



## ***Helianthus decapetalus* L. (Asteraceae): A New Record for India from the Northern Western Ghats, India**

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### **ABSTRACT**

During a recent floristic investigation, a new record has been reported from the northern Western Ghats in India. A new record species, *Helianthus decapetalus* L. (Asteraceae), has been identified. A taxonomy description, phenology, ecological observations, photographic images, and diagnostic traits of closely related species are compared and provided in this article for future reference. As per the scientific literature available, the author concluded that this is a new record for India from the northern Western Ghats.

**KEY WORDS:** *Helianthus decapetalus* L., Hotspot, New record, Western Ghats

### **INTRODUCTION**

The Western Ghats are one of the 34<sup>th</sup> mega-biodiversity hotspots located in the Indian subcontinent (Myers *et al.*, 2000). *H. decapetalus* belongs to the plant family Asteraceae. With over 56 species worldwide, the genus *Helianthus* L. is found in tropical and subtropical regions. The genus *Helianthus* is a member of the tribe Heliantheae of the Asteraceae subfamily Asteroideae. The studied species is perennial (Timme, 2006; Greene *et al.*, 2019; KEW, 2025b). Other *Helianthus* species, including *H. debilis* subsp. *cucumerifolius* and *H. argophyllus*, have also been observed in India, even though *Helianthus annuus* (common sunflower) is widely grown and present there for both oil and decorative uses (Sujatha, 2006). The wild species currently present on other continents are most likely introductions of the genus *Helianthus*, which originated in North America. The studied plants

are commonly called the thin-leaf sunflower and the Ten-petal Sunflower (Basak & Mukherjee, 2001; Filep *et al.*, 2010; Vear, 2011).

It is native to the Northeast USA, Southeast Canada; it is an ornamental in Central Europe, and sometimes it can escape (Botta-Dukat *et al.*, 2008; McAvoy & Harrison, 2012). Geographically, the genus *Helianthus* encompasses a wide variety of species, ranging from those that are highly ubiquitous throughout the continental United States to others that are restricted to a limited number of areas or endangered ecosystems (Seiler & Gulya, 2004). As per the review of the literature, the studied plant species were not mentioned or recorded for India. So, the studied taxon, *Helianthus decapetalus* L. was newly reported for India from the northern Western Ghats (Roxburgh, 1832; Dalzell & Gibson, 1861; Hooker, 1882; Cooke, 1908; Almedia, 1996; Singh *et al.*, 2000; 2001).

