

Notulae to the Italian flora of algae, bryophytes, fungi and lichens: 6

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Abstract

In this contribution, new data concerning bryophytes, fungi, and lichens of the Italian flora are presented. It includes new records and confirmations for the bryophyte genera *Barbula*, *Fissidens*, *Gymnostomum*, *Jungermannia*, *Riccia*, and *Scapania*, the fungal genera *Hyalopsona* and *Urocystis* and the lichen genera *Arthothelium*, *Chaenotheca*, *Lepraria*, *Lobaria*, *Miriquidica*, *Parmelia*, *Rinodina*, *Solenopsona*, *Thelopsis* and *Xanthoparmelia*.

Keywords

Ascomycota, Basidiomycota, Bryidae, Jungermanniidae, Marchantiidae, floristic data

How to contribute

The text of the records should be submitted electronically to: Cecilia Totti (c.totti@univpm.it) for algae, Marta Puglisi (mpuglisi@unict.it) for bryophytes, Alfredo Vizzini (alfredo.vizzini@unito.it) for fungi, Sonia Ravera (sonia.ravera@unimol.it) for lichens.

Floristic records**BRYOPHYTES*****Barbula crocea* (Brid.) F.Weber & Mohr (Pottiaceae)**

+ **TOS:** Tre Fiumi, Apuan Alps Regional Park, Stazzema (Lucca), in on damp marble walls (UTM WGS84: 32T 601741.4878893), 775 m, 16 January 2016, *G. Pandeli* (SIENA; Herb. Pandeli). – Species confirmed for the flora of Toscana.

This taxon has been recently recorded for Valle d'Aosta, Piemonte, Lombardia, Trentino Alto Adige, Veneto, Friuli Venezia Giulia, Abruzzo, and Campania (Aleffi et al. 2008), whereas old reports from Toscana dated before 1950. The site of Tre Fiumi is characterized by damp marble walls with the alliance *Cratoneurion commutati* Koch, where *Barbula crocea* grows with *Palustriella commutata* (Hedw.) Ochyra, *Orthothecium rufescens* (Dicks. ex Brid.) Schimp., *Pellia endiviifolia* (Dicks.) Dumort., *Pinguicula apuana* Casper & Ansaldo, *Potentilla caulescens* L., and *Saxifraga aizoides* L.

G. Pandeli, F. Cheli, I. Bonini

***Fissidens rufulus* Bruch & Schimp. ex Bruch & Schimp. & W. Guembel (Fissidentaceae)**

+ **CAL:** I Pagliai, Lago di Tarsia (Cosenza), on stones in a little waterfall (UTM WGS84: 33S 612230.4384759), 108 m, 10 May 2018, *D. Puntillo*, *M. Puntillo* (CLU No. 4151). – Species new for the flora of Calabria.

Fissidens rufulus is a rare species showing coloured brown costa and border. However this character is quite inconstant. This species was recorded as sterile on submerged stones of a small waterfall with clean unpolluted running waters together with *Eucladium verticillatum* (With.) Bruch & Schimp., *Lunularia cruciata* (L.) Lindb. and *Southbya tophacea* (Spruce) Spruce. In Italy, it is known only for few Regions: Friuli Venezia Giulia, Emilia Romagna, Marche, Sardinia, and Umbria (Aleffi et al. 2008; Ellis et al. 2016). Nearly endemic to Europe, *F. rufulus* is an uncommon plant, listed as Nationally Scarce in Britain, Endangered in Switzerland and Luxembourg,

Vulnerable in Austria, Near Threatened in the Czech Republic, Data Deficient in Sweden, Germany and Spain, and Very rare and Susceptible in the Netherlands. It is also known from France, Croatia, Greece, and Russia (Lockhart et al. 2012). In Europe, it is assigned to the Temperate floristic element (Smith 2004).

D. Puntillo, M. Puntillo

Gymnostomum viridulum Brid. (Pottiaceae)

+ **TAA:** Ex road to Pregasina (Trento) (UTM WGS84: 32T 642063.5079950), 320 m, 15 January 2017, *F. Prosser* (Herb. Prosser No. 00293); Frazengi above Campolongo di Noriglio (Trento) (UTM WGS84: 32T 659947.5083744), 435 m, 4 February 2018, *F. Prosser* (Herb. Prosser No. 02199). Below Dosso Tre Croci, Above San Tommaso at Nago (Trento), jutting cliff exposed to South (32T 647250.5082941), 510 m, 24 February 2018, *F. Prosser* (Herb. Prosser No. 02493). – Species new for the flora of Trentino-Alto Adige.

