

## ***Coptis* Sect. *Metacoptis* Subsect. *Japonocoptis* (Ranunculaceae), with Description of a New Species and a New Variety from Japan**

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The taxonomy of *Coptis* Sect. *Metacoptis* Subsect. *Japonocoptis* (Ranunculaceae) is revised. As a result four species and a variety, including a new species and a new variety of *C. quinquefolia* described here are recognized. *Coptis minamitaniana* sp. nov. is characterized by its estoloniferous habit, chartaceous, quinquefoliolate leaves, solitary flowers, membranous nectary blades and obovate, cuspidate bracts. *Coptis minamitaniana* is distributed in the northern part of Miyazaki Prefecture and grows under evergreen broad-leaved trees. *Coptis quinquefolia* Miq. var. *shikokumontana* var. nov. is distinguished from the typical variety by its cup-shaped nectary blades and strongly recurved stigmata and is endemic to the Shikoku Mountains. The species of *Coptis* sect. *Metacoptis* subsect. *Japonocoptis* are enumerated in this paper.

**Key words:** *Coptis minamitaniana*, *Coptis quinquefolia* var. *shikokumontana*, Japan, new taxa, Ranunculaceae.

The genus *Coptis* sect. *Metacoptis* (Satake) Kadota subsect. *Japonocoptis* (Satake) Kadota is characterized by having white flowers and evergreen, quinquefoliolate basal leaves. Two species, *C. quinquefolia* Miq. and *C. ramosa* (Makino) Ohwi, are recognized in subsection (Kadota 2004). Taiwanese individuals belonging to the subsection have been ascribed to *C. quinquefolia* (Hsieh 1976, Ying 1978, Hsiao 1979, T. Y. A. Yang and Huang 1996, Y. P. Yang et al. 1999, Huang 2001).

In 1983 Mr. Tadashi Minamitani noticed that *Coptis* plants were cultivated in Miyazaki Prefecture, southern Japan, however, he could not locate them in the field at that time. The presence of the plants was confirmed by him at Kijô-cho, Koyu-gun of Miyazaki Prefecture in 1985. No *Coptis* plants had been reported from Kyushu Island

by the time of his discovery. At first he considered the plants to be *C. quinquefolia* (Minamitani 1986) and afterwards *C. ramosa* (Minamitani 2000). The author visited one of the localities of the *Coptis* plants under the guidance of Mr. Minamitani and made a field study of the plants there in October, 2003. Some flowering plants of the *Coptis* were also presented by him to the Herbarium, Department of Botany, National Science Museum, Tokyo (TNS).

The *Coptis* plants from Miyazaki Prefecture belong to subsection *Japonocoptis* because they bear white flowers and evergreen quinquefoliolate leaves. However, they could not be ascribed to any species hitherto known within the subsection in having chartaceous leaves, membranous nectary blades and obovate, cuspidate bracts. The subsection *Japonocoptis* was taxonomically

revised. As a result it was concluded that the *Coptis* plants from Miyazaki Prefecture should be attributed to a distinct new species. This new species is named here as *C. minamitaniana* after the original discoverer. The plants regarded as “*C. quinquefolia* Miq.” from Shikoku Island, western Japan, were shown to be distinct from *C. quinquefolia* at a varietal rank in having cup-shaped nectary blades and strongly recurved stigmata. This entity is named here as *C. quinquefolia* var. *shikokumontana* because it is endemic to the Shikoku mountains. As a result of this revision it is clarified that the subsection is endemic to East Asia and consists of four species and a variety including a new species and a new variety of *C. quinquefolia* Miq.

The aims of this paper are to describe these two new taxa and to enumerate the species of genus *Coptis* sect. *Metacoptis* subsect. *Japonocoptis*.

### Key to the species of *Coptis* sect.

#### *Metacoptis* subsect. *Japonocoptis*

1. Rhizome thin and long, stoloniferous; flowers solitary; petal blades fleshy
2. Petal blades saucer-shaped; stigmata erect or gently recurved .....
  - .....3a. *C. quinquefolia* var. *quinquefolia*
2. Petal blades cup-shaped; stigmata strongly recurved .....
  - .....3b. *C. quinquefolia* var. *shikokumontana*
1. Rhizome thick and short or relatively long, estoloniferous
3. Leaves chartaceous; flowers solitary; bracts obovate, cuspidate at apex; petal blades obovate, membranous .....
  - .....1. *C. minamitaniana*
3. Leaves coriaceous; flowers 1–4, in a loose raceme; bracts narrowly ovate, acuminate at apex; petal blades rounded
4. Petal blades hemispherical, deep, membranous; terminal leaflets obovate to rhombic, shallowly pinnatilobed; bracts entire .....
  - .....4. *C. ramosa*

4. Petal blades saucer-shaped, shallow, fleshy; terminal leaflets ovate to rhombic, coarsely serrate; bracts deeply trilobed to entire .....
  - .....2. *C. morii*

### Enumeration of the Species in *Coptis* sect.

#### *Metacoptis* subsect. *Japonocoptis*

*Coptis* Salisb. in Trans. Linn. Soc. London **8**: 305 (1807).

Sect. *Metacoptis* (Satake) Kadota in K. Iwats. & al., Fl. Jap. **IIa**: (2004).

Subgenus *Metacoptis* Satake in J. Jpn. Bot. **24**: 73 (1949).

Subsect. *Japonocoptis* (Satake) Kadota in K. Iwats. & al., Fl. Jap. **IIa**: (2004).

Sect. *Japonocoptis* Satake in J. Jpn. Bot. **24**: 73 (1949).

1. *Coptis minamitaniana* Kadota, sp. nov. [Figs. 1–2]

*Coptis quinquefolia* auct. non Miq.: Minamitani in Miyazaki-Shokubutsu-Kenkyûkai-Kaishi (2): 1–2, figs. 2–3 (1986).

