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FOUR LICHENS NEW TO ITALY

Mauro TRETIACH and Palmira CARVALHO

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Abstract: Four species of lichens, *Agonimia allobata*, *Anisomeridium nyssaegenum*, *Biatorella monasteriensis* and *Diplotomma scheideggerianum*, are reported for the first time from Italy. A detailed description of each species and critical notes on its ecology and geographic distribution are given.

Introduction

Italy is, from the lichenological point of view, one of the most interesting European countries; due to its wide latitudinal extension, to the variety of substrata and to the presence of the highest European mountains, it hosts one of the richest European floras, with 2145 infrageneric taxa (Nimis 1993). Notwithstanding the old lichenological tradition, the investigation of the Italian lichen flora is still unsatisfactory; until now, the best-known regions are Trentino-Alto Adige, Lombardia, Sardegna and Liguria, while few informations are available for the Adriatic regions and, more generally, for the South (Nimis & Tretiach 1993). To fill up these gaps the Società Lichenologica Italiana organizes field trips every year to study areas whose lichen floras are not well known (Tretiach 1990). In particular, at Trieste a group of researchers is carrying out field studies aimed at improving the knowledge of the Italian lichen flora. In this paper we give information on four species which are reported for the first time from Italy.

Data and Methods

The cited samples are preserved in the Herbarium Universitatis Tergestinae (TSB), Herb. P.L. Nimis. For each species, a brief comment on its ecology and geographic distribution is given, with a morpho-anatomical description of the samples collected by the authors. For each sample, locality, altitude, substratum, date of collection, collector name and data bank number are given. The nomenclature follows Nimis (1993) and Purvis *et al.* (1993).

The descriptions are based on the analysis of original material. Sections of thalli and ascomata were mounted in water and Lugol's solution. All measurements were made in water mounts. The iodine reaction of the asci was observed in Lugol's solution after pretreatment with K.

The species

Agonimia allobata (Stizenb.) P. James

Venezia Giulia: - Karst, Dolina di Borgo Grotta Gigante (TS), *ca.* 240 m, on *Quercus petraea*, 08.1993, leg. P. Carvalho (17804).

Thallus crustose, thin, smooth to finely granulose, dark grey-green. Perithecia frequent, spherical, 1/2-3/4 emergent, with a pale to pink-grey ostiole, *ca.* 0.2 mm in diameter. Periphyses present in the ostiole (Fig. 1a). Exciple completely black in the outer layer, a few cells colourless in the inner part (Fig. 1c). Paraphyses absent at maturity. Spores 8 per ascus, colourless, muriform, 30-55 x 10-15 µm, with a thin gelatinous perispore (Fig. 1b). Pycnidia not seen.

The small specimen was collected on *Quercus petraea*, on the south-western slope of a large dolina; it was associated with rather common species, such as *Acrocordia gemmata, Candelariella reflexa, Normandina pulchella, Phaeophyscia chloantha, Phlyctis argena*, and was observed only once.

Until now *A. allobata* has been reported from Ireland, England, Normandy and Switzerland, and the new record from the Karst region considerably enlarges its distributional range.

This taxon was previously considered as a member of the genus *Polyblastia*, but P. James (in Coppins *et al.* 1992) transferred it to *Agonimia* on account of its thallus morphology, the structure of the perithecia, and the ontogeny of the fruiting bodies (see also Coppins & James 1978). Other species of *Agonimia* present in Italy are *A. octospora* (known from a single locality in Toscana) and *A. tristicula*, with several, scattered localities throughout the country and a frequency maximum in the montane belt.

Anisomeridium nyssaegenum (Ellis & Everh.) R.C. Harris

Friuli: - Carnic Alps, road Comeglians - Tualis (UD), *ca.* 580 m, on *Sambucus*, in a closed scrub community near the road, 08.09.1993, leg. P.L. Nimis & M. Tretiach (17859). **Toscana**: - Casentino, near the monastery of Camaldoli (AR), *ca.* 780 m, on *Sambucus*, near a creek, 01.11.1993, leg. P.L. Nimis & M. Tretiach (18010).

