TWO NEW SPECIES OF LIMONIUM (PLUMBAGINACEAE) FROM ZAKYNTHOS ISLAND (GREECE)  

by  

R. ARTELARI  

BOTANICAL INSTITUTE OF PATRAS, (GREECE)  

Abstract  

ARTELARI, R.: Two new species of Limonium (Plumbaginaceae) from Zakynthos island.  

Two new species, Limonium zacynthium Artel. and L. phitosianum Artel. from Zakynthos island (Ionian Sea) are described. Chromosome numbers (2n = 18), karyotypes and aspects of reproduction of the above species are also given.  

In the process of the cytotaxonomical study of the genus Limonium in the Ionian islands we describe two new species from Zakynthos island (Map of Fig. 1):  

1. Limonium zacynthium Artel., sp. nova  

Typus: Ins. Zakynthos: ad sinum Keri; in saxosis calcareis, maritimis. ARTELARI 216 (Holotypus, UPA). Fig. 2 & 3.  

Planta perennis, glabra, tuberculata, 18-40 cm alta. Cauliculi 2-4 cm longi, ramosi, tenui. Folia 15-42 mm longa et 4-10,5 mm lata + spathulata, obtusa vel emarginata, revoluta, in petiolum lamina subaequilongum attenuata, uninervia, florendi tempore non emarcida. Caules permultis, erecti, tenuissimi, a basi ramosi, ramis angulis acutis formantibus. Inflorescentia corymbosa. Rami steriles permulti, fertiles pauci superiores. Spicae 15-55 mm longae, erectae, laxae, graciles. Spiculae 7-8 mm longae, 2-3-florae, ad 1-2 (-3) pro cm dispositae, secundae vel biseriales. Bractea exterior (0,8-) 1,2-1,7 mm longa, triangulares-ovata, acuta. Bractea media (1,6-) 1,9-2,4 mm longa, obovata-elliptica, obtusa, membranacea. Bractea interior 4,2-4,9 mm longa, elliptica, acuta, margine membranacea c. 0,5 mm lata, parte centrali herbacea, acuminata, acumine 0,8-1,1 mm longo. Calyx (4,3-) 4,5-5 mm longus, tubo limbo breviore vel subaequilongo, laxe piloso. Lobi calycis 0,7-0,9 mm longi, elliptici, obtusi vel sensim acuminati. Corolla 6-7 mm longa, violacea.
Habitat in saxosis calcareis, maritimis. Floret ab Jul. ad Sept.


Plant 18-40 cm, glabrous, perennial, tuberculate. Woody basal branches 2-6 cm long, thin, branched. Leaves 15-42 mm long and 4-10,5 mm wide, green at anthesis, ± spathulate, 1-veined, with revolute margin, apex obtuse or emarginate and petiole about as long as lamina. Stems numerous, very slender, erect or suberect, branched from the base, with the branches diverging at an acute angle. Inflorescence corymbose with numerous sterile branches and a few fertile at the upper 1/3. Spikes 15-55 mm long, slender, erect, with 1-2 (-3) spikelets per cm. Spikelets 7-8 mm long, 2-3-flowered. Outer bract (0,8-) 1,2-1,7 mm long, triangular-ovate, acute. Middle bract (1,6-) 1,9-2,4 mm long, ellipsoid, obtuse, membranous. Inner bract 4,2-4,9 mm long, ellipsoid, acute, with membranous margin c. 0,5 mm wide and the central herbaceous, acuminate with a point 0,8-1,1 mm long. Calyx (4,3-) 4,5-5 mm long, sparsely hairy; limb longer or equal to the tube; lobes 0,7-0,9 mm long, ellipsoid, obtuse or with a short point. Corolla 6-7 mm long, violet.

*Limonium phitosianum* Artel., sp. nova

Typus: Ins. Zakynthos: ad promontorium Skinari, prope pagum Korithi; in saxosis calcareis maritimis, PHITOS & KAMARI 18978 (Holotypus, UPA). Fig. 4 & 5.

Planta perennis, glabra, scabro-tuberculata, ad 30 cm alta. Folia permulta, pulviniformia, 6,5-30 mm longa et 2,5-6,5 mm lata, oblaneolata-spathulata, obtusa, valde revoluta, in petiolum lamina aequilongum attenuata, uninervia, florendi tempore pro maxima parte non emarcida. Caules pauci, erecti, fere a basi ramosi, ramis angulis acutis formantivus. Inflorescentia corymbosa. Rami articulis incrassatis, fragili-bus as nodis, inferiores steriles pauci, superiores fertiles. Spicæ 7-70 mm longæ, laxæ. Spiculae 8-8,5 mm longæ, pauco incurvedæ, 2-3 floræ, 3-4 (-6) pro cm dispositæ, secundæ vel biserialæ. Bractæa exterior 1-1,8 (-2) mm longa, triangulari-ovata, acuta. Bractæa media (1,7-) 1,9-2,6 (-2,9) mm longa, elliptica, obtusa, membranacea. Bracteæ interior (3,7-) 4,5 (-5,7) mm longæ, pauco incurva, elliptica, valde acuta ad acuta, margine membranacea 0,3-0,5 mm lata,
parte centrali herbacea, acuminate, acumine 0,3-0,8 mm longo. Calyx 5-5,8 (-6) mm longus, tubo limbo subaequilongo vel breviore, laxissime piloso vel fere glabo. Lobi calycis 0,8-1 mm longi, elliptici, obtusi vel acuti. Corolla 7-7,5 mm longa, violacea.

