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The 2018 classification and checklist of lichenicolous fungi, with 2000 non-lichenized, obligately lichenicolous taxa

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Abstract. Lichenicolous fungi represent a highly specialized and successful group of organisms that live exclusively on lichens, most commonly as host-specific parasites, but also as broad-spectrum pathogens, saprotrophs or commensals. We present here the most recent update to the classification of lichenicolous fungi in the Ascomycota and Basidiomycota to genus level, arranged phylogenetically according to published classifications. For each genus, all known lichenicolous taxa (obligately lichenicolous taxa, lichenicolous lichens, and facultatively lichenicolous taxa) are listed, along with information about types, synonyms, pertinent literature and whether or not molecular data are available for any of the listed species. The number of accepted lichenicolous fungi is now 2319, with 2000 obligately lichenicolous species, subspecies or varieties, 257 lichenicolous lichens and 62 facultatively lichenicolous taxa. These species are found in 10 different classes of Fungi (Ascomycota and Basidiomycota), 55 orders, 115 families and 397 genera. The 2319 total taxa is an increase from the 1559 total species reported in the last published catalogue in 2003, and a larger number than the approximately 1800 reported in the most recent online checklist (www.lichenicolous.net) posted in January 2018. Of the total number of taxa, 2219 (96%) are ascomycetes and 100 (4%) are basidiomycetes. Of the 397 genera containing lichenicolous species, c. 50% (198) are entirely lichenicolous. In addition, six families (Abrothallaceae, Adelococcaceae, Cyphobasidiaceae, Obryzaceae, Polycoccaceae, Sarcopyreniaceae) and two orders (Abrothallales, Cyphobasidiales) are entirely lichenicolous. Sequence information is available for lichenicolous species in 128 (32%) of the 397 genera containing lichenicolous species, and in 56 (28%) of the 198 entirely lichenicolous genera. Many species are known from only one host lichen, but it is likely that broader host ecologies will be discovered as new sequence information is obtained from ongoing microbiome studies. *Phaeopyxis* Rambold & Triebel is considered as a new synonym of *Bachmanniomyces* D.Hawksw., resulting in five new combinations *B. australis* (Rambold & Triebel) Diederich & Pino-Bodas (≡ *P. australis*), *B. carniolicus* (Arnold) Diederich & Pino-Bodas (≡ *Biatora carniolica*), *B. muscigenae* (Alstrup & E.S.Hansen) Diederich & Pino-Bodas (≡ *P. muscigenae*), *B. punctum* (A.Massal.) Diederich & Pino-Bodas (≡ *Nesolechia punctum*) and *B. varius* (Coppins, Rambold & Triebel) Diederich & Pino-Bodas (≡ *P. varia*). As a consequence of a phylogenetic analysis including new sequences, *Dactylospora* Körb. is regarded as a new synonym of *Sclerococcum* Fr. : Fr., resulting in one new name (*S. acarosporicola* Ertz & Diederich) and 46 new combinations. Sclerococcaceae Réblová, Unter. & W.Gams is considered as a new synonym of Dactylosporaceae Bellem. & Hafellner. The new *Sclerococcum ophthalmizae* Coppins is described. *Sclerophyton occidentale* Herre is lectotypified on the lichenicolous fungus present in the type specimen and becomes a younger synonym of *Sclerococcum parasiticum*. A replacement name is *Arthonia polydactylonis* Diederich & Ertz (≡ *A. ceracea*). Further new combinations are *Abrothallus lobariae* (Diederich & Etayo) Diederich & Ertz (≡ *Phoma lobariae*), *A. psoromatis* (Zhurb. & U. Braun) Diederich & Zhurb. (≡ *P. psoromatis*), *Asteroglobulus pyramidalis* (Etayo) Diederich (≡ *Cornutispora pyramidalis*), *Didymocyrtis grumantiana* (Zhurb. & Diederich) Zhurb. & Diederich (≡ *Phoma grumantiana*),

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Epithamnolia atrolazulina (Etayo) Diederich (≡ *Hainesia atrolazulina*), *Gyalolechia epiplacynthium* (Etayo) Diederich (≡ *Fulgensia epiplacynthium*), *Nesolechia doerfeltii* (Alstrup & P.Scholz) Diederich (≡ *Phacopsis doerfeltii*), *N. falcispora* (Triebel & Rambold) Diederich (≡ *P. falcispora*), *N. oxyspora* var. *fusca* (Triebel & Rambold) Diederich (≡ *P. oxyspora* var. *fusca*), *Preussia peltigerae* (Brackel) Diederich (≡ *Sporormiella peltigerae*), *Scutula curvispora* (D.Hawksw. & Miądl.) Diederich (≡ *Libertiella curvispora*), *S. didymospora* (D.Hawksw. & Miądl.) Diederich (≡ *L. didymospora*), *Stigmidium haesitans* (Nyl.) Diederich (≡ *Verrucaria haesitans*), and *S. parvum* (Henssen) Diederich (≡ *Pharcidia parvum*).

Keywords. Endolichenic fungi, lichenicolous lichens, microbiome, mycoparasites, phylogeny.

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Lichenicolous fungi represent a highly specialized and successful group of organisms that live exclusively on lichens, most commonly as host-specific parasites, but also as broad-spectrum pathogens, saprotrophs and commensals. Although they have been collected and described for centuries, little is known about the basic biology of most species, including modes of cellular contact, nutrient exchange, antibiosis, or virulence. Most are assumed to be restricted to a single host genus, but the degree of host-specificity is usually not known because of uncertainties about species boundaries and distributions. Very few lichenicolous fungi have been brought into culture, and little is known about their cultural requirements.

Lichenicolous fungi are assumed to represent an important source of new species in many groups of fungi (Hawksworth & Rossman 1997), but their overall diversity remains uncharted territory. This classification provides a snapshot of the phylogenetic diversity of lichenicolous fungi based on information updated continuously in the online website www.lichenicolous.net. It is being published here in the classification series in The Bryologist to provide a permanent baseline survey to which future classifications can be compared as new information accumulates.

Lichenicolous Fungi

Lichen parasites. All lichenicolous fungi are technically lichen parasites (they acquire fixed carbon from living lichen thalli), but many have no noticeable effects on the lichen host and some have the same nutrition as lichens. Most of the currently recognized lichenicolous species are weak parasites of either the lichen mycobiont (mycoparasites) or photobiont (phycoparasites) or sometimes both, recognizable by the presence of galls, lesions and discolorations on the lichen thallus. Some species are broad-spectrum pathogens that cause extensive damage capable of killing the host, but this is very rare among lichenicolous species (Hawksworth 1982c). Contacts between the parasite and the lichen host have been observed microscopically (Grube & Hafellner 1990; Grube & de los Ríos 2001; de los Ríos & Grube 2000; Diederich 1996), but the actual nature of most associations is not known with certainty.

Lichenicolous lichens. In addition to lichen myco- and phycoparasites, some described lichenicolous fungi are known to be derived from lichens and have the same nutrition (Rambold & Triebel 1992). They are therefore lichen fungi in search of a photobiont, facultative lichens usually referred to in the literature, and in this classification, as "lichenicolous lichens." They commonly begin growth as a free-living lichen mycobiont that becomes lichenized by associating with the photobiont of an unrelated lichenized thallus. Over time, the parasitic mycobiont becomes independent, either continuing to use the original host's photobiont or obtaining another photobiont later. Other lichenicolous lichens have their own photobiont but are typically collected on the surfaces of other "host" lichens. In this case, they are not biologically parasites (they are nutritionally lichens), but routinely associate with other lichens, growing over the surface of the host and clearly affecting its health and fitness. In this classification, we include all of these fungi in a separate category (lichenicolous lichens) and mention in the species listing following each genus what hosts they are known to associate with.

Host specificity. In this classification, obligate parasites and pathogens will be the predominant category to which species are assigned, and the main known hosts will be listed. A few species are

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commonly collected from lichens but are also known to be capable of living on non-lichen substrates of various sorts. These will be referred to in this classification as "facultatively lichenicolous" species. The host ecology of most species is assumed to be remarkably narrow for parasitic organisms. Most described species, perhaps as many as 95% (Lawrey & Diederich 2003), associate with a single lichen species or genus and are never found elsewhere. Similarly, some lichens harbor far more described lichenicolous fungi than others (Table 2 in Lawrey & Diederich 2003), indicating that suitability as hosts varies among lichen species probably for a wide variety of reasons (discussed by Hawksworth 1982d; Lawrey & Diederich 2003).

The close association of lichen parasites and lichen hosts would argue for a potential coevolutionary relationship among the associates. Until recently, lichen-parasite interactions have not been studied with regard to coevolution despite the fact that high levels of host-specificity are assumed to indicate cospeciation resulting from coevolution (Page 2003). In a very interesting first look at this, Millanes et al. (2014b) found that parasitism can be an important driver of speciation in lichen parasites and may help to explain the high numbers of both species and levels of host specificity in certain groups of lichenicolous fungi. The parasite studied was *Biatoropsis usnearum*, a basidiomycete known to infect a variety of *Usnea* lichens. The morphological variability in *B. usnearum* had been noted before and suggested to the authors that more than one parasite species might actually be involved in these interactions. The authors found that this was indeed the case—*Biatoropsis usnearum* is made up of seven lineages, some of which are more host specific than others. This diversity apparently arose by host switching, especially in the most host-specific lineages. This interesting first look at possible lichen-parasite coevolution suggests that host specificity and diversity in lichen parasites may therefore be a by-product of a number of ecological interactions that have rarely been studied in detail in these organisms.

Although lichenicolous fungi have been collected for centuries, our understanding of their actual distributions in nature, including the levels of host specificity and host ranges, will likely change over time as more information becomes available. This new information will include not only new collections, but also data from lichen microbiome studies (discussed in the next section) that indicate the presence of these fungi in asymptomatic lichens. For example, Fernandez-Mendoza et al. (2017) discovered using 454 pyrosequencing approaches that sequences of lichenicolous fungi are found not only in lichens with symptoms, but also in the same lichen species without symptoms, and (most surprisingly) in other lichen species never known to harbor the parasites. It may therefore eventually be discovered that the apparent high levels of host specificity in these fungi are not as high as they appear now. However, far more high-throughput sequencing of lichens is needed to establish this with certainty.

Effects of lichenicolous fungi on lichen health and fitness. Very little is known about the effects lichen parasites have on lichen hosts, but it is assumed that in many cases the association is more or less commensalistic with little or no effects on the lichens. In other cases, there is obvious discoloration or thallus damage, sometimes extensive, but the extent to which this affects lichen growth and reproduction is still largely unknown. The broad-spectrum pathogen *Athelia arachnoidea* is known to cause damage in European lichen communities, especially those affected by air pollution (e.g., Arvidsson 1976, 1978), but it does not appear to alter lichen community composition (Hawksworth 1982c). Few studies have measured the direct effect of parasites on lichen fitness, but a recent study (Merinero & Gauslaa 2017) showed experimentally that the gall-forming parasites *Plectocarpon lichenum* and *P. scrobiculatae* reduced the growth and fitness of the *Lobaria* lichens on which they grow. Effects on lichens may also involve degradation of lichen compounds, something lichenicolous fungi are known to do (Lawrey 2000). This can result in exposure of lichens to damaging UV radiation (Edwards et al. 2017) or to increased competition and predation (Asplund et al. 2016, 2018), ultimately leading to reduced growth and fitness.

Lichenicolous fungi as members of lichen mycobiomes. Lichens have long been known to harbor a diverse but largely invisible mycobiota in addition to the lichen-forming mycobiont (see e.g., Girlanda et al. 1997; Petrini et al. 1990; Suryanarayanan et al. 2005; Li et al. 2007; Harutyunyan et al. 2008; Fleischhacker et al. 2015; Muggia et al. 2016; Muggia & Grube 2010; Spribille et al. 2016; Fernandez-Mendoza et al. 2017; Wang et al. 2016;

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Zhang et al. 2015). Until recently, these fungi were assumed to be mainly opportunistic and facultative plant- and soil-inhabiting saprotrophs. Some are undoubtedly described lichenicolous forms that have not developed recognizable structures, but there are indications that additional groups of obligately lichen-associated fungi may occur in lichens. Detection techniques were originally culture-based, but recent uses of molecular methods have expanded our knowledge of the diversity, composition and specificity of these fungi, and it is now apparent that many are not generalized randomly-distributed contaminants but members of recognizable, more-or-less obligate, lichen-associated communities. Hofstetter et al. (2007) were first to suggest that nonlichen fungal sequences commonly amplified from lichens may represent a previously unrecognized source of lichen-specific fungal diversity. These were later referred to as "endolichenic" forms by Arnold et al. (2009), who viewed them as phylogenetically distinct from both lichen-forming mycobionts and lichenicolous fungi and an important evolutionary link to plant-associated endophytes (e.g., Chagnon et al. 2016; Fleischhacker et al. 2015; Muggia et al. 2016; U'Ren et al. 2010, 2012, 2014).

Arnold et al. (2009) originally considered endolichenic and lichenicolous fungi to be distinguishable by: (1) presence of symptoms—lichenicolous fungi show outward symptoms of infection and endolichenics lack any obvious outward symptoms; (2) phylogeny—endolichenic fungi were found to be most common among primarily nonlichenized lineages of euascomycetes (Sordariomycetes, Dothideomycetes, Leotiomycetes and Pezizomycetes) but absent among the lichen-dominated clades (Lecanoromycetes, Arthoniomycetes, Lichinomycetes), while lichenicolous fungi were thought to be closely related to lichens and found mainly in lichen-forming clades. As for the first difference (symptoms), it is now evident that lichens with and without obvious symptoms of infection harbor numerous described lichenicolous species in their mycobiomes (Fernandez-Mendoza et al. 2017). Since very few described lichenicolous species have been sequenced until very recently, the ability to identify endolichenics as lichenicolous species is limited at present. However, as more sequences of described species are published, it will be possible to identify those previously assigned to endolichenic fungi that actually belong to described lichenicolous species. As for the second difference (phylogeny), Lawrey & Diederich (2003) showed earlier, and many studies done since (incorporated into this classification), continue to support the idea that lichenicolous fungi are well-represented in both lichen-forming and non-lichenized clades of fungi. Since phylogenetic placement helps to elucidate origins of these fungi, it is apparent that lichenicolous fungi have multiple origins from lichen-forming and non-lichenized ancestors while endolichenic fungi are most likely descended from non-lichenized ancestors (Arnold et al. 2009). Given what we know about these lichen-associated groups now, we would argue that they represent components of the same communities and the distinction between them is likely to become less clear-cut as more lichen mycobiomes are studied and the inhabitants identified.

Diversity and Classification History

Lichenicolous fungi have been studied and described since the mid-18th century, long before the symbiotic nature of lichens was recognized (Acharius 1795, 1810; Dillenius 1742). Illustrated and remarkably thorough treatments appeared in the 19th and early 20th centuries (Keissler 1930; Lindsay 1869; Olivier 1905–1907; Vouaux 1912–1914; Zopf 1896), drawing the attention of both lichenologists and other mycologists to these fungi. Modern compilations were produced by Clauzade & Roux (1976 – with 457 species) and Clauzade et al. (1989 – with 686 species) (**Fig. 1**). Hawksworth (1983) published keys to 218 lichenicolous species known from the British Isles and Ihlen & Wedin (2008) keys to 298 species known from Sweden. The most recent published compilation (Lawrey & Diederich 2003) listed 1559 total species worldwide and the most recent online worldwide checklist includes around 1800 described species, including in some cases infraspecific taxa (Lawrey & Diederich 2003; http://www.lichenicolous.net). However, taking into account Hawksworth's (1991b, 2001) global estimates of fungal diversity and average levels of host specificity, and the total number of 19,409 lichen species in the most current classification (Lücking et al. 2016, 2017), the actual number of lichenicolous fungal species should be much higher. Estimates are that 3000–5000 species will eventually be described. In the present cata-

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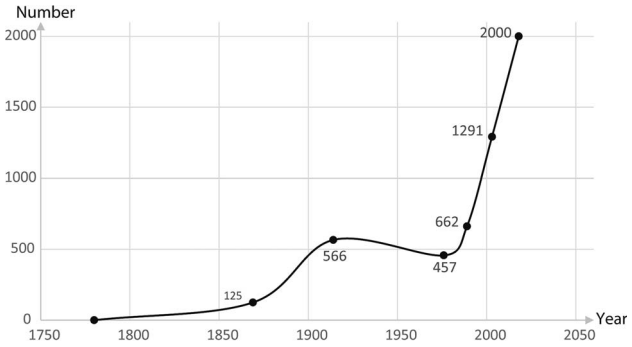

Figure 1. Number of obligate non-lichenized lichenicolous taxa (species, subspecies or varieties) accepted by Lindsay (1869), Vouaux (1912–14), Clauzade & Roux (1976), Clauzade et al. (1989), Lawrey & Diederich (2003) and the present classification (2018).

logue, we list a total of 2319 lichenicolous species or infraspecific taxa.

Materials and Methods

We produced a hierarchical listing of genera based on the most recent data available in www.lichenicolous.net [posted January 3, 2018]. For all genera, the latest phylogenetic and taxonomic papers have been consulted, and the resulting classification compared with other recent classifications of fungi (e.g., Jaklitsch et al. 2016, Lücking et al. 2016, Lumbsch & Huhndorf 2007; Wijayawardene et al. 2017, Zhao et al. 2017) to detect errors or omissions.

As is the case for the online checklist, we list for each genus all lichenicolous species or infraspecific taxa (obligately lichenicolous taxa, lichenicolous lichens and facultatively lichenicolous taxa), along with information about types, synonyms, numbers of each category of lichenicolous species or infraspecific taxa, pertinent literature and whether or not molecular data are available.

Molecular techniques and phylogenetic analyses. For the phylogenetic tree of the Sclerococcales (**Fig. 4**), a total of five nuLSU rDNA and four mtSSU sequences were newly amplified and sequenced for three specimens of *Dactylospora lobariella* and two specimens of *D. parasitica*, using the techniques described in Ertz et al. (2018a,b). Members of *Sclerococcales* for which the nuLSU and/or the mtSSU sequences were available were selected from Diederich et al. (2013), Muggia et al. (2016, 2017), Réblová et al. (2017) and Pino-Bodas et al. (2017), and their sequences retrieved from GenBank (**Table 6**). *Penicillium javanicum, Pyrgillus javanicus* and *Sphinctrina turbinata* were chosen as outgroup. The sequences were aligned using MAFFT v6.814b (Katoh *et al.* 2002) on the CIPRES Web Portal (Miller *et al.* 2010) and improved manually using Mesquite 3.04 (Maddison & Maddison 2015). Terminal ends of sequences and ambiguously aligned regions were delimited manually and excluded from the datasets.

Best-fit evolutionary models were estimated using Akaike Information Criterion (AIC; Akaike 1973) as implemented in jModelTest2 2.1.6 (Darriba *et al.* 2012). The TIM1+I+G and the GTR+G models were selected respectively for the nuLSU and the mtSSU datasets. The combined nuLSU+mtSSU dataset consisted of 29 specimens and 1610 unambiguously aligned sites. A bayesian analysis was carried out on the nuLSU+mtSSU dataset using the Metropolis-coupled Markov chain Monte Carlo (MCMCMC) method in MrBayes v. 3.2.6 (Ronquist & Huelsenbeck 2003) on the CIPRES Web Portal (Miller et al. 2010). Two parallel MCMCMC runs were performed, each using four independent chains and 40 million generations, sampling trees every 1000th generation. Posterior probabilities (PP) were determined by calculating a majority-rule consensus tree generated from 60002 post-burnin trees of the 80002 trees sampled by the two MCMCMC runs using the sumt option of MrBayes. PP $\geq$ 0.95 were considered to be significant. The phylogenetic tree was visualized using FigTree v. 1.4.2 (Rambaut 2012). The dataset and tree were deposited in Treebase as submission 23081.

Results and Discussion

At the time of this publication, the total number of lichenicolous fungi, including in certain cases subspecific taxa (**Table 1**, **Supplementary Table S1**) is 2319, with 2000 obligately lichenicolous species, 257 lichenicolous lichens and 62 facultatively lichenicolous species. This is a significant increase from the 1559 total species reported in the last published checklist (Lawrey & Diederich 2003), and a larger number even than the approximately 1800 reported in the most recent online checklist posted in January earlier this year. Of the total number of species, 2219 (96%) are ascomycetes (**Fig. 2**) and 100 (4%) are

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Table 1. Current total numbers of lichenicolous fungi (obligate lichenicolous, lichenicolous lichens and facultative lichenicolous) represented in various taxonomic ranks.

Taxonomic rank	Category	Numbers
Species	obligate lichenicolous	2000
	lichenicolous lichens	257
	facultative lichenicolous	62
	Total	2319
Genera	obligate lichenicolous	341
	lichenicolous lichens	63
	facultative lichenicolous	34
	Total	397
Families	obligate lichenicolous	98
	lichenicolous lichens	28
	facultative lichenicolous	21
	Total	115
Orders	obligate lichenicolous	45
	lichenicolous lichens	16
	facultative lichenicolous	17
	Total	55
Classes	obligate lichenicolous	8
	lichenicolous lichens	4
	facultative lichenicolous	6
	Total	10
		Number of species
Basidiomycota	obligate lichenicolous	93
	lichenicolous lichens	0
	facultative lichenicolous	7
	Total	100
Ascomycota	obligate lichenicolous	1907
	lichenicolous lichens	257
	facultative lichenicolous	55
	Total	2219

basidiomycetes (**Fig. 3**), and this ratio did not change from 2003.

Of the 397 genera in the list, 198 (c. 50%) are entirely lichenicolous (**Table 2**); there are also six families and two orders, some with large numbers of species, that are entirely lichenicolous (**Table 3**).

Table 2. Number of genera containing varying levels of lichenicolous species.

Level of representation	Ratio of lichenicolous species to all species in the genus	Number of genera
All lichenicolous species	100%	198
	$\geq$ 80%	210
Some lichenicolous species	$\geq$ 50%	227
	$\geq$ 20%	270
At least one lichenicolous species	$>$ 0%	397

Table 3. Families and orders of fungi containing only lichenicolous species.

Taxonomic category	Number of species
Families with only lichenicolous species	
Abrothallaceae	57
Polycoccaceae	72
Adelococcaceae	14
Sarcopyreniaceae	11
Obryzaceae	3
Cyphobasidiaceae	2
Orders with only lichenicolous species	
Abrothallales	57
Cyphobasidiales	2

Table 4. Genera with the largest number of described lichenicolous fungi (all three categories, obligate, facultative and lichenicolous fungi). For genera indicated in bold, all known species are lichenicolous.

Genus	Order	Number of described species
Arthonia	Arthoniales (Asco)	140
Stigmidium	Verrucariales (Asco)	94
Opegrapha	Arthoniales (Asco)	72
Sclerococcum	Sclerococcales (Asco)	64
Polycoccum	Trypetheliales (Asco)	**60**
Tremella	Tremellales (Basidio)	60
Lichenochora	Phyllachorales (Asco)	**44**
Endococcus	Verrucariales (Asco)	**44**
Pronectria	Hypocreales (Asco)	**44**
Abrothallus	Abrothallales (Asco)	**42**
Cercidospora	Dothideomycetes inc. sed. (Asco)	40
Plectocarpon	Arthoniales (Asco)	40
Lichenopeltella	Dothideomycetes inc. sed. (Asco)	39
Rhizocarpon	Rhizocarpales (Asco)	39
Sphaerellothecium	Dothideomycetes inc. sed. (Asco)	**35**
Zwackhiomyces	Collemopsidiales (Asco)	**35**
Chaenothecopsis	Mycocaliciales (Asco)	33
Skyttea	Helotiales (Asco)	**30**
Taeniolella	Asterotexiales (Asco)	30

Table 5. Genera of lichenicolous fungi with published sequences. In some cases the type species of the genus has been sequenced, but the lichenicolous members of the genus have not been sequenced.

Category	Numbers
Number of genera with lichenicolous sequences	128
Number of genera with type sequenced	171
Number of genera with type and lichenicolous sequenced	102

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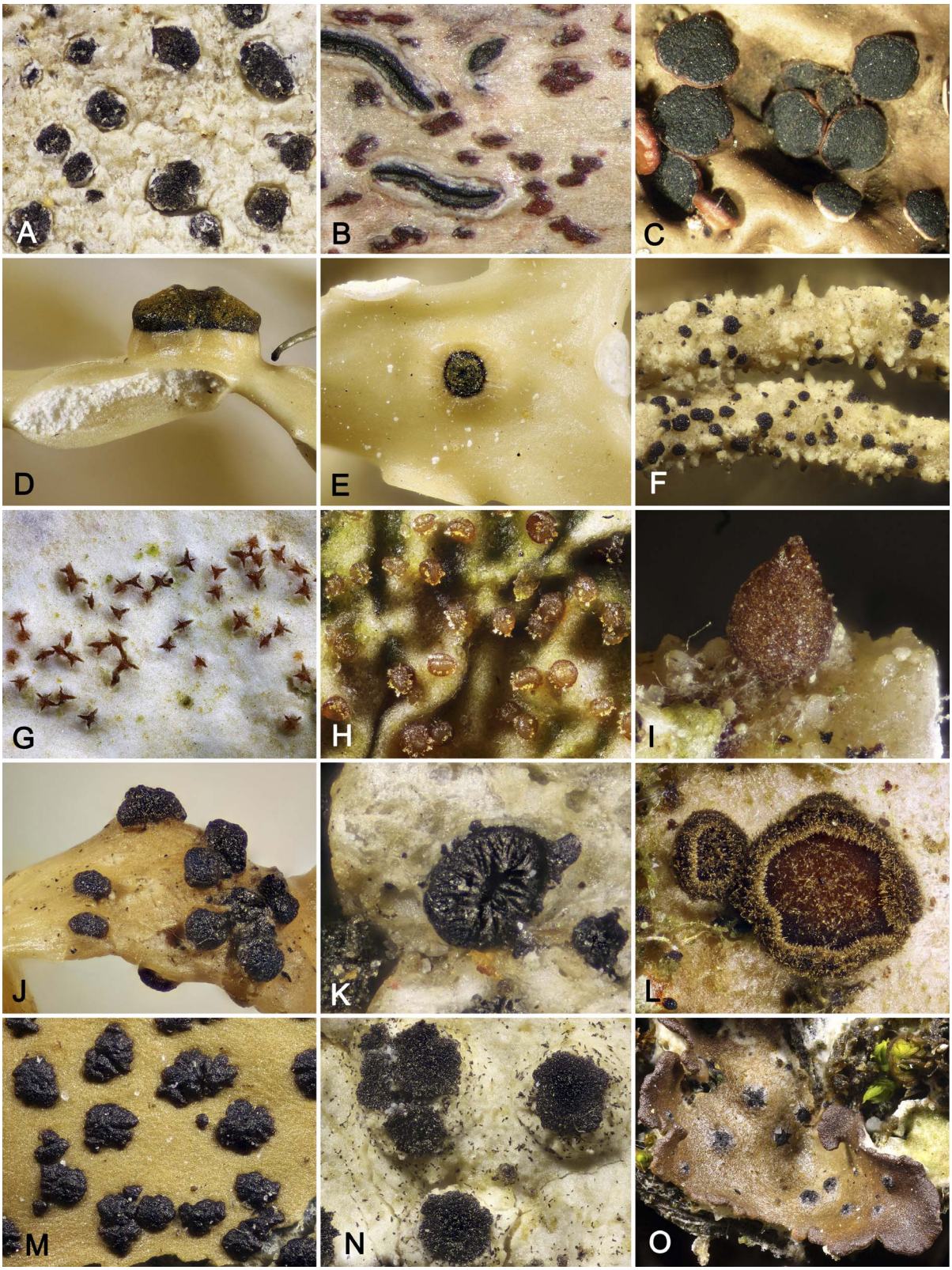

Figure 2. Morphological diversity of lichenicolous ascomycetes. **A.** *Arthonia diorygma* on Graphidaceae (Arthoniales, Arthoniaceae). **B.** *A. graphidicola* on *Graphis* (id.). **C.** *Plectocarpon lichenum* on *Lobaria* (id., Lecanographaceae). **D.** *Mixtoconidium insidiens* (sexual stage) on *Ramalina* (id., gen. inc. sed.). **E.** id. (pycnidial stage). **F.** *Lichenostigma maureri* on *Usnea* (Lichenostigmatales, Phaeococcomycetaceae). **G.** *Pronectria robergei* on *Peltigera* (Hypocreales, Bionectriaceae). **H.** *Trichonectria rubefaciens* on *Pleurosticta* (id.). **I.** *Lichenobarya usneae* on *Usnea* (id., Hypocreaceae). **J.** *Llimoniella ramalinae* on *Ramalina* (Helotiales, Corderitidaceae). **K.** *Skyttea pertusariicola* on *Pertusaria* (id.). **L.** *Unguiculariopsis manriquei* on *Lobaria* (id.). **M.** *Hemigrapha asteriscus* on *Peltigera* (Asterotexiales, gen. inc. sed.). **N.** *Nigromacula uniseptata* on *Hypotrachyna* (gen. inc. sed.). **O.** *Neolamya peltigerae* on *Peltigera* (id.). All photographs by Paul Diederich.

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Figure 3. Morphological diversity of lichenicolous basidiomycetes. **A.** *Chionosphaera lichenicola* on *Fellhanera* (Agaricostilbales, Chionosphaeraceae). **B.** *Cyphobasidium hypogymniicola* on *Hypogymnia* (Cyphobasidiales, Cyphobasidiaceae). **C.** *C. usneicola* on *Usnea* (id.). **D.** *Heterocephalacria physciacearum* on *Physcia* (Filobasidiales, Filobasidiaceae). **E.** *Biatoropsis minuta* on *Usnea* (Tremellales, Tremellaceae). **F.** *Tremella caloplacae* s.l. on *Xanthoria* (id.). **G.** *Arrhenia peltigerina* on *Peltigera* (Agaricales, Hygrophoraceae). **H.** *Athelia arachnoidea* (sexual stage) on *Xanthoria* (Atheliales, Atheliaceae). **I.** id. (sclerotial stage). **J.** *Leucogyrophana lichenicola* on *Cladonia* (Boletales, Coniophoraceae). **K.** *Erythricium aurantiacum* on *Physcia* (Corticiales, Corticiaceae). **L.** *Marchandiomyces corallinus* on *Xanthoparmelia* (id.). **M.** *Burgellopsis nivea* on a sterile crustose lichen (Cantharellales, gen. inc. sed.). **N.** *Burgella lutea* on *Sticta* (id.). **O.** *Minimedusa pubescens* on *Scoliciosporum chlorococcum* (id.). All photographs by Paul Diederich.

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Many genera that are entirely lichenicolous contain only one species, but some contain over 30 species (**Table 4**). Sequence information is available for lichenicolous species in 128 (32%) of the 397 genera containing lichenicolous species, in 56 (28%) of the 198 entirely lichenicolous genera (**Table 5**), and the generic type has been sequenced in 171 genera (some of which include lichenicolous species that have not yet been sequenced). Many species have also been brought into culture (listed in www.lichenicolous.net).

The 2018 classification and checklist of lichenicolous fungi in the Ascomycota and Basidiomycota

In the following compilation, the 391 fungal genera containing lichenicolous species in all three categories (obligately lichenicolous, lichenicolous lichens, facultatively or doubtfully lichenicolous) are listed hierarchically by subfamily (where applicable), family, order, subclass (where applicable), class, subphylum and phylum. Following the style of the lichen classification (Lücking et al. 2016 [2017]), all categories are listed in strict alphabetical order. For each genus entry, the following information is given: type, synonyms (only when the type species is lichenicolous), data on the existence of sequences [e.g., in "Mol.: yes (T, L)", "yes" means that sequences exist, "T" that the generic type has been sequenced and "L" that at least one lichenicolous species has been sequenced], nomenclatural or taxonomic notes, and number of taxa in each category [e.g., "23-1-2 (80)" means that 23 species, subspecies or varieties are obligately lichenicolous (non-lichenized), 1 taxon is a lichenicolous lichen, 2 taxa are facultatively (or doubtfully) lichenicolous, while the genus includes a total of c. 80 species (estimation based on recent literature and online databases); the latter number is omitted when all species are lichenicolous]. Species isolated from lichens in culture are included and are treated as doubtfully lichenicolous. Endolichenic species have sometimes been cultured but often are known only from DNA sequences. When they have not been named, they are excluded from the classification. Species names are given in bold regular font when **obligately lichenicolous**, in bold italic font for ***lichenicolous lichens***, and in bold regular font underlined when **facultatively (or doubtfully) lichenicolous**. An alphabetical listing of all species follows, along with the most common known lichen hosts. In some instances, poorly known species are included within the genus where they most likely belong, without formally combining them there. References cited after each genus mainly refer to taxonomic treatments. In author citations of genera and species, "ex" citations are omitted.

Phylum ASCOMYCOTA Caval.-Sm.

Subphylum PEZIZOMYCOTINA O.E.Erikss. & Winka

Class ARTHONIOMYCETES O.E.Erikss. & Winka

Order **Arthoniales** D.Hawksw. & O.E.Erikss.

Family **Arthoniaceae** Rchb.

Arthonia Ach. s.l.; type: *A. radiata* (Pers.) Ach. (lichenized) [= *Asterotrema* Müll.Arg.; type: *A. parasiticum*; = *Celidiopsis* A.Massal.; type: *C. gyrolophii*; = *Celidium* Tul.; type: *C. fuscopurpureum*; = *Charcotia* Hue; type: *C. rufidula*; = *Conida* A.Massal.; type: *C. clemens*; = *Conida* subgen. *Conidella* Elenkin; type: *C. urceolata*; = *Helicobolomyces* Matzer; type: *H. lichenicola* (asexual), i.e. *A. cinnabarinula*; = *Spilodium* A.Massal.; type: *S. fuscopurpureum*; = *Subhysteropycnis* Wedin & Hafellner; type: *S. maculiformans* (asexual), i.e. *A. maculiformis*]. Mol.: yes (T, L). Currently polyphyletic.
Species: 139-1-0 (500). **abrothallina** Nyl.: on *Pseudocyphellaria*; **agelastica** R.C.Harris & Lendemer: on *Lecanora louisiana*; **albotrachynae** Etayo: on *Hypotrachyna endochlora*; **almquistii** Vain.: on *Amygdalaria*, *Koerberiella*, *Porpidia* and *Trapelia*; **amandineicola** van den Boom & Ertz: on *Amandinea efflorescens*; **amylospora** Almq.: on *Porpidia* and *Farnoldia*; **anatolica** Halıcı & Candan: on *Aspicilia contorta*; **anjutae** S.Y.Kondr. & Alstrup [as '*anjutii*']: on *Teloschistes*; **apotheciorum** (A.Massal.) Almq. [=? *A. galactinaria* Leight.; =? *A. subvarians* Nyl.]: on *Myriolecis*; **arthoniicola** Diederich & Aptroot: on *Arthonia catenulata*; **aspiciliae** Alstrup & E.S.Hansen: on *Aspicilia*; **atropunctata** Vain.: on sterile foliicolous cf. *Echinoplaca*; **ayseniae** Halıcı & Candan [as '*aysenae*']: on *Acarospora*; **Celidium bacidiosporum** Steiner: on *Parmotrema andinum* [a poorly known species possibly belonging to *Arthonia* s.l.]; **badia** Wedin & Hafellner: on *Pseudocyphellaria granulata*; **biatoricola** Ihlen & Owe-Larss.: on *Biatora efflorescens*; **brussei** Egea & Torrente [≡ *A. capensis* Egea & Torrente, nom. illeg., non *A. capensis* Stizenb.]: on *Lecanographa*; **caerulescens** (Almq.) R.Sant.: on *Lecanora varia*; **calicii** Kantvilas & Wedin [as '*caliciae*']: on *Calicium tricolor*; **catillarioides** Etayo: on *Sticta*; **cinnabarinula** Müll.Arg. [= *Helicobolomyces lichenicola* Matzer]: on foliicolous *Porina* and *Trichothelium*; **circinata** Th.Fr.: on *Umbilicaria*; **clemens** (Tul.) Th.Fr. [≡ *Conida clemens* (Tul.) A.Massal.]: on *Rhizoplaca*; **cohabitans** Coppins: on *Arthothelium reagens*; **colombiana** Etayo: on *Cladonia*; **coniocraeae** Brackel: on *Cladonia coniocraea*; **coriifoliae**

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Wedin & Hafellner: on *Pseudocyphellaria coriifolia*; **coronata** Etayo: on *Flavoparmelia caperata*; **cryptotheciae** Matzer & R.Sant.: on foliicolous *Myriostigma candida*; **darbishirei** Follmann & Werner: on *Roccella nigerrima*; **destruens** Rabenh. var. **destruens**: on *Physcia*; **destruens** var. **nana** Grube & Hafellner: on *Xanthomendoza fallax*; **digitatae** Hafellner: on *Cladonia* [often co-occurring with *Milospium lacoizquetae*]; **digitispora** Etayo [as '*digitospora*']: on *Sticta*; **diorygmae** S.Joshi, D.K.Upreti & S.Nayaka: on *Diorygma*; **diploiciae** Calat. & Diederich: on *Diploicia canescens*; **epicladonia** (Nyl.) Alstrup & Zhurb. [≡ *Scutula epicladonia* (Nyl.) Sacc.]: on *Cladonia*; **epifarinosa** Etayo: on *Pannaria*; **epimela** (Almq.) I.M.Lamb: on *Amandinea punctata*; **epiphyscia** Nyl.: on *Physcia*; **epitoninia** Halıcı & Candan: on *Toninia*; **excentrica** Th.Fr.: on *Lepraria*; **farinacea** (H.Olivier) R.Sant.: on *Ramalina*, especially *R. farinacea*; **flavicantis** Wedin & Hafellner: on *Pseudocyphellaria flavicans*; **follmaniana** Diederich: on *Roccella*; **fuscopurpurea** (Tul.) R.Sant. [≡ *Celidium fuscopurpureum* Tul.; ≡ *Spilodium fuscopurpureum* (Tul.) A.Massal.]: on *Peltigera*; **garajonayi** Etayo: on *Porina*; **gelidae** R.Sant.: on *Placopsis gelida*; **glacialis** Alstrup & E.S.Hansen: on *Rhizoplaca melanophthalma*; **glaucomaria** (Nyl.) Nyl.: on *Lecanora rupicola*; **graphidicola** Coppins: on *Graphis scripta*; **griseopruinosa** F.Berger & E.Zimm.: on *Pertusaria pseudocorallina*; **Celidiopsis gyrolophii** A.Massal.: on *Cora* [a poorly known species pertaining to *Arthonia* s.l.]; **haematommatum** Kalb & Hafellner: on *Haematomma*; **haematostigma** Grube & Hafellner: on *Ramalina*; **hawksworthii** Halıcı: on *Dimelaena*; **hertelii** (Calat., Barreno & V.J.Rico) Hafellner & V.John: on *Aspicilia*; **heterodermiae** Etayo: on *Heterodermia*; **hodgesii** Lendemer & R.C.Harris: on *Graphis lineola*; ***infectans*** Egea & Torrente: lichen, juvenile lichenicolous on *Lecanographa hypothallina* and *Sparria cerebriforme*; **ingaderiae** Follmann: on *Ingaderia*; **insularis** Kantvilas & Wedin: on *Sirenophila eos*; **intermedia** Matzer: on foliicolous *Porina*; **intexta** Almq.: on *Lecidella*; **invadens** Coppins: on *Schismatomma quercicola*; **japewiae** Grube & Holien: on *Japewia*; **lecaniicola** van den Boom & M.Haji Moniri: on *Lecania triseptata*; **lecanoricola** Alstrup & Olech [as '*lecanoriicola*']: on *Lecanora populicola*; **lecanorina** (Almq.) R.Sant.: on *Lecanora albella*; **lepidiota** (H.Olivier) R.Sant.: on *Fuscopannaria praetermissa*; **Abrothallus lepidophilus** Anzi: on *Cladonia* [a poorly known species possibly belonging to *Arthonia* s.l.]; **lethariicola** Alstrup & M.S.Cole: on *Letharia*; **leucomelodis** F.Berger & E.Zimm.: on *Leucodermia leucomelos*; **lobariellae** Etayo: on *Lobariella*; **lobothalliae** Etayo: on *Lobothallia alphoplaca*; **maculiformis** Wedin & Hafellner [= *Subhysteropycnis maculiformans* Wedin & Hafellner]: on *Pseudocyphellaria glabra* and *P. homoeophylla;* **marginalis** Etayo: on *Pseudocyphellaria*; **mazosiicola** Matzer & R.Sant. [= *A. mazosiae* R. Sant., nom. inval., nom. illeg., non *A. mazosia* (A.Massal.) Willey]: on foliicolous *Mazosia*; **microsticta** Vain.: on foliicolous cf. *Fellhanera bouteillei* [a species of doubtful application]; **minuta** Wedin & Hafellner: on *Pseudocyphellaria coriifolia*; **molendoi** (Frauenf.) R.Sant.: on *Calogaya* and *Rusavskia*; **navasiana** Etayo: on *Lepraria*; **neglectula** Nyl.: on a sterile, sorediate crust (*Lepraria neglecta*?); **nephromiaria** Nyl.: on *Nephroma*; **nideri** (J.Steiner) Clauzade, Diederich & Cl.Roux, comb. inval.: on *Pyrenodesmia*; **obscurior** Triebel: on *Pilophorus dovrensis*; **oligospora** Vězda: on *Myriolecis crenulata*; **pannariae** Zhurb. & Grube: on *Protopannaria pezizoides* and *Psoroma hypnorum*; **pantherina** Etayo: on *Pertusaria pustulata*; **Asterotrema parasiticum** Müll.Arg.: on *Athallia pyracea* [probably belongs to *Arthonia*, fide Aptroot 1991; incorrectly cited as *Arthonia parasitica* (Müll.Arg.) Aptroot by Sundin et al. 2012 and Frisch et al. 2014b]; **parietinaria** Hafellner & A.Fleischhacker: on *Xanthoria parietina*; **parmeliae** (C.W.Dodge & G.E.Baker) D.Hawksw. & Iturr.: on *Physcia caesia*; **peltigerea** Th.Fr.: on *Peltigera* and *Solorina*; **peltigerina** (Almq.) H.Olivier: on *Peltigera* and *Solorina*; **pelvetii** (Hepp) H.Olivier: on *Crocodia aurata*; **pepei** Etayo & Pérez-Ortega: on *Parmelina*; **phaeophysciae** Grube & Matzer: on *Phaeophyscia*; **physcidiicola** Frisch & G. Thor: on *Physcidia wrightii*; **plectocarpoides** (S.Y.Kondr. & D.J.Galloway) Wedin & S.Y.Kondr.: on *Pseudocyphellaria scabrosa*; **polia** Etayo & R.Sant.: on *Diploicia canescens*; **polydactylonis** Diederich & Ertz, nom. nov. [≡ *A. ceracea* Etayo & Breuss nom. illeg.]: on *Peltigera polydactylon* [a younger homonym of *Arthonia ceracea* Fée]; **pragensis** Horáková: on *Caloplaca teicholyta*; **prominens** Follmann: on *Pentagenella gracillima*; **protoparmeliae** Etayo: on *Protoparmelia badia*; **protoparmeliopseos** Etayo & Diederich: on *Protoparmeliopsis muralis*; **pseudocyphellariae** Wedin: on *Pseudocyphellaria multifida*; **pseudopegraphina** Matzer: on foliicolous *Mazosia*; **punctella** Nyl.: on *Diplotomma*; **rangiformicola** Brackel & Etayo: on *Cladonia rangiformis*; **rimeliicola** Diederich: on *Parmotrema*; **rinodinicola** Candan & Halıcı: on *Rinodina oleae*; **rubescens** (Arnold) Clauzade, Diederich & Cl.Roux: on *Buellia epipolia*; **rufidula** (Hue) D.Hawksw., R.Sant. & Øvstedal [≡ *Charcotia rufidula* Hue]: on *Umbilicaria*; **sagenidii** Vězda & Kantvilas: on *Lecanactis mollis*; **sampaianae** (Diederich & Etayo) Ertz & Diederich [≡ *Plectocarpon sampaianae* Diederich & Etayo]: on *Nevesia sampaiana*; **santessoniana** Wedin & Hafellner: on *Pseudocyphellaria scabrosa*; **santessonii** Matzer: on foliicolous *Porina*; **semiimmersa** Wedin & Hafellner: on *Pseudocyphellaria*; **sherparum** Grube & Matzer: on *Lecanora sherparum*; **squamarinae** Etayo: on *Squamarina*; **stereocaulina** (Ohlert) R.Sant.: on *Stereocaulon*; **stevensoniana** R.C.Harris & Lendemer: on *Haematomma accolens*; **stictaria** Nyl.: on *Pseudocyphellaria*; **stipitata** M.M.E.Alves, Aptroot & M.Cáceres: on unidentified sterile, sorediate, corticolous lichen (?*Bacidina*, *Fellhanera*); **subaggregata** Wedin & Hafellner: on *Pseudocyphellaria hirsuta*; **subconveniens** Nyl. [=? *A. ricasoliae* Müll.Arg.]: on *Lobaria*; **subfuscicola** (Linds.) Triebel: on *Lecanora albella* and *L. carpinea*; **subvelutinae** (Vain.) R.Sant.: on foliicolous *Sporopodium*; **sytnikii** S.Y.Kondr.: on *Dufourea*; **tabescens** (Anzi) Jatta: on *Parmelia saxatilis*; **tavaresii** Grube & Hafellner: on *Anthracothecium* and *Pyrenula*; **tetraspora** S.Y.Kondr. & Kärnefelt: on *Caloplaca chilensis*; **thelotrematis** Coppins: on *Thelotrema*; **toensbergii** Holien & Frisch: on *Mycoblastus affinis*; **tremelloides** Etayo: on *Heterodermia*; **triebeliae** Zhurb.: on *Dactylina*; **urceolata** (Elenkin) Calat., Barreno & V.J.Rico [≡ *Conida urceolata* Elenkin]: on *Aspicilia*; **varians** (Davies) Nyl.: on *Lecanora bicincta*, *L. helicopis*, *L. rupicola* and *L. swartzii*; **versoeensis** Alstrup [= *A. aggregata* Alstrup, M.S.Christ. & Hafellner]: on *Amandinea punctata*; **xanthoparmeliarum** Etayo: on *Xanthoparmelia*.

