Lower Subansiri District, Talle Valley WS, Pange, 27.55°N & 93.96°E, 1,700m, coll. Licha Jeri & N.A. Bhat.

Habitat & Ecology: The plants were found growing in dense humid forests along shady stream sides, at an altitude of about 1,700m in association with other herbaceous species like *Fragaria* sp. (Rosaceae), *Hydrocotyle himalaica* P.K. Mukh. (Araliaceae), *Impatiens* sp. (Balsaminaceae), *Begonia* sp. (Begoniaceae), ferns *Pronephrium* sp. (Thelypteridaceae) and bamboos *Chimonobambusa* sp. (Poaceae). The upper canopy was dominated by *Rhododendron arboreum* Sm. (Ericaceae), *Castanopsis tribuloides* (Sm.) A. DC. (Fagaceae) and *Quercus spicata* Bonpl. (Fagaceae). The field exploration revealed that the occurrence of the species is very rare and the population is confined to only a single locality in the surveyed area.

The species is affected by many anthropogenic activities such as unsustainable harvesting of *Panax* sp. and *Paris polyphylla*, grazing by livestock (*Bos frontalis*), which results in habitat destruction in the area. Although *Pternopetalum latipinnulatum* was reported in China from different locations no information is known about the size of its populations or whether they face any threat to their existence.

Remarks: Morphological differences amongst the three taxa studied showed that *Pternopetalum latipinnulatum* is similar to *Pternopetalum botrychioides*

**Table 1. Comparison of *P. latipinnulatum* with its allied species *P. botrychioides* and *P. vulgare***

Characters	<i>P. latipinnulatum</i>	<i>P. botrychioides</i>	<i>P. vulgare</i>
Texture of leaf	Papyraceous	Membranous	Glabrous or strigose
Basal leaf	4–7, ternate 2-pinnate, quadrilateral	1–4 usually ternate, ovate	Numerous, ternate 3, triangular-ovate
Ultimate leaf segments	Incised-serrate, 2–3.5 × 1.2–1.5 cm, apex acute	Pinnatifid, 0.5–3.5 × 1.5–7 cm, apex caudate	Serrate, undivided, 1.6–6 × 0.6–3.8 cm, apex acute
Cauline leaves	1, homomorphic, smaller and slightly simplified	1–3, ternate 2-pinnate, heterogeneous	1-several, ternate
Inflorescence	Terminal and lateral	Terminal and lateral	Terminal, 1–2 in each
Umbellules	2–3 flowered	2 flowered	2–5 flowered
Pedicels	1.5–2 mm long	0.2–3 mm long	0.3–1.5 mm long
Bracteoles	Linear, 2–3	Lanceolate or linear, 1	Sub equal, 1–4
Calyx teeth	Lanceolate to linear	Subulate	Triangular
Fruit	Oblong, 2–3 × 1–1.5 mm; ribs scabrid	Broadly ovoid, 2–3 × 1.5–2 mm; ribs scabrid	Globose or ovoid, 3.5–5 × 2–3 mm; ribs denticulate





Image 1. *Pternopetalum latipinnulatum* (Shan) J.B. Tan & X.J. He.

A - habit; B - leaf (adaxial view); C - leaf (abaxial view) (scale = 2cm); D - umbel inflorescence; E - Umbellules (scale = 1mm); F - single flower; G - calyx teeth; H - single stamen; I - fruiting umbellules (scale = 0.8 mm); J - mesocarp of the fruit; K - stomata (diacytic); L - T.S of stem.

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(Dunn) Hand.-Mazz., but is distinguished from the former in having greater height and robustness, and have differences in the leaf characters, stomatal structures, stem character, fruit, and flower size. *Pternopetalum latipinnulatum* is also compared with *Pternopetalum vulgare* (Dunn) Hand.-Mazz. as few of the characters are similar but have stark difference in leaves structure, fruit and flower size. The morphological differences between *P. latipinnulatum*, *P. botrychioides* and *P. vulgare* are given in Table 1.

