

Notulae to the Italian flora of algae, bryophytes, fungi and lichens: 10

Sonia Ravera¹, Marta Puglisi², Alfredo Vizzini³, Cecilia Totti⁴,
Giuseppina Barberis⁵, Elisabetta Bianchi⁶, Angelo Boemo⁷, Ilaria Bonini⁶,
Daniela Bouvet⁸, Claudia Coccozza⁹, Davide Dagnino⁵, Luca Di Nuzzo¹⁰,
Zuzana Fačková^{6,11}, Gabriele Gheza¹², Stefano Gianfreda¹³, Paolo Giordani¹⁴,
Andreas Hilpold¹⁵, Pilar Hurtado¹⁶, Heribert Köckinger¹⁷, Deborah Isocrono¹⁸,
Stefano Loppi⁶, Jiří Malíček¹⁹, Cosimo Matino¹³, Luigi Minuto⁵,
Juri Nascimbene¹², Giulio Pandeli²⁰, Luca Paoli²¹, Domenico Puntillo²²,
Michele Puntillo²², Augusta Rossi²³, Francesco Sguazzin²⁴, Daniel Spitale²⁵,
Simon Stifter¹⁵, Claudia Turcato²⁶, Sara Vazzola²³

1 Dipartimento di Scienze e Tecnologie Biologiche Chimiche e Farmaceutiche (STEBICEF), Università di Palermo, Via Archirafi 38, 90123 Palermo, Italy **2** Dipartimento di Scienze Biologiche, Geologiche e Ambientali, Sezione di Biologia vegetale, Università di Catania, Via A. Longo 19, 95125 Catania, Italy **3** Institute for Sustainable Plant Protection (IPSP) – CNR, Viale P.A. Mattioli 25, 10125 Torino, Italy **4** Dipartimento di Scienze della Vita e dell'Ambiente, Università Politecnica delle Marche, via Brecce Bianche, 60131 Ancona, Italy **5** Dipartimento di Scienze della Terra, dell'Ambiente e della Vita, Università degli Studi di Genova, Corso Europa 26, 16132 Genova, Italy **6** Dipartimento di Scienze della Vita, Università di Siena, Via P. A. Mattioli, 4, 53100 Siena, Italy **7** Via XX Settembre 3, 33058 Carlino (Udine), Italy **8** Dipartimento di Scienze della Vita e Biologia dei Sistemi, Università di Torino, Viale P.A. Mattioli 25, 10123 Torino, Italy **9** DAGRI – Dipartimento di Scienze e Tecnologie Agrarie Alimentari Ambientali e Forestali, Università di Firenze, Via San Bonaventura 13, 50121 Firenze, Italy **10** Dipartimento di Biologia, Università degli Studi di Firenze, Via G. La Pira 4, 50121 Firenze, Italy **11** Department of Cryptogams, Institute of Botany, Plant Science and Biodiversity Centre, Slovak Academy of Sciences, Dúbravská cesta 9, SK-845 23, Bratislava, Slovakia **12** Dipartimento di Scienze Biologiche, Geologiche e Ambientali (BiGeA), Università di Bologna, Via Irnerio 42, 40126 Bologna, Italy **13** Istituto d'Istruzione Secondaria Superiore “Del Prete-Falcone”, Via Mazzini s.n., 74028 Sava (Taranto), Italy **14** Dipartimento di Farmacia (DIFAR), Università di Genova, viale Cembrano 4, 16148 Genova, Italy **15** Eurac Research, Institute for Alpine Environment, viale Druso/Drususallee 1, 39100 Bolzano/Bozen, Italy **16** Área de Biodiversidad y Conservación, Departamento de Biología y Geología, Física y Química Inorgánica, Universidad Rey Juan Carlos, Móstoles, Madrid, Spain **17** Roseggergasse 12, A-8741 Weisskirchen, Austria **18** Dipartimento di Scienze Agrarie, Forestali e Alimentari, Università di Torino, Largo Paolo Braccini, 10095 Grugliasco (Torino), Italy **19** Institute of Botany, The Czech Academy of Sciences, Zámek 1, CZ-252 43 Průhonice, Czech Republic **20** Via Botticini 15, 50143 Firenze, Italy **21** Dipartimento di Biologia, Università di Pisa, Via Luca Ghini 13, 56126 Pisa, Italy **22** Museo di Storia Naturale della

Calabria ed Orto Botanico, Università della Calabria, 87036 Arcavacata di Rende (Cosenza), Italy **23** Arpa Piemonte, via Pio VII 9, 10135 Torino, Italy **24** Via Selvotta 61, 33055 Muzzana del Turgnano (Udine), Italy **25** Museo di Scienze Naturali dell'Alto Adige, Via dei Bottai, 1, 39100 Bolzano, Italy **26** Ce.S.Bi.N. s.r.l., via San Vincenzo 2, 16121 Genova, Italy

Corresponding author: Sonia Ravera (sonia.ravera@unipa.it)

Academic editor: L. Peruzzi | Received 24 October 2020 | Accepted 16 November 2020 | Published 2 December 2020

Citation: Ravera S, Puglisi M, Vizzini A, Totti C, Barberis G, Bianchi E, Boemo A, Bonini I, Bouvet D, Cocozza C, Dagnino D, Di Nuzzo L, Fačková Z, Gheza G, Gianfreda S, Giordani P, Hilpold A, Hurtado P, Köckinger H, Isocrono D, Loppi S, Malíček J, Matino C, Minuto L, Nascimbene J, Pandeli G, Paoli L, Puntillo D, Puntillo M, Rossi A, Sguazzin F, Spitale D, Stifter S, Turcato C, Vazzola S (2020) Notulae to the Italian flora of algae, bryophytes, fungi and lichens: 10. Italian Botanist 10: 83–99. <https://doi.org/10.3897/italianbotanist.10.59352>

Abstract

In this contribution, new data concerning red algae, bryophytes, fungi and lichens of the Italian flora are presented. It includes new records and confirmations for the algal genus *Thorea*, for the bryophyte genera *Ephemerum*, *Hedwigia*, *Pogonatum*, *Riccia*, *Sphagnum*, and *Tortella*, the fungal genera *Pileolaria* and *Sporisorium*, and the lichen genera *Bacidia*, *Cerothallia*, *Chaenotheca*, *Cladonia*, *Halecania*, *Lecanora*, *Phylloblastia*, *Physcia*, *Protoparmelia*, *Pycnora*, *Segestria*, and *Sphaerophorus*.

Keywords

Ascomycota, Basidiomycota, Bryidae, Marchantiidae, Rhodophyta

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@unipa.it) for lichens.

