

A New Record and Invasive Species in Taiwan- *Clidemia hirta* (L.) D. Don

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ABSTRACT: A new record species, *Clidemia hirta* (L.) D. Don, is reported from Pingtung county, southern Taiwan. This represents the first generic record of *Clidemia* in Taiwan. Only one *C. hirta* population was collected in the secondary forest dominated by *Acacia confusa* Merr., *Bambusa stenostachya* Hackel etc. It is easy to distinguish this species from the other related taxa by having the lateral veins extending from the leaf base and fruits as berries. A key to the Melastomataceae, the taxonomic treatment, morphological description, line drawing and photographs are provided here.

KEY WORDS: Invasive plant, A new generic and species record, *Clidemia hirta* (L.) D. Don, Melastomataceae.

INTRODUCTION

Clidemia hirta (L.) D. Don, Koster's curse, a weedy and widespread native plant of the Neo-tropics, is now an invasive pest in much of the Paleotropics. It was widely distributed on Hawaii, Guam, Fiji, Solomon Is, American Samon, Vanuatu, Wallis and Futuna Is, Mascarene Is, Seychelles, Comores, Sri Lanka, India, Singapore and Sabah (Cronk and Fuller, 1995; Wagner *et al.*, 1990; Wester and Wood, 1977). *Clidemia hirta* was collected in southern Taiwan in 1998 and had an invasive characteristic (Cronk and Fuller, 1995). *Clidemia hirta* has not been reported in Taiwan previously (Huang and Huang, 1993) and so far only at one site has been found.

The microhabitat of *Clidemia hirta* is located in North 22° 38', East 120° 36', southern Taiwan. The altitude ranges from 100 m to 150 m. This plant grows in the disturbed woodland dominated by *Acacia confusa* Merr. and *Bambusa stenostachya* Hackel. The associated plants include *Eurya chinensis* R. Br., *Melastomata candidum* D. Don, *Mallotus paniculata* (Lam.) Muell.-Arg. and others. The seeds of *Clidemia hirta* can regenerate and some seedlings were found on the ground near *C. hirta* microhabitats. It is clear that *Clidemia hirta* can generate its inheritors readily there. Despite the long distance and widespread dispersal by birds (Cronk and Fuller, 1995), there is no evidence proving when and how the species immigrated to Taiwan.

In Fuji, this weedy shrub might be found from near sea level to 1,323 m and a degree of control had been brought about by *Liothrips urichi* (Thysanoptera: Phlaeothripidae) and made *C. hirta* population less troublesome (Smith, 1985). The biological control was also introduced in Hawaii and the Solomon islands, but it was not successful as in Fuji (Cronk and Fuller, 1995).

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Although *Clidemia hirta* grows in only one location so far in Taiwan, predictions suggest that it will be a noxious invasive pest in Taiwan in the future, because *Clidemia hirta* is considered to be one of the most serious invasive plants (Cronk and Fuller, 1995). If we don't care to control the colonization of this noxious weed, this weed will eventually threaten the persistence and survival of our native species. So we must be very concerned about the population traits such as vital rates to prevent its invasion.

The followings are the taxonomic treatment, the description, photographs and a line drawing about *C. hirta* (Fig. 1). All the collections are preserved in herbarium of PPI. A key to the 13 genera of Melastomataceae including *Sonerila* (Hsieh and Yang, 1999) and *Clidemia* is reconstructed (Huang and Huang, 1993).

TAXONOMY

Clidemia D. Don

Erect shrub. Leaf opposite, 3-7 nerved. Flowers in axillary panicles, 4-6-merous; hypanthium campanulate, hairy or glabrous; upper rim membranous, very shortly lobed; lobes with a long filiform appendage below, apex without; petals oval-obovate, obtuse, glabrous; stamens 8-12, equal or subequal, surrounding a whorl of fimbriate scales, filaments glabrous, anthers linear, connective not produced below the anther-cells, dorsally tuberculate, ventrally inappendiculate; ovary nearly entirely 3-9 celled, style glabrous, stigma not widened; berry, seeds ovoid.

