

Extended distribution of *Vicoa sahyadrica* Nandikar & Sardesai in the northern Western Ghats, India

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Abstract

The botanical exploration of the Sahyadri Rayless Daisy, or *Vicoa sahyadrica*, is an annual herb that is indigenous or endemic to the high-elevation areas of the northern Western Ghats, particularly in the states of Maharashtra and Karnataka. This article compares and provides a taxonomy description, phenology, ecological observations, photographs, and diagnostic features of closely related species for future use. The collected specimens were examined using available scientific literature, and we concluded that they have an extended distribution and new habitats in the northern Western Ghats, India.

Key words : Endemic, northern Western Ghats, Sahyadri, *Vicoa sahyadrica*.

Asteraceae is one of the largest families, including 1,620 genera and over 23,600 species¹². *Vicoa* belongs to the Asteraceae (Compositae) family and tribe Inuleae^{3,4}. These family members are medically important and used in various remedies^{2,11}. *Vicoa* is native to the Arabian Peninsula, Cape Verde, Tropical Africa, South China, and Indo-China. Under *Vicoa*, 15 accepted species in the world. In India, three species are distributed, such as *Vicoa indica* (L.) DC., *Vicoa sahyadrica* Nandikar & Sardesai, and *Vicoa cernua* Dalzell. The *Vicoa sahyadrica*, also known as Sahyadri

Rayless Daisy, is an annual herb that is native to the northern Western Ghats' high elevations, especially in the states of Maharashtra and Karnataka^{1,6-8}. On the basis of the available scientific literature, the studied species were initially distributed only in some regions of the northern Western Ghats, such as Maharashtra and Karnataka⁷. During the botanical exploration, we noticed new habitats extended the distribution of this species in the northern Western Ghats, India. This extended distribution is noted from the flora of Nashik district, Maharashtra state, India.

Study area : Studied plant species collected from the villages located in Trimbakeshwar taluka of Nashik district, Maharashtra, India (Localities, GPS coordinates, and altitudes such as Trimbakeshwar 19.956737N, 73.521426E, 750 m a.s.l; Ambai 19.985041N, 73.466947E, 700 m a.s.l and Dhadoshi 19.898616N, 73.516956E, 640 m a.s.l).

Local, states and national floras printed literature were used to gather scientific data to identify the collected specimens. Other platforms, such as JSTOR and BHL libraries, were used to retrieve scientific data related to the current research. Online plant databases such as POWO KEW and Tropicos provided the botanical names, synonyms, and references. Taxonomic Literature and IPNI provided information on plant names, authors, and collectors^{10,11,12}. Adobe Photoshop was used to edit photos that were captured in the field with the Redmi Note 13 Pro mobile camera. Take a microphotograph of processed samples; stereomicroscopes (Coslab) were used. Those processed photos were used to prepare photo plates. To create the distribution map (Fig. 1).

Key to the genus *Vicoa* in India :

1. Leathery, auriculate leaves with no pappus in the disc-florets.....*Vicoa indica*
-Distal leaves are frequently auriculate, while proximal leaves are attenuate and petiolate; disc-florets with pappus.....2
2. Capitula cupuliform to tubular, 4–5 x 4 mm, with a pappus of bristles measuring 6–12 (–14); rays barely noticeable (1–2 mm)*Vicoa sahyadrica*
- Head flat, 4–6 × 8–10 mm, with a 1–4(–5) bristle pappus and prominent rays (8–10 mm)*Vicoa cernua*

Taxonomic treatment

Vicoa sahyadrica Nandikar & Sardesai (Fig. 2)

Diagnosis :

Herb, annual, upright, 15–100 cm tall. Unbranched, upright, somewhat ribbed stem with glabrous, greyish brown proximal internodes measuring 2–8 cm and sparsely puberulous, green distal internodes measuring 1–4 cm. Distichous, alternating leaves; proximal, frequently early caducous, smaller, clearly petiolate (0.8–1.1 cm); lamina ovate to elliptic-oblong, lanceolate 0.5–6 × 0.5–2.5(–3) cm; adaxial, grey green, densely puberulous on veins; abaxial, green, densely puberulous to puberulent. Capitula heterogamous, cupuliform to tubular, 4–5 × 4 mm; bracteate, bract frequently foliaceous, subsessile or auriculate at base; peduncle filiform, 1–2.5 cm, lanate to puberulous, pale green; bracteole inconspicuous, lanate, elliptic; phyllaries multiseriate, spreading, graded and lengthening inwards, green to hyaline; outermost involucre lanceolate, thin, midvein green, hyaline laterally, sparsely covered in multiseriate hairs, apex acuminate, lacerate; the innermost involucre ensiform, about 3 mm, thick, green, with apex that is similar to the outer phyllaries, usually complete, rarely erose. Ray florets: 20–30, pistillate, about 4 mm long; ligule: oblong-elliptic, 1–2 mm, yellow, 3-lobed, sparsely glandular hairy, appendaged (reduced dorsal ligule) at base; tube: 2 mm, hyaline to yellow, sparsely glandular hairy; style: 5 mm, hyaline, stigma bipartite, papillose; ovary: linear oblong, about 1 mm, with pubescent apex and 6–12 (–14) hyaline, about 2 mm long (often reflexed at the top). The tube is linear, hyaline to yellowish green, sparsely glandular, hairy; stamens are about 4 mm, anthers are about 3 mm, thecae