Floristic records

ALGAE

Thorea hispida (Thore) Desvaux (Thoreaceae)

+ **PIE:** Tanaro River, Castello di Annone (Asti), shallow water on river side, moderate flow, (UTM WGS84: 32T 445180.4969789), 108 m, 19 September 2013, V. Pizzo, S. Vazzola, conf. R. Bolpagni; Bormida di Millesimo River, Cortemilia (Cuneo), shallow water, moderate flow (UTM WGS84: 32T 431783.4932315), 250 m, 14 August 2014, E. Gastaldi, V. Pizzo, S. Vazzola; Marcova torrent, Motta De' Conti (Vercelli), shallow

water, moderate flow (UTM WGS84: 32T 463903.5002336), 100 m, 16 July 2015, *V. Pizzo V., S. Vazzola*; Tanaro River, Castello di Annone (Asti), shallow water on river side, moderate flow, (UTM WGS84: 32T 445180.4969789), 108 m, 13 July 2016, *V. Pizzo, S. Vazzola* (Herbarium ARPA Piemonte – Dipartimento territoriale Piemonte sud est); Tanaro River, Felizzano (Alessandria), shallow water on river side, moderate flow (UTM WGS84: 32T 455731.4970930), 95 m, 13 July 2016, *V. Pizzo, S. Vazzola* (Herb. ARPA Piemonte – Dipartimento territoriale Piemonte sud est); Tanaro River, San Martino Alfieri (Asti), shallow waters on river side, moderate flow (UTM WGS84: 32T 431600.4963158), 128 m, 21 July 2016, *V. Pizzo, S. Vazzola* (Herbarium ARPA Piemonte – Dipartimento territoriale Piemonte sud est); Roggia Bona torrent, Carezana (Vercelli), shallow water, moderate flow (UTM WGS84: 32T 461394.5008232), 100 m, 6 October 2016, *V. Pizzo, S. Vazzola*; Sesia River, Motta De' Conti (Vercelli), shallow water on river side, moderate flow (UTM WGS84: 32T 464813.5004710), 100 m, 12 October 2016, *V. Pizzo, S. Vazzola* (Herbarium ARPA Piemonte – Dipartimento territoriale Piemonte sud est); Bormida di Millesimo River, Cortemilia (Cuneo), shallow water, moderate flow (UTM WGS84: 32T 431783.4932315), 250 m, 3 October 2018, *E. Gastaldi, V. Pizzo, S. Vazzola*; Tanaro River, Castello di Annone (Asti), shallow water on river side, moderate flow, (UTM WGS84: 32T 445180.4969789), 108 m, 5 August 2019, *V. Pizzo, S. Vazzola*; Tanaro River, San Martino Alfieri (Asti), shallow waters on river side, moderate flow (UTM WGS84: 32T 431600.4963158), 128 m, 5 August 2019, *V. Pizzo, S. Vazzola*; Tanaro River, Felizzano (Alessandria), shallow water on river side, moderate flow (UTM WGS84: 32T 455731.4970930), 95 m, 8 August 2019, *V. Pizzo, S. Vazzola*. – Species new for the flora of Piemonte.

Many new collections of *Thorea hispida* have been made in recent years from Europe: Simić and Pantović (2010), Simić et al. (2014) for Serbia; Vitonytė (2011) for Lithuania; Cărauş (2012) for Romania; Tomás et al. (2013) for Spain. This is likely the result of the implementation of the Water Framework Directive, that imposed an overall review and updating of knowledge on neglected macroscopic primary producers in freshwater ecosystems, such as red algae (Ceschin et al. 2012, 2013). Despite this renewed interest, this species remains poorly documented, especially regarding its ecological preferences (Vitonytė 2011, García and Aboal 2014). Thoreales are common in tropical and subtropical areas (Sheath and Hambrook 1990, Sheath et al. 1993, Carmona and Necchi 2001) and are considered rare and threatened in Europe (Eloranta et al. 2011). Accordingly, *T. hispida* is included in the Algae Red List in some European countries (Ludwig and Schnittler 1996, Sheliag-Sosonko 1996, Simienska 2006, Simić et al. 2007, Temniskova et al. 2008, Täuscher 2010), and it is still considered a species with a very restricted distribution (García and Aboal 2014 and references therein). In Italy, it was reported for the first time in Lombardia (northern Italy) in the Oglio River, a mid-size and nutrient-rich tributary of the Po River, where a seasonal monitoring study conducted during 2009–2011 revealed that a 40 km stretch hosted three *T. hispida* populations (Bolpagni et al. 2015). *Thorea hispida* is commonly associated to nutrient-rich waters.

S. Vazzola, D. Bouvet, A. Rossi

BRYOPHYTES

Ephemerum recurvifolium (Dicks.) Boulay (Pottiaceae)

+ **TAA**: Municipality of Montagna/Montan (Bolzano/Bozen-Südtirol) (UTM WGS84 32T 677213.5133744), 430 m, 15 May 2019, leg. S. Stifter, A. Hilpold, det. D. Spitale (Herbarium BOZ). – Species new for the flora of Trentino-Alto Adige.

Ephemerum recurvifolium is a submediterranean-euryatlantic species quite rare in Europe, where it is considered at risk in many countries (Hodgetts and Lockhart 2020) and listed as Near Threatened in the new IUCN European Red List (Hodgetts et al. 2019). In Italy it occurs in five administrative regions, Piemonte, Umbria, Campania, and Sicilia, and was recorded before 1968 in Toscana and Sardegna (Aleffi et al. 2020). In the new locality, *Ephemerum recurvifolium* was found in an apple orchard managed with Integrated Farming practices. Associated species were *Amblystegium serpens* (Hedw.) Schimp., *Kindbergia praelonga* (Hedw.) Ochyra, *Plagiomnium cuspidatum* (Hedw.) T.J.Kop., and *Brachythecium campestre* (Müll.Hal.) Schimp. In South Tyrol, this species is not listed in the new bryophyte database (FloraFaunaSüdtirol 2014). Like the other members of the genus it can be easily overlooked because of its small size. It is distinguished from the much more common *Ephemerum serratum* (Hedw.) Hampe and *Ephemerum minutissimum* Lindb. for its more strongly toothed leaves, showing no or very faint midrib. On suitable sites, this species grows on bare, moist soils often on calcareous clay in arable fields (Dierßen 2001), or on surfaces within grassy patches, which probably protect the persistent protonema from damage (Novotný 1986).

D. Spitale, S. Stifter, A. Hilpold

Hedwigia emodica Hampe ex Müll.Hal. (Hedwigiaceae)

+ **LIG**: Frisolino, Ne (Genova), path to the Miniera di Molinello, on red jasper (UTM WGS84: 32T 536605.4910320), 248 m, 5 January 2015, leg. G. Barberis, det. G. Barberis, D. Dagnino, C. Turcato (GE B180). – Species confirmed for the flora of Liguria.

Hedwigia emodica was reported for Italy by Aleffi et al. (2008) as *Hedwigia ciliata* (Hedw.) P.Beauv. var. *leucophaea* Bruch. & Schimp. for Piemonte, Trentino-Alto Adige, and Sardegna and, with old reports, for Val d'Aosta, Lombardia, Liguria, Toscana, Calabria, and Sicilia. Later, after a revision of specimens kept in the herbaria of Firenze (FI) and Pisa (PI), this species was reported also for Veneto, Emilia-Romagna, and Umbria (Puglisi et al. 2013). In particular, *H. emodica* has not been found in Liguria since the second half of the 19th century, when it was indicated for “apennino Genuensis” (De Notaris 1869) and for M. Penna (Fleischer 1893). It is a suboceanic boreo-temperate species, quite rare in the Mediterranean region, where it occurs in some countries as a single record (Ros et al. 2013).