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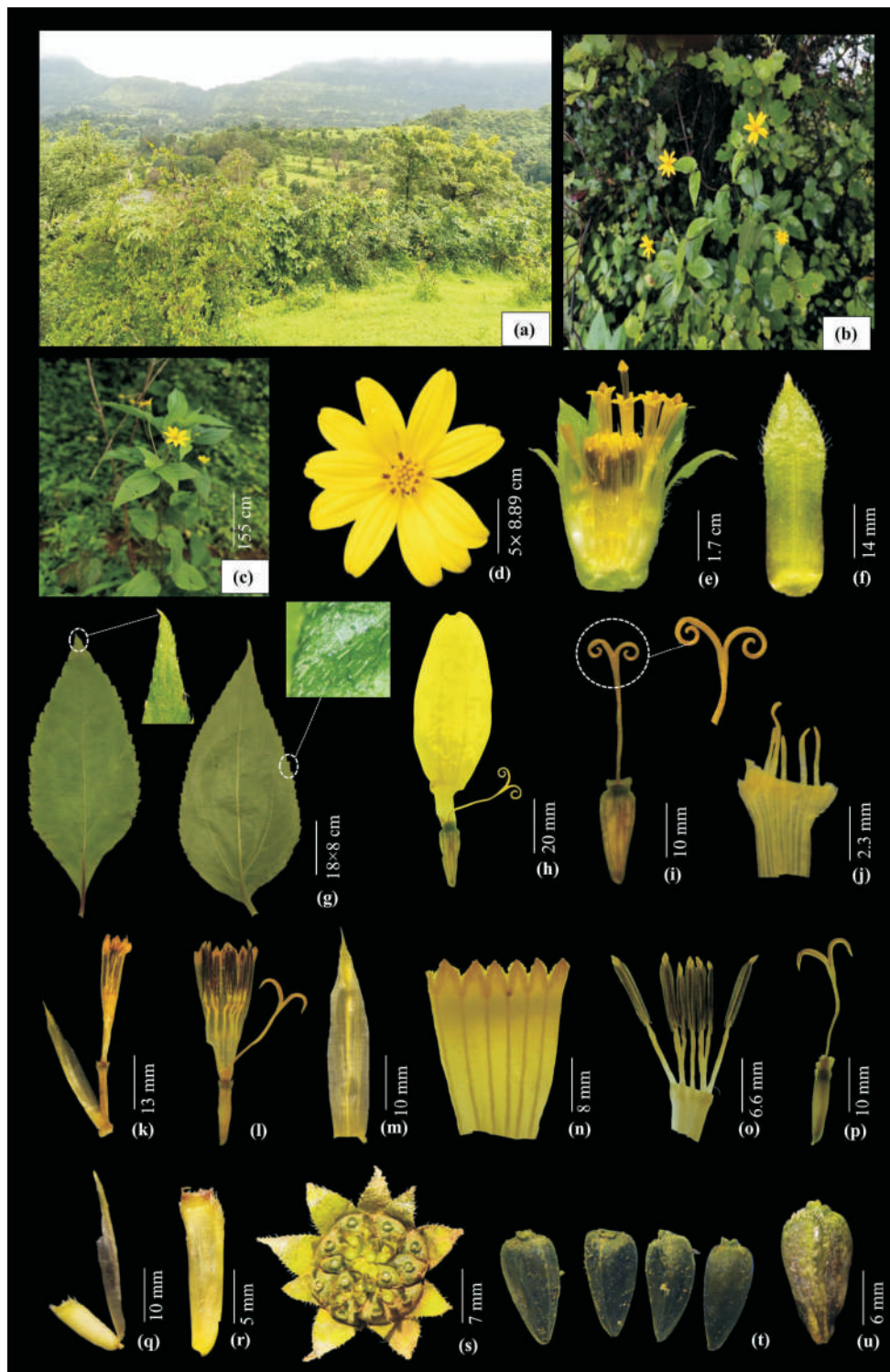


Fig. 1: *Helianthus decapetalus* L. (a) Study site, (b) Habit, (c) Flowering branch, (d) Capitulum, upper view, (e) Head in L.S., (f) Involucral bract, (g) Abaxial leaf surface with trichomes restricted to the margins, (h) Ray floret, (i) Pistil, (j) Sterile stamens, (k & l) Disc floret, (m) Pappus bracts, (n) Petals, (o) Stamens, (p) Pistil, (q) Ovary with bract, (r) Ovary, (s) Achene, (t) Seeds, (u) Seed.

**Identification of sunflower species using the following key**

- 1.a. Leaves are lanceolate, 2-3 cm wide. Lateral veins are weak. All leaves apart from the lowest ones are alternately arranged..... *H. giganteus* L.
- 1.b. Leaves are oval, ovate-lanceolate or ovate (usually broadest under their middle), with two strong lateral veins running along a curved line at the base or the lower third of the leaf, making the leaf appear as “three-veined”. The lowest and middle leaves or all of them are opposite ..... 2
- 2.a. Leaves are sessile. The plant is greyish-white, the stem and the involucre bracts are densely covered in whitish down..... *H. mollis* Lam.
- 2.b. Leaves have stalks. The plant is green or glaucous; the bracts are not downy ..... 3
- 3.a. Involucre bracts are blackish or dark green. The upper leaves are arranged alternately (this is only the case on undeveloped specimens, where all the leaves are opposite). The stem is covered in tough hair (cultivated forms) or is sparsely hairy, nearly glabrous (wild forms). In autumn, the rhizomes bear elongated, thin (wild forms) or roundish (cultivated forms) tubers..... *H. tuberosus* L.
- 3.b. Involucre bracts are green, yellowish on their lower part, with protruding veins. Generally, the stem leaves are all opposite. The stem is hairless or nearly hairless. The rhizome is only slightly thickened..... 4
- 4.a. Leaves are relatively narrow, usually at least three times as long as wide, the middle and upper ones are seldom broader than 4 cm. The leaf blade is thick, the upper side coarsely hairy, with strikingly lucid papillae at the base of the large trichomes; the underside is glaucous, whitish blue-green. Leaf margin is slightly serrate or entire. Involucre bracts are only slightly loose, only slightly or not at all, exceeding the disk..... *H. strumosus* L.
- 4.b. Leaves are broader, sometimes they can be three times longer than their width, often broader than 4 cm. Leaf blades are thin, hairless or only slightly rough, and the leaf margin is definitely serrated, often roughly serrate. Involucre bracts are very loosely arranged, evidently exceeding the disk ..... 5
- 5.a. The stem is nearly or completely hairless, with slight down present only on its upper section. The composite head has 8-12 radially arranged, 10-25mm long ray flowers; the diameter of the disk is about 7 mm. Achenes are produced..... *H. decapetalus* L.
- 5.b. The stem is slightly covered in rough hair. The head has more ray flowers, which are longer than 25 mm;

