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### *Limonium optimae*, a new species from central Sicily

#### Abstract

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*Limonium optimae*, a new species localized on the borders of a salty stream and along the limitrophe evaporitic limestone substrata in a very restricted area of the Sicilian inland, is described.

In the Mediterranean area the genus *Limonium* Miller results strongly diversified mainly in consequence of agamospecific processes in which it is involved. Indeed, besides a round dozen that were described later, according to Greuter, Burdet & Long (1989) this genus includes 280 species and subspecies.

Sicily, together with Sardinia, the Balearic islands and N Africa's coasts, is to be considered among the main centres of taxonomic differentiation.

The taxonomic knowledge in such islands, after the synthesis given by Pignatti in Flora Europaea (1972), was improved by some contributions of Brullo (1980), Raimondo & Pignatti (1986).

On the basis of published data the range of *Limonium* in Sicily concerns mainly the coast. Furthermore two species (*Limonium catanzaroi* Brullo and *L. todaroanum* Raimondo & Pignatti) have a subcoastal restricted area, besides *Limonium calcarae* (Janka) Pignatti which has a larger distribution near Terrapilata, Serradifalco and other new inland localities in the neighbourhood (Gianguzzi 1993).

More recently, field work carried out in order to achieve a census of the floristic patrimony of the Palermo administrative district allowed to find a new remarkable inland population which is located in subarid land on the border between the Palermo and Caltanissetta districts. This population appeared to be quite distinct when compared to other taxonomically known ones. Morpho-anatomic and karyological data give support to its peculiar character. We therefore describe it as a new species named *Limonium optimae*.

*Limonium optimae* Raimondo, nova sp. (Fig. 1) — Typus: scarpata calcarea ai margini del torrente Vaccarizzo poco prima della sua affluenza nel fiume Salso, all'altezza del ponte Cinque Archi, 30.05.1989, Gianguzzi & Raimondo (holotypus PAL; isotypi B, FI, M, PAL).

Planta perennis (10-) 40-50 (-70) cm alta, caespitosa. Scapi breves, ramorum apicibus foliis dense rosulatis praeditis. Folia glaucescentia, oblanceolato-spathulata, marginibus membranaceis, mucronata vel interdum retusa, 1,7-17 x 0,5-3,5 cm, 3(-5)-nervia.



Fig. 1. *Limonium optimae* Raimondo nova sp. — A: Typical habit (x 0.5), B: Hygrohalophytic habit (x 0.5), C: Spikelet (x 2.5), D: Flower (x 4.5), E: Calyx (x 5.5), F: Pistil (x 7), G: Anther (x 12), H: Fruiting calyx (x 12), I: Fruit (x 12). Drawn by L. Gianguzzi.

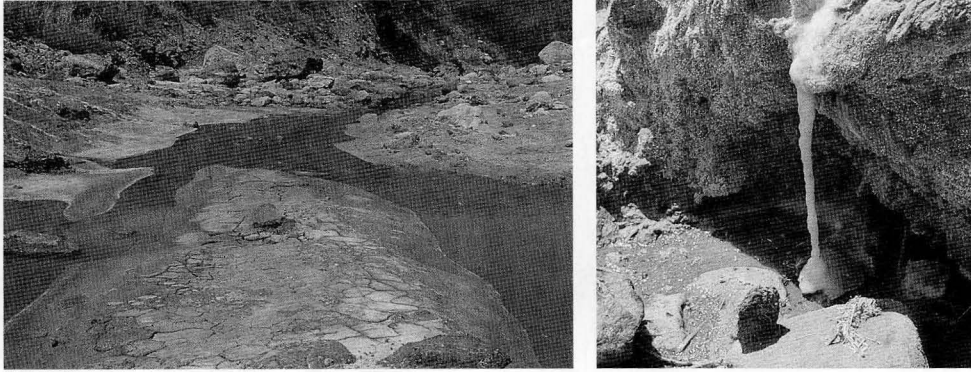


Fig. 2-3. River-bed of Torrente Vaccarizzo, an affluent of the Salso river: particular of the efflorescences of sodium chloride. Stalactite of sodium chloride on the Torrente Vaccarizzo's scarp.

