

Records of *Lecanora* species (Lichens) from Italy

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RIASSUNTO - Una revisione del materiale del genere *Lecanora* (Licheni) dell'Erbario Lichenologico dell'Università di Trieste (TSB) è stata effettuata dall'autrice. Si riportano 32 specie per l'Italia, con particolare riguardo per il poco noto complesso di *L. subfusca*. Molti ritrovamenti sono nuovi per alcune regioni italiane. Due specie (*L. cinereo fusca* e *L. soralifera*) sono nuove per l'Italia.

ABSTRACT - A revision of the material of the genus *Lecanora* (Lichens) in TSB was carried out by the author. 32 species are reported from Italy, with particular regard to the poorly known *L. subfusca* complex. Many records are new to several Italian regions. Two species (*L. cinereo fusca* and *L. soralifera*) are new to Italy.

Introduction

Lecanora s. lat. is a large cosmopolitan genus including more than 400 species. Recent studies have brought to the segregation of better defined genera, such as *Tephromela* and *Protoparmelia*, and probably other taxa still await to be assigned to more natural units. The species of the subgenus *Placodium* have been studied by Poelt (1958) and Poelt & Vezda (1977). Those of the *L. subfusca* group, included in the «subgenus *Eulecanora*» (Eigler, 1969), have been monographed by Brodo (1984) for North America; the European species were also studied by Magnusson (1932) and Poelt (1952). The *L. rupicola* group in Europe has been studied by Leuckert & Poelt (1989). Other groups still await a monographic study, as the *L. dispersa-hagenii* complex or the species with a green thallus.

The 8th course of lichenology, organized at the Department of Biology of the University of Trieste in August of 1992, was devoted to the genus *Lecanora*. On that occasion all the samples of *Lecanora* included in the Lichenological Herbarium of the University of Trieste (TSB), for a total of ca. 800 specimens, have been revised, and old identifications have been checked on the basis of recent literature. Many records, new to several Italian regions, are reported in this paper. For the species of the *L. subfusca* complex and for *L. leptyroides*, where earlier identifications are often of little value, all localities are listed. The revision of the specimens of the *L. subfusca* group is based mostly on the monograph by Brodo (1984).

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The following list reports, for each taxon, the locality and date of collection, the herbarium number and a short note on the ecology and known distribution; in several cases also the main differences from closely related taxa are indicated. The following abbreviations have been used for the collectors: B = G. Bolognini, C = M. Castello, N = P.L. Nimis, T = M. Tretiach.

The nomenclature follows Nimis (1993).

LECANORA AITEMA (Ach.) Hepp

Friuli - Prov. Udine, Carnic Alps: M. Lagna, on twigs of *Larix*, 1850 m, 10.9.1984, leg. N (4582).

This species is closely related to *L. symmicta* and has often been considered as a variety of the latter with black apothecia. It grows mostly on lignum or acid bark in the montane belt. For Italy it is known from a very few localities.

LECANORA ALLOPHANA Nyl.

Friuli - Prov. Pordenone, Friulian plain: S. Vito al Tagliamento, on *Populus*, 30 m, 18.6.1986, leg. E. Loi, det. B (7538); - **Prov. Udine:** Colli di Buia, 20 m ca., 2.2.1979, leg. N, det. B (441); Comeglians, on *Juglans* in *Xanthorion parietinae*, 550 m, 7.1981, leg. N (2751); Ampezzo Carnico, on *Juglans*, 560 m, 7.8.1986, leg. N (7778); **Julian Alps:** Camporosso in Valcanale, on *Fagus*, 1200 m, 20.8.1986, leg. R. Gerdol (7875); **Julian Prealps:** Val di Resia, Borgo Lischiazze, on *Juglans*, 550 m, 27.9.1987, leg. N (9807); **Carnic Alps:** P.so Pura, near baita Torino, on *Fagus*, 1420 m, 15.9.1992, leg. B (16569).

Veneto - Prov. Belluno: Dolomiti, S. Vito di Cadore, on *Ulmus*, 990 m, 3.4.1980, leg. N (985).

Toscana - Prov. Arezzo: Montevarchi, loc. Levane Alta, on *Robinia*, 150 m, 6.5.1992, leg. P. Vasari, det. T (16566).

Marche - Prov. Macerata: surroundings of the town, on *Quercus*, 300 m ca., 28.8.1989, leg. C & D. Gasparo, det. B (15089).

Lazio - Prov. Rieti: M. Terminillo, S.la Leonessa, on *Fagus*, 1820 m, 6.7.1989, leg. C, det. B (13007).

Abruzzo - Prov. Aquila: Pescocostanzo, on *Fagus*, 1340 m, 26.12.1988, leg. F. Recchia (12758).

Sardegna - Prov. Nuoro: M. Ortobene, on *Populus*, 750 m, 25.7.1985, leg. N & J. Poelt, det. B (6144).

Calabria - Prov. Cosenza: M. Palanuda, Orsomarso, on *Acer*, 1590 m, 7.8.1990, leg. D. Puntillo, det. B (16245); - **Prov. Reggio Calabria:** Limbadi, near Nicotera, on *Olea* in olive grove, 250 m, 26.6.1989, leg. N, det. B (12351).

This epiphytic species of the *L. subfusca* complex is known for Europe and North America. In Italy it is widespread throughout the country, from the lowlands to the montane belt. It is common, especially on the eutrophic bark of wayside deciduous trees. It is a variable species, which is sometimes difficult to distinguish from closely related taxa. The epithet *subfusca*, often used for all species of the complex, is a synonym for *L. allophana* (see discussion in Brodo & Vitikainen, 1984).

LECANORA ARGENTATA (Ach.) Malme

Friuli - Prov. Udine, Carnic Alps: P.so Pramollo, on *Fagus*, 1500 m, 4.1989, leg. F. Bersan (13594), P.so Pura, on *Fagus*, 1450 m, 15.9.1992, leg. B (16573).

