

An enumeration of Myrsinaceae of Taiwan

Yuen-Po Yang

Department of Biological Sciences, National Sun Yat-sen University, Kaohsiung, Taiwan, Republic of China

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Abstract. Four genera with a total of 22 species, 1 subspecies, and 3 varieties are enumerated for Myrsinaceae of Taiwan. The genera include *Ardisia*, *Embelia*, *Maesa*, and *Myrsine*. Among the species, *Maesa lanyuensis* Yang is new.

Keywords: Enumeration; Myrsinaceae; Taiwan.

Introduction

The Myrsinaceae of Taiwan was first revised by Walker (1959). In that floristic work, he recognized four genera: *Maesa* (three species and one uncertain), *Ardisia* (thirteen species, one variety and three uncertain), *Embelia* (three species and one variety), and *Myrsine* (three species). In 1978, principally following Walker's treatment, Li reported four genera containing 21 species, two varieties, and two uncertain in the Flora of Taiwan.

During the past 20 years, many additional collections of the family have accumulated in the herbaria of this island. These specimens provide adequate materials helpful to the taxonomy of the family. In fact, with the collections, I have made clarification for discrepancy in taxonomic treatment of the species *Ardisia kusukuensis* Hayata, which was treated as uncertain by Walker (1959), and was synonymized under *Ardisia crenata* by Chen (1979), Chen and Pipoly (1996), and Li (1978). In 1989, I pointed out that it is a good species on account of several specimens collected at Nanjenshan by Lu. In addition, Lu (1977) described a new species, *Ardisia miaoliensis* Lu, stating that it was very similar to *A. crenata* but differed in having leaves purple and not being punctate beneath. After examining more specimens, I recognized it to be conspecific with *A. crenata* since contiguous variation of the color and the punctuation of the leaves is present in many individuals of same population (Yang, 1989). On the other hand, Yang and Lu (1989) reported a new record, *Ardisia villosa* Roxb., for the family of the island. Furthermore, some authors have treated a few Taiwanese species taxonomically or nomenclaturally. For example, Fang and Yao (1979) elevated *Ardisia brevicaulis* Diels var. *violacea* (T. Suzuki) Walker to species rank, *A. violacea* (T. Suzuki) Fang & Yao. *Maesa formosana* Mez, previously referred to *M. tenera* by Walker (1959), was recognized as *M. montana* A. DC. by Chen (1979) and Chen and Pipoly (1996). However, Yamazaki (1991) changed its status to a variety, *M. montana* var. *formosana* (Mez) Yamazaki. All these facts suggest that an up-to-date revision or enumeration of the family is necessary.

In the enumeration, I do not provide descriptions to family, genera and each species. However, I give description to new species and those with previously inadequate or erroneous descriptions. I provide keys to genera and species, notes, and specimens examined of most species. A line drawing is given to the new species.

The specimens examined for this enumeration are deposited at the herbaria: HAST, TAI, and TAIF.

Taxonomic Treatment

Key to Genera

1. Flowers with 2 bracteoles on pedicel; ovary semi-superior 3. *Maesa*
1. Flowers without bracteoles on pedicel; ovary superior.
 2. Flowers in short-pedunculate racemes or sessile fascicles, unisexual, or if bisexual, stigma ligulate.
 3. Inflorescence racemose; leaves distichous 4. *Embelia*
 3. Inflorescence fasciculate; leaves not distichous .. 2. *Myrsine*
 2. Flowers in pedunculate corymbs or umbels, or at apex of flowering branches, bisexual, stigma punctiform . 1. *Ardisia*

I. ARDISIA Sw.

Key to Species

1. Leaves entire or slightly undulate.
 2. Young branchlets glabrous 6. *A. elliptica*
 2. Young branchlets puberulous or scaly.
 3. Young branchlets and lower surface of leaves puberulous; calyx-lobes lanceolate or ovate 1. *A. brevicaulis*
 3. Young branchlets and lower surface of leaves scaly; calyx-lobes triangular.
 4. Leaves less than 6 cm long; plants less than 0.5 m tall 2. *A. chinensis*

4. Leaves more than 7 cm long; plants more than 1 m tall.
5. Fruit depressed-globose, somewhat with 5 obtuse angles; leaves scattered along branchlets, apex acuminate or long acuminate..... 11. *A. quinquegona*
5. Fruit globose; leaves crowded at upper part of branchlets, apex acute or obtuse, rarely rounded 12. *A. sieboldii*
1. Leaves undulate crenulate, crenate, serrate, dentate, or coarse-dentate.
6. Leaves subopposite or subverticillate, margin serrate.
7. Leaves cordate at base 9. *A. maclurei*
7. Leaves rounded, obtuse or acute at base.
8. Young stems short puberulous; leaves coriaceous, with distinct reticulate veins 7. *A. japonica*
8. Young stems tomentose; leaves chartaceous, with indistinct reticulate veins...10. *A. pusilla*
6. Leaves alternate, margin undulate, crenulate, crenate, crenate-dentate or dentate.
9. Leaves undulate, coarse-dentate, crenate-dentate or sharp-dentate.
10. Leaves sharp-dentate at margin.
11. Branchlets and flowering branches glabrous
..3a. *A. cornudentata* ssp. *cornudentata*
11. Branchlets and flowering branches rusty .. 3b. *A. cornudentata* ssp. *morrisonensis*
10. Leaves undulate, or coarse-dentate at upper margin.
12. Young stems and leaf beneath puberulous 1. *A. brevicaulis*
12. Young stems and leaf beneath scaly 2. *A. chinensis*
9. Leaves crenulate or crenate.
13. Leaves villose above 13. *A. villosa*
13. Leaves glabrous or nearly so above.
14. Leaves puberulous beneath.
15. Leaves with lateral veins reddish and grayish patches above, margin crenate... 14. *A. violacea*
15. Leaves green above, margin crenulate... 1. *A. brevicaulis*
14. Leaves glabrous beneath or nearly so.
16. Leaves elongate-lanceolate or linear 5. *A. crispa*
16. Leaves ovate, oblong, elliptic, lanceolate, or oblanceolate.
17. Young stems, peduncles and pedicels brownish puberulous; calyxlobes short-ciliate 8. *A. kusukuensis*

