Short note

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Ridha El Mokni & Frederic Debruille

Two new *Suaeda* (*Chenopodiaceae/Amaranthaceae*, *Suaedoideae*) records from the Tunisian coastal areas with a key to species identification

Abstract

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Two species of *Suaeda*, *S. aegyptiaca* (sect. *Salsina*) and *S. splendens* (sect. *Schoberia*) are here reported for the first time from Tunisia. Descriptions for their distinguishing morphological characters, as well as ecological and chorological data are given. An analytical key to species of *Suaeda* belonging to *Suaedeae* tribe and occurring in Tunisia is also provided.

Key words: *Caryophyllales*, North Africa, New records, chorology.

Introduction

Suaeda Scop. (*Chenopodiaceae*/*Amaranthaceae*) comprises c. 100 species with the cosmopolitan distribution (Schenk & Ferren 2001). Its species are not easy to identify because the distinctive characters are few and high variable, particularly in vegetative parts, such as leaf shape, size, color and branching pattern of the stem within the same species (Bassett & Crompton 1978; Freitag & al. 2001; Schütze & al. 2003). Thus, identification is usually based on reproductive characters. According to Le Floc'h & al. (2010), Dobignard & Chatelain (2010) and Uotila (2011+), only 4 species of *Suaeda* occur in Tunisia, whereas 6 and 7 species occur in Lybia and Morocco, respectively (APD 2021). More recently, *Suaeda spicata* (Willd.) Moq. was added to the Tunisian flora (in Sukhorukov & al. 2019).

In the course of floristic surveys along coastal areas and saline wetlands for two decades (see e.g. Iamonico & El Mokni 2016, 2017, 2018 Sukhorukov & al. 2018, 2019; El Mokni & Iamonico 2019) two unusual species of *Suaeda* were recorded. *Suaeda aegyptiaca* and *S. splendens* are here recognized as two species new to the flora of Tunisia.

Material & Methods

The research is based on periodic field surveys during the last two decades in many saline wetlands of coastal areas going with analysis of relevant literature. Material of col-

lected individuals was considered for features examination. Systematics and nomenclature of *Suaeda* follow Schenk & Ferren (2001) and Sukhorukov & al. (2019). For the morphological description and the characterization of the species see Pottier-Alapetite (1979: 60-63), Boulos (1999: 111-116) and Jafri & Rateeb (1978: 58-68).

Results

Suaeda aegyptiaca (Hasselq.) Zohary
≡ *Chenopodium aegyptiacum* Hasselq.
≡ *Schanginia aegyptiaca* (Hasselq.) Aellen

Morphology: (Fig. B). Annual, up to 70 cm in height; **stems** erect or ascending, the lower often spreading, terminating in bracteate, shorter or longer spike-like inflorescences; **leaves** (long: 10–17 mm, wide: 1–3 mm), succulent, with obtuse apex, the lower linear or oblong, the upper narrow obovate to clavate, obtuse, at base attenuate into a short petiole; bracts subclavate to clavate, arcuate, spreading, the lower much longer, the upper as long as or even shorter than floral and fruit clusters; bracteoles 0,8-1 mm long, narrow ovate, trullate or triangular, acute or acuminate, the margins lacerate to toothed; **flowers** fig-shaped, 2–2.5 × 2.5 mm, gathered by 5–30 in axillary glomeruli, inserted on very short axillary branches; **perianth** with very succulent tepals, fused for ½ – ⅓, in the lowermost 1 mm forming a compact cone, higher up widened into a bowl-like structure, tepal-lobes incurved, green with hyaline margins, somewhat cucullate; **stamens** 5, the thread-like filaments inserted on an epitepalous rim; anthers 0.6–0.7 × 0.5 mm, divided for c. ½ ; **ovary** semi-inferior, in its lower, ovule-bearing part fused with the perianth, its upper part forming a ca. 1 mm long column or slender cone; stigmas (2–)3(–4), 0.7–1.2(–1.5) mm long, with long papillae, inserted in the centre of the collar-like ovary apex; fruiting perianth somewhat enlarged, up to 3 mm long, fig-shaped, often partly or completely spongy; **seed** slightly flattened, vertical, black 0.9–1.2 × 0.75–1 mm shining, smooth to delicately sculptured.

Habitat in Tunisia: margins of salt wetlands and marshes in the south east at sea-level.

Elevation: 0–5 m a.s.l.

Distribution in Tunisia: we found three populations at Medenine region (SE-Tunisia). The first was discovered since 2001 at “Oued El Fedje” comprising many scattered individuals to small subpopulations on the banks of the saline stream. The second was discovered in 2015 in Djerba (Houmet-Souk). The third one was discovered in 2016 in the margins of the “Gulf of Boughrara” on the left bank before the bridge leading to Djerba from Zarzis.

