Studia Geobotanica. Vol. 14: 27 - 31 (1994)

NEW OR INTERESTING LICHENS FROM THE DOLOMITES (TRE CIME DI LAVAREDO, NE ITALY)

Pier Luigi NIMIS

Dipartimento di Biologia, Via Giorgieri 10, I-34127 Trieste

Keywords: Alps, Dolomites, Flora, Lichens.

Abstract: Seventy-five infrageneric taxa of lichens are reported from the Dolomites (NE Italy, Tre Cime di Lavaredo). The samples were collected in two stations, one in the Alpine belt (2300-2400 m), the other in the subalpine belt (1800 m). Seventeen taxa are new to the Region of Veneto; eight of these are also new to the lichen flora of Italy; these are: *Caloplaca isidiigera* Vezda, *Candelariella unilocularis* (Elenk.) comb. nov., *Candelariella plumbea* Poelt & Vezda, *Eiglera homalomorpha* (Nyl.) Clauz. & Roux, *Farnoldia jurana* ssp. *bicincta* (Hertel) Clauz. & Roux, *Lecanora meolansii* B. de Lesd., *Verrucaria zamenhofiana* Clauz. & Roux., *Xanthoria elegans* v. *orbicularis* (Schaerer) Clauz. & Roux.

Introduction

Northern Italy, with 1857 species, is one of the lichenologically richest areas in Europe (Nimis 1993). The high number of species is mainly due to the presence of the Alpine chain, with a great diversity of substrates and of climatic types. The degree of lichenological exploration of the Italian Alps, however, is still very unsatisfactory. Most of the lichen records are due to the intensive exploration of relatively narrow areas by lichenologists of the previous century. The main contributions are those of Anzi (1860) for the Province of Sondrio in Lombardy, Baglietto (1857) for Liguria, Baglietto and Carestia (1880) for the Valsesia in Piedmont, and Arnold (1868-1897) for South Tyrol. During this century, due to the profound crisis of lichenology in Italy (Nimis 1988), no detailed floristic study concerning the Italian Alps was ever carried out. Only in more recent times several scattered records were published by various authors (e.g. Buschardt 1979, Tretiach 1993). On the whole, most of the Italian Alps still awaits a detailed lichenological exploration.

During the summer of 1994 I organized the international excursion of the Association Francaise de Lichénologie to the eastern Alps. Among the localities which were visited during the excursion there was the area of the Tre Cime di Lavaredo, in the Dolomites (Prov. Belluno). The short time available did not allow a detailed study of the local flora. However, also thanks to the presence of several specialists, and especially of C. Roux and Ch. van Haluwyn, which drew my attention to some recently-described or poorly-known taxa, it was possible, in a few hours, to collect several interesting lichens.

With the publication of this note I would like to present an example of how profitable it would be to carry out detailed lichenological studies in the Italian Alps. The paper includes a list of 75 infrageneric taxa collected in two localities, one in the Alpine, the other in the subalpine belt; 17 taxa are new to the region of Veneto, 8 taxa are new to the lichen flora of Italy.

Survey area, Data and Methods

The survey area is located in the heart of the Dolomites (NE Italy, Region of Veneto, Prov. Belluno), and includes two localities on the southern slopes of one of the most impressive and famous dolomitic Massives, the Tre Cime di Lavaredo.

Station A: Near Rifugio Auronzo, ca. 2,300-2,400 m, open Alpine grasslands with plenty of dolomitic boulders.

Station B: road from Rifugio Auronzo to Misurina, 1,800 m, very open *Larix* and *Pinus cembra* stand, with a dense undergrowth of *Pinus mugo* and, in acid soil pockets, of *Rhododendron ferrugineum*.

The samples are preserved in the Herbarium Universitatis Tergestinae (TSB, Herb. Nimis).

Nomenclature follows Nimis (1993).

Floristic List

Acarospora macrospora (Hepp) Bagl. - On sun-exposed, steeply inclined surfaces of dolomitic boulders, not common. For Veneto the species was known only from a single record in the area surrounding Bassano (Beltramini 1858). (A).

Alectoria ochroleuca (Hoffm.) Massal. - On wind-swept ridges, rather rare. (A).

Arthonia lapidicola (Taylor) Branth. & Rostr. - On small boulders and pebbles, in rather sheltered situations, locally common. (A).

Caloplaca cerina v. ***chloroleuca*** (Sm.) Th. Fr. - Very common on mosses and plant debris. (A, B).

Caloplaca diphyodes (Nyl.) Jatta - On a dolomitic rocks, in a rather shaded situation in the Alpine belt. This, the only representative of the *C. variabilis* complex occurring on siliceous substrata, may also grow on dolomitic rocks. Our samples are quite typical, and were compared with a sample from the Carnic Alps (Friuli), M. Poludnig, 2000 m, collected and identified by J. Poelt (GZU, TSB). New to Veneto and to Friuli. (A).

