

BIDENS PILOSA AND CONYZA SUMATRENSIS, TWO NEW NATURALISED SPECIES IN THE FLORA OF SLOVENIA

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ABSTRACT

The species *Conyza sumatrensis* and *Bidens pilosa* are of American tropical and subtropical origin, but have in the last few years become well acclimatised in the Slovene coastal belt of Istra. This can be ascribed particularly to the milder sub-Mediterranean climate, which is clearly more advantageous to these species, and to the intensive sea traffic between the Northern Adriatic ports. *Conyza sumatrensis* can be found in dry, sunny and often stony habitats and is in the above mentioned area certainly not rare, while *Bidens pilosa* occurs only in a few localities on the Slovene side of the border, i.e. on more fertile and fresh ruderal sites.

Key words: *Conyza sumatrensis*, *Bidens pilosa*, flora, distribution, Slovenia

BIDENS PILOSA E CONYZA SUMATRENSIS, DUE NUOVE SPECIE NATURALIZZATE NELLA FLORA DELLA SLOVENIA

SINTESI

Bidens pilosa e *Conyza sumatrensis* sono specie di origine americana tropicale e subtropicale, ma negli ultimi anni si sono acclimatate bene nella fascia costiera dell'Istria slovena. Questo fatto può essere principalmente attribuito al clima submediterraneo mite, che favorisce queste specie, nonché all'intenso traffico marittimo tra i porti del Nord Adriatico. *Conyza sumatrensis* può essere trovata in habitat asciutti, soleggiati, spesso pietrosi e nell'area sopra menzionata è tutt'altro che rara. *Bidens pilosa* è invece presente in pochi habitat dell'Istria slovena e cresce su terreni ruderali più fertili e freschi e in vigneti.

Parole chiave: *Conyza sumatrensis*, *Bidens pilosa*, flora, distribuzione, Slovenia

INTRODUCTION

Diversity of the adventitious flora of the Koper district was described as early as in 1983 by T. Wraber, who listed quite a number of species of Central American and Northern American distribution (*Aster squama-*

tus, *Artemisia annua*, *A. verlotiorum*, *Bidens frondosa*, *Bilderdykia aubertii*, *Helianthus tuberosus*, *Tagetes minuta*). The majority of these species are limited to the warmer, sub-Mediterranean part of Slovenia and some merely to its coastal region. They have been brought here with the aid of man and his communications, par-

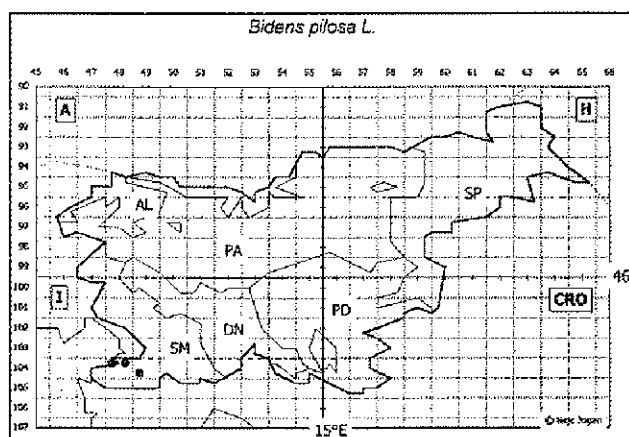


Fig. 1: Geographical distribution of *Bidens pilosa* in Slovenia.

Sl. 1: Geografska razširjenost *Bidens pilosa* v Sloveniji.

ticularly Northern Adriatic ports of Koper, Trieste and Monfalcone. Most relevant for a further expansion of certain species to the warmer habitats on the Continent are of course railway connections. We are in fact dealing with true corridors for the expansion of these species towards Ljubljana, Maribor and further on to Central Europe. Considering that the two found species, *Conyza sumatrensis* and *Bidens pilosa*, also originate from the warm (tropical and subtropical) parts of the New World, they are distributed (for the time being) only in the coastal part of Slovenia, for they favour warm habitats without or with late frost. Characteristic of *Bidens pilosa* are its extremely late blossoming and fructification (September - November), while *Conyza sumatrensis* often develops winter rosettes.

RESULTS AND DISCUSSION

Bidens pilosa L.

This American tropical species has been expanding practically to all warmer parts of the world - Asia, Oceania, Africa and Europe, where it already occurs in England and France (Stace, 1997) as well as in Spain (De Bolòs, 1998). In the neighbouring Italy it was recorded in Piemonte and Sicily (Pignatti, 1982), as well as in Liguria (Minuto, 1992), from where in fact originates the (earlier collected) herbarium specimen in LJU (Marchetti, 5. 12. 1964). The localities from the coastal part of Slovene Istra are thus the easternmost in Europe. The main reason for the occurrence of this species here is no doubt the busy sea traffic to and from the Port of Koper.

