

Hideaki OHBA*: **The genus *Hydrangea*. Studies on the plants of Minami Iwojima Island (Japan) (3)****

大場秀章*: 南硫黄島の植物研究 (3) アジサイ属

The genus *Hydrangea* is distributed disjunctively in the temperate and tropical regions of both eastern Asia and eastern North America. Minami Iwojima Island where two species of *Hydrangea* are found is located at the southeastern border of the Asiatic range. That is, there is no species of *Hydrangea* in the Pacific islands extending both east and south of Minami Iwojima. It is also interesting for the complete lack of *Hydrangea* in the Bonin group. One of these two *Hydrangea* is *H. macrophylla* subsp. *macrophylla* f. *normalis*, and the other is regarded as a species to be related with *H. aspera* D. Don or *H. involucrata* Sieb.

(1) ***Hydrangea macrophylla* (Thunb.) Seringe subsp. *macrophylla* f. *normalis* (Wils.) Hara** in Journ. Jap. Bot. 30: 277 (1955)—Tuyama in Tuyama & Asami, Nature Bonin Isls., 119 (1970); in Journ. Jap. Bot. 56: 320 (1981)—H. Ohba in Conserv. rep. Minami-Iwojima, 94, 124 (1982)—Ono & Kobayashi, Ogasawara no Koyushokubutu to Shokusei [The endemic flora and vegetation of Ogasawara], 80 (1983).

H. macrophylla var. *Hattoriana* Kitamura in Acta Phytotax. Geobot. 26: 5 (1974), ut "*Hattoriana* (Nakai) Kitamura"—Kitamura & Murata, Col. III. Woody Pl. Jap. 2: 115 (1979). Type. Kita Iwojima (J. Toyoshima s.n., KYO).

H. Hattoriana Nakai in shed. [ex Tuyama in Zoku Ogasawarashoto Shizen-keikan Chosahokukusho, 154 (1970), nom. nud.]

Specimens from the Volcano group (all in τ_1). Kita Iwojima Is. (Nakai June 21, 1920; Tuyama July 15, 1935; Tuyama June 16, 1940; Okabe from the cultivated stock at Chichi-jima in the Bonin); Sanmantsubo (Tuyama Nov. 21, 1935); alt. 150 m, in shady stream side (Yamazaki & Enomoto 229); alt. 450 m, in sunny bush (Yamazaki & Enomoto 228). Minami Iwojima Is. (Tuyama March 31, 1936); around the summit, alt. ca 910 m (Ohba 826089-826110; Ohba Jun.

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** Continued from Journ. Jap. Bot. 58: 23-27 (1983).

5, 1984, from the cultivated stock at Bot. Gard. Koishikawa, Univ. Tokyo; Midorikawa Jun. 2 & 24, 1984, from the cultivated stock at Shibaura, Tokyo).

Hydrangea macrophylla subsp. *macrophylla* f. *normalis* is distributed in the coastal region of the Pacific side of Honshu from Boso to Kii through Miura and Izu Peninsula and also both Izu and Volcano groups of islands, but does not occur in the Bonin group. In Minami Iwojima it grows in *Miscanthus sinensis* grassland covering the old crater wall around the summit together with *Boehmeria biloba* and dwarffish *Eurya japonica* (Fig. 1). Okutomi (1982) distinguished *Hydrangea macrophylla* f. *normalis*-*Eurya japonica*-community based on the *Hydrangea*, *Eurya* and *Boehmeria*. This community is also recorded by him from the summit area of Kita Iwojima (Volcano group) and disjunctively Hachijo Is. (Izu group). In Izu Peninsula this *Hydrangea* often grows with *Miscanthus* and *Boehmeria*, but in Boso and Miura it has strong tendency to grow under broad-leaved evergreen forests.

Although Kitamura (1974) regarded this *Hydrangea* as a distinct local variety within subsp. *macrophylla* by having larger capsules of 4 mm long and 4 styles, these characters are variable throughout the total range of subsp.



