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Orobanche alsatica (Orobanchaceae), an overlooked species in the flora of Crimea

A. V. Fateryga[1, 2]*, V. V. Fateryga[1, 3]

[1] *T. I. Vyazemsky Karadag Scientific Station – Nature Reserve of RAS – Branch of A. O. Kovalevsky Institute of Biology of the Southern Seas of RAS, Nauki St., 24, Kurortnoye, Feodosiya, Republic of Crimea, 298188, Russian Federation*

[2] *E-mail: fater_84@list.ru; ORCID iD: https://orcid.org/0000-0002-5346-3477*

[3] *E-mail: valentina_vt@mail.ru; ORCID iD: https://orcid.org/0000-0002-0031-1955*

* *Corresponding author*

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Summary. *Orobanche alsatica* Kirschl. is for the first time reported from Crimea with fairly identified specimen-based records; it is an 11th species of the genus confirmed for the peninsula (or a 14th, taking into account one unconfirmed and two very doubtful taxa). It was collected in two localities of the Crimean Foothills. Crimean plants show the flower size somewhat intermediate to a closely related *O. bartlingii* Griseb.: the corolla length is mostly 17–20 mm, while the stamens are inserted in 3–4 mm above the corolla base. However, we attribute these plants to *O. alsatica* based on a glandularly pubescent style, as well as the host *Peucedanum alsaticum* L., typical exactly of this species. In Crimea, the species is confined to plant communities of the class *Festuco-Brometea* Br.-Bl. et Tx. ex Soó 1947, sometimes transitional to *Trifolio-Geranietea sanguinei* T. Müller 1962. *Orobanche alsatica* was recently synonymized with *O. buekii* A. Dietr., a little-known name published a year earlier and hitherto considered a synonym of *O. lutea* Baumg.; however, we consider the name *O. alsatica* requiring proposal to be conserved to avoid disadvantageous nomenclatural changes entailed by the strict application of the principle of priority (Art. 14.1 of ICN).

Orobanche alsatica (Orobanchaceae) – пропущенный во флоре Крыма вид

А. В. Фатерыга, В. В. Фатерыга

Карадагская научная станция им. Т. И. Вяземского – природный заповедник РАН – филиал Института биологии южных морей им. А. О. Ковалевского РАН, ул. Науки, д. 24, пгт Курортное, г. Феодосия, Республика Крым, 298188, Россия

***Ключевые слова*:** голопаразиты, таксономия, фитоценотическая приуроченность, флористические находки, *Orobanche bartlingii*, *Orobanche buekii*.

Аннотация. Вид *Orobanche alsatica* Kirschl. впервые приведен для Крыма на основании собранных и достоверно определённых экземпляров; это 11-й вид данного рода, подтверждённый для полуострова (или же 14-й, если брать во внимание один неподтверждённый и два крайне сомнительных вида). Он был обнаружен в двух местонахождениях в Крымском Предгорье. Крымские растения имеют размеры цветков, несколько уклоняющиеся в сторону близкого вида *O. bartlingii* Griseb.: длина венчика составляет обычно 17–20 мм, а тычинки прикреплены в 3–4 мм от основания венчика. Однако мы относим их к *O. alsatica* на основании железисто

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опушенного столбика, а также питающего растения *Peucedanum alsaticum* L., характерного именно для этого вида. Вид приурочен в Крыму к растительным сообществам класса *Festuco-Brometea* Br.-Bl. et Tx. ex Soó 1947, иногда переходным к *Trifolio-Geranietea sanguinei* T. Müller 1962. *Orobanche alsatica* недавно был синонимизирован с *O. buekii* A. Dietr., малоизвестным названием, обнародованным на год раньше и до этого считавшимся синонимом *O. lutea* Baumg.; однако мы полагаем, что название *O. alsatica* должно быть предложено к консервации во избежание нежелательных номенклатурных изменений, вызываемых строгим применением принципа приоритета (ст. 14.1 МКН).