Chorology: *Suaeda aegyptiaca* has a large distribution area from eastern North Africa to the Near East, Arabian Peninsula, Jordan, Syria, Lebanon, Qatar and the United Arab

Emirates (Freitag 2001; APD 2021). Its main occurrence is from northern Libya eastwards to Iraq, the southern half of Iran, southern Afghanistan, to Pakistani Baluchistan, and southwards to the Arabian Peninsula, Yemen and the Dhofar region of Oman (see e.g. Freitag 2001; Uotila 2011+; Mosti & al. 2012; Sukhorukov & al. 2016). Within Africa, it occurs also in southwards of Sudan, southeastern Ethiopia and Egypt including the Sinai (Crivellaro & Schweingruber 2013: 224; APD 2021). The plant was known also from Cyprus (Crivellaro & Schweingruber 2013: 224) and appeared in parts of southern Australia where it may has naturalized (ALA 2021).

Record: Tunisia, Medenine, Djerba, 30.09.2015, Debruille (Photographed specimens from Debruille's collection are consultable online at: https://www.orchid-nord.com/Flore-Djerba/Suaeda%20aegyptiaca/Suaeda%20aegyptiaca.html).

Suaeda splendens (Pourr.) Gren. & Godr.
≡ *Salsola splendens* Pourr.

Morphology: Annual, up to 50 cm high, reddish to glaucous and glabrous; **stems** erect or spreading-diffuse and branched from the base; **leaves** alternate, 5–15 (–20) × 0.5–1.5 mm close together, linear to semicylindrical with hyaline margins and provided at the apex with a bristle of 0.5–1.5 mm (Fig. D) quickly deciduous; **inflorescence** in a dense spike-like panicle at the tips of fertile branches; **flowers** gathered by (3–)5–8 in axillary glomeruli, the lateral ones often female, the central bisexual in the leaf axils and provided with sharp bracteoles less than or equal to the length of the flowers; **perianth** 2.5–3 mm in diameter with 5 scarious tepals, connate at the base; **stamens** 5 exert; **ovary** pear-shaped, style with 3 free stigmas; fruiting perianth accrescent enclosing the fruit; **seed** lenticular, horizontal or vertical, black 1–1.5 × 0.8–1 mm, glossy, smooth.

Habitat in Tunisia: coastal salt wetlands in the centre east.

Elevation: 10–15 m a.s.l.

Distribution in Tunisia: we found many populations at Monastir town (CE-Tunisia) comprising numerous juvenile individuals which occupy an area of about few hectares. At the current state of knowledge, we consider *Suaeda splendens* as a native species for Tunisia.

Chorology: Southern Europe (except Balearic Islands, Cyprus and Sicily), Subtropical Africa (North Africa), Asia Minor (Turkey) and Eastern Mediterranean (Lebanon, Palestine).

Specimina visa (new records): Tunisia, Monastir, Monastir-surroundings, 05.10.2019, *El Mokni s.n.* (Herb. Univ. Monastir!).

