

Tricyrtis puberula and *T. latifolia* (Liliaceae) —A Review of Their Taxonomy and Ranges

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Tricyrtis puberula, *T. latifolia* and several other related taxa are reviewed taxonomically. Both *T. puberula* and *T. latifolia* can be regarded as distinct species each with marked diagnostic features. *Tricyrtis pseudolatifolia*, recently described from China, is reduced to *T. puberula*, as it has no significant difference from the latter. *Tricyrtis bakeri* and *T. makinoi* are regarded as conspecific with *T. latifolia*. Lectotypification of *T. bakeri* is made. *Tricyrtis latifolia* has often been recorded from China, but its occurrence is negated because of the absence of any supporting evidence. It is concluded that *T. puberula* is endemic to China, while *T. latifolia* to Japan. *Tricyrtis maculata*, to which *T. puberula* has often been referred, is quite a different entity from *T. puberula* and *T. latifolia*. Flowers of both *T. puberula* and *T. latifolia* are protandrous and last for two days, acting as male on the first day and as female on the second day. *Tricyrtis puberula* is self-compatible, as far as a preliminary test indicated. *Tricyrtis puberula* and *T. latifolia* are pseudo-annuals. The relationships between *T. puberula* and *T. latifolia* are discussed briefly.

Key words: Blooming process, pollination mechanism, protandry, self-compatibility, taxonomic revision, *Tricyrtis*.

Maximowicz (1867) described *Tricyrtis latifolia* based on material from northern Honshu, Japan. Since then, the knowledge on the distribution in Japan has been accumulated (Franchet and Savatier 1879, Matsumura 1905, Ohwi 1953, 1965, Okuyama 1958, Kitamura 1964, Takahashi 1980). Some botanists reported that this species also occurs in China (Wright 1903, Anonymous 1976a, Takahashi 1980, 1987, Chen and Takahashi 2000, Tsi 2002).

Meanwhile, Nakai and Kitagawa (1934) described *Tricyrtis puberula* from Hebei Province, northeastern China. This species has often been treated as conspecific with *T. latifolia* Maxim. (Takahashi 1980, Chen

and Takahashi 2000), with *T. maculata* (D. Don) J. F. Macbr. (= *T. pilosa* Wall.) (Tsi 1980, Tu 1990, Yang 1991, Zhang 1991), or with *T. esquirolii* (H. Lév.) H. Hara (Hara 1988).

Koidzumi (1924) published a new name *Tricyrtis bakeri*, based on the figure and the description given by Baker (1881) under the name of *Tricyrtis macropoda* Miq. in Plate 6544 of Curtis's Botanical Magazine. *Tricyrtis bakeri* has also frequently been included in *T. latifolia* Maxim. (Takahashi 1980, Chen and Takahashi 2000), in *T. maculata* (Tsi 1980, Tu 1990, Yang 1991, Zhang 1991), or in *T. esquirolii* (Hara 1988).

Takahashi and Koyama (2006) recently

described *Tricyrtis pseudolatifolia* from Sichuan Province, China. According to them, this species is similar to *T. latifolia*, but distinct. They did not make any remarks on *T. puberula* in connection with their new species.

Thus, the taxa mentioned above have been taxonomically controversial and need to be reviewed and revised.

Materials and Methods

Herbarium specimens housed in several herbaria and some living plants of *Tricyrtis latifolia* and *T. puberula* cultivated in the experimental nursery of our university were examined.

Sources of the living plants chiefly examined are listed below with their codes (L-1, P-1, etc.). Voucher specimens are preserved in TEU.

Tricyrtis latifolia Maxim.

- L-1: Collected in Ôme-shi, Tokyo Pref., Japan, on 8 Aug. 2005 by N. Tanaka (s.n.).
- L-2: Collected in Kazuma, Hinohara-mura, Tokyo Pref., Japan, on 3 Aug. 1984 by N. Tanaka (s.n.).
- L-3: Collected on Mt. Akagi, Seta-gun, Gunma Pref., Japan, on 17 Jun. 1994 by N. Tanaka (s.n.).
- L-4: Collected on Mt. Futatsu-dake, Ikahomachi, Gunma Pref., Japan, on 18 Jul. 1984 by N. Tanaka (s.n.).
- L-5: Collected in Kamioka-cho, Hida-shi, Gifu Pref., Japan, in Sept.–Nov. 2006 by S. Murakami (s.n.).
- L-6: Locality unknown, raised from seeds supplied by Royal Botanic Garden Edinburgh, Scotland, U. K. (accession number 19380540).
- L-7: Locality unknown, cultivated plants supplied by a Japanese nursery in Hokkaido, Japan.

Tricyrtis puberula Nakai & Kitag.

- P-1: Originally collected in northwestern Sichuan Province, China; supplied by a Chinese nursery (the locality information given by the supplier).
- P-2: Originally collected in western Hubei Province, China; supplied by a Chinese nursery (the locality information given by the supplier).
- P-3: Collected in southern part of Gansu Province, China, in Oct. 1980 by G. L. Chu (s.n.).
- P-4: Locality unknown, raised from seeds supplied by Royal Botanic Garden Edinburgh, Scotland, U. K. (accession number 19660338).
- P-5: Locality unknown, supplied by a Japanese nursery (N. Tanaka s.n., 25 July, 1987).

All the materials, including those previously named by others, were identified by the present author.

Observations on the blooming process of *Tricyrtis latifolia* (L-1, L-5–7) and *T. puberula* (P-1–4) were made outdoors in the nursery of our university in the daytime, between ca. 6 a.m. and 7 p.m., during the flowering period, June to September. Terms ‘morning’ and ‘afternoon’ are used in the text to mean those only in the daytime, respectively.

To investigate the presence of self-compatibility in *Tricyrtis puberula*, two plants (P-3) were used. A total of seven, second-day flowers borne on them were artificially self-pollinated. Except the short period to carry out artificial self-pollination, flowerbuds at least one day before anthesis to wilted flowers at least one day after anthesis were covered each with a light, thin, finely meshed net to prevent cross-pollination by insects.

Results and Discussion

Identities of several taxa related to *Tricyrtis puberula* and *T. latifolia*

Tricyrtis bakeri Koidz. and *T. makinoi* Tatew.

The plant figured under the name of *Tricyrtis macropoda* in Plate 6544 of Curtis's Botanical Magazine is no doubt *T. latifolia*. The taxonomic account of *T. macropoda* for the Plate was given by Baker (1881). His description of the plant seems to include the characters of both *T. latifolia* and *T. macropoda*. For instance, the stem is described as "flexuose", the leaves as "amplexicaul", and the perianth as "infundibular, about an inch long, and with copious minute purplish-brown spots". These characters are consistent or more consistent with *T. latifolia*. On the other hand, the perianth is described as "whitish within", in spite of the yellow perianths figured in the Plate. To my knowledge, *T. latifolia* constantly has a yellowish perianth, while *T. macropoda* a white one. That is, the color of the perianth described coincides with that of *T. macropoda*. He also described the leaves as "at first slightly pilose, but when mature glabrous on the upper surface, finely pubescent beneath (foliis...facie calvatis dorso pubescentibus)". This passage seems more compatible with the leaves of *T. macropoda*, as the leaves of *T. latifolia* are usually glabrous or nearly so.

Shortly before his contribution to the Magazine (Baker 1881), Baker (1879) gave detailed descriptions of both *T. macropoda* and *T. latifolia* in one of his papers, quoting several herbarium specimens. In this paper, the leaves of *T. macropoda* are described as "folia...facie glabra dorso pubescentia", while those of *T. latifolia* simply as "glabra". The perianth color of *T. macropoda* is described as "albido-purpureum". These passages for *T. macropoda* bear a strong similarity to those corresponding ones in the Magazine. This may imply that some of his

knowledge of *T. macropoda* is reflected in the account in the Magazine. Meanwhile, the plant figured in Plate 6544 in the Magazine is *T. latifolia*, as stated earlier. It flowered at Kew in 1880 (Baker 1881). As Baker took it for *T. macropoda*, it is quite natural that he also included some characters of *T. latifolia* in the account.

