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The first record of *Euphorbia hypericifolia* L. (Euphorbiaceae) in Libya

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Abstract. The herb *Euphorbia hypericifolia* L. was recorded for the first time in the flora of Libya. The species was collected in Tobruk city in north-eastern Libya in 2022. It is presented here with updated nomenclature, taxonomic description, geographical distribution, and the place of occurrence in Libya. A coloured photograph taken in the field is also provided. The voucher specimens have been deposited in the Herbarium of Botany Department (ULT), Faculty of Sciences, University of Tripoli, Libya.

Key words: *Euphorbia hypericifolia*, Euphorbiaceae, flora, Tobruk, Libya

1. Introduction

According to many authors, the genus *Euphorbia* L. is the third largest genus of flowering plants, with about 2000 species distributed throughout the world and the highest diversity in the arid and semi-arid regions of the tropics and subtropics (Horn *et al.* 2014; Ernst *et al.* 2015; Mabberley 2017). It includes a large diversity of life forms, e.g. geophytes shrubs, trees, succulents, and xerophytic forms. It is also characterized by a distinctive morphological synapomorphy, the cyathium inflorescence, and milky latex (Prenner & Rudall 2007; Horn *et al.* 2014; Scafidi *et al.* 2016; Swamy & Prasad 2022).

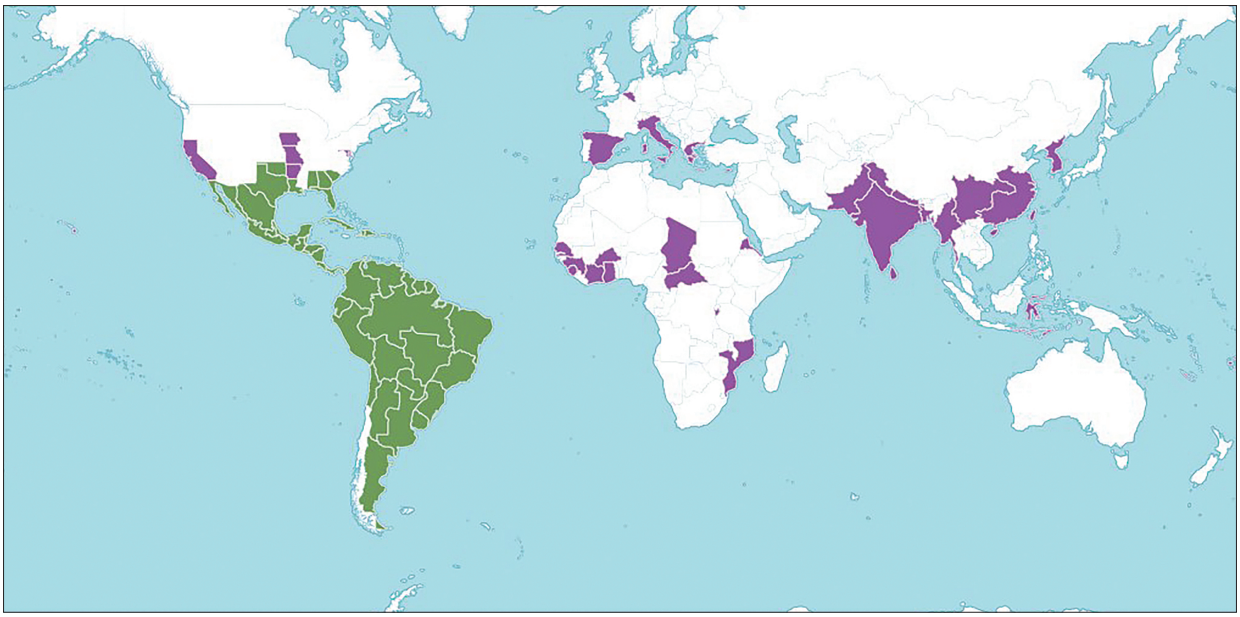

Fig. 1. Distribution of *Euphorbia hypericifolia* (from https://powo.science.kew)
Explanations: green – native, purple – introduced

BIOGEOGRAPHY

Euphorbia hypericifolia is an annual herb (15-50 cm high), which belongs to the subgenus *Chamaecuse*, section *Anisophyllum* Roep., subsection *Hypericifoliae* Boiss (Halford & Harris 2012; Raab-Straube & Raus 2015). It is native to the New World but has become a common and widespread weed of the warm temperate, tropical, and subtropical countries (Chan & Wu *et al.* 2004; POWO 2023) (Fig. 1). It is considered to be a pantropical weed in disturbed areas, on irrigated grounds near cultivation, sandy soils, hillsides, and sea shores, at altitudes up to 1700 m (Pahlevani 2017). So far, *E. hypericifolia* has not been reported from Libya, but here its first Libyan record is presented.

