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ITINERA ADRIATICA - LICHENS FROM THE EASTERN PART OF THE ITALIAN PENINSULA

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Abstract: 805 infrageneric taxa, 777 of lichenized fungi, 23 of lichenicolous fungi, and 5 of non-lichenized fungi belonging to genera including also lichenized forms are reported from the eastern part of the Italian Peninsula. Six regions were surveyed, with a total of 130 collecting sites: Marche (35 sites, 420 taxa), Umbria (2 sites, 106 taxa), Abruzzo (23 sites, 460 taxa), Molise (11 sites, 304 taxa), Puglia (38 sites, 424 taxa) and Basilicata (21 sites, 337 taxa). These regions were among the lichenologically least known in Italy; their floras, compared with data provided six years ago in the first checklists of Italian lichens, have increased as follows: Marche, 159% (presently known flora: 484 taxa); Umbria, 455% (261 taxa); Abruzzo, 76% (589 taxa); Molise (305 taxa); Puglia, 48% (566 taxa); Basilicata, 115% (464 taxa). Fourteen taxa (*Anema moedligense, Arthonia anombrophila, Aspicilia desertorum, Caloplaca veneris, Cresporhaphis wienkampii, Dirina cretacea, Immersaria uzbekica, Lecanora congesta, L. graeca, Lecidea albohyalina, Peccania salevensis, P. tiruncula, Thelidium dionantense,* and *T. impressum*) are new to the Italian lichen flora. Earlier hypotheses about a basic difference in the lichen floras of western (Tyrrhenian) and eastern (Adriatic) peninsular Italy, the former with a higher incidence of subtropical-suboceanic species, are confirmed by the new data.

Introduction

Italy is one of the lichenologically best investigated countries in the World. Most of the records derive from the «Golden Age» of Italian lichenology, between 1846 and 1880, and from the recent, somehow surprising resurrection of Italian lichenology which started in 1987, with the foundation of the Società Lichenologica Italiana (Nimis 1988). The most important earlier studies concerned, in northern Italy, the regions of Liguria, Piemonte, Lombardia, Trentino-Alto Adige and Veneto; in southern-central Italy those of Toscana, Sardegna, and Sicilia (Nimis 1993). More recently, the lichen flora of Sardegna was studied by Nimis & Poelt (1997), and that of Calabria has been the object of a thorough monograph by Puntillo (1996), which transformed this formerly very poorly known region into the best known one of southern Italy, and probably of most of the Mediterranean area. The Adriatic, eastern part of the Italian Peninsula, stretching from the Marche to the Puglia regions, remained almost unexplored by lichenologists. Nimis (1993) reported only 187 species from Marche, 47 from Umbria, 335 from Abruzzo and Molise (all records were from Abruzzo), 383 from Puglia and 216 species from Basilicata. Such figures, when compared with those presently available for other Italian regions (e.g. more than 800 species known from Friuli, Veneto, Trentino-Alto Adige, Lombardia, Piemonte, Toscana, Calabria, Sicilia, and Sardegna), show how much the eastern side of the Italian Peninsula was neglected by lichenologists, both in the past and in more recent times. After 1993 there were only a few contributions dealing with these regions: Ravera 1998 (Umbria), Recchia *et al.* 1993, Recchia & Villa 1996, Olivieri & Pacioni 1996, Olivieri *et al.* 1997a,b, and Loppi *et al.* 1999 (Abruzzo), Bartoli & Puntillo 1996, 1998 (western Basilicata). This state of things has two main reasons: a) the eastern side of the Peninsula lied outside the most fashionable «Italian Tour» of the last century where most universities were located (Firenze, Pisa, Roma, Napoli); b) the eastern side of the Peninsula is, admittedly, lichenologically less interesting than its western side, due to its more «continental» climate, and to the absolute prevalence of calcareous and alluvial substrata.

In order to contribute to a more even exploration of the country, we decided to dedicate much time and work to the lichenological exploration of the eastern part of the Peninsula, the least promising and probably the least interesting part of Italy. The present paper reports the results of several field surveys carried out between 1996 and 1999 in Marche, Umbria, Abruzzo, Molise, Puglia and Basilicata.

Survey Area, Data and Methods

The survey area (Fig. 1) includes the eastern side of the Italian Peninsula, from the region of Marche in the north to that of Puglia in southern Italy; the region of Basilicata, which partly belongs to Tyrrhenian Italy, and especially its eastern part, was also included. Most of the collections were gathered in the course of four field surveys:

1) Nimis & Tretiach: April 4-13, 1996;
2) Nimis & Tretiach: August 6-20, 1996;
3) Nimis & Tretiach, with H. Hertel (München): April 1-6, 1997;
4) Nimis & Tretiach, with L. Malyshev (Novosibirsk): April 13-17, 1997.

Just short before going to press, seven further stations were added thanks to two short collecting trips of M. Tretiach and P.L. Nimis, five of them in the Marche, one in Abruzzo and one in Umbria. The latter region was not included in the original plan of our *Iter*. However, since this is the lichenologically least known part of Italy, we decided to include it at the last moment, adding also a further small collection on the walls of the village of Castelluccio, taken during the first field trip, and originally excluded from our plan: the two collections from Umbria added 64 species to its lichen flora. The seven collections by Tretiach and Nimis, plus the earlier one in Castelluccio, will be indicated by letters (A-H), and not by numbers, in the following list of localities.

Altogether, 130 collecting sites were explored, 35 in the Marche, 2 in Umbria, 23 in Abruzzo, 11 in Molise, 38 in Puglia, and 21 in Basilicata. The altitudinal distribution of the stations is reported in Fig. 2. A numbered list of localities (numbers - and letters - are used as abbreviations in the floristic list), is given below. Collectors are abbreviated as follows: **N**: P.L. Nimis, **T**: M. Tretiach, **NT**: P.L. Nimis and M. Tretiach. Further details on the samples, kept in the TSB lichen herbarium, are in Nimis (1999b).

List of localities:

Marche: **1)** Casteldimezzo (PS), 197 m, 20.8.96, leg. N; **2)** Montefeltro, S. Leo (PS), 540 m, 19.8.1996, leg. N; **3)** Montefeltro, Calvillano, Mt. Carpegna (PS), 1300 m, 20.08.1996, leg. NT; **4)** Senigallia, loc. S. Stefano (AN), 65 m, 11.04.1997, leg. T; **5)** Poggio S. Marcello (AN), 380 m, leg. T; **6)** Valico di Rocca Trabaria (PS), 1049 m, 15.08.1996, leg. N; **7)** Mt. S. Vito (AN), 250 m, 04.1997, leg. T; **8)** below Mt. Conero, Portonovo (AN), 2 m, 13.08.1996, leg. NT; **9)** Mt. Conero, Badia S. Pietro (AN), 450 m, 13.08.1996, leg. NT; **10)** Jesi (AN), 100 m, 04.1997, leg. T; **11)** Mercatello sul Metauro (PS), 400 m, 15.08.1996, leg. N; **12)** Frontone (PS), Mt. Acuto, Cinisco Valley, 600 m, 13.04.1996, leg. NT; **13)** Mt. Acuto (PS), 1300 m, 13.04.1996, leg. NT; **14)** Genga (AN), 440 m, 04.1997, leg. T; **15)** Loreto (AN), 127 m, 01.04.1997, leg. NT; **16)** Poggio S. Romualdo (AN), 940 m, 12.09.1996, leg. T; **17)** Cerreto d'Esi (AN), 280 m, 04.1997, leg. T; **18)** Sibillini, Visso, Ussita (MC), 650 m, 06.08.1996, leg. NT; **19)** Sibillini, Visso, Ussita, loc. Frontignano (MC), 850 m, 06.08.1996, leg. NT; **20)** Sibillini, Visso, Ussita, loc. Frontignano (MC), 1300 m, 06.08.1998, leg. NT; **21)** Sibillini, Visso, Mt. Bove (MC), 1750 m, 06.08.1996, leg. NT; **22)** Castel di Croce (AP), 650 m, 08.08.1996, leg. NT; **23)** Mt. Ascensione (AP), 520 m, 08.08.1996, leg. NT; **24)** Sibillini, Gola dell'Infernaccio (AP), 800 m, 07.08.1996, leg. NT; **25)** Sibillini, high Aso Valley, loc. Tofe di Montemonaco (AP), 740 m, 07.08.1996, leg. NT; **26)** Sibillini, P.so di Gualdo, 1450 m, 07.08.1996, leg. NT; **27)** Sibillini, Orsara Valley (AP), 1100 m, leg. NT; **28)** Sibillini, Mt. Vettoretto, loc. Forca di Presta (AP), 1550 m, 07.08.1996, leg. NT; **29)** Monti della Laga, Acquasanta di Umito (AP), 800 m, 08.08.1996, leg. NT; **30)** road from Morrice to Acquasanta, Mt. Calvo, on the pass, 980 m, 02.04.1997, leg. NT. **A)** Sibillini, between Sarnano and Pizzo di Meta, after Piobbico (MC), ca. 1000 m, 06.06.1999, leg. T; **B)** Sibillini, between Sasso Tetto and Pintura di Bolognina (MC), 1350 m, 06.06.1999, leg. T; **C)** Sibillini, between Fiastra and S. Lorenzo Colpolina (MC), S. Marco church, 500 m, 06.06.1999, leg. T; **D)** Sibillini, Visso, Santuario di Macereto, 1000 m, 06.06.1999, leg. T; G) Lago di Friastra (MC) presso S. Lorenzo, ca. 650 m, 10.8.1999, Leg. N.

Umbria: **E)** Sibillini, between Norcia and

Forca Canepine, below Mt. Ventosola (PG), 1300 m, 07.06.1999, leg. T & D. Pinna; **F)** Sibillini, Castelluccio (PG), 1460 m, 07.08.1996, leg. NT.

Abruzzo: **31)** 2 km south of Cesano (TM), 390 m, 02.04.1997, leg. NT; **32)** Castellana Valley, loc. Morrice (TE), 715 m, 02.04.1997, leg. NT; **33)** Pascellata, loc. Rocca S. Maria (TE), 800 m, 08.08.1996, leg. NT; **34)** Monti della Laga, S. Stefano della Laga (TE), 840 m, 08.08.1996, leg. NT; **35)** Lago di Campotosto (AQ), 1350 m, 12.08.1996, leg. NT; **36)** Gran Sasso, below Corno Piccolo (AQ), 2350 m, 09.08.1996, leg. NT; **37)** Gran Sasso, Fonte Vetica (AQ), 1650 m, 09.08.1996, leg. NT; **38)** Gran Sasso, ref. Duca d'Abruzzi (AQ), 2200 m, 09.08.1996, leg. NT; **39)** Gran Sasso, Campo Imperatore (AQ), 1500 m, 09.08.1996, leg. NT; **40)** Gran Sasso, Pass between S. Stefano di Sessanio and Campo Imperatore (AQ), 1680 m, 06.04.1997, leg. NT; **41)** Rocca Calascio (AQ), 1450 m, 06.04.1997, leg. NT; **42)** road between Capestrano and Ofena, loc. Pagliare-Colonia Franca, 415 m, 06.04.1997, leg. NT; **43)** just below Capestrano, roadside of the Highway 17 (AQ), 430 m, 12.08.1996, leg. NT; **44)** Majella, above Blockhaus, loc. Grotte di Celano (CH), 2150 m, 10.08.1996, leg. NT; **45)** Majella, Pennapiedimonte (CH), loc. Colle dell'Angelo, trail n. 32, 1200 m, 10.08.1996, leg. NT; **46)** Majella, above Blockhaus, Mt. Focalone, biv. Fusco (CH), 2500 m, 10.08.1996, leg. NT; **47)** Rocca Caramanico (CH), 1000 m, 12.08.1996, leg. NT; **48)** Sulmona (AQ), eremo di M. Morrone, 500 m, 05.04.1997, leg. NT; **49)** Villalago (AQ), Gole del Sagittario, 685 m, 11.08.1996, leg. NT; **50)** road between Gioia dei Marsi and Gioia Vecchia (AQ), 1200 m, 11.08.1996, leg. NT; **51)** Parco Nazionale d'Abruzzo, F.te Pantano (AQ), 1450 m, 11.08.1996, leg. NT; **52)** Parco Nazionale d'Abruzzo, road between Opi and Valletta Barrea, 1050 m, 11.08.1996, leg. NT; **H)** Civitella del Tronto, below the castle, ca. 650 m, 09.08.1999, leg.N.

Molise: **53)** above Pescopennataro (IS), 1300 m, 05.04.1997, leg. NT; **54)** Pescopennataro (IS), 1195 m, 05.04.1997, leg. NT; **55)** from Agnone 4 km before Pescopennataro (IS), 1050 m, 05.04.1997, leg. NT; **56)** Castelbarone (IS), 1150 m, 05.04.1997, leg. NT; **57)** road between Larino and Montorio (CB), bridge on Cigna stream, 315 m, 13.04.1998, leg. NT; **58)** road from Ururi to Serracapriola, loc. Casone Cantalupo (CB), 95 m, 13.04.1998, leg. NT; **59)** below Lupara, along the river Biferno, 280 m, 04.04.1997, leg. NT; **60)** Pietrabbondante (IS), Mt. Caraceno, 1150 m, 04.04.1997, leg. NT; **61)** just below Pietrabbondante (IS), 980 m, 04.04.1997, leg. NT; **62)** just above Petrella Tifernina (CB), 780 m, 04.04.1997, leg. NT; **63)** Pesche Natural Reserve (IS), 800 m, 05.04.1997, leg. NT.

Puglia: **64)** Tremiti Islands, S. Nicola (FG), 60 m, 03.04.1997, leg. NT; **65)** Gargano, near Vieste, Torre di Porticello (FG), 30 m, 05.04.1996, leg. NT; **66)** Gargano, tra Vico Garganico e S. Menaio (FG), 340 m, 06.04.1996, leg. NT; **67)** Gargano, Lago di Lesina (FG), 2 m, 04.04.1996, leg. NT; **68)** Gargano, above Vieste (FG), 85 m, 05.04.1996, leg. NT; **69)** Gargano, between Vico Garganico and Foresta Umbra (FG), 550 m, 06.04.1996, leg. NT; **70)** Gargano, road from Vieste to Mattinata, C.ra Cupani (FG), 320 m, 05.04.1996, leg. NT; **71)** Gargano, Foresta Umbra (FG), near "Casa Forestale", 750 m, 06.04.1996, leg. NT; **72)** Gargano, below Pietra Appesa (FG), 450 m, 05.04.1996, leg. NT; **73)** Gargano, road between Foresta Umbra and Monte S. Angelo (FG), 600 m, 06.04.1996, leg. NT; **74)** Gargano, Monte S. Angelo (FG), below Mass. Paolino, 550 m, 05.04.1996, leg. NT; **75)** Gargano, Monte S. Angelo, Mass. Paolino, 700 m, 05.04.1996, leg. NT; **76)** Gargano, below P.so del Lupo (FG), 520 m, 05.04.1996, leg. NT; **77)** Fortore river, S. Maria del Ponte, Civitate bridge (FG), 45 m, 13.04.1998, leg. NT; **78)** Gargano, Monte S. Angelo (FG), S. Maria di Pulsano, 500 m, 05.04.1996, leg. NT; **79)** Gargano, Monte S. Angelo, Sanctuary of S. Maria di Pulsano (FG), 400 m, 05.04.1996, leg. NT; **80)** Daunia, Occhito lake, below Celenza (FG), Tredici Archi Bridge, 245 m, 13.04.1998, leg. NT; **81)** Daunia, just below S. Marco della Catola (FG), 470 m, 14.04.1998, leg. NT; **82)** Daunia, near Volturara Appula (FG), Mt. Sambuco, 980 m, 13.04.1998, leg. NT; **83)** Orsara di Puglia (FG), 650 m, 14.04.1998, leg. NT; **84)** railway station of Bovino, below Mt. Fedele, 260 m, 14.04.1998, leg. NT; **85)** Orsara di Puglia (FG), below Mt. Preisi, 419 m, 14.04.1998, leg. NT; **86)** Deliceto (FG), Convento della Consolazione, 540 m, 14.04.1998, leg. NT; **87)** Castel del Monte (BA), 520 m, 07.04.1996, leg. NT; **88)** road between Spinazzola and Poggiorsini (BA), 450 m, 07.04.1996, leg. NT; **89)** highway no. 97, c. 4 km out of Gravina di Puglia, 330 m, 07.04.1996, leg.

NT; **90)** Cassano delle Murge (BA), 400 m, 12.04.1996, leg. NT; **91)** Selva di Fasano, above S. Lucia (BR), 390 m, 08.04.1996, leg. NT; **92)** Villanova di Ostuni (BR), 2 m, 08.04.1996, leg. NT; **93)** Gravina di Puglia (BA), 330 m, 07.04.1996, leg. NT; **94)** Gioia del Colle (BA), 390 m, 07.04.1996, leg. NT; **95)** Martina Franca (TA), loc. Bosco delle Pianelle, 400 m, 08.04.1996, leg. NT; **96)** mouth of the Lama di Lenne river (TA), 3 m, 10.04.1996, leg. NT; **97)** Otranto (LE), Torre della Serpe, 5 m, 09.04.1996; **98)** S. Cesarea Terme (LE), 50 m, 09.04.1996, leg. NT; **99)** Gallipoli (LE), Torre del Pizzo, 2 m, 09.04.1996, leg. NT; **100)** Marina di Novaglie (LE), 60 m, 09.04.1996, leg. NT; **101)** road between S. Gagliano del Capo and Marina di Novaglie (LE), 60 m, 09.04.1996, leg. NT.

Basilicata: **102)** Melfi (PZ), below the castle, 530 m, 14.04.1998, leg. NT; **103)** Venosa (PZ), road Maschito Mass. Sterpara, 3 km from Venosa, 445 m, 16.04.1998, leg. NT; **104)** Venosa (PZ), 400 m, 14.04.1998, leg. NT; **105)** Mt. Vulture near Melfi (PZ), 1330 m, 15.04.1998, leg. NT; **106)** Lago Piccolo di Montecchio (PZ), just above the lake, 780 m, 15.04.1998, leg. NT; **107)** Monastery of Montecchio, Mt. Vulture (PZ), 810 m, 17.04.1998, leg. NT; **108)** road Atella-Lagopesole (PZ), 4 km from Atella, 514 m, 15.04.1998, leg. NT; **109)** road S.Giorgio-Acerenza (PZ), Bosco S. Giuliano near the bridge on the Bradano river, 550 m, 17.04.1998, leg. NT; **110)** road S.Giorgio-Acerenza (PZ), Bosco S. Giuliano, loc. Osteria Casone, c. 10 km before Acerenza, 775 m, 17.04.1998, leg. NT; **111)** Lagopesole (PZ), near the castle, 885 m, 15.04.1998, leg. NT; **112)** railway station of Venusio Vecchia (MT), 150 m, 11.04.1996, leg. NT; **113)** M.li Foi di Picerno, above Picerno (PZ), 1100 m, 16.04.1998, leg. NT; **114)** Diga di S. Giuliano (MT), 140 m, 11.04.1996, leg. NT; **115)** Gravina di Picciano, near the Bradano Bridge (MT), 150 m, 11.04.1996, leg. NT; **116)** Mt. Volturino (PZ), road toward the telpher station, 1500 m, 11.04.1996, leg. NT; **117)** Mt. Volturino, Marsico Vetere (PZ), 1300 m, 11.04.1996, leg. NT; **118)** Madonna di Viggiano (PZ), loc. Acqua dei Pastori, 1370 m, 11.04.1996, leg. NT; **119)** above Viggiano (PZ), road to S. Maria di Viggiano, 1000 m, 11.04.1996, leg. NT; **120)** Marina di Pisticci (MT), 5 m, 10.04.1996, leg. NT; **121)** Perpusillo lake, near the dam below Montemurro (PZ), 550 m, 11.04.1996, leg. NT; **122)** mouth of the Sinni river, loc. Bosco Pantano Sottano (PZ), 550 m, 10.04.1996, leg. NT.

A few records only derive from more or less sporadic collections carried out ouside the main field trips. A map of the collecting sites is provided in Fig. 1. The sampling sites were selected in such a way as to cover a broad spectrum of altitudinal and ecological situations. The number of samples taken in each site, and the time devoted to its exploration, were very variable. Sometimes several hours were devoted to the investigation of natural habitats, in other cases only a few minutes were spent in sampling special habitats, such as wayside trees, roofing tiles, cement and mortar walls. No effort was made for obtaining reasonably complete floristic lists at each site and no selection of species was carried out: both trivial and rare species were collected, to obtain an estimate of their frequency in the survey area.

In order to compact the ecological information attached to each taxon, for each taxon (except for a few non-lichenized fungi), this has been organized into 13 fields (the last three fields being optional), separated by "/", except for fields 5-8, which are separated by ",".

1) Growth form:
   F: non-lichenized, non-lichenicolous fungus (belonging to genera including also lichenized species);
   LF: lichenicolous fungus;
   Cr: crustose;
   Cr.end: crustose endolithic,
   Cr.pl: crustose placodiomorph,
   Sq: squamulose;
   Fol: foliose;
   Fol.b: foliose broad-lobed (*Parmelia*-type),
   Fol.n: foliose narrow-lobed (*Physcia*-type),
   Frut: fruticose;
   Frut.f: fruticose filamentous.
2) Photobiont (of course, not given for lichenicolous and non-lichenized fungi):
   Ch: green algae other than *Trentepohlia,*
   Tr: *Trentepohlia,*
   Cy.h: cyanobacteria, filamentous forms (e.g. *Nostoc*, *Scytonema*),
   Cy.c: cyanobacteria, coccaceous forms (e.g. *Gloeocapsa*, *Xanthocapsa*).
3) Reproductive strategy:
   S: mainly sexual,
   A.s: mainly asexual, by soredia, or soredia-like structures (e.g. blastidia),

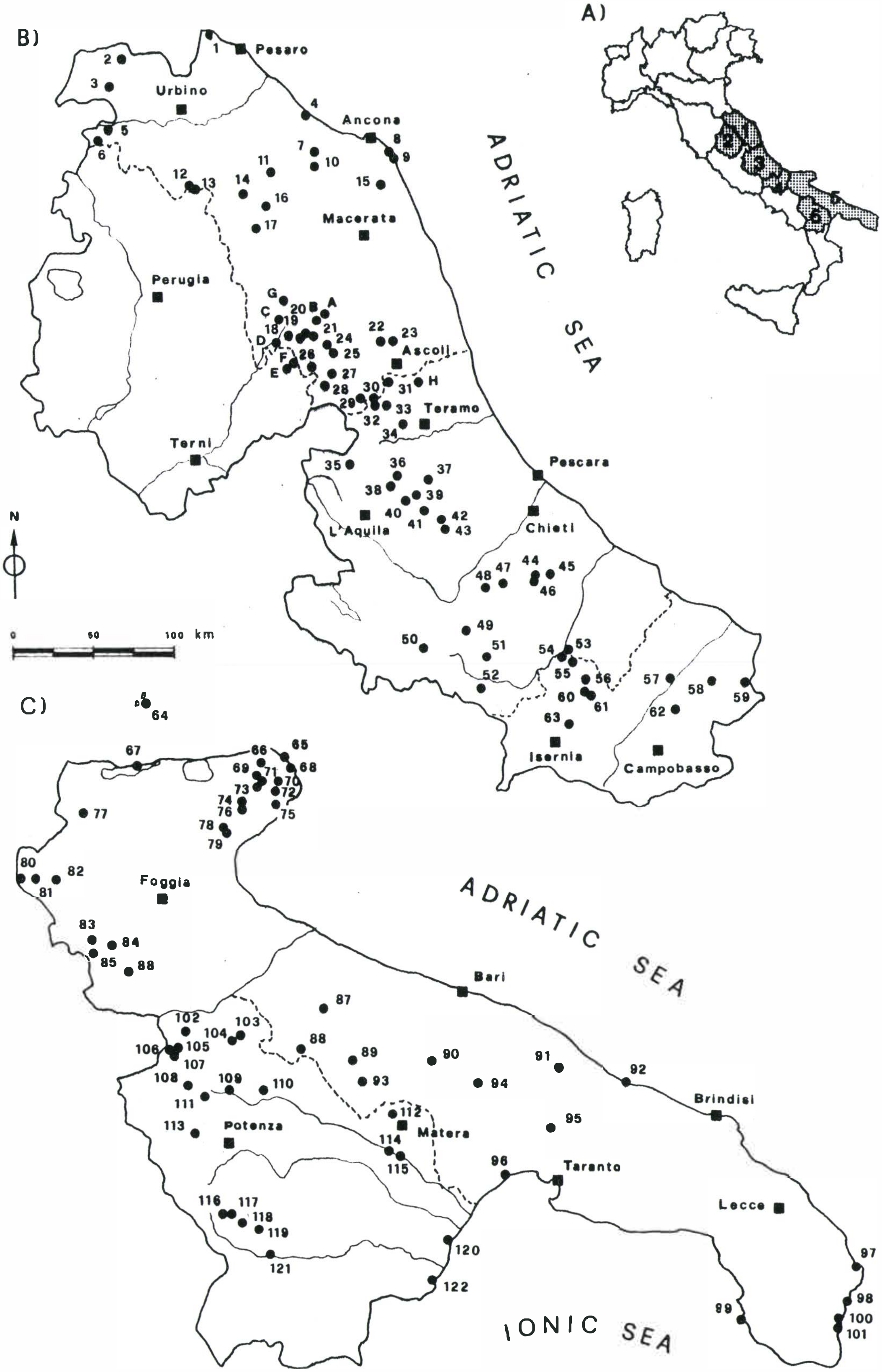

Fig. 1 - Survey area (A; 1: Marche; 2: Umbria; 3: Abruzzo; 4: Molise; 5: Puglia; 6: Basilicata) with the geographic distribution of sampling stations (B,C).

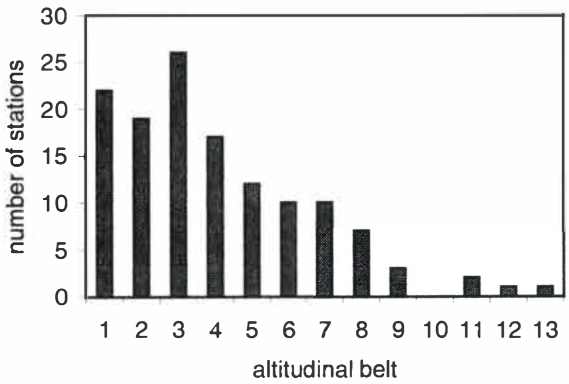

Fig. 2 - Frequency distribution of the stations of Fig. 1 in altitudinal belts of 200 m each, from sea level to 2600 m.

A.i: mainly asexual, by isidia, or isidia-like structures (e.g. schizidia),
A.f: mainly asexual, by thallus fragmentation.

4) Substratum:
Epiph: epiphytic,
Calc: on calciferous rocks,
Sil: on acid siliceous rocks,
Sil.b: on base-rich siliceous rocks,
Lign: on lignum,
Terr: on soil, terricolous mosses, plant debris.

5-8) Ecological indices: these are inspired by those proposed by Wirth (1995) for central Europe, with several important modifications. Each index is expressed by a 5-class ordinal scale. The ecological range of each taxon has been estimated considering its average ecological behaviour in Italy, which is not always easy, due to the high ecological-climatical diversity of the country.

5): pH of the substratum:
1: on very acid substrata (e.g. lignum, acid peaty soil, very acid, non eutrophicated siliceous rocks),
2: intermediate between 1 and 3,
3: on subneutral substrata (e.g. on base-rich siliceous rocks, trees with eutrophic bark),
4: intermediate between 3 and 5,
5: on basic substrata (e.g. pure limestone).

6): light requirements:
1: in very shaded situations (e.g. deep gorges, closed evergreen forests),
2: in shaded situations (e.g. north-exposed faces in closed deciduous forests),
3: in sites with diffuse light but scarce direct solar irradiation (e.g. horizontal surfaces in rather open-canopied deciduous woodlands),
4: in sun-exposed sites, but avoiding extreme solar irradiation (e.g. horizontal surfaces in more or less open stands),
5: in sites with very high direct solar irradiation (e.g. south-exposed surfaces in completely open stands).

7): water requirements (mainly referring to air humidity):
1: hygrophytic (in sites with very high frequency of fog),
2: rather hygrophytic, intermediate between 1 and 3,
3: mesophytic,
4: xerophytic (in dry situations, but absent from extremely arid stands),
5: very xerophytic (rarely applied to Italian lichens for the scarcity of sub-desertic habitats).

8) eutrophication (including deposition of dust and nitrogen compounds):
1: no eutrophication,
2: very weak eutrophication,
3: weak eutrophication,
4: rather high eutrophication,
5: very high eutrophication.

9) Altitudinal range: occurrence in 5 main vegetation belts:
1: eu-Mediterranean belt, potential vegetation: evergreen *Quercus ilex forests,*
2: submediterranean belt, potential vegetation: deciduous *Quercus-Carpinus* forests,
3: Mediterranean-montane belt, potential vegetation: *Fagus*-forests,
4: Oroboreal belt of the Alps (incl. *Picea abies, Larix decidua* and *Pinus cembra* stands),
5: vegetation above treeline (incl. Alpine tundras and eu-Oromediterranean vegetation).

10) Commonness-rarity status: this is just a first, rough approximation, referring to the frequency of a given taxon in the altitudinal belts and within the combination of ecological factors expressed by its indices, and is based on a preliminary statistical analysis of several hundred samples preserved in the TSB herbarium. The *er* (extremely rare) designation is adopted only for lichens which are known from less than four stations, and/or not found in any station in recent times, excluding recently-described species, and taxonomically very poorly known taxa.

er: extremely rare,
vr: very rare,
r : rare,
rr: rather rare,
rc: rather common,
c: common,
vc: very common,
ec: extremely common.

11) Phytoclimatic range in Europe:
oc: restricted to areas with humid-warm, oceanic conditions,
suboc: most common in areas with a humid-warm climate (e.g. most of Tyrrhenian Italy, the Insubrian district, the eastern pre-Alps),
subc: subcontinental: restricted to areas with a dry-subcontinental climate (e.g. dry Alpine valleys, some montane localities along the Adriatic side of the Peninsula, a few sites in southeastern Sicilia and Sardegna).

12) paras: «parasitic» growth, with specification of the host(s).

13) coast: taxon bound to maritime-coastal situations.

All of this information is taken from the online database on the lichen flora of Italy by Nimis (1999a). The indices refer to the average behaviour in Italy; strong deviations in the survey area are specified in the notes attached to each taxon. Nomenclature mainly follows Nimis (1993) with some later updating and corrections available on the WWW (see Grube & Nimis 1997, Nimis 1999a). Authors' abbreviations are according to Brummitt & Powell (1992).

List of taxa

Acarospora cervina A. Massal. - Cr/ Ch/ S/ Calc/ 4-5, 4-5, 4-5, 4-5/ Alt: 1-5/ c/ subc/ Note: following Nimis (1999a), this variable taxon is considered here in a broad sense, including *A. glaucocarpa*. Found on the top of exposed calcareous boulders, it is especially common along the eastern side of the Peninsula, and rarer in Tyrrhenian Italy; optimum, in the survey area, above the Mediterranean belt. - Loc.: **Marc**: 2, 21, 27, 28, A; **Umbr**: E; **Abr**: 37, 38, 41, 42, 47, 50; **Mol**: 54, 59, 60, 63; **Pugl**: 65, 79, 80; **Bas**: 117, 118.

Acarospora heppii (Hepp) Nägeli - Cr/ Ch/ S/ Sil-Sil.b/ 3-5, 4-5, 4, 3-4/ Alt: 1-4/ rr/ subc/ Note: an easily overlooked, holarctic pioneer lichen occurring on small pebbles in dry grasslands. - Loc.: **Marc**: 6.

Acarospora hospitans H. Magn. - Cr/ Ch/ S/ Sil-Sil.b/ 2-3, 4-5, 3-4, 2-3/ Alt: 3-5/ rr/ paras crustose lichens/ Note: closely related to *A. impressula*, and certainly much overlooked in Italy; very rare in the survey area, due to the scarcity of suitable substrata. - Loc.: **Bas**: 116.

Acarospora insolata H. Magn. - Cr/ Ch/ S/ Sil/ 2, 4-5, 3-4, 1-2/ Alt: 2-5/ rc/ subc/ paras *Aspicilia* and *Rhizocarpon* spp./ Note: probably more widespread in the Mediterranean mountains, but very rare in the survey area, due to the prevalence of calcareous substrata. - Loc.: **Bas**: 102.

Acarospora laqueata Flagey - Cr.pl/ Ch/ S/ Calc/ 5, 4-5, 4-5, 3-4/ Alt: 1/ er/ subc/ Note: an Irano-Turanian species, found on hard rocks in warm-dry situations; this is the second record from Italy, and the first from southern Italy. - Loc.: **Mol**: 59.

Acarospora macrospora (Hepp) Bagl. - Cr/ Ch/ S/ Calc/ 5, 4-5, 4, 3-4/ Alt: 3-5/ rc/ Note: on steeply inclined surfaces of calciferous rocks, up to above treeline, not rare throughout the Alps, much less frequent in upland areas of the Apennines. - Loc.: **Marc**: 13; **Abr**: 39, 40, 46.

Acarospora murorum A. Massal.- Cr/ Ch/ S/ Sil.b-Calc/ 4-5, 4-5, 3-4, 4/ Alt: 1-2/ rr/ Note: closely related to *A. macrospora*, but with a different ecology and altitudinal distribution; certainly not common in the survey area. - Loc.: **Abr**: 31.

Acarospora nitrophila H. Magn. - Cr/ Ch/ S/ Sil.b/ 3, 4-5, 3-4, 3-4/ Alt: 2-5/ rr/ Note: certainly overlooked in Italy, probably more frequent at low altitudes, but not in anthropized areas. - Loc.: **Marc**: 27; **Bas**: 102.

Acarospora oligospora (Nyl.) Arnold - Cr/ Ch/ S/ Sil.b/ 3-4, 4, 3-4, 4/ Alt: 1-3/ rr/ Note: overlooked in Italy, being most frequent below the montane belt, but very rare in the survey area. - Loc.: **Bas**: 102, 111.

Acarospora umbilicata Bagl. - Cr/ Ch/ S/ Sil.b/ 3, 4-5, 4, 3-4/ Alt: 1-2/ rc/ Note: often found on south-exposed faces of brick walls; common in Tyrrhenian Italy at low altitudes, much rarer along the eastern side of the Peninsula, due to the scarcity of both suboceanic climates and suitable substrata. - Loc.: **Pugl**: 74; **Bas**: 102.

Acarospora veronensis A. Massal. - Cr/ Ch/ S/ Sil.b/ 3, 4-5, 4, 3/ Alt: 2-4/ rc/ Note: a holarctic-temperate species, also present within small settlements, on walls. - Loc.: **Abr**: 35; **Mol**: 63; **Pugl**: 65.

Acrocordia cavata (Ach.) R. C. Harris - Cr/ Tr/ S/ Epiph/ 2-3, 2-3, 2, 1/ Alt: 1-3/ r/ suboc/ Note: most frequent in humid beech-forests, very rare in the Adriatic side of Italy due to its more continental climate. - Loc.: **Pugl**: 71.

Acrocordia conoidea (Fr.) Körb. - Cr.end/ Tr/ S/ Calc/ 5, 1-2, 1-2, 1/ Alt: 1-3/ c/ Note: optimum in woodlands, and in underhangs of calciferous rocks, in the submediterranean belt. - Loc.: **Marc**: 9, 12, 24, G; **Abr**: 45, 49; **Mol**: 60, 63; **Pugl**: 64, 71, 75, 95; **Bas**: 117, 118.

Acrocordia gemmata (Ach.) A. Massal. - Cr/ Tr/ S/ Epiph/ 2-3, 2-3, 2, 1/ Alt: 1-3/ rr/ suboc/ Note: esp. frequent in the submediterranean belt; rarer in most of the survey area than in Tyrrhenian Italy. - Loc.: **Marc**: 24, 26; **Abr**: 51; **Pugl**: 72, 73; **Bas**: 118.

Agonimia tristicula (Nyl.) Zahlbr. - Sq/ Ch/ S/ Terr/ 3-5, 3-4, 3, 1-2/ Alt: 1-3/ rc/ suboc/ Note: on terricolous mosses on calciferous ground, and at the base of old trunks; overlooked, and probably distributed throughout Italy, esp. in submediterranean areas. - Loc.: **Marc**: 3, 24, B; **Abr**: 38, 39, 40, 41, 47; **Mol**: 60; **Pugl**: 80; **Bas**: 117.

Amandinea punctata (Hoffm.) Coppins & Scheid. - Cr/ Ch/ S/ Sil-Sil.b-Epiph/ 1-3, 4-5, 3-4, 2-4/ Alt: 1-4/ c/ Note: the Italian material is heterogeneous, and needs revision. - Loc.: **Marc**: 2; **Abr**: 32, 43; **Mol**: 53; **Pugl**: 67, 83, 85, 86, 87, 91; **Bas**: 105, 109, 111.

Anaptychia ciliaris (L.) A. Massal. - Frut/ Ch/ S/ Epiph/ 2-3, 4-5, 3, 2-3/ Alt: 1-3/ c/ Note: locally very common and abundant in the Apennines and in Sicily, much rarer in the north; very narrow-lobed forms on plant debris can reach the oromediterranean belt in the Apennines. - Loc.: **Marc**: 3, 11, 19, 21, 26, 28, 30, B, C, G; **Umbr**: E; **Abr**: 35, 37, 39, 40, 43, 50, 51, 52; **Mol**: 53, 55, 56, 61, 62; **Pugl**: 64, 71, 72, 75, 78, 82, 90, 95, 96; **Bas**: 105, 109, 110, 116, 118, 119, 130.

Anaptychia crinalis (Schleich.) Vězda - Frut/ Ch/ S/ Epiph/ 2-3, 3, 2, 2/ Alt: 3/ r/ suboc/ Note: confined to humid beech forests; in our opinion, doubtfully different from *A. ciliaris*. - Loc.: **Mol**: 53.

Anema moedligense Zahlbr. - Cr/ Cy.c/ S/ Calc/ 4-5, 5, 4-5, 1-2/ Alt: 1-2/ rr/ Note: probably confused with other species in the past. New to Italy. - Loc.: **Abr**: 42; **Mol**: 63.

Anema nummularium (Durieu & Mont.) Nyl. - Cr/ Cy.c/ S/ Calc/ 5, 5, 4-5, 1-3/ Alt: 1-3/ c/ Note: on steeply inclined surfaces with periodical water seepage. - Loc.: **Marc**: 2; **Abr**: 42; **Mol**: 59.

Anisomeridium polypori (R.C.Harris & Everh.) Barr - Cr/ Tr/ S/ Epiph/ 3, 2, 2, 1-2/ Alt: 1-3/ rr/ suboc/ Note: mainly on *Sambucus* in humid situations, overlooked for a long time, but certainly not rare in suitable habitats, also in the survey area. - Loc.: **Marc**: 12; **Pugl**: 71.

Arthonia anombrophila Coppins & P. James Cr/ Tr/ S/ Epiph/ 2, 3, 2, 1/ Alt: 2/ vr/ Note: a species of dry bark, often found at the base of old trees. New to Italy. Loc: **Abr**: 42.

Arthonia calabrella Puntillo - Cr/ Tr/ S/ Epiph/ 3, 3, 2, 1-2/ Alt: 1-2/ vr/ suboc/ Note: only locally abundant in humid riparian deciduous forests of southern Italy, mostly on smooth bark (most often on *Fraxinus*); probably absent north of Puglia. - Loc.: **Pugl**: 67, 96, 100; **Bas**: 122.

Arthonia calcicola Nyl. - Cr/ Ch/ S/ Calc/ 5, 4, 4, 2-4/ Alt: 1-2/ rr/ Note: certainly overlooked; a pioneer lichen, also found on walls and cement; undercollected in the survey area. - Loc.: **Marc**: 2; **Umbr**: E; **Pugl**: 65.

Arthonia cinnabarina (DC.) Wallr. - Cr/ Tr/ S/ Epiph-Epiph/ 2-3, 3-4, 2, 1/ Alt: 1-2/ rr/ suboc/ Note: mostly on *Fraxinus* in open woodlands; much more frequent in the past, and particularly rare in Adriatic peninsular Italy due to the drier climate. - Loc.: **Pugl**: 71; **Bas**: 122.

Arthonia clemens (Tul.) Th. Fr. - LF/ S/ Calc/ 4-5, 4-5, 3-4, 3-4/ Alt: 1-3/ rr/ paras *Lecanora* dispersa and other crustose lichens/ Note: certainly occurring throughout the country, but much overlooked. - Loc.: **Abr**: 40, 47, 50; **Pugl**: 77, 92.

Arthonia didyma Körb. - Cr/ Tr/ S/ Epiph/ 2, 2-4, 2, 1-3/ Alt: 1-3/ r/ suboc/ Note: on smooth bark; sometimes reaching the subalpine belt. - Loc.: **Abr**: 42; **Pugl**: 70, 71.

Arthonia dispersa (Schrad.) Nyl. - Cr/ Tr/ S/ Epiph/ 2-3, 3-4, 2-3, 1/ Alt: 1-4/ rc/ Note: a holarctic pioneer species of smooth bark. - Loc.: **Marc**: 57, G; **Pugl**: 67, 70, 99, 100, 101; **Bas**: 106, 122.

Arthonia exilis (Flörke) Anzi, *s.lat.* - Cr/ Ch/ S/ Epiph/ 2-3, 3, 2-3, 1-2/ Alt: 1-2/ rr/ Note: a heterogeneous taxon; Italian material needs revision. - Loc.: **Marc**: 9; **Abr**: 31, 33, 37, 48, 50; **Mol**: 58; **Pugl**: 66; **Bas**: 122.

Arthonia galactites (DC.) Dufour - Cr/ Tr/ S/ Epiph/ 3, 3-4, 2-3, 1-2/ Alt: 1-2/ rr/ suboc/ Note: a pioneer species, esp. on the smooth bark of *Fraxinus ornus*, probably much overlooked or/ and confused with other species. - Loc.: **Bas**: 122.

Arthonia granosa de Lesd. - Cr/ Tr/ S/ Epiph/

3, 3-4, 1-2, 2-3/ Alt: 1/ er/ suboc/ coast/ Note: restricted to coastal situations with humid maritime winds; perhaps non-lichenized. - Loc.: **Pugl**: 87.

Arthonia intexta Almq. - LF/ S/ Sil-Sil.b/ 3, 4-5, 3, 3-4/ Alt: 1-5/ rc/ paras *Lecidella* spp./ Note: certainly overlooked, and present throghout the country. - Loc.: **Abr**: 40.

Arthonia lapidicola (Taylor) Branth & Rostr. - Cr/ Ch/ S/ Calc-Sil.b/ 4-5, 4, 3-4, 3-4/ Alt: 1-5/ rc/ Note: a pioneer species, most frequent on pebbles, but also on walls, tiles etc. - Loc.: **Marc**: 3, 21, 28; **Abr**: 35, 38, 39, 40; **Pugl**: 75, 90; **Bas**: 117.

Arthonia meridionalis Zahlbr. - Cr/ Tr/ S/ Calc/ 5, 2-3, 1-2, 1/ Alt: 1/ r/ suboc/ coast/ Note: often found with *Opegrapha durieui*. - Loc.: **Pugl**: 64, 98.

Arthonia molendoi (Frauenf.) R. Sant. - LF/ S/ Calc-Sil.b/ 4-5, 4-5, 4, 4/ Alt: 4-5/ r/ paras *Xanthoria elegans*/ Note: very much overlooked and certainly more widespread in Italy, esp. in upland areas. - Loc.: **Abr**: 38, 39, 40.

Arthonia pruinata (Pers.) A. L. Sm. - Cr/ Tr/ S/ Epiph/ 1-2, 3-4, 2, 1/ Alt: 1-2/ rr/ suboc/ Note: on isolated, old deciduous trees, certainly declining, and particularly rare in the survey area, mainly because of the slightly more continental climatical conditions. - Loc.: **Pugl**: 91, 100.

Arthonia punctiformis Ach. - Cr/ Tr/ S/ Epiph/ 2-3, 3-4, 3-4, 1/ Alt: 1-4/ rc/ Note: a pioneer species of smooth bark, common, esp. on twigs; undercollected in the survey area. - Loc.: **Marc**: 4; **Pugl**: 67; **Bas**: 120.