Lit.: Alstrup 1993a; Alstrup & Cole 1998; Alstrup & Hansen 2001; Alstrup & Olech 1996; Alves et al. 2014; Aptroot et al. 1995, 1997; Berger & Zimmermann 2016; Brackel 2010a, 2015; Calatayud et al. 1995, 2004a; Candan & Halıcı 2009; Diederich 1995; Ertz et al. 2005; Etayo 1993, 1996, 2002a, 2008, 2010b, 2010c, 2017, 2018b; Etayo & Breuss 1998; Etayo & Diederich 2009; Etayo & Pérez-Ortega 2016; Etayo & Sancho 2008; Fleischhacker et al. 2016; Follmann & Werner 2003; Frisch & Holien 2018; Frisch et al. 2014a; Grube & Matzer 1997; Grube et

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al. 1995; Hafellner 2009; Halıcı 2008; Halıcı & Candan 2009, 2011; Hawksworth 1991a; Hawksworth & Iturriaga 2006; Hertel 1969; Horáková 1994; Ihlen et al. 2004b; Joshi et al. 2013; Kalb et al. 1995; Kantvilas & Vězda 1992; Kantvilas & Wedin 2015; Kärnefelt et al. 2002; Kocourková et al. 2012; Kondratyuk 1996a; Kondratyuk & Zelenko 2002; Lendemer et al. 2016; Matzer 1996; Santesson 1993a; Santesson et al. 2004; Triebel et al. 1991; van den Boom & Haji Moniri 2018; van den Boom et al. 2017; Wedin & Hafellner 1998; Wedin & Kondratyuk 1997; Zhurbenko 2002; Zhurbenko & Grube 2010.

Briancoppinsia Diederich, Ertz, Lawrey & van den Boom; type: *B. cytospora*. Mol.: yes (T, L). Asexual, pycnidial.
Species: 1-0-0. **cytospora** (Vouaux) Diederich, Ertz, Lawrey & van den Boom [≡ *Phoma cytospora* (Vouaux) D.Hawksw.]: on parmelioid lichens, *Cladonia*, *Lecanora conizaeoides*, *Lepra*, etc..
Lit.: Diederich et al. 2011b.

Family **Lecanographaceae** Ertz, Tehler, G.Thor & Frisch

Lecanographa Egea & Torrente; type: *L. lyncea* (Sm.) Egea & Torrente (lichenized). Mol.: yes (T).
Species: 3-1-0 (38). ***dialeuca*** (Cromb.) Egea & Torrente: lichen, facultatively lichenicolous on *Roccella*; **imitans** Werner & Follmann: on *Roccella humboldtiana*; **occidentalis** Egea & Torrente: on *Roccellina*; **rinodinae** (Vězda) R.Sant.: on *Phaeorrhiza nimbosa*.
Lit.: Egea & Torrente 1994; Follmann & Werner 2003; Gonnet et al. 2017; Hafellner 2009; van den Boom & Etayo 2006; Vězda 1969.

Phacographa Hafellner; type: *P. glaucomaria*. Mol.: yes (T, L).
Species: 3-0-0. **glaucomaria** (Nyl.) Hafellner [= *Opegrapha maculans* (Arnold) Poelt & Türk]: on *Lecanora rupicola* s.l. (incl. *L. bicincta*); **protoparmeliae** Hafellner: on *Protoparmelia badia*; **zwackhii** (Zwackh) Hafellner [≡ *Opegrapha zwackhii* (Zwackh) Hafellner]: on *Phlyctis*.
Lit.: Hafellner 2009.

Plectocarpon Fée; type: *P. pseudosticta* [≡ *Delisea* Fée, nom. illeg.; = *Epiphora* Nyl.; type: *E. encaustica*; = *Lichenomyces* Trevis.; type: *L. parasiticus* Trevis., nom. illeg., i.e. *P. lichenum*]. Mol.: yes (L).
Species: 40-0-0 (41). **aequatoriale** Etayo: on *Sticta*; **arthonioides** Diederich: on *Lobaria isidiophora*; **bunodophori** Wedin, Ertz & Diederich: on *Bunodophoron patagonicum*; **cladoniae** R.Sant.: on *Cladonia*; **concentricum** Ertz, Diederich & Wedin: on *Pseudocyphellaria homeophylla*; **coppinsii** Ertz & Diederich: *Pseudocyphellaria crocata*; **cristalliferum** Christnach, Ertz & Diederich: on *Sticta*; **diedertzianum** Y.Joshi, Upadhyay & Chandra: on *Myelochroa*; **dimorphosporum** Etayo, Flakus & Kukwa: on *Ricasolia patinifera*; **dirinariae** Ertz & van den Boom: on *Dirinaria*; **encausticum** (Nyl.) R.Sant. [≡ *Epiphora encaustica* Nyl.]: on *Brodoa intestiniformis*; **gallowayi** (S.Y.Kondr.) Ertz & Diederich: on *Pseudocyphellaria dissimilis*; **gayanum** Etayo: on *Siphula*; **hypogymniae** Zhurb. & Diederich: on *Hypogymnia bitteri*; **lambinonii** Diederich & Etayo: on *Lobaria*; **latisporum** Ertz, Diederich & Wedin: on *Pseudocyphellaria coriifolia*; **leuckertii** (S.Y.Kondr. & D. J.Galloway) Ertz & Diederich: on *Pseudocyphellaria intricata* and *P. norvegica*; **lichenum** (Sommerf.) D.Hawksw.: on *Lobaria anomala*, *L. anthraspis* and *L. pulmonaria*; **linitae** (R.Sant.) Wedin & Hafellner: on *Lobaria linita*; **macaronesiae** Diederich, Etayo & Sérus.: on *Lobaria immixta* and *L. macaronesiae*; **melanohaleae** Christnach, Ertz & Diederich: on *Melanohalea ushuaiensis*; **nephromeum** (Norman) R.Sant.: on *Nephroma bellum*; **obtectum** Ertz & Diederich: on *Pseudocyphellaria encoensis*; **opegraphoideum** Christnach, Ertz, Diederich & Wedin: on *Pseudocyphellaria homeophylla* and *P. multifida*; **parmotrematis** Etayo, Flakus & Kukwa: on *Parmotrema reticulatum*; **peltigerae** Zhurb., Ertz, Diederich & Miądl.: on *Peltigera leucophlebia*; **pseudocyphellariae** Diederich: on *Pseudocyphellaria gilva*; **pseudoleuckertii** Diederich, Ertz & Wedin: on *Pseudocyphellaria coriifolia*; **pseudosticta** (Fée) Fée: on *Pseudocyphellaria freycinetii* and *P. glabra*; **ramalinae** Etayo & Flakus: on *Ramalina celastri*; **scrobiculatae** Diederich & Etayo: on *Lobarina scrobiculata*; **serusiauxii** Ertz & Diederich: on *Sticta*; **stereocaulicola** Kukwa, Etayo & Flakus: on *Stereocaulon*; **sticticola** Ertz, Wedin & Diederich: on *Sticta*; **tibellii** Ertz & Diederich: on *Pseudocyphellaria rubella*; **triebeliae** Diederich & Ertz: on *Ricasolia quercizans*; **usneae** Diederich & Etayo: on *Usnea exasperata*; **usneaustralis** Etayo: on *Usnea*; **venustum** Ertz, Coppins & Diederich: on *Nephroma papillosum*; **violaceum** Ertz, R.Sant., Diederich & Wedin: on *Nephroma antarcticum*.
Lit.: Aptroot et al. 1997; Diederich & Ertz 2018; Diederich & Etayo 1994; Ertz & Diederich 2007; Ertz & van den Boom 2012; Ertz et al. 2003, 2005; Etayo 2007, 2017; Etayo & Sancho 2008; Etayo et al. 2018; Hawksworth & Galloway 1984; Joshi et al. 2016b; Kukwa et al. 2012; Santesson 1993a, 1994a; Scholz 1998; Wedin & Hafellner 1998; Zhurbenko et al. 2008.

Family **Opegraphaceae** Stizenb.

Opegrapha Ach. s.l.; type: *O. vulgata* (Ach.) Ach. (lichenized) [= *Kalaallia* Alstrup & D.Hawksw.; type: *K. reactiva*; = *Leciographa* A.Massal.; type: *L. parasitica*; = *Lecoglyphis* Clem.; type: *L. centrifuga* (see under *O. rupestris*); = *Mycopegrapha* Vain.; type: *M. hymeniicola*; = *Opegraphoidea* Fink; type: *O. staurotheliicola*]. Mol.: yes (T, L). Currently polyphyletic.
Species: 72-0-0 (300). **agelaea** Fée: on pyrenocarpous lichen; **anomea** Nyl. [= *Leciographa pertusariae* Vouaux; = *O. wetmorei* M.S.Cole & D.Hawksw.]: on *Lepra*, *Ochrolechia*, *Pertusaria* and *Varicellaria*; **bacidiae** R.Sant.: on *Brasilicia brasiliensis*; **blakii** Ertz & Diederich: on cf. *Ochrolechia*; **brevis** Coppins: on *Thelotrema petractoides*; **brevissima** Kalb & Hafellner: on *Haematomma*; **briancoppinsii** S.Y.Kondr., L.Lőkös & J.-S.Hur: on *Porpidia albocaerulescens*; **brigantina** Hafellner: on *Brigantiaea*; **bryoriae** Zhurb.: on *Bryoria*; **buelliae** Zhurb.: on *Buellia insignis*; **chapsae** Etayo: on *Chapsa*; **cladoniicola** Ertz & Diederich: on *Cladonia*; **cryptotheciae** Matzer: on foliicolous *Myriostigma candidum*; **diffracticola** R.C.Harris & Ladd: on *Bacidia diffracta*; **ectolechiacearum** Matzer & R.Sant.: on foliicolous *Calopadia*, *Loflammia* and *Sporopodium*; **encephalographoidea** Diederich & Aptroot: on *Pyrenula*; **enterographae** Etayo & R.Sant.: on *Enterographa*; **epiporina** Matzer: on foliicolous *Porina*; **foreaui** (Moreau) Hafellner & R.Sant. [= *O. trassii* S.Y.Kondr. & Coppins]: on *Heterodermia*; **Leciographa furfuracea** (Anzi) Rehm: on *Lecanora rupicola* and *Rhizocarpon* [a poorly known species pertaining to *Opegrapha* s.l.]; **geographicola** (Arnold) Hafellner [≡ *Weddellomyces geographicola* (Arnold) Alstrup & D.Hawksw.]: on *Rhizocarpon*; **gregalis** Vain.: on pyrenocarpous lichen; **grossulina** Müll.Arg.: on Pyrenulaceae; **Leciographa gyrolophii**

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(A.Massal.) Vouaux: on *Cora* [a poorly known species pertaining to *Opegrapha* s.l.]; **hafellneri** E.Zimm., Etayo & F.Berger: on *Placopsis gelida*; **hellespontica** Vondrák & Kocourk.: on *Variospora aurantia*; **Mycopegrapha hymeniicola** Vain.: on *Lecanora* [a poorly known species pertaining to *Opegrapha* s.l.]; **insidens** (J.Steiner) S.Y.Kondr.: on *Athallia pyracea*, *Pyrenodesmia variabilis* and *Verrucaria buschirensis*; **invadens** Etayo: on *Pannaria farinosa*; **kalbii** Matzer: on foliicolous *Byssoloma*; **lamyi** (Nyl.) Triebel: on corticolous *Lecanora*; **lepidella** Nyl.: on cf. *Pertusaria*; **lichenicola** Thor, Lücking & Tat.Matsumoto: on *Porina*; **lopezariae** Etayo & Sipman: on *Lopezaria*; **maligna** Triebel: on *Lecidea fuscoatra*; **matzeri** Lücking: on foliicolous *Amazonomyces sprucei*; **mazosiae** Matzer: on foliicolous *Mazosia*; **melanospila** Müll.Arg.: on *Parmotrema*; **Leciographa nephromatis** Stein: on *Nephroma* [a poorly known species pertaining to *Opegrapha* s.l.]; **nigeriensis** C.W.Dodge: on *Cryptothecia*; **parasitica** (A.Massal.) H.Olivier [≡ *Leciographa parasitica* A.Massal.]: on *Aspicilia calcarea*; **perturbans** Follmann: on *Ingaderia pulcherrima*; **pertusariicola** Coppins & P.James: on *Pertusaria leioplaca*; **phaeophysciae** R.Sant., Diederich, Ertz & Christnach: on *Phaeophyscia hispidula*; **phlyctidicola** (Vouaux) Etayo: on *Phlyctis*; **phyllobathelii** Matzer & R.Sant.: on foliicolous *Phyllobathelium*; **phylloporinae** Müll.Arg.: on foliicolous *Porina*; **physcidiae** Kalb & Elix: on *Physcidia australasica*; **pigozziana** Etayo & Aptroot: on *Thelotrema*; **plectocarpoidea** Diederich: on *Phaeographis*; **porinicola** Matzer: on foliicolous *Porina*; **pulvinata** Rehm var. **pulvinata** [=? *Homostegia dermatocarponis* Alstrup & M.Cole (as '*dermatocarpae*'); =? *Phaeospora dermatocarponis* (R.G.Werner) S.Y.Kondr.]: on *Dermatocarpon*, possibly also *Catapyrenium* and *Endocarpon*; **pulvinata** var. **placidiicola** Zhurb.: on *Placidium*; **reactiva** (Alstrup & D.Hawksw.) Etayo & Diederich [≡ *Kalaallia reactiva* Alstrup & D.Hawksw.]: on *Hymenelia lacustris*; **reinkellae** Follmann: on *Roccella lirellina*; **rotunda** Hafellner: on *Physconia distorta*; **rouxiana** Nav.-Ros. & Hladun: on *Polyblastia nidulans*; **rupestris** Pers. [=? *O. centrifuga* A.Massal.; ≡ *Lecoglyphis centrifuga* (A.Massal.) Clem.]: on *Verrucaria*; **sipmanii** Matzer: on foliicolous *Porina*; **sphaerophoricola** Isbrand & Alstrup: on *Sphaerophorus globosus*; **Opegraphoidea staurotheliicola** Fink [=? *Opegrapha romsiae* S.Y.Kondr. & Kudratov (as '*romsae*')]: on *Staurothele* [a poorly known species pertaining to *Opegrapha* s.l.]; **stellanigra** Etayo: on *Sticta*; **stereocaulicola** Alstrup & D.Hawksw.: on *Stereocaulon*; **stigmodes** Nyl.: on *Porina*; **strigulae** Matzer & R.Sant.: on foliicolous *Strigula*; **submaritima** Hafellner: on *Tephromela atra*; **tenuior** Stirt.: on *Thelotrema*; **thelotrematis** Coppins: on *Thelotrema lepadinum* and *T. macrosporum*; **uniseptata** Matzer: on foliicolous *Strigula*; **velata** (Müll.Arg.) Vain.: on foliicolous *Actinoplaca*, *Calenia*, ?*Echinoplaca* and *Gyalectidium*; **verseghyklarae** S.Y.Kondr., L.Lőkös & J.-S.Hur: on *Ochrolechia pallescens*; **vulpina** Vondrák, Kocourk. & Tretiach: on *Caloplaca* s.l., incl. *Leproplaca cirrochroa*, *Pyrenodesmia erodens* and *Variospora flavescens*.

Lit.: Alstrup & Cole 1998; Alstrup & Hawksworth 1990; Aptroot el al. 1997; Awasthi 1991; Berger & Zimmermann 2016; Clauzade et al. 1989; Coppins & Kondratyuk 1998; Ertz 2009; Ertz & Diederich 2003; Ertz et al. 2004, 2005; Etayo 1996, 2007, 2010b, 2017; Etayo & Aptroot 2006; Etayo & Sancho 2008; Follmann & Werner 2003; Hafellner 1985b, 1994a, 2007, 2009; Harris & Ladd 2007; Isbrand & Alstrup 1992; Kalb & Elix 1995; Kalb et al. 1995; Kondratyuk & Galloway 1995c; Kondratyuk & Kudratov 2002; Kondratyuk & Zelenko 2002; Kondratyuk et al. 2015, 2016b; Lücking 1998; Matzer 1996; Navarro-Rosinés & Hladun 1995; Orange 2002; Triebel 1989; Vondrák & Kocourková 2008; Zhurbenko 2009b, 2013a; Zhurbenko & Vershinina 2014.

Paralecanographa Ertz & Tehler; type: *P. grumulosa*. Mol.: yes (T, L).
Species: 1-1-0. *grumulosa* (Dufour) Ertz & Tehler [≡ *Opegrapha grumulosa* Dufour; incl. *Lecanographa hemisphaerica* (Laundon) Egea & Torrente]: initially lichenicolous on *Roccella*, rarely on *Dirina*, *Gorgadesia* or *Opegrapha*, eventually developing an own thallus; **thelopsisocia** (B. de Lesd.) Cl.Roux, comb. provis. [≡ *Opegrapha grumulosa* var. *thelopsisocia* B. de Lesd.; ≡ *O. thelopsisocia* (B. de Lesd.) B. de Lesd.]: on *Thelopsis isiaca*.
Lit.: Egea & Torrente 1994, Roux 2014.

Family **Roccellaceae** Chevall.

Cresponea Egea & Torrente; type: *C. premnea* (Ach.) Egea & Torrente (lichenized). Mol.: yes.
Species: 1-0-0 (21). **lichenicola** Aptroot & M.Cáceres: on *Pyrenula*.
Lit.: Cáceres et al. 2014.

Enterographa Fée; type: *E. crassa* (DC.) Fée (lichenized). Mol.: yes (T).
Species: 9-0-1 (55). **bagliettoae** F.Seavey & J.Seavey: on *Bagliettoa*; **brezhonega** Sparrius & Aptroot: on *Porina rosei* and possibly other lichens with *Trentepohlia*; **confusa** Ertz & Van den Broeck: on *Arthonia ochraceella*; **epigraphis** Etayo & Sipman: on *Graphis*; **epiphylla** (Sérus.) Ertz, Diederich & Sparrius: on foliicolous *Coenogonium geralense* [= *C. flavicans*]; **fellhaneroides** Yeshitela, Eb.Fisch., Killmann & Sérus.: on *Coenogonium*; **mazosiae** Matzer & R.Sant.: on foliicolous *Mazosia*; **meklitiae** Yeshitela, Eb.Fisch., Killmann & Sérus.: probably lichenicolous over *Coenogonium*; **osagensis** C.A.Morse: on *Bacidina*; **punctata** Ertz & Diederich: on *Lobaria*.
Lit.: Cáceres et al. 2001; Ertz el.2005; Etayo 2017; Matzer 1996; Morse 2013; Seavey et al. 2017; Sparrius & Aptroot 2007; Van den Broeck & Ertz (2018).

Mazosia A.Massal.; type: *M. rotula* (Mont.) A.Massal. (lichenized). Mol.: yes.
Species: 1-0-0 (27). **adelphoparasitica** Matzer: on foliicolous *Mazosia rotula*.
Lit.: Matzer 1996.

Schismatomma A.Massal. s.l.; type: *S. pericleum* (Ach.) Branth & Rostr. (lichenized). Mol.: yes (T).
Species: 1-0-0 (10). **physconiicola** Ertz & Diederich: on *Physconia*.
Lit.: Ertz & Diederich 2006.

Sigridea Tehler; type: *S. californica* (Tuck.) Tehler (lichenized). Mol.: yes (T).
Species: 1-0-0 (6). **labyrinthica** (Follmann) Ertz & Diederich [≡ *Plectocarpon labyrinthicum* Follmann]: on *Roccella portentosa*.
Lit.: Ertz et al. 2005.

Order Arthoniales genera incertae sedis

Arthophacopsis Hafellner; type: *A. parmeliarum*. Mol.: no.
Species: 1-0-0. **parmeliarum** Hafellner: on *Parmelia* s.str.
Lit.: Hafellner 1998a.

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Arthothelium A.Massal.; type: *A. spectabile* A.Massal. (lichenized). Mol.: yes (T). Currently polyphyletic.
Species: 1-0-0 (140). **hymeniicola** Ertz & Fryday: on *Bacidia* (hymenium).
Lit.: Ertz & Fryday 2017.

Mixtoconidium Etayo; type: *M. canariense*. Mol.: no.
Species: 2-0-0. **insidiens** (Vouaux) Etayo & van den Boom [= *M. canariense* Etayo]: on *Ramalina*; **nashii** (Hafellner) Etayo & van den Boom [≡ *Plectocarpon nashii* Hafellner]: on *Niebla robusta*.
Lit.: Ertz & Diederich 2007; Etayo 1995a; van den Boom & Etayo 2017.

Paradoxomyces Matzer; type: *P. nymanii*. Mol.: no.
Species: 1-0-0. **nymanii** Matzer: on foliicolous *Strigula*.
Lit.: Matzer 1996.

Perigrapha Hafellner [a hemihomonym of *Perigrapha* Lederer (Lepidoptera)]; type: *P. superveniens*. Mol.: no.
Species: 5-0-0. **cetrariae** Zhurb.: on *Cetraria laevigata*; **lobariae** Zhurb.: on *Lobaria japonica* agg.; **nitida** Ertz, Diederich, Christnach & Wedin: on *Pseudocyphellaria glabra*; **phaeophysciae** Etayo & Pérez-Vargas: on *Phaeophyscia* cf. *orbicularis*; **superveniens** (Nyl.) Hafellner: on *Parmelia* s.str.
Lit.: Ertz et al. 2005; Hafellner 1996a; Pérez-Vargas et al. 2013; Zhurbenko & Ohmura 2018; Zhurbenko et al. 2015a.

Phacothecium Trevis.; type: *P. varium*. Mol.: no.
Species: 1-0-0. **varium** (Tul.) Trevis. [≡ *Arthonia varia* (Tul.) Jatta; = *Opegrapha physciaria* (Nyl.) D.Hawksw. & Coppins]: on *Xanthoria*.
Lit.: Hafellner 2009.

Trichophyma Rehm; type: *T. bunchosiae*. Mol.: no.
Species: 2-0-0. **bunchosiae** Rehm: on foliicolous *Strigula*; **similis** Matzer: on foliicolous *Strigula*.
Lit.: Matzer 1996.

Order **Lichenostigmatales** Ertz, Diederich & Lawrey

Family **Phaeococcomycetaceae** McGinnis & Schell

Etayoa Diederich & Ertz; type: *E. trypethelii*. Mol.: yes (T, L).
Species: 1-0-0. **trypethelii** (Flakus & Kukwa) Diederich & Ertz [≡ *Phaeosporobolus trypethelii*. Flakus & Kukwa]: on Graphidaceae, *Lecanora*, *Pertusaria*, *Trypetheliaceae* and other crustose lichens.
Lit.: Ertz et al. 2014b; Flakus & Kukwa 2012.

Lichenostigma Hafellner; type: *L. maureri* [= *Diederimyces* Etayo (not validly published); type: *D. fuscideae* Etayo; = *Phaeosporobolus* D.Hawksw. & Hafellner; type: *P. usneae* D.Hawksw. & Hafellner]. Mol.: yes (T, L). Many lichenicolous *Lichenostigma* species do not belong to *Lichenostigma* s.str., but obviously pertain to Lichenotheliaceae; they are treated under that family within *Lichenostigma* s.l.
Species: 5-0-0. **alpinum** (R.Sant., Alstrup & D.Hawksw.) Ertz & Diederich [≡ *Phaeosporobolus alpinus* R.Sant., Alstrup & D.Hawksw.; incl. *Diederimyces fuscideae* Etayo, *D. microsporus* Etayo, *P. minutus* Etayo]: on *Lepra*, *Ochrolechia*, *Varicellaria* and other lichens; **chlaroterae** (F.Berger & Brackel) Ertz & Diederich [≡ *P. chlaroterae* F.Berger & Brackel]: on *Lecanora* and other lichens; **fellhanerae** (R.C.Harris & Lendemer) Ertz & Diederich [≡ *P. fellhanerae* R.C.Harris & Lendemer]: on *Fellhanera*; **hyalosporum** Kalb & Hafellner [as '*hyalospora*']: on *Haematomma eremaeum*; **maureri** Hafellner [= *P. usneae* D.Hawksw. & Hafellner]: mainly on fruticose lichens.
Lit.: Ertz et al. 2014b; Etayo 1995b; Etayo & Sancho 2008; Hawksworth & Hafellner 1986; Kalb et al. 1995.

Class DOTHIDEOMYCETES O.E.Erikss. & Winka

Order **Abrothallales** Pérez-Ort. & Suija [= Lichenoconiales Diederich, Lawrey & K.D.Hyde]

Family **Abrothallaceae** Pérez-Ort. & Suija [=? Lichenoconiaceae Diederich & Lawrey]

Abrothallus De Not.; type: *A. bertianus* [= *Epinephroma* Zhurb.; type: *E. kamchatica*; = *Pseudolecidea* Marchand; type: *P. parmeliarum*, i.e. *A. parmeliarum*; = *Vouauxiomyces* Dyko & D.Hawksw.; type: *V. truncatus*, i.e. *A. microspermus*]. Mol.: yes (L).
Species: 42-0-0. **acetabuli** Diederich: on *Pleurosticta acetabulum*; **bertianus** De Not. [= *A. glabratulae* I.Kotte]: on *Melanelixia*, also reported from *Melanohalea* and other parmelioid lichens; **boomii** Pérez-Ortega & Suija: on *Nephroma*; **brattii** (S.Y.Kondr.) Suija & Pérez-Ortega: on *Pseudocyphellaria faveolata*; **bryoriarum** Hafellner: on *Bryoria*; **buellianus** De Not.: on *Parmelina*; **caerulescens** I.Kotte [=? *A. tulasnei* M.S.Cole & D.Hawksw.]: on *Xanthoparmelia*; **canariensis** Pérez-Ortega, van den Boom & Suija: on *Crocodia aurata*; **chrysanthus** Stein: on *Usnea*; **cladoniae** R.Sant. & D.Hawksw.: on *Cladonia*; **doliiformis** Pérez-Ortega & Suija: on *Sticta*; **eriodermae** Suija, Etayo & Pérez-Ortega: on *Erioderma*; **ertzii** Suija & Pérez-Ortega: on *Lobaria pulmonaria*; **etayoi** Pérez-Ortega & Suija: on *Sticta*; **granulatae** Wedin: on *Pseudocyphellaria*; **halei** Pérez-Ortega, Suija, D.Hawksw. & R.Sant.: on *Lobaria*; **heterodermiicola** Etayo & F.Berger: on *Leucodermia leucomelos*; **hypotrachynae** Etayo & Diederich: on *Hypotrachyna*; **kamchatica** (Zhurb. & Stepanchikova) Pérez-Ortega & Suija [≡ *Epinephroma kamchatica* Zhurb. & Stepanchikova]: on *Nephroma*; **lobariae** (Diederich & Etayo) Diederich & Ertz, comb. nov. [≡ *Phoma lobariae* Diederich & Etayo]: on *Lobaria*; **macrosporus** Etayo & R.Sant.: on *Lobariella*; **microspermus** Tul. [= *Vouauxiomyces truncatus* (B. de Lesd.) Dyko & D.Hawksw.]: on *Flavoparmelia caperata*; **nephromatis** Suija & Pérez-Ortega: on *Nephroma*; **niger** Etayo: on *Hypotrachyna*, and possibly *Parmotrema* and *Usnea*; **parmeliarum** (Sommerf.) Arnold [≡ *Pseudolecidea parmeliarum* (Sommerf.) Marchand; = *Abrothallus cetrariae* I.Kotte]: on *Nesolechia* (mainly *N. oxyspora*, rarely *N. oxyspora* var. *fusca* or *N. thallicola*, with or without visible galls) over *Parmelia*, *Parmotrema*, *Platismatia*, *Xanthoparmelia*, etc.; **parmotrematis** Diederich: on *Parmotrema*; **peyritschii** (Stein) I.Kotte: on *Cetraria*; **pezizicola** Diederich & R.C.Harris: on *Cladonia peziziformis*; **prodiens** (Harm.) Diederich & Hafellner: on *Hypogymnia*; **psoromatis** (Zhurb. & U.Braun) Diederich & Zhurb., comb. nov. [≡ *Phoma psoromatis* Zhurb. & U.Braun]: on *Psoroma*; **puntilloi** Brackel: on *Lobaria pulmonaria*; **ramalinae** Diederich: on *Ramalina*; **Vouaux-**

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iomyces santessonii D.Hawksw.: on *Platismatia glauca*; **secedens** Wedin & R.Sant.: on *Pseudocyphellaria*; **stereocaulorum** Etayo & Diederich: on *Stereocaulon*; **stictarum** Etayo: on *Sticta*; **stroblii** Hafellner: on *Menegazzia terebrata*; **suecicus** (Kirschst.) Nordin [= *Vouauxiomyces ramalinae* (Nordin) D.Hawksw.; ≡ *Phoma ramalinae* Nordin]: on *Ramalina*; **teloschistis** Brackel, Pérez-Ortega & Suija: on *Seirophora* and *Teloschistes*; **usneae** Rabenh. var. **usneae**: on *Usnea*; **usneae** var. **tetraspora** Etayo & Osorio: on *Usnea*; **welwitschii** Mont.: on *Sticta*.
Lit.: Brackel 2015; Brackel & Puntillo 2016; Diederich 1990, 2003, 2004a, 2011; Diederich et al. 2017; Etayo 2002, 2010b, 2017; Etayo & Diederich 1995; Etayo & Osorio 2004; Etayo & van den Boom 2006; Hafellner 1994a; Hafellner et al. 2008; Hawksworth 1990a; Ihlen & Wedin 2008; Kondratyuk 1996b; Nordin 1964; Pérez-Ortega et al. 2014; Suija 2006; Suija et al. 2011, 2015a; Wedin 1994; Zhurbenko & Braun 2013; Zhurbenko et al. 2012.

Lichenoconium Petr. & Syd.; type: *L. lichenicola*. Mol.: yes (L). Species: 15-0-0. **aeruginosum** Diederich, M.Brand, van den Boom & Lawrey: on *Cladonia*; **cargillianum** (Linds.) D.Hawksw.: on *Letharia*, *Parmotrema*, *Platismatia*, *Ramalina* and *Usnea*; **christiansenii** M.S.Cole & D.Hawksw.: on *Nodobryoria abbreviata*; **echinosporum** D.Hawksw.: on *Cladia muelleri*; **edgewoodensis** Alstrup & M.S.Cole: on *Parmelia sulcata*; **erodens** M.S.Christ. & D.Hawksw.: on various lichens; **follmannii** S.Y.Kondr. & D.J.Galloway: on *Lobaria pulmonaria*; **laevisporum** Kalb & Hafellner: on *Haematomma*; **lecanorae** (Jaap) D.Hawksw.: on various lichens; **lichenicola** (P.Karst.) Petr. & Syd.: on *Physcia*; **plectocarpoides** S.Y.Kondr. & D.J.Galloway: on *Pseudocyphellaria*; **pyxidatae** (Oudem.) Petr. & Syd.: on *Cladonia*; **reichlingii** Diederich: on *Ramalina fraxinea*; **usneae** (Anzi) D.Hawksw.: on various lichens; **xanthoriae** M.S.Christ.: on various lichens.
Lit.: Alstrup & Cole 1998; Christiansen 1956, 1980; Cole & Hawksworth 2004; Diederich 1986; Hawksworth 1977b, 1981; Kalb et al. 1995; Kondratyuk & Galloway 1995b; Kondratyuk et al. 1994; Lawrey et al. 2011.

Order **Acrospermales** Minter, Peredo & A.T.Watson

Family **Acrospermaceae** Fuckel

Gonatophragmium Deighton; type: *G. mori* (Sawada) Deighton. Mol.: yes. Asexual, hyphomycetous.
Species: 1-0-0 (8). **lichenophilum** F.Berger & U.Braun: on *Xanthoria parietina*.
Lit.: Berger et al. 2015.

Order **Asterotexiales** Firmino, O.L.Pereira & Crous

Liu et al. (2017) considered Asterotexiales to be a younger synonym of Asterinales D.Hawksw.& O.E.Erikss. However, the genus *Asterina* appeared to be polyphyletic in a phylogenetic analysis (Hyde et al. 2016). While most *Asterina* species clustered with Asterotexiales, sequences of two species, including the generic type, belonged to a distinct, non-related lineage. Hyde et al. (2016) concluded that sequences of the generic type may be from a contaminant and that Asterotexiales should consequently be synonymized under Asterinales, a view followed by Liu et al. (2017). However, this synonymy can only be established after proving that those type sequences represent a contaminant, and obtaining new, reliable sequences of the type of *Asterina*.

Order Asterotexiales genera incertae sedis

Buelliella Fink; type: *B. minimula* (lectotypified by Hafellner 1979). Mol.: yes (T). Currently polyphyletic.
Species: 12-0-0. **colombiana** Etayo: on *Phlyctis andensis*; **dirinariae** Diederich: on *Dirinaria picta*; **eximia** Kalb & Hafellner: on *Pyxine cocoes*; **heppiae** van den Boom: on *Heppia arenacea*; **inops** (Triebel & Rambold) Hafellner: on *Caloplaca* s.l.; **lecanorae** Suija & Alstrup: on *Lecanora*; **minimula** (Tuck.) Fink: on *Pertusaria*; **physciicola** Poelt & Hafellner: on *Phaeophyscia* and *Physcia*; **poetschii** Hafellner: on *Endocarpon*; **protoparmeliopseos** Etayo & Pérez-Ortega: on *Protoparmeliopsis*; **pusilla** Hafellner: on *Brigantiaea leucoxantha*; **trypethelii** (Tuck.) Hafellner: on *Trypethelium*.
Lit.: Aptroot et al. 1997; Ertz & Diederich 2015; Etayo 2002a; Hafellner 1979, 1985b; Hafellner et al. 2008; Kalb 1990; Pérez-Ortega & Etayo 2010; Suija & Alstrup 2004; van den Boom 2010.

Hemigrapha (Müll.Arg.) D.Hawksw.; type: *H. asteriscus* (lectotypified by Ertz & Diederich 2015). Mol.: yes (T).
Species: 8-0-0. **asteriscus** (Müll.Arg.) D.Hawksw.: on *Peltigera*; **atlantica** Diederich & Wedin: on *Sticta canariensis*; **nephromatis** Wedin & Diederich: on *Nephroma australe*; **phaeospora** Matzer & Lücking: on foliicolous *Strigula phyllogena*; **pilocarpacearum** M.Cáceres & Lücking: on *Byssoloma* and *Fellhanera*; **pseudocyphellariae** Diederich & Wedin: on *Pseudocyphellaria argyracea*; **strigulae** Matzer: on foliicolous *Strigula*; **tenellula** (Müll.Arg.) Matzer: on foliicolous *Porina*.
Lit.: Cáceres & Lücking 2000; Diederich & Wedin 2000; Eriksson et al. 2001; Ertz & Diederich 2015; Hawksworth 1975; Matzer 1996.

Karschia Körb.; type: *K. talcophila* (lectotypified by Hafellner 1979). Mol.: yes (T).
Species: 3-0-0 (4). **alpicolae** D.Hawksw. & Alstrup: on *Allantoparmelia alpicola*; **santessonii** Hafellner: on *Porpidia*; **talcophila** (Ach.) Körb.: on *Diploschistes*.
Lit.: Alstrup & Hawksworth 1990; Ertz & Diederich 2015; Hafellner 1979; Santesson 1994a.

Labrocarpon Etayo & Pérez-Ortega; type: *L. canariense*. Mol.: yes (T, L).
Species: 1-0-0. **canariense** (D.Hawksw.) Etayo & Pérez-Ortega: on *Pertusaria*.
Lit.: Ertz & Diederich 2015; Hawksworth 1982b; Pérez-Ortega & Etayo 2010.

Melanographa Müll.Arg.; type: *M. tribuloides* (lectotypified by Ertz & Diederich 2015). Mol.: no.
Species: 1-0-0. **tribuloides** (Tuck.) Müll.Arg.: on *Anthracothecium* and *Pyrenula*.
Lit.: Ertz & Diederich 2015.

Melaspilea Nyl. s.l.; type: *M. arthonioides* Nyl. (lichenized). Mol.: yes (T, L). The type belongs to Melaspileaceae

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(Eremithallales). All lichenicolous species need transfer to other genera, probably within Asterotexiales.
Species: 10-0-0 (150). **amarkantakensis** S.Joseph & G.P.Sinha: on *Pertusaria amarkantakana*; **cupularis** Müll.Arg.: on *Pyrenula*; **epigena** Müll.Arg.: on *Reimnitzia santensis*; **epigraphella** (Nyl.) Müll.Arg.: on *Acanthothecis consocians*; **galligena** Zhurb. & I.Zhdanov.: on *Pertusaria*; **insitiva** Stirt.: on *Pertusaria leioplaca*; **leciographoides** Vouaux: on *Verrucaria*; **lekae** Brackel & Kalb: on *Sarcographa*; **nitidochapsae** Pushpi Singh, Y.Joshi & Kr.P.Singh: on *Nitidochapsa leprieurii*; **tucumana** Flakus, Etayo & Kukwa: on *Pertusaria*.
Lit.: Clauzade et al. 1989; Ertz & Diederich 2015; Flakus et al. 2014; Joseph & Sinha 2015; Kalb et al. 2012; Singh et al. 2017; Zhurbenko & Zhdanov 2013.

Melaspileopsis (Müll.Arg.) Ertz & Diederich; type: *M. diplasiospora* (Nyl.) Ertz & Diederich (saprotrophic). Mol.: yes (T, L).
Species: 1-0-0. cf. **diplasiospora** (Nyl.) Ertz & Diederich: on *Graphis elegans*.
Lit.: Ertz & Diederich 2015.

Stictographa Mudd; type: *S. lentiginosa*. Mol.: yes (T).
Species: 2-0-0. **dirinariicola** Diederich & Ertz: on *Dirinaria picta*; **lentiginosa** (Leight.) Müll.Arg.: on *Phaeographis dendritica*.
Lit.: Ertz & Diederich 2015; Diederich et al. 2017.

Taeniolella S.Hughes s.l.; type: *T. exilis* (P.Karst.) S.Hughes (saprotrophic). Mol.: yes (T, L). The type belongs to Kirschsteiniotheliaceae (Dothideomycetes). Most lichenicolous species need transfer to other genera within Asterotexiales.
Species: 29-0-1 (45). **arctoparmeliae** Heuchert & Zhurb.: on *Arctoparmelia separata*; **arthoniae** (M.S.Christ. & D.Hawksw.) Heuchert & U.Braun [≡ *Cladosporium arthoniae* M.S.Christ. & D.Hawksw.]: on *Dendrographa decolorans*, *Lecanactis abietina*, *Lecanographa lyncea* and *Pachnolepia pruinata*; **atricerebrina** Hafellner: on *Tephromela atra*; **breviuscula** (Berk. & M.A.Curtis) S.Hughes: facultatively lichenicolous; **caespitosa** M.S.Cole & D.Hawksw.: on *Pertusaria*; **christiansenii** Alstrup & D.Hawksw.: on *Stereocaulon* (incl. on *Arthonia* lichenicolous on *Stereocaulon*); **chrysothricis** Diederich: on *Chrysothrix candelaris*; **cladinicola** Alstrup: on *Cladonia* subgen. *Cladina* and on the *C. uncialis* group; **delicata** M.S.Christ. & D.Hawksw.: on various lichens; **diederichiana** Etayo & Calat.: on *Placopsis*; **friesii** (Hepp) Hafellner: on *Strigula stigmatella*; **hawksworthiana** Heuchert, Ertz & Common: on *Phaeographis*; **ionaspisicola** Alstrup & E.S.Hansen: on *Ionaspis odora*; **lecanoricola** Heuchert & Diederich: on *Lecanora rupicola*; **pertusariicola** D.Hawksw. & H.Mayrhofer: on *Lecanora*, *Lepra*, *Ochrolechia*, *Ophioparma*, *Pertusaria* and *Varicellaria*; **phaeophysciae** D.Hawksw.: mainly on *Phaeophyscia*, also on *Hyperphyscia*, *Pectenia*, *Pertusaria*, *Physcia* and *Physconia*; **pseudocyphellariae** Etayo: on *Nephroma antarcticum* and *Pseudocyphellaria hillii*; **punctata** M.S.Christ. & D.Hawksw.: on *Graphis*, more rarely on *Arthonia*, *Fissurina*, *Pertusaria* and *Phaeographis*; **pyrenulae** Heuchert & Diederich: on *Pyrenula*; **rolfii** Diederich & Zhurb.: on *Cetraria*; **santessonii** Etayo & Heuchert: on *Roccellina cerebriformis*; **serusiauxii** Diederich: on *Dendrographa decolorans*, *Tylophoron* and other sterile crustose lichens with *Trentepohlia*; **strictae** Alstrup: on *Cladonia stricta*; **thelotrematis** Heuchert & Brackel: on *Thelotrema*; **toruloides** Heuchert & Diederich: on *Thelotrema*; **trapeliopseos** Diederich: on *Trapeliopsis*; **umbilicariae** Heuchert & Etayo: on *Umbilicaria*; **umbilicariicola** Heuchert & Etayo: on *Umbilicaria*; **verrucosa** M.S.Christ. & D.Hawksw.: on *Aspicilia*, *Micarea*, *Pachnolepia* and *Rhizocarpon*; **weberi** Heuchert & Sparrius: on *Thelotrema weberi*.
Lit.: Alstrup 1993b; Alstrup & Hansen 2001; Alstrup & Hawksworth 1990; Cole & Hawksworth 2001; Diederich 1989, 1990, 1992b; Diederich & Zhurbenko 1997, 2001; Ertz et al. 2016; Etayo 2010b; Etayo & Calatayud 2005; Etayo & Sancho 2008; Hafellner 1998b, 2007; Hawksworth 1979a; Heuchert et al. 2018; Zhurbenko & Alstrup 2004.

Order **Botryosphaeriales** C.L.Schoch, Crous & Shoemaker

Family **Phyllostictaceae** Fr.

Phyllosticta Pers.; type: *P. convallariae* Pers. Mol.: yes. Asexual, pycnidial.
Species: 1-0-0 (100). **galligena** F.Moreau: on *Parmotrema* [a poorly known species that might not belong here].
Lit.: Moreau 1951.

Order **Capnodiales** Woron.

Family **Cladosporiaceae** Nann.

Cladosporium Link; type: *C. herbarum* (Pers.) Link. Mol.: yes (T, L).
Species: 1-0-2 (300). **antarcticum** K.Schub., Crous & U.Braun: isolated from *Gondwania regalis*, probably lichenicolous; **licheniphilum** Heuchert & U.Braun: on macrolichens; **macrocarpum** Preuss: facultatively lichenicolous on *Cetraria islandica* and *Xanthoria parietina*.
Lit.: Bensch et al. 2012; Brackel 2014; Heuchert & Braun 2006; Zhurbenko 2012.

Verrucocladosporium K.Schub., Aptroot & Crous; type: *V. dirinae*. Mol.: yes (T).
Species: 1-0-1. **dirinae** K.Schub., Aptroot & Crous: isolated from *Dirina massiliensis*, probably lichenicolous; **roccellae** U.Braun, Diederich & Heuchert: on *Roccella*.
Lit.: Braun et al. 2009; Crous et al. 2007.

Family **Dissoconiaceae** Crous & de Hoog

Ramichloridium de Hoog; type: *R. apiculatum* (J.H.Mill., Giddens & A.A.Foster) de Hoog. Mol.: yes (T).
Species: 2-0-0 (35). **cladoniicola** U.Braun & Heuchert: on *Cladonia portentosa;* **tropicum** U.Braun & Diederich: on crustose lichen with *Trentepohlia*.
Lit.: Braun et al. 2009; Diederich et al. 2017.

Family **Mycosphaerellaceae** Lindau

Pseudocercospora Speg.; type: *P. vitis* (Lév.) Speg. Mol.: yes (T).
Species: 1-0-0 (1500). **lichenum** (Keissl.) D.Hawksw.: on various lichens.
Lit.: Etayo 2002; Hawksworth 1979a.

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Sphaerulina Sacc. s.l.; type: *S. myriadea* (DC.) Sacc. Mol.: yes (T). The two lichenicolous species are poorly known and might not belong here.
Species: 2-0-0 (65). **dubiella** (Nyl.) W.Wats.: on a crustose lichen; **lepidiotae** (Anzi) Vain.: on *Fuscopannaria praetermissa*.
Lit.: Clauzade et al. 1989.

Wernerella Nav.-Ros., Cl.Roux & Giralt; type: *W. maheui*. Mol.: no.
Species: 2-0-0. **acarosporae** Etayo: on *Acarospora nodulosa*; **maheui** (Werner) Nav.-Ros., Cl.Roux & Giralt: on *Rinodina*.
Lit.: Etayo 2010c; Navarro-Rosinés et al. 1996a, 1998d.

Family **Teratosphaeriaceae** Crous & U.Braun

Austrostigmidium Pérez-Ortega & Garrido-Benavent; type: *A. mastodiae*. Mol.: yes (T, L).
Species: 1-0-0. **mastodiae** Pérez-Ortega & Garrido-Benavent: on *Mastodia tessellata*.
Lit.: Pérez-Ortega et al. 2015.

Hobsoniopsis D.Hawksw.; type: *H. santessonii*. Mol.: yes (T, L).
Species: 1-0-0. **santessonii** (Lowen & D.Hawksw.) D.Hawksw.: on *Peltigera*, mainly *P. scabrosa*.
Lit.: Lowen et al. 1986; Sikaroodi et al. 2001.

Xanthoriicola D.Hawksw.; type: *X. physciae*. Mol.: yes (T, L).
Species: 1-0-0. **physciae** (Kalchbr.) D.Hawksw.: on *Xanthoria parietina*.
Lit.: Hawksworth 1979a; Hawksworth & Punithalingam 1973; Ruibal et al. 2011.

Order **Collemopsidiales** Pérez-Ort., Garrido-Ben. & Grube

Family **Xanthopyreniaceae** Zahlbr.

Collemopsidium Nyl.; type: *C. iocarpum* (Nyl.) Nyl. (lichenized). Mol.: yes.
Species: 1-0-0 (27). **cephalodiorum** (Triebel & Grube) Grube [≡ *Cercidospora cephalodiorum* Triebel & Grube]: on *Pilophorus cephalodiorum*.
Lit.: Grube 2005.

Didymellopsis (Sacc.) Clem. & Shear; type: *D. latitans*. Mol.: no.
Species: 8-0-0. **Pharcidia collematis** Dughi: on *Lempholemma chalazanum* [a poorly known taxon placed provisionally here]; **collematum** (J.Steiner) Grube & Hafellner: on *Collema*; **latitans** (Nyl.) Clem. & Shear: on *Lichinella* and *Lempholemma*; **nephromatis** Zhurb. & Etayo: on *Nephroma cellulosum*; **perigena** (Nyl.) Grube & Hafellner: on *Placidium squamulosum*; **pulposi** (Zopf) Grube & Hafellner: on *Collema*, *Enchylium*, *Lathagrium*, *Lempholemma* and *Scytinium*; **Verrucaria symbiotica** Nyl. [=? *Didymella pulposi* var. *garovaglii* Vouaux; =? *Lichenochora hypanica* S.Y.Kondr., L.Lőkös & J.-S.Hur]: on *Endocarpon* [poorly known taxa in need of a revision, placed provisionally here]; **viridireagens** Etayo: on *Leptogium*.
Lit.: Etayo 2017; Grube & Hafellner 1990; Roux 2014; Zhurbenko et al. 2015b.