Introduction

The holoparasitic genus *Orobanche* L. (Orobanchaceae) in the narrow sense (according to Sánchez Pedraja et al., 2016+) comprises ca. 150 species, most of which are native to the Northern Hemisphere, especially the Mediterranean Basin, Western and Central Asia, and Northern Africa (Piwowarczyk et al., 2019, 2023). Recent investigations have established that Western Asia, the Caucasus, and the Mediterranean are the center of diversity and place of origin for larger clades of holoparasitic Orobanchaceae (Piwowarczyk et al., 2021). There are some narrowly endemic species, particularly in the Caucasus (Piwowarczyk et al., 2019, 2023, 2024), although other species have rather wide ranges. One of the most widely distributed and at the same time taxonomically problematic species is *Orobanche alsatica* Kirschl., a species recently synonymized with *O. buekii* A. Dietr. (Rätzel et al., 2025). It is reported from most regions of Western, Southern, and Eastern Europe, the Caucasus, Urals, Southern Siberia, and some Central Asian mountains (Novopokrovsky, Tzvelev, 1958; Tzvelev, 1981; Sánchez Pedraja et al., 2016+; POWO, 2025). However, this wide distribution needs verification since in most regions *O. alsatica* is often confused with a closely related and very similar species *O. bartlingii* Griseb. (= *O. libanotidis* Rupr.). The latter is often considered a subspecies *O. alsatica* subsp. *libanotidis* (Rupr.) Tzvelev (≡ *O. buekii* subsp. *libanotidis* (Rupr.) Rätzel et Uhlich) (Tzvelev, 1981; Rätzel et al., 2025) or a synonym of *O. alsatica* (Novopokrovsky, Tzvelev, 1958; Domina, Raab-Straube, 2010+), while we accept it as a distinct species following Piwowarczyk et al. (2014, 2018, 2019, 2023), Tzvelev (2015), Sánchez Pedraja et al. (2016+), and POWO (2025).

The presence of *O. alsatica* in Crimea was until now questionable. This species is reported as present there by Novopokrovsky and Tzvelev (1958) (as *O. alsatica* s. l., including *O. bartlingii*) and POWO (2025) (as *O. buekii*), while the Euro+Med PlantBase (Domina, Raab-Straube, 2010+) and the Index Orobanchaceae (Sánchez Pedraja et al., 2016+) treat the reports of *O. alsatica* from Crimea as erroneous.

Neither *O. alsatica* nor *O. bartlingii* are mentioned in the most important "Floras" of Crimea (Tzvelev, 1969; Rubtzov, 1972; Golubev, 1996; Yena, 2012). The purpose of the present contribution is to report the first specimen-based records of *O. alsatica* from Crimea.

Material and methods

Specimens were collected on 7 June, 2025, at two localities of the Crimean Peninsula: Ayan Place in the vicinity of Perevalnoye, Simferopol District [44°50′02″N, 34°18′02″E] (the word "place" is used here for the Russian word "urochishche", following Kubentayev et al., 2023), and the vicinity of Zemlyanichnoye, Belogorsk District [44°58′28″N, 34°50′53″E]. Host plants were confirmed by exposing the soil using a shovel. Photographs were made with a Canon EOS RP digital camera and a Canon RF 35 mm F1.8 Macro IS STM lens. Collected specimens were deposited in herbaria ALTB, LE, PHEO, and YALT; additional material was studied in LE. Phytocoenological characteristics of the habitats with *O. alsatica* were made by a naked-eye estimation of the abundance of all vascular-plant species, occurring there, according to the seven-step Braun-Blanquet scale (Mirkin, Rozenberg, 1983). Taxonomy of Orobanchaceae follows Sánchez Pedraja et al. (2016+); taxonomy of other plants follows POWO (2025).

Results

Orobanche alsatica Kirschl. 1836, Prodr. Fl. Alsace: 109.

≡ *Orobanche minor* subsp. *alsatica* (Kirschl.) Nyman, 1881, Consp. Fl. Eur.: 562.

Neotype (Uhlich, Rätzel, 2025, Kochia, 18: 200): "*Orobanche* in *Cervaria Rivini* parasitica. Collis Turkheim pr. Colmar. VI 1833. Kirschleger" (STR 040660).

= *Orobanche buekii* A. Dietr. 1835, Fl. Boruss. 3: 145.

Lectotype (Uhlich, Rätzel, 2025, Kochia, 18: 186): illustration in A. Dietr. 1835, Fl. Boruss. 3: 145.

Epitype (Uhlich, Rätzel, 2025, Kochia, 18: 187): "Deutschland, Brandenburg, Lebuser Platte/ Mittleres Odertal, E Lossow (Steile Wand), S Frankfurt an der Oder, halboffene Rippe direkt an der Odertalhangkante, lichter Hainbuchen-Trockenwald, auf Mergelboden, oberhalb «Schiffersruh», 52°17′11,0″N, 14°34′31,8″E (WGS 84)/ca. 50 m – MTB 3753/12, Wirt: *Cervaria rivini* (aufgewachsen gesammelt). 29 VI 2013. S. Rätzel 2878" (B 10 1067920).

= *Orobanche cervariae* Suard ex Godr. 1843, Fl. Lorraine, 2: 180. ≡ *Orobanche alsatica* var. *cervariae* (Suard ex Godr.) Beck in Halácsy et Heinr. Braun, 1882, Nachtr. Fl. Nieder-Oesterr.: 130.

Neotype (Uhlich, Rätzel, 2025, Kochia, 18: 207): "Herbier Normal de la Flore de Lorraine, par M. le Docteur Godron. *Orobanche Cervariae* Suard, No. 909. Nancy" (P 04419433).

