

Lichenological studies in N-Italy: new records for Lombardy

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Abstract – 41 lichens new to Lombardy were found in the Adamello Natural Park (Val Camonica). *Acarospora intricata* H. Magn., *Caloplaca xanthostigmoidea* (Räsänen) Zahlbr. and *Gyalidea fritzei* (Stein) Vezda are new to Italy. The lichen flora of Lombardy now consists of 1137 species, with an increase of 3.8%. 32% of these species are exclusive of the Alps in Italy.

Alps / Lichens / Flora

INTRODUCTION

With South Tyrol and Piedmont, Lombardy is one of the lichenologically best-known regions of Italy. The first important studies are those by Santo Garovaglio, who published more than twenty papers (Nimis, 1993). After Garovaglio, the most important contribution to the knowledge of the lichens of Lombardy is the catalogue of the province of Sondrio by Anzi (1860). Subsequently more than 200 taxa were reported by Giacomini (1936) from the Val Camonica.

The known lichen flora of Lombardy consisted of 1055 species in 1993 (NIMIS 1993). Ten years later (Nimis & Martellos, 2003) it rose to 1095 species, with an increase of 40 taxa (3.8%).

In a recent floristic survey of the Adamello Natural Park (Val Camonica) 430 infrageneric taxa were found (Dalle Vedove et al., 2004; Nascimbene & Dalle Vedove, unpublished report). These represent ca. 40% of the lichen flora of Lombardy and ca. 25% of that of the Italian Alps (Martellos et al., 2004). Several of them are new to Lombardy, 3 to Italy.

SURVEY AREA, DATA AND METHODS

Two floristic surveys were carried out during summer 2001 and autumn-summer 2003-2004, in different localities of the Adamello Natural Park (Italian Central Alps). The most representative habitats were explored, from the montane belt (deciduous woodlands, rural villages with traditional agriculture, pastures, coniferous forests with *Picea excelsa*) to the subalpine (*Larix* formations,

Rhododendron-Vaccinium shrubs) and alpine belts (grasslands, siliceous and calciferous rocks). Some specimens were collected in alpine rivers or on periodically inundated rocks. In each habitat, the lichen flora was carefully sampled on every suitable substrate inside 20 × 20 m plots.

Critical material was submitted to specialist revision. Nomenclature follows Nimis & Martellos (2003).

RESULTS AND DISCUSSION

The Alps are one of the lichenologically best-known territories in the world, but lichens could be overlooked, mostly due to their scarce detectability. My results show that even in relatively well-known areas several new species could be collected. The 41 taxa new to Lombardy are in Tab. 1. The three taxa which are new to Italy are:

Acarospora intricata H. Magn. is a crustose lichen growing on iron-containing silicate rocks, on vertical or overhanging surfaces (Timdal 1984). The specimen was collected near Pornina at 1890 m, with other metalliferous taxa as *Acarospora sinopica* and *Lecanora epanora*.

Caloplaca xanthostigmoidea (Räsänen) Zahlbr. was collected on plants remains in the alpine belt at 2320 m., near the Gallinera pass. The thallus is crustose with isidioid protuberances and two apotecia are present. It differs from the fine-sorediate *C. epiphyta* both in thallus morphology and in the chemistry. For a detailed monograph see Söchting & Tönsberg (1997).

Gyalidea fritzei (Stein) Vezda is a crustose lichen with a thin, superficial or immersed, smooth thallus, living in periodically submersed siliceous rocks. It was collected in the Aviolo valley at 2010 m in a secondary stream sustained by snow melting with little pebbles in the bed, together with *Verrucaria margacea*.

The lichen flora of Lombardy now consists of 1137 species, with an increase of 3.8%. This puts Lombardy in the second place among the lichenologically best-known regions of Italy. The new species represent 10% of the known lichen flora of the Adamello Natural Park. 32% of them are alpine-exclusive in Italy (Nimis, 2003).

