Bioscience Discovery, 8(1):50-54, Jan. - 2017

Print & Online, Open Access, Research Journal Available on http://jbsd.in
ISSN: 2229-3469 (Print); ISSN: 2231-024X (Online)
Research Article

Melampodium divaricatum (Asteraceae-Melampodiinae): A new record for India

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Article Info

Received: 25-10-2016,
Revised: 29-11-2016,
Accepted: 07-12-2016

Keywords:
Melampodium divaricatum, Asteraceae, New record, India, Maharashtra, Satara

Abstract

Melampodium divaricatum (Rich.) DC., collected from the Satara district of Maharashtra and is reported for the first time from India. Detailed description and illustrations of the species are provided in the present paper.

INTRODUCTION

The family Asteraceae having 161 genera and 1052 species were reported from India (Jagtap and Bachulkar, 2008). Recently, some new distributional records were documented from India (Chennakesavulu *et al*., 2014 and Jagtap and Bachulkar, 2015) for India.

The genus *Melampodium* L. (Asteraceae-Heliantheae-Melampodiinae) is represented by 45 species (The plant list, 2013) distributed in tropical and subtropical regions, mostly restricted in Mexico, North America and Central America (Stuessy, 1972; Strother, 2006). The genus *Melampodium* is first described by Linnaeus (1738) in his "Hortus Cliffoitianus". The generic name is based on Greek word "*Melampus medicus graecus*". However, Gray (1884) & Cockerell (1905) overlooking the Linnaeus explanation mistakenly believed that the name came from Greek word meaning "Black foot" (Stuessy, 1972).

Humboldt, Bonpland and Kunth (1820) had been subdivided into 3 subgenera [viz., *Melampodia*, *Dysodia* (Rich.) H.B.K., and *Alciniae* (Cav.) H.B.K.], without given any description and comments. However, this sub-generic division was not supported by Cassini (1829). He recognizes three separate genera viz., *Melampodium* L., *Alcina* Cav., and a new genus *Zarabellia* Cass., based on the characters of inner phyllaries crowned with hooded appendages or no hood with two small valves like processes or without hood and valve processes respectively. Later on Candolle (1836) put these genera viz., *Zarabellia* and *Alcina* into the genus *Melampodium* but maintained the taxa as 3 sections based on Cassini's bract differences viz., *Eumelampodium* DC., *Zarabellia* (Cass.) DC and *Alcina* (Cav.) DC in the genus *Melampodium* L. Bentham and Hooker (1873) and Hoffmann (1890) did not recognized the sections given by Candolle. Baker (1884) treating the Brazilian *Melampodium* species into two subgenera *Dysodium* (Rich.) H.B.K. and *Unxia* (L.f.) Baker. Robinson (1901) in his synopsis of *Melampodium* submerged section *Alcina* (containing single species *M. perfoliatum* (Cav.) H.B.K.) into *Zarabellia*. However, other two sections of Candolle were retained on the basis of hood and nonhood characters of achenes (fruit). Stuessy (1972) revised the genus *Melampodium* L.,

