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Limonium formosum (*Plumbaginaceae*), a new species from the island of Jerba (Tunisia)

Abstract

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A new species of *Limonium* is described form the island of Jerba in Tunisia. This species, named *L. formosum,* occurs along the shoreline on sandy soils filling the sandstone outcrops, where it is a member of a new association of the *Ammophiletea* class, proposed as *Helichryso-Limonietum formosi*. Its relationships with *L. delicatulum* and allied species are examined too.

Introduction

According to Brullo & Erben (1989) and Erben (2001), the genus *Limonium* is represented in Tunisia by several species (37), the most endemic for this territory.

During field work on the island of Jerba, a peculiar population circumscribed to a narrow stretch of coast was found. For its habit and for the several morphological features, regarding leaves, inflorescences and flowers, this population clearly differs from the other known species of the genus *Limonium.* Therefore, it has to be considered as a new species to science and named *Limonium formosum.*

Limonium formosum Bartolo, Brullo & Giusso **sp. nova** (Fig. 1)

Typus: Tunisia, Djerba, Ras Toguernes, 04.09.1997, Bartolo & Brullo (holotype CAT).

A *Limonio delicatulo* foliis oblanceolato-spatulatis, 1-3 (5) nervis, 20-60 x 5-15 mm, scapo usque ad 30 cm alto, spiculis 5-6,5 mm longis, bractea exteriori 2-2,5 mm longa, bractea media 2,5-2,8 mm longa, bractea interiori 4,5-4,7 mm longa, calyce 4,5-4,8 mm longo, petalo 6,5-7 mm longo differt.

Perennial, glabrous, with caudicles branched, 3-12cm long. Leaves densely inserted along the caudicles, glaucous, flat, oblanceolate-spathulate, obtuse, mucronate, 20-60 x 5-15 mm, with narrow cartilaginous margin, 1-3 (-5) veined. Stems 12-30 cm long, erect, branched from the lower fifth, without sterile branches. Inflorescence paniculate, with branches rigid and divaricate. Spike 1-4 cm long, erect or sub-erect. Spikelets 5-6,5 mm long, erect, distichous, (6-) 7-8 per cm, 2-3 flowered. Outer bracts 2-2,5 mm long, triangular-ovate, obtuse, coriaceous in the central part, forming a point 0,8-1 mm long, and