*Coptis ramosa* auct. non (Makino) Tamura: Minamitani in Acta Phytotax. Geobot. **48**: 123, fig. 3 (2000).

*Coptis quinquefolia* Miq. var. *tenuis* H. Hara, in sched.

Haec species a *Coptidis quinquefoliae* habitu estolonifero; a *C. ramosae* floribus solitariis et bracteis obovatis cuspidatis; a *C. morii* floribus solitariis, bracteis obovatis cuspidatis et laminiis nectariorum membranaceis differt.

Herba perennis sempervirens scaposa, circiter 10 cm alta. Rhizoma crassum, relative longum, 3–4 mm in diametro, luteum, horizontale, estoloniferum. Scapus purpureo-brunneus, glaber, basi inclusus squamis ovatis crustaceis. Folia omnino basale, ambitu pentagono-cordatum, quinquefoliolatum, basi cordatum; foliola late obovatum vel rhombicum, 10–18 mm longum, 8–14 mm latum, chartaceum, leviter lucidum, trilobatum et incisum, aristatum, basi cuneatum, utrinque glabrum vel subtus

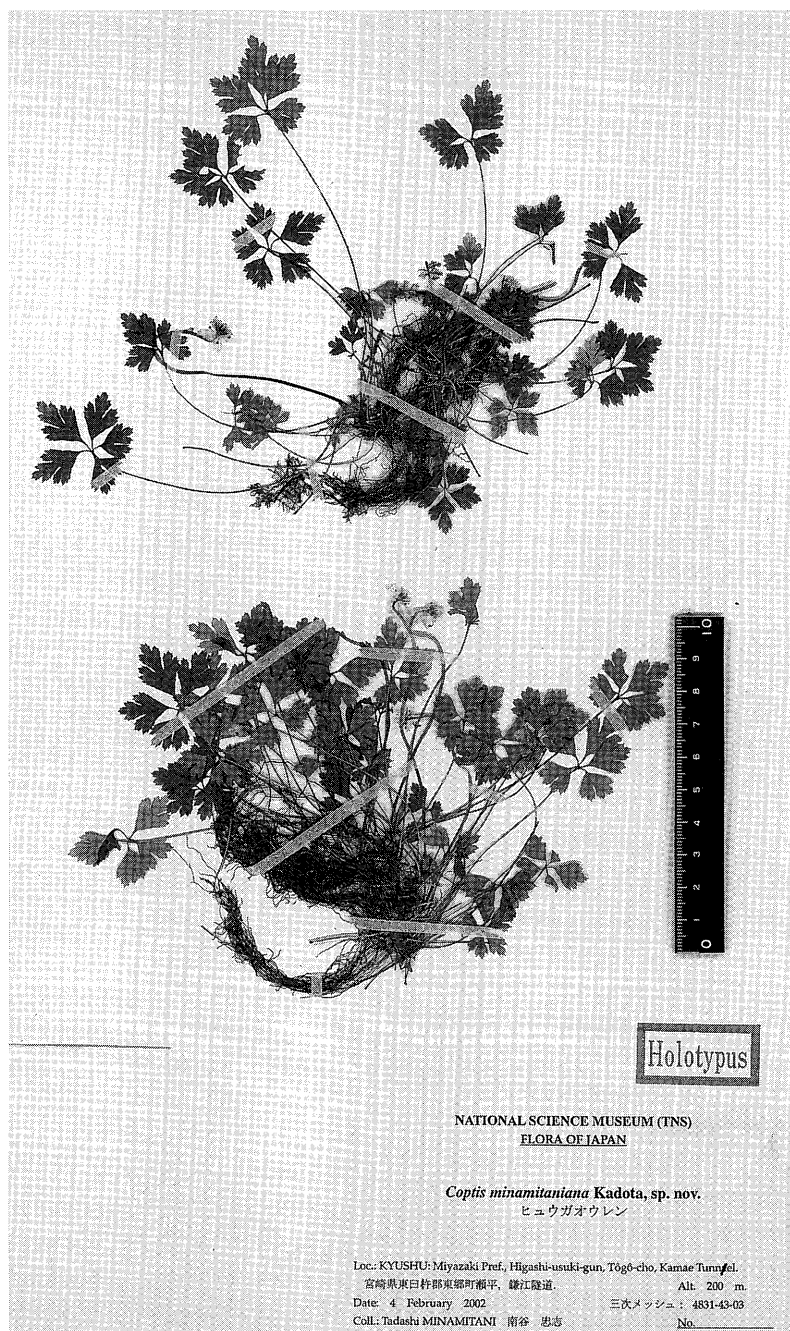


Fig. 1. Holotype of *Coptis minamitaniana* Kadota (JAPAN: Kyushu; Miyazaki Pref., Higashi-Uzuki-gun, Tôgô-cho, Kamae Tunnel, 4 Feb. 2002, T. Minamitani s. n., TNS 728532).

strigosum; petioli 3–8 cm longus, glaber, basi breviter vaginatus. Flores in Januarii et Martii, solitari, 1–1.4 cm in diametro, unibracteati; bracteae obovata, integra, circiter 2 mm longa, circiter 1.5 mm lata, cuspidata. Sepala 5, anguste ovata vel elliptica, 6–7 mm longa, 3–4 mm lata, alba, rotundata at apicem. Petala 5, spathulata, 3–4 mm longa, luteo-aurantiaca, stipitata; stipetes 2–3 mm longi; laminae circiter 1 mm longae, obovato-oblongae, membranaeae. Stamina 2–4 mm longae; antherae oblongae, circiter 0.5 mm longae; filamenta 1–3 mm longa, filiformia, leviter dilatata. Folliculi 5–9, ellipsoidei, 5–6 mm longi, circiter 2 mm lati, longe stipitati; stipites strigosi; rostra circiter 1 mm longa, uncinata; semina ignota.

