

3.1 = ON THE PRESENCE, DISTRIBUTION AND CONSERVATION STATUS OF *LYCOPODIUM LAGOPUS* (LYCOPODIACEAE) IN ITALY

ANGELO TROIA¹, FRANCESCO MARIA RAIMONDO¹, WERNER GREUTER²

¹Dipartimento di Scienze e Tecnologie Biologiche Chimiche e Farmaceutiche, Sezione di Botanica ed Ecologia Vegetale, Università degli Studi di Palermo, Via Archirafi 38, 90123 Palermo, Italy; ²Herbarium Mediterraneum Panormitanum, Università degli Studi di Palermo, c/o Orto Botanico, via Lincoln 2/A, 90133 Palermo, Italy

During our work on the *Lycopodiaceae* account for the upcoming Flora Critica d'Italia (1, 2), we assessed and accepted the presence in Italy of *Lycopodium lagopus* (Laest. ex Hartm.) Zinserl. ex Kuzen. = *L. clavatum* subsp. *monostachyon* (Grev. & Hook.) Selander (2).

Already reported by Fiori (3) as *L. clavatum* f. *monostachyum* Desv., its presence in Italy was more recently confirmed by Tribsch & Schönswetter (4) and accepted in some subsequent regional works (e.g. 5, 6), but the taxon is not recognized as distinct in the last national checklist of vascular plants (7).

Lycopodium lagopus has an arctic-alpine distribution in America and Eurasia (8, 9). Initially described as a variety of *L. clavatum* L., the taxon was later raised to subspecific (e.g. 10, 11) and specific rank (8, 9). In view of its largely sympatric occurrence with *L. clavatum* in the Alps, and of the apparent absence of intermediate populations or individuals, we prefer to treat *L. lagopus* as a separate species.

The main characters distinguishing *L. lagopus* from *L. clavatum* are the number of strobili (usually 1, rarely 2), and especially their being sessile or subsessile on a 0-2 cm long "peduncle".

In the Italian Alps it usually occurs at >1800 m a.s.l. As a result of our revision of specimens in several Italian herbaria, this clubmoss, formerly known only from Trentino - Alto Adige and Lombardy, is here reported for the first time for Piedmont on the basis of two specimens collected by Carestia in Valsesia in 1870 and preserved in TO. The presence in Friuli - Venezia Giulia (reported in 6 on the basis of a posthumous work of Gortani) is not confirmed: a specimen collected by Gortani in 1908 and preserved in MFU under "*L. clavatum* f. *monostachyum* Desv." is referable to *L. clavatum*. On the other hand, in view of the specie's ecology and confirmed distribution, one may reasonably expect that it is to be found, additionally, in Val d'Aosta and Veneto.

Lycopodium species in Europe have experienced a decline in abundance in a general way, partly due to their being collected and overexploited, and for this reason they have all been included in Annex V of the Habitats Directive 92/43/CEE. *Lycopodium clavatum* in particular, whose decline in Italy is confirmed by several authors (e.g., 6), is also included in Annex D of the Council Regulation (EC) No 338/97 on the protection of species of wild fauna and flora by regulation their trade.

It is therefore urgent to define the current distribution and conservation status of *L. lagopus* in Italy, in order to plan possible conservation measures. We hope that its inclusion (as *L. clavatum* subsp. *monostachyum*) in the most recent Red List of Italian Flora (12), even if only as DD (Data Deficient), and the contribution here presented may stimulate the study of this species in Italy.

This study is part of the "Flora Critica d'Italia" project and as such was funded by the Società Botanica Italiana onlus, the Fondazione per la Flora Italiana, and the International Foundation Pro Herbario Mediterraneo.

- 1) L. Pignotti (ed) (2006) Progetto per una Flora critica dell'Italia. Società Botanica Italiana, Firenze
- 2) A. Troia, W. Greuter (2013) Proceedings of XIV OPTIMA Meeting, Palermo, 9-15 September 2013, p. 151
- 3) A. Fiori (1943) Flora Italica Cryptogama, pars V: Pteridophyta. Tipografia Mariano Ricci, Firenze
- 4) A. Tribsch, Schönswetter P. (1999) Verh. Zool.-Bot. Ges. Österreich, 136, 235-248
- 5) D. Aeschmann, K. Lauber, D.M. Moser, J.P. Theurillat (2004) Flora Alpina. Haupt Verlag, Bern
- 6) E. Bona (ed), F. Martini, H. Niklfeld, F. Prosser (2005) Atlante corologico delle Pteridofite nell'Italia nordorientale. Distribution Atlas of the Pteridophytes of North-Eastern Italy. Museo Civico di Rovereto, Edizioni Osiride
- 7) F. Conti, G. Abbate, A. Alessandrini, C. Blasi (eds) (2005) An annotated checklist of the Italian vascular flora. Palombi Editori, Roma
- 8) W.H. Wagner, J. Beitel (1993) Lycopodiaceae. In: Flora of North America Editorial Committee (eds) Flora of North America Vol. 2 Pteridophytes & Gymnosperms. Oxford University Press, New York, pp. 18-37
- 9) F.J. Rumsey (2007) *Watsonia*, 26, 477-480
- 10) W. Rothmaler, A.C. Jermy (1993) *Lycopodium* L. In: T.G. Tutin et al. (eds), *Flora europaea* vol. 1, ed. 2. Cambridge, p. 4
- 11) I. Kukkonen (2000) Lycopodiaceae. In: B. Jonsell (ed) *Flora Nordica* 1. The Bergius Foundation, Stockholm, pp. 1-13
- 12) G. Rossi et al. (2013) *Lista Rossa della Flora Italiana*. 1. Policy Species e altre specie minacciate. Comitato Italiano IUCN e Ministero dell'Ambiente e delle Tutela del Territorio e del Mare