This species is not reported by Aleffi et al. (2008) for Trentino-Alto Adige, and it is indicated as Endangered in Italy by Cortini Pedrotti and Aleffi (1992). *Gymnostomum viridulum* was discovered in wet crevices on south-facing limestone cliffs, growing on shallow and friable tuff layer. In summer, these calcareous cliffs are generally completely dry. All the specimens are sterile, but they carry the typical green propagula in the leaf axil. This species seems to be quite widespread, and it will be probably found in other similar sites of the Region. Taking into account its very small size (the leaves hardly reach 50 µm in length), it may be assumed that this species is not as rare as reported, but simply difficult to find. In Germany, it was also found only recently for the first time (Long 1993).

F. Prosser

Jungermannia borealis Damsh. & Váňa (Jungermanniaceae)

+ **TAA:** Hintere Pilsbergalm, Stelvio National Park, Ultimo, Santa Gertrude (Bolzano) (WGS84 32T 639481.5151395), 2300 m, 28 October 2014, leg. *W. Tratter*, det. *D. Spitale*, conf. *M. Aleffi* (BOZ, no. BRYO 2421). – Species new for the flora of Trentino-Alto Adige.

This finding represents the first record for Trentino-Alto Adige and the fourth in Italy. This plant has been found on stones of an alpine stream, together with *Hypogryphnum smithii* (Sw.) Broth. Earlier, the species had been recorded in Piemonte, Val Gravio (Blockeel et al. 1999), in the Gran Paradiso National Park (Schumacker et al. 1999), and in Veneto, Dolomiti Bellunesi National Park (Tomaselli et al. 2004). Across the Alps, *J. borealis* occurs in Switzerland (<http://swissbryophytes.ch>) and Austria (Köckinger 2017). It is an arctic-alpine species (Damsholt 2002),

generally found on shady to partially shaded rocks along streams or on moist rocks on high mountains and base-rich snow fields. The preferred substrate is weakly alkaline, but not calcareous.

D. Spitale, W. Tratter, P. Mair

Riccia fluitans L. (Ricciaceae)

+ **PIE**: north of the Candia Lake in a tributary channel, Candia Canavese (Torino) (UTM WGS84 32T 414071.5019980), 227 m, 9 September 2007, *A. Selvaggi* (Bryophytorum Herbarium A. Selvaggi); pond called “la Paludetta” close to the north-western bank of Candia Lake Candia Canavese (Torino) (UTM WGS84 32T 413691.5019814), 226 m, 22 April 2018, *A. Selvaggi* (Bryophytorum Herbarium A. Selvaggi); ephemeral pond between Cascina Fornace and Rondò dell’Uno, “La Mandria” Regional Park, Venaria Reale (Torino) (UTM WGS84 32T 390247.5000923), 290 m, 14 May 2015, *A. Selvaggi*, *L. Miserere*, *A. Tacchino* (Bryophytorum Herbarium L. Miserere); *ibidem*, 1 July 2015, *L. Miserere* (Bryophytorum Herbarium L. Miserere); San Vitale pond, Roppolo (Biella) (UTM WGS84 32T 427566.5030772), 384 m, 8 August 2007, *A. Selvaggi* (Bryophytorum Herbarium A. Selvaggi); *ibidem*, 9 June 2015, *A. Selvaggi*; *ibidem*, 25 May 2018, *A. Selvaggi* (Bryophytorum Herbarium A. Selvaggi). Swamp with *Salix cinerea* L. on the north-eastern side of Monte Orsetto Roppolo (Biella) (UTM WGS84 32T 426878.5032149), 425 m, 25 May 2018, *A. Selvaggi* (Bryophytorum Herbarium A. Selvaggi); Benne di Saluggia (or Casale Benne), Saluggia (Vercelli) (UTM WGS84 32T 424130.5006159), resurgence stream close to Dora Baltea river, 162 m, 28 September 2010, *A. Selvaggi* (Bryophytorum Herbarium A. Selvaggi); near the road SS 589, north of Cascina Ricchiarretto Rosso and towards Cascina Paolina, Barge (Cuneo) (UTM WGS84 32T 375577.4954261), stream and wetland of resurgence in a alder swamp wood, 9 August 2011, *A. Selvaggi*, *M. Rastelli* (Bryophytorum Herbarium A. Selvaggi); “Fontanazze” east of Staffarda Abbey, Ravello (Cuneo) (UTM WGS84 32T 377088.4953168), in resurgence area on the left bank of the river Po, 20 July 2011, *A. Selvaggi*, *M. Rastelli* (Bryophytorum Herbarium A. Selvaggi). – Species confirmed for the flora of Piemonte.