Paniculae erectae vel incurvae, magis ramosae ad apicem, ramusculis nudis paucis ad basim praeditae. Spicae 10-20 cm longae; rachides nudaе ad basim. Spiculae uniflorae vel biflorae, 5-8 pro cm. Bractea exterior 1,5 mm longa; bractea interior 4-4,5 mm. Calyx 4-4,5 mm longus, lobis acutis 1,5 mm longis. Tubus pilosus, praecipue ad nervos prominentes. Corolla lilacina, 4-5 mm diametro; petala 6-8 mm longa. Antherae trigonae, verrucosae; ovarium costatum, 0,8 mm longus; styli 5, 2,8 mm, stigma 1,2 mm. Semen fuscum. Floret majo-septembri. Habitus: chamaephyta suffruticosa. Caryologia:  $2n = 26$

Etymologia: species optimae in hoc genere perrarae, haec autem distinctissima, qua ratione nomen Societati Herbarium Mediterraneum patrocinantem commemorans quam optime ferre poterit.

Chamaephyte developing in cushions (10-)40-50(-70) cm. Branches bearing densely rosulate leaves. Leaves 1.7-17 x 0.5-3.5 cm, more or less glaucous, obovate to oblanceolate spatulate, with membranous margins, mucronate or occasionally retuse, 3-veined or sometimes obscurely 5-veined. Panicle almost erect, branching mainly in the upper half and with few lower sterile branchlets. Spikes 10-20 cm.

Spikelets 5-8 per cm, 1-2 flowered, apically crowded. Inner bract 1.5 mm; outer bract 4-4.5 mm. Calyx 4-4.5 mm, with 1.5 mm long acute lobes and tube hairy along the raised veins. Corolla lilac, 4-5 mm in diameter; petals 6-8 mm long. Anthers trigonous, warty. Ovary 0.8 mm, costate. Styles 2.8 mm, stigma 1.2 mm. Fruit dark. Flowering period: May-September. Chromosome number:  $2n = 26$ .

Distribution: Central Sicily in a very limited area along the border of the stream "Vaccarizzo" near its confluence with the Salso river at the Ponte Cinque Archi on the Palermo-Caltanissetta administrative border (C Sicily).

*Limonium optimae*, on the basis of its chromosome number  $2n = 26$ , can be considered a triploid agamospecies like *L. minutiflorum* (Guss.) O. Kuntze and *L. avei* (De Not.) Brullo & Erben among the Sicilian representatives of the genus *Limonium*.