Lazio - Prov. Rieti: Pian di Rosce, 1100 m, on *Fagus*, 5.7.1989, leg. C (13005).

This is another epiphytic species of the *L. subfusca* group. It is common in temperate Europe and in eastern temperate North America, on smooth-barked trees. In Italy it is widely distributed throughout the country, being particularly frequent in beech-woods of the montane belt, mostly on *Fagus*. In the northern plains, due to deforestation and air

pollution, it has become rare. Its relation with the closely related *L. subrugosa* is still rather unclear (the two species differ only in the external morphology of the apothecia). Old records should be considered as dubious. Nomenclatural problems concerning the name *L. subfusca*, commonly used by European authors to designate *L. argentata*, are discussed by Brodo (1984).

LECANORA ARGOPHOLIS (Ach.) Ach.

Toscana - Prov. Siena: M. Amiata, Vivo d'Orcia, under the village, on trachitic rocks, 700 m ca., 7.11.1992, leg. T (16643).

This saxicolous species is widely distributed, but not very frequent, in the Northern Hemisphere, from the Arctic to the temperate zones (Vänskä, 1984). It grows on siliceous or weakly calcareous rocks in rather nutrient-enriched situations. In southern Europe it occurs mainly in the mountains. For Italy it is known from several localities in the Alps (mostly old records). The presence of the species in Tuscany was generically reported (*in montanis Etruriae*) by Jatta (1909-11) without indication of locality. Earlier authors treated *L. argopholis* as a variety or a form of *L. frustulosa*, but recent studies (Vänskä, 1984) showed that the two species are, morphologically and chemically, quite distinct. *L. argopholis* var. *ocellulata* (Arnold) Jatta is a synonym of *L. gangaleoides* Nyl.

LECANORA BICINCTA Ram.

Friuli - Prov. Udine, Carnic Alps: M. Neddiss, on acid sandstone, 1750 m, 21.1.1990, leg. F. Bersan & P. Di Piazza (16585).

This species of the *L. rupicola*-group is typically found on overhanging surfaces of hard siliceous rocks. It has an arctic-alpine to boreal-montane distribution. In Italy it is rather common in the siliceous Alps and the Mediterranean mountains.

LECANORA CAMPESTRIS (Schaerer) Hue

Venezia-Giulia - Prov. Trieste: Conconello, on sandstone wall, 140 m, 19.7.1979, leg. N (769); Val Rosandra, near Botazzo, on sandstone wall, 100 m, 28.4.1985, leg. J. Poelt & N (5568); Karst plateau, M. Radio, on sandstone, 180 m, 18.2.1989, leg. T (11469).

Toscana - Prov. Livorno, Tuscan Archipelago: Capraia, under M. Campanile, on trachyandesite, 40 m, Excursion S.L.I. 28.3-4.4.1988, leg. N, T & C (10235).

Lazio - Prov. Roma: Via Appia antica, on tuff, 2.2.1987, leg. N & T (8046); Frascati, Tusculum ruins, on vertical wall of tuff, SE exp., 670 m, 4.1987, leg. N, det. B (8644); Ardea, perimetral walls of the village, 70 m, 1987, leg. N & T (9960).

Sardegna - Prov. Cagliari: road between Arbus and Buggerru, ca 1.5 km before the road to Iglesias, on acid rock, 100 m, 2.5.1986, leg. N & J. Poelt (7652); Isle of Tavolara, on siliceous rock, 30 m, 17.5.1987, leg. G. Brizzi, det. N (8475).

Puglia - Prov. Foggia, Tremiti Islands: S. Domino, on limestone, 80 m, 4.7.1986, leg. N (7646).

This epilithic species is widely distributed in Europe (Poelt & Vezda, 1981) and is known also for coastal California (Brodo, 1984). It is found both on calcareous and non-calcareous rocks, with optimum on base-rich siliceous substrata. In Italy it seems to be rather common, mostly below the montane belt. Old records, however, need confirmation: the name *L. campestris* has often been generically applied to saxicolous specimens of the *L. subfusca* group with red-brown, epruinose disks. According to Brodo (1984) at

least seven distinct species can be distinguished within the group in North America and *L. campestris* s. str. appears to be rather rare and local on that continent. In Italy, *L. campestris* could have been sometimes confused with *L. pseudistera*, a species with similar ecology (see later) and apparently much rarer in our country.

LECANORA CAMPESTRIS V. ALBA B. de Lesd.

Sicilia - Prov. Trapani, Egadi Islands: Marettimo, M. Falcone, on limestone, Excursion S.L.I. 24-31.3.1991, leg. T (15638).

This taxon is rather well distinguished, ecologically and morphologically, from *L. campestris* s. str. It is restricted to calcareous substrata, has a white, very thick (up to 2-3 mm), areolate thallus and often pruinose disks. It is known from a few localities in the Mediterranean region.

LECANORA CENISIA Ach.

Friuli - Prov. Udine, Carnic Alps: M. Paularo, on schists, 2000 m, 16.8.1981, leg. N, det. B (1788), M. Crostis, 2000 m, 5.9.1983, leg. N (3498), M. Novarza, on sandstone, 1850 m, 11.9.1984, leg. N (4453), Piz di Mede, on sandstone schists, 9.8.1986, leg. N (7723), Lateis, above Casera Novarzutta, on subneutral sandstone, horizontal, 1730 m, leg. N & T (10843), M. Neddis, on siliceous rocks, 1800 m, 2.1990, leg. F. Bersan (13602).

Emilia-Romagna - Prov. Reggio Emilia: lake of Calamone, on acid sandstones, 1550 m, 3.8.1984, leg. N (4456).

Toscana - Prov. Siena: M. Amiata, Abbadia S. Salvatore, above Acquapassante, on trachytic rocks, 1150 m, 19.6.1991, leg. T (15504).