17. Young stems, peduncles and pedicels glabrous or nearly so; calyxlobes entire.
18. Leaves densely minutely black punctate beneath....15. *A. virens*
18. Leaves sparsely brownish punctate beneath 4. *A. crenata*

1. *Ardisia brevicaulis* Diels, Bot. Jahrb. 29: 519. 1900.

Specimens examined. ILAN HSIEN: Fushan Botanical Garden, *Chiang 115* (TAIF); Tsopei, 1976, *Yang s. n.* (TAIF). TAOYUAN HSIEN: Kahsirnao, *Tang 370* (TAIF); Nanchatienshan, 1975, *Lu s. n.* (TAIF). NANTOU HSIEN: Mayfeng, *Peng 8335* (TAIF).

2. *Ardisia chinensis* Benth., Fl. Hongk. 207. 1861.

Specimens examined. TAIWAN. TAIPEI CITY: Taipei, *Lu 16400* (TAIF); Aoti, *Huang 3099* (TAI); Shiting, *Peng 6785* (HAST). ILAN HSIEN: Chingkualiao, 1918, *Kanehira & Sasaki s. n.* (TAIF); Fushan Botanic Garden, *Yang et al. 4771* (TAIF); Enroute Fushan to Lalashan, *Lu 16400* (TAIF). NANTOU HSIEN: *Kao 4021* (TAI).

3. *Ardisia cornudentata* Mez, Engler, Pflanzenr. 9(IV. 236): 144. 1902.

a. subsp. *cornudentata*

Ardisia remotiserrata Hayata, Mater. Fl. Formosa 183. 1911.

This subspecies is geographically limited to the south of Peitawushan, the southern part of this island, and eastward to Lutao and Lanyu. Plants of this typical subspecies have leaves coriaceous and acute or sometimes acuminate at apex, branchlets and flowering branches glabrous, and the shape of calyxlobes rotund. In addition, inflorescence of the subspecies terminates only at flowering branches.

Specimens examined. TAIWAN. PINGTUNG HSIEN: Tahan logging trail, *Lu 15102* (TAIF); Mutan, *Liu 199* (TAIF). TAITUNG HSIEN: Lutao, *Lu 15963* (TAIF); Lanyu, *Yang et al. 6628* (TAIF).

b. subsp. *morrisonensis* (Hayata) Yuen P. Yang, Fl. Taiwan 2nd edn. 4: 42. 1998.

Ardisia morrisonensis Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 180. 1911.

Ardisia suishaensis Hayata, Icon. Pl. Formosan. 5: 93. 1915.

This subspecies is very similar to the typical subspecies in leaf shape and margin. However, the rusty pubescence of branchlets and flowering branches in this subspecies is the diagnostic feature that distinguishes it from the typical.

In this subspecies, two groups can be divided by the shape of calyx lobes and length of hairs on branchlets and flowering branches. One group has calyx lobes linear-

triangular or linear and margins between two lobes not overlapping, and shorter hairs which are difficult to be distinguished as uni- or multi-cellular. In addition, floral color in this group is white. Geographically, this group is confined in Hsitou to Alishan. It was named as *Ardisia stenosepala* by Hayata in 1915. As to the other group, it has calyx lobes broadly ovate and margins between lobes overlapping, longer hairs distinctly multicellular and flowers pink. The group was described as *Ardisia morrisonensis* by Hayata in 1911. It is widely distributed, ranging from the northern part of the island to Kaohsiung in the south. Based on the discontinuous morphological variation and the distribution pattern, they are treated as two varieties under the subsp. *morrisonensis*.

(1) var. *morrisonensis*

A small shrub; branchlets and flowering branches rusty multi-cellular hairy. Leaves subcoriaceous, apex acute or acuminate, sometimes shortly caudate-acuminate, lower surface sparsely multi-cellular hairy. Calyx lobes broadly ovate, imbricate; corolla pink.

Specimens examined. **TAIWAN.** TAIPEI HSIEN: Pichiashan, *Lu 14457* (TAIF); Huangtitien, *Liou 324* (TAIF). ILAN HSIEN: Wufeng, *Kuo 5706* (TAI). HSINCHU HSIEN: Wuchishan, *Huang & Huang 15152* (TAI). MIAOLI HSIEN: Nanfengshan, *Wang et al. s. n.* (TAIF). TAICHUNG HSIEN: Tungmaoshan, *Tang 355* (TAI). NANTOU HSIEN: Lienhuachih, *Lu 15486* (TAIF). CHIAYI HSIEN: Alishan, *Lu 16035* (TAIF). TAINAN HSIEN: Kuanchilin, *Lu 15276* (TAIF). KAOHSIUNG HSIEN: Shoushan, *Yang 171* (TAIF); Chuyunshan, *Liou 64* (TAIF). HUALIEN HSIEN: Tungli, *Lu 15728* (TAIF); Hsiulin, *Chen et al. 1178* (TAIF).