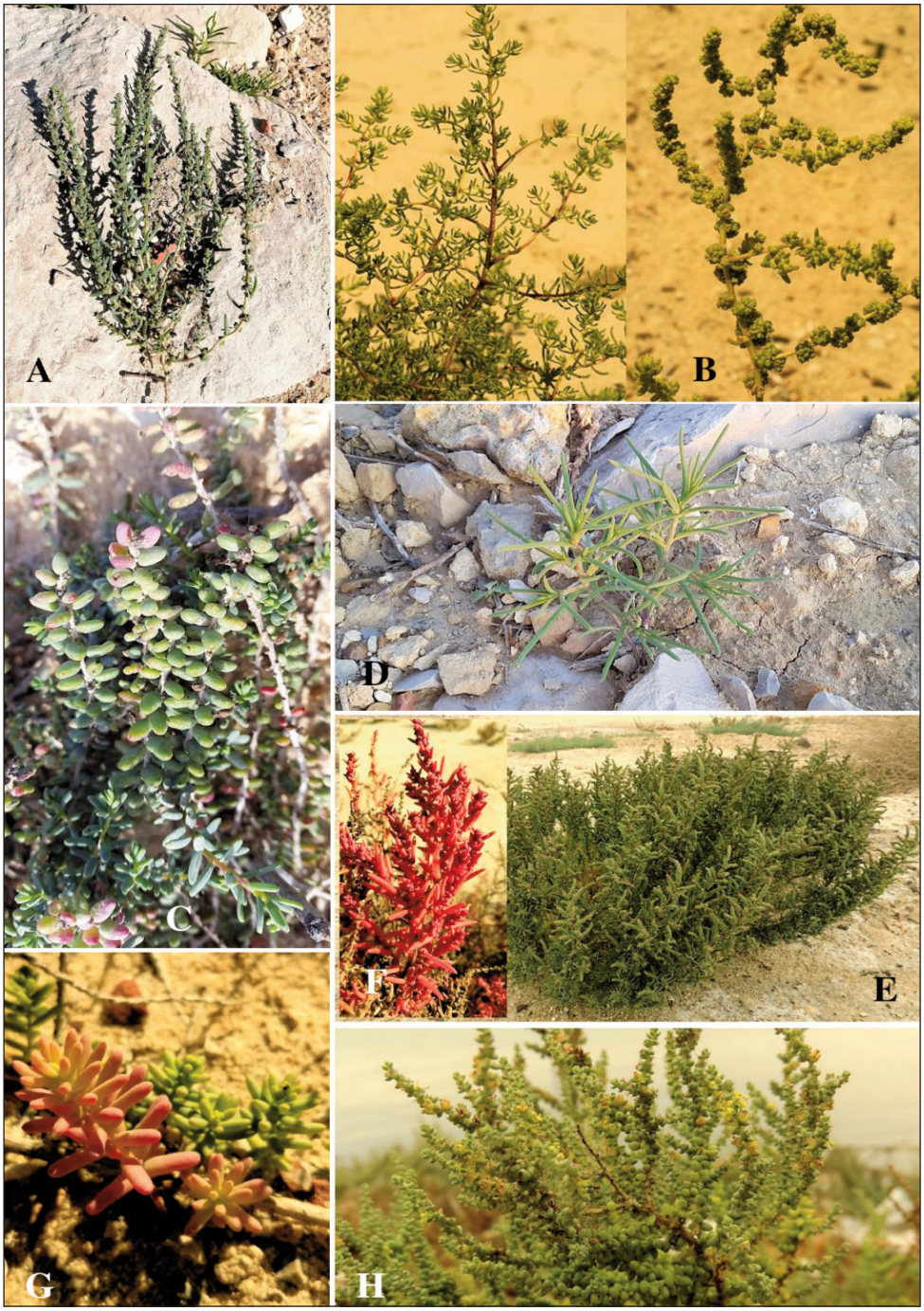

Fig. 1. Coastal species of *Suaeda* in Tunisia: A) *S. maritima*; B) *S. aegyptiaca*; C) *S. mollis*; D) *S. splendens*; E-F) *S. spicata*; G-H) *S. vera* s.lat. (Photos B. by F. Debruille and A, C-H by R. El Mokni).

Key to species of the genus *Suaeda* in Tunisia (new records in bold)

1. Upper part of the ovary swollen and spongy, the lower fused to the perianth at maturity .....***S. aegyptiaca***
– Ovary thin-walled, not spongy, enveloped by the perianth at maturity but not fused to it.....2
2. Annual herbs.....3
– Subshrubs or shrubs.....5
3. Leaves with short caducous apical bristle; seeds shiny and smooth .....***S. splendens***
– Leaves without apical bristle; seeds ornamented.....4
4. Perianth segments thickened, with a vertical keel on the back or, more rarely, with a small transverse wing of less than 1 mm .....*S. spicata*
– Perianth segments 0.8 mm long, deltoid; bracteoles 0.5 mm long, deltoid-ovate; leaves almost flat, acute or subacute.....*S. maritima*
5. Stigmas flat, lobed or disc-shaped; leaves 5–18 × (0.8–)1–2.5 mm, semi-cylindrical, usually shortly apiculate .....*S. vera*
– Stigmas filiform or linear; leaves different 6
6. Leaves 2–6(–8) × 5 mm, crowded on the stems, flat above, rounded beneath.....*S. pruinosa*
– Leaves 20(–30) × 1–4 mm, spaced on the stems, obovate-oblong to subglobose, terete.. .....*S. fruticosa*

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Addresses of the authors:
Ridha El Mokni [1, 2, *] & Frederic Debruille [3],
[1]University of Monastir, Laboratory of Botany, Cryptogamy and Plant Biology, Faculty of Pharmacy of Monastir, Avenue Avicenna, 5000-Monastir, Tunisia. Email: ridha.elmokni@fphm.rnu.tn.
[2]University of Carthage, IRESA, Laboratory of Forest Ecology, National Research Institute of Rural Engineering, Water and Forests, Ariana 2080, Tunisia.
[3]SFO (Société Française d'Orchidophilie), SBNF (Société Botanique du Nord de la France), SBCO (Société Botanique du Centre-Ouest). Email: Frederic@debruille.fr
* corresponding author.