Two New Species of Croomia (Stemonaceae) from Miyazaki Prefecture, Kyushu, Southern Japan

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Two new species of Croomia (Stemonaceae), C. saitoana Kadota and C. hyugaensis Kadota & Mas. Saito, are here described from Miyazaki Pref., Kyushu, southern Japan. Croomia saitoana differs from C. japonica Miq. [= C. kiusiana Makino] in having small, solitary, dark purplish brown flowers, thicker and shorter staminal filaments, thicker purplish stem, the absence of bracts and (6–)7–11 cauline leaves with 3–5 veins. Croomia hyugaensis is distinguished from C. japonica by having solitary flower, entire leaf margin, 4–6, slightly fleshy, cordate cauline leaves with cordate base; from C. saitoana by larger flowers, longer staminal filaments, slender green stem, prominent, linear to spathulate bracts and 4–6, slightly fleshy, cordate cauline leaves with 5–7 veins and entire margins. Croomia hyugaensis and C. saitoana are known exclusively from Miyazaki Pref., Kyushu, and are the forth and the fifth species in the genus Croomia, respectively. A key to the species of the genus Croomia is also provided.

Key words: Croomia hyugaensis, Croomia saitoana, Kyushu, Miyazaki prefecture, new species.


Both Asian species, C. heterosepala and C. japonica, are known from Kyushu, southern Japan. In May 2008 one of the authors (M.S.) encountered curious Croomia plants in the northern part of Miyazaki Prefecture, central Kyushu. The plants were attributed to neither C. heterosepala nor C. japonica. Following this botanical survey was conducted in Miyazaki Prefecture and its adjacent region. Consequently it has turned out that two new species of Croomia are distributed in Miyazaki Prefecture. This paper describes the two new species.

1. Croomia saitoana Kadota, sp. nov. [Figs. 1–2, 5B, 8B] Affinis Croomiae japonicae, sed floribus
Fig. 1. Type specimen of *Croomia saitoana* Kadota.
Fig. 2. Habit of *Croomia saitoana* Kadota. At Tanohara, Hyûga, Miyazaki Pref., Kyushu, Japan, on 20 April 2010.
Fig. 3. Type specimen of *Croomia hyugaensis* Kadota & Mas. Saito.
minoribus solitariis atropurpureobrunneis, filamentis staminum crassioribus brevioribus, caulibus crassioribus purpureis, bracteis minutis 0.5–1 mm longis, foliis caulinis (6–)7–11 venis 5–9 differt.

**TYPE:** JAPAN. Kyushu, Miyazaki Pref., Hyûga-shi, Tanohara, 16 April 2010, M. Saito s.n. (TNS 01105807–holotype, Fig. 1; KYO, MBK, TI, TNS 01105806, 01105808–isotype).

A herbaceous perennial, 45–60 cm tall. Rhizome subterranean, horizontal, up to 10 cm long, necklace-shaped; internodes 2–3 mm long; roots thread-like, carnose, ca. 2 mm in diameter, fasciculate. Stem suberect, glabrous, simple, shallowly fulcate. Basal leaves yellowish white, ca. 1 cm long, ovato-oblong, membranous, scaly. Lower cauline leaves light yellowish green, membranous, scaly, vaginate. Upper cauline leaves 6–9, situated in the upper part of the stem, alternate; blades membranous but thickened along the margin, light green above, glaucous and lustrous beneath, ovato-oblong, 5.5–16 cm long, 2.5–8 cm wide, 5–9-veined, acute at apex, cuneate to truncate to shallowly cordate at base; petioles 1.5–3 cm long, glabrous, amplexicaul, slightly auriculate, decurrent. Flowers April to May, 4–5 mm in diameter, axillary, solitary or rarely 2 in a loose cyme, bracteate; peduncels 3–5 cm long, glabrous, articulate, thickened at base; bracts minute, 0.5–1 mm long, lanceolate. Perianth-segments 4, cruciate, subequal, dark brownish purple, or yellowish green in the upper half and brownish purple in the lower half, triangular-ovate, 3 mm long, 2 mm wide, more or less reflexed, with strongly reflected margins, papillate, persistent during the fruiting time. Stamens 4; filaments dark brownish purple, cylindrical, 1–1.5 mm long, 1 mm in diameter, papillate; anthers widely oblong, basifixed. Styles minute.