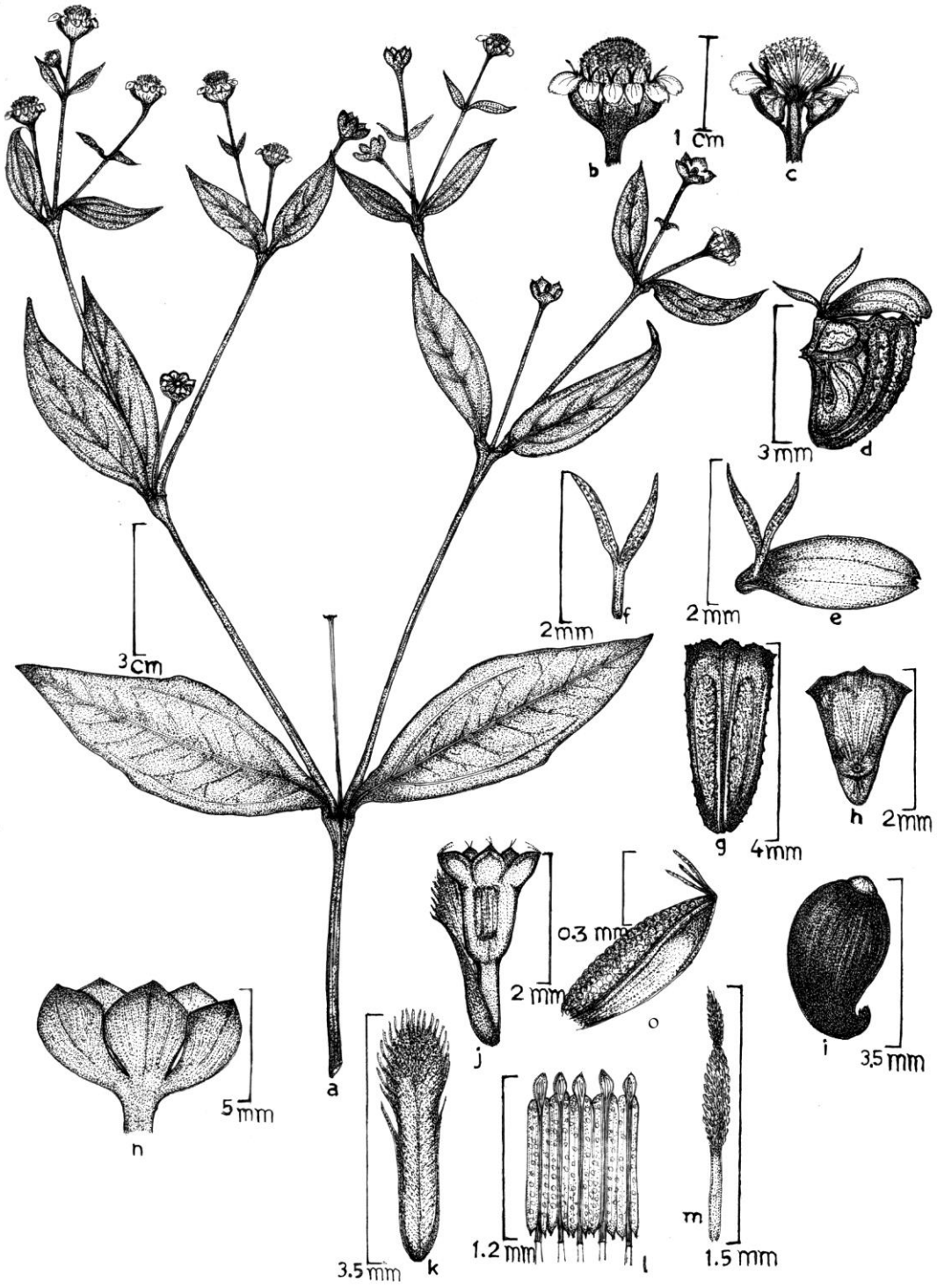

Fig. 1. *Melampodium divaricatum* (Rich.) DC a. Postion of twig b. Head c. V.S. of head d. Ray achene e. Ray floret f. Style of ray floret g. Lateral view of achene h. Top view of achene i. Seed j. Disc floret k. Palea l. stamens m. Gynoecium n. Cupulate involucre o. Lobe of disc floret