Riccia fluitans is an annual slender thallose liverwort, showing both floating and terrestrial forms. Floating forms grow on stagnant or slow-moving water of ponds, swamps, channels or resurgence areas with oligo- to meso-eutrophic waters. It is part of the floating pioneer vegetation of the *Lemnion trisulcae* Den Hartog & Segal, 1964 related with the UE Habitat “3150 - Natural eutrophic lakes with Magnopotamion- or Hydrocharition-type vegetation”, together with *Lemna trisulca* L., *Lemna minor* L., and *Ricciocarpos natans* (L.) Corda. In Europe, *R. fluitans* is considered as Near Threatened (NT) in Italy and Portugal, and Vulnerable (VU) in Spain, Norway, and Switzerland (Schnyder et al. 2004, Hodgetts 2015). In Piemonte, its occurrence has not been confirmed over the last 50 years (Aleffi et al 2008), albeit more recent data were recorded by Valda et al. (1983–1984) at “Cascina della Noria”, Trino Vercellese (Vercelli).

A. Selvaggi, L. Miserere

***Scapania gymnostomophila* Kaal. (Scapaniaceae)**

+ **TAA:** Mount Pasubio, above il Pian del Cheserle to Sorgente Sette Albi (Trento) (UTM WGS84: 32T 664848.5077265), 1490 m, 10 February 2018, *F. Prosser* (Herb. Prosser No. 02208). – Species new for the flora of Trentino-Alto Adige.

This circumboreal liverwort can be easily recognized by having only one big oil body for each leaf cell. It was found on the sheltered side of a limestone boulder together with another small *Scapania*, showing many oil bodies per cell and with *Barbula crocea* (Brid.) F. Weber & D. Mohr. For Italy, Aleffi et al. (2008) quote *S. gymnostomophila* only for Piemonte, based on previous records by Blockeel et al. (1999) from Sagna del Vallone and Rochemolles Valley. This species is very likely more widespread in the Italian Alps, as suggested by its distribution map in Switzerland (<http://www.swissbryophytes.ch>).

F. Prosser

FUNGI***Hyalopsora polypodii* (Pers.) Magnus (Pucciniastraceae)**

+ **CAL:** Serra Dolcedorme, Pollino National Park (Cosenza), on the leaves of the fern *Cystopteris fragilis* (L.) Bernh. (UTM WGS84: 33S 603883.4417049), 2179 m, 13 July 2018, *D. Puntillo* (CLU No. 99). – Species new for the flora of Calabria.

Hyalopsora polypodii is an autoecious obligate rust parasite. Because it is inconspicuous, the species is often overlooked. However, observing the lower page of the fern fronds of *Cystopteris fragilis* it was possible to see the yellow sori typical of this species. *Hyalopsora polypodii* has been generically recorded for Italy by De Toni (1888, sub *Uredo polypodii* (Pers.) DC.). Later, it was collected from Lozanna and S. Zeno (Verona) by Pollini (1816) and from Piemonte by Pollini (1824, sub *Uredo aspidii* Pollinii).

D. Puntillo

***Urocystis cepulae* Frost (Urocystidaceae)**

+ **CAL:** Bosco di Mavigliano (Montalto Uffugo, Cosenza), on leaves of *Allium nigrum* L. (UTM WGS84 33S 604884.4360659) 228 m, 30 March 2008, *D. Puntillo* (CLU No. 67, 68). – Species new species for the flora of Calabria.

Urocystis cepulae is of great importance as it infects cultivated garlic species. At the collection site, this species was recorded on leaves of *Allium nigrum* L., *A. ampeloprasum* L., *A. sphaerocephalon* L., and *A. vineale* L. Of the approximately 250 known species of *Allium* L., at least 150 are susceptible to this organism (Anderson 1926). In Italy, this species is known for Friuli Venezia Giulia (Tomasi 2013) and Sicilia (Venturella 1991). It is known also for Torino, Cuneo, and Vicenza (sub *Tuburcinia cepulae* (Frost) Liro)

and for Parma, Modena, and Perugia (sub *Tuburcinia magica* (Pass.) Liro) (Ciferri 1938). Finally, *U. cepulae* has been recorded for Licata (Sicily) from an old collection on *Allium subhirstum* L. (Vánky 1994).

D. Puntillo

LICHENS

Arthothelium ruanum (A.Massal.) Körb. (Arthoniaceae)

+ **CAM:** Gole del Bussento, Morigerati (Salerno), on *Carpinus betulus* L. (UTM WGS 84: 33T 546883.4443458), 180 m, 23 February 2011, leg. G. Brunialti, V. Genovesi, S. Ravera, det. S. Ravera (Herb. Ravera). – Species new for the flora of Campania.