In Slovenia, the species was found for the first time in 1994 (Poldini, TSU: October 8th 1994), i.e. at Valdoltra near Ankaran by the coast (0448/1), and later on at



Figs. 2, 3: *Bidens pilosa* with white marginal flowers in the head. In all other species these tubular-like flowers are yellow (Photo: M. Kaligarič).

Sl. 2, 3: *Bidens pilosa* bi po slovensko lahko imenovali beli mrkač, saj so obrobni - cevasti - cvetovi v košku beli. Pri vseh drugih mrkačih so rumene barve (Foto: M. Kaligarič).

Ankaran near the coast in the vicinity of the building of the Slovene Navy (Kaligarič, LJU: October 15th 1989) (0448/2). Its occurrence in this locality was again confirmed in 1999, while its newly discovered localities

were: at a vineyard at Ankaran (Poldini, TSU, 1999) (0448/2), at Kortina near Rižana (Poldini, TSU: October 16th 1999) (0449/3), and at Šared above Izola (Kaligarič, LJU: November 1st 1999) (0447/4) (Fig. 1). The species occurs on moderately damp and with nutrients rich ground, also as weed in vineyards, or ruderal, so that flysch and alluvial deposits obviously suit its requirements. The favourable conditions for the growth of this tropical-subtropical species are due also to the mild sub-Mediterranean climate in the coastal belt (Figs. 2, 3). From here probably the reason for this species inhabits only a narrow belt along the coast. Considering that very effective epizoochoria is characteristic of the genus *Bidens*, we can expect it to expand quickly towards south-east. It is difficult to predict, however, that its occurrence as a weed plant will become a major problem, as is the case in the New World and in some places of Asia and Oceania. In Slovene Istra, however, it is climatically on the very border of its occurrence.

Conyza sumatrensis (Retz.) E. Walker

Synonyms: *Conyza albida* Willd., *C. naudini* Bonet.

The species has spread from the tropical America elsewhere, including Europe, particularly into the warmer parts of the Mediterranean, where it is already widely distributed in most of the Mediterranean countries. Its first records in Italy were made as early as in 1964 by Anzalone (1964), i.e. in the area spreading from Piemonte to Sicily. The species reached the Slovene border in 1977, for this is the year since documented with a herbarium specimen (Poldini, TSU) (Fig. 4). The more recent data regarding the Mediterranean also concern Albania (Baltisberger *et al.*, 1987) and Croatia (Čarni & Jogan, 1998). This species has been for quite some time mistaken for the similar species *Conyza bonariensis*, which has been naturalised in the Mediterranean for a number of years. Austrian quotations of the species *C. bonariensis* have been rectified by Melzer (1998), who has now ascertained periodical occurrence of this species also out of the Mediterranean, i.e. in Austrian Styria. How can we distinguish between the two species? The most reliable marks are the marginal flowers in the inflorescence, which are in the species *C. sumatrensis* zygomorphic, while in the species *C. bonariensis* all the flowers are actinomorphic. The species *C. sumatrensis* is otherwise much taller, with greater number of leaves, and branched out only in the upper part of the stem, while the leaves are bigger, wider and denticulate. *C. sumatrensis* is recognisable particularly by its often well-developed winter rosettes (see figure 5). These develop in extremely dry (strained) and warm habitats, such as cracks in asphalt, between pavements and roads, between pavements and houses, in the shelter of stone walls, etc.

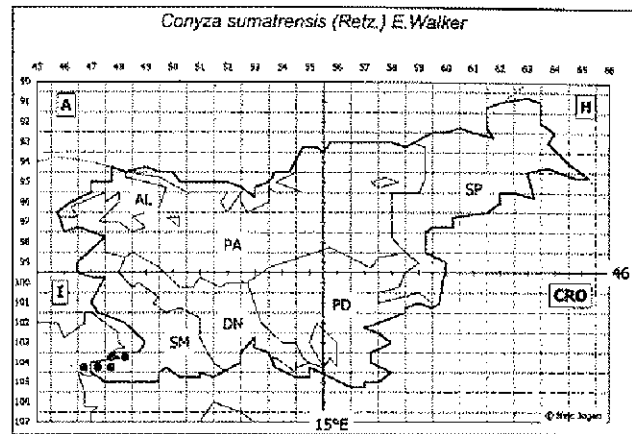


Fig. 4: Geographical distribution of *Conyza sumatrensis* in Slovenia.

Sl. 4: Geografska razširjenost *Conyza sumatrensis* v Sloveniji.

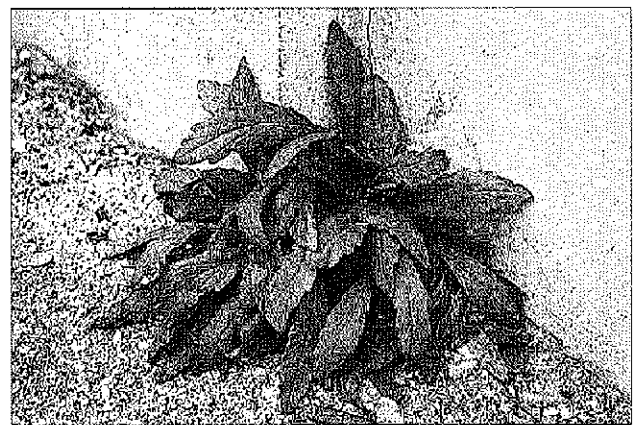


Fig. 5: *Conyza sumatrensis* is recognisable even in mid-winter for its copiously developed rosettes; it can be found in distinctly dry and warm habitats, such as asphalt cracks (Photo: M. Kaligarič).

