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New contribution to the knowledge of the flora of the Laga Mountains (Central Apennines)

GIANCARLO TONDI*, ROMEO DI PIETRO*, SANDRO BALLELLI** e FRANCESCO MINUTILLO*

* Dipartimento di Biologia Vegetale, Università di Roma "La Sapienza"
P.le Aldo Moro 5, I-00185 Roma.
** Dipartimento di Botanica ed Ecologia dell'Università
Via Pontoni 5, I-62032 Camerino (MC)

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Nuovo contributo alla conoscenza della flora dei Monti della Laga (Appennino Centrale) — Il presente lavoro prende in esame la flora di alcuni tipi di ambiente, che, nell'ambito del versante laziale dei Monti della Laga erano stati sino ad oggi solo parzialmente indagati. Si tratta in particolare del sito umido di Fosso Cerruglia, del vallone di Selva Grande e delle praterie montane e subalpine di Macchie Piane-Pizzo di Sevo. Dalle diverse campagne di rilevamento floristico condotte nel periodo 1997-2000 sono emersi interessanti risultati che hanno portato alla segnalazione di un'entità nuova per la catena appenninica, di 11 entità nuove per il Lazio, di 13 taxa non ancora indicati per i Monti della Laga e nuove stazioni di altre 80 specie già note per il territorio, alcune delle quali rare o rarissime almeno nel Lazio. Per le specie più interessanti, inoltre, vengono forniti dati sugli aspetti distributivi a livello regionale ed una caratterizzazione in chiave fitosociologica.

Kew words: Central Apennines, Flora, Italy, Laga Mountains.

Owing to their particular geological, geo-morphological and bioclimatic features, the Laga Mountains have a very peculiar flora and vegetation compared to those of other Central Apennine mountainous chains. The Laga district is a very important conservation site for many boreal or artic-alpine species, which often reach the southern border of their distributional area precisely in this part of the Italian Peninsula. territory find. The Laga wetlands and subalpine pastures are environments which are particularly rich in these rare species.

The Flora and the Vegetation of the Laga Mountains have been the object of several studies over the last fifty years. Phytosociological investigation were carried out by LONGHITANO & RONSISVALLE (1974), PEDROTTI (1981; 1982a; 1982b) and HRUSKA (1988). Floristic studies were carried out by ZODDA (1953; 1957-1964; 1967) in the "Laga teramana" zone and by TONDI & PLINI (1995) in the Latium side of the Laga The briological flora of the whole Laga territory was investigated by ALEFFI et al. (1997). For a complete reference list see TONDI & PLINI (1995) and CONTI (1998).

During the 1997 excursion of the Italian Botanical Society (S.B.I.), some of the most interesting sites of the the Tyrrhenian district of the Laga Mountains

were visited. Following this excursion, which had recorded, several new species for the Flora of the area, a fine-grained floristic investigation was performed in some important sites which had previously been studied or not at all.

Among these sites of particular interest were:

— F.so di Selva Grande (a long and deep valley E-W oriented with respect to the main watershed to flow into the Tronto river).
— Macchie Piane mountain plain and Pizzo di Sevo subalpine pastures.
— F.so Cerruglia wetlands.

Study area

The Laga Mountains ridge (fig. 1), which is nearly 24 km long, separates the Amatrice and Campotosto basins (to the west) from the Teraman sub-Apennines (to the east). Unlike the other mountainous groups of Central Italy which

Fig. 1 — Location of the three main sites in which the field- work was performed: 1) Macchie Piane and Pizzo di Sevo pastures; 2) Selva Grande valley; 3) Fosso Cerruglia wetlands. (The size of the circles are proportionated to the largeness of the sites).

are mainly formed by calcareous rocks, the Laga mountains are composed of a torbiditic succession of Messinian age known as "Laga Flysch" characterized by arenaceous, pelithic-arenaceous and marly litofacies. With four summits exceeding 2400 m (M. Gorzano, 2458, Cima Lepri 2445, Pizzo di Sevo, 2419 and Pizzo di Moscio, 2411) this mountain chain is the highest sandstone massif of the Apennines. The low permeability of the Laga sandy-clayey complex leads to mainly surface water flows, and these are the primary cause of the accelerated erosion of the slopes.

From a bioclimatic point of view (fig. 2) the Latium side of the Laga mountains falls completely within the Temperate Region (BLASI, 1994). In particular the Pizzo di Sevo subalpine pastures belong to the axeric and cold sub-region (mean annual temperature is 5,5°C and that of the coldest month –4°C) while the F.so Cerruglia, the F.so di Selva Grande and the Macchie Piane areas belongs to the mesaxeric-axeric subregion (mean annual temperature is 9°C and that of the coldest month –2.1°C).

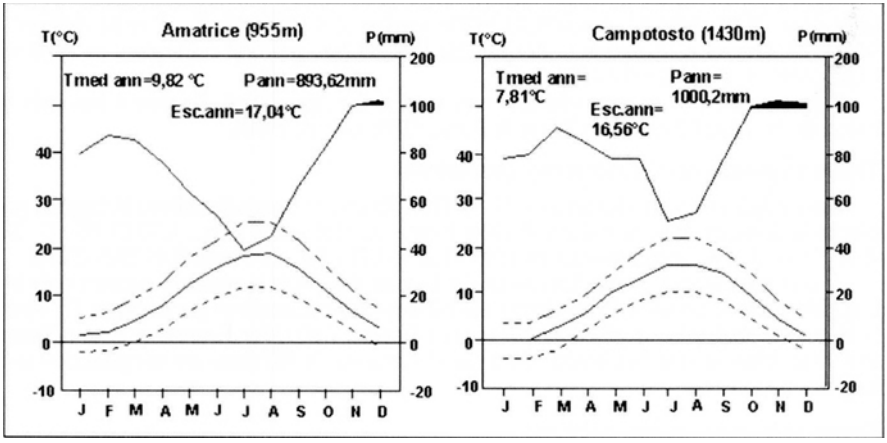

Fig. 2 — Umbro-Thermic diagrams of the stations located in the proximity of the study area.

DATA AND METHODS

The field-work was carried out during the period 1997-2000. For the identification of species, numerous herbarium specimens (RO) were examined, specifying, when necessary, whether the specimens belonged to one of the following collections: *Herb. Generale* (HG), *Herb. Horti Romani* (HR) and *Herb. Anzalone* (HA). Reference was made to GREUTER et al. (1984-89), ANZALONE (1996), TUTIN et al. (1964-80, 1993) and PIGNATTI (1982) for both the species nomenclature and the taxonomical classifications follows For chorological forms reference was made to PIGNATTI (1982). In the floristic list shown below, the species which are new for the flora of Latium are marked with an asterisk (*) while those which are new for the Laga Mountains are indicated by two asterisks (**). Finally, new records of already known species in the Laga Mountains are marked (◊).