**TYPE:** JAPAN: Kyushu; Miyazaki Pref., Higashi-Usuki-gun, Tôgô-cho, Sebira, Kamae Tunnel, alt. 200 m, 4 February 2002, fl., T. Minamitani s. n. (TNS 728532–holotype, Fig. 1; TNS 728531, 728533–isotypes).

Japanese name: Hyûga-ôren (nom. nov.).

An evergreen scapose perennial, ca. 10 cm tall, up to 15 cm at fruiting time. Rhizome thick and relatively long, 3–4 mm in diameter, branched, yellow, running horizontally, not stoloniferous. Scape purplish brown, glabrous, enclosed with ovate crustaceous scales at base. Leaves all basal, pentagonal-cordate in outline, quinquefoliolate, cordate at base; leaflets broadly obovate to rhombic, 10–18 mm long, 8–14 mm wide, chartaceous and dully lustrous, medially trilobed and incised, aristate, cuneate, glabrous or sparingly strigose with short curved hairs along veins on the adaxial side, veins rising on the adaxial side; petioles 3–8 cm long, glabrous, shortly vaginate at base. Flowers in January to March, solitary, 1–1.4 cm in diameter, unibracteate; bract obovate, entire, circ. 2 mm long, circ. 1.5 mm wide, cuspidate. Sepals 5, narrowly ovate to elliptic, 6–7 mm long, 3–4 mm wide, white, rounded at apex. Petals 5, spathulate, 3–4 mm long, yellowish

orange, long stipitate; stipes 2–3 mm long; blades ca. 1 mm long, obovato-oblong, membranous. Stamens 2–4 mm long; anthers oblong, circ. 0.5 mm long; filaments 1–3 mm long, filiform, slightly dilated. Follicles 5–9, ellipsoidal, 5–6 mm long, circ. 2 mm wide, long stalked; stalks strigose with curved hairs; beaks less than circ. 1 mm long, hooked; seeds unknown.

Additional specimens examined: **JAPAN;** Kyushu, Miyazaki Pref., Koyu-gun, Kijô-cho, Kobutoko, 19 Oct. 1937, S. Yoshie s. n. (TI); Ishigawachi, alt. 100 m, along the River Komarugawa, 28 Jan. 1990, fl., T. Minamitani 34312 (TI), 30 April 2004, fr., T. Minamitani s. n. (TNS 728869–728870).

*Coptis minamitaniana* is distinguished from *C. quinquefolia* by the lack of stolons; from *C. ramosae* by having solitary flowers and obovate, cuspidate bracts; from *C. morii* by having solitary flowers, obovate, cuspidate bracts and membranous nectary blades.

According to the results of my field survey made on 30 October 2003 in Ishigawachi (alt. ca. 100 m), Kijô-cho, Koyu-gun, Miyazaki Prefecture, *Coptis minamitaniana* was found growing on mossy floors of evergreen broad-leaved forests comprised of *Carpinus laxiflora*, *Quercus glauca*, *Pourthiaea villosa* var. *laevis*, *Eurya japonica*, *Pieris japonica*, *Adina pilulifera* etc.

2. **Coptis morii** Hayata, Icon. Pl. Form. 3: 9, pl. 2 (1913).

**TYPE:** TAIWAN; Mt. Rontabunsan, April 1910, N. Mori s. n. (TI–holotype!).

*Coptis quinquefolia* auct. non Miq.: Masam., List Vasc. Pl. Taiwan 52 (1954) – Liu & Hsieh in H. L. Li & al., Fl. Taiwan ed. 1, 2: 494, pl. 386 (1976) – S. S. Ying, Alp. Pl. Taiwan 2: 161, fig. 38 (1978) – Hsiao, Fl. Reipubl. Popul. Sin. 79: 598 (1979) – Yang & Huang in T. C. Huang & al., Fl. Taiwan ed. 2, 2: 546, pl. 258 (1996) – W. T. Wang, Higher Pl. China 3: 486, fig. 776 [same as the figure of Liu and Hsieh 1976] (1998) – Yang & al., Man. Taiwan Vasc. Pl. 2: 153,



