

Taxonomic Studies of *Cirsium* (Asteraceae) in Japan XIX. Two New Species from Honshu, Central Japan

Yuichi Kadota

Department of Botany, National Museum of Nature and Science,
Amakubo 4–1–1, Tsukuba, 305–0005 Japan
E-mail: kadota@kahaku.go.jp

Abstract *Cirsium myokoense* Kadota is described from Niigata Pref., Honshu, and is distinguished from *C. tenuipedunculatum* Kadota by having thicker, cylindrical involucre, patent and longer involucre phyllaries, longer and thicker peduncles, membranous, ovate to broadly ovate, medially pinnatifid cauline leaves and the absence of glandular bodies on inner and middle involucre phyllaries. *Cirsium nagisoense* Kadota is described from Nagano Pref. and is distinguished from *C. furusei* Kitam. by having cauline leaf blades glaucous (not woolly) below, adpressed, non spinulose involucre phyllaries and oblong to oblanceolate glandular bodies on bodies on all the involucre phyllaries. Both *C. myokoense* and *C. nagisoense* are endemic to Honshu, Japan, and belong to sect. *Onotrophe* (Cass.) DC. subsect. *Reflexae* Kadota (the *Cirsium kagamontanum* group).

Key words: *Cirsium kisoense*, *Cirsium myokoense*, *Cirsium nagisoense*, *Cirsium spinuliferum*, Japan, new combinations, new species.

Introduction

This is part of a revisional work on Japanese *Cirsium* (Asteraceae) (Kadota, 1989–2008; Kadota and Nagase, 1988).

Subsect. *Reflexae* Kadota of sect. *Onotrophe* (Cass.) DC. (= the *Cirsium kagamontanum* group) is characterized by the absence of radical leaves, nodding heads, narrowly cylindrical to cylindrical involucre and the chromosome number of $2n=2x=34$ and is considered to be a plant group that is extraordinarily differentiated in Honshu and Shikoku Islands, the Japanese Archipelagoes (Kadota, 2007b). Within this plant group there still remain several undescribed taxa especially in the central part of Honshu. Here I describe two new species from Honshu in the subsect. *Reflexae*.

Taxonomic treatment

Genus *Cirsium* Mill., Gard. Dict. Abringd. ed. 4, 1 (1754), emend. Scop., Fl. Carn. 355 (1760).

Sect. **Onotrophe** (Cass.) DC., Prodr. 6: 644 (1837).

Genus *Onotrophe* Cass. in Dict. Sci. Nat. 36: 145 (1825).

Ser. *Onotrophe* (Cass.) Maxim. in Bull. Acad. Sci. St.-Petersb. 19: 502 (1874).

Subsect. **Reflexae** (Kitam.) Kadota, Fl. Jap. IIIa: 148 (1995).

