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First finding in Sicily of *Bidens subalternans* (Asteraceae)

Abstract

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It is reported the presence in Sicily of a new alien species destined to a progressive further spread in the Island. It is *Bidens subalternans* DC., an annual asteracea of American origin, already known in other Italian regions (Friuli Venezia Giulia, Lombardia, Marche, Lazio and Campania) and in other European countries (Belgium, Corse, Croatia, Cyprus, France, Germany, Great Britain, Montenegro, Republic of Serbia, Slovenia, Spain, Switzerland). The new locality, in Sicily, occurs along the roadside Monreale – Pioppo, south of the city of Palermo. In this station, *B. subalternans* is found together with *B. pilosa* subsp. *minor* and other indigenous and exotic nitrophilous taxa. The population observed near Monreale (Palermo), is quite large and, according to the methods of dispersion, shows in Sicily an invasive tendency in favourable environment. The affinities of *B. subalternans* with *B. bipinnata* L. – with which the species was sometimes confused – is also discussed.

Key words: Alien flora, vascular plants, Italy, Mediterranean area.

Introduction

Bidens L. is a genus of the *Asteraceae* known since a long time in Europe; in fact, some of its species are to be considered native (Tutin & al. 1974.). The Italian flora includes 11 species (Conti & al. 2005, 2007): three of them are considered native (Bartolucci & al. in press). In Sicily, a species of this genus was already reported by Ucria (1789) and even earlier - in prelinnean times - by Cupani in his *Panphyton Siculum* of 1713 (Pastena & al. 2003). *Bidens* L. has been up to now represented by 6 specific and infraspecific taxa and among them is *B. bipinnata* L. (Giardina & al. 2007), taxon reported in various locality of the island, and that shows some similarities with other taxa with which in the past it could even be confused.

During distributive studies in W Sicily on *B. pilosa* L., we had the opportunity to find a dense population of another species of the genus, initially confused with *B. pinnata* L. The comparison of the new collected materials with other herbarium specimens housed in PAL allowed to attribute this population to *B. subalternans* DC., a taxon that has been recorded in the Italian peninsula since several decades. This finding is the object of ours contribution.

Taxonomy

On the basis of two characters (achenes and bristled awns), the collected samples of *Bidens* are attributed to *B. subalternans* DC. (Cabrera 1974; Tutin 1976; Bogosavljević & Zlatković 2015).

Bidens subalternans DC., Prodr. 5:600. 1836. [*B. quadrangularis* DC. loc. cit., *B. platensis* Manganaro, Ann. Nus. Nac. Buenos Aires, 24: 230. 1913] (Fig. 1)

Annual herb, with erect stem, branched, tetragonous, glabrous or sparsely bristly, 40-100 cm high. Leaves opposite, petiolate, ovate lanceolate, deeply pinnatisect or bipinnatisect, 6-20 cm long, with linear spine and lanceolate segments, briefly bristly. A few, long pedunculate capitula, arranged in corymbose heads at the ends of the branches. Hemispherical receptacle of 6 × 6-8 mm: linear phyllaries, more or less rough. Generally dimorphic flowers: white or yellowish, ligulate the ray ones (sometimes with a rudimentary or absent ligule); hermaphroditic and tubular those of the disc. Cypsela linear, tetragonous, the external 6-8 mm long, 8-14 mm the internal ones. Pappus formed by four aristae 1-2.5 mm long, covered by retracted hairs.

Geographic origin and ecology

According to Cabrera (1974), *Bidens subalternans* is native to South of Brazil, Bolivia, Uruguay and north and central Argentina. In the native area, the species is frequent as summer and autumn weed.

The studied population

The new population of *B. subalternans*, as far as noted, occupies road edges and slopes - mainly in the upstream - for a total length of about 3 km. It is settled on nitrophilous substrates of limestone matrix, from about 350 to 500 m a.s.l., between the eastern suburbs of the town of Monreale, up to the surroundings little village of Pioppo, along the Strada Statale 186 (Fig. 2). On the whole there are several thousand mature individuals, sometimes forming more or less monospecific coenosis, sometimes in communities where *B. subalternans* is still prevalent. It is associated with *B. pilosa pilosa* (var. *pilosa* and var. *minor* (Blume) Sherff), *Mercurialis perennis* L., *Malva sylvestris* L. subsp. *sylvestris*, *Ricinus communis* L., *Solanum nigrum* L., *Lobularia maritima* (L.) Desv. subsp. *maritima*, *Antirrhinum siculum* Mill., *Calendula* sp., *Pennisetum setaceum* (Forssk.) Chiov., *Sonchus tenerrimus* L., *Chenopodium murale* L., *Amaranthus retroflexus* L., *Parietaria judaica* L., *Erodium malacoides* (L.) L'Hér., *Bituminaria bituminosa* (L.) C. H. Stirt., *Helminthotheca echioides* (L.) Holub, *Scabiosa atropurpurea* L., *Oxalis pes-caprae* L., *Boerhaavia repens* subsp. *viscosa* (Choisy) Maire, *Brassica rapa* subsp. *campestris* (L.) A. R. Clapham, *Dittrichia viscosa* (L.) Greuter subsp. *viscosa* and *Rubus* sp.

