

Tobata-ayame: A New Variety of *Iris sanguinea* Hornem. from Northern Kyushu, Japan

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Abstract *Iris sanguinea* Hornem. var. *tobataensis* S. Akiyama & Iwashina (Iridaceae), a dwarf plant with large flowers (5–7 cm across), from northern Kyushu, is described as new.

Key words: extinct plant, *Iris sanguinea* var. *tobataensis*, new *Iris*, threatened plant.

An undescribed species of *Iris*, known locally as “*Tobata-ayame*” or “*Kozomino-no-ko-kakitsubata*” occurs in Tobata, Kitakyushu City, Fukuoka Pref., northern Kyushu. As early as 1875 this *Iris* was reported to grow in Kozomino, Fukuoka Pref., and at that time was called “*Kokakitsubata*” (Anonymous, 1875). According to the homepage of the city of Kitakyushu (<http://www.city.kitakyushu.jp>), wild populations of this *Iris* have been completely lost, although it has been maintained under cultivation. The reason that it is undescribed appears to be due to its misidentification as *Iris rossii* Baker. Although Tobata in Kitakyushu City is listed as one of the localities for *I. rossii* (Otaki, 1989), *I. rossii* has not been reported from there, but recently we have become aware of a plant called “*Tobata-ayame*” which is similar to *I. sanguinea* Hornem., but easily distinguished from var. *sanguinea* by its shorter stature, 10–15 cm tall, at flowering time (Kimura, 2005).

Two dwarf species of *Iris* are known from Japan, *I. rossii*, with flowers 3.5–4 cm across, and *I. gracilipes* A. Gray, with flowers ca. 4 cm across. These two species are easily distinguished by the presence or absence of a crest-like appendage on the outer perianth segments. *Iris rossii*, occurring in Japan, Korea and China, has flowers ca. 3.5–4 cm across without crest-like appendages. In Japan the range of *I. rossii* is disjunct and limited; the site of most of its occur-

rences are preserved as natural monuments (Satake, 1982; Otaki, 1989). *Tobata-ayame* resembles *I. rossii* in its dwarf stature and in the outer perianth segments without a crest-like appendage, but differs from the latter in having larger flowers, 5–7 cm across.

Although *Iris sanguinea* Hornem. (var. *sanguinea* Hornem. and var. *yixingensis* Y. T. Zhao) is a medium sized species, the color and shape of the flowers of *Tobata-ayame* are indistinguishable from that species. It is also noticeable that a dwarf cultivar ‘Pumila’ is known in *I. sanguinea* (Ohashi *et al.*, 2008). ‘Pumila’, Chabo-ayame in Japanese, also called *I. nertschinskia* Lodd. var. *pumila* Makino (Ishii, 1949; Tuyama, 1951) or *I. sanguinea* var. *pumila* (Makino) Tomino (Tomino, 1980; Otaki, 1989), is characterized by its dwarf stature and flowers nearly as tall as the its leaves. In *Tobata-ayame* the flowering stems are conspicuously shorter (2–3 cm) than the leaves and the leaves are apparently narrower and shorter (10–25 cm × 3–5 mm) than in var. *sanguinea*, var. *yixingensis*, and cultivar ‘Pumila’. In a study of the flower and leaf flavonoids using high performance liquid chromatography, Mizuno and Iwashina found the flavonoid composition of the *Iris* from Tobata to be different from the flavonoids of *I. sanguinea* var. *sanguinea* (Mizuno and Iwashina, unpublished data).

In China and Korea there are several species of

Table 1. Comparison among *Iris sanguinea*, including a new variety, *I. rossii*, *I. gracilipes*, *I. ruthenica*, *I. quinghainica* and *I. loczyi*

