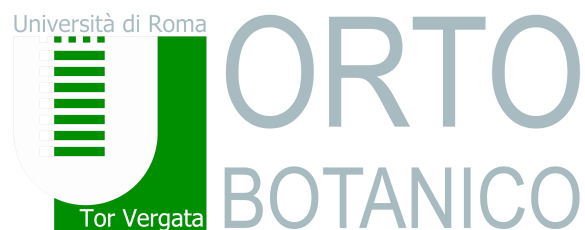


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BOOK OF ABSTRACT

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1.12. = PHYLOGENETIC AFFINITIES AND SYSTEMATIC POSITION OF THE ITALIAN POPULATIONS OF GYMNOSPERMIUM (BERBERIDACEAE)

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Gymnospermium Spach (Berberidaceae) is a small genus of tuberous herbs, characterized by fruits with exposed seeds when the membranous pericarp splits (from the Greek “gymnos”, naked, and “sperma”, seed). Together with the related genera *Leontice* L. and *Caulophyllum* Michx., it is part of tribe Leonticeae (Spach) Kosenko, which is characterized by succulent staminodia, eu-reticulate pollen exine, utricular gynoecea and a basic chromosome number of $x = 8$ (with exceptions). Although *Gymnospermium* is the most diverse genus in Leonticeae, it only includes around twelve specific or subspecific taxa, inhabiting semiarid steppes, montane shrublands and mesic forests across Eurasia. These taxa are mostly allopatric diploid endemics, forming three distinct geographic groups in eastern China, in central-western Asia and in the Balkan peninsula (1, 2). In spite of such a vast distribution range, the degree of morphological differentiation in the group is low and this has caused different interpretations of the limits, taxonomic status and number of species.

In 2014 populations of *Gymnospermium* were discovered by the first two authors of this work in a small forest area of the Maddalena mountains, a massif of the southern Apennines (Salerno province). Biogeographically, this finding allowed to extend much to the west the limit of the genus range. Based on macro-morphological characters, the Italian populations were first identified as *G. scipetarum* E.Mayer & Pulević, a species endemic to central Albania and south Montenegro. Other closely related species are *G. maloi* Kit Tan & Shuka, endemic to south Albania, and *G. peloponnesiacum* (Phitos) Strid, the third Balkan species endemic to the Peloponnese (3). The discovery of *Gymnospermium* in Italy prompted further studies on the species-level systematics of this little-known group, about which neither taxonomic investigations nor phylogenetic analyses have been conducted to date. We aimed at filling this gap using a combined molecular and morphological approach, and performing a phylogenetic analysis of the genus based on a taxon sampling including all the Balkan taxa plus other species from Europe, western and central Asia, and the Far East. Both nrDNA (ITS region) and cpDNA (*trnL-trnF* IGS) markers were used to infer interspecific relationships and better understand the affinities of the Italian populations. The rate of variation of both markers was relatively low, so that not all the nodes were resolved in the Bayesian and Maximum Parsimony trees. This result matches the low degree of morphological differentiation among species, despite their, often wide, geographic isolation. However, the Albanian and Italian accessions were retrieved as a monophyletic group by both markers, and the populations from the southern Apennines resulted closer to *G. maloi* than to *G. scipetarum*. The Italian accessions, however, were characterized by a few Single Nucleotide Positions (SNPs) and formed a distinct, well supported group in the combined ITS- *trnLF* analysis. The morphometric study revealed a somewhat intermediate position of the Italian plants between the two above species, from which they differ by a peculiar combination of character-states. Karyological analysis revealed the chromosome number $2n = 14$, as in *G. maloi* (2), while most of the other investigated species of *Gymnospermium* have $2n = 16$. In the light of these results, the Italian populations are provisionally referred to a new species which is currently under description.

1) H. Loconte, J.R. Estes (1989) Generic relationships within Leonticeae (Berberidaceae). *Can. J. Bot.*, 67, 2310-23161

2) H. Loconte (1993) Berberidaceae. In: K. Kubitzki, J.G. Rohwer, V. Bittrich (Eds.), *The families and genera of vascular plants II*. Berlin, Springer, Pp. 147–152.

3) K. Tan, L. Shuka, S. Siljak-Yakovlev, S. Malo, F. Pustahija (2011) The genus *Gymnospermium* (Berberidaceae) in the Balkans. *Phytotaxa*, 25, 1-17