Caloplaca epiphyta Lynge - Rather common on mosses and plant debris, especially in rather sheltered, but eutrophicated situations near the top of isolated boulders. This species, which for Italy is known only from the Dolomites, is certainly much more widespread in the calcareous Alps; it has been probably mistaken for the superficially similar *Caloplaca citrina*. (A).

Caloplaca isidiigera Vezda - On isolated dolomitic boulders in rather nutrient-enriched situations, often starting the life-cycle as a parasite of other lichens. The species is, at least formally, new to Italy. However, it might be (see Purvis & al. 1994) that the epithet *C. chlorina* (Flotow) Sandst. is an earlier name for this lichen. If this would prove to be the case, it is most probable that, of the records cited by Nimis (1993) for Italy, those from Lombardy and Piedmont refer to this lichen, whereas most of the others from peninsular and insular Italy could refer to another taxon in the *Caloplaca cerina* complex, which is devoid of isidioid outgrows. New to Italy. (A).

Caloplaca proteus Poelt - On rather sheltered, steeply inclined surfaces, not rare. For the Region of Veneto the species was known from one locality only (Nordin 1972). (A).

Caloplaca sinapisperma (Dc.) Mah. & Gill. - On mosses and plant debris, not uncommon. (A).

Caloplaca tiroliensis Zahlbr. - Not uncommon on mosses and plant debris, especially dead leaves of *Saxifraga*. New to Veneto. (A).

Candelariella unilocularis (Elenk.) comb. nov. Basion.: *Candelariella cerinella* v. *unilocularis* Elenk., Lich. Flor. Rossiae Mediae, fasc. 2: 273, 1907 - This Arctic-Alpine lichen, which occurs on mosses and plant debris on carbonatic substrata, and, more rarely, directly on rocks, is, in my opinion, well worth of being separated from *C. aurella* as a distinct species. It differs from *C. aurella* s.str. in having a well-developed thallus, in the much larger apothecia and the much larger spores. It is widespread, and sometimes common, throughout the calcareous Alps. New to Italy. (A).

Candelariella plumbea Poelt & Vezda - This species, which belongs in the form-rich group of *C. aurella* s. lat., is very characteristic: it grows directly on limestone and dolomite in rather exposed and eutrophicated situations, and is characterized by a thick, grey thallus. In the original description the thallus is said to be isidiate-sorediate: I have analyzed several samples in GZU: some of them actually have rough, corticate, isidia-like protuberances; many, however, have a more or less smooth thallus. I am not certain that the grey thallus belongs to the *Candelariella*; the species might be parasitic on sterile, grey thalli of other lichens, as already suggested by Clauzade & Roux (1985) for *C. oleaginescens* v. *glebulosa*, which is a most probable synonym of *C. plumbea*. *C. plumbea* is widespread and locally common in the eastern Alps, especially in the Alpine belt. New to Italy. (A).

Catapyrenium daedaleum (Krempelh.) B. Stein. - On soil in open vegetation. This species is frequent in the calcareous eastern Alps, especially in the Alpine belt. (A).

Cetraria islandica (L.) Ach. - Very common and abundant in subalpine vegetation. (B).

Cladonia amaurocraea (Flörke) Schaerer - Rather rare amongst *Rhododendron*-shrubs in the subalpine belt. (B).

Cladonia arbuscula (Wallr.) Flotow - Common in the subalpine belt. (B).

Cladonia bellidiflora (Ach.) Schaerer - Rather rare, in the subalpine belt. (B).