Sardegna - Prov. Nuoro: Gennargentu Mts., Bruncu Spina, on siliceous rocks (quartz) in a wind-exposed ridge, 1800 m, 9.1989, leg. N, C. Roux, T & A. Vezda (13923).

This species has a circumboreal distribution. It grows on siliceous rocks and occasionally on lignum. In Italy it is rather common on acid rocks in the montane belt, being most frequent in the Alps. Forms with dark apothecia have often been considered as separate taxa, i.e. *L. cenisia* v. *melacarpa* (dark brown disks) or *L. atrynea* (black disks), but they have not a real taxonomic value: the colour, both of thallus and apothecia, is high variable on the same specimen depending on exposure (from white to greenish grey and apothecia from yellowish brown to dark brown or black).

LECANORA CHLAROTERA Nyl.

Venezia-Giulia - Prov. Trieste: Sgonico, on *Quercus pubescens*, 280 m, 29.6.1985, leg. N (5903); Prebenico, on *Quercus petraea*, 210 m, 7.10.1985, leg. N (6506).

Friuli - Prov. Pordenone, Carnic Prealps: Claut, 5.1983, leg. E. Loi (3452); **Friulian plain:** Toppo, 250 m, 29.11.1984, leg. E. Loi (4961); **- Prov. Udine:** between Timau and P.so of M. Croce Carnico, on *Fagus*, 1100 m, 28.10.1982, leg. N, det. B (2855); Feletto Umberto, on *Populus*, 11.1.1983, leg. N (3088); Tramonti di Sotto, on *Carpinus*, 14.10.1983, leg. N (3667); Tarcento, Villanova delle Grotte, on *Fraxinus excelsior*, 700 m, 26.6.1985, leg. N (5858); **Julian Prealps:** Taipana, loc. Debellis, on *Fraxinus excelsior*, 350 m, 26.6.1985, leg. N (5872), high Torre Valley, M. Tapou, road to F.la Tacia, on *Fagus*, 876 m, 11.5.1989, leg. C. D. Gasparo & T (12688); Villa Santina, on *Juglans*, 400 m ca., 22.5.1987, leg. N (8621); P.so Pramollo, Austrian-Italian frontier, on *Larix*, 1500 m, 22.1.1990, leg. D. Gasparo (13611).

Toscana - Prov. Livorno, Tuscan Archipelago: Capraia, near the port, 10 m, Excursion S.L.I. 28.3-4.4.1988, leg. N, T & C (10292); **- Prov. Siena:** Abbadia S. Salvatore, Acquapassante, on *Castanea*, 1060 m, 18.6.1991, leg. T & A. Rondi (15291).

Abruzzo - Prov. Pescara: Popoli, along the SS T5, Bivio Bussi, on *Ailanthus*, 274 m, 7.12.1983, leg. F. Recchia (12757).

Sardegna - Prov. Cagliari: Tupa Granella near Santadi, on twigs, 700 m, 5.1987, leg. T (9566); Oasi WWF of M. Arcosu, Concale Petuntu, on twigs of *Quercus ilex*, 540 m, 8.1989, leg. N, C. Roux, T & Vezda (13229); **- Prov. Nuoro:** M. Ortobene, on *Populus*, 750 m, 25.7.1985, leg. N & J. Poelt (6145); M. Arbo, Ussassai, on *Carpinus*, 800 m, 6.1986, leg. N (8108); M. Albo, fonte Usurtia, 900 m, 4.1987, leg. M. Pertot (8567); Barbagia, Seulo, M. Arcueri near Cantoniera Arcueri, on *Acer*, 950 m, 7.1987, leg. N (8844); **- Prov. Sassari:** P.so Limbara, on twigs, 600 m, 5.1986, leg. N (7359); nuraghe Loelle, on twigs, 4.1987, leg. M. Pertot (8555); Lago di Baratz, on bark, 4.1987, leg. M. Pertot (8561); Platomona, on *Acacia cyanophylla*, 5 m, 18.9.1987, leg. P. Nicoli (9862); Palau, on *Quercus ilex*, 60 m, leg. F. Ceni (10510).

Calabria - Prov. Cosenza: Pianette di Montalto, on bark, 180 m, 21.1.1985, leg. D. Puntillo (4920); Botanic Garden of Arcavacata, on *Quercus*, 26.1.1985, leg. D. Puntillo (4931); river Caronte valley, on *Populus*, 310 m, 3.1986, leg. D. Puntillo (7170).

Sicilia - Prov. Catania: M. Etna, Nicolosi, on *Acacia*, 600 m, 1989, leg. N & J. Poelt (13956).

This is a very common epiphytic species of the *L. subfusca* complex, widespread both in Europe and North America. It has a wide ecological amplitude, occurring on the nutrient-enriched bark of isolated deciduous trees along roads, often as a pioneer species on young twigs, from the lowlands to the montane belt, also in Mediterranean vegetation. Some taxonomical problems still exist, in particular concerning the distinction from the closely related *L. rugosella*, considered by most of the European authors as a synonym of *L. chlarotera*, and *L. meridionalis*. In old papers it has often been cited as «*L. chlarona*», a name used by earlier authors also for *L. pulicaris*.

LECANORA CINEREOFUSCA Magnusson

Friuli - Prov. Udine, Carnic Alps: Lago di Sauris, Bosco della Stua, on *Abies* and *Fagus*, 1200 m, 11.9.1987, leg. N & T, det. T (9742).

This taxon is another distinctive member of the *L. subfusca* group, described from North America and characterized by the PD+ reaction of the epihymenium with the formation of an irregular layer of orange crystals. It is found mostly on the bark of deciduous trees (a saxicolous variety has been described from the Appalachians) and seems linked to a suboceanic climate. Its known distribution includes the Alps, eastern Asia and North America (Appalachian-Great Lakes region and western coast). According to Brodo (1976) this very disjunct distribution is perhaps of Tertiary age, and the species might be expected to occur in the Himalayas as well. The species is new to Italy.

