Blepharis saudensis (Acanthaceae), a new species from Saudi Arabia

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ABSTRACT

Blepharis saudensis, from small islands in the Red Sea of Jazan Provence, Saudi Arabia, is described as a new species and illustrated. This species differs from other known species in this genus by having a combination of long stems, oblong-lanceolate to linear leaves with entire margins and pubescence.

1. Introduction

Southwestern Saudi Arabia has more than 80% of the total flora of the country (Thomas, 2011). This diversity is caused by variation in geomorphological characteristics, which includes islands, sand dunes, sandy plains, low rocky hills and high mountains, generating a varied climate ranging from hot-extra arid to hot-arid to relatively low temperature-humid (Masrahi, 2012). In the recent years, floristic explorations have resulted in the discovery of many new taxa and records in this part of Saudi Arabia (Al Farhan, 2000; Al-Turki et al., 2001, 2002, Al-Turki, 2003; Fayed and Al-Zahrani, 2007; Al-Zahrani and El-Karemy, 2007; Masrahi et al., 2010, 2012a; Thomas et al., 2014; Masrahi, 2015). Blepharis A. l. Juss. (Acanthaceae) is an herbaceous genus of c. 126 species in the old world tropics and subtropics (Vollesen, 2000). In Saudi Arabia, there are two known species of Blepharis, B. edulis (Forssk.) Pers. and B. maderaspatensis (L.) Roth (excluding the new species) (Chaudhary, 2000; Masrahi, 2012). During field work on the small islands between the Jazan coast and the Farasan archipelago, Jazan Province, southwestern Saudi Arabia, between 2013 and 2014, we found scattered populations of Blepharis A. l. Juss. Critical studies of specimens with the help of the relevant literature (Vollesen, 2000; Boulos, 2002; Kelbessa, 2006) revealed that the newly collected specimens does not belong to any of the hitherto known species.

2. Taxonomy

Blepharis saudensis Y. Masrahi, & M. Basahi, sp. nov. (Figs. 2 and 3).

2.1. Diagnosis

Planta affinis Blepharis edulis, sed caulis usque 75 cm, foliis lanceolata-lineari, integerrimus, pubescence.

2.2. Type

Saudi Arabia, Jazan Province, Umm az zughaf island, 37.5 km E of Jazan coast, 16°35’0’’ N, 42°20’0’’ E, 1–2 m a.s.l., 22 February 2013, Y. Masrahi 5440 (Holotype: JAZUH); Al Ghuzah island, 38.7 km E of Jazan coast, 16°34’0’’ N, 42°21’0’’ E, 2–3 m a.s.l., 22 February 2013, Y. Masrahi & T. Al-Turki 5441 (Paratype: JAZUH).

2.3. Description

Annual or perennial herb, 10–75 cm high, stems erect (sometimes creeping), much-branched from the base, glabrous to pubescent. Leaves pubescent, 3.5–15.2 × 0.3–1.5 cm, oblong-lanceolate to linear, entire; spikes erect, 2.5–14 cm; peduncle 2–7 mm; bracts ovate, pubescent to dense pilose, 1.6–3.6 × 0.5–1 cm, margins with...
3–5 pairs of straight spines, 1–6 mm; bracteoles 10–12 mm, linear-subulate to lanceolate, pubescent; calyx pubescent, usually with longer pilose hairs, upper lobe 12–16 mm, ovate-elliptic, lower 9–11 mm, broadly ovate-elliptic; corolla dark blue with darker veins, pubescent, 15–17 mm long, limb 9–12 mm wide, 3-lobed; stamens 8–9 mm long, ovary 2 mm long, glabrous, style 6 mm long with some hairs in the base; capsule 8–9 mm; seeds 4–5.5 × 2.5–4 mm, covered with hygroscopic hairs.

Flowering and fruiting: Mostly December-February.

2.4. Conservation status

In view of its restricted known distribution and the small areas where it found, it should be regarded as Endangered (EN) following the criteria of IUCN (2016).

2.5. Taxonomic remarks

*B. saudensis* is closely related to *B. edulis* (Forssk.) Pers., a species widely distributed from Western Africa to Iran, in desert and semi-desert bushland on sandy to stony soil. The new species differs from *B. edulis* in particular by its tall stems (reach up to 75 cm) and entire leaf margins. In addition, the new species is restricted to saline habitats in calcareous sandy to fine sand soil, a few meters from sea water. Whereas *B. edulis* widely distributed in sandy to stony soil, 300–1600 m a.s.l. A morphological comparison between *B. saudensis* and *B. edulis* is given in Table 1.

3. Distribution and ecology

*Blepharis saudensis* is endemic to southwestern Saudi Arabia. The species is known only from some small islands between Jazan coast and Farasan archipelago, mainly on two islands with a relatively large community, Umm az zughaf and Al Ghuzah (Fig. 1). The species grows in saline habitats with calcareous sandy to fine sand soil. These islands are located within the harshest habitats in the Saudi Arabia, characterized by high temperature, high irradiance, high salinity and low rainfall (July-September) with a total annual precipitation of less than 160 mm (Masrahi, 2012). *B. saudensis* has *C*₄ photosynthetic pathway characters (Fisher et al., 2015). All species known to have *C*₄ photosynthesis are predominately found in hot and/or arid habitats, achieving maximum pho-
**Fig. 2.** *Blepharis saudensis* sp. nov. (A) habit, showing vegetative branch with spikes. (B) bracts. (C) corolla (stamens removed). (D) stamens. (E) ovary and style. (F) capsule. (G) seed.

**Fig. 3.** *Blepharis saudensis* sp. nov. in its natural habitat in calcareous sandy soil of Umm az zughaf island, Jazan Province, Saudi Arabia.
tosynthetic rates at higher leaf temperatures and higher levels of irradiance than normal C₃ plants. These characteristics of the C₄ photosynthetic pathway are particularly advantageous in harsh habitats with limited water availability (Masrahi et al., 2011, 2012b).

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