

## A New Record *Amaranthus blitoides* S. Watson. (Amaranthaceae) For the Flora of Libya

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DOI: 10.21859/ajlsr-040304

Submitted: 05.13.2016

Accepted: 06.27.2016

### Keywords:

Amaranthus  
Amaranthaceae  
Libya

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### Abstract

**Introduction:** A new invasive species, *Amaranthus blitoides* (Amaranthaceae) is reported for the first time for the flora of Libya.

**Methods:** The specimens were collected from Souq Al-Gomaa and Ain Zara east of Tripoli city in North West part of Libyan coast, this exotic species is native to the southern part of North America, and it should be considered as a potential invader in the Mediterranean ecosystems.

**Results and Conclusions:** Morphological description is provided to facilitate further identification of this species and to warrant its future detection as well.

## INTRODUCTION

The genus *Amaranthus* is represented by approximately between 60 to 75 species [1-9] and represents the largest pan-tropical genus in Amaranthaceae, *Amaranthus* is a common annual broadleaf genus of tropical origin, widely distributed all over the world, in tropical, subtropical and temperate regions with the center of diversity occurring in America, and few species in Australia, Africa and Eurasia [8-10]. At least 20 species of pigweed are important as field weeds, some as ornamental plants and others are utilized as food, leaf vegetables and cereals [5-11]. *Amaranthus* spp (Pigweeds) grow naturally in open areas with full sun and disturbed soils. They are annual plants, growing rapidly in disturbed areas and producing from tens of thousands to hundreds of thousands of seeds per plant. These habitat preferences enable them to grow well in agricultural fields that mimic their natural environments [9].

*Amaranthus blitoides* is one of the major agricultural weeds infesting all irrigated summer crops. Resistance to almost all herbicide groups has been reported *Amaranthus* spp [12-14]. In this paper a news species *Amaranthus blithoides* is collected and recorded for the first time for the flora of Libya as an invasive weed.

## METHODS

Plant specimens were collected from Souq Al-Gomaa 10 km east of Tripoli (32° 53' 17.64 N, 13° 53' 3 26.47 E) and Ain Zara 20 km east of Tripoli (32° 51' 31.83 N, 13° 17' 14.70 E) in the west part of Libyan coast. The plant species were monitored and collected in two consecutive seasons 2014-2015. (Fig 1 and Fig 2).

Plant specimens were examined carefully, characterized, described, and morphological data were given, the identification of this species was done using the data from the following literatures [15-19].

The specimens were subjected to ordinary herbarium procedures and then deposited at the national herbarium of the Department of Botany, Faculty of Sciences, Tripoli University, Libya.

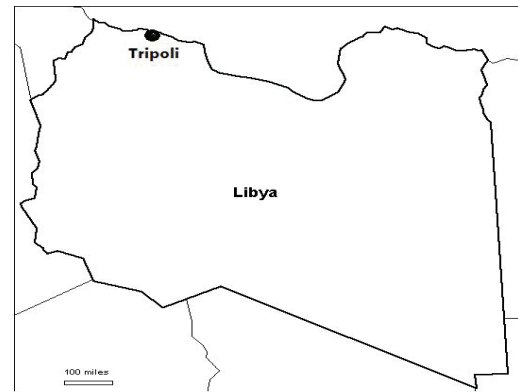


Figure 1: Map of Libya



Figure 2: Map of Tripoli Showing Locality

### Description of Species

*Amaranthus blitoides* S. Watson var. *densifolius* Uline & W. L. Bray, Bot. Gaz. 19: 315. 1894. [= *Amaranthus blitoides* S. Watson]. English name: Procumbent Pigweed, Prostrate Amaranth.