Numerus chromosomaticus: 2n = 18.

Habitat in saxosis calcareis, maritimis et in arenosis maritimis. Floret ab Jul. ad Sept.


Plant 12-30 cm, glabrous, perennial, scabrid-tuberculate. Leaves 6,5-30 mm long and 2,5-6,5 mm wide, on numerous small rosettes gathered to a dense cushion-like formation, the most of them green at anthesis, spatulate-oblancoate, 1-veined, with revolute margin, apex obtuse or sometimes emarginate and petiole about as long as lamina. Stems + few, erect, branched nearly from the base, with the branches diverging at an acute angle. Inflorescence corymbose with segments fragile and constricted at nodes lower branches sterile, few, upper fertile. Spikes 7-10 mm long, erect or curved. Spikelets 8-8,5 mm long, slightly curved, 2-4 (-6) per cm, 1-2 (-3)-flowered. Outer bract 1-1,8 (-2) mm long, triangular-ovate, acute. Middle bract (1,7-) 1,9-2,6 (-2,9) mm long, ellipsoid, obtuse, membranous. Inner bract (3,7-) 4-5 (-5,7) mm long, slightly curved, slightly acute to acute, with membranous margin 0,3-0,5 mm wide and the central part herbaceous, ellipsoid, acuminate, with a point 0,3-0,8 mm long. Calyx 5-5,8 (-6) mm long, very sparsely hairy or nearly glabrous; limb equal or longer than tube; lobes 0,8-1 mm long, ellipsoid, obtuse or acute. Corolla 7-7,5 mm long, violet.

Specimens seen:


*L. phitosianum* is distinguished from *L. sacynthium* from the obviously smaller number of sterile branches, the articulate segments of the inflorescence, the cushion-like rosettes, the curved spikelets and the longer calyx.

This species shows relation to *L. articulatum* because of its articulate inflorescence segments, but it differs from that from the well developed green leaves at anthesis, the longer spikes, the curved spikelets, the longer bracts and calyx and the chromosome number (*L. articulatum* 2n = 27).
The cytological study was based on living material cultivated in the experimental garden of the Botanical Institute of Patras.

The cytological investigation was limited to the mitotic metaphase plates and a root tip squash technique (ÜSTER-GREN & HENEEN, 1962) was used. Root tips were pretreated for 3hrs in 2mM 8-hydroxyquinoline and then fixed in Carnoy (3:1) for about 24 hrs. Afterwards, they were hydrolyzed in 1N HCl at 60°C for 12 min and stained in Feulgen for 3-4 hrs.

Both species are diploid with basic number \( x = 9 \) and have the chromosome number \( 2n = 18 \) (Fig. 6).

Reproduction

All the specimens of *L. zacynthium* and *L. phitosianum* examined have the self-sterile combinations A and B of pollen and stigma types (BAKER, 1948, 1953; ERBEN, 1978, 1979). Combination A is characterized by flowers with "cob"-stigmata and pollen grains broadly areolate, and combination B by flowers with "papillate" stigmata and pollen grains narrowly areolate.

In each population both A and B combinations appear with about the same frequency. This proves that the above species are sexual. Also, the chromosome number of both species, \( 2n = 18 \), is commonly observed in sexual species of *Limonium*. Pollen investigations showed in all cases well developed pollen grains with a mean fertility of 92,3% for *L. zacynthium* and 93,6% for *L. phitosianum*.

Acknowledgements

I warmly thank the Director of the following botanical Museums and Institutes, who kindly provided me herbarium material: The Botanical Museum of Berlin-Dahlem (B), the Natural History Museum of Wien (W) and the Botanical Laboratory of the University of Provence, Marseille (MARS).

I am greatly indebted to Prof. D. Phitos (Patras) for his valuable help throughout the course of this work. Thanks are, also, due to P. Lampropoulos for photos and drawings.
References


Legends of Figures

Fig. 1: Collection sites of: ▲ L. zacynthiaium and ● L. phitosianum.

Fig. 2: Holotype L. zacynthiaium.

Fig. 3: L. zacynthiaium: a = spike, b = outer bract, c = middle bract, d = inner bract, e = calyx, f = calyx lobes, g = leaf.

Fig. 4: Holotype L. phitosianum.

Fig. 5: L. phitosianum: a = spike, b = outer bract, c = middle bract, d = inner bract, e = calyx, f = calyx lobes, g = petal, h = leaf.

Fig. 6: Mitotic metaphase plates of: a. L. zacynthiaium. b. L. phitosianum.
Fig. 2
Fig. 4
a, b, c, d, e, g, h, 1mm, f, 1mm

Fig. 5