(2) var. *stenosepala* (Hayata) Yuen P. Yang, *Fl. Taiwan* 2nd edn. 4: 42. 1998.

Ardisia stenosepala Hayata, *Icon. Pl. Formosan.* 5: 92. 1915.

A small shrub; branchlets and flowering branches rusty unicellular hairy. Leaves subcoriaceous or chartaceous, apex caudate-acuminate or caudate, lower surface rusty unicellular hairy. Calyx lobes triangular-linear or linear, not overlapping; corolla white.

Specimens examined. **TAIWAN.** NANTOU HSIEN: Chitou, *Peng 6981* (HAST); *Chuang et M. T. Kao 3180* (TAI). CHIAYI HSIEN: Enroute Fengshan to Tatienu waterfall, *Wang et al. 9474* (TAIF); Furshan, *Wang et al. 6297* (TAIF); Lungyunshanchuang of Chuchi, *Wang 730* (TAIF); Fenchihu to Shipahlohantung, *Lin et al. 134* (TAI).

4. *Ardisia crenata* Sims, *Bot. Mag.* 45: pl. 1950. 1918.

Ardisia miaoliensis Lu, *Quart. J. Chin. Forest.* 10: 119. *figs. 1 & 2.* 1977.

According to Larsen and Hu (1996), this species is widely distributed with a range from India, Burma, through China to Japan, and southwards to the Philippines and

Malay Peninsula. They mentioned that the inflorescence of the species is considerably variable. In Taiwan, the subumbellate inflorescence is, however, rather stable in the species.

Specimens examined. **TAIWAN.** TAIPEI CITY: Monghuanhu, 1984, *Lu s. n.* (TAIF); Chutsehu, *Lu 3340* (TAIF). ILAN HSIEN: Chilan, *Clarke et al. 285* (TAIF); Nan-ao, *Liao & Chen 1786* (TAIF). MIAOLI HSIEN: Nanchuang, *Liu 366* (HAST). HSINCHU HSIEN: Yuanyanghu, *Lu 14860* (TAIF). NANTOU HSIEN: Jenlung logging trail, *Lu 15903* (TAIF); Chitou, *Ou & Kao 9106* (TAI). TAICHUNG HSIEN: Anmashan, *Lu 2412* (TAIF); Shiyuan-yako, *Lu 15614* (TAIF). CHIAYI HSIEN: Alishan, *Lu 14633* (TAIF). PINGTUNG HSIEN: Talomalinchih, *Lu 13607* (TAIF). HUALIEN HSIEN: Yenhai logging trail, 1983, *Chiou & Lin s. n.* (TAIF).

5. *Ardisia crispa* (Thunb.) A. DC., *Trans. Linn. Soc. Lond.* 17: 124. 1834.

Ardisia crispa (Thunb.) A. DC. var. *dielsii* (Levl.) Walker, *J. Washington Acad. Sci.* 29: 260. 1939; Li, *Fl. Taiwan* 4: 52. 1978.

The length of leaves in this species is quite variable, and the variation is continuous. I agree with Chen and Pipoly's treatment (1996) to reduce var. *dielsii* to *Ardisia crispa* (Thunb.) A. DC.

Specimens examined. **TAIWAN.** TAIPEI CITY: Monghuanhu, *Yang 462* (TAI); Chihshingshan, *Kuoh 2196* (TAI). ILAN HSIEN: Taipingshan, 1928, *Suzuki s. n.* (TAI).

6. *Ardisia elliptica* Thunb., *Nov. Gen. Pl.* 8: 119. 1795.

Ardisia squamulosa auct. non Presl: Li, *Fl. Taiwan* 4: 56. 1978.

Ardisia kotoensis Hayata, *J. Coll. Sci. Imp. Univ. Tokyo* 30(1): 18. 1911.

The species is confined to the islets of Lanyu and Lutao, and Hengchun Peninsula.

The description of the species given by Li (1978) consists of two species. A proper description is available in Chen and Pipoly (1994).

Specimens examined. **TAIWAN.** TAITUNG HSIEN: Hsiaoyehliu, 1994, *Wang s. n.* (TAIF); Lanyu, *Huang et al. 10568* (TAI); Lutao, *Nakahara 998* (TAIF).

7. *Ardisia japonica* (Hornsted) Blume, *Bijdr. Fl. Nederl. Ind.* 690. 1826.

This species is recognized by coriaceous, opposite or verticillate leaves with conspicuous reticulate veinlets.

Specimens examined. **TAIWAN.** TAIPEI CITY: Lopeishan, *Hsu 0222* (TAI). ILAN HSIEN: Tayuanshan, *Kao 3216* (TAI); Taipingshan, *Kao 10669* (TAI). TAOYUAN HSIEN: Lalashan, *Chiang 26* (TAIF). HSINCHU HSIEN: Yuanyanghu, *Lu 14231* (TAIF).

8. *Ardisia kusukuensis* Hayata, Icon. Pl. Formosan. 5: 90. 1915.

Ardisia crenata auct. non Sims: Li, Fl. Taiwan 4: 50. 1978. *pro parte*.

