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***Scolymus maculatus* (Asteraceae) new for the Flora of Libya**

Abstract

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Scolymus maculatus L. (Asteraceae) is a species native to the Mediterranean basin found for the first time in Libya. It was discovered growing in a typical silty habitat with other mesophyte plants, very close to the shoreline, about 45 km east of the city of Benghazi. Records date back to July 2017 and June 2018.

Key words: flora, Compositae, Cyrenaica, North Africa.

Introduction

The Asteraceae is one of the largest plant families in the globe, and consists of more than 30 000 species, and 1900 genera (Jafri & El-Gadi 1983). *Scolymus* belongs to tribe Cichorieae Lam. & DC. and includes only three species: *S. maculatus* L., *S. hispanicus* L., and *S. grandiflorus* Desf. (Vazquez 2000). Globally, *Scolymus* occurs native in South Europe, North Africa and the Mediterranean basin (Vazquez 2000). Up to now only *S. hispanicus* and *S. grandiflorus* are reported from Libya (Greuter 2006). *S. hispanicus* is considered introduced and was collected from near Al Beyda located at 800 m above the sea level.

Indeed, the flora of Libya is not yet completely known and a number of new plant records are published each year (e.g. Mahklouf 2016).

Materials and Methods

Plant specimens were first collected from Elmabni area (32° 26' 07.26" N, 20° 26' 51.39" E, 2 m a.s.l.); forty-five km east of Benghazi, 600 m away from the left side of the main road towards east (Fig. 1a). This species was found during a vegetation analysis project in May 2017 and June 2018. The collected samples were first checked according to the Flora of Libya (Jafri & El-Gadi 1983). Moreover, further taxonomic investigations were done in the Cyrenaica Herbarium (CHUG) based on Flora of Egypt (Tackholm 1974; Boulos 2002) and Flora of Turkey (Davis & al. 1975). Plant

specimens were deposited in the Cyrenaica Herbarium (CHUG), Department of Botany, Faculty of Sciences, University of Benghazi.

Results

Collection and Taxonomy

The main differences between the three species of *Scolymus* are described by Vázquez (2000), since *S. maculatus* is an annual herb with more than five involucrel leaves per capitula, capitula terminal and achenes without pappus (Fig. 1b). Whereas, the two other species *S. hispanicus* and *S. grandifloras* that are annual, biennial or perennial herbs, have three or less involucrel leaves per capitulum, capitula terminal or axillary and achenes with pappus. The population sampled belongs without any doubt to *S. maculatus*.

S. maculatus was found in relatively a large population, which covers an area of about eight hectares (Fig. 1c) and was obvious that the occurrence of this species dates back to at least 3-4 years or more. We believe that this species in Libya can be considered as an alien naturalized of recent introduction. Ten random quadrats of four m² were made within the concerned area to assess the density and frequency of *S. maculatus*. The individuals were found in 70% of quadrats made, with a density of 1.2 individual/m². This species dominates the whole area in association with: *Calendula arvensis* (Vaill.) L., *Lamarckia aurea* (L.) Moench, *Matricaria aurea* (Loefl.) Sch. Bip., *Malva parviflora* L., *Nicotiana glauca* Graham, *Paronychia arabica* (L.) DC. and *Suaeda aegyptiaca* (Hasselq.) Zohary. Some other species were found scattered within the site such as: *Diplotaxis muralis* (L.) DC., *Emex spinosa* (L.) Campd., *Plantago coronopus* L., *Silybum marianum* (L.) Gaertn. and *Vulpia bromoides* (L.) Gray.

General distribution

Scolymus maculatus is a species native to all countries of the Mediterranean including N. Africa, S. Europe, Crimea, S. Russia and Transcaucasia (Greuter 2006; African Plant Database 2012). The occurrence in Libya was expected since this species was known from all the neighbouring territories (Boulos 2002 ; Le-Floc'h & al. 2010; Bartolucci & al. 2018).

Site and climate description

It was discovered growing in a typical silty habitat in the field among other mesophyte plants and about 130 m south of halophyte communities, 2500 m south of the shoreline and 45 km east of the city of Benghazi. The climate in this area is primarily Mediterranean, very dry summers (June-August) and relatively wet winters (November-April). The highest mean monthly rainfall do not exceed 65 mm and usually in December and January. The mean annual rainfall within the last two decades is around 300 mm although very spatially erratic. The mean maximum monthly temperature reaches 41 °C in June and decreases to 21 °C in January. The lowest mean minimum monthly temperature is recorded in January and December at 6 °C and 7 °C, respectively (Mukassabi & al. 2017).

