

BIDENS FRONDOSA L. (ASTERACEAE), A NEW RECORD FOR THE FLORA OF IRAN

A. Moradi & B. Hamzehee

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During the revision of herbarium specimens in Agriculture and Natural Resources Research Center of Gilan Province, *Bidens frondosa* L. was identified for the first time and is reported as a new record for the flora of Iran. The most important morphological traits of this species have been compared with its closely related species, *B. tripartita* L. and *B. bipinnata* L. Also, the geographical distribution and photos of the herbarium specimen and its natural state are provided.

Aiub Moradi (correspondence <aiubmoradi50@gmail.com>), Natural Resources Research Division, Gilan Agricultural, and Natural Resources Researches and Education Center (AREEO), Rasht, Iran.- Behnam Hamzehee, Research Institute of Forest and Rangelands, Agricultural Research, Education and Extension Organization (AREEO), Tehran, Iran.

Keywords: *Bidens frondosa*; Asteraceae, new record; Gilan; Iran

گزارش جدید گونه *Bidens frondosa* L. از تیره مینا، برای فلور ایران

ایوب مرادی: کارشناس پژوهش، بخش تحقیقات منابع طبیعی، مرکز تحقیقات و آموزش کشاورزی و منابع طبیعی استان گیلان، سازمان تحقیقات، آموزش و ترویج کشاورزی، رشت، ایران

بهنام حمزه: دانشیار پژوهش، مؤسسه تحقیقات جنگلها و مراتع کشور، سازمان تحقیقات، آموزش و ترویج کشاورزی، تهران، ایران
طی مرور نمونه‌های هرباریومی مرکز تحقیقات و آموزش کشاورزی و منابع طبیعی گیلان، گونه *Bidens frondosa* L. برای اولین بار شناسایی و به‌عنوان گزارش جدید برای فلور ایران معرفی می‌گردد. این گونه از نظر مهم‌ترین صفات ریخت‌شناسی با نزدیک‌ترین گونه‌ها، یعنی، *B. tripartita* L. و *B. bipinnata* L. مقایسه شده است. همچنین پراکنش جغرافیایی و عکس‌هایی از نمونه هرباریومی و حالت طبیعی آن ارائه شده است.

INTRODUCTION

Bidens L. with ca. 280 species in the world is commonly distributed along roadsides and farms. Most species of the genus *Bidens* show cosmopolite distribution (Yildirim & al. 2019). North America, with more than 170 species is the diversity center of the genus (Sherff 1937). According to Flora Iranica, only *B. tripartita* L. occurs in Iran (Rechinger 1989). After Flora Iranica, Jafari & Ghanbarian (2010) reported *B. bipinnata* L. from NW of Iran. Also, the genus *Bidens* with the two above-mentioned species has been taxonomically studied in the Flora of Iran (Jafari 2018).

In this paper, *B. frondosa* L. is reported for the first time from Iran. This species is native to North America and is on the list of the 50 most widespread invasive plants of Europe (Lambdon & al. 2008).

MATERIALS AND METHODS

Herbarium specimens of the genus *Bidens* collected from Gilan province, deposited in the herbarium of the Gilan Agricultural and Natural Resources Researches and Education Center (GILAN) were examined and identified, using relevant literature (Rechinger 1989; Shishkin 1990; Jafari 2018).

RESULTS AND DISCUSSION

New record

Bidens frondosa L., (fig. 1).

Annual herb, stem 0.5-1.5 (-2.0) m long, hairy or nearly glabrous, erect, with opposite branching. Leaves opposite, petiolate, pinnate, with 1 (-2) pairs of leaflets, sometimes two basal leaflets each have 2 other small secondary leaflets. Leaflets sharply serrate toothed, lanceolate or oblong-lanceolate. The terminal leaflet is longer than lateral, with a petiole up to 25 mm long. Capitula semi-globous, (10)12-15 mm in diameter, outer series of bracts spreading, 4-8 in number, green, oblong-linear, considerably longer than inner, broad oblong-ovate ones, and often exceeding capitulum. Florets tubular, orange. Achenes cuneate, 5-7 mm long, compressed, laterally throughout and along the margin with appressed hairs, with two bristles at apex, half as long as the achene.

Examined specimens: Iran: Gilan, near Parehsar from Rasht, Pilambara, 5m, Moradi (GILAN-761);

Rezvanshahr, Shafaroud Mountains, Rازه, 1550m, Moradi & Amanzadeh (GILAN-1343); Parehsar, Gyssum park, 5m, Moradi (GILAN-5368); Rasht, Lakan, 20m, Moradi (GILAN-6310).

Habitats: Wet soils near roads, streams, and rivers on Caspian coasts and forest edges. Also, these habitats are home to other hygrophyte and halophyte species such as *Polygonum hydropiper* L., *Paspalum distichum* L., *Lythrum salicaria* L., *Calystegia sepium* (L.) R. Br., *Eclipta prostrata* L., *Sambucus ebulus* L., *Lycopus europaeus* L., *Eupatorium cannabinum* L., *Siegesbeckia orientalis* L., *Froriepia subpinnata* Baill., *Mentha aquatica* L., *Epilobium hirsutum* L., *Bidens tripartita* L., *Alisma plantago-aquatica* L., *Carex riparia* Curtis.

