

ФЛОРИСТИЧЕСКИЕ НАХОДКИ

***VIOLA ORIENTALIS* (VIOLACEAE) – A NEW SPECIES FOR THE FLORA OF SAKHALIN ISLAND (RUSSIAN FAR EAST)**

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The occurrence of *Viola orientalis* (Maxim.) W. Becker, a species of yellow-flowered violet, is reported for Sakhalin Island for the first time. The data on natural habitats and abundance of this species as well as its differences from other yellow-flowered violets growing in the Sakhalin Region are provided. The identification key for the species of yellow-flowered violets of the Russian Far East is complied.

Keywords: key, new species, *Viola*, subg. *Chamaemelum*, vascular plants, Russia, Sakhalin

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In May 2022, conducting a survey of the flora of the southwestern coast of Sakhalin Island, we found a population of unusual yellow-flowered violet, which has been identified as *Viola orientalis* subsp. *orientalis*. Before our finding, this species had been known only in the extreme south of the Russian Far East (Primorye and the south of Khabarovsk Territory) without any reports for the Sakhalin region (Sugawara, 1939; Vorob'ev et al., 1974; Barkalov, Taran, 2004).

In May 2023, we conducted a re-survey of the location of the species in order to study the population size, ecological and cenotic conditions and the area where the species grows. Below is the data we received. Specimens are stored in the herbarium of the IMGG FEB RAS (SAK); doublets were transferred to the herbarium of the V. L. Komarov's Botanical Institute RAS (LE) (<http://rr.herbariumle.ru/01272542>). Photos of living plants in their natural habitat have been uploaded to Inaturalist.org (iNat 196076079). The names of vascular plants are given according World Flora Online (www.worldfloraonline.org).

Viola orientalis (Maxim.) W. Becker subsp. *orientalis*: Nevelsky district, coast of the Tatar Strait, 5 km north of Shebunino village, mouth of the nameless stream (46°28'26.0" N, 141°49'48.0" E), a mixed-grass meadow on the slope of a stream, 20 V 2023. T. I. Koroteeva.

The habitat of the species is the valley of a small stream. The low part of stream slopes is covered with an emerging tall grass-sedge community of *Filipendula camtschatica* (Pall.) Maxim., *Petasites japonicus* subsp. *giganteus* (F. Schmidt ex Trautv.) Kitam., *Polygonatum odoratum* var. *maximowiczii* (F. Schmidt) Koidz. and *Carex* spp. However, violets grow en masse on forb-grass slopes, on which species of the family Poaceae dominate. There also *Maianthemum dilatatum* (Alph. Wood) A. Nelson et J. F. Macbr., *Bupleurum longiradiatum* Turcz., *Ranunculus franchetii* H. Boissieu, *Rhodiola rosea* L., *Hemerocallis middendorfii* Trautv. et C. A. Mey., *Aruncus dioicus* (Walter) Fernald, *Saussurea acuminata* subsp. *sachalinensis* (F. Schmidt) Kitam., *Arnica sachalinensis* A. Gray, *Artemisia* sp. are in grass cover. On the collection date (May 20) *V. orientalis* was blooming en masse. A thorough examination of the stream bed at a distance of 1 km from mouth showed that the population is located on both slopes of the stream 140 m from its mouth at a distance of about 150 m and numbers 300–400 individuals.

In Russia, *Viola orientalis* is represented by two subspecies: *V. orientalis* subsp. *orientalis* (= *V. conferta* (W. Becker) Nakai), that was previously known only in the south of the Far East – in Primorye and in the south of the Khabarovsk Territory and *V. orientalis* subsp. *xanthopetala* (Nakai) Espeut, distributed in the south

of Primorye, and outside the Russian Federation – in northern China, Korea and on the Japanese islands of Honshu and Kyushu (Espeut, 2020). The species grows on dry and rocky slopes covered with forest, in mixed forests, in mountain woodlands, at the edge of forests, in thickets of bushes and on grassy mountain slopes, at an altitude of 100 to 1100 m (Bezdeleva, 1987). On Sakhalin Island *V. orientalis* is on the northeastern border of its range.

The characteristic features of the species in comparison with other yellow-petaled violets of Sakhalin and the Kuril Islands are: corolla completely bright yellow-colored; lateral petals bearded; apical part of the style capitate and bearded; rhizome short and erect. It is distinguished from the *V. orientalis* subsp. *xanthopetala* by cauline leaves all subsessile and pubescent capsules (fig. 1).

In total, 6 species of violets with partially or completely yellow-colored flowers are known on Sakhalin and the Kuril Islands. In addition to *V. orientalis*, these are *V. arvensis* Murray, *V. biflora* L., *V. brevistipulata* W. Becker, *V. crassa* Makino and *V. kitamiana* Nakai (= *V. bezdelevae* Vorosch.). Of these, *V. biflora* is quite common, which is found throughout Sakhalin, except for the southwestern, northeastern and northwestern floristic district, and on all more or less large islands of the Kuril ridge, as a rule, in the valleys of streams along their banks and slopes. *V. crassa*, similar to it, which is characterized by shorter plant height and dense thick leaves with a wide notch at the apex, is known on Sakhalin only in the East Sakhalin mountain district (Sugawara, 1939; Vyshin, Barkalov, 1990; Katalog..., 1999) and on the Schmidt Peninsula (Sabirova, Sabirov, 2011), where it is found exclusively on rocky placers in the mountains or gravelly slopes along the sea coast. There is also an indication of the growth of *V. crassa* on the Moneron Island near the southwestern coast of Sakhalin, but these indications need to be verified (Katalog..., 1999; Barkalov et al., 2006). In the Kuril Islands, this species is much more widespread, where, like *V. biflora*, it is found on all more or less large islands, but grows in forb coastal meadows and subalpine lawns, on gravelly placers and slag fields in the mountains (Barkalov, 2009).