Annual, branched to several-many-stemms at base with procumbent shoots radiating but not rooting, shoots to 70 cm long, no spinescent, glabrous. Stems: irregularly ridged, green becoming tannish to reddish, with short, colorless nonglandular hairs and sessile glandular hairs on younger branches. Leaves: alternate, simple, petiolate, exstipulate; petiole short –30 mm long, blade obovate to oblong or ovate, 5–40 mm long, relatively small and folded upward on axillary shoots, tapered at base, entire, obtuse and with a short murcoat tip, glabrescent. Inflorescence: short, axillary, highly condensed cymes of unisexual flowers, spikelike throughout the plant, many-flowered, with sessile staminate flowers at base of cymule and pistillate flowers above, bracteate, glabrous; bracts persistent along rachis, awl-shaped, 1–2 (–3.5) mm long, short-pointed at tip but not spinescent, green with membranous margins; bractlet (bracteole) subtending flower 1, resembling bract but smaller, persistent on rachis. Staminate flower: radial, 1 mm across; perianth parts (tepals) 3–5, equal, cupped-lanceolate, 1.5–2 (–2.5) mm long, scarious-white with green midstripe, acuminate at tip; stamens 3–5, free. Pistillate flower: 1 mm across; perianth (tepals) 4–5 fused at base and persisting on fruit base, not spinescent, subequal, oblong or ovate, the longest sepal ca. 2 mm long and greenish, the shortest on the opposite side of pistil and narrower, pistil 1; ovary superior, compressed-ovoid, 1.5 mm long, green, 1-chambered with 1 ovule; styles 3. Fruit: compressed utricle, dehiscent, circumscissile, 1-seeded. Seed: vertically oriented, surrounded by persistent calyx, lens-shaped, 1.3–1.7 mm diameter, 1 mm thick, glossy black, smooth (Fig 3, Fig 4, Fig 5, Fig 6. and Fig 7).

Fl. April–Seb. Fruits, May–Oct.



Figure 4: Branch With Cymules

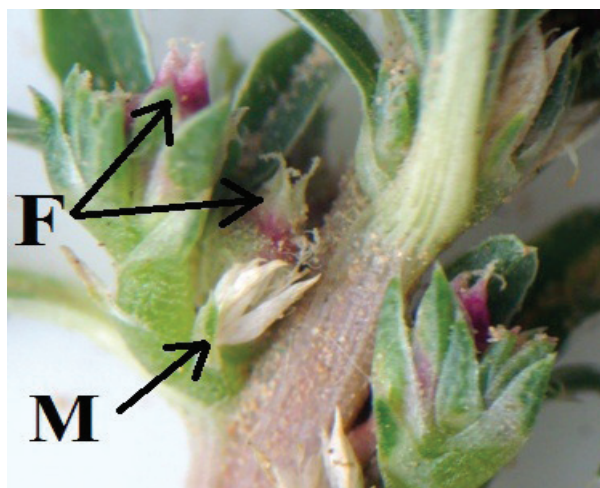


Figure 5: Cymule With Male Flower (M) and Female Flower (F)



Figure 3: Amaranthus Blithoides, Habit



Figure 6: Female Lower



Figure 7: Seed

## RESULTS AND DISCUSSION

*Amaranthus blithoides* is reported for the first time from Souq Al-Goma about 10 km east of Tripoli (32° 53' 17.64 N, 13° 13' 26.47 E) and Ain Zara (32° 51' 31.83 N, 13° 17' 14.70 E) about 20 Km south east of Tripoli, this report constitutes its first record to the Flora of Libya. The identification of this species was done using the data from the following literatures [15-19].

In addition it is easily recognized by its prostrate habit, spatulate leaves, and short axillary highly condensed cymes of unisexual flowers spread throughout the plant, with sessile staminate flowers at base of cymule and pistillate flowers above. *Amaranthus blithoides* is an occasional weed in open disturbed sites such as roadsides and waste places, it is described from Southern North America, and Now it has been naturalized through much of the world especially on the warmer regions [19]. it is recorded in many Mediterranean countries as an invasive weed of waste places such as Turkey [18], Spain [20, 21], Lebanon & Syria [17]. Palaetine and Jordan [16], Czech Republic [22] and many of another Mediterranean countries, so it was expected to found in Libya because the country fall within its range of distribution.

Chromosome number from European and Asian species,  $2n = 32$  [19-23].

## ACKNOWLEDGMENTS

None declared.

## CONFLICTS OF INTEREST

There is no conflict of interest.

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