Arthonia radiata (Pers.) Ach. - Cr/ Tr/ S/ Epiph/ 2-3, 3-4, 2-3, 1-3/ Alt: 1-4/ c/ Note: also found in non-natural habitats, such as in settlements. - Loc.: **Marc**: 3, 9, 13, 18, 25, 26, 29; **Abr**: 32, 33, 45, 49, 50, 51; **Mol**: 53, 56, 58; **Pugl**: 70, 72; **Bas**: 110, 115, 116, 119.

Arthonia spadicea Leight. - Cr/ Tr/ S/ Epiph/ 2-3, 2-3, 1-2, 1/ Alt: 2/ vr/ suboc/ Note: mostly on smooth bark in humid forests (e.g. on *Ilex* in beech forests of the southern mountains). - Loc.: **Pugl**: 73; **Bas**: 106.

Arthonia varians (Davies) Nyl. - LF/ S/ Sil/ 2-3, 3-4, 3-4, 2/ Alt: 2-5/ c/ paras *Lecanora rupicola s.latiss.*/ Note: rare in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Marc**: 60; **Bas**: 102, 105, 119.

Arthopyrenia cerasi (Schrad.) A. Massal. - Cr/ Tr/ S/ Epiph/ 2, 4, 3-4, 1/ Alt: 1-2/ rr/ Note: a pioneer species of smooth bark, mostly on *Prunus cerasus*, probably undercollected in the survey area. - Loc.: **Abr**: 35, 43.

Arthopyrenia cinereopruinosa (Schaer.) A. Massal. - Cr/ Tr/ S/ Epiph/ 2-3, 4, 2-3, 1/ Alt: 1-3/ rr/ suboc/ Note: a pioneer species of smooth bark, esp. in openings of old woodlands near rivers. - Loc.: **Marc**: G; **Abr**: 31; **Bas**: 109, 110.

Arthopyrenia fraxini A. Massal. - Cr/ Tr/ S/ Epiph/ 2-3, 3-4, 3, 1-2/ Alt: 1-2/ rc/ Note: a pioneer species, esp. on *Fraxinus ornus*. - Loc.: **Marc**: 8.

Arthopyrenia persoonii A. Massal. - Cr/ Tr/ S/ Epiph/ 2-3, 3-5, 3, 1-2/ Alt: 1-3/ rc/ Note: pioneer on smooth bark; perhaps to be included into *A. punctiformis*. - Loc.: **Marc**: 25.

Arthopyrenia punctiformis (Pers.) A. Massal. - Cr/ Tr/ S/ Epiph/ 2-3, 3-5, 3, 1-2/ Alt: 1-4/ vc/ Note: pioneer on smooth bark, on the twigs of several trees. - Loc.:**Marc**: G; **Abr**: 35, 49; **Mol**: 57; **Pugl**: 70; **Bas**: 121.

Arthopyrenia rhyponta (Ach.) A. Massal. - Cr/ Tr/ S/ Epiph/ 3, 3, 3, 1-2/ Alt: 2-4/ rr/ Note: pioneer on smooth bark, esp. on twigs. - Loc.: **Abr**: 35; **Mol**: 57.

Arthothelium crozalsianum (de Lesd.) de Lesd. - Cr/ Tr/ S/ Epiph/ 1-2, 3-4, 2-3, 1/ Alt: 1/ r/ suboc/ Note: mainly near the coast, on *Pinus*, very rare in the survey area. - Loc.: **Pugl**: 99.

Aspicilia caesiocinerea (Malbr.) Arnold - Cr/ Ch/ S/ Sil/ 2-3, 3-5, 2-4, 2-5/ Alt: 1-4/ c/ Note: extremely heterogeneous, and in need of revision; very rare in the survey area, due to the scarcity of suitable substrata. - Loc.: **Mol**: 63; **Pugl**: 65; **Bas**: 105, 116.

Aspicilia calcarea (L.) Mudd - Cr/ Ch/ S/ Calc/ 4-5, 4-5, 4, 2-3/ Alt: 1-5/ ec/. Note: sometimes reaching beyond treeline, esp. in the Apennines. - Loc.: **Marc**: 2, 3, 6, 13, 18, 21, 27, 28, A, **B; Umbr**: E; **Abr**: 34, 35, 37, 39, 40, 41, 42, 47, 48, 50; **Mol**: 59, 60, 61, 61, 63; **Pugl**: 64, 65, 72, 75, 76, 84, 89, 91, 93, 95; **Bas**: 109, 113, 115, 117, 117, 118.

Aspicilia cheresina (Müll. Arg.) Hue - Cr.pl/ Ch/ S/ Calc/ 5, 4-5, 4, 2/ Alt: 2-5/ rc/ paras *A. calcarea s.lat.* / Note: a very characteristic, and often overlooked species; it is not rare in Italy, esp. in the Apennines and on the islands; it should be looked for also in the north. - Loc.: **Umbr**: E; **Mol**: 60.

Aspicilia cheresina v. justii (Servít) Clauzade & Cl. Roux - Cr.pl/ Ch/ S/ Calc/ 5, 4-5, 4, 2/ Alt: 2-5/ rr/ paras *A. calcarea s.lat.* / Note: a chemical strain with stictic and norstictic acids; it is certainly more widespread in Italy, at least in the south. - Loc.: **Abr**: 41.

Aspicilia cheresina v. **microspora** (Arnold) Clauzade & Cl. Roux - Cr.pl/ Ch/ S/ Calc/ 5, 4-5, 4, 2/ Alt: 2-5/ rr/ paras *A. calcarea s. lat.* / Note: a chemical strain with norstictic acid only. - Loc.: **Marc**: 21; **Abr**: 39.

Aspicilia cinerea (L.) Körb. - Cr/ Ch/ S/ Sil/ 2, 3-5, 3-4, 3-4/ Alt: 2-5/ c/ Note: probably heterogeneous, and in need of revision; very rare in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Bas**: 116.

Aspicilia contorta ssp. **contorta** - Cr/ Ch/ S/ Calc/ 4-5, 4-5, 4, 4/ Alt: 1-3/ rr/ Note: a pioneer species, less frequent than subsp. *hoffmanniana*, and generally bound to weakly or non-anthropized situations; rare in Adriatic peninsular Italy. - Loc.: **Umbr**: E; **Abr**: 31; **Mol**: 59.

Aspicilia contorta ssp. **hoffmanniana** Ekman & Fröberg - Cr/ Ch/ S/ Calc/ 3-5, 3-4, 3-4, 3-5/ Alt: 1-4/ ec/ Note: also common within large urban settlements, one of the most frequent *Aspicilia* species of Italy. - Loc.: **Marc**: 2, 3, 6, 27; **Umbr**: E; **Abr**: 31, 34, 35, 47, 47; **Mol**: 59, 60, 63; **Pugl**: 80, 87, 90, 93, 93; **Bas**: 104, 111, 115.

Aspicilia coronata (A. Massal.) de Lesd. - Cr.end/ Ch/ S/ Calc/ 4-5, 4-5, 4, 2-3/ Alt: 2-5/ rc/ Note: esp.on dolomite; a mainly southern species in Europe: in Italy, however, it is mostly absent from the eu-Mediterranean, and rare in the submediterranean belts. - Loc.: **Marc**: 3, 13; **Umbr**: E; **Abr**: 42; **Mol**: 60, 63; **Pugl**: 65; **Bas**: 117.

Aspicilia desertorum (Kremp.) Mereschk. - Cr/ Ch/ S/ Calc/ 4-5, 5, 5, 2-3/ Alt: 5/ vr/ subc/ Note: limited to upland areas with dry, rather continental conditions, probably absent from the Alps. New to Italy. - Loc.: **Abr**: 36.

Aspicilia farinosa (Flörke) Arnold - Cr/ Ch/ S/ Calc/ 4-5, 4-5, 4, 2-3/ Alt: 2-5/ rc/ Note: a mainly southern species in Europe; in Italy it is locally frequent only above the submediterranean belt, on hard rocks, esp. on dolomite. - Loc.: **Mol**: 60; **Pugl**: 84; **Bas**: 117.

Aspicilia intermutans (Nyl.) Arnold - Cr/ Ch/ S/ Sil-Sil.b/ 2-3, 3-4, 3-4, 2-3/ Alt: 1-2/ c/ Note: one of the most frequent silicicolous *Aspicilia* of Mediterranean Italy; rare in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Bas**: 102, 107, 111.

Aspicilia parasitica de Lesd. - Cr.pl/ Ch/ S/ Sil.b/ 3, 5, 4-5, 3-4/ Alt: 1-3/ rr/ paras crustose lichens/ Note: after having examined several samples, we are convinced that this is a very good species, well-distinguished from *A. radiosa* by a wealth of morphological, chemical and biological (its parasitic growth) characters; very rare in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Bas**: 102, 111.

Aspicilia radiosa (Hoffm.) Poelt & Leuckert - Cr.pl/ Ch/ S/ Sil.b-Calc/ 3-5, 3-5, 3-4, 3-5/ Alt: 1-4/ ec/ Note: also occurring in urban environments; see also note on *A. parasitica*. - Loc.: **Marc**: 2, 3, 18, 21, 28; **Umbr**: E; **Abr**: 31, 34, 35, 39, 40, 41, 42, 47; **Mol**: 59, 63; **Pugl**: 72, 75, 76, 80, 84, 93; **Bas**: 102, 113, 115, 116, 117, 117.

Aspicilia viridescens (A. Massal.) Hue - Cr/ Ch/ S/ Calc-Sil.b/ 4-5, 3-4, 3, 2-3/ Alt: 1-2/ rc/ suboc/ Note: most frequent in the south, also on base-rich, hard siliceous rocks (e.g. basalt); in our opinion, this might be a well-distinct species, differing from typical *A. contorta* and its ssp. *hoffmanniana*. - Loc.: **Abr**: 42, 47; **Mol**: 59; **Pugl**: 64, 65, 87; **Bas**: 113.

Bacidia arceutina (Ach.) Arnold - Cr/ Ch/ S/ Epiph/ 2-3, 3, 2, 1-2/ Alt: 1-3/ rr/ suboc/ Note: esp. in open woodlands near rivers; sometimes calcicolous or muscicolous. - Loc.: **Marc**: 18, 29, G; **Abr**: 32, 33; **Pugl**: 71.

Bacidia bagliettoana (A. Massal. & De Not.) Jatta - Cr/ Ch/ S/ Terr-Calc/ 3-5, 3-4, 4, 1-3/ Alt: 2-5/ rc/ Note: esp. on muribund bryophytes and plant debris in dry grasslands on calciferous substrata; mostly in upland areas. - Loc.: **Marc**: 21; **Abr**: 31; **Bas**: 117.

Bacidia circumspecta (Vain.) Malme - Cr/ Ch/ S/ Epiph/ 3, 3-4, 2, 1-3/ Alt: 2-3/ r/ Note: esp. on old broadleaved trees in open woodlands. - Loc.: **Marc**: 21.

Bacidia fraxinea Lönnr. - Cr/ Ch/ S/ Epiph/ 3, 3-4, 2, 1-2/ Alt: 1-3/ rr/ suboc/ Note: rare in the north, much more frequent in Tyrrhenian Italy, mostly in open, humid woodlands; not uncommon in particularly humid mixed woodlands of southern Adriatic Italy, esp. on *Acer* and *Fraxinus*. - Loc.: **Marc**: 18, 24; **Abr**: 52; **Mol**: 53, 55, 56; **Pugl**: 67, 70, 71, 72, 73, 76, 82; **Bas**: 106, 109, 110.

Bacidia friesiana (Hepp) Körb. - Cr/ Ch/ S/ Epiph/ 3, 3, 2-3, 2-3/ Alt: 1-3/ rr/ suboc/ Note: esp. on *Sambucus* in sheltered situations; probably widespread throughout the country. - Loc.: **Marc**: 18, 24; **Bas**: 106.

Bacidia fuscoviridis (Anzi) Lettau - Cr/ Ch/ A.s/ Calc/ 4-5, 3, 2, 3/ Alt: 2-3/ vr/ suboc/ Note: a rather poorly known, generally sterile lichen, probably overlooked, also in the survey area. - Loc.: **Marc**: 30.

Bacidia incompta (Hook.) Anzi - Cr/ Ch/ S/

Epiph/ 3, 4, 3, 2-3/ Alt: 2-3/ r/ Note: mostly on *Ulmus*, near wounds of the bark, certainly declining in Italy, and very rare in the survey area. - Loc.: **Pugl**: 73.

Bacidia rosella (Pers.) De Not. - Cr/ Ch/ S/ Epiph/ 3, 3, 1-2, 1-2/ Alt: 1-3/ r/ suboc/ Note: esp. in woodlands along rivers; declining in the north, but still common in suitable habitats of the south; extremely rare in the survey area, except for the humid woodlands of the Gargano Peninsula, where it is locally abundant, esp. on *Acer*. - Loc.: **Pugl**: 71, 72, 73; **Bas**: 106, 122.

Bacidia rubella (Hoffm.) A. Massal. - Cr/ Ch/ S/ Epiph/ 2-3, 4, 2-3, 1-3/ Alt: 1-3/ rc/ Note: on old, more or less isolated oaks and other broad-leaved trees; still widespread, but probably declining; almost extinct in the Po-plain and rare in the Adriatic part of peninsular Italy, with optimum in the submediterranean belt. - Loc.: **Marc**: 18, 19, 25, 30; **Abr**: 33,H; **Mol**: 55; **Pugl**: 72, 75, 85, 94, 100; **Bas**: 106, 110.

Bacidia subincompta (Nyl.) Arnold - Cr/ Ch/ S/ Epiph/ 2-3, 3, 2, 1-2/ Alt: 2-3/ r/ suboc/ Note: for nomenclatural problems see Ekman (1996). - Loc.: **Abr**: 51; **Mol**: 53, 55.

Bacidia trachona (Ach.) Lettau - Cr/ Ch/ S/ Sil.b-Calc/ 3-5, 3-4, 1-2, 1/ Alt: 3-4/ r/ Note: mostly on steeply inclined surfaces, very rarely on bark; according to Ekman (1996) it might not belong into *Bacidia s. str*. - Loc.: **Abr**: 38.

Bacidina arnoldiana (Körb.) V. Wirth & Vězda - Cr/ Ch/ A.s/ Calc/ 3-5, 2-3, 2, 1-2/ Alt: 1-2/ r/ suboc/ Note: especially in open woodlands, rarely also at the base of old trees; often sterile, and certainly much overlooked. - Loc.: **Marc**: 9; **Abr**: 45; **Pugl**: 71, 91.

Bacidina delicata (Leight.) V. Wirth & Vězda - Cr/ Ch/ S/ Epiph-Sil.b/ 3, 3, 2, 2-3/ Alt: 1-2/ r/ Note: especially on *Sambucus*, in humid-shaded situations. - Loc.: **Pugl**: 71.

Bacidina phacodes (Körb.) Vězda - Cr/ Ch/ S/ Epiph/ 2, 3, 2, 1/ Alt: 1-3/ rr/ suboc/ Note: often on the undersides of thick branches, or on the trunks of old trees; in the Mediterranean belt confined to humid evergreen forests. - Loc.: **Marc**: 9; **Pugl**: 67, 70, 71, 76, 91; **Bas**: 105, 119, 122.

Bactrospora patellarioides v. **convexa** (de Lesd.) Egea & Torrente - Cr/ Tr/ S/ Epiph/ 1-2, 4-5, 2-3, 1-2/ Alt: 1/ rr/ suboc/ Note: on more or less isolated, normally old broadleaved trees; most frequent in Tyrrhenian Italy, much rarer in the Adriatic part of peninsular Italy, esp. on *Olea*. - Loc.: **Pugl**: 91, 100.

Bagliettoa baldensis (A. Massal.) Vězda - Cr.end/ Ch/ S/ Calc/ 5, 2-3, 2-3, 1/ Alt: 1-3/ c/ Note: optimum in the submediterranean belt; undercollected, and common in the survey area. - Loc.: **Abr**: 32; **Mol**: 63; **Pugl**: 65, 84.

Bagliettoa cazzae (Zahlbr.) Vězda & Poelt - Cr.end/ Ch/ S/ Calc/ 5, 3, 2-3, 1-2/ Alt: 1-2/ rc/ Note: a chiefly Mediterranean lichen of steeply inclined surfaces. - Loc.: **Mol**: 63; **Pugl**: 84, 98, 100.

Bagliettoa limborioides A. Massal. -Cr.end/ Ch/ S/ Calc/ 5, 2-3, 3, 1-2/ Alt: 1-3/ rr/ Note: probably more widespread, but overlooked, or confused with similar species. - Loc.: **Pugl**: 97, 98, 101.

Bagliettoa parmigera (Steiner) Vězda & Poelt - Cr.end/ Ch/ S/ Calc/ 5, 2-4, 2-3, 1-2/ Alt: 1-3/ c/ Note: optimum in the submediterranean belt; very common, and undercollected, throughout the survey area. - Loc.: **Marc**: 8; **Umbr**: E; **Abr**: 47; **Mol**: 60; **Pugl**: 64, 65, 75, 95; **Bas**: 113.

Bagliettoa parmigerella (Zahlbr.) Vězda & Poelt - Cr.end/ Ch/ S/ Calc/ 5, 1-3, 1-3, 1/ Alt: 1-3/ vc/ Note: in the Mediterranean belt confined to humid-shaded situations; optimum in the submediterranean belt, but reaching near and sometimes beyond treeline in the mountains of the south; common throughout the survey area. - Loc.: **Marc**: 9, 13, 24; **Umbr**: E; **Abr**: 45, 49; **Mol**: 60; **Pugl**: 64, 75, 90, 95, 97, 98, 100, 101, 118.

Biatoridium monasteriense J. Lahm - Cr/ Ch/ S/ Epiph/ 3, 2-3, 1-2, 1-2/ Alt: 2-3/ rr/ suboc/ Note: very much overlooked in the past, this species is not unfrequent on *Sambucus* along brooks. - Loc.: **Mol**: 55; **Pugl**: 71.

Blastodesmia nitida A. Massal. - Cr/ Tr/ S/ Epiph/ 3, 3-4, 3, 1-2/ Alt: 1-2/ rr/ suboc/ Note: a pioneer species, esp. on *Fraxinus ornus*, certainly rare in the Adriatic part of peninsular Italy. - Loc.: **Abr**: 49.

Bryoria capillaris (Ach.) Brodo & D. Hawksw. - Frut.f/ Ch/ A.s/ Epiph/ 1-2, 3-5, 1-2, 1/ Alt: 3-4/ rr/ suboc/ Note: most frequent in humid *Fagus-Abies* forests; extremely rare in the survey area. - Loc.: **Pugl**: 73.

Bryoria fuscescens (Gyeln.) Brodo & D. Hawksw. - Frut.f/ Ch/ A.s/ Epiph-Lign./ 1-3, 3-5, 1-2, 1-2/ Alt: 3-4/ rc/ Note: the most common species of *Bryoria* in Italy, and that with the broadest ecological range, sometimes reaching (in humid situations) the submediterranean belt; extinct in the Po-plain and certainly declining, esp. in anthropized areas; extremely rare in the

Adriatic part of peninsular Italy. - Loc.: **Marc**: 29; **Abr**: 37; **Mol**: 55.

Bryoria implexa (Hoffm.) Brodo & D. Hawksw. - Frut.f/ Ch/ A.s/ Epiph/ 1-2, 3-5, 1-2, 1/ Alt: 3-4/ rc/ Note: most frequent in the Alps, much rarer southwards. - Loc.: **Marc**: 20.

Buellia badia (Fr.) A. Massal. - Cr/ Ch/ S/ Sil.b/ 2-3, 4-5, 4, 2-3/ Alt: 1-3/ rc/ paras crustose lichens/ Note: very rare in Adriatic Italy for the scarcity of suitable substrata. - Loc.: **Marc**: 27.

Buellia disciformis (Fr.) Mudd - Cr/ Ch/ S/ Epiph/ 2, 3-4, 2, 1/ Alt: 3-4/ rr/ Note: esp. in beech forests, very rare in the survey area. - Loc.: **Pugl**: 69.

Buellia ericina (Nyl.) Jatta - Cr/ Ch/ S/ Epiph/ 1-2, 3-5, 2, 2/ Alt: 1-2/ r/ suboc/ Note: a rather poorly known species, with a western distribution in southern Europe. - Loc.: **Pugl**: 94.

Buellia erubescens Arnold - Cr/ Ch/ S/ Lign-Epiph/ 1, 3, 2, 1/ Alt: 3-4/ rr/ Note: restricted to upland areas in the south; this taxon badly needs revision. - Loc.: **Mol**: 53.

Buellia griseovirens (Sm.) Almb. - Cr/ Ch/ S/ Epiph/ 2, 3-4, 2-3, 1/ Alt: 1-3/ rc/ suboc/ Note: optimum above the Mediterranean belt, rarer in heavily anthropized areas (e.g. the Po-plain). - Loc.: **Marc**: 20; **Abr**: 32; **Pugl**: 91; **Bas**: 105, 118.

Buellia ocellata (Flot.) Körb. - Cr/ Ch/ S/ Sil-Sil.b/ 2, 4, 3-4, 1-2/ Alt: 1-2/ rr/ Note: a pioneer species, esp. common on small pebbles; very rare in the survey area due to the scarcity of suitable substrata. - Loc.: **Abr**: 34.

Buellia pulverulenta (Anzi) Jatta - Cr/ Ch/ S/ Terr/ 4-5, 4-5, 3-4, 2-4/ Alt: 4-5/ rr/ paras esp. *Physconia muscigena*/ Note: certainly widespread in the Alps, but much overlooked in the past, rarer in the Apennines. - Loc.: **Marc**: 21; **Abr**: 41.

Buellia schaereri De Not. - Cr/ Ch/ S/ Epiph-Lign/ 1-2, 4-5, 3-4, 2/ Alt: 2-4/ rc/ Note: esp. on conifers and wooden poles in upland areas, common in the north of Italy, and to be looked for in the mountains of the south. - Loc.: **Marc**: 29; **Abr**: 30; **Mol**: 53.

Calicium abietinum Pers. - Cr/ Ch/ S/ Lign/ 1-2, 2-3, 2, 1/ Alt: 2-4/ rr/ Note: mostly on lignum of conifers. - Loc.: **Marc**: 29; **Abr**: 32.

Calicium glaucellum Ach. - Cr/ Ch/ S/ Lign-Epiph/ 1-2, 3, 2, 1/ Alt: 2-4/ rc/ Note: when epiphytic, esp. on conifers; certainly occurring throughout the Alps, much rarer in the Apennines. - Loc.: **Marc**: 29.

Calicium quercinum Pers. - Cr/ Ch/ S/ Epiph-Lign/ 1-2, 3, 1-2, 1/ Alt: 2-3/ r/ Note: also on the bark of oaks, certainly occurring throughout the Alps, but also widespread, and locally not uncommon, throughout the Apennines. - Loc.: **Abr**: 32; **Mol**: 53, 55; **Pugl**: 94; **Bas**: 110.

Calicium salicinum Pers. - Cr/ Ch/ S/ Lign-Epiph/ 1-2, 4, 2-3, 1/ Alt: 1-3/ rr/ Note: most frequent on the dry parts of the boles of deciduous, acid-barked trees. - Loc.: **Marc**: 29.

Calicium viride Pers. - Cr/ Ch/ S/ Epiph/ 1-2, 3, 2, 1/ Alt: 3-4/ rc/ Note: mostly on *Abies* and *Picea*, certainly present throughout the Alps, but much rarer in the Apenninnes. - Loc.: **Abr**: 32.

Caloplaca adriatica (Zahlbr.) Servít - Cr/ Ch/ S/ Calc/ 5, 4-5, 4, 2-3/ Alt: 2-3/ vr/ Note: mostly in the mountains, on hard rocks. - Loc.: **Abr**: 41.

Caloplaca aegatica Giralt, Nimis & Poelt - Cr/ Ch/ S/ Epiph/ 3, 4-5, 2, 2-3/ Alt: 1/ vr/ suboc/ coast/ Note: a mostly Tyrrhenian species in Italy, generally found near the coast, extremely rare in the survey area, and probably absent north of Puglia. - Loc.: **Pugl**: 78, 91.

Caloplaca agardhiana (A. Massal.) Clauzade & Cl. Roux - Cr.end/ Ch/ S/ Calc/ 5, 4-5, 3-4, 2-3/ Alt: 1-5/ c/ Note: the complex of *C. agardhiana-C. alociza* is still not clear to us; here we follow the circumscription proposed by Clauzade & Roux (1985). - Loc.: **Marc**: 13, 21, 28, B; **Abr**: 36, 41, 46, 47; **Mol**: 59; **Pugl**: 64, 65, 65, 87, 90; **Bas**: 109, 119.

Caloplaca alnetorum Giralt, Nimis & Poelt - Cr/ Ch/ S/ Epiph/ 3, 4, 3, 2-3/ Alt: 2-4/ rr/ Note: mostly in the mountains, on smooth bark. - Loc.: **Abr**: 51, 52; **Pugl**: 76; **Bas**: 118.

Caloplaca alociza (A. Massal.) Mig. - Cr.end/ Ch/ S/ Calc/ 5, 4-5, 3-4, 2-3/ Alt: 1-5/ vc/ Note: see comment on *C. agardhiana*. - Loc.: **Marc**: 13, 21, 28, B; **Umbr**: E; **Abr**: 39, 41, 47; **Mol**: 53; **Pugl**: 65, 75, 90, 91, 95, 97, 98, 100; **Bas**: 117.

Caloplaca arenaria (Pers.) Müll. Arg. - Cr/ Ch/ S/ Sil-Sil.b/ 2-3, 4-5, 3-4, 2-4/ Alt: 2-5/ rc/ Note: esp. on more or less calcareous sandstone, often on walls; rare in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Mol**: 61.

Caloplaca areolata (Zahlbr.) Clauzade - Cr/ Ch/ S/ Calc/ 5, 4-5, 4, 4-5/ Alt: 2/ rr/ paras crustose lichens/ Note: a characteristic, but much overlooked species, found on the top of calcareous boulders; in the north mostly at low altitudes, in the south up to c. 1,000 m. - Loc.: **Mol**: 59, 63; **Pugl**: 65.

Caloplaca arnoldii (Wedd.) Zahlbr. - Cr.pl/ Ch/ S/ Calc/ 5, 4-5, 4, 3-4/ Alt: 4-5/ rc/ Note: a taxon of the extremely critical *C. saxicola* complex, certainly much more widespread in

Italy, at least in the Alps; it is common and abundant in the Gran Sasso and Majella massives. - Loc.: **Abr**: 36, 39, 44, 46.

Caloplaca aurantia (Pers.) Hellb. - Cr.pl/ Ch/ S/ Calc/ 4-5, 4-5, 4-5, 3-4/ Alt: 1-2/ vc/ Note: common in the Mediterranean-submediterranean belts, rarer at higher altitudes, more helio- and thermophytic than the closely related *C. flavescens*. - Loc.: **Marc**: 2, 8; **Abr**: 41; **Mol**: 58, 59, 60, 63; **Pugl**: 64, 65, 65, 72, 75, 77, 78, 80, 84, 90, 91, 92, 93, 94, 97; **Bas**: 112, 115.

Caloplaca aurea (Schaer.) Zahlbr. - Cr/ Ch/ S/ Terr/ 4-5, 4-5, 3, 2-3/ Alt: 4-5/ c/ Note: mostly in rock fissures; common in the Alps, the records from Abruzzo are the southernmmost in Europe. - Loc.: **Abr**: 36, 38, 44.

Caloplaca biatorina (A. Massal.) Steiner - Cr.pl/ Ch/ S/ Calc/ 5, 4-5, 4, 3-4/ Alt: 3-5/ rc/ Note: a rather critical, but, in our opinion, distinct species of the *C. saxicola* complex; esp. common along the Apennines above treeline. - Loc.: **Marc**: 21; **Abr**: 38, 39, 40, 41, 47; **Mol**: 54.

Caloplaca cacuminum Poelt - Cr/ Ch/ S/ Calc/ 5, 4-5, 4, 3-4/ Alt: 5/ r/ Note: probably much more widespread throughout the Alps; the record from the Apennines is the southernmost in Europe. - Loc.: **Abr**: 44.

Caloplaca cerina (Hedw.) Th. Fr. - Cr/ Ch/ S/ Epiph/ 3-4, 3-5, 3-4, 3-4/ Alt: 1-4/ vc/ Note: a holarctic species, with a broad ecological range. - Loc.: **Marc**: 3, 8, 12, 18, 19, 21, 22, 25, 26, C, D, G; **Abr**: 33, 37, 42, 46, 47, 48, 49, 52, H; **Mol**: 53, 56, 58; **Pugl**: 66, 68, 84, 94; **Bas**: 105, 109, 110, 119, 121.

Caloplaca cerina v. **chloroleuca** (Sm.) Th. Fr. - Cr/ Ch/ S/ Terr/ 3-4, 3-4, 3, 2-3/ Alt: 5/ vc/ Note: mainly above treeline, from the Alps to Calabria; and to be looked for also in the mountains of Sicily. - Loc.: **Marc**: 3, 21,B; **Abr**: 38, 39, 40, 41, 44, 46; **Bas**: 117.

Caloplaca cerina v. **muscorum** (A. Massal.) Jatta - Cr/ Ch/ S/ Terr/ 3, 4, 3-4, 2-3/ Alt: 1-3/ c/ subc/ Note: on mosses and plant debris, esp. in rather dry-continental areas; very rare in the survey area due to the prevalence of calcareous substrata. - Loc.: **Marc**: 28; **Abr**: 36, 39, 50.

Caloplaca cerinella (Nyl.) Flagey - Cr/ Ch/ S/ Epiph/ 3-4, 4-5, 3-4, 3-4/ Alt: 1-3/ c/ Note: on isolated trees with eutrophic or eutrophicated bark, with optimum in the submediterranean belt. - Loc.: **Marc**: 1, 3, 8, 19, 24, 25, C; **Abr**: 35, 42, H; **Mol**: 58, 59, 61, 62; **Pugl**: 64, 64, 77, 87, 99; **Bas**: 102, 109, 110, 114, 119, 122.

Caloplaca chalybaea (Fr.) Müll. Arg. - Cr/ Ch/ S/ Calc/ 5, 4-5, 4, 2-3/ Alt: 1-5/ c/ Note: this well-distinct species is extremely common in the survey area, esp. above the Mediterranean belt. - Loc.: **Marc**: 2, 13, 21, 28, B; **Umbr**: E; **Abr**: 39, 40, 41, 42, 47, 48, 50; **Mol**: 60, 61; **Pugl**: 64, 65, 75, 78, 84, 93; **Bas**: 113, 117, 119.

Caloplaca chlorina (Flot.) Sandst. - Cr/ Ch/ A.i/ Calc/ 4-5, 3-4, 3, 3-4/ Alt: 4-5/ rr/ Note: this is *C. chlorina sensu* Wetmore (1996), not *sensu* Nimis (1993). - Loc.: **Abr**: 34.

Caloplaca chrysodeta (Räsänen) Dombr. - Lepr/ Ch/ A.s/ Calc/ 4-5, 2-3, 2, 2-3/ Alt: 1-2/ rr/ Note: on shaded, steeply inclined or underhanging surfaces of calciferous rocks, certainly occurring throughout the country. - Loc.: **Marc**: 9, 18, G; **Pugl**: 71.

Caloplaca chrysophthalma Degel. - Cr/ Ch/ A.s/ Epiph/ 2-3, 4-5, 3, 2-3/ Alt: 1-2/ vr/ suboc/ Note: optimum in the submediterranean belt, and in areas with a rather humid climate; extremely rare in the survey area. - Loc.: **Pugl**: 68.

Caloplaca cirrochroa (Ach.) Th. Fr. - Cr.pl/ Ch/ A.s/ Calc/ 4-5, 3-4, 3, 2-3/ Alt: 1-4/ rc/ Note: somehow rarer in the Adriatic part of peninsular Italy than in other parts of the country. - Loc.: **Marc**: B; **Umbr**: E; **Abr**: 49; **Mol**: 54, 59, 60.

Caloplaca citrina (Hoffm.) Th. Fr. - Cr/ Ch/ A.s/ Calc-Epiph/ 3-5, 4-5, 3-4, 4-5/ Alt: 1-3/ ec/ Note: extremely common and abundant everywhere below the montane belt, also in heavily anthropized habitats, and on man-made substrata. - Loc.: **Marc**: 2, 4, 8, 15, 29; **Umbr**: F; **Abr**: 43; **Mol**: 58, 59; **Pugl**: 65, 75, 77, 80, 86, 87, 88, 89, 93, 95, 96; **Bas**: 102, 107, 112.

Caloplaca coccinea (Müll. Arg.) Poelt - Cr.end/ Ch/ S/ Calc/ 4-5, 4-5, 4, 1-3/ Alt: 4-5/ rc/ Note: a species of the mountains of southern Europe, probably occurring throughout the Alps; not uncommon in the highest parts of the Central Apennines, to be looked for further in the mountains of the south. - Loc.: **Marc**: 21; **Abr**: 36, 36, 38, 44, 46.

Caloplaca coronata (Körb.) Steiner - Cr/ Ch/ A.i/ Calc/ 5, 4-5, 4, 4-5/ Alt: 1-3/ rr/ paras crustose lichens/ Note: esp. on the top of isolated boulders; a very characteristic species, very much overlooked in the past, and locally not uncommon in the survey area, especially at low altitudes; its parasitic growth is evident in all our samples. - Loc.: **Marc**: 2, 28; **Umbr**: E; **Abr**: 34, 41; **Mol**: 54, 59, 63; **Pugl**: 65, 78, 80, 84, 93; **Bas**: 117.

Caloplaca crenularia (With.) J. R. Laundon -

Cr/ Ch/ S/ Sil-Sil.b/ 2-3, 3-5, 3-4, 2-4/ Alt: 1-3/ ec/ Note: very heterogeneous, and in need of revision; rare in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Abr**: 34; **Bas**: 102, 105, 111.

Caloplaca crenulatella (Nyl.) H. Olivier - Cr/ Ch/ S/ Calc/ 4-5, 4, 3-4, 4/ Alt: 2-3/ rr/ Note: a rather well-distinct, albeit controversial species (see Nimis 1993), which is not common in Italy. - Loc.: **Abr**: 31; **Bas**: 111.

Caloplaca cretensis (Zahlbr.) Wunder - Cr/ Ch/ S/ Calc/ 5, 4, 2, 2-3/ Alt: 1/ vr/ coast/ Note: mostly coastal in Italy, certainly rare, but perhaps overlooked or misunderstood, and perhaps slightly more widespread in Tyrrhenian Italy; certainly extremely rare in the survey area. - Loc.: **Mol**: 59.

Caloplaca decipiens (Arnold) Blomb. & Forssell - Cr.pl/ Ch/ A.s/ Calc/ 4-5, 4-5, 4, 4-5/ Alt: 2-3/ rr/ subc/ Note: not common in Italy, perhaps because of its subcontinental character; abundant, and locally extremely common only in some dry Alpine valleys and along the Adriatic side of the Peninsula, mostly on walls in mountain villages, very rare in natural habitats. - Loc.: **Marc**: 3, 15; **Umbr**: F; **Abr**: 41; **Mol**: 54, 59, 61; **Bas**: 102, 103, 104, 111, 112.

Caloplaca epiphyta Lynge - Cr/ Ch/ A.s/ Terr/ 4-5, 4, 3, 3/ Alt: 4-5/ rc/ Note: very much overlooked throughout the Alps, where it is rather common; certainly much rarer in the Apennines. - Loc.: **Marc**: 21.

Caloplaca erythrocarpa (Pers.) Zwackh - Cr/ Ch/ S/ Calc/ 4-5, 4-5, 4, 2-3/ Alt: 1-3/ c/ paras *Aspicilia calcarea* when young/ Note: optimum at low altitudes, and mostly outside disturbed habitats; extremely common throughout the survey area. - Loc.: **Marc**: 2, 3, 6, 18, 27, 28, A; **Umbr**: E; **Abr**: 34, 35, 41, 42, 47; **Mol**: 59, 60, 61, 63; **Pugl**: 64, 65, 75, 76, 78, 80, 84, 93; **Bas**: 113, 117, 117, 118.

Caloplaca ferrarii (Bagl.) Jatta - Cr/ Ch/ S/ Calc/ 5, 4-5, 4, 2-3/ Alt: 1-3/ rr/ Note: a pioneer lichen of the *C. lactea* group, whose circumscription, ecology and distribution are still not very clear to us. - Loc.: **Marc**: 21; **Abr**: 36, 38; **Bas**: 109.

Caloplaca ferruginea (Huds.) Th. Fr. - Cr/ Ch/ S/ Epiph/ 2-3, 4-5, 3, 2-3/ Alt: 1-2/ rc/ Note: esp. on oaks, optimum in the *Parmelietum acetabulae*; somehow rarer in the northern Adriatic part of the peninsula than elsewhere in Italy. - Loc.: **Marc**: 2, 11, 19; **Umbr**: E; **Abr**: 48; **Mol**: 60; **Pugl**: 66, 67, 69, 70, 72, 78, 82, 90, 91, 95; **Bas**: 110, 115, 121.

Caloplaca flavescens (Huds.) J. R. Laundon - Cr.pl/ Ch/ S/ Calc/ 4-5, 3-5, 3-4, 3-4/ Alt: 1-3/ ec/ Note: common everywhere below the montane belt; also found in anthropized habitats, somehow less heliophytic than the closely related *C. aurantia*. - Loc.: **Marc**: 8, 15; **Umbr**: E; **Umbr**: E; **Abr**: 31; **Mol**: 59, 60; **Pugl**: 64, 65, 77, 84, 92, 93, 95, 97, 101; **Bas**: 102, 115.

Caloplaca flavorubescens (Huds.) J. R. Laundon - Cr/ Ch/ S/ Epiph/ 2-3, 4-5, 3, 2-3/ Alt: 1-3/ c/ Note: esp. on more or less old, isolated deciduous trees; a member of a difficult and variable group; certainly widespread throughout Italy. - Loc.: **Marc**: 18, 25, G; **Umbr**: E; **Abr**: 34, 35, 49, 50, H; **Mol**: 53, 61; **Pugl**: 64, 82, 94; **Bas**: 105, 106, 107, 109.

Caloplaca flavorubescens (Huds.) J. R. Laundon v. **quercina** Giralt, Nimis & Poelt - Cr/ Ch/ S/ Epiph/ 2-3, 4-5, 3, 3/ Alt: 1-3/ rr/ Note: this variety is most frequent in the south of Italy. - Loc.: **Marc**: 3, 19, 23 C, D; **Abr**: 33; **Mol**: 56; **Pugl**: 95; **Bas**: 119.

Caloplaca flavovirescens (Wulfen) Dalla Torre & Sarnth. - Cr/ Ch/ S/ Sil.b/ 3-4, 3-5, 3, 2-3/ Alt: 1-3/ c/ Note: mostly on sandstone (also on walls); optimum in the submediterranean belt; rather rare in the survey area, due to the prevalence of calcareous substrata. - Loc: **Marc**: 2, 27, 29, 30; **Abr**: 31, 33, 34; **Pugl**: 76, 80; **Bas**: 109.

Caloplaca fulvolutea (Nyl.) Jatta - Cr/ Ch/ S/ Terr/ 3, 4, 3, 2-3/ Alt: 4-5/ rr/ Note: this muscicolous species, whose hitherto known Italian distribution is restricted to the mountains of central and southern Italy, is certainly present also in the Alps, and should be looked for there. - Loc: **Abr**: 39.

Caloplaca furax Egea & Llimona - Cr/ Ch/ S/ Sil.b/ 3-4, 4-5, 4, 2-3/ Alt: 1-2/ r/ paras *Aspicilia* spp./ Note: this taxon was included into *C. conglomerata* (correct name: *C. pellodella*) by Nimis (1993); after having collected it in several parts of Italy, we agree to treat it at species rank, at least pending further studies, due to the parasitic habit and several small morphological differences. - Loc.: **Bas**: 102.

Caloplaca granulosa (Müll. Arg.) Jatta - Cr.pl/ Ch/ A.i/ Calc/ 4-5, 4-5, 4, 4-5/ Alt: 1-2/ rr/ Note: esp. on inclined surfaces with seepage of nitrogen-rich solutions; optimum in the submediterranean belt. - Loc.: **Marc**: 2; **Abr**: 41, 47, 48; **Mol**: 54, 59; **Pugl**: 65.

Caloplaca grimmiae (Nyl.) H. Olivier - Cr/ Ch/

S/ Sil/ 2-3, 4-5, 3-4, 3-4/ Alt: 1-5/ rc/ paras *Candelariella vitellina*/ Note: certainly occurring throughout the country, but much rarer in the Adriatic than in the Tyrrhenian part of peninsular Italy, mainly because of the scarcity of siliceous substrata. - Loc.: **Marc**: 27; **Abr**: 34.

Caloplaca haematites (St.-Amans) Zwackh - Cr/ Ch/ S/ Epiph/ 3-4, 4-5, 4-5, 2-3/ Alt: 1-2/ rc/ Note: the distinction of this species from *C. cerina* would be well worthy of a DNA study: the two taxa are clearly altitudinal vicariants in southern Europe, but they are often sympatric in the submediterranean belt of Italy, and sometimes grow together on the same tree: in such cases we never saw intermediate forms; the morphological differences, although easy to appreciate, are admittedly weak. - Loc.: **Marc**: 18; **Abr**: 31, 34, 42, 43, 48, 49, H; **Mol**: 58, 61, 62; **Pugl**: 64; **Bas**: 102, 103, 108, 114, 115, 119.

Caloplaca herbidella (Hue) H. Magn. - Cr/ Ch/ A.i/ Epiph/ 2-3, 3-4, 3, 3-4/ Alt: 2-4/ r/ suboc/ Note: absent from the plains of the north and very rare in the survey area; some forms from southern Italy are worthy of further study. - Loc.: **Marc**: 29; **Mol**: 53; **Pugl**: 90.

Caloplaca holocarpa (Ach.) Wade - Cr/ Ch/ S/ Calc/ 4-5, 4-5, 3-5, 3-5/ Alt: 1-5/ ec/ Note: pending further research, saxicolous forms are separated under this epithet from the epiphytic *C. pyracea*. - Loc.: **Marc**: 6, 27; **Abr**: 35, 43; **Mol**: 58; **Pugl**: 75, 80, 88, 89, 93; **Bas**: 102, 112, 115.

Caloplaca inconnexa (Nyl.) Zahlbr. - Cr.pl/ Ch/ S/ Calc/ 4-5, 4-5, 3-4, 3-4/ Alt: 1-4/ vc/ paras crustose lichens/ Note: on isolated calcareous boulders, esp. on *Aspicilia calcarea* and on weakly inclined surfaces. - Loc.: **Marc**: 2, 13, 21, 27, 28, B; **Umbr**: E; **Abr**: 34, 39, 40, 41, 42, 47, 47, 50; **Mol**: 59, 60, 63; **Pugl**: 65, 72, 78, 80, 93; **Bas**: 113, 115, 117, 119.

Caloplaca inconnexa v. **nesodes** Poelt & Nimis - Cr.pl/ Ch/ Sil/ 2-3, 4-5, 3-4, 2-3/ Alt:1-3/ c/ paras *Aspicilia* spp., exp. *A. intermutans*/ Note: rare in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Bas**: 111.

Caloplaca irrubescens (Arnold) Zahlbr. - Cr/ Ch/ S/ Sil.b/ 3, 5, 4-5, 2-3/ Alt: 1-4/ rr/ Note: on steeply inclined, sunny surfaces; very rare in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Bas**: 111.

Caloplaca lactea (A. Massal.) Zahlbr. - Cr.end/ Ch/ S/ Calc/ 4-5, 4, 3-4, 2-3/ Alt: 1-4/ c/ Note: a pioneer lichen, often found on pebbles in dry grasslands; somehow undercollected, and certainly common, in the survey area. - Loc.: **Marc**: 8; **Abr**: 36, 48; **Mol**: 53; **Pugl**: 93, 97; **Bas**: 115.

Caloplaca limonia Nimis & Poelt - Cr/ Ch/ A.s/ Calc/ 5, 4, 4, 4-5/ Alt: 1/ rr/ Note: this taxon belongs to a large group of sorediate taxa which badly needs a DNA study; we often observed *C. citrina* and *C. limonia* growing together in southern Italy, mostly near the coast, without intermediate forms. - Loc.: **Pugl**: 64.

Caloplaca lithophila H. Magn. - Cr/ Ch/ S/ Calc/ 4-5, 4-5, 4-5, 4-5/ Alt: 1-3/ c/ Note: often found on mortar and cement walls in urban environments; a very poorly understood taxon, which needs further study, certainly undercollected in the survey area. - Loc.: **Marc**: 8, 13.

