

Belkacem Gordo &amp; Pertti Uotila

**First records of *Dysphania atriplicifolia* (Amaranthaceae) from Africa****Abstract**

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*Dysphania atriplicifolia* (Amaranthaceae), a species native to North America, has been recorded in 2024 from Algeria (Aïn Sefra, Naâma). This is the first record from Algeria and the second from the African continent; an unpublished old record from Egypt is published here. Brief information is provided about its morphology, distribution and habitat, and its biological traits and potential for invasiveness are discussed.

*Key words:* Aïn Sefra, Algeria, alien plant, Egypt, neophyte, new records, xenophyte.

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**Introduction**

The genus *Dysphania* R.Br., like the entire tribe *Dysphanieae* (*Chenopodioideae*, *Amaranthaceae*), which was recently revised by Uotila & al. (2021), contains about 50 species. It is a segregate genus from the formerly large genus *Chenopodium* L. (Fuentes-Bazan & al. 2012) and has a world-wide distribution mainly in tropical and subtropical regions (Uotila & al. 2021; POWO 2024). *Dysphania atriplicifolia* has some special morphological characters, especially the transverse wing on the perianth, which is why it was earlier treated as the monospecific genus *Cycloloma* Moq. However, phylogenetically it belongs to *Dysphania* and it was placed in sect. *Adenois* (Moq.) Mosyakin & Clemants by Uotila & al. (2021), but due to its specific characters and its status as the possible sister lineage to the other species of sect. *Adenois* Mosyakin (2021) preferred to place it in a monospecific section *Cycloloma* (Moq.) Mosyakin.

With the present reports of *Dysphania atriplicifolia* and the recent reports of the Australian *D. cristata* (F.Muell.) Mosyakin & Clemants (El Mokni & al. 2024) and *D. pumilio* (R.Br.) Mosyakin & Clemants (El Mokni 2024) from Tunisia, the number of species (native and exotic) of the genus amounts to eleven in Africa and six in the Mediterranean North Africa. In Algeria, *Dysphania* included earlier only three species, two naturalized from the Americas (*D. ambrosioides* (L.) Mosyakin & Clemants and *D. multi-*

*vida* (L.) Mosyakin & Clemants), and *D. botrys* (L.) Mosyakin & Clemants, which is an East European – Central Asiatic species, and doubtfully native in North Africa (Quézel & Santa 1962; Uotila 2006; Dobignard & Chatelain 2011; APD 2024; El Mokni & al. 2024).

Unlike the native flora of the Western Saharan Atlas (the Ksour Mountains), which is now well known (Gordo 2021; Gordo & al. 2021), the exotic flora is still incompletely studied. Apart from a few common xenophytes in Algeria, for instance *Ailanthus altissima* (Mill.) Swingle, *Erigeron canadensis* L., *Datura stramonium* L., *Oxalis pes-caprae* L. var. *pes-caprae*, *Solanum elaeagnifolium* Cav. and *Xanthium spinosum* L., no species new to the alien flora of Algeria has been observed in the region. Since 2021, this has led the first author to direct explorations towards urban environments and agricultural ecosystems. In the course of these studies, a few individuals of the North American species *Dysphania atriplicifolia* were observed in 2024 at a small farm located east of the city of Aïn Sefra (Naâma).

## Material and Methods

The site of *Dysphania atriplicifolia* in Algeria was visited by the first author several times to collect specimens, take photographs and describe the plants and the population. The specimens were deposited in the Herbarium of the University Center of Naâma (Naâma) and that of the University of Oran 1 (Oran), both in Algeria. During herbarium work at Berlin (B) in October 2024 by the second author, an additional African specimen, collected from Egypt, was found. For morphological comparison herbarium specimens and several floras and articles were used (in particular, Scott 1978; Wilson 1984; Mosyakin 2003; Vidéki 2005 and Uotila & al. 2021). For the global distribution of the species, Uotila (2006); GBIF (2024) and POWO (2024) were consulted. The nomenclature adopted for the species mentioned follows International Plant Names Index (IPNI 2024).

## Results

***Dysphania atriplicifolia* (Spreng.) G.Kadereit, Sukhor. & Uotila** in Taxon 70: 542. 2021  
(= *Salsola atriplicifolia* Spreng., Nachtr. Bot. Gart. Halle: 35. 1801, = *Cycloloma atriplicifolium* (Spreng.) J.M. Coult. in Mem. Torrey Bot. Club 5: 143. 1894).

**Egypt:** Orient, Cairo, [1834–]1835, A. Wiest (B 100672946; in Herbarium Baschant, acc. 1959). – New to Egypt.

**Algeria:** Naâma, Aïn Sefra, Dzira, 1097 m, 32°43.5950'N, 0°36.5710'W, 31 May 2024, Belkacem Gordo s. n. [Herb. Univ. C. Naâma and Univ. Oran 1]. – New to Algeria.

