

Sumiko KOBAYASHI\* & Mikio ONO\*: **A note on *Melastoma*  
in the Bonin and Volcano Islands**

小林純子\*・小野幹雄\*: 小笠原および硫黄列島のノボタン属

(Pl. IV)

There have been reported two species and a variety of *Melastoma* (Melastomataceae) from the Bonin and the Volcano Islands. With regard to the Bonin Islands, *Melastoma tetramerum* Hayata which has a unique tetramerous white flower is found rarely in a sunny dry place in higher part of Chichijima Island, and a variety of the species *M. tetramerum* var. *pentapetalum* Toyoda having a pink pentamelous flower grows in the mist forest of the highest part of Hahajima Island. In the Volcano Islands, on the other hands, two entities have been collected from Kita- and Minami-Iwojima, but unfortunately because of the lack of either flower or fruit they have not been identified and were reported as *Melastoma* sp. (Tuyama 1970, 1981) In 1982 Ohba collected several individuals of *Melastoma* from Minami-Iwojima and identified them as *M. candidum* D. Don which has a wide distribution in southeastern Asia such as the Ryukyus, Taiwan and South China (Ohba 1982).

One year earlier than that, one of the present authors Ono collected a plant of the genus in rather dry forest of *Livistonia chinensis* var. *boninensis* and *Elaeocarpus pachycarpus* on an eastward slope of Kita-Iwojima and reported it also as *M. candidum* (Ono & Kobayashi 1982). However, based on a detailed study and comparison, we have now concluded that it is better to treat this entity as a new variety of the same species. It differs from the mother species in the following characters:

The connective of the anthers of longer stamens is conspicuously denticulate in the front, and there are a few bristles on its back as shown in the figure (Fig. 1). Furthermore, hairs of leaf laminae are broader and scattered on the surface, compared with slender and dense hairs of the mother species.

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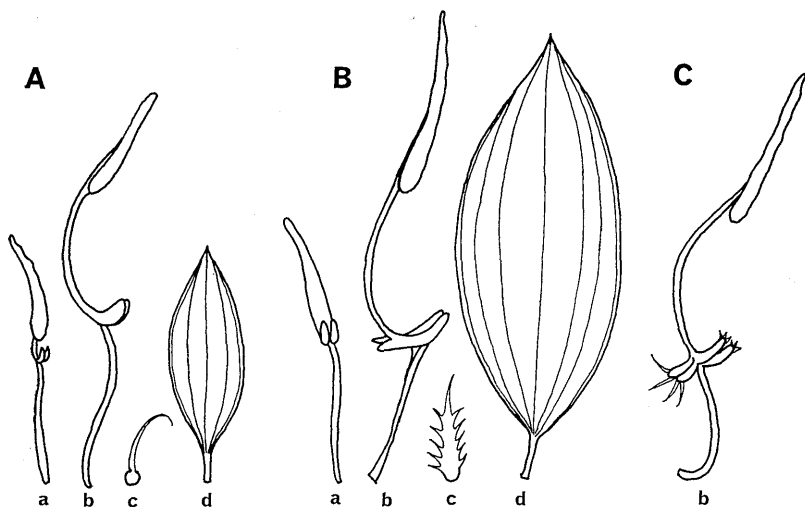


Fig. 1. Morphological comparison on *Melastoma* in the Bonin and Volcano Isls. A: *M. tetramerum* and *M. tetramerum* var. *pentapetalum*, B: *M. candidum*, C: *M. candidum* var. *alessandrense*. a: shorter stamen (ca  $\times 2$ ), b: longer stamen (ca  $\times 2$ ), c: hair of calyx tube (ca  $\times 5$ ), d: leaf (ca  $\times 1$ ).

***Melastoma candidum* D. Don var. *alessandrense* S. Kobayashi, var. nov.**

A typo, setis laminarum gracilioribus, parte anteriore prolongata connectivi staminis longioris apice denticulata, et parte posteriore protuberata apice setifera, diversum.

Nom. Jap. Iwo-nobotan (nov.).

Hab. The Volcano Isls., Kita-Iwojima (San Alessandro Isl.), Shibusawa, ca 200 m alt. (leg. M. Ono, Jun. 28, 1981 fl. & y. fr., *holo-type* in Makino Herbarium—MAK 196063).