G. Barberis, D. Dagnino, C. Turcato

Pogonatum aloides (Hedw.) P.Beauv. (Polytrichaceae)

+ **LIG**: Passo Cento Croci, Varese Ligure (La Spezia), mixed deciduous forest dominated by beech (UTM WGS84: 32T 549632.4918834), 1061 m, 7 October 2018, leg. S. Peccenini, det. D. Dagnino, C. Turcato (GE B167); Ronco Scrivia (Genova), along the “Cascinetta-Tegli” municipal road, coppice wood dominated by chestnut (UTM WGS84: 32T 493268.4937707), 475 m, 7 October 2018, leg. D. Dagnino, det. D. Dagnino, C. Turcato (GE B168). – Species confirmed for the flora of Liguria.

Pogonatum aloides occurs in most of the Italian regions (Aleffi et al. 2020) and Mediterranean countries (Ros et al. 2013), growing in a wide range of shady environments, from the basal to the alpine belt (Cortini Pedrotti 2001). Several records from the end of the 19th century suggest that this species was common in Liguria (Piccone 1863, Fitzgerald and Bottini 1881, Fleischer 1893), but it was no longer recorded for this region (Aleffi et al. 2020).

D. Dagnino, L. Minuto, C. Turcato

Riccia lamellosa Raddi (Ricciaceae)

+ **PUG**: Contrada Samia, Torricella (Taranto), on dry soil, (UTM WGS 84 33T 712611.4466222), 25 m, 30 January 2020, S. Gianfreda (Herbarium Gianfreda). – Species new for the flora of Puglia.

Riccia lamellosa was found in a small olive tree grove, two kilometres from the Ionian Sea; the soil was not plowed and was covered by a large amount of mosses. The specimens are characterized by light green rosettes with lobes 2–3 mm wide, lateral wings narrow, hardly distinct, nearly horizontal in old parts; the spores are dark brown, 90–100(110) µm in diameter with wings about 5 µm wide. In Europe the species is widespread in the southern and Mediterranean countries (Hodgetts and Lockhart 2020); in Italy the only Regions where it was found are Trentino-Alto Adige, Toscana, Campania, Sardegna, and Sicilia (Aleffi et al. 2020).

S. Gianfreda, C. Martino

Sphagnum molle Sull. (Sphagnaceae)

+ **FVG**: Malga Plotta, Carnic Alps, Paluzza (Udine), in a small bog next to the forest road which leads from the Marinelli Refuge to the Pass of Monte Croce Carnico (UTM WGS84: 33T 339914.5162098), 1847 m, 12 July 2020, F. Sguazzin, A. Boemo (Bryophytorum Herbarium F. Sguazzin). – Species confirmed for the flora of Friuli-Venezia Giulia.

Sphagnum molle is a suboceanic-temperate species; it is mostly distributed in northern and central Europe, where it is considered at risk of extinction in many countries (Hodgetts and Lockhart 2020). It is known in Italy, with reports published after 1950, for Piemonte, Veneto, and Trentino-Alto Adige and, with older records,

for Lombardia and Friuli-Venezia Giulia (Aleffi et al. 2008, 2020). As regards Friuli-Venezia Giulia (Sguazzin 2011), the only finding refers to Carnic Alps, and dates back more than a century (Kern 1908). In Italy, all *Sphagnum* species are threatened with extinction, but are included in the category Data Deficient (DD), because of their insufficient distribution knowledge (Rossi et al. 2013). According to Laine et al. (2018), this species grows in poor fens, along lake shores, wet heath margins, and sand dunes.

F. Sguazzin, A. Boemo

Tortella mediterranea Köckinger, Lüth O. Werner & Ros (Pottiaceae)

+ **ITALIA (TOS)**: Solco d'Equi, Apuan Alps Regional Park, Fivizzano (Massa Carrara), on sunny and dry (occasionally shaded and humid), vertical to inclined marble rocks at the edge of the road (UTM WGS84: 32T 593317.4890377), 396 m, 4 March 2020, *G. Pandeli* (Herb. Pandeli, Herb. Köckinger, GZU); Lizza della Canalonga, Apuan Alps Regional Park, Valle di Vinca, Fivizzano (Massa Carrara), marble and limestone outcrops above the path (UTM WGS84: 32T 591507.4888129), 355 m, 4 March 2020, *G. Pandeli* (SIENA). – Species new for the flora of Italy (Toscana).

Tortella mediterranea is a Mediterranean species recently described from the limestone gorges and crags of the mountainous regions of Mallorca, Greece, Croatia, and Montenegro from areas with a rather high level of annual precipitation. It differs from similar taxa, like *Tortella nitida* (Lindb.) Broth. and *Tortella tortuosa* (Hedw.) Limpr., by a characteristic combination of character-states according to Köckinger et al. (2018), see Suppl. material 1. This species proved locally abundant, but no sporophyte- nor gametangia-bearing material was detected. The populations can be found along the paths of Lizza della Canalonga and Solco d'Equi (Apuan Alps Regional Park), on vertical marble and limestone outcrops occupied by *Homalothecium lutescens* (Hedw.) H. Rob., *Schistidium crassipilum* H.H. Blom, *Ctenidium molluscum* (Hedw.) Mitt., *Tortella nitida* (Lindb.) Broth. var. *irrigata* (H. Winter) R.H. Zander, *Exsertotheca crispa* (Hedw.) S. Olsson, Enroth & D. Quandt, *Trichostomum crispulum* Bruch, and *Tortella squarrosa* (Brid.) Limpr. Because of the frequency of environmentally similar habitats in the area, *T. mediterranea* could be present also in other localities of the Apuan Alps.

G. Pandeli, H. Köckinger, I. Bonini

FUNGI

Pileolaria terebinthi (DC.) Castagne (Pileolariaceae)

+ **BAS**: Castelmezzano (Potenza), hypophyllous on leaves of *Pistacia terebinthus* L. (UTM WGS84: 33T 588716.4486225), 687 m, 20 October 2019, *D. Puntillo* (CLU No. 406). – Species new for the flora of Basilicata.

Considered for a long time a hemi-form (II, III, IV stage) or brachy-form rust species (0, II, III, IV), it is instead an automacrocytic species (0, I, II, III, IV) as

demonstrated by Abbasi (2018). Its aecial state is not uredinoid, as it was believed. *Pileolaria terebinthi* was cited as new for Italy by Berlese (1896), who recorded it on leaves of *Pistacia vera* L. in the Botanical Garden of University of Camerino, then it was reported from the Botanical Garden of Padova under the name *Uredo terebinthi* DC. (Saccardo 1872), from Veneto, Lombardia, Liguria, Marche, Lazio, Puglia (Trotter 1908, under the name *Uromyces terebinthi* (DC.) G.Winter) and also from Etna in Sicilia (Scalia 1915, under the name *Uromyces terebinthi*).

