



УДК 582.998:581.95(1-925.36)(540)

First record of the Himalayan endemic species *Ainsliaea fulvipes* (Asteraceae) from India

S. Panday^{1,4}, S. S. Dash^{2,5}, V. Kumar^{3,6*}

¹ Budge Budge College, Deshbandhu Chittaranjan Das Rd., 7, Budge Budge, Kolkata, West Bengal, 700137, India

² Botanical Survey of India, CGO Complex, Sector 1, Salt Lake City, Kolkata, West Bengal, 700064, India

³ CSIR-Institute of Himalayan Bioresource Technology, Post Box No. 6, Palampur (H.P.), Himachal Pradesh, 176061, India

⁴ ORCID iD: <https://orcid.org/0000-0003-4647-8010>

⁵ ORCID iD: <https://orcid.org/0000-0002-6754-2600>

⁶ E-mail: vikas@ihbt.res.in; ORCID iD: <https://orcid.org/0000-0002-0312-8849>

* Corresponding author

Keywords: Arunachal Pradesh, endemic, flora, India, new record.

Summary. The species *Ainsliaea fulvipes* Jeffrey et W. W. Sm. (Asteraceae) erstwhile considered as endemic to China is reported here first time from Zemithang, Arunachal Pradesh (India). Detailed descriptions, along with habitat photographs are provided to facilitate its easy identification.

Первая находка эндемичного для Гималаев вида *Ainsliaea fulvipes* (Asteraceae) из Индии

С. Пандай¹, С. С. Даш², В. Кумар³

¹ Колледж Баджа Баджа, Бадж Бадж, 7, улица Дешбандху Читтаранджан Дас,
г. Калькутта, Западная Бенгалия, 700137, Индия

² Ботаническая служба Индии, комплекс CGO, сектор 1, Солт-Лейк-Сити,
г. Калькутта, Западная Бенгалия, 700064, Индия

³ CSIR-Институт технологии биоресурсов Гималаев, Почтовый ящик № 6,
г. Паламтур, Химачал-Прадеш, 176061, Индия

Ключевые слова: Аруначал-Прадеш, Индия, новая находка, флора, эндемик.

Аннотация. Вид *Ainsliaea fulvipes* Jeffrey et W.W. Sm. (Asteraceae), ранее считавшийся эндемиком Китая, здесь впервые приводится из Земитанга, штат Аруначал-Прадеш (Индия). Подробные описания, а также фотографии местообитаний представлены для облегчения идентификации.

Introduction

The genus *Ainsliaea* DC. comprises ca. 53 taxa, and its native range is Afghanistan to Temp. E. Asia and W. and Central Malesia (POWO, 2022). All the

taxa of the *Ainsliaea* are characterized by perennial herb; leaves rosulate, usually arranged at the middle of the stem; capitula few-flowered, arranged in spikes or panicles; flowers slightly zygomorphic; corolla deeply 5-lobed with unilateral lobes (Freire, 2007).

The genus *Ainsliaea* is allied to *Macroclinidium* Maxim., *Myriphois* Bunge, and *Pertya* Sch. Bip., but it can be easily distinguished by the presence of plumose pappus instead of scabrid pappus, which are found in the latter three genera (Freire, 2007). In India, five species viz. *A. angustifolia* Hook. f. et Thomson ex C. B. Clarke, *A. aptera* DC., *A. apteroides* (C. C. Chang) Y. C. Tseng, *A. latifolia* (D. Don) Sch. Bip., and *A. spicata* Vaniot are known to occur in the Himalayan region (Hooker, 1981; Rao, 1995; Freire, 2007; BSI, 2022).

During a botanical exploration tour to Zemithang, Tawang district of Arunachal Pradesh, an interesting plant was collected from sub-alpine forest floor near a small water reservoir. After consultation of authentic literature (Freire, 2002, 2007; Gao et al., 2011), critical examination of live specimens and herbarium specimens housed at CAL, ARUN, ASSAM and images from herbaria such as K and S, it was identified as *Ainsliaea fulvipes* Jeffrey et W. W. Sm., hitherto not reported from India (Rao, 1995; Chowdhery et al., 1996; BSI, 2022).