Tricyrtis bakeri named by Koidzumi (1924) is based on both the figure and the description by Baker (1881) in the same Magazine. The figure, agreeing with *T. latifolia*, is designated here as the lectotype for *T. bakeri*, as the specific definition of *T. bakeri* by Koidzumi is consistent in many principal characters with the figure, and the description by Baker (1881) include the characters of both *T. latifolia* and *T. macropoda*, as aforementioned. Accordingly, *T. bakeri* comes under the name *T. latifolia*. Later, Koidzumi (1929) applied the name *T. bakeri* to several specimens from China. As far as I examined some of them, there was no specimen of *T. latifolia*. They were three other species of this genus, including *T. puberula*.

Tricyrtis makinoana, often occurring in northern Japan, is apparently a form of *T. latifolia* of which the stem in the distal part and the veins on the abaxial surface of the leaves are sparsely puberulent. It seems that this form cannot clearly be demarcated from the glabrous one, due to the presence of intermediate forms.

Tricyrtis pseudolatifolia Hir. Takah. & H. Koyama

Tricyrtis puberula has puberulent leaves and stems, and somewhat large, oblong-lanceolate or lanceolate capsules (2.8–4.1 cm long in the syntypes). One of the syntypes housed in TI has some roots over which many minute deep orange spots are scattered. Plants essentially identical with *T. puberula* occur not only in northeastern China, where the syntypes were collected,

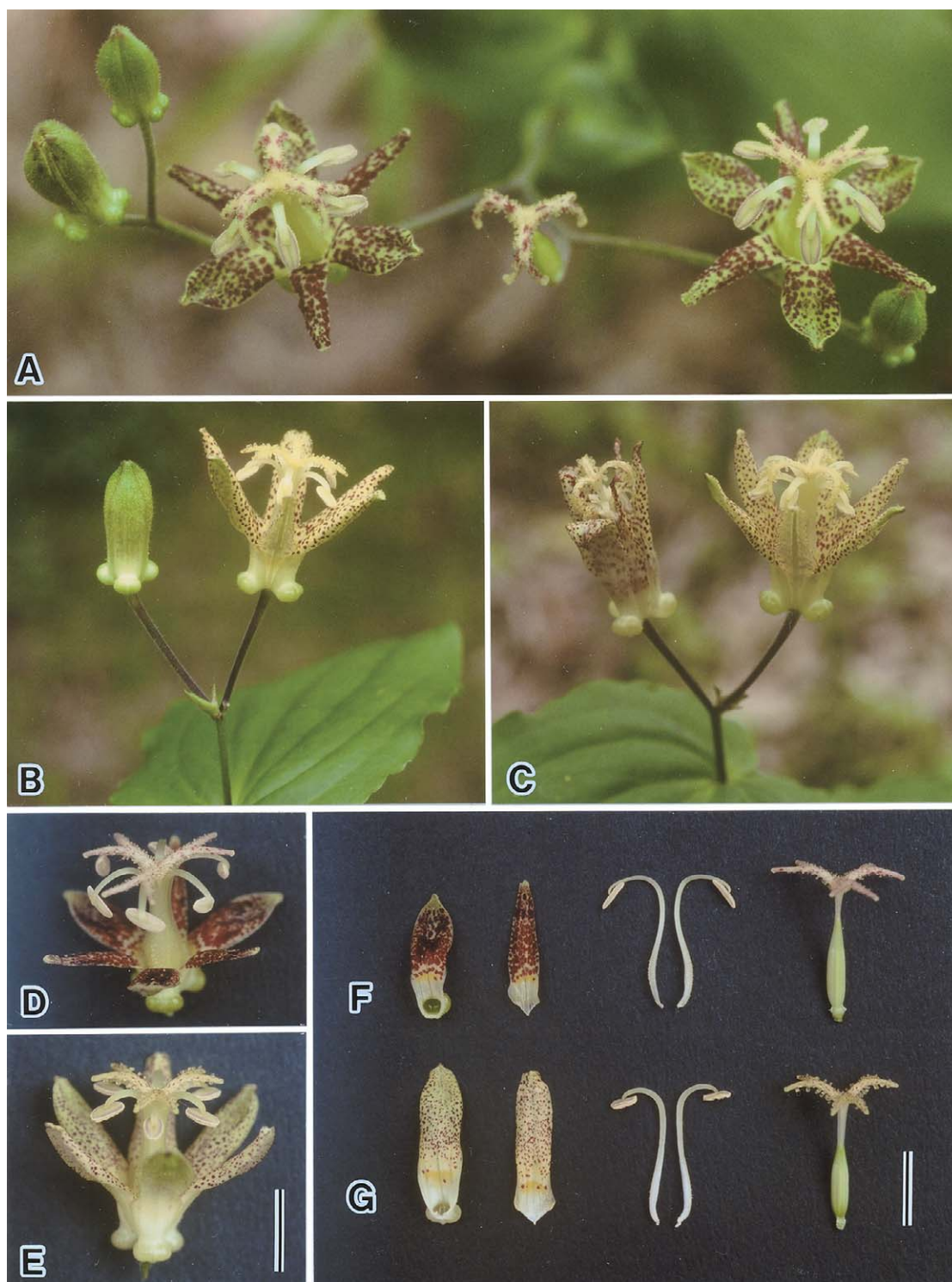


Fig. 1. Flowers of *Tricyrtis puberula* (A, D, F) and *T. latifolia* (B, C, E, G). A. Cyme with second-day flower (left) and first-day flower (right) (source P-4); at ca. 10:50 a.m., 24 Jun. 2006. B. Cyme with first-day flower (L-7); on 3 Jun. 2006. C. Cyme with fourth-day wilted flower (left) and second-day flower (right) (same plant as B); at 11:10 a.m., 6 Jun. 2006. D. First-day flower (P-1); at 12:50 p.m., 8 Jul. 2006. E. First-day flower (L-1); at same time as D. F. Parts of first-day flower aligned (P-1); at 2:32 p.m., 8 Jul. 2006. From left to right, outer tepal, inner tepal, two stamens and pistil. G. Parts of first-day flower aligned (L-1) as in F; at same time as F. Scale bars: D, E 1 cm (at E); F, G 1 cm (at G).

but also in more southwestern districts of China. *Tricyrtis pseudolatifolia* described from Sichuan Province has no significant difference from *T. puberula*, and is therefore referred to the latter.

Tricyrtis maculata and *T. esquirolii*

Hara (1988) included both *Tricyrtis bakeri* and *T. puberula* to *T. esquirolii*. *Tricyrtis esquirolii* has, however, greenish white tepals, filaments with reddish purple spots, and main fibrous roots without any spots of orange pigment, and is hence quite a different entity from the two species.

Tricyrtis maculata is very close to *T. esquirolii*, sharing many features with it. *Tricyrtis maculata* also differs from *T. bakeri* and *T. puberula* by the same features as those of *T. esquirolii*.

Both *Tricyrtis maculata* and *T. esquirolii* may have a close affinity with *T. puberula* and *T. latifolia*, but are distinct from them. The features and taxonomic status of *T. maculata* and *T. esquirolii* will be discussed elsewhere.

Comparison of *Tricyrtis puberula* and *T. latifolia*

A) Sexual reproductive characters

i) Flowers in blooming process

Flowers of *Tricyrtis puberula* and *T. latifolia* open for two days.

Tricyrtis puberula: On the first day in full bloom, the tepals of *T. puberula* are explanate from about 1/3 above the base, and the perianth is salverform (Figs. 1A, right flower, 1D). On the second day, the tepals gradually ascend and eventually become nearly upright toward the evening. In the process of their ascending, the inner tepals always precede the outer ones. The second-day flowers with ascending tepals of *T. puberula* look funnellform.

