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Taxonomic revision of the *Limonium cancellatum* group (Plumbaginaceae) in Croatia

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Abstract

A taxonomic revision of the genus *Limonium* (Plumbaginaceae) in Croatia was carried out. In particular, the species belonging to *L. cancellatum* group are examined on morphological, nomenclatural, ecological and chorological grounds. The morphological study is based on herbarium materials and living plants. 26 species are recognized, of which 4 are well known in literature (*L. cancellatum*, *L. dictyophorum*, *L. vestitum* and *L. subanfractum*), while 21 species are described as new to science (*L. busianum*, *L. cazzae*, *L. croaticum*, *L. ginzbergeri*, *L. issaeum*, *L. istriacum*, *L. lagostanum*, *L. leprosorum*, *L. liberianum*, *L. liburnicum*, *L. lovricii*, *L. milovicii*, *L. omissae*, *L. pelagosae*, *L. pharosianum*, *L. pomoense*, *L. subnudum*, *L. tabulare*, *L. trinajsticii*, *L. velutinum* and *L. zankii*). A new combination (*L. brusnicense*) was also proposed. Description, iconography, type, nomenclatural data, etymology, ecology, distribution maps and taxonomical notes are given for each taxon. New somatic chromosome number was given for 4 species (*L. cancellatum*, *L. dictyophorum*, *L. lovricii* and *L. milovicii*). The phenetic tree clearly shows that the species are morphologically related and two main groups can be separated on the base of the hairiness. In order to allow a correct identification, a diagnostic key is provided.

Key words: Endemic, *Limonium*, new combination, new species, phenetic tree, systematics

Introduction

The genus *Limonium* Miller (1754: 1328) can be considered one of the most critical taxon in the Mediterranean area and it is still not well known in some countries. In the last decades, several taxonomical studies improved the knowledges on this genus by the descriptions of many new species for the science. In particular, taxonomic works were published for some Mediterranean territories, such as Balearic Islands (Llorens 1986, Erben 1993, Castro & Rosselló 2007), Corse (Arrigoni & Diana 1993, Erben 2007), Cyprus (Kouzali *et al.* 2012), Greece (Artelari 1984a, b, 1989, Artelari & Kamari 2000, Brullo & Guarino 2000, Artelari & Georgiou 2003, Georgakopoulou *et al.* 2006), Iberian peninsula (Erben 1978, 1993), Israel (Domina *et al.* 2006), Italy (Pignatti 1973, 1982a,b, Rizzotto 1984, 1999, Brullo *et al.* 1990), Lebanon (Domina *et al.* 2008, Domina & Raimondo 2012), Libya (Brullo 1978), Sardinia (Erben 1980, 1981, 2001, Arrigoni & Diana 1985, 1991, 1999, Arrigoni 1981, 2010, Mayer 1995), Sicily (Brullo 1980, 1981, 1988, Raimondo & Pignatti 1986, Raimondo 1993), Tunisia (Brullo & Erben 1989), Turkey (Bokhary & Edmondson 1982, Fazlioglu 2011).

The Croatian coast is characterized in having several islands and islets, where *Limonium* is not still well known. On the basis of the current knowledge (Trinajstić 1980, 1981, Lovrić 1981, 1988, 1995, Pavletić 1989, 1992, Bogdanović & Mitić 2003, Erben 2006, Pandža *et al.* 2007, Bogdanović *et al.* 2011, Nikolić 2013) the genus *Limonium* is represented in this territory by some species with widespread Mediterranean distribution, such as *L. bellidifolium* (Gouan 1764: 231) Dumortier (1827: 27), *L. virgatum* (Willdenow 1809: 336) Fourreau (1869: 141), *L. narbonense* Miller (1768), and by some endemic taxa belonging to *L. cancellatum* group: *L. cancellatum* (Bernhard ex Bertoloni 1837: 525) Kuntze (1891: 395), *L. dictyophorum* (Tausch 1824: 254) Degen (1937: 540), *L. subanfractum* Trinajstić (1980: 6), *L. vestitum* (C.E.Salmon 1923: 97) C.E.Salmon (1924: 62) subsp. *vestitum* and *L. vestitum* (C.E.Salmon) C.E.Salmon subsp. *brusnicense* Trinajstić (1980: 7).

A first examination of herbarium material and live plants allowed to observe a remarkable morphological variability (both vegetative and reproductive traits) within the populations previously attributed to *L. cancellatum* s.l. or *L. dictyophorum* s.l. The combination of character-states, that distinguishes this group from the other ones, is usually represented by habit intricate, stems numerous, articulate, prostrate to erect, many sterile branches (rarely few), inflorescence terminal, with branches curved, spikes not elongated (except sometime the terminal one) and spikelets small. As concerns the indumentum, the plants can be totally densely hairy or glabrous, sometimes subglabrous to sparsely hairy only in the stem. These evidence led us to carry out a detailed morphological study, with the main aim to verify their variability and also their ecological requirements and geographical distribution.

The results of this taxonomical revision regarding the species belonging to the *L. cancellatum* group occurring in Croatia are here presented: five of these taxa are known from literature, while twenty one are new to science.