

Ophiorrhiza ripicola Craib (Rubiaceae), a new record to India from Arunachal Pradesh

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Abstract. *Ophiorrhiza ripicola* Craib (Rubiaceae) is reported here for the first time from Arunachal Pradesh, India. It is differing from other Indian *Ophiorrhiza* species by having triangular stipules, cuneate lamina base, corolla white-purple, 32 mm long, glabrous outside and pubescent inside, and filaments 14 mm long. Detailed description, digital images, distribution, habitat and ecology are presented for easy identification.

Key words: *Ophiorrhiza ripicola*, Rubiaceae, new record, India, Arunachal Pradesh

1. Introduction

The genus *Ophiorrhiza* L. (Rubiaceae: Ophiorrhizeae) is predominantly herbaceous and therapeutically important, with more than 400 species recorded from the world (Schanzer 2005) and distributed mainly in wet tropical and subtropical forests of Southeast Asia (Darwin 1976; Lo 1990; Deb & Mondal 1997; Chen & Taylor 2011; Duan *et al.* 2019). In India, the genus is portrayed by 52 species (Nayar *et al.* 2014) and lately, a handful of novel and fresh species on the same genus have been recorded (Hareesh *et al.* 2015a, 2015b, 2015c, 2017a, 2017b, 2018, 2020; Hareesh & Sabu 2018, 2022; Bhuyan *et al.* 2021). Among them 25 species are endemic to India (Hareesh *et al.* 2015b) and amidst them, 16 taxa were endemic to South India, and six taxa were found in North-East India, while one taxon was present in the Nicobar Islands (Hareesh *et al.* 2017a).

2. Materials and methods

Plant explorations were conducted regularly between 2012 and 2019 in different parts of the state Arunachal Pradesh (Fig. 1), aiming to collect medicinal herbs for the enrichment of the resources of North Eastern In-

stitute of Folk Medicine (NEIFM, Ministry of Ayush, Govt. of India), located at Pasighat, Arunachal Pradesh. During the study period, one species of *Ophiorrhiza* from East Siang District of Arunachal Pradesh was collected and referred in various published sources pertaining to north-eastern states (Lo 1990; Deb & Mondal 1997; Chen & Taylor 2011; Hareesh *et al.* 2015a, 2015b, 2015c, 2017a, 2017b, 2018, 2020; Hareesh & Sabu 2018; Bhuyan *et al.* 2021) but it was not recorded. The identity was confirmed as *Ophiorrhiza ripicola* Craib with the help of Zhao-Jie *et al.* (2019) and by comparing the virtual type image (K 000740655) of the specimen housed at Kew Herbarium. Interestingly, scrutiny of literatures revealed that this species has neither been hitherto recorded from India nor deposited in any of the Indian herbaria (CAL, ASSAM, ARUN, and BSHC). It has been so far known to occur in Thailand and recently recorded from China (Zhao-Jie *et al.* 2019). Hence, the present collection forms a new distributional record to India. The voucher specimen was deposited at the herbarium of North Eastern Institute of Folk Medicine (NEIFM, Ministry of Ayush, Govt. of India), at Pasighat, Arunachal Pradesh for future reference. A detailed description with colour photographs and information about the ecology of the plant has provided for easy of identification.



Fig. 1. Location map of the *Ophiorrhiza ripicola* Craib habitat in Pasighat, East Siang District, Arunachal Pradesh, north-eastern India

3. Results

Taxonomic description: *Ophiorrhiza ripicola* Craib in Flora Siam. Enum. ii 69. 1932. Type: Thailand. Chiangmai, Doi Inthanon [Doi Angka], 25 Nov 1926, Garrett 326 (holotype: K 000740655! isotype: NMNH 00348928!) (Fig. 2).