This endemic species has been treated conspecific with *Ardisia crenata* Sims by authors such as Chen (1979); Chen and Pipoly (1996) and Li (1978). However, its puberulous umbellate inflorescence from the axil of leaves and/or at apex of flowering branches, and sessile leaves that are puberulous abaxially support it as a distinct species. The description of *A. kusukuensis* is as follows.

A suffrutescent undershrub to 20 cm tall; stems erect, puberulous when young. Leaves oblanceolate, elliptic, or oblong-obovate, 10–17 cm long, 2.5–3.8 cm wide, apex acute or acuminate, base cuneate or attenuate, margins crenate, green and glabrous above, gray-green and glabrescent beneath; petioles 3–5 mm long, slightly short puberulous when young. Inflorescence umbellate, axillary with a short peduncle 6–7 mm long and/or terminating a flowering branch to 10 cm long and with 1 or 2 smaller leaves at apex; peduncles puberulous. Flowers pinkish or white; calyx lobes linear-triangular, ca 3 mm long; corolla lobes ovate; pedicels ca. 1 cm long, puberulous. Fruit globose, red.

The species is strictly distributed in forests below 800 m of the Hengchun Peninsula.

Specimens examined. TAIWAN. PINGTUNG HSIEN: Nanjenshan, Lu & Chen s. n. (TAIF); Kenting, Park, Lu 13821 (TAIF).

9. *Ardisia maclurei* Merr., Philip. J. Sci. 21: 351. 1922.

The species is characterized by leaves being obovate with cordate base and branchlets densely fuscous-villose. Plants of the species were found only in a small area at Wulai, Taipei.

Specimens examined. TAIWAN. TAIPEI HSIEN: Suzuki 14926 (TAI); Wulai, Lu 1296, 1686 (HAST), Chen 143 (HAST).

10. *Ardisia pusilla* A. DC., Trans. Linn. Soc. 17: 126. 1836.

Specimens of the species were sometimes misidentified as *Ardisia japonica*. The species can be distinguished by its chartaceous or membranous leaves with inconspicuous reticulate veinlets.

Specimens examined. TAIWAN. TAIPEI CITY: Taipei, Lu 16241 (TAIF); Pishan, Lu 12383 (TAIF). TAOYUAN HSIEN: Kasernao, Tang 284 (TAIF). TAICHUNG HSIEN: Chiayang, Lu 12424 (TAIF). HUALIEN HSIEN: Hsiao-chingsui, Lu 23943 (TAIF); Hopping, Hsieh et al. 58 (TAIF).

11. *Ardisia quinquegona* Blume, Bijdr. Fl. Nederl. Ind. 689. 1826.

Many collections of the species were misfiled in the folder of *Ardisia sieboldii* Miq. in the herbaria of this is-

land. Morphologically, the species is characterized by slightly depressed fruit with five obtuse angles, and the latter is by globose fruit. In the sterile specimens, the acuminate or elongate acuminate apex with somewhat pointed leaf tips of *Ardisia quinquegona* can be useful in separating it from *A. sieboldii*. In addition, the membranous leaf of the species vs. the coriaceous leaf of *A. sieboldii* is also a useful character.

Specimens examined. TAIWAN. TAIPEI CITY: Huangtieten, Wu 1251 (TAIF). ILAN HSIEN: Fushan Botanic Garden, Yang et al. 4770 (TAIF); Bonbon Mt., Kao 5914 (TAI). MIAOLI: Malapangshan, Chen 38 (TAIF). TAICHUNG HSIEN: Paileng-Tungmaoshan, Tang 353 (TAI). NANTOU HSIEN: Lienhuachih, Chen et al. 3261 (TAIF). PINGTUNG HSIEN: Lanjenshih, Wu et al. 1240 (TAIF); Lilungshan, Lu & Li 1632 (TAIF). TAITUNG HSIEN: Lanyu, 1986, Yang s. n. (TAIF).

12. *Ardisia sieboldii* Miq., Ann. Mus. Bot. Lugd.-Bat. 3: 190. 1867.

Leaf shape of this species is basically obovate with obtuse or acute apex and rounded or obtuse tip. Occasionally, the rounded leaf apex found in some specimens may be confused with *Ardisia elliptica* Thunb. However, the slightly incurved lower margin of leaves in *A. sieboldii* can serve as a diagnostic character to distinguish them. This character is also useful in separating it from *A. quinquegona* because sometimes the species has leaves acuminate at apex with a somewhat pointed tip.

Specimens examined. TAIWAN. TAIPEI CITY: Huangtieten, Liou et al. 339 (TAIF); Houshan, Shih 1175 (TAIF). TAICHUNG HSIEN: Anmashan, Liu 41 (TAIF). TAITUNG HSIEN: Haituang, Liu 444 (TAIF).

13. *Ardisia villosa* Roxb., Fl. Ind. ed. Carey 2: 274. 1824; Yang & Lu, Bull. Taiwan Forest. Res. Inst. n. s. 4(2): 77. 1989.

The species was recorded for the flora of Taiwan by Yang and Lu (1989) eight years ago. So far, it is known that the species has a strict distributional range, i.e. at Kuetien, Pingtung. Although Sasaki gathered a specimen from Kaohsiung, the exact locality of his collection could not be traced.

Specimens examined. TAIWAN. KAOHSIUNG HSIEN: Sasaki s. n. 1932 (TAI). TAITUNG HSIEN: Kuetien, 1982, Lu s. n. (TAIF).