(1906)

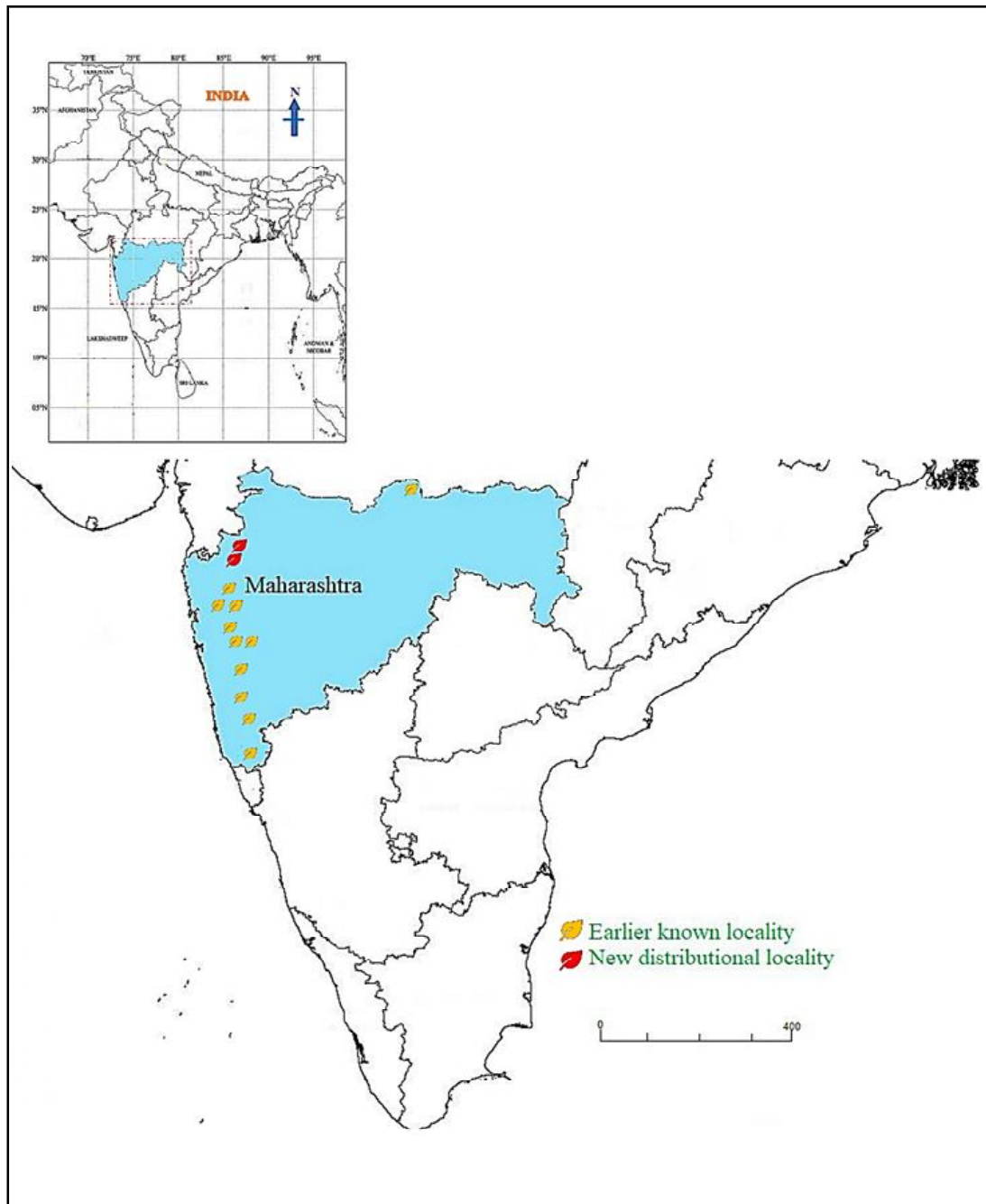


Figure 1. Distribution map of *Vicoa sahyadrica* Nandikar & Sardesai in the northern Western Ghats, India