Tricyrtis latifolia: The tepals of *T. latifolia* are obliquely expanded (at an angle of ca. 45 degrees) in the distal 1/2 to 2/3 (Figs. 1B,

1E). The tepals gradually become less expanded on the second day, and eventually become nearly upright toward the evening. In this species also, the inner tepals tend to slightly precede the outer ones in the closing process. The perianth of *T. latifolia* is funnellform during the two-day blooming period (Figs. 1B, 1C, 1E).

Thus, the two species differ in the degree of expansion of the tepals (Figs. 1A–1E), though the second-day flowers with ascending (closing) tepals of *T. puberula* superficially resemble the flowers of *T. latifolia* in shape.

ii) Morphological and functional floral characters

The flowers of *Tricyrtis puberula* are usually slightly smaller than those of *T. latifolia* (see the key and the descriptions below; Figs. 1D, 1E). *Tricyrtis puberula* has pale green or pale yellowish green tepals (Figs. 1A, 1D, 1F) often with a faint yellow spot on the lower part (Figs. 1D, 1F). On the other hand, *T. latifolia* has yellow or pale yellow tepals each with a more distinct (orange-) yellow spot (Figs. 1B, 1C, 1E, 1G). The inner tepals of *T. puberula* are narrowly deltoid(-lanceolate) (Fig. 1F), while those of *T. latifolia* are usually narrowly elliptic-lanceolate (Fig. 1G). In comparison with *T. latifolia*, *T. puberula* has somewhat longer anthers (Figs. 1F, 1G), a style of which the lower columnar part is relatively shorter and the upper branches are more extended (Figs. 1D, 1F, 2A, 2E vs. 1E, 1G, 2B, 2F in *T. latifolia*), filaments more broadly expanded distally (Figs. 1D, 1F vs. 1E, 1G), shorter glandular hairs on the abaxial surface of the outer tepals and on the midvein of the inner tepals, and more abundant, smaller, somewhat more slender bladder hairs (usually shortly acicular to pyriform or ovoid in *T. puberula* vs. usually globular in *T. latifolia*) on the upper branches of the style (Figs. 2A, 2C, 2E vs. 2B, 2D, 2F in *T. latifolia*).

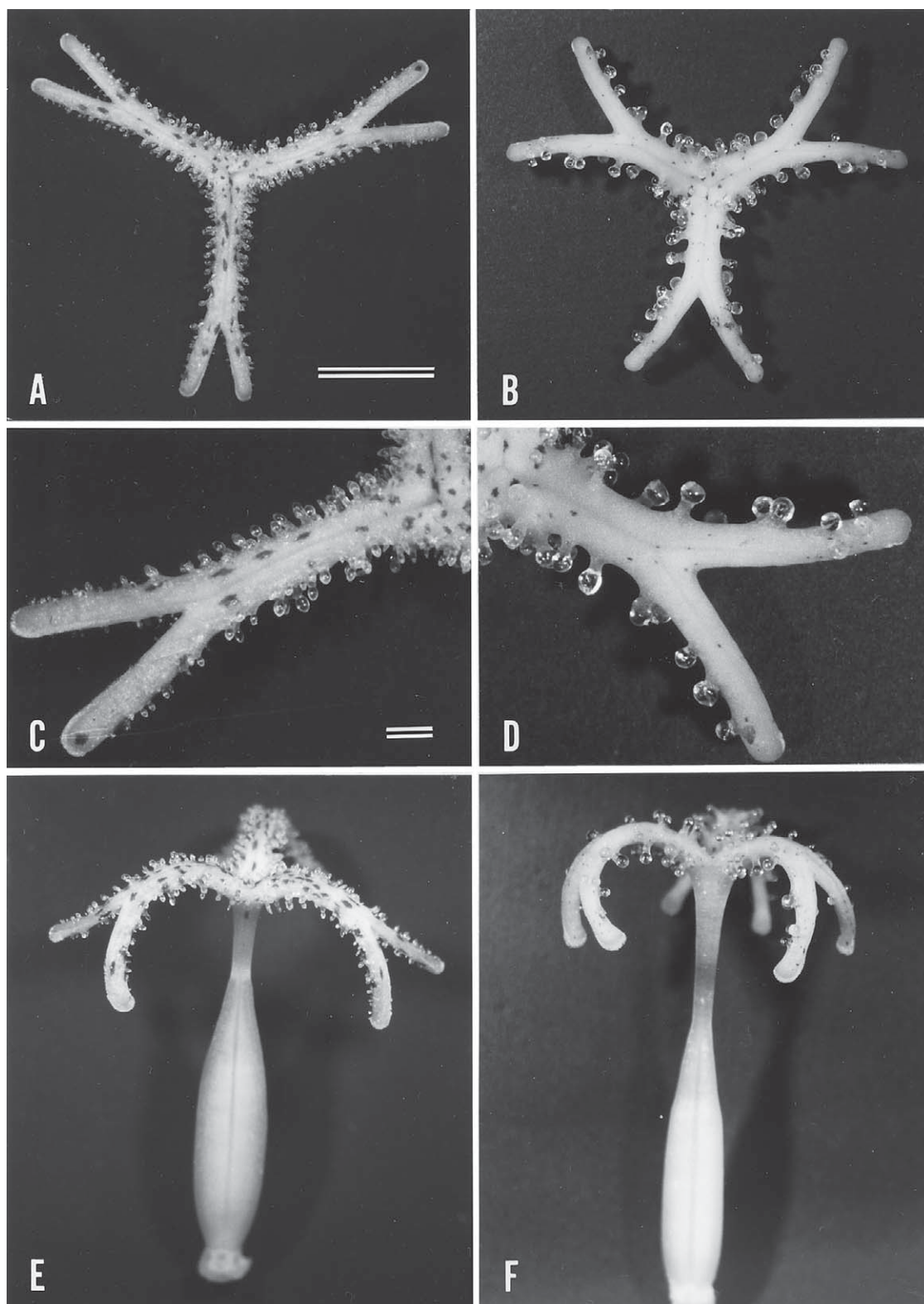


Fig. 2. Pistils of *Tricyrtis puberula* (source P-3) (A, C, E) and *T. latifolia* (L-1) (B, D, F). A–D. First-day flower. E, F. Second-day flower. A. Stretched stylar branches in front view; at ca. 5:15 p.m., 24 Jun. 2006. B. Stretched stylar branches in front view; at 12:20 p.m., 15 Jul. 2006. C. Part of A enlarged, showing many small bladder hairs on stylar branch. D. Part of B enlarged, showing comparatively large globular bladder hairs on stylar branch. E. Whole pistil with recurved stylar branches; at ca. 3:30 p.m., 24 Jun. 2006. F. Whole pistil with recurved stylar branches; at 1:43 p.m., 19 Jul. 2006. Scale bars: A, B, E, F 5 mm (at A); C, D 1 mm (at C).

The tepals of the two species have numerous purplish brown or reddish purple spots scattered over them (Figs. 1A–1G), and the outer tepals have a nectary at the base (Figs. 1A–1G). These may appeal to the vision or taste of some kinds of insects. The flowers are apparently entomophilous, as reported by Takahashi (1984) in *T. latifolia*.

iii) Sexual organs in the blooming process

The following are the results of observations mainly on the sexual reproductive organs in the blooming process of *Tricyrtis puberula* and *T. latifolia*.

One day before full bloom: Flower buds of *Tricyrtis puberula* split at the apex in the daytime. Those of *T. latifolia* remain closed or split apically in the daytime. In those split buds, the anthers still remain closed and the stigmata are immature.

First day in full bloom: In the morning, the anthers are dehiscent, exposing pollen. The upper branches of the style are ascending or spreading horizontally (Figs. 1A, right flower, 1B, 1D–1G, 2A, 2B, 3A). The stigmata, situated on the distal bifurcate branchlets of the style, look immature, as their papillae are still tiny and compactly disposed (Figs. 3B, 3C, 4A). The anthers are suspended by excurved filaments, with their ventral sides directed downward (Figs. 1A, right flower, 1B, 1D, 1E). They are located lower than the stigmata (e.g., Figs. 1A, right flower, 1B, 1D, 1E, 3A, 3B). Most pollen is usually removed by insects (e.g., some kinds of bumblebees).