Zwackhiomyces Grube & Hafellner; type: *Z. coepulonus*. Mol.: yes (T, L).
Species: 35-0-0. **arenicola** R.C.Harris: on unidentified areolate, saxicolous thallus; **argentinae** (Räsänen) D.Hawksw. & V.Atienza: on *Acarospora*; **aspiciliae** Halıcı & Candan: on *Aspicilia*; **berengerianus** (Arnold) Grube & Triebel: on *Lecidea berengeriana*; **calcariae** (Flagey) Hafellner & Nik.Hoffm.: on *Aspicilia*; **calcisedus** Cl.Roux: on *Verrucariaceae*; **cervinae** Calat., Triebel & Pérez-Ortega: on *Acarospora*; **cladoniae** (C.W.Dodge) Diederich: on *Cladonia*; **coepulonus** (Norman) Grube & R.Sant.: on *Calogaya*, *Caloplaca* s.str. and *Rusavskia elegans*; **diederichii** D.Hawksw. & Iturr.: on *Cladonia*; **dispersus** (Körb.) Triebel & Grube: on *Protoblastenia rupestris*; **echinulatus** Brackel: on *Physconia*; **euplocinus** Hafellner, Grube & Egan: on *Speerschneidera euploca*; **heppiae** van den Boom: on *Heppia arenacea*; **inconspicuus** Grube & Hafellner: on *Myriolecis dispersa*; **kantvilasii** S.Y.Kondr.: on *Parmotrema*; **kiszkianus** D.Hawksw. & Miądl.: on *Peltigera*; **lacustris** (Arnold) Orange: on *Ionaspis lacustris*; **lecanorae** (Stein) Nik.Hoffm. & Hafellner: on *Myriolecis*; **lithoiceae** (B. de Lesd.) Hafellner & V.John: on *Verrucaria*; **macrosporus** Alstrup & Olech: on *Protopannaria*; **martinatianus** (Arnold) Triebel & Grube: on *Porpidia*; **melanohaleae** Etayo & van den Boom: on *Melanohalea exasperata*; **namibiensis** Diederich & M.Schultz: on *Psorotichia*; **peltigerae** Miądl. & Alstrup: on *Peltigera*; **physciicola** Alstrup: on *Physcia caesia*; **polischukii** Darmostuk & Khodos.: on *Bacidia*; **rolfii** (Etayo) Etayo: on *Candelina*; **sipmanii** Diederich & Zhurb.: on *Phaeorrhiza sareptana*; **socialis** (Körb.) Cl.Roux [= *Z. immersae* (Arnold) Grube & Triebel]: on *Clauzadea*, perhaps also on *Bacidia bagliettoana*; **solenopsorae** van den Boom: on *Solenopsora holophaea*; **sphinctriniformis** Grube & Hafellner: on *Romjularia lurida*; **sphinctrinoides** (Zwackh) Grube & Hafellner: on *Lecanora campestris*; **sulcatus** Pérez-Ortega & Etayo: on *Austroparmelina macrospora*; **turcicus** Kocakaya, Halıcı & Aksoy: on *Physcia magnussonii*.
Lit.: Alstrup 1993a; Alstrup & Olech 1993; Aptroot et al. 1997; Diederich & Zhurbenko 2009; Etayo 2010b; Grube & Hafellner 1990; Halıcı & Candan 2009; Harris 1995; Hawksworth & Atienza 1994; Hawksworth & Iturriaga 2006; Hawksworth & Miądlikowska 1997a; Hoffmann & Hafellner 2000; Kocakaya et al. 2011; Khodosovtsev & Darmostuk 2017; Kondratyuk 1996b; Miądlikowska & Alstrup 1995; Orange 2002; Pérez-Ortega et al. 2011a; Roux 2014; van den Boom 2010; van den Boom & Etayo 2014.

Order **Dothideales** Lindau

Family **Dothideaceae** Chevall.

Plowrightia Sacc.; type: *P. ribesia* (Pers.) Sacc. Mol.: yes.
Species: 1-0-0 (50). **mereschkowskyi** Vouaux: on *Aspicilia hispida* [a poorly known species].
Lit.: Clauzade et al. 1989.

Family **Saccotheciaceae** Bonord.

Pseudoseptoria Speg.; type: *P. donacicola* Speg. Mol.: yes.
Species: 1-0-0 (8). **usneae** (Vouaux) D.Hawksw.: on *Usnea*.
Lit.: Hawksworth 1981.

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Order **Lichenotheliales** K.Knudsen, Muggia & K.D.Hyde

Family **Lichenotheliaceae** Henssen

Lichenothelia D.Hawksw.; type: *L. scopularia* (Nyl.) D.Hawksw. (saxicolous, non-lichenized). Mol.: yes (L).
Species: 3-0-3 (30). **convexa** Henssen: over siliceous rocks, facultatively lichenicolous; **renobalesiana** D.Hawksw. & V.Atienza: on endolithic Verrucariaceae (*Bagliettoa*, *Thelidium*, *Verrucaria*) over calcareous rocks; **rugosa** (G.Thor) Ertz & Diederich [≡ *Lichenostigma rugosum* G.Thor, as '*rugosa*']: on *Diploschistes*; **scopularia** (Nyl.) D.Hawksw.: over siliceous rocks, facultatively lichenicolous; **spiralispora** Etayo [as '*spiratispora*']: on *Acarospora sphaerospora*; **umbrophila** Muggia, Kocourk. & K.Knudsen: over rocks, facultatively lichenicolous.
Lit.: Atienza & Hawksworth 2008; Etayo 2010c; Ertz et al. 2014b; Kocourková & Knudsen 2011b; Muggia et al. 2015b.

Lichenostigma Hafellner s.l. [incl. *Lichenostigma* subgen. *Lichenogramma* Nav.-Ros. & Hafellner; type: *L. elongatum*; see under Lichenostigmatales for *Lichenostigma* s.str.]. Mol.: yes (L). All species treated here have been described in *Lichenostigma*, but certainly do not belong there. They obviously belong to Lichenotheliaceae (*L.* cf. *elongatum* and several unidentified specimens have been sequenced by Ertz et al. 2014), but the generic affinities are yet unknown.
Species: 25-0-1. **amplum** Calat. & Hafellner: on *Buellia*; **anatolicum** Halıcı & Kocakaya: on brown *Acarospora*; **bolacinae** Nav.-Ros., Calat. & Hafellner: on *Polycauliona bolacina*; **canariense** Etayo & van den Boom: on *Aspicilia calcarea*; **cosmopolites** Hafellner & Calat.: on *Xanthoparmelia*; **dimelaenae** Calat. & Hafellner: on *Dimelaena oreina*; **diploiciae** Calat., Nav.-Ros. & Hafellner: on *Diploicia subcanescens*; **elongatum** Nav.-Ros. & Hafellner [as '*elongata*']: on *Aspicilia* and *Lobothallia*; **epipolinum** Nav.-Ros., Calat. & Hafellner [as '*epipolina*']: on *Diplotomma epipolium*; **epiporpidiae** S.Y.Kondr., L.Lőkös & J.-S.Hur: on *Porpidia*; **epirupestre** Pérez-Ortega & Calat.: on *Pertusaria pertusa*; **episulphurella** Etayo & van den Boom: on *Lecanora sulphurella*; **gracile** Calat., Nav.-Ros. & Hafellner: on *Acarospora fuscata*; **heterodermiae** S.Y.Kondr., L.Lőkös et J.-S.Hur: on *Heterodermia*; **iranicum** Brackel & Valadbeigi: on *Lobothallia praeradiosa*; **lecanorae** Calat. & Nav.-Ros.: on *Lecanora farinacea*; **radicans** Calat. & Barreno: on *Aspicilia*; **rouxii** Nav.-Ros., Calat. & Hafellner: on *Squamarina*; **rupicolae** Fern.-Brime & Nav.-Ros.: on *Pertusaria rupicola*; **saxicola** K.Knudsen & Kocourk.: saxicolous, facultatively lichenicolous on *Polysporina simplex*; **semi-immersum** Hafellner: on *Buellia*; **subradians** Hafellner, Calat. & Nav.-Ros.: on *Acarospora*; **supertegentis** Ihlen & R.Sant.: on *Aspicilia supertegens*; **svandae** Vondrák & Šoun: on *Acarospora cervina*; **triseptatum** Halıcı & D.Hawksw.: on *Aspicilia*; **verrucosum** Brackel & Valadbeigi: on *Pleopsidium gobiense*.
Lit.: Alstrup & Hawksworth 1990; Calatayud & Barreno 2003; Calatayud & Navarro-Rosinés 2000; Calatayud et al. 2002, 2004b; Etayo & Sancho 2008; Fernández-Brime et al. 2010; Hafellner 1982a, 1999, Hafellner & Calatayud 1999; Halıcı & Hawksworth 2007; Halıcı et al. 2009d; Harris & Lendemer 2009; Ihlen 2004; Kondratyuk et al. 2013, 2017; Knudsen & Kocourková 2010b; Navarro-Rosinés & Hafellner 1996; Pérez-Ortega & Calatayud 2009; Thor 1985; van den Boom & Etayo 2006; Valadbeigi & Brackel 2011; Vondrák & Šoun 2007.

Order **Patellariales** D.Hawksw. & O.E.Erikss.

Family **Patellariaceae** Corda

Stratisporella Hafellner; type: *S. episemoides*. Mol.: no.
Species: 1-0-0. **episemoides** (Nyl.) Hafellner: on *Enterographa*.
Lit.: Aptroot et al. 1997; Hafellner 1979; Kutorga & Hawksworth 1997.

Tryblidaria (Sacc.) Rehm; type: *T. fenestrata* (Cooke & Peck) M.E.Barr. Mol.: no. The lichenicolous species is poorly known.
Species: 1-0-0 (9). **capensis** (Stizenb.) Vouaux: on *Buellia callaina*.
Lit.: Clauzade et al. 1989.

Order **Pleosporales** M.E.Barr.

Family **Dacampiaceae** Körb.

Dacampia A.Massal.; type: *D. hookeri*. Mol.: yes (T).
Species: 14-1-0. **caloplacicola** Halıcı, Candan & Etayo: on *Blastenia crenularia*; **cladoniicola** Halıcı & A.Ö.Türk: on *Cladonia*; **cyrtellae** Brackel: on *Lecania cyrtella*; **engeliana** (Saut.) A.Massal.: on *Solorina*; ***hookeri*** (Borrer) A.Massal.: lichenicolous lichen on *Solorina*; **lecaniae** Kocourk. & K.Knudsen: on *Lecania fuscella*; **leptogiicola** (D.Hawksw.) D.Hawksw.: on *Leptogium*; **muralicola** Halıcı & D.Hawksw.: on *Protoparmeliopsis muralis*; **peltigericola** D.Hawksw. & C.J.B.Hitch: on *Peltigera*; **pentaseptata** Etayo: on *Parmotrema*; **rhizocarpicola** D.Hawksw.: on *Rhizocarpon*; **rubra** Halıcı, Candan & Calat.: on *Aspicilia*; **rufescentis** (Vouaux) D.Hawksw.: on *Peltigera*; **thamnoliicola** Zhurb. *ad int.*: on *Thamnolia*; **xanthomendozae** Etayo & Halıcı: on *Xanthomendoza*.
Lit.: Brackel 2010a, 2010b; Earland-Bennett et al. 2006; Ertz et al. 2015; Etayo 2017; Halıcı & Hawksworth 2008; Halıcı et al. 2008, 2009a, 2009b; Hawksworth 1980b, 1986; Henssen 1995; Khodosovtsev & Darmostuk 2016; Kocourková & Knudsen 2010b; Zhurbenko 2012.

Family **Didymellaceae** Gruyter

Ascochyta Lib.; type: *A. pisi* Lib. Mol.: yes (T).
Species: 2-0-0 (400). **candelariellicola** D.Hawksw. & Kalb: on *Candelariella aurella*; **santessonii** Alstrup & D.Hawksw.: on *Phaeophyscia sciastra*.
Lit.: Alstrup & Hawksworth 1990; Hawksworth & Kalb 1992.

Epicoccum Link; type: *E. nigrum*. Mol.: yes (T, L).
Species: 0-0-1 (10). **nigrum** Link: facultatively lichenicolous over various lichens.
Lit.: David & Hawksworth 1995; Diederich 2004b.

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Leptosphaerulina McAlpine; type: *L. australis* McAlpine. Mol.: yes (T).
Species: 1-0-0 (30). **peltigerae** (Fuckel) Riedl: on *Peltigera*.
Lit.: Hawksworth 1980b.

Phoma Sacc. s.l.; type: *P. herbarum* Westend. Mol.: yes (T). Asexual, pycnidial. Most lichenicolous *Phoma* species from which molecular data are available belong to *Didymocyrtis* (Phaeosphaeriaceae, Pleosporales), and some more pertain to that genus on the basis of morphological characters. The remaining species, of unknown phylogenetic affinities, are enumerated here.
Species: 10-0-0 (100). **aggregata** Calat. & Etayo: on *Diploschistes ocellatus*; **biformis** Vouaux: on *Anisomeridium biforme* [a poorly known taxon]; **dubia** (Linds.) Sacc. & A.Trotter: on *Usnea*; **everniae** D.Hawksw.: on *Evernia prunastri*; **fistulata** Etayo & Osorio: on *Parmotrema fistulatum* [does not belong to *Didymocyrtis*]; **lecanorina** Diederich: on *Lecanora*; **maculiformans** Ihlen: on *Dibaeis baeomyces*; **melanohaleicola** D.Hawksw. & Earl.-Benn.: on *Melanohalea exasperata*; **pisutii** S.Y.Kondr., A.Lackovičová, E.Lisická & A.Guttová: on *Xanthomendoza ulophyllodes*; **recepii** Halıcı & Candan: on *Caloplaca* s.str.
Lit.: Brackel 2011a; Calatayud & Etayo 2001; Diederich 1986; Earland-Bennett et al. 2006; Etayo & Osorio (2004); Hafellner & Wieser 2000; Halıcı et al. 2014; Hawksworth 1980b, 1981, 1994; Ihlen 1998; Martínez & Hafellner 1998; Oksner 2010.

Family **Didymosphaeriaceae** Munk

Sporidesmiella P.M.Kirk; type: *S. claviformis* P.M.Kirk. Mol.: yes. Asexual, hyphomycetous.
Species: 2-0-0 (32). **lichenophila** U.Braun & Heuchert: on *Ramalina stenospora;* **physconiicola** Zhurb., U.Braun & Kobzeva: on *Physconia distorta*.
Lit.: Braun & Heuchert 2010; Zhurbenko et al. 2015d.

Family **Leptosphaeriaceae** M.E.Barr

Leptosphaeria Ces. & De Not.; *L. doliolum* (Pers.) Ces. & De Not. Mol.: yes (T).
Species: 3-0-0 (150). **clarkii** D.Hawksw.: on *Peltigera*; **oxneriae** Cl.Roux & S.Y.Kondr.: on *Xanthomendoza ulophyllodes*; **pycnostigma** (Nyl.) Sacc. & D.Sacc.: on *Baeomyces*.
Lit.: Clauzade et al. 1989; Hawksworth 1980b; Kondratyuk et al. 2017.

Family **Massarinaceae** Munk

Stagonospora (Sacc.) Sacc.; type: *S. paludosa* (Sacc. & Speg.) Sacc. Mol.: yes (T). Asexual, pycnidial.
Species: 1-0-0 (220). **exasperatulae** Brackel: on *Melanohalea exasperatula*.
Lit.: Brackel 2009.

Family **Microsphaeropsidaceae** Q.Chen, L.Cai & Crous

Microsphaeropsis Höhn.; type: *M. olivacea* (Bonord.) Höhn. Mol.: yes (T).
Species: 3-0-0 (37). **caloplacae** Etayo & Yazici: on *Calogaya*; **lichenicola** Etayo: on *Pannaria*; **physciae** Brackel: on *Physcia*.
Lit.: Brackel 2014; Etayo & Sancho 2008; Etayo & Yazici 2009.

Family **Periconiaceae** Nann.

Periconia Tode; type: *P. lichenoides* Tode. Mol.: yes (L). Asexual, hyphomycetous.
Species: 0-0-1 (45). **digitata** (Cooke) Sacc.: facultatively lichenicolous on *Cladonia*, *Peltigera* and *Xanthoria parietina*.
Lit.: Brackel 2014.

Family **Phaeosphaeriaceae** M.E.Barr

Didymocyrtis Vain.; type: *D. consimilis* (lectotypification by Ertz et al. 2015) [= *Diederichia* D.Hawksw.; type: *D. pseudeverniae*; = *Diederichomyces* Crous & Trakunyingcharoen; type: *D. xanthomendozae*]. Mol.: yes (T). Several *Phoma* and one *Leptosphaeria* species obviously belong here, but no new combinations are proposed for some, as they might represent synonyms of other species.
Species: 25-0-0 (26). **bryonthae** (Arnold) Hafellner [=? *Phoma denigricans* Hafellner]: on *Lecanora epibryon*; **canariensis** van den Boom & Etayo: on *Ramalina subgeniculata*; **Phoma candelariellae** Z.Kocakaya & Halıcı: on *Candelariella aurella* [similar to *D. consimilis*]; **cladoniicola** (Diederich, Kocourk. & Etayo) Ertz & Diederich [≡ *Ph. cladoniicola* Diederich, Kocourk. & Etayo]: on *Cladonia*, *Flavoparmelia*, *Parmelina*, *Ramalina* and *Squamarina*; **consimilis** Vain. [= *Ph. caloplacae* D.Hawksw.]: on *Caloplaca* s.str., possibly also on *Cladonia*, *Heterodermia* and *Melanohalea*; **epiphyscia** Ertz & Diederich [≡ *Ph. physciicola* Keissler; =? *Ph. epiphyscia* Vouaux, described from *Xanthoria* and *Phaeophyscia*, neotype on *Phaeophyscia sciastra*]: on *Physcia aipolia*, probably also on *Physcia adscendens*, *P. stellaris*, *P. tenella* and *Xanthoria parietina*; **foliaceiphila** (Diederich, Kocourk. & Etayo) Ertz & Diederich [≡ *Ph. foliaceiphila* Diederich, Kocourk. & Etayo]: on *Cladonia*, *Parmelia* and *Pseudevernia*; **Phoma fuliginosa** M.S.Cole & D.Hawksw.: on *Xanthomendoza trachyphylla* [similar to *D. consimilis*]; **graphidacearum** van den Boom & Ertz: on *Pallidogramme*; **grumantiana** (Zhurb. & Diederich) Zhurb. & Diederich, comb. nov. [≡ *Ph. grumantiana* Zhurb. & Diederich]: on *Cladonia*; **Phoma heterodermiae** S.Y.Kondr., L.Lőkös & J.-S.Hur: on *Heterodermia* [similar to *D. consimilis*]; **infestans** (Speg.) Hafellner: on *Teloschistes chrysophthalmus and T. flavicans*; **kaernefeltii** (S.Y.Kondr.) Hafellner [≡ *Polycoccum kaernefeltii* S.Y.Kondr.]: on *Teloschistes chrysophthalmus*; **melanelixiae** (Brackel) Diederich, Harris & Etayo [≡ *Ph. melanelixiae* Brackel]: on *Canoparmelia*, *Cetraria*, *Cetrelia*, *Evernia*, *Hypotrachyna*, *Melanelixia*, *Parmelia*, *Parmotrema*, *Platismatia*, *Pseudevernia*, *Punctelia* and *Usnea*; **micropunctum** Etayo: on *Parmotrema*; **Phoma peltigerae** (P.Karst.) D.Hawksw.: on *Peltigera*; **Leptosphaeria protousneae** Etayo: on *Protousnea* [similar to *D. ramalinae*]; **physciae** (Brackel) Hafellner [≡ *Merismatium physciae* Brackel; ≡ *Pleospora physciae* (Brackel) Hafellner & E.Zimm.]: on *Physcia*; **pseudeverniae** (Etayo & Diederich) Ertz & Diederich [≡ *Diederichia pseudeverniae* (Etayo & Diederich) D.Hawksw.; ≡ *Macrophomina pseudeverniae* Etayo & Diederich]: on *Pseudevernia*; **ramalinae** (Desm.) Ertz, Diederich & Hafellner

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[= *Ph. ficuzzae* Brackel; =? *Pyrenidium ucrainicum* S.Y.Kondr., L.Lőkös & J.-S.Hur]: on *Ramalina*; **Phoma rozziana** Etayo: on *Pseudocyphellaria* [similar to *D. cladoniicola*]; **slaptoniensis** (D.Hawksw.) Hafellner & Ertz [≡ *Polycoccum slaptoniense* D.Hawksw.]: on *Xanthoria parietina*; **trassii** Suija, Darmostuk & Khodos.: on *Cetraria aculeata*; **xanthomendozae** (Diederich & Freebury) Diederich & Freebury [≡ *Diederichomyces xanthomendozae* (Diederich & Freebury) Crous & Trakunyingcharoen; ≡ *Ph. xanthomendozae* Diederich & Freebury]: on *Xanthomendoza*; **Phoma thamnoliae** Zhurb. ad int.: on *Thamnolia*.
Lit.: Brackel 2008, 2010a; Diederich et al. 2007; Etayo 1996, 2017; Etayo & Diederich 1996a; Etayo & Sancho 2008; Hafellner 1994a, 2015; Hafellner & Zimmermann 2012; Hawksworth 1981, 1994, 2003; Hawksworth & Cole 2004; Khodosovtsev et al. 2018; Kocakaya et al. 2015; Kondratyuk 2008; Kondratyuk et al. 2012, 2013; Lawrey et al. 2012; van den Boom et al. 2017; Zhurbenko 2012.

Ophiobolus Riess; type: *O. disseminans* Riess. Mol.: yes (T). Both lichenicolous species probably do not belong here.
Species: 2-0-0 (350). **aspiciliae** (H.Olivier) Vouaux: on *Aspicilia*; **thallicola** (Ces. & De Not.) Sacc.: on *Peltigera* [often considered a synonym of *Neolamya peltigerae*, but following Brackel 2014 possibly a distinct species].
Lit.: Brackel 2014; Clauzade et al. 1989.

Phaeoseptoria Speg.; type: *P. papayae* Speg. [= *Phaeosphaeria* I.Miyake; type: *P. orizae* I.Miyake]. Mol.: yes (T).
Species: 1-0-0 (90). **peltigerae** Punith. & Spooner: on *Peltigera*.
Lit.: Punithalingam & Spooner 1997.

Xenophoma Crous & Trakunyingcharoen; type: *X. puncteliae*. Mol.: yes (T, L).
Species: 1-0-0. **puncteliae** (Diederich & Lawrey) Crous & Trakunyingcharoen [≡ *Phoma puncteliae* Diederich & Lawrey]: on *Punctelia*.
Lit.: Lawrey et al. 2012; Trakunyingcharoen et al. 2014.

Family **Pleomassariaceae** M.E.Barr

Lichenopyrenis Calat., Sanz & Aptroot; type *L. galligena*. Mol.: no.
Species: 1-0-0. **galligena** Calat., Sanz & Aptroot: on *Leptochidium albociliatum*.
Lit.: Calatayud et al. 2001b.

Family **Pleosporaceae** Nitschke

Pleospora Ces. & De Not.; type: *P. herbarum* (Pers.) Ces. & De Not. Mol.: yes (T).
Species: 6-0-0 (65). **bernadetiae** van den Boom [as *Plaeospora bernadetae*]: on *Protoparmeliopsis muralis*; **collematum** Zukal: on Collemataceae; **Verrucaria congestula** Cromb.: on *Aspiciliopsis macrophthalma* [a taxon of uncertain position, provisionally placed here]; **crozalsii** Vouaux: on *Sticta sylvatica*; **tretiachii** Hafellner [= *P. aquatica* Tretiach & Nimis, non Griffiths]: on *Aspicilia*; **xanthoriae** Khodos. & Darmostuk: on *Xanthoria parietina*.
Lit.: Clauzade et al. 1989; Khodosovtsev & Darmostuk 2016; Tretiach & Nimis 1999; van den Boom 2015.

Family **Pyrenochaetopsidaceae** Valenzuela-López, Crous, Cano, Guarro & Stchigel

Pyrenochaetopsis Gruyter; type: *P. leptospora* (Sacc. & Briard) Gruyter. Mol.: yes (T, L).
Species: 0-0-1 (7). **microspora** (Gruyter & Boerema) Gruyter, Aveskamp & Verkley: facultatively lichenicolous on *Buellia*.
Lit.: de Gruyter et al. 2010.

Family **Sporormiaceae** Munk

Preussia Fuckel [a hemihomonym of *Preussia* Karsch, Orthoptera]; type: *P. funiculata* (Preuss) Fuckel [= *Sporormiella* Ellis & Everh.; type: *S. nigropurpurea* Ellis & Everh.]. Mol.: yes (T).
Species: 1-0-0 (50). **peltigerae** (Brackel) Diederich, comb. nov. [≡ *Sporormiella peltigerae* Brackel]: on *Peltigera rufescens*.
Lit.: Brackel 2009.

Family **Trematosphaeriaceae** K.D.Hyde, Y.Zhang ter, Suetrong & E.B.G.Jones

Trematosphaeria Fuckel; type: *T. pertusa* (Pers.) Fuckel. Mol.: yes (T).
Species: 1-0-0 (20). **lophiostoma** M.Choisy & Werner: on *Staurothele* [a poorly known species].
Lit.: Clauzade et al. 1989.

Order Pleosporales genera incertae sedis

Berkleasmium Zobel; type: *B. cordeanum* Zobel. Mol.: yes.
Species: 1-0-0 (36). **parmeliellae** Etayo & Diederich: on *Parmeliella testacea*.
Lit.: Etayo & Diederich 1995.

Ellisembia Subram.; type: *E. coronata* (Fuckel) Subram. Mol.: yes.
Species: 1-0-0 (60). **lichenicola** Heuchert & U.Braun: on various lichens.
Lit.: Heuchert & Braun 2006.

Pseudopyrenidium Nav.-Ros., Zhurb. & Cl.Roux; type: *P. tartaricola*. Mol.: no.
Species: 1-0-0. **tartaricola** (Linds.) Nav.-Ros., Zhurb. & Cl.Roux [≡ *Weddellomyces tartaricola* (Linds.) Alstrup & D.Hawksw.]: on *Ochrolechia*.
Lit.: Alstrup & Hawksworth 1990; Navarro-Rosinés et al. 2010.

Pyrenochaeta De Not.; type: *P. nobilis* De Not. Mol.: yes (T).
Species: 2-0-0 (5). **collematis** Vouaux: on *Enchylium tenax* [not a *Pyrenochaeta*, fide Roux 2014]; **xanthoriae** Diederich: on *Xanthoria*.
Lit.: Clauzade et al. 1989; Diederich 1990; Hafellner 1982a.

Order **Strigulales** Lücking, M.P.Nelsen & K.D.Hyde

Family **Strigulaceae** Zahlbr.

Strigula Fr.; type: *S. smaragdula* Fr. (lichenized). Mol.: yes (T).
Species: 1-0-0 (70). **dichosporidii** Etayo: on *Dichosporidium nigrocinctum*.
Lit.: Etayo 2002.

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Order **Trypetheliales** Lücking, Aptroot & Sipman

Family **Polycoccaceae** Ertz, Hafellner & Diederich

Clypeococcum D.Hawksw.; type: *C. cladonema*. Mol.: yes (L).
Species: 12-0-0. **amylaceum** Etayo: on *Parmotrema*; **bisporum** Zhurb.: on *Cetraria* and *Nephromopsis*; **cajasense** Etayo: on *Hypotrachyna*; **cetrariae** Hafellner: on *Cetraria* and *Nephromopsis*; **cladonema** (Wedd.) D.Hawksw.: on *Cetrelia* and *Xanthoparmelia*; **epimelanostolum** (D.Hawksw. & Øvstedal) Grube & Hafellner: on *Buellia melanostola*; **galloides** Etayo: on *Lecidea* s.l.; **grossum** (Körb.) D.Hawksw.: on *Umbilicaria*; **hypocenomycis** D.Hawksw.: on *Hypocenomyce*; **placopsiiphilum** Øvstedal & D.Hawksw.: on *Placopsis*; **psoromatis** (A.Massal.) Etayo [= *C. epicrassum* (H.Olivier) Hafellner & Nav.-Ros.]: on *Squamarina*; **rugosisporum** Etayo & Zhurb.: on *Parmotrema*.
Lit.: Ertz et al. 2015; Etayo 2010b, 2017; Etayo & Triebel 2010; Grube & Hafellner 1990; Hafellner 1994a, 1995a; Hawksworth 1977a, 1980a, 1982a; Navarro-Rosinés et al. 1994; Øvstedal & Hawksworth 1986; Zhurbenko 2009a; Zhurbenko et al. 2016.

Polycoccum Körb.; type: *P. sauteri*, i.e. *P. trypethelioides*. Mol.: yes (T, L).
Species: 60-0-0. **acarosporicola** Halıcı & D.Hawksw.: on *Acarospora cervina*; **aksoyi** Halıcı & V.Atienza: on *Aspicilia*; **alboatrae** (Vouaux) Etayo: on *Diplotomma venustum*; **amygdalariae** F.Berger & Triebel: on *Amygdalaria*; **anatolicum** Halıcı & E.Akgül: on *Lepraria incana*; **arnoldii** (Hepp) D.Hawksw.: on *Diploschistes* and *Rhizocarpon*; **atrostriatae** van den Boom: on *Physcia atrostriata*; **cartilaginosum** (Arnold) D.Hawksw.: on an unidentified saxicolous lichen?; **cladoniae** Diederich & D.Hawksw.: on *Cladonia*; **clauderouxii** S.Y.Kondr., L.Lőkös & J.-S.Hur: on *Zeroviella laxa*; **clauzadei** Nav.-Ros. & Cl.Roux: on *Rusavskia elegans*; **crassum** Vězda: on *Peltigera*; **crespoae** Váczi & D.Hawksw.: on *Xanthoparmelia*; **decolorans** Calat. & Triebel: on *Immersaria*; **deformans** R.Sant. & Brackel: on *Placopsis*; **dictyonematis** Etayo & R.Sant.: on *Cora*; **diederichianum** Nav.-Ros., nom. inval. (Art. 30.8): on *Placynthium*; **dzieduszyckii** (Boberski) D.Hawksw.: on *Bagliettoa*; **epiphyllum** Matzer: on foliicolous *Trichothelium*; **epizoharyi** Calat. & V.Atienza: on *Buellia zoharyi*; **evae** Calat. & V.J.Rico: on *Dimelaena*; **follmannii** (C.W.Dodge) Alstrup: on *Lecidea cremoricolor*; **heterodermiae** Calat.: on *Heterodermia*; **hymeniicola** (Berk. & Broome) Zhurb. [≡ *Endococcus hymeniicola* (Berk. & Broome) D.Hawksw.]: on *Lobaria* [generic position uncertain]; **ibericum** Etayo & van den Boom: on *Rinodina*; **innatum** (Müll.Arg.) D.Hawksw.: on an unidentified corticolous lichen; **islandicum** Brackel & F.Berger: on *Placopsis gelida*; **jamesii** D.Hawksw.: on *Psoromidium*; **kerneri** J.Steiner: on *Lecidea fuscoatra*; **laursenii** Zhurb.: on *Cladonia*; **longisporum** Etayo: on *Pseudocyphellaria*; **marmoratum** (Kremp.) D.Hawksw.: on crustose lichens on calcareous rocks (*Clauzadea*, *Polyblastia*, *Thelidium*, *Verrucaria*); **microcarpum** Diederich & Etayo: on *Cladonia*; **microstictum** (Leight.) Arnold: on *Acarospora*, also reported from *Buellia*, *Ionaspis* and *Rhizocarpon*; **minutulum** Kocourk. & F.Berger: on *Trapelia placodioides*; **montis-wilhelmii** Diederich: on *Hypotrachyna*; **nigrosporum** Etayo: on *Buellia aethalea*; **ochvarianum** Y.Joshi: on *Ochrolechia*, *Pertusaria* and *Varicellaria*; **opulentum** (Th.Fr. & Almq.) Arnold: on *Polyblastia*; **peltigerae** (Fuckel) Vězda: on *Peltigera*; **perrugosae** Brackel: on *Placopsis perrugosa*; **psorae** Zhurb. & Triebel: on *Anamylopsora pulcherrima*; **pulvinatum** (Eitner) R.Sant.: on *Physcia*; **rinodinae** van den Boom: on *Rinodina*; **rubellianae** Calat. & V.Atienza: on *Caloplaca rubelliana*; **rugulosarium** (Linds.) D.Hawksw.: on *Austroplaca cirrochrooides* and *Gondwania*; **serusiauxii** Matzer: on foliicolous *Byssolecania*; **sporastatiae** Arnold: on *Sporastatia*; **squamarioides** (Mudd) Arnold: on *Placopsis*; **stellulatae** (Vouaux) Hafellner: on *Buellia stellulata*; **stictaria** (Linds.) D.J.Galloway: on *Pseudocyphellaria*; **superficiale** D.Hawksw. & Miądl.: on *Peltigera*; **teresum** Halıcı & K.Knudsen: on *Xanthoria*; **thallicola** Arnold: on cf. *Aspicilia candida*; **tinantii** Diederich: on *Blastenia ferruginea*; **trypethelioides** (Th.Fr.) R.Sant. [= *P. sauteri* Körb., fide Santesson 1960]: on *Stereocaulon*; **umbilicariae** (Linds.) D.Hawksw.: on *Lasallia*; **ventosicola** Zhurb.: on *Ophioparma ventosa*; **vermicularium** (Linds.) D.Hawksw.: on *Thamnolia*; **versisporum** (Bagl. & Carestia) D.Hawksw.: on *Rhizocarpon geographicum* and an unidentified saxicolous lichen.
Lit.: Alstrup 2002; Aptroot el al.1997; Atienza & Hawksworth 2008; Atienza et al. 2003; Berger 2000; Brackel & Berger 2010; Calatayud 2004; Calatayud & Atienza 2000; Calatayud & Rambold 1998; Calatayud & Rico 1995; Clauzade et al. 1989; Diederich 1990; Ertz et al. 2015; Etayo 2010b, 2010c; Etayo & Diederich 1998; Etayo & Sancho 2008; Galloway 2004; Gaya & Navarro-Rosinés 2008; Hafellner 2015; Halıcı et al. 2007a, 2009c, 2013; Hawksworth 1985b; Hawksworth & Diederich 1988; Hawksworth & Miądlikowska 1997a; Joshi et al. 2017a; Kocourková & Berger 1999; Kondratyuk et al. 2016b; Lord et al. 2013; Matzer 1996; Navarro-Rosinés 1992; Navarro-Rosinés & Roux 1990, 1998; Triebel 1989; Váczi & Hawksworth 2001; van den Boom 2010, 2012; van den Boom & Etayo 2014; Zhurbenko 2007b, 2010b; Zhurbenko & Dillman 2010.

Order **Tubeufiales** Boonmee & K.D.Hyde

Family **Tubeufiaceae** M.E.Barr

Lichenotubeufia Etayo; type: *L. eriodermae*. Mol.: no.
Species: 5-0-0. **boomiana** Etayo: on *Sticta*; **eriodermae** (Etayo) Etayo: on *Erioderma*; **heterodermiae** (Etayo) Etayo: on *Heterodermia* and *Physcia*; **pannariae** (Etayo) Etayo: on *Pannaria rubiginosa*; **tafallae** Etayo: on *Leptogium*.
Lit.: Etayo 2002a, 2002b, 2017.

Order **Venturiales** Yin.Zhang & K.D.Hyde

Family **Venturiaceae** M.E.Barr.

Spilodochium Syd.; type: *S. vernoniae* Syd. Mol.: no. Asexual, sporodochial.
Species: 1-0-0 (4). **parmotrematis** Diederich & Etayo: on *Parmotrema*.
Lit.: Etayo & Diederich 1995.

Order Venturiales genus incertae sedis

Fusicladium Bonord.; type: *F. virescens* Bonord. (saprotrophic). Mol.: yes (L).

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Species: 0-0-1 (75). **peltigericola** Crous & Diederich: isolated from *Peltigera*, probably lichenicolous.
Lit.: Crous et al. 2011.

Class Dothideomycetes familiae incertae sedis

Family **Corynesporascaceae** Sivan.

Corynespora Güssow; type: *C. mazei* Güssow. Mol.: yes. Asexual, hyphomycetous.
Species: 2-0-0 (130). **laevistipitata** (M.S.Cole & D.Hawksw.) Heuchert & U.Braun [≡ *Taeniolella laevistipitata* M.S.Cole & D.Hawksw.]: on *Graphis*, *Lecanora*, *Lepra*, *Pertusaria*, *Phaeophyscia* and *Xanthoria*; **thorii** U.Braun, Zhurb. & Frisch: on *Lecanora*.
Lit.: Heuchert & Braun 2006; Zhurbenko et al. 2015d.

Family **Naetrocymbaceae** R.C.Harris

Leptorhaphis Körb.; type: *L. oxyspora* (Nyl.) Körb. Mol.: no.
Species: 1-0-0 (15). **haematommatum** Hafellner & Kalb: on *Haematomma*.
Lit.: Kalb et al. 1995.

Family **Pseudoperisporiaceae** Toro

Keratosphaera H.P.B.Upadhyay; type: *K. batistae* [= *Sporhaplus* H.B.P.Upadhyay; type: *S. rondoniensis*, i.e. *K. batistae*; = *Sphaeromma* H.B.P.Upadhyay; type: *S. mazosiae*, i.e. *K. batistae*]. Mol.: no.
Species: 5-0-0 (6). **antoniana** Flakus, Farkas & Lücking: on foliicolous *Trichothelium*; **batistae** H.B.P.Upadhyay [= *Sphaeromma mazosiae* H.B.P.Upadhyay; = *Sporhaplus rondoniensis* H.B.P.Upadhyay]: on foliicolous *Mazosia*; **dimerellae** Matzer: on foliicolous *Coenogonium*; **furcatiseta** Matzer [= *Sphaeromma furcatiseta* Matzer]: on foliicolous *Porina*; **porinae** Matzer [= *Sphaeromma porinae* Matzer]: on foliicolous *Porina*.
Lit.: Farkas 2010; Matzer 1996.

Myxophora Döbbeler & Poelt; type: *M. amerospora* Döbbeler & Poelt. Mol.: no.
Species: 5-0-0 (7). **apotheciicola** Nik.Hoffm. & Hafellner: on *Leptogium azureum*; **leptogiophila** (G.Winter) Nik.Hoffm. & Hafellner: on *Collema* and *Scytinium plicatile*; **ovalispora** Nik.Hoffm. & Hafellner: on *Collema*; **placynthii** Nik.Hoffm. & Hafellner: on *Placynthium caesium*; **tetraspora** Nik.Hoffm. & Hafellner: on *Collema flaccidum*.
Lit.: Hoffmann & Hafellner 2000.

Neocoleroa Petr.; type: *N. sibirica* Petr. Mol.: no.
Species: 3-0-0 (6). **inundata** (Vain.) Diederich: on *Bacidina*; **lichenicola** (Hansf.) M.E.Barr. subsp. **lichenicola** [≡ *Wentiomyces lichenicola* (Hansf.) D.Hawksw.]: on foliicolous lichens; **lichenicola** subsp. **bouteillei** (Bricaud, Cl.Roux & Sérus.) Barr: on *Fellhanera bouteillei*, *Byssoloma* and possibly *Bacidina*.
Lit.: Barr 1997; Hawksworth 1980b; Matzer 1996; Roux et al. 1994; Sérusiaux et al. 1999.

Family **Trichothyriaceae** Theiss.

Lichenopeltella Höhn.; type: *L. maculans* [= *Micropeltopsis* Vain.; type: *M. cetrariicola*; ≡ *Microthyris* Clem.; type: *M. maculans*; = *Trichothyrina* (Petr.) Petr.; type: *T. alpestris* (Sacc.) Petr.]. Mol.: no.
Species: 39-0-0 (48). **arctomiae** Pérez-Ortega & T.Sprib.: on *Arctomia delicatula*; **biatorae** Pérez-Ortega & T.Sprib.: on *Biatora flavopunctata*; **bunodophoronis** Diederich: on *Bunodophoron*; **cetrariae** (Bres.) Höhn.: on *Cetraria*; **cetrariicola** (Nyl.) R.Sant. [≡ *Micropeltopsis cetrariicola* (Nyl.) Vain.]: on *Cetraria*; **cladoniarum** E.S.Hansen & Alstrup: on *Cladonia* subgen. *Cladina*; **communis** Etayo: on *Hypotrachyna*; **coppinsii** Earl.-Benn. & D.Hawksw.: on *Verrucaria*; **epiphylla** R.Sant.: on foliicolous *Mazosia* and *Porina*; **heppiae** van den Boom: on *Heppia*; **heterodermiae** Diederich: on *Heterodermia*; **heterodermiicola** M.S.Cole & D.Hawksw. subsp. **heterodermiicola**: on *Heterodermia*; **heterodermiicola** subsp. **endothallina** Etayo: on *Heterodermia*; **hydrophila** R.Sant.: on *Verrucaria*; **hypogymniae** Diederich: on *Hypogymnia zeylanica*; **hypotrachynae** Diederich: on *Hypotrachyna*; **leprosulae** Pérez-Ortega & T.Sprib.: on *Myochroidea leprosula*; **leptogii** Diederich: on *Leptogium*; **lobariae** Etayo & Diederich: on *Lobaria*; **maculans** (Zopf) Höhn. [≡ *Microthyris maculans* (Zopf) Clem.]: on *Umbilicaria*; **megalosporae** Diederich: on *Megalospora*; **microspora** Diederich: on *Parmeliella*; **minuta** R.Sant.: on *Agonimia foliacea*; **pannariacearum** Diederich: on Pannariaceae; **peltigericola** (D.Hawksw.) R.Sant.: on *Peltigera*; **physciae** Diederich: on *Physcia*; **pseudocyphellariae** Diederich: on *Pseudocyphellaria*; **ramalinae** Etayo & Diederich: on *Ramalina*; **rangiferinae** Brackel: on *Cladonia*; **santessonii** (P.M.Kirk & Spooner) R.Sant.: on *Peltigera*; **sclerenchymatica** Etayo: on *Pseudocyphellaria*; **setifera** Matzer: on foliicolous *Bacidia*; **soiliae** Zhurb. & Pino-Bodas: on *Cladia*; **stereocaulorum** Zhurb.: on *Stereocaulon*; **swaminathaniana** Harih., Mibey & D.Hawksw.: on *Porina*; **thalamica** Etayo, Flakus & Kukwa: on *Pseudocyphellaria*; **thamnoliae** R.Sant.: on *Thamnolia*; **thelidii** Diederich: on *Thelidium*; **uncialicola** Brackel: on *Cladonia uncialis*.
Lit.: Aptroot et al. 1997; Brackel 2010c, 2011b; Cole & Hawksworth 2002; Earland-Bennett & Hawksworth 1999b; Etayo 2010b, 2017; Etayo & Diederich 1996b; Etayo & Sancho 2008; Hansen & Alstrup 1995; Hariharan et al. 1996; Matzer 1996; Molitor & Diederich 1997; Pérez-Ortega & Spribille 2009; Santesson 1988, 1989, 1998, 2001; van den Boom & Giralt 2012; Zhurbenko 2010a; Zhurbenko & Pino-Bodas 2015.

Macrographa Etayo; type: *M. antarctica*. Mol.: no.
Species: 1-0-0. **antarctica** Etayo: on *Nephroma antarcticum*.
Lit.: Etayo & Sancho 2008.

Class Dothideomycetes genera incertae sedis

Ampullifera Deighton; type: *A. foliicola* [= *Ampulliferella* Bat. & Cavalc.; type: *A. amoeboides*; = *Ampulliferopsis* Bat. & Cavalc.; type: *A. myriapoda*, i.e. *A. amoeboides*; = *Teratoschaeta* Bat. & O.M.Fonseca; type: *T. rondoniensis*, i.e. *A. amoeboides*]. Mol.: no.
Species: 6-0-0. **amoeboides** (Bat. & Cavalc.) D.Hawksw. [≡ *Ampulliferella amoeboides* Bat. & Cavalc.; = *Ampulliferopsis myriapoda* Bat. & Cavalc.; = *Teratoschaeta rondoniensis* Bat. & O.M.Fonseca;]: on foliicolous *Mazosia* and other

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Roccellaceae; **foliicola** Deight.: on foliicolous lichens; **hippocrateacearum** (Bat. & Caval.) D.Hawksw. [= *A. brasiliensis* Deight.]: on foliicolous *Mazosia* and other lichens; **leonensis** Deight.: on foliicolous lichens; **pirozynskii** D.Hawksw.: on foliicolous lichens; **ugandensis** Deight.: on foliicolous lichens.
Lit.: Hawksworth 1979; Matzer 1996.

Cercidospora Körb.; type: *C. ulothii*, i.e. *C. macrospora*. Mol.: no.
Species: 40-0-0 (100). **alpina** Ihlen & Wedin: on *Stereocaulon cumulatum*; **anomala** Etayo: on *Pertusaria pertusa*; **apiosporoides** (Vouaux) Nav.-Ros., Hafellner & Calat. ad int. [≡ *Didymella epipolytropa* var. *apiosporoides* Vouaux]: on *Aspicilia*; **barrenoana** Calat. & Nav.-Ros.: on *Rhizoplaca peltata*; **caudata** Kernst.: on *Xanthocarpia lactea* and other Teloschistaceae; **cecidiiformans** Grube & Hafellner: on *Rhizocarpon*; **cladoniicola** Alstrup: on *Cladonia*; **crozalsiana** (H.Olivier) Nav.-Ros., Cl.Roux & Casares: on *Squamarina*; **decolorella** (Nyl.) O.Eriksson & Yue: on terricolous algae, mosses and lichens; **epicallopisma** Arnold: on *Variospora aurantia*; **epicarphinea** (Nyl.) Grube & Hafellner: on *Usnochroma*; **epidesertorum** Nav.-Ros. & Calat. ad int.: on *Gyalolechia desertorum*; **epipolytropa** (Mudd) Arnold: on *Lecanora*; **epithamnolia** Zhurb.: on *Thamnolia*; **etayoana** Nav.-Ros. & Calat. ad int.: on *Physcia caesia*; **exiguella** (Nyl.) Arnold: on *Rinodina mniaraea*; **galligena** Hafellner & Nav.-Ros.: on *Aspicilia*; **hypotrachynicola** Etayo: on *Hypotrachyna*; **javalambrensis** Calat. & Nav.-Ros. ad int.: on *Aspicilia desertorum*; **lecidomae** Zhurb. & Triebel: on *Lecidoma demissum*; **lobothalliae** Nav.-Ros. & Calat.: on *Lobothallia*; **macrospora** (Uloth) Hafellner & Nav.-Ros. [= *C. ulothii* Körb.]: on *Protoparmeliopsis*; **melanophthalmae** Nav.-Ros., Calat. & Hafellner: on *Rhizoplaca melanophthalma*; **mutabilicola** Calat.et al. ad int.: on *Megaspora verrucosa* var. *mutabilis*; **ochrolechiae** Zhurb.: on *Ochrolechia* and *Pertusaria coriaceae*; **parva** Hafellner & Ihlen: on *Baeomyces*; **pluriseptata** (Nyl.) Arnold: on crustose saxicolous lichens; **punctillata** (Nyl.) R.Sant. [= *C. lichenicola* (Zopf) Hafellner]: on *Solorina* and *Peltigera*, reported from many other hosts; **rinodinae** Etayo & van den Boom: on *Rinodina conradii*; **solearispora** Calat., Nav.-Ros. & Hafellner: on *Aspicilia*; **soror** Obermayer & Triebel: on *Arthrorhaphis citrinella*; **stenotropae** Nav.-Ros. & Hafellner ad int.: on *Lecanora* gr. *polytropa*; **stereocaulorum** (Arnold) Hafellner: on *Stereocaulon*; **thamnogalloides** Zhurb.: on *Thamnolia*; **thamnoliae** Zhurb.: on *Thamnolia*; **thamnoliicola** Ihlen: on *Thamnolia*; **trypetheliza** (Nyl.) Hafellner & Obermayer [= *C. arthrorhaphidicola* Alstrup]: on *Arthrorhaphis alpina*; **verrucosaria** (Linds.) Arnold: on *Megaspora verrucosa*; **werneri** Nav.-Ros., Calat. & Hafellner: on *Aspicilia*; **xanthoriae** (Wedd.) R.Sant.: on *Xanthoria*.
Lit.: Alstrup 1997; Alstrup et al. 1994; Calatayud et al. 2013; Clauzade et al. 1989; Etayo 2010a, 2017; Etayo & van den Boom 2005; Hafellner 1987b, 1993; Hafellner & Obermayer 1995; Ihlen 1995, 1998; Ihlen & Wedin 2007; Navarro-Rosinés et al. 1995, 1996b, 2004, 2009a; Triebel 1989; Triebel & Scholz 2001; Zhurbenko 2010b, 2012; Zhurbenko & Triebel 2003; Zhurbenko et al. 1995.