LECANORA CIRCUMBOREALIS Brodo & Vitik.

Friuli - Prov. Udine, Julian Alps: above Valbruna, near rifugio Greco, on *Abies*, 1500 m, 20.11.1983, leg. N (3846), M. Canin, above Sella Nevea, on *Larix*, 1850 m, 10.7.1977, leg. N (4610); **Carnic Alps:** M. Coglians, road to Rifugio Marinelli, on *Picea* and *Larix*, 1600 m, 8.1981, leg. N (2762), Casera Razzo, on *Larix* and *Picea*, 1730 m, 13.8.1981, leg. N (5717), Val Pesarina near rifugio De Gasperi, on *Larix*, 1800 m, 7.1989, leg. F. Bersan (12905).

This species has a circumboreal distribution, extending from the hemi- to the northern boreal zones and reaching, in Europe, the mountains of Italy and the southern Balkans. It occurs mostly on bark and twigs of conifers, and sometimes on lignum. The species is closely related to *L. pulicaris* and the distinction based on morphological characters is sometimes difficult, in particular when *L. pulicaris* lacks the typical PD+ red

reaction of the apothecial margins. The two species have also a similar ecology, but *L. circumborealis* is found almost exclusively on conifers while *L. pulicaris* is found both on conifers and on smooth-barked deciduous trees, and often occurs below the montane belt.

LECANORA EPIBRYON (Ach.) Ach.

Trentino Alto-Adige - Prov. Bolzano, western Dolomiti: P.so Sella, on plant remains on soil, 1880 m, 2.7.1987, leg. T (8700).

Friuli - Prov. Udine, Julian Alps: M. Canin, F.Ila Prevala, on mosses on calcareous rock, 2200 m, 8.1981, leg. N (2721); **Carnic Alps**: M. Tiarfin, on mosses and plant remains, 20.9.1981, leg. E. Loi & N (2014), M. Lagna, on plant remains in a wind-exposed ridge, 2100 m, 10.9.1984, leg. N (4602), M. Coglians, P.so Volaia, on plant remains on soil, 1950 m, 28.9.1990, leg. T (15108).

Veneto - Prov. Belluno: Tre Cime di Lavaredo, under Rifugio Auronzo, on soil in *Rhodoro-Vaccinietum*, 1950 m, 9.1991, leg. T (15891).

This species is a close relative to *L. allophana* differing mostly in the substrate preferences and distribution. It is often a dominant species, growing over dead plant cushions and mosses, in arctic or alpine tundras, especially on wind-exposed ridges. It has a circumboreal distribution; in Italy it is common in the alpine and subalpine belts of the Alps. A sorediate form is known from the Central European mountains and the Alps outside Italy, and probably occurs also within the Italian territory.

LECANORA GANGALEOIDES Nyl.

Liguria - Prov. Genova: Sestri Levante, S. Anna, Valle del Fico, on acid rock, 11.1989, leg. G. Porcella, det. T (14512).

Toscana - Prov. Livorno, Tuscan Archipelago: Capraia, near the port, on tuff, 20 m, Excursion S.L.I. 28.3-4.4.1988, leg. N, T & C (10153); - **Prov. Siena**: M. Amiata, Vivo d'Orcia, on trachytic rocks, 770 m, 15.6.1991, leg. N & T (15506).

Sardegna - Prov. Cagliari: loc. Is Coronas near Santadi, 5.1987, leg. T (9562); Isola dei Cavoli, on granite, 10 m, 1987, leg. E. Bocchieri & C. Fogu, det. N (10082).

Lazio - Prov. Roma: Frascati, Tusculum ruins, on siliceous rock, 610 m, 4.4.1987, leg. N & T (8444); Cerveteri, Etruscan necropolis, 200, 5.1987, leg. N (8658); - **Prov. Viterbo**: Norchia, Etruscan tombs, tuff, 160 m, 30.1.1988, leg. N & T (10121).

This saxicolous species of the *L. subfusca* group is characterized by black apothecia with a green epihymenium, and by a thick, verrucose thallus containing a variable quantity of orange pigments (xanthones) in the medullary layer. It should have a mediterranean-atlantic distribution including Europe and northern Africa. A population morphologically very similar to *L. gangaleoides*, but differing chemically in several respects (i.e. in the absence of xanthones), is known from California (Brodo, 1984). *L. gangaleoides* occurs on non calcareous rocks, mostly near the coast but, according to Egea (1989) it can reach 3000 m on the high Mediterranean mountains.

LECANORA GLABRATA (Ach.) Malme

Friuli - Prov. Udine: lake of Sauris, Bosco Flobia, on *Fagus*, 1150 m ca., 13.9.1991, leg. T, det. B (15379).

Sicilia - Prov. Trapani: Erice, rock outcrops north of the Castle, on *Cupressus*, 720 m ca, 22.3.1991, leg. T, det. B (16274).

This epiphytic species of the *L. subfusca* complex, closely related to *L. allophana*, seems to be widely distributed in Europe and eastern North America. According to Poelt & Vezda (1981) it is common in the European beech forests. Contrary to most of the epiphytic species of the *L. subfusca* group, it occurs in fairly shaded situations. In similar habitats *L. allophana* usually produces small and scattered apothecia as well; in these cases the distinction of the two species is rather difficult, and is based mostly on spore size. The name *L. glabrata* has been usually applied to a lichen of the *L. subfusca* complex with small, scattered apothecia and rather thin margins, characters which are common, at least at early stages of development, also for other species of the group occurring in such habitats. The Italian distribution of *L. glabrata* is very poorly known and mostly derives from old records which require confirmation.

LECANORA HORIZA (Ach.) Lindsay

Lazio - Prov. Latina: National Park of Circeo, in dunes 150 m from the sea, on *Juniperus macrocarpa*, 20.5.1984, leg. N (4164).