Arthothelium ruanum is a rare temperate-suboceanic species, mostly collected on smooth bark and shrubs in humid deciduous forests, quite rare at low elevation in the Mediterranean region (Nimis 2016). This crustose lichen morphologically resembles *Arthothelium spectabile* A.Massal., but the latter shows larger spore size (ca. 25–37 × 12–15 µm). This specimen was found in a humid, shaded canyon, listed among the Italian Important Lichen Areas (Ravera et al. 2011) because of its very rare and endangered relictual flora. The record reported here contributes to the knowledge of lichen biodiversity in this area, which is a WWF Oasis also included in the “Cilento, Vallo di Diano and Alburni” National Park. Due to its rarity, *A. ruanum* is red listed in Italy under the Near Threatened category (Nascimbene et al. 2013).

S. Ravera

Chaenotheca brachypoda (Ach.) Tibell (Coniocybaeae)

+ **TOS:** Rocca di Crevole, Murlo (Siena), on *Quercus ilex* L. (UTM WGS 84: 32T 691658.4784036), 320 m, leg. Italian Lichen Society (SLI) ecology working group, det. S. Ravera (Herb. Ravera). – Species new for the flora of Toscana.

Chaenotheca brachypoda is a “pin lichen” growing on decorticated stumps of deciduous trees and conifers, in old humid forests, previously collected on *Q. ilex* only in Calabria (Puntillo 1996). This species differs from the similar and more common *Chaenotheca furfuracea* (L.) Tibell in having an immersed, not visible, thallus, shorter apothecia and smooth spores. In Italy, this species has been reported from Trentino-Alto Adige, Piemonte, and Calabria (Nimis 2016). Due to its rarity, it is included in the Italian red list of epiphytic lichens under the Endangered category (Nascimbene et al. 2013).

L. Paoli, S. Ravera

Lepraria diffusa (J.R.Laundon) Kukwa (Cladoniaceae)

+ **LOM:** road between Paline di Borno and Dosso di Scalve, Azzone (Bergamo), on a limestone outcrop in a clearing of a montane wood with beech and spruce (UTM WGS84: 32T 586200.5088906), 970 m, 28 April 2017, leg. G. Gheza, det. H. Mayrhofer (Herb. Gheza); pathway between Croce di Salven and Valsorda, Angolo Terme (Brescia), on a limestone outcrop and on soil at the base of a spruce in a montane wood with beech and spruce (UTM WGS84: 32T 587883.5088284), 1210–1225 m, 1 January 2018, leg. G. Gheza, det. H. Mayrhofer (Herb. Gheza); Convento della Santissima Annunciata, Piancogno (Brescia), on terricolous bryophytes at the base of a beech, in a degraded wood dominated by beech (UTM WGS84: 32T 595636.5087262), 700 m, 2 January 2018, leg. G. Gheza, det. H. Mayrhofer (Herb. Gheza). – Species new for the flora of Lombardia.

In spite of having a wide altitudinal range, *Lepraria diffusa* is considered uncommon in Italy (Baruffo et al. 2006), and it was never reported before for Lombardia. It was found on calcareous rock and on soil overgrowing bryophytes, which are the most common substrates for this species (Baruffo et al. 2006; Nimis 2016). All the specimens contained 4-oxypannaric acid 2-methylester, but this species can rarely contain also atranorin and/or roccellic acid (Saag et al. 2009).

G. Gheza, H. Mayrhofer

Lepraria eburnea J.R.Laundon (Cladoniaceae)

+ **LOM:** Dosso di Scalve, Azzone (Bergamo), on bryophytes on bark of *Acer pseudoplatanus* L. in a shaded and humid montane mixed wood (UTM WGS84: 32T 586355.5090069), 995 m, 28 April 2017, leg. G. Gheza, det. H. Mayrhofer (Herb. Gheza); Via Mala, Azzone (Bergamo), on terricolous bryophytes in a montane mixed wood near a stream (UTM WGS84: 32T 585918.5091052), 725 m, 28 April 2017, leg. G. Gheza, det. H. Mayrhofer (Herb. Gheza); Lago Moro, Darfo Boario Terme (Brescia), on bark in a mixed deciduous wood (UTM WGS84: 32T 589363.5081082), 450 m, 30 April 2017, leg. G. Gheza, det. H. Mayrhofer (Herb. Gheza). – Species new for the flora of Lombardia.

In spite of being a very common species in Italy (Baruffo et al. 2006; Nimis 2016), *Lepraria eburnea* was never reported before from Lombardia. It is able to colonize various substrates (Baruffo et al. 2006; Nimis 2016), and the specimens reported here were collected on terricolous and epiphytic bryophytes and directly on bark, always in shaded situations. All specimens contained alectorialic acid and satellites, and only one specimen contained, in addition, protocetraric acid.