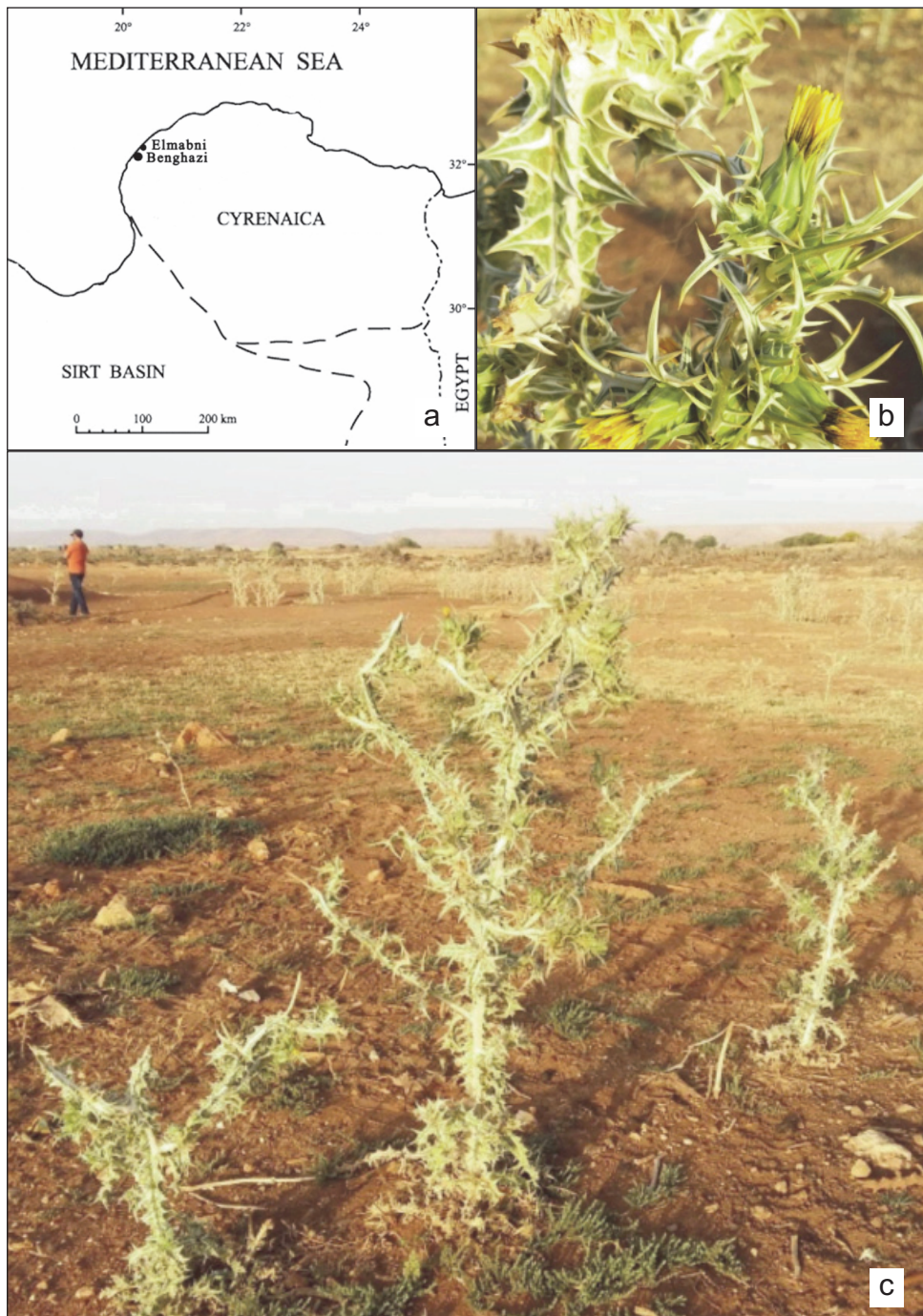


Fig. 1. a) The location of the new record of *Scolymus maculatus*; b) detail of stem and inflorescence; c) the population covers an area of about eight hectares (Photos by T. Mukassabi).

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