Thallus thin, smooth, whitish-grey, with *Trentepohlia* as photobiont, with scattered, ± immersed, globose perithecia. Upper wall of the fruiting bodies *ca.* 30 µm thick, in thin-cross section brown in the upper part, paler in the lower part, formed by ± isodiametric cells (Fig. 1e). Paraphyses richly branched and anastomosed, persistent (Fig. 1f). Asci with a thickening in the upper part, fissitunicate, I-, 8-spored (Fig. 1f, but sometimes a few spores aborting). Ascospores 14-20 x 4-6 µm, 1-septate or more rarely 2-septate, asymmetric, fusiform, uni- or biseriate in the asci, without a distinct episporium (Fig. 1d). Pycnidia black, globose, ± immersed, containing macro- or microconidia;

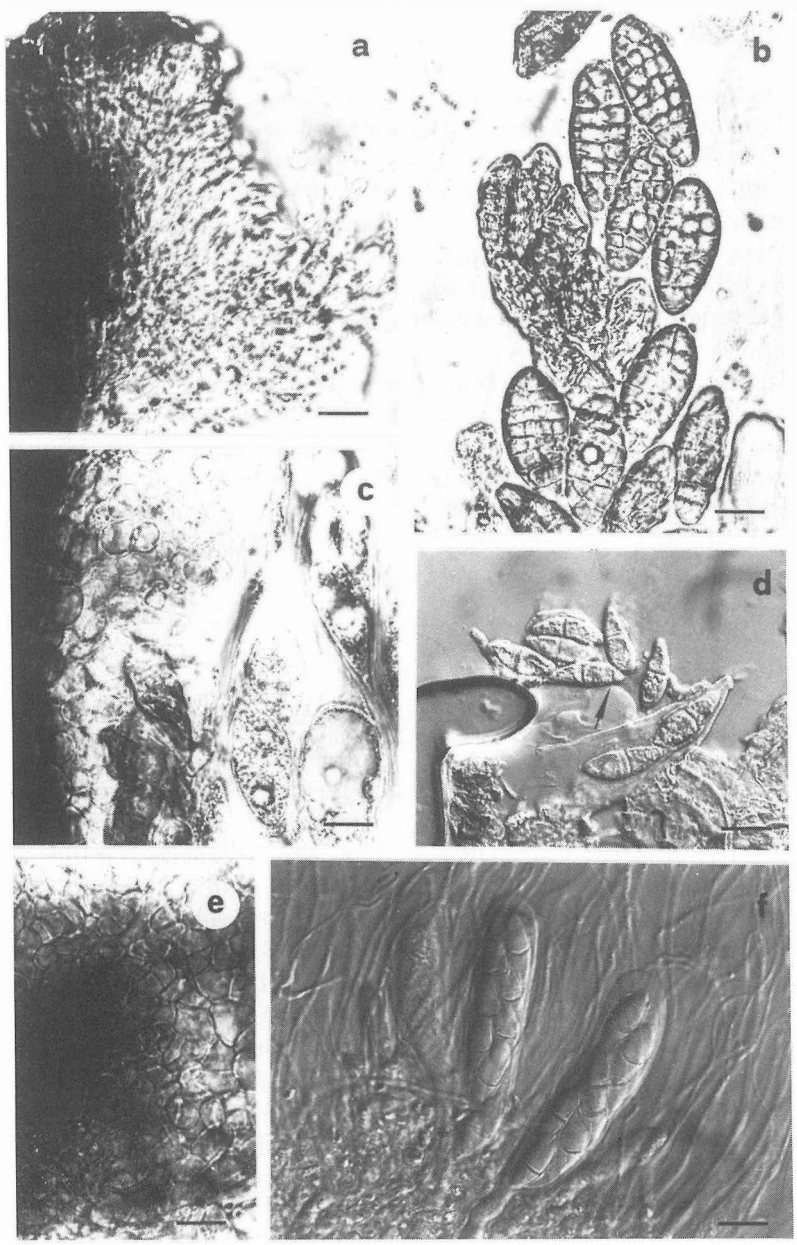

Fig. 1 - *Agonimia allobata*: periphyses (a), muriform spores with the thin gelatinous perispore (b), and section of the inner part of the exciple (c); *Anisomeridium nyssaegenum*: bi- and tri-septate spores (d), cross section of the lower part of the exciple (e), and 8-spored asci (f). Scales: a-f = 10 µm.

macroconidia ellipsoid, 4 x 2 µm; microconidia simple, narrowly ellipsoid, 2-3 x 1 µm.