The highest percentage of new species was found in alpine habitats with siliceous rocks and in subalpine *Larix* formations (Tab. 2). Alpine rivers and periodically submerged rocks are an overlooked habitat in the Italian Alps, which certainly could host several new species. By now, 43 amphibious lichens are known in N Italy, 24 of which are present in Lombardy (Nimis, 2003). Also carbonatic rocks and metalliferous silicates represent good habitats for future floristic surveys.

A problem is the assessment of the rarity of the species and their attribution to IUCN (2001) categories. Individuals should be inventoried and populations size assessed (Scheidegger & Goward, 2002). This is an interesting challenge for alpine lichenologists and lichens conservation. In this context Natural Parks represent an ideal laboratory to develop long-term researches on biodiversity. The Adamello Massif could be considered as a priority area for alpine lichen floristic in Italy because of its isolation and southern position in the central Alps and the great variety of substrates, climates and elevation.

Table 1. New taxa to Lombardy

		<i>Species</i>
1	°	<i>Acarospora intricata</i> H. Magn.
2	×	<i>Acarospora versicolor</i> Bagl. & Carestia
3	×	<i>Arthonia mediella</i> Nyl.
4	×	<i>Aspicila laevatooides</i> (H. Magn.) Oksner
5	×	<i>Brodoa atrofusca</i> (Schaer.) Goward
6	×	<i>Caloplaca ferrarii</i> (Bagl.) Jatta
7	°	<i>Caloplaca xanthostigmoidea</i> (Räsänen) Zahlbr.
8	×	<i>Candelariella unilocularis</i> (Elenkin) Nimis
9	×	<i>Cladonia arbuscula</i> ssp. <i>mitis</i> (Sandst.) Ruoss
10	×	<i>Cladonia borealis</i> Stenroos
11	×	<i>Cladonia crispata</i> var. <i>ctrariiformis</i> (Del.) Vain.
12	×	<i>Cladonia macilenta</i> ssp. <i>floerkeana</i> (Fr.) V. Wirth
13	×	<i>Cladonia subulata</i> (L.) F.H. Wigg.
14	×	<i>Cladonia sulphurina</i> (Michx.) Fr.
15	×	<i>Cystocoleus ebeneus</i> (Dillwyn) Thwaites
16	°	<i>Gyalidea fritzei</i> (Stein) Vezda
17	×	<i>Hymenelia ochrolemma</i> (Vain.) Gowan & Ahti
18	×	<i>Lecanora flotowiana</i> Spreng.
19	×	<i>Lecanora handelii</i> J.Steiner
20	×	<i>Lecanora orbicularis</i> (Schaer.) Vain.
21	×	<i>Lecanora perpruinosa</i> Fröberg
22	×	<i>Lecanora rupicola</i> ssp. <i>subplanata</i> (Nyl.) Leuckert & Poelt
23	×	<i>Lecanora subaurea</i> Zahlbr.
24	×	<i>Lepraria caesioalba</i> (de Lesd.) J.R. Laundon
25	×	<i>Leproloma membranaceum</i> (Dickson) Vainio
26	×	<i>Melanelia disjuncta</i> (Erichsen) Essl.
27	×	<i>Omphalina hudsoniana</i> (H.S.Jenn.) H.E. Bigelow
28	×	<i>Pertusaria aspergilla</i> (Ach.) J.R. Laundon
29	×	<i>Pertusaria flavicans</i> Lamy
30	×	<i>Phaeocalicium compressulum</i> (Vain.) F.W. Schmidt
31	×	<i>Placynthiella oligotropha</i> (J.R. Laundon) Coppins & P. James
32	×	<i>Polyblastia cruenta</i> (Körb.) P. James & Swinscow
33	×	<i>Polyblastia helvetica</i> Th.Fr.
34	×	<i>Polyblastia ventosa</i> Arnold
35	×	<i>Porpidia cinereoatra</i> (Ach.) Hertel & Knoph
36	×	<i>Rhizocarpon ridescens</i> (Nyl.) Zahlbr.
37	×	<i>Stereocaulon nanodes</i> Tuck.
38	×	<i>Strangospora moriformis</i> (Ach.) Stein
39	×	<i>Usnea ceratina</i> Ach.
40	×	<i>Usnea subfloridana</i> Stirton
41	×	<i>Verrucaria margacea</i> (Wahlenb.) Wahlenb.