Echinothecium Zopf; type: *E. reticulatum*. Mol.: no.
Species: 2-0-0. **aerophilum** Alstrup & M.S.Cole: on *Alectoria*; **reticulatum** Zopf [≡ *Sphaerellothecium reticulatum* (Zopf) Etayo]: on *Parmelia*, doubtfully reported from other parmelioid hosts.
Lit.: Alstrup & Cole 1998; Clauzade et al. 1989; Roux & Triebel 1994; Zhurbenko & Pino-Bodas 2015.

Homostegia Fuckel; type: *H. adusta*, i.e. *H. piggottii*. Mol.: no. A synonym of *Pyrenidium* (fide Navarro-Rosinés et al. in prep.).
Species: 2-0-0. **hertelii** D.Hawksw., V.Atienza & M.S.Cole: on *Flavoparmelia caperata*; **piggottii** (Berk. & Broome) P.Karst. [= *H. adusta* Fuckel; = *Phaeospora fritzei* Stein]: on *Parmelia* s.str.
Lit.: Hawksworth et al. 2004.

Koordersiella Höhn.; type: *K. javanica* Höhn. [= *Ascohansfordiellopsis* D.Hawksw.; type: *A. deightonii*; = *Hansfordiellopsis* Deight.; type: *H. aburiensis* Deight.]. Mol.: no.
Species: 6-0-0. **deightonii** (D.Hawksw.) D.Hawksw. & O.E.Erikss. [≡ *Ascohansfordiellopsis deightonii* D.Hawksw.; = *Hansfordiellopsis elongata* D.Hawksw.]: on foliicolous *Porina* and ?Gomphillaceae; **insectivora** (Hansf.) D.Hawksw. & O.E.Erikss. [≡ *A. insectivora* (Hansf.) D.Hawksw.; = *H. aburiensis* Deight.; = *H. lichenicola* (Bat. & Maya) Deight.; = *H. deightonii* Bat. & Herr.]: on foliicolous *Asterothyrium*, *Calenia*, *Gyalectidium* and *Tricharia*; **javanica** Höhn.: on Gomphillaceae; **Hansfordiellopsis minuta** D.Hawksw.: on foliicolous lichens; **tenuissima** (D.Hawksw.) D.Hawksw. [= *H. tenuissima* D.Hawksw.]: on foliicolous lichens; **variegata** (D.Hawksw.) D.Hawksw. [= *H. variegata* D.Hawksw.]: on foliicolous lichens, incl. *Bullatina aspidota*.
Lit.: Eriksson & Hawksworth 1987; Hawksworth 1979a; Matzer 1996.

Lanatosphaera Matzer; type: *L. porinicola*. Mol.: no.
Species: 2-0-0. **dimerellae** Matzer: on foliicolous *Coenogonium subluteum*; **porinicola** Matzer: on foliicolous *Porina epiphylla*.
Lit.: Matzer 1996.

Monodictys S.Hughes; type: *M. putredinis* (Wallr.) S.Hughes. Mol.: yes.
Species: 5-0-0 (50). **anaptychiae** (Lindau) D.D.Hawksw.: on *Anaptychia*; **cellulosa** S.Hughes [*M. lepraria* (Berk.) M.B.Ellis]: on various crustose, corticolous lichens; **epilepraria** Kukwa & Diederich: on *Lepraria*; **fuliginosa** Etayo: on *Lobaria* and *Ricasolia*; **phlyctidis** R.C.Harris: on *Phlyctis speirea*.
Lit.: Etayo & Diederich 1996b; Hawksworth 1975, 1979a; Kukwa & Diederich 2005; Muscavitch et al. 2017.

Pseudonitschkia Coppins & S.Y.Kondr.; type: *P. parmotrematis*. Mol.: no.
Species: 1-0-0. **parmotrematis** Coppins & S.Y.Kondr.: on *Parmotrema*.
Lit.: Coppins & Kondratyuk 1995.

Pseudorobillarda M.Morelet; type: *P. phragmitis* (Cunnell) Nag Raj, Morgan-Jones & W.B.Kendr. Mol.: yes (T).
Species: 1-0-0 (12). **peltigerae** Diederich: on *Peltigera*, rarely on *Cladonia*.
Lit.: van den Boom et al. 1998.

Pyrenidium Nyl.; type: *P. actinellum* [= *Dacampiosphaeria* D.Hawksw.; type: *D. rivana*]. Mol.: no. Several species are provisionally placed here, without being formally combined, awaiting the taxonomic revision of the genus.
Species: 13-0-0. **actinellum** Nyl.: on *Scytinium teretiusculum*; **aggregatum** Knudsen & Kocourk.: on *Phaeophyscia*

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and *Physcia*; **coccineum** Aptroot: on *Siphula decumbens*; **crozalsii** (Vouaux) Nav.-Ros., comb. inval. (Art. 30.8) [≡ *Leptosphaeria crozalsii* Vouaux]: on *Aspicilia* gr. *calcarea*; **cryptotheciae** Matzer: on foliicolous *Myriostigma candida*; **Phaeospora granulosae** Arnold: on *Trapeliopsis granulosa*; **hetairizans** (Leight.) D.Hawksw.: on *Staurothele*; **Leptosphaeria leucomelaria** (Mudd) Vouaux: on *Leucodermia leucomelos*; **octosporum** Looman: on an unidentified lichen; **Dacampiosphaeria rivana** (De Not.) D.Hawksw.: on *Peltigera*; **santessonii** Lücking: on *Bacidia psychotriae* and *Bapalmuia*; **sporopodiorum** Matzer: on foliicolous *Sporopodium*; **zamiae** (Müll.Arg.) Matzer: on foliicolous *Porina*.
Lit.: Aptroot 2014; Looman 1962; Lücking 1998; Matzer 1996; Navarro-Rosinés 1992; Roux 2014.

Rhabdospora (Sacc.) Sacc.; type: *Septoria oleandri* Durieu & Mont. Mol.: no. A poorly known genus.
Species: 1-0-0 (150). **haematommatum** Kalb & Hafellner: on *Haematomma*.
Lit.: Kalb et al. 1995.

Rosellinula R.Sant.; type: *R. haplospora*. Mol.: no.
Species: 4-0-0. **frustulosae** (Vouaux) R.Sant.: on *Lecanora frustulosa* and *L. argopholis*; **haplospora** (Th.Fr.) R.Sant.: on *Aspicilia* and *Bellemerea*; **kalbii** (Hafellner) Hafellner & R.W.Rogers: on *Haematomma puniceum*; **lopadii** (Vouaux) D.J.Galloway: on *Brigantiaea*.
Lit.: Galloway 2004; Hafellner 1985a, 2004.

Sphaerellothecium Zopf; type: *S. araneosum*. Mol.: no.
Species: 35-0-0. **abditum** Triebel: on *Immersaria* and *Lecidea*; **aculeatae** Khodos., Gavrylenko & Klymenko: on *Cetraria aculeata*; **araneosum** (Arnold) Zopf [= *Echinothecium glabrum* M.S.Christ., Alstrup & D.Hawksw.]: on *Ochrolechia*, *Lepra* and *Varicellaria*; **atryneae** (Arnold) Cl.Roux & Triebel: on *Lecanora bicincta*, *L. cenisia*, *L. rupicola* and *L. swartzii*; **breussii** K.Knudsen, Kocourk. & Etayo: on *Placidium lacinulatum*; **buelliae** (C.W.Dodge) D.Hawksw. & Iturr.: on *Buellia*; **cinerascens** Etayo & Diederich: on *Cladonia parasitica*; **cladoniae** (Alstrup & Zhurb.) Hafellner [≡ *S. araneosum* var. *cladoniae* Alstrup & Zhurb.]: on *Cladonia* subgen. *Cladonia* and *Stereocaulon*; **cladoniicola** E.S.Hansen & Alstrup: on *Cladonia* subgen. *Cladina*; **conioides** (Nyl.) Cl.Roux & Diederich: on *Baeomyces*; **contextum** Triebel: on *Calvitimela*, *Protoparmelia*, *Rhizocarpon*, *Rhizoplaca* and *Sporastatia*; **epilecanora** Zhurb.: on *Lecanora epibryon*; **episoralium** Etayo: on soralia of *Heterodermia*; **episquamarinae** Etayo: on *Squamarina lentigera*; **gallowayi** Diederich: on *Heterodermia*; **giraltiae** van den Boom: on *Rinodina*; **gowardii** Alstrup & M.S.Cole: on *Acarospora schleicheri*; **heterodermiae** van den Boom: on *Heterodermia*; **icmadophilae** (R.Sant.) Zhurb.: on *Icmadophila ericetorum*; **leratianum** Gardiennet & Cl.Roux: on *Brodoa*; **minutum** Hafellner: on *Sphaerophorus*; **pannariacearum** Etayo: on *Pannaria*; **parietinarium** (Linds.) Hafellner & V.John: on *Xanthoria*; **parmeliae** Diederich & Etayo: on *Parmelia*; **parmotrematis** van den Boom [as '*parmotremae*']: on *Parmotrema*; **phaeorrhizae** Diederich & Zhurb.: on *Phaeorrhiza sareptana*; **propinquellum** (Nyl.) Cl.Roux & Triebel: on *Lecanora carpinea* group; **pumilum** (Lettau) Nav.-Ros., Cl.Roux & Hafellner [≡ *Stigmidium pumilum* (Lettau) Matzer & Hafellner; = *Sphaerellothecium aipolium* Nav.-Ros. & Cl.Roux; =? *Thelidium parvum* C.W.Dodge & G.E.Baker]: on *Physcia*; **siphulae** Zhurb.: on *Siphula ceratites*; **soechtingii** Zhurb. & Alstrup: on *Arthrorhaphis alpina*; **stereocaulorum** Zhurb.: on *Stereocaulon*; **subtile** Triebel & Rambold: on *Teloschistes*; **thamnoliae** Zhurb. var. **thamnoliae**: on *Thamnolia*; **thamnoliae** Zhurb. var. **taimyricum** Zhurb.: on *Thamnolia*; **usneicola** Etayo: on *Usnea*.
Lit.: Alstrup & Cole 1998; Diederich 2007b; Diederich & Zhurbenko 2009; Etayo 2008, 2017; Etayo & Diederich 1998; Etayo & Sancho 2008; Gardiennet & Roux 2013; Hafellner 1993; Hansen & Alstrup 1995; Hawksworth & Iturriaga 2006; Khodosovtsev et al. 2016; Knudsen et al. 2009b; Navarro-Rosinés & Roux 2017; Navarro-Rosinés et al. 2018; Roux & Triebel 1994; Triebel 1989; Triebel et al. 1991; van den Boom 2010, 2016; Zhurbenko 2007, 2008a, 2015, 2012, 2015; Zhurbenko & Alstrup 2004; Zhurbenko & Brackel 2013; Zhurbenko & Triebel 2008.

Stromatopogon Zahlbr.; type: *S. baldwinii*. Mol.: no.
Species: 3-0-0. **baldwinii** Zahlbr.: on *Usnea*; **cladoniae** Diederich & Sérus.: on *Cladonia*; **geminatum** Etayo & Breuss: on *Usnea*.
Lit.: Diederich 1992a; Diederich & Sérusiaux 2003; Etayo & Breuss 2004.

Trematosphaeriopsis Elenkin; type: *T. parmeliana*. Mol.: no.
Species: 1-0-0. **parmeliana** (Jacz.) Elenkin: on *Xanthoparmelia*.
Lit.: Hafellner 2001.

Weddellomyces D.Hawksw.; type: *W. epicallopisma*. Mol.: no.
Species: 12-0-0. **aspiciicola** Alstrup: on *Lobothallia*; **epicallopisma** (Wedd.) D.Hawksw.: on *Protoblastenia*, *Pyrenodesmia* and *Variospora*; **erythrocarpae** Nav.-Ros. & Cl.Roux: on *Caloplaca erythrocarpa*; **gasparriniae** (C.W.Dodge) D.Hawksw. & Iturr.: on ?*Caloplaca*; **heterochrous** Nav.-Ros. & Cl.Roux: on *Aspicilia*; **macrosporus** D.Hawksw., Renob. & Coppins: on *Aspicilia calcarea* and *Lobothallia radiosa*; **pachyosporicola** Nav.-Ros. & Cl.Roux: on *Aspicilia*; **peripheric us** (Taylor) Alstrup & D.Hawksw.: on *Pertusaria pseudocorallina*; **pertusariicola** Halıcı: on *Varicellaria lactea*; **protearius** Nav.-Ros. & Cl.Roux: on *Leproplaca proteus* and *Rusavskia elegans*; **turcicus** Halıcı & Orange: on *Acarospora*; **xanthoparmeliae** Calat. & Nav.-Ros.: on *Xanthoparmelia*.
Lit.: Alstrup 1992; Calatayud & Navarro-Rosinés 1998; Halıcı 2010, Halıcı et al. 2006; Hawksworth 1978a, 1986, 1990a; Hawksworth & Iturriaga 2006; Navarro-Rosinés & Roux 1995, 1997b.

Class EUROTIOMYCETES O.E.Erikss. & Winka

Subclass CHAETOTHYRIOMYCETIDAE Doweld

Order **Chaetothyriales** M.E.Barr.

Family **Epibryaceae** S.Stenroos & C.Gueidan

Epibryon Döbbeler; type: *E. plagiochilae* (Gonz.Frag.) Döbbeler. Mol.: yes (T).
Species: 4-0-0 (30). **conductrix** (Norman) Nik.Hoffm. & Hafellner [= *Stigmidium catapyrenii* Cl.Roux & Triebel]: on *Catapyrenium cinereum* and *C. daedaleum*; **lichenicola** Matzer: on *Mazosia*; **parvipunctum** (Stein) Diederich: on *Thelidium*; **solorinae** (Vain.) Nik.Hoffm. & Hafellner: on *Solorina*.
Lit.: Hoffmann & Hafellner 2000; Matzer 1996; Sérusiaux et al. 1999.

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Family **Herpotrichiellaceae** Munk

Capronia Sacc.; type: *C. sexdecimspora* (Cooke) Sacc. Mol.: yes. Species: 21-0-0 (60). **amylacea** Etayo: on *Peltigera*; **andina** Etayo: on *Placopsis gelida*; **baeomycetis** Diederich: on *Baeomyces*; **epilobarina** S.Y.Kondr. & D.J.Galloway: on *Lobaria*; **etayoi** Flakus & Kukwa: on *Cora*; **guatemalensis** Etayo & van den Boom [as '*guatamalense*']: on *Parmotrema*; **hypotrachynae** Etayo & Diederich: on *Hypotrachyna* and *Menegazzia*; **josefhafellneri** Zhurb. & Etayo: on *Septotrapelia triseptata*; **leopoldiana** Etayo: on *Leptogium*; **leptogii** Etayo & Diederich: on *Leptogium*; **magellanica** Etayo: on *Fuscopannaria*; **minutosetosae** Halıcı, D.Hawksw., A.O.Türk & Candan: on *Thelenella muscorum*; **muellerelloides** Etayo: on *Heterodermia*; **normandinae** R.Sant. & D.Hawksw.: on *Normandina pulchella*; **paranectrioides** Etayo, Flakus & Kukwa: on *Erioderma leylandii*; **pseudonormandinae** Diederich: on *Normandina simodensis*; **santessoniana** Etayo: on *Cora*; **solitaria** Etayo: on *Heterodermia* and perhaps on *Lobaria*, *Lobariella* and *Sticta*; **suijae** Tsurykau & Etayo: on *Xanthoria parietina*; **thamnoliae** Zhurb.: on *Thamnolia*; **triseptata** (Diederich) Etayo [≡ *Muellerella triseptata* Diederich]: on various lichens.
Lit.: Aptroot el al.1997; Diederich 1986; Etayo 2002a, 2003, 2010b, 2017; Etayo & Diederich 1998; Etayo & Sancho 2008; Etayo & van den Boom 2006; Etayo et al. 2013b; Flakus & Kukwa 2012; Halıcı et al. 2010; Hawksworth 1990a; Kondratyuk & Galloway 1995a; Tsurykau & Etayo 2017; Zhurbenko 2012; Zhurbenko et al. 2016.

Cladophialophora Borelli; type: *C. carrionii* (Trejos) de Hoog, Kwon-Chung & McGinnis. Mol.: yes (T, L). Asexual, hyphomycetous.
Species: 5-0-0 (35). **cladoniae** (Diederich) Diederich: on *Cladonia*; **hawksworthii** (Etayo & Diederich) Diederich: on *Megalospora tuberculosa*; **megalosporae** Diederich: on *Megalospora pachycheila*; **normandinae** (Diederich & Etayo) Diederich: on *Normandina pulchella* [possibly the asexual stage of *Capronia normandinae*]; **parmeliae** (Etayo & Diederich) Diederich & Unter.: mainly on parmelioid lichens, also on *Lobaria* and *Pannaria*.
Lit.: Diederich 2010; Diederich et al. 2013; Etayo & Diederich 1995, 1996a; Etayo & Sancho 2008.

Family **Trichomeriaceae** Chomnunti & K.D.Hyde

Knufia L.J.Hutchison & Unter.; type: *K. cryptophialidica* L.J.Hutchison & Unter. Mol.: yes (T, L).
Species: 1-0-0 (13). **peltigerae** (Fuckel) Réblová & Unter. [≡ *Capronia peltigerae* (Fuckel) D.Hawksw.]: on *Peltigera*.
Lit.: Hawksworth 1980b; Réblová et al. 2013; Untereiner et al. 2011.

Order Chaetothyriales genera incertae sedis

Laeviomyces D.Hawksw.; type: *L. pertusariicola*. Mol.: no. Asexual, pycnidial.
Species: 1-0-0. **pertusariicola** (Nyl.) D.Hawksw. [≡ *Lichenodiplis pertusariicola* (Nyl.) Diederich]: on *Pertusaria*.
Lit.: Hawksworth 1979a; Zhurbenko & Otte 2012.

Lichenodiplis Dyko & D.Hawksw.; type: *L. lecanorae*. Mol.: yes (T, L). Asexual, pycnidial.
Species: 12-0-0. **anomala** Etayo & Pérez-Vargas [as *anomalus*]: on *Ochrolechia*; **crespoae** Pérez-Ortega & V.Atienza: on *Calicium notarisii*; **dendrographae** Diederich & van den Boom: on *Dendrographa*; **fallaciosa** (Hafellner & Kalb) Diederich [possibly the asexual stage of *Muellerella thalamita* (Berger & LaGreca 2014)]: on *Buellia* and *Orcularia*; **hawksworthii** F.Berger & Diederich: on *Pertusaria*; **lecanorae** (Vouaux) Dyko & D.Hawksw. [=? *Vouauxiella caloplacae* Alstrup] [probably the asexual stage of *Muellerella lichenicola* (Muggia et al. 2015a)]: on *Caloplaca* s.l., *Lecanora* s.l. and other crustose lichens; **lecanoricola** (M.S.Cole & D.Hawksw.) Diederich: on *Lecanora*; **lichenicola** Dyko & D.Hawksw.: on *Rinodina*; **ochrolechiae** Y.Joshi & M.Tripathi: on *Ochrolechia*; **opegraphae** (D.Hawksw.) Diederich: on *Opegrapha*; **poeltii** S.Y.Kondr. & D.Hawksw.: on *Xanthoria parietina*; **rinodinicola** Kocourk. & K.Knudsen: on *Rinodina*.
Lit.: Alstrup 1993a; Berger & Diederich 1996; Berger & LaGreca 2014; Cole & Hawksworth 2001; Diederich 2003; Hawksworth 1981; Hawksworth & Dyko 1979; Joshi et al. 2016a; Kalb 1990; Knudsen & Kocourková 2009; Kondratyuk 1996a; Muggia et al. 2015a; Pérez-Vargas et al. 2013.

Lichenodiplisiella S.Y.Kondr. & Kudratov; type: *L. makarevichiae*. Mol.: no. Asexual, pycnidial. Morphologically similar to *Lichenodiplis*.
Species: 1-0-0. **makarevichiae** S.Y.Kondr. & Kudratov [as '*makarevichae*']: on *Teloschistes brevior*.
Lit.: Kondratyuk et al. 2002.

Minutoexcipula V.Atienza & D.Hawksw.; type: *M. tuckerae*. Mol.: no. Asexual, pycnidial-sporodochial.
Species: 7-0-0. **beaglei** Etayo: on *Lecanora*; **calatayudii** V.Atienza: on *Hypogymnia*; **mariana** V.Atienza: on *Lepra* and *Pertusaria*; **miniatoexcipula** R.C.Harris & Lendemer: on *Pertusaria*, mainly *P. epixantha*; **tephromelae** V.Atienza, Etayo & Pérez-Ortega: on *Tephromela*; **tuckerae** V.Atienza & D.Hawksw.: on corticolous *Pertusaria*; **tuerkii** Hafellner: on *Pertusaria glomerata*.
Lit.: Atienza 2002; Atienza & Hawksworth 1994; Atienza et al. 2009; Etayo & Sancho 2008; Hafellner 1994a; Lendemer et al. 2016.

Muellerella Müll.Arg.; type: *M. polyspora* [≡ *Muellerellomyces* Cif. & Tomas.; type: *M. polyspora*; = *Pleothelis* M.Choisy; type: *P. myriocarpa*, i.e. *M. pygmaea*; = *Polycarpella* Theiss. & Syd.; type: *P. cookei*, i.e. *M. erratica*; = *Thelidiola* C.W.Dodge; type: *T. eklundii*, i.e. *Muellerella pygmaea*]. Mol.: yes (L). Bryophylous species may not be congeneric. Species: 12-0-0 (14). **antarctica** Etayo: on *Hypogymnia antarctica*; **atricola** (Linds.) Sacc. & D.Sacc.: on *Tephromela atra*; **erratica** (A.Massal.) Hafellner & V.John [= *M. pygmaea* var. *athallina* (Müll.Arg.) Triebel; = *Polycarpella cookei* (Linds.) Theiss. & Syd.]: on various lichens; **hospitans** Stizenb.: on *Bacidia fraxinea* and *B. rubella*; **lecanactidis** Diederich & van den Boom: on *Sigridea californica*; **lichenicola** (Sommerf.) D.Hawksw. [probably the sexual stage of *Lichenodiplis lecanorae* (Muggia et al. 2015a)]: on various lichens; **polyspora** Müll.Arg. [= *Muellerellomyces polysporae* Cif. & Tomas.]: on diverse lichens; **pygmaea** (Körb.) D.Hawksw. [= *Pleothelis myriocarpa* M.Choisy; = *Thelidiola eklundii* C.W.Dodge]: on various lichens; **stictinae** (H.Olivier) Vouaux: on *Sticta*; **thalamita** (Nyl.) D.Hawksw., F.Berger & LaGreca: on *Baculifer*, *Orcularia* and *Hafellia* [possibly the sexual stage of *Lichenodiplis fallaciosa* (Berger & LaGreca 2014)]; **ventosicola** (Mudd) D.Hawksw.: on *Ophioparma*, possibly

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also on *Dimelaena*, *Protoparmelia* and *Rhizocarpon*; **vesicularia** (Linds.) D.Hawksw.: on *Toninia*.
Lit.: Berger & LaGreca 2014; Clauzade et al. 1989; Diederich 2003; Etayo & Sancho 2008; Hawksworth 1985a; Muggia et al. 2015a; Triebel 1989.

Order **Pyrenulales** D.Hawksw. & O.E.Erikss.

Family **Requienellaceae** Boise

Distopyrenis Aptroot; type: *D. americana* Aptroot. Mol.: no.
Species: 1-0-0 (8). **japonica** Harada: on *Graphis proserpens*.
Lit.: Harada 2000.

Lacrymospora Aptroot; type: *L. parasitica*. Mol.: no.
Species: 1-0-0. **parasitica** Aptroot: probably lichenicolous on a sterile corticolous lichen (?*Myriotrema*).
Lit.: Aptroot 1991.

Parapyrenis Aptroot; type: *P. aurora* (Zahlbr.) Aptroot. Mol.: no.
Species: 1-0-0 (8). **lichenicola** Aptroot & Diederich: on ?*Pertusaria*.
Lit.: Aptroot et al. 1997.

Order **Verrucariales** D.Hawksw. & O.E.Erikss.

Family **Adelococcaceae** Triebel

Adelococcus Theiss. & Syd.; type: *A. alpestris*. Mol.: no.
Species: 4-0-0. **alpestris** (Zopf) Theiss. & Syd.: on *Acarospora*; **immersus** Etayo & Breuss: on *Dermatocarpon biennense*; **interlatens** (Arnold) Matzer & Hafellner: on *Clauzadea*, *Hymenelia*, *Ionaspis*, *Polysporina* and *Sarcogyne*; **porocyphii** S.Zelenko & S.Y.Kondr.: on *Porocyphus*.
Lit.: Etayo & Breuss 1998; Kondratyuk & Zelenko 2002; Matzer & Hafellner 1990.

Sagediopsis Vain.; type: *S. tartarina*, i.e. *S. campsteriana*. Mol.: no.
Species: 10-0-0. **aquatica** (Stein) Triebel: on *Koerberiella wimmeriana*; **aspiciliae** Nik.Hoffm. & Hafellner: on *Aspicilia myrinii*; **barbara** (Th.Fr.) R.Sant. & Triebel: on *Porpidia*; **bayozturkii** Halıcı, Güllü & Parnikoza: on *Acarospora mycrocyclos*; **campsteriana** (Linds.) D.Hawksw. & R.Sant. [= *S. tartarina* (Nyl.) Vain.]: on *Ochrolechia*; **dissimilis** Triebel: on *Paraporpidia leptocarpa*; **fissurisedens** Hafellner: on *Aspicilia myrinii*; **lomnitzensis** (Stein) Orange: on *Ionaspis lacustris* and *I. odora*; **pertusariicola** Zhurb.: on *Pertusaria*; **vasilyevae** Zhurb.: on *Rhizocarpon*.
Lit.: Alstrup & Hawksworth 1990; Hafellner 1993; Halıcı et al. 2017; Hoffmann & Hafellner 2000; Orange 2002; Triebel 1989; Triebel 1993; Zhurbenko 2009c; Zhurbenko & Yakovchenko 2014.

Family **Sarcopyreniaceae** Nav.-Ros. & Cl.Roux

Sarcopyrenia Nyl.; type: *S. gibba* [= *Hassea* Zahlbr.; type: *H. bacillosa*]. Mol.: no.
Species: 11-0-0. **acutispora** Nav.-Ros. & Cl.Roux: on cf. *Baglietoa calciseda*; **bacillosa** (Nyl.) Nav.-Ros. & Hladun [≡ *Hassea bacillosa* (Nyl.) Zahlbr.]: on saxicolous lichens; **bacillospora** Nav.-Ros. & Hladun: on *Thelidium* and *Verrucaria*; **baetica** Nav.-Ros. & Hladun: on *Lecania* cf. *erysibe*; **beckhausiana** (J.Lahm) M.B.Aguirre, Nav.-Ros. & Hladun: on saxicolous lichens, mainly Verrucariaceae; **cylindrospora** (P.Crouan & H.Crouan) M.B.Aguirre: mainly on *Aspicilia*; **gibba** (Nyl.) Nyl. var. **gibba**: on saxicolous lichens, incl. *Acarospora* and *Aspicilia*; **gibba** var. **geisleri** (Beckh.) Nav.-Ros. & Hladun: on saxicolous lichens; **lichinellae** Nav.-Ros. & Hladun: on *Lichinella stipatula*; **pluriseptata** Nav.-Ros. & Cl.Roux: on *Pyrenodesmia variabilis*; **sigmoideospora** Tretiach & Nav.-Ros.: on *Baglietoa*.
Lit.: Knudsen & Lendemer 2006; Navarro-Rosinés & Hladun 1990; Navarro-Rosinés & Hladun 2004; Navarro-Rosinés et al. 1998b, 2009b; Tretiach & Navarro-Rosinés 1996.

Family **Verrucariaceae** Zenker

Bellemerella Hafellner & Cl.Roux; type: *B. trapeliae*. Mol.: no.
Species: 4-0-0. **acarosporae** Calat. & Nav.-Ros.: on *Acarospora fuscata*; **polysporinae** Calat. & Nav.-Ros.: on *Polysporina simplex*; **ritae** Pérez-Ortega & T.Sprib.: on *Xylographa*; **trapeliae** Nav.-Ros. & Cl.Roux: on *Trapelia*.
Lit.: Calatayud & Navarro-Rosinés 2001; Navarro-Rosinés & Roux; 1997a; Pérez-Ortega & Spribille 2007.

Clauzadella Nav.-Ros. & Cl.Roux; type: *C. gordensis*. Mol.: no.
Species: 1-0-0. **gordensis** Nav.-Ros. & Cl.Roux: on *Verrucaria viridula*.
Lit.: Navarro-Rosinés & Roux 1996.

Endococcus Nyl.; type: *E. rugulosus* [= *Discothecium* Zopf; type: *D. stigma*]. Mol.: yes (L). Several poorly known species are provisionally placed here, without being formally combined in this genus.
Species: 44-0-0. **alectoriae** (D.Hawksw.) D.Hawksw.: on *Alectoria*; **apiciicola** (J.Steiner) R.Sant.: on *Usnea*; **brachysporus** (Zopf) M.Brand & Diederich: on *Porpidia*; **Microthelia calcaricola** Mudd: on *Aspicilia*; **caudisporus** J.C.David & Etayo: on *Lathagrium auriforme*; **cladiae** Zhurb. & Pino-Bodas: on *Cladia*; **complanatae** Arnold: on *Miriquidica*; **exerrans** Nyl.: on *Rhizocarpon*; **Verrucaria fumosaria** Leight.: on *Lecidea fuscoatra*; **fusiger** Th.Fr. & Almq.: on *Rhizocarpon*; **incrassatus** Etayo & Breuss: on *Placidiopsis*; **janae** K.Knudsen: on *Acarospora rhabarbarina*; **karlstadtensis** Kocourk. & Brackel: on *Endocarpon*; **Tichothecium latzelii** Keissl.: on *Collema*; **macrosporus** (Arnold) Nyl.: on *Rhizocarpon*; **matzeri** D.Hawksw. & Iturr.: on *Buellia*; **Mycoporum melacoccum** Nyl.: on a sterile, saxicolous lichen with a sorediate C+ red thallus; **nanellus** Ohlert: on *Stereocaulon*; **oreinae** Hafellner: on *Dimelaena oreina*; **oropogonicola** Etayo: on *Oropogon*; **pallidosporus** Etayo: on *Pseudocyphellaria*; **parentium** Etayo: on *Pseudocyphellaria*; **parmeliarum** Etayo: on *Parmelia saxatilis*; **pellax** Nyl.: on *Collema*; **peltigericola** Zhurb. & Stepanchikova: on *Peltigera*; **perminutus** Vain.: on *Bacidia subincompta*; **perpusillus** Nyl.: on *Schaereria*, also reported from other saxicolous lichens; **propinquus** (Körb.) D.Hawksw.: on *Porpidia*, also reported from other saxicolous lichens; **protoblasteniae** Diederich: on *Protoblastenia*; **pseudocarpus** Nyl.: on *Callome*, *Enchylium*, *Lathagrium*, *Peltula* and *Scytinium*; **pseudocyphellariae** Etayo: on *Pseudocyphellaria* (also *Nephroma*); **ramalinarius** (Linds.) D.Hawksw.: on *Ramalina*; **rugulosus** (Leight.)

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Nyl.: on *Verrucaria*, also reported from other saxicolous lichens; **sendtneri** (Arnold) Hafellner: on *Polyblastia sendtneri*; **sipmanii** Etayo: on *Heterodermia*; **stigma** (Körb.) Stizenb. [≡ *Discothecium stigma* (Körb.) Zopf]: on *Acarospora*; **thamnoliae** Etayo & R.Sant.: on *Thamnolia*; **thelommatis** Kocourk. & K.Knudsen: on *Thelomma santessonii*; **tricolorans** Alstrup: on *Platismatia glauca*; **variabilis** Halıcı, Kocourk. & Diederich: on *Staurothele*; **verrucisporus** Alstrup: on *Ionaspis lacustris*; **verrucosus** Hafellner: on *Aspicilia*; **xanthoparmeliae** Y.Joshi, S.Y.Kondr., L.Lőkös & Hur: on *Xanthoparmelia*; **zahlbrucknerellae** (Henssen) D.Hawksw.: on *Zahlbrucknerella*.
Lit.: Alstrup 1993b, 1996; Alstrup et al. 1994; Brackel & Kocourková 2006; David & Etayo 1995; Etayo 2002a, 2010b, 2017; Etayo & Breuss 2001; Etayo & Sancho 2008; Hafellner 1994a; Hafellner et al. 2002, 2008; Halıcı et a1. 2007b; Hawksworth 1979b, 1982a; Hawksworth & Iturriaga 2006; Joshi et al. 2015; Knudsen 2008; Kocourková & Knudsen 2011a; Matzer 1993; Matzer et al. 1996; Santesson 1994b; Sérusiaux et al. 1999; Triebel 1989; Zhurbenko & Pino-Bodas 2015; Zhurbenko et al. 2012.

Haleomyces D.Hawksw. & Essl.; type: *H. oropogonicola*. Mol.: no.
Species: 1-0-0. **oropogonicola** D.Hawksw. & Essl.: on *Oropogon lopezii*.
Lit.: Hawksworth & Esslinger 1993.

Heteroplacidium Breuss; type: *H. imbricatum* (Nyl.) Breuss (lichenized). Mol.: yes (T, L).
Species: 0-3-0 (12). ***fusculum*** (Nyl.) Gueidan & Cl.Roux: lichen, juvenile parasite on *Aspicilia calcarea*; ***transmutans*** K.Knudsen, Breuss & Kocourk.: lichen, juvenile parasite on *Acarospora socialis*; ***zamenhofianum*** (Clauzade & Cl.Roux) Cl.Roux [≡ *Verrucaria zamenhofiana* Clauzade & Roux]: lichenicolous lichen on *Staurothele areolata*, eventually becoming independent.
Lit.: Breuss 1994; Knudsen et al. 2014.

Halospora (Zschacke) Tomas. & Cif.; type: *H. deminuta*. Mol.: no.
Species: 4-0-0. **deminuta** (Arnold) Tomas. & Cif. [= *Merismatium deminutum* (Arnold) Cl.Roux & Nav.-Ros.]: on *Polyblastia*, *Staurothele*, *Thelidium* and *Verrucaria*, etc.; **discrepans** (Arnold) Hafellner [= *M. discrepans* (Arnold) Triebel]: mainly on *Protoblastenia*, also on *Aspicilia*, *Hymenelia*, *Verrucaria*, etc.; **longispora** (Cl.Roux & Nav.-Ros.) Hafellner [= *M. deminutum* subsp. *longisporum* Cl.Roux & Nav.-Ros.]: on endolithic lichens; **scammoeca** (Lettau) Hafellner [= *M. scammoecum* Lettau]: on *Polyblastia*, *Thelidium* and *Verrucaria*.
Lit.: Hafellner 2011; Roux et al. 2002; Triebel 1989.

Norrlinia Theiss. & Syd.; type: *N. peltigericola*. Mol.: no.
Species: 2-0-0. **medoborensis** S.Y.Kondr.: on *Peltigera*; **peltigericola** (Nyl.) Theiss. & Syd.: on *Peltigera*.
Lit.: Hawksworth 1980b; Kondratyuk & Galloway 1995a.

Phaeospora Stein; type: *P. rimosicola*. Mol.: no.
Species: 14-0-0. **arctica** Horáková & Alstrup: on *Arctoparmelia*, *Cetraria* and *Nephromopsis*; **catolechiae** Zopf: on *Catolechia wahlenbergii*; **everniae** Etayo & van den Boom: on *Evernia*; **exoriens** (Stirt.) A.L.Sm.: on *Pannaria*; **lecanorae** Eitner: on *Lecanora* and *Myriolecis*; **parasitica** (Lönnr.) Arnold: on *Rhizocarpon* [and *Lopadium*?]; **peltigericola** D.Hawksw.: on *Peltigera* and *Pseudocyphellaria* [and *Lobaria*?]; **perrugosaria** (Linds.) D.J.Galloway: on *Placopsis*; **protoblasteniae** Alstrup & Olech: on *Protoblastenia incrustans*; **quaterna** Eitner: on *Rhizocarpon*; **rimosicola** (Mudd) Stein: on *Rhizocarpon* [also reported on *Aspicilia* and *Diplotomma*]; **squamarinae** Etayo: on *Squamarina cartilaginea*; **subantarctica** Øvstedal & D.Hawksw.: on *Lecania gerlachei*; **verrucariae** Alstrup & E.S.Hansen: on *Verrucaria placynthiae*.
Lit.: Alstrup & Hansen 2001; Alstrup & Olech 1996; Etayo 2010c; Galloway 2004; Hawksworth 1980b, 1983; Horáková & Alstrup 1994; Øvstedal & Hawksworth 1986; Sérusiaux et al. 1999; van den Boom & Etayo 2014; Zhurbenko 2014.

Placidiopsis Beltr.; type: *P. grappae* Beltr. (lichenized). Mol.: yes (T).
Species: 0-1-0 (20). ***minor*** var. ***longispora*** Etayo & Breuss: lichenicolous lichen on *Diploschistes*.
Lit.: Etayo 2017.

Placocarpus Trevis.; type: *P. schaereri*. Mol.: yes (T, L).
Species: 0-3-0 (5). ***americanus*** K.Knudsen, Breuss & Kocourk.: lichen, juvenile parasite on *Protoparmeliopsis muralis*; ***melanophthalmosus*** Cl.Roux & Gueidan: lichen, juvenile parasite on *Rhizoplaca melanophthalma*; ***schaereri*** (Fr.) Breuss: lichen, juvenile often parasitic on *Protoparmeliopsis muralis*.
Lit.: Breuss 1985; Knudsen et al. 2009a; Roux & Gueidan 2011; Zhurbenko & Notov 2015.

Placopyrenium Breuss; type: *P. bucekii* (Nádv. & Servít) Breuss (lichenized). Mol.: yes (T, L).
Species: 0-6-0 (22). ***breussii*** Cl.Roux & Gueidan: lichen, juvenile parasite on *Aspicilia calcitrapa*; ***canellum*** Nyl.: lichen, juvenile parasite on *Aspicilia*; ***cinereoatrum*** (Degel.) Orange: facultatively lichenicolous on *Staurothele fissa*; ***formosum*** Orange: lichen, juvenile parasite on *Aspicilia aquatica*; ***fuscellum*** (Turner) Gueidan & Cl.Roux: lichen, juvenile facultatively parasite on *Baglietto*a and *Verrucaria*; ***noxium*** Breuss: lichenicolous lichen on *Staurothele areolata*.
Lit.: Breuss 1998, 2009; Orange 2004, 2009; Roux & Gueidan 2011.

Telogalla Nik.Hoffm. & Hafellner; type: *T. olivieri*. Mol.: no.
Species: 2-0-0. **cajasense** Etayo: on *Leptogium*; **olivieri** (Vouaux) Nik.Hoffm. & Hafellner: on *Xanthoria*.
Lit.: Etayo 2017; Hoffmann & Hafellner 2000.

Thelidium A.Massal.; type: *T. amylaceum* A.Massal. Mol.: yes.
Species: 0-1-0 (100). ***impressulum*** Zschacke: on Verrucariaceae with an endolithic thallus.
Lit.: Roux 2014.

Verrucaria Schrad.; type: *V. rupestris* Schrad. (lichenized). Mol.: yes (T). Currently polyphyletic.
Species: 1-5-0 (300). ***bernardinensis*** Breuss: lichenicolous lichen on *Staurothele*; ***cetera*** Breuss: lichenicolous lichen on *Staurothele areolata*, eventually becoming independent; **conturmatula** Nyl.: on *Ionaspis lacustris*; ***falcata*** Breuss: lichen appearing lichenicolous on or between areoles of *Verrucaria maculicarpa*; ***inficiens*** Breuss: lichenicolous lichen on *Staurothele areolata* and *S. elenkinii*, eventually becoming independent; ***placynthiae*** Alstrup & E.S.Hansen: lichenicolous lichen on *Placynthium nigrum*.
Lit.: Alstrup & Hansen 2001; Breuss 1998, 2007; Orange 2002.

Verrucula J.Steiner; type: *V. aegyptiaca*. Mol.: yes (L).
Species: 0-22-0. ***aegyptiaca*** (Müll.Arg.) J.Steiner: lichenicolous lichen on *Variospora*; ***ahlesiana*** (Zwackh) J.Steiner:

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lichen, probably lichenicolous; ***arnoldaria*** Nav.-Ros. & Cl.Roux: lichenicolous lichen on *Calogaya arnoldii*; ***biatorinaria*** (Zehetl.) Nav.-Ros. & Cl.Roux: lichenicolous lichen on *Calogaya biatorina*; ***clauzadaria*** Nav.-Ros. & Cl.Roux: lichenicolous lichen on *Caloplaca clauzadeana*; ***coccinearia*** (Zehetl.) Nav.-Ros. & Cl.Roux: lichenicolous lichen on *Caloplaca coccinea*; ***coronataria*** Nav.-Ros. & Cl.Roux: lichenicolous lichen on *Flavoplaca coronata*; ***elegantaria*** (Zehetl.) Nav.-Ros. & Cl.Roux: lichenicolous lichen on *Rusavskia elegans*; ***fulvaria*** Nav.-Ros. & Cl.Roux ad int.: lichenicolous lichen on *Leproplaca proteus*; ***granulosaria*** (Clauzade & Zehetl.) Nav.-Ros. & Cl.Roux: lichenicolous lichen on *Flavoplaca granulosa*; ***helvetica*** (B. de Lesd.) Nav.-Ros. & Cl.Roux: lichenicolous lichen on *Leproplaca cirrochroa*; ***hladuniana*** (Nav.-Ros. & Cl.Roux) Nav.-Ros. & Cl.Roux: lichenicolous lichen on *Flavoplaca marina*; ***inconnexaria*** Nav.-Ros. & Cl.Roux: lichenicolous lichen on *Caloplaca inconnexa*; ***lactearia*** Nav.-Ros. & Cl.Roux: lichenicolous lichen on *Xanthocarpia lactea* s.str.; ***latericola*** (Erichs.) Nav.-Ros. & Cl.Roux: lichenicolous lichen on *Calogaya pusilla*; ***maritimaria*** Nav.-Ros. & Cl.Roux: lichenicolous lichen on *Flavoplaca maritima*; ***microspora*** Nav.-Ros. & Cl.Roux: lichenicolous lichen on *Variospora velana*; ***navasaria*** Nav.-Ros. & Cl.Roux: lichenicolous lichen on *Flavoplaca navasiana*; ***polycarparia*** Nav.-Ros. & Cl.Roux.: lichenicolous lichen on *Flavoplaca polycarpa*; ***protearia*** (Zehetl.) Nav.-Ros. & Cl.Roux: lichenicolous lichen on *Leproplaca proteus*; ***pusillaria*** Nav.-Ros. & Cl.Roux: lichenicolous lichen on *Calogaya pusilla*; ***tarraconensis*** Nav.-Ros. & Cl.Roux: lichenicolous lichen on *Variospora*.
Lit.: Hoffman & Hafellner 2000; Navarro-Rosinés et al. 2007; Roux 2014; Zehetleitner 1978.

Verruculopsis Gueidan, Nav.-Ros. & Cl.Roux; type: *V. poeltiana*. Mol.: yes (T, L).
Species: 0-3-0 (6). ***flavescentaria*** Gueidan, Nav.-Ros. & Cl.Roux: lichenicolous lichen on *Calogaya flavescens*; ***irrubescentis*** (Ménard & Cl.Roux) Gueidan, Nav.-Ros. & Cl.Roux: lichenicolous lichen on *Caloplaca irrubescens*; ***poeltiana*** (Clauzade & Cl.Roux) Gueidan, Nav.-Ros. & Cl.Roux: lichenicolous lichen on *Calogaya aurantia*.
Lit.: Ménard & Roux 1991; Navarro-Rosinés et al. 2007.

Order Verrucariales genera incertae sedis

Gemmaspora D.Hawksw. & Halıcı; type: *G. lecanorae*. Mol.: no.
Species: 1-0-0. **lecanorae** (Werner) D.Hawksw. & Halıcı: on *Aspicilia*.
Lit.: Hawksworth & Halıcı 2007.

Merismatium Zopf; type: *M. lopadii* (Arnold) Zopf, i.e. *M. nigritellum* [= *Heterophracta* (Sacc. & D.Sacc.) Theiss. & Syd.; type: *Leptosphaerulina heterophracta*, i.e. *M. heterophractum*; *Phaeocyrtis* Vain.; type: *P. consocians*, i.e. *M. heterophractum*]. Mol.: no.
Species: 10-0-0. **cladoniicola** Alstrup: on *Cladonia ciliata*; **coccisporum** (Norm.) Vouaux: on *Amygdalaria*, *Euopsis*, etc.; **coccotremicola** Etayo: on *Coccotrema*; **corae** (Pat.) Etayo & R.Sant.: on *Cora*; **decolorans** (Arnold) Triebel [=? *Sphaerulina dolichotera* (Nyl.) Vouaux; =? *S. intermedia* Vouaux]: on *Lopadium*, *Bilimbia*, *Placynthiella*, *Trapeliopsis*, etc.; **heterophractum** (Nyl.) Vouaux [= *Leptosphaerulina heterophracta* (Nyl.) Sacc. & D.Sacc.; = *Phaeocyrtis consocians* (Nyl.) Vain.]: on *Biatora*, *Bilimbia*, *Lopadium*, etc.; **lecanorae** (H.Olivier) Vouaux: on *Ochrolechia parella*; **nigritellum** (Nyl.) Vouaux [= *M. lopadii* (Arnold) Zopf]: on *Catapyrenium*, *Leptogium*, *Lichenomphalia*, *Lopadium*, *Micarea*, *Mycobilimbia*, *Ochrolechia*, *Protoblastenia*, etc.; **peregrinum** (Flot.) Triebel: on *Rimularia*; **thamnoliicola** Alstrup & E.S.Hansen: on *Thamnolia*.
Lit.: Alstrup 1997; Alstrup & Hansen 2001; Etayo 2010b; Etayo & Sancho 2008; Hafellner 2011; Hertel & Rambold 1990; Triebel 1989.