Erect bushy annual plant 10–30(60) cm high (Fig. 1); leaves sessile or shortly petiolate, ovate to oblong 1.5–4 cm long, sinuate-dentate (usually with 3–4 long teeth with a mucro); flowers bisexual or polygamous forming a loose paniculate inflorescence; the axis of the inflorescence 1–5 cm long, gradually lengthening during flowering and fruit ripening; fruiting perianth (2.5)3–4(5) mm in diameter, depressed from above, crustaceous, with transverse, broad, irregularly toothed membranous wing in the middle; perianth lobes free above the wing; fruit a hairy achene.



Fig. 1. *Dysphania atriplicifolia* in the Dzira agricultural periphery (Aïn Sefra, Naâma) (31 May 2024, Belkacem Gordo). a) Habitat in weedy vegetation; b) Leaves; c) Branches of the inflorescence in fruiting stage. Note the transverse wing on fruiting perianths; this character separates this species from all other *Dysphania*.

#### ***Distribution and habitat in Algeria***

Around thirty individuals of *Dysphania atriplicifolia* in an area of 16 m<sup>2</sup> were observed at a small farm located in the Dzira agricultural periphery in Aïn Sefra, Algeria (Fig. 2). These are sand dunes which were enhanced by development work in the 1990s. The residual vegetation



Fig. 2. The location of the present find in Algeria is marked with a black square.

which persists here and there indicates that these environments were covered with the chamaephytic desert vegetation of *Calobota saharae* (Coss. & Durieu) Boatwr. & B.-E.van Wyk and *Retama raetam* (Forssk.) Webb & Berthel. Now in the small, irrigated plot, where *D. atriplicifolia* infiltrates, the following species were found: *Chenopodium album* L., *Cynodon dactylon* (L.) Pers., *Erigeron canadensis* L., *Melilotus indicus* (L.) All., *Nolletia chrysocomoides* Cass., *Onopordum arenarium* (Desf.) Pomel, *Polycarpha repens* (Forssk.) Asch. & Schweinf., *Portulaca oleracea* L., *Salsola tragus* L., *Senecio glaucus* subsp. *coronopifolius* (Maire) C.Alexander, *Setaria verticillata* (L.) P.Beauv. subsp. *verticillata*, and *Tribulus terrestris* L. The dominant species were the annuals *C. album*, *S. tragus* and *D. atriplicifolia*. In the densest parts of this disturbed habitat the vegetation cover could be 80%.

## Discussion

The original area of this species is mostly the central parts of North America west of the Mississippi River, but it has currently expanded its area to southern Canada and eastern USA (Mosyakin 2003; POWO 2024). It had been introduced to Europe already at end of the 1800s to northern Italy and in the early 1900s to Germany (Aellen 1960); at present it is said to be naturalized at least in Italy, France, Slovakia and Hungary (Mandak & Prach 2001; Vidéki 2005; Tison & de Foucault 2014). In the recent compilation of European alien plants (Kalusová & al. 2024), *D. atriplicifolia* was listed as casual in one territory (+ Finland: Kurtto & al. 2019), naturalized in three territories, naturalized/invasive in one territory and invasive in one territory. In addition, there are records with unknown or casual status from Australia (Prov. Victoria: Wilson 1984), South America (Argentina, Prov. Buenos Aires, Córdoba, La Pampa and San Luis: Brignone 2020), Asia (Japan, Sendai: Ebihara 2024), and from North Africa (Egypt and Algeria: present study; Fig. 2). Undoubtedly the species was recently accidentally introduced into the site in Algeria with



seeds imported to grow food and fodder, as, for instance, the fodder plant *Medicago sativa* L. (alfalfa), but it had reached the southern side of the Mediterranean Sea in Egypt at about the same time as the northern side.

*Dysphania atriplicifolia* is a spring-flowering psammophytic theropyte, i.e., its typical growing habitats in both the original and introduced areas are sandy accumulations such as dunes. Algerian plants were tall and richly branched and a single plant can produce a considerable number of seeds. Furthermore, loose, whole plants are easily rolled along by the wind (tumbleweed; Sukhorukov 2014). This may result in effective spreading, especially since in recent years the effects of wind have been more frequent throughout the Naâma Region (Bouarfa & al. 2018). Due to the risk of uncontrolled propagation of this species in sandy natural environments and/or those threatened by wind erosion, it is strongly recommended that regular monitoring be carried out in protected areas such as wetlands (lakes, oases, wadis) and coastal dunes.

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