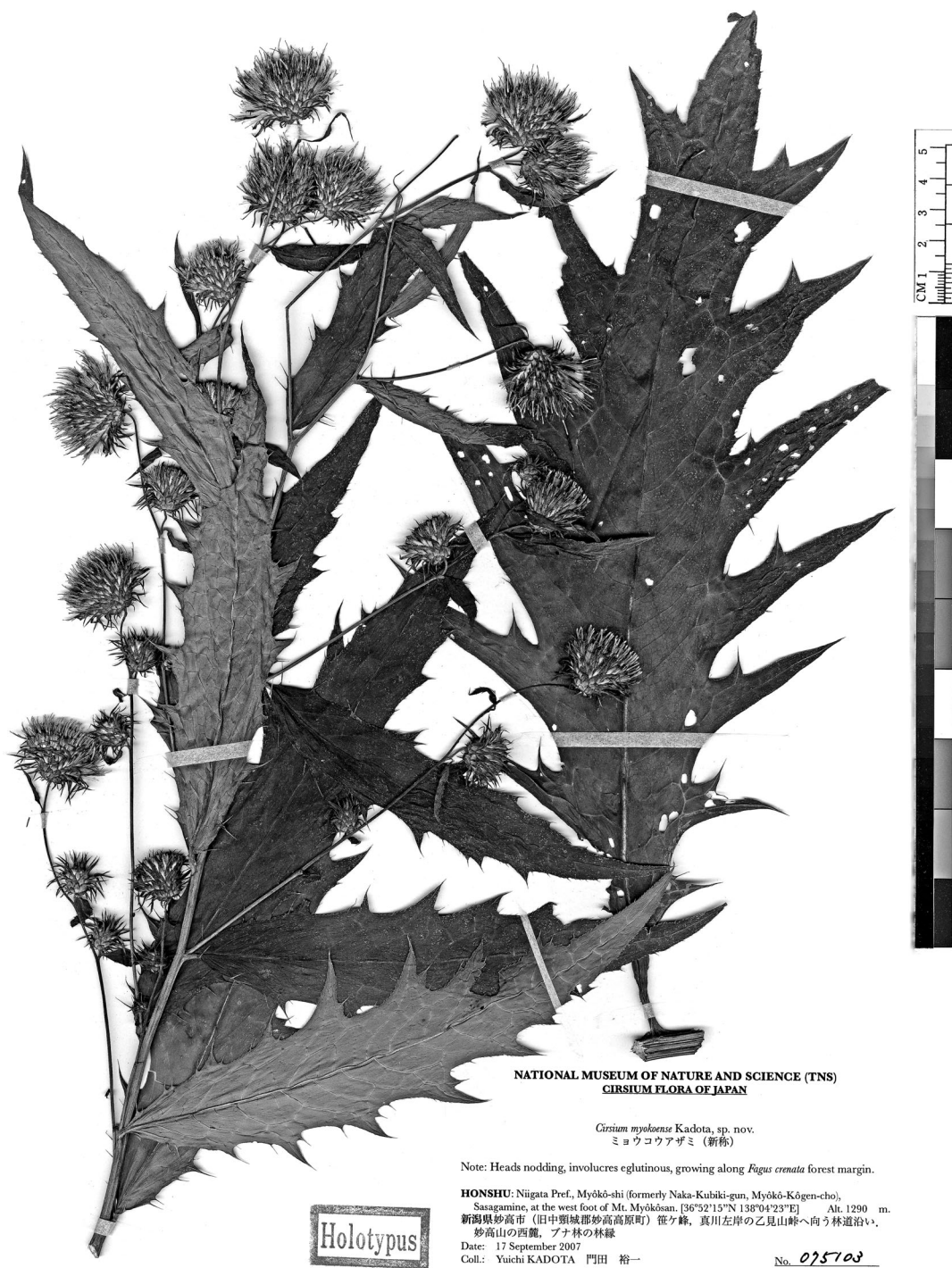
Ser. *Reflexe* Kitam. in Acta Phytotax. Geobot. 3: 5 (1934), p. p.

Ser. *Imbricatae* Kitam. in Acta Phytotax. Geobot. 3: 5 (1934), p. p.

1. ***Cirsium myokoense*** Kadota, sp. nov.

[Figs. 1 and 2]

Differt ab *Cirsio tenuipedunculato*, caule bene ramoso ramis divaricatis, phyllariis involucri (8–)9–10-seriatis, flosculis longioribus, pedunculis crassioribus, acheniis costatis; ab *C. horiano*, caule bene ramoso ramis divaricatis, pedunculis crassioribus, foliis mediis caulinis pinnatifidis, vittis vestigialibus non nisi super phyllariis involucri intimis, phyllariis exteri-



NATIONAL MUSEUM OF NATURE AND SCIENCE (TNS)
CIRSIUM FLORA OF JAPAN

Cirsium myokoense Kadota, sp. nov.
ミョウコウアザミ (新種)

Note: Heads nodding, involucre eguttinuous, growing along *Fagus crenata* forest margin.

HONSHU: Niigata Pref., Myōkō-shi (formerly Naka-Kubiki-gun, Myōkō-Kōgen-cho),
Sasagamine, at the west foot of Mt. Myōkōsan. [36°52'15"N 138°04'23"E] Alt. 1290 m.
新潟県妙高市 (旧中頸城郡妙高高原町) 笹ヶ峰, 真川左岸の乙見山峠へ向う林道沿い、
妙高山の西麓、フナ林の林縁

Date: 17 September 2007

Coll.: Yuichi KADOTA 門田 裕一

No. 075703

769885

Fig. 1. Type specimen of *Cirsium myokoense* Kadota (JAPAN: HONSHU; Niigata Pref., Myōkō-shi, Sasagamine, alt. 1290 m, 17 September 2007, Y. Kadota 075103, TNS 769885, holotype).

nis involucriorum longioribus.

TYPE: JAPAN: HONSHU; Niigata Pref., Myôkô-shi (former Naka-Kubiki-gun, Myôkô-Kôgen-cho), Sasagamine, at the foot of Mt. Myôkô-san [36°52'15"N 138°04'23"E], alt. 1290 m, 17 September 2007, Y. Kadota 075103 (TNS 769885–holotype; Fig. 1).