Key to genera of Melastomataceae in Taiwan

1. Leaves whorled; scandent shrub *Medinilla*
1. Leaves opposite.
 2. Herb.
 3. Flowers 3-merous; leaf thin membranous *Sonerila*
 3. Flowers 4-5-merous; leaf fleshy *Sarcopyramis*
 2. Tree or shrub.
 4. Leaf rusty brown beneath *Astronia*
 4. Leaf beneath not as above, greenish.
 5. Leaf veins penninerved *Memecylon*
 5. Leaf veins 3-7 nerved.
 6. Leaf fleshy, veinlets obscure *Pachycentria*
 6. Leaf not fleshy, veinlets distinct.
 7. Leaves glabrous or slightly short hairy.
 8. Stamen 8, unequal in length; inflorescence terminal *Barthea*
 8. Stamen 4, equal in length; inflorescence axillary *Blastus*
 7. Leaves pubescent.
 9. Leaf veins at least one pair extending from above the base *Bredia*
 9. Leaf veins extending from the base.
 10. Petals 4; stamen 8; calyx with stalk stellate hairs *Osbeckia*
 10. Petals 5; stamen 10; calyx without stellate hairs.
 11. Stamens unequal in length; fruit coriaceous or somewhat fleshy, dehiscing irregularly *Melastoma*
 11. Stamens equal in length; fruit berry.
 12. Leaf subcoriaceous, with appressed stiff hairs on both surfaces *Otanthera*
 12. Leaf chartaceous, with bristly hairs on both surfaces *Clidemia*

Clidemia hirta (L.) D. Don, Mem. Wern. Nat. Hist. Soc. 4: 309. 1823; Backer and Bakhuizen, Fl. Java 1: 370. 1980; Wagner *et al.*, Man. Fl. Pl. Hawai'i. 1: 907, Pl. 126. 1990; Smith, Fl. Vitiensis Nova 3: 386. 1985; Dassanayake, Fl. Ceylon 6: 177. 1987.

毛野牡丹 Figs. 2 & 3

Melastomata hirta L. Sp. Pl. 390. 1753.

Evergreen and well-branched shrubs ca. 3-4 m tall. Stems terete, erect, upper branches arching, covered with patently straight bristles; internodes ca. 6-10 cm long. Leaves opposite, ovate to oblong, 5-12 cm long, 2.5-6 cm wide, base cordate, apex acuminate, margin crenate with bristles, texture chartaceous, 5-7 nerved from base with brown red short hairs, lateral veins distinct, about 20-30 pairs, both surfaces patent hispid, upper surfaces sunked, lower surface elevated; petioles 1-3 cm long. Inflorescence of compact cymes or small panicles, terminal or axillary, up to 2-3 cm wide, axes of panicles covered with long patent bristles; flowers 4-9, bracteolate; pedicels 2-3 mm long with bristles; corolla free, glabrous, imbricate in bud, 1.2 cm wide in blooming, petals 5, white, equal in length, ca. 6-7 mm long, 3.5 mm wide, apex obtuse, base cuneate, sometimes flushed red; calyx united into hypanthium, with bristles, separable from ovary in bud, accrescent in fruit, narrowly campanulate or tubular, about 4-5 mm long, calyx lobes 5, in the apex of hypanthium, 2-2.5 mm long, linear or needle-shaped, with 7-10 patent bristles, bristles 1.5 mm long, red dish; stamens 10, equal, glabrous, filaments 2-2.5 mm long, anthers linear-lanceolate, ca. 5 mm long, with a single terminal pore, connective inconspicuous; pistil single, axillary placentation, partly or completely inferior, ovary 4 mm long, 5-celled, concrescent with hypanthium, apically with a collar around the style base, style filiform, ca. 7.5-8 mm long, glabrous, stigma not widened, ovules numerous. Fruit a berry, deep purple at maturity, globose or urceolate, 7-10 mm long, 6-7 mm across, covered with long patent bristles, with 5 persistent calyx lobes; seeds numerous, ca. 0.1- 0.3 mm wide, ovoid, dark blue, both surfaces granular or papillose.