= *Orobanche buekiana* W. D. J. Koch, 1844, Syn. Fl. Germ. Helv. ed. 2: 619. ≡ *Orobanche rubens* var. *buekiana* (W. D. J. Koch) Rchb. f. 1862, Icon. Fl. Germ. Helv. (H. G. L. Reichenbach), 20: 99. ≡ *Orobanche lutea* var. *buekiana* (W. D. J. Koch) Beck, 1890, Biblioth. Bot. 4: 166.

Lectotype (Uhlich, Rätzel, 2025, Kochia, 18: 203): "*Orobanche* pr[ope]. francof[urtum]. ad Viadr[um]. Buek" (L 2817868).

= *Orobanche brachysepala* F. W. Schultz, 1844, Arch. Fl. France Allem. 1: 69.

Not typified; type locality: "In collibus calcareis, radici *Peucedani Cervariæ* insidens, prope Dorlisheim in Alsatia (F. Schultz), prope Nancy (Suard) et prope Olmütz Moraviæ, Zinkowicz, teste Godron)".

= *Orobanche macrosepala* F. W. Schultz, 1844, Arch. Fl. France Allem. 1: 70. ≡ *Orobanche cervariae* var. *macrosepala* (F. W. Schultz) Rouy, 1909, Fl. France [Rouy et Foucaud], 11: 178. ≡ *Orobanche alsatica* f. *macrosepala* (F. W. Schultz) Beck, 1930, Pflanzenr. (Engler), 96: 258.

Not typified; type locality: "*Peucedano Cervariæ* insidens in collibus calcareis prope Turckheim Alsatiæ (Kirschleger)".

= *Orobanche caudata* De Not. 1844, Repert. Fl. Ligust.: 306. ≡ *Orobanche alsatica* var. *caudata* (De Not.) Bèg. in Fiori et Paol. 1902, Fl. Anal. Italia, 2(3): 480.

Not typified; type locality: "Ad radices *Peucedani Cervariae* in collibus supra Sestri di Ponente".

= *Orobanche strumosa* Rogow. 1855, Obozr. Sosud. Polusosud. Rast. Fl. Kievsk.: 91.

Not typified; type locality: "около хутора Роговичева Стар. уѣзд., и хут. Курдюмовки Глух. уѣзд. [near khutor Rogovichev, Starodubskiy Uezd, and khutor Kurdyumovka, Glukhovskiy Uezd]".

= *Orobanche alsatica* f. *haplodous* Beck, 1930, Pflanzenr. (Engler), 96: 258.

Not typified; type locality: "Bosnien: auf dem Masić brdo bei Tuinica nächst Novi (Beck)".

Material examined: "Crimea, Simferopol District, vicinity of Perevalnoye, Ayan Place, 44°50′02″N, 34°18′02″E, meadow (parasitizing on *Peucedanum alsaticum*). 7 VI 2025. A. V. Fateryga, V. V. Fateryga s. n." (ALTB, LE 01306495, PHEO, YALT); "Crimea, Belogorsk District, vicinity of Zemlyanichnoye, 44°58′28″N, 34°50′53″E, meadow among broadleaf forest (parasitizing on *Peucedanum alsaticum*). 7 VI 2025. A. V. Fateryga, V. V. Fateryga s. n." (PHEO).

The following specimen was identified as *O. alsatica* by E. S. Teryokhin, but we cannot either confirm or refute his identification due to poor preservation of the plant: "Crimea, 16 kilometers along the road from Yalta to Bakhchisaray, at road (mounted together with *Silphiodaucus hispidus*). 10 IX 1980. E. S. Teryokhin 7791" (LE 01246508).

Taxonomic notes: Rätzel et al. (2025) recently synonymized *O. alsatica* with *O. buekii*, a little-known name hitherto considered a synonym of *O. lutea* Baumg. (Sánchez Pedraja et al., 2016+). In our opinion, the name *O. alsatica* should be proposed to be conserved against *O. buekii* to avoid disadvantageous nomenclatural changes entailed by the strict application of the principle of priority [Art. 14.1 of ICN (Turland et al., 2025)].

Orobanche alsatica (= *O. buekii*) is very similar to *O. bartlingii* (= *O. alsatica* subsp. *libanotidis* ≡ *O. buekii* subsp. *libanotidis*). These two species are closely related but have significant differences in micromorphology of seeds and pollen (Piwowarczyk et al., 2014), as well as ITS markers (Piwowarczyk et al., 2018). Differentiation between *O. alsatica* and *O. bartlingii* is often challenging both in living plants and herbarium specimens. The former species usually has a larger corolla (18–25 mm in length rather than 12–18 mm), stamens inserted 4–7 mm rather than 1–3 mm above the base of the corolla tube, a glandularly pubescent style rather than glabrous one (or rarely sparsely glandular-pubescent), as well as different hosts in the family Apiaceae (*Peucedanum* spp. rather than *Libanotis* spp. or rarely *Seseli* spp.) (Kreutz, 1995; Piwowarczyk et al., 2009; Tzvelev, 2015). Crimean plants (Fig. 1) show somewhat intermediate size of the flowers: the corolla length is mostly 17–20 mm (Fig. 1D–G), while the stamens are inserted in 3–4 mm above the corolla base (Fig. 1G).

