

# Lectotypification of the name *Melastoma candidum* f. *albiflorum* and its taxonomic status

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Academic editor: R. Kriebel | Received 9 January 2020 | Accepted 23 March 2020 | Published 8 May 2020

**Citation:** Zhang X, Dai J-H, Liu X, Li Z, Lee SY, Zhou R, Tan G (2020) Lectotypification of the name *Melastoma candidum* f. *albiflorum* and its taxonomic status PhytoKeys 146: 47–52. <https://doi.org/10.3897/phytokeys.146.49929>

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## Abstract

A nomenclatural and taxonomic treatment of the name *Melastoma candidum* f. *albiflorum* (Melastomataceae) is presented. A lectotype is designated for this name, with an updated morphological description based on fresh material. The name *Melastoma candidum* f. *albiflorum* is proposed as a heterotypic synonym of *Melastoma candidum*.

## Keywords

flora of China, *Melastoma*, synonym, taxonomy

## Introduction

*Melastoma* L. comprises species mainly distributed in the Southeast Asia and extends to India, South China, Japan, northern Australia, and Oceania (Meyer 2001). *Melastoma* is taxonomically difficult, and the recognized number of species in this genus remains controversial due to rapid adaptive radiation and extensive natural hybridization (Renner and Meyer 2001; Liu et al. 2014; Zhou et al. 2017). It was claimed that this genus comprises about 100 species (Chen 1984), but only 22 species were recognized in the

recent taxonomic revision (Meyer 2001; Chen and Renner 2007). However, it was estimated that this genus might include 80–90 species based on a scientific investigation of the island of Borneo (Wong 2016).

In China, nine *Melastoma* species were recorded in the south of the Yangtze River by Chen (1984), yet only five of them were recognized in more recent publications (Meyer 2001; Chen and Renner 2007). This revised treatment has incorporated *M. affine*, *M. normale* and *M. candidum* into *M. malabathricum*, but this has not been accepted by several plant taxonomists (Huang et al. 2018).

In this study, we are in agreement with the recognition of *M. candidum* as a distinct species (Liu et al. 2014; Ng et al. 2017). *Melastoma candidum* is a relatively common species with purple flowers that occurs in southern China and northern Vietnam (Chen 1984). *Melastoma candidum* f. *albiflorum* J. C. Ou, a form of *M. candidum*, was first described from Taiwan Island (Ou 1976). However, this name was not validly published under Art. 40 of ICN (McNeill 2014; Turland et al. 2018) because Ou (1976) cited two gatherings but failed to designate a type, and no Latin description or diagnosis was provided. This taxon can be easily distinguished from *M. candidum* f. *candidum* by its white flowers.