D. Puntillo

Sporisorium reilianum (J.G.Kühn) Langdon & Full. (Ustilaginaceae)

+ **CAL**: Monasterace Marina near the archaeological excavations of Caulonia (Reggio Calabria), on flowers of *Sorghum halepense* (L.) Pers. (UTM WGS84: 33S 637874.4257027) 4 m, 22 August 2014, D. Puntillo (CLU No. 404). – Species new for the flora of Calabria.

Sori are located in *Sorghum* inflorescences, which are usually destroyed and transformed into a grainy-powdery blackish-brown sporal mass. This species also grows also on *Zea mays* L., but it is less common than *Ustilago maydis* (DC.) Corda. *Sporisorium cruentum* (J.Kühn) K.Vánky is very similar, but it stands out with its smooth spores, while in *Sporisorium sorghi* C.G.Ehrenberg ex H.F.Link the sori infect the ovaries. *Sporisorium reilianum* is a subcosmopolitan species. In Italy, Rivolta (1873) reported the species under the name *Ustilago holci-sorghi* Rivolta for Grosseto (Toscana). Ciferri (1938) listed the species under the name *Sphacelotheca holci-sorghi* Cif. for Campania, Emilia-Romagna, Lazio, Lombardia, Sicilia, Trentino-Alto Adige, and Veneto. Recently, Tommasi (2006) reported the species for Friuli Venezia Giulia.

D. Puntillo

LICHENS

Bacidia igniarii (Nyl.) Oxner (Ramalinaceae)

+ **ABR**: Vallone Grascito, south of Sulmona (L'Aquila), on the bark of *Quercus pubescens* Willd. (UTM WGS84: 33T 414031.4652537), 568 m, 7 July 2020, leg. L. Paoli, Z. Fačková, S. Loppi, A. Vannini, det. L. Paoli, Z. Fačková (SAV). – Species new for the flora of Abruzzo.

This species generally grows on smooth barks, rarely on wood, and it is poorly known (Nimis 2016). The collected specimen has ascospores 3-septate, hyaline, bacilliform ($15 \times 2.5 \mu\text{m}$); epithecium K-, olive green; hymenium mostly colourless; simple paraphyses; hypothecium colourless or very pale brown, K+ reddish.

L. Paoli, Z. Fačková, S. Loppi

Cerothallia luteoalba (Turner) Arup, Frödén & Søchting (Teloschistaceae)

+ **ABR**: Vallone Grascito, south of Sulmona (L'Aquila), on the bark of *Quercus pubescens* Willd. (UTM WGS84: 413992.4652623), 564 m, 7 July 2020, leg. L. Paoli, Z. Fačková, S. Loppi, A. Vannini, det. L. Paoli, Z. Fačková (SAV). – Species new for the flora of Abruzzo.

This species often prefers dust-covered barks, especially old trunks of deciduous trees, and it was more frequent in the past, perhaps extinct in several parts of the country, especially in northern Italy (Nimis, 2016). The collected specimen is characterized by thallus K- and by the presence of numerous apothecia (diameter < 0.6 mm), with mostly orange disc K+ red, and slightly paler proper margin. The ascospores are 1-septate, polarilocular, hyaline, with thin septum (< 1/4 of the length of ascospores). The specimen was recorded together with *Caloplaca cerina* (Hedw.) Th.Fr. s.lat., *Catillaria nigroclavata* (Nyl.) J.Steiner, *Gyalolechia flavorubescens* (Huds.) Søchting, Frödén & Arup, and *Myriolecis hagenii* (Ach.) Sliwa, Zhao Xin & Lumbsch.

L. Paoli, Z. Fačková, S. Loppi

Chaenotheca stemonea (Ach.) Müll.Arg. (Coniocybaceae)

+ **TOS**: Loc. Lago, Forest of Vallombrosa, Reggello (Firenze), on *Pinus* sp. (UTM WGS84: 32T 706990.4848314), 910 m, 24 June 2020, leg. C. Cocozza, S. Ravera, det. S. Ravera (Herb. Ravera); Forest of Vallombrosa, Reggello (Firenze), on Silver fir (*Abies alba* Mill.) standing dead tree (UTM WGS84: 32T 707245.4849062), 960 m, 8 October 2020, S. Ravera (Herb. Ravera). – Species new for the flora of Toscana.

Chaenotheca stemonea is a pin lichen with poorly developed excipulum, the lower part with a whitish pruina, 0.7–1.6 mm high, characterized by the photobiont (*Stichococcus*), the thin and farinose thallus and the almost globose capitulum. It is a cool-temperate to boreal-montane, circumpolar species, rare in the Italian montane belt, usually found on bark and wood of conifers, more rarely on deciduous trees in forested habitats (Nimis 2016). This specimen grows on the trunk of a single old tree, covering it completely up to approximately 2 m above the ground, along the course of a stream. *Chaenotheca stemonea* is included in the Italian Red List of epiphytic lichens, under the “Least Concern” category (Nascimbene et al. 2013).

S. Ravera, C. Cocozza

Cladonia macrophylla (Schaer.) Stenh. (Cladoniaceae)

– **TOS**. – Species to be excluded from the flora of Toscana.

Cladonia macrophylla is an arctic-boreal species found only at high elevations in temperate Europe (Wirth et al. 2013), and occurring only in the Alps in Italy (Nimis et al. 2018). Nimis (1993) reported only a single record of this species from Toscana, originally published by Sambo (1927). However, Sambo (1927) reported «*Cladonia squamosa* var. *macrophylla* Rabenhorst», which is *Cladonia squamosa* Hoffm., and not

«*Cladonia alpicola* (Flot.) Vain.», the name used for *C. macrophylla* in the 1920s (see Ahti 1967). Therefore, *C. macrophylla* was never actually reported from Toscana. Furthermore, the record by Sambo (1927) should not even be referred to *C. squamosa*. No specimen by Sambo was found in FI (Munzi et al. 2019), albeit Sambo (1927) clearly stated that this species was identified by referring to a specimen collected by Emilio Rodegher and preserved in FI («Cfr. hb. centr. Gen. *Cladonia campione* Val *Brembana legit Rodegher*»). The only specimen found in FI and labelled as «*Cladonia squamosa* var. *macrophylla*» («*Valle Brembana (Bergamasco), Rodegher, Det. Dr. Jatta, ex herb. E. Baroni*») is a misidentified specimen of *Cladonia furcata* (Huds.) Schrad. subsp. *furcata*, showing many large squamules on podetia. Therefore, the record by Sambo (1927) should also probably be referred to a specimen of *C. furcata* with richly squamulose podetia.

G. Gheza, L. Di Nuzzo, J. Nascimbene

Halecania viridescens Coppins et P.James (Leprocaulaceae)

+ **ITALY (TAA)**: Cavalese (Trento), on twig of *Fraxinus excelsior* L. (UTM WGS84: 32T 689644.5128933), 970 m, 13 December 2013, *J. Malíček* (Herb. Malíček no. 5342). – Species new for the flora of Italy (Trentino-Alto Adige).

