



OXALIS PES-CAPRAE L. (OXALIDACEAE) A NEW SPECIES IN THE FLORA OF CROATIA

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This paper reports the first findings of the species *Oxalis pes-caprae* L. in Croatia. The species was found in the town of Komiža (the island of Vis) in the spring of 2000 as well as on the island of Biševo in the spring of 2001. In both cases plants were found within ruderal vegetation. The species is extensively naturalized in the Mediterranean region and western Europe, but in Croatian flora it comes as an adventitious species.

Key words: *Oxalis pes-caprae* L. (Oxalidaceae), new species, flora, Croatia

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U radu se iznose podaci o prvim nalazima vrste *Oxalis pes-caprae* L. u Hrvatskoj. Vrsta je nađena u gradu Komiži na otoku Visu u proljeće 2000. godine, te na otoku Biševu u proljeće 2001. godine. Na oba nalazišta biljke su zabilježene unutar ruderalne vegetacije. U Mediteranu i zapadnoj Europi vrsta je uvelike naturalizirana, dok u flori Hrvatske dolazi kao adventivna vrsta.

Ključne riječi: *Oxalis pes-caprae* L. (Oxalidaceae), nova vrsta, flora, Hrvatska

INTRODUCTION

According to YOUNG (1968) the species *Oxalis pes-caprae* L. (= *O. cernua* Thunb.) is indigenous to South Africa and extensively naturalized in the Mediterranean region and western Europe (Balearic Islands, Britain, Corsica, Crete, France, Greece, Spain, Italy, Portugal, Sardinia and Sicily).

Floristic literature referring to the area of Croatia does not note this species in Croatia (VISIANI, 1852; SCHLOSSER & VUKOTINOVIĆ, 1869; HIRC, 1908; ROSSI, 1930; DEGEN, 1937; DOMAC, 1994; MARKOVIĆ, 1997).

Also, there are no specimens of *O. pes-caprae* L. in either the Herbarium of Department of Botany in Zagreb (ZA and ZAHO), or in the Herbarium of the Croatian Natural History Museum (CNHM).

PIGNATTI (1982) notes this species, belonging to South-African floral element, in the Italian flora, with a distribution over the western and southern part of the Apennine peninsula. HAYEK (1927) notes that the species is distributed in Greece, Crete and the islands in the Ionian Sea.

Since we have found the species in two different localities in Croatia we find it useful to publish the details.

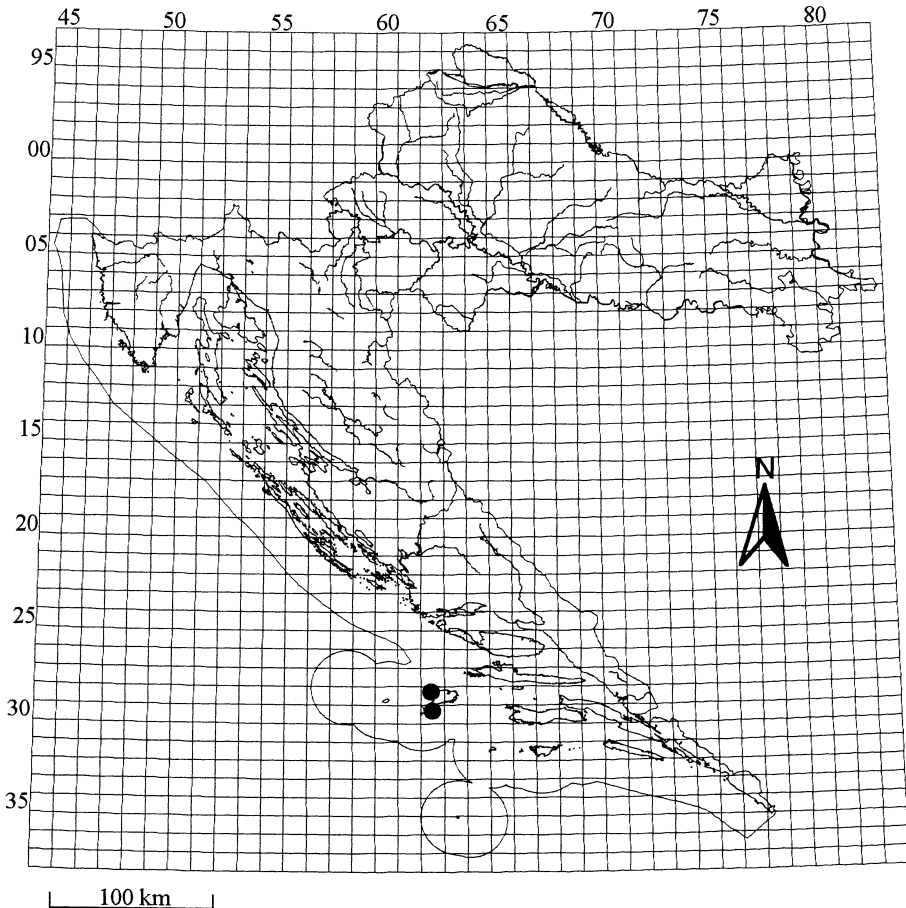


Fig. 1. Localities of *Oxalis pes-caprae* L. in Croatia (MTB grid).