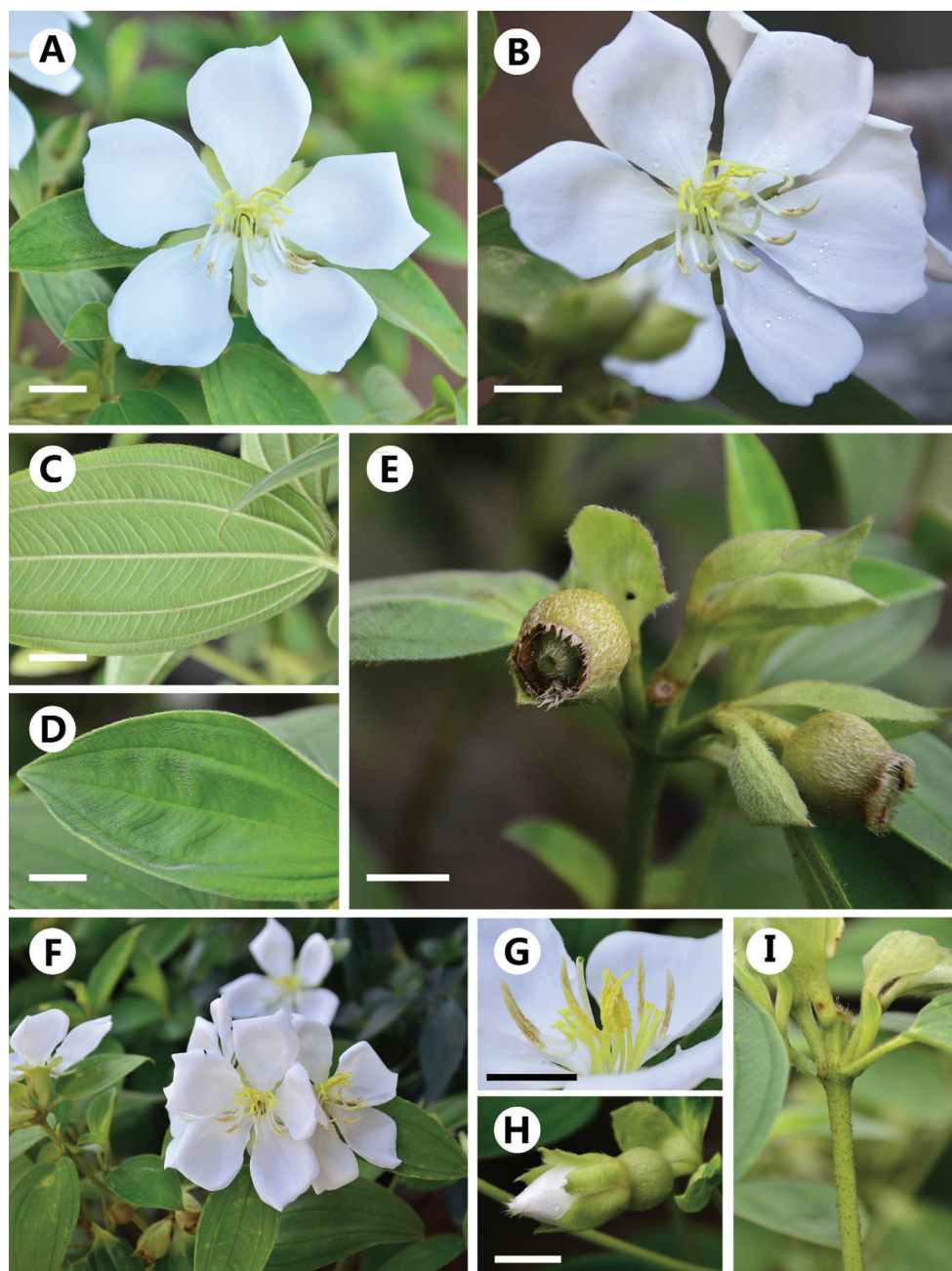
During a recent field survey, we collected an unidentified specimen of *Melastoma* in Fujian province, China, which we believed has not been recorded in mainland China. It closely resembles *M. candidum* in morphology, but has white flowers. After a comprehensive morphological comparison, we propose that this specimen be conspecific with *M. candidum* f. *albiflorum*. Here we designate a lectotype for this taxon name and discuss its taxonomic status.

## Materials and methods

Morphological data for identification and description of this taxon were based on observations of specimens in the field (ten individuals) and the herbarium. The voucher specimens are deposited in the Herbarium of Sun Yat-sen University (SYS), Guangzhou, China. Lectotypification and taxonomic treatment of this taxon is presented according to the "International Code of Botanical Nomenclature" (McNeill 2014; Turland et al. 2018), and a full description is provided.

## Results

Detailed morphological examination revealed that morphological characters of this unidentified taxon of *Melastoma*, such as erect habit, ovate leaves, twigs with compressed scales, hypanthia with compressed strigose scales, and fruits with densely appressed strigose scales (Fig. 1), are most similar to *M. candidum*. The two taxa differ only in petal color, with white petals in this taxon and purple petals in *M. candidum*. Considering that this taxon is sympatric with *M. candidum* in Fujian and Taiwan, we propose that *M. candidum* f. *albiflorum* is conspecific with and should be synonymized under *M. candidum*.



**Figure 1.** The white form of *Melastoma candidum*. **A** flower 5-merous **B** flower 6-merous **C** abaxial surface of leaf blade **D** adaxial surface of leaf blade **E** capsule **F** inflorescences **G** apex of flower showing heteranthy **H** close-up of bud showing margin ciliate of sepals and petals **I** twig of plant with pedicels Scale bars: 1 cm (**A–E, G, H**).

## Taxonomic treatment

### *Melastoma candidum* D. Don

**Synonym.** *Melastoma candidum* D. Don f. *albiflorum* J. C. Ou.

**Lectotype** (designated here): – CHINA. Taiwan. Ilan, Yuensanhsiang, leg. *Jun-Chih Ou* 64, July 6, 1976, Herbarium of National Research Institute of Chinese Medicine (HNRICM!).