Halecania viridescens is a crustose lichen with a fragile pale green to green-brown minutely warted-areolate thallus, dissolving into Pd+ orange-red soralia; few or absent gray to dark brown apotecia (to 0.4 mm broad). When sterile, it resembles *Scolio-sporum sarothamni* (Vain.) Vězda, which usually does not form discrete soralia and is C+ reddish. However, both species are slightly variable and can occur in the same habitat, so that the Pd+ reaction of soralia in *H. viridescens* is an important diagnostic character. In temperate Europe, *Halecania viridescens* is widespread pioneer lichen in forests and agricultural landscape. It prefers slightly nitrophilous communities and smooth bark of young trunks, branches and twigs. This species is often associated with *Catillaria nigroclavata* (Nyl.) Schuler and *Candelariella efflorescens* agg. *sensu* Westberg and Clerc (2012). Due to its mainly sterile occurrence and small thalli, *Halecania viridescens* is an overlooked species and its real distribution and abundance are probably much larger than believed (Malíček et al. 2020).

J. Malíček

Lecanora marginata (Schaer.) Hertel & Rambold (Lecanoraceae)

+ **VEN**: Colle Cesta, near Vette Grandi Pass, Vette Feltrine, Dolomiti Bellunesi National Park (Belluno), on selciferous calcareous rocks (Formazione di Fonzaso) (UTM WGS84: 32T 719837.5107983), 2010 m, 12 July 2020, *J. Nascimbene* (Herb. Nascimbene JN6868). – Species confirmed for the flora of Veneto.

Lecanora marginata is a lichen with a crustose, continuous or rimose-areolate, yellowish to yellowish white thallus and lecideine apothecia shiny black, flat to convex, at first immersed, then sessile. A thalline margin is present only in very young

apothecia and it is very soon excluded. The epithecium is typically green to dark blue-green or greenish black, reacting N+ red. The hymenium and the hypothecium are colourless. It is a circumpolar, arctic-alpine lichen, that in Italy is most frequent in the Alps (Nimis 2016), on limestone, dolomite, and on more or less calciferous siliceous rocks. The record reported here was collected on a calciferous carbonatic formation of the late Jurassic period. The last records from Veneto date back to the second half of the 19th century (Nimis 1993).

J. Nascimbene

Phylloblastia inexpectata Sérus., Coppins & Lücking (Verrucariaceae)

+ **CAL:** Bosco di Mavigliano, Montalto Uffugo (Cosenza), on cladodes of *Ruscus aculeatus* L. and *Hedera helix* L. leaves (UTM WGS84: 33S 604439.4360261), 223 m, 1 October 2020, D. Puntillo (CLU No. 17945, 17946). – Species new for the flora of Calabria.

Phylloblastia inexpectata is a foliicolous pyrenocarpous lichen species with Atlantic-Macaronesian distribution, also known from the British Isles and Madeira (Nimis 2016). In Italy, this species is known only for a warm-humid gorge located in Campania, where it was collected on *Buxus sempervirens* L. leaves (Sérusiaux et al. 2007). Its distribution is certainly underestimated, due to morphological characteristics. In fact, this species has an inconspicuous and very thin thallus, with a cortex formed by a single layer of cylindrical to irregular cells close to the perithecia, and very small flattened perithecia (0.1–0.15 mm in diameter). In the field, it is easily mistaken for a non-lichenized fungus. In the Mavigliano wood, we recorded a few others foliicolous species: *Fellhanera bouteillei* (Desm.) Vězda, *Porina boehneliana* (Jaap) R.Sant., *Porina oxneri* R.Sant., *Bacidina vasakii* (Vězda) Vězda, and the lichenicolous fungus *Bryostigma muscigenum* (Th.Fr.) Frisch & G.Thor (Puntillo and Puntillo 2004).

D. Puntillo, M. Puntillo

Physcia dimidiata (Arnold) Nyl. (Physciaceae)

+ **SIC:** Roccaforita (Messina), on limestone rocks at N-facing slope of a hill (UTM WGS84: 33S 523131.4198140), 880 m, 4 May 2012, J. Malíček (Herb. Malíček no. 6760). – Species new for the flora of Sicilia.

Physcia dimidiata is a narrow lobed foliose lichen, forming small irregular rosettes with overlapping lobes, crenulate and minutely lobulate at tips. It grows in rather rain-protected vertical and slight overhangs on epilithic substrates, as well as on artificial substrates and, occasionally, on basal parts of old trees with nutrient-rich, subneutral to moderately basic, often deeply cracked bark (Wirth et al. 2013). This lichen is a holarctic species with a Mediterranean to mild-temperate distribution in Europe, where it grows mostly below the montane belt (Nimis 2016).

J. Malíček, S. Ravera

Protoparmelia badia (Hoffm.) Hafellner (Parmeliaceae)

+ **VEN:** Colle Cesta, near Vette Grandi Pass, Vette Feltrine, Dolomiti Bellunesi National Park (Belluno), on selciferous calcareous rocks (Formazione di Fonzaso) (UTM WGS84: 32T 719837.5107983), 2010 m, 2 May 2000, *J. Nascimbene* (Herb. Nascimbene JN1318); Colle Cesta, near Vette Grandi Pass, Vette Feltrine, Dolomiti Bellunesi National Park (Belluno), on selciferous calcareous rocks (Formazione di Fonzaso) (UTM WGS84: 32T 719837.5107983), 2010 m, 12 July 2020, *J. Nascimbene* (Herb. Nascimbene JN6869). – Species confirmed for the flora of Veneto.

Protoparmelia badia is a crustose lichen with an olive-brown to gray-brown or dark brown rimose-areolate to warted thallus, chestnut brown to dark brown apothecia, at first immersed and later sessile, and one-celled ($10\text{--}16 \times 4\text{--}7 \mu\text{m}$) spores with pointed apices. It is a heterogeneous species (Singh et al. 2015) with an Italian distribution mainly centered in the Alps (reaching the nival belt), where it is common on siliceous rocks. It is relatively rare in Mediterranean ranges (Nimis 2016). The records reported here were collected on nodules or flint layers included in a carbonatic, late Jurassic, formation that are typically colonized by silicicolous lichens (e.g., *Rhizocarpon geographicum* s.l.). The last records from Veneto date back to the second half of the 19th century (Nimis 1993).

J. Nascimbene

Pycnora sorophora (Vain.) Hafellner (Pycnoraceae)

+ **PIE:** Upper Valsesia, Rassa (Vercelli), ZPS “Alta Valsesia e Valli Otro, Vogna, Gronda, Artogna e Sorba”, on old wooden fences not far from Torrente Gronda (UTM WGS84: 32T 423291.5068728), 960 m, 16 August 2020, *D. Isocrono* (Herbarium Isocrono). – Species new for the flora of Piemonte.