14. *Ardisia violacea* (T. Suzuki) W. Z. Fang & K. Yao, Acta Phytotax. Sin. 17: 99. 1979.

Bladhia violacea T. Suzuki, Trans. Nat. Hist. Soc. Formosa 25: 41. 1935.

Ardisia brevicaulis Diels var. *violacea* (T. Suzuki) E. Walker, Bot. Mag. (Tokyo) 67: 208. 1954; Li, Fl. Taiwan 4: 49. 1978.

I accept the treatment made by Fang and Yao (1979) to elevate this taxon to specific status because it is distinctly different from *A. brevicaulis* in leaves purplish along lateral veins above, purple and slightly and minutely reddish puberulous beneath, lateral veins several pairs, young stems reddish, inflorescence simple umbellate, and plant size much smaller.

Specimens examined. **TAIWAN.** TAIPEI CITY: Wulai, Suzuki 18417; Shitzu, 1956, Tsui & Kao s. n. (TAI). TAOYUAN HSIEN: Shiling, Lu 24399 (TAIF).

15. *Ardisia virens* Kurz, For. Fl. Brit. Burma 2: 575. 1877.

The species can be characterized by leaves densely minute black punctate beneath and inflorescence umbellate at apex of flowering branches which have several leaves scattered from lower to upper parts. Many specimens of the species have been found in the folder of *A. crenata* in herbaria of Taiwan. The sparsely scattered, elevated, round, glandular dots at the lower surface of leaves in *A. crenata* can serve as a useful character to separate them.

Specimens examined. **TAIWAN.** TAIPEI HSIEN: Tatongshan, Kuo 5582 (TAI); Shihting, Yang 252 (TAI). NANTOU HSIEN: Chingshuikou, Huang et al. 1086 (TAI); Kuanying Fall, 1970, Wu et al. s. n. (TAI). KAOHSIUNG HSIEN: Shanping, Kiang & Hsieh KT141 (TAI). HUALIEN HSIEN: Hungyeh, Koyama & Kao 14239 (TAI).

II. EMBELIA Burm. f.

Key to Species and Varieties

1. Leaves obovate or oblanceolate; lateral veins indistinct, less than 8 pairs; flowers 4-merous
..... 1. *E. laeta* var. *papilligera*
1. Leaves ovate, oblong-lanceolate to lanceolate; lateral veins distinct, more than 12 pairs; flowers 5-merous.
 2. Leaf veinlets conspicuous, prominently elevated; pedicels less than 3 mm long; filaments papillose at lower part 3. *E. rudi*
 2. Leaf veinlets inconspicuous, not elevated, especially those between lateral veins and near midrib; pedicels more than 3 mm long; filaments glabrous
..... 2. *E. lenticellata*

1. *Embelia laeta* (L.) Mez var. **papilligera** (Nakai) Walker, Bot. Mag. (Tokyo) 67: 158. 1954.

Embelia laeta auct. non (L.) Mez var. *laeta*: Li, Fl. Taiwan 4: 60. 1978.

Embelia laeta (L.) Mez var. *laeta* was reported occurring in Taiwan by Li in 1978. The voucher specimen (Suzuki 7547) cited by Li was found papillate on the young stems. It therefore belongs to var. *papilligera*. The typical variety does not occur on this island.

Specimens examined. **TAIWAN.** ILAN HSIEN: Ilan, Suzuki 7547 (TAI); Hoping logging trail, Lu 16307

(TAIF). HSINCHU HSIEN: Tapachienshan, Huang 5938 (TAI). TAICHUNG HSIEN: Lishan, Kuo 7628 (TAI). NANTOU HSIEN: Shitou, Hsu 6226 (TAI). TAINAN HSIEN: Yuching, 1958, You & Liao s. n. (TAI). KAOHSIUNG HSIEN: Laonungchi, Yamazaki et al. 678 (TAI). PINGTUNG HSIEN: Tawushan, Huang 15395 (TAI). HUALIEN HSIEN: Mukuashan, Liu et al. 212 (TAI).

2. *Embelia lenticellata* Hayata, Icon. Pl. Formosan. 5: 86. 1915.

Chen and Pipoly (1996) have treated this species and *E. rudis* Hand.-Mazz., as being conspecific with *E. vestita* Roxb. Compared with the line drawing of the species in Mez's publication (1902), the two species are different from *E. vestita* by the petals densely papillate inside and stamens longer than petals, while *E. vestita* has petals glabrous inside and stamens rather shorter than petals. Because I have never found any glabrous petals from the plants of *E. lenticellata* and *E. rudis*, the two species are here tentatively regarded as different from *E. vestita*.

As to the difference between the species and *E. rudis*, please see the note of following species.

Specimens examined. **TAIWAN.** MIAOLI HSIEN: Hsuechien, Huang & Huang 15377 (TAI); Tiengo, Huang & Huang 13265 (TAI). TAICHUNG HSIEN: Anmashan, Chuang 131 (TAI). NANTOU HSIEN: Tungpu, 1982, Hsieh et al. s. n. (TAI). KAOHSIUNG HSIEN: Liukuei, Chao 737 (TAI). PINGTUNG HSIEN: Santimen, Sasaki 1936 (TAI).

3. *Embelia rudis* Hand.-Mazz., Anz. Akad. Wiss. Wien 59: 108. 1922.