Fig. 1. *Hydrangea macrophylla* (Thunb.) Seringe subsp. *macrophylla* f. *normalis* (Wils.) Hara around the summit of Minami Iwojima Island.

macrophylla. It is noticeable that the sepal shape of the ornamental flowers found in the Volcano populations is broadly oblanceolate with attenuate base. This is, however, also difficult to be used as a distinguishable character. Because the shape varies from broadly oblanceolate with attenuate base to very broadly ovate with shortly attenuate or nearly truncate base continuously.

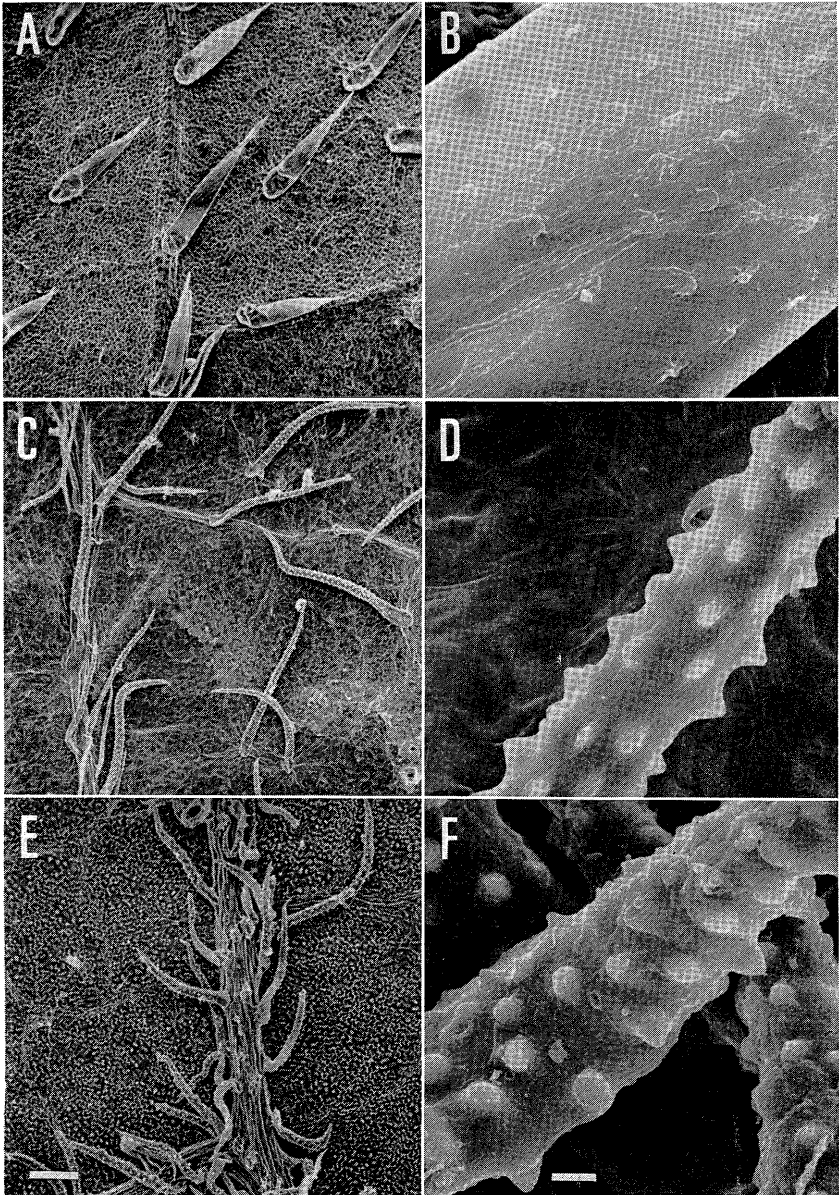
The Volcano *Hydrangea* exhibits some tendencies which are considered to adapt itself to environment in the subtropical island. The several stocks transplanted in Tokyo from both Minami Iwojima and Kita Iwojima have leaves and shoots growing throughout the year in greenhouse. Such life style continues at least for three years without any change. In all stocks planted outdoors, the leaves keep green till early winter. After that they wither up and fall. These have no distinct dormant bud. Next spring new shoots come forth from the axils only near the base of the former year's branches. But some of the stocks die during winter. Those from Honshu, on the other hand, shed their leaves and form distinct dormant buds in winter. Even in Hachijo Is. (the Izu group), which is its nearest locality to both Kita and Minami Iwojima, the *Hydrangea* prepares dormant buds in spite of the presence or absence of leaves (usually lack vividness) in winter. From these observations the Volcano *Hydrangea* does not seem to build up resistance to winter coldness. It is, however, difficult to provide any visible morphological differences corresponding to these physiological differentiation.