The genus *Pycnora*, formerly included in *Hypocenomyce* M.Choisy, was established in 2001 (Hafellner and Türk 2001) to separate crustose species with alectorialic acid and black pycnidia. Two of the four known species – *Pycnora sorophora* and *Pycnora praestabilis* (Nyl.) Hafellner – occur in Italy. *Pycnora sorophora* is a microlichen with areolate thallus and farinose yellowish brown soredia, often sterile, occurring on wood and on the bark of conifers. This species is widely distributed in boreal and temperate Europe but it is, so far, rarely reported in Italy only for eastern regions (Nimis 2016). It is included in the Italian Red List of epiphytic lichens as “Vulnerable” (Nascimbene et al. 2013).

D. Isocrono

Segestria leptalea (Durieu & Mont.) R.C.Harris (Porinaceae)

+ **TOS:** Forest of Vallombrosa, Reggello (Firenze), on bark of *Fagus sylvatica* L. (UTM WGS84: 32T 707245.4849025), 995 m, 23 June 2020, leg. *C. Coccozza, S. Ravera*, det.

S. Ravera (Herb. Ravera); Loc. Lago, Forest of Vallombrosa, Reggello (Firenze), on *Abies alba* Mill. (UTM WGS84: 32T 707000.4848230), 920 m, 7 October 2020, leg. C. Cocozza, *S. Ravera*, det. *S. Ravera* (Herb. Ravera). – Species new for the flora of Toscana.

Segestria leptalea is a crustose Pyrenocarpales, characterized by crowded brownish orange (not black, as more common in Pyrenocarpales) perithecia 0.1–0.3 mm across, partly immersed. In central Europe, it is typical for temperate beech forests, including mountain beech forests (J. Malíček pers. comm.). This species prefers old-growth forests, but it can occur also in managed ones, which are close to some old-growth forests. In Italy – where it is known only for Basilicata (Bartoli and Puntillo 1998) and Calabria (Puntillo and Vězda 1994, Puntillo 1995, 1996) – it usually grows on smooth bark of broadleaved trees, in moist forests and sometimes foliicolous on *Buxus sempervirens* L. (Nimis 2016). In the Forest of Vallombrosa, we found this lichen on bark of *F. sylvatica* L. and *Abies alba* Mill. in a mixed forest of beech and silver fir, with tree coverage greater than 60%, both on north and south-facing slopes, between 920 and 1050 m a.s.l.. *Segestria leptalea* is included in the Italian Red List of epiphytic lichens and classified as “Vulnerable” (Nascimbene et al. 2013).

S. Ravera, C. Cocozza

Sphaerophorus globosus (Huds.) Vain. (Sphaerophoraceae)

+ **CAM**: Ottati (Salerno), on *Fagus sylvatica* L. (UTM WGS84: 33T 527606.4485629), 1361 m, 28 June 2016, leg. P. Hurtado, P. Giordani, E. Bianchi, det. P. Giordani (Herb. Bianchi). – Species new for the flora of Campania.

Sphaerophorus globosus belongs to species complex with a very wide and disjunct distribution and a substantial morphological variability. It is a fruticose and shrubby lichen, forming small to large cushions (up to 15 cm across), irregularly branched, with rare terminal apothecia (Högnabba and Wedin 2003). *Sphaerophorus globosus* is generally restricted to cold-humid areas, mostly on rocks or as epiphyte, but occasionally grows over mossy outcrops in coastal forests at low and middle elevations. This species is extremely rare in Italy, and it is probably extinct in several Regions (Nimis 2016). Due to its rarity, it is included in the Italian Red List of epiphytic lichens under the “Vulnerable” category (Nascimbene et al. 2013). The record reported here refers to a fairly large population, colonizing a dozen large beech trees in an undisturbed open stand, within the epiphytic communities of the *Lobarion pulmonariae*.

P. Hurtado, P. Giordani, E. Bianchi

Acknowledgements

Giulio Pandeli wishes to thank Michael Lüth (Freiburg, Germany) for hints on the identification of *Tortella mediterranea*.

References

- Abbasi A (2018) Notes on the genus *Pileolaria* (Pucciniales). *Mycologia Iranica* 5: 1–6.
- Ahti T (1967) Nomenclatural notes on *Cladonia delessertii* and *Cladonia alpicola*. *The Bryologist* 70: 104–105. [https://doi.org/10.1639/0007-2745\(1967\)70\[104:NNOCDA\]2.0.CO;2](https://doi.org/10.1639/0007-2745(1967)70[104:NNOCDA]2.0.CO;2)
- Aleffi M, Tacchi R, Cortini Pedrotti C (2008) Check-list of the Hornworts, Liverworts and Mosses of Italy. *Bocconea* 22: 1–255.
- Aleffi M, Tacchi R, Poponessi S (2020) New Checklist of the Bryophytes of Italy. *Cryptogamie, Bryologie* 41(13): 147–195. <https://doi.org/10.5252/cryptogamie-bryologie2020v41a13>
- Bartoli A, Puntillo D (1998) Interesting lichen species from the Maratea coast (Basilicata region, South Italy). *Sauteria* 9: 61–70.
- Berlese AN (1896) Sulla struttura e sviluppo della *Pileolaria terebinthi*. *Rivista di Patologia Vegetale, Firenze*, 287–294.
- Bolpagni R, Amadio C, Johnston ET, Racchetti E (2015) New physical and chemical perspectives on the ecology of *Thorea hispida* (Thoreaceae). *Journal of Limnology* 74: 294–301. <https://doi.org/10.4081/jlimnol.2014.1058>
- Cărăuș I (2012) Algae of Romania. A distributional checklist of actual algae. Version 2.3, 3rd revision. University of Bacau, Bacau (Romania), 809 pp.
- Carmona JJ, Necchi Jr O (2001) Systematics and distribution of *Thorea* (Thoreaceae, Rhodophyta) from central Mexico and south-eastern Brazil. *Phycological Research* 49: 231–239. <https://doi.org/10.1111/j.1440-1835.2001.tb00253.x>
- Ceschin S, Bisceglie S, Ricci S (2012) Contribution to the knowledge of red algae (Rhodophyta) of some rivers in Central Italy. *Cryptogamie, Algologie* 31: 61–67. <https://doi.org/10.7872/crya.v33.iss1.2011.061>
- Ceschin S, Ricci S, Abati S, Bisceglie S, Minciardi MR, Zuccarello V (2013) Distribution and ecology of red algae in Italian rivers. *Fundamental and Applied Limnology* 183: 223–337. <https://doi.org/10.1127/1863-9135/2013/0493>
- Ciferri R (1938) Ustilaginales: Tilletiaceae, Graphioliaceae, Ustilaginaceae. *Flora Italica Cryptogama Fungi* 17: 1–443.
- Cortini Pedrotti C (2001) *Flora dei muschi d'Italia, I parte*. Antonio Delfino Editore. Sassari, 832 pp.
- De Notaris G (1869) *Epilogo della Briologia Italiana*. Tip. Sordo-Muti, Genova, 781 pp.
- Dierßen K (2001) Distribution, ecological amplitude and phytosociological characterization of European bryophytes. *Bryophytorum Bibliotheca* 56: 1–289.
- Eloranta P, Kwandrans J, Kusel-Fetzmann E (2011) Süßwasserflora von Mitteleuropa vol 7: Rhodophyta and Phaeophyceae. In: Schagerl M (Ed.) *Süßwasserflora von Mitteleuropa Band 7. Freshwater flora of Central Europe*. Spectrum Akademischer Verlag, Heidelberg, 1–155.
- Fitzgerald C, Bottini A (1881) Prodromo della briologia dei bacini del Serchio e della Magra. *Nuovo Giornale Botanico Italiano* 13: 23–121.
- Fleischer M (1893) Beitrag zur Laubmoosflora Liguriens. *Atti del Congresso Internazionale di Genova 1892*: 266–310.