Distribution: Paleotropics. Taiwan, only found in the secondary forest among bamboos and shade- intolerant species along the roadside, at altitudes ranging from 100 m to 150 m.

Habitat and ecology: Growing in the light conditions ranging from full sunlight to 100 % canopy cover, roadsides, open waste places; tolerance of a wide range of environmental conditions with prolific seed production and rapid growth rate.

Specimen examined: S.-Z. Yang 28815 (PPI), May 15, 1998, Neipu, National Pingtung University of Science and Technology, Pingtung county.

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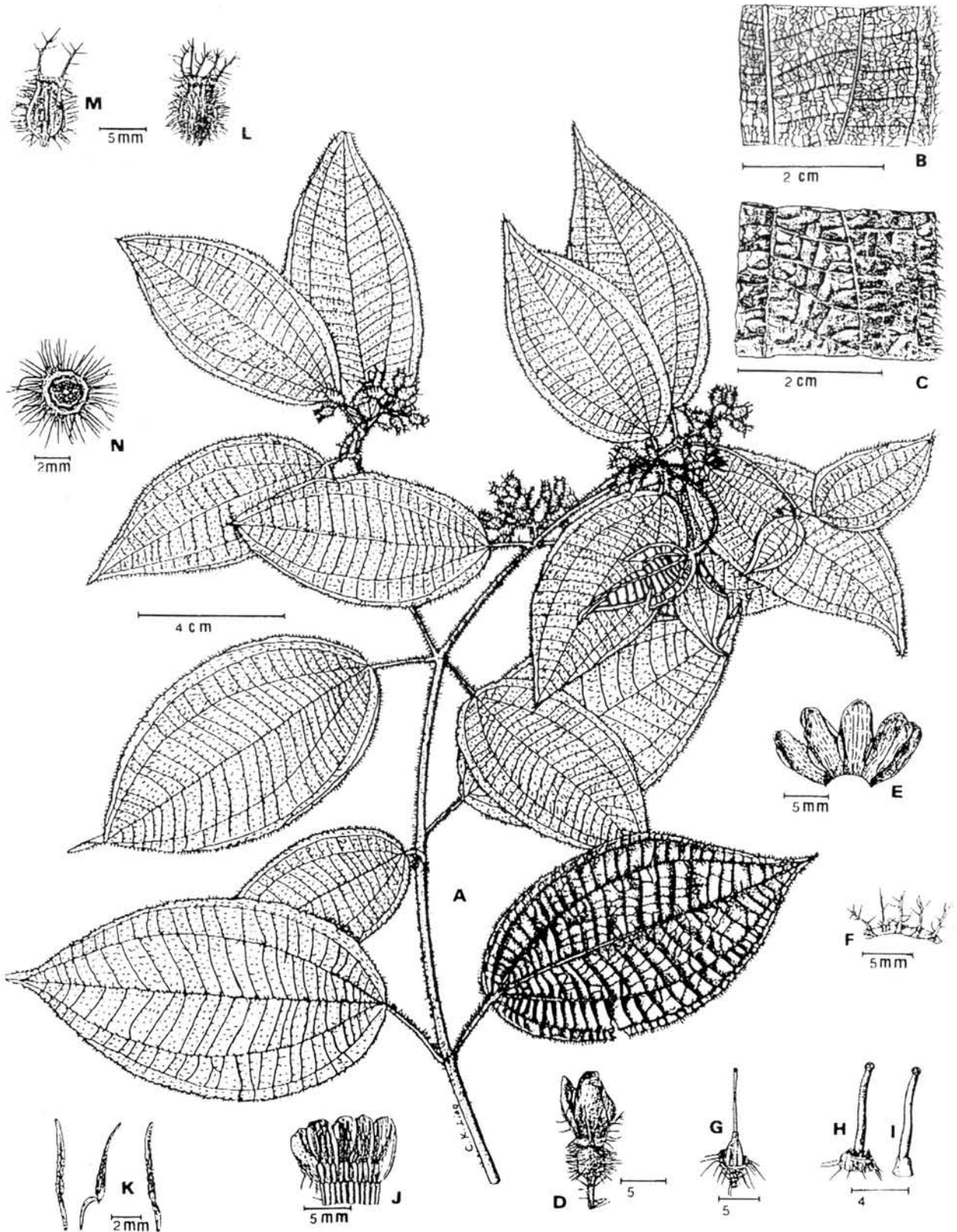