Diagnostic morphological traits of *B. frondosa*, with its closely related species, namely, *B. tripartita* and *B. bipinnata* are presented in table1.

Table 1. Diagnostic morphological traits of *B. frondosa*, *B. tripartita* and *B. bipinnata*.

species characters	<i>B. frondosa</i>	<i>B. tripartita</i>	<i>B. bipinnata</i>
Leaf	Pinnate	Pinnate	Bi-pinnate
Leaflets	3-5 in number, petiolate	3 in number, sessile	Multiple-pinnatisect
Achenes	With small appressed hairs, bristles 2	With teethes curved down bristles (2-) 3 (-4)	With teethes curved down bristles 2-4



Fig.1: *Bidens frondosa* in natural habitat (left) and dried herbarium specimen (right) (Photos: Aiuob Moradi).

Recent researches have revealed that the interaction of various features such as high mean temperatures, the abundance of riparian systems, the presence of biotopes with favorable water balance, and high human pressure can cause an over-representation of alien plants (Sobrino & al. 2002). Obviously, the habitats of collected specimens especially the areas near the Caspian Sea represent favorite conditions for the spreading of alien plants. In recent years, many alien plants have been reported from Caspian coasts, many of them are strongly invasive, such as *Ambrosia artemisiifolia* L. (Mozaffarian 1991), *Sida rhombifolia* L. (Amini & al. 2003), *Amaranthus spinosus* L. (Mohamadzadeh & al. 2005), *Tagetes minuta* L. (Naqinezhad & Saeidi Mehrvarz 2007), *Solanum sisymbriifolium* Lam. (Eslami & Naqinezhad 2010), *Eichhornia crassipes* (Mart.) Slams (Mozaffarian & Yaghoubi 2015), *Ambrosia psilostachya* DC. (Tokasi & al. 2017). Although *B. frondosa* is considered an invasive and weed plant. It has well distributed in the coastal and forest habitats of Gilan. It grows in similar habitat to *B. tripartita*. So, *B. frondosa* may be present or spread in other growing areas of *B. tripartita* especially the Mazandaran and Golestan provinces in the North of Iran.

REFERENCES

- Amini, T., Zare, H. & Pakravan, M. 2003: A new record for the flora of Iran. -Iran. J. Bot. 10 (1): 55-57.
- Eslami, B. & Naqinezhad, N. 2010: A new shrubby *Solanum* (Solanaceae) species for the flora of Iran. -Iran. J. Bot. 17 (2): 254-256.
- Jafari, E. 2018: *Bidens*. In: Assadi, M. (ed.), Flora of Iran, 144: 800-812. -Research Institute of Forests Rangelands, Tehran.
- Jafari, E. & Ghanbarian, Gh. 2010: A revision of the genera *Bidens* and *Eclipta* (Asteraceae) in Iran. -Iran. J. Bot. 16 (1): 87-90.
- Lambdon, P. W., Pysek, P., Basnou, C., Hejda, M., Arianoutsou, M., Essl, F., Jarosik, V. & al. 2008: Alien flora of Europe: species diversity, temporal trends, geographical patterns, and research needs. -Preslia, 80: 101-149.
- Mohamadzadeh, Z., Sheidai, M. & Assadi, M. 2005: *Amaranthus spinosus* L. (Amaranthaceae), A new record for the flora of Iran. -Iran. J. Bot. 11 (1): 55-58.
- Mozaffarian, V. 1991: New species and new plant records from Iran. -Iran. J. Bot. 5 (1): 29-39.
- Mozaffarian, V. & Yaghoubi, B. 2015: New record of *Eichhornia crassipes* (Water Hyacinth) from north of Iran. -Rostaniha. 16 (2): 208-211.
- Naqinezhad, A. & Saeidi Mehrvarz, Sh. 2007: Some new records for Iran and Flora Iranica area collected from Boujagh national park, N. Iran. -Iran. J. Bot. 13 (2): 112-119.
- Rechinger, K. H. 1989: Helianthae. In: K.H. Rechinger (ed.), Flora Iranica, 164: 33-40. -Graz.
- Sherff, E. E. 1937: The genus *Bidens*. -Publ. Field Mus. Nat. Hist., Bot. Ser. 16: 16-74.
- Shishkin, B. K. 1990: *Bidens*. In: V. L. Komarov (ed.), Flora of U.R.S.S., 25: 514-524. -Moskva & Leningrad.
- Sobrino, E., Sanz Elorza, M., Dana, E. & González-Moreno, A. 2002: Invasibility of a coastal strip in NE Spain by alien plants. -J. Vegetat. Sc. 13: 585-594.
- Tokasi, S., Kazerooni Monfared, E., Yaghoubi, B., Oveisi, M., Sasanfar, H., Rahimian Mashhadi, H. & Müller-Scharer, H. 2017: First report of *Ambrosia psilostachya* from Iran: An invasive plant species establishing in the coastal area of Gilan province (N Iran). -Rostaniha. 18 (2): 222-226.
- Yildirim, H., Ozdol, T. & Yasayacak, H. 2019: An alien species of *Bidens* (Asteraceae): *Bidens pilosa* L., new to the Turkish flora. -Acta Biologica Turcica. 32 (1): 61-64.