

New records of arctic montane and alpine mosses from Central Italy

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Abstract – Some interesting mosses discovered at the Laga Mountains in the central Apennines are reported. *Myurella sibirica*, a very rare moss in Europe, is rediscovered in Italy after more than one century. *Dicranella cerviculata* and *Dicranum flexicaule*, only known from northern Italy, are reported for the first time from Central Italy. Finally, *Dicranum polysetum* and *Pseudoleskea patens* are reported as new for the Abruzzo region. Ecological and chorological remarks are given for each species.

Mosses / Laga Mountains / Central Italy / Apennines / Ecology / Chorology

INTRODUCTION

The high presence of endemic and relic species has brought the high-altitude zones of the central Apennines to be considered one of the most peculiar environments of the whole Italian peninsula. The limestone massifs such as Gran Sasso (2912 m), Majella (2786 m), Velino (2485 m), Sibillini (4465 m) are mainly characterised by a vegetation type that reflects the strong amphiadriatic biogeographic links existing between the Apennines and the Balkans (Biondi *et al.*, 1999; Uzunov *et al.*, 2005), while the siliceous Laga Mountains are mainly known to host a high number of species and communities that testify a major relationship with the central-European district (Blasi *et al.*, 2003; Tondi *et al.*, 2003; Di Pietro *et al.*, 2007). The Laga Mountains have been in the past object of many studies regarding the vascular plants (e.g., Tondi & Plini, 1995; Blasi *et al.*, 2003; Tondi *et al.*, 2003). As regards the bryophyte flora, current knowledge on the bryophytes inhabiting these areas is based on sporadic reports dating back to the first half of the last century (Zodda 1910, 1947; Bottini, 1913; Barsali, 1914), and on scattered recent contributions (Aleffi & Cortini Pedrotti, 1991; Mastracci & Düll, 1991; Aleffi *et al.*, 1997 and Privitera *et al.*, 2006). Nevertheless, new field works carried out in the summer of 2009 within the subalpine belt of the Laga Mts. yielded new bryophyte records, whose presence increases the high bryophyte diversity of these mountains. Among these finds, *Myurella sibirica* (Müll. Hal.)

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Reimers had been considered vanished in Italy (Aleffi *et al.*, 2008) where it was previously known from few localities in the north of the country, with records dating back to the last century; *Dicranella cerviculata* (Hedw.) Schimp., *Dicranum flexicaule* Brid and *Pseudoleskea patens* (Lindb.) Kindb. are mostly known to occur in northern Italy, and *Dicranum polysetum* Sw. *ex* Anon. is newly reported for the whole Apennine chain. The specimens are kept in the Herbarium of the Department of Botany of the University of Catania (CAT). The nomenclature follows Hill *et al.* (2006). The ecological features and the chorotypes were taken from Dierssen (2001).

Study area

The vegetation is characterized by *Vaccinium myrtillus* L. communities and high altitude permanent water pools whose vegetation belongs to the phytosociological class *Scheuchzerio-Caricetea nigrae* (Nordhagen 1936) R. Tüxen 1937. From a lithological point of view the Laga Mountains are composed of a typical pelithic-arenaceous flyschoid formation known as “Formazione della Laga”, while the bioclimatic pattern can be defined as cold-temperate with the presence of the cryo-orotemperate thermotype precisely in the upper subalpine and alpine belts (Blasi, 2006).

NEW RECORDS

Myurella sibirica (Müll. Hal.) Reimers

Italy: Abruzzo, Pizzo di Moscio, Laga Mts (south-eastern slope), UTM 33TUH6922, 2150 m a.s.l., 05 September 2009, *Di Pietro*.

This rare moss was collected on the eastern slopes of Pizzo di Moscio, where it was growing at the edge of small pools containing permanent waters that are feeded by a high number of small sources and by the melting-snow waters. The vascular flora comprises species typical of *Scheuchzerio-Caricetea fuscae*. *Myurella sibirica* was represented by very slender, glaucous-green shoots with julaceous branches ascending up to 1 cm high; it was mixed with *Palustriella commutata* (Hedw.) Ochyra and *Tortella tortuosa* (Hedw.) Limpr.

Myurella sibirica is an arctic-alpine species occurring in Europe only in Austria, Slovenia, Bosnia-Herzegovina and Italy (Fig. 2; Schumacker & Martiny, 1995; Grims, 1999; Sabovljević *et al.*, 2008). In Italy the species was recorded more than one century ago from Tyrol (Matouschek, 1904) and Carnian Alps (Kern, 1908) but no other records were added in the meanwhile, so it was considered locally extinct in Italy (Cortini Pedrotti & Aleffi, 1992). This report from Laga Mountains represents the new southernmost limit of its European distribution area.

Dicranella cerviculata (Hedw.) Schimp.

Italy: Abruzzo, Pizzo di Moscio, Laga Mts (south-eastern slope), 33TUH6922, 2000 m a.s.l., 05 September 2009, *Di Pietro*; Abruzzo, northern slope of Monte di Mezzo-Pizzo Moscio, Laga Mts (south-eastern slope), 33TUH6816, 2000 m a.s.l., 6 September 2009, *Di Pietro*.

