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RESEARCH ARTICLE

Lectotypification of C*yathocline manilaliana* (Asteraceae) and its extended distribution to Daund taluka, Maharashtra, India

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Abstract:*Cyathocline manilaliana* (Asteraceae) is reported from Daund Taluka, Pune District, State of Maharashtra, India. It is an extended distribution to Maharashtra State, India. The identity of the plant collected was confirmed from the published original plant protologue after due email correspondence with the authorities of the herbaria where the authors claimed to have deposited the holotype and isotype. Principle 2, and sub-clauses of Article 9 of the ICN Shenzhen Code are applied for typification. The illustration published in the plant protologue is designated as the lectotype.

Keywords: Daund Taluka, endemic, illustration, letcotype, neotype

Abbreviations
BLAT—The Blatter Herbarium, St. Xavier's College (Autonomous), Mumbai, Maharashtra, India
CRS— Assigned Coordinate Reference System
MH—The Madras Herbarium of Botanical Survey of India, Southern Regional Centre, Coimbatore, Tamil Nadu, India.
PCA—Shrimant Pratap Shethaji Herbarium, Pratap College, Amalner (Autonomous), Maharashtra, India.
SKU—The Herbarium of the Department of Botany, Sri Krishnadevaraya University, Anantapur, Andhra Pradesh, India.
SUK—The Herbarium at Shri Shivaji University, Kolhapur, Maharashtra, India.

Introduction

According to Mabberley (2009), the genus *Cyathocline* of the family *Asteraceae* is globally represented by 3 species from tropical Asia (Cassini 1829, Berchtold and Presl 1820). The records and taxonomic literature available to date, reveal that Hooker (1882) and Cooke (1908) have reported two species of *Cyathocline* from India whereas Singh *et al.* (2001) and Almeida (2001) have reported two species and three varieties from the state of Maharashtra. Raju and Raju (1999), described *Cyathocline manilaliana*, a new species from Adilabad District of Telangana State, India and it is being treated as an endemic species. Salunkhe *et al.* (2002) reported it from Yeralwadi of Satara District, Maharashtra State. Bandyopadhyay *et al.* (2016) and Salve *et al.* (2021) reported that the type specimens of *Cyathocline manilaliana*, as mentioned in the protologue, have either not been deposited or cannot be traced in the respective herbaria since its publication. Salve *et al.* (2022) designated the herbarium specimen deposited at the PCA as the neotype for the plant name *Cyathocline manilaliana*, collected from Pochera Field, Adilabad District, Telangana, India. Thus, in order to conserve the very aim of Principle 2 of the ICN Shenzhen Code (Turland *et al.* 2018), it is necessary to designate the illustration as a lectotype from the extant original material. The herbarium specimen deposited by Salunkhe *et al.* (2002), representing the first report to the Maharashtra State, is not traceable. The specimen collected by the present authors is the only available evidence of its extended distribution to Maharashtra State, India.

Material and Methods

In January (2017), while documenting the plants from and near the water bodies in Daund taluka (18°23.618'N, 74°31.718'E) of Pune District, Maharashtra State, a plant was found