Fig. 1. *Orobanche alsatica* Kirschl. in Ayan Place (Crimea): A – habitat; B – plant in flower among leaves of *Peucedanum alsaticum* L.; C – attachment with a root of the host (plants extracted from soil); D – inflorescence; E – flower in frontal view; F – flower in lateral view; G – flower in longitudinal section. Photographs by A. V. Fateryga.

However, we attribute these plants to *O. alsatica* based on a glandularly pubescent style (Fig. 1G), as well as the host *Peucedanum alsaticum* L. (Fig. 1B, C), typical of this species.

Habitats: The habitat of *O. alsatica* in the Ayan Place was a steppe meadow (Fig. 1A), while the habitat in the vicinity of Zemlyanichnoye was a meadow on a cutting line in a broadleaf forest. About a hundred specimens of *O. alsatica* were observed in the Ayan Place, while just one was found in the vicinity of Zemlyanichnoye in 2025. Species composition and abundance of vascular plants in both habitats are represented in Table 1. A total of 66 species were identified; 56 species were present in the Ayan Place and 35 in the vicinity of Zemlyanichnoye; 25 species occurred in both habitats. According to the classification of the vegetation of Europe (Mucina et al., 2016), a plant community with *O. alsatica* in the Ayan Place belongs to the class *Festuco-Brometea* Br.-Bl. et Tx. ex Soó 1947 and forms a syntaxonomic transition between the alliance *Androsaco tauricae-Caricion humilis* Didukh in Mucina et Didukh 2014 of the order *Stipo pulcherrimae-Festucetalia pallentis* Pop 1968 and the alliance *Veronico multifidae-Stipion ponticae* Didukh in Didukh et Mucina 2014 of the order *Festucetalia valesiacae* Soó 1947. A plant community with *O. alsatica* in Zemlyanichnoye forms a syntaxonomic transition between the classes *Festuco-Brometea* and *Trifolio-Geranietea sanguinei* T. Müller 1962.

Discussion

The Crimean Peninsula is one of the floristically most studied regions in Eastern Europe. The last complete checklist of the Crimean flora (Yena, 2012) numbered 2536 species and subspecies of vascular plants. However, many updates were made after that and there were 2587 species in 2021 (Fateryga V. V., Fateryga A. V., 2021). In recent years, several new floristic records were continued to be done each year (e. g., Raab-Straube, Raus, 2021, 2022, 2023, 2024, 2025; Verkhozina et al., 2022). However, most of them were dealt with alien casual and naturalized species, although some native but previously overlooked taxa were also revealed. New records of holoparasitic plants occurred rarely and both were dealt with the genus *Phelipanche* Pomel (Rätzel et al., 2017; Fateryga V. V., Fateryga A. V., 2018), which is taxonomically very challenging. There were no new records in the genus *Orobanche* s. str. for a long time, although its taxonomy was updated. At least ten species of *Orobanche* s. str. (excluding *Phelipanche*) were confirmed for Crimea till now (Tzvelev, 1969; Rubtzov, 1972; Golubev, 1996; Yena, 2012; Rätzel et al., 2015; Sánchez Pedraja et al., 2016+; Uhlich, Rätzel, 2024): *O. alba* Stephan ex Willd., *O. callieri* (Tzvelev) Tzvelev, *O. centaurina* Bertol. (*O. elatior* auct.), *O. crenata* Forssk., *O. cumana* Wallr., *O. grenieri* F. W. Schultz (*O. cernua* auct.), *O. hederae* Duby, *O. lutea*, *O. minor* Sm., and *O. pubescens* d'Urv., although

Table 1. Plant species and their abundance according to the Braun-Blanquet scale at two localities with *Orobanche alsatica* Kirschl. in Crimea: Ayan Place (1) and the vicinity of Zemlyanichnoye (2)