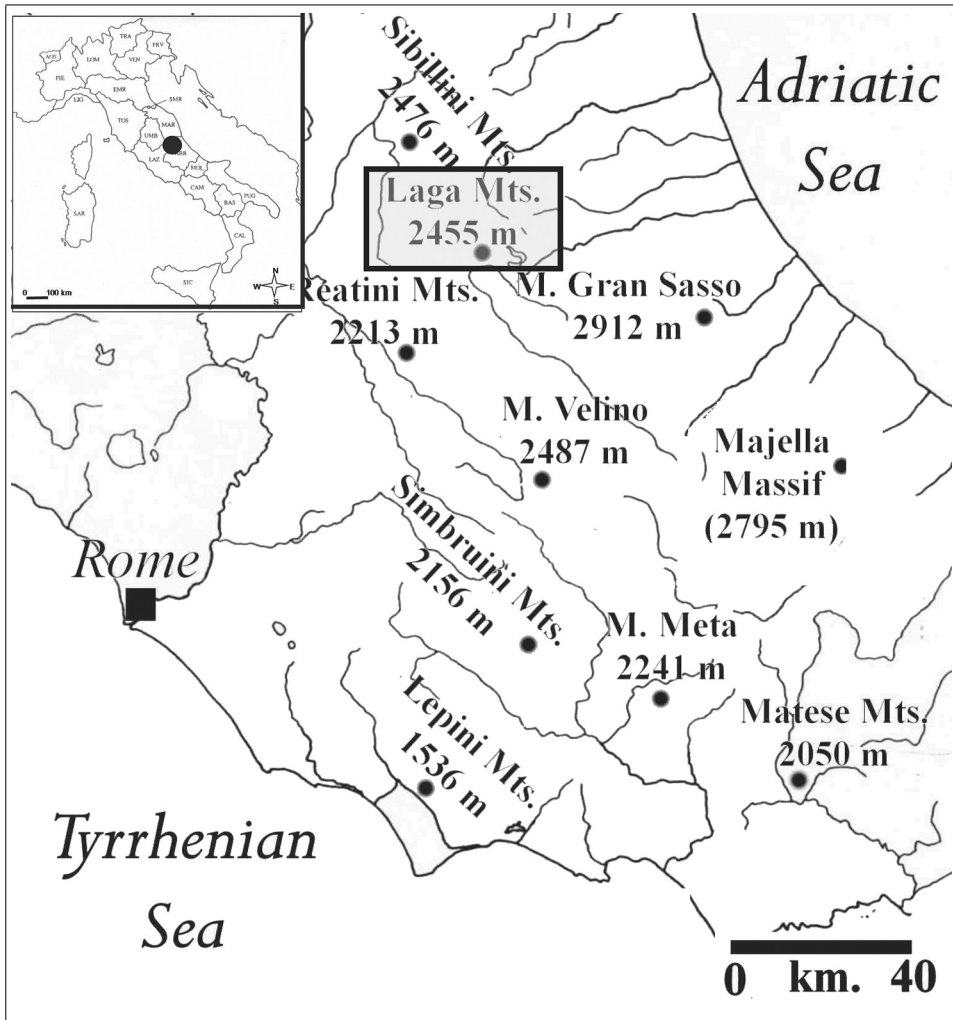


Fig. 1. Location of the study area in the Laga Mountains.

Dicranella cerviculata was found on damp ditches where it formed a monophytic population in the the *Juncus articulatus* L. stands; here the species occurs in green patches of shoots ascending up to 2 cm high. *Dicranella cerviculata* is a boreosubtropical-arctic species widely distributed in Europe. In Italy it is very rare, since it has been reported only from Piedmont, Lombardy (old reports) and Trentino-Alto Adige (Aleffi *et al.*, 2008), (Fig. 3). No record exists from central, southern and insular Italy. This report represents the new southernmost limit of the Italian range of this species.

***Dicranum flexicaule* Brid.**

Italy: Abruzzo, Cima della Laghetta, Laga Mts (south-eastern slope), 33TUH6917, 1990 m, 22 August 2009, *Di Pietro*; Abruzzo, northern slope of Monte di Mezzo-Pizzo Moscio, Laga Mts (south-eastern slope), 33TUH6816, 2000 m a.s.l., 6 September 2009, *Di Pietro*.



Fig. 2. European distribution of *Myurella sibirica*. ● previous reports, ★ new report.

D. flexicaule is an acidophytic, mesophytic species occurring on rocks, cliff ledges and soil, usually at high altitudes. In the Laga Mountains, it was collected in communities of the subalpine *Vaccinium myrtillus* L. at Cima della Laghetta, where it was growing on soil, in lax dull green turfs up to 8 cm high, together with *D. polysetum* Sw. ex anon. *Dicranum flexicaule* is an arctic-montane species that, in Italy, has been recorded in few localities throughout the whole southern slope of the Alps, from Val d'Aosta to Friuli Venezia Giulia. However, records from the central and eastern Alps are prior to 1950 (Aleffi *et al.*, 2008), (Fig. 4).