(2) **Hydrangea sp.**

H. sp. aff. H. aspera D. Don: H. Ohba in Conserv. rep. Minami-Iwojima, 93, 124 (1982).

[Description] Small tree (or shrub), 1-1.5 m tall, deciduous, with straight terete, slender stem, 1-1.5 cm across; branches of last year's growth with fistulous pith, the bark brownish, \pm rough, often fissured; of this year's brown or purplish brown, at first densely later sparsely pubescent with fulvous shaggy or appressed hairs 0.5-0.7 mm long.

Leaves when young conduplicate, petiolate. The petioles (3-)4-5.5 cm long, \pm semiterete, shallowly grooved above, moderately to sparsely pubescent throughout with fulvous or white curved or \pm appressed hairs 0.5-1 mm long, but densely puberulous on the upper grooves covering with white \pm appressed hairs (0.5-0.7 mm long) with somewhat swollen base. The lamina (Fig. 2A & B; 3 & 4j-l) chartaceous, more or less variable in shape, usually narrowly



oblong to oblong (or rarely broadly oblong) or narrowly oblanceolate to obovate, acuminate to acuminately acute at apex, round to nearly truncate at base, 12-23 cm long, 4.5-13 cm wide, generally their greatest width above the middle, rather irregularly serrate and partly double serrate throughout (Fig. 4j-l); the teeth deltoid 2-3(-4) mm long, spreading but with mucro pointing forward conspicuously, the distance between teeth usually 4-6 mm, the sinus between teeth round or obtuse; midrib conspicuous, slightly impressed above, elevated beneath, with 7-9 pairs of lateral veins towards margin and more or less arched, the veins strongly reticulate with network of veinlets; along the veinlets very sparsely strigose above and rather slightly strigose beneath with white, appressed, pointed hairs (0.4-0.6 mm long) with \pm swollen base (Fig. 2A & B), densely strigose on and along the midrib and lateral veins on both surfaces.

Specimens concerned. Minami Iwojima Is., around the summit, alt. ca 910 m (Ohba 826052, TI).

This *Hydrangea* is apparently new to the Volcano group. It was found to occur sporadically in a damp forest consisting of *Machilus Kobu* Maxim. around the summit of Minami Iwojima. All stocks of this species regrettably have not any remnants of flowers or fruits and seem to be juvenile. It, however, appears well to fall within the subsection *Asperae* of the section *Hydrangea* (McClintock 1957) by the vegetative features.

Compared with the specimens, this is thought to be akin to Japanese *H. involucrata* Sieb. and also *H. aspera*¹⁾, particularly the Taiwanese (not Himalayan) form of *H. robusta* Hook. f. et Thoms. in significant vegetative characters. However, this differs from them in the vesture (Fig. 2A & B). Its hairs on

¹⁾ The taxonomy of the species related to *H. aspera* is complicated and divergent in treatment. McClintock (1957) united almost all in a single species, *H. aspera*, in which she recognized 4 subspecies. *H. robusta* was regarded as the subspecies of *H. aspera* and restricted in the region from Himalaya to E. Tibet and N. Burma (not from Taiwan). Rehder (1911) and Chun (1954) recognized a large number of species and varieties in the complex based on various combinations of the shape, serration, and vesture of leaves together with other seemingly stable features.

Fig. 2. Hairs on the lower surface of leaves. A & B: *Hydrangea* sp. from Minami Iwojima (Ohba 826052). C & D: *H. involucrata* Sieb. (Kanai on July 2, 1962). E & F: *H. robusta* Hook. f. et Thoms. (Matuda on July 11, 1919). Bar in E 100 μ m. Bar in F 5 μ m. A & C are as the same as E; B & D as the same as F in magnification.