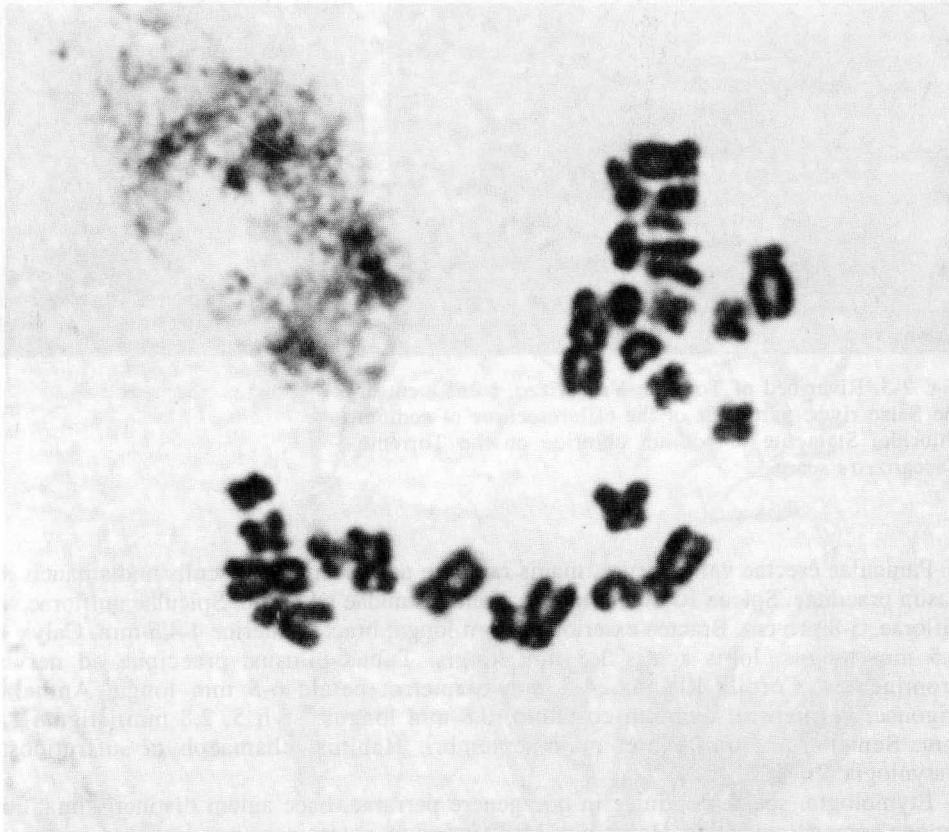


Fig. 4. Somatic metaphase of *Limonium optimae* Raimondo —  $2n = 26$ . (X 2500).

This new, shrubby species exhibits a great morphological and structural diversification in response to the environmental factors, especially water and salinity. In particular, individuals with halophytic habit (leaves greatly expanded and thickened) are frequent on moist and highly saline substrates in the stream bed, whereas individuals with less expanded leaves (xeromorphic habit) are more frequent on the cliffs bordering the stream where dry and less saline substrates are found.

In the saline habitat *Limonium optimae* occurs together with *Hainardia cylindrica* (Willd.) Greuter, *Beta vulgaris* L. subsp. *maritima* (L.) Arcang., *Atriplex latifolia* Wahlenb., *Parapholis incurva* (L.) Hubbard, *Juncus subulatus* Forssk., *Spergularia rubra* (L.) C. Presl, *Hordeum maritimum* With., *Mantisalca salmantica* (L.) Briq. & Cavill. and *Agropyron pungens* (Pers.) Roem. & Schult.



Fig. 5-6. Cushion of *Limonium optima* in a semi-rocky site (left); Specimen showing leaf gigantism growing on incoherent sediment at the river border (right).

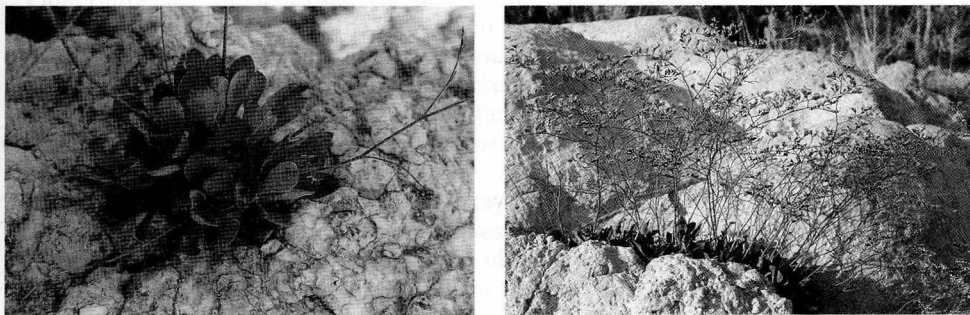


Fig. 7-8. *Limonium optima* at the base of the rocky scarp (left); *Limonium optima* flowering on the rocky riverside (right).

On the cliffs *L. optimae* has been recorded together with *Sedum rupestre* L. subsp. *rupestre*, *Artemisia arborescens* L., *Ampelodesmos mauritanicus* (Poir.) Dur. & Schinz, *Lygeum spartum* L., *Diplotaxis crassifolia* (Rafin.) DC., *Thymus capitatus* (L.) Hoffm. & Link, *T. spinulosus* Ten., *Matthiola fruticulosa* (L.) Maire, *Euphorbia rigida* M. Bieb., *Gypsophila arrostii* Guss., *Moricandia arvensis* (L.) DC., *Galium murale* (L.) All., *Phagnalon rupestre* (L.) DC. subsp. *rupestre*, *Cachrys sicula* L. and *Asparagus stipularis* Forssk.

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