Species	Abundance	
	1	**2**
Lotus herbaceus (Vill.) Jauzein	3	3
Melampyrum arvense L.	2	1
Onobrychis arenaria subsp. *miniata* (Steven) P. W. Ball	2	1
Pentanema asperum (Poir.) G. V. Boiko et Korniy.	2	1
Brachypodium pinnatum (L.) P. Beauv.	2	+
Galium rubioides L.	2	+
Peucedanum alsaticum L.	2	+
Bromus sclerophyllus Boiss.	2	–
Fragaria viridis subsp. *campestris* (Steven) Pawł.	2	–
Sanguisorba minor subsp. *balearica* (Bourg. ex Nyman) Muñoz Garm. et C. Navarro	2	–
Stipa pennata L.	2	–
Dactylis glomerata L.	1	1
Plantago urvillei Opiz	1	1
Polygala major Jacq.	1	1
Tanacetum corymbosum (L.) Sch. Bip.	1	1
Dianthus capitatus Balb. ex DC.	1	–

Table 1 (continued)

Species	Abundance	
	1	2
Euphorbia virgata Waldst. et Kit.	1	–
Festuca valesiaca Schleich. ex Gaudin	1	–
Filipendula vulgaris Moench	1	–
Helictochloa compressa (Heuff.) Romero Zarco	1	–
Leucanthemum ircutianum DC.	1	–
Phleum montanum K. Koch	1	–
Thalictrum minus L.	1	–
Veronica teucrium L.	1	–
Geranium sanguineum L.	+	1
Potentilla inclinata Vill.	+	1
Carex hirta L.	+	+
Medicago falcata L.	+	+
Poa longifolia Trin.	+	+
Ranunculus polyanthemos L.	+	+
Vicia tenuifolia Roth	+	+
Cirsium laniflorum (M. Bieb.) Fisch.	+	r
Orobanche alsatica Kirschl.	+	r
Arrhenatherum elatius (L.) P. Beauv. ex J. Presl et C. Presl	+	–
Bombycilaena erecta (L.) Smoljan.	+	–
Eryngium campestre L.	+	–
Muscari comosum (L.) Mill.	+	–
Valeriana dentata (L.) All.	+	–
Pilosella piloselloides (Vill.) Soják s. l.	r	1
Trifolium ambiguum M. Bieb.	r	+
Trifolium pratense L.	r	+
Ajuga laxmannii (L.) Benth.	r	r
Anacamptis pyramidalis (L.) Rich.	r	r
Achillea setacea Waldst. et Kit.	r	–
Alyssum rostratum Steven	r	–
Cerinthe minor L.	r	–
Crupina vulgaris Pers. ex Cass.	r	–
Linum austriacum L.	r	–
Muscari neglectum Guss. ex Ten. et Sangiov.	r	–
Myosotis arvensis (L.) Hill	r	–
Neotinea tridentata (Scop.) R. M. Bateman, Pridgeon et M. W. Chase	r	–
Pimpinella tragium Vill.	r	–
Pseudopodospermum strictum (Hornem.) Zaika, Sukhor. et N. Kilian	r	–
Rhinanthus major var. *apterus* Fr.	r	–
Thesium ramosum Hayne	r	–
Tragopogon dasyrhynchus Artemczuk	r	–
Agrimonia eupatoria subsp. *grandis* (Asch. et Graebn.) Bornm.	–	+
Clinopodium vulgare L.	–	+
Falcaria vulgaris Bernh.	–	+
Lapsana communis subsp. *intermedia* (M. Bieb.) Hayek	–	+
Plantago lanceolata L.	–	+
Vicia cracca L.	–	+
Aegonychon purpurocaeruleum (L.) Holub	–	r
Orchis purpurea Huds.	–	r
Platanthera bifolia (L.) Rich.	–	r
Primula vulgaris Huds.	–	r

relationships between *O. crenata* and *O. callieri* are not clear. Eleventh species, that is *O. picridis* F. W. Schultz (*O. artemisiae-campestris* auct.) was reported by Tzvelev (1983), but its identification requires verification due to an often confusion of this species with *O. minor* (Sánchez Pedraja et al., 2016+). The presence of two additional (12th and 13th) species reported from Crimea is very doubtful, that is *O. gracilis* Sm. and *O. caryophyllacea* Sm. The former was reported without any existing herbarium material, while the latter is represented by two specimens but one is without detailing geographical label and another is doubtfully identified due to its poor preservation (Tzvelev, 1969).

Orobanche alsatica was reported from Crimea in the "Flora of the USSR" (Novopokrovsky, Tzvelev, 1958), but there were no specimens confirming this report. The only available specimen labeled as *O. alsatica* in LE (where both authors of the "Flora of the USSR" worked) was collected in 1980, after the publication of the corresponding book. Moreover, this specimen (LE 01246508) was mounted together with *Silphiodaucus hispidus* (M. Bieb.) Spalik, Wojew., Banasiak, Piwczyński et Reduron, not a typical host of *O. alsatica*. A certain identification of this specimen of *Orobanche* is difficult because it was collected in September and therefore was without most characters preserved. The presence of *O. alsatica* in Crimea was not confirmed by subsequent florists (Tzvelev, 1969; Rubtzov, 1972; Golubev, 1996; Yena, 2012). Thus, our records of *O. alsatica* are the first specimen-based report of this species from Crimea. *Orobanche alsatica* is an 11th species of the genus confirmed for Crimea (or a 14th, taking into account one unconfirmed and two doubtful taxa).