A hermaphrodite, perennial, herbaceous plant, 1–2 m tall or taller. Rootstock stout, horizontal, up to 5 cm in diameter, with cord-like roots. Stem declining, well branched from the middle part, leafy, arachnoid and covered with short brownish hairs chiefly in the upper part. Basal leaves withering at anthesis. Middle cauline leaves dull green on the adaxial side, membranous, neither auriculate nor amplexicaul, short petiolate; blades narrowly ovate to lanceolate in outline, 15–35 cm, 4–18 cm broad, glabrous on the adaxial side and sparingly pubescent with long brownish hairs along midribs on the abaxial side, shallowly to medially pinnatifid or frequently

coarsely dentate, if pinnatifid, 5–8-jugate; lobes narrowly ovate, 2–7 cm long, 1–2.5 cm broad, with weak spines 1–3 mm long; petioles 0.3–1 cm long. Upper cauline leaves coarsely dentate, subsessile. Flowers in September. Capitula 2–3 in a loose raceme, nodding, with peduncles 4–7 cm long; subtending leaves 2–5, lanceolate to narrowly ovate, 0.5–1 cm long, with sharp spines ca. 1 mm long. Involucre cylindrical, 18–20 mm long, 8–10 mm (*in vivo*) and 2–3 cm (*in sicco*) in diameter, sparingly arachnoid. Phyllaries 9–10-seriate, patent to gently recurved; glandular bodies absent, eglandular; middle phyllaries sometimes provided with spinules along the margin; outer phyllaries ovate with long acuminate tips, 5–8 mm long, clearly shorter than the inner ones, herbaceous, terminated with sharp spines ca. 1 mm long. Corollae pale violet, 14–15 mm long; lobes 3–4 mm long; throats 4.5–5 mm long; tubes 6 mm long, slightly longer than the throats. Achenes grayish brown, ca.



Fig. 2. Habit of *Cirsium myokoense* Kadota (JAPAN: HONSHU; Niigata Pref., Myôkô-shi, Sasagamine, alt. 1290 m, 17 September 2007). Left corner inset shows a nodding capitulum.

3.5 mm long, ribbed; pappus sordid, 8–13 mm long.

Chromosome number: $2n=2x=34$.

Japanese name: Myôkô-azami (nom. nov.).

Distribution: Honshu (the Kubiki Mountain Range, Myôkô Mountains; Fig. 5, star). Endemic to Japan.

Additional specimens examined: JAPAN: HONSHU; Niigata Pref., Naka-Kubiki-gun, Myôkô-Kôgen-cho, Sasagamine, alt. 1400 m, 28 Sept. 2002, Y. Kadota 203017–203025 (TNS 730703–730710, 730741–730742); Myôkô-shi, Sasagamine, at the foot of Mt. Myôkô-san [36°52′15″N 138°04′23″E], alt. 1290 m, 17 September 2007, Y. Kadota 075101–075102 (TNS 769883–769884).

Cirsium myokoense is distinguished from *C. tenuipedunculatum* Kadota [= *C. effusum* auct. non (Maxim.) Matsum.: cf. Kadota, 1993] by having cylindrical and thicker involucre, patent (spreading) and longer involucral phyllaries, longer and thicker peduncles, membranous, ovate, medially pinnatilobate cauline leaves and the absence of glandular bodies on inner and middle involucral phyllaries. *Cirsium tenuipedunculatum* is known as a member of the Fossa Magna (Fuji–Hakone) Elements plants and is distributed in Mt. Fuji and its neighboring area and the northern part of the Akaishi Mountain Range.

Cirsium myokoense is different from *C. horiiianum* Kadota by having longer peduncles, cylindrical involucre, patent (spreading) involucral phyllaries, shorter florets and shorter, ribbed achenes. *Cirsium horiiianum* is restricted to the Oga Mountains, Akita Pref., northern Honshu. The locality of *C. horiiianum* is distant from that of *C. myokoense* by ca. 400 km in beeline distance (Kadota, 2005).

Cirsium myokoense grows exclusively along the margin of *Fagus crenata* woods. The range of *C. myokoense* is restricted to the southern slopes of the Myôkô Mountains, central Honshu, Japan (Fig. 5, star).

