

# Contribution to the knowledge of the distribution of *Anemone apennina* L. (Ranunculaceae) in Croatia

MILENKO MILOVIĆ<sup>1\*</sup>, JAGODA KARAĐOLE<sup>2</sup>

<sup>1</sup>“Antun Vrančić“ Grammar School, Put Gimnazije 64, HR-22000 Šibenik, Croatia

<sup>2</sup> Put Dubrave 48, HR-22000 Šibenik, Croatia

\*Autor za dopisivanje / corresponding author: [milenko.milovic@si.t-com.hr](mailto:milenko.milovic@si.t-com.hr)

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## Abstract

The species *Anemone apennina* L. (Ranunculaceae) has been known in Croatia only from several localities in the Konavle region. Three new localities of this plant in the surroundings of Sinj and Trilj (the region of Dalmatian Hinterland) are presented in this paper. With these new records the finding of the taxon near Sinj at the beginning of the 20th century was confirmed and the border of the areal in the eastern-Adriatic littoral has been significantly moved to the northwest.

**Keywords:** *Anemone apennina*, Croatia, Dalmatia, new localities, surroundings of Sinj and Trilj

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## Sažetak

Vrsta *Anemone apennina* L. (Ranunculaceae) u Hrvatskoj je do sada bila poznata samo na nekoliko lokaliteta u Konavlima. U ovom radu navode se tri nova nalazišta u okolici Sinja i Trilja u Dalmatinskoj zagori. Ovim nalazima potvrđen je nalaz iz okolice Sinja s početka 20. stoljeća, a granica areala u istočnojadranskom primorju znatno je pomaknuta na sjeverozapad.

**Ključne riječi:** *Anemone apennina*, Dalmacija, Hrvatska, nova nalazišta, okolica Sinja i Trilja

## Introduction

The genus *Anemone* L. (Ranunculaceae) is represented in the Croatian flora with nine taxa (Nikolić 2019), among which is *Anemone apennina* L. It is native in the central and eastern Mediterranean,

from Corsica to the Balkan peninsula (Corsica, Sicily, Italy, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, North Macedonia and Albania), but cultivated as a plant of ornamental value and



**Figure 1.** Previously known distribution of *Anemone apennina* in Croatia (Nikolić 2019).

locally naturalised elsewhere in Europe (Great Britain, Denmark, Belgium, Netherlands, France, Austria and Hungary) (Rochlena 1942, Trinajstić 1973, Brickell 1989, Chater 1993, Pils 2016).

In Croatia, *A. apennina* has been reported so far only from several localities in the region of Konavle (Fig. 1). In the mid-19th century Visiani (1852:80) recorded its presence in the mountain Sniježnica (“in umbrosis

silvaticis montis Snjesnicza”), and only more recently it has been found on several new localities in the Konavle region: Velji Do, Duba Konavoska, Kuna Konavoska and north of Molunat (Nikolić 2019).

Furthermore, the presence of *A. apennina* was reported in the surrounding of Sinj (Fig. 2) (Latzel 1914). However, Latzel’s article *Neuere Ergebnisse der botanischen Erforschung Dalmatiens und der Herzegowina* in which he published findings of some mosses and vascular plants from Dalmatia and neighbouring Herzegovina has remained unnoticed in the Croatian botanical literature for a long time. Since the time of Latzel’s publication, this locality for *A. apennina* has not been confirmed and it was not included in the Flora Croatica Database (Nikolić 2019). The nearest localities of this taxon are those in neighbouring Bosnia and Herzegovina, where it has been recorded for the surrounding of Mostar and for several localities in eastern Hercegovina (Beck-Mannagetta 1909, Latzel 1914). According to Šilić (1977), this plant grows in the mountain belt of littoral mountains, on loose soil rich with humus, in littoral, thermophilic forests and in the shrubberies of pubescent oak (Alliance *Ostryo-Capinion orientalis* Horvat (1954) 1959).