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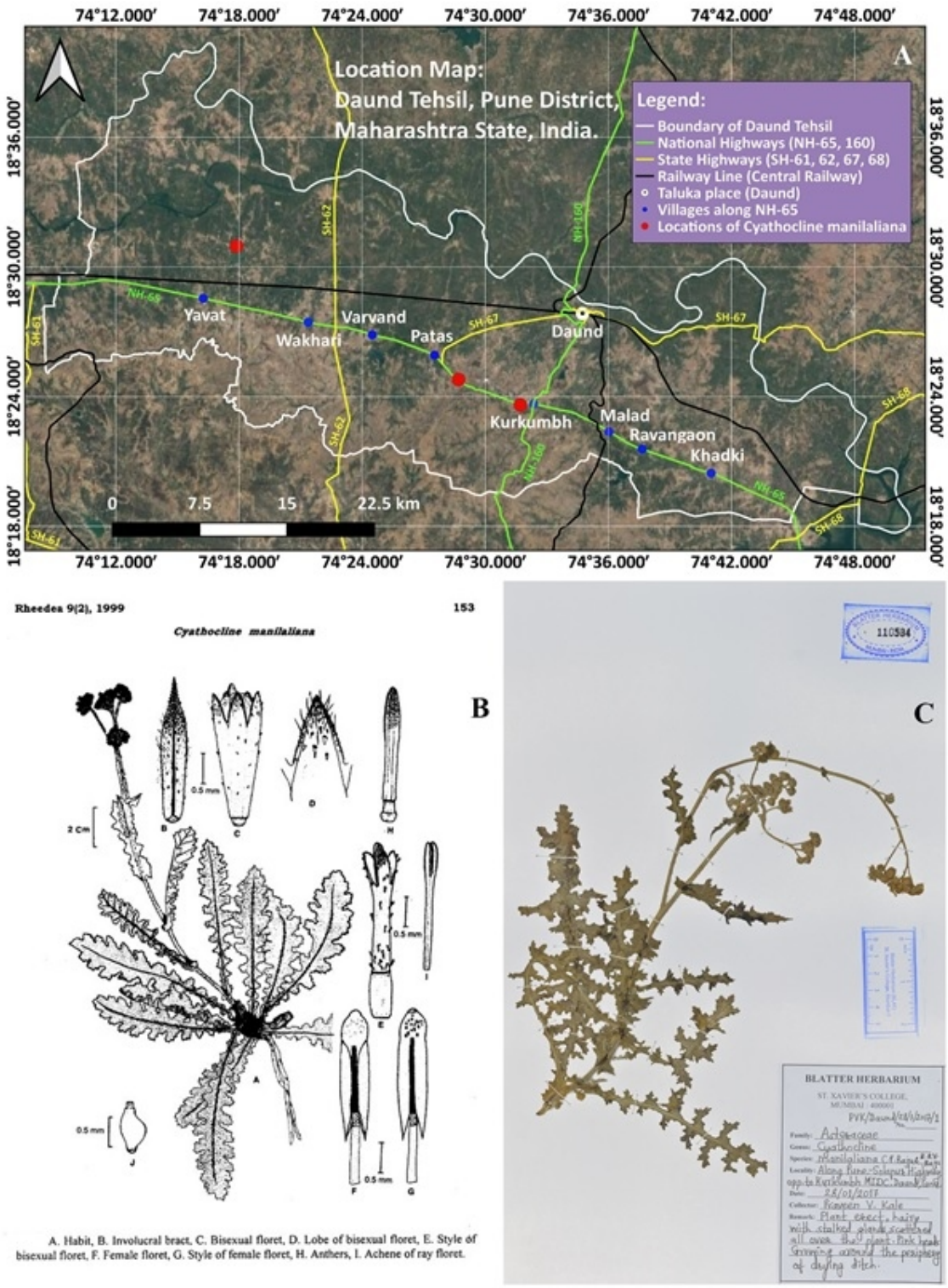

A. Habit, B. Involucral bract, C. Bisexual floret, D. Lobe of bisexual floret, E. Style of bisexual floret, F. Female floret, G. Style of female floret, H. Anthers, I. Achene of ray floret.

Figure 1: **A -** Location Map of Daund Taluka; **B.** Original illustration (Lectotype - hic designatus); **C.** Herbarium specimen Deposited at the BLAT.

Figure 2: *Cyathocline manilaliana* C.P. Raju & R.R.V. Raju. **A**- Habit; **B.** Stem base showing White wooly vegetative propagules; **C.** Flowering twig; **D.**- Inflorescences; **E–F.** Involucral bracts; **G.** Achene; **H.** Female florets; **I–K.** Bisexual florets; **L.** opened Corolla of Bisexual floret showing anthers; **M.** Anther-base deeply sagittate with sharp auricles.

growing along the periphery of a drying ditch located opposite the Kurkumbh MIDC area along the National Highway No. 65 in Daund Taluka . The plant specimens collected in their fertile stage were pressed, preserved as per International standard herbarium techniques recommended by Bridson, and Forman (1989) and for future reference are deposited at the BLAT. All the necessary field notes and GPS readings along with photo documentation were recorded at the time of collection. The identity of the plant collected from the research area was confirmed in all respect (Fig. 2) with the description and illustration (Fig. 1B) as published in the protologue of *Cyathocline manilaliana.* Later on, the plant was recorded from two more localities—near Mastani Lake (18°24.795'N, 74°28.705'E), Patas Village and near Matoba Lake (18°30.963'N, 74°17.879'E), Khutbav Village of the taluka. Daund Taluka location map was prepared using QGIS 3.22.3 'Białowieża' software and Google Satellite Image (URL-http://www.google.com/maps/vt?lyrs=s@189&gl=cn&x={x}&y={y}&z={z}; Assigned Coordinate Reference System (CRS): EPSG:3857 - WGS 84 / Pseudo-Mercator) and the distribution of the plant in the taluka is given in the location map of Daund Taluka (Fig. 1A).