Caloplaca lobulata (Flörke) Hellb. - Cr.pl/ Ch/ S/ Epiph/ 2, 4, 3-4, 2-3/ Alt: 2/ r/ subc/ Note: in Italy esp. on almond trees, and in areas with a dry, rather subcontinental climate. - Loc.: **Abr**: 41, 42, 43.

Caloplaca lucifuga G. Thor - Cr/ Ch/ A.s/ Epiph/ 2, 3, 3, 2/ Alt: 2/ r/ Note: exp. on ancient, more or less isolated deciduous oaks, in bark fissures; extremely rare in the survey area. - Loc.: **Pugl**: 71, 73.

Caloplaca luteoalba (Turner) Th. Fr. - Cr/ Ch/ S/ Epiph/ 3-4, 4-5, 4, 3-4/ Alt: 2/ er/ Note: on dust-covered bark, exp. of *Ulmus*, much more frequent in the past, now strongly declining and perhaps extinct in several parts of the country; this is the only recent record from Italy. - Loc.: **Pugl**: 88.

Caloplaca marmorata (Bagl.) Jatta - Cr.end/ Ch/ S/ Calc/ 5, 4-5, 4-5, 3-3/ Alt: 1-2/ c/ Note: a pioneer lichen, often found on pebbles, very common in the eu-Mediterranean belt throughout Italy. - Loc.: **Marc**: 8; **Abr**: 48; **Pugl**: 64, 65, 92, 97; **Bas**: 115.

Caloplaca nubigena (Kremp.) Dalla Torre & Sarnth. - Cr/ Ch/ S/ Calc/ 4-5, 4, 3, 1-2/ Alt: 4-5/ rr/ paras *Clauzadea immersa*/ Note: certainly more widespread in the Alps, much rarer in the Apennines; it was, however, abundant in the few upland areas where it has been collected during this survey. - Loc.: **Marc**: 21; **Abr**: 36, 40.

Caloplaca nubigena v. **keissleri** (Servít) Clauzade & Cl. Roux - Calc/ 5, 4-5, 4, 1-2/ Alt: 4-5/ rr/ Note: the taxonomic rank of this variety is still not clear to us. - Loc.: **Marc**: B; **Abr**: 44.

Caloplaca oasis (A. Massal.) Szatala - Cr.end/ Ch/ S/ Calc/ 5, 3, 2-3, 1/ Alt: 2-3/ rr/ paras *Baglietta parmigerella*/ Note: locally common in open beech forests of the south, much rarer in the north of Italy; not common, but locally abundant, esp. in the southern part of the survey area, in the beech-belt. - Loc.: **Marc**: 9, 24; **Pugl**: 75, 95; **Bas**: 118.

Caloplaca obscurella (Körb.) Th. Fr. - Cr/ Ch/ A.s/ Epiph/ 3, 4, 3, 3-4/ Alt: 1-2/ rr/ Note: often found in orchards, on fruit-trees; rare in the Mediterranean belt; see also Arvidsson & Martinsson (1993). - Loc.: **Marc**: 2, G; **Abr**: 43, 52; **Mol**: 57; **Pugl**: 68, 70, 87; **Bas**: 109, 114, 121.

Caloplaca ochracea (Schaer.) Flagey - Cr.end/ Ch/ S/ Calc/ 5, 3, 3, 1-3/ Alt: 1-3/ c/ Note: optimum in the submediterranean belt; mostly found in open woodlands, much rarer in the Mediterranean belt, and then confined to rather humid-shaded situations. - Loc.: **Marc**: 9, **B**; **Abr**: 41, 42, 49; **Mol**: 59, 63; **Pugl**: 65, 72, 75, 78, 84, 93, 94, 95, 97; **Bas**: 115, 119.

Caloplaca polycarpa (A. Massal.) Zahlbr. - Cr.end/ Ch/ S/ Calc/ 5, 3, 2-3, 1-3/ Alt: 1-3/ c/ paras *Bagliettoa* spp./ Note: optimum in the submediterranean belt; in Mediterranean Italy confined to more humid-shaded situations. - Loc.: **Marc**: 2, **B**; **Umbr**: E; **Abr**: 49; **Mol**: 59, 60; **Pugl**: 64, 65, 75, 84, 93, 97, 97, 98, 101; **Bas**: 109, 115.

Caloplaca pyracea (Ach.) Th. Fr. - Cr/ Ch/ S/ Epiph/ 3-4, 4-5, 3-4, 2-4/ Alt: 1-4/ vc/ Note: this is an extremely controversial group; pending further research, we prefer to treat epiphytic samples as distinct from the calcicolous *C. holocarpa*. - Loc.: **Marc**: 12, 19, 22; **Umbr**: E; **Abr**: 31, 33, 34, 50, H; **Mol**: 62; **Pugl**: 64, 66, 67, 83, 84, 96; **Bas**: 102, 108.

Caloplaca saxicola (Hoffm.) Nordin - Cr.pl/ Ch/ S/ Calc-Sil.b/ 3-5, 4-5, 4-5, 2-3/ Alt: 1-4/ ec/ Note: an extremely polymorphic taxon, which well deserves a general revision worldwide; mostly found on steeply inclined surfaces, common also in urban environments and on man-made substrata; optimum on hard rocks. - Loc.: **Marc**: 2, 3, 28, **B**; **Abr**: 38, 41; **Mol**: 54, 59, 60; **Pugl**: 77, 88, 93; **Bas**: 102, 103, 112, 119.

Caloplaca saxicola ssp. **biatorinoides** Clauz. & Cl. Roux - Cr.pl/ Ch/ S/ Calc/ 5, 4, 4-5, 2-3/ r/ Alt: 2-3/ Note: another member of the critical *C. saxicola* complex, most common in underhangs. - Loc.: **Mol**: 54.

Caloplaca saxifragarum Poelt - Cr/ Ch/ S/ Terr/ 4-5, 4-5, 3-4, 2-3/ Alt: 5/ c/ Note: certainly widespread throughout the Alps, not uncommon at high elevations in the Central Apennines, and to be looked for in the highest mountains of the south. - Loc.: **Marc**: 21; **Abr**: 36, 38, 39, 41, 44, 46.

Caloplaca sinapisperma (Lam. & DC.) Maheu & A. Gillet - Cr/ Ch/ S/ Terr/ 3-5, 4, 3, 2-3/ Alt: 5/ c/ Note: mainly on mosses and plant debris, sometimes reaching the montane belt in open habitats, common in the Alps, rarer in the Apennines, where it is restricted to the highest mountains. - Loc.: **Abr**: 38, 40.

Caloplaca subochracea (Wedd.) Werner v. **subochracea** - Cr/ Ch/ S/ Calc/ 5, 3-4, 2, 1-2/ Alt:1/ c/ coast/ Note: rarely found also at some distance from the coast; almost certainly absent north of Puglia in the survey area. - Loc.: **Pugl**: 64, 95, 99, 100.

Caloplaca subochracea v. **luteococcinea** Clauzade & Cl. Roux - Cr/ Ch/ S/ Calc/ 5, 4, 2-3, 1-2/ Alt: 1/ rc/ coast/ Note: a variety with a yellow thallus, most frequent in rather sunny sites; intermediate forms with the typical variety are frequent. - Loc.: **Pugl**: 95, 97, 98, 101.

Caloplaca teicholyta (Ach.) Steiner - Cr/ Ch/ A.s, S/ Calc-Sil.b/ 4-5, 3-4, 3, 3-4/ Alt: 1-2/ ec/ Note: esp. on calciferous sandstone, mostly on man-made substrata, common also within settlements. Loc. **Marc**: 2, 15, 27; **Umbr**: F; **Abr**: 31, 34, 43; **Mol**: 58; **Pugl**: 77, 80, 89, 93; **Bas**: 102, 103, 104, 112.

Caloplaca tiroliensis Zahlbr. - Cr/ Ch/ S/ Terr/ 3-5, 4-5, 3-4, 2-3/ Alt: 5/ c/ Note: mainly on mosses and plant debris in *Carex curvula* stands; common and widespread throughout the Alps, much rarer and very localized in the highest mountains of the Apennines. - Loc.: **Abr**: 39, 40, 44.

Caloplaca ulcerosa Coppins & P. James - Cr/ Ch/ A.s/ Epiph/ 3-4, 4-5, 3-4, 3-4/ Alt: 1-2/ rc/ Note: a rather misunderstood, but well-distinct species, esp. common on *Ulmus* and *Populus* at low altitudes; the type material of *C. viperae* Zahlbr. should be compared with that of *C. ulcerosa*: the two taxa might prove to be synonyms, in which case the former name would have priority. - Loc.: **Marc**: 1, 2, 17, 19; **Abr**: 31; **Mol**: 62; **Pugl**: 64, 81, 85, 85; **Bas**: 108.

Caloplaca variabilis (Pers.) Müll. Arg. - Cr/ Ch/ S/ Calc/ 4-5, 4-5, 3-4, 2-4/ Alt: 1-4/ ec/ Note: also present in urban environments, e.g. on walls. - Loc.: **Marc**: 3, 27, A; **Umbr**: E; **Abr**: 34, 37, 40, 48; **Mol**: 54, 59, 63; **Pugl**: 65, 75, 76, 80, 87, 95; **Bas**: 109, 113, 117, 118.

Caloplaca velana (A. Massal.) Du Rietz - Cr/ Ch/ S/ Calc/ 4-5, 4-5, 3-4, 3-4/ Alt: 1-5/ ec/ Note: extremely heterogeneous, and badly needing revision; the name *C. dolomiticola* Hue is often applied to this species, but the type of *Callopisma aurantiacum v. velanum* A. Massal. (seen by Nimis) falls well within the variation range of this polymorphic taxon. - Loc.: **Marc**: 3, 21; **Umbr**: E; **Abr**: 31, 40, 41, 47, 48, 50; **Mol**: 61; **Pugl**: 64, 65, 75, 78, 80, 97, 98; **Bas**: 117, 117, 119.

Caloplaca velana v. **dalmatica** Clauzade & Cl. Roux - Cr/ Ch/ S/ Calc/ 5, 4-5, 4, 3-4/ Alt: 2-5/ rr/ Note: mostly on hard rocks, incl. dolomite. Here we follow the circumscription by Clauzade & Roux (1985), but Poelt (*in litt.* to Nimis), claimed that material of this taxon in M, from the Massalongo herbarium, is identical to *C. glomerata* Arup. - Loc.: **Mol**: 60.

Caloplaca velana v. **dolomiticola** (Hue) Clauzade & Cl. Roux - Cr/ Ch/ S/ Calc/ 5, 4-5, 4, 3-4/ Alt: 3-5/ rr/ Note: identified according to Clauzade & Roux (1985) - Loc.: **Marc**: 13, 28; **Abr**: 35, 39.

Caloplaca velana v. **placidia** (A. Massal.) Clauzade & Cl. Roux - Cr/ Ch/ S/ Calc/ 5, 4-5, 4, 3-4/ Alt: 3-5/ rr/ Note: mostly on very hard calciferous rocks. - Loc.: **Marc**: 13, 28.

Caloplaca veneris Cl. Roux & Nav.-Ros. - Cr/ Ch/ S/ Calc/ 5, 4, 3-4, 3-4/ Alt: 1/ vr/ coast/ Note: a recently-described species, probably more widespread along the south Italian coasts. New to Italy. - Loc.: **Pugl**: 98.

Caloplaca virescens (Sm.) Coppins - Cr/ Ch/ A.s/ Epiph/ 2-3, 3-4, 3, 3-4/ Alt: 2/ vr/ suboc/ Note: esp. on old oaks, very much overlooked or confused with similar species, but certainly not common. - Loc.: **Pugl**: 94; **Bas**: 114, 122.

Caloplaca xantholyta (Nyl.) Jatta - Lepr/ Ch/ A.s/ Calc/ 4-5, 2-3, 1-2, 1-3/ Alt: 1-2/ c/ Note: optimum in the submediterranean belt, mostly in open woodlands, in niches of the rock. - Loc.: **Marc**: 2, 12, 18, 24; **Abr**: 41, 45, 49, H; **Mol**: 60.

Candelaria concolor (Dicks.) Stein - Fol.n/ Ch/ A.s/ Epiph/ 3-4, 4-5, 3-4, 3-5/ Alt: 1-2/ vc/ Note: rare in the Mediterranean belt and much less common along the Adriatic side of the Peninsula (slightly more continental climate). - Loc.: **Marc**: 9, 11, 12, 17, 25; **Abr**: 31, H; **Pugl**: 69, 82, 87.

Candelariella aurella (Hoffm.) Zahlbr. - Cr/ Ch/ S/ Calc/ 4-5, 3-5, 3-5, 2-4/ Alt: 1-5/ ec/ Note: a cosmopolitan species of calciferous rocks, exceptionally found also on dusty lignum and bark; some forms above treeline await further study. - Loc.: **Marc**: 2, 3, 6, 13, 21, 27, A, B; **Umbr**: E; **Abr**: 35, 36, 37, 41, 46, 47; **Mol**: 54, 58, 60, 61, 63; **Pugl**: 65, 75, 78, 80, 87, 89, 92; **Bas**: 102, 103, 109, 111, 112, 117, 118, 119, 121.

Candelariella faginea Nimis, Poelt & Puntillo - Cr/ Ch/ S/ Epiph/ 2, 3-4, 3, 2-3/ Alt: 3/ rr/ Note: most frequent in beech forests of southern Italy, very rare in the survey area. - Loc.: **Marc**: 21; **Abr**: 51; **Mol**: 56; **Bas**: 119.

Candelariella lutella (Vain.) Räsänen - Cr/ Ch/ S/ Epiph/ 2-3, 3-4, 3, 2-3/ Alt: 2-3/ r/ Note: mostly on base-rich bark in rather humid situations; extremely rare in the survey area. - Loc.: **Abr**: 49.

Candelariella medians (Nyl.) A.L. Sm. - Cr/ Ch/ A.s/ Calc/ 4-5, 4-5, 4-5, 4-5/ Alt: 1-3/ rc/ Note: most frequent on man-made substrata, or at the top of isolated boulders; in the Apennines very abundant on churches and other monuments. - Loc.: **Marc**: 15; **Abr**: 39, 40, 42, 47; **Mol**: 54; **Pugl**: 59, 79, 93; **Bas**: 103, 104, 112.

Candelariella oleaginescens Rondon - Cr/ Ch/ S/ 4-5, 3-4, 4-5, 2-4/ Alt: 1-5/ r/ Note: doubtfully distinct from *C. aurella,* most frequent on man-made substrata, and undercollected in this survey to avoid problems with the owners of nice walls near private villas... Loc.: **Marc**: 2.

Candelariella plumbea Poelt & Vězda - Cr/ Ch/ S/ Calc/ 4-5, 4, 3-4, 3-4/ Alt: 4-5/ rc/ Note: probably more widespread in the Alps; frequently identified, in the past, as *C. aurella*. - Loc.: **Abr**: 38.

Candelariella reflexa (Nyl.) Lettau - Cr/ Ch/ A.s/ Epiph/ 3-4, 4-5, 3, 4-5/ Alt: 1-2/ c/ Note: common in the eastern part of the Po-plain and in northern-central Tyrrhenian Italy, much rarer along the Adriatic side of the peninsula, and throughout Mediterranean Italy. - Loc.: **Marc**: 2, 11, 14; **Mol**: 61; **Pugl**: 94; **Bas**: 108, 114.

Candelariella subdeflexa (Nyl.) Lettau - Cr/ Ch/ S/ Epiph/ 3, 4, 3, 2-3/Alt: 2/ r/ Note: esp. on *Populus* and *Juglans*. - *Loc.: **Marc**: 5, D; **Abr**: 33; **Bas**: 110*.

Candelariella unilocularis (Elenkin) Nimis - Cr/ Ch/ S/ Terr/ 4-5, 4-5, 3-4, 3-4/ Alt: 4-5/ rc/ Note: this taxon was very much misunderstood in the past, it is probably widespread throughout the Alps, rarer in the Central Apennines, above treeline. - Loc.: **Umbr**: E; **Abr**: 39.

Candelariella viae-lacteae G. Thor & V. Wirth - Cr/ Ch/ A.i/ Epiph/ 3, 4, 3, 3-4/ Alt: 1-2/ r/ Note: often overlooked, being mostly sterile, and probably more widespread in Italy; also found on wayside trees in small settlements (Tretiach 1997). - Loc.: **Pugl**: 88.

Candelariella vitellina (Hoffm.) Müll. Arg. - Cr/ Ch/ S/ Sil-Sil.b/ 1-3, 3-5, 3-4, 2-5/ Alt: 1-5/ ec/

Note: sometimes on bryophytes, lignum and acid bark; not so common in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Marc**: 27, 29, 30; **Abr**: 34, 46; **Mol**: 63; **Pugl**: 65, 74; **Bas**: 102, 105, 111, 117.

Candelariella xanthostigma (Ach.) Lettau - Cr/ Ch/ S/ Epiph/ 2-3, 3-5, 3, 2-3/ Alt: 1-4/ c/ Note: less nitrophytic than *C. reflexa*; optimum in the submediterranean belt. - Loc.: **Marc**: 2, 3, 9, 11, 12, 19, 26, G; **Umbr**: E; **Abr**: 32, 35, 37, 43, 49, 50, H; **Mol**: 53, 55, 61; **Pugl**: 70, 78, 81, 82, 83, 85, 87, 90, 94; **Bas**: 105, 107, 110, 114, 118.

Carbonea vitellinaria (Nyl.) Hertel - LF/ S/ Sil.b/ 2, 4-5, 3-4, 3-4/ Alt: 2-5/ rc/ paras *Candelariella vitellina*/ Note: esp. common in and above the montane belt, throughout the country, but very rare in the survey area, due to the prevalence of calcareous substrata. - Loc.: **Abr**: 46; **Bas**: 116.

Catapyrenium boccanum (Servít) Breuss - Sq/ Ch/ S/ Terr/ 4-5, 4, 4-5, 2/ Alt: 1-2/ rr/ Note: often found on walls, probably common in the south; most of the species of this genus were undercollected in the survey area. - Loc.: **Mol**: 59.

Catapyrenium cinereum (Pers.) Körb. - Sq/ Ch/ S/ Terr/ 3-4, 4-5, 3-4, 1-2/ Alt: 3-5/ rc/ Note: a boreal-arctic species occurring also in more southern mountains. - Loc.: **Marc**: 21; **Abr**: 38, 40.

Catapyrenium daedaleum (Kremp.) Stein - Sq/ Ch/ S/ Terr/ 3-4, 4, 3-4, 1-2/ Alt: 5/ rc/ Note: perhaps less common than *C. cinereum* in the mountains of the south. - Loc.: **Abr**: 36.

Catapyrenium lachneum (Ach.) R. Sant. - Sq/ Ch/ S/ Terr/ 3-4, 4, 4, 1-2/ Alt: 4-5/ rr/ Note: certainy occurring throughout the Alps, much rarer in the Apennines. - Loc.: **Abr**: 36, 38.

Catapyrenium rufescens (Ach.) Breuss - Sq/ Ch/ S/ Terr-Calc/ 4-5, 4-5, 4-5, 1-3/ Alt: 2-5/ r/ Note: often found on rocks, on steeply inclined to vertical, sunny surfaces. - Loc.: **Mol**: 59.

Catapyrenium squamulosum (Ach.) Breuss - Sq/ Ch/ S/ Terr/ 4-5, 4-5, 3-5, 1-3/ Alt: 1-3/ rc/ Note: this is probably the most common species of the genus in Italy; it was undercollected in our field surveys. - Loc.: **Pugl**: 75.

Catillaria chalybeia (Borrer) A. Massal. - Cr/ Ch/ S/ Sil-Sil.b/ 2-3, 2-4, 2-3, 1-3/ Alt: 1-3/ c/ Note: most common in Tyrrhenian than in Adriatic Italy. - Loc.: **Marc**: 30; **Abr**: 34; **Mol**: 63; **Pugl**: 65; **Bas**: 102, 111, 116.

Catillaria detractula (Nyl.) H. Olivier - Cr/ Ch/ S/ Calc/ 4-5, 4, 3, 1-2/ Alt: 1-3/ vr/ Note: ecology and distribution of this taxon need further study. - Loc.: **Pugl**: 65, 97.

Catillaria erysiboides (Nyl.) Th. Fr. - Cr/ Ch/ S/ Lign/ 1-2, 2-3, 2-3, 1/ Alt: 2-4/ r/ Note: According to Printzen (1995) this could be a synonym of *Lecidea symmictella* Nyl. - Loc.: **Abr**: 37.

Catillaria globulosa (Flörke) Th. Fr. - Cr/ Ch/ S/ Epiph.a/ 2, 2-3, 2, 1-2/ Alt: 2-4/ rr/ Note: according to Printzen (1995) this species, which does not belong to *Catillaria s.str.*, is closely related to *Lecidea albohyalina* and *L. meiocarpa* (see also Ekman 1996). - Loc.: **Mol**: 53.

Catillaria lenticularis (Ach.) Th. Fr. - Cr/ Ch/ S/ Calc/ 4-5, 2-4, 2-3, 1-3/ Alt: 1-4/ rc/ Note: optimum in the submediterranean belt, but extending to the beech belt towards the south. - Loc.: **Marc**: 2, 24; **Umbr**: E; **Abr**: 45, 49; **Mol**: 57, 59, 60; **Pugl**: 64, 72, 90, 91, 95; **Bas**: 117, 118.

Catillaria mediterranea Hafellner - Cr/ Ch/ S/ Epiph/ 3, 4-5, 3, 2-3/ Alt: 1-3/ rr/ paras *Anaptychia ciliaris, A. crinalis*/ Note: for further details see Tretiach & Hafellner (1998). - Loc.: **Mol**: 53; **Bas**: 118.

Catillaria minuta (A. Massal.) Lettau - Cr/ Ch/ S/ Calc/ 5, 2-3, 2, 1/ Alt: 1-3/ rr/ Note: mostly on steeply inclined or underhanging surfaces. - Loc.: **Marc**: 24; **Pugl**: 71, 87, 91, 99, 100; **Bas**: 118.

Catillaria nigroclavata (Nyl.) Schuler - Cr/ Ch/ S/ Epiph/ 2-3, 4, 3, 2-3/ Alt: 1-3/ rc/ Note: for the distinction between *C. mediterranea* and *C. praedicta* see Tretiach & Hafellner (1998). - Loc.: **Marc**: 1, 8, 12, 18, 23, 29, G; **Abr**: 31, 33, 37, 48; **Mol**: 57, 62, 63; **Pugl**: 64, 65, 66, 67, 68, 81, 83, 86, 94, 96, 99; **Bas**: 110, 114, 115, 120, 121, 122.

Catillaria praedicta Tretiach & Hafellner - Cr/ Ch/ S/ Epiph/ 2-4, 3-5, 2, 3/ Alt: 1/ rc/ Note: very abundant in our coastal station, and perhaps not uncommon in coastal situations of southern-Tyrrhenian Italy. - Loc.: **Pugl**: 67.

Catinaria atropurpurea (Schaer.) Vězda & Poelt - Cr/ Tr/ S/ Epiph-Lign/ 2, 3-4, 2, 1-2/ Alt: 1-3/ r/ suboc/ Note: mostly on old broadleaved trees; locally common in some humid areas of the south, but very rare in the northern part of the survey area. - Loc.: **Marc**: 29; **Abr**: 31, 32; **Pugl**: 71, 72, 76, 82.

Cephalophysis leucospila (Anzi) H. Kilias & Scheid. v. **leucospila** - Cr/ Ch/ S/ Calc/ 4-5, 4-5, 3-4, 1-2/ Alt: 5/ r/ Note: widespread in the Alps, much rarer in the Apennines; also found on dolomite, on steeply inclined surfaces. - Loc.: **Abr**: 38.

Cetraria aculeata (Schreb.) Fr. - Frut/ Ch/ S/ Terr/ 1-3, 4-5, 4, 1/ Alt: 2-5/ rr/ Note: in Italy most common above the submediterranean belt; rare in the survey area, due to the prevalence of calcareous substrata. - Loc.: **Marc**: 21; **Umbr**: E; **Abr**: 39, 40, 41, 50; **Bas**: 117.

Cetraria chlorophylla (Willd.) Vain. - Frut/ Ch/ A.s/ Epiph.a/ 1-2, 3-4, 3, 1-2/ Alt: 3-4/ r/ Note: most frequent in the Alps, rarer in the mountains of the south, and extremely rare in the survey area. - Loc.: **Pugl**: 71.

Cetraria ericetorum Opiz - Frut/ Ch/ A.f/ Terr/ 1-2, 4-5, 4, 1/ Alt: 4-5/ c/ Note: common throughout the Alps, but much rarer than *C. islandica* along the Apennines, where it is restricted to the highest mountains. - Loc.: **Abr**: 39, 41.

Cetraria islandica (L.) Ach. - Frut/ Ch/ A.f/ Terr/ 1-3, 3-5, 3-4, 1-2/ Alt: 3-5/ ec/ Note: optimum near treeline; fairly common also in the highest mountains of the south. - Loc.: **Marc**: 21, B; **Abr**: 36, 38, 39, 40, 41, 46.

Cetraria nivalis (L.) Ach. - Frut/ Ch/ A.f/ Terr/ 2-4, 4-5, 3-4, 1/ Alt: 5/ rc/ Note: common throughout the Alps, this species is surprisingly abundant also on the Gran Sasso Massif (Central Apennines); at Campo Imperatore it even dominates small tundra-like vegetation in wind-exposed situations. - Loc.: **Abr**: 39, 40, 41.

Cetrelia olivetorum (Nyl.) W. L. Culb. & C. F. Culb. - Fol.b/ Ch/ A.s/ Epiph/ 2-3, 3, 1-2, 1/ Alt: 2-3/ r/ suboc/ Note: locally still common in humid forests of the Alps, becoming much rarer southwards; extremely rare in the survey area, where it was only found in the Gargano Peninsula - Loc.: **Pugl**: 71.

Chaenotheca furfuracea (L.) Tibell - Cr/ Ch/ S/ Epiph-Terr/ 1-2, 1-3, 1-2, 1/ Alt: 1-4/ rc/ Note: esp. in forests, often in underhangs, and on exposed roots. - Loc.: **Marc**: 29; **Abr**: 35; **Mol**: 56; **Pugl**: 71; **Bas**: 105, 118.

Chaenotheca hispidula (Ach.) Zahlbr. - Cr/ Tr/ S/ Epiph.a-Lign/ 2, 3-4, 1-2, 1/ Alt: 1-3/ vr/ Note: often found in dry hollows and undersides, and on tree bases in humid forests. - Loc.: **Pugl**: 29.

Chaenotheca phaeocephala (Ach.) Th.Fr. - Cr/ Ch/ S/ Epiph-Lign/ 2, 3, 1-2, 1/ Alt: 2-3/ rr/ Note: mostly on old trees in open woodlands; very rare in the survey area. - Loc.: **Mol**: 53.

Chaenotheca stemonea (Ach.) Müll. Arg. - Cr/ Ch/ S/ Epiph.a-Lign/ 1-2, 2-3, 1, 1/ Alt: 2/ r/ Note: often in hollows of conifer trunks, most frequent in the Alps, becoming much rarer southwards. - Loc.: **Marc**: 29.

Chaenotheca trichialis (Ach.) Th. Fr. - Cr/ Ch/ S/ Epiph.a/ 1-2, 1-3, 1-2, 1/ Alt: 2-4/ rr/ Note: certainly more widespread in upland areas throughout the country; most common in the Alps, and very rare in the survey area. - Loc.: **Mol**: 53.

Chaenothecopsis debilis (Sm.) Tibell - F/ S/ Lign/ 2, 3, 2-3, 1/ Alt: 3-4/ rr/ Note: on dry lignum, often in hollows of the trunks; probably overlooked, and more frequent in upland areas, throughout the country. - Loc.: **Mol**: 53.

Chromatochlamys muscorum (Fr.) H. Mayrhofer & Poelt - Cr/ Ch/ S/ Terr/ 2-3, 3-4, 3, 1-2/ Alt: 2-4/ rr/ Note: on mosses; never abundant, but certainly widespread throughout Italy. - Loc.: **Marc**: 29, B; **Umbr**: E; **Abr**: 32, 39, 40; **Bas**: 102.

Chrysothrix candelaris (L.) J. R. Laundon - Lepr/ Ch/ A.s/ Epiph/ 1-2, 3, 1-3, 1/ Alt: 1-4/ c/ Note: more common in the north, and in Tyrrhenian Italy, than in the survey area. 2. - Loc.: **Marc**: 29; **Abr**: 32, 33; **Pugl**: 71; **Mol**: 53; **Bas**: 109, 110.

Cladonia coniocraea (Flörke) Spreng. - Frut/ Ch/ A.s/ Terr-Lign/ 2-3, 3-4, 2-3, 1-3/ Alt: 1-4/ vc/ Note: often found also at the base of trees in open forests; surprisingly rare in the Adriatic part of peninsular Italy. - Loc.: **Marc**: 20; **Abr**: 51; **Pugl**: 71.

Cladonia convoluta (Lam.) Anders - Frut/ Ch/ A.f/ Terr/ 4-5, 4-5, 3-4, 1-2/ Alt: 1-3/ ec/ Note: in open, rather, but not too dry situations on calcareous ground, with optimum in the submediterranean belt. - Loc.: **Marc**: 2, 3, 13, 18, D; **Umbr**: E; **Abr**: 30, 34, 40, 41, 42, 47, 50; **Mol**: 59, 60, 61; **Pugl**: 64, 65, 67, 78, 91, 92, 93, 99; **Bas**: 115, 117, 120, 122.

Cladonia digitata (L.) Hoffm. - Frut/ Ch/ A.s/ Lign/ 1-2, 3-4, 2-3, 1/ Alt: 3-4/ c/ Note: on strongly weathered lignum, mosses, at the base of trunks, sometimes on humic soil; most common in the Alps, much rarer southwards. - Loc.: **Abr**: 29, 32.

Cladonia fimbriata (L.) Fr. - Frut/ Ch/ A.s/ Terr-Lign-Epiph/ 1-3, 3-4, 2-3, 1-3/ Alt: 1-4/ vc/ Note: a rather ephemeral pioneer species with a wide ecological range; surprisingly rarer in the Adriatic part of peninsular Italy. - Loc.: **Marc**: 20; **Abr**: 45; **Pugl**: 72, 75; **Bas**: 117, 119.

Cladonia furcata (Huds.) Schrad. - Frut/ Ch/ S/ Terr/ 2-4, 3-4, 3, 1-2/ Alt: 1-4/ c/ Note: a generally very common species in Italy, but surprisingly very rare along the Adriatic part of the peninsula. - Loc.: **Abr**: 41.

Cladonia macilenta Hoffm. ssp. **macilenta** - Frut/ Ch/ S/ Epiph.a-Lign/ 1-2, 3-4, 2-3, 1-2/ Alt: 2-4/ rc/ Note: most common in the north, much rarer southwards, where it is most frequent in old *Castanea* plantations. - Loc.: **Marc**: 29; **Abr**: 32.

Cladonia parasitica (Hoffm.) Hoffm. - Frut/ Ch/ S/ Epiph.a-Lign/ 1-2, 3, 2-3, 1/ Alt: 2-3/ rc/ Note: optimum in oak forests in the north, and in *Castanea* plantations in the south, certainly not common in the survey area. - Loc.: **Marc**: 29; **Abr**: 32.

Cladonia pocillum (Ach.) Grognot - Frut/ Ch/ S/ Terr/ 4-5, 4-5, 4, 1-3/ Alt: 1-5/ ec/ Note: on calcifeorus ground in dry, open grasslands. - Loc.: **Marc**: 2, 3, 21, 30, A, G; **Umbr**: E; **Abr**: 38, 39, 40, 41, 42, 44, 50; **Mol**: 60; **Pugl**: 64, 75, 78; **Bas**: 115, 117.

Cladonia polycarpoides Nyl. - Frut/ Ch/ S/ Terr/ 2-3, 4, 3, 1/ Alt: 1-3/ r/ suboc/ - Note: on more or less calcareous mineral soil in open grasslands; this is the first record from Central Italy, where this species is certainly extremely rare, and confined to upland areas. Loc.: **Abr**: 44.

Cladonia polydactyla (Flörke) Spreng. - Frut/ Ch/ A.s/ Lign-Terr/ 1, 3, 2-3, 1/ Alt: 2-4/ rc/ suboc/ Note: widespread throughout the Alps, becoming much rarer southwards, where it is mostly confined to old *Castanea* plantations. - Loc.: **Marc**: 29.

Cladonia pyxidata (L.) Hoffm. - Frut/ Ch/ S/ Terr-Lign-Epiph/ 2-3, 3-5, 2-3, 1-3/ Alt: 1-5/ ec/ Note: a very polymorphic, and still critical species. - Loc.: **Marc**: 21, 24, 29; **Umbr**: E; **Abr**: 31, 41, 51; **Mol**: 53; **Pugl**: 75; **Bas**: 102.

Cladonia rangiformis Hoffm. - Frut/ Ch/ S/ Terr/ 3-5, 4-5, 3, 1-3/ Alt: 1-3/ ec/ Note: one of the most frequent and abundant species of *Cladonia* in Italy, with optimum in more or less dry grasslands on calcareous ground in the submediterranean belt. - Loc.: **Marc**: 2, 3, 13, 18, 29, 30, D; **Umbr**: E; **Abr**: 34, 42; **Mol**: 60, 63; **Pugl**: 65, 67, 72, 75, 91, 92, 94, 95; **Bas**: 115, 117, 120, 122.

Cladonia squamosa Hoffm. v. **squamosa** - Frut/ Ch/ A.i/ Terr-Lign-Epiph.a/ 1-2, 3, 2-3, 1-2/ Alt: 1-5/ rc/ Note: a very polymorphic taxon of more or less organic substrata, certainly rare in the survey area. - Loc.: **Marc**: 29; **Abr**: 32.

Cladonia squamosa v. **subsquamosa** (Leight.) Vain. - Frut/ Ch/ A.i/ Terr-Lign/ 1-2, 3, 2, 1/ Alt: 3/ rc/ suboc/ Note: more hygrophytic than the typical variety. - Loc.: **Marc**: 29.

Cladonia subrangiformis Sandst. - Frut/ Ch/ S/ Terr/ 3-5, 3-4, 3-4, 1-3/ Alt: 1-2/ rc/ Note: in our opinion, this is a good species; although less abundant than *C. rangiformis*, it is common throughout Italy. - Loc.: **Marc**: 3, 30; **Umbr**: E; **Abr**: 39, 40, 41, 42, 47, 50; **Mol**: 60; **Pugl**: 64, 67, 67; **Bas**: 115, 117.

Cladonia symphycarpa (Flörke) Fr. - Frut/ Ch/ S/ Terr/ 4-5, 4-5, 4, 1-3/ Alt: 2-5/ c/ Note: mostly in open, dry grasslands on calciferous ground; although most frequent in the north, this species certainly occurs also in mountain areas of southern Italy, and should be looked for there. - Loc.: **Marc**: 21, 28; **Abr**: 38, 40.

Clauzadea chondrodes (A. Massal.) Clauzade & Cl. Roux - Cr/ Ch/ S/ Calc/ 5, 3-5, 3, 1-2/ Alt: 2-5/ rc/ Note: certainly widespread throughout the Alps, and in upland areas of the south, this species is certainly rare in the survey area. - Loc.: **Marc**: 2.

Clauzadea immersa (Weber) Hafellner & Bellem. - Cr.end/ Ch/ S/ Calc/ 5, 3-4, 3, 1-2/ Alt: 1-5/ vc/ Note: optimum in the submediterranean belt, but with a very wide altitudinal range. - Loc.: **Marc**: 9, 12, 21; **Abr**: 39; **Mol**: 59; **Pugl**: 64, 95, 99, 100; **Bas**: 115.

Clauzadea metzleri (Körb.) D. Hawksw. - Cr/ Ch/ S/ Calc/ 5, 3-4, 3-4, 1-2/ Alt: 1-4/ c/ Note: often found on small pebbles, certainly present throughout Italy, and often overlooked. - Loc.: **Marc**: 18; **Abr**: 45, 47; **Mol**: 59; **Pugl**: 64, 65, 72, 92, 93, 97, 98; **Bas**: 115.

Clauzadea monticola (Schaer.) Hafellner & Bellem. - Cr/ Ch/ S/ Calc/ 5, 3-4, 3-4, 1-3/ Alt: 1-5/ c/ Note: an ecologically wide-ranging species, also found on man-made substrata, not uncommon throughout the survey area. - Loc.: **Marc**: 24, G; **Umbr**: E; **Abr**: 38, 47; **Mol**: 57, 61; **Pugl**: 64, 72, 75, 95, 99; **Bas**: 118.

Cliostomum corrugatum (Ach.) Fr. - Cr/ Ch/ S/ Epiph.a-Lign/ 2, 3-4, 2, 1/ Alt: 2-3/ vr/ suboc/ Note: although somehow more frequent in the Alps, this species also occurs in some humid montane forests of the south; it is certainly extremely rare in the survey area, where it was found in a relict, rather humid forest of *Abies alba*. - Loc.: **Mol**: 53.

Collema auriforme (With.) Coppins & J. R. Laundon - Fol.b/ Cy.h/ A.i/ Calc-Terr/ 3-5, 2-4, 2-3, 1-2/ Alt: 1-3/ c/ suboc/ Note: optimum in the submediterranean belt, and mostly on epilithic bryophytes in shaded, somehow humid situations; confined to upland sites in the survey area. - Loc.: **Marc**: 24; **Umbr**: E; **Abr**: 41, 47; **Mol**: 55, 57;

Pugl: 73, 76; **Bas**: 118.

Collema conglomeratum Hoffm. - Fol.n/ Cy.h/ S/ Epiph/ 3, 4-5, 3, 3/ Alt: 1-2/ rr/ Note: esp. on *Juglans* and *Populus*, certainly not common in the survey area. - Loc.: **Marc**: 14.

Collema crispum (Huds.) F. H. Wigg. - Fol.b/ Cy.h/ S/ Terr/ 3-4, 4, 3, 2-3/ Alt: 1-3/ rc/ Note: most common in central and southern Italy, often on walls; perhaps undercollected, but certainly not common in the survey area. - Loc.: **Pugl**: 65.

Collema cristatum (L.) F. H. Wigg. - Fol.n/ Cy.h/ S/ Calc/ 5, 4-5, 4-5, 1-3/ Alt: 1-5/ ec/ Note: on sunny calcareous rocks; one of the most common species of the genus in Italy. - Loc.: **Marc**: 2, 3, 13, 18, 21; **Umbr**: E; **Abr**: 41, 42, 47, 48; **Mol**: 59, 60, 61, 63; **Pugl**: 65, 74, 75, 78, 80; **Bas**: 117.

Collema fasciculare (L.) F. H. Wigg. - Fol.b/ Cy.h/ S/ Epiph/ 2-3, 3-4, 2, 1-3/ Alt: 1-2/ rr/ suboc/ Note: probably more frequent in the past, and certainly very much declining; extremely rare in the survey area. - Loc.: **Marc**: 19.

Collema flaccidum (Ach.) Ach. - Fol.b/ Cy.h/ A.i/ Epiph-Sil.b/ 3, 3-4, 2, 1-2/ Alt: 1-4/ rr/ suboc/ Note: more common in the past, presently extinct in all areas with heavy anthopization, exp. in the Po-Plain, locally still rather common in the Apennines. - Loc.: **Marc**: 29, 30; **Abr**: 31, 51, 52; **Pugl**: 73, 76; **Bas**: 109.

Collema furfuraceum (Arnold) Du Rietz - Fol.b/ Cy.h/ A.i/ Epiph/ 2-3, 3-4,2, 1-3/ Alt: 1-3/ rr/ suboc/ Note: more common in the past; presently confined to semi-natural, mostly upland areas. - Loc.: **Marc**: 25; **Mol**: 55; **Pugl**: 72, 83.

Collema fuscovirens (With.) J. R. Laundon - Fol.b/ Cy.h/ A.i/ Calc/ 4-5, 3-4, 3, 1-2/ Alt: 1-5/ c/ Note: together with *C. cristatum* and *C. tenax* this is one of the most common species of the genus throughout Italy; its optimum is clearly in the submediterranean belt - Loc.: **Marc**: 2, 3, 13, 21; **Umbr**: E; **Abr**: 38, 47, 52; **Mol**: 59, 63; **Pugl**: 65, 78, 80; **Bas**: 117.

Collema ligerinum (Hy) Harm. - Fol.n/ Cy.h/ S/ Epiph/ 3, 4-5, 3, 3/ Alt: 2/ r/ Note: mostly on *Juglans* and *Populus*, more common in the past, but still widespread. - Loc.: **Marc**: 5; **Bas**: 119.

Collema multipartitum Sm. - Fol.n/ Cy.h/ S/ Calc/ 5, 3-4, 3, 1-2/ Alt: 2-3/ rr/ Note: a mainly submediterranean species, widespread throughout Italy, but never really common, also in the survey area. - Loc.: **Mol**: 59.

Collema multipunctatum Degel. - Fol.b/ Cy.h/ S/ Epiph/ 2-3, 4, 2, 2/ Alt: 1-2/ r/ suboc/ Note: mostly Tyrrhenian in Italy, extremely rare rare in Adriatic peninsular Italy. - Loc.: **Mol**: 56.

Collema nigrescens (Huds.) DC. - Fol.b/ Cy.h/ A.i/ Epiph/ 2-3, 3-4, 2, 1-3/ Alt: 1-3/ rc/ suboc/ Note: certainly more common in the past, this species has disappeared from wide heavily anthropized areas of the north, but is still frequent in semi-natural environments throughout the country, especially in Tyrrhenian Italy, being somehow rarer in upland areas of Adriatic peninsular Italy, with optimum in the submediterranean belt. - Loc.: **Marc**: 25, G; **Abr**: 50, 52; **Mol**: 56; **Pugl**: 66, 71, 76; **Bas**: 110, 119.

Collema polycarpon Hoffm. ssp. **polycarpon** - Fol.b/ Cy.h/ S/ Calc/ 5, 4-5, 4, 1-3/ Alt: 1-5/ c/ Note: a common species of exposed calcareous rocks, probably undercollected in the survey area, with optimum in the submediterranean belt. - Loc.: **Marc**: 21, A; **Umbr**: E; **Abr**: 39; **Mol**: 59, 63; **Pugl**: 65, 74.

Collema subflaccidum Degel. - Fol.b/ Cy.h/ A.i/ Epiph/ 2-3, 3-4, 2, 2-3/ Alt: 1-3/ rr/ suboc/ Note: more common in the past, and presently absent from heavily anthropized areas, with optimum in the submediterranean belt. - Loc.: **Marc**: 19, 24, 25, 26, C, G; **Abr**: 50, 52; **Mol**: 53; **Pugl**: 66, 72.

Collema subnigrescens Degel. - Fol.b/ Cy.h/ S/ Epiph/ 3, 3-4, 2, 2-3/ Alt:1- 2/ rc/ suboc/ Note: more frequent in the past in the north, and presently extinct over wide areas (e.g. the Po-plain); still rather frequent in Tyrrhenian Italy, but very rare in the Adriatic part of peninsular Italy. - Loc.: **Abr**: 52.

Collema tenax (Sw.) Ach. - Fol.b/ Cy.h/ S/ Terr/ 3-5, 3-5, 3-5, 1-3/ Alt: 1-5/ ec/ Note: this is probably the most common species of the genus throughout the country. - Loc.: **Marc**: 24, 28, 28; **Umbr**: E; **Abr**: 31, 46, 48; **Mol**: 53, 63; **Pugl**: 64, 65, 67, 75, 76, 92, 93, 97; **Bas**: 115.

Collema undulatum Flot. - Fol.b/ Cy.h/ S/ Calc/ 5, 3-5, 4, 1-3/ Alt: 2-5/ rr/ Note: mostly in upland areas, esp. in the south. - Loc.: **Umbr**: E; **Abr**: 39, 40, 41, 42; **Mol**: 60; **Bas**: 117.

Cresporhaphis wienkampii (Haszlin) **B**. M. Aguirre - Cr/ Ch/ S/ Epiph/ 2-3, 4, 3, 1-2/ Alt: 2/ er/ Note: new to Italy. Loc.: **Pugl**: 77.

Cyphelium notarisii (Tul.) Blomb. & Forssell - Cr/ Ch/ S/ Lign/ 1-2, 4-5, 3-4, 1-2/ Alt: 2-3/ r/ Note: certainly more widespread in the Alps, but very rare in the Apenninies. - Loc.: **Abr**: 35.