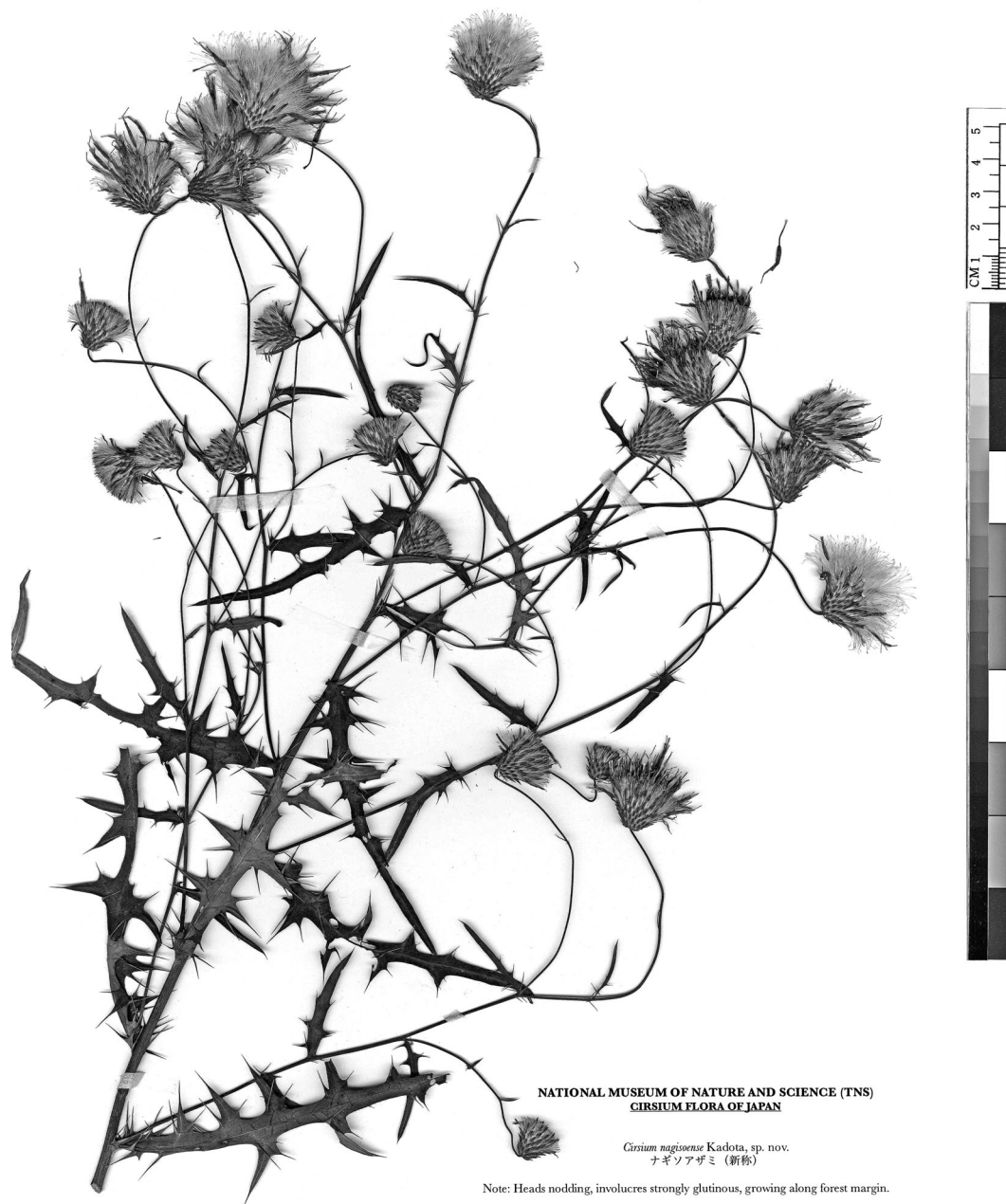
2. *Cirsium nagisoense* Kadota, sp. nov.

[Figs. 3, 4 and 6A]

Differt ab *Cirsio furusei*, foliis caulibus subterglaucis (non lanatis), phyllariis involucri adpressis integris (sine spinulis), vittis bene evolutis oblongis vel oblanceolatis.

TYPE: JAPAN: HONSHU; Nagano Pref., Kiso-gun, Nagiso-machi, Azuma, Araragi, at the foot of Mt. Nagiso-dake, 35°34′31″N 137°38′12″, alt. 990 m, 20 September 2007, Y. Kadota 075401 (TNS 769879–holotype; Fig. 3).

A hermaphrodite, perennial, herbaceous plant, 0.7–2 m high. Root stock sturdy, oblique to suberect, up to 2 cm in diameter, with firm, cord-like roots. Stem erect to inclining, sulcate, well branched from the middle part, sparingly arachnoid and densely covered with multicellular, brownish hairs throughout the surface; branches well elongated. Basal leaves withering at anthesis. Middle cauline leaves deep green, herbaceous; blades narrowly ovate in outline, 16–35 cm long, 5–15 cm wide, glaucous on the abaxial side, almost glabrous on both sides, deeply pinnatilobate, sessile, amplexicaul, not decurrent; lobes 6–11-jugate, ovate, 2.5–7 cm long, 0.7–1.5 cm wide, with strong and sharp spines up to 10 mm long. Upper cauline leaves narrowly ovate, smaller than the middle, diminishing in size, glabrous, sessile, amplexicaul. Flowers in September to October. Capitula nodding, 3–4 in a loose corymb or solitary, long pedunculate; peduncles 6–17 cm long, densely pubescent with multicellular, brownish hairs; subtending leaves 3–5, lanceolate, 2–4 mm long, provided with weak spines less than 1 mm long. Involucre narrowly cylindrical, exceedingly glutinous, 13–15 mm long, 5–8 mm (*in vivo*) and 1–1.5 cm (*in sicco*) in diameter, sparingly arachnoid. Phyllaries 9–10-seriate, herbaceous, terminated with weak spines less than 1 mm long; innermost phyllaries broadly linear, ca. 15 mm long, erect; middle phyllaries narrowly ovate, ca. 1 cm long, adpressed; outer phyllaries ovate, adpressed, 2–4 mm long, 1/5 shorter than the inner ones; glandular bodies well developed, oblong to oblanceolate on all the phyllaries.