A great many of the *exsiccata* (catalogued with LG...) are deposited in the Herbarium Tondi, in Rome.

In order to provide synecological information, each species was also classified on the basis of both the type of environment in which it most frequently occurs within the study area and its syntaxonomical role. This latter was obtained by summarizing informations in RIVAS-MARTINEZ et al. (1984), RAMEAU (1989), OBERDORFER (1992, 1994), GERDOL & TOMASELLI (1993), MUCINA et al. (1993), BIONDI et al.(1995), SCOPPOLA et al. (1995).

Floristic list

** **Equisetum fluviatile** L.

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16), pozza temporanea (secca solo dalla fine di luglio a settembre), m 1280 s.l.m., 5.VII.1997, *G. Tondi* (LG 2521-2522-2523).

This circumboreal species was not found in Latium for over a century [TENORE & GUSSONE (1842) for Picinisco and FALQUI (1899) for Lake Posta Fibreno]. However, in 1938 it was observed by BRILLI-CATTARINI (*in litt.*)near Castelfusano (Rome). On the Laga Mountains, we collected it in some temporary puddles along F.so Cerruglia.

Salix foetida Schleich.

Agro Nero di Illica (Accumoli - RI) (UTM: UH 61.30), ampia radura umida in faggeta, m 1450 s.l.m., 3.VI.1998, *G. Tondi* (LG 3080); *ibidem*, 2.V.1999, *G. Tondi et M. Silvetti* (LG 3131); M. Gorzano (Amatrice - RI) (UTM: UH 68.20), praterie subalpine, m 2100 s.l.m, 13.IX.1999, *R. Di Pietro* (LG 3060).

New stations of a species which is very rare in the Apennines. To date it has only been found in the Laga Mountains (TONDI & PLINI, 1995; CONTI, 1998).

Thesium pyrenaicum Pourret subsp. **pyrenaicum**

F.so di Selva Grande (Amatrice - RI) (UTH: UH 66.21), lungo il sentiero in faggeta, poche centinaia di metri dopo la radura di Piani Fonte, m 1580-1600 s.l.m., 6.VII.1997, *G. Tondi* (LG 2583); *ibidem*, prato sassoso, m 1580 s.l.m., 6.VII.1997, *G. Tondi* (LG 2725-2728).

A very rare species in the Apennines. In Latium this plant is certainly present only in the Laga Mountains (TONDI & PLINI, 1995); the bibliographic quotations pertinent to *Th. alpinum* L. should probably be ascribed to this entity [TENORE (1831) for Frosolone above Picinisco, and VERI (1988) for the Simbruini Mountains], however, in RO there are not exsiccata to confirm this hypothesis.

** **Rumex patientia** L. subsp. **patientia**

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16), prati umidi nitrofili di fronte alla casa cantoniera, lungo la S.S. 577 verso Campotosto (AQ), m 1280 s.l.m., 22.IX.1996, *G. Tondi* (LG 2351); *ibidem*, 23.VII.1997, *G. Tondi* (LG 3014).

A very rare species in Latium, not recorded for the Laga Mountains.

◊ **Arenaria leptoclados** (Rchb.) Guss.

F.so Castellano, loc. Cardito (Amatrice - RI) (UTM:UH 62.15)

◊ **Stellaria media** (L.) Vill. subsp. **cupaniana** (Jord. & Fourr.) Nyman

Strada per Macchie Piane (Amatrice - RI) (UTM:UH 61.25), F.so Cerruglia (Amatrice - RI) (UTM:UH 63.16).

Stellaria graminea L.

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16), nella torbiera, 500 m a SE della casa cantoniera lungo la S.S. 577 verso Campotosto (AQ), m 1280 s.l.m., 5.VII.1997, *G. Tondi* (LG

2506); ibidem, 23.VII.1997, *G. Tondi* (LG 2569); *ibidem*, nei prati umidi e torbosi sotto i rimboschimenti di Cima delle Serre (UTM: UH 64.17), m 1300 s.l.m., 14.VI.1998, *G. Tondi et Minutillo* (LG 3101-3102).

Prior to our discovery of a specimen in a small peat-bog along F.so Cerruglia, this species had been found only on the Simbruini Mountains in Latium (VERI, 1988).

** **Cerastium cerastoides** (L.) Britton

Pizzo di Sevo (Amatrice - RI) (UTM: UH 64.25), valletta nivale, con *Potentilla brauneana*, *Salix herbacea*, *Gnaphalium supinum*, ecc., m 2200 s.l.m., 4.VII.1998, *S. Ballelli* (CAME, Herb. Tondi LG 2941).

New for the Laga Mountains, this extremely rare arctic-alpine species of snowbed meadows and of high altitude pastures is sporadically to be found along almost all of the calcareous Central Apennines: Sibillini Mountains (*leg. Marchesoni* [CAME] in BALLELLI & PEDROTTI, 1993a, 1993b), Gran Sasso (TAMMARO, 1983), Majella (TAMMARO, 1986), Simbruini Mountains (VERI, 1988), as far as Mainarde, where it reaches the southern boundary of its distribution area (CONTI, 1995; LUCCHESE, 1995).

◊ **Cerastium thomasii** Ten.

Pizzo di Sevo (Amatrice - RI) (UTM: UH 63.25).

** **Silene rupicola** A. & E. Huet

F.so di Selva Grande (Amatrice - RI) (UTM: UH 65.21), macereti e pietraie lungo il sentiero verso Colle del Vento, m 1400 s.l.m., 6.VII.1997, *G. Tondi* (LG 2584).

A rare and localized rupicolous species in Latium, The recent taxonomical notes about *Silene* sect. *saxifragoides* in peninsular Italy revalued this entity, to which many specimen from Central Italy known sub *S. parnassica* Boiss. & Spruner should be referred (GUBELLINI et al., 2002). In the Laga Mountains this species colonize the shadowy cliffs and the stony slopes with marly detritus (~1400 m a.s.l.).

◊ **Dianthus sylvestris** Wulfen subsp. **longicaulis** (Ten.) Greuter et Burdet

Pizzo di Sevo (Amatrice - RI) (UTM: UH 63.25).

◊ **Caltha palustris** L. subsp. **palustris**

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16).

◊ **Ranunculus velutinus** Ten.

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16).

* **Ranunculus marsicus** Guss. et Ten.

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16), nella torbiera, 500 m a SE della casa cantoniera lungo la S.S. 577 verso Campotosto (AQ), m 1280 s.l.m., 1.VI.1997, *G. Tondi* (LG 2995); *ibidem*, 23.VII.1997, *G. Tondi et F. Minutillo* (LG 2580); *ibidem*, nei prati umidi presso la cantoniera, m 1280 s.l.m., 14.VI.1998, *G. Tondi* (LG 3098).