the head is filled to half or entirely by them. The diameter of the disk is greater than 7 mm. The plant is almost or completely infertile, thus no achenes are produced..... *H. ×multiflorus* L. (Botta-Dukat *et al.* 2008).

**MATERIAL AND METHODS**

**Study area:** Studied plant species collected from the village of Dhadoshi, located in Trimbakeshwar taluka of Nashik district, Maharashtra, India (GPS coordinates 19°53’31.8”N 73°31’04.5”E)(Fig. 2).

**Taxonomy & Morphology:***Helianthus decapetalus* Linnaeus, Sp. Pl. 2: 905. 1753.

**Description:** Perennials, 60-200 cm (rhizomatous). Stems erect, glabrous. Leaves cauline; opposite (proximal or all) or alternate (distal); petioles (1–) 2-5 cm; blades (green, 3-nerved distal to bases) lanceolate to ovate, 7-21×4-10 cm, bases rounded to cuneate (often shortly decurrent onto petioles, margins usually serrate (moderately to notably in larger leaves), abaxial faces ± scabro-hispidulous, relatively sparsely gland-dotted. Heads 3-6(-10). Peduncles 2-12 cm (not gland-dotted). Involucre hemispheric, 12-25 mm diam. Phyllaries 20-25 (often reflexed), lance-linear to lanceolate, 11-16 × 2-3 mm (sometimes leaflike, longest surpassing discs by 1/2+ their lengths), (margins ciliate) apices attenuate, abaxial faces strigillose to glabrate, not gland-dotted. Paleae 8–10 mm, 3-toothed. Ray florets 8-12; laminae 20-25 mm. Disc florets 40+; corollas 6.5-7.2 mm, lobes yellow; anthers usually dark brown to black (rarely reddish brown), appendages dark or reddish brown. Cypselae 3.5-5 mm; pappi of 2 aristate scales 3-4 mm. Achene has an elongated shape. Vegetative colonies of plants are often formed from the rhizomes (Fig. 1) (Linnaei, 1753; Jockoviæ *et al.*, 2020; Eflora, 2025).

**Herbarium consultation:**The *H. decapetalus* was identified by utilizing the different deposited Herbarium Catalogue specimen numbers K003040088(KEW, 2025a). NHMUK BOT BM001050929 and NHMUK BOT BM001050928 Source: Natural History Museum (London) Collection Specimens (GBIF, 2025).

**Synonyms:** *H. trachelifolius* (FNA, 2025).

**Common names:** Thin leaf or thin-leaved sunflower, ten-petal sunflower, Forest Sunflower

**Flowers & Fruits:** July-October

**Distribution:** This species’ natural range is from eastern Canada to the northeastern and central United States. It grows mostly in the temperate biome and is a perennial (KEW, 2025a).