Second day in bloom: The upper branches of the style are strongly recurved with the stigmatic apices directed downward (e.g., Figs. 2E, 2F, 3D), and the distal bifurcate branchlets of the style straddle the anther of the outer stamen (e.g., Figs. 1A, left flower, 1C, 3D). The bifurcate branchlets are more elongate and divergent than those on the previous day. The stigmata look mature with fully developed papillae (Figs. 3E, 4B). They

are located slightly lower than the anthers (e.g., Figs. 1C, 3D).

The third day: The tepals, stamens and the style look faded.

The observations above indicate that the flowers of *Tricyrtis puberula* and *T. latifolia* are protandrous, acting as male on the first day and as female on the second day. Both the anthers and the stigmata come to maturity by the morning of the first day and by the morning of the second day, respectively. This diurnal maturity of the sexual reproductive organs seems to have developed as a result of adaptation to the diurnal activities of insect pollinators. Actually, I have often seen in the daytime some kinds of bumblebees visit the flowers and move on the tepals for sucking nectar. In the first-day flowers, while the bee forages on the tepals, its back rubs the ventral side of the anthers and carries the pollen away. During this behavior, the bee scarcely touches the immature stigmata which are located higher than the anthers (Figs. 1A, right flower, 1B, 1D, 1E, 3A, 3B). Similarly, in the second-day flowers, the bee smears the mature stigmata, which came down to be situated lower than the anthers (e.g., Figs. 1A, left flower, 1C, 3D), with pollen carried on its back, and thus pollination is achieved. These observations on the practice of pollination essentially agree with those by Takahashi (1984) in *T. latifolia*. According to his paper, the primary pollinators of *T. latifolia* are bumblebees, such as *Bombus diversus* and *B. honshuensis*.

From the observations above it can safely be said that the two species possess the floral mechanism to promote cross-pollination and outbreeding.

While cross-pollination is promoted by protandry, self-pollination is also expected to occur in the two species. For instance, both the first- and the second-day flowers are often borne simultaneously on the same individuals. Further, both species can propagate

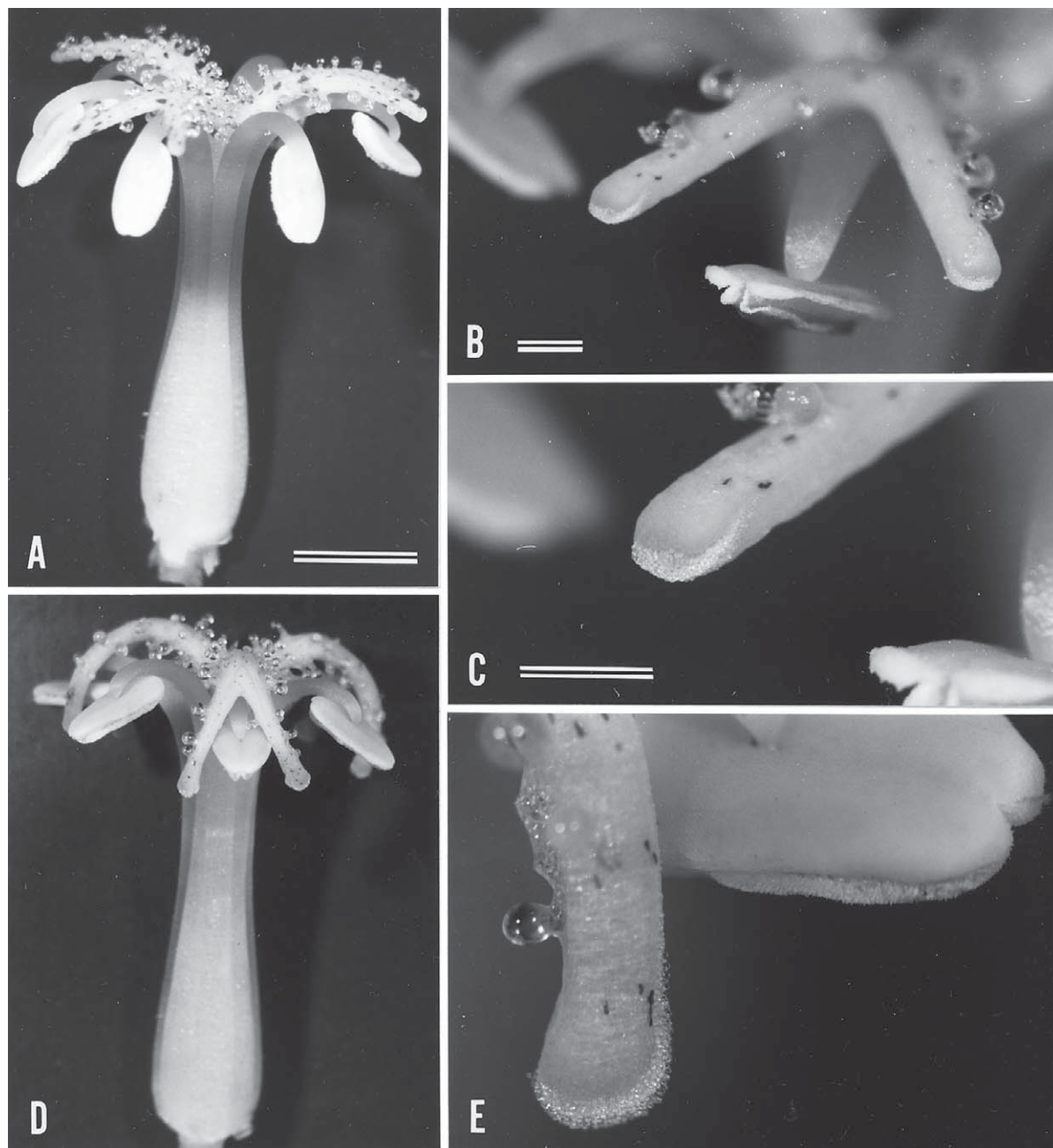


Fig. 3. Sexual organs of first-day flower (A–C) and second-day flower (D, E) of *Tricyrtis latifolia* (source L-1). A. Pistil and surrounding stamens, showing dehiscent anthers situated lower than immature stigmata; on 9 Aug. 2005. B. Bifurcate stigmatic branchlets situated slightly higher than dehiscent anthers; at 12:05 p.m., 15 Jul. 2006. C. Part of B enlarged, showing immature stigma with undeveloped papillae; at 12:10 p.m., 15 Jul. 2006. D. Pistil and surrounding stamens, showing strongly recurved stylar branches, straddling anthers of outer stamens; at 1:37 p.m., 19 Jul. 2006. E. Mature stigma with developed papillae; at 1:31 p.m., 19 Jul. 2006. Scale bars: A, D 5 mm (at A); B 1 mm; C, E 1 mm (at C).