Although Chen and Pipoly (1996) regarded this species and *E. lenticellata* as conspecific, this species differs from it in having leaves coriaceous and with very distinct and elevated reticulate veinlets between lateral veins near midrib, pedicels 2–3 mm long, petals ciliate at margin, filaments glandular-puberulous at lower half and anthers punctate at back. These characters evidently indicate the two species are distinct.

Specimens examined. **TAIWAN.** TAICHUNG HSIEN: Chunghsingling, Kao 10050 (TAI). NANTOU HSIEN: Kuantaohsi, Hsieh 1469 (TAI); Lienhuachih, Huang 7585 (TAI).

III. MAESA Forsk.

Key to Species

1. Young branchlets very minutely hirtellous (under microscope) or hirsute; calyx lobes ciliate.
 2. Leaf buds not hairy; leaves coriaceous, remotely dentate or denticulate with mucronate tip
..... 1. *M. japonica*
 2. Leaf buds hairy; leaves chartaceous, serrate or obtusely serrate.

3. Branchlets distinctly hirtellous or hirsute
 3b. *M. perlaria* var. *perlaria*
3. Branchlets nearly glabrous (very minutely
 hirtellous under microscope)
 3a. *M. perlaria* var. *formosana*
1. Young branchlets glabrous; calyx lobes not ciliate
 2. *M. lanyuensis*

*Note: Identification of species of the genus must be careful. A dissecting microscope is needed for examination.

1. *Maesa japonica* (Thunb.) Moritzi ex Zoll., Syst. Verz. Ind. Archip. 61. 1846.

Leaves coriaceous and remotely mucronate-dentate or mucronate-denticulate, and inflorescence racemose or paniculate with a branch at lower part are the diagnostic characters to distinguish it from other species of the genus in Taiwan.

Specimens examined. TAIWAN. TAIPEI CITY: Chihshingshan, Hsu 1248 (TAI). ILAN HSIEN: Fushan, Clarke et al. 379 (TAIF); Shenmiku, Yang et al. 4634 (TAIF). TAOYUAN HSIEN: Lalashan, Huang 7677 (TAI). MIAOLI HSIEN: Nanchuang, Hsu 12562 (TAI). HSINCHU HSIEN: Yuanyanghu, Lu 14231 (TAIF); Chiaopangshan, Chun & Chang 7071 (TAI); Kuanwu, 1976, Yang s. n. (TAIF). TAICHUNG HSIEN: Lishan, 1977, Kuo s. n. (TAI). NANTOU HSIEN: Meifeng, Lin 5232 (TAIF). KAOHSIUNG HSIEN: Kaohsiung, 1917, Shimada s. n. (TAIF). HUALIEN HSIEN: Hsinkanshan, Yang et al. 4417 (TAI).

2. *Maesa lanyuensis* Yuen P. Yang, sp. nov.—TYPE: Taiwan, Taitung Hsien: Lanyu, 11 Mar 1986, Yuen-Po Yang, s. n. (holotype: TAIF; isotypes: HAST, NSYSU).
 Figure 1

Maesa tenera auct. non Mez: Li, Fl. Taiwan 4: 61. *pro part.*

Species nova affinis *Maesa perlariae* (Lour.) Merr. sed differt ramulis glabris, foliis obovatis vel ellipticis, glabris, supra lineolis nervilliformibus praeditis, inflorescentiis glabris.

Frutex ca. 2.5 m altus. Ramuli glabri. Folia chartacea vel subcoriacea, glabra, obovata vel elliptica, 5–12 cm longa, 3.2–6 cm lata, apice acuta vel acuminata, basi acuta, obtusa vel rotundata, nervis lateralibus 6–8 paribus; petioli 1.2–2 cm longi, glabri. Inflorescentiae subpauciflorae, paniculatae, axillares, glabrae; bracteolae triangulares, ovatae vel orbiculato-ovatae. Flores 5-meri, albi. Calycis lobi orbiculato-ovati, glabri. Corolla campanulata, lobis ovatis, punctato-lineatis, glabris, apice obtusis; pedicelli 1.3–1.7 mm longi, glabri. Drupa ovata.

An erect shrub to 2.5 m high; stems glabrous. Leaves chartaceous or subcoriaceous, obovate to elliptic, 5–12 cm long, 3.2–6 cm wide, apex rounded, obtuse, acute to acuminate, base acute, obtuse to subrounded, margin serrate, glabrous on both surfaces, lateral veins 6–9 pairs,

longitudinal resin canals somewhat distinct above; petioles 1.2–2 cm long, glabrous. Inflorescence paniculate with many or sometimes a few branches, glabrous; bracteoles triangular, ovate, orbicular ovate, margin entire or sometimes slightly and minutely ciliate. Flowers white; calyx lobes orbicular ovate, glabrous, entire; corolla campanulate, lobes ovate, about 2 mm long, punctate-lineate, glabrous, entire, apex obtuse; pedicels 1.3–1.7 mm long, glabrous. Fruit ovoid.

Endemic, along roadside and in or at edge of forests of Lanyu and Lutaio islands.

Additional specimens examined. TAIWAN. TAITUNG HSIEN: Lanyu, Huang & Kao 6446 (TAI), Huang et al. 9259 (TAI).

This species is closely related to *Maesa perlaria*, but differs from it by plants glabrous, paniculate inflorescence mostly many-branched to sometimes several-branched, and calyx lobes not ciliate. In addition, somewhat distinct longitudinally resin canals at upper surface of leaves (especially more distinct in young leaves) in the species can serve as a diagnostic feature to separate it from *M. perlaria*.