Taxonomic and chorological remarks

Bidens subalternans DC., native to South America, and now widespread in various countries of Europe (Belgium, Corse, Croatia, Cyprus, France, Germany, Great

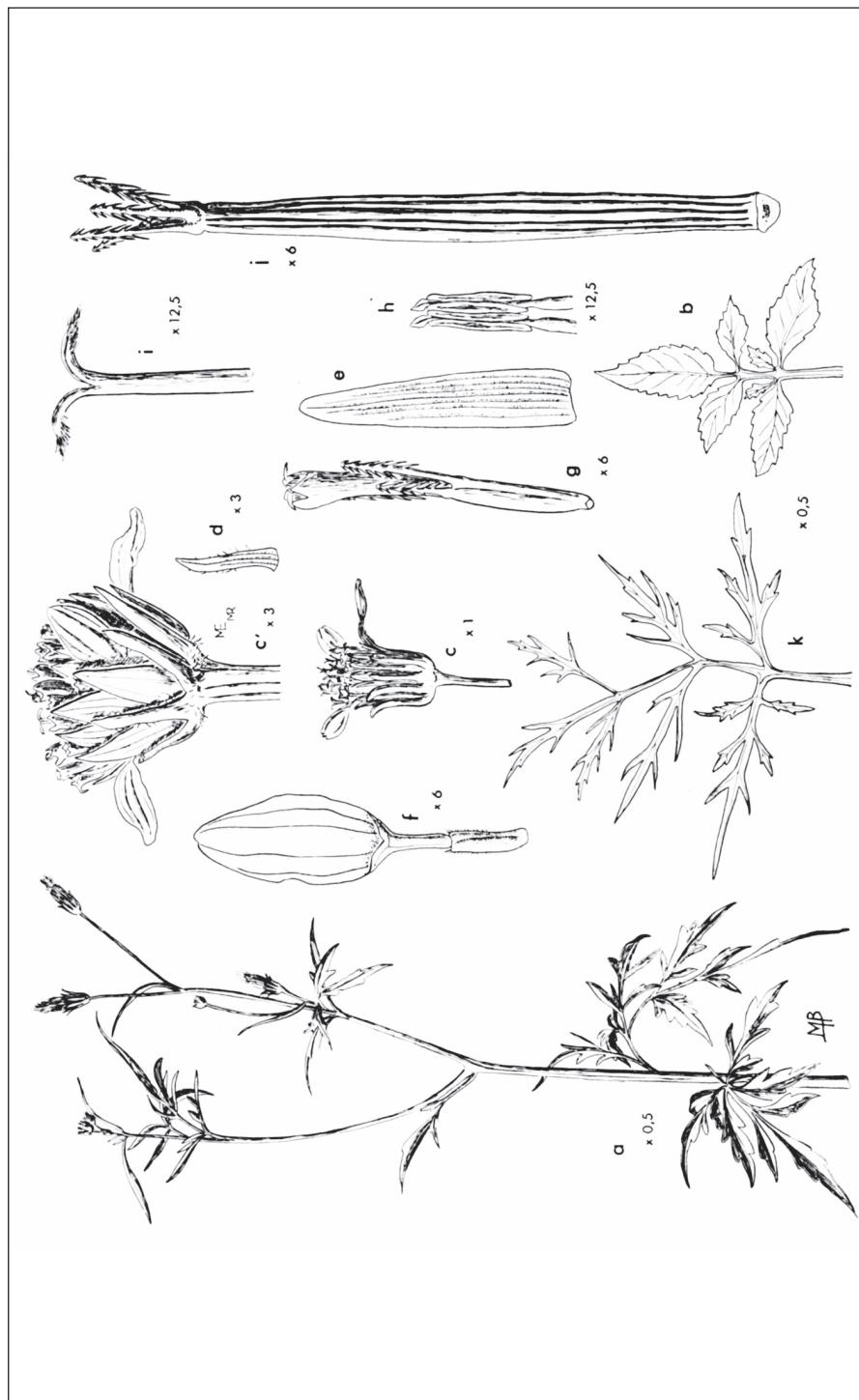


Fig. 1. *Bidens subalternans* DC. var. *subalternans*: a)Habit; b) leaf; c) capitula; d) capitula; e) phyllary; f) palea; g) disc flower; h) anthers; i) apex of the style; j) cypsela; k) leaf of *B. subalternans* var. *simulans* Sheriff (from Cabrera 1974).