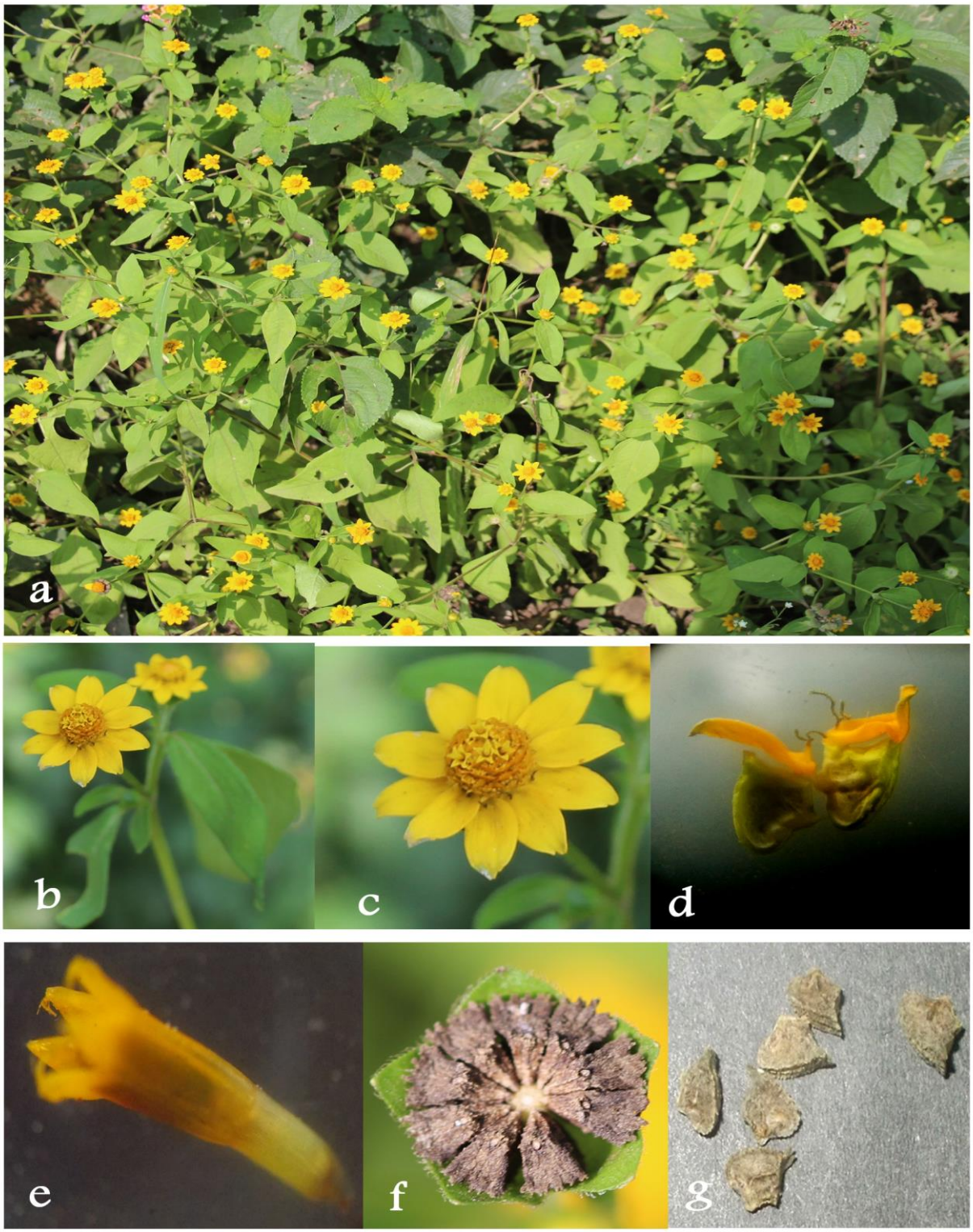

Fig. 2. *Melampodium divaricatum* (Rich.) DC., a. Habit b. Single twig c. Enlarged head d. Enlarged ray floret e. Enlarged disc floret f. Involucre with achenes (fruits) g. Achenes (fruits)

and recognized the Candolle's sections viz., *Zarabellia* (Cav.)D and *Alcina* (Cav.) DC with four new sections viz., *Melampodium*, *Serratura* Stuessy, *Bibractiaria* Stuessy and *Rhizomaria* Stuessy were derived from the section *Zarabellia* on the basis chromosome number and diversity of morphological features.

During present investigation authors were followed the Stuessy's view. The species *Melampodium divaricatum* (Rich.) DC., (section Serratura) is reported for first time from India as new generic distributional record.