Sardegna - Prov. Cagliari: Su Feraxi, on twigs of shrubs in a coastal maquis, 9.1989, leg. N, C. Roux, T & A. Vezda (13163); - **Prov. Nuoro**: Arcu Genna Cruxi, south of Dogali, on *Quercus ilex*, 1100 m, 3.9.1989, leg. N (16584); - **Prov. Sassari**: Tempio Pausania, on *Ulmus*, 560 m, 6.1986, leg. N (7294); Lago di Baratz, on bark, 4.1987, leg. M. Pertot (8538).

Puglia - Prov. Foggia, *Tremiti Islands*: S. Nicola, on *Pistacia*, 50 m, 3.7.1986 (7621).

Sicilia - Prov. Trapani, *Egadi Islands*: Marettimo, Punta Ficarella, on *Pistacia*, 155 m, Excursion S.L.I. 24-31.3.1991, leg. N (15641).

This is another member of the *L. subfusca* complex closely resembling *L. allophana*, differing in the less flexuose apothecial margins with a distinct cortex and in the smaller spores. It is known from Europe (Mediterranean region), California and Mexico. It is common on deciduous trees or shrubs (occasionally also on conifers), especially in sunny, moderately nutrient-enriched situations, often in *Xanthorion* communities, behaving as a vicariant of *L. allophana* in Mediterranean vegetation.

LECANORA INTUMESCENS (Rebent.) Rabenh.

Friuli - Prov. Udine, *Carnic Alps*: P.so Pura, on *Fagus*, 8.8.1979, leg. N, rev. T (812); - *Julian Alps*: Tarvisio, Valbruna, on *Fagus*, 1100 m, 20.11.1982, leg. N (2933).

Toscana - Prov. Lucca, *Appennino Tosco-Emiliano*: P.so Pradarena, on *Fagus* in a wind-exposed beech-wood, 1579 m, 10.7.1990, leg. C (14446).

Lazio - Prov. Rieti: M. Terminillo, Valle Ordena, on *Fagus*, 1500 m, 5.7.1989, leg. C (13008).

Abruzzo - National Park of Abruzzo, on *Fagus*, 7.1981, leg. Sauli, det. N (5254).

Sardegna - Prov. Sassari: Tempio Pausania, M. Limbara, in a little valley, 1000 m, 20.7.1987, leg. F. Ceni (10622).

Calabria - Prov. Cosenza: M. Pollino, Serra del Prete, on *Fagus* in a beech-wood, 1620 m, 10.8.1988, leg. N, T & C (10598); Sila piccola, Colle Ascione, on *Fagus*, 1350 m, 11.7.1988, leg. N, T & C (11377); - **Prov. Reggio Calabria**, *Aspromonte*: Montalto, on *Fagus*, 1500 m, 8.11.1988, leg. F. Bersan (10770), under M. Nardello along the road to Gambarie, on *Fagus*, 1500 m, 26.6.1989, leg. N (12361).

Sicilia - Prov. Palermo, *Madonie Mts.*: M. Quacella, on *Fagus*, 6.1988, leg. N & J. Poelt (11396).

This species of the *L. subfusca* complex is characterized by the PD+ orange reaction of the apothecial margins. Owing to its characteristic morphology and ecology it is unlikely to be confused with other species of the group. Its distribution is not completely

known: it is widespread in Europe, and recently has been reported also for North America. In Italy it occurs mostly in the montane belt, from the Alps to the Mediterranean mountains. It is one of the most common species in beech woods, mostly on *Fagus* or on other smooth-barked trees, in nutrient-poor sites.

LECANORA LEPTYRODES (Nyl.) Degel.

Venezia-Giulia - Prov. Trieste, Karst plateau: on *Carpinus*, 270 m, 10.10.1980, leg. N, det. B (2493), M. Lanaro, 500 m, on *Prunus mahaleb*, 9.10.1985, leg. N, det. B (6549)

Friuli - Prov. Udine, Julian Alps: Pontebba, along the road to Pramollo, on *Acer*, 750 m, 10.5.1981, leg. R. De Faveri & N (1407), Bagni di Lusnizza, on *Alnus*, 650 m, leg. N, det. B (4342); *Julian Prealps:* M. Matajur, on *Fagus*, 1300 m, 5.6.1981, leg. E. Loi & N (1885), Val Resia, bosco Lischiazze, on *Juglans*, 550 m, 27.9.1987, leg. N & T, det. B (9806), high Torre valley, M. Tapou, F.la Tacia, on *Fraxinus excelsior*, 870 m, 11.5.1989, leg. C, D. Gasparo & T, det. B (12324), high Torre Valley, P.so Tanamea, on *Fagus*, 11.5.1989, leg. C, D. Gasparo & T (12689); *Carnic Alps:* P.so Pura, on *Fagus*, 1500 m, 8.8.1981, leg. R. De Faveri & N (1982), Pierabech, on *Abies alba*, 20.9.1986, leg. N, det. B (7890).

Emilia-Romagna - Prov. Modena, Appennino Modenese: Pieve Pelago reserve, on *Fagus sylvatica*, 22.8.1991, leg. T & D. Gasparo, det. B (15441)

Toscana - Prov. Lucca, Appennino Tosco-Emiliano: P.so Pradarena, in beech-wood on *Fagus*, 1579 m, 10.7.1990, leg. C (14453)

Lazio - Prov. Rieti: M. Terminillo, Pian di Rosce, 1100 m, on *Crataegus*, 5.7.1989, leg. C (13009)

Sardegna - Prov. Nuoro: Barbagia, Seulo, M. Arcueri, near Cantoniera Arcueri, 950 m, 7.1987, leg. N, det. B (8846)