An endemic species rare in the C. Apennines which to date has been found only in the wet meadows on calcareus soil in Abruzzo (CONTI, 1998) and Marche [in the Sibillini Mountains, sub *R. auricomus* L. (CORTINI PEDROTTI et al., 1973.)], together with *Leontodon autumnalis* L., *Deschampsia caespitosa* (L.) Beauv., *Veronica scutellata* L., *Alopecurus pratensis* L., *Filipendula ulmaria* (L.) Maxim., etc. It was found for the first time on the Laga Mountains in the wet pastures and peat-bogs of the F.so Cerruglia.

Ranunculus flammula L.

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16), nella torbiera, 500 m a SE della casa cantoniera lungo la S.S. 577 verso Campotosto (AQ), m 1280 s.l.m., 23.VII.1997, *G. Tondi* (LG 2659-3082-3083-3084).

In Italy this species becomes progressively rare moving southwards. Today it has been confirmed in Central Italy at only a few sites in Abruzzo (CONTI, 1998; CONTI et al., 1999), Umbria [in the Sibillini Mountains (CORTINI PEDROTTI et al., 1973.)] and Latium [in the Pantani di Accumoli (PIGNATTI, 1982; LATTANZI & SCOPPOLA, 1992) and in the Piani di Rascino (*leg. Anzalone*, 1982, RO, in HA)].

* **Thalictrum simplex** L.

F.so Castellano, loc. Cardito (Amatrice - RI) (UTM: UH 62.15), lungo la S.S. 577 verso Campotosto (AQ), prato umido e torboso, m 1350 s.l.m., 4.VII.1998, *G. Tondi* (LG 3074-3075).

Cardamine pratensis L. subsp. **granulosa** (All.) Arcang.

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16), nella torbiera, 500 m a SE della casa cantoniera lungo la S.S. 577 verso Campotosto (AQ), m 1280 s.l.m., 1.VI.1997, *G. Tondi* (LG 2527); *ibidem*, 23.VII.1997, *G. Tondi et F. Minutillo* (LG 2576).

It occurs widely in the wet and peat meadows of the F.so Cerruglia biotope. It had been already found in Abruzzo near Lake Campotosto (FIORI, 1929; ZODDA 1953-1967); in Latium only some exsiccata of this species, going back to the nineteenth century, are available (Selva di Terracina, *leg. Chiovenda*, 1894, in BOLO; Terracina, *leg. Pappi*, 1894, RO! [HR]).

Brassica gravinae Ten.

F.so di Selva Grande (Amatrice - RI) (UTM: UH 66.21), brecciaio marnoso verso M. Doro, m 1500 s.l.m., 15.VI.1997, *G. Tondi* (LG 3041); *ibidem* (UTM: UH 67.21), lungo l'alveo del F.so Gorzano tra le rocce, m 1550 s.l.m., 6.VII.1997, *G. Tondi* (LG 2635).

This species was collected at Selva Grande. In Latium this plant is confirmed only in the Laga Mountains and in the Meta and Mainarde Mountains (BASSANI, 1994; CONTI, 1992, 1995). In addition, however, there are in RO! some old specimens, collected in the Simbruini Mountains, at Mount Cotento, (*leg. Brizi et Cerulli*, 1890). There is a record, also, for the Ernici mountains (FALQUI, 1899, at Pizzo Deta), however, there are no exsiccata to confirm this in RO.

* **Sedum monregalense** Balbis

Pizzo di Sevo (Amatrice - RI) (UTM: UH 63.25), prateria sassosa, m 1900 s.l.m., 28.IX.1995, *G. Tondi* (LG 2411); *ibidem*, prateria alpina, ca. m 2200, 4.VII.1998, *G. Tondi* (LG 3110).

A new species for Latium. It has also been found in Abruzzo, at Pizzo di Sevo (PARLATORE, 1890), Montagna dei Fiori, Pizzo di Moscio and, at lower altitudes, at Langamella and Martese Woods and at Gran Sasso, near Pietracamela (ABBATE, 1903; ZODDA, 1967; CONTI, 1998).

Saxifraga oppositifolia L. subsp. **oppositifolia**

F.so di Selva Grande (Amatrice - RI) (UTM: UH 65.21), macereti e rupi lungo il sentiero verso M. Gorzano, m 1400 s.l.m., 6.VII.1997, *G. Tondi* (LG 2998).

Saxifraga oppositifolia L. subsp. **speciosa** (Dorfler et Hayek) Engler et Irmscher

Pizzo di Sevo (Amatrice - RI) (UTM: UH 63.25), macereti e pietraie, ca. m 1850 s.l.m., 4.VII.1998, *G. Tondi* (LG 3000).

Recent herbarium research (BRILLI-CATTARINI, *in litt.*) established that the existing records of *S. latina* (N. Terracc.) Hayek for Teminillo, Duchessa and Simbruini Mountains and Picinisco Mounts should be ascribed to *Saxifraga oppositifolia* L. subsp. *oppositifolia*, whereas subsp. *speciosa* is today confirmed in Latium only in the Laga (TONDI & PLINI, 1995).

Filipendula ulmaria (L.) Maxim. subsp. **denudata** (J. et C. Presl) Hayek

F.so Cerruglia (Amatrice - RI) (UTM: UH 62.16), prato umido presso la casa cantoniera lungo la S.S. 577 verso Campotosto (AQ), m 1280 s.l.m., 22.IX.1996, *G. Tondi* (LG 2329-2330-2331-2332); *ibidem* (UTM: UH 63.16), nella torbiera, 500 m a SE della casa cantoniera lungo la S.S. 577 verso Campotosto (AQ), m 1280 s.l.m., 23.VII.1997, *G. Tondi* (LG 2689-2690-2691).

Common in the F.so Cerruglia biotope. In Latium this species has also been found in the Velino Upper Valley, between Posta and Cittareale (VENANZONI, 1983), in Rieti (ANZALONE, *pers. obs.*) and in the Gole del Velino, between Antrodoco and Cittareale (LATTANZI, *pers. obs.*). A bibliographic indication for Saracinesco, in the Simbruini Mountains (VERI, 1988) has not been confirmed in the recent past.

◊ **Rosa pimpinellifolia** L.

F.so di Selva Grande (Amatrice - RI) (UTM: UH 66.21).

◊ **Rosa agrestis** Savi

Strada per Macchie Piane (Amatrice - RI) (UTM:UH 61.25).

◊ **Geum rivale** L.

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16).

◊ **Potentilla hirta** L.

F.so di Selva Grande, Piani Fonte (Amatrice - RI) (UTM: UH 66.21).