**Ecology:** It grows in places like riverbanks and floodplain woodlands. Numerous insects, including bees

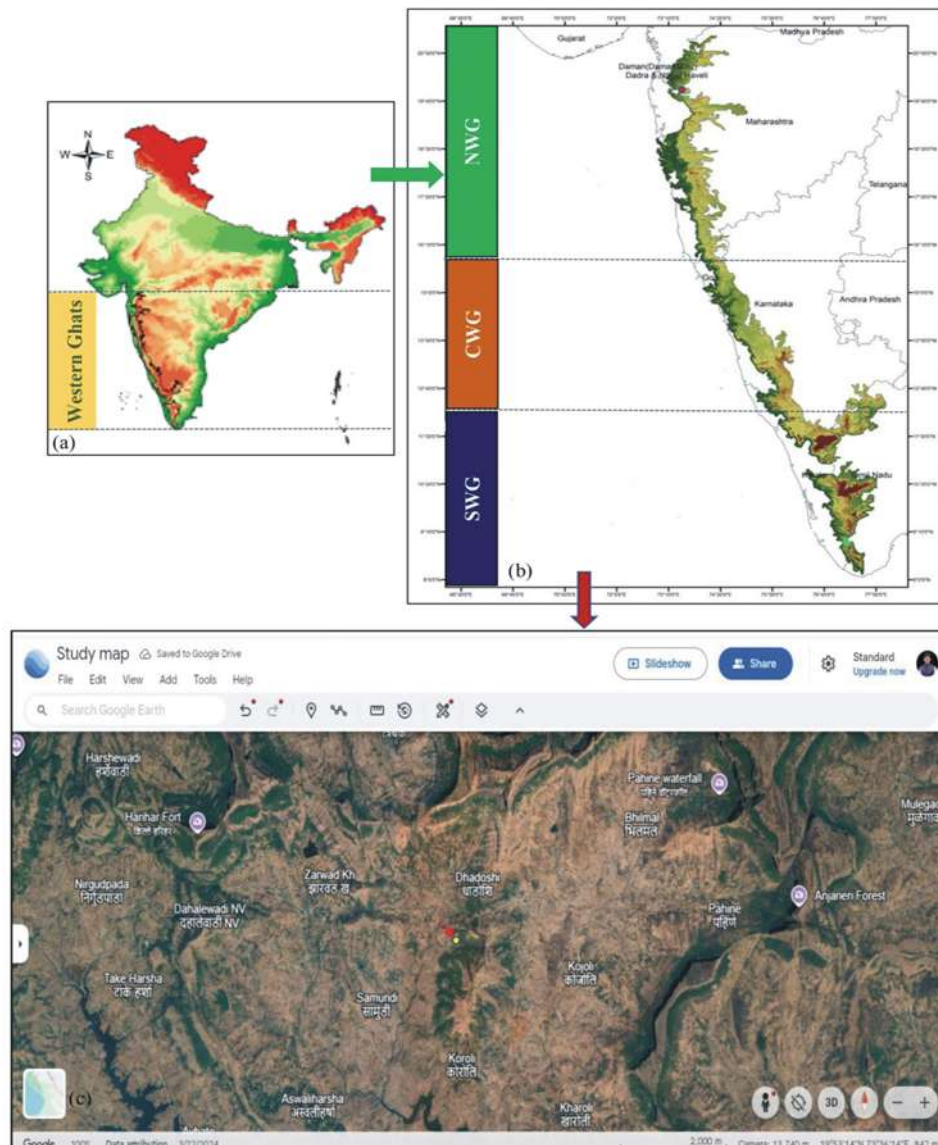


Figure 2: (a) Western Ghats of India, (b) Western Ghats, (c) Map showing *Helianthus decapetalus* L. collected from the Northern Western Ghats  
 \*Northern Western Ghats: NWG; Central Western Ghats: CWG; Southern Western Ghats: SWG

and butterflies, are drawn to the yellow blossoms; some of these insects, such as the Painted Lady and the Silvery Checkerspot, use the plant as a host for their larvae. The seeds provide birds with a food source (INaturalist, 2025).

**Conservation status:** According to the IUCN Red List, the studied species is evaluated as Least Concern (LC) (Rhodes *et al.*, 2016; GBIF, 2025).

## RESULT AND DISCUSSION

The taxa that were examined in 2024-2025 include some

amazing plant species that are part of the Asteraceae family. Flora of North America @efloras.org was used to accurately identify the plant, and deposited Herbarium Catalogue specimens K003040088, BOT BM001050929, and NHMUK BOT BM001050928 were used for authentication. Taxa that had not yet been reported from India were considered in the fundamental literature evaluation of accessible scientific literature. It can be claimed that these are the first records from the northern Western Ghats for India.

## CONCLUSION

The taxon *H. decapetalus* was not previously documented from India. According to this scientific source, it is a new record for India from the northern Western Ghats. For easier identification, the description includes scientific notes, Images, and botanical keys provided in this research paper.

## ACKNOWLEDGMENTS

The authors would like to thank the Principal Prof. (Dr.) K. M. Khalkar of M.V.P's, S.S.S.M. Arts, Science and Commerce College, Saikheda, Nashik. The authors would like to thank Head Prof. Prajakta A. Dhage, Department of Zoology, M.V.P's, S.S.S.M. Arts, Science and Commerce College, Saikheda, Nashik. Authors are also grateful to Mr. A.R. Handore and Mr. Rohit Rajole for providing facilities for recording various research support.

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