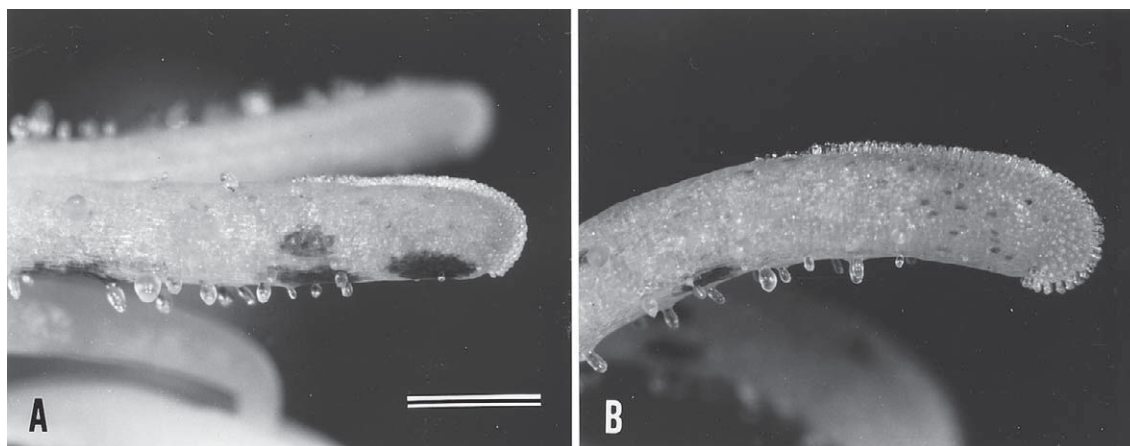


Fig. 4. Stigmata of first-day flower (A) and second-day flower (B) of *Tricyrtis puberula* (source P-3). A. Immature stigmata with undeveloped papillae on straight terminal branchlets of style; at ca. 11:43 a.m., 25 Jun. 2006. B. Mature stigma with developed papillae on recurved terminal branchlet of style; at 11:20 a.m., 25 Jun. 2006. Scale bar: A, B 1 mm (at A).

vegetatively by means of subterranean stolons and ramets, and hence the same genotypic plants may grow adjacent to each other in wild populations. In such situations it is likely that practical self-fertilization (including geitonogamy) occurs within the same plants and/or between the same genotypic plants, as pointed out by Takahashi (1984) in *T. latifolia*.

iv) Self-compatibility

Preliminary experiments were carried out to investigate the presence of self-compatibility in *Tricyrtis puberula*. All of the flowers tested fruited well and set sound seeds, which are similar in all respects to those set by open pollination. *Tricyrtis puberula* seems, therefore, self-compatible, as far as the plants tested are concerned. Takahashi (1984) also reported that *T. latifolia* is self-compatible.

B) Vegetative characters

Both *Tricyrtis puberula* and *T. latifolia* produce subterranean stolons and ramets by which they can propagate vegetatively. *Tricyrtis puberula* tends to have fewer and shorter stolons than *T. latifolia* (see the

descriptions below). Each stolon develops a ramet at the tip. Leaving only ramets, the whole vegetative part of the plants dies in winter. The ramets become activated and begin to grow in the following spring. Namely, as for vegetative parts, every generation dies annually, leaving ramets as next generation. Thus, it can be said that the two species are pseudo-annuals, as are some species of *Disporum* Salisb. ex D. Don (Kawano and Takasu 2004).

The main fibrous roots of *Tricyrtis puberula* have numerous minute deep orange spots scattered over them, while those of *T. latifolia* have fainter or no spots.

The leaves of *Tricyrtis puberula* are pubescent, while those of *T. latifolia* are usually glabrous and slightly thinner in texture.

Geographical ranges of *Tricyrtis puberula* and *T. latifolia*

Tricyrtis latifolia has often been recorded from China by some botanists, as stated earlier. As far as I have checked, there exists no specimen of true *T. latifolia* from China. Several specimens from China identified previously as *T. latifolia* by Wright (1903) or by Takahashi (1980) are not *T. latifolia*.

Wright (1903) also cited a specimen (A. Henry 1485) from Taiwan under the name of *T. latifolia*, but it is actually *T. formosana* Baker var. *lasiocarpa* (Matsum.) Masam. (*T. lasiocarpa* Matsum.). In Flora Tsinlingensis (tomus 1, pars 1, p. 335. 1976), *T. latifolia* is recorded with a figure (t. 316) from Shaanxi Province, China. I had the opportunity to examine several specimens from the same Province, which had been annotated by Chinese botanists as either *T. maculata* or *T. latifolia*. All of them proved to be *T. puberula*. Namely, there is no evidence to support the occurrence of *T. latifolia* outside Japan. Judging from the present knowledge, *T. latifolia* is endemic to Japan, while *T. puberula* to China. It is noteworthy that the ranges of the two species are markedly disjunctive despite their close affinity.

Relationships between *Tricyrtis puberula* and *T. latifolia*

Both *Tricyrtis puberula* and *T. latifolia* can be regarded as distinct species each with marked diagnostic features. But, at the same time, they are apparently very closely related to each other. For instance, their perianths are similar in the ground color (green, yellowish green or yellow; Figs. 1A–1G), in having copious fine reddish purple (or purplish brown) spots (Figs. 1A–1G), and in forming a short cylindrical base (Figs. 1B–1E). The two species also share comparatively large anthers (Figs. 1D–1G), filaments pubescent below and lacking any pigmentary spots (Figs. 1F, 1G, 3A, 3D), and comparatively early flowering periods usually beginning in June (June and July in *T. puberula*; June (sometimes May) to August in *T. latifolia*)

Tricyrtis puberula and *T. latifolia* also seem to have some affinities with *T. maculata* (s. str.), *T. macropoda*, *T. affinis* and *T. setouchiensis* Hir. Takah., as all these species share many features. For instance, their stems have retrorse hairs (when hairs

are present), their perianths form a short cylindrical base, and their filaments have short retrorse hairs proximally. *Tricyrtis latifolia* is unusual among them for its yellowish, funnellform perianths (Figs. 1B, 1C, 1E, 1G) and for comparatively large bladder hairs on the styler branches (Figs. 2A–2F). Presumably, these features of *T. latifolia* derived from those in *T. puberula* (e.g., yellow perianths of *T. latifolia* from more greenish ones of *T. puberula*; similarly, funnellform perianths from salverform ones). *Tricyrtis latifolia* appears to be an advanced form derived from an ancestor close to *T. puberula*.

Taxonomy

Key to the species

- 1a. Main fibrous roots tinged with orange, having numerous minute deep orange spots scattered over them. Leaves puberulent on both surfaces. Tepals 15–22 mm long, pale green or pale yellowish green, explanate in distal 2/3 on first day in bloom, gradually ascending on second day. Yellow spot indiscernible or faintly present on lower part of tepals. Inner tepals narrowly deltoid(-lanceolate). Bladder hairs on upper branches of style numerous, usually narrowly conic to ovoid, small (to 0.35 mm diameter). Glandular hairs on abaxial surface of outer tepals to 0.4 mm long.....1. *T. puberula*
- 1b. Main fibrous roots whitish or pale yellowish brown, often having minute pale (yellowish) orange spots. Leaves glabrous or nearly so adaxially, glabrous or sometimes sparsely puberulent on veins abaxially, somewhat thin-textured. Tepals 23–27 mm long, yellow or pale yellow, obliquely expanded in distal (1/2–)2/3. Orange yellow spot present on lower part of tepals. Inner tepals narrowly elliptic-lanceolate. Bladder hairs on branches of style usually not so numerous, mostly globular and comparatively large (to 0.6 mm diameter). Glandular hairs on abaxial

surface of outer tepals to ca. 0.8 mm long
2. *T. latifolia*

1. ***Tricyrtis puberula*** Nakai & Kitag., Rep. First Sci. Exped. Manch. **4** (1): 19, t. 7 (1934); Liou (ed.), Clav. Pl. Chin. Bor.-Orient. 582, t. 219–1 (1959); Kitag., Lineam. Fl. Mansh. (Rep. Inst. Sci. Res., Manch. **3**, append. 1) 143 (1939), Neo-Lineam. Fl. Mansh. 184 (1979). Type: China. [Hebei Province]. Hsing-lung-t'ang (興隆堂 Koryudo)–Pei-ying-fang (北營房 Hokueibo), 27 Aug. 1933, T. Nakai & al. (syntypes in TI!).

Tricyrtis pseudolatifolia Hir. Takah. & H. Koyama in Acta Phytotax. Geobot. **57**: 200 (2006), **syn. nov.** Type: China. Sichuan Province. Pingwu County, Muzhuo, 1750 m alt., H. Takahashi 20018 (holotypus in KUN n.v., isotypus in TNS n.v.).