Dactylina madreporiformis (Ach.) Tuck. - Frut/ Ch/ A.f/ Terr/ 3-5, 4-5, 4, 1-2/ Alt: 4-5/ rr/

Note: certainly widespread throughout the Alps; the records from Abruzzo (Gran Sasso) are the southernmost in Europe for this mainly Arctic-Alpine species whose presence and abundance there (Campo Imperatore), are somehow surprising. - Loc.: **Abr**: 39, 40.

Dendriscocaulon umhausense (Auersw.) Degel. - Frut/ Cy.h/ S/ Epiph/ 2-3, 3, 1, 1-2/ Alt: 1-3/ rr/ suboc/ Note: perhaps the cyanobacterial morph of *Lobaria amplissima*; its range in Italy is mainly Tyrrhenian; extremely rare in the Adriatic part of peninsular Italy. - Loc.: **Abr**: 52.

Dermatocarpon miniatum (L.) W. Mann - Fol.u/ Ch/ S/ Calc/ 3-5, 4-5, 4, 3/ Alt: 1-5/ c/ Note: not uncommon on calcareous substrata throughout the survey area. - Loc.: **Marc**: 24; **Abr**: 36, 38, 40, 44, 46; **Mol**: 54; **Pugl**: 69; **Bas**: 118.

Dimerella pineti (Ach.) Vězda - Cr/ Tr/ S/ Epiph.a-Lign/ 1-2, 2-3, 1-3, 1-2/ Alt: 1-4/ rc/ Note: certainly widespread throughout the country, esp. in non-heavily anthropized areas with a humid climate. - Loc.: **Abr**: 31; **Pugl**: 70, 71, 73; **Bas**: 105, 106.

Diploicia canescens (Dicks.) A. Massal. - Cr.pl/ Ch/ A.s/ Epiph-Calc-Sil.b/ 3-5, 3-5, 2-3, 2-4/ Alt: 1-2/ c/ suboc/ Note: very common in Tyrrhenian Italy, where it is often fertile, on a wide variety of substrates; much rarer along the eastern side of the peninsula, and bound to somehow humid habitats there, but often found in underhangs of calcareous rocks protected from rain. - Loc.: **Marc**: 24; **Mol**: 61; **Pugl**: 64, 67, 78, 91, 93, 94, 95, 96, 97, 99, 100; **Bas**: 115.

Diploschistes actinostomus (Ach.) Zahlbr. - Cr/ Ch/ S/ Sil.b/ 3, 4, 3-4, 3/ Alt: 1-2/ rc/ Note: most frequent in Tyrrhenian Italy, where it might be even abundant; in estern Peninsular Italy it is sometimes found on very hard limestone. Note: **Marc**: 27; **Abr**: 34; **Mol**: 63; **Pugl**: 65, 74; **Bas**: 102.

Diploschistes diacapsis (Ach.) Lumbsch - Cr/ Ch/ S/ Terr/ 3-4, 4-5, 4-5, 1-3/ Alt: 1-2/ c/ subc/ Note: widespread in dry grasslands throughout the country, but rare in the Adriatic part of peninsular Italy. - Loc.: **Bas**: 102.

Diploschistes euganeus (A. Massal.) Steiner - Cr/ Ch/ S/ Sil.b/ 3, 4, 3, 3-4/ Alt: 1-2/ r/ Note: most frequent in Tyrrhenian Italy, very rare in the Adriatic part of peninsular Italy, also for the scarcity of suitable substrata. - Loc.: **Bas**: 116.

Diploschistes gypsaceus (Ach.) Zahlbr. - Cr/ Ch/ S/ Calc/ 5, 2-3, 2, 1/ Alt: 1-4/ c/ Note: often found in rock fissures of vertical faces, esp. in woodlands; certainly not common in the survey area. - Loc.: **Marc**: 29.

Diploschistes muscorum (Scop.) R. Sant. - Cr/ Ch/ S/ Terr/ 3-4, 3-5, 3-4, 1-3/ Alt: 1-5/ c/ Note: most frequent on mosses, lichens (exp. *Cladonia*) and plant debris; not always distinguished from *D. diacapsis* in the older literature, but certainly occurring throughout Italy; quite rare in the survey area. - Loc.: **Marc**: D; **Pugl**: 75; **Bas**: 117.

Diploschistes ocellatus (Vill.) Norman - Cr/ Ch/ S/ Calc/ 4-5, 4, 3-4, 2-3/ Alt: 1-3/ c/ Note: on calcareous rocks and thin layers of soil, often covering large surfaces; rare in the north, more common in southern Italy. - Loc.: **Abr**: 42, **Marc**: 53; **Pugl**: 75; **Bas**: 119.

Diploschistes scruposus (Schreb.) Norman - Cr/ Ch/ S/ Sil/ 2-3, 3-5, 3-4, 1-3/ Alt: 1-4/ vc/ Note: formerly often confused with similar species, certainly present throughout Italy, with optimum in the submediterranean and Mediterranean-montane belts; much rarer in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Bas**: 102, 110.

Diplotomma alboatrum (Hoffm.) Flot. - Cr/ Ch/ S/ Epiph-Calc-Sil.b/ 3-4, 4-5, 4-5, 3-4/ Alt: 1-3/ c/ Note: for further details on the synonyms see Nordin (1996); for several reasons, however, which will be explained in a forthcoming paper (but see note on *D. epipolium*), we do not agree with several taxonomic conclusions by this author. Loc.: **Marc**: 7, 30; **Abr**: 50, 52; **Mol**: 55, 56, 58, 60; **Pugl**: 75, 77, 85, 87, 97, 99; **Bas**: 108, 114.

Diplotomma chlorophaeum (Leight.) Szatala - Cr/ Ch/ S/ Sil.b/ 3, 4, 4, 3-4/ Alt: 1-2/ rc/ Note: common, esp. on tiles, and therefore very much overlooked, thrughout the country. - Loc.: **Abr**: 43; **Bas**: 102, 103.

Diplotomma epipolium *auct. non* (Ach.) Arnold - Cr/ Ch/ S/ Calc/ 4-5, 4-5, 4, 3-4/ Alt: 1-3/ vc/ Note: the synonymization of this species with *D. venustum*, by Nordin (1996) is not accepted here; this author carried out his studies in southern Scandinavia, which is the northenmost distributional limit for both species. We are certain that most southern European authors would never agree with such a taxonomic solution: in southern Europe *D. epipolium* and *D. venustum* can be easily recognized by gross morphological traits and by their peculiar biology (see note on *D. venustum*), even without considering chemical characters. - Loc.: **Marc**: 2, 3, 8, 13, 27, 30, A, D; **Umbr**: E; **Abr**: 31, 39, 40, 41, 44, 50; **Mol**: 54, 59, 60, 61, 63; **Pugl**: 64, 65, 80, 93; **Bas**:

109, 113, 117, 118.

Diplotomma murorum (A. Massal.) Coppins - Cr/ Ch/ S/ Calc-Sil.b/ 4-5, 4, 3, 4/ Alt: 1-2/ rc/ paras *Caloplaca teicholyta*/ suboc/ Note: the peculiar biology of this species deserves further study. - Loc.: **Abr**: 34; **Bas**: 102.

Diplotomma nivale (Bagl. & Carestia) Cr/ Ch/ S/ Sax/ paras Teloschistaceae/ Note: according to the revision of this group in southern Scandinavia (!) by Nordin (1996) this is a synonym of *D. alboatrum*; we strongly doubt that this is correct, and, pending further study, we maintain this as a separate species. Loc: **Mol**: 60.

Diplotomma populorum A. Massal. - Cr/ Ch/ S/ Epiph/ 3, 4-5, 4-5, 3-4/ Alt: 1-3/ rc/ Note: the relationships with *D. alboatrum* need further study: the two taxa might well prove to be the same. - Loc.: **Marc**: 18.

Diplotomma venustum (Körb.) Körb. - Cr/ Ch/ S/ Calc/ 4-5, 4-5, 4, < 3-4/ Alt: 1-3/ c/ paras *Lecanora muralis*/ Note: at least when young, a constant parasite on *Lecanora muralis* v. *versicolor*; morphological, biological and chemical differences from *D. epipolium* are so evident that the synonymization of the two taxa proposed by Nordin (1996), based on samples from southern Sweden only, appears doubtful; see also comment on *D. epipolium*. - Loc.: **Marc**: 2, 21, 28; **Umbr**: E; **Abr**: 36, 39, 40, 41, 47, 50; **Mol**: 59; **Pugl**: 75, 78, 92; **Bas**: 117, 119.

Dirina ceratoniae (Ach.) Fr. - Cr/ Tr/ S/ Epiph/ 3-4, 2-3, 1-2, 2-4/ Alt: 1/ c/ suboc/ coast/ Note: the relationships of this taxon to *D. massiliensis* would be well worthy of a DNA study. - Loc.: **Pugl**: 99, 100.

Dirina cretacea (Zahlbr.) Tehler - Cr/ Tr/ S/ Calc/ 5, 2-3, 1-2, 1/ Alt: 1/ vr/ coast/ Note: hitherto only known from the coasts of Dalmatia and the eastern Mediterranean region. New to Italy. Note: **Pugl**: 97, 98, 101.

Dirina massiliensis Durieu & Mont. - Cr/ Tr/ S/ Calc-Sil-Sil.b/ 3-5, 2-3, 1-2, 1-2/ Alt: 1/ ec/ coast/ Note: on steeply inclined or underhanging surfaces; very variable according to the type of substrata; the sexual form seems to be absent along the Adriatic coast north of Abruzzo (like the ecologically similar *Roccella phycopsis*). - Loc.: **Pugl**: 64, 97, 98, 101.

Dirina massiliensis f. **aponina** (A. Massal.) Tehler - Cr/ Tr/ A/ Calc/ 3-5, 2-3, 1-3, 1-2/ Alt: 1/ rr/ coast/ Note: much more widespread than the few records would suggest. - Loc.: **Abr**: 49.

Dirina massiliensis f. **sorediata** (Müll. Arg.) Tehler - Cr/ Tr/ A.s/ Calc-Sil-Sil.b/ 3-5, 2-3, 1-3, 1-2/ Alt: 1/ vc/ coast/ Note: see also comment on *D. stenhammari*. - Loc.: **Pugl**: 64, 93.

Dirina stenhammari (Stenh.) Poelt & Follmann - Cr/ Tr/ A.s/ Calc/ 5, 2-3, 2-3, 1/ Alt: 2-3/ rr/ Note: the status of this taxon is a typical example of a problem which can be only solved by DNA analyses: sorediate forms of *D. massiliensis* are common in coastal environments, together with fertile forms. Similar forms (but mostly with a thinner thallus and with more diffuse soredia) do also occur very far from the coast (e.g. in the Alps), and are also known from several Central European sites. Morphologically and chemically, they should be included into *D. massiliensis* f. *sorediata*. However, due to their peculiar distribution and ecology, we prefer, pending further study, to maintain them as a distinct taxon. Note: **Mol**: 59, 60.

Endocarpon adscendens (Anzi) Müll. Arg. - Sq/ Ch/ S/ Terr/ 4-5, 3-4, 3, 2-3/ Alt: 2-3/ rr/ Note: mostly on terricolous mosses, with optimum in upland areas. - Loc.: **Marc**: 2.

Endocarpon pusillum Hedw. - Sq/ Ch/ S/ Terr/ 4-5, 3-4, 3, 1/ Alt: 1-2/ rr/ Note: the genus *Endocarpon* badly needs revision; *E. pusillum* in the sense of most European authors is heterogeneous, and could be subdivided into several different species. - Loc.: **Abr**: 40.

Endococcus perpusillus Nyl. - LF/ S/ Sil/ Alt: 3-5/ rr/ paras *Rhizocarpon geographicum s.lat.*/ - Loc.: **Bas**: 117. Det. D. Triebel

Enterographa crassa (DC.) Fée - Cr/ Tr/ S/ Epiph/ 3, 2-3, 2, 1-2/ Alt: 1-2/ rr/ suboc/ Note: esp. on base-rich bark in riparian woodlands; mainly Tyrrhenian in Italy, very rare in Adriatic peninsular Italy, and probably absent in the northern part of the survey area. - Loc.: **Pugl**: 67; **Bas**: 122.

Eopyrenula leucoplaca (Wallr.) R.C. Harris - Cr/ Tr/ S/ Epiph/ 2, 3, 3, 1-2/ Alt: 2-3/ r/ suboc/ Note: mostly in deciduous forests; probably somehow more frequent in the past, but presently very rare. - Loc.: **Pugl**: 70, 72.

Evernia divaricata (L.) Ach. - Frut/ Ch/ A.s/ Epiph/ 1-2, 3-5, 1-2, 1/ Alt: 3-4/ rr/ Note: common throughout the Alps, becoming much rarer southwards; optimum in humid beech forests; very rare in Adriatic peninsular Italy. - Loc.: **Mol**: 53.

Evernia prunastri (L.) Ach. - Frut/ Ch/ A.s/ Epiph/ 1-3, 3-5, 2-3, 1-3/ Alt: 1-4/ c/ Note: rare only near settlements, otherwise rather common throughout the country, with a wide altitudinal range.- Loc.: **Marc**: 19, 26; **Umbr**: E; **Abr**: 32, 35, 37; **Mol**: 55, 60, 62; **Pugl**: 64, 65, 69, 70, 71, 72, 73, 82, 83, 87, 90; **Bas**: 105, 106, 109, 110, 113, 118.

Farnoldia jurana (Schaer.) Hertel v. **jurana** - Cr.end/ Ch/ S/ Calc/ 4-5, 3-5, 3-4, 1-3/ Alt: 3-5/ ec/ Note: one of the most common calcicolous species above and near treeline, throughout the country. - Loc.: **Marc**: 21; **Abr**: 36, 38, 39, 40, 46; **Mol**: 62.

Farnoldia micropsis (A. Massal.) Hertel - Cr/ Ch/ S/ Calc/ 4-5, 3-5, 3-4, 1-2/ Alt: 4-5/ rc/ Note: more common in the Alps, much rarer southwards. - Loc.: **Abr**: 38, 46.

Fulgensia australis (Arnold) Poelt - Cr.pl/ Ch/ S/ Calc/ 5, 4-5, 4, 3/ Alt: 5/ rr/ Note: certainly more widespread in the Alps; the systematic position is not clear to us: perhaps closer to *Caloplaca* than to *Fulgensia s. str*. - Loc.: **Abr**: 36, 38.

Fulgensia bracteata v. **alpina** (Th.Fr.) Räsänen - Cr/ Ch/ A.i/ Terr/ 4-5, 4-5, 4, 2-3/ Alt: 5/ r/ Note: a poorly known taxon, well worthy of further study; certainly present also in the Alps. - Loc.: **Marc**: 21.

Fulgensia fulgens (Sw.) Elenkin - Cr.pl/ Ch/ S/ Terr-Calc/ 4-5, 4-5, 4, 2-3/ Alt: 1-3/ c/ subc/ Note: in openings of dry grasslands on calciferous ground, with optimum in submediterranean areas; perhaps undercollected in the survey area. - Loc.: **Marc**: 30; **Abr**: 41, 61.

Fulgensia fulgida (Nyl.) Szatala - Cr.pl/ Ch/ S/ Terr/ 4-5, 4-5, 4-5, 2-3/ Alt: 1-2/ rc/ Note: in openings of garrigue and Mediterranean grassland vegetation, on calciferous or base-rich ground. - Loc.: **Marc**: 2; **Mol**: 60, 63; **Pugl**: 65, 75, 78, 93; **Bas**: 117.

Fulgensia schistidii (Anzi) Poelt - Cr/ Ch/ S/ Terr-Sil.b/ 3, 4-5, 3-4, 2-3/ Alt: 2-4/ rr/ Note: mostly on (epilithic) mosses in upland areas, throughout the country. - Loc.: **Marc**: 21, 28, A; **Umbr**: E; **Abr**: 37, 39, 40, 41, 47; **Mol**: 60; **Bas**: 117.

Fulgensia subbracteata (Nyl.) Poelt - Cr.pl/ Ch/ A.i/ Terr/ 3-5, 4-5, 3-4, 2-3/ Alt: 1-3/ c/ Note: a widespread, critical taxon, characterized by the occurrence of schizidia, which, however, are also present in other species; a revision is badly needed. - Loc.: **Marc**: 2, 21, 28; **Umbr**: E; **Abr**: 34, 38, 40, 41; **Mol**: 61; **Pugl**: 64, 92, 99; **Bas**: 115, 117.

Fuscidea cyathoides (Ach.) V. Wirth & Vězda - Cr/ Ch/ S/ Sil-Epiph/ 1-3, 3-4, 2, 1/ Alt: 2-3/ rr/ suboc/ Note: optimum in humid beech forests, throughout Italy, but mostly not common and perhaps declining; extremely rare in the survey area, perhaps due to its climatic features. - Loc.: **Pugl**: 71.

Fuscopannaria ignobilis (Anzi) M. Jørg. - Sq/ Cy.h/ S/ Epiph/ 2-3, 3-4, 1-2, 1-2/ Alt: 1-2/ r/ suboc/ Note: mostly Tyrrhenian in Italy, much rarer in the Adriatic part of peninsular Italy. - Loc.: **Marc**: 29; **Abr**: 32, 52.

Fuscopannaria leucophaea (Vahl) M. Jørg. - Sq/ Cy.h/ S/ Sil.b/ 3, 3, 2, 1-2/ Alt: 2-4/ rc/ Note: most frequent in the Alps, much rarer southwards; extremely rare in the survey area, both for the prevalence of calcareous substrata and the less suboceanic climate. - Loc.: **Marc**: 29.

Fuscopannaria mediterranea (Tav.) M. Jørg. - Sq/ Cy.h/ A.s/ Epiph/ 3, 3-4, 2, 1-2/ Alt: 1-2/ rr/ suboc/ Note: mosty Tyrrhenian in Italy, estremely rare along the eastern side of the peninsula, and not known from the north. - Loc.: **Marc**: 19; **Abr**: 52.

Fuscopannaria olivacea (M. Jørg.) M. Jørg. - Sq/ Cy.h/ S/ Epiph/ 2-3, 3-4, 1-2, 1-2/ Alt: 1-2/ r/ suboc/ Note: a typically Tyrrhenian species in Italy; the record from Abruzzo is somehow exceptional. - Loc.: **Abr**: 31.

Graphis scripta (L.) Ach. - Cr/ Tr/ S/ Epiph/ 2-3, 2-3, 2-3, 1-2/ Alt: 1-3/ rc/ Note: optimum in the temperate belt, particularly frequent in beech forests in the south. - Loc.: **Marc**: 9, 12, 18, 29; **Abr**: 32, 33; **Mol**: 53; **Pugl**: 71, 71; **Bas**: 109, 122.

Gyalecta flotowii Körb. - Cr/ Tr/ S/ Epiph/ 2-3, 3, 2-3, 1/ Alt: 1-2/ r/ suboc/ Note: mostly on *Acer* in undisturbed, humid, ancient forests, in deep fissures of the bark; extremely rare in the survey area, and perhaps absent north of Puglia - Loc.: **Pugl**: 67, 71, 73, 76, 100.

Gyalecta foveolaris (Ach.) Schaer. - Cr/ Tr/ S/ Terr/ 3-4, 3, 2-3, 1/ Alt: 5/ r/ Note: on soil and plant debris in humid-shaded situations; to be looked for throughout the calcareous Alps, much rarer in the Apennines. - Loc.: **Marc**: 21.

Gyalecta jenensis (Batsch) Zahlbr. - Cr/ Tr/ S/ Calc-Sil.b/ 4-5, 1-3, 1-2, 1-2/ Alt: 2-5/ rc/ Note: often in deep fissures of the rock, throughout the country, perhaps undercollected in the survey area, most common in upland areas in southern Italy. - Loc.: **Marc**: 21, 24, 28, 29; **Abr**: 33, 45.

Gyalecta leucaspis (A. Massal.) Zahlbr. - Cr/ Tr/ S/ Calc/ 5, 1-3, 2, 1/ Alt: 2-3/ rr/ Note: certainly less common than *G. jenensis*, but probably more widespread, and often overlooked; very rare along the eastern side of the peninsula. - Loc.: **Bas**: 118.

Gyalecta truncigena (Ach.) Hepp - Cr/ Tr/ S/ Epiph/ 2-3, 3, 1-2, 1-2/ Alt: 1-3/ rr/ suboc/ Note: more common in the past, presently restricted to humid, old but open forests; extremely rare in the survey area, where it is perhaps restricted to the Gargano Peninsula. - Loc.: **Pugl**: 71.

Gyalecta ulmi (Sw.) Zahlbr. - Cr/ Tr/ S/ Epiph-Terr/ 2-3, 3, 2-3, 1-2/ Alt: 3/ r/ Note: also found on calcicolous mosses in steeply inclined surfaces; probably more frequent in the past; there are no recent records from northern Italy; extremely rare, and perhaps confined to the Gargano Peninsula, in Adriatic peninsular Italy. - Loc.: **Pugl**: 71.

Heppia solorinoides (Nyl.) Nyl. - Sq/ Cy.h/ S/ Terr/ 4-5, 4-5, 4-5, 1-2/ Alt: 1/ vr/ subc/ Note: limited to dry grasslands of Mediterranean Italy, and even there never common; most probably absent north of Puglia in the survey area. - Loc.: **Pugl**: 64.

Heterodermia speciosa (Wulfen) Trevis. - Fol.n/ Ch/ S/ Epiph/ 2-3, 3-4, 1-2, 1-2/ Alt: 2-3/ r/ suboc/ Note: optimum in humid beech forests throughout Italy; never common, but particularly rare in the Adriatic part of peninsular Italy. - Loc.: **Abr**: 51.

Hymenelia coerulea (DC.) A. Massal. - Cr.end/ Ch/ S/ Calc/ 4-5, 3, 3, 1/ Alt: 4-5/ c/ Note: on steeply inclined surfaces; certainly widespread throughout the Alps; the record from Abruzzo is the southernmost known in Italy. - Loc.: **Marc**: B; **Abr**: 21.

Hymenelia epulotica (Ach.) Lutzoni - Cr/ Ch/ S/ Calc/ 5, 3. 2-3, 1/ Alt: 3-5/ rr/ Note: most frequent in the Alps, much rarer southwards. - Loc.: **Marc**: 21.

Hymenelia melanocarpa (Kremp.) Arnold - Cr/ Ch/ S/ Calc/ 4-5, 3, 2, 1/ Alt: 4-5/ rr/ Note: probably widespread in the Alps; very rare in the Apennines; to be looked for also on the highest mountains of Abruzzo. - Loc.: **Marc**: 21

Hymenelia prevostii (Duby) Kremp. - Cr/ Ch/ S/ Calc/ 5, 3, 2-3, 1-2/ Alt: 2-5/ rr/ Note: most frequent in the Alps, but also present in the Mediterranean mountains, and probably occurring throughout the country. - Loc.: **Marc**: 21, 24, A; **Mol**: 60; **Bas**: 118.

Hyperphyscia adglutinata (Flörke) H. Mayrhofer & Poelt - Fol.n/ Ch/ A.s/ Epiph-Calc/ 3-4, 4-5, 3-4, 3-5/ Alt: 1-2/ vc/ Note: still common throughout Italy, also in areas with heavy agricultural exploitment (also in the Po-plain). - Loc.: **Marc**: 1, 9, 11, 23; **Abr**: 31, 42, 43, 57, **H**; **Mol**: 58, 59; **Pugl**: 67, 70, 86, 87; **Bas**: 114, 122.

Hypocenomyce caradocensis (Nyl.) P. James & Gotth. Schneid. - Sq/ Ch/ S/ Epiph.a-Lign/ 1-2, 4, 3, 1/ Alt: 3/ vr/ Note: probably more widespread in the Alps, but extremely rare in the Apennines. - Loc.: **Abr**: 32.

Hypocenomyce scalaris (Lilj.) M. Choisy - Sq/ Ch/ A.s/ Epiph.a-Lign/ 1-2, 3-5, 3-4, 1/ Alt: 2-4/ rc/ Note: much more common in the north, esp. in upland areas, than in the mountains of the south. - Loc.: **Marc**: 29; **Abr**: 32.

Hypogymnia farinacea Zopf - Fol.b/ Ch/ A.s/ Epiph/ 1-2, 3-4, 3-4, 1/ Alt: 3-4/ rr/ Note: most frequent in the Alps, much rarer in the mountains of the south; very rare in the survey area. - Loc.: **Abr**: 37; **Mol**: 60.

Hypogymnia physodes (L.) Nyl. - Fol.b/ Ch/ A.s/ Epiph/ 1-3, 3-4, 2-3, 1-2/Alt: 1-4/ c/ Note: still common throughout the country, and even occurring, albeit sporadically, and with poorly developed specimens, in relatively polluted areas of the Po- plain; optimum above the submediterranean belt in natural habitats; quite rare in the Adriatic part of peninsular Italy. - Loc.: **Marc**: 16, 20, 26; **Abr**: 37; **Pugl**: 69, 83; **Bas**: 109, 113.

Hypogymnia tubulosa (Schaer.) Hav. - Frut/ Ch/ A.s/ Epiph/ 1-2, 3, 2-3, 1-2/ Alt: 2-4/ rc/ Note: certainly much rarer than *H. physodes*, and somehow more bound to semi-natural and natural, more humid situations; very rare in the Adriatic part of peninsular Italy. - Loc.: **Marc**: 16; **Abr**: 37; **Pugl**: 82; **Bas**: 105, 113.

Immersaria uzbekica (Hertel) Nav.-Ros & Cl. Roux - Cr/ Ch/ S/ Sil.b/ 3, 4-5, 4-5, 3-4/ Alt: 1-2/ er/ Note: new to Italy. This species was previously known from three unpublished localities in northern Lazio (TSB, leg. Tretiach) on basaltic rocks. The Italian specimens are identical to material collected in Catalonia (V. Calatayud, *in litt.* to Tretiach) - Loc.: **Bas**: 102.

Ingaderia troglodytica Feige & Lumbsch - Frut/ Tr/ A.f/ Calc/ 5, 3, 1-2, 1-2/ Alt: 1/ vr/ coast/ suboc/ Note: on vertical to underhanging surfaces of calcareous coastal cliffs subject to humid maritime winds. In our opinion, the true nature of this lichen still awaits to be clarified: we strongly doubt that it belongs to *Ingaderia s.str.*, and even that this is a true macrolichen: it could be a very peculiar form of *Lecanographa grumulosa*, or even of *Dirina massiliensis*. - Loc.: **Pugl**: 64.

Ingvariella bispora (Bagl.) Guderley &

Lumbsch - Cr/ Ch/ S/ Sil.b/ 3, 4-5, 3, 3/ Alt: 1-3/ rc/ Note: for the delimitation of the genus see Guderley *et al.* (1997); rare in Adriatic peninsular Italy for the scarcity of suitable substrata, and perhaps also because of climatic conditions. - Loc.: **Marc**: 27.

Julella lactea (A. Massal.) M. E. Barr - F/ S/ Epiph/ 3, 3-4, 3-4, 1-2/ Alt: 1-2/ rr/ Note: mostly on *Fraxinus*. - Loc.: **Marc**: 25.

Kiliasia tristis (Müll. Arg.) Hafellner - Cr/ Ch/ S/ Calc-Sil.b/ 4-5, 3-4, 3-4, 1-2/Alt: 3-5/ rr/ Note: the generic position of this taxon is still an open problem (see Nimis 1993: 707) - Loc.: **Marc**: 25.

Lecania cyrtella (Ach.) Th. Fr. - Cr/ Ch/ S/ Epiph/ 3, 4-5, 3-4, 2-3/ Alt: 1-3/ c/ Note: on isolated trees with more or less eutrophic bark; the distinction from *L. cyrtellina* is not clear to us: the two taxa might prove to be the same. - Loc.: **Marc**: 1, 18, 22, 24, 25; **Abr**: 47, 52; **Mol**: 55, 62; **Pugl**: 64, 67, 70, 82, 87; **Bas**: 109.

Lecania erysibe (Ach.) Mudd - Cr/ Ch/ A.s/ Calc-Sil.b/ 3-5, 3-4, 3-4, 4-5/ Alt: 1-3/ rc/ Note: often found on man-made substrata; in the past very much confused with other species; often sterile. - Loc.: **Marc**: 8, 18, 24; **Abr**: 33, 34; **Pugl**: 89.

Lecania flavescens Lynge - Cr/ Ch/ S/ Calc/ 5, 3-4, 3, 3/ Alt: 2-3/ vr/ Note: the ecology and distribution of this species are still not clear to us; it is probably more widespread in the mountains of southern Italy. - Loc.: **Bas**: 118.

Lecania fuscella (Schaer.) A. Massal. - Cr/ Ch/ S/ Epiph/ 3, 4, 3-4, 2-3/ Alt: 1-2/ rr/ Note: on isolated trees with more or less eutrophic bark; more frequent in the past, relatively more common in southern Italy. Note: **Marc**: 18; **Abr**: 33; **Mol**: 64; **Bas**: 108, 119, 122.

Lecania inundata (Körb.) M. Mayrhofer - Cr/ Ch/ S/ Calc/ 3-4, 3-5, 3-4, 4-5/ Alt: 1-2/ rc/ Note: often found on man-made substrata; in the past confused with *L. erysibe* and with *L. turicensis*; perhaps undercollected in the survey area. Loc.: **Mol**: 64.

Lecania koerberiana J. Lahm - Cr/ Ch/ S/ Epiph/ 3, 4-5, 3-4, 2-3/ Alt: 2-3/ rr/ Note: closely related to *L. fuscella*. - Loc.: **Mol**: 61; **Bas**: 105.

Lecania naegelii (Hepp) Diederich & P. Boom - Cr/ Ch/ S/ Epiph/ 3, 4, 3, 2-3/ Alt: 1-2/ rr/ suboc/ Note: optimum in the submediterranean belt, but also present within eu-Mediterranean vegetation in humid, mostly coastal sites; not uncommon throughout the survey area. - Loc.: **Marc**: 12, 18, 19, 24, 25; **Abr**: 31, 50, 52; **Mol**: 53, 57, 58, 62; **Pugl**: 64, 67, 70, 71, 85, 96; **Bas**: 106, 121.

Lecania polycycla (Anzi) Lettau - Cr/ Ch/ S/ Calc/ 5, 4, 3-4, 3/ Alt: 1-2/ r/ Note: on limestone in natural habitats; perhaps undercollected, but certainly not common in the survey area. - Loc.: **Marc**: 13.

Lecania spadicea (Flot.) Zahlbr. - Cr/ Ch/ S/ Calc-Sil.b/ 4-5, 4-5, 4, 3-4/ Alt: 1-2/ c/ Note: optimum in the Mediterranean belt; mainly Tyrrhenian in Italy; often found also on man-made substrata (e.g. on calcareous walls within small conurbations); restricted to the southern part of the survey area. - Loc.: **Pugl**: 64, 65, 93, 97, 98, 100.

Lecania sylvestris (Arnold) Arnold - Cr/ Ch/ S/ Calc/ 5, 3-4, 4, 3-4/ Alt: 1-2/ rr/ Note: often found on walls; probably more widespread in Italy, but never really common. - Loc.: **Marc**: 8; **Mol**: 60; **Pugl**: 74; **Bas**: 103.

Lecania turicensis (Hepp) Müll. Arg. - Cr/ Ch/ S/ Calc/ 3-5, 3-4, 3, 4-5/ Alt: 1-3/ c/ Note: this is probably the most common species of the genus throughout Italy; often found on man-made substrata (walls, monuments, etc.). - Loc.: **Marc**: 6, 8, 15; **Umbr**: F; **Mol**: 54; **Pugl**: 75, 77, 89, 94, 97; **Bas**: 109, 111, 112, 117.

Lecanographa grumulosa (Dufour) Egea & Torrente - LF/ S/ Calc/ 3-5, 2-4, 1-2, 1-2/ Alt: 1/ vc/ paras *Dirina*, *Roccella*, *Ingaderia*/ coast/ suboc/ Note: the biology of this species is worthy of further study; according to Egea & Torrente (1994) this is a non-lichenized fungus growing on species of *Dirina*; probably not reaching north of Puglia in the survey area. - Loc.: **Pugl**: 64, 97.

Lecanographa lyncea (Sm.) Egea & Torrente - Cr/ Tr/ S/ Epiph/ 1-2, 3-4, 2, 1/ Alt: 1/ r/ suboc/ Note: very much declining, esp. in the north; mostly on old oaks, and mainly Tyrrhenian in Italy; probably absent north of Puglia in the survey area. - Loc.: **Pugl**: 100.

Lecanora agardhiana Ach. ssp. **agardhiana** - Cr/ Ch/ S/ Calc/ 5, 3-5, 3-4, 1-3/ Alt: 2-5/ vc/ Note: the distinction from other related species still needs further study. - Loc.: **Marc**: 13, 21, B; **Abr**: 36, 37, 38, 39, 40, 46; **Mol**: 60; **Pugl**: 65, 78, 91; **Bas**: 119.

Lecanora agardhiana ssp. **sapaudica** Clauzade & Cl. Roux - Cr/ Ch/ S/ Calc/ 5, 4-5, 4, 2-3/ Alt: 5/ r/ Note: this taxon, which was previously known only from the Alps, is well worthy of further study. - Loc.: **Abr**: 38, 44,

Lecanora albella (Pers.) Ach. - Cr/ Ch/ S/ Epiph/ 2, 3, 2, 1/ Alt: 2-3/ r/ Note: more frequent in the past, presently very much declining; extremely rare in Adriatic peninsular Italy. - Loc.: **Pugl**: 95.

Lecanora albescens (Hoffm.) Branth & Rostr. - Cr/ Ch/ S/ Calc-Sil.b/ 3-5, 3-5, 3-5, 3-4/ Alt: 1-3/ ec/ Note: on a wide variety of substrata, including cement, brick, calcareous walls, also present within large urban settlements. - Loc.: **Marc**: 6, 8, 15, 27; **Umbr**: F; **Abr**: 31, 35, 41; **Mol**: 54, 58; **Pugl**: 64, 75, 77, 87, 88, 89, 91, 92, 93; **Pugl**: 102, 101, 104, 111, 112, 117.

Lecanora allophana f. sorediata (Vain.) Schaer. - Cr/ Ch/ A.s/ Epiph/ 3, 4, 3, 3/ Alt:2-3/ r/ Note: this taxon was sometimes considered as a synonym of *L. impudens*; the two taxa, although similar in general appearance, have a different chemistry; extremely rare in the survey area. - Loc.: **Marc**: 25.

Lecanora allophana Nyl. - Cr/ Ch/ S/ Epiph/ 3, 4-5, 3-4, 3/ Alt:2-3/ rc/ Note: mostly rare or absent in heavily anthropized areas of the north (e.g. the Po-plain), and quite rare in the survey area, esp. in the lowlands. - Loc.: **Marc**: 3, 11, 19, 25, D, G; **Abr**: 33, 49, 52; **Mol**: 55, 61; **Pugl**: 94.

Lecanora argentata (Ach.) Malme - Cr/ Ch/ S/ Epiph/ 2-3, 3-4, 3, 1-2/ Alt: 2-3/ c/ Note: throughout Italy, this species has its optimum in the beech belt, as in the survey area. - Loc.: **Marc**: 3, 18, 21, 26; **Abr**: 31, 45, 51; **Mol**: 53, 55, 56; **Pugl**: 71, 73; **Bas**: 106, 116, 118.

Lecanora bolcana (Pollini) Poelt - Cr.pl/ Ch/ S/ Sil-Sil.b/ 2-3, 4-5, 4, 3-4/ Alt: 1-3/ c/ Note: mostly found in areas with eu-Mediterranean vegetation; rare in Adriatic peninsular Italy for the scarcity of suitable substrata, and of the local climatic conditions. - Loc.: **Bas**: 102, 116.

Lecanora campestris (Schaer.) Hue - Cr/ Ch/ S/ Sil.b/ 2-4, 4-5, 3, 2-3/ Alt: 1-3/ c/ Note: on base-rich, or slightly calciferous siliceous rocks, with optimum in the submediterranean belt; calcicolous forms are particularly frequent in the southern part of the survey area. - Loc.: **Marc**: 29, 30; **Abr**: 34; **Mol**: 53; **Pugl**: 93, 97, 97; **Bas**: 102, 109.

Lecanora carpinea (L.) Vain. - Cr/ Ch/ S/ Epiph/ 2-4, 3-5, 3-4, 1-3/ Alt: 1-4/ ec/ Note: a pioneer species of smooth bark; the distinctions from *L. leptyrodes* and *L. subcarpinea* are not always clear to us. - Loc.: **Marc**: 3, 11, G; **Umbr**: E; **Abr**: 41, 45, 47, 50, H; **Mol**: 55, 62, 63; **Pugl**: 64, 65, 66, 75, 76, 80, 82, 85; **Bas**: 103, 107, 119.

Lecanora chlarotera Nyl. - Cr/ Ch/ S/ Epiph/ 2-3, 3-5, 3-4, 2-5/ Alt: 1-4/ ec/ Note: this is certainly the most common epiphytic *Lecanora* throughout the country. - Loc.: **Marc**: 2, 8, 9, 11, 12, 18, 19, 22, 24, 29, 30, G; **Umbr**: E; **Abr**: 32, 33, 34, 35, 37, 42, 43, 45, 50, H; **Mol**: 56, 59, 61, 62, 63; **Pugl**: 64, 65, 66, 67, 69, 70, 71, 72, 76, 78, 81, 83, 84, 85, 86, 87, 90, 91, 94, 96, 99; **Bas**: 102, 103, 106, 107, 109, 110, 115, 119, 120, 121, 122.

Lecanora circumborealis Brodo & Vitik. - Cr/ Ch/ S/ Epiph/ 1-2, 3-5, 3, 1-2/ Alt: 3-4/ c/ Note: often on twigs; common in the Alps, becoming much rarer, although it is certainly somehow more widespread than the few records would suggest, towards the south. - Loc.: **Abr**: 41.

Lecanora congesta Clauz. & Vězda - Cr.pl/ Ch/ S/ Calc/ 5, 4-5, 4, 3-4/ Alt: 1/ r/ coast/ Note: probably more widespread along the Mediterranean coast. New to Italy. - Loc.: **Pugl**: 64.

Lecanora crenulata Hook. - Cr/ Ch/ S/ Calc/ 3-5, 3-4, 3-4, 1-2/ Alt: 2-5/ rc/ Note: on steeply inclined surfaces or in underhangs; absent from urban environments and from man-made substrata. - Loc.: **Marc**: 3, 13, 21, 28, B; **Umbr**: E; **Abr**: 36, 39, 40, 41; **Mol**: 60, 63; **Pugl**: 65, 75; **Bas**: 118.

Lecanora dispersa (Pers.) Sommerf. - Cr/ Ch/ S/ Calc-Sil.b/ 4-5, 3-5, 4-5, 2-4/ Alt: 1-2/ vc/ Note: most frequent in urban environments (e.g. on monuments, walls, asbestos-cement); Italian records from natural habitats and from mountain areas refer to other species, esp. *L. flotowiana*. - Loc.: **Marc**: 2, 6, 30; **Umbr**: F; **Abr**: 31, 34; **Mol**: 54, 61; **Pugl**: 86; **Bas**: 103, 107, 121.

Lecanora epibryon (Ach.) Ach. - Cr/ Ch/ S/ Terr/ 3-5, 4-5, 4, 2-3/ Alt: 5/ vc/ Note: common in the Alps, much rarer in the Apennines, where it is restricted to the highest mountains. - Loc.: **Abr**: 36, 39, 40, 44, 46.

Lecanora epibryon v. bryopsora Doppelb. & Poelt - Cr/ Ch/ A.s/ Terr/ 3-4, 3-4, 3-4, 2-3/ Alt: 4-5/ r/ Note: certainly occurring also in the Italian Alps; according to Clauzade & Roux (1985), this variety is most frequent in the montane belt. - Loc.: **Marc**: 21.

Lecanora expallens Ach. - Cr/ Ch/ A.s/ Epiph.a/ 1-2, 3-4, 2-3, 1-2/ Alt: 1-3/ vc/ Note: common throughout submediterranean Italy, in open woodlands, and on the north-facing side of acid-barked trees. - Loc.: **Marc**: 2, 11, 20; **Umbr**: E; **Abr**: 34; **Mol**: 53, 57; **Pugl**: 70, 72, 75, 83, 90; **Bas**: 111.

Lecanora flotowiana Spreng. - Cr/ Ch/ S/ Calc/ 4-5, 4-5, 3-4, 4-5/ Alt: 2-5/ vc/ Note: certainly widespread throughout the country;

absent from large settlements and never found on man-made substrata. - Loc.: **Marc**: 2, 3, 13, 21; **Umbr**: E; **Abr**: 36, 38, 41, 44, 46; **Mol**: 59, 59, 60, 63; **Pugl**: 65, 72; **Bas**: 113, 117.

Lecanora graeca Steiner - Cr.pl/ Ch/ S/ Calc-Sil.b/ 4-5, 4, 3, 1/ Alt.: 4-5/ Note: hitherto known only from the eastern Mediterranean region, this taxon is well worthy of further study. New to Italy. - Loc.: **Abr**: 36.

Lecanora hagenii (Ach.) Ach. - Cr/ Ch/ S/ Epiph-Calc/ 3-5, 4-5, 3-5, 2-4/ Alt: 1-5/ ec/ Note: this is a very difficult complex, needing a thorough revision. - Loc.: **Marc**: 1, 3, 8, 18, 19, 25, C, D, G; **Abr**: 31, 41, 50, H; **Mol**: 56, 58; **Pugl**: 67, 68, 77, 82, 87, 88, 94, 96; **Bas**: 109, 110, 114, 119.

Lecanora hagenii v. **fallax** Hepp - Cr/ Ch/ S/ Terr/ 3-5, 4-5, 2-4, 2-4/ Alt: 4-5/ vc/ Note: this taxon is well worthy of further study, it could be a distinct species growing on plant debris on more or less calcareous substrata from the Oromediterranean belt to the Arctic zone. - Loc.: **Marc**: 21, 28; **Abr**: 36, 38, 39, 40, 41, 46; **Bas**: 117.

Lecanora horiza (Ach.) Linds. - Cr/ Ch/ S/ Epiph/ 2-3, 4-5, 3-4, 2-3/ Alt: 1-2/ vc/ Note: this species, an altitudinal vicariant of *L. argentata* in the Mediterranean belt, becomes more and more common from the northern to the southern part of the survey area, at low altitudes. - Loc.: **Marc**: 8; **Abr**: 31; **Mol**: 58; **Pugl**: 64, 66, 67, 87, 90, 92, 94, 96, 99, 100; **Bas**: 108, 114, 115, 120, 122.

Lecanora hypoptoides (Nyl.) Nyl. - Cr/ Ch/ S/ Lign/ 1-2, 2-4, 2, 1/ Alt: 3-4/ rr/ Note: certainly widespread in the Alps, but much rarer in upland areas of the Adriatic part of peninsular Italy. - Loc.: **Abr**: 35; **Mol**: 60.

Lecanora intumescens (Rebent.) Rabenh. - Cr/ Ch/ S/ Epiph/ 2, 3-4, 2, 1/Alt: 3/ c/ Note: a very characteristic, generally abundant species, of humid beech forests, throughout the country. - Loc.: **Marc**: 21, 26, 30; **Umbr**: E; **Abr**: 50, 51; **Mol**: 55, 56; **Pugl**: 70; **Bas**: 106, 116, 118.

Lecanora leptyrodes (Nyl.) Degel. - Cr/ Ch/ S/ Epiph/ 2-3, 3-5, 2-3, 1-2/ Alt: 2-3/ ec/ Note: a rather critical taxon (esp. regarding its delimitation from *L. carpinea* and *L. subcarpinea*), widespread and extremely abundant in the montane belt, esp. in beech forests, from the Alps to Sicily. - Loc.: **Marc**: 13, 18, 29; **Abr**: 32, 33, 45, 51, 52; **Mol**: 60; **Pugl**: 70; **Bas**: 106, 109, 113, 118, 121.

Lecanora lividocinerea Bagl. - Cr/ Ch/ S/ Epiph/ 3, 4-5, 3, 3/ Alt: 1/ r/ suboc/ Note: mainly Tyrrhenian in Italy, and never common; extremely rare in the Adriatic part of peninsular Italy, due both to the scarcity of suitable substrata and to climatic conditions; probably absent north of Puglia. - Loc.: **Pugl**: 100.

Lecanora meridionalis H. Magn. - Cr/ Ch/ S/ Epiph/ 3-4, 4-5, 3-4, 3/ Alt: 1-2/ r/ Note: a very controversial taxon, related to *L. chlarotera* (and perhaps - at least for Italian samples - to be synonymized with it). - Loc.: **Abr**: 34; **Pugl**: 66.