Maesa elmeri Mez has been reported as occurring on Lanyu Island, but no specimen of the species from the island has been found at any herbium in Taiwan. According to the original description (Mez, 1906), *M. elmeri* is characterized by leaves ovate-elliptic or elliptic, young stems minutely pilose, petioles up to 4 cm long, bracteoles lanceolate-triangular, and pedicels less than 0.5 mm long. These characters can support its difference from *M. lanyuensis*.

3. *Maesa perlaria* (Lour.) Merr., Trans. Amer. Philos. Soc. n. s. 24(2): 298. 1935.

a. var. *formosana* (Mez) Yuen P. Yang, Fl. Taiwan 2nd edn. 4: 52. 1998.

Maesa tenera auct. non Mez: Li, Fl. Taiwan 4: 61. 1978.

Maesa formosana Mez in Engler, Pflanzenr. 9(IV. 236): 29. 1902.

Maesa montana Mez var. *formosana* (Mez) Yamazaki, J. Jap. Bot. 66(1): 59. 1990.

This variety was previously treated as a synonym of *M. tenera* Mez by Walker (1959), and then *M. montana* A. DC. by Chen (1979). Recently, Yamazaki (1991) regarded it as a variety, *M. montana* var. *formosana* (Mez) Yamazaki. Compared with TAI specimens of *M. montana* and *M. perlaria* (Lour.) Merr. collected from mainland China, this variety seems more close to the latter species because they have inflorescence mostly paniculate and rarely racemose, lateral veins of leaves 6–9 pairs, and stigma slightly lobed. The only difference between them is the length and density of hirtellous hairs on stems and leaves. Although *M. montana* also has minute hirtellous hairs on young stems and leaves, which is similar to this species, the evidences that its inflorescences are mostly racemose (rarely paniculate), lateral veins of leaves are

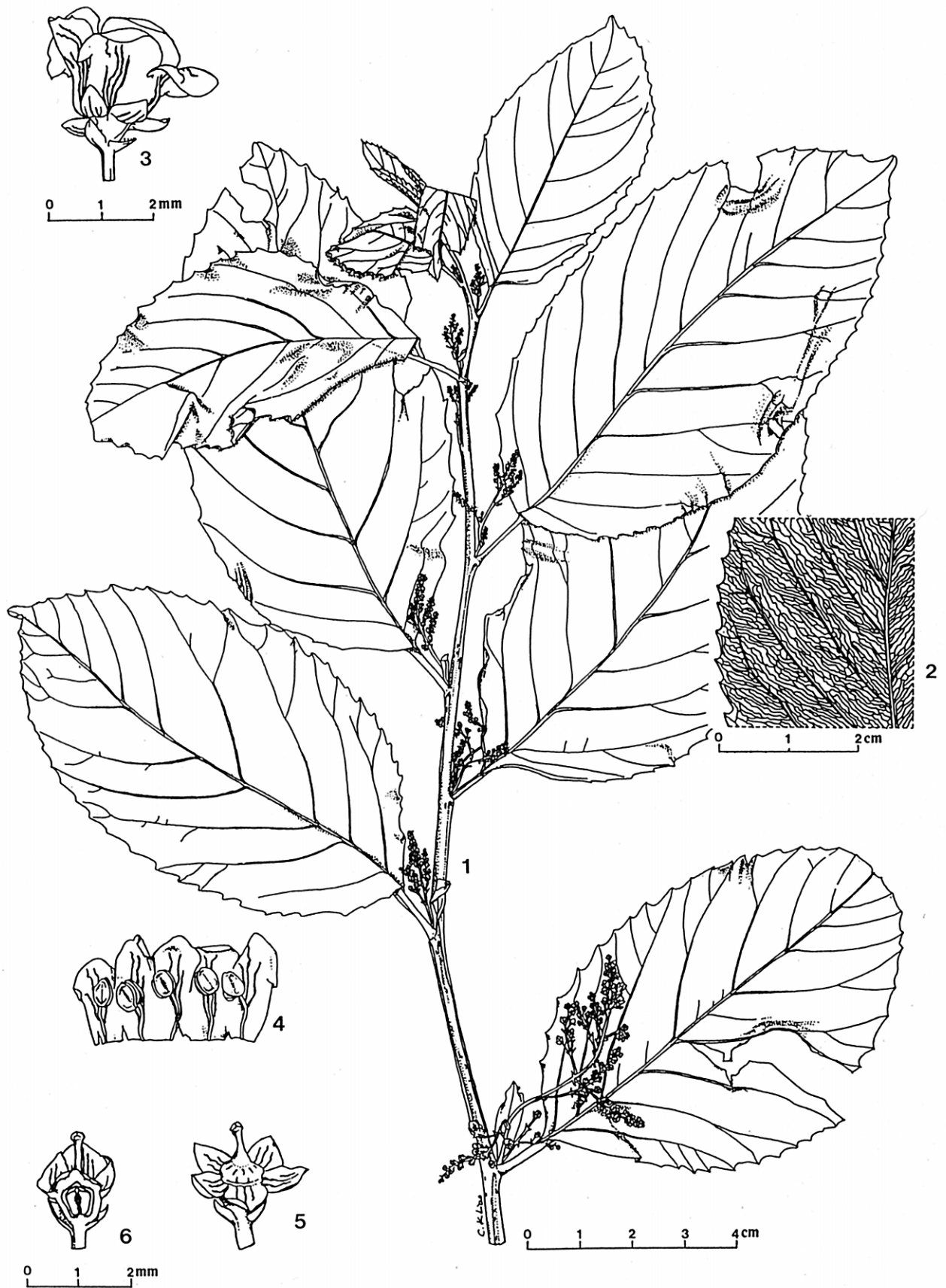


Figure 1. *Maesa lanyuensis* Yang. 1, Flowering branch; 2, Longitudinal veinlets of leaf fragment; 3, Flower; 4, Corolla with stamens; 5, Flower without corolla; 6, Flower dissected longitudinally.

