Original research

An alien species of Bidens (Asteraceae): Bidens pilosa L., new to the Turkish flora

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Abstract: Bidens pilosa L. was collected during field trip to Osmaniye/Turkey in September 2018. Bidens pilosa is a recorded a new taxa for Flora of Turkey. It’s diagnostic characters, description and photographs are given in article. The geographical distribution in Turkey of the new record is mapped. Bidens pilosa is slightly related to Bidens frondosa, but it is distinctly separated from Bidens frondosa by short spathulate calycular bracts, (2-)3-4 barbellate awns of achenes, with white ray florets, ray florets at least 2-times longer than disc florets, longer stem, beneath of leaf usually dense pillosulose-tomentose indumentum.

Keywords: Bidens L., Asteraceae, New record, Flora, Turkey


Introduction

The genus Bidens L. is first described to science by Linnaeus in Species Plantarum Volume 2 (Linnaeus, 1753). This genus belongs to tribe Coreopsideae / subtribe Coreopsidinae of family Asteraceae. The tribe Coreopsideae contains 30 genera and approximately 550 species with a worldwide distribution. (Panero, 2007). Most of the species under subtribe Coreopsidinae (especially Bidens L. species) are distributed in America, especially North America. (Panero, 2007).

Bidens L. is represented about 280 species (Panero, 2007) on worldwide, generally distributed near Roadsides and in fields (Chen & Hind, 2011). It is represented by 5 species in Turkey (Kupicha, 1975; Güner, 2000; Coşkunçelebi et al., 2007; Korkmaz et al. 2011; Güner et al., 2012). Most of the Bidens species shows cosmopolite distribution. This genus is an alien genus for Turkey’s flora (Güner et al., 2012), all taxa of Bidens are invasive plant for Turkey Flora.

Bidens pilosa L., commonly known as Spanish needle, is also an invasive species that distributed and recorded from to south of North America, South America, West and South Africa, East of Suez Canal, West, North, South and Middle Europe, South-East Asia, North and South-East Australia and some of Pacific and Atlantic islands (GBIF, 2018) to date (Fig. 1).

Figure 1. Worldwide distribution map of Bidens pilosa in the (obtained from GBIF).

Bidens pilosa is used in traditional medicines. it is reported to treat various diseases and infections, commonly rheumatism, diarrhoea, ear, eyes and tooth ache problems, for treating malaria, skin infections, stomach and liver disorders. Also B. pilosa is a source of
natural anti-microbials anti-inflammatory hepatoprotective and cytotoxic against various cancer cells. (Pereira et al., 1999; Khan et al., 2001; Sundararajan et al., 2006; Yuan et al., 2008; Kumari et al., 2009; Pozharitskaya et al., 2010; Fotso et al., 2014; Silva et al., 2014; Singh et al., 2017)

Materials and methods
Mehmet Çelik, who is an amateur botanist and nature lover, collected an interesting specimen of *Bidens* from Osmaniye-Kırmtılı Province. He sent some interesting pictures of this specimen to me for identification in 2017. In 2018, we gathered flowering and fruiting material from the natural population of this plant. All samples were compared with many other *Bidens* specimens on relevant literature (Linnaeus, 1753; Boissier, 1875; Kupicha, 1975; Tutin, 1976 Boufford, 2006; Chen & Hind, 2011) was taken into consideration. After close examination of the specimens, we concluded that the collected specimens belonged to *Bidens pilosa* L., which is firstly recorded from Turkey. Photographs of plant specimens and plant parts were taken at herbarium and natural habitats. Morphological characters were measured by a millimetric ruler under a stereo binocular microscope.

Results
*Bidens pilosa* L. Sp. Pl. 2: 832. 1753. (Fig.2-3)


Stem glabrous or subglabrous. Leaf 1-pinnately divided; segments 3–5, ovate, lanceolate; upper surface of lamina subglabrous, beneath tomentose, adpressed pilosulous, cuneate at base, apices mostly acute, sometimes acuminate, margins serrate; terminal leaflets 3–10 × 0.7–3.5 cm; lateral leaflets 1.5–6 × 0.3–2 cm; petiole 1–7 cm. Capitula solitary to corymbose; capitula radiate or discoid; peduncles 3–5 cm pilose, hispidulous, elongate in fruiting time; calycular bracts mostly 8, spatulate to linear, 4–6 mm pilosus to pilosulous, hispidulous; involucres turbinate to campanulate, 4–8 × 6–10 mm; phyllaries mostly 8, lanceolate, 4–6 mm, margins scarious winged, ciliate. Ray florets mostly 5, lamina whitish, 10–12 mm. Disc florets 25–50, yellowish 3–5 mm, tubulate. Palea similar to phyllaries, slightly shorter or equal to disc flowers. Achenes dark brown to blackish, light brown to yellowish at apex, 6–10 mm, hispid to antorsely hispidulous or strigose at apex; pappus (2–)3–4 barbed, 1–2.5 mm; outer achenes ± flat linear to narrowly cuneate, each surface obscurely 2-grooved, subglabrous at basal; inner achenes ± equally 4-angled, linear, surface of all side 2-grooved, truncate at apex.

Suggested Turkish name: The Turkish name of this species is given as “Tarlasuketeni”, according to the guidelines of Menemen et al. (2013).
study, the number of *Bidens* L. taxa number has increased to 6 in Turkey border. *B. pilosa* morphologically is quite different from other *Bidens* taxa in Turkey. It is easily distinguished from other *Bidens* taxa in Turkey by its leaf segments, indumentum, calycular bracts and ray florets.

*Bidens pilosa* is slightly related to *B. frondosa*, but it is distinctly separated from *B. frondosa* by short spathulate calycular bracts, (2-)3-4 barbellate awns of achenes, with white ray florets, ray florets at least 2-times longer than disc florets, longer stem, beneath of leaf usually dense pillosulose-tomentose indumentum.

According to The Plantlist (2018), *B. pilosa* has 137 synonyms. It shows that, *B. pilosa* is a morphologically high variety species.

Osmaniye province is located on the intersection point of 2 major flyways of migratory soaring birds that come from Europe and Caucasian area. Most probably, *B. pilosa* carried by soaring birds to Osmaniye.

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**References**