Lecanora muralis (Schreb.) Rabenh. - Cr.pl/ Ch/ S/ Sil.b-Calc/ 2-5, 3-5, 3-4, 3-5/ Alt: 1-5/ ec/ Note: the most common placodioid species of the genus throughout the country, also occurring inside large conurbations. This is what we consider the trivial *L. muralis s.str*. - Loc.: **Marc**: 2, 27, 30; **Abr**: 31, 35; **Mol**: 59, 63; **Pugl**: 65, 72; **Bas**: 102, 104, 105, 111, 115, 116, 117.

Lecanora muralis v. **versicolor** (Pers.) Tuck. - Cr.pl/ Ch/ S/ 5, 4-5, 4, 3-4/. Note: probably a simple calcicolous morph, which, however, might be worthy of further study, perhaps of a DNA analysis. - Loc.: **Marc**: 21, 28, B; **Umbr**: E; **Abr**: 34, 37, 38, 39, 40, 41, 42, 47, 50; **Mol**: 60; **Pugl**: 75, 78, 93.

Lecanora perpruinosa Fröberg - Cr/ Ch/ S/ Calc/ 4-5, 4-5, 4, 4/ Alt: 4-5/ rc/ Note: certainly undercollected in the survey area, and probably more widespread at high altitudes. - Loc.: **Marc**: 21.

Lecanora persimilis (Th. Fr.) Nyl. - Cr/ Ch/ S/ Epiph/ 3, 4-5, 3, 2-3/ Alt: 1-3/ rr/ Note: an easily overlooked species, which is probably more widespread throughout Italy, with optimum in the submediterranean belt. - Loc.: **Marc**: 8, C; **Umbr**: E; **Mol**: 55; **Pugl**: 67, 94.

Lecanora piniperda Körb. - Cr/ Ch/ S/ Epiph/ 1-2, 4-5, 3-4, 1/ Alt: 4-5/ rr/ Note: a northern species, widespread throughout the Alps, but much rarer in the south. - Loc.: **Abr**: 35.

Lecanora poeltiana Clauzade & Cl. Roux - Cr/ Ch/ S/ Calc/ 5, 4-5, 3-4, 1-2/ Alt: 1/ vr/ coast/ Note: a species of hard calcareous coastal rocks subject to salt-spray, probably slightly more widespread in Mediterranean Italy, but certainly never common; very difficult to identify when (as it often happens) it is sterile; almost certainly absent in the survey area north of Puglia. - Loc.: **Pugl**: 101.

Lecanora prominens Clauzade & Vězda - Cr/ Ch/ S/ Calc/ 5, 4-5, 4, 2-3/ Alt: 3-5/ r/ Note: often confused with other species of the *L. dispersa* group, this taxon is probably more widespread, at least in the mountains of southern Italy. - Loc.: **Pugl**: 65.

Lecanora pruinosa Chaub. - Cr.pl/ Ch/ S/ Calc-Sil.b/ 4-5, 3-5, 2-3, 1-3/ Alt: 1-3/ c/ suboc/ Note: mainly Tyrrhenian in Italy, and there often found also within settlements and on man-made substrata; much rarer along the Adriatic side of the peninsula, and there most common in upland areas, and in underhangs of calcareous outcrops. - Loc.: **Marc**: 8; **Umbr**: E; **Abr**: 41; **Mol**: 62; **Pugl**: 64, 65, 75, 78, 78, 84, 92, 93, 95, 97, 101; **Bas**: 115, 118, 119.

Lecanora pulicaris (Pers.) Ach. - Cr/ Ch/ S/ Epiph-Lign/ 1-2, 3-5, 2-4, 1-2/ Alt: 2-4/ c/ Note: mostly on twigs of conifers and deciduous trees; most common in the Alps, much rarer in the mountains of the south. - Loc.: **Marc**: 3, 28; **Abr**: 32, 44.

Lecanora reuteri Schaer. - Cr/ Ch/ S/ Calc/ 5, 4, 2-3, 1/ Alt: 3-5/ r/ Note: mostly in underhangs or on steeply inclined surfaces of calcareous outcrops; certainly widespread throughout the Alps, and also in the mountains of the south. - Loc.: **Marc**: A, B; **Abr**: 39, 40, 41, 44, 46, 49; **Mol**: 54, 60; **Bas**: 117, 119.

Lecanora rubicunda Bagl. - Cr/ Ch/ S/ Epiph/ 2-3, 4-5, 3, 2-3/ Alt: 1/ r/ suboc/ Note: a southern species in Europe, probably confused with *L. chlarotera* in the past, but certainly not common. - Loc.: **Pugl**: 64.

Lecanora rupicola (L.) Zahlbr. ssp. **rupicola** - Cr/ Ch/ S/ Sil-Sil.b/ 2-3, 3-5, 3-4, 2/ Alt: 2-5/ ec/ Note: rare only along the Adriatic side of the peninsula, mainly because of the absence of suitable substrata. - Loc.: **Bas**: 102, 105, 111.

Lecanora rupicola ssp. **subplanata** (Nyl.) Leuckert & Poelt - Cr/ Ch/ S/ Sil-Sil.b/ 2-3, 4, 3-4, 2/ Alt: 1-3/ rc/ Note: perhaps somehow more xerophytic than the typical subspecies; to be looked for throughout Italy; very rare only in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Bas**: 102.

Lecanora rupicola ssp. **sulphurata** (Ach.) Leuckert & Poelt - Cr/ Ch/ S/ Sil-Sil.b/ 2-3, 4-5, 3, 2/ Alt: 1-3/ c/ suboc/ Note: more photo- and thermophytic than the typical subspecies; very rare only in Adriatic peninsular Italy for the scarcity of suitable substrata; the Italian range is mainly Tyrrhenian. - Loc.: **Bas**: 102.

Lecanora salicicola H. Magn. - Cr/ Ch/ S/ Epiph/ 2, 3-4, 3, 1-2/ Alt: 4/ c/ Note: on the smooth barks of shrubs near treeline; widespread throughout the Alps, much rarer in the Apennines, where it is confined to the highest mountains. - Loc.: **Abr**: 40.

Lecanora saligna (Schrad.) Zahlbr. - Cr/ Ch/ S/ Lign-Epiph.a/ 1-2, 4-5, 4, 1-2/ Alt: 2-4/ rc/ Note: most frequent in the north, but also present in the mountains of the south; very rare in the survey area. - Loc.: **Marc**: 28; **Abr**: 35, 37.

Lecanora sambuci (Pers.) Nyl. - Cr/ Ch/ S/ Epiph/ 3-4, 3-5, 3, 1-3/ Alt: 1-3/ rr/ Note: esp. on *Sambucus* and *Populus*, rare in the Mediterranean belt, but widespread throughout Italy, except in heavily anthropized areas. - Loc.: **Abr**: 35; **Mol**: 61; **Pugl**: 77; **Bas**: 106.

Lecanora subcarpinea Szatala - Cr/ Ch/ S/ Epiph/ 3, 4-5, 3-4, 1-2/ Alt: 1-3/ rc/ Note: here we place all records of lichens similar to *L. carpinea*, and usually found on base-rich, sun-exposed bark, but reacting C+ orange. Loc.: **Marc**: 19, 21, 22, 25, 26; **Abr**: 35, 37, 47, 50; **Mol**: 53, 55, 56, 61; **Bas**: 117, 119.

Lecanora sulphurea (Hoffm.) Ach. - Cr/ Ch/ S/ Sil.b-Calc/ 2-4, 4-5, 2-3, 2/ Alt: 1-4/ c/ paras *Tephromela atra*. Note: in southern and central Italy this species is almost so common on limestone as on more or less base-rich siliceous rocks, regularly growing on the thalli of *Tephromela atra*. - Loc.: **Abr**: 41; **Mol**: 60, 63; **Pugl**: 64, 65, 75, 78, 93; **Bas**: 111, 117.

Lecanora symmicta (Ach.) Ach. - Cr/ Ch/ S/ Epiph.a/ 1-2, 3-4, 2-3, 1-2/ Alt: 2-4/ rc/ Note: most frequent in the north; much rarer in the Adriatic part of peninsular Italy, with optimum in submediterranean areas; perhaps undercollected, but surprisingly rare in the survey area. - Loc.: **Pugl**: 100.

Lecanora umbrina (Ach.) A. Massal. - Cr/ Ch/ S/ Epiph/ 2-3, 3-5, 3-4, 3-4/ Alt: 1-3/ rc/ Note: on eutrophic bark and on base-rich/calciferous siliceous rocks; this taxon is in urgent need of revision (identification after Clauzade & Roux 1985). - Loc.: **Pugl**: 67; **Bas**: 102, 109, 111.

Lecanora varia (Hoffm.) Ach. - Cr/ Ch/ S/ Lign/ 1, 4-5, 3-4, 1-2/ Alt: 3-4/ rc/ Note: most frequent in the Alps, but also occurring, albeit very rarely, in the Mediterranean mountains; extremely rare in the survey area. - Loc.: **Abr**: 35; **Mol**: 60.

Lecanora xanthostoma Cl. Roux & Fröberg - Cr/ Ch/ S/ Calc/ 4-5, 4-5, 3-4, 4-5/ Alt: 3-5/ rc/ Note: a critical, but very interesting taxon of the *L. dispersa* group, most often overgrowing other crustose lichens on the top of calcareous boulders; certainly much more widespread throughout the

Alps, and in upland areas of the south. - Loc.: **Umbr**: E; **Abr**: 39, 40; **Mol**: 53; **Pugl**: 78; **Bas**: 102, 117, 119.

Lecidea albohyalina (Nyl.) Th. Fr. - Cr/ Ch/ S/ Epiph.a-Lign/ 1-2, 3-4, 2-3, 1/ Alt: 3-4/ r/ Note: according to Printzen (1995) this species does not belong neither to *Biatora* nor to *Lecidea*, and should be probably segregated into a new genus. - Loc.: **Mol**: 55.

Lecidea exigua Chaub. - Cr/ Ch/ S/ Epiph/ 2, 3-4, 2-3, 1-3/ Alt: 2/ r/ Note: on the bark of deciduous trees (esp. on branches, and on oaks); the record from Puglia is the first one in this century from Italy. - Loc.: **Pugl**: 95.

Lecidea fuscoatra (L.) Ach. - Cr/ Ch/ S/ Sil.b/ 2-3, 4, 3-5, 2-4/ Alt: 1-5/ ec/ Note: on a wide variety of siliceous, more or less base-rich or calciferous substrata; this taxon, in southern Europe, is extremely variable: on the Etna Vulcano one can find very different morphotypes, growing side by side, and superficially looking as different species; this phenomenon is well worthy of a DNA study. Rare in the survey area, due to the scarcity of suitable substrata (probably more widespread on roofing tiles, which, for obvious reasons, were not sampled thorougly). - Loc.: **Abr**: 31, 34; **Mol**: 57; **Pugl**: 74; **Bas**: 102, 105.

Lecidea fuscoatra v. **grisella** (Flörke) Nyl. - Cr/ Ch/ S/ Sil.b/ 1-2, 4-5, 4-5, 3-4/ Alt: 1-3/ c/ Note: this is just one of the many morphs, and most probably not the most interesting one (see above), of *L. fuscoatra s.lat.*, most frequent in anthropized habitats (walls, roofing tiles, brick, etc.). - Loc.: **Bas**: 102.

Lecidea lurida Ach. - Sq/ Ch/ S/ Calc-Terr/ 4-5, 4-5, 3-4, 1-3/ Alt: 1-5/ vc/ Note: a very widespread and common species of calcareous substrata; its development often starts in fissures of the rock. - Loc.: **Marc**: 2, 3, 21; **Abr**: 37, 38, 40, 41, 42, 47; **Mol**: 59, 60; **Pugl**: 78; **Bas**: 119.

Lecidea speirodes Nyl. - Cr/ Ch/ S/ Sil.b/ 3, 4-5, 4, 1-2/ Alt: 4-5/ rr/ Note: on steeply inclined surfaces of superficially decalcified calciferous rocks; the record from Abruzzo (Gran Sasso) is the southernmost in Europe. - Loc.: **Abr**: 44.

Lecidea turgidula Fr. - Cr/ Ch/ S/ Epiph-Lign/ 1-2, 3-4, 2, 1/ Alt: 3-4/ rc/ Note: most common throughout the Alps, but also present in the mountains of the south, esp. in old *Castanea* woodlands. According to Printzen (1995) the systematic position of this taxon is not clear. - Loc.: **Marc**: 29; **Abr**: 32; **Mol**: 55, 60.

Lecidea umbonata (Hepp) Mudd - Cr/ Ch/ S/ Calc/ 3-4, 3-4, 2, 1/ Alt: 5/ r/ Note: on more or less calciferous rocks; a variable species of the southern European mountains. - Loc.: **Abr**: 38.

Lecidella achristotera (Nyl.) Hertel & Leuckert - Cr/ Ch/ S/ Epiph/ 2-4, 4-5, 3, 2-4/ Alt: 1-2/ rr/ suboc/ Note: doubtfully distinct from *L. elaeochroma*; this record corresponds to a strongly deviating coastal form described as *L. achristotera* v. *juniperina* Poelt & Nimis (Nimis & Poelt 1987), which, in our opinion, needs further study. - Loc.: **Pugl**: 87.

Lecidella asema (Nyl.) Knoph & Hertel - Cr/ Ch/ S/ Sil.b/ 3, 3-4, 3, 3/ Alt: 2-3/ rc/ suboc/ Note: a chemically heterogeneous, mostly south European and subatlantic lichen, with a mainly submediterranean range in Italy. - Loc.: **Abr**: 34, 35; **Pugl**: 75, 78; **Bas**: 102, 104.

Lecidella carpathica Körb. - Cr/ Ch/ S/ Sil.b-Calc/ 3, 4-5, 3, 3-4/ Alt: 2-3/ c/ Note: in the Apennines and in southern Italy it was often found on the top of calcareous boulders; chemistry: see Knoph & Leuckert (1997). - Loc.: **Marc**: 21, 27, 28; **Umbr**: E; **Abr**: 35, 39, 40, 41, 47; **Mol**: 53, 63; **Pugl**: 65; **Bas**: 102, 111, 116, 117.

Lecidella elaeochroma (Ach.) Hazsl. - Cr/ Ch/ S/ Epiph/ 2-4, 3-5, 2-5, 2-4/ Alt: 1-4/ ec/ Note: one of the commonest epiphytic lichens of Italy. - Loc.: **Marc**: 1, 3, 8, 9, 11, 12, 13, 18, 19, 21, 24, 25, 26, 28, 29, 29, 30, B, G; **Umbr**: E; **Abr**: 31, 32, 33, 35, 37, 39, 40, 42, 43, 44, 45, 47, 48, 49, 50, 51, 52, H; **Mol**: 53, 55, 56, 57, 58, 59, 61, 62, 63; **Pugl**: 64, 65, 66, 67, 67, 69, 70, 72, 75, 76, 78, 81, 82, 83, 85, 86, 87, 90, 91, 94, 95, 96, 99, 101; **Bas**: 103, 105, 106, 107, 109, 110, 113, 115, 116, 117, 118, 120, 121, 122.

Lecidella elaeochroma f. **soralifera** (Erichsen) D. Hawksw. - Cr/ Ch/ A.s/ Epiph/ 2-4, 3, 2-3, 2-3/ Alt: 2-3/ rr/ suboc/ Note: this taxon does not deserve a segregation neither at species not at varietal rank; in our opinion, it is just a sorediate (and often fruiting) form of *L. elaeochroma,* most frequent in upland areas, and/or in humid situations, and often found together with the fertile form. - Loc.: **Pugl**: 70; **Bas**: 106, 107, 109, 118.

Lecidella elaeochroma v. **flavicans** (Ach.) Hertel - Cr/ Ch/ S/ Epiph/ 3-4, 4-5, 3, 3-4/ Alt: 1-2/ rr/ suboc/ Note: this taxon, with optimum in the Mediterranean belt, is well worthy of a DNA study. - Loc.: **Pugl**: 64.

Lecidella flavosorediata (Vězda) Hertel & Leuckert - Cr/ Ch/ A.s/ Epiph/ 3-4, 4, 3-4, 3-4/

Alt: 2-3/ r/ Note: this taxon deserves further study; it seems to be most frequent in southern Italy; with optimum in the montane belt; chemistry: see Knoph & Leuckert (1997). - Loc.: **Pugl**: 67.

Lecidella patavina (A. Massal.) Knoph & Leuckert - Cr/ Ch/ S/ Calc/ 4-5, 4-5, 3-4, 3-4/ Alt: 3-5/ ec/ Note: one of the most common calcicolous lichens of upland areas throughout the country; chemistry: see Knoph & Leuckert (1997). - Loc.: **Marc**: 2, 3, 13, 21, 28, B; **Umbr**: E; **Abr**: 36, 37, 38, 39, 40, 41, 44, 45, 46, 50; **Mol**: 60; **Pugl**: 75; **Bas**: 117, 118, 119.

Lecidella stigmatea (Ach.) Hertel & Leuckert - Cr/ Ch/ S/ Sil.b/ 3-4, 3-4, 3-4, 3-4/ Alt: 1-4/ c/ Note: a widespread species which, in Italy, has the optimum in the submediterranean belt; chemistry: see Knoph & Leuckert (1997). - Loc.: **Marc**: 6, 27, 29, 30; **Abr**: 31, 34, 35; **Mol**: 58, 63; **Pugl**: 65; **Bas**: 111.

Lecidella wulfenii (Hepp) Körb. - Cr/ Ch/ S/ Terr/ 3-4, 4, 3-4, 2-3/ Alt: 4-5/ vc/ Note: most common in the Alps, but also present in the highest mountains of the south; chemistry: see Knoph & Leuckert (1997). - Loc.: **Abr**: 38; **Bas**: 117.

Lempholemma botryosum (A. Massal.) Zahlbr. - Cr/ Cy.h/ S/ Calc/ 4-5, 3-4, 4-5, 1-3/ Alt: 1-3/ r/ Note: in periodically water-filled depressions of hard calciferous rocks; very rare in the Mediterranean belt. - Loc.: **Mol**: 60.

Lepraria eburnea J. R. Laundon - Lepr/ Ch/ A.s/ Epiph-Terr-Sil.b/ 2-3, 2-4, 2-3, 1-2/ Alt: 2-3/ c/ Note: mostly in underhangs protected from rain; certainly much more common, also in urban and polluted situations (all *Lepraria*-species were undercollected during this survey). - Loc.: **Abr**: 40, 41; **Mol**: 53, 55.

Lepraria flavescens Clauzade & Cl. Roux - Lepr/ Ch/ A.s/ Calc/ 5, 1-3, 1-3, 1-3/ Alt: 1-3/ rr/ Note: mostly in natural habitats, certainly much more widespread throughout Italy. - Loc.: **Marc**: 12, B; **Abr**: 48.

Lepraria lobificans Nyl. - Lepr/ Ch/ A.s/ Epiph-Sil.b/ 2-3, 2-4, 1-3, 1-2/ Alt: 1-4/ c/ Note: mostly in the lower parts of trunks, but also on rocks, and more rarely on lignum, soil and mosses; also occurring in rather polluted areas, with optimum in the submediterranean belt; this is probably one of the most common species of the genus in Italy, to be looked for throughout the country. - Loc.: **Bas**: 105.

Lepraria nivalis J. R. Laundon - Lepr/ Ch/ A.s/ Calc/ 4-5, 1-3, 1-2, 1-2/ Alt: 1-5/ rc/ Note: on limestone and dolomite in situations protected by rain, often on steeply inclined or underhanging surfaces, rare in the eu-Mediterranean belt. - Loc.: **Marc**: 24, 28; **Abr**: 49.

Lepraria rigidula (de Lesd.) Tönsberg - Lepr/ Ch/ A.s/ Epiph-Terr-Sil-Lign/ 2-3, 2-4, 2-3, 1-3/ Alt: 2-5/ rr/ Note: an ecologically wide-ranging species, with Italian optimum in the beech belt, certainly occurring also in the Alps, and to be looked for there. - Loc.: **Abr**: 51.

Leptogium diffractum Körb. - Cr.pl/ Cy.h/ S/ Calc/ 5, 3-5, 4, 1-2/ Alt: 1-2/ rr/ Note: on steeply inclined seepage tracks of hard calcareous rocks. Loc.: **Mol**: 63

Leptogium gelatinosum (With.) J. R. Laundon - Sq/ Cy.h/ S/ Terr/ 3-4, 4-5, 3, 1-2/ Alt: 2-5/ c/ Note: some forms are sometimes difficult to distinguish from *L. lichenoides*. - Loc.: **Marc**: 2, 3, 21; **Abr**: 38, 40, 41, 48; **Mol**: 54, 60; **Pugl**: 76; **Bas**: 118.

Leptogium lichenoides (L.) Zahlbr. - Sq/ Cy.h/ S/ Terr-Epiph/ 3-4, 3-5, 2-4, 1-3/ Alt: 1-5/ ec/ Note: the most common species of *Leptogium* throughout the country; when epiphytic, it mostly occurs at the base of trunks, on mosses; the more photophytic v. *pulvinatum*, which should be perhaps better treated at the rank of a *forma*, is subsumed here under the typical variety. - Loc.: **Marc**: 18, 20, 24, 26, 29, 30, A; **Umbr**: E; **Abr**: 31, 39, 40, 41, 47, 51; **Mol**: 59; **Pugl**: 71, 73, 75, 76; **Bas**: 102.

Leptogium massiliense Nyl. - Frut.f/ Cy.h/ S/ Calc/ 5, 4-5, 3-4, 1-2/ Alt: 1-2/ rc/ Note: on steeply inclined, sunny calcareous rocks; certainly much more widespread in northern Italy, and to be looked for there. - Loc.: **Marc**: A; **Mol**: 63; **Pugl**: 74; **Bas**: 117.

Leptogium microphylloides *auct. non* Nyl. - Fol/ Cy.h/ S/ Terr-Epiph/ 2-3, 3-4, 3-4, 1-2/ r/ Note: this taxon, whose name is probably erroneous, correponds to corticolous, rather broad-lobed forms, related to, but not identical with *L. teretiusculum*. - Loc: **Marc**: C; **Pugl**: 76; **Bas**: 119.

Leptogium plicatile (Ach.) Leight. - Fol.n/ Cy.h/ S/ Calc-Sil.b/ 3-5, 3-4, 3-4, 1-3/ Alt: 1-3/ rc/ Note: on exposed, inclined calcareous surfaces with some water seepage after rain, sometimes also on mosses and calciferous soil. - Loc.: **Abr**: 31, 41; **Mol**: 59, 63; **Pugl**: 64, 65, 80, 93.

Leptogium saturninum (Dicks.) Nyl. - Fol.b/ Cy.h/ A.i/ Epiph/ 3, 4, 2-3, 2-3/ Alt: 3-4/ rr/

suboc/ Note: only locally common, esp. in mountain areas. - Loc.: **Marc**: 3, 25; **Abr**: 51.

Leptogium schraderi (Bernh.) Nyl. - Frut/ Cy.h/ S/ Calc/ 4-5, 4-5, 3-4, 1-3/ Alt: 1-2/ rr/ Note: on calcareous rocks, sometimes overgrowing other lichens (esp. *Lecidea lurida*), more rarely on thin soil layers, with optimum in the submediterranean belt; certainly rare in the survey area. - Loc.: **Pugl**: 80.

Leptogium subtile (Schrad.) Torss. - Sq/ Cy.h/ S/ Epiph/ 3-4, 4, 2-3, 2-3/ Alt: 2-3/ r/ Note: on the base of old broadleaved trees, sometimes lignicolous, more rarely on soil. - Loc.: **Abr**: 51.

Leptogium tenuissimum (Dicks.) Körb. - Sq/ Cy.h/ S/ Terr-Epiph-Calc/ 3-4, 3-4, 2-3, 2-3/ Alt: 2-4/ rr/ Note: a rather pioneer species, most frequent on base-rich soil; certainly rare in the survey area. - Loc.: **Pugl**: 64, 92.

Leptogium teretiusculum (Wallr.) Arnold - Sq/ Cy.h/ A.i/ Epiph-Terr/ 2-3, 3-4, 2-3, 2-3/ Alt: 1-3/ r/ Note: certainly occurring also in the Alps, and to be looked for there; most common at the base of old trees with subneutral to weakly acid bark; certainly not common in the survey area. - Loc.: **Abr**: 52; **Pugl**: 83.

Lichenoconium lecanorae (Jaap) D. Hawksw. - LF/ S/ Sil-Epiph/ paras *Lecanora* spp./ rc/ - Loc.: 41, on *Lecanora carpinea*. Det. D. Triebel

Lichenoconium usneae (Anzi) D. Hawksw. - LF/ S/ Epiph/ paras *Usnea spp.* - Loc.: **Abr**: 38.

Lichenostigma elongatum Nav.-Ros. & Hafellner - LF/ A/ Calc/ paras *Aspicilia spp.*/ - Loc.: **Abr**: 34, on *Aspicilia calcarea*. Det. D. Triebel

Lichinella nigritella (Lettau) G. Moreno & Egea - Frut/ Cy.c/ S/ Calc-Sil.b/ 3-5, 4-5, 4-5, 2-3/ Alt: 2-3/ rc/ Note: on vertical or steeply inclined surfaces of calcareous, or base-rich siliceous rocks with some water seepage after rain, with optimum in the Mediterranean belt. - Loc.: **Abr**: 42; **Mol**: 59, 63; **Pugl**: 64, 93.

Lichinella stipatula Nyl. - Frut/ Cy.c/ S/ Calc-Sil.b/ 3-4, 4-5, 4-5, 2-3/ Alt: 1-3/ rc/ subc/ Note: on steeply inclined, sun-exposed surfaces of base-rich or slightly calciferous siliceous rocks with some percolation of water, often overgrowing other lichens; extremely rare in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Pugl**: 80.

Lithothelium triseptatum (Nyl.) Aptroot - Cr.end/ Tr/ S/ Calc/ 4-5, 1-2, 1-2, 1/ Alt: 1/ r/ coast/ Note: a strictly coastal calcicolous species, locally abundant in shaded situations, to be looked for further along the coasts of southern Italy; probably absent north of Puglia in the survey area. - Loc.: **Pugl**: 64, 97, 98, 101.

Lobaria amplissima (Scop.) Forssell - Fol.b/ Ch/ S/ Epiph/ 2-3, 4-5, 1-2, 1-2/ Alt: 2-3/ vr/ suboc/ Note: on old, more or less isolated trees; formerly much more widespread also in the north, very locally still abundant in some parts of the Apennines, but extremely rare in the Adriatic part of peninsular Italy, due to climatic conditions. - Loc.: **Abr**: 52; **Pugl**: 71.

Lobaria pulmonaria (L.) Hoffm. - Fol.b/ Ch/ A.s/ Epiph-Sil/ 2-3, 3, 1-2, 1-2/ Alt: 1-4/ rr/ suboc/ Note: extinct in the plains of the north, but still abundant in central and southern Italy; the optimum is presently in the beech belt, but this species can even be present in Mediterranean coastal stations in particularly humid areas; when on rock, mostly on bryophytes - Loc.: **Marc**: 3, 26, 29, 30; **Abr**: 32, 52; **Mol**: 53; **Pugl**: 71, 73, 76; **Bas**: 110, 116, 118.

Lobaria scrobiculata (Scop.) DC. - Fol.b/ Cy.h/ A.s/ Epiph-Sil/ 2, 3, 1-2, 1/ Alt: 3-4/ vr/ suboc/ Note: certainly much rarer than other species of the genus in Italy; formerly more common, presently extinct in several parts of the country (e.g. the whole Po-plain), and certainly very much declining; extremely rare in the survey area. - Loc.: **Marc**: 30; **Abr**: 32.

Lobaria virens (With.) J. R. Laundon - Fol.b/ Ch/ S/ Epiph/ 2-3, 3, 1, 1/ Alt: 3-4/ er/ oc/ Note: a species of old, natural, warm-humid forests, perhaps exctinct in the Alps and along the eastern Apennines, and very much declining; it can still be locally very abundant in some warm-humid montane forests of the south; in the survey area it is probably surviving only in the humid forests of the Gargano Peninsula (where it is locally abundant). - Loc.: **Pugl**: 71.

Megalaria grossa (Nyl.) Hafellner - Cr/ Tr/ S/ Epiph/ 3, 3, 1-2, 1-2/ Alt: 2-3/ vr/ suboc/ Note: most frequent on *Acer* and *Fraxinus*, locally still abundant in humid forests of the south. - Loc.: **Mol**: 55, 56; **Pugl**: 71, 73; **Bas**: 109.

Megalaria laureri (Th. Fr.) Hafellner - Cr/ Tr/ S/ Epiph/ 2-3, , 1-2, 1-2/ Alt: 2-3/ vr/ suboc/ Note: mostly on the bark of *Quercus* and *Fagus* in humid forests, certainly declining; in the survey area it was only found in the Gargano Peninsula. - Loc.: **Pugl**: 71.

Megaspora verrucosa (Ach.) Hafellner & V. Wirth v. **verrucosa** - Cr/ Ch/ S/ Terr/ 3-4, 4-5, 3-4, 1-3/ Alt: 3-5/ vc/ Note: a terricolous and muscicolous species of more or less calciferous substrata; common in the Alps it is not rare also in the oromediterranean belt. - Loc.: **Marc**: 21, 28, **B**; **Abr**: 36, 38, 39, 40, 41, 44; **Bas**: 117.

Megaspora verrucosa v. **mutabilis** (Ach.) Nimis & Cl. Roux - Cr/ Ch/ S/ Epiph/ 3, 4, 3-4, 2-3/ Alt: 2-4/ rr/ Note: this epiphytic taxon is perhaps worthy of further study. - Loc.: **Marc**: C; **Abr**: 51; **Mol**: 61.

Melaspilea proximella (Nyl.) Norrlin - F/ S/ Epiph/ 1-3, 3-4, 2-3, 1-2/ Alt: 2-4/ r/ Note: an inconspicuous species, non-lichenized, probably very much overlooked. - Loc.: **Marc**: 29.

Melaspilea urceolata (Fr.) Almb. - Cr/ Tr/ S/ Epiph/ 2, 3, 2-3, 1-2/ Alt: 2/ r/ suboc/ Note: probably more widespread in the past, presently very much declining. - Loc.: **Marc**: 5, 10, 14; **Pugl**: 85.

Micarea adnata Coppins - Cr/ Ch/ S/ Lign, Epiph/ 2, 2-3, 1-2, 1-2/ Alt: 2-3/ r/ suboc/ Note: mostly found on rather decomposed lignum. - Loc.: **Bas**: 105.

Micarea botryoides (Nyl.) Coppins - Cr/ Ch/ S/ Sil-Terr-Lign/ 1-2, 1-3, 1-2, 1/ Alt: 2-3/ r/ suboc/ Note: found on a wide varity of substrata; certainly very much overlooked, but not common in Italy. - Loc.: **Marc**: 29.

Micarea denigrata (Fr.) Hedl. - Cr/ Ch/ S/ Lign/ 1-2, 2-4, 2-4, 1-3/ Alt: 2-4/ rr/ Note: esp. common on wooden poles in the mountains, rarer on the bark of conifers. - Loc.: **Abr**: 32; **Bas**: 113.

Micarea elachista (Körb.) Coppins & R. Sant. - Cr/ Ch/ S/ Lign/ 1-2, 3, 2-3, 1/Alt: 2-3/ r/ Note: optimum in *Castanea*-forests, often with *Chaenotheca ferruginea*; certainly more widespread, also in the mountains of the survey area, but much overlooked. - Loc.: **Marc**: 29.

Micarea globulosella (Nyl.) Coppins - Cr/ Ch/ S/ Epiph-Lign/ 1-2, 1-3, 1-2, 1/ Alt: 2-4/ vr/ suboc/ Note: most frequent on the bark of conifers in upland areas; very much overlooked, and certainly occurring also in the Italian Alps, from which it was never reported. - Loc.: **Mol**: 55; **Pugl**: 69.

Micarea misella (Nyl.) Hedl. - Cr/ Ch/ S/ Lign/ 1-2, 2-4, 2-3, 1/ Alt: 3-4/ rr/ Note: optimum in the oroboreal belt of the Alps, but probably occurring, albeit more rarely, throughout the Apennines in upland areas. - Loc.: **Abr**: 32, 35.

Micarea prasina Fr. - Cr/ Ch/ S/ Epiph-Lign-Sil-Terr/ 1-2, 2-3, 2, 1/ Alt: 2-4/ rc/ Note: most common at the basis of old, acid-barked trees in the montane belt, but with a wide substrate range; this is probably the most common species of the genus in Italy, esp. in the north and, albeit more rarely, along the Apennines. - Loc.: **Marc**: 20, 29; **Pugl**: 67.

Milospium graphideorum (Nyl.) D. Hawksw.- LF/ A/ Epiph/ paras *Lecanographa* spp./ r/ Note: a lichenicolous fungus, most freqeunt on old oaks, in warm-humid parts of Tyrrhenian Italy, extremely rare in the survey area. - Loc.: **Pugl**: 100; **Bas**: 122.

Muellerella hospitans Stitz. - LF/ S/ Epiph/ paras *Bacidia* spp./ vr/ - Loc.: 122, on *Bacidia rosella*. - Loc.: **Abr**: 39. Det. D. Triebel

Muellerella pygmaea (Körb.) D. Hawksw. v. **athallina** (Müll. Arg.) Triebel - LF/ S/ paras crustose lichens/ vc/ - Loc.: **Marc**: 21; **Abr**: 40, 41 on *Caloplaca velana*. Det. D. Triebel

Muellerella triseptata Diederich - LF/ S/ paras *Bacidia* spp./ vr/ - Loc.: **Pugl**: 100, on *Bacidia rubella*. Det. D. Triebel

Mycobilimbia berengeriana (A. Massal.) Hafellner & V. Wirth - Cr/ Ch/ S/ Epiph-Terr/ 4-5, 3-4, 3, 1-2/ Alt: 3-5/ r/ Note: often found on mosses in alpine-subalpine calcareous grasslands; most common in the Alps, but occurring throughout the Apennines. - Loc.: **Abr**: 36, 39, 46.

Mycobilimbia hypnorum (Lib.) Kalb & Hafellner - Cr/ Ch/ S/ Terr/ 3-4, 3-4, 3, 1-2/ Alt: 2-5/ rr/ Note: most often found on mosses. - Loc.: **Marc**: 21.

Mycobilimbia lobulata (Sommerf.) Hafellner - Cr/ Ch/ S/ Terr/ 3-4, 3-4, 2-4, 1-2/ Alt: 3-5/ rc/ Note: often found on terricolous mosses, common from the Alps to the high Mediterranean mountains. - Loc.: **Marc**: 21, 28, B; **Abr**: 36, 38, 39, 40, 41, 46; **Bas**: 117.

Mycobilimbia microcarpa (Th. Fr.) W. Brunnbauer - Cr/ Ch/ S/ Terr/ 4-4, 3-4, 3-4, 1-2/ Alt: 3-5/ rr/ Note: often found on mosses in dry grasslands; perhaps overlooked and not uncommon throughout the country. - Loc.: **Abr**: 40, 41.

Mycobilimbia sabuletorum (Schreb.) Hafellner - Cr/ Ch/ S/ Terr/ 3-4, 2-4, 2-3, 2-3/ Alt: 1-5/ c/ Note: mostly found on mosses, also in urban environments (e.g. on walls); for synonymies see Ekman (1996). - Loc.: **Marc**: 2, 26, 28, G; **Abr**: 39, 40, 44, 51; **Mol**: 59.

Mycobilimbia sanguineoatra *auct*. - Cr/ Ch/ S/ Epiph/ 2-3, 2-3, 2-3, 1/ Alt: 2-3/ r/ Note: a rather critical taxon, with optimum in humid forests of the beech belt; most often on epiphytic mosses, sometimes also on soil. - Loc.: **Marc**: 8, 9, 29; **Pugl**: 76.

Nephroma laevigatum Ach. - Fol.b/ Cy.h/ S/

Epiph/ 2-3, 3, 1-2, 1/ Alt: 1-3/ rc/ suboc/ Note: this is probably the most common species of *Nephroma* in Italy; optimum in humid, semi-natural forests; rare in the survey area, more frequent in Tyrrhenian Italy. - Loc.: **Abr**: 32; **Bas**: 110, 118.

Nephroma parile (Ach.) Ach. - Fol.b/ Cy.h/ A.s/ Epiph-Sil/ 2-3, 3, 1, 1-2/ Alt: 2-4/ rr/ suboc/ Note: optimum in humid forests, on mosses; extremely rare in the survey area. - Loc.: **Marc**: 26.

Nephroma resupinatum (L.) Ach. - Fol.b/ Cy.h/ A.i/ Epiph/ 2-3, 2-3, 1-2, 1-2/ Alt: 3-4/ rr/ suboc/ Note: optimum in humid beech forests, often found together with *Peltigera collina*. - Loc.: **Marc**: 21, 26; **Abr**: 51, 52; **Pugl**: 116, 118.

Normandina pulchella (Borrer) Nyl. - Sq/ Ch/ A.s/ Epiph/ 2-3, 3-4, 2-3, 1-3/ Alt: 1-3/ rc/ suboc/ Note: often found on epiphytic *Frullania*; optimum in the submediterranean belt; very common in Tyrrhenian Italy and in some parts of the north (e.g. north-eastern pre-Alps), but extremely rare along the eastern side of the peninsula, probably because of the more continental climatic conditions. - Loc.: **Marc**: 9, 24.

Ochrolechia androgyna (Hoffm.) Arnold - Cr/ Ch/ A.s/ Epiph-Sil-Terr/ 1-2, 3, 2, 1/ Alt: 2-4/ rr/ Note: a polymorphic species, closely related to *O. tartarea*. - Loc.: **Marc**: 29; **Abr**: 32; **Pugl**: 85; **Bas**: 105.

Ochrolechia arborea (Kreyer) Almb. - Cr/ Ch/ A.s/ Epiph/ 2, 3-4, 3, 1-3/ Alt: 2-3/ rc/ Note: on more or less isolated deciduous trees with mineral-rich bark, with optimum in submediterranean areas. - Loc.: **Marc**: 30; **Abr**: 32; **Mol**: 53; **Pugl**: 75, 81; **Bas**: 110, 119.

Ochrolechia balcanica Verseghy - Cr/ Ch/ S/ Epiph/ 2-3, 3, 2, 1-2/ Alt: 2-3/ rc/ Note: common and abundant in the southern Apennines, in humid forests, with optimum in the beech belt (but occurring in southern oak forests as well); not known in eastern Peninsular Italy north of the Gargano Peninsula, but reaching as north as Tuscany in Tyrrhenian Italy. - Loc.: **Pugl**: 72; **Bas**: 105, 110, 116, 118, 119.

Ochrolechia pallescens (L.) A. Massal. - Cr/ Ch/ S/ Epiph/ 2, 3-4, 2-3, 1-2/ Alt: 2-3/ rr/ suboc/ Note: most frequent in the north, in areas with a rather humid climate; the relationships with *O. parella* remain to be clarified: the two species are very similar, but have a different ecology and distribution, and they hardly can be treated as *formae* of one and the same species; in our opinion, only a DNA study will be able to clarify this problem. - Loc.: **Marc**: 3, 21, 26, 29, 30; **Umbr**: E; **Abr**: 50, 51; **Mol**: 59; **Bas**: 110, 116, 118.

Ochrolechia parella (L.) A. Massal. - Cr/ Ch/ S/ Sil.b/ 2-3, 3-4, 2-3, 1-3/ Alt: 1-3/ c/ suboc/ Note: closely related to *O. pallescens* (see note on this species), but silicicolous, and much more common, esp. in Tyrrhenian Italy; rare in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Marc**: 29, 30; **Abr**: 31, 34; **Bas**: 102, 105, 107, 111.

Ochrolechia subviridis (Höeg) Erichsen - Cr/ Ch/ A.s/ Epiph/ 2, 3-4, 2, 1/ Alt: 2-3/ rr/ suboc/ Note: most frequent on isolated trees in rather humid areas, with optimum in submediterranean areas. - Loc.: **Marc**: 29, 30; **Pugl**: 91.

Ochrolechia turneri (Sm.) Hasselrot - Cr/ Ch/ A.s/ Epiph/ 2, 3, 2-3, 2-3/ Alt: 2-3/ rr/ Note: formerly very much confused with other sorediate species of the genus; the optimum seems to be in the beech belt, at least in the survey area. - Loc.: **Marc**: 29; **Abr**: 52; **Pugl**: 81, 83.

Ochrolechia upsaliensis (L.) A. Massal. - Cr/ Ch/ S/ Terr/ 4-5, 4, 3, 1-2/ Alt: 4-5/ rc/ Note: an Arctic-Alpine species of soil and plant debris, rather common in the Alps, but very rare in the Apennines. - Loc.: **Abr**: 38, 39.

Opegrapha atra Pers. - Cr/ Tr/ S/ Epiph/ 2, 2-4, 2-3, 1-2/ Alt: 1-3/ vc/ Note: this is certainly the most common epiphytic species of *Opegrapha* throughout Italy. - Loc.: **Marc**: 12, 18, 29; **Abr**: 31, 33, 49; **Mol**: 58; **Pugl**: 64, 71; **Bas**: 106.

Opegrapha calcarea Sm. - Cr/ Tr/ S/ Calc-Sil.b/ 3-5, 1-3, 1-2, 1-3/ Alt: 1-3/ ec/ Note: this is the most common calcicolous species of *Opegrapha* throughout Italy. - Loc.: **Marc**: 9, 21, 24, B; **Umbr**: E; **Abr**: 45; **Mol**: 62; **Pugl**: 65, 75, 80, 84, 91, 93, 95, 97, 100, 101; **Bas**: 118.

Opegrapha celtidicola (Jatta) Jatta - Cr/ Tr/ S/ Epiph/ 2-3, 2-3, 2, 1-2/ Alt: 1-2/ rr/ suboc/ Note: esp. on old broadleaved trees; mainly Tyrrhenian in Italy, and very rare in the survey area, except in its southern part. - Loc.: **Marc**: 25; **Pugl**: 67, 91, 96, 100; **Bas**: 122.

Opegrapha durieui Mont. - Cr/ Tr/ S/ Calc/ 5, 2-3, 1-2, 1/ Alt: 1/ r/ coast/ suboc/ Note: on shaded calcareous rocks, often in underhangs, in coastal situations; not uncommon in some warm-humid areas of Tyrrhenian Italy, but probably absent from eastern Italy north of Puglia; most probably this taxon does not belong to *Opegrapha s. str*. - Loc.: **Pugl**: 64, 97.

Opegrapha herbarum Mont. - Cr/ Tr/ S/

Epiph/ 2-3, 2-3, 1-3, 1-2/ Alt: 1-2/ r/ suboc/ Note: mostly Tyrrhenian in Italy, and very rare in Adriatic peninsular Italy (not known north of Puglia). - Loc.: **Pugl**: 67.

Opegrapha mougeotii A. Massal. - Cr/ Tr/ S/ Calc/ 4-5, 2-3, 2, 1-2/ Alt: 1-2/ rr/ suboc/ Note: a rather critical taxon of calcareous substrata, related to *O. varia*. - Loc.: **Pugl**: 64, 97.

Opegrapha niveoatra (Borrer) J. R. Laundon - Cr/ Tr/ S/ Epiph/ 2, 3, 2, 1-2/ Alt: 1-2/ rr/ Note: a mainly Tyrrhenian species; very rare in Adriatic peninsular Italy - Loc.: **Marc**: 29; **Pugl**: 67, 91.

Opegrapha ochrocheila Nyl. - Cr/ Tr/ S/ Epiph/ 2-3, 2-3, 2, 1-2/ Alt: 1/ r/ suboc/ Note: An Atlantic species, listed under the dubious records by Nimis (1993). The material from Sardegna (TSB) was revised by Egea & Torrente, and the identification by Nimis & Poelt (1987) proved to be correct; the material from Puglia complies with that from Sardegna; this species is almost certainly absent in the survey area north of Puglia. - Loc.: **Pugl**: 100.

Opegrapha ochrocincta Werner - Cr/ Tr/ S/ Epiph/ 2-3, 2-4, 2, 1-2/ Alt: 1/ r/ suboc/ Note: most common in Tyrrhenian Italy, very rare along the eastern side of the Peninsula, and not known north of the Gargano Peninsula. - Loc.: **Pugl**: 64, 67, 99; **Bas**: 122.