A. nyssagaenum was found for the first time in the Carnic Alps in a very humid, narrow valley in the lower montane belt, and the specimen collected was very poorly-developed; more recently, a conspicuous, richly fruiting population was found in the Camaldoli forest (Tuscany) in a relatively open area near a creek, growing on *Sambucus*, and it was possible to prepare an exsiccatum. This species, bound to humid biotopes, is usually found on eutrophic bark, but sometimes it may grow also on rock (Purvis *et al.* 1992); often sterile, it can be easily identified by the white cyrrhus of macroconidia protruding from the pycnidia, when present.

The genus *Anisomeridium* has a worldwide distribution centered in Tropical regions (Poelt & Vezda 1981), and is related to *Arthopyrenia* and *Acrocordia*. The species of the latter genus have a well-developed episporium, bitunicate asci and uniseriate spores; *Arthopyrenia* has, like *Anisomeridium*, fissitunicate asci, but the paraphyses are effimerous and the involucrellum is entirely fungal. Other species of *Anisomeridium* presently known from Italy are *A. biforme* and *A. macrosporum*, both of which are rarely collected as well (Nimis 1993).

Biatorella monasteriensis (Lahm) Lahm

Friuli: - Carnic Alps, Road Comeglians - Tualis (UD), *ca.* 580 m, on *Sambucus*, in a closed shrub community near the roadside, 08.09.1993, leg. P.L. Nimis & M. Tretiach (17860).

Thallus thin, granular, effuse, pale grey-green when dry, bright green when wetted, with numerous, globose ascomata. Cortex of the thalline granules formed by isodiametric, uniseriate cells (Fig. 2b). Apothecia minute, *ca.* 0.3-0.5 mm large, with a very thin proper margin when young, then strongly convex and without margin, with a fleshy colour, pinkish-yellow, paler and almost transparent when wet (Fig. 2a). Thalline exciple formed by isodiametric cells, extended to the thalline granules. Epithecium pale brown, with small crystals in the paraphyses; hymenium and hypothecium pale-coloured in thick sections. Paraphyses branched only in the upper part, becoming more evident in K, and enlarged at their top, being almost clavate. Asci multispored, *ca.* 100-150-spored (Fig. 2c), with a I+ blue, gelatinous outer layer (Fig. 2d), and without tholus, *Biatorella*-type (see Hafellner & Casares-Porcel 1992). Ascospores 3-4 µm, globose, hyaline, without halo.

Biatorella monasteriensis was collected on *Sambucus* together with *Anisomeridium nyssaegenum*. The former species formed a rather well-developed population intermingled with numerous, small liveworts on the lower part of a branch. This species is normally found on eutrophic bark of broad-leaved trees, such as *Fraxinus*, *Ulmus* and *Sambucus* in sheltered habitats, and seems to prefer