Cladonia coccifera (L.) Willd. - Common, especially in the subalpine belt, with fruiting specimens, mostly sterile in the Alpine belt. (A, B).
Cladonia crispata (Ach.) Flotow - Rather rare, in the subalpine belt, on acid ground. (B).
Cladonia gracilis (L.) Willd. - Not very frequent, in the subalpine belt. (B).
Cladonia macroceras (Delise) Havaas - Very common and often abundant, especially amongst mosses in subalpine *Rhododendron* formations. (B).
Cladonia pocillum (Ach.) O.J. Rich. - On bare, mineral soil in the Alpine belt; our specimens are quite typical. (A).
Cladonia pyxidata (L.) Hoffm. - Most common in the subalpine belt, on bare soil. (A, B).
Cladonia rangiferina (L.) Wigg. - Mostly in the subalpine belt, where it is common, and often associated with *Cladonia arbuscula*. (B).
Cladonia squamosa (Scop.) Hoffm. - Rather rare, but very well-developed, on bare soil in the subalpine belt. (B).
Collema polycarpon Hoffm. - On dolomitic boulders, common. (A).
Dermatocarpon miniatum (L.) Mann - On dolomitic boulders, often in fissures or in sites with periodical percolation of water, common. (A, B).
Eiglera flavida (Hepp) Haf. - On dolomitic boulders and pebbles in the Alpine belt, not frequent, but locally abundant. For Veneto there was a single record from the previous century (Arnold 1876). (A).
Eiglera homalomorpha (Nyl.) Clauz. & Roux - On shaded dolomitic boulders, common and often abundant. This species, previously called *Lecidea cavatula* Nyl., has been often overlooked by previous authors; it is fairly common and often abundant in the calcareous eastern Alps, from the Dolomites to the Julian Alps, especially above tree limit. New to Italy. (B).
Farnoldia jurana (Schaerer) Hertel ssp. ***jurana*** - Common on dolomitic rocks (A, B).
Farnoldia jurana ssp. ***bicincta*** (Hertel) Clauz. & Roux - On dolomitic boulders, found only once. This subspecies is characterized by the umbonate apothecia. New to Italy. (A).
Hypogymnia farinacea Zopf - On *Pinus cembra* in the subalpine belt, rather common. (B).
Hypogymnia physodes (L.) Nyl. - Very common in the subalpine belt, on *Larix* and *Pinus cembra*. (B).
Icmadophila ericetorum (L.) Zahlbr. - Very common in the subalpine belt, on rotten wood and dying *Sphagnum* mats. (B).
Imshaugia aleurites (Ach.) S.F. Meyer - On *Larix* and *Pinus cembra* in the subalpine belt, frequent. (B).
Ionaspis heteromorpha (Krempelh.) Arnold - On dolomite in rather shaded situations, often near the ground, not rare. For Italy the species was previously known only from South Tyrol (Nimis 1993). New to Veneto. (A).
Ionaspis melanocarpa (Krempelh.) Arnold - Together with the previous species, and perhaps more common. (A).
Lecanora dispersa (Pers.) Sommerf. - On cement walls in the Alpine belt. (A).
Lecanora epibryon (Ach.) Ach. - Very common on mosses and plant debris in the Alpine belt. (A).
Lecanora meolansii B. de Lesd. - On isolated dolomitic boulders in the Alpine belt. This taxon, belonging to the difficult and still poorly understood complex of *Lecanora dispersa* s.lat., is characterized by the presence of blue pigments reacting N+ red in the amphithecial cortex and sometimes also on the epithecium. Such forms are quite common in the Alpine belt of the calcareous Eastern Alps. The taxonomical value of the presence of pigments is still not clear to me: sometimes pigmented and non-pigmented apothecia occur side by side. As, however, these samples appear to be different from *L. dispersa* s.str. also in many other minor traits, I prefer to accept here *L. meolansii* as a distinct species, pending a general revision of the *L. dispersa* group. The species is, at least formally, new to Italy; according to Poelt *(in litt.)*, several records of *L. dispersa* v. *coniotropa* by Arnold, from South Tyrol, refer to *L. meolansii*. In TSB there is another sample from Friuli (Carnic Alps), collected by J. Poelt at M. Poludnig, at c. 2000 m (dupl. GZU), representing a form with non-pruinose apothecia. (A).
Lecanora varia (Hoffm.) Ach. - On decorticated stumps of *Larix* and *Pinus cembra* in the subalpine belt, rather frequent. (B).
Lecidella patavina (Massal.) Knoph & Leuck. - A widespread and rather common species of carbonatic rocks. (A).
Mycobilimbia hypnorum (Libert) Kalb & Haf. - On mosses and plant debris, rather frequent. (A).
Mycobilimbia lobulata (Sommerf.) Haf. - On mosses and plant debris, not as common as the previous species. (A).
Pannaria pezizoides (G.H. Weber) Trevisan - On epigaeic mosses in the Alpine and subalpine belts, common and often abundant. (A, B).

Parmelia omphalodes (L.) Ach. - On an isolated boulder with siliceous nodules. Rare. New to Veneto. (A).

Parmeliopsis ambigua (Wulfen) Nyl. - At the basis of trunks of *Larix* and *Pinus cembra*, as well as on stumps, common. (B).

Parmeliopsis hyperopta (Ach.) Arnold - As the previous species, but not as frequent; perhaps more abundant in rather shaded situations. (B).

Peltigera didactyla (With.) Laundon - On bare soil, rare. (A).

Peltigera lepidophora (Nyl.) Bitter - A Boreal-montane species in Europe (Vitikainen 1995), which, in spite of the few records (Nimis 1993), is not rare in the eastern Alps. New to Veneto. (A).

Peltigera rufescens (Weis) Humb. - On bare, mineral soil, common. (A).

Phaeophyscia sciastra (Ach.) Moberg - On the top of isolated dolomitic boulder, in nutrient-rich situations, common. (A).

Phaeorrhiza nimbosa (Fr.) H. Mayrh. & Poelt - On soil, mosses and decaying plants on isolated, exposed boulders, commmon and often abundant. (A).