RESULTS AND DISCUSSION

Localities of *Oxalis pes-caprae* L. in Croatia

The first plant was discovered (and collected) in March 2000 in the town of Komiža, in the south western part of Vis island (MTB 2962/4), on a meadow near the town pharmacy. There the species formed two continuous plots, with an area of ca 100 m² in total. In April 2001, we found a new locality on Sarbunara, a sandy beach in the western part of Biševo island (MTB 3062/1), with only two single specimens (Fig. 1).

The plant usually grows as a ruderal species or a weed, in cultivated ground (e.g. olive groves and vineyards) and other open habitats. The plants found in Komiža were growing in ruderal vegetation, and the ones in Sarbunara were found on sandy beach with great anthropogenic influence (Fig. 2 and 3).

Morphological characteristics of the species

O. pes-caprae L. is a perennial, caespitose, 10–50 cm tall, sparsely pubescent plant with bulbous roots, which emit an annual, ascending, subterranean stem, which bears bulbils and a rosette of leaves at ground level. The leaves are divided into three heart-shaped leaflets, 8–20 × 12–30 mm, and the surface of each leaflet is slightly hairy, often with a number of black specks. Petioles are up to 20 cm long. Six to twelve infundibuliform yellow flowers form umbellate cymes. The flowers have 5 petals, 20–25 mm long, and 5 sepals bicallos at the top, and are up to 7 mm long (YOUNG, 1968; PIGNATTI, 1982; BURNIE, 1995). Despite the energy spent on flowering, Mediterranean plants rarely form capsules or produce seeds. Instead, they spread by forming small bulbils that are easily scattered (BURNIE, 1995).

Generally *O. pes-caprae* L. is a heterostyleous plant, but in Italian populations, as well as in both known Croatian localities, it is represented only in microstyleous form. This indicates that all populations in the Mediterranean draw their origin from *Padre Giacinto's* plant (PIGNATTI, 1982).

PIGNATTI (1982) supposes that the species *O. pes-caprae* L. was introduced into Malta after the English occupation of the island during the Napoleonic Wars. An English woman brought the plant from Capo Colony (South Africa) and gave it to the local botanist *Padre Giacinto*. The plant resembled *O. cernua* Thunb. from his »Index Plantarum« (1806). By the year 1811 the species was flourishing. In Sicily the species has been cultivated since 1796, but only in the second part of the 19th century was it recorded as abundant. In Corsica it was finally noted in 1837, in Pantelleria in 1920, in Tuscany in 1923, in Lazio in 1934 and in Brescia in 1950 (PIGNATTI, 1982).

Since the species has spread to many localities all along the Apennine peninsula (PIGNATTI, 1982), as well as in Greece, Crete and the islands in the Ionian Sea (HAYEK, 1927), it can be assumed to be quite frequent in the eastern Adriatic and can be probably found in similar habitats.



Fig. 2. Herbarium specimen of *Oxalis pes-caprae* L. from Komiža, March 2000 (scann: I. Dobrović).

Presently the genus *Oxalis* L. is represented in Croatian flora with six species (MARKOVIĆ, 1997). Four species are indigenous and two are cultivated: *O. deppei* Loddiges ex Sweet and *O. tetraphylla* Cav. Neither of these two species are included in the key given below. To identify this new species, we offer the adjusted key according to YOUNG (1968):

- 1 Petals yellow
- 2 Aerial stem absent; bulbils present at base of plant*Oxalis pes-caprae* L.
- 2 Aerial stem present; bulbils absent3
- 3 Stem procumbent, rooting at nodes; leaves alternate; stipules auriculate
.....*O. corniculata* L.



Fig. 3. *Oxalis pes-caprae* L. in bloom. Biševo, April 2001 (photo: A. Ostojić).

- 3 Stem ascending, not rooting at nodes; leaves mostly subopposite; stipules not auriculate4
- 4 Inflorescence umbellate; fruiting pedicels deflexed; stipules oblong; stem with non-septate hairs*O. dillenii* Jacq. (= *O. stricta* L.)
- 4 Inflorescence not umbellate; fruiting pedicels not deflexed; stipules absent; stem with septate hairs.....*O. fontana* Bunge (= *O. europaea* Jord.)
- 1 Petals white, usually with lilac veins, stem rhizomatous; bulb absent; rhizome less than 1 cm thick; flowers solitary*O. acetosella* L.

