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ON THE PRESENCE OF *DYSPHANIA PUMILIO* (R. BR.) MOSYAKIN & CLEMANTS (AMARANTHACEAE) IN ITALY

D. IAMONICO

Department of Environmental Biology, University of Rome Sapienza,
Piazzale Aldo Moro, 5 - 00185 Rome - duilio76@yahoo.it
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Resumen. *Dysphania pumilio* (R. Br.) Mosyakin & Clemants ha sido recolectado en la región de Lazio, lo que constituye la primera cita de esta especie para la región, como se ha confirmado por el estudio de citas bibliográficas y del material de herbario previos. Se incluye la descripción de la especie, su distribución, ecología y el grado de invasión en Italia.

Palabras clave: *Dysphania pumilio*, *Amaranthaceae*, Italia

Summary. *Dysphania pumilio* (R. Br.) Mosyakin & Clemants was recorded for the first time in Lazio region (central Italy), based on floristic surveys, analysis of literature and examination of herbarium specimens. Morphology, distribution, invasive status, ecological features of this species in Italy are here presented.

Keywords: *Dysphania pumilio*, *Amaranthaceae*, Italy

INTRODUCTION

The generic name *Dysphania* has been traditionally applied to 7-10 species endemic to Australia (AELLEN, 1930; SCOTT, 1978; WILSON, 1983). Recent molecular studies (KADEREIT & al., 2003; 2005) have shown a close relationship among the species of *Chenopodium* L. characterized by the presence of multicellular glandular hairs (previously included in the subgen. *Ambrosia* A.J. Scott), supporting the proposal by MOSYAKIN & CLEMANTS (2002; 2008) to transfer the glandular species to *Dysphania* R. Br.

Dysphania R. Br. (Amaranthaceae) is a genus of about 45 species (WESTERN AUSTRALIAN HERBARIUM, 1998-2009; MOSYAKIN & CLEMANTS, 2002; 2008; VERLOOVE & LAMBINON, 2006). Most of them are native to Australia (20 species) and to the Americas (18 species), while the remaining ones to Africa, Asia and Europe (see IPNI, 2008).

For Europe (BRENNAN, 1964; JALAS & SOUMINEN, 1980; GREUTER & al., 1984; AKEROYD, 1993; DAISIE, 2008) 8 species are indicated [only one of these

(in DAISIE, 2008) was reported under the name *Dysphania* (*D. glomulifera* (Nees) P. G. Wilson) while for the others the genus *Chenopodium* L. was accepted].

In Italy are recorded 6 species [CONTI & al., 2005 (sub *Chenopodium* spp.); CONTI & al., 2007 (sub *Chenopodium* spp.); CELESTI-GRAPOW & al., 2009a; IAMONICO, 2009; 2011].

In this paper the presence of *D. pumilio* (R. Br.) Mosyakin & Clemants in Italy is discussed; a new regional record to Lazio and a confirmation to Sicilia were given. Distribution, evaluation of its invasive *status* and notes on its morphology and ecology are also provided.

The work is part of a more comprehensive study, carried out by the same author, on taxonomy and distribution of the genus *Dysphania* in Italy.

MATERIALS AND METHODS

The study was carried out by:

- floristic surveys;
- extensive analysis of literature;
- investigation and examination of specimens kept in the following Herbaria: AO, APP, BI, BOLO, BOZ, CAME (*Herb. Ballelli*), CAT (<<http://www.dipbot.unict.it/herbarium/erbario.aspx>>), FI, FER, LEC, MRSN, MSNM, NAP, RO, ROV, PAD, PAL, PERU (*Herb. Cicioni*), PESA, TO, TSB, URT. The following personal Herbaria (not indexed in Index Herbariorum) were also checked: Herb. Alessandrini (Bologna, Emilia-Romagna), Herb. Argenti (Belluno, Veneto), Herb. Bovio (Aosta, Valle d'Aosta), Herb. Del Guacchio (Salerno, Campania), Herb. Iberite (Latina, Lazio), Herb. Lattanzi (Roma, Lazio), Herb. Pavesi (Roma, Lazio), Herb. Soldano (Vercelli, Piemonte), Herb. Tisi (Torino Piemonte), Herb. R.E. Turrisi (Catania, Sicilia).

RESULTS AND DISCUSSION

OCCURRENCE IN ITALY

Most Italian floras (BERTOLONI, 1854; CESATI, 1873; ARCANGELI, 1882; CESATI & al., 1884; ARCANGELI, 1894; CARUEL, 1894; FIORI, PAOLETTI, 1900-1902; SACCARDO, 1909; BÉGUINOT & MAZZA, 1916; FIORI, 1923; ZANGHERI, 1976; PIGNATTI, 1982; CONTI & al., 2005) have not reported *D. pumilio*. Only recently the species was indicated for Sicilia region by CONTI & al.

(2007), based on UOTILA & al. (2001). The non-native flora of Italy (CELESTI-GRAPOW & al., 2009a; 2009b; 2010) recorded *D. pumilio* for Lombardia region (as naturalized), based on some populations observed in four provinces: Bergamo, Brescia, Lecco, Milano (G. Galasso, *in verbis*), while no quotation for Sicilia was provided. So, a confirmation of the occurrence of *D. pumilio* in the latter region was necessary.

