A New Species of *Ranunculus* (Ranunculaceae)
from Hokkaido, Northern Japan

Yuichi KADOTA

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

(Recieved on June 16, 2007)

A new species of *Ranunculus* (Ranunculaceae), *R. horieanus* Kadota, is described from Hokkaido, northern Japan. It resembles *R. acris* subsp. *novus* (H. Lév. & Vaniot) Vorosch. [= *R. acris* var. *nipponicus* H. Hara] but is distinguished from the latter by having obovate petals with short claws, hemispherical, small nectary pits, smaller nectary appendages, bi-bracteolate pedicels, patent sepals, divaricate, elongated branches and pedicels at fruiting time and smaller fruiting heads. *Ranunculus horieanus* is distributed in the northernmost part and the central part of Hokkaido and grows along mountain streams of lowlands (alt. 100–200 m).

**Key words**: Hokkaido, Japan, new species, *Ranunculus horieanus*, rheophyte.

In 2005 I was asked to determine some *Ranunculus* plants from Dôhoku District of Hokkaido, northern Japan, by Dr. Kenji Horie, Asahikawa, Hokkaido, Japan. At that time the plants were considered as variants of *R. acris* subsp. *novus* (H. Lév. & Vaniot) Vorosch. [= *R. acris* var. *nipponicus* H. Hara, *R. acris* subsp. *nipponicus* (H. Hara) Hultén] despite the differences in the shape of nectary pits and appendages (Kadota 1990, 2006a, 2006b). Visiting Dôhoku District to make field studies on rheophytic *Trollius* plants in June, 2006, I was aware that the *Ranunculus* plants in question grew along mountain streams of lower elevations almost sympatrically with the *Trollius* plants. In order to study their achenes I revisited Dôhoku District at the end of July, 2006. It was revealed that the *Ranunculus* plants had divaricate, well elongated branches and pedicels at fruiting time. Such characteristics are not known in *R. acris* subsp. *novus*. As a result of detailed comparison it was clarified that the *Ranunculus* plants in question belong to an undescribed species. This new species is described as *Ranunculus horieanus* after the name of the discoverer.


*Ranunculus horieanus* Kadota, sp. nov.

[Figs. 1–2, 4, 5A]

Affine *Ranunculo acri* subsp. *novo*, sed petalis obovatis breviter unguiculatis, foveis nectariorum minoribus hemisphaericis, appendicibus nectariorum minoribus, pedicellis bi-bracteolatis, sepalis patentibus, ramis et pedicellis bene productis post anthesin et capitulis fructu minoribus differt.

**TYPE**: JAPAN: Hokkaido; Sôya Subpref., Esashi-gun, Nakatonbetsu-cho, Heian, Peichan-gawa, the Garô Bridge, 44°54′28″N 142°21′07″E, alt. 100 m, 26 June 2007,
Fig. 1. Holotype of *Ranunculus horieanus* Kadota. JAPAN: Hokkaido; Sōya Subpref., Esashi-gun, Nakatonbetsu-cho, Heian, Peichan-gawa, the Garō Bridge, 44°54′28″N 142°21′07″E, alt. 100 m, 26 June 2007, Y. Kadota 071206 (TNS 764446).
Fig. 2. Habit of *Ranunculus horieanus* Kadota (JAPAN: Hokkaido: Sôya Subpref., Esashi-gun, Nakatonbetsu-cho, Heian, Peichan-gawa, near the Garô Bridge, on 27 June 2007).
fl. & fr., Y. Kadota 071206 (TNS 764446–holotype, Fig. 1).

Japanese name: Sôya-kinpôge (nom. nov.).

A herbaceous perennial, 50–80 cm tall, growing in a bundle with 2–4 stems. Roots cord-like, slightly thickened at base. Rhizome thick and short, 0.8–2 cm in diameter, ca. 1.5 cm long, erect. Stem terete, striate, 2–3 times branched, sericeous with whitish adpressed hairs in the upper part, glabrous in the lower part; branches elongated, divaricate at fruiting time; collar clothed with fibrous remains of petioles, frequently provided with the preceding year’s stem persisting. Basal leaves 2–4; blades dark green, not lustrous, reniform, 4–9 cm long, 6.5–10 cm wide, medially trilobed, shallowly to deeply cordate, glabrous on both sides; middle lobes incised with ovate laciniae 4–7 mm wide; lateral lobes shallowly divided into two segments; petioles 8–20 cm long, glabrous, long vaginate at base; leaf-sheaths densely hirsute with long (ca. 2 mm) hairs. Middle cauline leaves 6–8 cm long, 9–10 cm wide, glabrous on both sides or very sparingly sericeous with long hairs on the abaxial side, shallowly cordate at base, petiolate; petioles 1–3 cm long, vaginate at base; leaf-sheaths hirsute with long hairs. Upper cauline leaves 5–7 cm long, 7–9 cm wide, deeply trilobed with lobes 5–10 mm wide, sparingly sericeous on the adaxial side, glabrous on the abaxial side, subsessile, vaginate and amplexicaul at base. Flowers in June to July, bright yellow, 1.5–2.7 cm in diameter, 4–5 in a cyme; pedicels 1.5–5 cm long, elongated to 13 cm long at fruiting time, densely sericeous, bifracteolate; bracteoles narrowly lanceolate, 2–7 mm long, ca. 1 mm wide. Sepals 5, elliptic, 4–8 mm long, 2–3 mm wide, convex, membranous along margin, tinged with brownish violet and densely sericeous on the abaxial side, patent at anthesis (Fig. 4D). Petals 5(–8), 12–15 mm long, 8–10 mm wide, obovate, emarginate to undulate or entire, slightly overlapping with each other;
claws 0.5–1 mm long; nectaries hemispherical, 0.8 mm in diameter, covered with scaly appendages; scales 1–1.5 mm long, 1–1.2 mm wide, rectangular to triangular (Fig. 4B). Anthers narrowly elliptic, ca. 2 mm long, dorsifixed and latrorse; filaments 3–4 mm long, dilated above. Fruits in July to August. Fruiting heads broadly obovoidal (Fig. 4C), 4.5–5 mm in diameter, 5 mm long; receptacles glabrous. Achenes obovate, flattened, 2 mm long, glabrous; beaks ca. 0.5 mm long, thick, intensely recurved (Fig. 5). Chromosome number 2n = 14.