In Poland, *O. alsatica* prefers thermophilous fringe vegetation of the alliance *Geranion sanguinei* Tx. in T. Müller 1962 (order *Antherico ramosi-Geranietalia sanguinei* Julve ex Dengler in Dengler et al. 2003 of the class *Trifolio-Geranietea sanguinei*), often forming a mosaic with thermophilous oak forests (*Quercion petraeae* Issler 1931 = *Potentillo albae-Quercion petraeae* Jakucs in Zólyomi 1967; order *Quercetalia pubescenti-petraeae* Klika 1933 of the class *Quercetea pubescentis* Doing-Kraft ex Scamoni et Passarge 1959) and xerothermic grasslands, noted less frequently in open xerothermic grasslands of the alliance *Cirsio-Brachypodion pinnati* Hadač et Klika in Klika et Hadač 1944 (order *Brachypodietalia pinnati* Korneck 1974 of the class *Festuco-Brometea*) (Piwowarczyk, 2012). Such vegetation is quite similar to that observed in the habitats of *O. alsatica* in Crimea, where this species occurs in communities of the class *Festuco-Brometea*, sometimes transitional to *Trifolio-Geranietea sanguinei*. Taking into account that these plants communities are native, we can assume that *O. alsatica* is probably a native species in the flora of Crimea, overlooked until present, rather than a recently introduced one.

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REFERENCES / ЛИТЕРАТУРА

Domina G., Raab-Straube E. von [2010+ (continuously updated)]. *Orobanche*. In: *Euro+Med Plantbase – the information resource for Euro-Mediterranean plant diversity.* URL: https://europlusmed.org/ (Accessed 3 September 2025).

Fateryga V. V., Fateryga A. V. 2018. New records of rare and little-known species of angiosperm plants in the flora of the Crimea. *Acta Biol. Sib.* 4, 4: 108–113. [In Russian] (***Фатерыга В. В., Фатерыга А. В.*** Новые находки редких и малоизвестных видов цветковых растений флоры Крыма // Acta Biol. Sib., 2018. Т. 4, № 4. С. 108–113). https://doi.org/10.14258/abs.v4.i4.4883

Fateryga V. V., Fateryga A. V. 2021. Three new nomenclature combinations in the Crimean flora. *Wulfenia* 28: 223–226.

Golubev V. N. 1996 (reprinted in 2008). *Biologicheskaya flora Kryma* [*Biological flora of the Crimea*], 2nd ed. Yalta, 126 pp. [In Russian]. (***Голубев В. Н.*** Биологическая флора Крыма. 2-е изд. Ялта, 1996 (перепечатано в 2008). 126 с.).

Kreutz C. A. J. 1995. *Orobanche: Die Sommerwurzarten Europas: ein Bestimmungsbuch = the European broomrape species: a field guide. Bd. 1: Mittel- und Nordeuropa = Vol. 1: Central and Northern Europe*. Maastricht: Stichting Natuurpublicaties Limburg. 159 pp.

Kubentayev S. A., Efimov P. G., Alibekov D. T., Kupriyanov A. N., Izbastina K. S., Khalymbetova A. E., Perezhogin Yu. V. 2023. Review of Orchidaceae of the northern part of Kazakhstan. *PhytoKeys* 229: 185–213. https://doi.org/10.3897/phytokeys.229.105457

Mirkin B. M., Rozenberg G. S. 1983. *Tolkovyy slovar sovremennoy fitotsenologii* [*Glossary of the modern phytocenology*]. Moscow: Nauka. 134 pp. [In Russian]. (***Миркин Б. М., Розенберг Г. С.*** Толковый словарь современной фитоценологии. М.: Наука, 1983. 134 с.).

Mucina L., Bültmann H., Dierßen K., Theurillat J.-P., Raus T., Čarni A., et al. 2016. Vegetation of Europe: hierarchical floristic classification system of vascular plant, bryophyte, lichen, and algal communities. *Appl. Veg. Sci.* 19(Suppl. 1): 3–264. https://doi.org/10.1111/avsc.12257

Novopokrovsky I. V., Tzvelev N. N. 1958. Orobanchaceae Lindl. In: B. K. Schischkin (ed.). *Flora URSS* [*Flora of the USSR*]. Vol. 23. Mosqua; Leningrad: Editio Academiae Scientiarum URSS. Pp. 19–117. [In Russian] (***Новопокровский И. В., Цвелёв Н. Н.*** Orobanchaceae Lindl. // Флора СССР. Т. 23. Под ред. Б. К. Шишкина. М.; Л.: Изд-во АН СССР, 1958. С. 19–117).