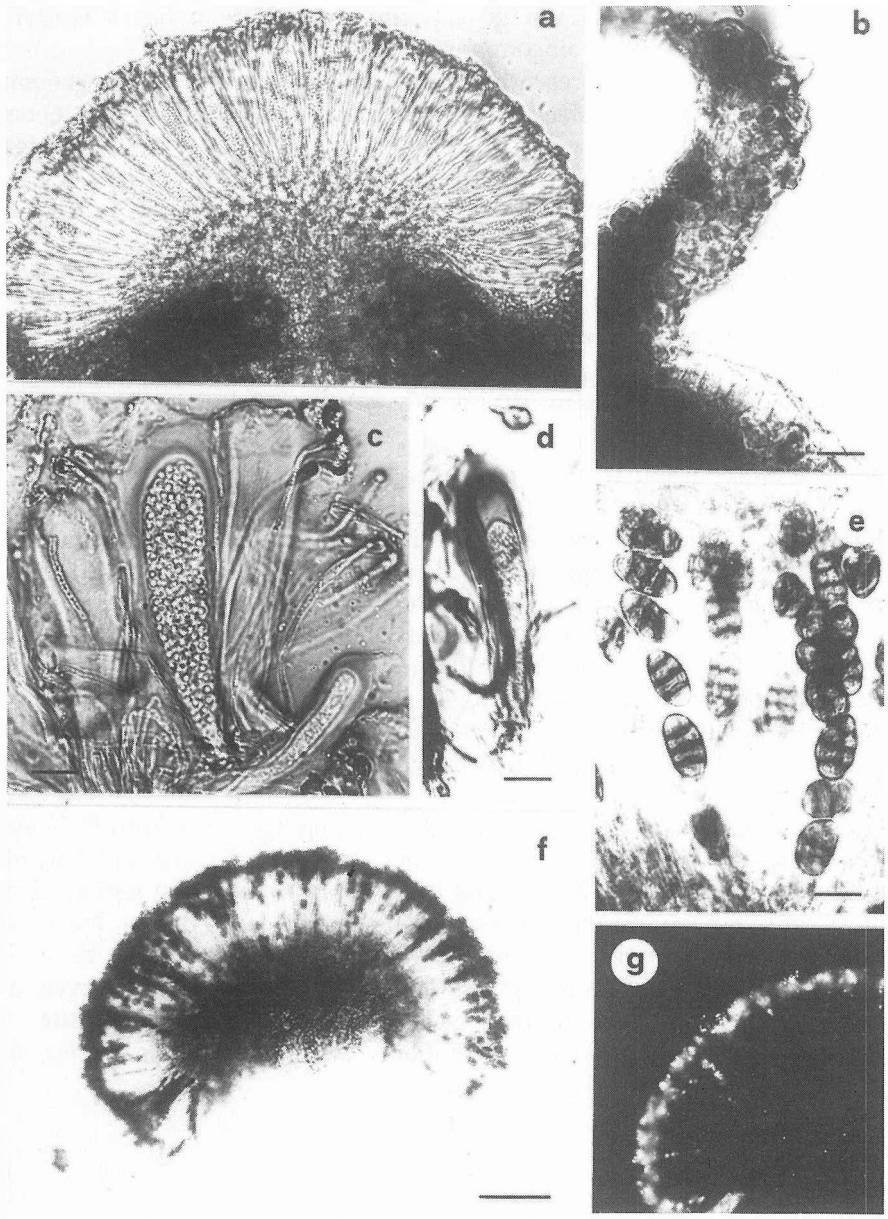

Fig. 2 - *Biatorella monasteriensis*: cross section of the apothecium (a), thalline margin of the apothecium (b), multi-spored ascus (c), and immature ascus after pretreatment with K/I (d); *Diplotomma scheideggerianum*: triseptate or submuriform spores (e), cross section of the apothecium (f), and crystals in the epihymenium observed with orientative polarization (g). Scales: a = 25 µm; b-e = 10 µm; f,g = 75 µm.

substrata with a high water storage capacity. In Europe it has a scattered distribution, and it is certainly uncommon.

The genus *Biatorella*, as presently understood, is probably heterogeneous. Several species are not-lichenized, and have been transferred to other genera (*Sarea, Strangospora*). Until now, the Italian flora comprised only tree epilithic or epigaeic species (*B. fossarum*, the strongly related *B. hemisphaerica*, and *B. germanica*). All species are easily overlooked, and are probably more frequent than the few known samples would suggest.

Diplotomma scheideggerianum (Bricaud & Roux) Nimis

Venezia Giulia: - Karst, Dolina di Borgo Grotta Gigante (TS), 250 m, on a calcareous face in the northern-exposed slope of the dolina, with *Caloplaca xantholyta*, 20.08.1993, leg. P.L. Nimis & M. Tretiach (17398).

Thallus leprose, granular, obscurely lobate at the margins, with numerous, ± immersed apothecia and a rather thick, chalky medulla. Algal layer not well-developed and -delimited. Apothecia pruinose, covered by a thick layer of crystals, with a thin proper margin, not always evident (Figg. 2f-g). Epithecium pale brown, hypothecium brown. Paraphyses simple, asci 8-spored, *Buellia*-type, clearly J+ blue. Spores triseptate or submuriform, brown when mature, with 1-3 transverse septa, *ca.* 8-15 x 5-9 µm, often deformed or abortive (Fig. 2e). No detectable reaction of the thallus to C, KC, K, J, P.

D. scheideggerianum grows as a parasite on thalli of *Caloplaca xantholyta*, but often the host species persists just as small yellow, sorediate portions within the thallus of the parasite.

This species was recently described as *Buellia scheideggeriana* from Provence, and has been later found in several localities of France, Greece and Slovenia (near the Italian border). We have found it only once in the Karst region, at the bottom of an overhang, on the north-exposed site of a large dolina, but in the region it is probably more frequent, because at first sight it can be easily mistaken for a well-developed *Lepraria*. The apothecia, which, however, are often badly-developed and immersed in the thallus, are diagnostic. *D. scheideggerianum* seems to be an ombrophobous, rather nitrophilous species, and prefers rather humid sites (Bricaud & Roux 1991).

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