Japanese name: Kobana-nabewari (nov.).

**Distribution:** Northern part of Miyazaki Pref., Kyushu (Fig. 6, triangle). Endemic to Japan.


**Croomia saitoana** is different from *C. japonica* Miq. (Fig. 7, left) [= *C. kiusiana* Makino (Fig. 7, right)] by having small (Fig. 5A, B), solitary, dark purplish brown flowers, thicker and shorter staminal filaments, thicker purplish stem, the absence of bracts and (6–)7–11 cauline leaves with 3–5 veins.

**Croomia saitoana** grows under warm-temperate, laurel forests and *Cryptomeria japonica* plantations.

2. **Croomia hyugaensis** Kadota & Mas. Saito, sp. nov. [Figs. 3–4, 5D, 8C]

Differt a *Croomia japonica* floribus solitariis, foliis caulinis 4–6, ovato-oblongis basi cordatis marginie integris; a *C. saitoana* floribus majoribus, filamentis staminus longioribus, caule gracili viridi, bracteis prominetibus linearibus vel spathulatis, foliis caulinis 4–6, leviter carnosis, ovato-oblongis basi truncatis vel subcordatis, venis 5–7.

**TYPE:** JAPAN. Kyushu, Miyazaki Pref., Miyazaki-shi, Tano-cho, Sagise, alt. 80 m, 16 April 2009, M. Saito B-T-30241 (TNS 01105800–holotype; Fig. 3).

A herbaceous perennial, 30–45 cm tall. Rhizome subterranean, horizontal, up to 10 cm long, necklace-shaped; internodes ca. 5 mm long; roots thread-like, carnose, 2–2.5 cm in diameter, fasciculate. Stem suberect, glabrous, simple, fulcate. Basal leaves yellowish white, ca. 1 cm long, ovato-oblong, membranous, scaly. Lower cauline leaves light yellowish green, membranous, scaly, vaginate. Upper cauline leaves 4–6, situated in the upper part of the stem, alternate; blades somewhat fleshy, light green above, glaucous and lustrous beneath, ovato-
oblong, 9–13 cm long, 4–8 cm wide, 5–7-veined, acute at apex, truncate to shallowly cordate at base; petioles 0.5–2 cm long, glabrous, not amplexicaul, not auriculate, decurrent. Flowers April to May, 7–10 mm in diameter, axillary, solitary, bracteate; peduncels 3–5.5 cm long, glabrous, articulate, thickened at base; bracts prominent, 1–5 mm long, linear to spatulate. Perianth-segments 4, cruciate, subequal, yellowish green in the upper half and brownish purple in the lower half, triangular-ovate, 5 mm long, 2–3 mm wide, more or less reflexed, with strongly reflexed margins, papillate, persistent during the fruiting time. Stamens 4; filaments dark brownish purple, cylindrical, 3–4 mm long, 1–1.5 mm in diameter, papillate; anthers widely oblong, basifixed. Styles minute.

Japanese name: Hyūga-nabewari (nov.).

Distribution: Southern part of Miyazaki Pref., Kyushu (Fig. 6, star). Endemic to Japan.


Croomia hyugaensis is distinguished from C. japonica by having solitary flower with wider perianth-segments (Fig. 5C, D), entire leaf margin (Fig. 8A, C), 4–6, slightly fleshy, cordate cauline leaves with cordate base; from C. saitoana by larger flowers (Fig. 5A, B).
longer staminal filaments, slender green stem, prominent, linear to spatulate bracts and 4–6, slightly fleshy, cordate cauline leaves with 5–7 veins and with entire margin (Fig. 8, B, C).

Figure 8 shows leaf margin of *Croomia japonica*, *C. hyugaensis* and *C. saitoana*. Both in *C. japonica* and *C. saitoana* leaf margin is serrulate while *C. kyugaensis* has an entire leaf margin.

*Croomia hyugaensis* grows under warm-temperate, laurel forests.