Piwowarczyk R. 2012. Revised distribution and plant communities of *Orobanche alsatica* and notes on the Orobanchaceae series *Alsaticae* in Poland. *Biodiv. Res. Conserv.* 26: 39–51. https://doi.org/10.2478/v10119-012-0008-3

Piwowarczyk R., Denysenko-Bennett M., Góralski G., Kwolek D., Sánchez Pedraja Ó., Mizia P., Cygan M., Joachimiak A. J. 2018. Phylogenetic relationships within *Orobanche* and *Phelipanche* (Orobanchaceae) from Central Europe, focused on problematic aggregates, taxonomy, and host ranges. *Acta Biol. Crac. Ser. Bot.* 60(1): 45–64. https://doi.org/10.24425/118044

Piwowarczyk R., Halamski A. T., Durska E. 2014. Seed and pollen morphology in the *Orobanche alsatica* complex (Orobanchaceae) from central Europe and its taxonomic significance. *Aust. Syst. Bot.* 27(2): 145–157. https://doi.org/10.1071/SB14013

Piwowarczyk R., Nobis M., Przemyski A. 2009. *Orobanche bartlingii* Griseb. (Orobanchaceae) in Poland: taxonomical position, distribution and habitat requirements. *Biodiv. Res. Conserv.* 13: 3–8. https://doi.org/10.2478/v10119-009-0001-7

Piwowarczyk R., Sánchez Pedraja Ó., Fateryga A. V., Svirin S. A., Murtazaliev R. A. 2024. *Orobanche dagestanica* (Orobanchaceae): a new species from the Greater Caucasus. *Phytotaxa* 653(1): 67–78. https://doi.org/10.11646/phytotaxa.653.1.5

Piwowarczyk R., Sánchez Pedraja Ó., Khutsishvili M., Kharazishvili D. 2023. Holoparasitic Orobanchaceae in Georgia (Caucasus): taxonomic revision, diversity, distribution, habitats and host range. *Phytotaxa* 604(1): 1–103. https://doi.org/10.11646/phytotaxa.604.1.1

Piwowarczyk R., Sánchez Pedraja Ó., Moreno Moral G., Fayvush G., Zakaryan N., Kartashyan N., Aleksanyan A. 2019. Holoparasitic Orobanchaceae (*Cistanche*, *Diphelypaea*, *Orobanche*, *Phelipanche*) in Armenia: distribution, habitats, host range and taxonomic problems. *Phytotaxa* 386(1): 1–106. https://doi.org/10.11646/phytotaxa.386.1.1

Piwowarczyk R., Schneider A. C., Góralski G., Kwolek D., Denysenko-Bennett M., Burda A., Ruraż K., Joachimiak A. J., Sánchez Pedraja Ó. 2021. Phylogeny and historical biogeography analysis support Caucasian and Mediterranean centres of origin of key holoparasitic Orobancheae (Orobanchaceae) lineages. *PhytoKeys* 174: 165–194. https://doi.org/10.3897/phytokeys.174.62524

POWO [2025]. *Plants of the World Online*. Kew: Facilitated by the Royal Botanic Gardens. URL: http://www.plantsoftheworldonline.org/ (Accessed 3 September 2025).

Raab-Straube E. von, Raus Th. (ed.). 2021. Euro+Med-Checklist Notulae, 14. *Willdenowia* 51(3): 355–369. https://doi.org/10.3372/wi.51.51304

Raab-Straube E. von, Raus Th. (ed.). 2022. Euro+Med-Checklist Notulae, 15. *Willdenowia* 52(2): 273–299. https://doi.org/10.3372/wi.52.52205

Raab-Straube E. von, Raus Th. (ed.). 2023. Euro+Med-Checklist Notulae, 16. *Willdenowia* 53(1–2): 57–77. https://doi.org/10.3372/wi.53.53104

Raab-Straube E. von, Raus Th. (ed.). 2024. Euro+Med-Checklist Notulae, 17. *Willdenowia* 54(1): 5–45. https://doi.org/10.3372/wi.54.54101

Raab-Straube E. von, Raus Th. (ed.). 2025. Euro+Med-Checklist Notulae, 18. *Willdenowia* 55(1): 107–144. https://doi.org/10.3372/wi.55.10

Rätzel S., Fateryga A. V., Uhlich H. 2017. *Phelipanche schultzioides* M. I. Y. Foley. In: E. von Raab-Straube, Th. Raus (eds.). *Euro+Med-Checklist Notulae*, 8 [Notulae ad floram euromediterraneam pertinentes No. 37]. *Willdenowia* 47(3): 302–303. https://doi.org/10.3372/wi.47.47311