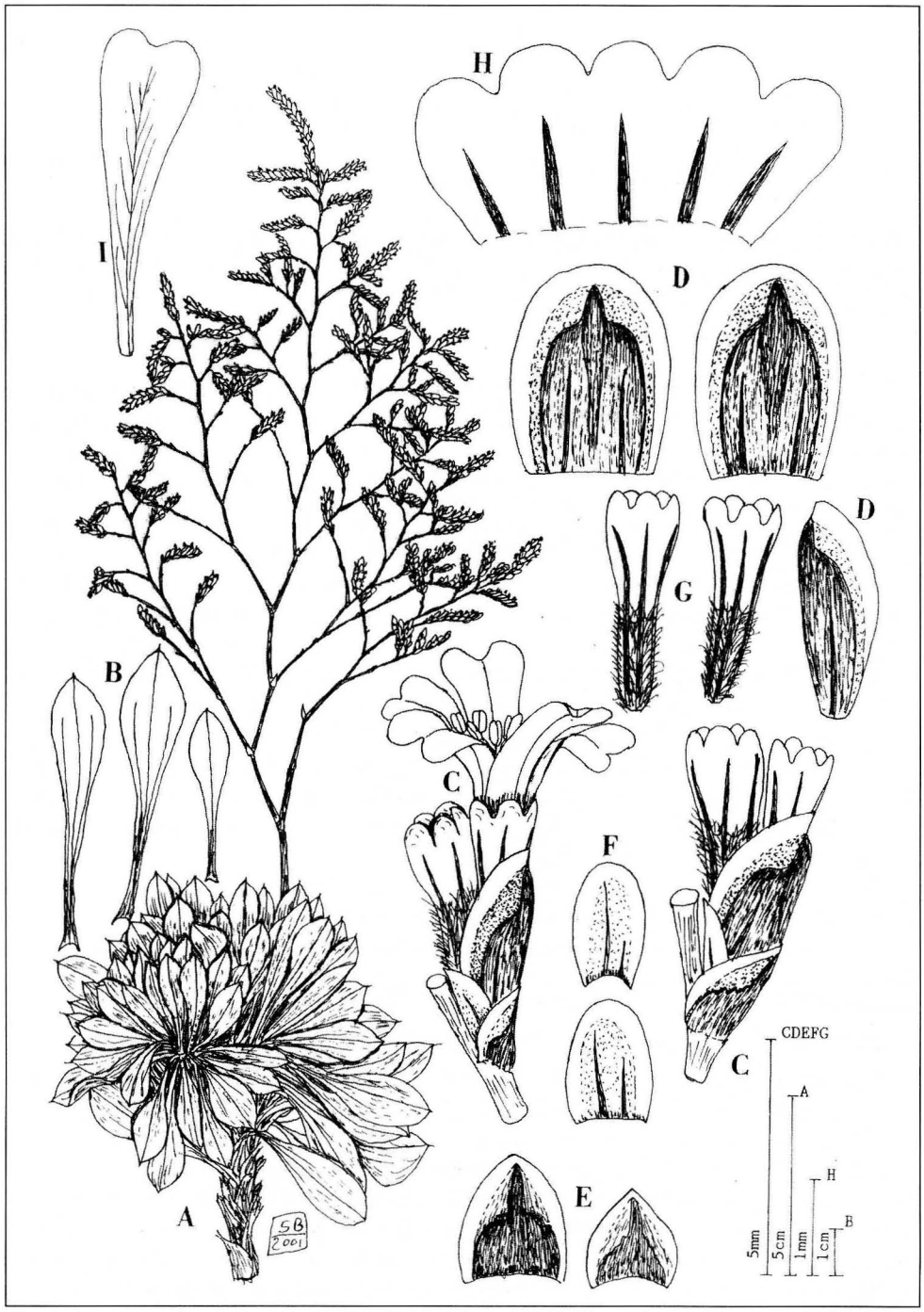

Fig. 1. *Limonium formosum* Bartolo, Brullo & Giusso: A. Habit; B. Leaves; C. Spikelets; D. Inner bracts; E. Outer bracts; F. Middle bracts; G. Calyces; H. Calyx lobes; I. Petal.

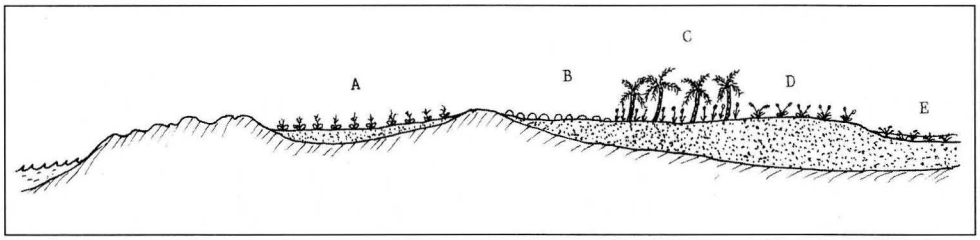

Fig. 2. Transect of the coastal psammophilous vegetation near Ras Toguernes (Jerba): A. *Helichryso conglobati-Limonietum formosi*; B. *Sileno succulentae-Ononidetum angustissimae*; C. *Imperato cylindricae-Ononidetum angustissimae phoenicetosum*; D. *Herniario-Lygeetum sparti*; E. *Aeleuropo-Sarcocornietum alpini.*

membranous at margin. Middle bracts membranous, 2,5-2,8 mm long, elliptic. Inner bracts 4,5-4,7 x 3-4 mm, elliptic, rounded, with outer margin hyaline and inner margin pale-brown, central part herbaceous, tri-nerved, with a point 0,5-0,6 mm long, not reaching the apex. Calyx 4,5-4,8 mm long, densely hairy at tube, with limb slightly longer than the tube, and lobes hemispherical, 0,5 mm long; calyx midrib ending before the base of the lobe. Petals 6,5-7 mm long, dark violet, emarginate.

ECOLOGY AND DISTRIBUTION - *Limonium formosum* occurs in a short coastal stretch of the island of Jerba (S-Tunisia), where it grows on sandstone covered by a feeble sandy layer (Fig. 2). It is a member of a psammophilous community (Table 1), particularly rich in species belonging to the S-Mediterranean element, such as *Silene succulenta*, *Lotus polyphyllus*, *Helichrysum conglobatum*, *Launea resedifolia*, *Zygophyllum album*, *Atractylis carduus*. Moreover, many psammophytes are present too; they are: *Elytrigia juncea, Pancratium maritimum*, *Euphorbia paralias*, *Sporobolus arenarius*, *Cyperus kallii.* From the phytosociological point of view, this vegetation has to be referred to *Ammophiletea,* class grouping the perennial vegetation linked to the coastal dunes of the Mediterranean and Atlantic territories.

Due to the dominance of *Limonium formosum* and *Helichrysum conglobatum,* this community is, floristically and physiognomically, well differentiated from the up to now known association of this class. Therefore it is proposed as a new association, named *Helichryso conglobati-Limonietum formosi* (holotype: rel. 5 Table 1) belonging to the *Aegialophilo-Silenion succulentae,* alliance with a SE Mediterranean distribution (Brullo & Furnari 1988).