Opegrapha rufescens Pers. - Cr/ Tr/ S/ Epiph/ 2-3, 2-3, 1-2, 1/ Alt: 1-3/ rc/ Note: optimum in shaded-humid submediterranean woodlands, most often in gorges and along rivers, on smooth bark; not uncommon throughout the survey area. - Loc.: **Marc**: 8, 18, 25, 29, 29; **Abr**: 31, 49; **Mol**: 55, 57; **Pugl**: 96; **Bas**: 109, 110.

Opegrapha rupestris Pers. - Cr/ Tr/ S/ Calc/ 4-5, 1-3, 1-3, 1-2/ Alt: 1-5/ c/ Note: often found on the thalli of other crustose lichens; optimum in open deciduous forests. - Loc.: **Abr**: 49; **Pugl**: 65, 91.

Opegrapha subelevata (Nyl.) Nyl. - Cr/ Tr/ S/ Calc-Sil.b/ 3-5, 2-4, 2-3, 1-3/ Alt: 1-2/ r/ suboc/ Note: mainly Tyrrhenian in Italy, extremely rare in the survey area. - Loc.: **Abr**: 33.

Opegrapha varia Pers. - Cr/ Tr/ S/ Epiph/ 2-3, 2-3, 2-3, 1-2/ Alt: 1-3/ rc/ Note: mostly on old trees, more rarely on basic siliceous rocks; with optimum in submediterranean areas. - Loc.: **Marc**: 5, 8, 18, 24; **Abr**: 49; **Mol**: 55, 58; **Pugl**: 64, 71, 73, 76, 85, 94; **Bas**: 106, 114.

Opegrapha variaeformis Anzi - Cr/ Tr/ S/ Calc/ 4-5, 2-3, 2, 1/ Alt: 1/ r/ suboc/ Note: on more or less steeply inclined rock faces near the coast; in Adriatic Italy not known north of Puglia. - Loc.: **Pugl**: 64, 100.

Opegrapha vermicellifera (Kunze) J. R. Laundon - Cr/ Tr/ S/ Epiph/ 2-3, 3, 2, 1-2/ Alt: 2/ r/ Note: mostly on old trees, very rare in the Adriatic part of peninsular Italy. - Loc.: **Pugl**: 71, 73.

Opegrapha viridis (Ach.) Behlen & Desberger - Cr/ Tr/ S/ Epiph/ 2-3, 3, 2, 1/ Alt: 1-2/ rr/ Note: much more common in the Tyrrhenian than in the Adriatic side of the peninsula. - Loc.: **Pugl**: 64, 67; **Bas**: 122.

Opegrapha vulgata Ach. - Cr/ Tr/ S/ Epiph/ 2, 3, 1-2, 1/ Alt: 2-3/ rr/ Note: a widespread, but not common species, with optimum above the submediterranean belt, esp. on *Abies*. - Loc.: **Abr**: 32; **Pugl**: 67, 71; **Bas**: 122.

Pachyphiale carneola (Ach.) Arnold - Cr/ Tr/ S/ Epiph/ 2, 2-3, 1-2, 1/ Alt: 2-3/ r/ suboc/ Note: an indicator of old forests, very much declining, esp. in the north; somehow more frequent in the southern than in the northern part of the survey area. Loc. **Abr**: 32; **Mol**: 53; **Pugl**: 66, 71, 72, 73.

Pachyphiale fagicola (Hepp) Zwackh - Cr/ Tr/ S/ Epiph/ 3, 3, 1-2, 1/ Alt: 1-3/ vr/ Note: often confused with the previous species, but certainly rare throughout the country; optimum in open deciduous forests or, in humid areas, on more or less isolated trees. - Loc.: **Marc**: 21; **Abr**: 51.

Pannaria conoplea (Ach.) Bory - Fol.n/ Cy.h/ S/ Epiph/ 2-3, 3, 1, 1/ Alt: 2-3/ r/ Note: a *Lobarion*-species, very much declining, esp. in the north. - Loc.: **Marc**: 29; **Abr**: 32.

Pannaria pezizoides (Weber) Trevis. - Cr/ Cy.h/ S/ Terr/ 2, 3-4, 2, 1-2/ Alt: 3-5/ c/ Note: on mosses, plant debris, organic soil in rather open habitats; most common in the Alps, but occurring, albeit much more rarely, throughout the Apennines. - Loc.: **Abr**: 39.

Parmelia acetabulum (Neck.) Duby - Fol.b/ Ch/ S/ Epiph/ 2-3, 4-5, 3-4, 2-3/ Alt: 2-3/ vc/ Note: very abundant and common in central- to south Italian beech and oak forests, rarer in Mediterranean Italy and in the north, and almost extinct in the Po-Plain; also growing on calcareous rocks (strongly pruinose forms) in the high Mediterranean mountains (e.g. in the Madonie Mnts., Sicily). Extremely common in the survey area, above the Mediterranean belt - Loc.: **Marc**: 2, 11, 16, 19, 21, 26, 30, C, G; **Umbr**: E; **Abr**: 33, 35, 37, 45, 50, 51, H; **Mol**: 53, 55, 56, 57, 60, 61, 62, 63; **Pugl**: 64, 65, 70, 75, 78, 81, 82, 87, 90; **Bas**: 105, 106, 109, 110, 111, 113, 117, 118, 119.

Parmelia caperata (L.) Ach. - Fol.b/ Ch/ A.s/ Epiph/ 2, 4, 3, 1-2/ Alt: 1-2/ rc/ Note: a chiefly submediterranean species in Italy, except along the Adriatic side of the Peninsula, where, while not being rare, it is relatively less common. - Loc.: **Marc**: 2, 9, 11, 14, 16, 19, 29; **Abr**: 32, 45; **Mol**: 57, 63; **Pugl**: 69, 70, 72, 75, 82, 83, 86, 95; **Bas**: 106, 110, 121.

Parmelia carporrhizans Taylor, Fol.b/ Ch/ S/ Epiph/ 2-3, 4-5, 3-4, 2-3/ Alt: 1-3/ rc/ Note: doubtfully distinct from *P. quercina*. - Loc.: **Mol**: 63; **Pugl**: 65, 70, 82, 90; **Bas**: 106.

Parmelia conspersa (Ach.) Ach. - Fol.b/ Ch/ A.i/ Sil/ 2-3, 3-5, 3-4, 2-3/ Alt: 1-4/ c/ Note: common throughout the country, esp. at high altitudes; in the Mediterranean belt it is substituted by the vicariant species *P. tinctina* (with a similar chemistry, and sometimes difficult to distinguish on the basis of morphological characters only); very rare in the survey area for the scarcity of suitable substrata. - Loc.: **Bas**: 105.

Parmelia elegantula (Zahlbr.) Szatala - Fol.b/ Ch/ A.i/ Epiph/ 2, 3-4, 3, 3/ Alt: 2-3/ rr/ Note: common along the Apennines, as in the survey area, much rarer in the north. - Loc.: **Marc**: 3, 29, 30; **Abr**: 32, 51; **Mol**: 53; **Pugl**: 69, 72, 78, 82, 87, 90; **Bas**: 105, 107, 109, 110, 111, 119.

Parmelia exasperata De Not. - Fol.b/ Ch/ S/ Epiph/ 2, 4-5, 3-4, 2-3/ Alt: 1-3/ vc/ Note: on smooth and rather acid bark, often among the earliest colonizers of small twigs of smooth-barked trees and shrubs (e.g. *Prunus*). - Loc.: **Marc**: 3, 16, 19, 21; **Umbr**: E; **Abr**: 35, 37, 41, 42, 45, 47, 50; **Mol**: 53, 62; **Pugl**: 64, 69, 70, 75; **Bas**: 105, 106, 110, 119.

Parmelia exasperatula Nyl. - Fol.b/ Ch/ A.i/ Epiph/ 2-3, 3-5, 3, 3/ Alt: 2-4/ c/ Note: mostly on isolated trees, in *Xanthorion* communities; not common in the survey area. - Loc.: **Marc**: 16; **Abr**: 37.

Parmelia glabra (Schaer.) Nyl. - Fol.b/ Ch/ S/ Epiph/ 2-3, 4-5, 3-4, 3/ Alt: 1-3/ c/ Note: the ecology and the distribution of this species are very similar to those of *P. acetabulum*. - Loc.: **Marc**: 2, 3, 19, 21, 26, 30, C, D, G; **Umbr**: E; **Abr**: 32, 33, 35, 37, 47, 50, 52, H; **Mol**: 56, 62, 63; **Pugl**: 64, 65, 66, 69, 70, 72, 78, 81, 82, 83, 85, 87; **Bas**: 105, 107, 110, 111, 118, 119.

Parmelia glabrans Nyl. - Fol.b/ Ch/ S/ Sil-Sil.b/ 2-3, 4-5, 3, 2-3/ Alt: 1/ rr/ Note: often confused with similar taxa in Italy; very rare in the survey area due to the prevalence of calcareous substrata. Loc.: **Pugl**: 72.

Parmelia glabratula (Lamy) Nyl. - Fol.b/ Ch/ A.i/ Epiph-Sil/ 1-3, 3-4, 2-3, 2-3/ Alt: 1-3/ c/ Note: rather rare in the Mediterranean belt, but very common in the deciduous belts, also within open beech forests, mostly epiphytic in Italy. - Loc.: **Marc**: 13, 26; **Abr**: 51; **Mol**: 53; **Pugl**: 71, 72, 83; **Bas**: 106, 118.

Parmelia horrescens Taylor - Fol.b/ Ch/ A.i/ Epiph/ 2-3, 3, 1-2, 1-2/ Alt: 1-3/ vr/ suboc/ Note: mostly on old trees in ancient, but rather open forests. - Loc.: **Marc**: 29; **Abr**: 32.

Parmelia laciniatula (H. Olivier) Zahlbr. - Fol.b/ Ch/ A.i/ Epiph/ 2-3, 3, 2, 2-3/ Alt: 3/ rr/ Note: most common, and often abundant, in humid beech forests of the Apennines, especially in the south. - Loc.: **Mol**: 53, 56; **Pugl**: 71; **Bas**: 105, 118.

Parmelia loxodes Nyl. - Fol.b/ Ch/ A.s/ Sil-Sil.b/ 2-4, 3-4, 3-4, 3-5/ Alt: 1-3/ vc/ Note: common, especially in submediterranean areas, on more or less base-rich siliceous substrata, incl. brick and tiles, but rare in the survey area, perhaps also because of its more continental climate. - Loc.: **Marc**: 30; **Abr**: 31, 34; **Bas**: 102, 105.

Parmelia pastillifera (Harm.) Schub. & Klem. - Fol.b/ Ch/ A.i/ Epiph/ 2-3, 4, 2, 2-3/ Alt: 2-3/ rc/ suboc/ Note: more frequent in the montane belt than the closely related *P. tiliacea*, descending to the submediterranean belt in humid areas. - Loc.: **Marc**: 3, 14, 21, 26; **Abr**: 35, 50, 51; **Mol**: 56; **Pugl**: 71; **Pugl**: 106, 116, 117, 118,

Parmelia pulla Ach. - Fol.b/ Ch/ S/ Sil-Sil.b/ 2-3, 4-5, 3-4, 2-3/ Alt: 1-4/ ec/ Note: rare in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Marc**: 30; **Mol**: 63; **Pugl**: 65, 72; **Bas**: 116.

Parmelia quercina (Willd.) Vain. - Fol.b/ Ch/ S/ Epiph/ 2-3, 4-5, 3-4, 2-3/ Alt: 1-3/ rc/ Note: more thermo- and less hygrophytic than the closely related *P. pastillifera*. - Loc.: **Marc**: 19, G; **Umbr**: E; **Abr**: 32; **Mol**: 56, 62; **Pugl**: 64, 66, 69, 70, 76, 83; **Bas**: 110, 115, 119, 121.

Parmelia saxatilis (L.) Ach. - Fol.b/ Ch/ A.i/ Epiph-Sil/ 1-2, 3-4, 2-3, 1-3/ Alt: 1-4/ c/ Note: optimum in and above the beech belt, but this species can even reach the Mediterranean belt in part. humid situations; less common in the Adriatic part of peninsular Italy. - Loc.: **Marc**: 3, 29; **Abr**: 32; **Mol**: 54; **Pugl**: 71; **Bas**: 105, 116, 118.

Parmelia somloensis Gyeln. - Fol.b/ Ch/ S/ Sil-Sil.b-Terr/ 2-3, 4-5, 4, 2-3/ Alt: 1-5/ rc/ Note: very rare in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Bas**: 116.

Parmelia soredians Nyl. - Fol.b/ Ch/ A.s/ Epiph/ 2-3, 4-5, 2-3, 2-3/ Alt: 1-2/ rr/ Note: easily mistaken for *P. caperata*, optimum in areas with warm-humid climate. - Loc.: **Abr**: 43; **Pugl**: 73, 90.

Parmelia subargentifera Nyl. - Fol.b/ Ch/ A.s/ Epiph/ 3-4, 4-5, 3-4, 2-3/ Alt: 2/ rr/ subc/ Note: most common in Alpine valleys with a rather continental climate, but extending along the eastern side of the Peninsula and to be looked for in the south; on isolated trees. - Loc.: **Marc**: 19; **Abr**: 41, 43, 50.

Parmelia subaurifera Nyl. - Fol.b/ Ch/ A.s/ Epiph/ 2-3, 3, 2-3, 1-3/ Alt: 1-3/ vc/ Note: a rather pioneer species, often found on smooth bark, common everywhere in Italy, but absent from polluted areas. - Loc.: **Marc**: 9, 11, 19, 20, 29, 30, G; **Abr**: 31, 50, H; **Mol**: 55, 57, 60; **Pugl**: 69, 70, 71, 75, 82, 83, 87; **Bas**: 106, 107, 109, 111, 121.

Parmelia submontana Hale - Fol.b/ Ch/ A.i/ Epiph/ 2, 3, 1-2, 1-2/ Alt: 3/ rr/ Note: most frequent in humid beech forests of the Apennines, where it is locally very abundant. - Loc.: **Marc**: 13; **Abr**: 51; **Mol**: 55; **Pugl**: 71; **Bas**: 105, 113, 118.

Parmelia subrudecta Nyl. - Fol.b/ Ch/ A.s/ Epiph/ 2-4, 3-4, 3, 1-3/ Alt: 1-2/ c/ Note: ecologically intermediate between *Xanthorion* and *Parmelion* vegetation; less frequent on the eastern side of the Peninsula, and in the eu-Mediterranean belt. - Loc.: **Marc**: 9, 11, 14; **Abr**: H; **Mol**: 59; **Pugl**: 70, 86, 87; **Bas**: 115.

Parmelia sulcata Taylor - Fol.b/ Ch/ A.s/ Epiph/ 1-3, 3-5, 2-3, 1-3/ Alt: 1-4/ ec/ Note: also present near large urban settlements in the north, rarer in eu-Mediterranean Italy. - Loc.: **Marc**: 3, 9, 11, 13, 16, 19, 20, 21, 26, 29, 30, G; **Umbr**: E; **Abr**: 32, 37, 45, 50, 51, 52; **Mol**: 53, 55, 56, 57, 60, 61, 62; **Pugl**: 64, 70, 73, 75, 82, 83, 86, 87, 96; **Bas**: 105, 106, 109, 110, 111, 116, 117, 118, 121.

Parmelia tiliacea (Hoffm.) Ach. - Fol.b/ Ch/ A.i/ Epiph-Sil.b/ 2, 3-4, 3, 2-3/ Alt: 1-2/ c/ Note: more common in the submediterranean belt than the closely related *P. pastillifera*. - Loc.: **Marc**: 2, 11, 19, 29, 29, 30, C, G; **Umbr**: E; **Abr**: 31, 32, 35, 37, 43, H; **Mol**: 56, 57, 61, 62; **Pugl**: 64, 67, 69, 70, 72, 78, 81, 82, 83, 85, 86, 87, 90, 95; **Bas**: 102, 105, 107, 110, 118, 119, 121.

Parmelia tinctina Maheu & A. Gillet - Fol.b/ Ch/ A.i/ Sil-Sil.b/ 2-3, 4-5, 4, 3-4/ Alt: 1-2/ c/ Note: mostly Mediterranean in Italy; rare in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Bas**: 102.

Parmeliella triptophylla (Ach.) Müll. Arg. - Cr/ Cy.h/ A.i/ Epiph/ 2-3, 3, 1-2, 1/ Alt: 2-5/ r/ suboc/ Note: mostly on old trees and upon epiphytic bryophytes in humid forests; very much declining, esp. in the north, and extremely rare in the survey area. - Loc.: **Marc**: 29.

Parmeliopsis ambigua (Wulfen) Nyl. - Fol.n/ Ch/ A.s/ Epiph/ 1-2, 3-5, 3-4, 1/ Alt: 3-4/ ec/ Note: optimum in the subalpine belt of the Alps; much rarer, but widespread, in the Apennines, where it is mostly found in *Castanea* woods. - Loc.: **Marc**: 20, 29; **Abr**: 32, 37.

Parmeliopsis hyperopta (Ach.) Arnold - Fol.n/ Ch/ A.s/ Epiph/ 1-2, 3, 3, 1/ Alt: 3-4/ c/ Note: ecology and distribution resemble those of the previous species, but *P. hyperopta* is decidely less photophytic and somehow more hygrophytic; the distinction at species level of these two taxa requires confirmation, perhap by a DNA study. - Loc.: **Marc**: 20.

Parmotrema chinense (Osbeck) Hale & Ahti - Fol.b/ Ch/ A.s/ Epiph/ 2, 3-4, 2-3, 1-2/ Alt: 1-2/ rr/ suboc/ Note: the most common species of the genus in Italy, but extremely rare along the eastern side of the Peninsula because of its more continental climate conditions. - Loc.: **Mol**: 57.

Parmotrema reticulatum (Taylor) M. Choisy - Fol.b/ Ch/ A.s/ Epiph/ 2-3, 3-4, 2, 1-2/ Alt: 1-2/ rr/ suboc/ Note: very much declining, and presently mostly Tyrrhenian and coastal; extremely rare in Adriatic peninsular Italy. - Loc.: **Pugl**: 69, 95.

Peccania coralloides (A. Massal.) A. Massal. - Frut/ Cy.c/ S/ Calc/ 4-5, 4-5, 4-5, 1-2/ Alt: 1-2/ rc/ Note: on steeply inclined surfaces of calciferous rocks with periodical percolation of water; certainly widespread throughout the country, but very much overlooked. - Loc.: **Abr**: 31, 42.

Peccania salevensis (Müll. Arg.) Forssell - Frut/ Cy.c/ S/ Calc/ 4-5, 4-5, 3-5, 1-2/ Alt: 1-3/ rc/ Note: differing from the previous species in the larger spores and the absence of pruina; a critical taxon, which needs revision. - Loc.: **Marc**: 22.

Peccania tiruncula (Nyl.) Henssen - Frut/ Cy.c/ S/ Calc/ 4-5, 4-5, 4, 1-2/ Alt: 2-3/ vr/ Note: new to Italy. - Loc.: **Abr**: 42.

Peltigera aphthosa (L.) Willd. - Fol.b/ Ch/ S/ Terr/ 1-2, 2-3, 2-3, 1/ Alt: 4/ vc/ Note: mostly on terricolous mosses; an acidophytic ecological vicariant of *P. leucophlebia*; common throughout the Alps, becoming much rarer southwards along the Apennines; extremely rare in the survey area. - Loc.: **Abr**: 39.

Peltigera canina (L.) Willd. - Fol.b/ Cy.h/ S/ Terr/ 3-4, 3, 2-3, 1/ Alt: 2-4/ rc/ Note: mostly on terricolous mosses in open forests, sometimes on bark at the base of old trees; certainly rarer than *P. praetextata*, with which it was often confused in the past; perhaps undercollected in the survey area. - Loc.: **Abr**: 34.

Peltigera collina (Ach.) Schrad. - Fol.b/ Cy.h/ A.s/ Epiph/ 2-3, 3, 1-2, 1-2/ Alt: 2-3/ rr/ Note: a species of humid forests, mostly found in *Lobarion*-vegetation, sometimes occurring also on epilithic mosses; very rare in Adriatic peninsular Italy. - Loc.: **Abr**: 32, 51.

Peltigera didactyla (With.) J. R. Laundon - Fol.b/ Cy.h/ A.s/ Terr/ 2-3, 4, 3-4, 3/ Alt: 2-5/ rr/ Note: an ephemeral pioneer species of disturbed mineral soil, most common in the Alps, and becoming much rarer southwards. - Loc.: **Abr**: 36.

Peltigera horizontalis (Huds.) Baumg. - Fol.b/ Cy.h/ S/ Terr/ 2-3, 2-3, 1-3, 1/ Alt: 2-4/ rc/ Note: most often on mosses (also epiphytic and epilithic); rare in Adriatic peninsular Italy, with optimum in the beech belt. - Loc.: **Marc**: 29, 30; **Abr**: 32; **Pugl**: 73.

Peltigera kristinssonii Vitik. - Fol.b/ Cy.h/ S/ Terr/ 3-4, 3-4, 3, 1/ Alt: 3-4/ r/ Note: a recently-described species, known also from the Italian Alps. - Loc.: **Marc**: 21.

Peltigera leucophlebia (Nyl.) Gyeln. - Fol.b/ Ch/ S/ Terr/ 3-4, 2-3, 2-3, 1/ Alt: 3-4/ vc/ Note: this is the basiphytic vicariant of *P. aphthosa*; very rare in the Adriatic part of peninsular Italy, but to be looked for throughout the Apennines. - Loc.: **Abr**: 44.

Peltigera neckeri Müll. Arg. - Fol.b/ Cy.h/ S/ Terr/ 2-3, 2-3, 2, 1/ Alt: 2-3/ rr/ suboc/ Note: in humid areas directly on soil, otherwise on terricolous, epiphytic and silicicolous mosses; most frequent in humid-warm beech forests; very rare in Adriatic peninsular Italy. - Loc.: **Mol**: 56.

Peltigera polydactyla (Neck.) Hoffm. - Fol.b/ Cy.h/ S/ Terr/ 2-3, 2-3, 2-3, 1/ Alt: 3-4/ rc/ Note: common in the Alps, much rarer in Adriatic peninsular Italy. - Loc.: **Mol**: 56.

Peltigera praetextata (Sommerf.) Zopf - Fol.b/ Cy.h/ A.i/ Terr-Epiph/ 2-4, 3-4, 3, 1-2/ Alt: 1-4/ vc/ Note: when epiphytic, mostly on mosses at the base of old trunks; with *P. rufescens*, one of the most common species of the genus in Italy. - Loc.: **Marc**: 18, 21, 24, 26, 29, 30; **Abr**: 31, 32, 51; **Mol**: 53; **Pugl**: 71, 73; **Bas**: 116, 118.

Peltigera rufescens (Weiss) Humb. - Fol.b/ Cy./ S/ Terr/ 2-5, 4-5, 3-4, 1-3/ Alt: 1-5/ vc/ Note: most common in arid grasslands, esp. in the Alpine belt, but also occurring in the Mediterranean belt, where it is rare, due to intensive grazing and trampling; one of the most common species of the genus throughout Italy, absent only from the plains of the north. - Loc.: **Marc**: 3; **Abr**: 34, 35, 36, 38, 39, 40, 41, 46; **Mol**: 53.

Peltula euploca (Ach.) Poelt - Fol.u/ Cy.h/ A.s/ Sil.b-Calc/ 3, 4-5, 4-5, 1-3/ Alt: 1-2/ rc/ Note: optimum on steeply inclined surfaces of base-rich siliceous rocks with water seepage after rain; very rare in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Pugl**: 93.

Pertusaria albescens (Huds.) M. Choisy & Werner - Cr/ Ch/ A.s/ Epiph/ 2-3, 3-4, 2-3, 1-3/ Alt: 1-3/ c/ Note: rare in agricultural areas, and in the Mediterranean belt, most common in deciduous open woodlands, with optimum on old oaks in the submediterranean belt. - Loc.: **Marc**: 3, 19, 29 ,C; **Umbr**: E; **Abr**: 32, 52, H; **Mol**: 55, 56; **Pugl**: 71, 73, 75, 81, 83; **Bas**: 105, 110, 119.

Pertusaria amara (Ach.) Nyl. - Cr/ Ch/ A.s/ Epiph/ 1-3, 2-4, 2-3, 1-4/ Alt: 1-4/ ec/ Note: this is certainly the most common epiphytic species of the genus throughout Italy, with a wide ecological range; it often behaves as an aggressive competitor, being able to overgrow other crustose lichens and sometimes even bryophytes. - Loc.: **Marc**: 3, 11, 19, 25, 26, 28, 29, G; **Abr**: 32, 33, 50, 51, H; **Mol**: 53, 56, 61; **Pugl**: 66, 70, 71, 72, 73, 75, 85, 94, 95, 105; **Bas**: 109, 110, 113, 116, 118, 119.

Pertusaria amara v. **flotowiana** (Flörke) Erichsen - Cr/ Ch/ A.s/ Sil.b/ 2-3, 3-4, 2-3, 1-2/ Alt:2-3/ rr/ Note: a very critical taxon, which badly needs revision. - Loc.: **Marc**: 30; **Abr**: 31.

Pertusaria coccodes (Ach.) Nyl. - Cr/ Ch/ A.i/ Epiph/ 2-3, 3-4, 2, 1-3/ Alt: 1-3/ rr/ suboc/ Note: locally common, esp. along the Apennines, mostly on old oaks or beech trees, in rather open situations. - Loc.: **Marc**: 19, 26, 29; **Abr**: 32, 33; **Pugl**: 95; **Bas**: 105, 106, 109, 110.

Pertusaria digrediens Nyl. - Cr/ Ch/ A.s/ Sil.b/ 2-3, 4, 2-3, 1-2/ Alt: 3-4/ r/ Note: closely related to *P. leucosora*; very rare in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Bas**: 111.

Pertusaria flavida (DC.) J. R. Laundon - Cr/ Ch/ A.s/ Epiph/ 2, 3-4, 2, 1-2/ Alt: 1-3/ rc/ suboc/ Note: optimum in open oak forests, mostly on old trees; rarer in the north, more common along the Apennines. - Loc.: **Marc**: 3, 29, 30; **Abr**: 32, 51; **Mol**: 53; **Pugl**: 72; **Bas**: 105, 109, 110, 118.

Pertusaria hemisphaerica (Flörke) Erichsen -

Cr/ Ch/ A.s/ Epiph/ 2, 3-4, 2-3, 1-2/ Alt: 2-3/ rr/ Note: optimum on old oaks in rather open forests. - Loc.: **Marc**: 30; **Mol**: 55; **Pugl**: 72, 75, 83, 90; **Bas**: 109, 110.

Pertusaria heterochroa (Müll. Arg.) Erichsen - Cr/ Ch/ S/ Epiph/ 2-3, 4-5, 2-3, 1-3/ Alt: 1-2/ rc/ Note: optimum in the Mediterranean belt, in more or less coastal situations, on smooth bark (e.g. twigs of shrubs in garrigue vegetation); mostly Tyrrhenian in Italy, rare in the Adriatic part of peninsular Italy (not known north of Puglia). - Loc.: **Pugl**: 64, 69, 99, 100.

Pertusaria hymenea (Ach.) Schaer. - Cr/ Ch/ S/ Epiph/ 2-3, 4-5, 2-3, 1-2/ Alt: 1-2/ rc/ suboc/ Note: presently very rare in the north, still common in the Apennines; mostly on old oaks in rather open stands, much rarer in the beech belt, and there only on isolated trees in sunny situations; more common in Tyrrhenian than in Adriatic peninsular Italy (no recent records north of Puglia). - Loc.: **Pugl**: 66, 72, 73, 81, 82, 86, 91, 95; **Bas**: 110.

Pertusaria leioplaca DC. - Cr/ Ch/ S/ Epiph/ 2, 3-4, 2-3, 1-2/ Alt: 1-3/ vc/ Note: a pioneer species of smooth bark; in the Mediterranean belt it is common only in particularly humid situations. - Loc.: **Marc**: 12, 24, 29; **Abr**: 32; **Mol**: 57; **Pugl**: 67, 70, 71, 72, 76, 82, 91; **Bas**: 105, 106, 109, 122.

Pertusaria pertusa (Weigel) Tuck. - Cr/ Ch/ S/ Epiph/ 2, 3, 2-3, 1-2/ Alt: 1-3/ c/ Note: optimum in deciduous forests, and in natural habitats; almost extinct in the northern plains, and rare in the eu-Mediterranean belt. - Loc.: **Marc**: 3, 29, 30; **Abr**: 32; **Mol**: 53; **Pugl**: 71, 82, 95; **Bas**: 105, 109, 110, 116, 118.

Pertusaria sommerfeltii (Sommerf.) Fr. - Cr/ Ch/ S/ Epiph/ 2, 3-4, 3, 1/ Alt: 4-5/ rr/ Note: mostly on smooth bark; not uncommon in the Alps, but extremely rare in the Apennines (not known south of Marche). - Loc.: **Marc**: 21.

Pertusaria velata (Turner) Nyl. - Cr/ Ch/ S/ Epiph/ 2-3, 3, 1-2, 1-2/ Alt: 1/ r/ suboc/ Note: a subtropical species of humid areas; certainly rare, and mostly coastal in Italy; it should be looked for in other parts of the Tyrrhenian region; extremely rare in the Adriatic part of peninsular Italy, and probably absent north of Puglia. - Loc.: **Pugl**: 71, 73.

Petractis clausa (Hoffm.) Kremp. - Cr.end/ Cy.h/ S/ Calc/ 5, 1-3, 2-3, 1-2/ Alt: 1-3/ rc/ suboc/ Note: on shaded calcareous rocks, mostly in the submediterranean belt; very rare in the southern part of the survey area. Loc.: **Marc**: 8, 21, 24, B; **Abr**: 47.

Petractis hypoleuca (Ach.) Vězda - Cr/ Tr/ S/ Calc/ 5, 1-3, 1-2, 1/ Alt: 2-4/ rr/ Note: optimum in the beech belt; very rare in the Adriatic part of peninsular Italy. - Loc.: **Marc**: 24.

Petractis luektemuelleri (Zahlbr.) Vězda - Cr/ Tr/ S/ Calc/ 5, 1-3, 1-2, 1/ Alt: 1/ r/ coast/ Note: mostly Tyrrhenian in Italy, but also present along the calcareous coast of Puglia. - Loc.: **Pugl**: 97.

Petractis thelotremella (Bagl.) Vězda - Cr/ Tr/ S/ Calc/ 5, 1-3, 1-2, 1/ Alt: 1/ r/ coast/ Note: mostly Tyrrhenian in Italy, but also present, and not rare, along the calcareous coast of Puglia, and on the Ionian coast of Basilicata. - Loc.: **Pugl**: 64, 97, 97, 98, 101; **Bas**: 103.

Phaeophyscia cernohorskyi (Nádv.) Essl. - Fol.n/ Ch/ A.s/ Epiph-Sil.b/ 2-3, 4-5, 4, 3-4/ Alt: 2-3/ rr/ Note: a mainly southern species in Europe, with optimum in submediterranean areas. - Loc.: **Pugl**: 93

Phaeophyscia chloantha (Ach.) Moberg - Fol.n/ Ch/ A.s/ Epiph-Calc/ 3-5, 3-4, 3, 3-4/ Alt: 2/ rr/ Note: a typically submediterranean species occurring on a wide range of substrata, but never common in heavily anthropized habitats; rarer along the eastern side of the peninsula. - Loc.: **Pugl**: 76, 85; **Bas**: 105, 107.

Phaeophyscia ciliata (Hoffm.) Moberg - Fol.n/ Ch/ S/ Epiph-Calc/ 2-3, 4-5, 3, 3/ Alt: 2-3/ rc/ Note: much less frequent than the closely related *Ph. orbicularis*, being absent from heavily anthropized areas and from eu-Mediterranean vegetation, and with narrower ecological requirements; most frequent on *Fraxinus* and *Juglans*. - Loc.: **Marc**: 18, 19, 22, G; **Abr**: 33, 35, 47, 49, 51, 52; **Mol**: 61; **Pugl**: 72; **Bas**: 107, 119.

Phaeophyscia endococcina (Körb.) Moberg - Fol.n/ Ch/ S/ Sil/ 2-3, 3-4, 1-3, 2-3/ Alt: 3-4/ rr/ suboc/ Note: specimens without the red pigment in the medulla are relatively frequent in the Alps; very rare in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Marc**: 30.

Phaeophyscia endophoenicea (Harm.) Moberg - Fol.n/ Ch/ A.s/ Epiph/ 2-3, 3, 3, 2-3/ Alt: 2-3/ r/ Note: most often on epiphytic bryophytes; specimens without the red pigment in the medulla are not rare, and they can be easily confused with other species. - Loc.: **Marc**: 3, 12, 24; **Abr**: 49, 49, 51; **Mol**: 56; **Pugl**: 71, 85.

Phaeophyscia hirsuta (Mereschk.) Essl. - Fol.n/ Ch/ A.s/ Epiph/ 3-4, 4-5, 3-4, 3-4/ Alt: 1-2/ rc/ Note: most common in the submediterranean belt, in rather humid areas; very rare along the eastern side of the Peninsula. - Loc.: **Bas**: 121.

Phaeophyscia nigricans (Flörke) Moberg - Fol.n/ Ch/ A.i/ Epiph-Calc-Sil.b/ 3-4, 4-5, 3-4, 4/ Alt: 2-3/ r/ Note: optimum in submediterranean areas, but reaching much higher altitudes in the Alps; extremely rare in Adriatic peninsular Italy, mainly for the scarcity of suitable substrata. - Loc.: **Bas**: 111.

Phaeophyscia orbicularis (Neck.) Moberg - Fol.n/ Ch/ A.s/ Epiph-Sil.b-Calc/ 2-5, 3-5, 3-4, 4-5/ Alt: 1-3/ ec/ Note: a very polymorphic and widespread species with optimum in submediterranean areas; some morphs, in our opinion, deserve further study. - Loc.: **Marc**: 1, 2, 11, 16, 19, 22, C; **Umbr**: E; **Abr**: 31, 34, 35, 37, 47, 52, H; **Mol**: 55, 58, 61, 62; **Pugl**: 64, 66, 68, 70, 75, 82, 83, 84, 85, 86, 87, 88; **Bas**: 108, 109, 110, 111, 114, 122.

Phaeophyscia poeltii (Frey) Nimis - Fol.n/ Ch/ S/ Epiph/ 2-3, 4-5, 3, 2-3/ Alt: 1-2/ r/ Note: for further information see Moberg (1994); rare in Adriatic peninsular Italy. - Loc.: **Mol**: 62.

Phaeophyscia pusilloides (Zahlbr.) Essl. - Fol.n/ Ch/ A.s/ Epiph/ 2-3, 4-5, 3, 3/ Alt: 2/ rr/ Note: absent from urban areas, somehow less frequent in semi-natural stands, often confused, in the past, with other species; in the survey area it is not common, and is absent from the lowlands. - Loc.: **Marc**: C, G; **Abr**: 33, 35, 50, 52, H; **Mol**: 56; **Pugl**: 73; **Bas**: 107, 111, 116.

Phaeophyscia sciastra (Ach.) Moberg - Fol.n/ Ch/ A.s/ Calc-Sil/ 3-5, 3-5, 2-5, 3-4/ Alt: 2-5/ c/ Note: most frequent above the Mediterranean belt, on the top of exposed calcareous boulders. - Loc.: **Marc**: 2, 3, 21, 27, 28; **Umbr**: E; **Abr**: 35, 40, 47; **Mol**: 54, 59; **Pugl**: 64; **Bas**: 117.

Phaeorrhiza nimbosa (Fr.) H. Mayrhofer & Poelt - Cr/ Ch/ S/ Terr/ 3-4, 3-5, 3-4, 1-2/ Alt: 5/ c/ Note: an Arctic-Alpine species of wind-exposed situations, common throughout the Alps, much rarer in the Apennines; our locality is probably the southernmost in Italy. - Loc.: **Abr**: 38, 39, 46.

Phlyctis agelaea (Ach.) Flot. - Cr/ Ch/ S/ Epiph/ 2-3, 3, 2-3, 1-2/ Alt: 1-2/ rc/ Note: frequent in relatively humid parts of central and southern Italy, and in a few warm-humid areas of the north; not uncommon along the eastern side of the peninsula, esp. near the coast. - Loc.: **Marc**: 24; **Abr**: 32; **Mol**: 55, 56, 60; **Pugl**: 69, 70, 71, 75, 76, 82, 95; **Bas**: 106, 109.

Phlyctis argena (Spreng.) Flot. - Cr/ Ch/ A.s/ Epiph/ 2, 2-3, 2-3, 1-2/ Alt: 1-3/ vc/ Note: an aggressive pioneer species of smooth bark, with a clear optimum in submediterranean woodlands. - Loc.: **Marc**: 3, 9, 11, 13, 18, 24, 25, 26, 29, 30, G; **Umbr**: E; **Abr**: 33, 49, 50, 51; **Mol**: 53, 55, 56, 60; **Pugl**: 70, 71, 72, 82, 95; **Bas**: 105, 106, 109, 110, 116, 118, 119.

Physcia adscendens (Fr.) H. Olivier - Fol.n/ Ch/ A.s/ Epiph-Calc-Sil-Sil.b/ 2-5, 4-5, 3-4, 3-5/ Alt: 1-5/ ec/ Note: one of the most common species of the genus; see also note on *Ph. vitii*. - Loc.: **Marc**: 1, 2, 9, 11, 16, A, C; **Umbr**: E; **Abr**: 31, 33, 34, 35, 37, 42, 43; **Mol**: 57, 62; **Pugl**: 64, 66, 67, 68, 70, 75, 81, 83, 86, 90, 96, 99; **Bas**: 102, 106, 107, 109, 109, 110, 115, 117, 117, 121.

Physcia aipolia (Humb.) Fürnrh. - Fol.n/ Ch/ S/ Epiph/ 2-3, 4-5, 3, 3-4/ Alt: 2-3/ vc/ Note: most common in the submediterranean and montane belts, very rare at low altitudes in the south. - Loc.: **Marc**: 2, 3, 11, 18, 19, 21, 22, 23, 25, C, D, G; **Umbr**: E; **Abr**: 33, 34, 35, 42, 43, 47, 50, 51, 52, H; **Mol**: 56, 57, 61, 62; **Pugl**: 64, 66, 69, 70, 72, 75, 81, 82, 83, 85, 86, 90, 94; **Bas**: 106, 107, 110, 116, 118.

Physcia biziana (A. Massal.) Zahlbr. v. **biziana** - Fol.n/ Ch/ S/ Epiph/ 3, 4-5, 3-4, 3-4/ Alt: 1-2/ c/ Note: rather common on isolated trees at low altitudes throughout the country, but very rare above the submediterranean belt. - Loc.: **Marc**: 1, 2, 16; **Abr**: 42, 47, H; **Mol**: 57, 59, 62, 63; **Pugl**: 64, 65, 67, 70, 78, 81, 83, 84, 85, 86, 87, 88; **Bas**: 103, 108.

Physcia caesia (Hoffm.) Fürnr. v. **caesia** - Fol.n/ Ch/ A.s/ Calc-Sil.b/ 3-5, 4-5, 4, 4-5/ Alt: 2-5/ vc/ Note: common only at high altitudes, from the Alps to Sicily. - Loc.: **Marc**: 18, 27, 28; **Abr**: 39, 40, 41; **Mol**: 53; **Bas**: 102.

Physcia dimidiata (Arnold) Nyl. - Fol.n/ Ch/ A.s/ Sil.b-Epiph/ 3-4, 4-5, 4, 3-4/ Alt: 1-2/ r/ Note: on steeply inclined faces of old walls, and on basal parts of old trees; very rare in the survey area.- Loc.: **Marc**: 19, C.

Physcia dubia (Hoffm.) Lettau v. **dubia** - Fol.n/ Ch/ A.s/ Epiph-Sil.b-Calc/ 3-5, 4-5, 4, 4-5/ Alt: 1-5/ rc/ Note: optimum in submediterranean areas, also found in small settlements (e.g. on walls). - Loc.: **Abr**: 37, 47.

Physcia semipinnata (J. F. Gmel.) Moberg - Fol.n/ Ch/ S/ Epiph/ 2-4, 4-5, 3-4, 2-3/ Alt: 1-3/ ec/ Note: mostly southern and Mediterranean in Italy, but reaching the beech belt in open habitats of the southern mountains; very common, esp. in the southern part of the survey area and esp. on the twigs of shrubs. - Loc.: **Marc**: 3, 16, 19; **Umbr**: E; **Abr**: 35, 45, 47, 50, 52, H; **Mol**: 53, 56, 57, 59, 60; **Pugl**: 69, 70, 75, 82, 83, 95; **Pugl**: 106, 109, 110, 113, 115, 119.

Physcia stellaris (L.) Nyl. - Fol.n/ Ch/ S/ Epiph/ 2-3, 4-5, 3, 2-4/ Alt: 3-4/ c/ Note: *Ph. biziana*, *Ph. aipolia* and *Ph. stellaris*, although often overlapping in their altitudinal distributions, are altitudinal vicariants in Italy, from lower to higher altitudes, respectively. *Ph. stellaris* has its optimum in and above the beech-belt, from Sicily to the Alps, where it is more common. - Loc.: **Marc**: 2, 3, 13, 16, 21, 26; **Abr**: 35, 37, 41, 45; **Mol**: 55, 60, 62; **Bas**: 105, 106, 110, 117, 119.

Physcia tenella (Scop.) DC. - Fol.n/ Ch/ A.s/ Epiph-Calc/ 2-4, 4-5, 3-4, 3-4/ Alt: 1-3/ rr/ Note: the separation of this species from *Ph. adscendens* is not always clear to us: very characteristic specimens, clearly not referrable to *Ph. adscendens s. str.*, are most common in the submediterranean belt, in the mountains of the Peninsula and of the islands, mostly in seminatural situations. *Ph. tenella* certainly occurs throughout Italy, but it is not so common as the many records could suggest (several of them - esp. those from polluted areas of the north - are probably due to confusion with young or poorly developed specimens of *Ph. adscendens*). - Loc.: **Marc**: 19, 21; **Abr**: 35, 39, 40, 41, 50; **Mol**: 53, 61; **Pugl**: 70, 82, 94; **Bas**: 119.

Physconia detersa (Nyl.) Poelt - Fol.n/ Ch/ A.s/ Epiph/ 2-3, 4, 2, 2-3/ Alt: 4/ r/ Note: some Italian records could refer to *Ph. perisidiosa*, which is much more common in Italy; extremely rare in the Adriatic part of peninsular Italy. - Loc.: **Abr**: 33.

Physconia distorta (With.) J. R. Laundon - Fol.n/ Ch/ S/ Epiph/ 3-4, 4-5, 3-4, 3-4/ Alt: 1-3/ vc/ Note: optimum on isolated deciduous trees in submediterranean Italy; rare in truly Mediterranean vegetation, and in polluted areas. In the south there are morphs which are well worthy of further study. - Loc.: **Marc**: 2, 11, 16, 19, 22, 23, 25, C, D; **Umbr**: E; **Abr**: 35, 37, 43, 47; **Mol**: 56, 61, 62; **Pugl**: 64, 66, 78, 81, 85, 87, 90; **Bas**: 110, 111, 119.

Physconia enteroxantha (Nyl.) Poelt - Fol.n/ Ch/ A.s/ Epiph-Sil.b/ 2-4, 4-5, 3, 4-5/ Alt: 1-2/ rr/ suboc/ Note: most frequent in the south, and along the Tyrrhenian coast at low altitudes (below 800 m), much rarer elsewhere. - Loc.: **Abr**: 49, 50, 51, 62; **Pugl**: 64, 83; **Bas**: 111, 121.

Physconia grisea (Lam.) Poelt ssp. **grisea** - Fol.n/ Ch/ A.s/ Epiph-Sil.b/ 3-4, 3-5, 3, 4-5/ Alt: 1-2/ c/ Note: most common from the humid Mediterranean to the submediterranean belts, and often found in urban environments, on isolated broadleaved trees. - Loc.: **Marc**: 2, 10, 11; **Abr**: 43, H; **Mol**: 59; **Pugl**: 76, 85, 87, 88; **Bas**: 102, 107, 114.

Physconia muscigena (Ach.) Poelt v. **muscigena** - Fol.n/ Ch/ S/ Terr/ 3-5, 4-5, 3-4, 2-4/ Alt: 4-5/ ec/ Note: mostly on mosses and plant debris in open situations; from the subalpine and alpine belts of the Alps, throughout the Apennines, to the mountains of Sicily. In the survey area it descends well below treeline in arid grasslands and rock outcrops. - Loc.: **Marc**: 21, 28, A, B; **Umbr**: E; **Abr**: 36, 38, 39, 40, 41, 46; **Bas**: 117.