NATIONAL MUSEUM OF NATURE AND SCIENCE (TNS)
CIRSIIUM FLORA OF JAPAN

Cirsium nagisoense Kadota, sp. nov.
ナギソアザミ (新称)

Note: Heads nodding, involucre strongly glutinous, growing along forest margin.

HONSHU: Nagano Pref., Kiso-gun, Nagiso-machi, Azuma, Araragi, near the entrance to Mt. Nagisodake. [35°34'31"N 137°38'12"E] Alt. 990 m.
長野県木曾郡南木曾町吾妻, 關, 南木曾岳登山口付近.

Date: 20 September 2007
Coll.: Yuichi KADOTA 門田 裕一

No. 075401

Holotypus

TNS Database

769879

Fig. 3. Type specimen of *Cirsium nagisoense* Kadota (JAPAN: HONSHU; Nagano Pref., Kiso-gun, Nagiso-machi, Azuma, Araragi, at the foot of Mt. Nagiso-dake, alt. 990 m, 20 September 2007, Y. Kadota 075401, TNS 769879, holotype).



Fig. 4. Habit of *Cirsium nagisoense* Kadota (JAPAN: HONSHU; Nagano Pref., Kiso-gun, Nagiso-machi, Azuma, Araragi, at the foot of Mt. Nagiso-dake, alt. 990 m, 20 September 2007). Left corner inset shows a nodding capitulum.

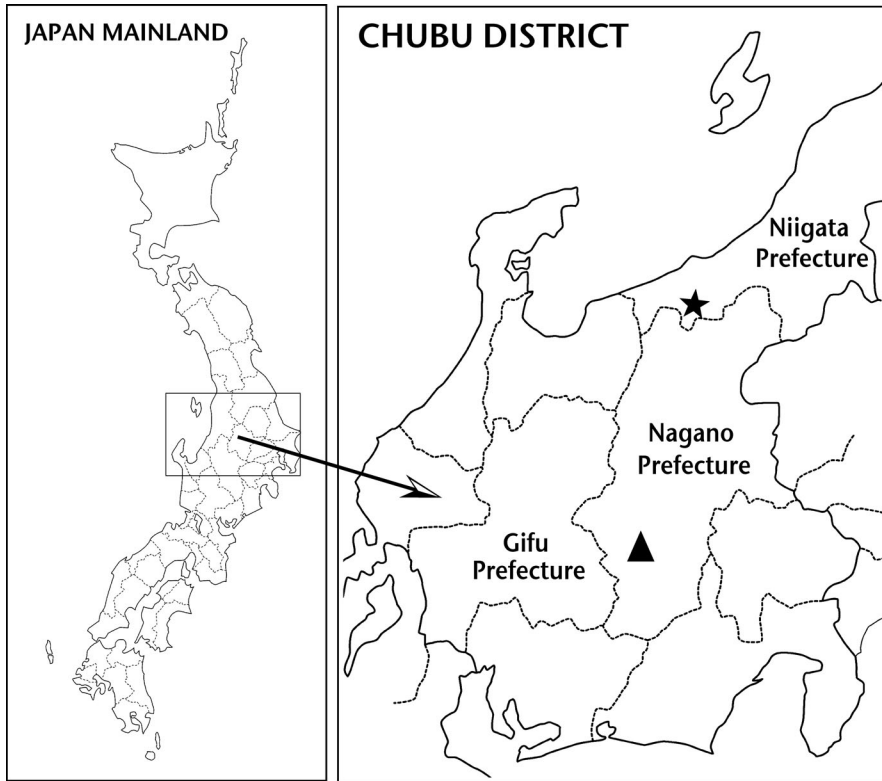


Fig. 5. Distribution of *Cirsium myokoense* Kadota (star) and *C. nagisoense* Kadota (triangle).