Pseudostigmidium Etayo; type: *P. nephromiarium*. Mol.: no.
Species: 5-0-0. **biseptatum** Etayo: on *Pseudocyphellaria*; **confusum** Etayo: on *Pseudocyphellaria*; **disparatum** Etayo: on *Pseudocyphellaria*; **fumosum** Etayo: on *Pseudocyphellaria*; **nephromiarium** (Linds.) Etayo: on *Nephroma antarcticum*.
Lit.: Etayo & Sancho 2008.

Stigmidium Trevis.; type: *S. schaereri* [= *Pharcidia* Körb.; type: *P. congesta*, i.e. *S. congestum*]. Mol.: no.
Species: 94-0-0 (95). **acetabuli** Calat. & Triebel: on *Pleurosticta acetabulum*; **aggregatum** (Mudd) D.Hawksw.: on *Aspicilia*; **ahtii** Etayo & Palice: on apothecia of *Cladonia lopezii*; **alectoriae** (Linds.) Etayo: on *Usnea*; **allogenum** (Nyl.) D.Hawksw.: on *Rhizocarpon*; **arthoniae** (Arnold) Hafellner: on *Arthonia*; **arthrorhaphidis** Hafellner & Obermayer: on *Arthrorhaphis citrinella*; **aspiciliae** (J.Lahm) Cl.Roux: on *Aspicilia* gr. *calcarea*; **bellemerei** Cl.Roux & Nav.-Ros.: on *Lecania*; **beringicum** Zhurb. & Triebel: on *Stereocaulon*; **buelliae** Zhurb. & Himelbrant: on *Buellia disciformis*; **californicum** K.Knudsen & Kocourk.: on *Caloplaca stanfordensis*; **calopadiae** Matzer: on foliicolous *Calopadia*; **cartilagineae** Calat. & Triebel: on *Squamarina*; **cerinae** Cl.Roux & Triebel: on *Caloplaca* s.str., also reported from other Teloschistaceae; **cladoniicola** Zhurb. & Diederich: on *Cladonia*; **clauzadei** Cl.Roux & Nav.-Ros.: on *Verrucaria*; **coarctatae** S.Y.Kondr., L.Lőkös & J.-S.Hur: on *Trapelia coarctata* [ascomata setose: *Niesslia*?]; **collematis** Cl.Roux & Triebel: on *Collema*; **congestum** (Körb.) Triebel [≡ *Pharcidia congesta* Körb.]: on apothecia of *Lecanora* gr. *chlarotera*; **conspurcans** (Th.Fr.) Triebel & R.Sant.: on *Psora rubiformis*; **croceae** (Arnold) Cl.Roux & Triebel: on *Solorina*; **cupulare** (Pat.) D.Hawksw.: on *Sticta*; **degelii** R.Sant.: on *Degelia*; **disconephromeum** Etayo: on *Nephroma antarcticum*; **divaricatae** E.Zimm. & F.Berger: on *Evernia divaricata*; **ephebes** (Henssen) D.Hawksw.: on *Ephebe*; **epinesolechia** Etayo: on *Nesolechia oxyspora* galls over *Punctelia*; **epiphyllum** Matzer: on foliicolous *Actinoplaca* and *Echinoplaca*; **epistigmellum** (Vouaux) Kocourk. & K.Knudsen: on marine *Polycauliona*; **epixanthum** Hafellner: on *Acarospora*; **eucline** (Nyl.) Vězda: on *Varicellaria*; **exasperatum** Etayo: on *Melanohalea exasperata*; **frigidum** (Sacc.) Alstrup & D.Hawksw.: on *Thamnolia*; **fuscatae** (Arnold) R.Sant.: on *Acarospora*; **glebarum** (Arnold) Hafellner: on *Toninia*; **grex** Alstrup & Olech: on *Ochrolechia* cf. *frigida*; **gyrophorarum** (Arnold) D.Hawksw. [≡ *Endococcus gyrophorarum* (Arnold) J.C.David & D.Hawksw.]: on *Umbilicaria*; **haesitans** (Nyl.) Diederich, comb. nov. [≡ *Pharcidia haesitans* Nyl.]: on *Protothelenella sphinctrinoides*; **hafellneri** Zhurb.: on *Nephromopsis cucullata*; **hageniae** (Rehm) Hafellner: on *Anaptychia* and *Physconia*; **hesperium** Kocourk., K.Knudsen & Diederich: on *Polycauliona* and *Wetmoreana*;

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heterodermiae Etayo: on *Heterodermia*; **humidum** Pérez-Ortega, Halıcı & K.Knudsen: on *Thelenella muscorum*; **hygrophilum** (Arnold) R.Sant.: on *Rhizocarpon* and *Porpidia*; **hypotrachynicola** Etayo: on *Hypotrachyna*; **joergensenii** R.Sant.: on *Agonimia foliacea*; **johnii** Halıcı & D.Hawksw.: on *Caloplaca* s.l.; **lecidellae** Triebel, Cl.Roux & Le Coeur: on *Lecidella elaeochroma*; **lendemeri** Kocourk. & K.Knudsen: on *Aspicilia*; **leprariae** Zhurb.: on *Lepraria neglecta*; **leptogii** Etayo: on *Leptogium*; **leucophlebiae** Cl.Roux & Triebel: on *Peltigera leucophlebia*; **lichenum** (Arnold) Triebel & P.Scholz: on *Verrucaria maculiformis*; **lobariae** Zhurb. & Etayo: on *Lobaria*; **marinum** (Deakin) Swinscow: on maritime *Verrucaria*; **Pharcidia maritima** B. de Lesd.: on *Verrucaria* [a poorly known taxon provisionally placed here]; **micareae** van den Boom: on *Micarea alabastrites*; **microcarpum** Alstrup & J.C.David: on *Cetraria* and *Nephromopsis cucullata*; **microspilum** (Körb.) D.Hawksw.: on *Graphis scripta*; **microsporum** Etayo & Osorio: on *Teloschistes*; **mitchellii** Cl.Roux & Bricaud: on *Pannaria conoplea*; **mycobilimbiae** Cl.Roux, Triebel & Etayo: on *Bilimbia*; **neofusceliae** Calat. & Triebel: on *Xanthoparmelia pulla*; **parmotrematis** F.Berger & E.Zimm.: on *Parmotrema*; **parvum** (Henssen) Diederich, comb. nov. [≡ *Pharcidia parva* Henssen]: on *Ephebe lanata*; **peltideae** (Vain.) R.Sant.: on *Peltigera*, also reported from *Pseudocyphellaria*, *Solorina* and *Sticta*; **petri** Hafellner: on *Clauzadea monticola*; **placopsidis** E.Zimm. & F.Berger: on *Placopsis*; **placynthii** Cl.Roux & Nav.-Ros.: on *Placynthium nigrum*; **porinae** Matzer: on foliicolous *Porina*; **pseudopeltideae** Cl.Roux & Triebel: on *Peltigera*; **psorae** (Anzi) Hafellner: on *Psora* and *Psorula*; **ramalinae** (Müll.Arg.) Etayo & Diederich [= *S. epiramalina* (Vouaux) Hafellner]: on *Ramalina*; **rivulorum** (Kernst.) Cl.Roux & Nav.-Ros.: on *Verrucaria*; **rouxianum** Calat. & Triebel: on *Acarospora cervina*; **schaereri** (A.Massal.) Trevis.: on *Solorina* thalli parasitized by *Dacampia hookeri*; **schizoporum** Matzer: on foliicolous *Porina*; **seirophorae** Etayo & van den Boom: on *Seirophora scorigena*; **solorinarium** (Vain.) D.Hawksw.: on *Solorina*; **spegazzinii** Etayo: on *Pseudocyphellaria*; **squamariae** (B. de Lesd.) Cl.Roux & Triebel: on *Lecanora*, *Protoparmeliopsis* and *Rhizoplaca*; **squamarinicola** Calat. & Triebel: on *Squamarina*; **stereocaulorum** Zhurb. & Triebel: on *Stereocaulon*; **stygnospilum** (Minks) R.Sant.: on *Dermatocarpon*; **subcladoniicola** van den Boom: on *Cladonia*; **superpositum** (Nyl.) D.Hawksw.: on *Sporodictyon*; **tabacinae** (Arnold) Triebel: on *Toninia*; **tetrasporum** Etayo: on Verrucariaceae; **trichotheliorum** Matzer: on foliicolous *Trichothelium*; **triebeliae** Etayo: on *Parmotrema*; **Pharcidia verrucariarum** (Arnold) Sacc. & D. Sacc.: on *Verrucaria* [a poorly known taxon provisionally placed here]; **vezdae** Matzer: on foliicolous *Fellhanera colchica*; **xanthoparmeliarum** Hafellner: on *Xanthoparmelia*.

Lit.: Alstrup 1993a; Alstrup & Hawksworth 1990; Alstrup & Olech 1996; Berger & Zimmermann 2016; Calatayud & Triebel 1999, 2001; Clauzade et al. 1989; Etayo 1994, 2000, 2002a, 2010c, 2017; Etayo & Sancho 2008; Hafellner 1982c, 1994a, 1994b; Hafellner & Obermayer 1995; Hafellner et al. 2008; Hawksworth 1975; Kihlman 1891; Kocourková & Knudsen 2009a, 2009b, 2010, 2012; Kondratyuk et al. 2016b; Lord et al. 2013; Matzer 1996; Matzer & Hafellner 1990; Molitor & Diederich 1997; Pérez-Ortega et al. 2010; Roux 2014; Roux & Navarro-Rosinés 1994; Roux & Triebel 1994; Roux et al. 1995; Santesson 1989, 1993b; Triebel 1989; Triebel & Scholz 2001; Roux et al. 1998; van den Boom 2016; van den Boom & Etayo 2017; Zhurbenko & Etayo 2012; Zhurbenko & Diederich 2008; Zhurbenko et al. 2012; Zimmermann & Berger 2018.

Subclass MYCOCALICIOMYCETIDAE Tibell

Order **Mycocaliciales** Tibell & Wedin

Family **Mycocaliciaceae** A.F.W.Schmidt

Chaenothecopsis Vain.; type: *C. rubescens*. Mol.: yes (L).
Species: 24-0-9 (40). **arthoniae** Tibell: on *Arthonia vinosa*; **australis** Tibell: on *Lecanactis abietina*; **brevipes** Tibell: on *Arthonia* and *Lecanactis*; **cinerea** Tibell: on *Lecanactis abietina*; **consociata** (Nádv.) A.F.W.Schmidt: on *Chaenotheca chrysocephala*; **dibbleandersoniarum** Selva: on *Felipes leucopellaeus*; **epithallina** Tibell: on *Chaenotheca trichialis*; **formosa** Titov: on *Chaenotheca sphaerocephala*; **haematopus** Tibell: facultatively lichenicolous; **hospitans** (Th.Fr.) Tibell: on *Haematomma ochroleucum* and *Lecanora*; **kalbii** Tibell & K.Ryman: on *Lecanora caesiorubella*; **lecanactidis** Tibell: on *Lecanactis abietina*; **leifiana** Titov: on *Arthonia*; **lignicola** (Nádv.) A.F.W.Schmidt: facultatively lichenicolous, especially on *Chaenotheca*; **nigra** Tibell: on *Chaenotheca*; **ochroleuca** (Körb.) Tibell & K.Ryman: on *Haematomma ochroleucum*; **parasitaster** (Bagl. & Carestia) D.Hawksw.: on *Cladonia*; **pilosa** Tibell & Kalb: on *Tylophoron*; **pusilla** (Ach.) A.F.W.Schmidt: on *Calicium*, *Chaenotheca*, *Psilolechia*, algae or most commonly lignicolous; **pusiola** (Ach.) Vain.: on *Chaenotheca* or saprophytic; **retinens** (Nyl.) Tibell: on *Inoderma byssaceum* and *Sporodophoron cretaceum*; **rubescens** Vain.: on *Inoderma byssaceum*, other lichens with *Trentepohlia* or saprophytic; **rubina** Tibell: on *Pyrgidium montellicum*; **sagenidii** Tibell: on *Lecanactis mollis*; **savonica** (Räsänen) Tibell: on *Chaenotheca* or saprophytic; **sinensis** Titov: on unidentified lichen with chlorococcoid algae; **subparoica** (Nyl.) Tibell: on *Haematomma ochroleucum*; **tasmanica** Tibell: on diverse lichens, incl. *Chaenotheca chrysocephala*; **treicheliana** (Stein) Kalb: on corticolous *Lecanora*; **vainioana** (Nádv.) Tibell: on *Arthonia*, *Lecanactis abietina*, *Calicium salicinum*, other lichens with *Trentepohlia* or saprophytic; **vinosa** Titov: on lichens; **viridialba** (Kremp.) A.F.W.Schmidt: on *Chaenotheca chryscephala* or saprophytic; **viridireagens** (Nádv.) A.F.W.Schmidt: on *Calicium*, *Chaenotheca* or on free-living algae.
Lit.: Clauzade et al. 1989; Gasparyan et al. 2014; Selva 2013; Tibell 1991b, 1998; Tibell & Ryman 1995; Titov 2006.

Mycocalicium Vain.; type: *M. parietinum* (Ach.) Vain. Mol.: yes.
Species: 3-0-0 (12). **chiodectonicola** Aptroot & Etayo: on *Chiodecton*; **enterographicola** Aptroot & M.Cáceres: on *Enterographa* cf. *quassiaecola*; **rapax** Tibell: on *Pertusaria*.
Lit.: Aptroot et al. 2016; Etayo & Aptroot 2017; Titov 2006.

Sphinctrina Fr.; type: *S. turbinata*. Mol.: yes (T, L).
Species: 9-0-0. **anglica** Nyl.: on *Protoparmelia*; **benmargana** Selva: on *Pertusaria*; **intermedia** Tibell: on *Pertusaria*; **leucopoda** Nyl.: on *Pertusaria* and *Diploschistes*; **ophioparmae** Kalb: on *Ophioparma araucariae*; **pallidella** (Willey) Selva: on *Pertusaria*; **paramerae** D.Muñiz & Hladun: on *Pertusaria paramera*; **tubaeformis** A.Massal.: on *Pertusaria*; **turbinata** (Pers.) de Not.: on *Pertusaria*.
Lit.: Kalb 2001; Löfgren & Tibell 1979; Muñiz et al. 2013; Purvis et al. 1992; Tibell et al. 2014; Titov 2006.

Subclass SCLEROCOCCOMYCETIDAE Réblová, Unter. & W.Gams

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Order **Sclerococcales** Réblová, Unter. & W.Gams

Family **Dactylosporaceae** Bellem. & Hafellner [= Sclerococcaceae Réblová, Unter. & W.Gams]

Sclerococcum Fr.; type: *S. sphaerale* [= *Dactylospora* Körb.; type: *D. floerkei*, i.e. *D. parasitica*]. Mol.: yes (T, L).
Species: 60-0-4 (80). **acarosporae** S.Y.Kondr.: on *Acarospora*; **acarosporicola** Ertz & Diederich, nom. nov. [≡ *Dactylospora acarosporae* (H.Magn.) Hafellner]: on *Acarospora*; **aeruginosum** (Holien & Ihlen) Ertz & Diederich, comb. nov. [≡ *D. aeruginosa* Holien & Ihlen]: on various lichens, also on bark or wood; **ahtii** (Zhurb. & Pino-Bodas) Ertz & Diederich, comb. nov. [≡ *D. ahtii* Zhurb. & Pino-Bodas]: on *Cladonia*; **allantoideum** (Alstrup & D.Hawksw.) Ertz & Diederich, comb. nov. [≡ *D. allantoidea* Alstrup & D.Hawksw.]: on *Xanthoparmelia pulla*; **amygdalariae** (Triebel) Ertz & Diederich, comb. nov. [≡ *D. amygdalariae* Triebel]: on *Amygdalaria*; **anziae** (Zhurb., Ezhkin, Skirina & Y.Ohmura) Ertz & Diederich, comb. nov. [≡ *D. anziae* Zhurb., Ezhkin, Skirina & Y.Ohmura]: on *Anzia*; **aptrootii** Diederich: on *Fissurina dumastii*; **areolatum** Etayo: probably on *Xylographa*; **aspiciliicola** (Alstrup & D.Hawksw.) Ertz & Diederich, comb. nov. [≡ *D. aspiciliicola* Alstrup & D.Hawksw.]: on *Aspicilia*; **athallinum** (Müll.Arg.) Ertz & Diederich, comb. nov. [≡ *D. athallina* (Müll.Arg.) Hafellner; =? *Abrothallus placophyllus* Anzi]: on *Baeomyces*; **attendendum** (Nyl.) Ertz & Diederich, comb. nov. [≡ *D. attendenda* (Nyl.) Arnold]: on *Amygdalaria*, *Icmadophila*, *Pilophorus* and *Porpidia*; **australe** (Triebel & Hertel) Ertz & Diederich, comb. nov. [≡ *D. australis* Triebel & Hertel]: on *Coccotrema*, *Lecidea*, *Paraporpidia*, *Poeltiaria*, *Poeltidea*, *Porpidia*, *Rimularia* and *Tremolecia*; **boreale** (Holien & Ihlen) Ertz & Diederich, comb. nov. [≡ *D. borealis* Holien & Ihlen]: on *Mycoblastus*, other lichens or directly on the bark; **cladoniicola** (Alstrup & Olech) Ertz & Diederich, comb. nov. [≡ *D. cladoniicola* Alstrup & Olech]: on *Cladonia*; **crassitunicatum** Zhurb., Diederich & U.Braun: on *Cladonia*; **crassum** (Sarrión & Hafellner) Ertz & Diederich, comb. nov. [≡ *D. crassa* Sarrión & Hafellner]: saprotrophic on *Juniperus oxycedrus*, also on old *Parmelia*; **davidii** (Hafellner & H.Mayrhofer) Ertz & Diederich, comb. nov. [≡ *D. davidii* Hafellner & H.Mayrhofer]: on *Pseudocyphellaria*; **deminutum** (Th.Fr.) Ertz & Diederich, comb. nov. [≡ *D. deminuta* (Th.Fr.) Triebel; = *D. rinodinicola* Alstrup & D.Hawksw.]: on various lichens; **dobrowolskii** (Olech & Alstrup) Ertz & Diederich, comb. nov. [≡ *D. dobrowolskii* Olech & Alstrup]: on *Calogaya saxicola*; **epicladonia** Zhurb.: on *Cladonia*; **epiphytorum** Diederich: on *Pertusaria coccodes* and *Varicellaria hemisphaerica*; **frigidum** (Hafellner) Ertz & Diederich, comb. nov. [≡ *D. frigida* Hafellner]: on *Brigantiaea*; **gelidarium** Etayo & F.Berger: on *Placopsis*; **glaucomarioides** (Tuck.) Ertz & Diederich, comb. nov. [≡ *D. glaucomarioides* (Tuck.) Hafellner]: on *Ochrolechia*; **hafellnerianum** (Sérus.) Ertz & Diederich, comb. nov. [≡ *D. hafellneriana* Sérus.]: on *Santessonia lagunebergii*; **heterodermiae** (Etayo) Ertz & Diederich, comb. nov. [≡ *D. heterodermiae* Etayo]: on *Heterodermia*; **homoclinellum** (Nyl.) Ertz & Diederich, comb. nov. [≡ *D. homoclinella* (Nyl.) Hafellner]: on *Lecanora* and *Tephromela*; **inconspicuum** (Etayo) Ertz & Diederich, comb. nov. [≡ *D. inconspicua* Etayo]: on *Menegazzia*; **inquilinum** (Tuck.) Ertz & Diederich, comb. nov. [≡ *D. inquilina* (Tuck.) Hafellner]: on corticolous *Pertusaria*; **leuckertii** Diederich & P.Scholz: on *Buellia aethalea*; **lobariellum** (Nyl.) Ertz & Diederich, comb. nov. [≡ *D. lobariella* (Nyl.) Hafellner]: on *Lobaria* and *Ricasolia*, also reported on *Pseudocyphellaria*; **microsporum** (Etayo) Ertz & Diederich, comb. nov. [≡ *D. microspora* Etayo]: on *Catinaria atropurpurea*; **montagnei** Hafellner: on *Lecanora rupicola*; **olivaceum** Etayo & F.Berger: on *Flavoparmelia soredians*; **ophthalmizae** Coppins, sp. nov.: on *Lepra ophthalmiza*; **orygmaeum** (Nyl.) Ertz & Diederich, comb. nov. [≡ *D. orygmaea* (Nyl.) S.Y.Kondrat. & D.J.Galloway]: on *Pseudocyphellaria berberina*; **parasitaster** (Nyl.) Ertz & Diederich, comb. nov. [≡ *D. parasitaster* (Nyl.) Arnold]: on *Biatora sphaeroides* and *Thelenella muscorum*; **parasiticum** (Flörke) Ertz & Diederich, comb. nov. [≡ *D. parasitica* (Flörke) Zopf; = *D. floerkei* Körb., nom. illeg.; = *Sclerophyton occidentale* Herre]: on *Lepra*, *Ochrolechia* and *Pertusaria*; **parellarium** (Nyl.) Ertz & Diederich, comb. nov. [≡ *D. parellaria* (Nyl.) Arnold]: on *Ochrolechia parella*; **pertusariicola** (Tuck.) Ertz & Diederich, comb. nov. [≡ *D. pertusariicola* (Tuck.) Hafellner]: on saxicolous *Pertusaria*; **phaeophysciae** Diederich & van den Boom: on *Phaeophyscia orbicularis*; **phyllobaeis** Etayo: on *Phyllobaeis*; **pleiospermum** (Triebel) Ertz & Diederich, comb. nov. [≡ *D. pleiosperma* Triebel]: on *Lecanora caesiorubella*; **polysporum** (Triebel) Ertz & Diederich, comb. nov. [≡ *D. polyspora* Triebel]: on *Protoparmelia*; **porphyreum** (Hafellner & Kalb) Ertz & Diederich, comb. nov. [≡ *D. porphyrea* Hafellner & Kalb]: on *Bacidia*, *Brigantiaea* and *Phyllopsora*; **protothallinum** (Anzi) Ertz & Diederich, comb. nov. [≡ *D. protothallina* (Anzi) Hafellner]: on *Fuscopannaria* and *Parmeliella*; **purpurascens** (Triebel) Ertz & Diederich, comb. nov. [≡ *D. purpurascens* Triebel]: on *Amygdalaria*, *Pilophorus* and *Porpidia*; **pyrenaicum** (Etayo) Ertz & Diederich, comb. nov. [≡ *D. pyrenaica* Etayo]: over bryophytes, perhaps associated with *Mycobilimbia pilularis*; **rhyparizae** (Arnold) Ertz & Diederich, comb. nov. [≡ *D. rhyparizae* Arnold]: on *Bryodina rhipariza*; **rimulicola** (Müll.Arg.) Ertz & Diederich, comb. nov. [≡ *D. rimulicola* (Müll.Arg.) Hafellner]: on *Lecanora* and ?*Pertusaria*; **rostrupii** (Alstrup) Ertz & Diederich, comb. nov. [≡ *D. rostrupii* Alstrup]: on *Lepra dactylina*; **saxatile** (Schaer.) Ertz & Diederich, comb. nov. [≡ *D. saxatilis* (Schaer.) Hafellner]: on *Ochrolechia* and *Pertusaria*; **saxatile** var. **laureri** (Hafellner) Ertz & Diederich, comb. nov. [≡ *D. saxatilis* var. *laureri* Hafellner]: on *Pertusaria*; **serusiauxii** Boqueras & Diederich: on *Parmelina*; **simplex** D.Hawksw.: on corticolous *Lepra* and *Pertusaria*; **sipmanii** Diederich: on *Anomomorpha* cf. *roseola*; **sphaerale** (Ach.) Fr.: on saxicolous *Pertusaria* [mainly *P. corallina*]; **suburceolatum** (Coppins & Fryday) Ertz & Diederich, comb. nov. [≡ *D. suburceolata* Coppins & Fryday]: on a whitish-yellowish muscicolous crustose lichen; **tegularum** (Arnold) Ertz & Diederich, comb. nov. [≡ *D. tegularum* (Arnold) Hafellner]: on *Caloplaca* s.l., incl. *Rufoplaca*; **tephromelarum** Etayo & Calat.: on *Tephromela*; **toensbergii** Diederich: on *Megalaria pulverea* and *Pertusaria carneopallida*; **urceolatum** (Th.Fr.) Ertz & Diederich [≡ *Dactylospora urceolata* (Th.Fr.) Arnold]: on *Protothelenella sphinctrinoides*, also reported from other hosts; **verrucisporum** Alstrup: on *Bellemerea diamarta*.
Lit.: Alstrup 1993a; Alstrup & Hawksworth 1990; Alstrup & Olech 1993; Alstrup et al. 1994; Berger 2000; Boqueras & Diederich 1993; Brackel 2014; Clauzade et al. 1989; Diederich 1990, 2015; Diederich & Scholz 1995; Diederich & van den Boom 2017; Diederich et al. 2013; Etayo 1991, 2010c, 2017; Etayo & Berger 2002; Etayo & Calatayud 1998; Etayo & Sancho 2008; Fryday & Coppins 2012; Hafellner 1979, 1985b, 1996b; Hafellner & Mayrhofer 2007; Hafellner et al. 2002; Hawksworth 1975, 1979a, 2003; Ihlen et al. 2004a; Kondratyuk & Galloway 1995c; Kondratyuk & Zelenko 2002; Olech & Alstrup 1996; Pino-Bodas et al. 2017; Réblová et al. 2017; Sarrión et al. 2002; Sérusiaux & Wessels 1984; Sparrius 2004;

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Triebel 1989; Zhurbenko & Pino-Bodas 2017; Zhurbenko et al. 2017.

Class Eurotiomycetes familia incertae sedis

Family **Rhynchostomataceae** Winka & O.E.Erikss.

Rhynchomeliola Speg.; type: *R. pulchella* Speg. Mol.: yes (fide Wijayawardene et al. 2017).
Species: 1-0-0 (3). **lichenicola** Henssen & Kantvilas: on *Wawea*.
Lit.: Henssen & Kantvilas 1985.

Class LECANOROMYCETES O.E.Erikss. & Winka

Subclass ACAROSPOROMYCETIDAE Reeb, Lutzoni & Cl.Roux

Order **Acarosporales** Reeb, Lutzoni & Cl.Roux

Family **Acarosporaceae** Zahlbr.

Acarospora A.Massal.; type: *A. schleicheri* (Ach.) A.Massal. (lichenized). Mol.: yes (T, L). Some species described by H. Magnusson are poorly known.
Species: 0-25-0 (200). ***anatolica*** H.Magn.: lichenicolous lichen on *Dimelaena*; ***brevilobata*** H.Magn.: lichenicolous lichen on *Rhizocarpon*; ***epithallina*** H.Magn.: lichenicolous lichen on *Acarospora hilaris* and *Usnochroma carphinea*; ***freyi*** H.Magn.: facultatively lichenicolous lichen on *Aspicilia*; ***heufleriana*** Körb.: lichenicolous lichen on *Lecanora valesiaca*; ***hospitans*** H.Magn.: lichenicolous lichen on *Aspicilia*, *Bellemerea*, *Leanora*, *Lecidea* and *Tremolecia*; ***imbricatula*** H.Magn.: facultatively lichenicolous lichen on *Aspicilia*; ***impressula*** Th.Fr.: facultatively lichenicolous lichen on *Aspicilia*; ***insignis*** H.Magn.: lichenicolous lichen on *Aspicilia*; ***insolata*** (B. de Lesd.) Redinger: lichenicolous lichen on *Immersaria* and *Rhizocarpon*, becoming independent; ***interjecta*** H.Magn.: lichenicolous lichen on *Acarospora novomexicana*; ***invadens*** H.Magn.: lichenicolous lichen on *Aspicilia* and *Dimelaena*, becoming independent; ***jenisejensis*** H.Magn.: lichenicolous lichen on *Buellia*, *Dimelaena* and *Lecanora*, becoming independent; ***microcarpa*** (Nyl.) Weddell: lichenicolous lichen on *Diploschistes actinostomus*, more rarely *Acarospora*, *Dimelaena* and *Ingvariella*, becoming independent; ***nashii*** K.Knudsen: lichenicolous lichen on *Dimelaena* and *Pleopsidium*, becoming independent; ***nodulosa*** (Dufour) Hue: facultatively lichenicolous lichen on *Diploschistes diacapsis*; ***pulvinata*** H.Magn.: lichenicolous lichen on *Aspicilia*; ***sphaerospora*** H.Magn.: lichenicolous lichen on *Aspicilia*, becoming independent; ***stapfiana*** (Müll.Arg.) Hue: lichenicolous lichen on *Caloplaca* s.l. and *Rusavskia elegans*; ***strigata*** (Nyl.) Jatta: lichenicolous lichen on *Aspicilia*, becoming independent; ***succedens*** H.Magn.: facultatively lichenicolous lichen on *Dimelaena oreina*; ***superans*** H.Magn.: lichenicolous lichen on *Aspicilia* and *Dimelaena*; ***suprasedens*** H.Magn.: lichenicolous lichen on *Aspicilia* and *Lecanora*; ***tominiana*** H.Magn.: lichenicolous lichen on *Aspicilia*; ***umbrina*** H.Magn.: lichenicolous lichen on *Lecanora*.
Lit.: Knudsen 2011; Knudsen & Kocourková 2010a; Rambold & Triebel 1992.

Myriospora Nägeli; type: *M. rufescens* (Ach.) Nägeli (lichenized). Mol.: yes (T).
Species: 0-1-0 (9). ***hassei*** (Herre) K.Knudsen & L.Arcadia: facultatively lichenicolous lichen (juvenile obligately lichenicolous?) on *Acarospora socialis*.
Lit.: Knudsen & Bungartz 2014.

Polysporina Vězda; type: *P. simplex* (Taylor) Vězda (lichenized). Mol.: yes (T, L).
Species: 3-0-0 (10). **arenacea** (H.Magn.) K.Knudsen & Kocourk.: on crustose lichens on siliceous rocks; **pusilla** (Anzi) Kantvilas: on crustose lichens on calcareous rocks, e.g., *Acarospora*, *Caloplaca* s.l., *Protoblastenia*; **subfuscescens** (Nyl.) K.Knudsen & Kocourk.: on crustose lichens on siliceous rocks, e.g., *Acarospora*, *Buellia*, *Caloplaca* s.l., *Candelariella*, *Lecidea*.
Lit.: Knudsen & Kocourkoná 2008.

Sarcogyne Flot.; type: *S. corrugata* Flot. (lichenized). Mol.: yes (L).
Species: 0-1-0 (28). ***sphaeospora*** J.Steiner: lichenicolous lichen on *Candelariella*.
Lit.: Lendemer et al. 2009; Pino-Bodas et al. 2017.

Subclass CANDELARIOMYCETIDAE Timdal & M.Westb.

Order **Candelariales** Miądl., Lutzoni & Lumbsch

Family **Candelariaceae** Hakul.

Candelariella Müll.Arg.; type: *C. vitellina* (Ehrh.) Müll.Arg. (lichenized). Mol.: yes (T).
Species: 0-2-0 (50). ***dispersa*** (Räsänen) Hakul.: lichenicolous lichen on *Placynthium*; ***superdistans*** (Nyl.) Malme: lichenicolous lichen on *Lecanora populicola*.
Lit.: Gilbert & James 2009.

Subclass LECANOROMYCETIDAE Miądl., Lutzoni & Lumbsch

Order **Caliciales** Bessey

Family **Caliciaceae** Chevall.

Acolium (Ach.) Gray; type: *A. sessile*. Mol.: yes.
Species: 2-0-0 (5). **marcianum** (B. de Lesd.) M.Prieto & Wedin [≡ *Cyphelium marcianum* B. de Lesd.]: on *Pertusaria*, mainly *P. pseudocorallina*; **sessile** (Pers.) Trevis. [≡ *C. sessile* (Pers.) Trevis.]: on *Pertusaria coccodes* and other corticolous *Lepra* and *Pertusaria*.
Lit.: Giavarini & Purvis 2009a; Prieto & Wedin 2017; Tibell 1971.

Amandinea Scheid. & M.Mayrhofer; type: *A. coniops* (Wahlenb.) Scheid. & M.Mayrhofer. Mol.: yes (T).

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Species: 2-0-0 (35). **adjuncta** (Th. Fr.) Hafellner [≡ *Buellia adjuncta* Th. Fr.]: on *Lecanora straminea* (possibly also on *Caloplaca* and *Rinodina olivaceobrunnea*); **deminuta** Hafellner (Febr. 2004) [= *Buellia uruguayensis* Etayo & Osorio (July 2004)]: on *Caloplaca felipponei*.
Lit.: Etayo & Osorio 2004; Hafellner 2004c.

Buellia De Not.; type: *B. disciformis* (Fr.) Mudd (lichenized). Mol.: yes (T, L).
Species: 6-8-0 (300). **albulella** Elix: on *Buellia albula*; ***caloplacivora*** Llimona & Egea: lichenicolous lichen on *Caloplaca* s.l., becoming independent; ***campbelliana*** Elix: lichenicolous lichen on basal squamules of *Cladonia*; ***griseosquamulata*** Scheidegger: lichenicolous lichen on *Buellia tirolensis*; ***imshaugii*** Hafellner: lichenicolous lichen on *Dimelaena oreina*; ***insularis*** Øvstedal: lichenicolous lichen on *Pannaria* and *Vestergrenopsis*; ***miriquidica*** Scheidegger: lichenicolous lichen on *Schaereria fuscocinerea*; **servilosina** Elix & Kantvilas: on *Xanthoparmelia mougeotina*; **subadjuncta** Elix & Kantvilas: on *Caloplaca lateritia*; **teloschistis** Vězda: on *Teloschistes*; **thelotremicola** Elix: on *Thelotrema*; ***uberior*** Anzi: lichenicolous lichen on *Schaereria fuscocinerea*, soon becoming independent; ***uberiuscula*** (Nyl.) Zahlbr.: facultatively lichenicolous lichen on *Acarospora fuscata*; **vouauxii** Calat. & Barreno: on *Rhizoplaca melanophthalma*.
Lit.: Calatayud & Barreno 1995; Clauzade et al. 1989; Elix 2018; Elix et al. 2017; Hafellner 1979; Llimona & Egea 1984; Øvstedal et al. 2009; Rambold & Triebel 1992; Scheidegger 1987, 1993.

Caliciella Vain.; type: not selected. Mol.: no.
Species: 1-0-0. **parasitica** Räsänen: on *Chaenotheca furfuracea*.
Lit.: Clauzade et al. 1989; Kaufmann & Hofmann 1998.

Calicium Pers.; type: *C. viride* Pers. Mol.: yes (T, L).
Species: 1-0-0. **corynellum** (Ach.) Ach.: on *Haematomma ochroleucum* and other saxicolous lichens.
Lit.: Roux 2014.

Dimelaena Norman; type: *D. oreina* (Ach.) Norman (lichenized). Mol.: yes (T).
Species: 0-1-0 (10). ***lichenicola*** K.Knudsen., Sheard, Kocourk. & H.Mayrhofer: lichen, juvenile lichenicolous on *D. oreina* and *D. thysanota*.
Lit.: Knudsen et al. 2013.

Diplotomma Flot.; type: *D. alboatrum* (Hoffm.) Flot. (lichenized). Mol.: yes (T).
Species: 1-6-0 (30). ***murorum*** (A.Massal.) Coppins: lichenicolous lichen on *Caloplaca teicholyta*; ***nivale*** (Bagl. & Carestia) Hafellner: on *Rusavskia* and *Caloplaca* s.l., soon with its own thallus; **parasiticum** (B. de Lesd.) Diederich, Cl.Roux & Van Haluwyn: on *Myriolecis*; ***renobalesiii*** Cl.Roux [= *Buellia lecanoricola* Renob., nom. nud.]: on *Myriolecis albescens*, soon with its own thallus; ***scheideggerianum*** (Bricaud & Cl.Roux) Nimis: lichenicolous lichen on *Leproplaca xantholyta*; ***venustum*** Körb.: juvenile lichenicolous lichen on *Protoparmeliopsis versicolor*, soon with its own thallus; ***vezdanum*** (P.Scholz & Knoph) Coppins: lichenicolous lichen on *Polycauliona verruculifera*.
Lit.: Bricaud & Roux 1991; Duke & Purvis 2009; Hafellner 1979; Renobales 1996; Roux 2014.

Endohyalina Marbach; type: *E. rappii* (R.C.Harris) Marbach (lichenized). Mol.: no.
Species: 2-1-0 (10). ***brandii*** Giralt, van den Boom & Elix: on *Aspicilia intermutans*, often lichenized with an own thallus; **diederichii** Giralt, van den Boom & Elix: on *Ramalina*, rarely lichenized with a reduced thallus; **insularis** (Arnold) Giralt, van den Boom & Elix: on *Lecanora rupicola* agg., very rarely lichenized with a reduced thallus.
Lit.: Giralt et al. 2010.

Monerolechia Trevis.; type: *M. bayrhofferi* (Schaer.) Trevis. Mol.: yes (L).
Species: 0-4-0. ***badia*** (Fr.) Kalb [≡ *Buellia badia* (Fr.) A.Massal.]: lichen, juvenile parasite on saxicolous lichens; ***californica*** (H.Magn.) Elix [≡ *Dimelaena californica* (H.Magn.) Sheard]: lichen, juvenile parasite on saxicolous *Dimelaena radiata*; ***glomerulans*** (Müll.Arg.) Elix [≡ *Buellia glomerulans* (Müll.Arg.) Zahlbr.]: lichen, juvenile parasite on *Xanthoparmelia*; ***norstictica*** Elix: lichen, juvenile parasite on saxicolous *Lecanora* or *Pertusaria*.
Lit.: Elix 2015; Kalb 2004.

Tetramelas Norman; type: not selected. Mol.: yes (L).
Species: 2-1-0 (16). ***concinnus*** (Th.Fr.) Giralt: lichenicolous lichen on *Buellia*, *Melanelia*, *Parmelia*, *Physcia* and *Pseudephebe*, becoming independent; **phaeophysciae** A.Nordin & Tibell: on *Phaeophyscia* and *Physcia*; **pulverulentus** (Anzi) A.Nordin & Tibell [≡ *Buellia pulverulenta* (Anzi) Jatta]: mainly on *Physconia*, also on *Anaptychia*, *Phaeophyscia* and *Physcia*.
Lit.: Hafellner & Poelt 1980; Nordin & Tibell 2005; Scheidegger & Ruef 1988.

Family **Physciaceae** Zahlbr.

Rinodina (Ach.) Gray; type: *R.sophodes* (Ach.) A.Massal. (lichenized). Mol.: yes (T, L).
Species: 1-9-0 (300). ***afghanica*** Steiner & Poelt: lichenicolous lichen on *Calogaya polycarpoides* and *Diplotomma alboatrum*; ***canariensis*** Matzer, H.Mayrhofer & Clerc: lichenicolous lichen on saxicolous lichens; **egedeana** (Linds.) Alstrup & D.Hawksw.: on *Parmelia* and *Peltigera*; ***epimilvina*** H.Mayrhofer: lichenicolous lichen on *Rinodina milvina*; ***milvina*** (Wahlenb.) Th.Fr.: lichen, facultatively lichenicolous on saxicolous lichens; ***milvinoides*** H.Mayrhofer: lichenicolous lichen on *Aspicilia*; ***obnascens*** (Nyl.) H.Olivier: lichenicolous lichen on *Aspicilia* and *Rhizocarpon*; ***parasitica*** H.Mayrhofer & Poelt: lichenicolous lichen on *Aspicilia*, *Lecanora* and *Lecidea*; ***santorinensis*** J.Steiner: lichen, facultatively lichenicolous on *Diploicia*, *Ochrolechia*, *Pertusaria*, etc.; ***superposita*** H.Magn.: lichenicolous lichen on *Lecanora* and *Lecidea*.
Lit.: Alstrup & Hawksworth 1990; Matzer et al. 1994; Mayrhofer 1984a, 1984b; Rambold & Triebel 1992.

Order **Lecanorales** Nannf.

Family **Catillariaceae** Hafellner

Catillaria A.Massal.; type: *C. chalybeia* (Borrer) A.Massal. (lichenized). Mol.: yes (T).
Species: 3-1-0 (150). **lobariicola** (Alstrup) Coppins & Aptroot [≡ *Scutula lobariicola* Alstrup; = *Phoma lobariicola*

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Alstrup]: on *Lobarina scrobiculata*; ***mediterranea*** Hafellner: lichenicolous lichen with a reduced thallus, on *Anaptychia ciliaris* and *Niebla bourgaeana*; **stereocaulorum** (Th.Fr.) H.Olivier [≡ *Scutula stereocaulorum* (Th.Fr.) Körb.]: on *Stereocaulon*; **usneicola** Etayo: on *Usnea*.
Lit.: Alstrup 1997; Etayo 2000; Hafellner 1982b.

Family **Lecanoraceae** Körb.

Carbonea (Hertel) Hertel; type: *C. atronivea* [*Huea* C.W.Dodge & G.E.Baker may represent an earlier synonym, fide Fryday 2011]. Mol.: yes (L).
Species: 11-6-0 (20). **aggregantula** (Müll.Arg.) Diederich & Triebel: on *Lecanora* (mainly *L. polytropa*), also reported from *Rhizoplaca*; **antarctica** (C.W.Dodge & G.E.Baker) D.Hawksw. & Iturr.: on *Pseudephebe*; ***assimilis*** (Körb.) Hafellner & Hertel: lichenicolous lichen on *Aspicilia*, *Lecanora*, *Lecidea*, *Pertusaria*, *Rhizocarpon* and *Tephromela*; ***atronivea*** (Arnold) Hertel: lichenicolous lichen on *Lecidella*, becoming independent; **degelii** Alstrup: on *Lecanora intricata*; ***distans*** (Kremp.) Hafellner & Obermayer var. ***distans***: lichenicolous lichen on *Lecidea obscurissima* and *Orphniospora mosigii*; ***distans*** var. ***buelliarum*** (Hertel) Hertel: lichenicolous lichen on *Buellia*; **herteliana** Hafellner & Matzer: on *Rhizocarpon*; **Catillaria hospitans** H.Magn.: on *Lecidea* [a poorly known taxon, provisionally placed here]; **intrudens** (H.Magn.) Hafellner: on *Rhizocarpon*; ***invadens*** (H.Magn.) Andreev: lichen, juvenile lichenicolous on *Rhizocarpon geographicum*; **neuropogonis** Etayo: on *Usnea aurantiaco-atra*; **Nesolechia oxysporiza** J.Steiner: on *Lecanora polytropa* [probably a *Carbonea*, fide Roux 2014]; **superjecta** (Nyl.) Hertel: on *Lecanora disjungenda*; **supersparsa** (Nyl.) Hertel: on *Lecanora* (mainly *L. polytropa*), rarely *Rhizoplaca*; **vitellinaria** (Nyl.) Hertel: on *Candelariella*; ***vorticosa*** (Flörke) Hertel: lichen, facultatively lichenicolous on *Physcia dubia*.
Lit.: Alstrup et al. 1994; Chambers et al. 2009; Ertz et al. 2014a; Etayo & Sancho 2008; Hafellner 1999, 2006; Hawksworth & Iturriaga 2006; Hertel 1967; Obermayer 1993; Rambold &Triebel 1992, Roux 2014.

Lecanora Ach.; type: *L. allophana* Nyl. (lichenized). Mol.: yes (T).
Species: 3-13-0 (550). ***dispersa*** f. ***parasitans*** (Wedd.) Harm.: lichenicolous lichen on *Dermatocarpon miniatum*; ***epithallina*** H.Magn.: lichenicolous lichen on *Tingiopsidium isidiatum*; ***gisleriana*** Müll.Arg.: lichenicolous lichen on *Lecanora epanora*, *L. handelii* and *L. subaurea*; ***gyrophorina*** Poelt & Zhurb.: lichenicolous lichen on *Umbilicaria hyperborea*; ***invadens*** H.Magn.: lichenicolous lichen on *Aspicilia asiatica*; ***laatokaensis*** (Räsänen) Poelt: lichenicolous lichen on *Aspicilia* and other lichens, when young; **lasalliae** Pérez-Ortega & Etayo: on *Lasallia pustulata*; ***latro*** Poelt: lichenicolous lichen on *Miriquidica nigroleprosa*; **lecanoricola** (Alstrup, D.Hawksw. & R.Sant.) Rambold & Triebel [≡ *Lecidella lecanoricola* Alstrup, D.Hawksw. & R.Sant.]: on *Lecanora cenisia*; ***mosigiicola*** (Eitner) Hertel & Rambold var. ***mosigiicola***: lichenicolous lichen on *Orphniospora mosigii*; ***mosigiicola*** var. ***buelliarum*** (Hertel) Hertel & Rambold: lichenicolous lichen on *Buellia*; ***nohedensis*** Cl.Roux & M.Barbero: lichenicolous lichen on *Placopyrenium breussii*; ***printzenii*** Pérez-Ortega, Vivas & Hafellner: lichenicolous lichen on *Umbilicaria*; ***thallophila*** H.Magn.: lichenicolous lichen on *Dermatocarpon*; ***tolypodes*** Poelt & Vězda: lichenicolous lichen on *Aspicilia* cf. *grisea*; **usneicola** Etayo: on *Usnea antarctica*.
Lit.: Etayo & Sancho 2006; Hafellner 1995b; Lumbsch et al. 2011; Pérez-Ortega & Etayo 2008; Poelt et al. 1996; Rambold & Triebel 1992; Ryan et al. 2004; Zhurbenko 2009.

Lecidella Körb.; type: *L. viridans* (Flot.) Körb. (lichenized). Mol.: yes.
Species: 0-2-0 (80). ***dimelaenophila*** Hertel: lichen, juvenile lichenicolous on *Dimelaena oreina*; ***vorax*** Leuckert & Poelt: lichenicolous lichen on *Lecanora rupicola*.
Lit.: Rambold & Triebel 1992.