**Key to the species of Croomia**
A. Perianth-segments heteromorphic, orbicular to broadly elliptic, slightly incurved along margin; leaves not lustrous ... *C. heterosepala*
A. Perianth-segments monomorphic, narrowly triangular ovate, more or less recurved along margin; leaves lustrous
B. Flowers yellowish green, 2–4 in a cyme or rarely solitary, if cymose, peduncle non-articulate; bracts lanceolate, 2–3 mm long
C. Leaves cuneate to shallowly cordate at base; cymes longer than the petioles; internodes of rhizome less than 1 cm ........
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C. japonica
C. Leaves cordate at base; cymes shorter than or equal to the petioles in length; internodes of rhizome 2–6 cm ................
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C. pauciflora
B. Flowers dark purplish brown at least in the lower half, solitary, peduncle articulate; bracts less than 1.5 mm long or absent
D. Flower small, 4–5 mm across, dark purplish brown; Perianth-segments shorter than 2 mm, subequal; filaments thick and short, 1–1.5 mm long; bracts usually absent, if present, 0.5 mm long; cauline leaves 7–11, membranous, narrowly ovato-obloltng, with 3–5 veins ..............
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C. saitoana
D. Flower large, ca. 1 cm across yellowish
green or dark purplish brown only in the lower half; Perianth-segments longer than 6 mm, inner slightly shorter than the outer; filaments 3–4 mm long; bracts linear to spathulate, 1–5 mm long; cauline leaves 4–6, slightly fleshy, cordate to narrowly cordate, with 5–7 veins..... *C. hyugaensis*

**Croomia japonica from China**

*Croomia japonica* has been reported from Continental China (Institute of Botany, Academia Sinica 1976, Ji and Duyfjes 2000, Ji 2002), however, we had no opportunities to examine Chinese material. According to the descriptions and the illustration (Institute of Botany, Academia Sinica 1976, t. 7673) there are some significant differences between Chinese and Japanese plants: in Chinese plants the flowers are smaller, the perianth-segments are triangular ovate and smaller, and the cauline leaves 3–5 and ovate in outline. Consequently the Chinese materials should not be ascribed to *C. japonica*. The molecular data of Li et al. (2008) also suggested that Chinese populations were genetically segregated from the Japanese populations. The Chinese plants are supposed to belong to an undescribed taxon in the genus *Croomia*, which is akin to *C. japonica* Miq.

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Fig. 7. Left. Lectotype specimen of *Croomia japonica* Miq. (L 0422345). Left corner inset shows flower. Courtesy of Dr. S. Akiyama. Right. Holotype specimen of *Croomia kiusiana* Makino (MAK 207635). Courtesy of Dr. H. Kato.
Makino Botanical Garden, for checking Dr. Tomitaro Makino’s *Croomia* collections in TI and MKB, and to Dr. H. Nagamasu, The Kyoto University Museum, Kyoto University, for correcting Latin descriptions, respectively.

**Literature cited**


**Fig. 8.** Comparison of leaf margin in *Croomia japonica* (A), *C. saitoana* (B) and *C. hyugaensis* (C).
門田裕一*a,斉藤政美b：宮崎県産ナベワリ属（ビャクブ科）の2新種

宮崎県からナベワリ属（ビャクブ科）の2新種、コバナナベワリ Croomia saitoana Kadota とヒュウガナベワリ C. hyugaensis Kadota & Mas. Saito を記載した。コバナナベワリはヒメナベワリ C. japonica Miq. (= C. kiusiana Makino) とは、①花は小さく、単生し、紫褐色を帯び、②花糸がより太くかつ短く、③茎が太くて紫色を帯び、④苞を欠き、⑤茎葉は普通7–11枚で、脈が3–5本である点で区別される。ヒュウガナベワリは①花が単生し、②葉緑が全緑色で、③茎葉は4–6枚あり、やや肉質、心形で、基部も心形であることからヒメナベワリと区別され、⑤花が大きく、⑥花糸が長く、⑦茎が細くて緑色で、⑧苞が著しく、線形ないし匙形であり、⑨茎葉は4–6枚あり、やや肉質、心形で、基部も心形であり、脈が5–7本ある点でコバナナベワリと区別できる。

コバナナベワリとヒュウガナベワリはナベワリ属ではそれぞれ4番目と5番目の種であり、いずれもこれまでに宮崎県のみに知られている。

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