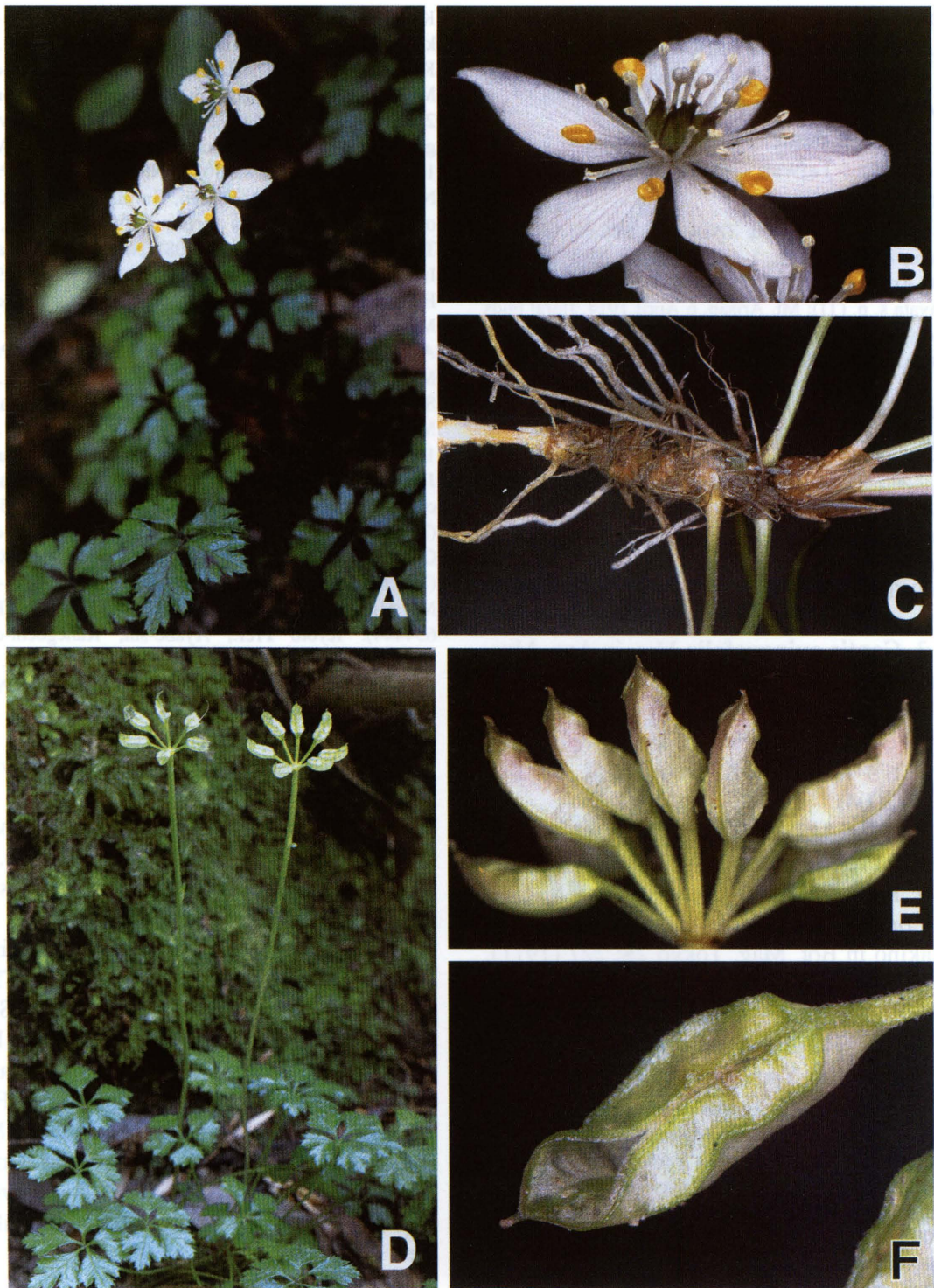


Fig. 2. *Coptis minamitaniana* Kadota (JAPAN: Kyushu; Miyazaki Pref., Koyu-gun, Kijô-cho, Ishigôchi, alt. 100 m, 3 March 1996 (A–B), 30 April 2004 (C–F); photo by Mr. T. Minamitani). A. Flowering plants. B. Flower. C. Creeping rhizome. D. Fruiting plants. E. Fructescence. F. Follicle.

photo 422 (1999) – Huang in Z. Y. Wu & D. Y. Hong, *Fl. China* 6: 307 (2001).

*Coptis quinquefolia* Miq. var. *ramosa* (Makino) Yamam., in sched.

Japanese name: Mingetsu-ôren.

Distr.: Taiwan (northern mountains). Endemic.

Specimens examined: TAIWAN; Taihoku, Urai-Rasaran, April 1933, fr., J. Ohwi 863 (TI, TNS 220810); Mt. Arisan, Mingetsu, 15 April 1916, fl. & y. fr., B. Hayata s. n. (TI); Mt. Arisan, 6 April 1914, floral buds and young fr., S. Sasaki s. n. (TNS 646020); Taoyuan Hsien, Daguan-shan (Lala-shan) Nature Protected Area to Mt. Lalashan, "in evergreen forest, along footpath, moist mossy place, alt. 1650 m, somewhat gregarious, sepals white, limb of petal pale yellowish green with white claw, anthers and filaments white, ovaries green", 22 March 1995, fl., T. Kawasaki 1534 (TNS 639957, 640529). Ilan Hsien, Mt. Taipingshan, 7 May 1917, fr., no collector's name (TI); Mt. Taipingshan, 2 March 1966, fl. & y. fr., C. C. Chuang & M. T. Kao 4089 (TI).

3. *Coptis quinquefolia* Miq. in *Ann. Mus. Bot. Lugd.-Bat.* 3: 7 (1867) – Kitam. & Murata, *Herb. Pl. Jap.* 2: 214, t. 421 (1961) – Satake & al., *Wild Flow. Jap.* 2: 87, pl. 87-3 (1982) – Kadota in K. Iwats. & al., *Fl. Jap. IIa*: (2004).

**TYPE:** JAPAN; Honshu, prov. Owari [Aichi Pref.], Keiske (L-syntype); Fuzi Jama [Mt. Fuji], Pierot (L-syntype).

*Coptis quinquefolia* Miq. var. *stolonifera* Makino in *Bot. Mag. Tokyo* 25: 227 (1911).

3a. var. *quinquefolia*

Japanese name: Baika-ôren, Gokayô-ôren.

Distr.: Honshu (from Yamagata [Mts. Azumasan] to Yamaguchi Prefs.). Endemic.