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In der Österr. Botan. Zeitschrift vom Jahre 1877 hat PANTOCSEK *Heliosperma eriophorum* JUR. für die Koristna greda im Tal Raduš brodo bei Vučija angegeben. Ich habe an den Nordabhängen der Bjelagora von Lastva bis Vučija, also einschließlich des genannten Tales nur *Heliosperma Tommasinii* GRIS. in mehreren Formen angetroffen, darunter die f. *chromodonta* (VIS.) non JUR., ferner  $\beta$  *montenegrinum* K. MALY, welches für die Monarchie neu ist. Ich kann daher die PANTOCSEKsche Angabe nicht bestätigen.

Übergehend zu den Ranunculaceen wäre zunächst von *Anemone apennina* L. zu bemerken, daß dieselbe in Dalmatien viel weiter nach Norden geht, als bisher angenommen wurde. Ich fand sie im heurigen Frühjahr überaus zahlreich an mehreren Stellen um Sinj in Bergdalmatien. In der Herzegowina fand ich sie in fast geschlossener Verbreitung längs der ganzen herzegowinisch-dalmatinischen Grenze von Zavala über die Vlastica, Glavska, Grab bis an den Fuß des Orjen bei Vrbanje.

Aus der Gattung *Ranunculus* wäre *R. chius* DC. zu erwähnen, den ich in der feuchten Umgebung einer Zisterne bei Porto Palazzo auf der Insel Meleda fand, woselbst er in Gesellschaft von *Veronica anagalloides* Guss.

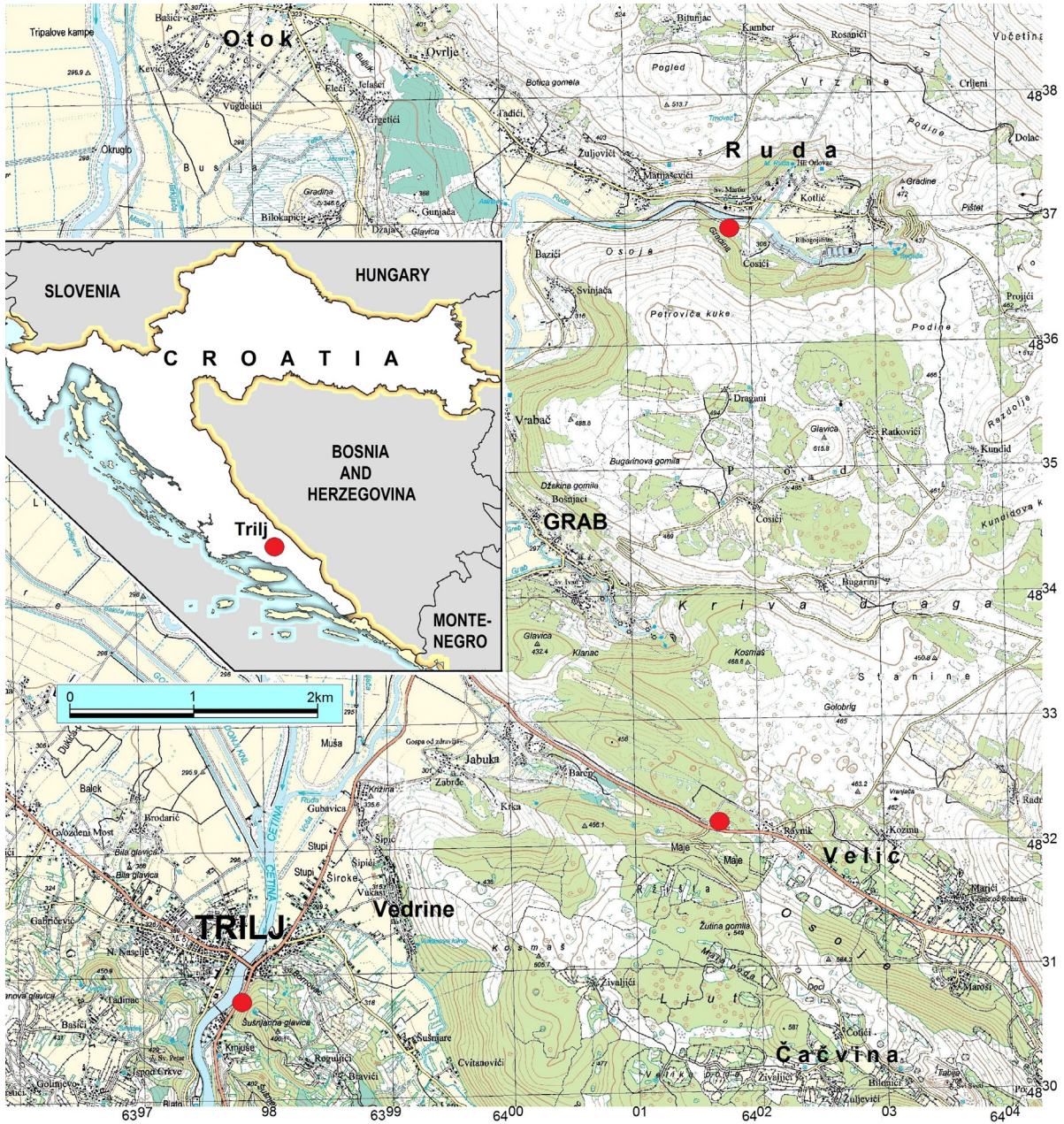
**Figure 2.** Overlooked locality of *Anemone apennina* in the surroundings of Sinj mentioned by A. Latzel (1914:2).