° = new to Italy; × = new to Lombardy

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Table 2.

<i>Habitat</i>	<i>Natura 2000 code</i>	<i>N° of new species</i>	<i>% on the total</i>
Siliceous rocks	81,10 and 82,20	9	22
<i>Larix</i> formations	94,20	9	22
Alpine rivers on siliceous substrates	32,20	6	14,6
Carbonatic rocks	81,20 and 82,10	5	12,2
Metalliferous siliceous rocks	82,20	5	12,2
Alpine grasslands on siliceous substrates	61,50	3	7,3
Alpine grasslands on carbonatic substrates	61,70	2	4,9
<i>Alnus viridis</i> formations	?	1	2,4
<i>Rhododendron-Vaccinium</i> formations	40,60	1	2,4

REFERENCES

- ANZI M., 1860 — *Catalogus lichenum quos in Orovincia Sondriensi collegit et ordinavit et in ordinem systematicum digessit presbyter M. Anzi*. Novi-Comi. Tip. C. Franchi, 126 pp.
- DALLE VEDOVE M., NASCIMBENE J & BONETTINI A.M., 2004 — *Licheni del Parco dell'Adamello*. Parco dell'Adamello, 78 pp.
- GIACOMINI V., 1936 — I licheni di Valle Camonica. *Atti dell'Istituto Botanico e del Laboratorio Crittogamico dell'Universita di Pavia*, ser. 4, 9 : 123-149.
- IUCN, 2001 — *IUCN Red List Categories and Criteria: Version 3.1*. IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, U.K. ii + 30 pp.
- MARTELLOS S., NASCIMBENE J. & NIMIS P.L., 2004 — *I licheni delle Alpi: biodiversità e conservazione*. Report APAT 45/2004: 176-186.
- NASCIMBENE J. & DALLE VEDOVE M., unpublished report — *Studio sulla presenza lichenica nel Parco Naturale dell'Adamello (BS)*. Relazione conclusiva 2005. Ente Parco Naturale dell'Adamello.
- NIMIS P.L., 1993 — *The Lichens of Italy. An annotated catalogue*. Museo Regionale di Scienze Naturali, Torino, 897 pp.
- NIMIS P.L., 2003 — *Checklist of the lichens of Italy 2.0*. University of Trieste, Dept. of Biology, IN2.0/2. (<http://dbiodbs.univ.trieste.it/>)
- NIMIS P.L. & MARTELLOS S., 2003 — *A second checklist of the lichens of Italy with a thesaurus of synonyms*. Monografia 4. Museo regionale di Scienze Naturali, Aosta: 195 pp.
- SCHEIDEGGER C. & GOWARD T., 2002 — *Monitoring lichens for conservation: Red Lists and conservation action plans*. In: P.L. Nimis, C. Scheidegger and P.A. Wolseley (eds.), *Monitoring with Lichens — Monitoring Lichens*, Kluwer Academic Publishers. The Netherlands.: 163-181.
- SÖCHTING U. & TÖNSBERG T., 1997 — *Caloplaca xanthostigmoidea* (Ras) Zahlbr., a common lichen in cool regions of the Northern Hemisphere. *Symbolae Botanicae Upsalienses* 32(1) : 247-253.
- TIMDAL E., 1984 — *Acarospora intricata* and *A. wahlenbergii* (Acarosporaceae) in Scandinavia. *Nordic Journal of Botany* 4: 541-543.