Tricyrtis latifolia auct. non Maxim.: Wright in J. Linn. Soc. **36**: 141 (1903), p. p.; Inst. Bot. Bor.-Occid. Acad. Sin., Fl. Tsinling. **1** (1): 335, f. 316 (1976); Takah. Hir., Sci. Rep. Fac. Educ., Gifu Univ. (Nat. Sci.) **6** (4): 631 (1980), p. p.; S. C. Chen & Hir. Takah., Fl. China **24**: 153 (2000), p. p.; Z. H. Tsi, High. Pl. China **13**: 83, t. 119, color photo 64 (2002).

Tricyrtis bakeri auct. non Koidz. (1924): Koidz. in Bot. Mag. (Tokyo) **43**: 390 (1929), p. p.; Inst. Bot. Acad. Sin., Icon. Corm. Sin. **5**: 429, t. 7688 (1976).

Tricyrtis pilosa auct. non Wall.: Inst. Bot. Bor.-Occid. Acad. Sin., Fl. Tsinling. **1** (1): 335, f. 316 (1976), p. p., saltem; S. C. Chen & Hir. Takah., Fl. China **24**: 152 (2000), p. p.

Tricyrtis maculata auct. non (D. Don) J. F. Macbr.: Z. H. Tsi, Fl. Reip. Pop. Sin. **14**: 32 (1980), p. p.; G. H. Yang, Fl. Sichuan. **7**: 23, t. 8 (1991), p. p.; Zhang J. X., Fl. Hebei. **3**: 485, f. 2154 (1991), p. p.

Pseudo-annual. Subterranean stolons (rhizomes) 1–3, to 4.5 cm long (under cultivation), annual, forming ramet at tip. Main fibrous roots tinged with orange, with innu-

merable minute deep orange spots scattered over them. Stem upright, simple, glabrous, sometimes puberulent distally, to 70 cm long (or to 95 cm long when inflorescence rachis included). Leaves cauline, elliptic to narrowly elliptic, ovate or oblong, acuminate at apex, shortly attenuate, obtuse or cordate at base, puberulent on both surfaces, 10–17 cm long, 3–9.5 mm wide. Cymes terminal, often also axillary in distal part of stem; peduncle and pedicels densely glandular-haired. Flowers to 12 per cyme, lasting for 2 days, 2.5–3.4 cm in diameter, unscented; tepals spreading horizontally from about 1/3 above base on first day in bloom, gradually ascending on second day in bloom, pale green or pale yellowish green, usually minutely spotted in purplish brown or reddish purple except basal part; orange yellow spot indiscernible or faintly present subbasally; outer tepals narrowly elliptic-oblong, with nectary at base, 16–21 mm long, 6–8.5 mm wide, glandular-haired abaxially; inner tepals narrowly deltoid-lanceolate, subhastate at base, 15–22 mm long, 3–5 mm wide in middle (5.5–6.5 mm wide in subhastately dilated base), glandular-haired on midvein abaxially. Stamens 6; filaments excurved distally, with short retrorse hairs in lower half, without any pigmentary (reddish purple) spots, united laterally in basal part, 17–24 mm long; anthers oblong or narrowly elliptic, extrorse, creamy, faintly dull purplish marginally, (3.5–)4–5.5 mm long. Pistil 1; style columnar below, trifurcate above, each branch further bifurcate distally; branches pale green or pale yellowish green, with numerous minute reddish purple spots and somewhat slender bladder hairs; basal columnar part 3–5 mm long; trifurcate branches 4.5–7.5 mm long; distal bifurcate branchlets 3–5 mm long; ovary linear-lanceolate, trigonous, pale green, 10–13 mm long. Capsules oblong-lanceolate or lanceolate, acute or subacuminate, triquetrous, 2.5–4.1 cm long, 6–9 mm wide, dehiscent septicidally above. Seeds ovate or

elliptic-ovate, acute, flattened, dark brown, 2.5–3.3 mm long, 1.5–2 mm wide.

Flowering: June to July.

Distribution: CHINA: Hebei, Henan, Shaanxi, Gansu, Sichuan, Hubei and Guizhou.

Chinese name: 東北油点草 (Anonym. 1959), 黄花油点草 (Anonym. 1976b).

Japanese name: Manshû-hototogisu (Nakai and Kitagawa 1934).

Other selected specimens examined: CHINA. **Hebei** (Hopei): Tsing-hsing-hsien, 1000 m, 23 Sept. 1934, K. M. Liou 3900 (K); Nei-giu-xian, 28 June 1951, Liu 519 (PE); Wulingshan, Miyake s.n. (TI). **Henan**: Funiu-shan, 1370 m, 17 Aug. 1958 J. Q. Fu 201 (KUN 303036); Xi-xia, 1350 m, 13 July 1960, Guan & al. 1075 (PE 721394). **Shaanxi**: Schen-si septentr., 1897, Giraldi s.n. (K); Taipeishan, 1910, W. Purdom 7548 (K); Lan-gao, 1800 m, 20 July 1959, fl., P. Y. Li 8229 (WUK 355525); Tai-bai, 1750 m, 15 Jul. 1959, fl., J. X. Yang 1278 (WUK 410165); Taipeishan, vicinity of Haopingszu, 24 Aug. 1937, Liou and Tsoong 252 (KUN 303024); Feng-xian, 1600 m, 4 Jul. 1960, fl., K. T. Fu 13004 (WUK 162943); Xi-tai-bai-shan, Bai-yun-xia, 1550 m, 8 July 1957, fl., K. T. Fu 9287 (WUK 89834); Hu-xian, 11 July 1951, fl., Guo 284 (WUK 28225); Wei-nan, Qing-gang-ping, 2000 m, 7 July 1952, T. P. Wang 15660 (WUK 61612); Fo-ping, 2100 m, 21 July 1952, Guo 1747 (PE). **Gansu**: Southern part, Oct. 1980, G. L. Chu s.n., cult. in Teikyo Univ., 30 Jun. 2006, N. Tanaka s.n. (TEU). **Sichuan**: Wenchuan-hsien, 25 July 1928, W. P. Fang 1495 (E); Chen-kou, 960 m, 6 July 1959, Y. L. Qiao 1336 (KUN 303121); Nan-chuan, 1780 m, 9 July 1964, Guan & al. 1257 (PE 848005). **Hubei**: Western Hupeh, Jul. and Oct. 1907, E. H. Wilson 369 (K); Nanto, E. H. Wilson 1485 (K); Hupeh, 3–6000 ft., A. Henry 5871 (K); W. Hupeh, E. H. Wilson 1485 (K); Badong, 2200 m, 21 July 1957, Fu & al. 925 (PE 530022). **Guizhou**: Weining, Cahn-ti, Oct. 18, 1930, Y. Tsiang 9191 (TI).

2. *Tricyrtis latifolia* Maxim. in Bull. Acad. Imp. Sci. St-Petersb. **11**: 435 (1867); Baker in J. Linn. Soc. **17**: 464 (1879); Franch. & Sav., Enum. Pl. Jap. **2**: 74 (1879); Matsum., Ind. Pl. Jap. **2** (1): 216 (1905); Makino, Ill. Fl. Jap. 755, t. 2263 (1940), rev. ed. (1949); Ohwi, Fl. Jap. 290 (1953), in Mey. F. G. & Walker E. (eds.), Fl. Jap. (in Eng.) 287 (1965); Okuyama, Col. Ill. Wild

Pl. Japan **3**: 31, t. 192 (1958); Kitam. in Kitam. & al., Col. Ill. Herb. Pl. Jap. **3**: 146, t. 40-252 (1964); Okuyama, Col. Ill. Alp. Fl. Jap. 192, t. 96-325 (1966); Takah. Hir. in Sci. Rep. Fac. Educ., Gifu Univ. (Nat. Sci.) **6** (4): 631 (1980), p. p.; Satake, Wild Flow. Jap. **1**: 25, t. 14-3 (1982). Type: In Nippon borealis principatu Nambu, Tschonoski (LE–n.v.).

Tricyrtis macropoda Miq. var. *glabrescens* Koidz. in Bot. Mag. (Tokyo) **38**: 97 (1924). Type: Japan. Prov. Shinano [Nagano Pref.], Agematsu, U. Faurie (KYO–n.v.). (After Takahashi 1980).