TAXONOMIC REMARKS - *Limonium formosum* is a well distinguished species, morphologically characterized by a robust, branched and quite developed rootstock, with caudicles densely covered by glaucous leaves for a long tract, an elegant inflorescences without any sterile branches, with short, dense spikes, and small spikelets, calyx tube densely hairy.

These characters are rather similar and typical for the species belonging to the *L. delicatulum* group. However, *L. formosum* differs from *L. delicatulum* (Girard.) Kuntze, in having smaller leaves oblanceolate-spathulate, 1-3 veined, shorter stems, bigger spikelets, bracts, calyx and petals. Instead, *L. delicatulum* shows ovate to elliptical leaves, 4-10 veined, 35-150 x 20-50 mm, stems up to 90 cm tall, spikelets 4,5-5 mm long, outer bracts 1,3-2 mm long, middle bracts 1,4-2 mm long, inner bracts 3-4mm long, calyx 3-4 mm

Table 1. Helichryso conglobati-Limonietum formosi ass. nova.

Number of the relevé	1	2	3	4	5	6	7	8	9
Surface (m^2)	5	5	5	10	15	10	20	10	15
Cover (%)	70	80	80	90	90	90	90	80	80
Char. association									
Limonium formosum Bartolo, Brullo & Giusso	2	4	3	2	3	4	4	3	3
Helichrysum conglobatum (Viv.) Steud.	3	2	3	2	2	3	2	3	4
Char. All. (*Aegialophilo-Silenion succulentae*)									
Lotus polyphyllus Clarcke	1	1	+	3	1	2	1	2	2
Silene succulenta Forsskål	2	.	1	2	1	2	+	1	1
Char. Ord. (*Ammophiletalia*) & Cl. (*Ammophiletea*)									
Elytrigia juncea (L.) Nevski	1	1	2	2	2	1	2	1	1
Pancratium maritimum L.	1	1	1	1	1	2	+	1	1
Launea resedifolia (L.) O. Kuntze	1	.	1	1	+	2	1	1	1
Euphorbia paralias L.	+	1	1	1	+	.	.	1	+
Sporobolus arenarius (Gouan) Duv.-Jouve	.	+	1	+	3	.	3	1	.
Cyperus kallii (Forsskål) Murb.	.	.	.	+	+	.	.	.	+
Other species									
Atriplex halimus L.	2	2	2	1	2	2	2	1	2
Limonium virgatum (Willd.) Fourr.	2	1	2	3	2	2	2	1	1
Zygophyllum album L.	1	1	2	1	1	1	1	1	1
Atractylis carduus (Forsskål) Christ.	1	2	+	1	1	2	+	+	+
Salsola kali L.	.	+	+	.	.	.	.	.	+
Nitraria retusa (Forsskål) Aschers.	.	.	.	.	1	.	.	+	.
Asparagus aphyllus L.	.	.	.	.	.	.	.	+	.

long, petals 5,6-6,4 mm long (cf. Erben 1993).

Among the species of the *L. delicatulum* group occurring in Tunisia, *L. formosum* seems to be more related to *L. byzacium* Brullo & Erben and *L. neapolense* Brullo & Erben, from which it differs in the size and shape of the leaves, spikes, spikelets, bracts and calyx (Brullo & Erben 1989). In particular, *L. byzacium* is characterized by leaves 40-160 x 20-55 mm, 5-9 veined, stems 40-90 cm tall, inflorescences more branched, densely paniculate, spikelets 4-4,5 mm long, 2-7 flowered, outer bracts 1,2-1,6 mm long, middle bracts 1,2-1,7 mm long, inner bracts 3-3,8 mm long, calyx 2,9-3,8 mm, calyx teeth triangular-ovate; while *L. neapolense* has leaves 30-100 x 20-30, 5-7 veined, stems 30-70 cm tall, with short and few sterile branches, spikelets 4,5-5 mm long, outer bracts 1,6-1,7 mm long, middle bracts 1,7-1,9 mm long, inner bracts 3,3-3,8 mm long, calyx 3,6-4 mm long, calyx teeth semi-elliptical.

In the same locality another species of *Limonium* occurs. It is *L. menigense* Brullo &

Erben that clearly differs from *L. formosum* in the big size, with stem 50-80 cm high, leaves 50-140 x 12-30 mm, laxly inserted on short caudicles, rounded at the apex, 5-7-veined, inflorescence widely spreading and less branched, with lax spikes (3-4 spiklets per cm), smaller middle bracts, inner bracts 4.8-5 x 2.8-3,1 mm, with a point 1,2-1,6 mm long, calyx 4,1-4,6 mm long, with semi-elliptical lobes.

From the ecological point of view, there are also some differences, since *L. formosum* is a psammophyte, while both *L. byzacium, L. neapolense* and *L. menigense* are halophytes linked to salt marshes.

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