

Serratula coronata (Asteraceae) – a new species record for the flora of Azerbaijan

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Abstract. *Serratula coronata* (Asteraceae) is reported for the first time for the flora of Azerbaijan. The species was first found during the field surveys in 2012 in the forest edge near the village of Qonaqkend in Quba District of Azerbaijan, and later (in 2014) also discovered between Arafsa and Leketaq villages in the Nakhchivan Autonomous Republic. Data on distribution of species of *Serratula* sensu lato in the Caucasus are briefly reported and summarized. Diagnostic characters distinguishing *S. coronata* from other related taxa are provided. Plant communities with participation of *S. coronata* in Azerbaijan are characterized. Recent data on taxonomy of *Serratula* and related taxa are briefly discussed.

Keywords: Asteraceae, Azerbaijan, biogeography, flora, *Serratula*, taxonomy

Гусейнова А.Й., Агаєва Р.Н., Гарахані Р.Х., Алі-заде В.М. *Serratula coronata* (Asteraceae) – новий вид для флори Азербайджана. *Український ботанічний журнал*, 76(1): 67–70.

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Abstract. *Serratula coronata* (Asteraceae) вперше наводиться для флори Азербайджана. Цей вид був знайдений під час польових обстежень у 2012 р. на лісовій галявині біля с. Гонагкєнд у Губинському районі Азербайджана, а пізніше (в 2014 р.) – також між с. Арафса і Лєкетєг у Нахїчеванській Автономній Рєспублїці. В статті стисло викладено дані про поширення видів *Serratula* на Кавказі. Подано діагностичні ознаки, які відрізняють *S. coronata* від інших споріднених таксонів. Наведено характеристики угруповань рослин із участю *S. coronata* в Азербайджані. Отримані результати обговорюються у контексті сучасних даних про таксономію та філогенію *Serratula* і споріднених таксонів.

Ключові слова: Азербайджан, поширення, систематика, флора, Asteraceae, *Serratula*

The family Asteraceae (Compositae, nom. altern.) was reported to be represented in the flora of Azerbaijan by ca. 580 species belonging to 125 genera (Agadjanov, 1961); however, the exact numbers of species and genera are subject to changes due to recent changes in taxonomy and nomenclature. Several genera and species of the family, such as *Centaurea* L., *Pyrethrum* Zinn. sensu stricto (now *Tanacetum* L. sensu lato), etc., were studied in Azerbaijan in detail (Askerova, 1970; Qusenova et al., 2013, 2014; Mustafayeva, 2013; Mustafayeva et al., 2017); however, some groups of the family are still insufficiently known in the country. In the 20th century, seven species of *Serratula* L. sensu lato were reported for the territory of Azerbaijan (Agadjanov, 1961): *S. quinquefolia* M.Bieb. ex Willd., *S. coriacea* Fisch. & C.A.Mey., *S. radiata* (Waldst. & Kit.) M.Bieb., *S. transcaucasica* (Bornm.) Sosn. ex Grossh., *S. caucasica* Boiss., *S. xeranthemoides* M.Bieb., and *S. serratuloides* (Fisch. & C.A.Mey. ex DC.) Takht.

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Eight species of *Serratula* were reported from the Caucasus, including *S. coronata* L., *S. erucifolia* (L.) Boriss., *S. radiata*, *S. haussknechtii* Boiss., *S. coriacea*, *S. quinquefolia*, *S. serratuloides* (Fisch. & C.A.Mey.) Takht., and *S. caucasica* Boiss. *Serratula coronata* was mentioned in the *Conspectus florum Caucasi* (2008) for central and western parts of the Caucasus, but not for Azerbaijan, which is located in the Southern Caucasus. Of those species reported in the *Conspectus*, *S. transcaucasica* was synonymized with *S. haussknechtii* and *S. xeranthemoides* with *S. erucifolia*. Other species were recorded for Azerbaijan.

The concept of the genus has changed recently and all Azerbaijani species except one (*S. coriacea*) were transferred to the genus *Klasea* Cass. Now they are recognized as *Klasea quinquefolia* (Willd.) Greuter & Wagenitz (*Serratula quinquefolia*), *K. radiata* (Waldst. & Kit.) Á. Löve & D.Löve (*S. radiata*), *K. haussknechtii* (Boiss.) Holub (*S. transcaucasica*), *K. caucasica* (Boiss.) Greuter (*S. caucasica*), *K. erucifolia* (L.) Greuter & Wagenitz (*S. xeranthemoides*), and *K. serratuloides*



Fig. 1. *Serratula coronata*. A: herbarium specimen; B: plants in nature

(DC.) Greuter & Wagenitz (*S. serratuloides*) (see Wagenitz, 1959, 1975; Wagenitz, Hellwig, 1996). *Serratula coronata* and *S. erucifolia* have not been yet reported from Azerbaijan.