**Material and methods**

The identification of *A. apennina* was carried out using the diagnostic keys and species descriptions given by Chater (1993) and Brickell (1989). Gauss-Krüger's (GK) coordinates (the 6th zone) and HTRS96 coordinates of new localities were determined using GPS and were mapped into topographic map TK

1:25000. The collected herbal material is available in the herbarium ZAGR (Id. 53597) in Zagreb, and the photographs of plant specimens and their habitats obtained during the research can be found in the photo gallery FCD (Nikolić 2019). All photos presented in this paper were taken by the first author.



**Figure 3.** The geographic position of the new localities of *Anemone apennina*.



## Results and discussion

During our botanical excursions from 2017 to 2019 in the wide surroundings of Sinj and Trilj, in Dalmatian Hinterland, we found three new localities of *Anemone apennina* (Fig. 3), a rare species in Croatian flora.

1. South of the village of Ruda (east of the town of Sinj), in the foothill of the Gradina hill along the left coast of the rivulet Ruda (GK6: Y=6401819, X=4836974; HTRS96: Y=522375.19, X=4836783.43), April 8, 2017. The population of many specimens is found in the narrow belt along the road, on the plane 200 m long and 10 m wide, in a mixed shrubbery of pubescent oak and hop hornbeam (As. *Ostryo-Quercetum pubescentis* (Horvat 1950) Trinajstić 1979).
2. West of the settlement Velić, east of Trilj (GK6: Y=6401687, X=4832120; HTRS96: Y=522330.85, X=4831928.41), March 20, 2019. The population of many specimens, on the plane 100 m long and 50 m wide, in a mixed shrubbery of pubescent oak and hop hornbeam (As. *Ostryo-Quercetum pubescentis* (Horvat 1950) Trinajstić 1979).
3. Along the settlement of Trilj, the hillside of the hill Šušnjarina glavica along the left coast of the river Cetina (GK6: Y=6397795, X=4830816;

HTRS96: Y=518463.49, X=4830554.57), April 14, 2018. The population of not many specimens grows on the plane 30 m long and 10 m wide, in the shrubbery of hop hornbeam with autumn moor grass (As. *Seslerio autumnalis-Ostryetum* Horvat et Horvatić in Horvat 1950).

*Anemone apennina* is often confused with *Anemone blanda* Schott & Kotschy, which is native in southeast Europe and southwest Asia: in Montenegro, Albania, Greece, North Macedonia, Bulgaria, Turkey, Syria and Lebanon (Rochlena 1942, Trinajstić 1973, Brickell 1989, Chater 1993, Pils 2016), but not yet registered in Croatia, neither in culture nor in the wild (Nikolić 2019). Some authors consider *A. blanda* not to be a separate species, but a subspecies *A. apennina* L. subsp. *blanda* (Schott & Kotschy) Nyman (Rochlena 1942, Pils 2016). As *A. blanda* is found in the wild in neighbouring Montenegro, there was a possibility that it was also present in Croatia, either in the wild or escaping from culture. Therefore, performing the determination of plants found in the surroundings of Sinj and Trilj, we paid special attention to the distinctive features of *A. apennina* and *A. blanda*. Compared to *A. blanda*, *A. apennina* (Fig. 4–7) is distinguished by its creeping rhizome