Representative specimens examined: Fukushima Pref., Fukushima-shi, Toriko-daira, alt. 1600 m, 9 June 1956, fl., H. Kanai s. n. (TI); Yama-gun, Inawashiro-machi, Mts. Azumasan, Mt. Iegatayama – Mt. Higashi-Daiten, alt. 1900 m, 3 Aug. 1981, fr., K. Midorikawa 810876 (TI); Mts. Azumasan, no date, fr., no collector's name (TNS 57175). Yamanashi Pref., Enzan-shi, Daibosatsu Pass, 3 May 1957, fl., T. Takano s. n. (TNS 139587). Shizuoka Pref., Fujinomiya-shi, Fumoto, the Tenshi Range, P 1960, alt. 1900 m, in coniferous forest, 7 May 1977, fl., Y. Kadota &

K. Inoue 4086 (TNS 664736); Shizuoka-shi, Ôgi-nokaname-Mt. Ôyarei, alt. 1900 m, 5–7 May 1978, fl., Y. Kadota 5029 (TNS); Haibara-gun, Hon-Kawane-cho, Mt. Tekaridake, alt. 2100 m, in *Abies mariesii* forest, 20 Aug. 1976, fr., Y. & N. Kadota 2878 (TI); Iwata-gun, Misakubo-cho, Ikeshima, alt. 1600 m, 28 April 1983, fl., M. Kurosawa 308 (TNS 26149). Gifu Pref., Nakatsugawa-shi, Mt. Enasan, Kuroisawa, alt. 1800 m, on floor of coniferous forest, 1 June 1996, fl., H. Takahashi 16491 (TNS 672108). Nagano Pref., Kami-ina-gun, Iijima-cho, Yodagirigawa, 19–21 June 1926, H. Koidzumi 11390 (TNS 706070); Chôgatake-koya Mt. Hut-Tokusawa, 25 July 1965, fl. & young fr., Y. Akasawa & al. 0672 (TKPM BSP116199). Mie Pref., Mie-gun, Komono-cho, Yunoyama, April 1923, fl., T. Satow s. n. (TNS 649141). Wakayama Pref., Higashi-Muro-gun, Nachi-katsuura-cho, Mt. Nachisan, 6 Jan. 1963, fl., G. Murata 17700 (TNS 158734; *Plantae Japonicae Exsiccatae* No. 21 from KYO); Kozagawa-cho, Tstsugawa, 23 Dec. 1996, fl., Ogawa & al. 5719 (TKPM BSP037141); Kita-Muro-gun, Miyama-cho, Chôshi-dani, 23 Nov. 1975, ste., C. Abe 58081, 58082 (TKPM BSP209291, 209292). Shiga Pref., Ôtsu-shi, Mt. Hieizan, 2 April 1939, Y. Araki 14853 (TNS 654444). Kyôto Pref., Ayabe-shi, Kanegôchi-cho, Asusugi Shrine, alt. 105 m, 3 April 1994, fl, R. Nishimura 915 (TNS 636729). Yamaguchi Pref., Kuga-gun, Akinaka-mura, Mt. Nishirogiyama, 19 March 1955, fl., M. Wada 2453 (TNS 369587).

Refer to Kadota (2004) for the synonymy of *C. quinquefolia*.

3b. var. *shikokumontana* Kadota, var. nov. [Figs. 3 B–D, 4]

A typo laminiis nectariorum cupulatis et stigmatibus valde revurvatis differt.

**TYPE:** JAPAN; Shikoku, Tokushima Pref., Mt. Tsurugisan, H. Kimura 236 (TNS 297779–holotype; Fig. 3 B). JAPAN; Shikoku, Tokushima Pref., Mt. Tsurugisan, Ni-no-mori, 17 May 1953, fl., Y. Akasawa 105788 (TKPM BSP116147–paratype; Fig. 3 C); Ehime Pref., Uma-gun, Doi-machi, Mt. Higashi-Akaishiyama, 5 May 1970, M. Hotta & H. Takahashi 8 (TNS 011340–paratype; Fig. 3 D), Japanese name: Shikoku-baika-ôren (nom. nov.).

Distr.: Shikoku. Endemic.

*Coptis quinquefolia* var. *shikokiana* is discriminated from var. *quinquefolia* by having cup-shaped nectary lobes and strongly