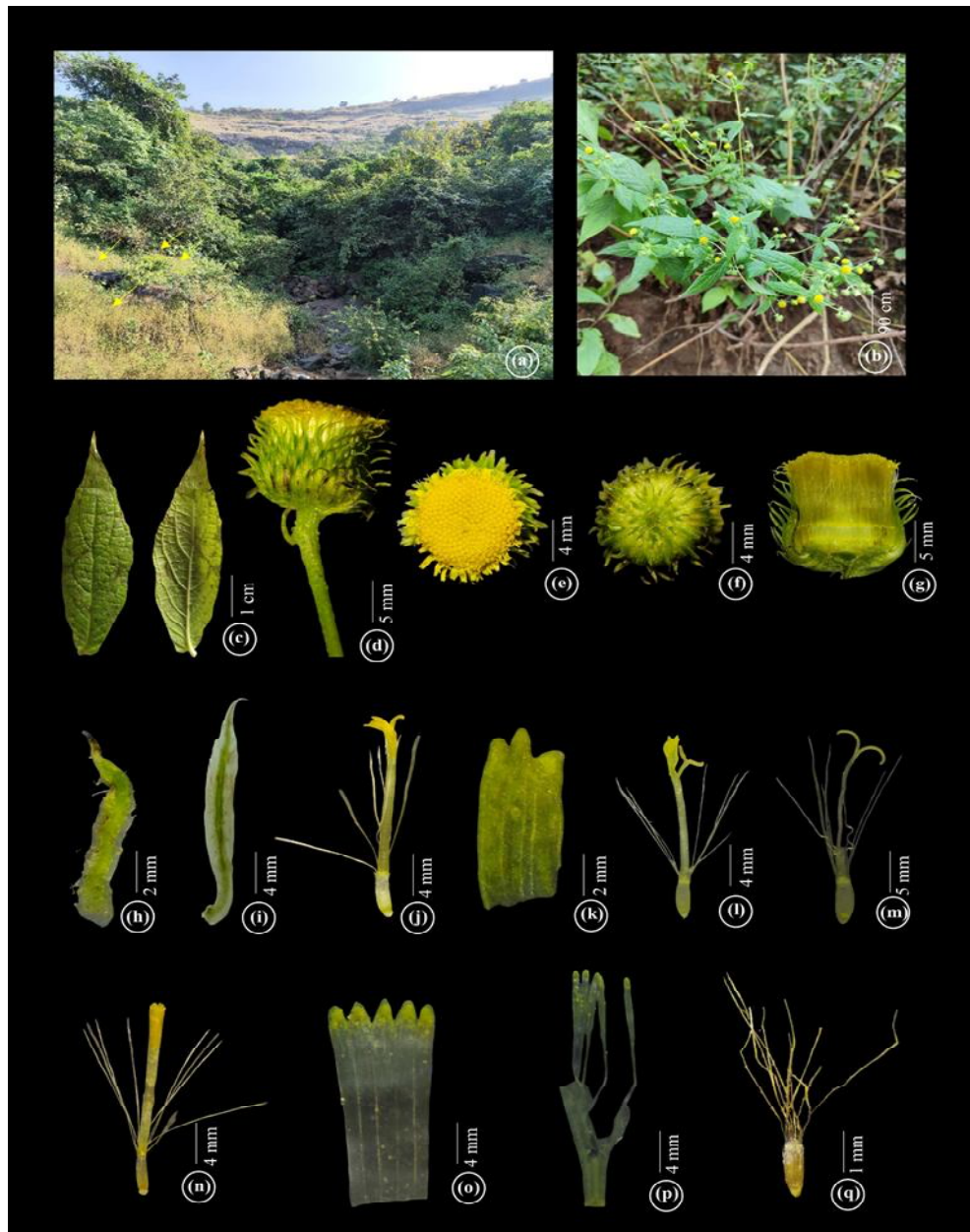


Figure 2. *Vicoa sahyadrica* Nandikar & Sardesai. a. Habitat; b. Habit; c. Leaf adaxial & abaxial view; d. pitulum (Head); e. Top view of capitulum; f. Back view of capitulum; g. Vertical section of capitulum; h. Involucre in young, spheroid capitulum; i. Involucre in well-grown, tubular capitulum; j. Ray floret; k. Corolla obscure teeth at the tip; l. pistil in ray floret; m. Pistil; n. Disc floret; o. Corolla tubular; p. Stamens; q. Achene

are linear, adnate to the style; the ovary and pappus are identical in ray florets; and disc florets are many, hermaphrodite, 5-lobed, oblong, thickly glandular, and yellow. Achenes are pale brown, oblong-elliptic, about 1 x 0.4 mm, sparsely sericeous, pubescent at the apex, stramineous, and bearded with 6–12 (–14) bristles⁷.

Herbarium consultation : The author used the deposited herbarium no. 002811 for the literature review.

Common names : Sahyadri Rayless Daisy.

Phenology: Flowering & fruiting October to December.

Habitat and distribution : Frequent along forest margins, undergrowth, roadside ditches, old walls; prefers shade, 100–1300 m a.s.l.; apparently endemic to Maharashtra and Karnataka states of Peninsular India. Extended new habitat distributions found in Maharashtra state (Fig. 1).

Ecology : The plant grows in specific high-altitude environments and on the slopes of the Sahyadri mountains.

Conservation status : According to the IUCN Red List, the species under study is not evaluated.

The taxon *Vicoa sahyadrica* was not previously documented from the flora of the Nashik district of Maharashtra state, India. For easier identification, the description includes scientific notes, Images, and botanical keys provided in this research paper. According to

this scientific source, the specimens were examined using available scientific literature, and we concluded that they have an extended distribution and new habitats in the northern Western Ghats, India.

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