Distr. Endemic.

**Cytological observation** As for the chromosome number of the genus, there have been only two reports: one in *M. candidum* on the material from China ( $n=28$ , Sugiura 1936) and the other in *M. normale* from India ( $n=10$ , Mehra & Khosla 1969).

Here we confirmed the same chromosome number  $2n=56$  in *M. candidum* in several materials collected from Iriomote Island of the Ryukyu Isls. Regarding the Bonin species,  $2n=16$  chromosomes are counted in *M. tetramerum*. It was

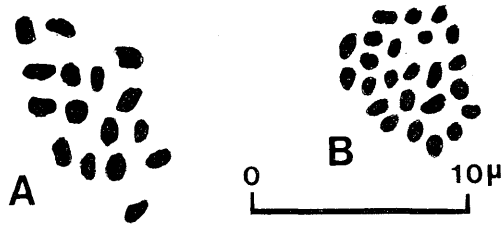


Fig. 2. Somatic karyotypes of the two endemic taxa of *Melastoma* of the Bonin Isls.  
A: *M. tetramerum* (Chichijima), B: *M. tetramerum* var. *pentapetalum* (Hahajima).

examined in root-tips of young seedlings germinated from seeds in Tokyo which had been collected by us on the route to Mt. Hatsune, Chichijima. While in *M. tetramerum* var. *pentapetalum*, another chromosome number  $2n=24$  is counted in the materials collected in the mist forest near the peak of Mt. Chibusa about 400 m alt. in Hahajima. The chromosomes of both entities are all dot-shaped and no significant difference is recognized in their karyo-types except in the number and the size (Fig. 2).

**Discussion** The genus *Melastoma* has about 70 species mostly in sub-tropic China, Taiwan and the Ryukyu Islands. According to Fedrov (1969), the chromosome number within the family Melastomataceae differs widely from  $2n=14$  (*Memecylon*, Favarger 1952) to  $2n=76$  (*Amphiblemma*, Favarger 1962). It differs even within the genus *Melastoma* as mentioned above. Though there have been only a few reports, previous counts of chromosomes are not coincide even in the basic number (Tab. 1). As for the species concerning the adjacent area of the Bonin and the Volcano Isles, three chromosome counts have been reported:  $2n=$

Tab. 1. Previous and present counts of chromosomes within the genus *Melastoma*.

species	chrom. no.	author
<i>Melastoma candidum</i>	$2n=56$	present work
<i>M. tetramerum</i>	$2n=16$	ditto
<i>M. tetramerum</i> var. <i>pentapetalum</i>	$2n=24$	ditto
<i>Melastoma candidum</i>	$2n=56$	Sugiura 1936
<i>M. sanguineum</i>	$2n=56$	Matsuura & Suto 1935
<i>M. normale</i>	$2n=20$	Mehra & Khosla 1969

20 ( $n=10$ ) in *Melastoma normale* (Mehra & Khosla 1969),  $2n=56$  in *M. candidum* (Sugiura 1936) and  $2n=56$  in *M. sanguineum* (Matsuura & Suto 1935). The two chromosome numbers,  $2n=16$  and  $2n=24$  being reported in this paper are not only the first counts for the taxa of the Bonin and the Volcano Isls but also very different from the previous counts for the genus. Unfortunately we have not been able to examine the chromosome number on the materials of Kita- nor Minami-Iwojima.

Ono has already reported that there are three groups of plants endemic to the Bonin Isls, based on the comparison of their chromosome numbers with those of their related taxa growing in the neighbouring area of the Bonins (Ono 1977) : 1) the Bonin endemic taxa have the same chromosome numbers as in the related taxa, but are different in gross morphology, 2) the Bonin taxa have the chromosome number of a polyploid (or haploid) series of their related taxa accompanied with some differences in gross morphology, and 3) the Bonin taxa have a slight different chromosome number (aneuploid) compared with their related taxa with more or less difference in morphology. According to Favarger & Contandriopoulos (1961), above mentioned 1) and 2) groups are defined as "schi-zoendemics" and "apo- or patro-endemics" respectively. Ono (1981) proposed a term of "anneuendemics" for the group 3).