Description: Perennial herb, plant 30-90 cm tall, erect or ascending; stems glabrous. Leaves thin, membranous, ovate or elliptic-lanceolate, 9-15 cm × 3-5 cm, apex long, acuminate, base cuneate, midrib raised on both side, lateral veins 5-8, on each side; petiole 1-3 cm long, glabrous; stipules triangular, 2-3 mm long, caducous. Cymes terminal, pendulous when young, erect when mature; peduncle 1-2 cm long, smooth and glabrous; bracts lanceolate or linear, 4-8 mm long, acuminate, subglabrous. Flowers numerous, dimorphic; pedicels 3-4 mm long, often pubescent; calyx nearly glabrous or pubescent, 1.2-1.4 × 1.8-2.2 mm, lobes oblong to narrowly triangular, 1.5-2 mm long, apex obtuse; corolla white to purplish red, funnel-shaped, corolla tube 1.0-1.8 cm long, glabrous outside, pubescent inside, corolla lobes 5, triangular-ovate, 3-5 mm long, slightly incurved apically, beak-like; filaments 14 mm long, stamens 5, up to 4 mm long, opposite to corolla lobes, located in tube centre, anthers linear, 2.5 mm long; stigma located at flower throat, lobes lanceolate, about 3 mm long. Capsule monk cap shaped, flattened on both sides.

Flowering: April-May.

Fruiting: June-August.

Habitat and ecology: This species is very rare to locate, in the evergreen forests along the stream sides

of rocky slopes, at elevation 220 m a.s.l. Only five matured individuals were found on the edges of streamlets at Yaapgo village (north-west of Pasighat town). It is commonly associated with *Mikania micrantha* Kunth, *Cissampelos pareira* L., *Polygonum chinense* L., *Elatostema sessile* J.R.Forst. & G.Forst, *Leptopus clarkei* (Hook.f.) Pojark., *Rauwolfia verticillata* (Lour.) Baill., *Dioscorea bulbifera* L., *Oxyspora paniculata* (D.Don) DC., *Solanum spirale* Roxb., *Psilanthus benghalensis* (B.Heyne ex Roth) J.-F.Leroy, *Paederia foetida* L., *Ampelocissus hoabinhensis* C.L.Li, *Brucea mollis* Wall. ex A.W.Benn., *Mussaenda frondosa* L., *Chloranthus officinalis* Blume, *Elsholtzia blanda* (Benth) Benth., and *Piper sylvaticum* Roxb.

Specimen examined: India: Arunachal Pradesh: East Siang Dist.: Pasighat: Yaapgo village; 220 m a.s.l.; 28°03'36.0936" N, 95°17'48.8508" E; coll. by K. Jeyaprakash NEIFM-00479; 10 Oct 2021.

Distribution: Arunachal Pradesh, India; Thailand and China.

4. Discussion

There are 25 species of *Ophiorrhiza* and three varieties recorded from the North East Indian states (Deb & Mondal 1997; Hareesh *et al.* 2017b; Hareesh & Sabu 2022), among this *O. heterostyla* Dunn, *O. pauciflora* Hook.f., *O. repens* (Wall. ex G. Don) Bennet, *O. wallichi* Hook.f., *O. wattii* C.E.C. Fisch. and *O. medogensis* H. Li and with its var. *shiyomiense* Hareesh & Sabu have been recorded from Arunachal Pradesh. Now *O. ripicola* is an another addition to the state, Arunachal Pradesh and as well to the country, India.



Fig. 2. *Ophiorrhiza ripicola* Craib

Explanations: A – habit, B – inflorescence, C – split-opened corolla showing androecium with style and stigma, D – twig with fruits, E – enlarged fruits

Acknowledgements. The authors are thankful to the Member Secretary/CEO and Nodal Officer, State Medicinal Plants Board, Tamil Nadu, for granting permission to publish the research findings. Authors are grateful to Joint Director, Directorate of Indian Medicine and Homoeopathy, Arumbakkam, Chennai, Prof. M. Krishnaveni, Head, Dept. of Gunapadam, GSMC, Chennai for their support and encouragement. The authors are also thankful to Director, North Eastern Institute of Folk Medicine (Ministry of Ayush, Govt. of India), Pasighat, Arunachal Pradesh, and to DFO, Pasighat Forest Division, East Siang District, Arunachal Pradesh, for his permission to carry out the research.

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