Physconia perisidiosa (Erichsen) Moberg - Fol.n/ Ch/ A.s/ Epiph/ 2-3, 3-4, 2-3, 2-3/ Alt: 1-3/ rr/ suboc/ Note: common in submediterranean areas with a warm-suboceanic climate; very sensitive to air pollution, it has disappeared throughout the Po-plain. - Loc.: **Marc**: 2, 11, 19, 25, C, G; **Abr**: 32, 35, 43, 50, 52; **Mol**: 55, 61, 63; **Pugl**: 65, 75, 82; **Bas**: 107, 110, 119.

Physconia servitii (Nádv.) Poelt - Fol.n/ Ch/ S/ Epiph/ 2-3, 3-4, 2, 2-3/ Alt: 1-2/ rr/ suboc/ Note: abundant only in areas with a warm-humid climate (e.g. in the western part of Calabria); most common in Tyrrhenian Italy, with optimum in submediterranean woodlands; more frequent in the southern than in the northern part of the survey area. - Loc.: **Marc**: 19, 30; **Abr**: 32; **Pugl**: 81, 82, 83, 86; **Bas**: 107, 119, 121.

Physconia subpulverulenta (Szatala) Poelt v. **subpulverulenta** - Fol.n/ Ch/ S/ Epiph/ 3, 4-5, 3, 3-4/ Alt: 1-2/ r/ suboc/ Note: the taxonomic value of the presence of yellow pigments in the medulla within *Physconia* still awaits a satisfactory evaluation; this taxon, in any case, is rare in Italy, and restricted to relatively warm-humid areas, probably with a mainly Tyrrhenian range; extremely rare in the survey area, and not known north of Puglia. - Loc.: **Bas**: 111, 119.

Physconia venusta (Ach.) Poelt - Fol.n/ Ch/ S/ Epiph/ 2-3, 3-4, 2, 1-2/ Alt: 2-3/ vc/ Note: one of the most abundant and typical lichens of central and southern Italian humid beech forests, much rarer in the Alps and in the submediterranean belt, where it occurs only in particularly humid areas. In the survey area its frequency clearly increases from north to south. - Loc.: **Marc**: 3, 3, 29, G; **Abr**: 33, 50, 51, 52; **Mol**: 53, 56; **Pugl**: 69, 70, 72, 82; **Bas**: 105, 106, 107, 110, 116, 118.

Placocarpus schaereri (Fr.) Breuss - Cr/ Ch/ S/

Calc/ 4-5, 4-5, 4, 3-4/ Alt: 1-3/ c/ Note: on isolated calcareous boulders of the Mediterranean and (esp.) submediterranean belts; in the mountains of the peninsula, however, it can well reach up to 2,000 m, as in the Gran Sasso Massif. - Loc.: **Marc**: 2, 21, 28; **Umbr**: E; **Abr**: 39, 41, 47, 50; **Mol**: 59, 60; **Pugl**: 78, 80; **Bas**: 117.

Placolecis opaca (Fr.) Hafellner - Cr/ Ch/ S/ Calc/ 5, 3-4, 3, 2-3/ Alt: 1-2/ rr/ Note: we still do not understand well the ecology of this species: it mostly occurs in the Mediterranean and (more rarely) submediterranean belts, both in rather shaded and very sunny places. Its total distribution extends widely into Central Asia. - Loc.: **Mol**: 59; **Pugl**: 80.

Placopyrenium bucekii (Nádv. & Servít) Breuss - Cr/ Ch/ S/ Sil.b-Calc/ 3-4, 3-5, 4-5, 3-4/ Alt: 1-2/ rr/ Note: esp. frequent in the Mediterranean belt, on base-rich rocks, and sometimes even on soil. It often occurs together with *Peltula euploca*, but it shows a different ecology, being most common on horizontal, dust-impregnated surfaces. It should be looked for in suitable habitats of the Alps, esp. in dry-warm situations; extremely rare in the survey area, and not known north of Puglia. - Loc.: **Pugl**: 93.

Placynthiella icmalea (Ach.) Coppins & P. James - Cr/ Ch/ S/ Terr-Lign/ 1-2, 3-4, 2-3, 1-2/ Alt: 2-4/ rr/ Note: most frequent throughout the boreal belt of the Alps, but extending south to Calabria through the Apennines, where it is mostly found in open *Castanea*-stands. - Loc.: **Marc**: 20, 29; **Abr**: 32, 37.

Placynthiella uliginosa (Schrad.) Coppins & P. James - Cr/ Ch/ S/ Terr-Lign/ 1-2, 3-4, 3, 1/ Alt: 3-5/ rr/ Note: most frequent throughout the Alps above treeline, rarer in the Apennines, where it is most common in old *Castanea* stands. - Loc.: **Marc**: 29.

Placynthium filiforme (Garov.) M. Choisy - Cr/ Cy.h/ S/ Calc/ 4-5, 3-4, 4, 1-2/ Alt: 2-3/ rr/ Note: probably overlooked, but certainly not very common in Italy, on steeply inclined surfaces with some periodical percolation of water. - Loc.: **Marc**: A; **Mol**: 59.

Placynthium garovaglii (A. Massal.) Malme - Cr/ Cy.h/ S/ Calc/ 5, 4, 4-5, 2-3/ Alt: 1-3/ rr/ Note: also found on steeply inclined rocks with some water seepage in the Mediterranean belt; it certainly occurs also in southern Italy, but was largely overlooked by earlier authors. - Loc.: **Marc**: 22.

Placynthium hungaricum Gyeln. - Cr/ Cy.h/ S/ Calc/ 5, 4-5, 4-5, 2-3/ Alt: 1-3/ rr/ Note: certainly much overlooked, and probably much more widespread in Italy, at least in the submediterranean belt, on steeply inclined, sun-exposed surfaces. - Loc.: **Abr**: 42; **Mol**: 54.

Placynthium lismorense (Cromb.) Vain. - Cr/ Cy.h/ S/ Calc/ 5, 4-5, 3-4, 1-2/ Alt: 1-2/ vr/ Note: certainly much overlooked, and probably much more widespread in Italy, at least in the submediterranean belt, often intermingled with small Lichinaceae. - Loc.: **Abr**: 42; **Mol**: 63.

Placynthium nigrum (Huds.) Gray - Cr/ Cy.h/ S/ Calc-Sil.b/ 3-5, 3, 2-3, 2-3/ Alt: 1-4/ c/ Note: from the Mediterranean belt (only in shaded-humid situations) to the mountains; also common in small urban settlements (e.g. on north-facing walls); rather heterogeneous and perhaps in need of revision. - Loc.: **Marc**: 2, 15, 18, 28, 29 , A; **Umbr**: E; **Abr**: 31, 34, 36, 49, 52; **Mol**: 59, 63; **Pugl**: 64, 65, 75, 76, 78, 80, 93, 99.

Placynthium subradiatum (Nyl.) Arnold - Cr/ Cy.h/ S/ Calc/ 5, 4-5, 4-5, 2-4/ Alt: 1-3/ rc/ Note: on vertical, south-exposed calcareous surfaces with periodical seepage of water; optimum in the submediterranean belt, but also present in the Mediterranean belt (and there mostly in more sheltered situations), and in the low mountains, including the pre-Alps. - Loc.: **Marc**: 2, A; **Mol**: 59.

Platismatia glauca (L.) W. L. Culb. & C. F. Culb. - Fol.b/ Ch/ A.i/ Epiph-Sil/ 1-2, 3-5, 3, 1-2/ Alt: 3-4/ vc/ Note: common throughout the Alps, both on the bark of beech and of coniferous trees; along the Apennines it becomes very rare. - Loc.: **Marc**: 20.

Plectocarpon lichenum (Sommerf.) D. Hawksw.- LF/ S/ Epiph/ r/ paras *Lobaria pulmonaria*/ - Loc.: **Pugl**: 73.

Polyblastia albida Arnold - Cr.end/ Ch/ S/ Calc/ 5, 2-3, 2-3, 1/ Alt: 3-5/ rc/ Note: on hard calciferous rocks, incl. dolomite; also within forests; most frequent in the Alps, much rarer in the Apennines, where it is confined to high altitudes. - Loc.: **Marc**: 24.

Polyblastia ardesiaca (Bagl. & Carestia) Zschacke - Cr/ Ch/ S/ Calc/ 5, 3, 1-2, 1/ Alt: 3-5/ r/ Note: periodically submerged in mountain creeks; most frequent, and probably more widespread, in the Alps, extremely rare in the Apennines. - Loc.: **Marc**: 24.

Polyblastia cupularis A. Massal. - Cr.end/ Ch/ S/ Calc-Sil.b/ 4-5, 2-3, 2-3, 1/ Alt: 3-5/ rc/ Note: here the species is treated in a broad sense;

optimum from the upper montane to the Alpine belts, on hard rocks, incl. dolomite; most frequent throughout the Alps, becoming much rarer southwards. - Loc.: **Abr**: 38.

Polyblastia nidulans (Stenham.) Arnold - Cr.end/ Ch/ S/ Calc/ 5, 2-3, 2, 1/ Alt: 4-5/ r/ Note: related to *P. diminuta*, but with larger and more typically mural spores without a clear halo; probably occurring also in the Italian Alps; very rare in the survey area. - Loc.: **Abr**: 44.

Polyblastia sendtneri Kremp. - Cr/ Ch/ S/ Terr/ 2-4, 4, 2, 1-2/ Alt: 5/ rr/ Note: on organic soil and plant debris above treeline, most common in the Alps, much rarer in the Apennines. - Loc.: **Marc**: 21, 28; **Abr**: 39, 40, 44.

Polyblastia sepulta A. Massal. - Cr.end/ Ch/ S/ Calc/ 5, 2-3, 2, 1/ Alt: 3-5/ rr/ Note: on hard calciferous rocks; optimum above treeline; most common in the Alps, much rarer in the Apennines; the whole complex is in need of revision. - Loc.: **Marc**: 13; **Abr**: 44, 45.

Polyblastia ventosa Arnold - Cr.end/ Ch/ S/ Calc/ 5, 3-4, 3, 1/ Alt: 5/ rc/ Note: mostly in exposed situations above treeline; common in the Alps, much rarer in the Apennines. - Loc.: **Marc**: 21, B; **Abr**: 36.

Polyblastia verrucosa (Ach.) Lönnr. - Cr/ Ch/ S/ Calc/ 5, 2-3, 2, 1/ Alt: 5/ rr/ Note: probably widespread and not very rare throughout the calcareous Alps, much rarer and localized in the Apennines. - Loc.: **Abr**: 44.

Polycoccum epicrassum (Olivier) R. Sant. - LF/ S/ Terr/ paras *Squamarina* spp./ rr/ - Loc.: **Bas**: 115. Det. D. Triebel

Polysporina simplex (Davies) Vězda - Cr.end/ Ch/ S/ Sil-Sil.b/ 2-3, 4-5, 3-4, 2-3/ Alt: 1-4/ rc/ Note: a pioneer species of siliceous rocks, often growing in small fissures; very rare in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Bas**: 109.

Polysporina urceolata (Anzi) Brodo - Cr.end/ Ch/ S/ Calc/ 4-5, 4, 3-4, 1/ Alt: 5/ vr/ Note: probably widespread, but overlooked, throughout the Alps; certainly rarer in the Apennines. - Loc.: **Abr**: 46.

Porina aenea (Wallr.) Zahlbr. - Cr/ Tr/ S/ Epiph/ 2-3, 1-2, 1-3, 1/ Alt: 1-3/ rc/ Note: locally very common, esp. on smooth bark, also in humid parts of the Mediterranean belt. - Loc.: **Marc**: 9, 12, 18, 29; **Abr**: 32, 33, 45, 49; **Mol**: 59; **Pugl**: 67, 70, 71, 91, 96, 99; **Bas**: 105, 106, 109, 110, 122.

Porina borreri (Trevis.) D. Hawksw. & P. James - Cr/ Tr/ S/ Epiph/ 2, 1-2, 1-3, 1/ Alt: 2/ r/ suboc/ Note: mostly on the rough, acid bark of deciduous trees in rather humid forests, probably more widespread, and to be looked for also in the north of Italy. - Loc.: **Pugl**: 71; **Bas**: 122.

Porina byssophila (Körb.) Zahlbr. - Cr/ Tr/ S/ Calc/ 4-5, 1-3, 1-3, 1/ Alt: 1-2/ r/ Note: somehow rarer than the closely related *P. linearis*, and perhaps a synonym of the latter (see Wirth 1995: 783). - Loc.: **Pugl**: 64.

Porina linearis (Leight.) Zahlbr. - Cr.end/ Tr/ S/ Calc-Sil.b/ 4-5, 1-3, 1-3, 1/ Alt: 1-3/ c/ Note: optimum in submediterranean areas, and in rather shaded situations, often found with *Acrocordia conoidea*. - Loc.: **Marc**: 9, 24; **Pugl**: 64, 65, 91, 95, 100, 101; **Bas**: 118.

Porina oleriana (A. Massal.) Lettau - Cr/ Tr/ S/ Calc/ 4-5, 1-3, 1-3, 1/ Alt: 1-2/ rc/ Note: most common in Mediterranean-Tyrrhenian Italy, often found with *Acrocordia conoidea*; rare in the survey area, and not known north of Puglia. - Loc.: **Pugl**: 64, 98; **Bas**: 118.

Porina oleriana v. **provincialis** Clauzade & Cl. Roux - Cr/ Tr/ S/ Calc/ 4-5, 1-3, 1-3, 1/ Alt: 1/ rr/ Note: the status of this taxon is well worthy of further study. - Loc.: **Pugl**: 78.

Porpidia crustulata (Ach.) Hertel & Knoph - Cr/ Ch/ S/ Sil/ 1-2, 3-4, 2-3, 1-2/ Alt: 1-5/ vc/ Note: a pioneer species of siliceous substrata, often found on small pebbles on the ground; rare in the driest parts of Mediterranean Italy, but common elsewhere, up to the Alpine belt of the Alps; very rare in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Abr**: 32.

Protoblastenia calva (Dicks.) Zahlbr. - Cr/ Ch/ S/ Calc/ 5, 3-5, 3-4, 1/ Alt: 3-5/ rc/ Note: esp. common in the mountains, from the Alps, through the Apennines, down to Sicily. - Loc.: **Marc**: 3, 13, 21, 28, B; **Umbr**: E; **Abr**: 41.

Protoblastenia cyclospora (Körb.) Poelt - Cr/ Ch/ S/ Calc/ 5, 4-5, 2-3, 1-3/ Alt: 3/ r/ suboc/ Note: on steeply inclined surfaces in humid-rainy areas; the thalli are often covered by thick colonies of cyanobacteria. - Loc.: **Abr**: 47; **Mol**: 60.

Protoblastenia incrustans (DC.) Steiner v. **incrustans** - Cr/ Ch/ S/ Calc/ 5, 3-5, 3-4, 1-2/ Alt: 1-4/ ec/ Note: optimum above the Mediterranean belt; sometimes reaching the Oromediterranean belt. - Loc.: **Marc**: 9, 13, 21, 24, 28, A; **Umbr**: E; **Abr**: 38, 39, 44, 47, 47; **Mol**: 61; **Pugl**: 72, 75; **Bas**: 117.

Protoblastenia rupestris (Scop.) Steiner - Cr/ Ch/ S/ Calc-Sil.b/ 3-5, 3-5, 3-4, 2-3/ Alt: 1-3/ ec/

Note: the most common species of the genus; often found also on mortar in urban settlements. - Loc.: **Marc**: 2, 24, B, G; **Umbr**: E; **Abr**: 31, 34, 45, 47; **Abr**: 57; **Mol**: 60; **Pugl**: 75, 91, 95.

Protoblastenia siebenhaariana (Körb.) Steiner - Cr/ Ch/ S/ Calc-Sil.b-Terr/ 3-5, 4, 3, 2-3/ Alt: 3-5/ rr/ Note: in our opinion there is no real difference between *P. terricola* and *P. siebenhaariana*, the former representing only a rarer terricolous morph of the latter, most frequent in the southern part of the species range (unfortunately, the name «*terricola*» has priority). This species is not frequent in the Italian Alps, but can be locally common where suitable substrata are present, from the montane belt (rarely) to above treeline, but is very rare in the Apennines. - Loc.: **Abr**: 21.

Protoparmelia badia (Hoffm.) Hafellner - Cr/ Ch/ S/ Sil/ 2-3, 3-4, 3, 1-3/ Alt: 3-5/ rc/ Note: very common throughout the siliceous Alps, less frequent, but not rare, throughout the Apennines and the high Mediterranean mountains, wherever siliceous substrata are present; extremely rare in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Abr**: 38.

Pseudevernia furfuracea (L.) Zopf - Fol.b/ Ch/ A.i/ Epiph-Sil/ 1-2, 3-5, 3-4, 1-2/ Alt: 3-4/ c/ Note: extremely abundant in the boreal belt of the Alps, becoming rarer southwards along the Apennines; exceptionally present below the submediterranean belt in the north, on particularly acid substrata. - Loc.: **Marc**: 16, 20, 37; **Bas**: 105, 113.

Psora decipiens (Hedw.) Hoffm. - Sq/ Ch/ S/ Terr/ 4-5, 4-5, 4-5, 1-3/ Alt: 1-5/ vc/ Note: esp. common in dry grasslands; rare only in areas with intensive grazing or high trampling. - Loc.: **Marc**: 21, 28; **Abr**: 38, 39, 40, 41; **Mol**: 61; **Pugl**: 64; **Bas**: 115.

Psora vallesiaca (Schaer.) Timdal - Sq/ Ch/ S/ Terr-Sil.b/ 3-4, 4, 4, 2-3/ Alt: 1-3/ r/ subc/ Note: not rare where suitable habitats are present (subcontinental conditions and base-rich siliceous substrata), this species is not frequent in the survey area. - Loc.: **Marc**: 28; **Bas**: 117.

Psoroglaena stigonemoides (Orange) Henssen - Cr/ Ch/ S/ Epiph-Foliic/ 3-4, 1-2, 1-2, 1/ Alt: 2/ er/ suboc/ Note: exp. on *Sambucus* in humid-shaded situations (as in our collection), and also foliicolous on *Buxus*. - Loc.: **Pugl**: 71.

Pterygiopsis affinis (A. Massal.) Henssen - Cr/ Cy.h/ S/ Calc-Sil.b/ 4-5, 4-5, 4-5, 2-3/ Alt: 2-3/ rr/ Note: on periodically wetted rocks, esp. on more or less steeply inclined rain-tracks; this taxon is probabbly heterogeneous, including both sorediate and fertile forms, which are morphologically quite distinct. - Loc.: **Abr**: 42; **Pugl**: 65, 93.

Pyrenocollema halodytes (Nyl.) R. C. Harris - Cr.end/ Cy.h/ S/ Calc-Sil/ 3-5, 2-3, 1, 1/ Alt: 1/ rc/ coast/ Common, but often overlooked, throughout the Italian coasts; most often found on barnacles. - Loc.: **Pugl**: 65.

Pyrenocollema saxicola (A. Massal.) Coppins - Cr.end/ Cy.h/ S/ Calc/ 5, 3-4, 3, 1/ Alt: 3-5/ r/ Note: a pioneer species of calcareous substrata; most frequent in upland areas. - Loc.: **Mol**: 63.

Pyrenula chlorospila Arnold - Cr/ Tr/ S/ Epiph/ 3, 3, 2, 1-2/ Alt: 1-2/ r/ suboc/ Note: mostly in deciduous forests along rivers at low elevations; mainly Tyrrhenian in Italy, and extremely rare in the Adriatic part of the peninsula, being not known north of Puglia. - Loc.: **Pugl**: 67; **Bas**: 122.

Pyrenula nitida (Weigel) Ach. - Cr/ Tr/ S/ Epiph/ 2, 2, 1-2, 1/ Alt: 2-3/ rr/ Note: optimum in the beech belt, most often at the base of old trunks of *Fagus*. - Loc.: **Abr**: 51; **Pugl**: 71, 73; **Bas**: 106.

Pyrrhospora quernea (Dicks.) Körb. - Cr/ Ch/ A.s/ Epiph/ 2, 4-5, 2, 2-3/ Alt: 1/ rc/ suboc/ Note: abundant in coastal-Mediterranean, rather humid situations (mostly in Tyrrhenian Italy), where it is often fertile, much rarer elsewhere in Mediterranean Italy; also occurring, albeit rarely - and then mostly sterile - in the Insubrian District of Lombardy; very rare in the Adriatic part of peninsular Italy. - Loc.: **Pugl**: 88, 94, 95, 100.

Ramalina calicaris (L.) Fr. - Frut/ Ch/ S/ Epiph/ 1-2, 4, 2, 1-2/ Alt: 3/ rr/ Note: optimum in humid beech forests. - Loc.: **Mol**: 53; **Pugl**: 71.

Ramalina canariensis Steiner - Frut/ Ch/ A.s/ Epiph/ 1-3, 4-5, 2, 2-4/ Alt: 1/ rc/ Note: mostly coastal and Tyrrhenian in Italy, and confined to semi-natural situations; extremely rare in the Adriatic part of peninsular Italy, being not known north of Puglia. - Loc.: **Pugl**: 67, 95, 96, 99, 100.

Ramalina farinacea (L.) Ach. - Frut/ Ch/ A.s/ Epiph/ 2-3, 3-5, 1-2, 1-2/ Alt: 1-4/ c/ Note: optimum in humid beech forests; a chemically and morphologically very polymorphic species. - Loc.: **Abr**: 32, 35, 37; **Mol**: 53, 55, 56; **Pugl**: 67, 69, 70, 73, 75, 82, 87, 90, 95, 96; **Bas**: 105, 106, 109, 110, 116, 118.

Ramalina fastigiata (Pers.) Ach. - Frut/ Ch/ S/ Epiph/ 2-3, 3-5, 2-3, 1-3/ Alt: 1-3/ c/ Note: still common throughout Italy, but almot extinct in the plains of the north; some morphs of humid beech forests are worthy of further study. - Loc.: **Marc**: 2, 11, 16; **Abr**: 37, 50; **Mol**: 60, 61, 62; **Pugl**: 64, 66, 67, 69, 70, 82, 83, 86, 87, 90, 91, 95, 99; **Bas**: 105, 106, 107, 109, 110, 111, 113, 115, 116, 118.

Ramalina fraxinea (L.) Ach. - Frut/ Ch/ S/ Epiph/ 2-3, 4-5, 2-3, 2-3/ Alt: 2-3/ rc/ Note: optimum in the montane belt of the Apennines, where it is common on isolated trees; rarer in the Alps, and extinct in the plains of the north. - Loc.: **Marc**: 2, 16, 21, 26; **Abr**: 35, 37, 41, 45, 50; **Mol**: 56, 62; **Pugl**: 64, 69, 72, 75, 82, 83; **Bas**: 105, 109, 110, 111, 119.

Ramalina lacera (With.) J. R. Laundon - Frut/ Ch/ A.s/ Epiph-Sil.b/ 2-3, 4-5, 1-2, 2-3/ Alt: 1-2/ r/ suboc/ Note: mostly coastal and Tyrrhenian in Italy, and absent from large conurbations; restricted to the southern part of the survey area, in coastal situations. - Loc.: **Pugl**: 64.

Ramalina obtusata (Arnold) Bitter - Frut/ Ch/ A.s/ Epiph/ 2, 3-4, 1-2, 1/ Alt: 3-4/ r/ Note: probably more widespread, but never common, in the Alps, much rarer in the mountains of the south. - Loc.: **Mol**: 53.

Ramalina subgeniculata Nyl. - Frut/ Ch/ S/ Epiph/ 2, 4, 2, 1-2/ Alt: 1/ r/ suboc/ Note: generally coastal in humid-warm areas, and mainly Tyrrhenian in Italy; the collection from inland Basilicata, in a humid oak forest, is somehow surprising. Loca.: **Bas**: 109.

Ramalina thrausta (Ach.) Nyl. - Frut.f/ Ch/ A.s/ Epiph/ 2, 3-5, 1-2, 1/ Alt: 3-4/ rr/ suboc/. Note: confined to very humid montane forests, extremely rare along the Adriatic side of the peninsula. - Loc.: **Pugl**: 71.

Rhizocarpon atroflavescens Lynge - Cr/ Ch/ S/ Calc-Sil.b/ 3, 3-4, 3, 1/ Alt: 4-5/ rc/ Note: the record from Abruzzo is the southernmost one in Europe. Loc. **Abr**: 44.

Rhizocarpon distinctum Th. Fr. - Cr/ Ch/ S/ Sil.b/ 2-3, 4, 3, 2-3/ Alt: 2-4/ rc/ suboc/ Note: a pioneer species, often found on tiles; certainly more widespread in the Alps, rarer along the Apennines. - Loc.: **Marc**: 10; **Bas**: 111.

Rhizocarpon epispilum (Nyl.) Zahlbr. - Cr/ Ch/ S/ Sil-Sil.b/ 2, 4, 3, 1-2/ Alt: 1-2/ r/ paras *Pertusaria* spp./ Note: probably more widespread, but very much overlooked, throughout central and southern Italy. - Loc.: **Bas**: 27.

Rhizocarpon eupetraeum (Nyl.) Arnold - Cr/ Ch/ S/ Sil/ 1-2, 3-4, 3-4, 2-3/ Alt: 3-5/ rr/ Note: most common on acid sandstone; rare in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Mol**: 63; **Pugl**: 65, 85.

Rhizocarpon geminatum Körb. - Cr/ Ch/ S/ Sil.b/ 2-3, 3-4, 3-4, 1-3/ Alt: 3-5/ rr/ Note: a chemically heterogeneous species, probably less thermophytic than the closely related *Rh. disporum*; very rare in the Adriatic part of peninsular Italy for the scarcity of suitable substrata. - Loc.: **Bas**: 116.

Rhizocarpon geographicum (L.) DC. s.lat. - Cr/ Ch/ S/ Sil/ 1-2, 3-5, 3-4, 1-3/ Alt: 2-5/ ec/ Note: optimum above the montane belt; very variable, and in need of revision; very rare in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Abr**: 38; **Mol**: 61, 63; **Bas**: 116.

Rhizocarpon lecanorinum Anders - Cr/ Ch/ S/ Sil-Sil.b/ 2-3, 4-5, 3-4, 3/ Alt: 2-4/ rc/ Note: most common on tiles, and dust-impregnated surfaces. - Loc.: **Marc**: 28, 30; **Abr**: 34; **Mol**: 63; **Pugl**: 74; **Bas**: 102, 111, 116.

Rhizocarpon obscuratum (Ach.) A. Massal. - Cr/ Ch/ S/ Sil-Sil.b/ 1-3, 3-4, 2-3, 1-2/ Alt: 1-4/ c/ Note: a pioneer species, often found on pebbles; in the south the optimum is in upland areas; rare in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Mol**: 63; **Pugl**: 74.

Rhizocarpon petraeum (Wulfen) A. Massal. - Cr/ Ch/ S/ Calc-Sil.b/ 3, 3-4, 3, 1-3/ Alt: 1-5/ c/ Note: a rather pioneer species, with optimum in the submediterranean and the montane belts, often found on tiles and on calcareous sandstone; much rarer in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Abr**: 32; **Pugl**: 74.

Rhizocarpon tinei (Tornab.) Runemark - Cr/ Ch/ S/ Sil/ 2-3, 4-5, 3-4, 1-2/ Alt: 1-3/ rc/ Note: closely related to *Rh. geographicum*; very rare in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Pugl**: 74.

Rhizocarpon umbilicatum (Ramond) Flagey - Cr/ Ch/ S/ Calc-Sil.b/ 4-5, 3, 3-4, 1/ Alt: 3-5/ c/ Note: on steeply inclined surfaces; most common in the Alps, but occurring throughout the Apennines, esp. along the eastern side of the peninsula, mostly above treeline. - Loc.: **Marc**: 21, B; **Abr**: 39, 41; **Mol**: 60.

Rhizocarpon viridiatrum (Wulfen) Körb. - Cr/ Ch/ S/ Sil-Sil.b/ 2-3, 4-5, 4, 1-2/ Alt: 1-3/ rc/ paras *Aspicilia* species/ Note: optimum in relatively warm-dry areas; very rare in Adriatic peninsular Italy for the scarcity of suitable substrata. - Loc.: **Marc**: 27.

Rinodina albana (A. Massal.) A. Massal. - Cr/

Ch/ S/ Epiph/ 3, 4, 3, 2-3/ Alt: 2-3/ rr/ Note: optimum in the montane belt, on more or less isolated trees with smooth bark; often confused with similar species. - Loc.: **Marc**: 26; **Abr**: 51.

Rinodina bischoffii (Hepp) A. Massal. v. **bischoffii** - Cr/ Ch/ S/ Calc-Sil.b/ 3-4, 4, 3-4, 2-4/ Alt: 1-4/ c/ Note: a pioneer species, often found on walls, tiles, etc.; optimum in the submediterranean belt, exceptionally reaching above treeline in particularly dry-warm areas. - Loc.: **Marc**: 13, 21, 27; **Abr**: 47, 48; **Pugl**: 91; **Bas**: 115.

Rinodina calcarea (Arnold) Arnold - Cr/ Ch/ S/ Calc/ 4-5, 4-5, 4, 3-4/ Alt: 1-3/ rc/ Note: optimum in the submediterranean belt, at the top of sun-exposed boulders. - Loc.: **Abr**: 42; **Pugl**: 93; **Bas**: 115, 119.

Rinodina capensis Hampe - Cr/ Ch/ S/ Epiph/ 2-3, 4, 2-3, 1/ Alt: 2-4/ rr/ Note: mostly on smooth bark; altitudinal optimum in the montane belt. - Loc.: **Pugl**: 78, 91; **Bas**: 109, 119.

Rinodina colobina (Ach.) Th. Fr. - Cr/ Ch/ S/ Epiph/ 3-4, 4-5, 4, 3-4/ Alt: 1-2/ vr/ Note: there are few recent records of this species from Italy; mostly on the base-rich, dust-impregnated bark of isolated trees, esp. *Populus, Fraxinus, Juglans* and *Ulmus*. - Loc.: **Abr**: 50; **Pugl**: 88.

Rinodina dubyana (Hepp) Steiner - Cr/ Ch/ S/ Calc/ 4-5, 4-5, 3, 1-2/ Alt: 1-3/ rc/ Note: on steeply inclined, sunny surfaces; rather common throughout the country. - Loc.: **Marc**: 13, 18, 28; **Abr**: 38, 39, 40, 49; **Mol**: 59, 60, 63; **Pugl**: 65, 75, 78, 90, 91, 93, 95, 98; **Bas**: 117.

Rinodina exigua (Ach.) Gray - Cr/ Ch/ S/ Epiph/ 2, 3-5, 3-4, 3/ Alt: 1-3/ c/ Note: optimum in submediterranean areas; perhaps undercollected in the survey area. - Loc.: **Abr**: 32, 49.

Rinodina gennarii Bagl. - Cr/ Ch/ S/ Calc-Sil.b/ 3-4, 4-5, 3-4, 3-4/ Alt: 1-2/ rc/ Note: often found in small urban settlements, on walls and tiles; certainly undercollected in the survey area. - Loc.: **Pugl**: 77; **Bas**: 103.

Rinodina guzzinii Jatta - Cr/ Ch/ S/ Sil.b-Calc/ 3-4, 4-5, 4-5, 2-3/ Alt: 1-3/ rr/ Note: an Irano-Turanian-Mediterranean species. - Loc.: **Marc**: 30; **Abr**: 35, 37, 47; **Mol**: 63; **Pugl**: 65, 80; **Bas**: 117.

Rinodina immersa (Körb.) Arnold - Cr.end/ Ch/ S/ Calc/ 4-5, 3-5, 3-5, 1-2/ Alt: 1-4/ vc/ Note: most frequent on steeply inclined surfaces, in natural habitats, but also on pebbles; exceptionally reaching the Alpine belt; common, and somehow undercollected, throughout the survey area. - Loc.: **Marc**: 3, 21, A; **Umbr**: E; **Abr**: 41, 47; **Mol**: 54; **Pugl**: 84; **Bas**: 115, 117.

Rinodina lecanorina (A. Massal.) A. Massal. - Cr/ Ch/ S/ Calc/ 4-5, 4-5, 3-4, 3-4/ Alt: 1-4/ rc/ Note: optimum in the submediterranean belt; at the top of sun-exposed boulders. - Loc.: **Marc**: 2, 13, 28; **Umbr**: E; **Abr**: 47; **Mol**: 54, 59.

Rinodina milvina (Wahlenb.) Th. Fr. - Cr/ Ch/ S/ Sil.b-Sil/ 2-3, 3-4, 3, 1-3/ Alt: 3-5/ c/ Note: often on other crustose lichens when young; rare in the survey area due to the scarcity of siliceous substrata. - Loc.: **Bas**: 116.

Rinodina obnascens (Nyl.) H. Olivier - Cr/ Ch/ A.i/ Sil/ 2-3, 4, 3, 2-3/ Alt: 1-3/ rr/ paras *Aspicilia* spp./ suboc/ Note: mostly Tyrrhenian in Italy, esp. on *Aspicilia intermutans*; not reported from the survey area north of Basilicata (scarcity of siliceous substrata) - Loc.: **Bas**: 111.

Rinodina oleae Bagl. - Cr/ Ch/ S/ Epiph/ 2-3, 3-5, 3-4, 3/ Alt: 1/ rr/ Note: probably mostly Tyrrhenian in Italy; very much overlooked or confused with similar species in the past. - Loc.: **Pugl**: 87.

Rinodina pyrina (Ach.) Arnold - Cr/ Ch/ S/ Epiph/ 2-3, 4-5, 3, 2-3/ Alt: 2-4/ rc/ Note: mostly on smooth bark; optimum in the submediterranean belt, but with a broad ecological amplitude. - Loc.: **Abr**: 43; **Pugl**: 66, 84; **Bas**: 102, 108, 114.

Rinodina sophodes (Ach.) A. Massal. - Cr/ Ch/ S/ Epiph/ 2-3, 4-5, 3-4, 1-2/ Alt: 1-4/ vc/ Note: a pioneer species of smooth, acid bark, often found on twigs, with optimum above the Mediterranean belt; widespread and sometimes very common, throughout the survey area. - Loc.: **Marc**: 3, 19, 21; **Umbr**: E; **Abr**: 35, 37, 41, 42, 45, 47, 48; **Mol**: 53, 55, 60, 62; **Pugl**: 64, 69, 95; **Bas**: 103, 119.

Rinodina teichophila (Nyl.) Arnold - Cr/ Ch/ S/ Sil.b-Calc/ 3-4, 4, 3, 3-4/ Alt: 1-3/ c/ Note: often found in small urban settlements, on walls and tiles, with optimum in submediterranean areas. - Loc.: **Marc**: 29, 30; **Abr**: 34; **Bas**: 102, 111.

Rinodina tunicata H. Mayrhofer & Poelt - Cr/ Ch/ S/ Calc/ 5, 4-5, 4, 2-3/ Alt: 1-2/ rr/ Note: mostly on pure limestone in natural habitats; probably more widespread in the south. - Loc.: **Abr**: 38; **Pugl**: 78, 93.

Rinodinella controversa (A. Massal.) H. Mayrhofer & Poelt - Cr/ Ch/ S/ Calc/ 5, 3-5, 4-5, 2-3/ Alt: 1-2/ rc/ Note: optimum in the submediterranean belt. - Loc.: **Abr**: 42; **Mol**: 59, 63; **Pugl**: 65, 78, 80, 95; **Bas**: 115, 119.

Roccella fuciformis (L.) DC. - Frut/ Tr/ A.s/ Sil, Sil.b, Calc/ 3-5, 2-3, 1-2, 1-2/ Alt: 1/ r/ coast/

suboc/ Note: much rarer, and less heliophytic, than *R. phycopsis* in Mediterranean Italy, extremely rare along the Adriatic coast, certainly absent north of Puglia. - Loc.: **Pugl**: 64.

Roccella phycopsis Ach. - Frut/ Tr/ A.s/ Calc, Sil, Sil.b/ 2-5, 2-3, 1-2, 1-3/ Alt: 1/ c/ coast/ suboc/ Note: the northernmost known locality along the Adriatic side of the peninsula is in the Gargano Peninsula (Puglia), while along the Tyrrhenian side this species extends northward up to Liguria. - Loc.: **Pugl**: 64, 97, 98.

Sagiolechia protuberans (Ach.) A. Massal. - Cr/ Tr/ S/ Calc/ 4-5, 3-4, 1-3, 1-2/ Alt: 2-5/ r/ Note: most frequent on dolomite and hard calcareous rocks; locally abundant in the northern part of the survey area, otherwise rare. - Loc.: **Marc**: 3, 21, 24.

Sarcogyne fallax H. Magn. - Cr/ Ch/ S/ Sil/ 2-3, 3-4, 2-3, 2/ Alt: 2-3/ r/ Note: mostly on acid sandstone in open forests; the few known localities, including the type locality, are in the northern-central Apennines. - Loc.: **Abr**: 31.

Sarcogyne privigna (Ach.) A. Massal. - Cr.end/ Ch/ S/ Sil-Sil.b/ 2-4, 4-5, 4, 1-3/ Alt: 2-4/ rr/ Note: mostly on steeply inclined surfaces, often in fissures; in the southern part of the survey area it is frequent also on limestone (v. *calcicola*). - Loc.: **Bas**: 111.

Sarcogyne privigna v. **calcicola** H. Magn. - Cr/ Ch/ S/ Calc/ 3-4, 4-5, 4-5, 1-3/ Alt: 3-4/ rr/ Note: in our opinion, this taxon hardly deserves even the rank of a simple forma. - Loc.: **Marc**: 27, 30; **Abr**: 40, 47; **Mol**: 59.

Sarcogyne regularis Körb. - Cr/ Ch/ S/ Calc-Sil.b/ 4-5, 4-5, 3-5, 1-3/ Alt: 1-5/ ec/ Note: a very variable pioneer species in need of a thorough revision, common both in urban environments (e.g. on cement walls) and in natural situations. - Loc.: **Marc**: 2, 6, 15, 27, 29, B, G; **Abr**: 34, 41, 42, 43, 48; **Mol**: 60; **Pugl**: 72, 75, 80, 84, 88, 95; **Bas**: 115, 118.

Schismatomma decolorans (Sm.) Clauzade & Vězda - Cr/ Tr/ A.s/ Epiph/ 2, 1-3, 1-3, 2-3/ Alt: 1-2/ rc/ suboc/ Note: very common and abundant on e.g. orange trees in Tyrrhenian Italy (e.g. W Calabria), much rarer in the Adriatic part of peninsular Italy. - Loc.: **Pugl**: 64, 67, 91, 100.

Schismatomma dirinellum (Nyl.) Zahlbr. - Cr/ Tr/ S/ Epiph/ 2, 1-3, 1-3, 2-3/ Alt: 1/ rr/ Note: mostly Tyrrhenian in Italy, but not rare also along the coast of Puglia and Basilicata. - Loc.: **Pugl**: 64, 67, 99; **Bas**: 122.

Schismatomma graphidioides (Leight.) Zahlbr. - Cr/ Tr/ S/ Epiph/ 2-3, 2, 1-2, 1/ Alt: 2-3/ vr/ Note: optimum in humid *Abies-Fagus* forests of the Apennines. - Loc.: **Pugl**: 73; **Bas**: 106.

Schismatomma pericleum (Ach.) Branth & Rostr. - Cr/ Tr/ S/ Epiph/ 1-2, 2, 2, 1/ Alt: 3-4/ r/ Note: optimum in humid beech forests, but mostly on conifers (*Abies, Picea*) in shaded situations, very rarely on oaks, often in underhangs; very rare in the north, and in the survey area. - Loc.: **Marc**: 29, 29; **Abr**: 32; **Mol**: 53, 55.

Sclerophora nivea (Hoffm.) Tibell - Cr/ Tr/ S/ Epiph/ 3, 2-3, 1-2, 1/ Alt: 2-3/ r/ Note: mostly on old specimens of *Acer, Ulmus* and *Fraxinus* in humid situations; certainly strongly declining, esp. in the north; the only Italian collections of this century are from Molise and Calabria. - Loc.: **Mol**: 55.

Sclerophora peronella (Ach.) Tibell - Cr/ Tr/ S/ Epiph/ 2-3, 2-3, 1-2, 1/ Alt: 3-4/ er/ Note: on lignum and bark of mature broad-leaved trees; although all Italian collections are recent, the species is probably declining. - Loc.: **Marc**: 26.

Scoliciosporum gallurae Vězda & Poelt - Cr/ Ch/ S/ Epiph/ 1-3, 3-4, 2-3, 2-3/ Alt: 1-2/ rc/ suboc/ Note: probably much more widespread, esp. in Tyrrhenian Italy, but very much overlooked, being often sterile; certainly rarer in the Adriatic part of peninsular Italy. - Loc.: **Marc**: 9.

Scoliciosporum sarothamni (Vain.) Vězda - Cr/ Ch/ A.s/ Epiph-Sil/ 2-3, 2-3, 2, 1-2/ Alt: 2-3/ r/ Note: on smooth bark; probably very much overlooked, being mostly sterile. - Loc.: **Marc**: 18; **Abr**: 32.

Scoliciosporum umbrinum (Ach.) Arnold - Cr/ Ch/ S/ Epiph-Sil-Sil.b-Lign/ 1-3, 3, 2-3, 1-3/ Alt: 1-4/ c/ Note: also present in urban environments; sometimes parasitic on other lichens (esp. when on siliceous rocks). - Loc.: **Marc**: 3; **Abr**: 45, 52; **Mol**: 56, 61; **Pugl**: 71; **Bas**: 105, 105, 116.

Solenopsora candicans (Dicks.) Steiner - Cr.pl/ Ch/ S/ Calc/ 4-5, 4-5, 3-4, 3/ Alt: 1-3/ rc/ suboc/ Note: optimum below the montane belt. - Loc.: **Marc**: 2; **Abr**: 33, 49; **Mol**: 59, 60; **Pugl**: 64, 76, 80, 95; **Bas**: 119.

Solenopsora cesatii v. **grisea** (Bagl.) Nimis - Cr.pl/ Ch/ A.s/ Calc/ 4-5, 3-4, 3, 2-3/ Alt: 1-2/ rr/ suboc/ Note: this and the typical variety are sometimes difficult to distinguish, due to the existence of intermediate forms. - Loc.: **Marc**: 2; **Pugl**: 64, 93.

Solenopsora olivacea (Fr.) H. Kilias ssp. **olivacea** - Cr.pl/ Ch/ S/ Calc/ 5, 3, 2-3, 1-3/ Alt:

1-2/ rc/ suboc/ Note: esp. common in the submediterranean belt, but rarer in the northern part of the survey area. - Loc.: **Marc**: 2; **Pugl**: 64, 65, 76, 78, 91, 101.

Solenopsora olivacea ssp. **olbiensis** (Nyl.) Clauzade & Cl. Roux - Cr.pl/ Ch/ A.s/ Calc/ 5, 3, 2, 1-2/ Alt: 1-2/ rc/ suboc/ Note: sometimes found together with the typical subspecies, but generally preferring more humid-shaded situations; perhaps a varietal rank would be more appropriate. - Loc.: **Pugl**: 65.

Solorina bispora Nyl. - Fol.b/ Ch/ S/ Terr/ 3-4, 3-4, 2, 1-2/ Alt: 4-5/ c/ Note: common throughout the Alps, but occurring also, although more rarely, in the Apennines. - Loc.: **Marc**: 21, B; **Abr**: 39.

Sphaerellothecium propinquellum (Nyl.) Roux & Triebel - LF/ S/ Epiph/ paras *Lecanora* spp./ - Loc.: **Abr**: 52, on *Lecanora leptyrodes*. Det. D. Triebel

Sphinctrina leucopoda Nyl. - LF/ S/ Epiph/ 2-3, 2-3, 2-3, 1/ Alt: 2-3/ rr/ paras *Pertusaria* spp./ suboc/ Note: mostly on *Pertusaria pertusa*; certainly very much declining. - Loc.: **Marc**: 29.

Sphinctrina turbinata (Pers.) De Not. - LF/ S/ Epiph/ 2-3, 2-3, 2-3, 1/ Alt: 2-4/ rr/ *paras Pertusaria* spp./ suboc/ Note: mostly on *Pertusaria pertusa* in humid beech forests. - Loc.: **Abr**: 32.

Squamarina cartilaginea (With.) P. James - Sq/ Ch/ S/ Calc-Terr/ 4-5, 3-5, 3-4, 1-3/ Alt: 1-3/ ec/ Note: chemically variable. - Loc.: **Marc**: 2, 18, 28; **Umbr**: E; **Abr**: 41, 42, 48; **Mol**: 59, 60; **Pugl**: 64, 75, 78, 80, 92, 95; **Bas**: 115, 117.