- FloraFaunaSüdtirol (2014) Das Portal zur Verbreitung von Tier- und Pflanzenarten in Südtirol. Naturmuseum Südtirol, Bozen. www.florafaina.it [accessed 7.6.2020]
- García ME, Aboal M (2014) Environmental gradients and macroalgae in Mediterranean marshes: the case of Pego-Oliva marsh (East Iberian Peninsula). *The Science of the Total Environment* 475: 216–224. <https://doi.org/10.1016/j.scitotenv.2013.10.014>
- Hafellner J, Türk R (2001) Die lichenisierten Pilze Österreichs – eine Checkliste der bisher nachgewiesenen Arten mit verbreitungsangaben. *Stapfia* 76: 1–167.
- Hodgetts N, Lockhart N (2020) Checklist and country status of European bryophytes – update 2020. *Irish Wildlife Manuals*, No. 123. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht. Ireland, 214 pp.
- Hodgetts N, Calix M, Englefield E, Fettes N, Garcia Criado M, Patin L, Nieto A, Bergamini A, Bisang I, Baisheva E, Campisi P, Cogoni A, Hallingback T, Konstantinova N, Lockhart N, Sabovljevic M, Schnyder N, Schrock C, Sergio C, Sim Sim M, Vrba J, Ferreira CC, Afonina O, Blockeel T, Blom H, Caspari S, Gabriel R, Garcia C, Garilleti R, Gonzalez Mancebo J, Goldberg I, Hedenas L, Holyoak D, Hugonnot V, Huttunen S, Ignatov M, Ignatova E, Infante M, Juutinen R, Kiebacher T, Kockinger H, Kučera J, Lonnell N, Luth M, Martins A, Maslovsky O, Papp B, Porley R, Rothero G, Soderstrom L, Ștefănuț S, Syrjanen K, Untereiner A, Vaña J, Vanderpoorten A, Vellak K, Aleffi M, Bates J, Bell N, Bruges M, Cronberg N, Denyer J, Duckett J, During HJ, Enroth J, Fedosov V, Flatberg K-I, Ganeva A, Gorski P, Gunnarsson U, Hassel K, Hespanhol H, Hill M, Hodd R, Hylander K, Ingerpuu N, Laaka-Lindberg S, Lara F, Mazimpaka V, Mežaka A, Muller F, Orgaz JD, Patino J, Pilkington S, Puche F, Ros RM, Rumsey F, Segarra-Moragues JG, Seneca A, Stebel A, Virtanen R, Weibull H, Wilbraham J, Żarnowiec J (2019) A miniature world in decline: European Red List of Mosses, Liverworts and Hornworts. IUCN, Brussels, 87 pp. <https://doi.org/10.2305/IUCN.CH.2019.ERL.2.en>
- Högnabba F, Wedin M (2003) Molecular phylogeny of the *Sphaerophorus globosus* species complex. *Cladistics* 19: 224–232. <https://doi.org/10.1111/j.1096-0031.2003.tb00365.x>
- Kern F (1908) Die Moosflora der Karnischen Alpen. Jahresbericht der Schlesische Gesellschaft für Vaterländische Cultur 2: 2–14.
- Köckinger H, Lüth M, Werner O, Ros RM (2018) *Tortella mediterranea* (Pottiaceae), a new species from southern Europe, its molecular affinities, and taxonomic notes on *T. nitida*. *The Bryologist* 121: 560–570. <https://doi.org/10.1639/0007-2745-121.4.560>
- Laine J, Flatberg KI, Harju P, Minkkinen K, Laine A, Tuittila E-S, Vasander H (2018) *Sphagnum* Mosses – The Stars of European Mires. University of Helsinki Department of Forest Sciences, Sphagna Ky, Helsinki, 326 pp.
- Ludwig G, Schnittler M (1996) Rote liste gefährdeter Pflanzen Deutschlands. Schriftenreihe für Vegetationskunde 28: 744 pp.
- Malíček J, Palice Z, Šoun J, Vondrák J, Novotný P (2020) Atlas českých lišejníků. www.dalib.cz [accessed 4.10.2020]
- Munzi S, Benesperi R, Bianchi E, Brackel Wv, Di Nuzzo L, Favero-Longo SE, Gheza G, Giordani P, Matteucci E, Paoli L, Tonon C (2019) Sulle orme dei Sambo – escursione del XXXI congresso della Società Lichenologica Italiana al Monteferrato. *Notiziario della Società Lichenologica Italiana* 32: 99–108.

- 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, Torino, 897 pp.
- Nimis PL (2016) The Lichens of Italy – A second annotated catalogue. EUT Edizioni Università di Trieste, Trieste, 740 pp.
- Nimis PL, Hafellner J, Roux C, Clerc P, Mayrhofer H, Martellos S, Bilovitz PO (2018) The lichens of the Alps – an annotated checklist. *Mycoskeys* 31: 1–634. <https://doi.org/10.3897/mycokeys.31.23568>
- Novotný I (1986) The moss *Ephemerum recurvifolium* (Dicks.) Boul. in Czechoslovakia. *Acta Musei Moraviae* 71: 119–130.
- Piccone A (1863) Elenco dei Muschi di Liguria. Commentario della Società Crittogamologica Italiana 1: 240–287.
- Puglisi M, Campisi P, Dia MG, Privitera M (2013) Additional reports for Italian moss flora. *Plant Biosystems* 147: 525–528. <https://doi.org/10.1080/11263504.2013.806365>
- Puntillo D (1995) Contributi alle conoscenze floristiche sui licheni d'Italia. VIII. Florula lichenica del Bosco di Santa Maria (Serra San Bruno, Vibo Valentia, Calabria). *Webbia* 50: 51–66. <https://doi.org/10.1080/00837792.1995.10670597>
- Puntillo D (1996) I Licheni di Calabria. Monografie XXII. Museo Regionale di Scienze Naturali di Torino, Torino, 229 pp.
- Puntillo D, Puntillo M (2004) Flora of Mavigliano Wood (Cosenza, Calabria). I. The Lichens. *Flora Mediterranea* 14: 189–200.
- Puntillo D, Vězda A (1994) Some foliicolous lichens new to Calabria. *Webbia* 49: 125–131. <https://doi.org/10.1080/00837792.1994.10670575>
- Sguazzin F (2011) Check-list delle briofite del Friuli Venezia Giulia (NE Italia). *Gortania* 32(2010): 17–114.
- Rivolta S (1873) Dei parassiti vegetali come introduzione allo studio delle malattie parassitarie e delle alterazioni dell'alimento degli animali domestici. Torino, Tipografia di Giulio Speirani e Figli, 422 pp.
- Ros RM, Mazimpaka V, Abou-Salama U, Aleffi M, Blockeel T L, Brugués M, Cros RM, Dia MG, Dirkse GM, Draper I, El-Saadawi W, Erdag A, Ganeva A, Gabriel R, Gonzales-Mancebo JM, Granger C, Herrnstadt A, Hugonnot V, Khalil K, Kürschner H, Losada-Lima A, Luís L, Mifsus S, Privitera M, Puglisi M, Sabovlijević, Sèrgio C, Shabbara HM, Sim-Sim M, Sotiaux A, Tacchi R, Vanderpoorten A, Wernner O (2013) Mosses of the Mediterranean, an annotated checklist. *Cryptogamie, Bryologie* 34: 99–283. <https://doi.org/10.7872/cryb.v34.iss2.2013.99>
- Rossi G, Montagnani C, Gargano D, Peruzzi L, Abeli T, Ravera S, Cogoni A, Fenu G, Magrini S, Gennai M, Foggi B, Wagensommer RP, Venturella G, Blasi C, Raimondo FM, Orsenigo S [Eds] (2013) Lista Rossa della Flora Italiana. 1. Policy Species e altre specie minacciate. Comitato Italiano IUCN e Ministero dell'Ambiente e della Tutela del Territorio e del Mare, 54 pp.
- Saccardo PA (1872) Florula spontanea Horti Botanici Patavini. *Nuovo Giornale botanico italiano* 4: 212–220.