## References

- Bridson, D. & L. Forman (1998). *The Herbarium Handbook*. 3rd Edition. Royal Botanic Gardens, Kew, UK, 334pp.
- Hajara, P.K., D.M. Verma & G.S. Giri (1996). *Materials for the Flora of Arunachal Pradesh, Vol. I*. Botanical Survey of India, Dehra Dun, 534–544pp.
- Hassler, M. (2017). *World Plants: Synonymic checklists of the vascular plants of the World* (version May 2017). In: Roskov Y., L. Abucay, T. Orrell, D. Nicolson, N. Bailly, P.M. Kirk, T. Bourgoin, R.E. de Walt, W. Decock, A. de Wever, E. van Nieuwerkerken, J. Zarucchi & L. Penev (eds.). *Species 2000 & ITIS Catalogue of Life*. 26<sup>th</sup> July 2017.

**Keys for identification of Indian *Pternopetalum* species**

- 1a. Plant with basal and cauline leaves..... 2
- 1b. Plant without cauline leaves or rarely one..... 5
- 2a. Basal and cauline leaves heteromorphic..... *P. tanakae*
- 2b. Basal and cauline leaves homomorphic ..... 3
- 3a. Leaves pinnate; ultimate segments ovate-triangular..... *P. subalpinum*
- 3b. Leaves ternate, 2–4-pinnate; ultimate segments lanceolate..... 4
- 4a. Calyx teeth lanceolate-linear; fruit ribs finely scabrid..... *P. latipinnulatum*
- 4b. Calyx teeth truncate; fruit ribs denticulate..... *P. vulgare*
- 5a. Leaves ternate with 3 leaflets, ovate, margins crenate, calyx teeth triangular..... *P. nudicaule*
- 5b. Leaves ternate, 3–4-pinnate, margins finely dissected; calyx teeth subulate..... 6
- 6a. Pedicel equal; stylopodium oblong, ribs scarbrid..... *P. arunachalense*
- 6b. Pedicel unequal; stylopodium conical, ribs filiform..... 7
- 7a. Leaves ternate decompose; rays 20-50; umbels terminal..... *P. senii*
- 7b. Leaves ternate pinnate, rays 6-8; umbels terminal and lateral..... *P. radiatum*

Jain, S.K. & R.R. Rao (1977). *A Handbook of Field and Herbarium Methods*. Today & Tomorrow. Printers & Publishers, New Delhi, 157pp.

Mukherjee, P.K. & L. Constance (1993). *Umbelliferae (Apiaceae) of India*. American Institute of Indian Studies, New Delhi, India, 91–93pp.

Pimenov, M.G. (2017). Updated checklist of Chinese Umbelliferae: nomenclature, synonymy, typification, distribution. *Turczaninowia* 20(2): 106–239.

Pu, F.T. & L.R. Phillippe (2005). *Pternopetalum* Franchet, pp. 85–92. In: Wu, Z.Y. & P.H. Raven (eds.). *Flora of China, vol. 14*. Science Press, Beijing & Missouri Botanical Garden Press, St. Louis.

Shan, R.H. (1940). *Studies of Umbelliferae of China*. III. (Apiaceae: Ammineae-Carinae). *Sinensia* 11: 137–174.

Su, P. & M.L. Sheh (2001). *Pollen Photographs and Flora of Umbelliferae in China*. Shanghai: Shanghai Scientific and Technical Publishers, 35–58pp.

Tan, J.B., X.G. Ma, L. Zhang & X.J. He (2015). On the identity of *Pternopetalum botrychioides* (Apiaceae), introducing *P. latipinnulatum* comb. & stat. nov. *Phytotaxa* 226(3): 233–244.

Wang, L.S. (2012). A revision of the genus *Pternopetalum* Franch. (Apiaceae). *Journal of Systematics and Evolution* 50(6): 550–572.

Wu, C.Y. (1991). The areal-types of Chinese genera of seed plants. *Acta Botanica Yunnanica* 4(suppl.): 1–139.

Wu, C.Y., Z.K. Zhou, H. Sun, P.Z. Li & H. Peng (2006). *The Areal-types of Seed Plants and Their Origin and Differentiation*. Yunnan Publishing Group, Yunnan Science and Technology Press, Kunming, 563pp.



**Image 2. Herbarium of *Pternopetalum latipinnulatum* (Shan) J.B. Tan & X.J. He.**







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