8–12 pairs, and stigma is enlarged and lobed support the taxon as a variety of *M. perlaria*.

Indochina, China and the Ryukyus. Taiwan, along roadside, in or at edge of forests at low to 1,500 m throughout the island.

Specimens examined. **TAIWAN.** TAIPEI HSIEN: Shiaokotou, *Ho 426* (TAIF). ILAN HSIEN: Sanhsin, *Huang et al. 10816* (TAI). TAOYUAN HSIEN: Palin, *Cheng 655* (TAI). MIAOLI HSIEN: Sanyi, *Shimada 1141* (TAI). TAICHUNG HSIEN: Chingsuikou, *Yang 1302* (TAI). NANTOU HSIEN: Fenghuangshan, *Hsu 6172* (TAI). CHIAYI HSIEN: Fenchihu, *Huang & Huang 14005* (TAI). KAOHSIUNG HSIEN: Liukuei, *Chao 747* (TAI); Shoushan, *Yang 481* (TAIF). PINGTUNG HSIEN: Linungshan, *Yang 1223* (TAI); Kengtin, 1983, *Lu s. n.* (TAIF). HUALIEN HSIEN: Hoping, *Hsieh et al. 549* (TAIF); Shioulin, *Liu 364* (TAIF).

b. var. *perlaria*

The typical variety differs from the var. *formosana* in having hirsute to hirtellous hairs on branchlets, lower surface of leaves, inflorescence, and fruits.

Indochina and China. Taiwan, in the forests in the southern part.

Specimens examined. **TAIWAN.** TAINAN HSIEN: Kuantzeling, *Morimoto 354* (TAI).

IV. MYRSINE L. s. l.

Key to Species

1. Branchlets pubescent; leaves less than 2.5 cm long 1. *M. africana*
1. Branchlets glabrous; leaves more than 3 cm long.
 2. Leaves oblong, oblanceolate or oblong-obovate, lateral veins indistinct above 2. *M. sequinii*
 2. Leaves elliptic or elliptic-lanceolate, lateral veins somewhat distinct above 3. *M. stolonifera*

1. *Myrsine africana* L., Sp. Pl. 196. 1753.

This species needs further study in future because morphological distinction exists in the plants between Africa and Asia.

The Azores, Africa, Afghanistan, NW India, Kashmir, Nepal, and China. Taiwan, in the central and eastern parts.

Specimens examined. **TAIWAN.** TAICHUNG HSIEN: Wuling farm, *Lu 15645* (male) (TAIF); Chiayang, *Debreczy et al. 48911* (TAIF). HUALIEN HSIEN: Lusui, *Lu 2272* (TAIF); Yenhai logging trail, 1983, *Chiou & Lin s. n.* (TAIF).

2. *Myrsine sequinii* Lévl., Fl. Kouy-Tcheou 288. 1914-1915; Chen & Pipoly, Fl. China 15: 37. 1994.

For synonymy of the species, please refer to Chen and Pipoly's publication in 1994.

Eastern Asia from Indochina through China to Japan. Taiwan, widely distributed.

Specimens examined. **TAIWAN.** TAIPEI HSIEN: Tsaikungshsan, *Chiang 371* (TAIF); Wuchihshan, *Lu 25208* (TAIF). ILAN HSIEN: Kueishan Isl., *Li 38* (TAI). PINGTUNG HSIEN: Chufengku, 1992, *Chen & Chen s. n.* (TAI); Chinshuiying, 1951, *Chun & Chang s. n.* HUALIEN HSIEN: Hsinkangshan, *Shen 672* (TAI).

3. *Myrsine stolonifera* (Koidz.) Walker, Philip. J. Sci. 73: 247. 1940.

Anantia stolonifera Koidz., Bot. Mag. (Tokyo) 37: 40. 1923.

China, the Ryukyus and Japan. Taiwan, in forests from low to high altitudes throughout the island.

Specimens examined. **TAIWAN.** TAIPEI HSIEN: Peichatienshan, *Shih 1008* (TAIF). ILAN HSIEN: Chilanshan, *Kuo 8442* (TAI); Taipingshan. *Chiu & Chen 1186* (TAI). MIAOLI HSIEN: Taian, *Chen 1432* (TAI). HSICHU HSIEN: Kuanwu, 1990, *Ou et al. s. n.* (TAI); Tapachienshan, *Wang 1255* (TAI). TAICHUNG HSIEN: Central Cross Highway, 1980, *Ou et al. s. n.* (TAI); Anmashan, *Huang 8012* (TAI). NANTOU HSIEN: Luku, *Shen 173*. CHIAYI HSIEN: Fengshan, *Huang & Chen 24* (TAI). PINGTUNG HSIEN: Wutoshan, *Y. R. Lin 166* (TAI); Tawushan, *Huang et al. 13578* (TAI). HUALIEN HSIEN: Hoping logging trail, *Huang et al. 5129* (TAI).

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