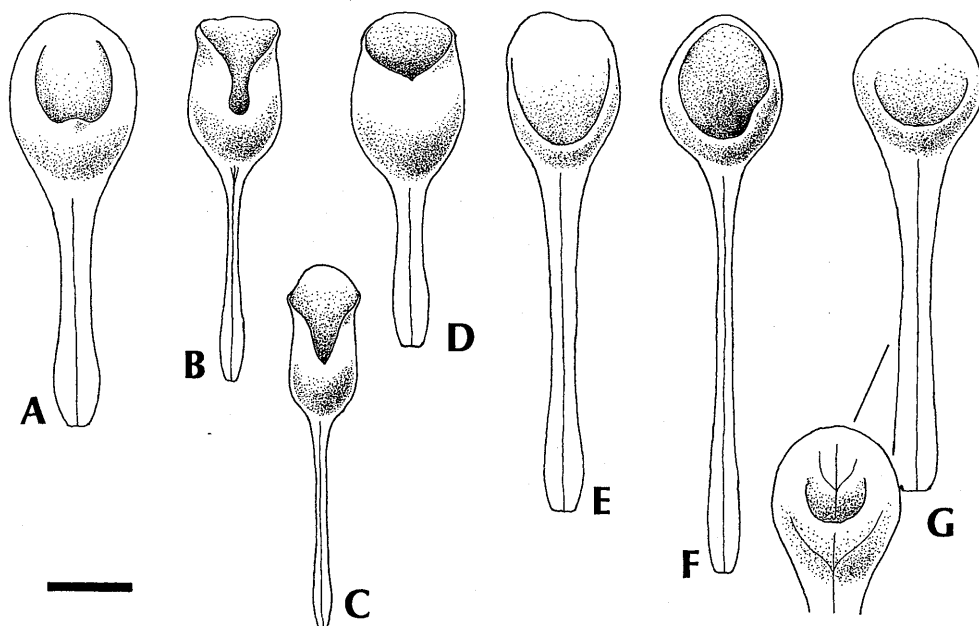


Fig. 3. Comparison of nectary shape between the species in *Coptis* sect. *Metacoptis* subsect. *Japonocoptis*. A. *C. quinquefolia* var. *quinquefolia* (JAPAN: Honshu, Shizuoka Pref., Shizuoka-shi, Mt. Ôyarei alt. 1900 m, 5–7 May 1978, Y. Kadota 5029, TNS). B–D. *C. quinquefolia* var. *shikokumontana*. B. JAPAN: Honshu, Mt. Tsurugisan, 5 June 1981, H. Kimura 236 (holotype, TNS 297776). C. JAPAN: Honshu, Mt. Tsurugisan, Ni-no-mori, Y. Akasawa 105788 (paratype, TKPM BSP116147). D. JAPAN: Honshu, Ehime Pref., Mt. Akaishiyama, M. Hotta & H. Takahashi 8 (paratype, TNS 011340). E. *C. minamitaniana* (JAPAN: Kyushu; Miyazaki Pref., Higashi-Usuki-gun, Tôgô-cho, T. Minamitani s. n. (holotype, TNS 728532). F. *C. ramosa* (JAPAN: Kyushu, Kagoshima Pref., Is. Yakushima, A. Yamamoto s. n. (TNS 344098). G. *C. morii* (TAIWAN: Taoyuan Hsien, Mt. Lalashan, T. Kawasaki 1534 (TNS 639957). Scale indicates 0.5 mm.

recurved stigmata.

Specimens examined: JAPAN: Shikoku; Tokushima Pref., Mt. Tsurugisan, 13 Aug. 1904, ste., J. Nikai 1269 (TI); Mt. Tsurugisan, 19 July 1911, fr., J. Nikai s. n. (TNS 22980); Mt. Tsurugisan, 5 July 1937, fr., C. Abe 9401 (TKPM BSP209296); Mt. Tsurugisan, 3 Aug. 1943, ste., T. Inobe 191 (TI); Mt. Tsurugisan, the summit, 8 June 1947, young fr., Y. Akasawa s. n. (TKPM BSP116139); Mt. Tsurugisan, 8 June 1947, fl., C. Abe 9402 (TKPM BSP209297); Mt. Tsurugisan, Ichi-no-mori, 17 May 1953, fl., Y. Akasawa 105823, 105825 (TKPM BSP116145, 116146); Mt. Tsurugisan, Ni-no-mori, 17 May 1953, fl., Y. Akasawa 105783, 105784, 105786, 105787 (TKPM BSP116136, 116137, 116144, 116148); Mt. Tsurugisan, 22 July 1955, fr., S. Takafuji 0158 (TKPM BSP040792); Mt. Tsurugisan, Ichi-no-mori, 19 July 1957, fr., S. Takafuji 783 (TKPM BSP006727); Mt. Tsurugisan, Ni-no-mori, 22 May

1960, fl., S. Takafuji 0351 (TKPM BSP040794); Mt. Tsurugisan, "Ohanabatake-michi", 13 May 1967, fl., C. Abe 25382 (TKPM BSP209298); Mt. Tsurugisan, Ni-no-mori, 13 May 1967, fl., C. Abe 25384 (TKPM BSP209299); Mt. Tsurugisan, Ichi-no-mori, 12 May no year, fl., S. Takafuji s. n. (TKPM BSP040793); Mt. Tsurugisan, Ichi-no-mori, 20 April 1971, fl., S. Takafuji s. n. (TKPM BSP054574, 054589); Mt. Tsurugisan, Ni-no-mori, 20 April 1971, fl., S. Takafuji s. n. (TKPM BSP030312); Mt. Tsurugisan, alt. 1750 m, 'on moss in subalpine *Abies* forest, fls white', 6 June 1984, fl., T. Yamazaki s. n. (TI). Kôchi Pref., Tosa-gun, Tosayama-mura, mt. Kuishiyama, 33°40'N 133°30'E, 6 April 2003, T. Matsuo FOK-607828 (MBK 0074419); Takaoka-gun, Sakawa-mura, 23 April 1896, fr., no collector's name (TNS 32498); Sakawa-cho, 24 Sept. 1955, ste., Y. Akasawa 32521 (TKPM BSP116138); Sakawa-cho, the Kinpu Shrine, 23 Feb.