Potentilla brauneana Hoppe ex Nestler

Pizzo di Sevo (Amatrice - RI) (UTM: UH 64.25), valletta nivale con *Cerastium cerastoides*, *Salix herbacea*, *Gnaphalium supinum*, ecc., m 2200 s.l.m., 4.VII.1998, *S. Ballelli* (CAME, Herb. Tondi LG 2975).

This snowbed meadows species was already known for Latium (BALLELLI & FRANCALANCIA, 1995) and is a very good example of distribution area disjunction in the Central Apennines. it has also been found in Abruzzo, at Gran Sasso [ZODDA (1967), on the Corno Grande, and FURRER & FURNARI (1960), on Mount Portella].

Potentilla erecta (L.) Rauschel

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16), nella torbiera, 500 m a SE della casa cantoniera lungo la S.S. 577 verso Campotosto (AQ), m 1280 s.l.m., 1.VI.1997, *G. Tondi* (LG 2993); *ibidem*, 23.VII.1997, *G. Tondi et F. Minutillo* (LG 2567-2568-2662-2744); *ibidem* (UTM: UH 64.17), nei prati umidi e torbosi sotto i rimboschimenti di Cima delle Serre, ca. m 1300 s.l.m., 14.VI.1998, *G. Tondi et Minutillo* (LG 3106-3107).

Frequent in the F.so Cerruglia peat meadows, this species has been found in Latium only on the Ernici Mountains (*leg. Béguinot*, 1895, in RO! [HR]) and in the Pantani di Accumoli (LATTANZI, *pers. obs.*).

◊ **Alchemilla flabellata** Buser

Pizzo di Sevo (Amatrice - RI) (UTM: UH 63.25).

* **Alchemilla marsica** Buser

F.so di Selva Grande (Amatrice - RI) (UTM: UH 66.21), nella faggeta lungo il sentiero dopo Piani Fonte, ca. m 1550 s.l.m., 6.VII.1997, *B. Anzalone et G. Tondi* (RO, Herb. Tondi LG 3015).

A new species for Latium, this extremely rare C. Apennine endemic species is also sporadicly present in the Abruzzo National Park, at Coppo dell'Orso near Villavallelonga (*locus classicus*, for L. Grande collection [1907]) and Valle dell'Inferno (CONTI, 1998).

◊ **Alchemilla coriacea** Buser

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16).

◊ **Alchemilla straminea** Buser

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16).

◊ **Astragalus penduliflorus** Lam.

F.so di Selva Grande (Amatrice - RI) (UTM: UH 66.21).

◊ **Oxytropis campestris** (L.) DC.

Pizzo di Sevo (Amatrice - RI) (UTM: UH 63.25).

◊ **Oxytropis pilosa** (L.) DC.

Pizzo di Sevo a Macchie Piane (Amatrice - RI) (UTM: UH 63.25).

Vicia dumetorum L.

Macchie Piane (Amatrice - RI) (UTM: UH 62.26), in un canalone sotto il pianoro, esp. N, ca. m 1500 s.l.m., 4.VII.1998, *F. Minutillo* (LG 2922).

A very rare species in Latium (ANZALONE, 1994) where it occurs only in the Colli Albani (M. Artemisio, *leg. Bazzichelli* and *leg. Cacciato*, in RO) and the Aurunci Mountains (MORALDO et al., 1990).

◊ **Vicia pisiformis** L.

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16).

Lathyrus linifolius (Reichard) Bässler

Macchie Piane (Amatrice - RI) (UTM: UH 63.26), ai margini della faggeta verso Pizzo di Sevo, m 1700 s.l.m., 4.VII.1998, *G. Tondi* (LG 2900-2901-2902).

New station of a very rare species in Latium. To date it has only been found in Mount Rufeno (SCOPPOLA & PICARELLA, 1993).

* **Trifolium hybridum** L. subsp. **hybridum**

F.so Castellano, loc. Cardito (Amatrice - RI) (UTM: UH 62.15), lungo la S.S. 577 verso Campotosto (AQ), prato umido e torboso, m 1350 s.l.m., 4.VII. 1998, *G. Tondi et F. Minutillo* (LG 3072-3073).

** **Trifolium dubium** Sibth.

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16), prati umidi, m 1300 s.l.m., 4.VII.1998, *F. Minutillo* (LG 2977).

* **Geranium pusillum** L.

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16), prati freschi presso la casa cantoniera, lungo la S.S. 577 verso Campotosto (AQ), 23.VII.1997, *G. Tondi* (LG 2665).

◊ **Geranium nodosum** L.

F.so di Selva Grande (Amatrice - RI) (UTM: UH 66.21).

Viola canina L. subsp. **montana** (L.) Hartman

Pizzo di Sevo (Amatrice - RI) (UTM: UH 63.25), nella brughiera subalpina a *Vaccinium*, ca. m 1900 s.l.m., 4.VII.1998, *S. Ballelli* (CAME, Herb. Tondi LG 2904).

A very rare species in the Central Apennines, where its presence is confirmed only in Latium (SCOPPOLA & CAPORALI, 1999) and in Umbria [Sibillini Mountains, at Pian Grande, sub

V. canina L. (CORTINI PEDROTTI et al., 1973.; PEDROTTI, 1982); plain woodlands near Gubbio (BALLELLI, 1988)]. Today the Latial and Umbrian sites are the southern boundary of its italian distribution area.

Epilobium obscurum Schreber

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16), nei prati umidi e ai bordi del ruscello, presso la casa cantoniera lungo la S.S.577 verso Campotosto (AQ), m 1280 s.l.m., 22.IX.1996, *G. Tondi* (LG 2335-2336); *ibidem*, 6.X.1996, *P. Plini* (LG 2333-2334); *ibidem*, nella torbiera, 500 m a SE della casa cantoniera lungo la S.S. 577 verso Campotosto (AQ), m 1280 s.l.m., 23.VII.1997, *G. Tondi* (LG 2669-2670-2671).

This find confirms the presence of the species in Latium, where it had previously been recorded at Filettino (Simbruini Mountains, CUFODONTIS, 1939) and in Rome and Frosinone (ANZALONE, *in litt.*). However the exsiccata are not to be found in RO, except, maybe, for ambiguous Sanguinetti specimens from the outskirts of Rome.

◊ **Chaerophyllum aureum** L.

F.so Cerruglia (Amatrice - RI) (UTM: UH 64.16).

** **Ligusticum lucidum** Miller subsp. **cuneifolium** (Guss.) Tammaro

F.so di Selva Grande (Amatrice - RI) (UTM: UH 65.21), macereti e pietraie lungo la strada ENEL da S. Cuore alla chiusa, m 1350 s.l.m., 6.VII.1997, *G. Tondi* (LG 2582).