Calabria - Prov. Cosenza: M. Pollino, Campotenese, on *Juglans*, 1000 m ca., 1.6.1979, leg. N, det. B (594); M. Pollino, Spezzavummulu, on *Fagus*, 1664 m, 26.8.1984, leg. D. Puntillo, det. B (4693); Rende, Piano Monello, on *Alnus cordata*, 260 m, 27.12.1984, leg. D. Puntillo, det. B (4921); Sila, M. Scuro, on *Pinus laricio*, 1700 m, 29.1.1985, leg. D. Puntillo, det. B (5445); - **Prov. Reggio Calabria, Aspromonte:** Montalto, on *Fagus*, 1500 m, 8.11.1988, leg. F. Bersan (10771), Delianuova, Pian di Carmelia, on *Populus*, 1020 m, 11.4.1989, leg. N & C, det. B (12165)

Sicilia - Prov. Catania: M. Etna, Nicolosi, 2.11.1985, leg. M. Grillo (11213); - **Prov. Palermo, Madonie Mts.:** M. Quacella, on *Fagus*, 1300 m, 6.1988, leg. N & J. Poelt (11394)

This epiphytic species closely resembles *L. carpinea*, differing in the PD+ yellow-orange reaction of the apothecial margin. The two species are often associated, but *L. carpinea* seems to be more frequent in lowland areas. For Italy *L. leptyrodes* has been previously reported only from a few localities, but it is probably widely distributed throughout the country, mostly in the montane and submontane belts.

LECANORA LIVIDOCINEREA Bagl.

Toscana - Prov. Livorno, Tuscan Archipelago: Capraia, Trattoio, on *Myrtus* in coastal maquis, 100 m, 29.3.1988, leg. N, T & C (11113)

Sardegna - Prov. Sassari: Rena Maggiore, Cala Vall'Alta near S. Teresa di Gallura, on *Juniperus* in coastal maquis, 4 m, 25.3.1989, leg. N & J. Poelt (11798)

Sicilia - Prov. Trapani: Pantelleria Is., loc. Cuddia Attalora, on dead twigs of *Erica multiflora*, 500 m ca., 5.5.1981, leg. E. Loi (15823)

This epiphytic species of the *L. subfusca* complex is characterized by the C+ pink-red reaction of the thallus and apothecial margins. It closely resembles *L. chlarotera*, to which it is often associated, both in external morphology and in apothecial anatomy; owing to this similarity it has probably been overlooked. Its known distribution is limited to a few localities in the western Mediterranean region.

LECANORA MERIDIONALIS Magnusson

Friuli - Prov. Udine, Julian Prealps: high Torre Valley, M. Tapou, road to F.la Tacia, on *Prunus*, 876 m, 11.5.1989, leg. C, D. Gasparo & T, det. B (16167)

Sardegna - Prov. Sassari: Badesi mare, on wood of *Juniperus* on sand dunes, 6.1986, leg. N, det. B (8117)

This epiphytic species is closely related to *L. chlarotera*, from which it is distinguished in having black apothecial disks with a dark greenish epihymenium and a different ecology; it occurs mainly in open Mediterranean and submediterranean vegetation. In Italy it seems to be rare. Its total range includes also Switzerland (from where the species has been described), Provence and eastern North America. Old records might be under other taxa of the *L. subfusca* group. In particular, the identification of the specimens named «*L. coilocarpa*» needs a revision because this epithet, usually applied to *L. circumborealis*, in some cases has been used also for *L. meridionalis*.

LECANORA POLYTROPA V. ALPIGENA (Ach.) Schaer.

Friuli - Prov. Udine, Carnic Alps: M. Paularo, on siliceous rock, 2000 m, 16.8.1981, leg. N (1691)

Emilia-Romagna - Prov. Reggio Emilia: lake of Calamone, on acid sandstones, 1550 m, 3.8.1984, leg. N, det. B (4470)

This taxon, characterized by very large (up to 4 mm), often adpressed apothecia and an almost absent thallus, is rather well distinguished from the more common *L. polytropa* (Hoffm.) Rabenh. v. *polytropa*. It closely resembles in aspect *L. silvae-nigrae*, differing in the PD- reaction of the thalline margin. It is frequent on siliceous rocks in the Alpine and subalpine belts of the Alps. Probably it has often been included in *L. polytropa* s.l.

LECANORA POPULICOLA (DC) Duby

Sardegna - Prov. Nuoro: M. Ortobene, on *Populus*, 750 m, 25.7.1985, leg. N & J. Poelt, det. C (6138)

Calabria - Prov. Reggio Calabria, Aspromonte: Delianuova, Pian di Carmelia, on *Populus*, 1020 m, 11.4.1989, leg. N & C (12165)

This species grows mostly on *Populus tremula* but also on other trees with a rather minerotrophic bark. It is most common in the montane belt. In Italy it is seemingly frequent in the Alps, but it also extends along the Apennines. In external morphology it closely resembles *L. carpinea*, from which it is easily distinguished by the different reactions. Old records under the name *L. distans* require confirmation because this epithet has been used also for forms of *L. carpinea* with a few, scattered apothecia.

LECANORA PROMINENS Clauz. et Vezda

Toscana - Prov. Grosseto: M. Labro, on calcareous rocks (N-exposure), 1100 m, 19.5.1992, leg. B & T (16417)

This calciphilous species, described for southern France (Clauzade & Vezda, 1966), has probably a southern European distribution. From Italy there are only two records from Sardinia (Nimis & Poelt, 1987), but the species should be not rare on limestones in the montane belt. It has been probably overlooked, or confused with non-parasitic species of the *Lecanora dispersa* complex, mainly *L. crenulata* Hooker, from which it differs in the colour of the disk (not always a constant character) and the PD+ orange reaction of the amphithecial medulla.

LECANORA PSEUDISTERA Nyl.

Venezia-Giulia - Prov. Trieste: Contovello, muretto a secco di arenaria, S-exp., 250 m ca., 18.5.1988, leg. T, det. B (10963).

Toscana - Prov. Livorno, Tuscan Archipelago: Capraia, Forcella di M. Forcone, on siliceous rock, 250 m, 29.3.1988, leg. N & T, det. B (11024).