Physconia muscigena (Lam.) Poelt - On mosses and plant debris in nutrient-enriched situations, especially at the top of isolated dolomitic boulders. (A).

Polyblastia sendtneri Krempelh. - On plant debris on a dolomitic boulder. This Arctic-Alpine species was previously known for Veneto only from an old record by Arnold (1876). (A).

Protoblastenia siebenhaariana (Koerber) Steiner - On dolomite, not common. Previously known for Veneto only from an old record by Arnold (1876). (A).

Pseudevernia furfuracea (L.) Zopf - Common and abundant on *Larix* and *Pinus cembra* in the subalpine belt. (B).

Rhizocarpon umbilicatum (Ram.) Flagey - Rather common on exposed dolomitic rocks. (A).

Rinodina castanomelodes H. Mayrh. & Poelt - On dolomite. A recently-described, Arctic-Alpine species of limestone, marl and calcareous schists. New to Veneto. (A).

Rinodina mniaraea (Ach.) Koerber - Common on plant debris and mosses. Previously known for Veneto only from an old record by Arnold (1876). (A).

Rinodina roscida (Sommerf.) Arnold - On decaying mosses on a dolomitic boulder. An Arctic-Alpine lichen, widespread throughout the Alps, but new to Veneto. (A).

Saccomorpha icmalea (Ach.) Clauz. & Roux - On recently disturbed organic soil in the subalpine belt, very common. This species was forgotten for a long time, and was often confused with *S. uliginosa* (Schrader) Haf. There were no previous records from Northern Italy, where this lichen is certainly much more common and widespread than hitherto assumed, especially in the Alps. New to Veneto. (B).

Sarcogyne pruinosa v. ***platycarpoides*** (Anzi) Magnusson - On steeply inclined surfaces of a dolomitic boulder in the Alpine belt. This variety, characterized by the large, partially immersed apothecia with a thin margin, is certainly worth of further studies, like many other forms in the *S. pruinosa*-complex. New to Veneto. (A).

Sarcosagium campestre (Fr.) Poetsch & Schied. - On terricolous mosses, found only once. This Boreal-montane species is known for Italy only from a few records, but is probably more widespread, at least in the Alps, being very easy to overlook. (A).

Solorina bispora Nyl. - Only an ancient record from the Dolomites (Arnold 1876), where, however the species is widespread and even common, especially in the Alpine belt; it was confused with *S. saccata*. (A).

Solorina saccata (L.) Ach. - Common, especially in the subalpine belt. (A, B).

Squamarina lamarckii (DC.) Poelt - On steeply inclined surfaces of dolomitic rocks, often in fissures, not frequent. (A).

Staurothele areolata (Nyl.) Vainio - Very common on dolomitic boulders, in rather nutrient-enriched situations, especially in the Alpine belt. The species is widespread in the eastern Alps. (A, B).

Thelidium decipiens (Nyl.) Krempelh. - Common on rock in the Alpine belt. (A).

Toninia alutacea (Anzi) Jatta - In fissures of steeply inclined dolomitic rocks, rather common. (A).

Verrucaria tristis (Massal.) Clauz. & Roux - This characteristic species seems to be very common, especially in the Alpine belt, on dolomitic boulders, and in slightly sheltered situations. For the Dolomites the species was known only from an old record by Arnold (1876). (A, B).

Verrucaria zamenhofiana Clauz. & Roux - This recently-described species is quite easy to overlook, being a parasite inside the thalli of *Staurothele areolata*. In the Alpine belt it seems to be quite common. New to Italy. (A).

Xanthoria elegans (Link) Th.Fr. - On isolated

dolomitic boulders in nutrient-enriched situations, common. (A).

Xanthoria elegans v. ***orbicularis*** (Schaerer) Clauz. & Roux - On dolomitic boulders, together with *X. elegans* s.str., and clearly different from it at first sight, without any transitional form. This variety is characterized by more or less flat, broad (2-3.5 mm), short lobes; among the various forms of the very polymorphic *X. elegans* s.lat. this is probably the one which would be most worth of further studies. New to Italy. (A).

Xylographa abietina (Pers.) Zahlbr. - On decorticated stumps of *Larix* and *Pinus cembra* in the subalpine belt, frequent. From Veneto there was just an old record (Arnold 1876), but the species is widespread and often common throughout the Alps. (B).

Acknowledgements

I am indebted to all partecipants to the excursion of the Association Francaise de Lichénologie, and especially to Prof. C. Roux (Marseille) and C. van Haluwyn (Lille), for drawing my attention to some species, and for useful comments on their ecology and distribution. I am also grateful to Prof. J. Poelt (Graz), for critical comments to the manuscript.

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Received November 9, 1994
Accepted December 12, 1994