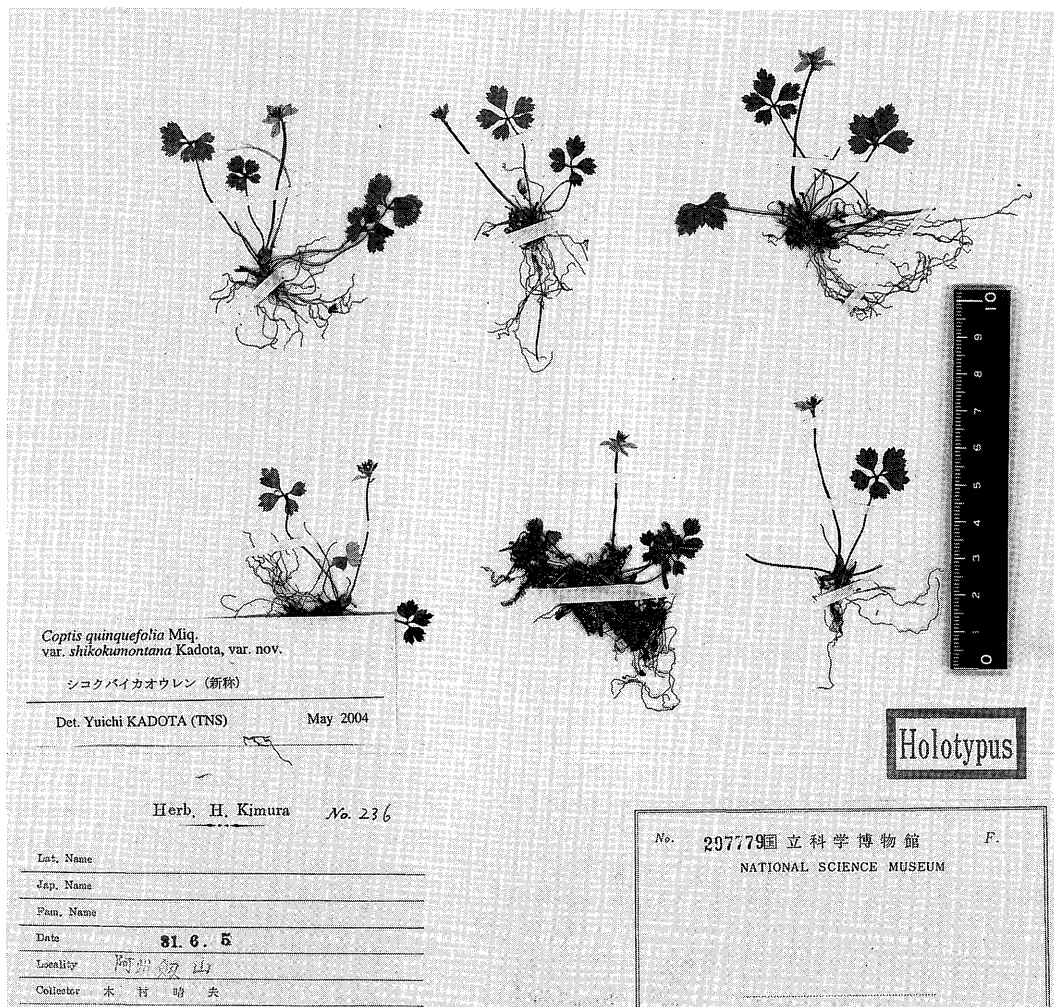


Fig. 4. Holotype of *Coptis quinquefolia* Miq. var. *shikokumontana* Kadota (JAPAN: Shikoku; Tokushima Pref., Mt. Tsurugisan, H. Kimura 236, TNS 728532).

1964, fl., K. Wada s. n. (MBK 0048745–0048748); Sakawa-cho, Ônaro, 33°31'N 133°17'E, 12 Feb. 2002, fl., N. Inagaki & al. FOK-007446 (MBK 0074415); Sakawa-cho, Tokano, Nishiyama, 33°28'N 133°16'E, 12 Feb. 2002, fl., N. Inagaki & al. FOK-016872 (MBK 0074416); Hidaka-mura, hashiratani, 13 March 1987, fl., Y. Koukami 1792 (MBK 0004638); Hidaka-mura, Makiyama, 18 March 1990, fl., S. Okumiya 5849 (MBK 0004646); Hidaka-mura, Hashiratani, 12 Feb. 1993, fl., K. Hosokawa 93-003 (MBK 0004647); Hidaka-mura, Imose Pass-Hon'mura, 33°33'N 132°33'E, 29 Jan. 2001, fl., Y. Okabe FOK-600490 (MBK 0074414); Hidaka-mura, Shimobun, Nishiki-

yama, 33°33'N 133°23'E, alt. 180 m, 20 Feb. 2002, fl., N. Nomura FOK-606493 (MBK 0074418); Hidaka-mura, Hongô, Imose Pass, 33°32'N 133°21'E, 13 Feb. 2002, N. Nomura FOK-606492 (MBK 0074417-paratype); Tosa-gun, Tosayama-mura, Mt. Kuishiyama, 20 May 1973, ste., C. Abe 47540 (TKPM BSP209301). Kôchi-shi, Mt. Ko-Takasakayama, 1 May 1938, fr., T. Yamawaki M38-047 (MBK 0004610). Kôchi Oref., no precise locality, April 1960, fr., T. Yamanaka 18909 (TNS 282088).

Although the specimens from the Tsurugi Mountains and Mt. Higashi-Akaishiyama are



cited as *C. quinquefolia* var. *shikokumontana* in this study, those from the Ishizuchi Mountains, western Shikoku, were not examined here. However, "*C. quinquefolia*" has been reported from the Ishizuchi Mountains (K. Yamamoto 1936, Jin'no 1960, S. Yamamoto 1978). These plants hitherto known as "*C. quinquefolia*" are likely to be ascribed to this variety judging from the images from some web sites (e. g., <http://www6.plana.or.jp/saragamine/040221data.html>).

4. ***Coptis ramosa*** (Makino) Ohwi, Fl. Jap. 537 (1953), 457 (1956), rev. ed. 633 (1972) – Kadota in K. Iwats. & al., Fl. Jap. **IIa**: (2004) – *Coptis quinquefolia* Miq. f. *ramosa* Makino in Bot. Mag. Tokyo **25**: 227 (1911) – Yamam, Suppl. Icon. Pl. Formos. **3**: 25 (1927), p. p. – *Coptis quinquefolia* Miq. var. *ramosa* (Makino) Ohwi in Bull. Natn. Sci. Mus., Tokyo (33): 72 (1953) – *Coptis ramosa* (Makino) Tamura in Acta Phytotax. Geobot. **17**: 118 (1958); in Satake & al., Wild Flow. Jap. **2**: 87 (1982), nom. superfl.

**TYPE**: JAPAN; Kagoshima Pref., Is. Yakushima, Sept. 1909, ste., T. Makino s. n. (MAK 095830–holotype; cf. <http://202.243.235.3/MakinoDB/makino/prep-j/MAK095830.html>).

*Coptis quinquefolia* Miq. var. *pedatoquinquefolia* Koidz. in Bot. Mag. Tokyo **37**: 39 (1923) – Masam., Fl. Geobot. Yakushima 190 (1934) – Satake in J. Jpn. Bot. **24**: 74 (1949) – Kitam. & Murata, Col. Illust. Herb. Pl. Jap. **2**: 214 (1961).

Japanese name: Ô-baika-ôren, Ô-gokayô-ôren.

Distr.: Is. Yakushima, Kagoshima Pref. Endemic.