The species *Ainsliaea fulvipes* is considered to be endemic to the China (POWO, 2022), which is allied to *A. angustata* C. C. Chang. Both the species

have basal rosettes leaves with long densely strigose petiole. However, *A. fulvipes* can be easily segregated by its oblong to elliptic leaf blades with obtuse to rounded apex, pilose phyllaries and rounded anther appendages, whereas *A. angustata* is characterized by linear to elliptic lamina with acute apex, glabrous phyllaries and acuminate anther appendages (Freire, 2007). The present collections from Arunachal Pradesh confirm its extended distribution in India. The species is enumerated here with a detailed description, field photographs, and image of the voucher herbarium specimen. A key based on the diagnostic characters of all the Indian species are also given here for easy understanding.

Material and methods

The photographs of habit were taken using Nikon-Coolpix B700 digital camera. The dissected floral parts were examined under Olympus stereozoom microscope SZ-61. The herbarium was prepared as per the standard method and the voucher specimen was deposited at Botanical Survey of India, Central National Herbarium, Howrah.



Fig. 1. Habitat of *Ainsliaea fulvipes*.

Systematic accounts

Ainsliaea fulvipes Jeffrey et W. W. Sm., 1914, Notes Roy. Bot. Gard. Edinburgh 8: 175.

Type: "China, Yunnan, Teng-yueh, 7000 ft., May, 1912, G. Forrest 7862" (S); lectotype designated by S. E. Freire in Ann. Missouri Bot. Gard. 94: 123. 2007; isolectotype K (K000768816).

Description. Herbs, perennial, 15–30 cm high. Stem erect, unbranched, much reduced. Leaves clustered at base of stem, rosette; petiole 3–6 cm long, pubescent, without wing; lamina elliptic or

sub-ovate, 3–7 × 1–5 cm, subcoriaceous, both dorsal and ventral surfaces strigose, rounded at base, margin faintly denticulate, obtuse at apex. Synflorescence axis solitary. Capitula shortly pedunculate, 1–3; involucre cylindrical, 3–4 mm across; phyllaries 4–5-seriate, sub-leathery, abaxially pilose, purple, outer phyllaries ovate, ca. 2.5 mm long, inner phyllaries lanceolate, 6–10 mm long. Florets 3, bisexual. Corolla shortly 5-lobed, tubular, ca. 3.5 mm, purple. Anthers ca. 2 mm, sagittate. Style short, shallowly divided at apex. Achenes oblong, pilose, ca. 4 mm long; pappus ca. 5 mm long.



Fig. 2. Appearance of *Ainsliaea fulvipes*: A – an immature plant; B – close-up of rosette leaves; C – a plant with a single flower; D – close-up of flowers.



Fig. 3. Voucher herbarium of *Ainsliaea fulvipes*.

भारतीय वनस्पति सर्वेक्षण केन्द्रीय राष्ट्रीय पादपसंग्रहालय 100 नगरपालिका इलाहाबाद उत्तर प्रदेश		Botanical Survey of India Central National Herbarium Herbarium (CAL) Varanasi West Bengal	
Name of the Project :	Biodiversity Assessment Indian Himalayan Landscape (NMHS)		
Field No.:	88040	Date :	26.07.2018
Access. No. :			
Botanical Name :	<i>Ainsliaea fulvipes</i> Jeffrey & W.W. Smith		
Family	Asteraceae		
State	Arunachal Pradesh		
Locality	Tawang, Zemithang, (Way to Limpo)		
Latitude	27°41'30.10" N	Altitude :	3166 m
Longitude	91°45'12.35" E	Distribution	
Habit	Herb	Rare	
Notes			
Vernacular Name			
Uses			
Collected By	V. Kumar & S. Panday		
Identified By	S. Panday & V. Kumar		

Flowering and Fruiting: June–November.