Reliable diagnostic characters for identification of species of *Serratula* and *Klasea* include pollen types, chromosome numbers, along with arrangement of florets, seriate pappus, phyllaries, appendages, etc., but in general identification of species belonging to that group of *Asteraceae* is complicated. Eight pollen types were distinguished among taxa of the subtribe *Centaureinae* and, according to the pollen evolution, the genera *Serratula*, *Crupina* (Pers.) DC., *Rhaponticoides* Vaill., *Psephellus* Cass., *Centaurea*, and the *Acrocentron* and *Jacea* groups of *Centaurea sensu lato* were evolutionarily ranked based on their main pollen types by Wagenitz (1955). Later, *Serratula*, *Crupina* and *Rhaponticoides* were accepted as "primitive" (with mainly ancestral pollen characters), *Psephellus* (including *P. dealbatus* (Willd.) K.Koch = *Centaurea dealbata* Willd., and related taxa), the *Centaurea Cyanus* and *Centaurea Montana* groups – as intermediate, but the *Acrocentron* and *Jacea* groups of *Centaurea* – as advanced types.

The *Serratula* type with spiny pollen grains was placed in the evolutionarily basal (early-branching) part of the cladogram of *Centaureinae* (Garcia-Jacas et al., 2001).

Progress in taxonomy, beginning from the last decades of the 20th century, especially due to molecular phylogenetic studies, brought more clarity to the taxonomic positions of genera, also necessitating numerous taxonomic changes and nomenclatural rearrangements within subtribes, tribes, and genera. Recent molecular phylogenetic studies indicated that the genus *Serratula*, as traditionally understood, is not a monophyletic group (Martins, Hellwig, 2005; Martins, 2006; Dogan et al., 2015). In particular, the segregate genus *Klasea* is currently recognized as distinct from *Serratula sensu stricto* (Ranjbar et al., 2015). However, the species *S. coronata* remains in the genus *Serratula sensu stricto*.

Herbarium specimens were collected in subalpine meadows of Qonaqkend village in Quba District, at elevation 1900 m above sea level [a.s.l.] (GPS coordinates N41°12'03.8'', E048°13'21.7'', collection date 11 August 2012) and between Arafsa and Leketaq villages in Nakhchivan Autonomous Republic of

Azerbaijan at elevations 1700–1800 m a.s.l. (GPS coordinates N41°05'546'', E048°27'37.0'', collection date 23 July 2014). In both cases the plants were found growing under meso-xerophytic conditions. Specimens were identified based on morphology and taking into account the main diagnostic characters.

Serratula coronata thus represents a new species record for the flora of Azerbaijan (Fig. 1, A, B). This species in Quba District was found in plant communities growing together with *Campanula caucasica* M.Bieb., *C. latifolia* L., *C. rapunculoides* L., *C. stevenii* M.Bieb., *Centaurea iberica* Trevir. ex Spreng., *Cyanus cheiranthifolius* (Willd.) Soják (*Centaurea cheiranthifolia* Willd.), *Festuca ovina* L., *Erigeron orientalis* Boiss., *Gentiana verna* L., *Nonea alpestris* (Steven) G.Don, *N. dagestanica* Kusn., *Primula amoena* M.Bieb., *P. auriculata* Lam., *Thymus collinus* M.Bieb., and *Veronica biloba* L. The plant was distributed in small groups. A large population of the species was found in Nakhchivan growing in association with *Rumex alpinus* L., *Polygonum cognatum* Meisn., *Astragalus karjagii* (Boriss.) Boriss., and *Pentanema britannicum* (L.) D.Gut.Larr. et al. (*Inula britannica* L.). The plants mainly occur in forests, forest edges, on mountain slopes, and in salty and mountain meadows.

Conclusions

Asteraceae/Compositae has been studied in Azerbaijan mainly during the 1950s–1960s and, based on collected information and herbarium data, the eighth volume of the *Flora of Azerbaijan* has been compiled (*Flora Azerbaidzhana*, 1961). This represents the main source for identification and analyzing the species of the family in the flora of Azerbaijan. As mentioned above, seven species of *Serratula sensu lato* recorded in the *Flora of Azerbaijan* (1961) and eight species in the *Conspectus florum Caucasi* (2012). Most of them were recently transferred to the segregate genus *Klasea*. Currently only two species known from Azerbaijan, *S. erucifolia* and *S. coronata*, are still considered as belonging to the genus *Serratula sensu stricto*.

As well known, over the last 40 years large-scale changes were introduced in *Asteraceae* systematics; in particular, tribal limits have been significantly reshaped (Funk et al., 2009). Considering taxonomic and nomenclatural changes proposed and accepted for *Asteraceae*, there is the urgent need to analyze the family in Azerbaijan at the level of tribes and genera. The number and list of species recorded in the flora of

the country should be also further updated and specified in the future.

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