**Figure 4.** The habitus of *A. apennina* (surroundings of Velić, March 20, 2019).



**Figure 5.** The rhizome of *A. apennina* (surroundings of Ruda, April 8, 2017).



**Figure 6.** The habitat of *A. apennina* (surroundings of Ruda, April 8, 2017).

(vs. congested tuber-like rhizome), oppressed hairy pedicels (vs. patent hairy), its perianth segments that are slightly pubescent beneath near base (vs. glabrous) and its fruiting heads that remain erect (vs. pendent). *A. apennina* also tends to have slightly fewer perianth segments, its leaves are usually more hairy and with stalked primary divisions (Brickell 1989, Chater 1993, Verloove 2006). The determination of specimens found on the new localities shows that they belong to the species *A. apennina*, which confirms the report of this species in the surroundings of Sinj from the beginning of the 20th century (Latzel 1914). The most proximate localities to these new records during our research are those in the neighbouring country Bosnia and Hercegovina in the surroundings of Mostar (Beck-Mannagetta 1909).

The localities of *A. apennina* from the region of Konavle, on the far south of Croatia present an extension of its area of distribution in neighbouring Bosnia and Hercegovina, in the wide neighbourhood of Trebinje (eastern Heregovina). According to the available data, its westernmost known locality was in the surroundings of Mostar (Beck-Mannagetta 1909). With our findings of new localities in the surroundings of Sinj and Trilj, its border of the area of distribution in the eastern-Adriatic littoral has been significantly moved to the northwest. With the further intensification of the field research in early spring (March–April), new findings of *A. apennina* in

Croatia can be expected, especially in the territory between Konavle region in the south and the newly discovered localities near Sinj and Trilj.

## References

- Beck-Mannagetta, G. (1909): Flora Bosne, Hercegovine i novopazarskog Sandžaka II(5). Glasnik Zemaljskog muzeja u Bosni i Hercegovini 21(1): 135-165.
- Brickell, C.D. (1989): *Anemone* L. In: Walters, S.M., Alexander, J.C.M., Brady, A., Brickell, C.D., Cullen, J., Green, P.S., Heywood, V.H., Matthews, V.A., Robson, N.K.B., Yeo, P.F., Knees, S.G. (eds.): The European Garden Flora 3, Cambridge University Press, Cambridge, 349-355.
- Chater, A.O. (1993): *Anemone* L. In: Tutin, G., Burges, N.A., Chater, A.O., Edmondson, J.R., Heywood, V.H., Moore, D.M., Valentine, D.H., Walters, S.M., Webb, D.A. (eds.): Flora Europaea 1 (2nd ed.). Cambridge University Press, 262-264.
- Latzel, A. (1914): Neuere Ergebnisse der botanischen Erforschung Dalmatiens und der Hercegowina. Verh. Ges. deutsche Natf. u. Aerzt e 85. Vers. Wien 1913. II. Tl. 1. Hälfte, F.C.W. Vogel., Leipzig, 1-6.
- Nikolić, T., ed. (2019): Flora Croatica Database. University of Zagreb, Faculty of Science, Department of Botany and Botanical Garden, Zagreb. <http://hirc.botanic.hr/fcd> (accessed May 10, 2019).
- Pils, G. (2016): Illustrated flora of Albania. Eigenverlag G. Pils.
- Rohlena, J. (1941-42): Conspectus Florae Montenegroinae. Preslia XX-XXI, 3-506.
- Šilić, Č. (1977): Šumske zeljaste biljke. IGKRO „Svjetlost“, Sarajevo – Školska knjiga, Zagreb – „Vuk Karadžić“, Beograd.
- Trinajstić, I. (1973): *Anemone* L. In: Trinajstić, I. (ed.): Analitička flora Jugoslavije 1(2). Grafički zavod Hrvatske, Zagreb, 276-284.
- Verloove, F. (2019): *Anemone apennina* L. In: Manual of the Alien Plants of Belgium. Botanic Garden Meise, Belgium. <http://alienplantsbelgium.be> (accessed August 10, 2019)
- Visiani, R. (1852): Flora Dalmatica, vol. 3. Apud F. Hofmeister, Lipsiae, 80.