G. Gheza, H. Mayrhofer

***Lepraria nivalis* (Nyl.) J.R.Laundon (Cladoniaceae)**

+ **LOM:** pathway between Croce di Salven and Valsorda, Angolo Terme (Brescia), on a limestone outcrop in a montane wood with beech and spruce (UTM WGS84: 32T 587883.5088284), 1210–1225 m, 1 January 2018, leg. G. Gheza, det. H. Mayrhofer (Herb. Gheza); road between Paline di Borno and Dosso di Scalve, Azzone (Bergamo), on mosses and soil in the crevices of calcareous outcrops in a clearing of a montane wood with beech and spruce (UTM WGS84: 32T 586200.5088906), 970 m, 28 April 2017, leg. G. Gheza, det. H. Mayrhofer (Herb. Gheza). – Species new for the flora of Lombardia.

In spite of being a very common species, showing a wide altitudinal range in Italy (Baruffo et al. 2006; Nimis 2016), *Lepraria nivalis* was never reported before from Lombardia. As *Lepraria eburnea* J.R.Laundon, it is able to colonize various substrates (Baruffo et al. 2006, Nimis 2016), but the records reported here are from calcareous substrates. Two chemotypes were detected: the first specimen contained atranorin and fumarprotocetraric acid, the second atranorin and psoromic acid.

G. Gheza, H. Mayrhofer

***Miriquidica deusta* (Stenh.) Hertel & Rambold (Lecanoraceae)**

+ **TOS:** Miniere di Murlo Valle del Crevole (Siena), above the path Sentiero delle Miniere, on siliceous rocks (UTM WGS84: 32T 693605.4779005), 215 m, 3 December 2017, leg. L. Paoli, det. L. Paoli, Z. Fačkovcová (SAV). – Species new for the flora of Toscana.

This saxicolous lichen is often overlooked since at first glance its brown, brown-black areolate thallus may resemble *Verrucaria* species. However, fertile thalli of *M. deusta* form black, immersed or moderately sessile apothecia up to 0.7 mm in diameter (Wirth et al. 2013). The lichen usually grows on exposed base-rich siliceous rocks. So far, only few records are known from Italy, although it seems locally common in some parts, e.g., in Sardegna (Nimis 1993, 2016). The specimen from Miniere di Murlo contains also *Rhizocarpon viridiatrum* (Wulfen) Körb. and *Aspicilia intermutans* (Nyl.) Arnold.

L. Paoli, Z. Fačkovcová

***Parmelia barrenoae* Divakar, M.C.Molina & A.Crespo (Parmeliaceae)**

+ **CAL:** Cupone, Sila National Park (Cosenza) on post fence (UTM WGS84: 33S 633215.4360465), 1158 m, 8 June 2018, D. Puntillo (CLU No. 17809). – Species new for the flora of Calabria.

Parmelia barrenoae has been described on the basis of both morphological and molecular data, in particular sequences in the ITS region of rDNA and the tubulin gene (Divakar et al. 2005, Molina et al. 2011). This species is very similar to *Parmelia*

sulcata Taylor. However, in the field, it is recognizable for the simple rhizines and ripe lobes with revolute apex (*vs* squarrose rhizines, without revolute apex in *P. sulcata*). The species was recently reported for Molise (Ravera 2012). In the Sila plateau it is quite common on old wooden rustic fence poles and on old wooden fence posts in well-lit sites, but never in direct sunlight.

D. Puntillo, M. Puntillo

Rinodina aspersa (Borrer) J.R.Laundon (Physciaceae)

+ **TOS:** Miniere di Murlo Valle del Crevole (Siena), above the path Sentiero delle Miniere, on siliceous rocks (UTM WGS84: 32T 693605.4779003), 215 m, 3 December 2017, leg. L. Paoli, det. L. Paoli, Z. Fačková (SAV). – Species new for the flora of Toscana.

This is a saxicolous lichen, generally growing on siliceous rocks. So far, it was found only in Sardegna by Mayrhofer (Nimis and Poelt 1987). It seems fairly common in this locality, showing preference for open situations.

L. Paoli, Z. Fačková

Solenopsora marina (Zahlbr.) Zahlbr. (Catillariaceae)

+ **TOS:** Località «La Castellaccia», near Convento del Petreto, Scansano (Grosseto), on shaded calcareous outcrops in a mixed oak forest with *Lobaria pulmonaria* (L.) Hoffm, on overhanging rock (UTM WGS84: 32T 691756.4729815), 509 m, 24 March 2018, L. Paoli, Z. Fačková; *ibidem*, 1 September 2018, L. Paoli, A. Béréšová (SAV). – Species new for the flora of Toscana.

