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Vitex trifolia (Lamiaceae) a naturalized alien new to the non-native flora of Tunisia and North Africa

Abstract

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Vitex trifolia (Lamiaceae) is recorded for the first time for the non-native vascular flora of Tunisia and North Africa. Morphological description, distribution and habitat, as well as taxonomic notes, are provided. Original discriminant characters and a key of the genus in North Africa are also given.

Key words: aliens, *Lamiales*, new records, Mahdia.

Introduction

In continuation to our ongoing project aiming at updating and improving knowledge about vascular flora of Tunisia (see e.g. El Mokni 2018, 2019, 2020; El Mokni & Domina 2018, 2019, 2020a, 2020b; El Mokni & Iamonico 2018a, 2018b, 2019, 2020; El Mokni & Verloove 2019a, 2019b, 2020; El Mokni & al. 2019, 2020), extensive botanical surveys carried out within the central-eastern of Tunisia (Regions of Hammamet, Monastir, Sousse and Mahdia) allowed in 2015 the discovery of a naturalized population of *Vitex L.*, previously non recorded in the country.

Vitex is one of the prominent genera in the family of *Lamiaceae* including about 300 species almost all occurring in the tropics (de Kok 2008), of which *V. agnus-castus L.* (chaste tree) is the only known as abundant taxon within the Mediterranean region and North Africa (WCSP 2020). The Arabian lilac (*Vitex trifolia L.*), a tropical shrub that is widely distributed in tropical countries is here reported for the first time from Tunisia and North Africa as a naturalized alien.

About the discovery

Vitex trifolia L. Sp. Pl. 2: 638. 1753.

≡ *Vitex agnus-castus* var. *trifolia* (L.) Kurz, Forest Fl. Burma 270. 1877.

Lectotype (designated by Moldenke & Moldenke 1983): India, *Herb. Linnaeus* 811/7 (LINN). Lectotype (Moldenke & Moldenke in Dassanayake & Fosberg, Revised Handb. Fl. Ceylon 4: 378. 1983): *Herb. Linn.* No. 811.7 (LINN).

Brief description

The plant has a shrubby **habit** with 60–220(–300) cm in height; branchlets puberulous; bark brown, slightly smooth (Fig. 1-A). **Leaves** with 1–3 leaflets (Fig. 1-B); petiole up to 30 mm long; leaflets chartaceous, obovate or elliptic, 2.5–7.5 by 1–4 cm, apex and base acute, margin entire; adaxial leaf surface dark green, glabrous, abaxial surface with glands and grey hairs; secondary veins 4–12- paired; petiolule absent. **Inflorescence** terminal in panicle-like cyme (Fig. 1-C), 5–20 cm long; peduncle 2–5 cm long; bracts foliaceous, obovate or oblanceolate, 2–5 by 1–1.5 mm with petiole 1–5 mm long; bracteoles linear, 1–2 mm long. **Calyx** green with pale purple; tube 2–4.5 mm long, outside with short grey hairs, inside glabrous; lobes 5, triangular, 0.3–0.5 mm long (Fig. 1-D). **Corolla** funnel shaped, 8–12 mm long, pale purple; upper lobe 2–3 by 2–3 mm, triangular, one lower lobe 6–7 by 4–6 mm, rounded with entire margin; tube 3–7 mm long, outside with cream short hairs, inside with white hairs (Fig. 1-D). **Stamens** filament glabrous with long whitish hairs at base; short filament 6.5–7.5 mm long; long filament 7.5–8.5 mm long; anthers 1–1.5 mm long, dark purple (Fig. 1-D). **Ovary** globose or ovoid; style 7–13 mm long; stigma 1–1.3 mm long. **Fruits** globose drupes, 5–8 mm in diameter, pale green or green turning to purplish black, black or dark brown when mature (Fig. 1-E). **Seeds** up to 4 per fruit. (de Kok 2007; Chantaranothai 2011)

Phenology

Flowering and fruiting all year round.

Habitat

The plant grows in an extended population in a loam-sandy costal field within Mahdia-City (East Central Tunisia).

Distribution

Widespread from North Australia east to Tahiti and north via Indonesia and the Philippines to China, India and Sri Lanka. Also reported from East Africa (Verdcourt 1992) and introduced on many islands (because of its local medicinal and ornamental use) in the Central Pacific and Hawaii (Wagner & al. 1999). The plant is reported also in Bangladesh, Japan, Vietnam, Malaysia, Brunei, New Guinea, Polynesia (Chantaranothai 2011). *Vitex trifolia* is known only from few European Mediterranean countries (Portugal, Spain and Italy) as cultivated (GBIF 2020; WCSP 2020) and till this work no record for North Africa (APD 2020).

Occurrence in North Africa and status of naturalization

Only one extend population is known in North Africa till now (more than 30 individuals in total) from Tunisia. The population is found in Mahdia region (East Central Tunisia) occupying about 3 ha. This population is observed since 2015 whereas our last observations are in August 2020. Based on this datum, and according to the actual wider area of occupancy noted for the species, we here propose *V. trifolia* as naturalized species in North Africa.



Fig. 1. Morphological features of *Vitex trifolia* in Tunisia: A. Plant habit in its blooming-fruiting period; B. typical three obovate sessile leaflets leaves; C. terminal panicle-like cyme inflorescence; D. flowers in profile view with green pale purple cupuliform calyx, funnel shaped bilabiate corolla, long style and exerted stamens; D. globose, ovoid pale green drupes (Mahdia, 05.08.2020) (Photographs by R. El Mokni).

Taxonomic notes

The species is part of a species complex comprising the Asian *Vitex negundo* L., the Mediterranean *V. agnus-castus* L. [incl. the W-Asian *V. pseudonegundo* (Hausskn.) Hand.-Mazz.] and the Australian *V. trifolia* subsp. *trifolia* [incl. *V. benthamiana* Domin.]. This complex is defined by a unique hair type and similar ecology. *Vitex trifolia* L. [syn. *V. agnus-castus* var. *trifolia* (L.) Kurz] has been confused with *V. negundo* L., which is a native to India but has been introduced into western Malesia. In comparison, *V. negundo* has relatively long leaves and large inflorescences with smaller cymes of flowers, and calyxes with 5 distinct pointed teeth (Singhakumara 1990). Moreover, *V. trifolia* L. differs from *V. negundo* L. in its obovate leaflets with mainly the central one being almost sessile (Chantaranothai 2011).

Examined specimens (new records)

TUNISIA: **Mahdia** (Mahdia-City, CE Tunisia), 35°29'43"N, 011°03'26"E, 1-5 m a.s.l., 29 December 2015, R. El Mokni s.n. (Herb. Univ. Monastir); *ibidem*, 05 August 2020, R. El Mokni s.n. (Herb. Univ. Monastir).

Key to species of *Vitex* L. occurring in the wild in North Africa (incl. Tunisia) (New taxon in bold)

1. Leaves 1–3 (rarely 5)- foliolate, leaflets often obovate, the central almost sessile. Cymes (panicle-like) lax..... *V. trifolia*
1. Leaves 5–7- foliolate, leaflets usually lanceolate. Cymes sessile or sub-sessile, forming compact verticillasters in a subcylindrical, narrow inflorescence *V. agnus-castus*



Fig. 2. Occurrence of *Vitex trifolia* (▲) in the Mahdia region, Tunisia.

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