**Description.** Perennial shrubs, 0.3–1.5 m tall. Twigs nearly 4-angled to subterete in the younger parts and terete in the old parts, densely covered with appressed to suberect strigose with scales. Leaf blades ovate to elliptic, papery, 3.3–4.8×6–9.5 cm, base broadly cuneate to rounded or subcordate, apex acuminate, margin entire, palmately 7-nerved (the marginal nerves often inconspicuous), adaxially densely strigose, abaxially densely puberulous, strigose along veins; petioles 1.4–2.0 cm, densely strigose with scales. Inflorescences subcapitate corymbose, terminal, 3–5-flowered, with 2 leaf-like bracts at base. Pedicels 8–12 mm, densely strigose with scales; bracteoles 2, opposite, elliptic-lanceolate to elliptic, 6–13 mm, abaxially densely strigose, margin ciliate. Hypanthia 7–12 mm, densely appressed-strigose with scales, margin fimbriate. Sepals lanceolate to ovate-lanceolate, apex acuminate, densely strigose and pubescent on both sides and along the margin. Petals 5, occasionally 6, white, obovate, ca. 27×18 mm, apex rounded. Stamens 10, dimorphic, longer stamens with anthers linear, curved, ca. 9 mm, filaments ca. 10 mm, joined by a connective ca. 9 mm, curved, spur bifid ca. 2 mm, shorter stamens with anthers ca. 8 mm, 2-tuberculate at base, filaments ca. 7 mm, without prolonged connective. Ovary half-inferior, campanulate, with a ring of bristles at apex. Capsule dry, urceolate, apically dehiscent, 9–16×7–10 mm, densely squamose strigose. Seeds numerous, minute, cochleate. Fl. May–Aug, fr. Aug–Oct.

**Distribution and habitat.** The white-flowered form of *M. candidum* was first reported only from Hsinchu Hsien and Ilan Hsien (Taiwan). This form has also been reported to occur in the Ryukyu Island (Hatusima and Amano 1994), but without exact specimen information. The individuals in Fujian, China represent the first known occurrence of this form outside of Taiwan Island (Fig. 2). It occurs only in lowland evergreen forest margins at an elevation of approximately 150–300 in Pinghe County, Fujian. They occur in evergreen forests dominated by *Blechnum orientale*, *Dicranopteris pedata*, *Miscanthus floridulus* and *Rhodomyrtus tomentosa*.

**Notes.** The key character of the white form of *M. candidum* is its white-colored flowers, which can be easily distinguished from the purple form of *M. candidum*. Whereas the purple form has a relatively wide range of distribution in northern Vietnam and southern China (Liu et al. 2014), the white-flowered individuals have been found across a narrow region. Individuals in Taiwan and mainland China may represent independent origins of white petals from local populations of *M. candidum*, since breakdown of the anthocyanin synthesis pathway in plants is relatively common (Smith et al. 2012; Zheng et al. 2019).

The flowers of the white form of *M. candidum* have been used in folk-medicine for the treatment of hypertension, dysentery, diarrhea and antibacterial (Chou and Liao





**Figure 2.** Distribution map of the white form of *Melastoma candidum*. Square (■) represents previously reported localities, solid circle (●) represents newly recorded locality. Map was created using SimpleMappr, <http://www.simplemappr.net> (Shorthouse 2010).

1982). During our survey, we also learned that the white form has been cultivated as a medicinal herb by the local people in Pinghe County, Fujian. They believe that it is highly effective for the treatment for nephritis, and has led to the exploitation of natural populations, threatening its survival in the wild. Due to its narrow geographical range and small population size, effective conservation effort is required.

**Paratype.** – CHINA. Fujian Province, Pinghe County, in lowland evergreen forest margins, 24°02.66'N, 117°04.75'E, Elev. 276 m. 28 July 2019, X. J. Zhang, ZXJ-1901 (SYS)

## Acknowledgments

We thank Ms. Siyi Cai, of the National Research Institute of Chinese Medicine, Taiwan, for providing the protologue. We are also grateful to Prof. Wenbo Liao, Prof. Ying Liu and Dr. Wanyi Zhao, all from Sun Yat-sen University, for helpful comments on the taxonomic treatment.