The genus *Solenopsora* A.Massal. had been traditionally placed in the poorly explored family of the Catillariaceae based on characteristic anatomical features (clavate eight-spored asci lacking an ocular chamber (*Catillaria*-type), one-septate, hyaline ascospores, simple paraphyses with brown pigmented clavate apices). However, recent molecular investigations indicate that the genus belongs to a morphologically diverse family, the Leprocaulaceae (Miadlikowska et al. 2014). *Solenopsora marina* has a squamulose thallus forming rosettes or irregular patches (up to 5–6 cm in diameter), pale greenish up to green. Outer squamules are loose, flexuose, folded and with white pruinose margins. Brownish apothecia are sessile, often globose at maturity. It grows on calcareous rocks in shaded and humid sites with low eutrophication (Guttová et al. 2014), mostly in rock fissures or below overhanging rock surfaces. It is a rare species strongly confined to the Mediterranean-type climate. Its distribution in Italy is largely unknown (Guttová et al. 2018). This is the second record in Italy, and the species was so far known only for Basilicata (Potenza et al. 2014).

L. Paoli, Z. Fačková, A. Guttová

***Thelopsis rubella* Nyl. (Stictidaceae)**

+ **TOS:** Strada di Crevole, Murlo (Siena), on *Quercus ilex* L. (UTM WGS 84: 32T 691658.4784036), 320 m, 1 June 2018, leg. *Italian Lichen Society (SLI) ecology working group*, det. *S. Ravera* (Herb. Ravera). – Species confirmed for the flora of Toscana.

Thelopsis rubella is a crustose epiphytic pyrenolichen, characterized by pale pink-brown, red-brown to dark-brown perithecia, strictly associated with mature trees mostly in the *Lobarion* in ancient woodlands (Rose 1988). It is included in the Italian red list of epiphytic lichens under the Least Concern category (Nascimbene et al. 2013). There are no recent records for Toscana (Baglietto 1871; Saccardo 1894, Rose 1988).

L. Paoli, S. Ravera

***Xanthoparmelia glabrans* (Borrer) J.R.Laundon (Parmeliaceae)**

+ **TOS:** Miniere di Murlo Valle del Crevole (Siena), above the path Sentiero delle Miniere, on siliceous rocks (UTM WGS84: 32T 693600.4779000), 215 m, 3 December 2017, leg. *L. Paoli*, det. *L. Paoli*, *Z. Fačkovcová* (SAV). – Species new for the flora of Toscana.

This species can be distinguished from similar taxa of the *Xanthoria pulla* group by a characteristic UV+ reaction of the medulla (strongly blue-white), which contains an alectoronic acid (Giordani et al. 2003). In Italy, it has been recorded from a few localities in Trentino-Alto Adige, Valle d’Aosta, and Liguria (Nimis 2016). In the reported locality, it was accompanied by other *Xanthoparmelia* species, such as *X. conspersa* (Ehrh. ex Ach.) Hale, *X. stenophylla* (Ach.) Ahti & D.Hawksw. and *X. tinctina* (Maheu & A.Gillet) Hale.

L. Paoli, Z. Fačkovcová

References

- Aleffi M, Tacchi R, Cortini Pedrotti C (2008) Check-list of the Hornworts, Liverworts and Mosses of Italy. *Bocconea* 22: 1–255.
- Anderson PJ (1926) Comparative susceptibility of onion varieties and of species of *Allium* to *Urocystis cepulae*. *Journal of Agricultural Research* 31: 275–285.
- Baglietto F (1871) Prospetto Lichenologico della Toscana. *Nuovo Giornale Botanico Italiano* 3: 211–298.
- Baruffo L, Zedda L, Elix JA, Treliach M (2006) A revision of the lichen genus *Lepraria* s.lat. in Italy. *Nova Hedwigia* 83: 387–429. <https://doi.org/10.1127/0029-5035/2006/0083-0387>
- Blockeel TL, Porley R, Rothero G (1999) Summer field meeting, Italian Alps, 1997. *Bulletin British Bryological Society* 72: 17–24.
- Ciferri R (1938) *Flora Italica Cryptogama*, Pars. I: Fungi. Ustilaginales. Fasc. 17. Rocca San Casciano, 119–121, 131–134.