***Dicranum polysetum* Sw. ex Anon.**

Italy: Abruzzo, Cima della Laghetta, Laga Mts (south-eastern slope), 33TUH6917, 1990 m, 22 August 2009, *Di Pietro*.

Dicranum polysetum was found on moist soil where it was growing in green tufts up to 10 cm high. It is an arctic montane species widely distributed

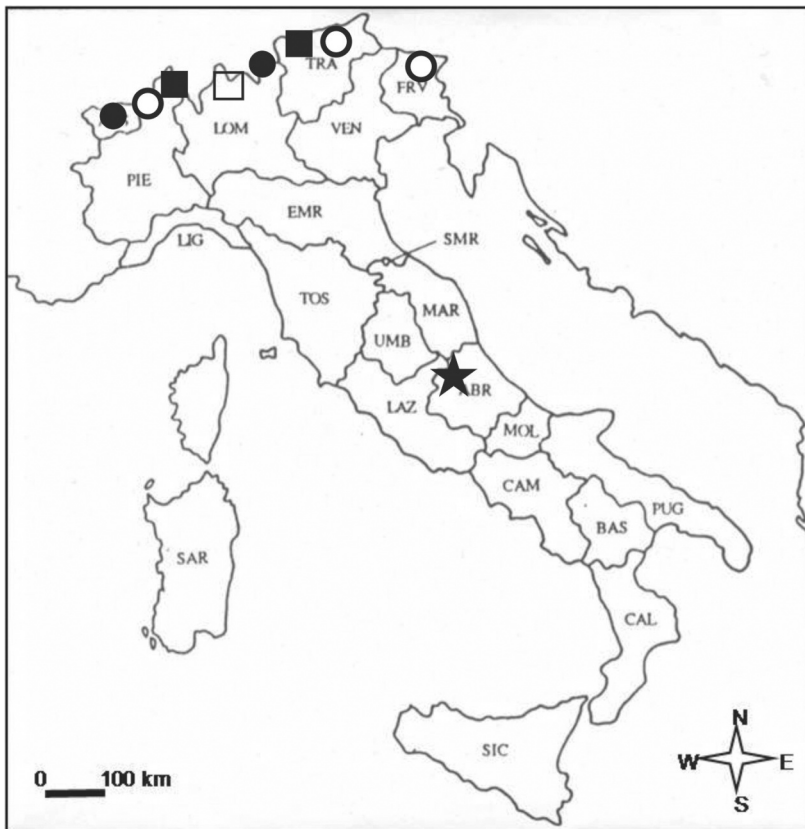


Fig. 3. Italian distribution of *Dicranella cerviculata* and *Dicranum flexicaule*. *Dicranella cerviculata*: □ old reports (before 1950), ■ recent reports (after 1950). *Dicranum flexicaule*: ○ old reports (before 1950), ● recent report (after 1950). * new report.

in Europe. In Italy it has been reported from many northern localities, and more sporadically from Umbria, Puglia and Sardinia (Aleffi *et al.*, 2008); here it is reported for the first time from the Abruzzo region.

Pseudoleskea patens (Lindb.) Kindb.

Italy: Abruzzo, northern slope of Mt Mezzo-Pizzo Moscio, Laga Mts (south-eastern slope), 33TUH6816, 2000 m, 6 September 2009, *Di Pietro*.

Pseudoleskea patens was found in the undergrowth of the subalpine *Vaccinium myrtillus* communities, growing in a few very slender patches with primary stems creeping and erect branches mixed to *Racomitrium canescens* (Hedw.) Brid. It is an arctic-alpine species mostly spread in northern Europe; in Italy it is scattered throughout the Alps, from Piedmont to Veneto and in the Tuscan-Emilian northern Apennines. According to Aleffi *et al.* (2008) there is an old report of this species also from Sardinia, which deserves further investigations given the peculiar bioclimatic and biogeographical contexts of this island.

The arctic-alpine or arctic-montane mosses reported in this paper add to the set of the alpine bryophytes until now found in the Central Apennines, such as *Tritomaria scitula* (Taylor) Jörg., *Asterella gracilis* (F. Weber) Underw., *Lophozia opacifolia* Culm. ex Meyl., *Myurella tenerrima* (Brid.) Lindb., *Cratoneuron curvicaule* (Jur.) G. Roth, *Schistidium atrofusum* (Schimp.) Limpr., and *Polytrichum sexangulare* Brid. All these species can be considered glacial relicts which are confined to the highest parts of the mountain range, where they mostly benefit the high capacity of water retention of the siliceous substrate. These records confirm the uniqueness of the Laga Mountains, as a site suitable for the conservation of Arctic entities in the Apennines and contribute to the consideration of these mountains as an Important Plant Area for bryophyte conservation within the Global Strategy of Plant Conservation (GSPC), in similar terms as the Italian Islands of Linosa and Pantelleria in the Mediterranean Region (Privitera & Puglisi, 2009).

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