Habitat: The species found growing on the lower portion of moss-covered old moist trunk of *Rhododendron arboreum* in sub-alpine shady forest in association with *Circaea alpina*, *Impatiens stenantha*, *Viola pilosa*, *Hymenophyllum* sp., *Selaginella* sp., etc.

Distribution: INDIA: Arunachal Pradesh (present report); CHINA (Guangdong, Sichuan, Yunnan).

Specimen examined: “India, Arunachal Pradesh, Tawang, Zemithang (near Limpo), 27°41'30.10"N, 91°45'12.35"E, 3166 m. 26 IIV 2018. V. Kumar, S. Panday. 88040” (CAL!).

Key to the Indian species of the genus *Ainsliaea*:

1. Leaf blades uniformly narrowed at the base; base attenuate *A. angustifolia*
+ Leaf blades abruptly narrowed into the petiole; base rounded or cordate 2
2. Petioles 4–10 mm long *A. spicata*
+ Petioles more than 10 mm 3
3. Petioles winged *A. latifolia*
+ Petioles wingless 4

4. Leaf base rounded; apex rounded-subobtusely; phyllaries pilose *A. fulvipes*
+ Leaf base cordate; apex acute-acuminate; phyllaries usually glabrous (or with glandular trichomes in *A. aptera*) 5

5. Leaf margins dentate; anther appendages rounded in chasmogamous florets *A. aptera*
+ Leaf margins shallowly denticulate; anther appendages truncate in chasmogamous florets
..... *A. apteroides*

Acknowledgements

We are grateful to the Director, Botanical Survey of India, Kolkata for facilities; Forest Department, Arunachal Pradesh for giving permission and logistic support during fieldwork. Authors SP and VK are thankful to the Principle, Budge Budge College, Kolkata and Director, CSIR-IHBT, Palampur respectively for their encouragement. Author VK is also thankful to Dr. S. E. Freire, Argentina for confirming the identity of the species. This study was funded by the MoEFCC, New Delhi under the NMHS scheme (NMHS/2015–16/LG-05).

REFERENCES

- BSI [2022]. “*Ainsliaea*” on *The Flora of India: An Annotated Checklist*: Botanical Survey of India, Kolkata. URL: <https://efloraIndia.gov.in/> (Accessed 01 March 2022).
- Chowdhery H. J., Giri G. S., Pal G. D., Pramanik A., Das S. K. 1996. Asteraceae. In: G. S. Giri, A. Pramanik, H. J. Chowdhery (eds.). *Materials for the flora of Arunachal Pradesh (Asteraceae – Ceratophyllaceae)*. Vol. 2. Kolkata: Botanical Survey of India. Pp. 1–53.
- Freire S. E. 2002. Two new species of *Ainsliaea* (Asteraceae, Mutisieae) from China and Vietnam. *Novon* 12: 451–455.
- Freire S. E. 2007. Systematic revision and phylogeny of *Ainsliaea* DC. (Asteraceae, Mutisieae). *Annals of the Missouri Botanical Garden* 94: 79–191.
- Gao T. G., Freire S. E., Hind D. J. N. 2011. Mutisieae. In: Z. Y. Wu, P. H. Raven, D. Y. Hong (eds.). In: *Flora of China*. Vol. 20–21 (Asteraceae). Beijing: Science Press; St. Louis: Missouri Botanical Garden Press. Pp. 9–32.
- Hooker J. D. 1881. Compositae. In: J. D. Hooker (ed.). In: *Flora of British India*. Vol. 3. London: L. Reeve and Co. Pp. 388–389.
- POWO [2022]. *Plants of the World Online*. Kew: Facilitated by the Royal Botanic Gardens. URL: <http://www.plantsoftheworldonline.org> (Accessed 01 March 2022).
- Rao R. R. 1995. Mutisieae. In: P. K. Hajra, R. R. Rao, D. K. Singh, B. P. Uniyal (eds.). *Flora of India*. Vol. 13. Asteraceae (*Inuleae – Vernoniaeae*). Calcutta: Botanical Survey of India. Pp. 163–185.