This rare C. Apennines endemic species had previously been found by STEINBERG (1952) and PETRICCIONE (1993) in the Duchessa Mountains, by VERI (1988) in Vallepietra (Simbruini Mountains) and by CONTI (1992) in the Mainarde Mountains.

◊ **Heracleum sphondylium** L. subsp **orsinii** (Guss.) H. Neumayer

F.so di Selva Grande (Amatrice - RI) (UTM: UH 65.21).

◊ **Heracleum sphondylium** L. subsp **ternatum** (Velen.) Brummitt

F.so di Ortanza (Amatrice - RI) (UTM: UH 65.19), F.so Cerruglia (Amatrice - RI) (UTM:UH 63.16), F.so di Selva Grande (Amatrice - RI) (UTM: UH 65.21)

◊ **Tordylium maximum** L.

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16).

◊ **Laserpitium gallicum** L.

F.so di Selva Grande (Amatrice - RI) (UTM: UH 67.21).

◊ **Torilis japonica** (Houtt.) DC.

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16).

◊ **Pyrola minor** L.

Pizzo di Sevo (Amatrice - RI) (UTM: UH 63.25).

◊ **Gentiana dinarica** G. Beck

F.so di Selva Grande (Amatrice - RI) (UTM: UH 65.21).

Menyanthes trifoliata L.

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16), prati umidi lungo le sponde del torrente, sotto Salix alba, m 1300 s.l.m., 5.VII.1997, *G. Tondi* (LG 3090); *ibidem*, nei prati umidi lungo il torrente, nei pressi della torbiera 500 m SE della casa cantoniera lungo la S.S. 577 verso Campotosto (AQ), m 1280 s.l.m., 14.VI.1998, *G. Tondi et F. Minutillo* (LG 3091).

A very rare species in the Apennines, of which the presence in Latium is confirmed only in the Laga Mountains, at "Le Vespare" (BALLELLI & FRANCALANCIA, 1995) and in the F.so Cerruglia biotope. Till 1935 it was also known in the Pontine Marshes, between Sermoneta, Bassiano and Sezze (*Béguinot*, 1895, in RO! [HR]).

◊ **Galium elongatum** C. Presl

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16).

Cruciata pedemontana (Bellardi) Ehrnd.

Pizzo di Sevo (Amatrice - RI) (UTM: UH 63.25), cespuglieto a *Juniperus communis* lungo il Tracciolino di Annibale, m 1800 s.l.m., 5.VII.1997, *F. Minutillo* (LG 2996).

A rare and localized species in Latium, the presence of which today is only confirmed for Prenestini Mountains (GUARRERA & LATTANZI, 1990), Simbruini Mountains (VERI, 1988), Terminillo (MONTELUCCI, 1951-1952) and Picinisco Mounts (CONTI, 1995).

Cuscuta planiflora Ten.

F.so di Selva Grande (Amatrice - RI) (UTM: UH 66.21), versante N del Colle della Pelara, prato arido e sassoso, con detrito marnoso, m 1450 s.l.m., 6.VII.1997, *G. Tondi* (LG 1133).

◊ **Onosma echioides** L.

F.so di Selva Grande (Amatrice - RI) (UTM: UH 66.21).

◊ **Thymus praecox** Opiz subsp. **polytrichus** (Borbás) Jalas (= *Th. kerneri* Borbás)

Pizzo di Sevo (Amatrice - RI) (UTM: UH 63.25).

Veronica acinifolia L.

F.so Castellano, loc. Cardito (Amatrice - RI) (UTM: UH 62.15), lungo la S.S. 577 verso Campotosto (AQ), pratelli aridi e sabbiosi, m 1350 s.l.m., 4.VII.1998, *G. Tondi et F. Minutillo* (LG 3023).

** **Euphrasia italica** Wettst.

Pizzo di Sevo (Amatrice - RI) (UTM: UH 63.25), pascolo subalpino discontinuo, m 1950 s.l.m., 24.IX.1995, *G. Tondi* (LG 2381); ibidem, nella brughiera subalpina a *Vaccinium*, ca. m 1900 s.l.m., 4.VII.1998, *G. Tondi* (LG 3014).

Rare in the Latium flora, this species is reported for the first time on the Laga Mountains.

◊ **Plantago argentea** Chaix

F.so di Selva Grande (Amatrice - RI) (UTM: UH 65.21).

Valerianella locusta (L.) Laterrade

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16).

Succisa pratensis L.

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16), prati umidi presso la casa cantoniera lungo la S.S. 577 verso Campotosto (AQ), m 1280 s.l.m., 22.IX.1996, *G. Tondi* (LG 2345-2423-2428-2435-2436-2437); *ibidem* (UTM: UH 64.17), nei prati umidi e torbosi sotto i rimboschimenti di Cima delle Serre, ca. m 1300 s.l.m., 14.VI.1998, *G. Tondi et Minutillo* (LG 3005-3006).

The find of this species at Campotosto (CECCHETANI, 1907) has not been confirmed recently because the extensive ancient Campotosto peat-bog was covered by the present Campotosto lake from the late 1930's onwards. At present, this species occurs in the Laga Mountains only at the Fosso Cerruglia site and it is also very rare in Latium where it is confirmed only in the Circeo Forest and the Fondi Plain (MORALDO et al., 1990).

Gnaphalium uliginosum L. var. **prostratum** (Fiori) Fiori

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16), in una pozza vicino alla torbiera, 500 m a SE della casa cantoniera lungo la S.S. 577 verso Campotosto (AQ), m 1300 s.l.m., 23.VII.1997, *F. Minutillo* (LG 2575); *ibidem* (UTM: UH 64.17), nei prati umidi e torbosi sotto i rimboschimenti di Cima delle Serre, ca. m 1300 s.l.m., 14.VI.1998, *G. Tondi et F. Minutillo* (LG 3116).

In recent times this species has been found in Latium only at Lake Canterno (*vidit* ANZALONE & LATTANZI) and in the Pantani di Accumoli (*leg. Brilli-Cattarini*, 1991, in PESA). All the other records from the 19th century and the first ten years of the 20th (exsiccata in RO!) have not been confirmed recently. Two years ago it has been also collected at Campotosto by CONTI et al.(1999).

* **Matricaria discoidea** DC.

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16), nei prati presso la casa cantoniera e lungo la strada per lo stazzo, m 1280 s.l.m., 1.VI.1997, *G. Tondi* (LG 2456); *ibidem*, 23.VII.1997, *G. Tondi* (LG 2748-2749-2750).

Although this species was considered as probably extinct in Latium (ANZALONE, 1996), but this record confirms that this is not the case.

◊ **Carduus carlinifolius** Lam.