	<i>I. sanguinea</i> var. <i>tobataensis</i> [Tobata-ayame]	<i>I. sanguinea</i> var. <i>sanguinea</i> [Ayame]	<i>I. sanguinea</i> var. <i>yixingensis</i>	<i>I. rossii</i> [Ehime-ayame]	<i>I. ruthenica</i> [Ko-kakitsubata]	<i>I. quinghainica</i>	<i>I. loczyi</i>
Rhizome	creeping	creeping	creeping	creeping, slender	creeping, branched	knobly	knobly
Leaves	linear, 1 (or 2) vein distinct, 10–25 cm long, 3–5 mm wide	linear, midvein indistinct, 30–50 cm long, 5–10 mm wide	linear, 30–50 cm long, 2–4 mm wide	linear, 2(–4) veins distinct, 4–20 cm long, 2–6 mm wide	linear, 3–5 veins distinct, 7–25 cm long, 1–3 mm wide	linear, midvein absent, 5–25 cm long	linear, midvein absent, 20–40 cm long, ca. 3 mm wide
Flowering stem	2–3 cm, 2- or 3-leaved, 2-flowered	30–60 cm, 2–4-leaved, 2- or 3-flowered	40–60 mm, 1- or 2-leaved, 1- or 2-flowered	5–15 cm, 1–3-leaved, 1-flowered	2–20 cm, 2- or 3-leaved, 1-flowered	2–3 mm wide not emerging above ground, 1- or 2-flowered	not or only slightly emerging above ground, 1- or 2-flowered
Spathes	2, whitish, ca. 2 cm×ca. 8 mm	2, green, 4–7 cm×10–15 mm	2 or 3, reddish brown on outer side, bluish white on inner, 6–7 cm×7–9 mm	2, green, 4–7 cm×5–8 mm	2, green, reddish purple at margins, 2–3.5 cm×8–10 mm	3, green, 6–10×6–18 mm	3, 10–15×ca. 15 mm
Flower color	Purple, but sometimes pale purple or white	purple	purple	blue-purple to violet	violet	violet	pale violet
Flower size	5–7 cm	7–10 cm	5.5–6 cm	3.5–4 cm	5–5.5 cm	4.5–5 cm	5.5–7 cm
Perianth tube	ca. 8 mm	ca. 8 mm	very short	4–6 cm	5–15 mm	3–6 cm	to 14 cm
Limb of outer segments	obovate, ca. 3.5 cm×ca. 16 mm	widely obovate, 3.5–5 cm×2.5–3.5 cm	widely obovate	narrowly obovate, ca. 3 cm	oblanceolate, ca. 4 cm×8–10 mm	narrowly oblanceolate, 3–3.5 cm×5–8 mm	oblanceolate or narrowly obovate, ca. 6 cm×1–2 cm
Inner segments	erect, elliptic-oblanceolate, ca. 2.5 cm	erect, elliptic-oblanceolate, 3–5 cm	erect, elliptic-oblanceolate	erect, oblong, ca. 2 cm	erect, narrowly oblanceolate, ca. 2.5 cm	narrowly oblanceolate, ca. 3 cm	oblanceolate, 4.5–5 cm
Stamens	ca. 2 cm	2–2.5 cm	ca. 1.5 cm	ca. 1.5 cm	ca. 2.5 cm	1.8–2 cm	ca. 2.5 cm
Ovary	ca. 12 mm	ca. 12–17 mm	ca. 10 mm	ca. 10 mm	ca. 10 mm	ca. 15 mm	ca. 12 mm
Style branches	ca. 2.5 cm, bifid	2.5–3 cm, bifid	ca. 2 cm, deeply bifid	ca. 2 cm, deeply bifid	3.5–4 cm	ca. 2.5 cm	ca. 4 cm
Distribution	Japan (northern Kyushu)	Japan, Korea, northeastern China, and eastern Siberia	China (Zhejiang)	Japan, Korea, China (eastern Liaoning)	Korea, China, Mongolia, Russia, Kazakhstan, eastern Europe	China (southwestern Gansu, northeastern Qinghai)	China, Mongolia, Russia, Afghanistan, Tajikistan, Iran



Fig. 1. Holotype of *Iris sanguinea* Hornem. var. *tobataensis* S. Akiyama & Iwashina (Japan, Fukuoka Pref., cultivated, T. Iwashina, 27 Apr. 2009, TNS).

dwarf *Iris* with purple flowers such as *I. rossii* (Qian *et al.*, 1985; Zhao *et al.*, 2000; Lee, 2006). One of them, *Iris ruthenica* Ker-Gawl (Japanese name: *Ko-kakitsubata*), with small flowers (3–5.5 cm across) and the outer perianth segments (8–10 mm wide) with a narrow limb, is cultivated in Japan. *Iris qinghainica* Y. T. Zhan from southwestern Gansu and northeastern Qinghai also has rather small flowers (4.5–5 cm across) and the outer perianth segments (5–8 mm wide) with a narrow wing. *Iris loczyi* Kanitz from Gansu, Nei Mongol, Ningxia, Qinghai, Sichuan, Xinjiang and Xizang has 5.5–7 cm across but its leaves are 20–40 cm long. The inner perianth segments are 4.5–5 cm long and the perianth tube is 14 cm long. All of them are easily distinguishable from *Tobata-ayame* by the various features mentioned

(Table 1).

Tobata-ayame and *I. sanguinea* are considered to be conspecific, but the large flowers, small leaves, and short flowering stem (Figs. 1 and 2), distinguished it as a variety, *Iris sanguinea* var. *tobataensis*, which we describe here. The epithet *tobataensis* reflects the name of the type locality, Tobata.

***Iris sanguinea* Hornem. var. *tobataensis* S. Akiyama & Iwashina, var. nov.**

[Figs. 1 & 2]

A typo (var. *sanguinea*) caulibus floriferis conspicue brevioribus cum foliis brevis angustatisque bene differt. A *Iride rossii* Baker caule florifero floribus duobus amplioribus maxime



Fig. 2. *Iris sanguinea* var. *tobataensis*, cultivated in Kitakyushu, Fukuoka Pref., Apr. 2009.

5–7 cm dimetiens satis diagnoscenda.

Type: Japan. Fukuoka Pref., Kitakyushu, cultivated in Tobata Ayame Park, (*T. Iwashina*, 27 Apr. 2009, TNS-holo).

Herbs, perennial. Rhizome somewhat creeping. Roots whitish, fibrous. Stems with pale brown fibrous remnants basally. Leaves linear, with 1 or 2 distinct veins, 10–25 cm long, 3–5 mm wide. Flowering stems 2–3 cm tall at flowering, elongating after flowering, with 2 or 3 leaves. Spathes 2, whitish, ca. 2 cm × 8 mm, membranaceous. Pedicel 1.5–2 cm long. Flowers usually 2, purple, but sometimes pale purple or white, 5–7 cm across: perianth tube ca. 8 mm long: outer segments spreading; limb purple, ca. 3.5 cm × ca. 16 mm, white or yellow basally, with dark purple veins. Inner segments erect, purple, elliptic-oblongate, ca. 2.5 cm long: ovary ca. 12 mm long: style 3-lobed, branched, ca. 2.5 cm long, bifid, minutely denticulate. Flowers late April to mid May in cultivation.

Habit: Known only from cultivation.

Distribution: Japan. Kyushu. Fukuoka Pref., Kitakyushu City, Tobata (known only from the type locality, extinct in the wild).

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