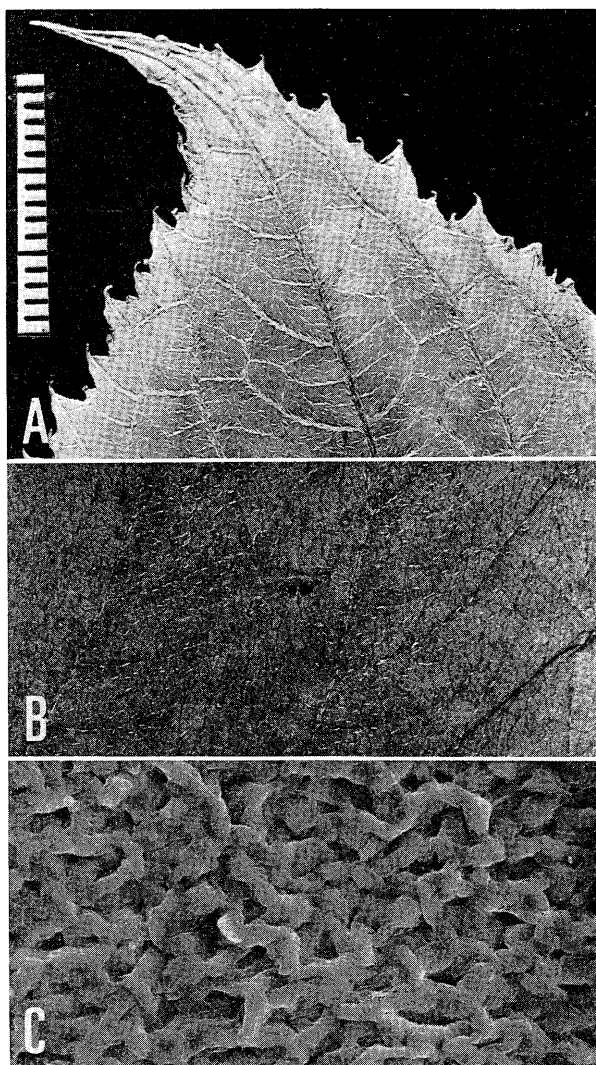


Fig. 3. Leaf of *Hydrangea* sp. from Minami Iwojima (Ohba 826052). A & C: The lower surface. B: The upper surface. A & B: A scale is 2 mm. C: \times ca 720.