Miriquidica Hertel & Rambold; type: *M. complanata* (Körb.) Hertel & Rambold (lichenized). Mol.: yes (T).
Species: 0-6-0 (30). ***complanata*** (Körb.) Hertel & Rambold: juvenile facultatively lichenicolous lichen on *Rhizocarpon* gr. *geographicum*; ***instrata*** (Nyl.) Hertel & Rambold: facultatively lichenicolous lichen on *Aspicilia* (and on *Rhizocarpon*?); ***intrudens*** (H.Magn.) Hertel & Rambold: lichenicolous lichen on *Rhizocarpon*; ***invadens*** Hafellner, Obermayer & Tretiach: lichenicolous lichen on *Sporastatia*, becoming independent; ***nigroleprosa*** (Vain.) Hertel & Rambold: juvenile facultatively lichenicolous lichen on *Rhizocarpon* gr. *geographicum*; ***verrucariicola*** (B.D.Ryan) K.Knudsen & Kocourk. [= *Protoparmelia ryaniana* van den Boom, Sipman & Elix, nom. illeg.]: lichenicolous lichen on *Dimelaena radiata*, *Tephromela* and *Verrucaria subdivisa*, becoming independent.
Lit.: Hafellner et al. 2005, 2014; Hertel & Rambold 1987; Knudsen et al. 2015; Rambold & Triebel 1992.

Family **Parmeliaceae** Zenker

Nesolechia A.Massal; type: *N. oxyspora*. Mol.: yes (T, L). All lichenicolous species, except *N. falcispora*, often develop subspherical to lobate or foliose gall-like structures that may be regarded as an own lichenized thallus. A high morphological plasticity, sometimes correlated with host selection, has led to the description of many poorly characterized taxa, most of which are not accepted here. Two species of uncertain generic position (*N. cetrariicola* and *N. diversispora*) are provisionally kept here.
Species: 7-0-0. **cetrariicola** (Linds.) Arnold [≡ *Lecidea cetrariicola* Linds.]: on *Cetraria*; **diversispora** Grélet: on *Lecanora* [a poorly known species]; **doerfeltii** (Alstrup & P.Scholz) Diederich, comb. nov. [≡ *Phacopsis doerfeltii* Alstrup & P.Scholz]: on *Arctoparmelia centrifuga*; **falcispora** (Triebel & Rambold) Diederich, comb. nov. [≡ *Ph. falcispora* Triebel & Rambold; = *Ph. falcispora* var. *sipmanii* Diederich & Triebel]: on *Usnea*; **oxyspora** (Tul.) A.Massal. var. **oxyspora** [≡ *Punctelia oxyspora* (Tul.) Divakar, Crespo, D.Hawksw. & Lumbsch; = *Ph. oxyspora* var. *defecta* Triebel & Rambold; = *Ph. menegazziae* Triebel & Rambold; = *N. rufa* Müll.Arg.]: on Parmeliaceae [populations with reddish to dark brown apothecia and a hyaline to pale brown hypothecium]; **oxyspora** var. **fusca** (Triebel & Rambold) Diederich, comb. nov. [≡ *N. fusca* (Triebel & Rambold) Pérez-Ortega; ≡ *Ph. oxyspora* var. *fusca* Triebel & Rambold; = *Ph. australis* Aptroot & Triebel]: on *Xanthoparmelia* and other Parmeliaceae [populations with dark brown to black, immersed to superficial apothecia and a brown to dark brown hypothecium]; **thallicola** (A.Massal.) A.Massal. [= *Abrothallus curreyi* Linds.]: on *Flavoparmelia caperata* [type of *N. thallicola*], *Parmotrema* [type of *A. curreyi*], *Cetrelia*, *Flavopunctelia* and *Hypotrachyna*.

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Lit.: Aptroot & Triebel 2002; Divakar et al. 2015, 2017; Scholtz 1998; Spribille 2010; Triebel & Rambold 1988; Triebel et al. 1995, Zhurbenko & Hafellner 1999.

Phacopsis Tul.; type: *P. vulpina*. Mol.: yes (T, L).
Species: 6-0-0. **cephalodioides** (Nyl.) Triebel & Rambold: on *Hypogymnia physodes*; **lethariellae** Hafellner & Rambold: on *Lethariella intricata*; **oroarcticae** Zhurb.: on *Brodoa oroarctica*; **prolificans** (Müll.Arg.) Triebel & Rambold: on *Platismatia interrupta*; **usneae** C.W.Dodge: on *Usnea* subgen. *Neuropogon*; **vulpina** Tul.: on *Letharia*.
Lit.: Divakar et al. 2015; Etayo & Sancho 2006; Hafellner 1987a; Triebel & Rambold 1988; Triebel et al. 1995; Zhurbenko 2010b.

Protoparmelia M.Choisy; type: *P. badia* (Hoffm.) Hafellner (lichenized). Mol.: yes (T, L).
Species: 0-7-0 (35). ***atriseda*** (Fr.) R.Sant. & V.Wirth: lichen, juvenile lichenicolous on *Rhizocarpon*; ***cupreobadia*** (Nyl.) Poelt: lichen, juvenile lichenicolous on *Rhizocarpon*; ***hierrensis*** van den Boom & Ertz: lichenicolous lichen on *Pertusaria*; ***leproloma*** (R.Sant.) Rambold & Poelt: lichenicolous lichen on *Lecidea praenubila*; ***loricata*** Poelt & Vězda: lichenicolous lichen on *Lecanora umbrosa*; ***phaeonesos*** Poelt: lichenicolous lichen on *Aspicilia myrinii*; ***placentiformis*** (J.Steiner) Poelt: lichen, juvenile lichenicolous on *Bellemerea cupreoatra*.
Lit.: Rambold & Triebel 1992; van den Boom & Ertz 2012.

Raesaenenia D.Hawksw., C.Boluda & H.Lindgren; type: *R. husskonenii*. Mol.: yes (T, L).
Species: 1-0-0. **huuskonenii** (Räsänen) D.Hawksw., C.Boluda & H.Lindgr. [≡ *Phacopsis huuskonenii* Räsänen; ≡ *Protousnea huuskonenii* (Räsänen) Divakar, Crespo & Lumbsch]: on *Bryoria*.
Lit.: Divakar et al. 2015, 2017; Lindgren et al. 2015; Triebel & Rambold 1988.

Family **Pilocarpaceae** Zahlbr.

Epicladonia D.Hawksw. s.l.; type: *E. sandstedei*. Mol.: yes (T, L). The generic type belongs to Leotiomycetes. Both *E. simplex* and *E. stenospora* are not related to the type, but represent a distinct clade in the Pilocarpaceae. More studies are needed before a new genus can be described for them, hence they are provisionally placed here.
Species: 2-0-0. **simplex** D.Hawksw.: on *Cladonia*; **stenospora** (Harmand) D.Hawksw.: on *Cladonia*.
Lit.: Hawksworth 1981; Pino-Bodas et al. 2017.

Fellhanera Vězda; type: *F. fuscatula* (Müll.Arg.) Vězda (lichenized). Mol.: yes.
Species: 0-1-0 (100). ***stictae*** Etayo: lichenicolous lichen on *Sticta*.
Lit.: Etayo 2017.

Micarea Fr.; type: *M. prasina* Fr. (lichenized). Mol.: yes (T, L).
Species: 4-1-0 (100). **inquinans** (Tul.) Coppins: on *Dibaeis baeomyces;* ***intrusa*** (Th.Fr.) Coppins & H.Kilias [≡ *Carbonea intrusa* (Th.Fr.) Rambold & Triebel; ≡ *Scoliciosporum intrusum* (Th.Fr.) Hafellner]: lichen, frequently lichenicolous on *Rhizocarpon*, *Lecidea* or other saxicolous lichens; **kemmleri** Brackel: on *Cladonia*; **stereocaulorum** Etayo & van den Boom: on *Stereocaulon*; **usneae** van den Boom & Ertz: on *Usnea*.
Lit.: Brackel 2016; Coppins 2009; Etayo 2017; van den Boom & Ertz 2014.

Scutula Tul.; type: *S. wallrothii*, i.e. *S. miliaris* [= *Hollosia* Gyeln.; type: *H. vertescens*, i.e. *S. epiblastematica*; = *Karsteniomyces* D.Hawksw.; type: *K. peltigerae* (P.Karsten) D.Hawksw.; = *Libertiella* Speg. & Roum.; type: *L. malmedyensis* Speg. & Roum., i.e. probably *S. epiblastematica*]. Mol.: yes (T, L). Species on non-Peltigerales hosts probably do not belong to *Scutula* s.str.
Species: 14-2-0. **cladoniicola** Alstrup & D.Hawksw.: on *Cladonia trassii* [does not belong to *Scutula*]; **curvispora** (D.Hawksw. & Miądl.) Diederich, comb. nov. [≡ *Libertiella curvispora* D.Hawksw. & Miądl.]: on *Peltigera*; ***dedicata*** Triebel, Wedin & Rambold: lichenicolous lichen on *Peltigera*; **didymospora** (D.Hawksw. & Miądl.) Diederich, comb. nov. [≡ *Libertiella didymospora* D.Hawksw. & Miądl.]: on *Peltigera*; **epiblastematica** (Wallr.) Rehm [= *S. aggregata* (Bagl. & Carestia) Rehm; = *Hollosia vertescens* Gyeln.; =? *Orbilia peltigerae* (Fuckel) Sacc.; =? *Libertiella malmedyensis* Speg. & Roum.]: on cyanobacterial *Peltigera* species; ***heerii*** (Hepp) Trevis.: lichenicolous lichen on *Peltigera*; **Libertiella fennica** Alstrup: on *Peltigera*; **Libertiella leprariae** Etayo & Diederich: on *Lepraria*; **leptogica** (Nyl.) Zopf: on *Polychidium muscicola*; **Karsteniomyces llimonae** Boqueras & Diederich: on *Parmelina quercina*; **miliaris** (Wallr.) Trevis. [= *S. wallrothii* Tul., nom. illeg.; = *Karsteniomyces peltigerae* (P.Karst.) D.Hawksw.; = *Diplodina peltigerae* Vouaux]: on cyanobacterial *Peltigera* species; **nephromatis** (Speg.) Etayo: on *Nephroma antarcticum*; **Libertiella obscurior** Gerber: on *Brodoa intestiniformis* [a poorly known species]; **pseudocyphellariae** Etayo & Triebel: on *Pseudocyphellaria*; **tuberculosa** (Th.Fr.) Rehm [= *S. krempelhuberi* Körb.; = *S. solorinaria* (Nyl.) P.Karst.; = *S. solorinicola* (Vain.) Rehm]: on *Solorina*; **Karsteniomyces tuberculosus** Alstrup & D.Hawksw.: on green-algal *Peltigera* species [probably distinct from *S. epiblastematica*].
Lit.: Alstrup 1997; Alstrup & Hawksworth 1990; Boqueras & Diederich 1993; Etayo & Diederich 1995; Etayo & Sancho 2008; Etayo & Triebel 2010; Hawksworth 1980b, 1981; Hawksworth & Miądlikowska 1997a; Pino-Bodas et al. 2017; Triebel et al. 1997; Wedin et al. 2007.

Family **Psoraceae** Zahlbr.

Glyphopeltis Brusse; type: *G. eburina*, i.e. *G. ligustica*]. Mol.: yes (T, L).
Species: 0-1-0. ***ligustica*** (B. de Lesd.) Timdal [= *G. eburina* Brusse]: lichen, juvenile parasite on *Peltula*.
Lit.: Ott & Scheidegger 1992; Rambold & Triebel 1992.

Psorula Gotth.Schneid.; type: *P. rufonigra*. Mol.: yes (T, L).
Species: 0-1-0 (3). ***rufonigra*** (Tuck.) Gotth.Schneid.: lichenicolous lichen on *Spilonema*.
Lit.: Rambold & Triebel 1992.

Family **Ramalinaceae** C.Agardh.

Bacidia De Not.; type: *B. rosella* (Pers.) De Not. (lichenized). Mol.: yes (T).
Species: 1-0-0 (230). **killiasii** (Hepp) D.Hawksw.: on *Peltigera*.
Lit.: Rambold & Triebel 1992.

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Myrionora R.C.Harris; type: *S. albidula* (Willey) R.C.Harris (lichenized). Mol.: no.
Species: 0-1-0 (2). ***pseudocyphellariae*** (Etayo) S.Ekman & Palice [≡ *Scoliciosporum pseudocyphellariae* Etayo]: lichenicolous lichen on *Pseudocyphellaria*.
Lit.: Etayo & Sancho 2008; Palice et al. 2013.

Toninia A.Massal.; type: *T. cinereovirens* (Schaer.) A.Massal. (lichenized). Mol.: yes (T, L).
Species: 11-3-0 (85). **collematicola** Timdal: on *Collema*; **episema** (Nyl.) Timdal [=? *Scutula aspiciliae* (Müll.Arg.) Rehm]: on *Aspicilia*; **leptogii** Timdal: on *Collema* and *Leptogium*; **nashii** Timdal: on *Lecidella asema* (and *Lecanora gangaleoides*?); ***nordlandica*** Th.Fr.: lichenicolous lichen on *Placynthium* and other lichens with cyanobacteria; **plumbina** (Anzi) Hafellner & Timdal: on *Degelia*; **poeltiana** S.Y.Kondr., L.Lőkös & J.-S.Hur: on *Verrucaria fuscella*; **subfuscae** (Arnold) Timdal: on *Lecanora*, rarely on other lichens; **subdispersa** (Hasse) K.Knudsen [= *T. talparum* Timdal]: on *Lecania*; **subtalparum** van den Boom: on *Lecania*; **tecta** C.A.Morse & Ladd: on *Dermatocarpon*; ***ualae*** Etayo: lichenicolous lichen on *Pseudocyphellaria* and *Nephroma antarcticum*; **verrucariae** (Nyl.) Timdal: on *Baglietoa* and *Encephalographa elisae*; ***verrucarioides*** (Nyl.) Timdal: lichenicolous lichen on *Placynthium*.
Lit.: Etayo & Sancho 2008; Knudsen & Lendemer 2007; Knudsen & Kocourková 2018; Kondratyuk et al. 2016b; Ladd & Morse 2018; Rambold & Triebel 1992; Timdal 1992; van den Boom 2004.

Family **Ramboldiaceae** S.Stenroos, Miądl. & Lutzoni

Ramboldia Kantvilas & Elix; type: *R. stuartii* (Hampe) Kantvilas & Elix (lichenized). Mol.: yes (T, L).
Species: 0-1-0 (30). ***insidiosa*** (Th.Fr.) Hafellner: lichenicolous lichen on *Lecanora varia*.
Lit.: Hafellner & Türk 1995.

Family **Scoliciosporaceae** Hafellner

Scoliciosporum A.Massal.; type: *S. holomelaeum* (Flörke) A.Massal. (lichenized). Mol.: no.
Species: 0-1-0 (13). ***vouauxii*** (B. de Lesd.) Hafellner: lichenicolous lichen on *Ramalina*.
Lit.: Hafellner 2002, 2004b.

Family **Stereocaulaceae** Chevall.

Paralecia Brackel, Greiner, Peršoh & Rambold; type: *P. pratorum*. Mol.: yes (T, L).
Species: 1-0-0. **pratorum** Brackel, Greiner, Peršoh & Rambold: on *Protoparmeliopsis muralis*.
Lit.: Liu et al. 2015.

Family **Tephromelataceae** Hafellner [= Mycoblastaceae Hafellner]

Tephromela M.Choisy; type: *T. atra* (Huds.) Hafellner (lichenized). Mol.: yes (T).
Species: 3-1-0 (30). **campestricola** (Nyl.) Rambold & Triebel: on *Lecanora pseudistera* and *L.* sp.; **cerasina** (Müll.Arg.) Rambold & Triebel: on *Dirinaria*; **koliensis** (Räs.) Rambold & Triebel: on *Lecanora argopholis*; ***parasitica*** Øvstedal & Søchting: lichenicolous lichen on *Lecidella*.
Lit.: Rambold 1993; Søchting et al. 2004.

Order Lecanorales genera incertae sedis

Corticiruptor Wedin & Hafellner; type: *C. abelonae*. Mol.: yes.
Species: 2-0-0. **abeloneae** (P.M.Jørg.) Wedin & Hafellner: on *Sticta*; **corallinus** Etayo: on *Pseudocyphellaria*.
Lit.: Etayo & Sancho 2008; Wedin & Hafellner 1998.

Lichenosticta Zopf; type: *L. podetiicola*, i.e. *L. alcicorniaria*. Mol.: yes (T, L).
Species: 5-0-0. **alcicorniaria** (Linds.) D.Hawksw. [= *L. podetiicola* Zopf]: on *Cladonia*; **dombrovskae** Zhurb.: on *Stereocaulon*; **hoegnabbae** Zhurb. & Pino-Bodas: on *Cladia*; **jurgae** Kukwa & Flakus: on *Lecanora*; **lecanorae** (Vouaux) Brackel & Zhurb.: on *Lecanora*.
Lit.: Flakus & Kukwa 2012; Hawksworth 1981; Pino-Bodas et al. 2017; Zhurbenko 2010a; Zhurbenko & Pino-Bodas 2015; Zhurbenko et al. 2015a.

Nimisiostella Calat., Barreno & O.E.Erikss.; type: *N. lichenicola*. Mol.: yes.
Species: 1-0-0. **lichenicola** Calat., Barreno & O.E.Erikss.: on *Parmelia saxatilis*.
Lit.: Calatayud et al. 1997.

Umbilithecium Etayo; type: *U. pseudocyphellariae*. Mol.: yes.
Species: 1-0-0. **pseudocyphellariae** Etayo: on *Pseudocyphellaria*.
Lit.: Etayo & Sancho 2008.

Umushamyces Etayo; type: *U. kuturnus*. Mol.: yes.
Species: 1-0-0. **kuturnus** Etayo: on *Coccotrema cucurbitula*.
Lit.: Etayo & Sancho 2008.

Order **Lecideales** Vain.

Family **Lecideaceae** Chevall.

Bellemerea Hafellner & Cl.Roux; type: *B. alpina* (Sommerf.) Clauzade & Cl.Roux (lichenized). Mol.: yes (T).
Species: 0-1-0 (9). ***cupreoatra*** (Nyl.) Clauzade & Cl.Roux: lichenicolous lichen on *Buellia*, becoming independent.
Lit.: Rambold & Triebel 1992.

Cecidonia Triebel & Rambold; type: *C. umbonella*. Mol.: yes (T, L).
Species: 2-0-0. **umbonella** (Nyl.) Triebel & Rambold: on *Lecidea*; **xenophana** (Körb.) Triebel & Rambold [= *Lecidea hymeneliicola* Alstrup & D.Hawksw.]: on *Porpidia*.
Lit.: Triebel & Rambold 1988.

Immersaria Rambold & Pietschm.; type: *I. athroocarpa*. Mol.: yes (L).
Species: 0-3-0 (8). ***athroocarpa*** (Ach.) Rambold & Pietschm.: lichen, juvenile facultatively lichenicolous on *Aspicila* and other lichens; ***cupreoatra*** (Nyl.) Calat. & Rambold: lichen, juvenile lichenicolous on *Buellia*; ***usbekica*** (Hertel) Barbero,

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Nav.-Ros. & Cl.Roux: lichen, juvenile facultatively lichenicolous on *Aspicila* and other lichens.
Lit.: Rambold & Triebel 1992.

Lecidea Ach. s.l.; type: *L. fuscoatra* (L.) Ach. (lichenized). Mol.: yes (T).
Species: 4-6-0 (100). **acervata** Stiz.: on *Pseudoparmelia* [a poorly known taxon]; ***degeliana*** Hertel: lichenicolous lichen on *Acarospora*; **diexcipula** D.Hawksw. & Alstrup: on *Lecanora polytropa*; ***grummannii*** Hertel: lichenicolous lichen on *Acarospora*; **halacsyi** J.Steiner: on *Rhizocarpon geographicum*; ***leprosolimbata*** (Arnold) Poelt: lichenicolous lichen on *Bellemerea subcandida*; ***percutiens*** Poelt: lichenicolous lichen on *Diploschistes scruposus*; **perforans** Stiz.: on *Parmotrema* [a poorly known taxon]; ***rapax*** Hertel: lichenicolous lichen on *Aspicilia* and *Bellemerea*; ***verruca*** Poelt: lichenicolous lichen on *Aspicilia*.
Lit.: Hafellner 2006; Rambold & Triebel 1992.

Poeltiaria Hertel; type: *P. turgescens* (Körb.) Hertel (lichenized). Mol.: yes.
Species: 0-1-0 (8). ***coromandelica*** (Zahlbr.) Rambold & Hertel: lichen, juvenile lichenicolous on *Parapordia leptocarpa*.
Lit.: Rambold & Triebel 1992.

Order **Leprocaulales** Lendemer & B.P.Hodk.

Family **Leprocaulaceae** Lendemer & B.P.Hodk.

Halecania M.Mayrhofer; type: *H. alpivaga*. Mol.: yes (T, L).
Species: 1-5-0 (22). ***alpivaga*** (Th.Fr.) M.Mayrhofer: lichenicolous lichen on *Physcia* and *Placynthium*; **fuscopannariae** Etayo & van den Boom: on *Fuscopannaria*; ***giraltiae*** van den Boom & Etayo: lichenicolous lichen on saxicolous lichens; ***lobulata*** van den Boom & Elix: lichen, possibly lichenicolous over *Hymenelia*; ***parasitica*** Aptroot & K.H.Moon: lichenicolous lichen over *Schaereria fuscocinerea*, becoming independent; ***santessonii*** Andreev: lichenicolous lichen on *Porpidia albocaerulescens*.
Lit.: Andreev 2010; Aptroot & Moon 2015; M. Mayrhofer 1987; van den Boom 2009; van den Boom & Elix 2005; van den Boom & Etayo 2001.

Order **Rhizocarpales** Miądl. & Lutzoni s.l.

Family **Rhizocarpaceae** Hafellner

Epilichen Clem.; type: *E. scabrosus*. Mol.: no.
Species: 1-2-0. ***glaucinigellus*** (Nyl.) Hafellner: lichenicolous lichen on *Baeomyces*; ***scabrosus*** (Ach.) Clements: lichenicolous lichen on *Baeomyces*; **stellatus** Triebel: on *Lecidea* cf. *tessellata*.
Lit.: Hafellner 1978; Triebel 1989.

Rhizocarpon DC.; type: *R. geographicum* (L.) DC. (lichenized). Mol.: yes (T, L).
Species: 7-32-0 (225). **advenulum** (Leight.) Hafellner & Poelt: on *Pertusaria flavicans* and *P. rupicola*; ***asiaticum*** (Poelt) Poelt: lichenicolous lichen on *Sporastatia*; **aspiciliae** (Räsänen) D.Hawksw. & V.Atienza: on *Hymenelia*; ***atrovirellum*** (Nyl.) Zahlbr.: lichenicolous lichen on *Aspicilia*; **bryonthae** Poelt: on *Pertusaria bryontha*; ***captans*** Poelt: lichenicolous lichen on *Aspicilia*; ***cleptophilum*** Alstrup & E.S.Hansen: lichenicolous lichen on *Acarospora picea*; ***dahlii*** Øvstedal: lichenicolous lichen on the prothallus of *Rhizocarpon geographicum*; ***destructans*** Alstrup: lichenicolous lichen on *Lecanora polytropa*; ***dimelaena*** Timdal: lichenicolous lichen on *Dimelaena oreina*; ***dinothetes*** Hertel & Leuckert: lichenicolous lichen on *Protoparmelia*; ***diploschistidina*** McCune: lichenicolous lichen on *Diploschistes muscorum*; ***effiguratum*** (Anzi) Th.Fr.: facultatively lichenicolous lichen on *Pleopsidium flavum*; ***epispilum*** (Nyl.) Zahlbr. s.l.: lichenicolous lichen on saxicolous *Pertusaria*; ***fratricida*** Poelt & Nimis: lichenicolous lichen on *Rhizocarpon*; ***fuegianum*** Poelt, nom. nud.: lichenicolous lichen on *Rhizocarpon geographicum*; ***furax*** Poelt & V.Wirth: lichenicolous lichen on *Lecidea*; ***inimicum*** Poelt & Vězda: lichenicolous lichen on *Lecanora rupicola* s.l.; ***intermediellum*** Räsänen: lichen, juvenile lichenicolous on other lichens; ***kakurgon*** Poelt: lichenicolous lichen on *Aspicilia*; ***kansuense*** H.Magn.: lichenicolous lichen on *Aspicilia*; ***lusitanicum*** (Nyl.) Arnold: lichenicolous lichen on saxicolous *Lepra*; **malenconianum** (Llimona & Werner) Hafellner & H.Mayrhofer: on *Diploschistes*; ***mosigiae*** Poelt & Obermayer: lichenicolous lichen on *Rimularia gibbosa*; **narssaqense** Alstrup: on *Lecanora atromarginata*; ***norvegicum*** Räsänen: lichen, juvenile lichenicolous on other lichens, mainly *Acarospora*; **ochrolechiae** (Poelt & Nimis) Hafellner: on *Ochrolechia parella*; ***parvum*** Runem.: lichen, juvenile lichenicolous on *Tremolecia atrata*; ***pusillum*** Runem.: lichenicolous lichen on *Sporastatia*; ***rapax*** V.Wirth & Poelt: lichenicolous lichen on *Acarospora*, *Aspicilia* and *Rimularia*; ***renneri*** Poelt: lichenicolous lichen on *Dimelaena oreina*; ***santessonii*** Timdal: lichenicolous lichen on *Tremolecia atrata*; ***schedomyces*** Hafellner & Poelt: lichenicolous lichen on saxicolous *Pertusaria*; ***subtile*** Runem.: lichen, juvenile lichenicolous on *Tremolecia*; ***superficiale*** (Schaer.) Vain.: lichen, juvenile lichenicolous on *Acarospora oxytona*; ***tephromelae*** Øvstedal: lichenicolous lichen on *Tephromela atra*; ***trapeliicola*** Brand: lichenicolous lichen on *Trapelia*; **tungurahuae** Etayo & Palice: on *Gyalidea*; ***viridiatrum*** (Wulf.) Körb.: lichen, juvenile often lichenicolous on *Aspicilia*, *Lecidea*, *Tremolecia*; ***vorax*** Poelt & Hafellner: lichenicolous lichen on *Ochrolechia parella* and *Pertusaria*.
Lit.: Alstrup & Hawksworth 1990; Etayo 2017; Feuerer & Timdal 2004; Hawksworth & Atienza 1994; Holtan-Hartwig & Timdal 1987; Lumbsch et al. 2011; Øvstedal et al. 2009; Poelt & Obermayer 1995; Poelt & Vězda 1984; Rambold & Triebel 1992.

Order **Teloschistales** D.Hawksw. & O.E.Erikss.

Family **Teloschistaceae** Zahlbr.

Subfamily **Caloplacoideae** Arup, Søchting & Frödén

Caloplaca Th.Fr. s.l.; type: *C. cerina* (Hedw.) Th.Fr. (lichenized). Mol.: yes (T, L). We also include here species belonging to *Caloplaca* s.l. for which no molecular data are available.
Species: 0-26-0 (350). ***adelphoparasitica*** Nimis & Poelt: lichenicolous lichen on *Caloplaca* and other lichens; ***anchon-phoeniceon*** Poelt & Clauzade: lichenicolous lichen on *Aspicilia*; ***cacuminum*** Poelt: lichen, juvenile facultatively lichenicolous on saxicolous lichens; ***emilii*** Vondrák,

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Khodos., Cl.Roux & V.Wirth: lichen, juvenile lichenicolous on saxicolous lichens; ***epierodens*** M.Bertrand & Cl.Roux: lichenicolous lichen on *Pyrenodesmia erodens*; ***epithallina*** Lynge: lichenicolous lichen on *Acarospora*, *Aspicila*, *Dimelaena*, *Lecanora*, *Melanelia*, *Pleopsidium*, *Psorinia*, *Rhizocarpon*, *Rhizoplaca*, *Stereocaulon*, *Tephromela*, *Umbilicaria*; ***epitoninia*** O.Breuss: lichenicolous lichen on *Toninia aromatica*; ***erythrocarpa*** (Pers.) Zwackh: lichen, juvenile facultatively lichenicolous on *Aspicilia calcarea*; ***furax*** Egea & Llimona: lichen, juvenile lichenicolous on other lichens, especially *Aspicilia*; ***grimmiae*** (Nyl.) H.Olivier: lichenicolous lichen on *Candelariella*; ***inconnexa*** (Nyl.) Zahlbr. var. ***inconnexa***: lichen, juvenile lichenicolous on *Acarospora*, *Aspicilia*, *Caloplaca*; ***inconnexa*** var. ***nesodes*** Poelt & Nimis: lichenicolous lichen on *Aspicilia*; ***infestans*** H.Magn.: lichenicolous lichen on *Aspicilia*, *Caloplaca* s.l., *Lecanora*; ***insularis*** Poelt: lichenicolous lichen on *Aspicilia*; ***interna*** Poelt & Nimis: lichenicolous lichen on *Aspicilia*; ***isidiigera*** Vězda: lichenicolous lichen on saxicolous lichens; ***lecanorae*** F.C.Seavey & J.L.Seavey: lichenicolous lichen on *Lecanora leprosa*; ***magni-filii*** Poelt: lichenicolous lichen on *Miriquidica nigroleprosa*; ***megalariicola*** Øvstedal: lichenicolous lichen on *Megalaria grossa*; ***necator*** Clauzade & Poelt: lichenicolous lichen on *Aspicilia*; ***nubigena*** (Kremp.) Dalla Torre & Sarnth.: lichen, facultatively lichenicolous on *Clauzadea immersa*; ***peludella*** (Nyl.) Hasse: lichen, juvenile facultatively lichenicolous on saxicolous lichens; ***placidia*** (A.Massa.) J.Steiner: lichen, juvenile facultatively lichenicolous on *Pyrenodesmia chalybaea*; ***psoricida*** Hansen, Poelt & Søchting: lichenicolous lichen on *Psora rubiformis*; ***rinodinae-albae*** Poelt & Nimis: lichenicolous lichen on *Rinodina alba*; ***tenuatula*** (Nyl.) Zahlbr.: lichenicolous lichen on *Bagliettoa calciseda*.
Lit.: Breuss 1990; Fryday & Øvstedal 2012; Nimis et al. 1994; Rambold & Triebel 1992; Roux 2014; Seavey & Seavey 2012; Wetmore 1999.

Gyalolechia A.Massal.; type: *G. aurea* (Schaer.) A.Massal (lichenized) [= *Fulgensia* A.Massal. & De Not.; type: *F. fulgens* (Sw.) Elenkin (lichenized)]. Mol.: yes (T).
Species: 0-1-0 (30). ***epiplacynthium*** (Etayo) Diederich, comb. nov. [≡ *Fulgensia epiplacynthium* Etayo]: lichenicolous lichen on *Placynthium filiforme*.
Lit.: Etayo 2010c.

Variospora Arup, Søchting & Frödén; type: *V. velana*. Mol.: yes (T, L).
Species: 0-1-0 (12). ***velana*** (A.Massal.) Arup, Søchting & Frödén: lichen, juvenile facultatively lichenicolous on *Pyrenodesmia variabilis*.
Lit.: Roux 2014.

Subfamily **Teloschistoideae** Arup, Søchting & Frödén

Catenarina Søchting, Søgaard, Arup, Elvebakk & Elix; type: *C. desolata*. Mol.: yes (T, L).
Species: 0-1-0 (3). ***desolata*** Søchting, Søgaard & Elvebakk: lichenicolous lichen on *Aspicilia*.
Lit.: Søchting et al. 2014.

Sirenophila Arup, Søchting & Frödén; type: *S. gintarasii* (S.Y.Kondr. & Kärnefelt) Arup, Frödén & Søchting. Mol.: yes (T).
Species: 0-1-0 (8). ***ovis-atra*** Søchting, Søgaard & Sancho: lichenicolous lichen on *Hydropunctaria*.
Lit.: Søchting et al. 2016.

Subfamily **Xanthorioideae** Arup, Søchting & Frödén

Flavoplaca Arup, Søchting & Frödén; type: *F. citrina* (Hoffm.) Arup, Søchting & Frödén. Mol.: yes (T).
Species: 0-4-0 (27). ***coronata*** (Körb.) J.Steiner: lichen, juvenile facultatively lichenicolous on saxicolous lichens; ***microthallina*** (Wedd.) Zahlbr.: lichen, facultatively lichenicolous on saxicolous lichens, especially *Hydropunctaria maura*; ***oasis*** (A.Massal.) Szatala: lichen, facultatively lichenicolous on saxicolous lichens, especially *Bagliettoa calciseda*; ***polycarpa*** (A.Massal.) Arup, Frödén & Søchting: lichenicolous lichen on *Bagliettoa*.
Lit.: Arup et al. 2013, Roux 2014.

Pachypeltis Søchting, Arup & Frödén [a hemihomonym of *Pachypeltis* Signoret (Heteroptera)]; type: *P. castellana* (Räsänen) Søchting, Frödén & Arup (lichenized). Mol.: yes (T, L).
Species: 0-1-0 (4). ***invadens*** (Lynge) Søchting, Frödén & Arup: lichenicolous lichen on *Lecanora*, *Physcia caesia*.
Lit.: Arup et al. 2013.

Shackletonia Søchting, Frödén & Arup; type: *S. hertelii* (Søchting, Øvstedal & Sancho) Søchting, Frödén & Arup (lichenized). Mol.: yes (T, L).
Species: 1-2-0 (5). **buelliae** (Olech & Søchting) Søchting: on *Buellia*; ***Caloplaca psoromatis*** Olech & Søchting: lichenicolous lichen on *Psoroma* and *Pannaria hookeri* [provisionally placed here]; ***sauronii*** (Søchting & Øvstedal) Søchting: lichenicolous lichen on *Buellia*.
Lit.: Garrido-Benavent et al. 2016; Olech & Søchting 1993; Søchting et al. 2004.

Subclass OSTROPOMYCETIDAE Reeb, Lutzoni & Cl.Roux

Order **Ostropales** Nannf.

Family **Gomphillaceae** Walt.Watson

Corticifraga D.Hawksw. & R.Sant.; type: *C. peltigerae*. Mol.: yes (T, L).
Species: 7-0-0. **chugachiana** Zhurb.: on *Lobaria oregana*; **fuckelii** (Rehm) D.Hawksw. & R.Sant.: on *Peltigera*; **fusispora** Zhurb.: on *Peltigera aphthosa* and *P. leucophlebia*; **peltigerae** (Fuckel) D.Hawksw. & R.Sant.: on *Peltigera*, exceptionally on *Solorina* and *Pseudocyphellaria*; **pseudocyphellariae** Etayo: on *Pseudocyphellaria*; **santessonii** Zhurb. & Zavarzin: on *Lobaria* and *Nephroma*; **scrobiculatae** Pérez-Ortega: on *Lobarina scrobiculata*.
Lit.: Etayo & Sancho 2008; Hawksworth & Santesson 1990; Pino-Bodas et al. 2017; Spribille et al. 2010; Zhurbenko 2007c; Zhurbenko 2009b.

Gyalideopsis Vězda; type: *G. peruviana* Vězda (lichenized). Mol.: yes.
Species: 4-0-1 (91). **cochlearifer** Lücking & Sérus.: on foliicolous Gomphillaceae; **epithallina** R.Lücking: on foliic-

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olous *Gyalideopsis vulgaris*; **parvula** Kalb & Vězda: on foliicolous Pilocarpaceae; **stipitata** Kalb & Vězda: facultatively lichenicolous on *Dictyonema*; **usneicola** Etayo: on *Usnea*.
Lit.: Etayo 2010b, 2017; Lücking 1997; Lücking & Sérusiaux 1998.

Paragyalideopsis Etayo; type: *P. floridae*. Mol.: no.
Species: 4-0-0. **breussii** Etayo: on *Hypotrachyna*; **floridae** (Etayo & Diederich) Etayo: on *Parmotrema*; **minuta** Etayo: on *Trypethelium*; **stereocaulicola** (Etayo) Etayo: on *Stereocaulon*.
Lit.: Etayo 2017; Etayo & Diederich 2001.

Taitaia Suija, Kaasalainen, Kirika & Rikkinen; type: *T. aurea*. Mol.: yes (T, L).
Species: 1-0-0. **aurea** Suija, Kaasalainen & Rikkinen: on *Crocodia* cf. *clathrata*.
Lit.: Suija et al. 2018b.

Family **Graphidaceae** Dumort.

Subfamily **Graphidoideae** Rivas Plata, Lücking & Lumbsch

Diploschistes Norman; type: *D. scruposus* (Schreb.) Norman (lichenized). Mol.: yes (T, L).
Species: 0-4-0 (31). ***bisporus*** (Bagl.) J.Steiner: lichen, facultatively lichenicolous on *Rhizocarpon geographicum* s.l.; ***caesioplumbeus*** (Nyl.) Vainio: lichen, juvenile lichenicolous on *Lecanora gangaleoides*; ***euganeus*** (A.Massal.) J.Steiner: lichen, facultatively lichenicolous on *Ochrolechia parella*; ***muscorum*** (Scop.) R.Sant.: lichenicolous on *Cladonia* (rarely *Stereocaulon*) when young, later an independent lichen.
Lit.: Lumbsch 1989.

Family **Protothelenellaceae** Vězda, H.Mayrhofer & Poelt

Protothelenella Räsänen; type: *P. reducta* (Th.Fr.) Räsänen, i.e. *P. sphinctrinoidella* (Nyl.) H.Mayrhofer & Poelt (lichenized). Mol.: yes (T, L).
Species: 3-0-3 (11). **croceae** (Bagl. & Car.) Hafellner & H.Mayrhofer: on *Solorina crocea*, more rarely *Peltigera*; **leucothelia** (Nyl.) H.Mayrhofer & Poelt: facultatively lichenicolous on moribund lichens, especially *Cladonia*; **pseudocyphellariae** Etayo: on *Pseudocyphellaria*; **santessonii** H.Mayrhofer: on *Cladonia*; **sphinctrinoidella** (Nyl.) H.Mayrhofer & Poelt: facultatively lichenicolous on *Cladonia*, *Peltigera* and *Stereocaulon*; **sphinctrinoides** (Nyl.) H.Mayrhofer & Poelt: facultatively lichenicolous on *Peltigera* and *Solorina*.
Lit.: Etayo & Sancho 2008; H. Mayrhofer 1987; Pino-Bodas et al. 2017.

Family **Stictidaceae** Fr.

Cryptodiscus Corda; type: *C. pallidus* [= *Lettauia* D.Hawksw. & R.Sant.; type: *L. cladoniicola*]. Mol.: yes (T, L).
Species: 3-0-0 (9). **cladoniicola** (D.Hawksw. & R.Sant.) Pino-Bodas, Zhurb. & S.Stenroos [≡ *Lettauia cladoniicola* D.Hawksw. & R.Sant.]: on *Cladonia*; **epicladonia** Zhurb. & Pino-Bodas: on *Cladonia*; **galaninae** Zhurb. & Pino-Bodas: on *Cladonia*.
Lit.: Hawksworth & Santesson 1990; Pino-Bodas et al. 2017.

Lettauia D.Hawksw. & R.Sant. s.l.; type: *L. cladoniicola*., i.e. *Cryptodiscus cladoniicola*. Mol.: no. The generic type has recently been shown to belong to *Cryptodiscus*. The phylogenetic affinities of the three other species described in *Lettauia* are currently unknown.
Species: 3-0-0. **hypotrachynae** Etayo: on *Hypotrachyna*; **santessonii** Ihlen & Tønsberg: on *Loxospora pustulata*; **usneae** Etayo: on *Usnea*.
Lit.: Etayo 2002, 2017; Ihlen & Tønsberg 1996.

Nanostictis M.S.Christ.; type: *N. peltigerae*. Mol.: no.
Species: 9-0-0. **caucasica** Zhurb.: on *Parmelia sulcata*; **christiansenii** Etayo: on *Lobaria pulmonaria*; **confusa** Etayo: on *Hypotrachyna*; **heterodermiae** Etayo & Sipman: on *Heterodermia*; **nephromatis** Etayo: on *Nephroma antarcticum*; **peltigerae** M.S.Christ.: on *Peltigera*; **pluriseptata** Etayo: on *Lobariella* gr. *pallida*; **pseudocyphellariae** Sherwood: on *Pseudocyphellaria*; **stictae** Etayo: on *Sticta*.
Lit.: Etayo 2002a, 2017; Etayo & Diederich 1996b; Etayo & Sancho 2008; Zhurbenko 2017.

Sphaeropezia Sacc.; type: *S. alpina* Sacc. [= *Lethariicola* Grummann; type: *L. sipei*]. Mol.: yes (L).
Species: 16-0-0 (19). **bryoriae** (Diederich & Etayo) Baloch & Wedin [≡ *Odontotrema bryoriae* Diederich & Etayo]: on *Bryoria*; **cucularis** (Norman) Baloch & Wedin: on *Parmeliopsis*; **figulina** (Norman) Baloch & Wedin: on *Lecanora polytropa*; **intermedia** (Diederich, Zhurb. & Etayo) Baloch & Wedin [≡ *O. intermedium* Diederich, Zhurb. & Etayo]: on *Thamnolia*; **japewiae** (Zhurb. & Diederich) Baloch & Wedin [≡ *O. japewiae* Zhurb. & Diederich]: on *Japewia tornoënsis*; **lecanorae** (Diederich & G.Marson) Baloch & Wedin [≡ *O. lecanorae* Diederich & G.Marson]: on *Lecanora*; **melaneliae** (Diederich & Zhurb.) Baloch, Gilenstam & Wedin [≡ *O. melaneliae* Diederich & Zhurb.]: on *Melanelia hepatizon* and *Melanohalea olivacea*; **mycoblasti** Diederich, Baloch & Wedin: on *Mycoblastus*; **navarinoi** (Etayo) Baloch & Wedin [≡ *O. navarinoi* Etayo]: on *Micarea magellanica*; **ochrolechiae** (Diederich, Holien & Zhurb.) Baloch & Wedin [≡ *O. ochrolechiae* Diederich, Holien & Zhurb.]: on *Ochrolechia*; **pertusariae** (Etayo, Diederich & Coppins) Baloch & Wedin [≡ *O. pertusariae* Etayo, Diederich & Coppins]: on *Pertusaria hymenea*; **rhizocarpicola** (Zhurb., Diederich & Himelbrant) Baloch & Wedin [≡ *O. rhizocarpicola* Zhurb., Diederich & Himelbr.]: on *Rhizocarpon* gr. *geographicum*; **santessonii** (Zhurb., Etayo & Diederich) Baloch & Wedin [≡ *O. santessonii* Zhurb., Etayo & Diederich]: on *Thamnolia*; **sipei** (Grummann) Baloch & Wedin [≡ *Lethariicola sipei* Grummann]: on *Letharia*; **Odontotrema stereocaulicola** Zhurb.: on *Stereocaulon* [provisionally placed here; probably does not belong to *Sphaeropezia*]; **thamnoliae** (Zhurb., Diederich & Etayo) Baloch & Wedin [≡ *O. thamnoliae* Zhurb., Diederich & Etayo]: on *Thamnolia*.
Lit.: Baloch et al. 2013; Diederich et al. 2002b; Etayo & Sancho 2008; Zhurbenko 2009b, 2010a.

Stictis Pers.; type: *S. radiata* (L.) Pers. Mol.: yes (T). The only lichenicolous species probably does not belong to *Stictis*.
Species: 1-0-0 (4). **cladoniae** (Rehm) Sacc.: on *Cladonia*.
Lit.: Pino-Bodas et al. 2017; Sherwood 1977.

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Order **Ostropales** genera incertae sedis

Aabaarnia Diederich; type: *A. siphulicola*. Mol.: no.
Species: 1-0-0. **siphulicola** Diederich: on *Siphula decumbens*.
Lit.: Diederich 2014.

Biazrovia Zhurb. & Etayo; type: *B. stereocaulicola*. Mol.: no.
Species: 1-0-0. **stereocaulicola** Zhurb. & Etayo: on *Stereocaulon*.
Lit.: Zhurbenko & Etayo 2013.

Normanogalla Diederich; type: *N. cribriformis*. Mol.: no.
Species: 1-0-0. **cribriformis** (Norman) Diederich [≡ *Unguiculariopsis cribriformis* (Norman) Alstrup & D.Hawksw.]: on *Lepra dactylina* and *Pertusaria oculata*.
Lit.: Alstrup & Hawksworth 1990; Diederich 2014.

Paralethariicola Calat., Etayo & Diederich; type: *P. aspiciliae*. Mol.: no.
Species: 1-0-0. **aspiciliae** Calat., Etayo & Diederich: on *Aspicilia*.
Lit.: Calatayud et al. 2001a.

Spirographa Zahlbr.; type: *S. fusisporella* [≡ *Graphinella* Zahlbr.; type: *G. fusisporella*; = *Pleospilis* Clem.; type: *P. vermiformis* (Leight.) Clem.; = *Spilomela* (Sacc.) Keissl.; type: *S. vermifera* (Leight.) Keissl.; = *Spirographomyces* Cif. & Tomas.; type: *S. spiralis* Cif. & Tomas.]. Mol.: no. No new combinations are proposed here, as a taxonomic revision of the genus is still missing.
Species: 5-0-0. **Lecidea ascaridiella** Nyl. [≡ *Pleospilis ascaridiella* (Nyl.) D.Hawksw.]: on ?*Porpidia*; **fusisporella** (Nyl.) Zahlbr. [≡ *Graphinella fusisporella* (Nyl.) Zahlbr.; =? *Opegrapha spiralis* Müll.Arg.]: on Graphidaceae; **longispora** Etayo: on *Sticta*; **usneae** Flakus, Kukwa & Etayo: on *Usnea*; **Melaspilea vermiformis** Leight. [= *Melaspilea vermifera* Leight., nom. illeg.]: on *Lepra albescens*.
Lit.: Diederich 2004; Etayo 2017; Flakus & Kukwa 2012; Sherwood-Pike 1987.

Order **Pertusariales** D.Hawksw. & O.E.Erikss.

Family **Megasporaceae** Lumbsch, Feige & K.Schmitz

Aspicilia A.Massal.; type: *A. cinerea* (L.) Körb. (lichenized). Mol.: yes (T).
Species: 0-1-0 (200). ***parasitica*** B. de Lesd.: lichenicolous lichen on saxicolous, crustose lichens.
Lit.: Rambold & Triebel 1992.

Family **Microcaliciaceae** Tibell

Microcalicium Vain.; type: *M. disseminatum*. Mol.: yes (T, L).
Species: 3-0-0 (4). **arenarium** (A.Massal.) Tibell: on *Psilolechia*; **conversum** Tibell: on *Calicium* and *Chaenotheca*; **disseminatum** (Ach.) Vain.: on *Calicium* and *Chaenotheca*, rarely on free living algae.
Lit.: Clauzade et al. 1989; Hawksworth 1981; Prieto et al. 2013; Tibell 1978.

Order **Sarrameanales** B.P.Hodk. & Lendemer

Family **Schaereriaceae** Hafellner

Schaereria Th.Fr.; type: *S. lugubris* (Fr.) Körb. [= *Hafellnera* Houmeau & Cl.Roux; type: *H. parasemella*]. Mol.: yes.
Species: 0-1-0 (16). ***parasemella*** (Nyl.) Lumbsch [≡ *Hafellnera parasemella* (Nyl.) Houmeau & Cl.Roux]: lichenicolous lichen on *Biatora vernalis*.
Lit.: Houmeau & Roux 1984; Rambold & Triebel 1992.

Order **Trapeliales** B.P.Hodk. & Lendemer

Family **Xylographaceae** Tuck.