Other specimens examined. JAPAN: HOKKAIDO; Sōya Subpref., Esashi-gun, Utanobori-cho, 3 June 1972, M. Yamanoi 122 (TNS 319437). Esashi-cho,
Utanobori, Tokushibetsu-gawa River, 18 June 2006, K. Horie 063038 (TNS 757801); Utanobori, Shibiutan, Tokushibetsu-gawa River, the Hinode-bashi Bridge, 44°45′30″N 142°36′39″E, alt. 60 m, 26 June 2007, Y. Kadota 071304–071318 (TNS); Utanobori, Shibiutan, Tokushibetsu-gawa River, Ômagari, 44°40′01″N 142°34′15″E, alt. 190 m, 27 June 2007, Y. Kadota 071507–071513 (TNS). Nakatonbetsu-cho, Heian, Peichan-gawa, alt. 90 m, 8 June 2004, K. Horie 05–02 (TNS 744993–744994); Nakatonbetsu-cho, Heian, Peichan-gawa, the Garô Bridge, 44°53′N 142°21′E, alt. 100 m, 31 July 2006, fr., Y. Kadota 064001 (TNS 757721–757722); the Garô Bridge, alt. 100 m, 26 June 2007, Y. Kadota 071205–071215 (TNS). Kamikawa Subpref., Nakagawa-gun, Bifuka-cho, Niupu, along Penke-niupu-gawa River, 44°30′01″N 142°29′05″E, alt. 130 m, 27 June 2007, Y. Kadota 071601–071614 (TNS). Furano-shi, Yamabe, along the Sorachi-gawa River, alt. 210 m, 29 May 2004, K. Horie 05–01 (TNS 744993–744994); along the Sorachi-gawa River, alt. 230 m, 3 July 2007, K. Horie 07–01–07–05 (TNS).

Distribution: The northernmost part and the central part of Hokkaido, Japan (Fig. 3). Endemic.

Habitat: Growing along mountain streams: alt. (60–)100–200(–230) m.

*Ranunculus horieanus* is similar to *R. acris* subsp. *novus* (H. Lév. & Vaniot) Vorosch. but the former is distinguished from the latter by having obovate petals with short claws, hemispherical, small nectary pits, smaller nectary appendages (Fig. 4B, arrowhead; cf. Kadota 1990, figs. 1–3), bi-bracteolate pedicels, patent sepals (Fig. 4D), divaricate, elongated branches and pedicels at flowering time and smaller fruiting heads.

There are slight differences in the attributes of achene between *R. horieanus* and *R. acris* subsp. *novus* (Fig. 5). Although beaks (styles) are strongly recurved in both taxa, beaks of *R. horieanus* are thicker than those of *R. acris* subsp. *novus*. Ventral and dorsal keels of *R. horieanus* are wider than those of *R. acris* subsp. *novus*.

There is a difference also in habitat preference between the two taxa. *Ranunculus acris* subsp. *novus* is a representative of Japanese alpine plants and grows in mesic meadows of the alpine zone in Honshu and Hokkaido (Kadota 1990, 2006a, 2006b). On the contrary *R. horieanus* is exclusively found along mountain streams of lowlands (alt. 100–200

![Fig. 5. Comparison of *Ranunculus horieanus* and *R. acris* subsp. *novus* in achene shape. A. *R. horieanus* (Hokkaido, Esashi-gun, Nakatonbetsu-cho, the Garô Bridge, TNS 757723, paratype). B. *R. acris* subsp. *novus* (Hokkaido, Shibetsu-shi, Mt. Teshio-dake, TNS 758353).](image-url)
m). The habitat will be flooded in the case of the rise in the water level after rainfall.

In this habitat the following plants were observed: Salix caprea, Salix gracilistyla, Ulmus laciniata, Alnus crispa subsp. maximowiczii, Filipendula camtschatica, Artemisia montana, Parasenecio hastatus subsp. orientalis, Petasites japonicus subsp. giganteus, etc.

I wish show my sincere thanks to Dr. K. Horie for his guidance to the localities of Ranunculus horieanus and presenting herbarium specimens of this species; to Prof. Dr. T. Nishikawa for the counting of the chromosome number of R. horieanus.

References