Viola brevistipulata and *V. kitamiana* are extremely rare and are only in the Kuril Islands. The first of them is indicated for the Southern Kuriles (Akiyama et al., 1999), the second – for the highlands of the Stokap Volcano on Iturup Island (Bezdeleva et al., 2006 – as *V. bezdelevae*; Barkalov, 2009). A characteristic feature of this violet is white flowers with a yellow center and dark veins (Espeut, 2020). In addition, apparently, the



Fig. 1. *Viola orientalis* subsp. *orientalis* (Sakhalin Island, Nevelskiy District, May 20, 2023).

observation of a vegetating violet made by Dmitry Kulakov at the top of the Baransky volcano (Iturup Island) belongs to this species (Inaturalist.org – iNat 35487056).

Another violet that has white flowers with a yellow center, but branching shoots and leaf-shaped stipules is *V. arvensis*, which is introduced to Sakhalin. It is found as a weed in agricultural fields in the Tymovsky district and the vicinities of Yuzhno-Sakhalinsk (Katalog..., 1999).

Other yellow-flowered violets are also known in the Russian Far East – *V. uniflora* L., *V. muehldorfii* Kiss, *V. kusnezowiana* W. Becker. The probability of finding the last two on Sakhalin and the Kuril Islands is quite high. Therefore, below we provide a key for identifying all yellow-flowered violets of the Russian Far East. This key is based on the revision of the genus *Viola* in the Russian Far East (Espeut, 2020).

- 1 Throat of spurred petal pilose; stipules dentate, lobed or divided subg. *Melanium*: *V. arvensis*
- 1 Throat of spurred petal glabrous or shortly papillose; stipules undivided or at most toothed 2 subg. *Chamaemelianum*
- 2 Corollas white with yellow center sect. *Kitamianae*: *V. kitamiana*
- 2 Corollas completely yellow 3

3 Plants without annual erect or decumbent stems; rhizome long creeping, slender, whitish, producing directly flowers and leaves; style tubularsect. *Memorabiles*: *V. kusnezowiana*

3 Plants with annual erect or decumbent stems producing flowers; style 2-lobed or capitate **4**

4 Leaves emarginate, obtuse or subobtuse; lateral petals beardless; apical part of the style 2-lobed and beardless **5**: sect. *Dischidium*

4 Leaves with \pm extended acute apex; lateral petals bearded; apical part of the style capitate, bearded on the both sides **7**: sect. *Chamaemelum*

5 Leaves thin, soft, matt, with marginal teeth ended by an inconspicuous gland; capsule up to 6 mm long; lower petal up to 13 mm long, apex acute to obtuse, never truncated; sepals green; $2n = 24$ *V. biflora*

5 Leaves thick, firm, glossy or matt, with marginal teeth ended by a conspicuous gland; capsule up to 8 mm long; lower petal up to 15 mm long, apex usually rounded or truncate, sometimes obtuse, never acute; sepals often tinged with purple-red; $2n = 48$ **6**: *V. crassa*

6 Leaves distinctly pubescent above, more slightly beneath *V. crassa* subsp. *avatchensis*

6 Leaves glabrous on both sides *V. crassa* subsp. *borealis*

7 Lowest cauline leaf with a flower at its axil **8**

7 Lowest cauline leaf without a flower **10**

8 Rhizome short, erect; sepal appendages little but distinct **9**: *V. orientalis*

8 Rhizome long, creeping, branched; sepal appendages inconspicuous *V. brevistipulata*

9 Cauline leaves 2(3), subsessile; capsules pubescent *V. orientalis* subsp. *orientalis*

9 Cauline leaves generally 3, the lowest one distinctly petiolate; capsules glabrous *V. orientalis* subsp. *xanthopetala*

10 Lowest cauline leaf distinctly petiolate, distant from the upper ones that are grouped in the upper part of the stem; rhizome long, slender, procumbent *V. muehldorfii*

10 Lowest cauline leaf shortly petiolate, close to the upper ones in the upper part of the stem; rhizome vertical or oblique *V. uniflora*

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VIOLA ORIENTALIS (VIOLACEAE) – НОВЫЙ ВИД ДЛЯ ФЛОРЫ ОСТРОВА САХАЛИН (РОССИЙСКИЙ ДАЛЬНИЙ ВОСТОК)

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Впервые для острова Сахалин приводится новый вид желтоцветковой фиалки — *Viola orientalis* (Maxim.) W. Becker. Приводятся данные об условиях произрастания, численности вида и отличиях от других желтоцветковых фиалок, произрастающих в Сахалинской области. Дан ключ для определения желтоцветковых фиалок российского Дальнего Востока.

Ключевые слова: ключ, новый вид, *Viola*, subg. *Chamaemelanium*, сосудистые растения, Сахалин, Россия