Lambiella Hertel; type: *L. psephota* (Tuck.) Hertel (lichenized). Mol.: yes (T, L).
Species: 0-2-0 (12). ***furvella*** (Mudd) M.Westb. & Resl: lichenicolous lichen on various lichens; ***insularis*** (Nyl.) T.Sprib.: lichenicolous lichen on *Lecanora rupicola*.
Lit.: Rambold & Triebel 1992.

Subclass Ostropomycetidae familia incertae sedis

Family **Epigloeaceae** Zahlbr.

Epigloea Zukal; type: *E. bactrospora* Zukal (algicolous). Mol.: yes.
Species: 1-0-0 (13). **urosperma** Döbbeler: on *Placynthiella*.
Lit.: Döbbeler 1994.

Subclass Ostropomycetidae genus incertae sedis

Bachmanniomyces D.Hawksw.; type: *B. uncialicola* [= *Phaeopyxis* Rambold & Triebel; type: *P. punctum*]. Mol.: yes (T, L).
Species: 6-0-0 (7). **australis** (Rambold & Triebel) Diederich & Pino-Bodas, comb. nov. [≡ *Phaeopyxis australis* Rambold & Triebel]: on *Paraporpidia*; **muscigenae** (Alstrup & E.S.Hansen) Diederich & Pino-Bodas, comb. nov. [≡ *P. muscigenae* Alstrup & E.S.Hansen]: on *Physconia*; **pseudocyphellariae** Etayo: on *Pseudocyphellaria*; **santessonii** Etayo: on *Sticta*; **punctum** (A.Massal.) Diederich & Pino-Bodas, comb. nov. [≡ *P. punctum* (A.Massal.) Rambold, Triebel & Coppins; = *B. uncialicola* (Zopf) D.Hawksw.]: on *Cladonia*; **varius** (Coppins, Rambold & Triebel) Diederich & Pino-Bodas, comb. nov. [≡ *P. varia* Coppins, Rambold & Triebel]: on *Trapeliopsis*.
Lit.: Alstrup & Hansen 2001; Etayo 2010b; Etayo & Sancho 2008; Hawksworth 1981; Pino-Bodas et al. 2017; Rambold & Triebel 1990; Suija et al. 2015b.

Class Lecanoromycetes familia incertae sedis

Family **Arthrorhaphidaceae** Poelt & Hafellner

Arthrorhaphis Th.Fr.; type: *A. flavovirescens*, i.e. *A. citrinella*. Mol.: yes (T, L).

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Species: 6-3-0 (13). **aeruginosa** R.Sant. & Tønsb.: on *Cladonia*; ***alpina*** (Schaer.) R.Sant.: juvenile parasite on *Baeomyces rufus*, later an independent lichen; **arctoparmeliae** Kocourk. & van den Boom: on *Arctoparmelia incurva*; ***citrinella*** (Ach.) Poelt [= *A. flavovirescens* (A.Massal.) Th.Fr.]: juvenile facultatively parasite on *Baeomyces rufus*, later or from the beginning an independent lichen; **grisea** Th.Fr.: on *Baeomyces*, later occasionally an independent lichen; **muddii** Obermayer: on *Dibaeis baeomyces*; **olivaceae** R.Sant. & Tønsb.: on *Melanohalea olivacea*; **phyllobaeis** Etayo & Palice: on *Phyllobaeis*; ***vaccillans*** Th.Fr.: juvenile parasite on *Baeomyces*, later an independent lichen.
Lit.: Etayo 2017; Kocourková & van den Boom 2005; Obermayer 1994; Santesson & Tønsberg 1994.

Class Lecanoromycetes genus incertae sedis

Piccolia A.Massal.; type: *P. crocea* (Spreng.) A.Massal. (lichenized). Mol.: no.
Species: 0-1-0 (7). ***nannaria*** (Tuck.) Lendemer & Beeching: lichen, at least facultatively lichenicolous on *Pyrrhospora varians*.
Lit.: Lendemer & Harris 2014.

Class LEOTIOMYCETES O.E.Erikss. & Winka

Order **Helotiales** Korf & Lizon

Family **Cordieritidaceae** (Sacc.) Sacc.

Diplolaeviopsis Giral & D.Hawksw.; type: *D. ranula*. Mol.: yes (T, L).
Species: 3-0-0. **japonica** Zhurb. & Diederich: on *Gyalolechia flavorubescens*; **ranula** Giralt & D.Hawksw.: on *Lecanora strobilina* and *L. strobilinoides*; **symmictae** Diederich & Coppins: on *Lecanora symmicta*.
Lit.: Diederich & Coppins 2014; Etayo et al. 2015; Giralt & Hawksworth 1991; Suija et al. 2015b; Zhurbenko et al. 2015a.

Llimoniella Hafellner & Nav.-Ros.; type: *L. scabridula*. Mol.: yes (L).
Species: 19-0-0. **acarosporicola** (Kocourk. & K.Knudsen) Diederich & Ertz: on *Acarospora socialis*; **adnata** Hafellner & Nav.-Ros.: on *Placidium*; **bergeriana** Etayo: on *Punctelia*; **catapyrenii** Zhurb., Kukwa & Flakus: on *Catapyrenium*; **cinnabarinae** Pérez-Ortega, Etayo & T.Sprib.: on *Ramboldia cinnabarina*; **fuscatae** Hafellner & Obermayer: on *Acarospora fuscata*; **gregorellae** (Alstrup & D.Hawksw.) Triebel & Hafellner: on *Gregorella humida*; **groenlandiae** (Alstrup & D.Hawksw.) Triebel & Hafellner: on *Athallia* and *Flavoplaca*, possibly on *Gyalolechia* and *Xanthocarpia*; **heppiae** (Nav.-Ros., Hladun & Llimona) Diederich & Ertz: on *Heppia*; **parmotrematis** Etayo: on *Parmotrema*; **pertusariae** Diederich & Etayo: on *Lepra ophthalmiza* and *Pertusaria glaucomela*; **phaeophysciae** Diederich, Ertz & Etayo: on *Phaeophyscia*; **placomaroneae** Etayo & Diederich: on *Placomaronea candelarioides*; **placopsidis** Diederich & Fryday: on *Placopsis*; **pyrenulae** Diederich & Etayo: on *Pyrenula*; **ramalinae** (Müll.Arg.) Etayo & Diederich: on *Ramalina celastri* and *R. unilateralis*; **scabridula** (Müll.Arg.) Nav.-Ros. & Hafellner: on *Acarospora nodulosa* and *A. placodiiformis*; **terricola** (Arnold) M.Schultz, Diederich & Ertz: on *Leptogium byssinum*; **vinosa** (Holien & Triebel) Diederich & Etayo: on *Ochrolechia* and *Lepra* cf. *borealis*.
Lit.: Alstrup & Hawksworth 1990; Diederich & Etayo 2000; Diederich et al. 2010b; Etayo 2010b, 2017; Pérez-Ortega et al. 2011b; Suija et al. 2015b; Zhurbenko 2013a.

Macroskyttea Etayo, Flakus, Suija & Kukwa; type: *M. parmotrematis*. Mol.: yes (T, L).
Species: 1-0-0. **parmotrematis** Etayo, Flakus & Kukwa: on *Parmotrema*.
Lit.: Etayo et al. 2015.

Rhymbocarpus Zopf; type: *R. punctiformis*, i.e. *R. geographici*. Mol.: yes (L).
Species: 12-0-0. **aggregatus** Etayo & Diederich: on *Buellia griseovirens*; **boomii** Etayo & Diederich: on *Dirina ceratoniae*; **cruciatus** (Sherwood, D.Hawksw. & Coppins) Etayo & Diederich: on *Diploicia canescens*; **ericetorum** (Körb.) Etayo, Diederich & Ertz: on *Dibaeis baeomyces*; **fuscoatrae** (Hafellner) Diederich & Etayo: on *Lecidea fuscoatra*; **geographici** (J.Steiner) Vouaux [≡ *R. punctiformis* Zopf]: on *Rhizocarpon*; **makarovae** Diederich & Etayo: on *Porpidia*; **neglectus** (Vain.) Diederich & Etayo: on the *Lepraria neglecta* group; **pertusariae** Diederich, Zhurb. & Etayo: on *Lepra panyrga*; **pubescens** (Etayo & Diederich) Diederich & Etayo: on *Lepraria*; **roccellae** (Etayo, Paz-Bermúdez & Diederich) Etayo, Diederich & Ertz: on *Roccella*; **stereocaulorum** (Alstrup & D.Hawksw.) Etayo & Diederich: on *Stereocaulon*.
Lit.: Diederich & Etayo 2000; Diederich et al. 2010b; Etayo & Diederich 2011; Suija et al. 2015b.

Skyttea Sherwood, D.Hawksw. & Coppins; type: *S. nitschkei*. Mol.: yes (T, L).
Species: 30-0-0. **anziae** Etayo & Diederich: on *Anzia*; **buelliae** Sherwood, D.Hawksw. & Coppins: on *Amandinea punctata*; **bumyoungsungii** S.Y.Kondr. & J.-S.Hur: on unidentified epilithic thallus (*Gyalidea* or *Porpidia*?); **caesii** Diederich & Etayo: on *Mycoblastus* (incl. *M. caesius*); **carboneae** Diederich & Etayo: on *Carbonea montevidensis*; **cismonicae** Hafellner: on *Loxospora cismonica*; **dacampiae** Zhurb.: on *Dacampia hookeri*; **elachistophora** (Nyl.) Sherwood & D.Hawksw.: on cf. *Tylothallia biformigera*; **fusispora** Sherwood, D.Hawksw. & Coppins: on *Ochrolechia*; **gossypina** Etayo: on *Phlyctis argena*; **gregaria** Sherwood, D.Hawksw. & Coppins: on *Violella fucata*; **hawksworthii** Diederich: on *Verrucaria*; **heterochroae** Nav.-Ros. & Muñiz: on *Pertusaria heterochroa*; **insignis** Driscoll, S.R.Clayden & R.C.Harris: on *Lecanora insignis*; **lecanorae** Diederich & Etayo: on *Lecanora*; **mayrhoferi** Diederich & Etayo: on *Pertusaria melanospora*; **megalosporae** Etayo & Diederich: on *Megalospora tuberculosa*; **nitschkei** (Körb.) Sherwood, D.Hawksw. & Coppins: on *Thelotrema lepadinum*; **ochrolechiae** Zhurb.: on *Ochrolechia trochophora*; **pertusariicola** Diederich & Etayo: on corticolous *Pertusaria*; **pyrenulae** Diederich, Etayo & Coppins: on *Pyrenula*; **radiatilis** (Tuck.) R.Sant., Etayo & Diederich: on cf. *Loxospora pustulata*; **recognita** Etayo & Diederich: on epiphytic crustose lichens; **richardsonii** Iturr. & D.Hawksw.: on an unidentified lichen; **spinosa** D.Hawksw. & Coppins: on *Verrucaria nigrescens*; **tavaresae** R.Sant., Etayo & Diederich: on *Pyrrhospora* cf. *quernea*; **tephromelarum** Kalb & Hafellner: on *Tephromela*; **thelotrematis** Diederich & Etayo: on *Thelotrema lepadinum*; **violacea** Etayo: on *Tephromela*; **viridis** D.Hawksw. & Coppins: on *Micarea* cf. *denigrata*.

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Lit.: Diederich & Etayo 2000, 2004; Driscoll et al. 2016; Etayo 2002a, 2010c, 2017; Etayo & Sancho 2008; Hafellner 2000; Kondratyuk et al. 2018; Navarro-Rosinès & Muñiz 2009; Suija et al. 2015b; Zhurbenko et al. 2015a.

Thamnogalla D.Hawksw.; type: *T. crombiei*. Mol.: yes (T, L).
Species: 1-0-0. **crombiei** (Mudd) D.Hawksw. [=? *Didymocyrtis thamnoliicola* Y.Joshi, R.Bajpai & Upreti]: on *Thamnolia*.
Lit.: Hoffmann & Hafellner 2000; Joshi et al. 2016c; Lord et al. 2013; Suija et al. 2015b.

Unguiculariopsis Rehm; type: *U. ilicincola* (Berk. & Broome) Rehm (saprotrophic). Mol.: yes (L).
Species: 15-0-0 (25). **acrocordiae** (Diederich) Diederich & Etayo: on *Acrocordia gemmata*; **ahtii** D.Hawksw., D.J.Galloway & S.Y.Kondr.: on *Pseudocyphellaria*; **damingshanica** W.Y.Zhuang: on unidentified lichen on bamboo; **helmutii** S.Y.Kondr., L.Lőkös & J.-S.Hur: on *Rinodina* aff. *sophorodes*; **lesdainii** (Vouaux) Etayo & Diederich: on *Lecanora saligna*; **lettaui** (Grummann) Coppins: on *Evernia prunastri*; **lobariellum** S.Y.Kondr. & D.J.Galloway: on *Lobaria* and *Lobariella*; **lucaniae** Brackel: on *Lecidella elaeochroma*; **macrocarpa** Etayo: on *Pseudocyphellaria*; **manriquei** Etayo: on *Lobaria pulmonaria*; **Llimoniella muralicola** Halıcı: on *Protoparmeliopsis muralis* [belongs to *Unguiculariopsis* s.l.]; **peltigericola** Etayo: on *Peltigera*; **refractiva** (Coppins) Coppins: on *Bilimbia*; **thallophila** (P.Karst) W.Y.Zhuang: on *Lecanora*; **triregia** S.Y.Kondr. & D.J.Galloway: on *Sticta*.
Lit.: Brackel 2011a; Coppins 1988; Diederich & Etayo 2000; Etayo 2017; Etayo & Diederich 1996b; Etayo & Sancho 2008; Kondratyuk et al. 1994; Kondratyuk & Galloway 1995a; Kondratyuk & Galloway 1995b; Kondratyuk et al. 2016b; Suija et al. 2015b; Zhuang 2000.

Family **Helicogoniaceae** Baral

Geltingia Alstrup & D.Hawksw.; type: *G. associata*. Mol.: yes (T, L).
Species: 1-0-0. **associata** (Th.Fr.) Alstrup & D.Hawksw.: on *Ochrolechia*, more rarely on *Lepra dactylina* and *Thamnolia*.
Lit.: Alstrup & Hawksworth 1990; Diederich et al. 2010b; Suija et al. 2015b.

Family **Helotiaceae** Rehm

Bryoscyphus Spooner; type: *B. conocephali* (Boyd) Spooner. Mol.: yes.
Species: 1-0-0 (19). **lichenicola** Alstrup & M.S.Cole: on *Cladonia* cf. *pyxidata*.
Lit.: Alstrup & Cole 1998.

Family **Hyaloscyphaceae** Nannf.

Hyalopeziza Fuckel; type: *H. patula* (Pers.) Fuckel. Mol.: yes.
Species: 2-0-0 (15). **heterodermiae** Etayo: on *Heterodermia*; **rapax** Huhtinen: on *Pseudocyphellaria*.
Lit.: Etayo 2017; Huhtinen et al. 2008.

Hyphodiscus Kirschst.; type: *H. gregarius* Kirschst. Mol.: yes (T, L).
Species: 1-0-0 (16). **ucrainicus** (S.Y.Kondr.) Suija, Tsurykau & Diederich [≡ *Pezizella ucrainica* S.Y.Kondr.]: on *Cladonia*.
Lit.: Kondratyuk & Galloway 1995a; Oksner 2010; Suija et al. 2018; Zhurbenko & Pino-Bodas 2017.

Polydesmia Boud.; type: *P. pruinosa* (Berk. & Broome) Boud. Mol.: yes (T).
Species: 1-0-0 (7). **lichenis** Huhtinen & R.Sant.: on *Peltigera*.
Lit.: Huhtinen & Santesson 1997.

Protounguicularia Raitv. & R.Galán; type: *P. brevicapitata* Raitv. & R.Galán. Mol.: no.
Species: 4-0-0 (10). **fasciculata** (Etayo) Etayo: on *Ramalina stenospora*; **hispidula** (Etayo) Etayo: on *Psoroma hispidulum*; **nephromatis** (Zhurb. & Zavarzin) Huhtinen, D.Hawksw. & Ihlen: on *Nephroma*; **usneae** Etayo: on *Usnea*.
Lit.: Etayo 2010b, 2017; Etayo & Triebel 2010; Huhtinen et al. 2008; Zhurbenko 2007a.

Family **Lachnaceae** Raitv.

Solenopezia Sacc.; type: *S. solenia* Sacc. Mol.: no.
Species: 1-0-0 (7). **tetraspora** P.Henn.: on *Physcia integrata* [a poorly known species].
Lit.: Clauzade et al. 1989; Vouaux 1914.

Family **Mollisiaceae** Rehm

Mollisia (Fr.) P.Karst.; type: *M. cinerea* (Batsch) P.Karst. Mol.: yes (T).
Species: 1-0-0 (130). **collematis** Boud. [≡ *Pyrenopeziza collematis* (Boud.) Boud.]: on *Collema* [a poorly known species that does not belong to *Mollisia*].
Lit.: Clauzade et al. 1989; Vouaux 1914.

Niptera Fr.; type: *N. lacustris* (Fr.) Fr. Mol.: no. Both lichenicolous species are poorly known and possibly do not belong to *Niptera*.
Species: 2-0-0 (10). **lichenicola** (Speg.) Sacc.: on *Flavoparmelia caperata*; **microscopica** (P.Crouan & H. Crouan) Vouaux: on *Placynthiella uliginosa*.
Lit.: Clauzade et al. 1989; Vouaux 1914.

Trimmatostroma Corda s.l.; type: *T. salicis* Corda. Mol.: yes (T). Asexual, hyphomycetous. Probably polyphyletic, the lichenicolous taxa unlikely to be closely related to the type species.
Species: 8-0-1 (30). **arctoparmeliae** Brackel & Schiefelbein: on *Arctoparmelia incurva*; **cetrariae** Brackel: on *Cetraria islandica*; **dendrographae** Diederich, Ertz, U.Braun & Heuchert: on *Dendrographa*; **glebarum** Brackel: on *Flavoparmelia caperata*; **hierrense** Diederich & Ertz: on *Arthonia endlicheri*; **lecanoricola** Diederich, Etayo, U.Braun & Heuchert: on *Lecanora*; **quercicola** Diederich, U.Braun & Heuchert: facultatively lichenicolous on sterile, corticolous, crustose lichens; **umbilicariicola** Heuchert & U.Braun: on *Umbilicaria*; **varicellariae** Heuchert & U.Braun: on *Varicellaria rhodocarpa*.
Lit.: Brackel 2015; Diederich et al. 2010a; Heuchert & Braun 2014; Schiefelbein et al. 2017; Zhurbenko & Brackel 2013.

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Family **Pezizellaceae** Velen.

Calycina Gray [a hemihomonym of *Calycina* Gregory, Echinozoa]; type: *C. herbarum* (Pers.) Gray [= *Pezizella* Fuckel; type: *P. pulchella* Fuckel]. Mol.: yes (T, L). Two species are provisionally placed here pending a phylogenetic reassessment of the lichenicolous taxa.
Species: 3-0-0 (30). **alstrupii** Suija & Motiejūnaitė: on *Lobaria pulmonaria*; **Pezizella epithallina** (W.Phillips & Plowr.) Sacc.: on *Peltigera*; **Pezizella stictae** Etayo: on *Sticta*.
Lit.: Etayo 2002a; Hawksworth 1980b; Suija & Motiejūnaitė 2017; Suija et al. 2015b.

Chalara (Corda) Rabenh.; type: *C. fusidioides* (Corda) Rabenh. Mol.: yes (T).
Species: 3-0-1 (100). **lichenicola** M.S.Christ.: on *Cladonia*; **lobariae** Etayo: on *Lobaria pulmonaria*; aff. **microspora** (Cordes) Hughes: facultatively lichenicolous on *Cladonia coniocraea*; **pseudocyphellariae** Etayo: on *Pseudocyphellaria faveolata*.
Lit.: Brackel 2015; Christiansen 1993; Etayo & Diederich 1996b; Etayo & Sancho 2008.

Family **Sclerotiniaceae** Whetzel

Pycnopeziza W.L.White & Whetzel; type: *P. sympodialis* W.L.White & Whetzel [≡ *Acarosporium* Bubák & Vleugel; type: *A. sympodiale* Bubák & Vleugel]. Mol.: yes (T).
Species: 1-0-0 (5). **Acarosporium lichenicola** Ihlen & Tønsberg: on *Icmadophila* [provisionally placed here, possibly not belong to *Pycnopeziza*].
Lit.: Ihlen 1998.

Order Helotiales genera incertae sedis

Brackelia Zhurb.; type: *B. lunkei*. Mol.: no.
Species: 1-0-0. **lunkei** Zhurb.: on *Cladonia*.
Lit.: Zhurbenko & Pino-Bodas 2017.

Cecidioskyttea Etayo; type: *C. osorioi*. Mol.: no.
Species: 1-0-0. **osorioi** Etayo: on *Parmotrema fistulatum*.
Lit.: Etayo & Osorio 2004.

Chloroepilichen Etayo; type: *C. rolfii*. Mol.: no.
Species: 1-0-0. **rolfii** Etayo: on *Yoshimuriella* cf. *peltigera*.
Lit.: Etayo 2010b.

Echinodiscus Etayo & Diederich [a younger synonym of *Echinodiscus* Mann, diatoms, and of *Echinodiscus* Bentham, Fabaceae; a hemihomonym of *Echinodiscus* Leske, Echinozoa]; type: *E. lesdainii*. Mol.: no.
Species: 2-0-0. **kozhevnikovii** Zhurb.: on *Cetraria*; **lesdainii** (Vouaux) Etayo & Diederich: on *Lecania*.
Lit.: Etayo & Diederich 2000; Zhurbenko 2009a.

Pleoscutula Vouaux; type: *P. arsenii*. Mol.: no.
Species: 2-0-0. **arsenii** Vouaux: on *Heterodermia*; **hypotrachynae** Etayo & Diederich: on *Hypotrachyna*.
Lit.: Etayo 2002a; Hafellner 1982b.

Skyttella D.Hawksw. & R.Sant.; type: *S. mulleri*. Mol.: no.
Species: 2-0-0. **mulleri** (Willey) D.Hawksw. & R.Sant.: on *Peltigera*; **stictae** Etayo: on *Sticta*.
Lit.: Etayo 2017; Hawksworth & Santesson 1988.

Strossmayeria Schulzer; type: *S. rackii* Schulzer [= *Pseudospiropes* M.B.Ellis; type: *P. nodosus* (Sacc.) M.B.Ellis]. Mol.: yes. Molecular data of both facultatively lichenicolous species are needed to determine if they belong to *Strossmayeria*.
Species: 0-0-2 (16). **Pseudospiropes costaricensis** (E.F.Morris) de Hoog & Arx: facultatively lichenicolous on *Crocodia aurata*; **P. longipilus** (Corda) Hol.-Jech.: facultatively lichenicolous on *Lepraria*.
Lit.: Braun et al. 2008; Johnston et al. 2014.

Order **Phacidiales** Höhn.

Order Phacidiales genus incertae sedis

Epithamnolia Zhurb.; type: *E. karatyginii*. Mol.: yes (L). Asexual.
Species: 7-0-0. **atrolazulina** (Etayo) Diederich, comb. nov. [≡ *Hainesia atrolazulina* Etayo]: on *Hypotrachyna*; **brevicladoniae** (Diederich & van den Boom) Diederich & Suija [≡ *H. brevicladoniae* Diederich & van den Boom]: on *Cladonia*; **karatyginii** Zhurb.: on *Thamnolia*; **longicladoniae** (Diederich & van den Boom) Diederich & Suija [≡ *H. longicladoniae* Diederich & van den Boom]: on *Cladonia*; **pertusariae** (Etayo & Diederich) Diederich & Suija [≡ *H. pertusariae* Etayo & Diederich; = *H. bryonorae* Zhurb.; = *H. peltigerae* Zhurb. & Davydov]: on *Bryonora*, *Cladonia*, *Peltigera* and *Pertusaria*; **rangiferinae** E.Zimm., Diederich & Suija: on *Cladonia rangiferina*; **xanthoriae** (Brackel) Diederich & Suija [≡ *H. xanthoriae* Brackel; = *H. aeruginascens* Brackel; = *H. lecanorae* Brackel]: on *Candelaria*, *Hypogymnia*, *Lecanora*, *Melanohalea*, *Parmelia*, *Phaeophyscia*, *Physcia*, *Platismatia*, *Polycauliona*, *Protoparmeliopsis*, *Pseudevernia*, *Punctelia*, *Rusavskia* and *Xanthoria*.
Lit.: Brackel 2009, 2014; Diederich & van den Boom 2013; Etayo 2017; Etayo & Diederich 1996a; Suija et al. 2018b; Zhurbenko 2012, 2013b; Zhurbenko & Brackel 2013.

Class Leotiomycetes genus incertae sedis

Epicladonia D.Hawksw. s.str.; type: *E. sandstedei*. Mol.: yes (T, L). Asexual, pycnidial. Two further species, *E. simplex* and *E. stenospora*, are treated within *Epicladonia* s.l. under Pilocarpaceae, based on phylogenetic results.
Species: 3-0-0. **heterodermiae** Y.Joshi, Falswal & R.Joshi: on *Heterodermia*; **lapponica** Ihlen: on *Pleopsidium chlorophanum*; **sandstedei** (Zopf) D.Hawksw.: on *Cladonia*.
Lit.: Hawksworth 1981; Ihlen & Wedin 2005; Joshi et al. 2017b; Pino-Bodas et al. 2017.

Class LABOULBENIOMYCETES Engl.

Order **Laboulbeniales** Lindau s.l.

Order Laboulbeniales genus incertae sedis

Gliocephalis Matr.; type: *G. hyalina* Matr. Mol.: yes (T).
Species: 1-0-0 (2). **pulchella** (Penz. & Sacc.) D.Hawksw.: on *Sticta*.
Lit.: Hawksworth 1979a.

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Class LICHINOMYCETES Reeb, Lutzoni & Cl.Roux

Order **Lichinales** Henssen & Büdel

Family **Lichinaceae** Nyl.

Lichinodium Nyl.; type: *L. sirosiphoideum*. Mol.: no.
Species: 0-1-0 (4). ***sirosiphoideum*** Nyl.: lichen, juvenile parasite of *Parmelia* s.l.
Lit.: Rambold & Triebel 1992.

Phylliscum Nyl.; type: *P. demangeonii*. Mol.: yes (T, L).
Species: 0-1-0 (8). ***demangeonii*** (Moug. & Mont.) Nyl.: lichen, juvenile parasite on *Ochrolechia frigida*.
Lit.: Rambold & Triebel 1992.

Class SORDARIOMYCETES O.E.Erikss. & Winka

Subclass DIAPORTHOMYCETIDAE Senan., Maharachch. & K.D.Hyde

Subclass Diaporthomycetidae familiae incertae sedis

Family **Sporidesmiaceae** Fr.

Sporidesmium Link; type: *S. atrum* Link. Mol.: yes.
Species: 3-0-0 (330). **bacidiicola** Alstrup: on *Bacidia rubella*; **lichenicola** Iturr., D.Hawksw. & J.L.Crane: on *Leptogium;* **usneae** Etayo: on *Usnea*.
Lit.: Alstrup (1991); Etayo 2017; Iturriaga et al. (2008).

Family **Trichosphaeriaceae** G.Winter

Trichosphaeria Fuckel; type: *T. pilosa* (Pers.) Fuckel. Mol.: yes (T).
Species: 1-0-0 (20). **lichenum** P.Karst. & Har.: on *Peltigera* [a poorly known species].
Lit.: Clauzade et al. 1989; Hawksworth 1980b.

Subclass HYPOCREOMYCETIDAE O.E.Erikss. & Winka

Order **Coronophorales** Nannf.

Family **Nitschkiaceae** (Fitzp.) Nannf.

Acanthonitschkea Speg.; type: *A. argentinensis* Speg. Mol.: yes (T).
Species: 1-0-0 (10). **peltigericola** (Alstrup & Olech) O.E.Erikss. & R.Sant. [≡ *Hystrix peltigericola* Alstrup & Olech]: on *Peltigera*.
Lit.: Alstrup & Olech 1993.

Lasiosphaeriopsis D.Hawksw. & Sivan.; type: *L. salisburyi*. Mol.: no.
Species: 7-0-0. **cephalodiorum** (Rostr.) Alstrup: on *Placopsis*; **christiansenii** Alstrup & D.Hawksw. [=? *L. supersparsa*]: on *Porpidia tuberculosa*; **lecanorae** Pérez-Ortega & Halıcı: on *Lecanora polytropa*; **pilophori** Zhurb. & Triebel: on *Pilophorus*; **salisburyi** D.Hawksw. & Sivan.: on *Peltigera*; **stereocaulicola** (Linds.) O.E.Erikss. & R.Sant.: on *Stereocaulon*; **supersparsa** (Zopf) Triebel: on *Porpidia*.
Lit.: Alstrup et al. 1994; Alstrup & Hawksworth 1990; Eriksson & Santesson 1986; Hawksworth 1980b; Pérez-Ortega & Halıcı 2008; Triebel 1989; Zhurbenko & Triebel 2005.

Rhagadostoma Körb.; type: *R. corrugatum*, i.e. *R. lichenicola*. Mol.: no.
Species: 7-0-0. **boleae** Nav.-Ros. & Hladun: on *Lecania*; **brevisporum** (Nav.-Ros. & Hladun) Nav.-Ros.: on *Nephroma*, *Peltigera* and *Solorina*; **collematum** Etayo & Nav.-Ros.: on *Lathagrium auriforme*; **lichenicola** (De Not.) Keissl. [= *R. corrugatum* Körb.]: on *Solorina*; **pannariae** Etayo: on *Pannaria*; **rugosum** Nav.-Ros. & Hladun: on *Verrucaria nigrescens*; **verrucariarum** Nav.-Ros. & Hladun: on *Verrucaria*.
Lit.: Etayo & Sancho 2008; Navarro-Rosinés & Hladun 1994; Navarro-Rosinés et al. 1999.

Rhagadostomella Etayo; type: *R. gregaria*. Mol.: no.
Species: 1-0-0. **gregaria** Etayo: on *Sticta*.
Lit.: Etayo 2002a.

Order **Hypocreales** Lindau

Family **Bionectriaceae** Samuels & Rossman

Acremonium Link; type: *A. alternatum* Link. Mol.: yes (T, L). Asexual, hyphomycetous.
Species: 4-0-6 (150). **antarcticum** (Speg.) D.Hawksw.: on various lichens, facultatively lichenicolous; **bavaricum** Brackel: on *Melanelixia glabratula*; **hypholomatis** (Boedijn) D.Hawksw.: on *Physcia stellaris*, facultatively lichenicolous [the lichenicolous populations are possible the asexual stage of *Pronectria echinulata* Lowen]; **lichenicola** W.Gams: on lichens and other substrata; **persicinum** (Nicot) W.Gams: isolated from lichens, facultatively lichenicolous; **pertusariae** Brackel & Etayo: on *Lepra* and *Pertusaria*; **psychrophilum** Möller & Gams: isolated from lichens, probably lichenicolous; **spegazzinii** D.Hawksw.: on *Leptogium*; **strictum** W.Gams: facultatively lichenicolous; **subeffusum** (Ellis & Galw.) Etayo & Brackel: on *Physcia millegrana* and possibly other lichens.
Lit.: Brackel et al. 2012; Diederich 1989; Diederich & Braun 2009; Hawksworth 1979a; Lowen 1995.

Globonectria Etayo; type: *G. cochensis*. Mol.: no.
Species: 1-0-0. **cochensis** Etayo: on *Lobaria pallida*.
Lit.: Etayo 2002a.

Nectriopsis Maire; type: *N. violacea* (Fr.) Maire. Mol.: yes (T, L).
Species: 24-0-1 (70). **albida** Etayo: on *Sticta*; **cariosae** Brackel & D.G.Zimmermann: on *Cladonia*; **cladoniicola** M.S.Cole & D.Hawksw.: on *Cladonia*; **collematis** Diederich: on *Collema*; **curtiseta** Etayo: on *Sticta*; **frangospora** Brackel: on *Lepra albescens* and *Pertusaria rubefacta*; **gangwondoensis** S.Y.Kondr., L.Lőkös & J.-S.Hur: on *Phaeophyscia adiastola*; **guamuesii** Etayo: on *Sticta*; **heterodermiae** Etayo: on *Heterodermia*; **hirta** Etayo: on various lichens; **indigens** (Arnold) Diederich & Schroers: on perithecioid lichens, often near water; **lecanodes** (Ces.) Diederich & Schroers: on cyanobacterial macrolichens,

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mainly *Lobaria*, *Peltigera* and *Pseudocyphellaria*, also on *Collema* and *Leptogium*; **leptogii** Diederich: on *Leptogium*; **lichenophila** (Speg.) Etayo: on *Heterodermia*; **melongenoidea** Etayo: on *Gomphillus*; **micareae** Diederich, van den Boom & Ernst: on *Micarea viridileprosa*; **mindoensis** (Petrak) (Petr.) Samuels: facultatively lichenicolous on *Coenogonium*; **peruviana** Etayo & R.Sant.: on *Cora* and *Coccocarpia*; **physciicola** D.Hawksw. & Earl.-Benn.: on *Physcia stellaris*; **porinicola** Samuels: on foliicolous *Porina*; **silvaustralis** Etayo: on *Pseudocyphellaria*; **tatrensis** (Alstrup) Lisická & Alstrup: on *Thelidium*; **verseghyklarae** S.Y.Kondr., L.Lőkös & J.-S.Hur: on *Verseghya klarae*; **vinosa** Etayo: on *Usnea*; **vivida** Etayo & Sipman: on unidentified crustose lichen.
Lit.: Alstrup 1996; Aptroot et al. 1997; Brackel 2010a; Brackel & Zimmermann 2012; Cole & Hawksworth 2001; Earland-Bennett et al. 2006; Etayo 2002a, 2010a, 2017; Etayo & Sancho 2008; Kondratyuk et al. 2016a, 2018; Matzer 1996; Samuels 1988; Sérusiaux et al. 1999.

Ovicuculispora Etayo; type: *O. parmeliae*. Mol.: yes (T, L).
Species: 2-0-0. **macrospora** Etayo: on sterile saxicolous crust (Gomphillaceae?); **parmeliae** (Berk. & Curt.) Etayo: on various lichens.
Lit.: Etayo 2010b.

Paranectria Sacc.; type: *P. affinis*. Mol.: no.
Species: 4-0-0. **affinis** (Grev.) Sacc.: on *Ephebe pubescens*; **alstrupii** Zhurb.: on various lichens; **oropensis** (Rabenh.) D.Hawksw. & Piroz.: on various lichens; **superba** D.Hawksw.: on *Peltigera*.
Lit.: Clauzade et al. 1989; Hawksworth 1982a; Rossman et al. 1999; Zhurbenko 2009d.

Pronectria Clem.; type: *P. lichenicola*, i.e. *P. robergei*. Mol.: yes (T, L).
Species: 43-0-1. **algicola** Vondrák, Naumovich & Khodos.: on terricolous microbial crusts possibly associated with *Sarcosagium* or *Steinia*; **angulospora** Etayo: on *Heterodermia*; **biglobosa** Etayo: on *Hypotrachyna*; **caloplacae** Khodos., Vondrák & Naumovich: on *Flavoplaca austrocitrina*; **casaresii** Etayo: on *Evernia prunastri*; **collematis** Etayo & Brackel: on *Lathagrium*; **dealbans** (Müll.Arg.) Etayo & Breuss: on *Endocarpon*; **dillmaniae** Zhurb.: on *Catapyrenium cinereum*; **diplococca** Kocourk., Khodos., Naumovich, Vondrák & Motiej.: on *Collema*; **echinulata** Lowen: on *Phaeophyscia*, *Physcia* and *Physconia*; **erythrinella** (Nyl.) Lowen: on *Peltigera*; **fragmospora** Etayo: on *Usnea*; **hymeniicola** Etayo: on *Collema*; **invisibilis** Etayo: on *Nephroma antarcticum*; **japonica** Zhurb., Tadome & Y. Ohmura: on *Ochrolechia*; **lecideicola** Zhurb.: on *Lecidea ramulosa*; **leptogii** Etayo: on *Leptogium*; **microspora** Etayo: on *Lobaria pallida*; **minuta** Motiej. & Kukwa: on *Cladonia* subg. *Cladina*; **neofissuriprodiens** F.Berger & E.Zimm.: on *Lobaria*; **occulta** Etayo: on *Usnea*; **oligospora** Lowen & Rogersen var. **oligospora**: on *Punctelia*; **oligospora** var. **octospora** Etayo: on *Punctelia*; **parmotrematis** Etayo: on *Parmotrema*; **pedemontana** Brackel: on *Lathagrium auriforme*; **pertusariicola** Lowen: on *Lepra* and *Pertusaria*; **pilosa** Etayo & López Silanes: on *Collema*; **pycnidioidea** Etayo: on *Heterodermia*; **rhizocarpicola** Brackel: on *Rhizocarpon geographicum*; **robergei** (Mont. & Desm.) Lowen [= *P. lichenicola* (Ces.) Clem.; = *Illosporium carneum* Fr.]: on *Peltigera* and *Solorina*; **rolfiana** Etayo: on *Solorina*; **roseopunctata** Etayo: on *Hypotrachyna*; **santessonii** (Lowen & D.Hawksw.) Lowen: on *Anaptychia runcinata*; **sticticola** Etayo: on *Sticta*; **tenacis** (Vouaux) Lowen: on *Collema*; **tenuispora** (D.Hawksw.) Lowen: on *Peltigera*; **terrestris** Lowen & Diederich: on *Thrombium epigaeum*; **tibellii** Zhurb.: on *Cladonia*; **tincta** (Fuckel) Lowen: on *Anaptychia ciliaris*; **toniniae** Etayo: on *Toninia sedifolia*; **verrucariae** (Vouaux) Lowen: on *Verrucaria*; **walkerorum** Zhurb.: on *Ochrolechia*; **xanthoriae** Lowen & Diederich: on *Xanthoria*; **zhurbenkoi** Brackel: on *Peltigera praetextata*.
Lit.: Berger & Zimmermann 2016; Brackel 2013a, 2013b, 2015; Brackel & Etayo 2010; Etayo 1998, 2001, 2002a, 2010b, 2010c, 2017; Etayo & Breuss 1996; Etayo & Diederich 1996b; Etayo & Sancho 2008; Etayo & Triebel 2010; Hawksworth 1979a; Khodosovtsev 2012; López de Silanes et al. 2009; Lowen 1995; Lowen & Diederich 1990; Lowen & Hawksworth 1986; Motiejūnaitė & Kukwa 2008; Rossman et al. 1999; Sikaroodi et al. 2001; Zhurbenko 2007b, 2009d; Zhurbenko & Alstrup 2004; Zhurbenko et al. 2005, 2018.

Trichonectria Kirschst.; type: *T. aculeata* Kirschst. Mol.: yes.
Species: 15-0-0 (19). **anisospora** (Lowen) van den Boom & Diederich [= *Acremonium pedatum* Lowen]: on *Hypogymnia*; **apiculata** Etayo: on *Usnea*; **australis** Etayo: on *Usnea*; **calopadiicola** Farkas & Flakus: on foliicolous *Calopadia* cf. *puiggari*; **cladoniicola** (Alstrup & Svane) Alstrup: on *Cladonia*; **furcatosetosa** Brackel: on necrosed *Melanelixia*, *Parmelia*, *Physcia* and *Candelariella*; **hirta** (A.Bolxam) Petch: on corticolous lichens; **hypotrachynae** Etayo: on *Hypotrachyna*; **intermedia** Etayo: on *Parmotrema*; **leptogiicola** Etayo: on *Leptogium*; **pertusariae** Etayo & van den Boom: on *Pertusaria*; **pyrenaica** Gardiennet & Lechat: on *Usnea*; **rubefaciens** (Ellis & Everh.) Diederich & Schroers [≡ *Nectriopsis rubefaciens* (Ellis & Everh.) M.S.Cole & D.Hawksw.; = *Acremonium rhabdosporum* W.Gams]: on Parmeliaceae; **setadpressa** Etayo: on *Lobaria*; **usneicola** Etayo: on *Usnea*.
Lit.: Alstrup & Svane 1998; Brackel 2014; Etayo 2001, 2002a, 2017; Etayo & Sancho 2008; Etayo & van den Boom 2005; Farkas & Flakus 2016; Gardiennet & Lechat 2012; Hawksworth 1978b; Rossman et al. 1999; Sérusiaux et al. 1999.

Family **Clavicipitaceae** (Lindau) O.E.Erikss.

Neobarya Lowen; type: *N. parasitica* (fungicolous). Mol.: yes (T).
Species: 4-0-0 (10). **ciliaris** Etayo: on *Heterodermia*; **darwiniana** Etayo: on *Nephroma antarcticum*; **lichenophila** (Ferd. & Winge) Lowen & Samuels: on *Cladonia*; **peltigerae** Lowen, Boqueras & Gómez-Bolea: on *Peltigera*.
Lit.: Candoussau et al. 2007; Etayo 2002a; Etayo & Sancho 2008.

Family **Cordycipitaceae** G.H.Sung, J.M.Sung, Hywel-Jones & Spatafora

Syspastospora P.F.Cannon & D.Hawksw.; type: *S. parasitica* (Tul.) P.F.Cannon & D.Hawksw. Mol.: yes (T).
Species: 1-0-0 (4). **cladoniae** Etayo: on *Cladonia foliacea*.
Lit.: Etayo 2008.

Family **Hypocreaceae** De Not.

Hypomyces (Fr.) Tul. & C.Tul.; type: *H. lactifluorum* (Schwein.) Tul. & C.Tul. Mol.: yes (T, L).
Species: 1-0-0 (150). **peltigericola** Lechat & Gardiennet: on *Peltigera canina*.
Lit.: Lechat et al. 2017.

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Lichenobarya Etayo, Diederich & Lawrey; type: *L. usneae*. Mol.: yes (T, L).
Species: 1-0-0. **usneae** (Etayo) Etayo, Diederich & Lawrey: on *Usnea*.
Lit.: Etayo 2000a; Lawrey et al. 2015.

Family **Nectriaceae** Tul. & C.Tul.

Fusarium Link; type: *F. roseum* Link. Mol.: yes. Asexual, hyphomycetous.
Species: 2-0-0 (120). **pallens** Link: on *Myriolecis hagenii*; **peltigerae** Westend.: on *Peltigera*.
Lit.: Hawksworth 1979a.

Nectria (Fr.) Fr. s.l. [a hemihomonym of *Nectria* Gray, Asterozoa]; type: *N. cinnabarina* (Tode) Fr. Mol.: yes (T).
Species: 2-0-1 (29). **brutia** Diederich & Puntillo: on *Collema* [does not belong to *Nectria* s.str.]; **byssophila** Rossman [possibly related to *Lichenobarya* or *Neobarya*]: on macrolichens; **paraguayensis** Speg.: facultatively lichenicolous on lichens.
Lit.: Diederich & Puntillo 1995; Etayo & Sancho 2008; Hirooka et al. 2012.

Xenonectriella Weese; type: *X. lutescens*. Mol.: no.
Species: 18-0-0. **aurantiaca** Etayo: on *Pseudocyphellaria*; **calabrica** Brackel & Puntillo: on *Pertusaria pertusa*; **coppinsiana** Etayo: on *Yoshimuriella subdissecta*; **dirinariae** Etayo & van den Boom: on *Dirinaria*; **fissuriprodiens** (Etayo) Etayo: on *Lobaria*; **humilis** Etayo: on *Pseudocyphellaria*; **leptaleae** (J.Steiner) Rossman & Lowen: on *Phaeophyscia*, *Physcia* and *Physconia*; **leptaleoides** (Etayo) Etayo: on *Leptogium*; **lutescens** (Rehm) Weese: on *Peltigera* and *Solorina*; **ornamentata** (D.Hawksw.) Rossman: on *Peltigera*; **protopannariae** (Zhurb.) Brackel: on *Protopannaria pezizoides*; **rosea** Etayo: on *Pannaria*; **rugulatispora** Etayo: on *Lobariella*; **septemseptata** (Etayo) Etayo & van den Boom: on *Melanelixia* and *Melanohalea*; **streimannii** (S.Y.Kondr., Coppins & D.J.Galloway) Rossman: on *Lobaria* and *Sticta*; **subimperspicua** (Speg.) Etayo var. **subimperspicua**: on *Parmelia* and *Punctelia*, also reported from *Physcia*; **subimperspicua** var. **degenerans** Etayo: on *Parmotrema*; **vertebrata** Etayo: on *Heterodermia*.
Lit.: Brackel 2014; Brackel & Puntillo 2016; Etayo 2002a, 2017; Etayo & Sancho 2008; Etayo & Triebel 2010; Etayo & van den Boom 2013; Rossman et al. 1999; van den Boom & Etayo 2014.

Family **Niessliaceae** Kirschst.

Atronectria Etayo; type: *A. magellanica*. Mol.: no.
Species: 1-0-0. **magellanica** Etayo: on *Pseudocyphellaria* and *Nephroma*.
Lit.: Etayo & Sancho 2008.

Melanopsamma Niessl.; type: *M. pomiformis* (Pers.) Sacc. Mol.: yes (T).
Species: 1-0-0 (40). **lettauiana** (Keissl.) Vouaux: on saxicolous, crustose lichens [a poorly known species].
Lit.: Clauzade et al. 1989.

Niesslia Auersw.; type: *N. chaetomium* (Corda) Auersw. [= *Nitschkiopsis* Nannf. & R.Sant.; type: *N. stictarum*]. Mol.: yes (L).
Species: 17-0-0 (43). **cladoniicola** D.Hawksw. & W.Gams: on *Cladia* and *Cladonia* [anamorph: *Monocillium* sp.]; **coenogonii** van den Boom: on *Coenogonium*; **echinoides** Etayo, Flakus & Kukwa: on *Erioderma*; **evae** Etayo: on *Erioderma*; **globospora** Etayo: on *Cora*; **keissleri** Zhurb. [= *Echinothecium cladoniae* Keissl., nom. nud.]: on *Cladia* and *Cladonia*; **kununguakii** Alstrup & E.S.Hansen: on *Arthrorhaphis alpina*; **lobariae** Etayo & Diederich: on *Lobaria*; **peltigericola** (D.Hawksw.) Etayo [≡ *Wentiomyces peltigericola* D.Hawksw.; ≡ *Raciborskiomyces peltigericola* (D.Hawksw.) M.E.Barr]: on *Peltigera*; **pseudocyphellariae** Etayo & Diederich: on *Pseudocyphellaria*; **robusta** Tretiach: on *Tephromela grumosa*; **schizospora** Etayo: on *Hypotrachyna*; **stictarum** (Nannf. & R.Sant.) R.Sant. & Tretiach subsp. **stictarum** [≡ *Nitschkiopsis stictarum* Nannf. & R.Sant.]: on *Sticta*; **stictarum** subsp. **nuda** Etayo: on *Lobariella*; **tatjanae** (S.Y.Kondr.) Etayo: on *Pseudocyphellaria*; **tetrahedrospora** Etayo: on *Dichosporidium* [possibly belongs to *Trichosphaerella*, fide Lendemer et al. 2016]; **yaganae** Etayo: on *Nephroma antarcticum*.
Lit.: Alstrup & Hansen 2001; Etayo 2000, 2002a, 2017; Etayo & Diederich 1996b; Etayo & Sancho 2008; Etayo et al. 2013a; Hawksworth 1975, 1979a; Tretiach 2002; van den Boom et al. 2017; Zhurbenko & Pino-Bodas 2017.