Sl. 5: *Conyza sumatrensis* je prepoznavna tudi sredi zime po obilno razvitih rozetah; najdemo jo v izrazito suhih in toplih habitatih, kot so razpoke v asfaltu (Foto: M. Kaligarič).

The first reliable data for Slovenia are from 1984 (Poldini, TSU, December 21st 1984), i.e. from Gradno at Goriška Brda (9947/3). Poldini collected this species twice in 1997, namely in the centre of Izola (TSU, October 18th 1997) (0447/4) and at Brestovica na Krasu (TSU, October 1st 1997) (0147/4). In the material from the LJU herbarium there are two sheets from Lucija (T. Wraber, September 12th 1974) (0447/4) and Seča (T. Wraber, M. Lovka, October 2nd 1981) (0547/2) that are identified as *C. bonariensis*. The bottom leaves are missing and the plants are more or less in the phase of fruits, but there are zygomorphic flowers also present in

the flower head, which speaks of the fact that in both cases we are dealing with *C. sumatrensis* and not *C. bonariensis*. Apart from the stated herbarium specimens from Slovenia, the species *C. sumatrensis* was observed practically in every Slovene coastal town: in Koper at its parking places and Škocjan Inlet, in Izola also at its parking places, in Piran in its centre, etc.

We can conclude that this species, too, is more or

less restricted to the warm sub-Mediterranean climate of Slovene Istra, where it inhabits explicitly dry and warm (usually anthropogenous) habitats. It can be therefore expected that it will not expand out of this area, although this does not mean that some periodical finds are not excluded. Such case is the periodical occurrence of this species in Austrian Styria (Melzer, 1998).

BIDENS PILOSA IN *CONYZA SUMATRENSIS*, DVE NOVI NATURALIZIRANI VRSTI V FLORI SLOVENIJE

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POVZETEK

Vrsti *Bidens pilosa* in *Conyza sumatrensis* sta ameriškega tropskega in subtropskega izvora in sta se v slovenskem obalnem pasu Istre v nekaj letih precej udomačili. Sem sta bili zanešeni ob pomoči človeka in njegovih komunikacij, predvsem severnojadranskih pristanišč: Kopr, Trsta in Tržiča. Bistvena okoliščina, ki je prispevala k njihovi udomačitvi, pa je topla submediteranska klima, ki jo obravnavani tropsko-subtropski vrsti še lahko preneseta, saj jima ustrezajo topla rastišča brez ali s pozno zmrzaljo. Izjemoma oziroma prehodno se vrsta *Conyza sumatrensis* pojavlja tudi v ostrejših podnebnih razmerah. Tako so jo npr. našli že na avstrijskem Štajerskem. Sumatransko hudoletnico najdemo na suhih sončnih, večkrat kamnitih rastiščih in na omenjenem območju ni redka. Najdemo jo predvsem na suhih antropogenih rastiščih kot so nasipališča, parkirišča, gradbišča in v razpokah asfalta ali kamnitega tlaka. Od zelo podobne vrste *Conyza bonariensis* se loči po obrobni cvetovi v koških, ki so pri vrsti *C. sumatrensis* tudi zigomorfni, pri vrsti *C. bonariensis* pa so vsi cvetovi aktinomorfni. Sicer pa je vrsta *C. sumatrensis* znatno višje rasti, bolj gosto olistana, razrasla le v zgornjem delu stebela, listi pa so večji, širši in imajo izrazitejši stranske žile. Posebej je vrsta *C. sumatrensis* prepoznavna po svojih pogosto lepo razvitih zimskih rozetah. Vrsta *Bidens pilosa* je redkejša in jo v Sloveniji najdemo v Ankaranu in Valdobri, v Kortini nad Rižano ter v Šaredu nad Izolo. Zanja sta značilna izredno pozno cvetenje in fruktifikacija (september - november), uspeva na nekoliko bolj rodovitnih in svežih ruderalnih rastiščih. V tropskih in subtropskih predelih Azije in Oceanije postaja vrsta *Bidens pilosa* zelo invazivna in nadležen plevel. Ker je v Sloveniji na klimatski meji uspevanja, takšnega problema z njo vsaj za zdaj še ne pričakujemo. Ker so jezičasti cvetovi v koških bele barve - običajno so v tem rodu rumeni - predlagamo slovensko ime "beli mrkač".

Ključne besede: *Conyza sumatrensis*, *Bidens pilosa*, flora, razširjenost, Slovenija

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