## References

- Chen J (1984) Melastomataceae. In: Chen C, Chang H, Miao R, Hsu T (Eds) *Flora Reipublicae Popularis Sinicae*. Science Press, Beijing 53(1): 152–162. [in Chinese]
- Chen J, Renner SS (2007) Melastomataceae. In: Wu ZY, Raven PH (Eds) *Flora of China*. Beijing: Science Press, & St Louis: Missouri Botanical Garden Press 13: 360–399.

- Chou CJ, Liao C (1982) Phytochemical and pharmacological studies on the flower of *Melastoma candidum* D. Don forma *albiflorum* J. C. Ou. The Annual Reports of the National Research Institute of Chinese Medicine: 69–129.
- Hatusima S, Amano T (1994) Flora of the Ryukyus, South of Amami Island (2nd edn).
- Huang GL, Liu Y, Wu W, Ng WL, Ning ZL, Zhang RJ, Fan Q, Zhou RC (2018) Multi-locus analyses indicate that *Melastoma dendrisetosum*, an endemic and endangered shrub in Hainan, is a distinct species. *Systematic Botany* 43(1): 258–265. <https://doi.org/10.1600/036364418X697120>
- Liu T, Chen YY, Chao LF, Wang SQ, Wu W, Dai SP, Wang F, Fan Q, Zhou RC (2014) Extensive hybridization and introgression between *Melastoma candidum* and *M. sanguineum*. *PLoS One* 9: 5. <https://doi.org/10.1371/journal.pone.0096680>
- McNeill J (2014) Holotype specimens and type citations: General issues. *Taxon* 63(5): 1112–1113. <https://doi.org/10.12705/635.7>
- Meyer K (2001) Revision of the Southeast Asian genus *Melastoma* (Melastomataceae). *Blumea* 46: 351–398.
- Ng WL, Cai YC, Wu W, Zhou RC (2017) The complete chloroplast genome sequence of *Melastoma candidum* (Melastomataceae). *Mitochondrial DNA. Part B, Resources* 2(1): 242–243. <https://doi.org/10.1080/23802359.2017.1318680>
- Ou JC (1976) A new forma of *Melastoma candidum* from Taiwan, *Melastoma candidum* Don forma *albiflorum* J. C. Ou. *National Research Institute of Chinese Medicine* 3: 336.
- Renner SS, Meyer K (2001) Melastomeae come full circle: Biogeographic reconstruction and molecular clock dating. *Evolution. International Journal of Organic Evolution* 55(7): 1315–1324. <https://doi.org/10.1111/j.0014-3820.2001.tb00654.x>
- Shorthouse DP (2010) SimpleMappR, an online tool to produce publication-quality point maps. <http://www.simplemappR.net> [accessed Oct. 8, 2019]
- Smith SD, Wang SQ, Rausher MD (2012) Functional evolution of an anthocyanin pathway enzyme during a flower color transition. *Molecular Biology and Evolution* 30(3): 602–612. <https://doi.org/10.1093/molbev/mss255>
- Turland NJ, Wiersema JH, Barrie FR, Greuter W, Hawksworth DL, Herendeen PS, Knapp S, Kusber WH, Li DZ, Marhold K, May TW, McNeill J, Monro AM, Prado J, Price MJ, Smith GF (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. Koeltz Botanical Books, Glashütten. <https://doi.org/10.12705/Code.2018>
- Wong KM (2016) Studies in Southeast Asian *Melastoma* (Melastomataceae), 2. The genus *Melastoma* in Borneo including 31 new species. *Natural History Publications (Borneo)*, Kota Kinabalu, in association with National Parks Board, Singapore, 184 pp.
- Zheng T, Lin YH, Wang LP, Lin QJ, Lin XX, Chen ZD, Lin ZY (2019) De novo assembly and characterization of the floral transcriptomes of two varieties of *Melastoma malabathricum*. *Frontiers in Genetics* 10: 521. <https://doi.org/10.3389/fgene.2019.00521>
- Zhou QJ, Cai YC, Ng WL, Wu W, Dai SP, Wang F, Zhou RC (2017) Molecular evidence for natural hybridization between two *Melastoma* species endemic to Hainan and their widespread congeners. *Shengwu Duoyangxing* 25(6): 638–646. <https://doi.org/10.17520/biods.2017060>