2. Materials and methods

Specimens of *Euphorbia hypericifolia* were found, photographed, and collected by Ms. Madina Al-Shaari from roadsides in Tobruk city in north-eastern Libya in October 2022 (32° 4' 50.77" N and 57° 23' 30.61" E) (Fig. 2). The specimens were brought by her to the National Herbarium in the Faculty of Sciences at the University of Tripoli (ULT), where they were subjected to the general herbarium techniques, then examined, and characterized with a detailed description. The plant identification and authentication procedures, carried out by me, were based on data from the *Flora of Palestine* (Zohary 1972), *Nouvelle Flore de Liban et de La Syrie* (Moutterde 1970), *Flora of West Tropical Africa* (Hutchinson *et al.* 2014), *Flora of Egypt* (Boulos 2000), and *Flore de Mauritanie* (Barry & Celles 1991; Khamar *et al.* 2021). Finally, the plant specimens were given a voucher number (7689528) and deposited in the same herbarium (Fig. 3).

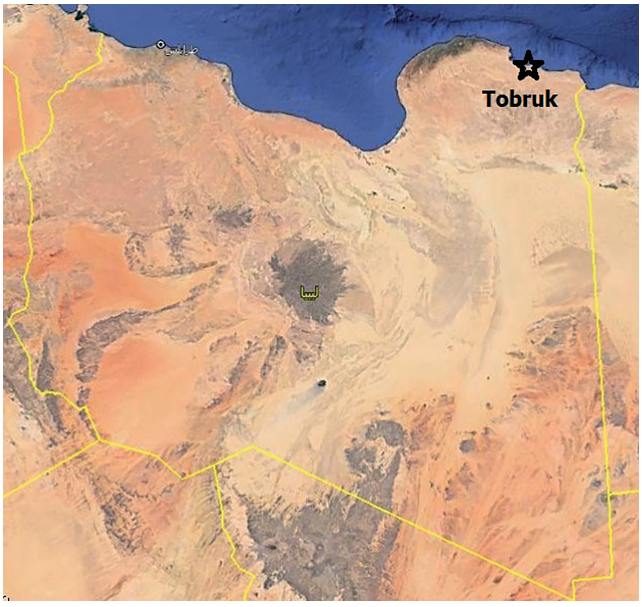

Fig. 2. Map of Libya showing location of Tobruk city (based on Google Maps)

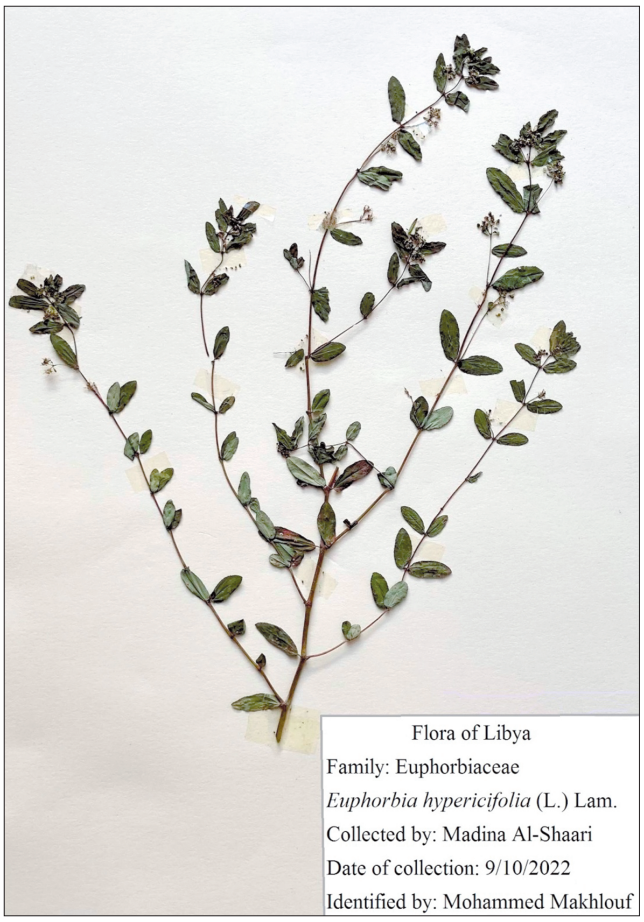

Fig. 3. Herbarium specimen of *Euphorbia hypericifolia*

3. Species description

Accepted name: *Euphorbia hypericifolia* L. Sp. Pl. 454 1753.