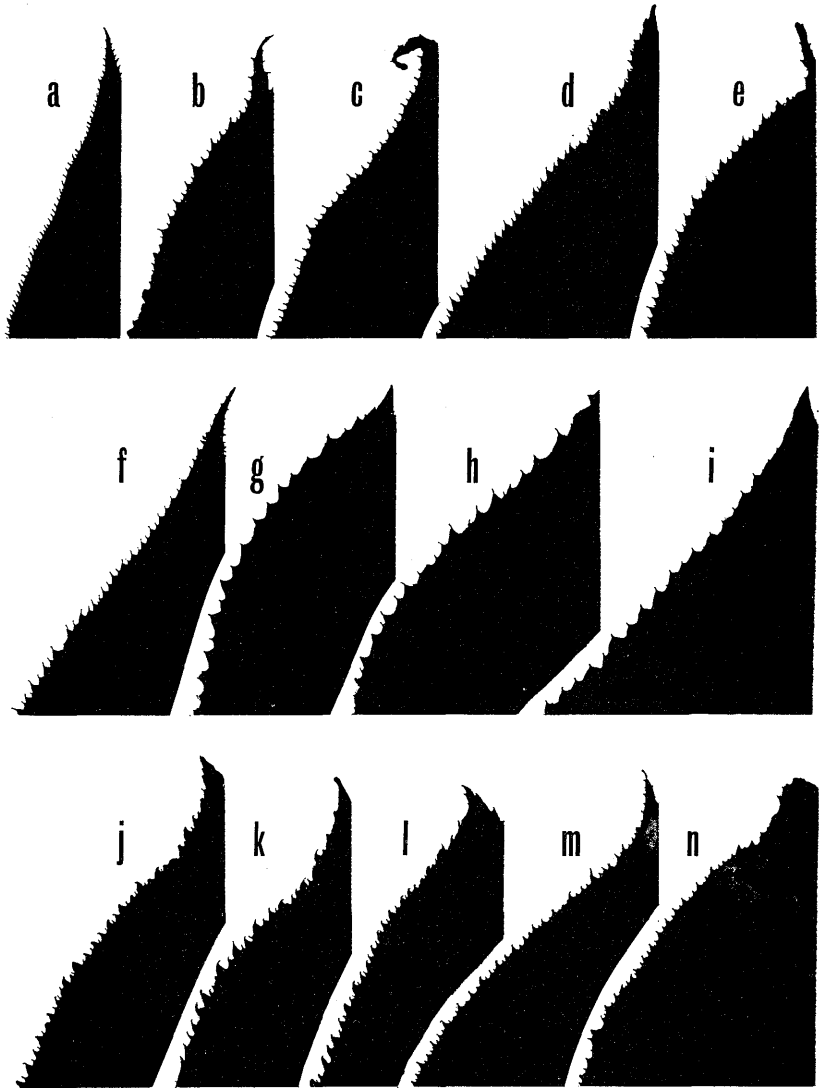


Fig. 4. The serration of leaves of *Hydrangea involucrata* Sieb. (a-i), *Hydrangea* sp. from Minami Iwojima (j-l) and *H. robusta* Hook. f. et Thoms. (m & n). a: Izu, Yugashima (Satake s. n.). b: Kiso, Ontakesan (Koidzumi s. n.). c: Kanagawa Pref., Futagoyama (Ohba & Akiyama 1063). d: Fukushima Pref., Nakagawa (Matsumura s. n.). e: Toyama Pref., the upper Satsukigawa (Hara & Kurosawa s. n.). f: Tokyo Pref., Asakawa (Kanai 803). g: Shizuoka Pref., Haibaragun, Hibaragawa (Yamazaki s. n.). h: Yamanashi Pref., Mt. Kuro-dake (Midorikawa 811017). i: Shinano, Otaki-mura (Mizushima s. n.). j-l: Minami Iwojima Is. (Ohba 826052). m: Taiwan, Wutaishan (Namba et al. 1272). n: Taiwan, Ariko-Banti (Matuda s. n.). All $\times 2/3$.

the lower surface of the leaves are stout and pointed with some 50 μm wide just above the somewhat swollen base, while those of *H. involucrata* (Fig. 2C & D) and the Taiwanese *H. robusta* (Fig. 2E & F) are slender with some 25 μm wide at the same portion. *H. involucrata* is rather smooth on the under surface, but the Minami Iwojima *Hydrangea* and Taiwanese *H. robusta* are rugged, particularly in the Minami Iwojima one (Fig. 3C). The serration of leaf is changeable and variable in both species (Fig. 4). So that the serration is hardly useful to distinguish these two species from one another. It is, therefore, difficult to identify the Minami Iwojima *Hydrangea* specifically based on the present material.

References

- Chun, W.-Y. 1954. A census and preliminary study of the Chinese Hydrangeoideae. *Acta Phytotax. Sin.* 3: 101-205. McClintock, E. 1957. A monograph of the genus *Hydrangea*. *Proceed. Calif. Acad. Sci.* 4th Ser. 29: 147-256. Okutomi, K. 1982. Vegetation of Isl. Minami-Iwojima (San Augustino). Conservation report of the Minami-Iwojima Wilderness Area, 146-174. Rehder, A. 1911. *Hydrangea* in C.S. Sargent, *Plantae Wilsonianae*, 1: 25-41.

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南硫黄島では 2 種のアジサイ属植物を採集した。そのうちの 1 種はガクアジサイであり、他は火山列島新産であるが、正体のはっきりしないものである。火山列島では、北硫黄島と南硫黄島にガクアジサイを産する。火山列島のは、イオウトウアジサイとしてガクアジサイから区別されることがある。両者には、生理生態的な差はみられるものの形態から分けることは困難である。他の 1 種（ナンカイアジサイ、新称）は、花も果実もない個体しか見いだせなかった。葉の諸形質からタマアジサイや *Hydrangea aspera* D. Don. 特に台湾の *H. robusta* Hook. f. et Thoms. に近似すると考えられるが、毛の性質が両者と異なる。種レベルでの正しい同定のためには、どうしても再度渡島して、新たな材料の入手が不可欠である。