The herbarium specimens were deposited at SUK herbaria and herbaria of Dept. of Botany, Shri Vijaysinha Yadav Arts & Science College, Peth-Vadgaon

Taxonomic description

Melampodium divaricatum (Rich.) DC. Prodr. 5: 520. 1836; Stuessy T. F. Rev. of genus Melampodium J. Rhodora, 74: 798. Pp. 161-219. 1972; Strother J. L. Fl. N. Amer. 27: 33-34. 2006. *Dysodium divaricatum* Rich. In Sys. 2: 489. 1807. '*Golden Medallion Flower', 'Butter Daisy' ,'Star Daisy'*

Annual herbs, erect, ca 30-120 cm tall; stems dichotomously branched, slender, fistulous, purple tinged, pulvinous at node, glabrous or minutely hairy on young branches, slightly grooved with distinct nodes and internodes. Leaves simple, opposite; usually at the stem dichotomy, entire, elliptic, oblong or oblong-lanceolate, ca 2.5-7 x 0.5-3.5 cm, hispid on both surface, trinerved, sessile or cuneate into small petiole; petiole 2-8 mm long. Heads heterogamous (with ray florets in one row, fertile; central florets male or sterile), ca 1cm across, globose, solitary or 2-3 in loose cymes, bracteolate, pedunculate; peduncle 0.4-2.5 cm long, pubescent, terete. Receptacle elongated; conical to oblong, ca 5 mm long, paleaceous (upper half of receptacle); palea conduplicate, spathulate, ca 3-3.5 x 1-1.2 mm. Involucral bracts 1-2 seriate, herbaceous; outer bracts 5, cupular, connate at base, sparsely pubescent, imbricate, ovate to orbiculate, ca 4-6 x 3.5-5 mm; inner bracts enclosing the ray achenes. Ray florets 8-12, female, ligulate; ligules 2-4 mm long, 3-dentate, yellow-orange, attached on ventral side of achene apex; tube nonexistent or very short. Disc florets many, tubular, ca 2.5-3 mm long, male or sterile, with yellow, campanulate 5-lobed corollas; corolla lobes with barbellate appendages on tips. Anthers linear, appendiculate, base sagittate, 1-1.2 mm long. Style of disc unilobed (unbranched), densely papillose or penicellate, ca 1.5 mm long. Achenes often enclosed in subtending involucral bract, slightly compressed, curved, strongly ornamented; ca 3.5 x 2 mm, epappose. Chromosome number, n= 12 (Stuessy, op. cit.)

Flowering & Fruiting: August-December

Distribution: Mexico, Central America, North-South America, Caribbea, Brazil, Burma (Myanmar), Cuba, Philippine (occupies primarily moist habitats from tropical deciduous forests)

India: Satara district, Maharashtra State

Specimens examined: INDIA, Maharashtra; Satara district, 26. 10. 2013. Jagtap, Exsiccate: DGJ00040

Note: Recently new introduced species *Melampodium divaricatum* (Rich.) DC., was collected from Satara (17°40'16.4" N 73°58'35.0" E) district of Maharashtra. A population of about 500 individuals was found in the locality. The area of occupancy is 0.5–1 km^2/per locality.

Acknowledgement

Authors are thankful to Shri. Gulabrao Pol, President of Shri Shahu Shikshan Prasak Seva Mandal, Peth-Vadgaon for encouragement and Shri Shivajirao Mohite, President of Shetkari Shikshan Prasarak Mandal for providing laboratory facilities. Authors are also thankful to Prof. Tod F. Stuessy, Past Director of the Herbarium and Professor Emeritus, Evolution, Ecology, and Organismal Biology, The Ohio State University, Columbus, for confirming the identity of the species.

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How to Cite this Article:

Jagtap D. G., M. Y. Bachulkar-Cholekar, S.M. Patil and S. B. Bhamburdekar, 2017. *Melampodium divaricatum* (Asteraceae-Melampodiinae): A new record for India. *Bioscience Discovery*, **8**(1):50-54.