Results

Thus, in accordance with Principle 2 of the ICN Shenzhen Code (Turland *et al.* 2018), the lectotype (Fig. 1B) is designated hereunder articles 9.3, 9.4/b, and under article 9.12. The authors of the present research paper have deposited an herbarium specimen (Fig. 1C) at the BLAT, St. Xavier's College (Autonomous), Mumbai.

All over the world, *Cyathocline lutea* J. S. Law ex Wight, *Cyathocline jacquemontii* Gagnep., *Cyathocline manilaliana* and *Cyathocline purpurea* (Buch.-Ham. ex D.Don) Kuntze, were the four (World Flora Online. Version (2021). published on the Internet; http://www.worldfloraonline.org. Accessed on: 18 Nov 2021) species representing the genus *Cyathocline* (Cassini 1829);*Cyathocline jacquemontii* is now reduced to synonym of *Cyathocline purpurea* (Plants of the World Online. Facilitated by the Royal Botanic Gardens, Kew. Published on the Internet; http://www.plantsoftheworldonline.org. Hence at present, the genus has three species.

Keys

A key to the species of the genus *Cyathocline* Cassini (1829) in the world is given as follows:-

1. Plants up to 9 inches tall; Flowers bright yellow … *C. lutea*
- Plants more than 12 inches tall; Flowers purplish-white or purple ... 2.
2. White woolly globose clusters (vegetative propagules) present on the stem bases; leaves both radical and cauline, coriaceous; involucral bracts sub-acuminate, margins not scarious; anthers 2–3.5 mm long, anther base deeply sagittate with sharp auricles … *C. manilaliana*
- White woolly globose clusters absent; leaves cauline only, chartaceous; involucral bracts acuminate, margins scarious; anthers 1–1.5 mm long, anther base obtuse … *C. purpurea*

Discussion

Raju and Raju (1999) have mentioned in the plant protologue of *Cyathocline manilaliana* that the authors have deposited the type herbarium specimens bearing collection-number Venkata Raju and Prabhakar Raju-13230 as holotype at the MH and as isotype at the SKU. We had duly requested the respective herbaria to provide us with the digital images of the type herbarium specimens so as to compare with the type specimen and to confirm our identification. The authorities in charge of both the Herbaria replied that they do not have in their collection the holotype and isotype of the said species deposited by Venkata Raju and Prabhakar Raju. To date, from the year of publication, the authors have either not deposited the type specimens or the specimens are not traceable. Thus, in the absence of both the holotype and isotype, the description and illustration published in the protologue of the present plant species constitute the only extant original material (Turland *et al.* 2018) and the illustration needs to be designated as lectotype. The neotype for the plant name *Cyathocline manilaliana* designated by Salve *et al.* (2022) is deposited at the PCA. Also, the authorities in charge of the SUK replied to the request for the digital image as mentioned by Salunkhe *et al.* (2002) in the very first report of *Cyathocline manilaliana* for the State of Maharashtra, India, that they do not have in their

herbarium collection, the herbarium sheet of the concerned plant species bearing collection-number Salunkhe-1320, claimed to have deposited by the authors in SUK. Hence, the herbarium specimen (Fig. 1C) deposited by the present authors at the BLAT is the only available and constructive evidence of the occurrence of the said species in the state of Maharashtra.

Conclusion

Typification
Cyathocline manilaliana Raju and Raju (1999)
Lectotype (hic designatus): Illustration (Fig. 1B) published in the article titled "*Cyathocline manilaliana* (Asteraceae)-a new species from Andhra Pradesh, India" in Rheedea Vol. 9(2): 153. 1999.