Tricyrtis bakeri Koidz. in Bot. Mag. (Tokyo) **38**: 103 (1924), p.p. **Lectotype (designated here)**: Bot. Mag. t. 6544 (1881), excl. descr.

Tricyrtis latifolia var. *emaculata* Honda in Bot. Mag. (Tokyo) **50**: 437 (1936). Type: Japan. Honshu. Circa Candogoya [Sandogoya] in monte Nasu, prov. Simotuke [Tochigi Pref.], anno 1935 [3 Aug. 1935], S. Sugaya [s.n.] (holotype–TI!). Nom. Jap. Muji-no-tamagawa-hototogisu.

Tricyrtis makinoana Tatew. in J. Jpn. Bot. **24**: 63 (1949). Type: Japan. Hokkaidô. Prov. Ishikari, Matsuyama Hot Spring, 5 Aug., 1947, M. Tatewaki 36028 (non 26028) (syntypes TI!, SAPA–n.v.); 20 Jul., 1949, Y. Fukiage s.n. (syntypes TI!, SAPA–n.v.). Nom. Jap. Hagaromo-hototogisu.

Tricyrtis latifolia var. *makinoana* (Tatew.) Hiyama in J. Jpn. Bot. **27**: 26 (1952).

Tricyrtis latifolia var. *nikkomontana* Hiyama in J. Jpn. Bot. **27**: 26 (1952). Type: Japan. Hondo. Prov. Shimotsuke [Tochigi Pref.], in regione montana Nikko, July 26 1951, T. Tanabe & H. Yoshitake (TNS!). Nom. Jap. Nikkô-hototogisu.

Tricyrtis macropoda auct. non. Miq.: Franch. & Sav., Enum. Pl. Jap. **2**: 74 (1879), p. p., Sômokou Zoussetz **7**: 23 (non 34); Baker in Bot. Mag. t. 6544 (1881), p. p.

Pseudo-annual. Subterranean stolons (rhizomes) 3–11, to 13 cm or longer, annual,

forming ramet at tip. Main fibrous roots whitish or pale yellowish brown, often with numerous minute pale yellowish orange spots. Stem upright, sometimes descending when growing on cliff, glabrous, sometimes sparsely puberulent distally, flexuose above, to ca. 1 m long. Leaves cauline, ovate, elliptic, oblong, obovate or oblanceolate, acuminate at apex, usually amplexicaul, often wavy marginally, glabrous or nearly so adaxially, glabrous or sometimes slightly puberulent on veins abaxially, somewhat thin-textured, 10–18 cm long, 4–7.5 cm wide; main veins impressed above. Cymes terminal, sometimes also axillary in distal part of stem; peduncle and pedicels densely glandular-haired; bracts small, caducous. Flowers to 12 per cyme, lasting for 2 days, (sometimes) faintly scented; tepals obliquely expanded at angle of ca. 45 degrees in distal 1/2 to 2/3, yellow or pale yellow, often slightly greenish above, minutely spotted in reddish purple or purplish brown except basal part, with orange yellow spot in subbasal part; outer tepals narrowly elliptic-oblanceolate or oblanceolate, mucronate at apex, with nectary at base, with glandular hairs abaxially, 23–27 mm long, 6.5–8.5 mm wide; inner tepals narrowly elliptic or elliptic-lanceolate, obtuse or subretuse, sometimes minutely corniculate at apex, auriculate at base, glandular-haired on midvein abaxially, 23–27 mm long, 5–7.3 mm wide in middle (5.5–7.7 mm wide in auriculate base). Stamens 6; filaments excurved distally, united laterally in basal part, with short retrorse hairs in lower half, pale yellow, without any pigmentary (reddish purple) spots, 22–27 mm long; anthers narrowly elliptic or oblong, extrorse, pale yellow, often purplish marginally, 3.3–4.6 mm long; pollen pale creamy. Pistil 1; style columnar below, trifurcate above, each branch further bifurcate distally; branches yellow, usually minutely spotted in reddish purple, bearing globular bladder hairs; basal

columnar part 6–9 mm long; trifurcate branches 4.5–7.5 mm long, bifurcate branchlets 3–5 mm long; ovary linear-lanceolate, trigonous, pale green, glabrous, sometimes with sparse short glandular hairs on angles, 10–14 mm long. Capsules narrowly oblong-lanceolate, subacuminate or acute, septicidally dehiscent above, 2.7–3 cm long, 6–7 mm wide. Seeds ovate, acute, compressed, brown, 2.2–2.7 mm long, 1.5–2 mm wide.

Flowering: June to August.

Distribution: JAPAN: Hokkaido, Honshu, Shikoku and Kyushu.

Japanese name: Tamagawa-hototogisu.

Other selected specimens examined: JAPAN. **Honshu.** Tohoku: Iwate Pref., Mt. Iwate, 26 Jul. 1927, M. Honda s.n. (TI); Fukushima Pref., Mt. Azuma, Aug. 1911, G. Koidzumi (TI). Kanto: Tochigi Pref., Nikkō, 29 Jul. 1885, J. Matsumura (TI); Gunma Pref., Kitakaruizawa, 31 Jul. 1983, H. Hara & S. Kurosawa s.n. (TI); Tokyo Pref., Mt. Mitake, 22 Aug. 1898, Y. Yabe s.n. (TI). Chubu: Niigata Pref., Arakawa-machi, 7 Jul. 1957, S. Togasi (TI); Shizuoka Pref., Mt. Hijiridake, ca. 1500 m, 11 Jul. 1971, Y. Tateishi 289 (TI). **Shikoku.** Tokushima Pref., Mt. Yahazu, 11 Aug. 1936, K. Abe 24 (TI); Kochi Pref., Mt. Tebako, 27 Jul. 1984, T. Kawahara and H. T. Im 202 (TI); Ehime Pref., Omogokei, 800 m, 24 Jul. 1958, Hatusima 22129 (TI). **Kyushu.** Miyazaki Pref., Mt. Sobo, 10 Oct. 1958, Y. Momiyama s.n. (TI); Miyazaki Pref., Nishi-usuki-gun, Mt. Shiraiwa, 20 Jul. 1953, S. Hirata s.n. (TI).