- Cortini Pedrotti C, Aleffi M (1992) Lista Rossa delle Briofite d'Italia. In: Conti F, Manzi A, Pedrotti F (Eds) Libro rosso delle Piante d'Italia. Ministero Ambiente, WWF Italia, Società Botanica Italiana, Roma, 557–637.
- De Toni GB (1888) Sylloge ustilaginearum et uredinearum. Sylloge Fungorum 7: 857–858.
- Damsholt K (2002) Illustrated Flora of Nordic Liverworts and Hornworts. Lund, Nordic Bryological Society, 840 pp
- Divakar PK, Molina MC, Lumbsch TH, Crespo A (2005) *Parmelia barrensoe*, a new lichen species related to *Parmelia sulcata* (*Parmeliaceae*) based on molecular and morphological data. Lichenologist 37: 37–46. <https://doi.org/10.1017/S0024282904014641>
- Ellis LT, Aleffi M, Alegro A, Segota V, Asthana AK, Gupta R, Singh VJ, Bakalin VA, Bednarek-Ochyra H, Cykowska-Marzencka B, Benitez A, Borovichev EA, Vilnet AA, Konstantinova NA, Buck WR, Cacciatoro C, Sérgio C, Csiky J, Deme J, Kovács D, Damsholt K, Enroth J, Erzberger P, Fedosov VE, Fuertes E, Gradstein SR, Gremmen NJM, Hallingbäck T, Junkoniene I, Kiebacher T, Larrain J, Lebouvier M, Lüth M, Mamontov YuS, Potemkin AD, Nemeth Cs, Nieuwkoop JAW, Nobis M, Węgrzyn M, Wietrzyk P, Osorio F, Parnikoza I, Virchenko VM, Peralta DE, Carmo DM, Plášek V, Skoupá Z, Poponessi S, Venanzoni R, Puche F, Purger D, Reeb C, R. Rios, Rodriguez-Quiel E, Arrocha C, Sabovljević MS, Nikolić N, Sabovljević AD, dos Santos EL, Segarra-Moragues JG, Ștefănuț S, Stončius D (2016) New national and regional bryophyte records, 48. Journal of Bryology 38: 235–259. <https://doi.org/10.1080/03736687.2016.1206685>
- Giordani P, Benesperi R, Rellini I, Frati L, Brunialti G, Paoli L, Isocrono D, Elix JA (2003) The lichen genus *Neofuscelia* (Ascomycota, Parmeliaceae) in Italy. The Lichenologist 35: 377–385. <https://doi.org/10.1016/j.lichenologist.2003.09.001>
- Guttová A, Fačková Z, Martellos S, Paoli L, Munzi S, Pittao E, Ongaro S (2018) Ecological specialization of lichen congeners with a strong link to Mediterranean-type climate: a case study of the genus *Solenopsora* in the Apennine peninsula. The Lichenologist: in press.
- Guttová A, Zozomová-Lihová J, Timdal E, Kučera J, Slovák M, Píknová K, Paoli L (2014) First insights into genetic diversity and relationships of European taxa of the genus *Solenopsora* (Catillariaceae, Ascomycota) with implications on their delimitation. Botanical Journal of the Linnean Society 176: 203–223.
- Hodgetts NG (2015) Checklist and country status of European bryophytes – towards a new Red List for Europe. Irish Wildlife Manuals, No. 84. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Ireland, 130 pp.
- Köckinger H (2017) Die Horn- und Lebermoose Österreichs (Anthocerophyta und Marchantiophyta). Catalogus Florae Austriae, II. Teil, Heft 2. Biosystematics and Ecology Series 32, Verlag der Österreichischen Akademie der Wissenschaften, 382 pp.
- Lockhart N, Hodgetts N, Holyoak D (2012) Rare and threatened bryophytes of Ireland. Holywood: National Museums Northern Ireland, 656 pp.
- Long DG (1993) *Gymnostomum viridulum* Brid. new to Germany. Journal of Bryology 17: 514. <https://doi.org/10.1179/jbr.1993.17.3.514>
- Miadlikowska J, Kauff F, Högnabba F, Oliver JC, Molnár K, Fraker E, Gaya E, Hafellner J, Hofstetter V, Gueidan C, Otálora MAG, Hodkinson B, Kukwa M, Lücking R, Björk C, Sipman HJM, Burgaz A, Thell A, Passo A, Myllys L, Goward T, Fernández-Brime S,