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References

- BURNIE, D., 1995: Wild flowers of the Mediterranean. Dorling Kindersley Limited, London, p. 120.
- DEGEN, A., 1937: Flora Velebitica 2. Budapest, p. 378–379.
- DOMAC, R., 1994: Flora Hrvatske – priručnik za određivanje bilja. Školska knjiga, Zagreb, p. 147.
- HAYEK, A., 1927: Prodromus Florae Peninsulae Balcanicae 1. Berlin, p. 567–568.
- HIRC, D., 1908: Revizija hrvatske flore (Revisio florum croaticarum). Rad Jugosl. Akad. Znan. 173, 26–27.
- MARKOVIĆ, Lj., 1997: *Oxalidaceae*. In: NIKOLIĆ, T. (ed.): Flora Croatica, Index florum Croaticarum Pars 2. Nat. Croat. 6, Suppl. 1, 103.
- PIGNATTI, S., 1982: Flora d'Italia 2. Edagricole, Bologna, p. 1–3.
- ROSSI, Lj., 1930: Pregled flore Hrvatskog Primorja. Prir. Istraž. Kralj. Jug. 17, 182.
- SCHLOSSER, J. C. K. & VUKOTINOVIĆ, L. F., 1869: Flora Croatica. Zagrabiae, p. 399.
- YOUNG, D. P., 1968: *Oxalis*. In: TUTIN, T. G., HEYWOOD, V. H., BURGESS, N. A., MOORE, D. M., VALENTINE, D. H., WALTERS, S. M. & WEBB, D. A. (eds.): Flora Europaea 2. Cambridge University Press, Cambridge, p. 192–193.
- VISIANI, R., 1852: Flora Dalmatica 3. Lipsiae, p. 219.

SAŽETAK

Oxalis pes-caprae L. (*Oxalidaceae*), nova vrsta u hrvatskoj flori

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Vrsta *Oxalis pes-caprae* L. je biljka koja autohtono raste na području južne Afrike, a danas je proširena i uvelike naturalizirana u Mediteranu i zapadnoj Europi (YOUNG, 1968). Floristička djela koja se odnose na područje Hrvatske (VISIANI, 1852; SCHLOSSER & VUKOTINOVIĆ, 1869; HIRC, 1908; ROSSI, 1930; DEGEN, 1937; DOMAC, 1994; MARKOVIĆ, 1997) ne navode postojanje ove vrste u hrvatskoj flori.

Vrstu *O. pes-caprae* L. pronašli smo u proljeće 2000. godine u gradu Komiži na otoku Visu (MTB 2962/4), te na otoku Biševu na plaži Sarbunara (MTB 3062/1) u proljeće 2001. godine. Vrsta obično raste na kultiviranim i drugim otvorenim staništima kao ruderalna vrsta ili korov. Jedinke nađene u Komiži rastu u sastavu ruderalne vegetacije, dok one na otoku Biševu rastu na pješčanoj plaži, koja je pod velikim antropogenim utjecajem.

Budući je vrsta proširena duž Apeninskog poluotoka (PIGNATTI, 1982) te u Grčkoj, na Kreti i na otocima u Jonskom moru (HAYEK, 1927), može se pretpostaviti da, osim na našim nalazištima, raste i na drugim dijelovima istočnog dijela jadranske obale na sličnim staništima. U svrhu lakšeg određivanja vrste *O. pes-caprae* L. predlažemo korištenje prilagođenog ključa prema YOUNG (1968), u koji smo uvrstili 5 samoniklih vrsta roda *Oxalis* koje dolaze u hrvatskoj flori:

1 Latice žute

- 2 Nadzemna stabljika ne postoji; bulbili prisutni pri bazi biljke...*Oxalis pes-caprae* L.
- 2 Nadzemna stabljika prisutna; bulbila nema.....3
- 3 Polegla stabljika stvara korijenje u čvorovima; listovi izmjenični; palistići uškasti
.....*O. corniculata* L.
- 3 Stabljika se uzdiže, ne stvara korijenje u čvorovima; listovi gotovo nasuprotni;
palistići nisu uškasti.....4
- 4 Cvat štitac; stapke ploda prema natrag svinute; palistići duguljasti; stabljika s
nepregrađenim dlakama.....*O. dillenii* Jacq. (= *O. stricta* L.)
- 4 Cvat nije štitac; stapke ploda nisu prema natrag svinute; palistića nema;
stabljika s pregrađenim dlakama.....*O. fontana* Bunge (= *O. europaea* Jord.)
- 1 Latice bijele, obično s ružičastim žilama; stabljika s dobro razvijenim podankom;
bulbila nema; podanak tanji od 1 cm; cvjetovi pojedinačni*O. acetosella* L.