Digital image of herbarium specimen examined: India, Telangana: Pochera Sacred Grove field, along small stream of water, Adilabad district, 26th December 2021, Jayesh T. Salve, s.n. (Acc. No.2598), (PCA).

Herbarium specimen deposited: India, Maharashtra, Daund, along Pune–Solapur Highway, 28/01/2017, Praveen V. Kale, PVK/Daund/28/01/2017/1, (Acc. No.114134), (BLAT), (Fig. 1C).

Flowering & Fruiting: October–March.

Distribution: *C. manilaliana* is so far being treated as endemic to the State of Telangana, India. Its distribution is hereby extended to the Daund taluka, District Pune, State of Maharashtra, India.

Our present article will highlight the issues of non-deposition of the type specimens at the time of publication of the new plant species name as well as non-deposition of the herbarium specimens mentioned in the research articles. It will be helpful while drafting mandatory requisites to conserve the very aim of Principle 2 of the ICN Shenzhen Code (Turland *et al.* 2018).

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References

Almeida M R 2001 Flora of Maharashtra: Vol. IIIA. Orient Press, Mumbai 94-95.

Bandyopadhyay S, Krishna G and Venu P 2016 Names of new taxa published and types deposited—A case study. Annals of Plant Sciences **5** 1451–1457.

Berchtold F and Presl J S 1820 O přirozenosti Rostlin: obsahugjej gednánj o živobytj rostlin pro sebe a z ohledu giných živoků, podlé stawu nyněgss ylo znanj, pýtwn rostlin : názwoslowj audů, hospodářstwj gegich, rozssjřenj po semi a způsob rostlinář zřjditi a zacowati. Praze (Praha), 254.

Bridson D and Forman L 1992 The Herbarium Handbook: Revised Edition. The Royal Botanic Gardens, Kew.

Cassini M H 1829 Tableau Synoptique Des Synanthèrèes. 'Annales des sciences naturelles; comprenant la physiologie animale et végétale, lanatomie comparée des deux règnes, la zoologie, la botanique, la minéralogue et la géologie. **17** 387–423.

Cooke T 1908 The Flora of The Presidency of Bombay: Vol. 2, Compositae to Gramineae. Talor & Francis, London 15.

Hooker J D 1882 The Flora of British India: Vol. 3, Caprifoliaceae to Apocynaceae. L. Reeve & Co., London 246.

Mabberley D J 2009 Mabberley's Plant-Book: A portable dictionary of Plants, their classification and uses, Third Edition, Cambridge University Press, London 242.

Raju C P and Raju R R V 1999 *Cyathocline manilaliana* (Asteraceae)-a new species from Andhra Pradesh, India. *Rheedea* **9(2)** 151–154.

Salunkhe C B, Simpale V B, Sardesai M M and Yadav S R 2002 Miscellaneous Notes: Some New Records of Asteraceae for the State of Maharashtra. *J. Bombay Nat. Hist. Soc.* **99(3)** 555–557.

Salve J T, Tuwar A Rand Tadavi S C 2021 Molecular and Taxonomic Review of the Genus *Cyathocline* Cass (Asteraceae): A case study. International Conference on Innovative Trends in Natural and Applied Sciences Special Issue 337–340.

Salve J T, Tuwar A R, Tadavi S C and Bhadane V V 2022 Foliar Micromorphology of the Genus Cyathocline Cass. (Asteraceae) Species : A Scanning Electron Microscopy Screening *Int. J. Sci. Res. Sci. Tec.* **9 (9)** 117-120

Shirodkar D L and Lakshminarasimhan P 2001 Asteraceae In: Singh N P, Lakshminarasimhan P, Karthikeyan S and Prasanna P V (Eds.) Flora of Maharashtra State: Vol. II, Dicotyledones. Botanical Survey of India, Calcutta. 203–204.

Turland N J, Wiersema J H, Barrie F R, Greuter W, Hawksworth D L, Herendeen P S, Knapp S, Kusber W - H, Li D -Z, Marhold K, May T W, McNeill J, Monro A M, Prado J, Price M J and Smith G F (Eds.) 2018 International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code) adopted by the Nineteenth International Botanical Congress Shenzhen, China, July 2017. Regnum Vegetabile 159. Glashütten: Koeltz Botanical Books.