Pizzo di Sevo (Amatrice - RI) (UTM: UH 63.25); Macchie Piane (Amatrice - RI) (UTM: UH 63.25).

Carduus affinis Guss. subsp. **affinis**

Pizzo di Sevo (Amatrice - RI) (UTM: UH 63.25), pascolo nitrofilo, in una conca utilizzata come ricovero per le greggi, m 1900 s.l.m., 28.VI.1998, *G. Tondi* (LG 3001).

In Latium this species is known only for Pantani di Accumoli (LATTANZI & SCOPPOLA, 1992) and Terminillo (MONTELUCCI, 1951-1952).

* **Carduus majellensis** Huter, Porta et Rigo

Pizzo di Sevo (Amatrice - RI) (UTM: UH 63.25), pratello nitrofilo, in una conca utilizzata come ricovero per le greggi, con *Carduus affinis* e *C. chrysacanthus,* m 1850 s.l.m., 4.VII.1998, *S. Ballelli et G. Tondi* (LG 2973).

This is the natural hybrid of *C. affinis* Guss. and *C. chrysacanthus* Ten.; to date it has been found only at high altitudes in the Abruzzo Apennines (FIORI, 1929; ZODDA, 1967).

◊ **Cirsium lobelii** Ten.

Cardito - F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16).

◊ **Centaurea scabiosa** L. subsp. **scabiosa**

Cornillo Nuovo (Amatrice - RI) (UTM: UH 63.18).

* **Centaurea jacea** L. subsp. **angustifolia** (Schrank) Gugler var. **forojuliensis** (Poldini) Barbo

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16), nella torbiera, 500 m a SE della casa cantoniera lungo la S.S. 577 verso Campotosto (AQ), m 1280 s.l.m., 23.VII.1997, *G. Tondi* (LG 2565).

This is to be considered as a new species for Latium, although there is still some controversy over its taxonomical rank.

* **Scorzonera aristata** Ramond

Pizzo di Sevo (Amatrice - RI) (UTM: UH 63.25), in un canalone erboso, esp. W, m 1700 s.l.m., *F. Minutillo* (LG 2921).

A very rare species in the Central Apennines. Typically this species is found in *Vaccinium* subalpine heath, formation growing on acid soil, which is very rich in humus. The Laga Mountains mark the southern boundary of its distribution area.

◊ **Hypochoeris cretensis** (L.) Bory et Chaub.

Pizzo di Sevo (Amatrice - RI) (UTM: UH 63.25); Cardito - F.so Cerruglia (Amatrice – RI) (UTM: UH 63.16).

◊ **Taraxacum alpinum** (Hoppe) Hegetschw. [= *T.apenninum* (Ten.) Ten.]

Pizzo di Sevo (Amatrice - RI) (UTM: UH 63.25).

◊ **Lactuca perennis** L.

F.so di Selva Grande (Amatrice - RI) (UTM: UH 65.21).

◊ **Crepis biennis** L.

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16).

◊ **Crepis lacera** Ten.

F.so di Selva Grande (Amatrice - RI) (UTM: UH 65.21).

◊ **Hieracium lactucella** Wallr. subsp. **nanum** (Scheele) P.D. Sell

Pizzo di Sevo (Amatrice - RI) (UTM: UH 63.25).

Allium oleraceum L.

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16), pendio arido, su terreno marnoso-arenaceo, m 1300 s.l.m., 23.VII.1997, *G. Tondi* (LG 2558-2559); *ibidem* (UTM: UH 64.16), nei prati lungo la strada per lo stazzo, 1 km SE della casa cantoniera lungo la S.S. 577 verso Campotosto (AQ), m 1350 s.l.m., *G. Tondi* (LG 2717).

There is some doubt as to whether this species is today part of the flora of Latium. There have been some claimed findings, for example at Simbruini, Lucretili and Ernici Mountains, but the proof for these was not conclusive.

◊ **Juncus compressus** Jacq.

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16).

◊ **Cynosurus effusus** Link (= *C. elegans* Desf. subsp. *obliquatus* (Link) Battand. et Trabut)

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16).

◊ **Festuca pratensis** Hudson

F.so di Selva Grande (Amatrice - RI) (UTM: UH 65.21).

◊ **Glyceria notata** Chevall.

F.so Castellano, loc. Cardito (Amatrice - RI) (UTM: UH 62.15).

◊ **Catabrosa aquatica** (L.) P. Beauv.

F.so Castellano, loc. Cardito (Amatrice - RI) (UTM: UH 62.15).

◊ **Bromus racemosus** L.

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16).

Apera interrupta (L.) P. Beauv.

F.so Cerruglia (Amatrice - RI) (UTM: UH 62.15), incolto arido su arenaria, sotto i rimboschimenti di Cima delle Serre, ca. m 1300 s.l.m., 31.V.1998, *F. Minutillo* (LG 2919).

This species is reported for the first time for the Laga Mountains and this finding confirms its presence in Latium. A record for the species exists for Mount Scalambra (BÉGUINOT, 1897b), but no exsiccata were found in RO.

◊ **Deschampsia caespitosa** (L.) P. Beauv. subsp. **caespitosa**

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16).

◊ **Anthoxanthum nipponicum** Honda (= *A. alpinum* A. & D. Löve)

Pizzo di Sevo (Amatrice - RI) (UTM: UH 63.25).

◊ **Phleum pratense** L. subsp **pratense**

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16); F.so di Selva Grande (Amatrice - RI) (UTM: UH 65.21).

* **Carex davalliana** Sm.

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16), piccola palude con *Eleocharis spp.*, presso la casa cantoniera lungo la S.S. 577 verso Campotosto (AQ), m 1280 s.l.m., 1.VI.1997, *G. Tondi* (LG 2448); *ibidem*, nella torbiera, 500 m a SE della casa cantoniera lungo la S.S. 577 verso Campotosto (AQ), m 1280 s.l.m., 23.VII.1997, *G. Tondi et F. Minutillo* (LG 2751-2752-2753); *ibidem* (UTM: UH 62.15), nei prati umidi e torbosi sotto i rimboschimenti di Cima delle Serre, ca. m 1300 s.l.m., 14.VI.1998, *G. Tondi et Minutillo* (LG 3081).

Although this species is rather common in Northern Apennine high altitude peatlands, it is very rare in the Central Apennines, where it is confirmed for only three locations: Abruzzo [Altopiano delle Rocche (BALLELLI & PEDROTTI, 1979), Umbria [Pian Grande di Castelluccio (CORTINI PEDROTTI et al., 1973)] and Marche [Pian Perduto (BALLELLI et. al., 1981)].

◊ **Carex otrubae** Podp.

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16).

Carex acuta L.