Specimens examined: JAPAN: Kyushu, Kagoshima Pref., Is. Yakushima, 4 Sept. 1910, Y. Nakano s. n. (TNS 28690); Is. Yakushima, Aug. 1913, Y. Yoshii s. n. (TNS 388591); Is. Yakushima, 9 April 1954, M. Takeuchi s. n. (TI); Is. Yakushima, Shiratani-Unsuikyô, 27 March 1975, fl. & fr., A. Yamamoto s. n. (TNS 344098); Is. Yakushima, Kosugidani, 14 Aug.

1963, fr., T. Inobe s. n. (TKPM BSP042705); Is. Yakushima, Hanaegô, 24 March 1964, fl., N. Satomi s. n. (TKPM BSP032771, 048806); Is. Yakushima, Kosugidani, alt. ca. 750 m, 'in planted *Cryptomeria japonica* forest', 30 March 1966, fr., H. Ohba 662555 (TI); Is. Yakushima, Suzukawa, alt. 600 m, 27 Feb. 1968, y. fr., C. Chuma s. n. (TI); Is. Yakushima, Odakuni Valley, 3 March 1968, fr., H. Ohba 38 (TI); Is. Yakushima, Kosugidani–Kusugawa Forest Road, 14 March 1969, F. Konta 7463 (TNS 636592); Is. Yakushima, Kosugidani, 31 March 1975, young fr., C. Abe 50916, 50918 (TKPM BSP209302, 209303); Is. Yakushima, Shiratani-Unsui-kyô, alt. 620–900 m, 8 May 1984, fr., J. Murata & al. 17823 (TI); Is. Yakushima, Yakusugi-Land, 24 March 1985, fl., J. Sato s. n. (TI); Is. Yakushima, Mt. Aikodake, 9 April 1990, fr., K. Midorikawa & al. 904034 (TI).

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門田裕一：オウレン属ミツバオウレン節バイカオウレン亜節（キンボウゲ科）の分類学的再検討—日本産1新種と1新変種の記載—

オウレン属ミツバオウレン節バイカオウレン亜節 *Coptis* sect. *Metacoptis* subsect. *Japonocoptis*（キンボウゲ科）の分類学的再検討を行った。その結果、この亜節は日本と台湾に分布し、1新種ヒュウガオウレン *C. minamitaniana* Kadota とバイカオウレン *C. quinquefolia* Miq. の1新変種シコクバイカオウレン var. *shikokumontana* Kadota を含む、4種1変種から成ることを明らかにした。

ヒュウガオウレンは宮崎市の南谷忠志氏が1983年にその存在に気づき、1986年に確認したものである。同氏は本植物を、最初バイカオウレン *C. quinquefolia* Miq. と考え、後になって屋久島産のものと同じのオオバイカオウレン *C. ramosa* (Makino) Ohwi（この学名を用いることについては本文を参照されたい）とみなした。ヒュウガオウレンはストロンを出さないことでバイカオウレンとは明瞭に区別でき、オオバイカオウレンからは花が単生し、花茎につく苞の縁が切形となって先端が尾状に伸びる点で区別できる。台湾にはミンゲツオウレン *C. morii* Hayata があるが、ヒュウガオウレンは花が単生し、苞の先が尾状に伸びることのほかに、花卉の舷部が倒卵形で膜状になることでこれとは異なる。原寛博士が東京大学所蔵の宮崎県産標本に裸名ながらウスババイカオウレン *C. quinquefolia* var. *tenuis* の名前を与えたよ

うに、ヒュウガオウレンの葉は質が薄いことも重要な特徴の一つである。ヒュウガオウレンはまた生育環境の点でも他のオウレン属植物と異なっている。2003年10月に同県児湯郡木城町（標高150m前後）で行った現地調査では、河川沿いのアラカシ、カマツカ、タニワタリノキ、アセビなどの常緑広葉樹林内でのコケの間に生育しているのが観察された。南谷氏による現地調査の結果からは、ヒュウガオウレンは宮崎県・尾鈴山西麓の標高100-500mの範囲に分布しているものと推定されている。

バイカオウレンは本州では山形・福島両県の県境に位置する吾妻山から山口県・寂地山まで比較的広く分布するが、四国山地にも隔離的に分布している。今回改めて四国のものを検討したところ、花卉（蜜弁）の舷部がコップ状になり、柱頭が強く反曲する点で本州のバイカオウレンと異なることが明らかになった。そこで四国のものをバイカオウレンの新変種、シコクバイカオウレンとして記載した。

以上の結果にもとづき、オウレン属ミツバオウレン節バイカオウレン亜節の種は次のように区別される：

1. 根茎は細くかつ長く、ストロンを出す；花は花茎に単生する；花卉の舷部は肉質（広義の

- バイカオウレン)
2. 花卉の舷部は皿状；花柱は直立あるいは緩やかに反曲する ..... バイカオウレン (本州；山形県～山口県)
  2. 花卉の舷部はコップ状；花柱は強く反曲する ..... シコクバイカオウレン (四国山地)
  1. 根茎は太くかつ短くあるいはやや長く、ストロンを出さない
    3. 葉は洋紙質；花は単生する；苞は倒卵形，先端は尾状に短く尖る；花卉の舷部は皿状，質が薄く肉質とはならない ..... ヒュウガオウレン (宮崎県)
  3. 葉は革質；花は花茎に 1-4 花着く；苞は狭卵形，先端は漸尖形
    4. 花卉の舷部は半球形で深く，質が薄く肉質とならない；頂小葉は倒卵形～菱形，多少とも羽裂する；苞は全縁 ..... オオゴカヨウオウレン (屋久島)
    4. 花卉の舷部は皿状で浅く，肉質となる；頂小葉は卵形～菱形，粗い鋸歯がある；苞はしばしば 3 裂する ..... ミンゲツオウレン (台湾北部)
- (国立科学博物館植物研究部)