Lazio - Prov. Viterbo: Falerii Novi, on the tuff walls of the Roman town, 200 m, 2.2.1988, leg. N & T, det. B (10046); Norchia, Etruscan tombs, on tuff, 160 m, 30.1.1988, leg. N & T, det. B (10132).

Sardegna - Prov. Sassari: nuraghe S. Antine, on basalt, 317 m, 19.3.1989, leg. N & T, det. B. (11623).

This epilithic species of the *Lecanora subfusca* complex has been described several times in different parts of its range (i.e. in Europe as *L. rubrofusca* B. de Lesd. from southern France and as *L. clauzadei* B. de Lesd. from Liguria). This is probably due to the high variability of the thallus morphology, from dispersed-verrucose to areolate and sometimes subsquamulose. Supposedly, also *L. sbarbaronis* (B. de Lesd.) Zahlbr. described from Liguria, which has the same apothecial anatomy of *L. clauzadei* and an areolate thallus (Clauzade & Roux, 1985), might be a form of *L. pseudistera*. The total range of *L. pseudistera* is very unclear: it is also known from France, Japan and eastern North America and seems to be limited to the temperate zone (Brodo, 1984). For Italy it is known from Liguria and Tuscany (as *L. clauzadei* and *L. rubrofusca*). It seems to be bound to more or less siliceous substrata in lowland areas. Old records might be under *L. campestris* (see discussion above).

LECANORA PULICARIS (Pers.) Ach.

Friuli - Prov. Udine, Carnic Alps: M. Novarza, on *Salix*, 1600 m, 11.9.1984, leg. N, det. B (4616), road to M. Nauleni, on *Fagus*, 1450 m, 17.9.1992, leg. B (16567); Julian Prealps: M. Joanaz, above the village of Montefosca (Pulfero), on *Fraxinus excelsior*, 820 m, leg. N, det. B (6306), high Torre Valley, NE of M. Testa Grande, on *Larix*, 1350 m, 12.5.1989, leg. C, D. Gasparo & T (12690), high Torre Valley, along the stream Mea, loc. Sriegnibosch, on *Salix*, 700 m, 12.5.1989, leg. C, D. Gasparo & T (12691).

Liguria - Prov. Savona: M. Castellazzo, on *Quercus pubescens*, 400 m, 18.9.1990, leg. M. Bellio & C, det. B (14666).

This species has a hemi- to southern boreal distribution. In Italy it occurs in the montane and submontane belts of the Alps, Apennines and the mountains of Sicily. It grows on the bark of various trees, both coniferous and deciduous, and on lignum. It is very closely related to *L. circumborealis*, differing mainly in the PD+ red reaction of the apothecial margins. This character occasionally is absent, making difficult an immediate distinction of the two taxa. In such cases, the size of the spores, the thickness of the cortex and the colour of the epihymenium can be used as differential characters. *L. pulicaris* and *L. circumborealis* are characterized, with respect to the other taxa of the group, by the finely interspersed epihymenium with small granules between the tips of the paraphyses, a character found also in *L. salicicola* (Hinteregger et al., 1989). Old records of *L. chlarona*, which often reacts PD-as well, could refer to *L. chlarotera*.

LECANORA PUNICEOFUSCA Bagl.

Toscana - Prov. Livorno, Tuscan Archipelago: Capraia, Belvedere, on tuff, Excursion S.L.I. 28.3-4.4.1988, leg. N, T & C, det. B (10169)

Sardegna - Prov. Cagliari: S. Lucia near Capoterra, on hard silicate, 80 m, 6.1985, leg. N & J. Poelt, det. B (7976); - Prov. Nuoro: Torre Argentina north of Bosa, on tuff, 20 m, 19.7.1987, leg. N (8811)

Also this species belongs to the *L. subfusca* complex. It seems to be closely related with *L. campestris* (the two species have a similar apothecial anatomy), but has some very distinctive characters, i.e. a rather thick, grey, verrucose-areolate thallus with a black hypothallus, and dark apothecial margins containing blackish pigments with a positive, red reaction to HNO₃ (this character, however, can be due to the presence of a parasite). It is known only for the northern Tyrrhenian coasts and occurs on very coarse-textured siliceous rocks (Nimis & Poelt, 1987); probably it has been largely overlooked.

LECANORA REUTERI Schaerer

Friuli - Prov. Udine, Carnic Alps: M. Tinisa, calcareous faces, 1800 m, 2.9.1988, leg. T, det. C (10750)

This placodioid species grows on underhanging or vertical surfaces of calcareous rocks. For Italy it was known with certainty only from Veneto (old records). It is known from isolated stations in the mountains of southern Europe. The strongly fragmentary range could reflect the relic character of this taxon (Poelt & Vezda, 1977).

LECANORA RUBICUNDA Bagl.

Puglia - Prov. Foggia, Tremiti Islands: S. Domino, on *Quercus ilex*, 100 m, 4.7.1986, leg. N, det. B (7584)

Sicilia - Prov. Trapani, Egadi Islands: Maretimo, under Pizzo delle Fragole, on twigs of *Pistacia*, 500 m, Excursion S.L.I. 24-31.3.1991, det. B (15639)

Another epiphytic species which belongs to the *L. subfusca* complex and closely resembles *L. chlarotera* (in thallus, apothecial anatomy and spores), differing in the larger (up to 3 mm) apothecia constricted at the base, the KOH+blood-red reaction of the disk and the KOH+yellow to red reaction of the thallus, due to the presence of norstictic acid. It seems to be widespread in the western Mediterranean region; for Italy it was previously known only from Liguria and Sardegna.

LECANORA RUGOSELLA Zahlbr.