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16), prato umido ai bordi del ruscello, presso la casa cantoniera lungo la S.S. 577 verso Campotosto (AQ), m 1280 s.l.m., 22.IX.1996, *G. Tondi* (LG 2457-2462); ibidem, nella torbiera, 500 m a SE della casa cantoniera lungo la S.S. 577 verso Campotosto (AQ), m 1280 s.l.m., 23.VII.1997, *G. Tondi et F. Minutillo* (LG 2754-2755-2756).

Records exist for this species for many wet areas of the Central and Southern Apennines. All records for Latium are from the nineteenth century (Pontine Marshes at the Circeo "ad ripas fluviorum pontinorum" *leg. Fiorini-Mazzanti*, in RO! [HR]; Terracina [BÉGUINOT, 1897a]; Lake Fondi [TENORE, 1831-42]; Picinisco Mounts at the Schioppaturo [CONTI, 1995 from TENORE & GUSSONE, 1842]) and have not been confirmed recently.

◊ **Carex ericetorum** Pollich

F.so di Selva Grande (Amatrice -RI) (UTM: UH 66.21).

◊ **Carex digitata** L.

Pizzo di Sevo (Amatrice - RI) (UTM: UH 63.26).

* **Carex tumidicarpa** Anderss. (= *C. demissa* Hornen.)

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16), nella torbiera, 500 m a SE della casa cantoniera lungo la S.S. 577 verso Campotosto (AQ), m 1280 s.l.m., 23.VII.1997, *F. Minutillo* (LG 2981).

This species is rather sporadic even within the Alps. This is the first record of it for the Apennines. Although we collected only one specimen, the species was identified on the basis of

some significant diagnostic features, i.e. straight stems curved at the base and considerably longer than the leaves; male spike oblique; utricles 3,5-4 mm long with a straight and smooth beak.

◊ **Carex rostrata** Stokes

F.so di Selva Grande (Amatrice - RI) (UTM: UH 66.21); F.so Cerruglia (Amatrice - RI) (UTM: UH 62.15).

Carex acutiformis Ehrh.

F.so Cerruglia (Amatrice - RI) (UTM: UH 64.16), sulle sponde del torrente, ca. m 1300 s.l.m., 31.V.1998, *F. Minutillo* (LG 2965).

The existing record of Campotosto sub *C. paludosa* Good. (CECCHETANI, 1907; MARCHETTI, 1936) has not been confirmed recently because the extensive ancient Campotosto peat-bog became covered by present-day Lake Campotosto. At the moment this species occurs in the Laga Mountains only at the Fosso Cerruglia site.

◊ **Blysmus compressus** (L.) Panzer ex Link

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16).

Eleocharis uniglumis (Link) Schultes in Schultes et Schultes fil.

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16), negli acquitrini intorno alla torbiera, 500 m a SE della casa cantoniera lungo la S.S. 577 verso Campotosto (AQ), m 1300 s.l.m., 23.VII.1997, *F. Minutillo et G. Tondi* (LG 2563-2564-2573).

This species is very rare in Latium, where at present records exist only for the Fondi Plane (MORALDO et al., 1990) and for the Circeo Forest at the "Cerasella" (ANZALONE et al., 1997).

◊ **Eriophorum latifolium** Hoppe

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16).

◊ **Dactylorhiza incarnata** (L.) Soò subsp. **incarnata**

F.so Cerruglia (Amatrice - RI) (UTM: UH 63.16).

◊ **Orchis pauciflora** Ten.

F.so Cerruglia (Amatrice - RI) (UTM: UH 64.17).

◊ **Ophrys fusca** Link

F.so Cerruglia (Amatrice - RI) (UTM: UH 64.17.

SYNECOLOGICAL FEATURES OF THE SPECIES COLLECTED

Wetlands

A temperate bioclimate charaterized by high rainfall together with a flyschoid substrate probably played a major role in the creation of environments such as the mires and peatlands, in which many boreal "acidophylous" species found refuge during the northwards withdrawal of the nordic flora after the last glacial cycle (e. g., the occurrence of *Carex davalliana, Carex tumidicarpa, Carex acuta, Menianthes trifoliata* in the mires of Fosso Cerruglia). On the basis

of the available literature (CORTINI PEDROTTI et. al., 1973; PEDROTTI, 1976; CANULLO et. al., 1988; VENANZONI, 1988), these species are absent or sporadic in other wetland areas of the central and southern Apennines while they are well represented in the northern Apennines.

Almost the entire range of species found within the Laga wetlands can be considered as included in the following three major syntaxonomical classes: *Scheuchzerio-Caricetea*, *Phragmiti-Magnocaricetea* and *Molinio-Arrhenatheretea*.

All the species typical of *Scheuchzerio-Caricetea* tend to be linked to mire vegetation types, but they can also be found within the helophytic belt of shallow pools. Within this group of species we found elements characteristic of the class (*Menianthes trifoliata*) of the order *Scheuzerietalia palustris* (*Carex rostrata*), of the order *Caricetalia davallianae* (*Eriophorum latifolius* and *Carex tumidicarpa*) and of the alliance *Caricion davallianae* (*Carex davalliana*, *Blysmus compressus*, and *Dactyloriza incarnata*). As far as *Phragmiti-Magnocaricetea* class vegetation is concerned, it is important to note that because of both the progressive increase in filling up processes of lakes and larger pools, and the drastic decrease in river flow, the riparian helophytic belt is only sporadically represented within the study area. As characteristic of *Phragmitetalia* only *Equisetum fluviatile* is found, while other elements such as *Galium palustre, Galium elongatum, Carex acutiformis* and *Carex otrubae* can be considered as "preferential" within *Magnocaricion* communities (although, the latter three especially, show a wide ecological amplitude which allows them to frequently appear as common companions within several other grassland, shrubland and riparian woodland communities). *Glyceria notata* and *Catabrosa aquatica* are on the other hand characteristic species of *Glycerio-Sparganion* (*Nasturtio-Gliceretalia*). Two endemic central-Apennine species, *Ranunculus marsicus* and *Carex flacca* subsp. *praetutiana*, can be considered as territorial differential elements of *Magnocaricion*. There are several species which belong to the *Molinio-Arrhenatheretea* grasslands wetter fringe. In this group we would include *Deschampsia caespitosa* and *Succisa pratensis* (*Molinetalia*); *Filipendula ulmaria, Geum rivale, Epilobium obscurum, Carex acuta* and *Bromus racemosus* (*Calthion*); *Juncus compressus* (*Plantagini-Prunellion*) and *Trifolium dubium* and *Stellaria graminea* which can be abundant in many *Arrhenatheretalia* communities. The var. *forojuliensis* of *Centaurea angustifolia*, which in the range of ecological variability of *Centaurea jacea* is the only element clearly linked to wet environments (BARBO & CELA RENZONI, 1998) probably also has to be included in the *Calthion* alliance.