The chromosome numbers  $2n=16$  and  $2n=24$  counted here in two taxa of *Melastoma* endemic to the Bonin Islands are thus considered as new examples of patroendemics, if the basic number for the genus is assumed as  $x=8$  or 4. However, chromosome counts in other species of the genus, especially in adequate materials of *M. candidum* of the Ryukyu Islands as well as of the Volcano Islands should be made for further consideration.

#### Key to the taxa of the Bonin and Volcano Islands

- A. Leaves smaller, 2.5-8.0 cm long, 7-30 mm wide, oblong to lanceolate, 3(-5) nerved; calyx-tubes thinly covered with reddish brown curved spiny hairs; flowers white or pinkish, 4 or 5-merous; anther connectives of longer stamens shallowly bifid in the front; appendage of shorter stamens apart from base of the anther.
- B. Hairs of the leaves slender and rather dense; flowers white, 4-merous.  
 $2n=16$ . ..... *M. tetramerum*  
 (Bonin Isles.: Chichijima, Anijima; A, B in Pl. IV)

- B. Hairs of the leaves broader at the base and rather scattered; flowers pinkish, 5-merous.  $2n=24$ . . . . . *M. tetramerum* var. *pentapetalum* (Bonin Isls.: Hahajima; C, D in Pl. IV)
- A. Leaves larger, 5-12 cm long, 25-60 mm wide, ovate to ovate-oblong, 5-7 nerved; calyx-tubes densely covered with whitish long and flattened hairs; flowers rose-purple, 5-merous; anther connective of longer stamens bifid both in the front and the posterior; appendage of shorter stamens adjacent to the base of anther.
- B. Hairs of the leaves slender and rather dense; anthers about 10 mm long; connective of the anther of longer stamens with no hairs.  $2n=56$ . . . . . *M. candidum* (Volcano Isls.: Minami-Iwojima,  $2n=?$ ; Ryukyu Isls. to S.E. Asia; F in Pl. IV)
- B. Hairs of the leaves broader and rather scattered; anthers about 8 mm long; connective of the anther of longer stamen denticulate in the front and setiferous in the posterior; chromosome number unknown. . . . . *M. candidum* var. *alessandrense* (Volcano Isls.: Kita-Iwojima; E in Pl. IV)

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#### Explanation of Plate IV

A: *Melastoma tetramerum* (fl.), B: *M. tetramerum* (fr.) (Chichijima). C: *M. tetramerum* var. *pentapetalum* (fl.), D: *M. tetramerum* var. *pentapetalum* (fr.) (Hahajima). E: *M. candidum* var. *alessandrese* (fl.) (Volcano Isls.: Kita-Iwojima). F: *M. candidum* (fl.) (Ryukyu Isls.).

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1981年6月に筆者らの1人、小野が北硫黄島で採集したノボタン属の植物は、その後の研究で東南アジアに広く分布するノボタン *M. candidum* D. Don の1変種とすることが適当と思われる。この植物は母種のノボタンに似るが、葉面の毛と雄蕊、とくに長い雄蕊の形態が異なる。すなわち、葉面の毛は細長く、雄蕊は短く葯もやや短い。葯隔の先端はノボタンは無毛であるが、新変種では先端に数個の短い歯状突起があり、後部の先端にも長い刺毛が2~3本みられる。

今まで南・北硫黄島で採集された標本は花や果実がなく、*Melastoma* sp. として扱われてきたが、大場 (1982) によると南硫黄島の高所のものはノボタンであることが確かめられた。

この群の植物の染色体数としては古く中国南部のノボタンで  $2n=56$  が報じられ、今回も沖縄県の西表島で採集した個体で同数を確認した。これに対し、父島と母島の固有とされるムニンノボタン *M. tetramerum* Hayata とハハジマノボタン *M. tetramerum* var. *pentapetalum* Toyoda でそれぞれ  $2n=16$  と  $2n=24$  を確認した。この染色体数は同属としては初めての知見であるが、ノボタン科全体の中では珍しくはなく、もし同属の基本数を  $x=8$  (または4) と考えれば、倍数体系列の中に入る。今後、南西諸島と硫黄列島のものでの研究を待って、その細胞地理学的位置を明らかにしたい。



S. KOBAYASHI & M. ONO: *Melastoma*