Friuli - Prov. Udine, Carnic Alps: P.so Pura, near baita Torino, on *Fagus*, 1417 m, 15.09.1992, leg. B & L. Cervo (16642)

Abruzzo - Prov. Pescara: S. Tommaso, in Oak-wood on *Quercus*, 580 m, 7.11.1990, leg. C & D. Gasparo, det. B (15307)

This species has been treated by most of the European authors as a synonym or as a form of *L. chlarotera* Nyl. (e.g. Poelt & Vezda, 1981 and Clauzade & Roux, 1985). However, it has some characters that set it apart from *L. chlarotera*: large apothecia constricted at the base with verrucose margins, and very broad (sometimes almost round) spores with thick walls. Among all the specimens of *L. chlarotera* of TSB, only two specimens from Italy and two from Greece correspond to *L. rugosella*. Its European distribution is rather poorly known, the species being known also from North America (Brodo, 1984).

LECANORA SAMBUCCI (Pers.) Nyl.

Venezia-Giulia - Prov. Trieste, Karst plateau: Basovizza, on *Populus* and *Sambucus*, 400 m, 11.10.1981, leg. E. Loi & N, det. C (5255)

Calabria - Prov. Cosenza: Sila Greca, Fallistro, on Robinia, 1390 m, 15.7.1988, leg. N, T & C, det. C (10740)

This species belongs to the *L. hagenii* complex, and is characterized by the multi-spored asci. It grows on mineral-rich bark. It seems to be rather widespread throughout Italy. In external appearance it closely resembles *L. hagenii* or *L. persimilis*.

LECANORA SCHISTINA (Nyl.) Arnold

Toscana - Prov. Livorno, Tuscan Archipelago: Capraia, Volterraio, on trachyandesite, NW-exp., 330 m, 4.8.1990, leg. P. Nicoli, det. B. (14815)

Sardegna - Prov. Cagliari: Isola dei Cavoli, on acid rock, 5.1987, leg. N & J. Poelt, det. B (8131); Santadi, on siliceous rock, 400 m, 5.1987, leg. T (9578); Isola di S. Antioco, western coast, 5 km south of Calasetta, on tuff near the coast, 6 m ca., 9.1989, leg. N, C. Roux, T & A. Vezda (13017); Oasi WWF of M. Arcosu, Concale Petuntu, on siliceous rock, 700 m, 8.1989, leg. N., C. Roux, T & A. Vezda (13281); - **Prov. Nuoro:** Macomer, nuraghe Muradu, on trachyte, N-exp., 640 m, 3.1989, leg. N & T (11583); - **Prov. Oristano:** Tresnuraghes, nuraghe Porcos, on trachyte, N-exp., 250 m, 21.3.1989, leg. N & T (11598); - **Prov. Sassari:** Capo Falcone, on schists, 120 m, 7.1985, leg. N & J. Poelt (5986); Capo d'Orso, on granite, 80 m, 5.1986, leg. N (73004); Punta Sardegna, Palau, on granite, 70 m, 25.7.1987, leg. F. Ceni (10618)

Calabria - Prov. Cosenza: river Caronte Valley, Pantanolungo, on cristal rock, 720 m, 1.3.1986, leg. D. Puntillo (7176)

This species occurs on siliceous rocks, extending from the western Mediterranean region and Macaronesia to the Atlantic coast of Great Britain (Egea, 1989). It seems to be somewhat linked to suboceanic climate conditions. In Italy it is rather frequent along the Tyrrhenian coast. It is very close to *L. gangaleoides* in external morphology, apothecial anatomy and spores, differing in the KOH + red reaction of the thallus and in the absence of orange pigments in the medulla. The two species also have a similar ecology and distribution. As in the case of *L. rubicunda* and *L. chlarotera*, *L. schistina* could be a chemotype of *L. gangaleoides* with norstictic acid.

LECANORA SORALIFERA (Suza) Räsänen

Friuli - Prov. Udine, Carnic Alps: M. Chiadin, on sandstone, 1900 m, 13.11.1983, leg. M. Palma, det. N (3793)

This sorediate species of non-calcareous rocks is known from Central and northern Europe; its total distribution is rather poorly known. Being often sterile, it might have been overlooked, or confused with other sorediate saxicolous species. The record is new to Italy.

LECANORA STROBILINA (Sprengel) Kieffer

Venezia-Giulia - Prov. Trieste, Karst plateau: abisso di Ferneti, on *Prunus*, 18.9.1983, leg. N, det. B (16601)

Friuli - Prov. Pordenone: Claut, on *Pinus*, 15.5.1983, leg. E. Loi, det. B (3405); Tramonti di Sotto, on *Carpinus*, 10.10.1983, leg. N, det. C (3669); Toppo, 29.11.1984, leg. E. Loi, det. B (4705); Friulian plain, Usago, on *Carpinus*, 300 m, 2.1985, leg. E. Loi, det. C (5331)

This species is known from Europe, North America and New Zeland. For Italy there is only one previous report (Nimis, 1988). It occurs on acid bark and could have been overlooked or confused with other epiphytic *Lecanora* with greenish, thin, more or less granulose thallus. It seems to be linked to suboceanic climate conditions.

LECANORA UMBROSA Degel.

Friuli - Prov. Udine, Carnic Alps: M. Pieltinis, on Werfen sandstones, 1900 m, 20.9.1981, leg. E. Loi

& N (2033). Casera Razzo, on sandstone, 1750 m, 20.9.1981, leg. E. Loi & N (2042), M. Novarza, on sandstone, 1700 m, 11.9.1984, leg. N (4469), Lateis, under F.lla of M. Novarza, on basic sandstones, 1650 m, 12.9.1991, leg. T (15384)

L. umbrosa is one of the few sorediate species of the *L. subfusca* complex. It occurs on calcareous rocks, usually on inclined to overhanging surfaces. It is known from scattered localities in Europe and North America. The specimens cited here are all fructified, but *L. umbrosa* is not often fertile. For this reason (sterile lichens usually go uncollected) it is almost certainly underrepresented in the herbaria and its distribution should be much wider than hitherto assumed.

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