The record by UOTILA & al. (2001) was the first published for Sicilia and Italy. The authors indicated *D. pumilio* in «...*Monti Nebrodi, Bosco di Caronia... in the montane deciduous forest belt, in man-made, somewhat trampled and nitrified habitats amidst forest dominated by Quercus cerris var. gussonei Borzi...*» (Southern Italy, Sicilia region, Messina province); the specimens are kept in H (3 exsiccata) and in B (1 exsiccata) and they were collected by P. Uotila, Th. Raus and H. Kalheber. Subsequently, TURRISI (2004) recorded the species in Monte Ciraulo (southern sector of Etna Volcan, Catania province, Sicilia region), also quoting the species for 28 localities of eastern area of Etna. CRISTAUDO & MARGANI (2006) recorded *D. pumilio* in new 5 sicilian localities (Castiglione di Sicilia, Mascali, Linguaglossa, Aci Sant'Antonio, Adrano) all included in the area of the Etna volcano (Catania province). POLI MARCHESE & TURRISI (2007) reported *D. pumilio* as alien in Botanical Garden "Nuova Gussoneana" (Regalna, Catania province, Sicilia). For this species GIARDINA & al. (2007) refer only to UOTILA & al. (2001) and CRISTAUDO & MARGANI (2006). R. Turrisi sent to me some sicilian specimens, allowing to confirm his determinations.

Recently, *D. pumilio* was recorded in Campania region (Southern Italy in Salerno and Napoli provinces; DEL GUACCHIO, 2010) and in Emilia-Romagna region (Northern Italy, in Bologna and Ferrara provinces; ALESSANDRINI, 2010; ALESSANDRINI & al., 2011)]. In both regions the species can be considered naturalized (casual for Ferrara and Napoli provinces), according to PYŠEK & al. (2004).

Floristic survey carried out in Lazio region (autumn 2009) allowed me to find a population of *D. pumilio* in the city of Rome (southern sector) in urban-made habitat (mainly road flowerbed). This is the first record of the species for the region and for central Italy. The recent Flora of Lazio (ANZALONE & al., 2010) has not reported the species. Moreover, no specimens collected in Lazio are kept in RO, FI and URT. *D. pumilio* can be considered casual alien species for Lazio at present.

Fig. 1 shows the province of the Italy (Bergamo, Bologna, Brescia, Catania, Ferrara, Lecco, Messina, Milano, Napoli, Roma, Salerno) with present occurrence of *D. pumilio*.

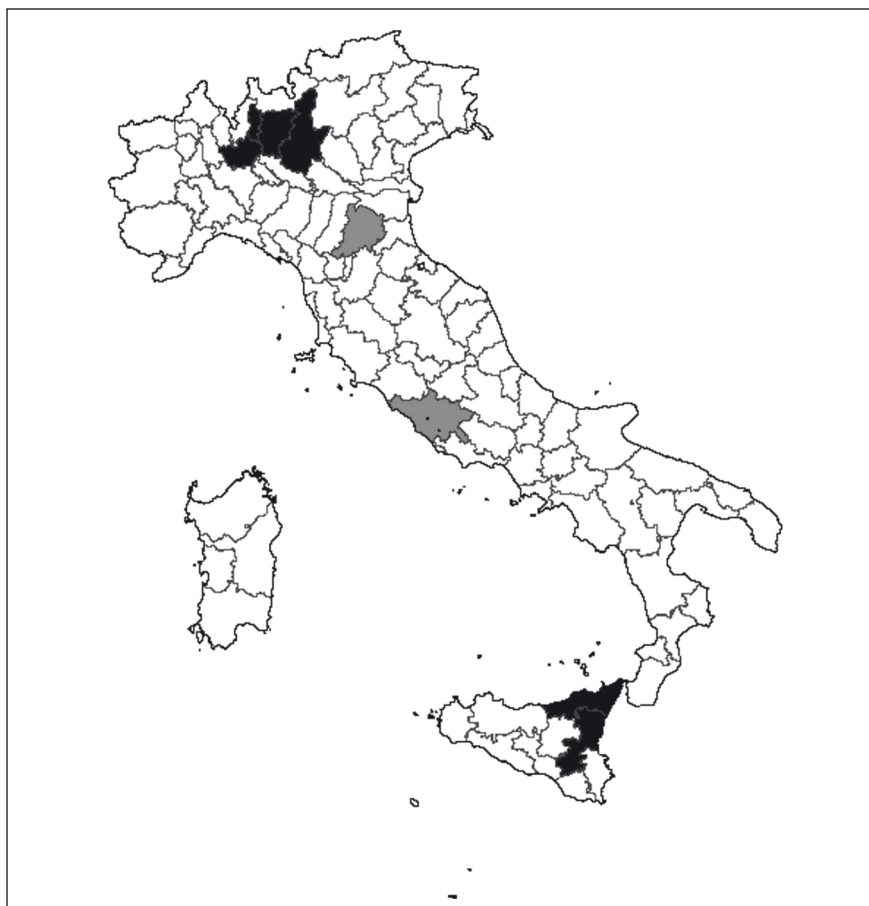


Fig. 1. Distribution map. Provinces with records of *Dysphania pumilio* in Italy are marked fully in black (naturalized species) or grey (casual species).