Fig. 1. *Clidemia hirta* (L.) D. Don (Melastomataceae). A: habit; B: portion of a leaf, adaxial view; C: portion of a leaf, abaxial view; D: blooming flower; E: petals; F: calyx; G: gynoecium, dissected petals; H. and I: style; J: corolla and stamens, dissected flower; K: stamen; L: hypanthium; M: hypanthium, longitudinal; N: ovary, cross section.



Fig. 2. *Clidemia hirta* (L.) D. Don showing dark blue mature berries covered with long patent bristles.



Fig. 3. *Clidemia hirta* (L.) D. Don showing chartaceous leaves covered with white bristles; petals 5-merous, white, free.

LITERATURE CITED

- Backer, C. A. and C. R. Bakhuizen van den Brink. 1963. Flora of Java 1: 354-374, 561. N. V. P. Noordhoff, Groningen, The Netherlands.
- Cronk, Q. C. B. and J. L. Fuller. 1995. Plant invaders: The threat to natural ecosystem. Chapman & Hall. London.
- Dassanayake, M. D. 1987. A Revised Handbook to the Flora of Ceylen 4: 157-178. Amerind publishing Co. Pvt. Ltd. New Delhi.
- Hsieh, T.-H. and K.-C. Yang. 1999. *Sonerila* Roxb. (Melastomataceae), a new generic record for the flora of Taiwan. *Taiwania* **44**: 529-532.
- Huang, S.-F. and T.-C. Huang. 1993. Melastomataceae. In: Huang, T.-C. (eds.). Flora of Taiwan. 2nd. Department of Botany, National Taiwan University. **3**: 905-928.
- Smith, A. C. 1985. Flora Vitiensis Nova. A New Flora of Fiji 3: 382-387. Lawai, Kauai, Hawaii.
- Wagner, W. L., D. R. Herbst and S. H. Sohmer. 1990. Manual of the Flowering plants of Hawai'i 1: 902-906. University of Hawaii press. Bishop Museum press.
- Wester, L. L. and H. B. Wood. 1977. Koster's curse (*Clidemia hirta*), a weed pest in Hawaiian forest. *Environmental Conservation* **4**: 35-41.

臺灣新紀錄與擴散植物—毛野牡丹(*Clidemia hirta* (L.) D. Don)

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摘 要

本文報導臺灣新紀錄與擴散植物—毛野牡丹(*Clidemia hirta* (L.) D. Don)。毛野牡丹屬(*Clidemia*)亦是臺灣新記錄屬。毛野牡丹目前僅出現屏東縣內埔，其伴生優勢樹種為相思樹及荊竹林。毛野牡丹屬有別於其他相關種類，主要的不同點在於側脈延自於葉基部，以及果實為漿果。本文提供野牡丹科 13 個屬的檢索表、分類處理、形態描述與植物繪圖。

關鍵詞：擴散植物、新記錄屬與種、毛野牡丹、野牡丹科。