Fig. 2. a) *Bidens subalternans* in the suburbs of Monreale; b) detail of the flower stem; c) detail of the cauline leaves; d) dense population in the new Sicilian locality.

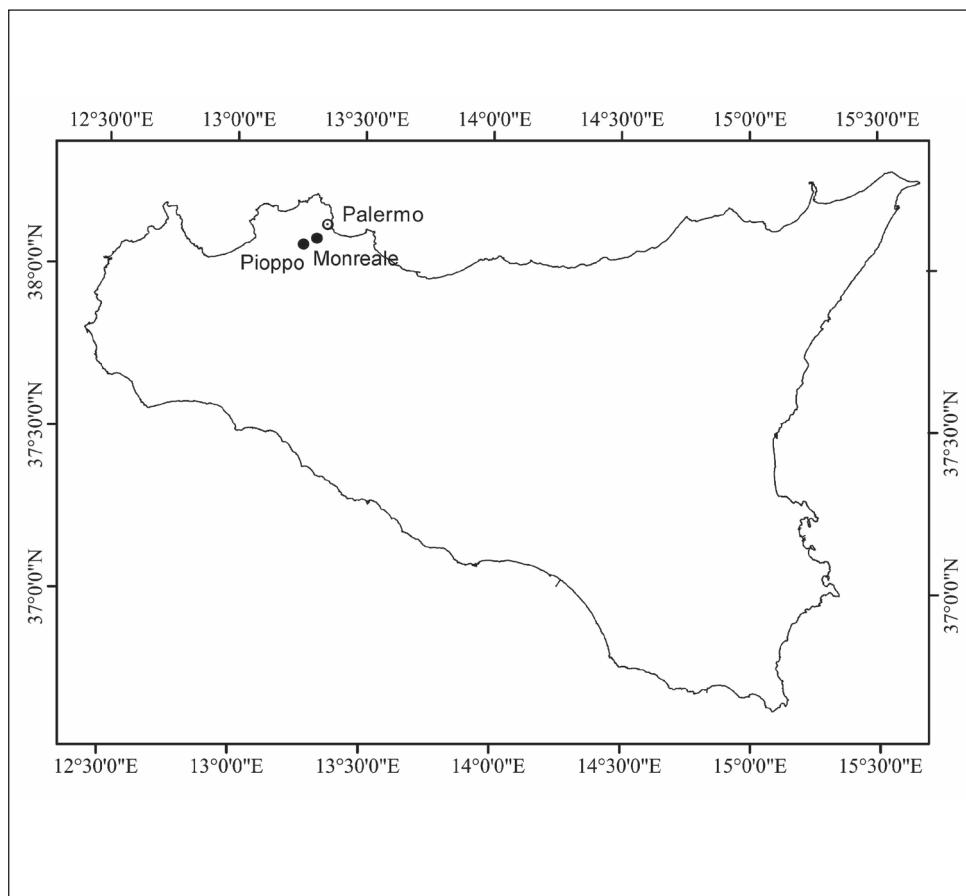


Fig. 3. Localities of the first finding in Sicily of *Bidens subalternans*.

Britain, Montenegro, Republic of Serbia, Slovenia, Spain, Switzerland) (Greuter 2006 -), Asia and Africa, has some variability and has often been confused with *B. bipinnata* (Latini & al. 2016).

In addition to the nominal species, there is a var. *simulans* Sherff. It differs from the typical variety for very dissected leaves, with linear or linear-lanceolate segments. It is found, usually, together with the species.

Based on this possible confusion – as was recently verified in Lazio (C Italy) by Latini & al. (2016) – the known geographic distribution of the two taxa should be checked. *B. subalternans* differs from *B. bipinnata* by the thinner, ramified only in the upper part stems, reflexed leaves, generally lanceolate and toothed leaf segments, as well as by the achenes, 0.6-1.4 cm long, and with aristae 1-2.5 mm long; whereas in *B. bipinnata* the leaf segments are deltoids and almost whole, and the achenes are 1-1.8 cm long, with aristae of 2-4 mm (Cabrera 1974).

Specimina

Sicily: Monreale, ai margini della strada provinciale per Pioppo [on the borders of a provincial route to Pioppo], 38° 03' 53" N 13° 6' 3" E, 420 m a.s.l., 20.6.2016, Raimondo (PAL, PAL-Gr, FI); Circonvallazione di Monreale, S.S. 186, habitat rudereale [bypass road of Monreale, S.S. 186, ruderal habitat], 38° 04' 17" N 13° 16' 28" E, 345 m (a.s.l.), 28.09.2017, Spadaro (PAL, PAL-Gr, FI).

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