Rätzel S., Ristow M., Uhlich H. 2015. *Orobanche grenieri* F. W. Schultz. In: E. von Raab-Straube, Th. Raus (eds.). *Euro+Med-Checklist Notulae, 5* [Notulae ad floram euromediterraneam pertinentes No. 34]. *Willdenowia* 45(3): 456–457. https://doi.org/10.3372/wi.45.45312

Rätzel S., Uhlich H., Raabe U., Ristow M., Rother M., Kummer V. 2025. Die Orobanchen (*Orobanche*, *Phelipanche*) in den Herbarien Albert Dietrich, Teil I: Die in der Flora Regni Borussici behandelten Taxa – *Orobanche buekii*. *Kochia* 18: 175–239. https://doi.org/10.21248/kochia.v18.233

Rubtzov N. I. (ed.). 1972. *Opredelitel vysshikh rasteniy Kryma* [*Key to vascular plants of Crimea*]. Leningrad: Nauka. 550 pp. [In Russian] (***Рубцов Н. И.*** (ред.). Определитель высших растений Крыма. Л.: Наука, 1978. 550 с.).

Sánchez Pedraja Ó., Moreno Moral G., Carlón L., Piwowarczyk R., Laínz M., Schneeweiss G. M. [2016+ (continuously updated)]. *Index of Orobanchaceae*. Liérganes, Cantabria, Spain. URL: http://www.farmalierganes.com/Otrospdf/publica/Orobanchaceae%20Index.htm (Accessed 3 September 2025).

Turland N. J., Wiersema J. H., Barrie F. R., Gandhi K. N., Gravendyck J., Greuter W., et al. 2025. *Código Internacional de Nomenclatura para algas, hongos y plantas. VI edición en español (Código de Madrid). Occasional papers from the Herbarium Greuter, 6*. Berlín: Stiftung Herbarium Greuter. liv + 344 pp. https://doi.org/10.7320/codigo.de.madrid.V2

Tzvelev N. N. 1969. Orobanchaceae Lindl. In: N. I. Rubtzov, L. A. Privalova (eds.). *Flora Kryma* [*Flora of Crimea*]. Vol. 3, Fasc. 3. Yalta: State Nikita Botanical Garden. Pp. 53–68. [In Russian] (***Цвелёв Н. Н.*** Orobanchaceae Lindl. // Флора Крыма. Т. 3, вып. 3. Под ред. Н. И. Рубцова и Л. А. Приваловой. Ялта: Государственный Никитский ботанический сад, 1969. С. 53–68).

Tzvelev N. N. 1981. Orobanchaceae Vent. In: A. A. Fedorov (ed.). *Flora partis europaeae URSS* [*Flora of the European part of the USSR*]. Vol. 5. Leningrad: Nauka. Pp. 317–336. [In Russian] (***Цвелёв Н. Н.*** Orobanchaceae Vent. // Флора европейской части СССР. Т. 5. Под ред. А. А. Федорова. Л.: Наука, 1981. С. 317–336).

Tzvelev N. N. 1983. De plantis raris et adventivis nonnullis in parte europaea URSS crescentibus, 4. *Novosti Sist. Vyssh. Rast.* 20: 225–238. [In Russian] (***Цвелёв Н. Н.*** О некоторых редких и заносных растениях европейской части СССР, 4 // Новости сист. высш. раст., 1983. Т. 20. С. 225–238).

Tzvelev N. N. 2015. On the genus *Orobanche* L. sensu lato (Orobanchaceae) in Russia. *Novosti Sist. Vyssh. Rast.* 46: 189–215. [In Russian] (***Цвелёв Н. Н.*** О роде заразиха (*Orobanche* L. sensu lato, Orobanchaceae) в России // Новости сист. высш. раст., 2015. Т. 46. С. 189–215). https://doi.org/10.31111/novitates/2015.46.189

Uhlich H., Rätzel S. 2024. Lectotypifications and taxonomic changes in *Alectra*, *Boschniakia*, *Cistanche*, *Orobanche*, *Phelipanche* and *Phelypaea* (all Orobanchaceae). *Nord. J. Bot.* 2024(6): e04155. https://doi.org/10.1111/njb.04155

Verkhozina A. V., Anisimov A. V., Beshko N. Yu., Biryukov R. Yu., Bondareva V. V., Chernykh D. V., et al. 2022. Findings to the flora of Russia and adjacent countries: new national and regional vascular plant records, 4. *Bot. Pacifica* 11, 1: 129–157. https://doi.org/10.17581/bp.2022.11114

Yena A. V. 2012. *Spontaneous flora of the Crimean Peninsula*. Simferopol: N. Orianda. 232 pp. [In Russian] (***Ена А. В.*** Природная флора Крымского полуострова. Симферополь: Н. Оріанда, 2012. 232 с.).