Corollae violet to pale violet, 14–15 mm long; lobes 2.5–4 mm long; throats 4.5–5 mm long; tubes 6–7 mm long, slightly longer than the throats. Achenes grayish brown, minutely light purple-spotted or -striated, ca. 3 mm long, angled, finely striate, tapered to the base; pappi ivory-white, 8–13 mm long.

Chromosome number: $2n=2x=34$.

Distribution: Central Honshu (Nagano Pref., the southernmost part of the Kiso Mountain Range; Fig. 5, triangle). Endemic to Japan.

Japanese name: Nagiso-azami (nom. nov.).

Additional specimens examined: JAPAN: HONSHU; Nagano Pref., Kiso-gun, Nagiso-machi, Azuma, Araragi, Mt. Nagiso-dake, alt. 950–1060 m, 30 Oct. 1997, Y. Kadota 978011–978021, 978030–978036 (TNS 6510400–651400, 651392–651414); at the foot of Mt. Nagiso-dake, alt. 900 m, 28 Oct. 1997, Y. Kadota 978041–978045 (TNS 651423–651430);

at the foot of Mt. Nagiso-dake, 35°34′31″N 137°38′12″, alt. 990 m, 20 Sept. 2007, Y. Kadota 075402–075416 (TNS 769852–769870); Nagiso-machi, Hirose, Chôjabata, alt. 1020 m, 29 Oct. 1997, Y. Kadota 978051–978059 (TNS 651616–651620, 651691–651699); Nagiso-machi, Hirose, Chôjabata Rindô [a forest road], alt. 1040 m, 29 Oct. 1997, Y. Kadota 978061–978062 (TNS 651597–651603).

Cirsium nagisoense is distinguished from *C. furusei* Kitam. (Fig. 6B) by cauline leaf blades glaucous below (not woolly), adpressed, entire (not spinulose), involucrel phyllaries, oblong to oblanceolate glandular bodies on the inner and middle involucrel phyllaries.

Cirsium spinuliferum (Kitam.) Kadota, **stat. nov.** [basonym: *Cirsium kagamontanum* Nakai var. *spinuliferum* Kitam. in Mem. Coll. Sci. Kyoto Imper. Univ., ser. B, **13**: 99 (1937)–*C. furusei* Kitam. var. *spinuliferum* (Kitam.) Kitam.

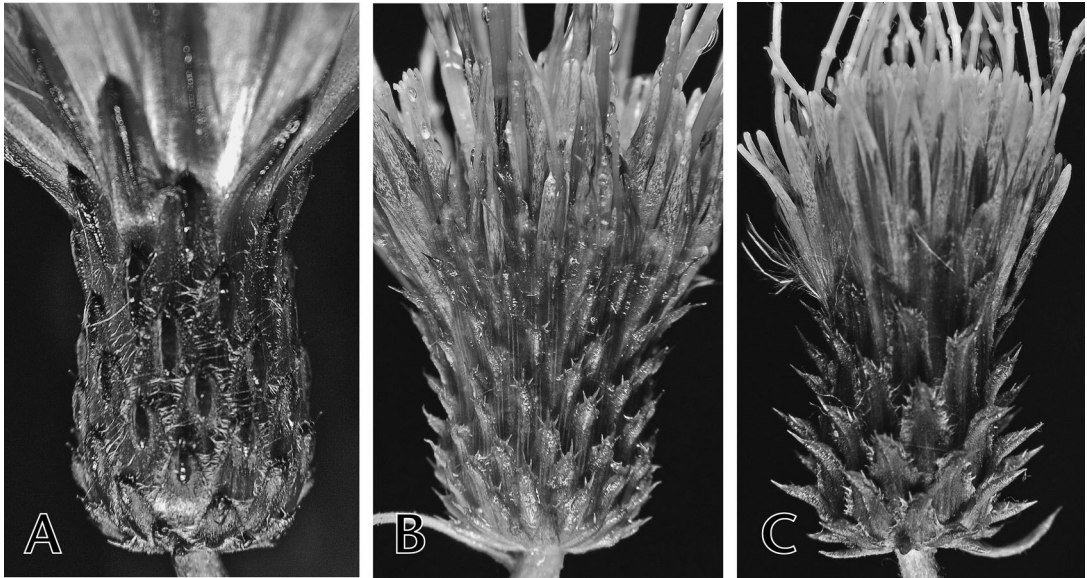


Fig. 6. Comparison among *Cirsium nagisoense* Kadota, *C. furusei* Kitam. and *C. spinuliferum* (Kitam.) Kadota in involucre. **A.** *C. nagisoense* (Nagano Pref., Kiso-gun, Nagiso-machi, Mt. Nagiso-dake). **B.** *C. furusei* (Nagano Pref., Kiso-gun, Ôkuwa-mura, Mt. Kosumo-yama). **C.** *C. spinuliferum* (Nagano Pref., Iida-shi, Mt. Surikogi-yama).