- Hetsmark G, Lendemer J, Lumbsch HT, Schmall M, Schoch CL, Sérusiaux E, Maddison DR, Arnold AE, Lutzoni F, Stenroos S (2014) A multigene phylogenetic synthesis for the class Lecanoromycetes (Ascomycota): 1307 fungi representing 1139 infrageneric taxa, 317 genera and 66 families. *Molecular Phylogenetics and Evolution* 79: 132–168. <https://doi.org/10.1016/j.ympev.2014.04.003>
- Molina C, Crespo A, Blanco O, Lumbsch HT, Hawksworth DL (2004) Phylogenetic relationships and species concepts in *Parmelia* s. str. (*Parmeliaceae*) inferred from nuclear ITS rDNA and tubulin sequences. *Lichenologist* 36: 37–54. <https://doi.org/10.1017/S0024282904013933>
- Nascimbene J, Nimis PL, Ravera S (2013) Evaluating the conservation status of epiphytic lichens of Italy: a red list. *Plant Biosystems* 147: 898–904. <https://doi.org/10.1080/11263504.2012.748101>
- Nimis PL (1993) The lichens of Italy: an annotated catalogue. Monografie XII. Museo Regionale di Scienze Naturali di Torino, 897 pp.
- Nimis PL (2016) The Lichens of Italy. A second annotated catalogue. EUT, Trieste, 740 pp.
- Nimis PL, Poelt J (1987) The lichens and lichenicolous fungi of Sardinia (Italy). An annotated list. *Studia Geobotanica* 7 (suppl. 1), 269 pp.
- Pollini C (1816) Horti et Provinciae Veronensis plantae. *Giornale di Fisica Chimica Storia Naturale Medicina ed Arti* 9: 21–35, 94–101, 174–187.
- Pollini C (1824) Flora veronensis quam in prodromum florum Italiae septentrionalis. Typis et Expensis Societatis Typographicae. Verona, 3, 898 pp.
- Potenza G, Fačková Z, Fascetti S, Grassi A, Guttová A, Paoli L, Puntillo D, Ravera S (2014) Specie nuove ed interessanti per la Basilicata. *Notiziario della Società Lichenologica Italiana* 27: 62.
- Puntillo D (1996) I Licheni di Calabria. Monografie XXII. Museo Regionale di Scienze Naturali Torino, 229 pp.
- Ravera S (2012) Notulae Cryptogamicae 5 (16–25). Notula 23. *Parmelia barroenoae* Divakar, M.C.Molina & A.Crespo. *Informatore Botanico Italiano* 44: 193.
- Ravera S, Nimis PL, Brunialti G, Frati L, Isocrono D, Martellos S, Munzi S, Nascimbene J, Potenza G, Tretiach M (2011) The Role of lichens in selecting Important Plant Areas in Italy. *Fitosociologia* 48: 145–153.
- Rose F (1988) Phytogeographical and ecological aspects of *Lobarion* communities in Europe. *Botanical Journal of the Linnean Society* 96: 69–79. <https://doi.org/10.1111/j.1095-8339.1988.tb00628.x>
- Saag L, Saag A, Randle T (2009) World survey of the genus *Lepraria* (Stereocaulaceae, lichenized Ascomycota). *Lichenologist* 41: 25–60. <https://doi.org/10.1017/S0024282909007993>
- Saccardo F (1894) Saggio di una flora analitica dei licheni del Veneto, aggiuntavi l'enumerazione sistematica di altre specie italiane. Tip. Prosperini. Padova, 164 pp.
- Schnyder N, Bergamini A, Hofmann H, Müller N, Schubiger-Bossard C, Urmi E (2004) Lista Rossa delle briofite minacciate in Svizzera. UFAM, FUB & NISM. Collana dell'UFAM: Ambiente – Esecuzione, 101 pp.

- Schumacker R, Aleffi M, Miserere L (1999) The bryophyte flora of the Gran Paradiso National Park (Aosta Valley and Piedmont, Italy) and its immediate surroundings: a synthesis. *Lejeunia* 160: 1–107.
- Smith AJE (2004) The moss flora of Britain and Ireland. 2nd edn. Cambridge University Press, Cambridge, 1012 pp. <https://doi.org/10.1017/CBO9780511541858>
- Tomasi E (2014) Indagine cecidologica sulla pianura e le lagune friulane (Italia NE). *Atti del Museo Civico di Storia Naturale di Trieste* 56: 43–202.
- Tomaselli M, Petraglia A, Lasen C (2004) Flora briologica e vegetazione delle vallette nivali nelle Vette di Feltre (Parco Nazionale Dolomiti Bellunesi, Italia settentrionale). *Gortania* 26: 111–136.
- Varalda G, Forneris G, Montacchini F (1983–1984) Nuove segnalazioni ed interessanti conferme per la flora del basso Verellese e dell'Oltrepo alessandrino. *Allionia* 26: 123–130.
- Vànyk K (1994) *European Smut Fungi*. Gustav Fischer Verlag, Stuttgart, Jena, New York: 296.
- Venturella G (1991) A check-list of Sicilian fungi. *Bocconea* 2: 5–221.
- Wirth V, Hauck M, Schultz M (2013) *Die Flechten Deutschlands*. Ulmer, Stuttgart, 1244 pp.