Synonyms (based on POWO 2023): *Anisophyllum hypericifolium* (L.) Haw. in Syn. Pl. Succ.: 161 (1812); *Chamaesyce hypericifolia* (L.) Millsp. in Publ. Field Columb. Mus., Bot. Ser. 2: 302 (1909); *Chamaesyce boliviana* (Rusby) Croizat in J. Arnold Arbor. 27: 291 (1946); *Chamaesyce glomerifera* Millsp. in Publ. Field Mus. Nat. Hist., Bot. Ser. 2: 377 (1913); *Ditrita obliqua* Raf. in Sylva Tellur.: 115 (1838); *Euphorbia boliviana* Rusby in Bull. New York Bot. Gard. 4: 442 (1907); *Euphorbia cuspidata* Bertol. in Misc. Bot. 3: 17 (1844), nom. illeg.; *Euphorbia glomerifera* (Millsp.) L.C.Wheeler in Contr. Gray Herb. 127: 78 (1939); *Euphorbia hypericifolia* var. *maculata* Klotzsch in B.Seemann, Bot. Voy. Herald: 276 (1856); *Euphorbia papilligera* Boiss. in Cent. Euphorb.: 8 (1860).

Description: Annual herb, glabrous, branched, more or less erect, 15-50 cm tall, apex of branches

Fig. 4. Habit of *Euphorbia hypericifolia*

drooping (Fig. 4). Leaves opposite, simple, with triangular stipules (1.5-2.5 mm × 1.2-1.8 mm), one pair often fused, hairy at margins; petiole 1-3 mm long; leaf blade elliptical-oblong to oblong, 1.5-3 cm × 0.8-1.8 cm, base cuneate, apex oblique, obtuse to bluntly acute, leaf margin obscurely toothed. Peduncle 0.5-2.0 cm long, cyathia in axillary or terminal cymes, densely clustered into a head 1.0-1.5 cm in diameter, each cythium almost sessile (on a stalk c. 1 mm long), with a cup-shaped involucre, minute triangular lobes, 4 tiny glands, almost round, stipitate, with variable appendages (round to somewhat elliptical), white to pale pink, and each involucre containing 1 female flower surrounded by many male flowers (2-20). All flowers unisexual; male flower sessile, with a linear bracteole and no perianth, stamen c. 0.5 mm long; female flower with a short pedicel and a superior ovary, glabrous, 3-celled, styles 3, c. 0.4 mm long. Fruit: a 3-lobed capsule, 1.3-1.4 mm × 1.1-1.5 mm, 3-seeded. Seeds ovoid-triangular, 0.8-1.1 mm × 0.5 mm, slightly wrinkled, brownish, without caruncle, i.e. elaiosome (Zohary 1972; Sciandrello *et al.* 2016).

Chromosome number: $2n = 32$ (Sulaiman *et al.* 2020).

4. Results and discussion

This was the first record of *Euphorbia hypericifolia* in the flora of Libya. The plants of this species on the roadsides in Tobruk city were sporadic, forming a small population in a restricted area. This finding indicates that the species may have been recently introduced there. It can be easily identified by its glabrous shoots, opposite, oblong-lanceolate leaves, minutely serrulate, with their bases usually unequally obliquely rounded, as well as by its dense terminal and axillary cymes, about 1 cm in diameter, with peduncles 0.5-2.0 cm long. The genus *Euphorbia* is represented in Libya by 27 species, so this addition increases their number to 28. Among the 27 earlier known species none is closely related to this newly recorded species, so it can be readily distinguished by its axillary capitate cymes, about 1 cm across, and 2 opposite, serrulate leaves. Therefore, it can be easily included in the already constructed diagnostic key in the *Flora of Libya* (Jafri & El-Gadi 1982).

Although *E. hypericifolia* is native to the tropical and subtropical New World, on many Pacific Islands it is regarded as an invasive weed. It certainly can be found in West Africa, Burundi, and Mauritius (Prota 2013) as well as in Singapore and Taiwan (Parker 2022). Additionally, it has been reported from the Mediterranean-Macaronesian region: by Greuter *et al.* (1986) from Egypt and Israel, by Verloove (2002, 2005) from Belgium and Spain, by Gregor and Meierott (2013) from Crete, by Otto and Verloove (2016) from the Canary Islands, by von Raab-Straube and Raus (2015) from the northern Peloponnese, and finally by Sciandrello *et al.* (2016) from Italy. Therefore, it seems that *E. hypericifolia* has a limited capacity to be naturalized in the Mediterranean area, but its scattered distribution is progressively widening. The Pest Risk Analysis (PRA), following the EPPO protocol (Brunel *et al.* 2010; EPPO 2012) was actually performed on *E. hypericifolia*. The result of the assessment (the evaluation of spread, impacts, and uncertainty degree) is as follows:

- spread potential (A.5): medium;
- impact on the environment (A.6): low;
- impact on agriculture and forestry (A.7): low.

Considering the spread potential and adverse impacts, *E. hypericifolia* should be listed as a species of "minor concern" (Sciandrello *et al.* 2016).

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