- Sambo E (1927) I licheni del M. Ferrato (Toscana). *Nuovo Giornale Botanico Italiano*, nuova serie 34: 333–358.
- Scalia G (1915) Rassegna dei casi fitopatologici, studiati nel Laboratorio di Patologia vegetale della Reale Scuola Enologica di Catania nel triennio 1910–1913: relazione del direttore prof. dott. Giuseppe Scalia. Monaco & Mollica, Catania, 40 pp.
- Sérusiaux E, Coppins BJ, Lücking R (2007) *Phylloblastia inexpectata* (Verrucariaceae), a new species of folicolous lichen from Western Europe and Madeira. *Lichenologist* 39: 103–108. <https://doi.org/10.1017/S0024282907006500>
- Sheath RG, Hambrook JA (1990) Freshwater Ecology. In: Cole KM, Sheath RG (Eds) *Biology of the Red Algae*. Cambridge University Press: 423–453.
- Sheath RG, Vis ML, Cole KM (1993) Distribution and systematics of the freshwater red algal family Thoreaceae in North America. *European Journal of Phycology* 28: 231–241. <https://doi.org/10.1080/09670269300650341>
- Sheliag-Sosonko YuR [Ed.] (1996) *Red Data Book of Ukraine – Vegetable Kingdom*. Ukr. encyclop. after M. P. Bazhan, Kiev, 608 pp. [In Ukrainian]
- Simić S, Pantović N (2010) Observations on the rare alga *Thorea hispida* (Thore) Desvaux (Rhodophyta) from Serbia. *Cryptogamie, Algologie* 31: 343–353.
- Simić SB, Đorđević NB, Vasiljević BM (2014) New record of red alga *Thorea hispida* (Thore) Desvaux (Rhodophyta) in the River Sava (Sremska Mitrovica, Serbia). *Water Research and Management* 4: 47–52.
- Simić V, Simić S, Paunović M, Cakić P (2007) Model of assessment of critical risk of extinction and the priorities of protection of endangered aquatic species at national level. *Biodiversity and Conservation* 16: 2471–2493. <https://doi.org/10.1007/s10531-006-9130-x>
- Simińska J (2006) Red list of the algae of Poland. In: Mirek Z, Zarzycki K, Wojewoda W, Szlag Z (Eds) *Red list of plants and fungi in Poland*. Polish Academy of Sciences, 37–52.
- Singh G, Dal Grande F, Divakar PK, Otte J, Leavitt SD, Szczepanska K, Crespo A, Rico VJ, Aptroot A, Cáceres ME, Lumbsch HT, Schmitt I (2015) Coalescent-based species delimitation approach uncovers high cryptic diversity in the cosmopolitan lichen-forming fungal genus *Protoparmelia* (Lecanorales, Ascomycota). *PLOS One* 10(5): e0124625. <https://doi.org/10.1371/journal.pone.0124625>
- Täuscher L (2010) Prodröm einer Roten Liste der Cyanobakterien/Blualgen, Rot-, Gelbgrün-, Braun- und Grünalgen des Landes Brandenburg – Ergebnisse eines bibliographischen Überblicks zur Algenbesiedlung. Deutsche Gesellschaft für Limnologie (DGL). *Erweiterte Zusammenfassungen der Jahrestagung 2009 (Oldenburg)*, Hardegsen: 511–515.
- Temniskova D, Stoyneva PM, Kirjakov KI (2006) Red list of the Bulgarian algae. I. Macroalgae. *Phytologia Balcanica* 14: 193–206.
- Tomás P, Moreno JL, Aboal M, Oscoz J, Durán C, Navarro P, Elbaile A (2013) Distribución y ecología de algunas especies de rodo fitos (Rhodophyta) en la Cuenca del río Ebro. *Limnetica* 32: 61–70.
- Tommasi E (2006) Indagine cecidiologica sulle Prealpi Giulie occidentali (Friuli Venezia Giulia-Italia). *Atti del Museo Civico di Storia Naturale di Trieste* 53: 101–185.
- Trotter A (1908) *Flora Italica Cryptogama*. Pars I: Fungi. Uredinales: 40–41.

- Vitonytė I (2011) First record of red algae *Thorea hispida* in Lithuanian freshwaters. *Botanica Lithuanica* 17: 165–175.
- Westberg M, Clerc P (2012) Five species of *Candelaria* and *Candelariella* (Ascomycota, Candelariales) new to Switzerland. *MycKeys* 3: 1–12. <https://doi.org/10.3897/mycokeys.3.2864>
- Wirth V, Hauck M, Schultz M (2013) *Die Flechten Deutschlands*. Ulmer, Stuttgart. 2 voll, 1244 pp.

Supplementary material I

Figure S1

Authors: Giulio Pandeli

Data type: JPG image

Explanation note: *Tortella mediterranea* Kückinger, Lüth, O.Werner & Ros – A Plant. B Leaf C Shoot habit, dry D Shoot habit, moist E Stem cross-section F Leaf cross-section G Leaf margin at mid-limb with elongated marginal cells. Photographs by G. Pandeli.

Copyright notice: This dataset is made available under the Open Database License (<http://opendatacommons.org/licenses/odbl/1.0/>). The Open Database License (ODbL) is a license agreement intended to allow users to freely share, modify, and use this Dataset while maintaining this same freedom for others, provided that the original source and author(s) are credited.

Link: <https://doi.org/10.3897/italianbotanist.10.59352.suppl1>