in Satake et al., Wild Fl. Jap. Herb. Pl. **III**: 218 (1981), comb. nud. **TYPE**: JAPAN: Honshu; Prov. Shinano [=Nagano Pref.], Mt. Koma [=Mt. Kiso-Komagatake], 28 Aug. 1936, G. Koidzumi s.n. (holotype-KYO !); Fig. 6C] is discriminated from *C. nagisoense* by having cylindrical involucre and shortly recurved, spinulose involucreal phyllaries. *Cirsium spinuliferum* is distributed in the southeastern part of the Kiso Mountain Range.

Cirsium kisoense (T. Yamaz. et S. Asano) Kadota, **stat. nov.** [basionym: *Cirsium norikureense* Nakai var. *kisoense* T. Yamaz. et S. Asano in J. Jpn. Bot. **40**: 5, fig. 5 (1965). **TYPE**: JAPAN: Honshu; Nagano Pref., Shimoina-gun, Iida [Iida-shi], Mt. Nenzyo [Mt. Nenjô-dake], Kamimatsukawa, alt. 1600 m, 12 Aug. 1963, T. Yamazaki and S. Asano 7580 (holotype-TI !)] is different from *C. nagisoense* by having cauline leaf blades densely woolly on the abaxial side and long and strongly recurved, spinulose involucreal phyllaries. *Cirsium kisoense* is distributed on the eastern foot of the Kiso Mountain Range and the southern foot of Mts. On-take, Nagano Pref.,

Honshu.

Cirsium nagisoense is restricted to the southern slopes of Mt. Nagiso-dake, Nagano Pref., Honshu (Fig. 5, triangle), and grows near streams along summer-green woods and/or *Cryptomeria japonica* plantations.

Acknowledgement

I wish to give my sincere thanks to Prof. Dr. T. Nishikawa for his counting the chromosome numbers of *Cirsium myokoense* and *C. nagisoense*.

References

- Kadota, Y. 1989. Genus *Cirsium*. In: Ono, M., Ohba, H. and Nishida, M. (eds.), Makino's New Illustrated Flora of Japan. pp. 799–807. Hokuryukan, Tokyo (in Japanese).
- Kadota, Y. 1990. Taxonomy and distribution of *Cirsium brevicaule* A. Gray and its related species (Asteraceae). *Memoirs of the National Science Museum* (23): 51–61.
- Kadota, Y. 1991. Taxonomic studies of *Cirsium* (Asteraceae) of Japan I. Alpine species of central Honshu — the *Cirsium fairiei* group. *Bulletin of the National Sci-*