SPECIES DESCRIPTION, ECOLOGICAL NOTES AND INVASIVE STATUS

Based on observations of *exsiccata* and live populations, a detailed description of *D. pumilio* is reported.

Dysphania pumilio (R. Br.) Mosyakin & Clemants, Ukrayins'k. Bot. Zhurn. (Ukr. Bot. J.) 59: 382 (2002)

Bas.: *Chenopodium pumilio* R. Br., Prodr. 1: 407 (1810)

Prostrate or ascending annual to 40 cm. Stem branched, glandular, reddish or dark green. Leaves petiolate, with blade ovate to ovate-lanceolate (0.3-2.0 ×

0.5-5.0 cm) hairy and glandular (both sessile and stipitate glandular-hairs), margins lobed (2-4 lobes for each side), base cuneate and apex rounded. Inflorescences in axillary clusters (2.5-5.0 mm in diameter); flowers (about 1.0 mm) sessile or with short pedicel, with 5 ovate tepals, white at maturity, rounded dorsally, with apex acute, \pm pubescent; stamen 1; stigmas 2. Fruit spheroidal or ellipsoidal; seed vertical, ovoid (0.3-0.4 \times 0.5-0.6 mm), brown to black, coat smooth.

Chromosome number: $2n = 16, 18$ (RAHIMINEJAD & al., 2004; UOTILA, 1990).

D. pumilio is native to Australia (SCOTT, 1978; WILSON, 1983; 1984) and it is considered as alien species for Europe (UOTILA, 1990; DAISIE, 2008) and North America (CLEMANTS & MOSYAKIN, 2003); recently was also found in Iran (RAHIMINEJAD & al., 2004).

As regards the ecological demands, on the basis of field observations, *D. pumilio* can be considered a thermophyte, heliophyte and nitrophilous plant. The species follows the human settlements in Italy, colonizing mainly disturbed areas (roadsides, flowerbed) or cultivated field. The plant can be found at low altitudes (3-300 m a.s.l.) in Italian peninsula and up to 1345 m a.s.l. in Sicilia.

This neophyte can be considered as naturalized [Lombardia, Emilia-Romagna (Bologna province) Campania (Salerno province) and Sicilia regions] or casual [Emilia-Romagna (Ferrara province), Lazio and Campania (Napoli province) regions] (see Figure 1). I assume the year 1991 as the date of the first introduction in Italy (locality Vacchiera, Pedara, Catania province, Sicilia), although no herbarium specimens are available because of parasitism attack that have destroyed them (R. E. Turrisi, *in verbis*). The old available specimens were collected in the year 2001 and are kept in B and H (UOTILA & al., 2001).

CONCLUSIONS

D. pumilio is here recorded for the first time in Lazio region (central Italy); moreover, this is the first record for central Italy. On the basis of PYŠEK & al. (2004), this neophyte can be considered as casual to Lazio region and naturalized for the other Italian regions in which it is recorded. Further studies are needed to verify its presence in other Italian regions defining its distribution in Italy.

SPECIMINA VISA SELECTA

ITALY. Campania. Salerno, Torre Ancellara presso la Colonia S. Giuseppe, suoli sabbiosi costieri degradati, 3 m a.s.l., 17-11-2002, *Del Guacchio & Petrolicchio* (Herb. Del Guacchio); Salerno, S. Eustachio, terreni smossi e ambienti ruderali, 20 m a.s.l., 07-10-2003, *E. Del Guacchio et U. Petrolicchio* (Herb. Del Guacchio). **Emilia-Romagna.** Bologna, via S. Donato presso il sottopasso della “Cintura Ferroviaria”, marciapiede, 04-8-2008, *Alessandrini* (Herb. Alessandrini); *ibidem*, 20-8-2010, *Alessandrini* (FI, MSNM); Ferrara, marciapiedi, 10-9-2010, *Pellizzari* (FER). **Lazio.** Roma, quartiere Tuscolano, via Marco Fulvio Nobiliore, aiuole stradali, 51 m a.s.l., 05-11-2009, *Iamónico* (Herb. Iamónico, RO). **Sicilia.** Messina, Monti Nebrodi, estate of Casa Impallationata, in yard area of the estate, 825 m a.s.l., 29-9-2001, *Uotila 43779* (H); *ibidem*, on small unpaved forest road near the estate, 810 m a.s.l., 29-9-2001, *Uotila 43780* (H); *ibidem*, *Th. Raus 24701* (B). Catania, Contrada Regalda, Pedara, Etna, 15-8-2002, *Galesi 204* (CAT); *ibidem 204-1* (CAT); Catania, Pedara, località Vaccchiera, Monte Etna, lungo la via Mozzarella, 9-2002, *Turrisi s.n.* (Herb. Turrisi); *ibidem s.n.* (ricevuto da R. E. Turrisi in data 16-03-2010) (Herb. Iamónico).

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