Squamarina concrescens (Müll. Arg.) Poelt - Ch/ A.i/ Terr-Terr/ 3, 4-5, 3-4, 1-3/ Alt: 1-2/ rr/ Note: mostly Tyrrhenian in Italy, due to the absence of suitable substrata along the eastern side of the peninsula. - Loc.: **Abr**: 38; **Pugl**: 65, 93, 99.

Squamarina gypsacea (Sm.) Poelt - Sq/ Ch/ S/ Calc/ 5, 4-5, 3-4, 1-3/ Alt: 1-5/ rc/ subc/ Note: this species has two optima: in the Mediterranean-submediterranean belts and above treeline, esp. in dry areas; it often grows on *Lecidea lurida*. - Loc.: **Marc**: 21, 28; **Mol**: 59; **Pugl**: 78; **Bas**: 117.

Squamarina lamarckii (DC.) Poelt - Sq/ Ch/ S/ Calc/ 4-5, 4-5, 4, 1-2/ Alt: 4-5/ r/ Note: on steeply inclined surfaces; most frequent in the Alps, much rarer in the Apennines, but to be looked for also in the south. - Loc.: **Abr**: 41.

Squamarina lentigera (Weber) Poelt - Cr.pl/ Ch/ S/ Terr/ 4-5, 4-5, 4-5, 1-2/ Alt: 1-2/ rr/ subc/ Note: in Italy only locally abundant, esp. on gypsaceous soil in relatively warm-dry areas. - Loc.: **Abr**: 42; **Bas**: 115.

Squamarina oleosa (Zahlbr.) Poelt - Sq/ Ch/ S/ Calc/ 4-5, 3-4, 3, 1-2/ Alt: 1-3/ rr/ Note: optimum in the submediterranean belt. - Loc.: **Marc**: 28.

Squamarina stella-petraea Poelt - Sq/ Ch/ S/ Calc-Terr/ 5, 4-5, 4-5, 1-3/ Alt: 1-3/ rc/ Note: very much overlooked, or confused with *S. cartilaginea* in the past; locally very common, also in the survey area, esp. in the south. - Loc.: **Marc**: 2, 3, A, B; **Umbr**: E; **Abr**: 39, 40, 41, 47, 48; **Mol**: 60; **Pugl**: 75, 78, 93; **Bas**: 117, 117.

Staurolemma omphalarioides (Anzi) M. Jørg. & Henssen - Fol/ Cy.h/ A.i/ Epiph/ 2-3, 4, 2, 1-3/ Alt: 1-2/ rr/ suboc/ Note: certainly rare in the survey area; for further information see Jörgensen & Henssen (1993, with map). - Loc.: **Abr**: 52.

Staurothele areolata (Ach.) Lettau - Cr/ Ch/ S/ Calc/ 3-5, 3-5, 3, 3/ Alt: 4-5/ rc/ Note: according to Wirth (1995) this is a possible synonym of *S. frustulenta*; specimens from upland areas, however, clearly differ from those collected at lower altitudes identified as *S. frustulenta*; pending further research, the two species are maintained as distinct here. - Loc.: **Abr**: 38.

Staurothele frustulenta Vainio - Cr/ Ch/ S/ Sil.b/ 3, 4, 3-4, 2-3/ Alt: 2-3/ vr/ Note: see note to *S. areolata*. - Loc.: **Bas**: 102.

Staurothele hymenogonia (Nyl.) Th. Fr. - Cr/ Ch/ S/ Calc-Sil.b/ 4-5, 4, 3, 2-3/ Alt: 2-5/ rr/ Note: a pioneer species, with optimum in submediterranean areas. - Loc.: **Marc**: 2; **Abr**: 31; **Mol**: 60; **Bas**: 115.

Staurothele immersa (A. Massal.) Dalla Torre & Sarnth. - Cr.end/ Ch/ S/ Calc/ 5, 3, 3, 1-2/ Alt: 1-2/ rr/ Note: this is one of the few species of the genus with optimum at low altitudes. - Loc.: **Marc**: 2; **Mol**: 59; **Pugl**: 95.

Staurothele orbicularis (A. Massal.) Th. Fr. - Cr.end/ Ch/ S/ Calc/ 4-5, 3-4, 3, 1-2/ Alt: 4-5/ vr/ Note: related to *S. guestphalica*. - Loc.: **Marc**: 3.

Staurothele rugulosa (A. Massal.) Arnold - Cr/ Ch/ S/ Calc-Sil.b/ 3-5, 3-4, 3, 3/ Alt: 3-5/ rr/ Note: probably more widespread in the Alps; the record from Marche is the southernmmost in Italy. - Loc.: **Marc**: 27.

Stenocybe mildeana (Hepp) Jatta - F/ S/ Epiph/ 3-4, 3, 2-3, 2-3/ Alt: 2-3/ er/ Note: mostly on *Fraxinus*; certainly very much declining: the record from Marche is the first one from Italy in this century. - Loc.: **Marc**: 22.

Stigmidium congestum (Körb.) Triebel - LF/ S/ paras/ - Loc.: **Abr**: 43; **Pugl**: 90, on *Lecanora* *chlarotera*. Det. D. Triebel

Strangospora ochrophora (Nyl.) R. Anderson - Cr/ Ch/ S/ Epiph/ 3, 4-5, 3, 2-3/ Alt: 1-2/ vr/ suboc/ Note: mostly on *Populus*; very much overlooked, but certainly rare and probably declining. - Loc.: **Pugl**: 70, 72, 87.

Strigula affinis (A. Massal.) R. C. Harris - Cr/ Tr/ S/ Epiph/ 3, 3-4, 3, 2-3/ Alt: 1-3/ r/ Note: often found on *Juglans*. - Loc.: **Marc**: 23, G; **Mol**: 58.

Strigula mediterranea Etayo - Cr/ Tr/ S/ Epiph/ 2-3, 3, 2-3, 1-2/ Alt: 1-2/ r/ suboc/ Note: probably more widespread, but certainly not common, in southern Italy. - Loc.: **Pugl**: 70.

Strigula stigmatella (Ach.) R. C. Harris - Cr/ Tr/ S/ Epiph/ 2, 2-3, 2, 1/ Alt: 2-3/ r/ Note: both on bark and on epiphytic mosses at the base of trunks; optimum in humid beech forests. - Loc.: **Bas**: 122.

Synalissa symphorea (Ach.) Nyl. - Frut/ Cy.c/ S/ Calc/ 4-5, 4-5, 4-5, 2-3/ Alt: 1-4/ rc/ Note: both directly on rock, on steeply inclined surfaces with periodical water seepage, and on *Lecidea lurida*. - Loc.: **Marc**: 21, 28; **Abr**: 31, 41, 42, 47; **Mol**: 59, 60, 63.

Teloschistes chrysophthalmus (L.) Th. Fr. - Frut/ Ch/ S/ Epiph/ 2-3, 4-5, 3-4, 2-3/ Alt: 1/ er/ Note: much more common in the past, presently extinct in many regions (esp. in the north). - Loc.: **Bas**: 115.

Teloschistes contortuplicatus (Ach.) Clauzade & Rondon - Frut/ Ch/ A.s/ Calc/ 4-5, 4-5, 4-5, 2-4/ Alt: 4-5/ rr/ Note: esp. in south-facing niches; relatively common also in the C Apennines, on the Adriatic side of the peninsula; probably unrelated to other congeneric species. - Loc.: **Marc**: 21, 28; **Abr**: 36, 39, 44.

Tephromela atra (Huds.) Hafellner v. **atra** - Cr/ Ch/ S/ Sil-Sil.b/ 2-3, 3-4, 2-4, 1-2/ Alt: 1-5/ ec/ Note: a variable and polymorphic species. - Loc.: **Marc**: 29, 30; **Abr**: 31, 34, 41; **Mol**: 63; **Pugl**: 65, 74, 77, 85; **Bas**: 102, 111.

Tephromela atra v. **calcarea** (Jatta) Clauzade & Cl. Roux - Cr/ Ch/ S/ Calc/ 3-5, 3-4, 3-4, 1-3/ Alt: 1-3/ vc/ Note: calcicolous specimens are common in southern Italy, rarer in the north; perhaps they deserve to be treated at the rank of a simple *forma*. - Loc.: **Marc**: 2, B; **Umbr**: E; **Mol**: 60; **Pugl**: 75, 78, 93; **Bas**: 115, 119.

Tephromela atra v. **torulosa** (Flörke) Hafellner - Cr/ Ch/ S/ Epiph/ 2-3, 3-4, 3, 1-2/ Alt: 1-3/ rc/ Note: this taxon deserves a revision: corticolous forms of typical *T. atra* are not rare, but the most common morph differs in several respects from *T. atra s.str*. - Loc.: **Marc**: 21; **Mol**: 53, 61; **Pugl**: 66, 90, 91, 95; **Bas**: 115, 116.

Thelenella modesta (Nyl.) Nyl. - Cr/ Ch/ S/ Epiph/ 2-3, 3, 2, 1-2/ Alt: 1-2/ r/ suboc/ Note: mostly Tyrrhenian in Italy, and not found north of Molise in the survey area. - Loc.: **Mol**: 58; **Pugl**: 64, 85.

Thelidium absconditum (Hepp) Rabenh. - Cr.end/ Ch/ S/ Calc-Sil.b/ 4-5, 3, 2-3, 1-2/ Alt: 3-5/ rr/ Note: mostly on inclined surfaces, the relationship with *Th. decipiens* remains to be clarified; certainly widespread through the Alps, much rarer in the Apennines. - Loc.: **Marc**: 13.

Thelidium decipiens (Nyl.) Kremp. - Cr.end/ Ch/ S/ Calc/ 4-5, 3-4, 2-3, 1-2/ Alt: 4-5/ rc/ Note: mostly on inclined or vertical surfaces, but also on large pebbles, with a wide ecological amplitude. - Loc.: **Marc**: 3.

Thelidium dionantense (Hue) Zschacke - Cr.end/ Ch/ S/ Calc/ 5, 3-4, 2-3, 1/ Alt: 4-5/ r/ Note: new to Italy. - Loc.: **Abr**: 44.

Thelidium impressum (Müll.Arg.) Zschacke - Cr.end/ Ch/ S/ Calc/ 5, 3-4, 2-3, 1-2/ Alt: 3-5/ r/ Note: a critical taxon. New to Italy. - Loc.: **Marc**: 21; **Mol**: 60.

Thelidium incavatum Mudd - Cr/ Ch/ S/ Calc/ 4-5, 3-4, 2-3, 1-2/ Alt: 4-5/ rr/ Note: often on small pebbles, probably more widespread, but often overlooked; most frequent in the Alps, rarer in the Adriatic part of peninsular Italy. - Loc.: **Mol**: 59.

Thelidium papulare (Fr.) Arnold - Cr/ Ch/ S/ Calc-Sil.b/ 4-5, 3, 2-3, 1-2/ Alt: 3-5/ rc/ Note: on steeply inclined, rather shaded and humid surfaces, optimum on limestone and dolomite. - Loc.: **Marc**: 21; **Abr**: 36, 38, 45.

Thelidium pyrenophorum (Ach.) Mudd - Cr/ Ch/ S/ Calc-Sil.b/ 4-5, 4, 2-3, 1/ Alt: 3-5/ rc/ Note: on limestone and dolomite. - Loc.: **Marc**: 21.

Thelidium subsimplex Zschacke - Cr.end/ Ch/ S/ Calc/ 5, 2-3, 2-3, 1-2/ Alt: 4-5/ r/ Note: a critical taxon. - Loc.: **Marc**: 28

Thelidium zwackhii (Hepp) A. Massal. - Cr/ Ch/ S/ Terr/ 3-4, 4, 2, 1-2/ Alt: 2-3/ r/ Note: a pioneer species, mostly on base-rich siliceous soil, sometimes on small pebbles, probably very much overlooked in Italy. - Loc.: **Marc**: 21.

Thelocarpon macchiae Nimis, Poelt & Puntillo - Cr/ Ch/ S/ Terr/ 3-4, 4, 3, 1-2/ Alt: 1/ r/ Note: a recently-described species, easy to overlook and probably ephemeral, perhaps more widespread in Mediterranean Italy. - Loc.: **Pugl**: 64.

Thelochroa montinii A. Massal. - Cr/ Cy.c/ S/ Calc/ 4-5, 4-5, 4, 2-3/ Alt: 1-2/ rc/ On weakly inclined surfaces of calcareous rocks with periodical water seepage. Loc: **Pugl**: 65.

Thelopsis isiaca Stizenb. - Cr/ Tr/ S/ Epiph-Terr-Sil.b/ 2-4, 2-3, 1-2, 1-2/ Alt: 1/ r/ suboc/ coast/ Note: mostly Tyrrhenian in Italy; locally very abundant in coastal situations (e.g. in many islands of the south); very rare, and probably absent north of Puglia in the survey area. - Loc.: **Pugl**: 64.

Thelopsis rubella Nyl. - Cr/ Tr/ S/ Epiph/ 2-3, 2-3, 2-3, 1/ Alt: 2-3/ vr/ suboc/ Note: on the trunks of old trees. - Loc.: **Marc**: 9, 29.

Thyrea confusa Henssen - Frut/ Cy.c/ S/ Calc/ 4-5, 5, 4-5, 2-3/ Alt: 1-2/ rc/ Note: on steeply inclined, often south-exposed surfaces; certainly widespread throughout Italy, with optimum in the submediterranean belt. - Loc.: **Marc**: 2; **Abr**: 42.

Tomasiella arthonioides (A. Massal.) A. Massal. - F/ S/ Epiph/ 3, 4, 3-4, 1-3/ Alt: 1-2/ c/ Note: most frequent on *Fraxinus ornus*, with optimum in the submediterranean belt. - Loc.: **Marc**: 8, 9, 25; **Abr**: 49; **Mol**: 57; **Pugl**: 64; **Bas**: 109, 115.

Toninia alutacea (Anzi) Jatta - Sq/ Ch/ S/ Calc/ 5, 4, 3-4, 1-2/ Alt: 2-5/ rc/ Note: in fissures of the rock; when young often overgrowing cyanobacteria and cyanobacterial lichens. - Loc.: **Marc**: A; **Bas**: 117.

Toninia aromatica (Sm.) A. Massal. - Sq/ Ch/ S/ Sil.b-Terr/ 3-5, 3-4, 3-4, 2-4/ Alt: 1-3/ c/ paras crustose lichens/ Note: often found on walls in small settlements, but common in natural habitats as well; in the Mediterranean belt common only in Tyrrhenian Italy, rare elsewhere. - Loc.: **Pugl**: 64, 65, 80, 92, 93, 100.

Toninia athallina (Hepp) Timdal - Cr.end/ Ch/ S/ Calc/ 5, 3-5, 3-4, 1-2/ Alt: 1-5/ c/ Note: mostly on steeply inclined or overhanging surfaces; certainly widespread throughout Italy, but very much overlooked. - Loc.: **Marc**: 3, 21, 28; **Abr**: 38; **Pugl**: 74.

Toninia candida (Weber) Th. Fr. - Sq/ Ch/ S/ Calc/ 5, 4-5, 3-4, 1-2/ Alt: 2-5/ rc/ subc/ Note: on steeply inclined surfaces and in fissures of the rock; often on cyanobacteria or cyanobacterial lichens when young. - Loc.: **Marc**: 2, 3; **Umbr**: E; **Abr**: 44; **Mol**: 59; **Pugl**: 74, 80.

Toninia diffracta (A. Massal.) Zahlbr. - Sq/ Ch/ S/ Calc-Terr/ 5, 4-5, 4, 1-2/ Alt: 1-5/ rc/ subc/ Note: in small fissures of the rock, on steeply inclined surfaces; optimum at low altitudes, but reaching up to the Alpine belt. - Loc.: **Marc**: 21, 28; **Mol**: 54, 60.

Toninia episema (Nyl.) Timdal - LF/ Ch/ S/ Calc/ 5, 4-5, 4, 2-3/ Alt: 1-3/ rc/ paras *Aspicilia calcarea*/ Note: optimum in submediterranean areas. - Loc.: **Marc**: 3; **Abr**: 31; **Mol**: 59, 63; **Pugl**: 65, 78, 95

Toninia lutosa (Ach.) Timdal - Sq/ Ch/ S/ Terr/ 4-5, 4, 3-4, 1-2/ Alt: 1-2/ er/ subc/ Note: often associated with cyanobacteria or cyanobacterial lichens when young. - Loc.: **Mol**: 59.

Toninia opuntioides (Vill.) Timdal - Sq/ Ch/ S/ Calc-Terr/ 3-5, 3-4, 3, 2/ Alt: 2-5/ rr/ Note: often found amongst bryophytes, and always associated to cyanobacterial lichens when young. - Loc.: **Marc**: 21, 24; **Abr**: 38; **Mol**: 59.

Toninia philippea (Mont.) Timdal - Cr/ Ch/ S/ Calc/ 3-5, 4, 3-4, 2/ Alt: 1-5/ r/ subc/ Note: on calciferous ground in dry grasslands. - Loc.: **Abr**: 31.

Toninia physaroides (Opiz) Zahlbr. - Sq/ Ch/ S/ Terr/ 3-4, 4, 3-4, 2-3/ Alt: 1-2/ rr/ subc/ Note: most often found on soil developing from calcareous sandstone. - Loc.: **Marc**: 30; **Abr**: 34; **Mol**: 61; **Pugl**: 74.

Toninia sedifolia (Scop.) Timdal - Sq/ Ch/ S/ Terr/ 3-5, 3-4, 3-4, 2-3/ Alt: 1-5/ vc/ Note: most common in dry, open grasslands on calcareous ground, with optimum in the submediterranean belt. - Loc.: **Marc**: 3, 21, 28, B; **Umbr**: E; **Abr**: 39, 40, 41, 42; **Mol**: 60, 61; **Pugl**: 75, 80; **Bas**: 115, 117, 119.

Toninia taurica (Szatala) Ochsner - Sq/ Ch/ S/ Terr/ 4-5, 3-4, 3-4, 2/ Alt: 1-3/ rr/ Note: often associated with cyanobacterial lichens when young; rare in the eu-Mediterranean belt. - Loc.: **Marc**: 13, 21; **Umbr**: E; **Pugl**: 99.

Tornabea scutellifera (With.) J. R. Laundon - Frut/ Ch/ A.s/ Epiph-Sil-Calc/ 3-4, 3-5, 1-2, 2-3/ Alt: 1/ er/ Note: much more widespread in the past, but presently restricted to a few, localized stations with natural vegetation, esp. sand dunes, mostly along the Tyrrhenian coast; the station from the Lake of Lesina is quite exceptional for this species (see Nimis & Tretiach 1997). - Loc.: **Pugl**: 67.

Trapelia coarctata (Sm.) M. Choisy - Cr/ Ch/ S/ Sil/ 1-3, 3, 2, 1-2/ Alt: 1-4/ rc/ Note: sometimes also found on soil; rare, and mostly Tyrrhenian in Italy, also found in the eu-Mediterranean belt in particularly humid situations; extremely rare in Adriatic peninsular Italy, due to the scarcity of suitable substrata and to the more continental climate. - Loc.: **Bas**: 102.

Trapeliopsis flexuosa (Fr.) Coppins & P.

James - Cr/ Ch/ S/ Lign-Epiph/ 1, 4-5, 2-4, 1-2/ Alt: 2-4/ rc/ Note: optimum above the submediterranean belt, often found on wooden poles and on the bark of *Pinus*. - Loc.: **Marc**: 29; **Abr**: 31; **Pugl**: 82; **Bas**: 121.

Trapeliopsis granulosa (Hoffm.) Lumbsch - Cr/ Ch/ S/ Lign-Terr/ 1-2, 3-4, 2, 1/ Alt: 3-5/ rc/ Note: most common in the Alps, much rarer in the Apennines. - Loc.: **Abr**: 32.

Trapeliopsis pseudogranulosa Coppins & P. James - Cr/ Ch/ A.s/ Terr-Lign/ 1, 3, 2, 1/ Alt: 1-3/ r/ suboc/ Note: most frequent in humid *Castanea* woodlands, on mosses at the base of trunks, decaying lignum and acid organic soil; certainly more widespread, but not common in Italy. - Loc.: **Marc**: 29; **Abr**: 32.

Usnea articulata (L.) Hoffm. - Frut.f/ Ch/ A.f/ Epiph/ 2, 3-5, 1-2, 1/ Alt: 1-2/ r/ suboc/ Note: most frequent in humid forests of the south, much rarer, and perhaps extinct in the north; extremely rare in Adriatic peninsular Italy. - Loc.: **Pugl**: 71.

Usnea filipendula Stirt. - Frut.f/ Ch/ A.s/ Epiph/ 1-2, 3-5, 1-2, 1/ Alt: 2-4/ c/ Note: a variable species, most common in humid montane deciduous forests; rare in Adriatic peninsular Italy. - Loc.: **Abr**: 37; **Pugl**: 73.

Usnea glabrescens (Vain.) Vain. - Frut.f/ Ch/ A.s/ Epiph-Lign/ 1-2, 4-5, 2, 1/ Alt: 4/ r/ Note: the collection from Puglia, as most of the records from Italy, requires confirmation by a specialist of this difficult genus. - Loc.: **Pugl**: 73.

Usnea subfloridana Stirt. - Frut.f/ Ch/ A.s/ Epiph/ 2, 3-5, 2, 1-2/ Alt: 2-4/ rr/ Note: also present, with stunted specimens, in moderately anthropized habitats; rare in Adriatic peninsular Italy. - Loc.: **Marc**: 16; **Abr**: 37; **Pugl**: 82.

Verrucaria adriatica Zahlbr. - Cr/ Ch/ S/ Calc/ 5, 3, 1, 1/ Alt: 1/ vr/ coast/ Note: periodically submerged in the high-tide zone; the record from Puglia is the first one from the eastern Adriatic coast. - Loc.: **Pugl**: 92.

Verrucaria amylacea Hepp - Cr.end/ Ch/ S/ Calc/ 5, 3, 2-3, 1/ Alt: 1-3/ rr/ Note: on limestone and dolomite, certainly very much overloooked and probably more common throughout Italy, with optimum in the submediterranean belt. - Loc.: **Marc**: 9.

Verrucaria aspiciliicola R. Sant. - Cr/ Ch/ S/ Calc/ 5, 4-5, 4, 3-4/ Alt: 1-4/ rc/ paras *Aspicilia calcarea s.lat.*/ Note: this is a common, but often misunderstood species, with optimum in the submediterranean belt. - Loc.: **Marc**: 2, 28, 47, 50, A; **Umbr**: E; **Mol**: 59, 60, 63; **Pugl**: 65; **Bas**: 117, 117.

Verrucaria beltraminiana (A. Massal.) Trevis. - Cr/ Ch/ S/ Calc/ 5, 4, 3-4, 3-4/ Alt: 2/ r/ Note: most often found on walls near small settlements; closely related to *V. lecideoides*. - Loc.: **Mol**: 58.

Verrucaria biatorinaria Zehetl. - Cr/ Ch/ S/ Calc/ 5, 4-5, 4, 3-4/ Alt: 3-5/ rr/ paras *Caloplaca biatorina*/ Note: certainly much more widespread in upland areas throughout Italy. - Loc.: **Abr**: 38, 41, 44; **Mol**: 54.

Verrucaria caerulea DC. - Cr/ Ch/ S/ Calc/ 5, 3, 2-3, 1/ Alt: 2-4/ rc/ Note: on steeply inclined surfaces; optimum in the submediterranean belt in the north, in the montane belt in the south, exceptionally reaching above treeline; apparently rare in the survey area. - Loc.: **Abr**: 38.

Verrucaria calciseda *auct. non* DC. Cr.end/ Ch/ S/ Calc/ 4-5, 4, 3-4, 1-2/ Alt: 1-3/ rc/ Note: optimum in the submediterranean belt; certainly undercollected in the survey area. - Loc.: **Pugl**: 87; **Bas**: 117.

Verrucaria coccinearia Zehetl. - Cr/ Ch/ S/ Calc/ 5, 4-5, 4, 1-2/ Alt: 4-5/ r/ paras *Caloplaca coccinea*/ Note: certainly more widespread in Italy, and present also in the Alps (see Nimis 1993). - Loc.: **Abr**: 44.

Verrucaria cyanea A. Massal. - Cr.end/ Ch/ S/ Calc/ 5, 2-3, 2-3, 1/ Alt: 1-3/ rc/ Note: optimum in the submediterranean belt in the north, in the montane belt in the south; apparently rare, but perhaps undercollected in the survey area. - Loc.: **Pugl**: 95.

Verrucaria disjuncta Arnold - Cr/ Ch/ S/ Calc/ Note: a very poorly-known species, identified following Clauzade & Roux (1985). - Loc.: **Abr**: 44.

Verrucaria dufourii DC. - Cr.end/ Ch/ S/ Calc/ 4-5, 3, 2-3, 1-2/ Alt: 1-5/ rc/ Note: on hard limestones, with optimum in the upper montane belt. - Loc.: **Abr**: 46; **Pugl**: 64, 71, 75.

Verrucaria foveolata (Flörke) A. Massal. - Cr.end/ Ch/ S/ Calc/ 5, 3-4, 2-3,2-4/ Alt: 2-5/ rc/ Note: a rather pioneer, ecologically wide-ranging species of limestones and dolomites; as many other Verrucarias, it was probably undercollected in our survey. - Loc.: **Abr**: 38.

Verrucaria fuscella (Turner) Winch - Cr/ Ch/ S/ Calc/ 4-5, 3-5, 3-4, 3-4/ Alt: 1-5/ c/ Note: mostly on steeply inclined surfaces, often growing on *Verrucaria nigrescens*; a polymorphic taxon, which badly needs revision. - Loc.: **Marc**: 27, 33, A; **Abr**: 47, 48; **Mol**: 63; **Pugl**: 65, 84.

Verrucaria fuscula Nyl. - Cr/ Ch/ S/ Calc/ 5, 4-

5, 3-4, 3-4/ Alt: 1-4/ vc/ paras *Aspicilia calcarea s.lat.*/ Note: one of the most common species of calcareous and dolomitic outcrops throughout the survey area, wherever *Aspicilia calcarea* is present. - Loc.: **Marc**: 2, 13, 21, 28, A; **Umbr**: E; **Abr**: 39, 41, 42, 47; **Mol**: 59, 60, 63; **Pugl**: 65, 72, 75, 78, 80, 84; **Bas**: 119.

Verrucaria hochstetteri Fr. - Cr/ Ch/ S/ Calc/ 5, 2-3, 2-3, 1-2/ Alt: 2-5/ rr/ Note: most common in upland areas in the south, where sometimes it reaches the oromediterranean belt. - Loc.: **Abr**: 39; **Pugl**: 75, 91, 93; **Bas**: 115.

Verrucaria latericola Erichsen - Cr/ Ch/ S/ Calc/ 5, 4-5, 4, 4-5/ Alt: 1-2/ rr/ paras *Caloplaca granulosa*/ Note: widespread throughout Italy, with optimum in the submediterranean belt; probably undercollected in the survey area. - Loc.: **Abr**: 47; **Pugl**: 65.

Verrucaria lecideoides (A. Massal.) Trevis. - Cr/ Ch/ S/ Calc/ 4-5, 4-5, 3-4, 3-4/ Alt: 1-3/ rc/ Note: a rather common species throughout the country, with optimum in the submediterranean belt. - Loc.: **Marc**: 18; **Umbr**: E; **Abr**: 41; **Mol**: 59, 63; **Pugl**: 65, 75, 78, 84, 93.

Verrucaria macrostoma DC. - Cr/ Ch/ S/ Calc-Sil.b/ 3-5, 3-4, 3-4, 3-5/ Alt: 1-3/ ec/ Note: often found on walls in urban settlements; certainly undercollected in the survey area. - Loc.: **Marc**: 24, 27; **Abr**: 33, 34, 35, 43; **Mol**: 61; **Bas**: 102.

Verrucaria marmorea (Scop.) Arnold - Cr/ Ch/ S/ Calc/ 5, 3-4, 3, 1-2/ Alt: 1-3/ c/ Note: on hard limestones, with optimum in the submediterranean belt; apparently not common in the survey area. - Loc.: **Marc**: A; **Abr**: 47; **Mol**: 54, 59.

Verrucaria muralis Ach. - Cr/ Ch/ S/ Calc-Sil.b/ 4-5, 3-4, 3-4, 1-3/ Alt: 2-4/ c/ Note: a pioneer species, often found on walls, brick and roofing tiles in settlements, exceptionally reaching the subalpine belt. - Loc.: **Marc**: 2; **Pugl**: 84, 91, 93; **Bas**: 111.

Verrucaria nigrescens Pers. - Cr/ Ch/ S/ Calc-Sil.b/ 4-5, 3-5, 3-5, 3-5/ Alt: 1-5/ ec/ Note: very variable, common both in urban and natural habitats, with a wide ecological tolerance; some forms deserve further study. - Loc.: **Marc**: 2, 9, 13, 15, 21, 23, 27, B, G; **Umbr**: E; **Abr**: 31, 33, 34, 34, 37, 38, 42, 43, 45, 48, 49; **Mol**: 57, 61, 63; **Pugl**: 64, 65, 72, 75, 76, 78, 84, 87, 89, 90, 91, 92, 93, 95, 99; **Bas**: 102, 103, 104, 111, 115, 118.

Verrucaria pinguicula A. Massal. - Cr/ Ch/ S/ Calc/ 5, 3-4, 3, 1-2/ Alt: 2-3/ rr/ Note: very much overlooked, and probably more frequent in Italy. - Loc.: **Marc**: G; **Pugl**: 84.

Verrucaria sphaerospora Anzi - Cr/ Ch/ S/ Calc-Sil.b/ 4, 4, 3, 2-4/ Alt: 2-3/ r/ Note: a very characteristic species of calciferous sandstone, certainly not common throughout Italy. - Loc.: **Abr**: 35.

Verrucaria tectorum (A. Massal.) Körb. - Cr/ Ch/ S/ Calc/ 4-5, 4, 3-4, 4-5/ Alt: 1-2/ c/ Note: most common on man-made substrata; closely related to *V. macrostoma*. - Loc.: **Marc**: 15; **Abr**: 34; **Pugl**: 64; **Bas**: 112.

Verrucaria transiliens Arnold - Cr/ Ch/ S/ Calc-Sil.b/ 4-5, 3, 2-3, 2-3/ Alt: 1-3/ r/ Note: mostly on pebbles near the ground; perhaps more widespread in submediterranean Italy, but overlooked, or confused with similar species. - Loc.: **Marc**: 30; **Pugl**: 74; **Bas**: 111.

Verrucaria viridula (Schrad.) Ach. - Cr/ Ch/ S/ Calc-Sil.b/ 3-5, 3-4, 3-4, 3-4/ Alt: 2/ rc/ Note: an early colonizer of more or less calcareous substrata, most common on small pebbles, also found in urban areas (e.g. on roofing tiles); probably undercollected in the survey area. - Loc.: **Bas**: 118.

Vulpicida pinastri (Scop.) Mattson & M. J. Lai - Fol.b/ Ch/ A.s/ Epiph/ 1-2, 3-5, 3, 1/ Alt: 3-4/ ec/ Note: mostly at the base of trunks and on twigs with long snow-covering, often associated with *Parmeliopsis*-species; common only in the boreal and subalpine belts of the Alps; extremely rare, and mostly confined to *Castanea* or conifers stands in the Apennines. - Loc.: **Marc**: 20; **Abr**: 37.

Xanthoria calcicola Ochsner - Fol.b/ Ch/ S/ Calc-Sil.b/ 3-5, 4-5, 4, 4-5/ Alt: 1-3/ c/ Note: most frequent at the top of isolated calcareous boulders, and, esp. along the western side of the Peninsula, also on roofing tiles. - Loc.: **Marc**: 2, 15, 28; **Umbr**: E; **Abr**: 39, 41; **Mol**: 54; **Pugl**: 65, 80.

Xanthoria candelaria (L.) Th. Fr. - Fol.n/ Ch/ A.s/ Calc-Sil.b/ 2-4, 4-5, 4, 4-5/ Alt: 3-5/ rr/ subc/ Note: certainly not common in Italy, where it is restricted to areas with a rather subcontinental climate at high elevations (continental Alpine valleys, eastern Apennines, etc.); sometimes also found on bark and lignum. - Loc.: **Abr**: 41.

Xanthoria ectaneoides (Nyl.) Zahlbr. - Fol.b/ Ch/ S/ Calc-Sil.b/ 4-5, 3-5, 3, 3-4/ Alt: 1/ rr/ coast/ suboc/ Note: the circumscription of this more or less coastal species, which is delimited here following Purvis *et al.* (1992), and especially its distinction from *X. calcicola*, are not clear to us: intermediate forms seem to be rather common. -

Loc.: **Pugl**: 64, 97.

Xanthoria elegans (Link) Th. Fr. v. **elegans** - Fol.n/ Ch/ S/ Calc-Sil.b/ 3-5, 4-5, 4, 3-4/ Alt: 3-5/ c/ Note: common above the montane belt, reaching much lower altitudes in climatically more continental areas, almost absent from truly Mediterranean vegetation. - Loc.: **Marc**: 21, 28, A, B; **Umbr**: E; **Abr**: 36, 38, 39, 40, 41, 46, 47.

Xanthoria fulva (Hoffm.) Poelt & Petutschnig - Fol.n/ Ch/ A.s/ Epiph/ 3, 4-5, 4, 3-4/ Alt: 3/ rr/ subc/ Note: a rather critical taxon, whose distribution and ecology are still poorly known. - Loc.: **Abr**: 37.

Xanthoria mediterranea Giralt, Nimis & Poelt - Fol.b/ Ch/ A.i/ Calc/ 4-5, 4-5, 4, 4-5/ Alt: 1-2/ rc/ Note: optimum in the Mediterranean belt, often found together with *X. calcicola,* and with a similar ecology, but with a narrower altitudinal range. - Loc.: **Mol**: 59; **Pugl**: 64, 75, 92, 93; **Bas**: 115.

Xanthoria parietina (L.) Th. Fr. - Fol.b/ Ch/ S/ Epiph/ 3-4, 4-5, 3-4, 3-4/ Alt: 1-4/ ec/ Note: absent only from heavily polluted areas; sometimes also found on calcareous or base-rich siliceous rocks. - Loc.: **Marc**: 1, 2, 8, 11, 16, 18, 19, 22, 23, 28, C, G; **Umbr**: E; **Abr**: 31, 35, 37, 41, 42, 43, 45, 47, 50, 52, H; **Mol**: 53, 55, 56, 57, 59, 60, 61, 62, 63; **Pugl**: 64, 65, 66, 67, 68, 70, 75, 78, 81, 82, 84, 85, 86, 87, 88, 90, 92, 94, 95, 96, 99; **Bas**: 103, 106, 107, 108, 109, 110, 114, 115, 117, 119, 120, 122.

Xanthoria polycarpa (Hoffm.) Rieber - Fol.n/ Ch/ S/ Epiph/ 2-3, 4-5, 3-4, 2-3/ Alt: 3-4/ rr/ Note: most frequent in the Alps, on isolated trees and sun-exposed branches, but occurring, albeit much more rarely, throughout the eastern side of the Apennines down to Calabria, above the submediterranean belt. - Loc.: **Marc**: 3, 16; **Abr**: 35, 37, 45; **Mol**: 60, 55; **Bas**: 111, 105, 106, 113.

Xanthoria sorediata (Vain.) Poelt - Fol.n/ Ch/ A.s/ Calc/ 4-5, 4-5, 3-4, 4-5/ Alt: 4-5/ c/ Note: on exposed calcareous boulders; most frequent in the Alps, but also found, at high altitudes, in the Apennines. - Loc.: **Abr**: 36, 46.

Xanthoriicola physciae (Kalchbr.) D. Hawksw. - LF/ paras Teloschistaceae/ - Loc.: **Bas**: 109, on *Xanthoria parietina*. Det. D. Triebel

Xylographa abietina (Pers.) Zahlbr. - Cr/ Ch/ S/ Lign/ 1-2, 3, 2-3, 1/ Alt: 2-4/ c/ Note: restricted to high altitudes, and much rarer, in the south than in the Alps. - Loc.: **Bas**: 113.

Xylographa vitiligo (Ach.) J. R. Laundon - Cr/ Ch/ A.s/ Lign/ 1-2, 3, 2, 1/ Alt: 3-4/ rc/ Note: mostly on decaying trunks of conifers in humid-shaded situations; widespread in the Alps, very rare in the Apennines. - Loc.: **Abr**: 32.

Zwackhiomyces coepulonus (Norm.) Grube & R. Sant. - LF/ paras *Caloplaca* and *Fulgensia*/ - Loc.: **Abr**: 38, on *Fulgensia australis*/ Det. D. Triebel

Discussion

The list reports 805 infrageneric taxa, including 777 lichenized fungi, 23 lichenicolous fungi and 5 non-lichenized fungi belonging to genera with lichenized species; the taxa are distributed among regions as follows: Marche: 417, Umbria: 106; Abruzzo: 459, Molise: 305, Puglia: 423, and Basilicata: 337. Fourteen taxa (*Anema moedligense, Arthonia anombrophila, Aspicilia desertorum, Caloplaca veneris, Cresporhaphis wienkampii, Dirina cretacea, Immersaria uzbekica, Lecanora congesta, Lecanora graeca, Lecidea albohyalina, Peccania salevensis, P. tiruncula, Thelidium dionantense,* and *T. impressum*) are new to the Italian lichen flora.

In Tab. 1 we give, for each region of Italy, the following data: a) the total number of taxa reported by Nimis (1993); b) the total number of taxa known today on the basis of our results plus several smaller contributions which appeared after 1993, and mentioned in the introduction (data from Nimis, 1999a); c) the percent variation in number of infrageneric taxa since 1993. Some regions, generally those which were less studied in the 1993-1999 period, even decreased the number of species, mainly due to synonymization of poorly-known taxa after Nimis (1993). The highest increases, of course, are in the least-known regions, and particularly in those visited during this survey.

In spite of these figures, the Adriatic part of the Peninsula still remains the least well-known region of the country. However, the new data substantially increase its lichen floras, and permit to test a hypothesis formulated by Nimis & Tretiach (1995) on the basis of a much poorer set of records, that of a fundamental subdivision between the western (Tyrrhenian) and eastern (Adriatic) side of the peninsula. According to these authors, Tyrrhenian Italy is characterized by a much higher incidence of suboceanic species, many of which have a subtropical character. In the following, we report the percents of suboceanic species, and of species with *Trentepohlia* (an indicator of tropical-subtropical affinities) in

Tab. 1 - Number of lichen infrageneric taxa known for each Italian region in 1993 (data from Nimis 1993) and in 1999 (data from Nimis 1999), and percent variation.

Region	1993	1999	Variation
Venezia Giulia	431	456	6%
Friuli	638	877	37%
Veneto	900	931	3%
Trentino-Alto Adige	1272	1268	0%
Lombardia	1055	1071	2%
Piemonte	898	898	0%
Valle d'Aosta	503	668	33%
Emilia-Romagna	562	615	9%
Liguria	790	778	-2%
Toscana	921	951	3%
Marche	187	484	159%
Umbria	47	261	455%
Lazio	557	568	2%
Abruzzo	335	589	76%
Sardegna	1002	1027	2%
Molise	0	305	-
Campania	501	493	-2%
Puglia	383	566	48%
Basilicata	216	464	115%
Calabria	629	861	37%
Sicilia	726	833	15%
N-Italy	1857	1883	1%
C-Italy	1338	1453	9%
S-Italy	1061	1239	17%
ITALY	2145	2254	5%

some regions of Tyrrhenian and Adriatic Italy. Tyrrhenian Italy: Liguria (22.1; 10.1), Toscana (27.0; 11.6), Lazio (27.5; 12.2), Campania (21.2; 10), Calabria (25.2; 12.3), Sicilia (23.7;10.5). Adriatic Italy (incl. regions of the north): Venezia Giulia (16.6; 8.9), Friuli (13.4; 6.3), Veneto (14.0; 8.6), Emilia-Romagna (15.2; 5.9), Marche (15.2; 8.2), Abruzzo (14.7; 7.3), Molise (11.1; 5.2), Puglia (23.8; 14.6). The differences are such as to confirm the hypothesis by Nimis & Tretiach (1995). The values relative to Puglia would be much lower if the flora of the Gargano Peninsula would be excluded: this area, with an exceptionally humid climate, gives to the lichen flora of Puglia a suboceanic flavour which does not reflect the climatic conditions prevailing in most of the region, one of the driest of Italy.

The truly oceanic element, which is anyway extremely rare in Italy, is practically absent along the eastern side of the Peninsula, with the only exception of *Lobaria virens* in the Gargano Peninsula.

Several more or less suboceanic species are much less common in Adriatic than in Tyrrhenian Peninsular Italy; among them we can cite: *Acrocordia cavata, Arthonia cinnabarina, Bactrospora patellarioides, Blastodesmia nitida, Cetrelia olivetorum, Collema multipunctatum, C. nigrescens, C. subnigrescens, Dendriscocaulon umhausense, Diploicia canescens, Enterographa crassa, Fuscopannaria ignobilis, F. mediterranea, Heterodermia speciosa, Ingaderia troglodytica,* *Lecanographa lyncea, Lecanora lividocinerea, L. pruinosa, Normandina pulchella, Opegrapha celtidicola, O. herbarum, O. ochrocincta, O. subelevata, Parmotrema chinense, P. reticulatum, Peltigera neckeri, Pertusaria hymenea, P. velata, Physconia enteroxantha, P. servitii, Pyrenula chlorospila, Pyrrhospora quernea, Ramalina lacera, R. subgeniculata, R. thrausta, Roccella fuciformis, R. phycopsis, Schismatomma decolorans, Thelenella modesta, Thelopsis isiaca, Usnea articulata*. Species like *Normandina pulchella* and *Parmotrema chinense* which are locally almost trivial in other parts of Italy (northeastern plains, Tyrrhenian Italy) are practically absent in the survey area. Also some widespread temperate species, otherwise very common in the deciduous oak belt throughout Italy, are much less abundant along the Adriatic side of the peninsula; examples are: *Candelaria concolor, Candelariella reflexa, Cladonia furcata, Parmelia caperata*, and *P. subrudecta*.

Despite the scarcity of oceanic and suboceanic species, the survey area, however, has only a few, slightly subcontinental lichens which are more common in Adriatic than in Tyrrhenian Italy. Examples are: *Acarospora cervina, Caloplaca decipiens, Parmelia acetabulum*, and *Parmelia glabra*. Other more or less subcontinental species, very rare or absent in Tyrrhenian Italy, and occurring – albeit rarely – in Adriatic Italy are: *Acarospora heppii, A. insolata, A. laqueata, Aspicilia desertorum, Caloplaca lobulata, Diploschistes diacapsis, Heppia solorinoides, Parmelia subargentifera, Psora vallesiaca, Squamarina lentigera, Teloschistes contortuplicatus, Toninia philippaea, T. physaroides, Toninia lutosa, Xanthoria elegans, X. fulva, X. candelaria*. Some of them are just bound to dry climates, which are common anyway in the eu-Mediterranean belt. The most interesting records from Adriatic peninsular Italy are those of the non-strictly Mediterranean *Acarospora laqueata* and *Aspicilia desertorum*, and the abundance of *Teloschistes contortuplicatus* along the eastern slopes of the Apennines. The climates of Adriatic penisular Italy are not enough humid for allowing an abundant presence of suboceanic lichens, but also not dry-continental enough as to permit the presence of a consistent set of truly continental species.

Absent from Adriatic peninsular Italy are many silicicolous species, due to the absolute prevalence of calcareous substrata. Three times we tried in vain to visit the Monti della Laga in Abruzzo, the only extensive siliceous outcrops (sandstone) of the survey area, always dissuaded by an extremely bad wheather: a future exploration of this area will be likely to increase considerably the lichen flora of Abruzzo.

A very peculiar phenomenon is the frequent occurrence of some more or less silicicolous species on limestone, especially at low altitudes. Among them are: *Diploschistes actinostomus, Lecanora campestris, L. sulphurea, Lecidella asema, L. carpathica, L. stigmatea, Ochrolechia parella, Placopyrenium buceckii, Sarcogyne privigna*, and *Tephromela atra*. This phenomenon is usually explained by a «superficial decalcification» of the calcareous rocks; however, all of the rock samples which we examined showed a clear reaction to HCl. The occurrence of silicicolous species on limestone in Adriatic Italy is probably a more complex phenomenon, where climatic conditions could play an important role, and which still awaits a more satisfactory explanation.

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