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References

- Anonymous. 1959. *Tricyrtis puberula*. In: Liou T. N. (ed.), *Claves Plantarum Chinae Boreali-Orientalis*. p. 582. Science Press, Beijing (in Chinese).
- Anonymous. 1976a. *Tricyrtis latifolia*, *T. pilosa*. In: Instituto Botanico Boreali-Occidentali Academiae Sinicae (ed.), *Flora Tsinlingensis* **1** (1): 335–336. Science Press, Beijing (in Chinese).
- Anonymous. 1976b. *Tricyrtis bakeri*. In: Institute of Botany, Academia Sinica, Beijing (ed.), *Iconographia Cormophytorum Sinicorum* **5**: 429, t. 7688. Science Press, Beijing (in Chinese).
- Baker J. G. 1879. A synopsis of *Colchicaceae* and the aberrant tribes of *Liliaceae*. *J. Linn. Soc.* **17**: 405–510. *Tricyrtis latifolia*, *T. macropoda* (pp. 464–465).
- Baker J. G. 1881. *Tricyrtis macropoda*. In: Hooker J. D. (ed.), *Bot. Mag.* **107**: t. 6544.
- Chen X. Q. and Takahashi H. 2000. *Tricyrtis pilosa*, *T. latifolia*. In: Wu Z. Y. and Raven P. H. (eds.), *Flora of China* **24**: 152–153. Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.
- Franchet A. and Savatier L. 1879. *Tricyrtis latifolia*. *Enumeratio Plantarum in Japonia sponte crescentium*. **2**: 74. F. Savy, Paris.
- Hara H. 1988. *Tricyrtis esquirolii*. In: Ohba H. and Malla S. B. (eds.), *The Himalayan Plants* **1**: 206. University of Tokyo Press, Tokyo.
- Kawano S. and Takasu H. 2004. *Disporum smilacinum* A. Gray (*Liliaceae*). In: Kawano S. (ed.), *Life History Monographs of Japanese Plants* **1**. Spring Plants **1**: 25–32. Hokkaido University Press, Sapporo (in Japanese with English summary).
- Kitamura S. 1964. *Tricyrtis latifolia*. In: Kitamura S., Murata G. and Koyama T. (eds.), *Coloured Illustrations of Herbaceous Plants of Japan* **3**: 146, t. 40–252. Hoikusha, Osaka (in Japanese).
- Koidzumi G. 1924. Contributiones ad cognitionem florum asiae orientalis. *Bot. Mag. (Tokyo)* **38**: 87–113. *Tricyrtis Bakerii* (p. 103).
- Koidzumi G. 1929. Contributiones ad cognitionem florum asiae orientalis. *Bot. Mag. (Tokyo)* **43**: 382–407. *Tricyrtis Bakerii* (p. 390).
- Matsumura J. 1905. *Tricyrtis latifolia*. *Index Plantarum Japonicarum*. **2** (1): 216. Maruzen, Tokyo.
- Maximowicz C. J. 1867. *Tricyrtis latifolia*. *Diagnoses breves plantarum novarum Japoniae et Mandshuriae* **3**: 435. *Bull. Acad. Imp. Sci. St-Petersb.* **11**: 433–439.
- Nakai T. and Kitagawa M. 1934. *Tricyrtis puberula*. *Plantae novae Jeholenses* **1**. *Rep. First Sci. Exped. Manch.* **4** (1): 19–20, t. 7.
- Ohwi J. 1953. *Tricyrtis latifolia*. *Flora of Japan*. p. 290. Shibundo, Tokyo (in Japanese).
- Ohwi J. 1965. *Tricyrtis latifolia*. In: Meyer F. G. and Walker E. H. (eds.), *Flora of Japan* (in English). p. 287. Smithsonian Institution, Washington, D. C.
- Okuyama S. 1958. *Tricyrtis latifolia*. *Coloured Illustrations of Wild Plants of Japan* **3**: 31–32, t. 192–3. Seibundo-shinkosha, Tokyo (in Japanese).
- Takahashi H. 1980. A taxonomic study on the genus *Tricyrtis*. *Sci. Rep. Fac. Educ., Gifu Univ. (Nat. Sci.)* **6** (4): 583–635.
- Takahashi H. 1984. The floral biology of *Tricyrtis latifolia* Maxim. (*Liliaceae*). *Bot. Mag. (Tokyo)* **97**: 207–217.
- Takahashi H. 1987. Distribution of *Tricyrtis* and its phytogeographical problems. *Acta Phytotax. Geobot.* **38**: 123–132 (in Japanese).
- Takahashi H. and Koyama H. 2006. *Tricyrtis pseudolatifolia* Hir. Takah. et H. Koyama (*Liliaceae*), a new species from Central China. *Acta Phytotax. Geobot.* **57** (3): 199–203.
- Tsi Z. H. 1980. *Tricyrtis maculata*. In: Wang F. T. et Tang T. (eds.), *Flora Reipublicae Popularis Sinicae* **14**: 32–33, t.6-3. Science Press, Beijing (in Chinese).
- Tsi Z. H. 2002. *Tricyrtis latifolia*, *T. pilosa*. In: Fu L. K. and Hong T. (eds.), *Higher Plants of China* **13**: 83–84. Qingdao Publishing House, Qingdao (in Chinese).
- Tu Y. L. 1990. *Tricyrtis maculata*. In: Li Y. K. (ed.), *Flora Guizhouensis* **3**: 331–332. Guizhou Renmin Chubanshe, Guiyang (in Chinese).
- Wright C. H. 1903. *Tricyrtis latifolia*. In: Forbes F. B. and Hemsley W. B. (eds.), *An enumeration of all the plants known from China Proper, Formosa, Hainan, Corea, the Luchu archipelago, etc.* *J. Linn. Soc.* **36**: 141–142.
- Yang G. H. 1991. *Tricyrtis maculata*. In: Xu J. M. (ed.), *Flora Sichuanica* **7**: 23–25. Sichuan Minzu Chubanshe, Chengdu (in Chinese).
- Zhang J. X. 1991. *Tricyrtis maculata*. In: He S. Y. (ed.), *Flora Hebeiensis* **3**: 485–486. Hebei Science & Technology Publishing House, Shijiazhuang (in Chinese).

田中教之：マンシュウホトトギスとタマガワホトトギス（ユリ科）の分類と分布域の再検討

中国産のマンシュウホトトギス（以下マンシュウと略称する）*Tricyrtis puberula* と日本産のタマガワホトトギス（以下タマガワと略称する）*T. latifolia* は一見類似しているため、これまでしばしば同種とされてきた。しかし、両種は明確な相違点をいくつか持つので、別種として扱うのが妥当である。

両種ともに栽培下（東京・八王子）では初夏から夏にかけて開花する。両種の各花の開花期間は2日で、雄性先熟であり、1日目は雄性を表し（葯は熟して裂開するが、柱頭は未熟）、2日目は雌性を表す（柱頭が成熟）。従って、両種の花は他家（花）受粉志向の開花習性と機構を持つ。ただし、自家受粉による自殖も起きうる。マンシュウの花はタマガワよりもやや小さく、花被片は上部約2/3がほぼ水平に開き、淡緑～淡黄緑色で、タマガワよりも概して緑がかっている。花被片下部の（橙）黄色の斑はタマガワでは明瞭であるが、マンシュウではやや淡色で、認められないこともある。マンシュウの内花被片は狭三角状（皮針形）で、タマガワのそれは狭楕円状皮針形で異なる。マンシュウの外花被片の外面と内花被片外面の中肋の毛はタマガワのそれよりも短い。マンシュウの花は、開花2日目の日中に花被片が閉じ始め、斜上するので、この時の花被の型はタマガワのそれと一見類似する。タマガワと比べて、マンシュウの花柱下部の単一柱状部分は相対的に短く、花柱上部の分枝部分はより幅広く拡張する。花糸も同様に上部がより幅広く拡張する。マンシュウの葯はタマガワのそれよりもやや長大である。マンシュウの葉は両面ともに常に微毛が密生し、同様の毛は茎上部にもしばしば現れる。マンシュウの根には紅色の微斑が密に散在している。タマガワ

の茎葉は通常無毛で、時に短毛が葉裏の脈上や茎にまばらに現れる（稀に葉の表面もまばらに短毛がある）。根には淡黄紅色の微斑が多く散在するかまたは不在である。また、タマガワの葉はマンシュウのそれよりもやや薄質である。

タマガワが中国にも産するという報告がこれまでいくつかあるが、調べた限りではこれらはマンシュウか他の種であった。調査結果によると、タマガワは日本列島に、マンシュウは中国にそれぞれ固有である。両種の関係について形態的に論じた。

最近、中国四川省産の標本をタイプとして記載された *Tricyrtis pseudolatifolia* はマンシュウと同一種であると見なした。マンシュウはこれまで *T. maculata* や *T. esquirolii* と同種として扱われてきたが、後の2種はマンシュウとは別種である。これらは乾燥標本では一見類似しているので、混同されやすく、文献で記載内容や分布域等を参照する際には注意を要する。

Tricyrtis bakeri Koidz. については Curtis's Botanical Magazine の図 (Plate 6544) のみをレクトタイプとして選定した。Koidzumi (1924) による *T. bakeri* の種の定義にある多くの主要な特徴が図の植物と一致することと、Curtis's Botanical Magazine の同図版に対応する Baker (1881) による記載文には異なる2種（ヤマホトトギス *T. macropoda* および図に描かれている種タマガワ）の特徴が混在していると判断したからである。結果的に、*T. bakeri* はタマガワと同種である。また、*T. makinoi* もタマガワと同種として扱った。

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