Finally there are some species which belong to sintaxa not specifically linked to wetlands but which frequently behave as transgressive within them

For example *Potentilla erecta* (this species is considered characteristic of *Calluno-Ulicetea* but is also very commonly found in mires), *Chaerophyllum aureum* (*Galio-Urticetea*) and *Gnaphalium uliginosum* var. *prostratum* and *Veronica acinifolia* characteristics of *Nanocyperetalia.*

Mountainous pastures

Many of the grassland communities which occur mainly within the montane belt, such as *Poo violaceae-Nardetum*, *Brachypodio-Festucetum paniculatae*, *Seslerio nitidae-Brometum erecti*, *Cynosurus cristatus communities, Brizo mediae-Brometum erecti* were investigated during the floristic field-work of the present study. The species collected within the montane belt grasslands can be included in the ecological range of different sintaxa. Characteristic species of *Festuco-Brometea* are *Centaurea scabiosa, Allium oleraceum, Allium paniculatum* and *Festuca pratensis*, while *Ophrys fusca* and *Thesium pyrenaicum* are preferential of *Bromion erecti.* Worthy of note are some species known to exhibit moderaly calciphilous behaviour, such as *Laserpitium garganicum* subsp. *siculum, Onosma echioides, Crepis lacera, Ornithogalum gussonei* and *Cynosurus effusus* (*Phleo-Bromion*), *Dianthus sylvestris* subsp. *longicaulis* and *Gentiana dinarica* (*Seslerietalia tenuifoliae*), *Satureja graeca* subsp. *tenuifolia* (*Cisto-Micromerietea*) and *Arenaria leptoclados* (*Sedo-Scleranthetea*). Although these species are commonly found in most of the central Apennine limestone massifs, they are rather rare in siliceous mountain such as the Laga group and were observed only on isolated calcareous-marnose outcrops.

Finally there are a few species such as *Tordylium maximum*, *Torilis japonica* (*Galio-Alliarion*) *Valerianella locusta* (*Chenopodietalia*) and *Apera interrupta* (*Stellarietea mediae*) which, although they occur sporadically within grasslands, find their synecological optimum in sub-nitrophilous environments.

Subalpine pastures

Some *Nardetalia* preferential elements behave as typical sub-acidophilous species, for example *Alchemilla flabellata*, *Anthoxantum nipponicum*, *Scorzonera aristata Viola canina*, and *Euphrasia italica* (which might be considered as territorial characteristic of the order). Also acidophilous, but typical of the border of beech woodlands is *Cruciata pedemontana.* On the other hand *Cerastium cerastioides* (*Salicetea herbaceae*), *Potentilla brauneana* and *Taraxacum alpinum* (*Arabidion caeruleae*) are strictly limited to snowbeds. Finally species close to

the *Elyno-Seslerietea* range are *Carduus carlineifolius, Carduus affinis, Carduus majellensis, Oxytropis campestris, Oxytropis pilosa* and *Hypochoeris cretensis* (this latter is more properly to be considered as transgressive from montane belt *Phleo-Bromion* communities).

Cliffs and screes

True cliffs are very rare on the Laga Mountains because the sandy-clayey substrate does not allow wide debris conoids to develop, instead they occur in the form of limited stony deposits along water flow lines. Most of the species which occur in this type of environment i.e. *Saxifraga oppositifolia* subsp. *speciosa*, *Heracleum sphondylium* subsp. *orsinii*, *Brassica gravinae*, *Laserpitium gallicum*, *Silene multicaulis* and *Cerastium thomasii* are included in the endemic alliance of *Linario-Festucion dimorphae* (*Thlaspietea rotundifolii*). Another species which in the Apennines is often found within the talus slopes environment is *Heracleum spondylium* subsp. *ternatum*. In fact, although this latter is generally linked to *Adenostyletalia* communities, it also grows (sometimes abundantly) in those parts of the scree where a higher degree of moisture occurs. Also found on these unstable substrates were transgressive elements coming from the xerophilous fringe of both *Festuco-Brometea* (*Plantago argentea* and *Lactuca perennis*) and *Elyno-Seslerietea* (*Thymus praecox* subsp. *polytrichus*) have been found. On the other hand *Sedum monregalense* and *Silene rupicola* were found to be more typically linked to the permanent vegetation of the subvertical cliffs (*Potentilletalia caulescentis*).

Beech woods

Beech woods often include those species which, at least in the study area, tend to populate wood borders. Among such species we found some elements of *Trifolion medii* such as *Vicia dumetorum*, *Vicia pisiformis* and the rare endemic *Alchemilla marsica*, which can probably be considered as having with the role of territorial characteristic. Other "border" species may belong to *Chenopodietalia* (*Geranium pusillum*) and *Arrhenatheretalia* (*Crepis biennis*).

Two species typical of the *Quercetalia robori-petraeae* acidophylous woodlands such as *Pyrola minor* and *Lathyrus linifolius* were found within the *Veronico-Fagetum* stands. *Lathyrus linifolius*, under its previous name of *Lathyrus montanus* was utilized as a characteristic species in the diagnosis of *Lathyro-*

Quercion cerridis alliance described by SCOPPOLA & FILESI (1998) for the acidophilous substrates of the northern Latium volcanic mountain system.

Geranium nodosum is a particularly significant species in Italian peninsula woodlands. In fact, right within the Laga mountains district runs the southern boundary of the *G. nodosum* distribution area, which coincides with the southern limit of the entire *Geranio nodosi-Fagenion* sub-alliance.

Another interesting species from a syntaxonomical point of view is *Carex digitata*. This species, which in peninsular Italy exhibits a mainly northern distribution and which can be found on both sub-alkaline and sub-acid substrates, is usually considered as a characteristic element of *Querco-Fagetea* (OBERDORFER, 1994) or *Fagetalia sylvaticae* (WALLNÖFER et al., 1993). This syntaxonomical "border" role between oak and termophilous beech woods is confirmed also for the Apennines, where the species is included (UBALDI et al., 1990) in the characteristic combination of the alliance *Laburno-Ostryon*.

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Summary

In this paper the Authors show the results of a floristic research on the Laga Mountains carried out from 1997 to 2000. The field observations were made at three sites in this area which had not previously been studied: the wetlands of Fosso Cerruglia, the mountainous pastures of Fosso di Selva Grande and the subalpine pastures of Macchie Piane - Pizzo di Sevo. Among the results we report 1 species as new to the Apennines, 11 as new to Latium, and 13 as new to the Laga Mountains. Moreover, new findings of another 80 species (already known for the Laga Mountains) were found. For the most interesting species the authors supply data on aspects of the regional distribution and synecological and sintaxonomical features.