- ence Museum, Series B 17: 123–139.
- Kadota, Y. 1993. Lectotypification of six species and a new species of Japanese *Cirsium* (Asteraceae). *Bulletin of the National Science Museum, Series B* 19: 45–57.
- Kadota, Y. 1995a. Genus *Cirsium* (Asteraceae). In: Iwatsuki, K., Yamazaki, T., Boufford, D. E. and Ohba, H. (eds.), Flora of Japan new English ed., 2nd ed. **IIIb**: 119–151. Maruzen, Tokyo.
- Kadota, Y. 1995b. Taxonomic studies of *Cirsium* (Asteraceae) of Japan II. Three new species and a new variety of *Cirsium nipponicum* (Maxim.) Makino from central Honshu. *Bulletin of the National Science Museum, Series B* 20: 13–27.
- Kadota, Y. 1996. *Cirsium abukumense* — a new species of *Cirsium* (Asteraceae) from the Abukuma Mountains, northeastern Japan. *Memoirs of the National Science Museum* (29): 93–98.
- Kadota, Y. 1997a. Taxonomic studies of *Cirsium* (Asteraceae) of Japan III. *Cirsium occidentalinipponense*, sp. nov. with special reference to the lectotypification of *Cirsium borealinipponense* Kitam. *Bulletin of the National Science Museum, Series B* 23: 115–125.
- Kadota, Y. 1997b. Genus *Cirsium*. In: Shimizu, T. (ed.), Flora of Nagano Prefecture, pp. 1127–1140. Shinano Mainichi Shinbunsha, Nagano (in Japanese).
- Kadota, Y. 1998a. Taxonomic studies of *Cirsium* (Asteraceae) of Japan IV. Notes on *Cirsium lucens* Kitam. from southwestern Japan. *Memoirs of the National Science Museum* (30): 65–71.
- Kadota, Y. 1998b. Taxonomic studies of *Cirsium* (Asteraceae) of Japan V. *Cirsium umezawanum*, a new species from Island Rishiri, Hokkaido and a new white-flowered form of *Cirsium amplexifolium* Kitam. *Bulletin of the National Science Museum, Series B* 24: 147–156.
- Kadota, Y. 1999. Taxonomic studies of *Cirsium* (Asteraceae) of Japan VI. Two new species, *Cirsium hidakamontanum* and *Cirsium zawoense* from northern Japan. *Bulletin of the National Science Museum, Series B* 25: 95–105.
- Kadota, Y. 2000. Taxonomic studies of *Cirsium* (Asteraceae) in Japan VII. Notes on *Cirsium congestissimum* Kitam. and *Cirsium tenue* Kitam. and the identity of *Cirsium tenue* Kitam. var. *ishizuchiense* Kitam. *Memoirs of the National Science Museum* (32): 127–134.
- Kadota, Y. 2002a. Taxonomic studies of *Cirsium* (Asteraceae) in Japan VIII. *Cirsium shidokimontanum*, a new species from middle Honshu. *Bulletin of the National Science Museum, Series B* 28: 99–106.
- Kadota, Y. 2002b. Taxonomic studies of *Cirsium* (Asteraceae) in Japan IX. On the entity of *Cirsium yatsugatakense* Nakai. *Memoirs of the National Science Museum* (38): 110–118.
- Kadota, Y. 2003. Taxonomic studies of *Cirsium* (Asteraceae) in Japan X. Species described by Franchet and Savatier. *Bulletin of the National Science Museum, Series B* 29: 45–64.
- Kadota, Y. 2004a. Taxonomic studies of *Cirsium* (Asteraceae) in Japan XI. A new subsection and two new species belonging to the subsection, from Southern Kyushu. *Bulletin of the National Science Museum, Series B* 30: 63–69.
- Kadota, Y. 2004b. Taxonomic studies of *Cirsium* (Asteraceae) in Japan XII. Subsect. *Niponensia* subsect. Nov. and a new species, *C. hachimantaiense*, belonging to the new subsection. *Bulletin of the National Science Museum, Series B* 30: 117–133.
- Kadota, Y. 2004c. Classification of the genus *Cirsium* (Asteraceae) in Japan. *Bulletin of the Fukui Botanical Garden* (2): 1–6 (in Japanese).
- Kadota, Y. 2005. Taxonomic studies of *Cirsium* (Asteraceae) in Japan XIII. Three new species from Tohoku district, northern Japan. *Bulletin of the National Science Museum, Series B* 31: 35–47.
- Kadota, Y. 2006a. Taxonomic studies of *Cirsium* (Asteraceae) in Japan XIV. Notes on *Cirsium hachijoense* Nakai. *Memoirs of the National Science Museum* (42): 89–98.
- Kadota, Y. 2006b. Taxonomic studies of *Cirsium* (Asteraceae) in Japan XV. Four new species from western Japan. *Bulletin of the National Science Museum, Series B* 32: 85–101.
- Kadota, Y. 2007a. Taxonomic studies of *Cirsium* (Asteraceae) in Japan XVI. A new subsection and four new species from the Tohoku district, northern Japan. *Bulletin of the National Museum of Nature and Science, Series B* 33: 29–45.
- Kadota, Y. 2007b. Species diversification of genus *Cirsium* (Asteraceae) in Japan. *Korean Journal of Plant Taxonomy* 37: 335–349.
- Kadota, Y. 2008a. Taxonomic studies of *Cirsium* (Asteraceae) in Japan XVII. Two new species from Hokkaido and Kyushu. *Bulletin of the National Museum of Nature and Science, Series B* 34: 31–41.
- Kadota, Y. 2008b. Taxonomic studies of *Cirsium* (Asteraceae) in Japan XVIII. A new subsection and four new species from Kyushu, southern Japan. *Bulletin of the National Museum of Nature and Science, Series B* 34: 135–151.
- Kadota, Y. and Nagase, H. 1988. A new species of *Cirsium* (Asteraceae: Cynareae) from Hida Province, central Japan. *Memoirs of the National Science Museum* (14): 9–20.
- Kitamura, S. 1937. Genus *Cirsium*. *Memoirs of the College of Science, Kyoto Imperial University, Series B, [Compositae Japonicae I]* 13: 33–134.
- Kitamura, S. 1981. *Cirsium*. In: Satake, Y., Ohwi, J., Kitamura, S., Watari, S. and Tominari, T. (eds.), Wild Flowers of Japan. Herbaceous Plants (including Dwarf Subshrubs) **III**: 212–220, pls. 188–200. Heibonsha Ltd., Tokyo (in Japanese).