Trichosphaerella E.Bommer, M.Rousseau & Sacc.; type: *T. decipiens* E.Bommer, M.Rousseau & Sacc. Mol.: yes.
Species: 1-0-0 (4). **buckii** R.C.Harris & Lendemer: on *Punctelia rudecta*.
Lit.: Lendemer et al. 2016.

Order Hypocreales genera incertae sedis

Cephalosporiopsis Peyronel; type: none. Mol.: no. Asexual, hyphomycetous. A genus of uncertain application.
Species: 0-0-1 (10). **epiparasitaster** Alstrup: on the lichenicolous fungus *Chaenothecopsis parasitaster*.
Lit.: Alstrup 1997.

Chondronectria Etayo, Flakus & Kukwa; type: *C. eriodermaticola*. Mol.: no.
Species: 1-0-0. **eriodermaticola** Etayo, Flakus & Kukwa: on *Erioderma*.
Lit.: Etayo 2017.

Cylindronectria Etayo; type: *C. cyanobactericola*. Mol.: no.
Species: 0-0-1. **cyanobactericola** Etayo: on epilichenic cyanobacteria, doubtfully lichenicolous.
Lit.: Etayo 2017.

Illosporiopsis D.Hawksw.; type: *I. christiansenii*. Mol.: yes (T, L). Asexual, sporodochial.
Species: 1-0-0. **christiansenii** (B.L.Brady & D.Hawksw.) D.Hawksw.: on various corticolous lichens.
Lit.: Lowen et al. 1986; Sikaroodi et al. 2001.

Leptobarya Etayo; type: *L. nigra*. Mol.: no.
Species: 2-0-0. **auranticarpa** Etayo: on *Leptogium*; **nigra** Etayo: on *Leptogium*.
Lit.: Etayo 2017.

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Roselliniella Vain.; type: *R. nephromatis*. Mol.: yes (L).
Species: 19-0-0. **africana** Diederich: on *Usnea*; **atlantica** Matzer & Hafellner: on *Xanthoparmelia*, *Hypotrachyna* and *Platismatia*; **cladoniae** (Anzi) Matzer & Hafellner: on *Cladonia*; **coccocarpiae** (Pat.) Matzer & R.Sant.: on *Degelia*; **epiphylla** Matzer & Hafellner: on foliicolous *Sporopodium*; **eriodermicola** Matzer & R.Sant.: on *Erioderma tomentosum*; **euparmeliicola** Millanes & D.Hawksw.: on *Parmelia* s.str.; **heterodeae** Matzer & Hafellner: on *Cladia muelleri*; **lecideae** Darmostuk, Khodos. & Naumovich: on *Lecidea fuscoatra*; **microthelia** (Wallr.) Nik.Hoffm. & Hafellner: on *Trapelia*; **muralis** van den Boom: on *Protoparmeliopsis muralis*; **nephromatis** (Crouan) Matzer & Hafellner: on *Nephroma*; **oxyspora** Matzer & R.Sant.: on *Coccocarpia*; **pannariae** Matzer & Hafellner: on *Protopannaria pezizoides*; **papuana** Diederich: on *Usnea*; **peltigericola** D.Hawksw. & Miądl.: on *Peltigera*; **ramirezii** Etayo: on *Lobaria*; **stereocaulorum** Zhurb., Kukwa & Oset: on *Stereocaulon*; **stictae** Etayo: on *Sticta*.
Lit.: Aptroot et al. 1997; Darmostuk et al. 2018; Etayo 2002a; Hawksworth & Miądlikowska 1997a; Hawksworth et al. 2010b; Hoffmann & Hafellner 2000; Matzer & Hafellner 1990; van den Boom 2015; Zhurbenko et al. 2009.

Trichothecium Link; type: *T. roseum* (Pers.) Link. Mol.: yes (T, L). Asexual, hyphomycetous.
Species: 0-0-1 (9). **roseum** (Pers.) Link: facultatively lichenicolous.
Lit.: Hawksworth 1979a.

Order **Microascales** Benny & Kimbr.

Family **Graphiaceae** De Beer

Graphium Corda [a hemihomonym of *Graphium* Scopoli, Lepidoptera]; type: *G. penicillioides* Corda. Mol.: yes (T). Asexual, synnematous.
Species: 2-0-0 (20). **aphthosae** Alstrup & D.Hawksw.: on *Peltigera* and other terricolous lichens, possibly algicolous; **samogiticum** Motiej. & Alstrup: over *Sarcosagium* and *Verrucaria*, possibly algicolous.
Lit.: Alstrup & Hawksworth 1990; Motiejūnaitė & Alstrup 2006.

Subclass SORDARIOMYCETIDAE O.E.Erikss. & Winka

Order **Chaetosphaeriales** Huhndorf, A.N.Mill. & F.A.Fernández

Family **Chaetosphaeriaceae** Réblová, M.E.Barr & Samuels

Dinemasporium Lév.; type: *D. graminum*, i.e. *D. strigosum*. Mol.: yes (T, L). Asexual, pycnidial.
Species: 0-0-1 (35). **strigosum** (Fr.) Sacc. [= *D. gramineum* (Lib.) Lév.]: facultatively lichenicolous on *Peltigera*, more rarely other lichens.
Lit.: Etayo 2017; Miądlikowska & Alstrup 1995.

Order **Phyllachorales** M.E.Barr.

Family **Phyllachoraceae** Theiss. & P.Syd.

Lichenochora Hafellner; type: *L. thallina*, i.e. *L. obscuroides*. Mol.: no.
Species: 44-0-0. **acutispora** Etayo: on *Fuscopannaria magellanica*; **aipoliae** Etayo, Nav.-Ros. & Coppins: on *Physcia aipolia*; **aprica** Hafellner & Nik.Hoffm.: on *Aspicilia*; **arctica** Zhurb.: on *Candelariella canadensis* and neighbouring *Rinodina terrestris*; **atrans** Halıcı, K.Knudsen & Candan: on *Psora decipiens*; **bacidiispora** Etayo: on *Parmotrema*; **bellemerei** Nav.-Ros., Cl.Roux & Diederich: on *Menegazzia*; **caloplacae** Zhurb.: on *Athallia*, *Blastenia*, *Bryoplaca* and *Caloplaca* s.str.; **chimaerica** Etayo: on *Pertusaria* [close to *Parapyrenis*, fide Etayo, pers. comm.]; **clauzadei** Nav.-Ros., Cl.Roux & Llimona: on *Squamarina*; **coarctatae** (B. de Lesd.) Hafellner & F.Berger: on *Trapelia*; **collematum** Nik.Hoffm. & Hafellner: on *Rostania ceranisca*; **constrictella** (Müll.Arg.) Hafellner: on *Gyalolechia bracteata*; **coppinsii** Etayo & Nav.-Ros.: on *Protopannaria pezizoides*; **elegantis** Hafellner: on *Rusavskia elegans*; **epidesertorum** Nav.-Ros.: on *Gyalolechia desertorum*; **epifulgens** Nav.-Ros. & Cl.Roux: on *Gyalolechia fulgens*; **epimarmorata** Nav.-Ros.: on *Xanthocarpia marmorata*; **epinashii** Nav.-Ros. & Etayo: on *Polycauliona nashii*; **gahavisukae** Diederich: on ?*Graphis*; **galligena** R.Sant. & Hafellner: on *Physcia*; **haematommatum** R.C.Harris & Lendemer: on *Haematomma personii*; **heppiae** Cl.Roux: on *Heppia lutosa*; **hypanica** S.Y.Kondr., L.Lõkös & J.-S.Hur: on *Endocarpon*; **hyperphysciae** Etayo: on *Hyperphyscia adglutinata*; **inconspicua** Hafellner: on *Lecidea berengeriana*; **lecidellae** Boqueras & Nav.-Ros.: on *Lecidella elaeochroma*; **lepidiotae** (Anzi) Etayo & Nav.-Ros.: on *Fuscopannaria praetermissa*; **makareviczae** S.Y.Kondr.: on *Lecanora* aff. *campestris*; **mediterraneae** Calat., Nav.-Ros. & E.Calvo: on *Fuscopannaria mediterranea*; **monegrina** Etayo: on terricolous *Polyblastia*; **obscuroides** (Linds.) Triebel & Rambold [= *L. thallina* (Cooke) Hafellner]: on *Phaeophyscia*, more rarely *Physcia*; **paucispora** Etayo & Nav.-Ros.: on *Bilimbia sabuletorum*; **physciicola** (Ihlen & R.Sant.) Hafellner: on *Physcia dubia*; **polycoccoides** Hafellner & R.Sant.: on *Physcia tribacia*; **pyrenodesmiae** Nav.-Ros. & Cl.Roux: on *Pyrenodesmia*; **rinodinae** Zhurb.: on *Rinodina*; **sinapispermae** Etayo & Nav.-Ros.: on *Bryoplaca sinapisperma*; **tertia** Etayo, Flakus & Rodr.Flakus: on *Rusavskia elegans*; **thorii** Zhurb.: on *Aspicilia moenium*; **verrucicola** (Wedd.) Nik.Hoffm. & Hafellner: on *Aspicilia calcarea*, *A. cinerea* and *A. contorta*; **wasseri** S.Y.Kondr.: on *Flavoplaca*; **weillii** (Werner) Hafellner & R.Sant.: on *Physcia* and *Physconia*; **xanthoriae** Triebel & Rambold: on *Leproplaca proteus* and *Rusavskia elegans*.
Lit.: Aptroot et al. 1997; Calatayud et al. 2000; Etayo 2010c, 2011, 2017; Etayo & Navarro-Rosinés 2008; Etayo & Sancho 2008; Etayo et al. 2013c; Hafellner 1989; Hafellner & Berger 2000; Hafellner & Zimmermann 2012; Hoffmann & Hafellner 2000; Ihlen & Wedin 2005; Kondratyuk et al. 2014, 2015; Lendemer et al. 2016; Navarro-Rosinés & Etayo 2001; Navarro-Rosinés et al. 1994, 1998a, 1998c; Navrotskaya et al. 1996; Roux & Triebel 1994; Triebel et al. 1991; Zhurbenko 2008b, 2013a; Zhurbenko & Brackel 2013.

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Order **Sordariales** D.Hawksw. & O.E.Erikss.

Family **Helminthosphaeriaceae** Samuels, Cand. & Magni

Endophragmiella B.Sutton; type: *E. pallescens* B.Sutton. Mol.: yes. Asexual, hyphomycetous.
Species: 3-0-0 (70). **franconica** Brackel & Markovskaja: on *Cladonia*, *Platismatia glauca* and *Hypogymnia physodes*; **hughesii** D.Hawksw.: on *Lobaria pulmonaria*; **stordeuriana** U.Braun, Zhurb., Diederich, Tsurykau & Heuchert: on *Cladonia*.
Lit.: Brackel & Markovskaja 2009; Hawksworth 1979a; Zhurbenko et al. 2015d.

Order Sordariales genera incertae sedis

Globosphaeria D.Hawksw.; type: *G. jamesii*. Mol.: no.
Species: 1-0-0. **jamesii** D.Hawksw.: on *Normandina pulchella*.
Lit.: Hawksworth 1990b.

Reconditella Matzer & Hafellner; type: *R. physconiarum*. Mol.: no.
Species: 1-0-0. **physconiarum** Hafellner & Matzer: on *Physconia distorta* and *P. venusta*.
Lit.: Matzer & Hafellner 1990.

Roselliniomyces Matzer & Hafellner; type: *R. trichotheliorum*. Mol.: no.
Species: 2-0-0. **erinaceus** Etayo: on *Sticta*; **trichotheliorum** Matzer & Hafellner: on foliicolous *Trichothelium*.
Lit.: Etayo 2017; Matzer & Hafellner 1990.

Roselliniopsis Matzer & Hafellner; type: *R. groedensis*. Mol.: no.
Species: 7-0-0. **gelidaria** (Mudd) Matzer: on *Placopsis gelida*; **groedensis** (Zopf) Matzer & Hafellner: on *Varicellaria lactea*; **palicei** Etayo: on *Placopsis gelida*; **phaeophysciae** S.Y.Kondr., L.Lőkös & J.-S.Hur: on *Phaeophyscia*; **tartaricola** (Leight.) Matzer: on *Lepra*, *Ochrolechia*, *Pertusaria pupillaris* and *Varicellaria hemisphaerica*; **tropica** Matzer & R.Sant.: on ?*Ochrolechia*; **ventosa** (Rostr.) Alstrup: on *Placopsis gelida*.
Lit.: Alstrup et al. 1994; Etayo 2003; Kondratyuk et al. 2013; Matzer 1993; Matzer & Hafellner 1990.

Subclass XYLARIOMYCETIDAE O.E.Erikss. & Winka

Order **Xylariales** Nannf.

Family **Hyponectriaceae** Petr.

Charonectria Sacc.; type: *C. consolationis* Sacc. Mol.: no.
Species: 1-0-0 (3). **amabilis** Lowen & D.Hawksw.: on *Phaeorrhiza*.
Lit.: Rossman et al. 1999.

Physalospora Niessl; type: *P. alpestris* Niessl. Mol.: yes.
Species: 2-0-0 (37). **collematis** (Stein) G.Winter: on *Collema* [a poorly known species]; **jonaspidis** (Stein) Vouaux: on *Ionaspis chrysophana* [a poorly known species].
Lit.: Hoffmann & Hafellner 2000.

Family **Hypoxylaceae** DC.

Hypoxylon Bull.; type: *H. fragiforme* (Pers.) J.Kickx f. [= *Sphaeria* Haller, nom. rejic.]. Mol.: yes (T).
Species: 1-0-0 (140). **Sphaeria sociella** Nyl.: on *Trapelia coarctata* [phylogenetic position uncertain].
Lit.: Triebel 1989.

Family **Xylariaceae** Tul. & C.Tul.

Anthostomella Sacc.; type: *A. limitata* Sacc. Mol.: yes. Currently heterogeneous.
Species: 1-0-0 (85). **apogyra** (Nyl.) Saccardo & D.Saccardo: on *Umbilicaria* [a poorly known species].
Lit.: Clauzade et al. 1989; Matzer & Hafellner 1990.

Class Sordariomycetes ordo incertae sedis

Order **Coniochaetales** Huhndorf, A.N.Mill. & F.A.Fernández

Family **Coniochaetaceae** Malloch & Cain

Coniochaeta (Sacc.) Cooke; type: *C. ligniaria*. Mol.: yes (T, L).
Species: 0-0-1 (80). **ligniaria** (Grev.) Massee: facultatively lichenicolous on *Diploschistes diacapsis*.
Lit.: Etayo 2008.

Subphylum Pezizomycotina ordo incertae sedis

Order **Thelocarpales** Lücking & Lumbsch

Family **Thelocarpaceae** Zukal

Thelocarpon Nyl.; type: *T. laureri* (Flot.) Nyl. (lichenized). Mol.: yes (T, L).
Species: 0-0-4 (25). **cyaneum** Olech & Alstrup: on '*Polyblastia* cf. *gothica*', probably facultatively lichenicolous; **epibolum** Nyl. var. **epibolum**: facultatively lichenicolous on *Arthrorhaphis*, *Baeomyces*, *Lichenomphalia hudsoniana*, *Peltigera* and *Solorina*; **epibolum** var. **epithallinum** (Leight.) G.Salisb.: facultatively lichenicolous on *Arthrorhaphis*, *Baeomyces*, *Catapyrenium*, *Peltigera*, *Protopannaria* and *Solorina*; **lichenicola** (Fuckel) Poelt & Hafellner: facultatively lichenicolous on *Baeomyces*, *Peltigera*, *Solorina* and other terricolous lichens.
Lit.: Olech & Alstrup 1990; Rambold & Triebel 1992.

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Subphylum Pezizomycotina familiae incertae sedis

Family **Myxotrichaceae** Currah

Myxotrichum Kunze; type: *M. chartarum* Kunze. Mol.: yes (T).
Species: 0-0-1 (12). **bicolor** (Ehrenb.) Fr.: on dying thalli of *Usnea*, possibly only fortuitously lichenicolous.
Lit.: Hawksworth 1979a.

Family **Obryzaceae** O.E.Erikss.

Obryzum Wallr.; type: *O. corniculatum*. Mol.: no.
Species: 3-0-0. **corniculatum** Wallr.: on *Scytinium*; **friesii** (Keissl.) Nik.Hoffm. & Hafellner: on *Leptogium*; **strigu-loides** Aptroot & Sipman: on *Agonimia vouauxii*.
Lit.: Aptroot & Sipman 2001; Hoffmann & Hafellner 2000; Lücking et al. 2017.

Subphylum Pezizomycotina genera incertae sedis

Acaroconium Kocourk. & D.Hawksw.; type: *A. punctiforme*. Mol.: no. Asexual, pycnidial.
Species: 1-0-0. **punctiforme** Kocourk. & D.Hawksw.: on *Acarospora* and *Sarcogyne*.
Lit.: Kocourková & Hawksworth 2008.

Actinocladium Ehrenb.; type: *A. rhodosporum*. Mol.: no. Asexual, hyphomycetous.
Species: 0-0-1 (8). **rhodosporum** Ehrenb.: facultatively lichenicolous on *Flavoparmelia*, *Hypotrachyna*, *Lecanora*, *Lepra* and *Lepraria*.
Lit.: Brackel 2014.

Arborillus Munt.-Cvetk. & Gómez-Bolea; type: *A. llimonae*. Mol.: no. Asexual, synnematous.
Species: 1-0-0. **llimonae** Munt.-Cvetk. & Gómez-Bolea: on *Diploschistes*.
Lit.: Muntañola-Cvetkovic & Gómez-Bolea 1998.

Asteroglobulus Brackel; type: *A. giselae*. Mol.: no. Asexual, pycnidial.
Species: 2-0-0. **giselae** Brackel: on *Ramalina farinacea*; **pyramidalis** (Etayo) Diederich, comb. nov.: on *Hypotrachyna* and *Parmotrema*.
Lit.: Brackel 2011a, Etayo 2010a.

Asterophoma D.Hawksw.; type: *A. mazaediicola*. Mol.: no. Asexual, pycnidial.
Species: 1-0-0. **mazaediicola** D.Hawksw.: on *Calicium* and *Chaenotheca*.
Lit.: Hawksworth 1981; Tibell 1991a.

Biciliopsis Diederich; type: *B. leptogiicola*. Mol.: no.
Species: 2-0-0. **cladoniae** Zhurb., Pino-Bodas & Diederich: on *Cladonia*; **leptogiicola** Diederich: on *Leptogium*.
Lit.: Aptroot el al.1997; Hoffmann & Hafellner 2000; Zhurbenko & Pino-Bodas 2017.

Bicoloromyces Heuchert, U.Braun & D.Hawksw.; type; *B. kyffinensis*. Mol.: no. Asexual, hyphomycetous.
Species: 1-0-0. **kyffinensis** Heuchert, U.Braun & D.Hawksw.: on *Lecanora fuscobrunnea* or *Lecidella*.
Lit.: Heuchert et al. 2015.

Calongeomyces D.Hawksw. & Etayo; type: *C. gibelluloides* [≡ *Calongia* D.Hawksw. & Etayo, nom. illeg.]. Mol.: no. Asexual, hyphomycetous.
Species: 1-0-0. **gibelluloides** (D.Hawksw. & Etayo) D.Hawksw. & Etayo: on *Cladonia*, *Flavoparmelia caperata* and *Lepra amara*.
Lit.: Hawksworth & Etayo 2010, 2011.

Caeruleoconidia Zhurb. & Diederich; type: *C. ochrolechiae*. Mol.: no. Asexual, pycnidial.
Species: 2-0-0. **biazrovii** Zhurb.: on *Cladonia*; **ochrolechiae** Zhurb. & Diederich: on *Ochrolechia*.
Lit.: Zhurbenko & Pino-Bodas 2017; Zhurbenko et al. 2015a.

Carnegieispora Etayo & F.Berger; type: *C. rimeliae*. Mol.: no. Asexual, pycnidial.
Species: 1-0-0. **rimeliae** Etayo & F.Berger: on *Parmotrema*.
Lit.: Etayo & Berger 2009.

Cecidiomyces U.Braun & Zhurb.; type: *C. santessonii*. Mol.: no. Asexual, hyphomycetous.
Species: 1-0-0. **santessonii** U.Braun & Zhurb.: on *Stereo-caulon*.
Lit.: Zhurbenko & Braun 2012.

Choreospora Constant. & R.Sant.; type: *C. tibellii*. Mol.: no. Asexual, sporodochial.
Species: 1-0-0. **tibellii** Constant. & R.Sant.: on foliicolous ?*Echinoplaca*.
Lit.: Constantinescu & Santesson 1987.

Cladoniicola Diederich, van den Boom & Aptroot; type: *C. staurospora*. Mol.: no. Asexual, pycnidial.
Species: 2-0-0. **irregularis** Etayo: on *Diploschistes diacapsis*; **staurospora** Diederich, van den Boom & Aptroot: on *Cladonia*.
Lit.: Diederich et al. 2002a; Etayo 2010c.

Clauzadeomyces Diederich; type: *C. verrucosus*. Mol.: no. Asexual, sporodochial.
Species: 1-0-0. **verrucosus** Diederich: on *Placopsis*.
Lit.: Diederich 1994.

Codonmyces Calat. & Etayo; type: *C. lecanorae*. Mol.: no. Asexual, hyphomycetous.
Species: 1-0-0. **lecanorae** Calat. & Etayo: on *Lecanora valesiaca*.
Lit.: Calatayud & Etayo 1999a.

Coniambigua Etayo & Diederich; type: *C. phaeographidis*. Mol.: no. Asexual, pycnidial.
Species: 1-0-0. **phaeographidis** Etayo & Diederich: on *Phaeographis* s.l. (incl. *Leiorreuma*).
Lit.: Etayo & Diederich 1995.

Cornutispora Piroz.; type: *C. limaciformis*. Mol.: no. Asexual, pycnidial.
Species: 8-0-1. **ciliata** Kalb: on various lichens; **herteliana** Knoph: on *Lecidella*; **intermedia** Punith. & D.Hawksw.: on various lichens; **lichenicola** D.Hawksw. & B.Sutton: on

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various lichens; **limaciformis** Piroz.: facultatively lichenicolous on *Protoparmeliopsis muralis*; **ophiurospora** Etayo: on *Lobariella*; **pittii** D.Hawksw. & Punith.: on *Hypotrachyna*; **triangularis** Diederich & Etayo: on *Pertusaria pertusa*; **tricupulata** F.Berger & E.Zimm.: on *Physcia stellaris*.
Lit.: Etayo 2017; Etayo & Diederich 1995; Gierl & Kalb 1993; Hawksworth 1976, 1981; Knoph 2004; Punithalingam 2003; Sutton 1980; van den Boom & Etayo 2000; Zimmermann & Berger 2018.

Deichmannia Alstrup & D.Hawksw.; type: *D. verrucosa*. Mol.: no. Asexual, sporodochial.
Species: 1-0-0. **verrucosa** Alstrup & D.Hawksw.: on *Diploschistes*.
Lit.: Alstrup & Hawksworth 1990.

Dictyophrynella Bat. & Cavalc.; type: *D. bignoniacearum*. Mol.: no. Asexual, hyphomycetous.
Species: 1-0-0. **bignoniacearum** Bat. & Caval.: on foliicolous lichens.
Lit.: Hawksworth 1979a.

Epaphroconidia Calat. & V.Atienza; type: *E. hawksworthii*. Mol.: no. Asexual, pycnidial.
Species: 1-0-0. **hawksworthii** Calat. & V.Atienza: on *Pertusaria pertusa*.
Lit.: Calatayud & Atienza 1995.

Everniicola D.Hawksw.; type: *E. flexispora*. Mol.: no. Asexual, pycnidial.
Species: 1-0-0. **flexispora** D.Hawksw.: on *Evernia* and *Nephroma arcticum*.
Lit.: Hawksworth 1982a.

Feltgeniomyces Diederich; type: *F. luxemburgensis*. Mol.: no. Asexual, sporodochial.
Species: 4-0-0. **dichotomus** Etayo & Calat.: on *Physcia*; **luxemburgensis** Diederich: on *Lecidella*; **physciae** Etayo & Breuss: on *Physcia*; **uniseptatus** Diederich: on *Hypotrachyna*.
Lit.: Aptroot et al. 1997; Calatayud & Etayo 2001; Diederich 1990; Etayo & Breuss 1998.

Fenestroconidia Calat. & Etayo; type: *C. caloplacae*. Mol.: no. Asexual, sporodochial.
Species: 1-0-0. **caloplacae** Calat. & Etayo: on *Calogaya*.
Lit.: Calatayud & Etayo 1999b.

Gyrophthorus Hafellner & Sancho; type: *G. perforans*. Mol.: no.
Species: 3-0-0. **crustulosae** (Creveld) Hafellner & Sancho: on *Umbilicaria*; **gracilis** Nik.Hoffm. & Hafellner: on *Umbilicaria*; **perforans** Hafellner & Sancho: on *Umbilicaria*.
Lit.: Hafellner & Sancho 1990; Hoffman & Hafellner 2000.

Hawksworthiana U.Braun; type: *H. peltigericola*. Mol.: no. Asexual, hyphomycetous.
Species: 1-0-0. **peltigericola** (D.Hawksw.) U.Braun: on *Peltigera*.
Lit.: Braun 1988; Hawksworth 1980a.

Henfellra Halıcı, D.Hawksw., Z.Kocak. & M.Kocak.; type: *H. muriformis*. Mol.: no. Asexual, pycnidial.
Species: 1-0-0. **muriformis** Halıcı, D.Hawksw., Z.Kocak. & M.Kocak.: on *Candelariella antennaria*.
Lit.: Hawksworth et al. 2016.

Hymenobia Nyl.; type: *H. insidiosa* [= *Hymenobiella* Triebel; type: *H. aporea*]. Mol.: no. A poorly known genus.
Species: 1-0-0. **insidiosa** Nyl. [= *Hymenobiella aporea* (Nyl.) Triebel]: on *Lecidea*.
Lit.: Eriksson & Hawksworth 1991; Triebel 1989.

Hypotrachynicola Etayo; type: *H. rubra*. Mol.: no. Sexual.
Species: 1-0-0. **rubra** Etayo: on *Hypotrachyna*.
Lit.: Etayo 2002.

Intralichen D.Hawksw. & M.S.Cole; type: *I. christiansenii*. Mol.: yes (T, L). Asexual, hyphomycetous. Probably polyphyletic.
Species: 4-0-0. **baccisporus** D.Hawksw. & M.S.Cole: on *Calogaya*, *Flavoplaca*, *Gyalolechia*, *Xanthocarpia*, *Xanthomendoza* and other lichens; **christiansenii** (D.Hawksw.) D.Hawksw. & M.S.Cole [≡ *Bispora christiansenii* D.Hawksw.]: on *Candelariella* and other lichens; **lichenicola** (M.S.Christ. & D.Hawksw.) D.Hawksw. & M.S.Cole [≡ *Trimmatostroma lichenicola* M.S.Christ. & D.Hawksw.]: on *Candelariella* and other lichens; **lichenum** (Diederich) D.Hawksw. & M.S.Cole [≡ *Bispora lichenum* Diederich]: on various lichens.
Lit.: Diederich 1990; Hawksworth 1979a; Hawksworth & Cole 2002.

Isthmoconidium Etayo & F.Berger; type: *I. bacidiicola*. Mol.: no. Asexual, pycnidial.
Species: 1-0-0. **bacidiicola** Etayo & F.Berger: on *Bacidia*.
Lit.: Etayo & Berger 2013.

Kalchbrenneriella Diederich & M.S.Christ.; type: *K. cyanescens*. Mol.: no. Asexual, hyphomycetous.
Species: 1-0-0. **cyanescens** (Kalchbr.) Diederich & M.S.Christ.: on *Usnea*.
Lit.: Diederich 2002.

Katherinomyces Khodos.; type: *K. cetrariae*. Mol.: no. Asexual, coelomycetous, stromatic.
Species: 1-0-0. **cetrariae** Khodos: on *Cetraria aculeata*.
Lit.: Khodosovtsev et al. 2016, 2018.

Keissleriomyces D.Hawksw.; type: *K. sandstedeanus*. Mol.: no. Asexual, pycnidial.
Species: 1-0-0. **sandstedeanus** (Keissler) D.Hawksw.: on *Cladonia*.
Lit.: Hawksworth 1981.

Lambinonia Sérus. & Diederich; type: *L. strigulae*. Mol.: no. Asexual, sporodochial.
Species: 1-0-0. **strigulae** (Elenkin & Woron.) Sérus. & Diederich: on foliicolous *Strigula*.
Lit.: Sérusiaux & Diederich 2005.

Lawalreea Diederich; type: *L. lecanorae*. Mol.: no. Asexual, pycnidial. Resembles pycnidia of some *Lecanora* s.l.
Species: 1-0-0. **lecanorae** Diederich: on *Myriolecis persimilis* and other *Myriolecis* species.
Lit.: Diederich 1990.

Leightoniomyces D.Hawksw. & B.Sutton; type: *L. phillipsii*. Mol.: no. Asexual, hyphomycetous.

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Species: 2-0-0. **canariensis** Etayo & Pérez-Vargas: on crustose saxicolous lichens; **phillipsii** (Berk. & Leight.) D.Hawksw. & B.Sutton: on *Steinia geophana* and *Thrombium epigaeum*, possibly algicolous.
Lit.: Hawksworth 1977a, 1979a; Pérez-Vargas et al. 2013.

Lichenobactridium Diederich & Etayo; type: *L. pertusariae*. Mol.: no. Asexual, sporodochial.
Species: 1-0-0. **pertusariae** Diederich & Etayo: on *Pertusaria pertusa*.
Lit.: Etayo & Diederich 1995.

Lichenohendersonia Calat. & Etayo; type: *L. squamarinae*. Mol.: no. Asexual, pycnidial.
Species: 3-0-0. **squamarinae** Calat. & Etayo: on *Squamarina*; **uniseptata** Etayo & Calat.: on *Parmelia* and *Parmelina*; **varians** Calat. & Etayo: on *Rhizoplaca*.
Lit.: Calatayud & Etayo 2001.

Lichenopenicillus Etayo; type: *L. versicolor*. Mol.: no. Asexual, synnematous.
Species: 1-0-0. **versicolor** Etayo: on *Sticta and Leptogium*.
Lit.: Etayo 2017.

Lichenophoma Keissl.; type: *L. haematommatis*. Mol.: no. Asexual, pycnidial. A poorly known genus.
Species: 1-0-0 (2). **haematommatis** Keissl.: on *Haematomma*.
Lit.: Hawksworth 1981.

Lichenopuccinia D.Hawksw. & Hafellner; type: *L. poeltii*. Mol.: no. Asexual, sporodochial.
Species: 1-0-0. **poeltii** D.Hawksw. & Hafellner: on *Parmelia*.
Lit.: Hawksworth 1984.

Lichenostella Calat. & Etayo; type: *L. hypotrachynae*. Mol.: no. Asexual, sporodochial.
Species: 1-0-0. **hypotrachynae** Etayo & Calat.: on *Hypotrachyna*.
Lit.: Calatayud & Etayo 1999a.

Milospium D.Hawksw.; type: *M. graphideorum*. Mol.: yes (T). Asexual, hyphomycetous.
Species: 2-0-0 (4). **graphideorum** (Nyl.) D.Hawksw.: on *Dirina massiliensis*, sometimes lichenized; **lacoizquetae** Etayo & Diederich: on *Cladonia* [often co-occurring with *Arthonia digitatae*].
Lit.: Crous et al. 2015; Etayo & Diederich 1996a; Hawksworth 1975, 1979a.

Minutophoma D.Hawksw.; type: *M. chrysophthalmae*. Mol.: no. Asexual, pycnidial.
Species: 1-0-0. **chrysophthalmae** D.Hawksw.: on *Chrysothrix chrysophthalmae*.
Lit.: Hawksworth 1981.

Neolamya Theiss. & Syd.; type: *N. peltigerae*. Mol.: no. Sexual.
Species: 3-0-0. **ahtii** Zhurb.: on *Cladonia*; **peltigerae** (Mont.) Theiss. & Syd.: on *Peltigera* (mainly *P. didactyla*); **xanthoparmeliae** Kocourk.: on *Xanthoparmelia conspersa*.
Lit.: Keissler 1930; Kocourková 2009; Zhurbenko & Pino-Bodas 2017.

Nigromacula Etayo; type: *N. hypotrachynae*. Mol.: no. Asexual, sporodochial.
Species: 1-0-0. **uniseptata** (D.Hawksw.) D.Hawksw. [≡ *Vouauxiella u.* D.Hawksw.; = *N. hypotrachynae* Etayo]: on *Hypotrachyna*.
Lit.: Etayo 2002.

Nigropuncta D.Hawksw.; type: *N. rugulosa*. Mol.: no. Asexual, pycnidial.
Species: 2-0-0. **groenlandica** Alstrup: on crustose lichen; **rugulosa** D.Hawksw.: on *Bellemerea*.
Lit.: Alstrup 1993a; Hawksworth 1981; Hawksworth & Poelt 1986.

Patriciomyces D.Hawksw.; type: *P. valentinianus*. Mol.: no. Asexual, hyphomycetous.
Species: 1-0-0. **valentinianus** D.Hawksw.: on *Physcia*.
Lit.: Cole & Hawksworth 2001.

Psammina Sacc. & M.Rousseau; type: *P. bommeriae* M.Rousseau & Sacc. Mol.: no. Asexual, hyphomycetous.
Species: 3-0-0 (8). **inflata** Earl.-Benn. & D.Hawksw.: on *Lepraria* and corticolous algae; **simplex** Earl.-Benn. & D.Hawksw.: on various corticolous lichens and algae; **stipitata** D.Hawksw.: on various corticolous lichens and algae.
Lit.: Earland-Bennett & Hawksworth 1999a; Hawksworth 1979a.

Pycnopsammina Diederich & Etayo; type: *P. lobariae*. Mol.: no. Asexual, pycnidial.
Species: 1-0-0. **lobariae** Diederich & Etayo [≡ *Psammina lobariae* (Diederich & Etayo) Earl.-Benn. & D.Hawksw.]: on *Lobaria pulmonaria*.
Lit.: Etayo & Diederich 1995.

Pygmaeosphaera Etayo & Diederich; type: *P. coccocarpiae*. Mol.: no. Possibly related to Tubeufiales.
Species: 3-0-0. **coccocarpiae** (Diederich) Etayo & Diederich [≡ *Nectriopsis coccocarpiae* Diederich]: on *Coccocarpia*; **epigraphis** Etayo: on *Graphis*; **sipmaniana** Etayo: on *Parmeliella*.
Lit.: Etayo 2017.

Refractohilum D.Hawksw.; type: *R. galligenum*. Mol.: no. Asexual, hyphomycetous.
Species: 5-0-0. **achromaticum** (B.Sutton) D.Hawksw.: on *Gyalecta*; **galligenum** D.Hawksw.: on *Nephroma laevigatum*; **intermedium** Cl.Roux & Etayo: on *Gyalecta*; **peltigerae** (Keissl.) D.Hawksw.: on *Peltigera*; **pluriseptatum** Etayo & Cl.Roux: on *Gyalecta*, possibly also on *Nephroma antarcticum*.
Lit.: Etayo & Sancho 2008; Hawksworth 1977a, 1979a; Roux et al. 1997.

Sarcoexcipula Etayo; type: *S. pannariae*. Mol.: no. Sexual.
Species: 1-0-0. **pannariae** Etayo: on *Pannaria pallida*.
Lit.: Etayo & Sancho 2008.

Sessiliospora D.Hawksw.; type: *S. bicolor*. Mol.: no. Asexual, hyphomycetous.
Species: 1-0-0. **bicolor** D.Hawksw.: foliicolous lichens.
Lit.: Hawksworth 1979a.

Spilomium Nyl.; typification not clear. Mol.: no. Asexual, sporodochial.
Species: 0-1-0. ***auratum*** Sm.: lichenized, facultatively lichenicolous on *Dirina* spp.
Lit.: Giavarini & Purvis 2009b.

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Stellifraga Alstrup & Olech; type: *S. cladoniicola*. Mol.: no. Sexual.
Species: 1-0-0. **cladoniicola** Alstrup & Olech: on *Cladonia*.
Lit.: Alstrup & Olech 1993.

Stygiomyces Coppins & S.Y.Kondr.; type: *S. galliformis*. Mol.: no. Asexual, pycnidial.
Species: 1-0-0. **galliformis** Coppins & S.Y.Kondr.: on *Pseudocyphellaria*.
Lit.: Coppins & Kondratyuk 1995.

Taeniolina M.B.Ellis; type: *T. centaurii* (Fuckel) M.B.Ellis. Mol.: no. Asexual, hyphomycetous.
Species: 0-0-1 (4). **scripta** (P.Karst) P.M.Kirk: facultatively lichenicolous on corticolous lichens.
Lit.: Diederich 1989; Hawksworth 1979a; Heuchert et al. 2018.

Talpapellis Alstrup & M.Cole; type: *T. peltigerae*. Mol.: no. Asexual, hyphomycetous.
Species: 5-0-0. **beschiana** (Diederich) Zhurb., U.Braun, Diederich & Heuchert [≡ *Taeniolella beschiana* Diederich; = *Ameroconium cladoniae* U.Braun & Zhurb.]: on *Cladonia*; **mahensis** Diederich, U.Braun & Ertz: on crustose lichen with *Trentepohlia*; **peltigerae** Alstrup & M.S.Cole var. **peltigerae**: on *Peltigera venosa*; **peltigerae** Alstrup & M.S.Cole var. **rossica** Heuchert, Zhurb. & U.Braun: on *Peltigera* spp.; **solorinae** Zhurb., Heuchert & U.Braun: on *Solorina crocea*.
Lit.: Alstrup & Cole 1998; Diederich 1992; Diederich et al. 2017; Heuchert et al. 2014, 2018; Zhurbenko & Braun 2013; Zhurbenko et al. 2015c.

Teratosperma Syd. & P.Syd.; type: *T. singulare* Syd. & P.Syd. Mol.: no. Asexual, hyphomycetous.
Species: 2-0-0 (14). **anacardii** Hansf.: on foliicolous lichens; **lichenicola** D.Hawksw.: on foliicolous lichens.
Lit.: Hawksworth 1979a.

Trichoconis Clem.; type: *T. caudata* (Appel & Strunk) Clem. Mol.: yes. Asexual, hyphomycetous.
Species: 3-0-0 (21). **hafellneri** U.Braun, Khodos., Darmostuk & Diederich: on *Athallia pyracea* and *Xanthoria parietina*; **lichenicola** D.Hawksw.: on *Peltigera collina*; **physciicola** Brackel: on *Physcia*.
Lit.: Brackel 2014; Braun et al. 2016; Hawskworth 1980b.

Vagnia D.Hawksw. & Miądl.; type: *V. cirriformis*. Mol.: no. Asexual, coelomycetous.
Species: 1-0-0. **cirriformis** D.Hawksw. & Miądl. [as '*cirriformia*']: on *Peltigera*.
Lit.: Hawksworth & Miądlikowska 1997b.

Verrucaster Tobler; type: *V. lichenicola*. Mol.: no. Asexual, pycnidial. A poorly known taxon.
Species: 1-0-0. **lichenicola** Tobler: on *Cladonia*.
Lit.: Hawksworth 1981.

Viridiannula Etayo; type: *V. pertusariae*. Mol.: no. Asexual, pycnidial.
Species: 1-0-0. **pertusariae** Etayo: on *Pertusaria pertusa*.
Lit.: Etayo 2002b.

Vouauxiella Petr. & Syd.; type: *V. verrucosa*. Mol.: no. Asexual, pycnidial.
Species: 3-0-0. **lichenicola** (Linds.) Petrak & H.Sydow: on *Lecanora*; **pithospora** (Cavalc. & Silva) B.Sutton: on foliicolous lichens; **verrucosa** (Vouaux) Petrak & H.Sydow: on *Lecanora*.
Lit.: Hawksworth 1981.

Zevadia J.C.David & D.Hawksw.; type: *Z. peroccidentalis*. Mol.: no. Asexual, hyphomycetous.
Species: 1-0-0. **peroccidentalis** J.C.David & D.Hawksw.: on *Usnea*.
Lit.: David & Hawksworth 1995.

Zwackhiomacromyces Etayo & van den Boom; type: *Z. constrictocarpus*. Mol.: no. Sexual.
Species: 2-0-0. **constrictocarpus** Etayo & van den Boom: on *Megalospora verrucosa*; **hyalosporus** (Alstrup, D.Hawksw. & R.Sant.) Etayo & F.Berger [≡ *Pyrenidium hyalosporum* Alstrup, D.Hawksw. & R.Sant.]: on *Placopsis*.
Lit.: Alstrup & Hawksworth 1990; van den Boom & Etayo 2014.

Phylum BASIDIOMYCOTA R.T.Moore

Subphylum PUCCINIOMYCOTINA R.Bauer, Begerow, J.P.Samp., M.Weiss & Oberw.

Order **Agaricostilbales** Oberw. & R.Bauer

Family **Chionosphaeraceae** Oberw. & Bandoni

Chionosphaera D.E.Cox; type: *C. apobasidialis* D.E.Cox (saprotrophic). Mol.: yes (T).
Species: 2-0-0 (6). **coppinsii** P.Roberts: on various lichens; **lichenicola** Alstrup, Sutton & Tønsberg: on various lichens.
Lit.: Diederich 1996; Kirschner et al. 2001; Roberts 1997.

Order **Cyphobasidiales** T.Sprib. & H.Mayrhofer

Family **Cyphobasidiaceae** T.Sprib. & H.Mayrhofer

Cyphobasidium Millanes, Diederich & Wedin; type: *C. hypogymniicola*. Mol.: yes (T, L). Sexual stage in galls, yeast stage asymptomatic in lichen cortex; DNA sequences of many unnamed species obtained from the cortex of macrolichens, especially of Parmeliaceae.
Species: 2-0-0. **hypogymniicola** (Diederich & Ahti) Millanes, Diederich & Wedin [≡ *Cystobasidium hypogymniicola* Diederich & Ahti]: on *Hypogymnia*; **usneicola** (Diederich & Alstrup) Millanes, Diederich & Wedin [≡ *Cystobasidium usneicola* Diederich & Alstrup]: on *Usnea* [consists of two genetically distinct species].
Lit.: Diederich 1996; Diederich & Christiansen 1994; Millanes et al. 2016a; Spribille et al. 2016.

Subphylum AGARICOMYCOTINA Doweld [= Basidiomycotina Ainsw.]

Class TREMELLOMYCETES Doweld

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Order **Filobasidiales** Jülich

Family **Filobasidiaceae** L.S.Olive

Heterocephalacria Berthier; type: *H. solida* Berthier. Mol.: yes (T, L).
Species: 2-0-0 (4). **bachmannii** (Diederich & M.S.Christ.) Millanes & Wedin [≡ *Syzygospora bachmannii* Diederich & M.S.Christ.]: on *Cladonia*; **physciacearum** (Diederich) Millanes & Wedin [≡ *S. physciacearum* Diederich]: on *Leucodermia*, *Physcia*, *Physconia* and *Polyblastidium*, also reported from *Phaeophyscia*.
Lit.: Diederich 1996; Liu et al. 2016.

Syzygospora G.W.Martin; type: *S. alba* G.W.Martin. Mol.: yes (T).
Species: 1-0-0 (3). **parmeliicola** Diederich: on *Hypotrachyna* [phylogenetic position unknown].
Lit.: Diederich 1996.

Order **Tremellales** Fr.

Family **Tremellaceae** Fr.

Biatoropsis Räsänen; type: *B. usnearum*. Mol.: yes (T, L).
Species: 4-0-0. **hafellneri** Millanes, Diederich, M.Westb. & Wedin: on *Usnea fragilescens* aggr., mainly *U. cornuta*; **minuta** Millanes, Diederich, M.Westb. & Wedin: on *Usnea barbata* and *U. lapponica*; **protousneae** Millanes, Diederich, M.Westb. & Wedin: on *Protousnea dusenii*; **usnearum** Räsänen s.str.: on *Usnea* (incl. *U. flavocardia*, *U. florida/subfloridana*, *U. fragilescens*, *U. glabrescens*, *U.* cf. *krogiana* and *U. macaronesica*); in continental Europe so far only on *U. florida/subfloridana*.
Lit.: Diederich 1996; Diederich & Christiansen 1994; Millanes et al. 2014b, 2016b.

Tremella Pers. s.l.; type: *T. mesenterica* (Schaeff.) Retz. Mol.: yes (T, L). All lichenicolous species sexual, often with asexual stage.
Species: 60-0-0 (250). **anaptychiae** J.C.Zamora & Diederich: on *Anaptychia ciliaris*; **caloplacae** (Zahlbr.) Diederich s.l.: on *Caloplaca* s.l. and *Xanthoria*; **candelariellae** Diederich & Etayo: on *Candelariella*; **celata** J.C.Zamora, Millanes, V.J.Rico & Pérez-Ortega: on *Ramalina fraxinea*; **cephalodiicola** Diederich: on *Psoroma*; **cetrariellae** Millanes, Diederich, M.Westb., Pippola & Wedin: on *Cetraria delisei*; **cetrariicola** Diederich & Coppins: on *Nephromopsis*; **christiansenii** Diederich: on *Physcia*; **cladoniae** Diederich & M.S.Christ.: on *Cladonia*; **coccocarpiae** Diederich: on *Coccocarpia*; **coppinsii** Diederich & G.Marson: on *Platismatia*; **dendrographae** Diederich & Tehler: on *Dendrographa*; **diederichiana** Pérez-Ortega, Millanes, Wedin, V.J.Rico & J.C.Zamora: on *Lecidea* aff. *erythrophaea*; **diploschistina** Millanes, M.Westb., Wedin & Diederich: on *Diploschistes*; **dirinariae** Diederich, Millanes & Wedin: on *Dirinaria aegialita*; **endosporogena** J.C.Zamora, Millanes, V.J.Rico & Pérez-Ortega: on *Lecanora carpinea* (apothecia); **everniae** Diederich: on *Evernia mesomorpha*; **graphidastrae** Diederich: on *Graphidastra*; **graphidis** Diederich, Millanes & Wedin: on *Graphis*; **haematommatis** Diederich: on *Haematomma*; **harrisii** Diederich: on *Polymeridium* and *Trypethelium*; **huuskonenii** Diederich, Myllys, Goward & Lindgren: hyperparasitic on *Raesaenenia huuskonenii* over *Bryoria*; **hypocenomycis** Diederich: on *Hypocenomyce*; **hypogymniae** Diederich & M.S.Christ.: on *Hypogymnia*; **leptogii** Diederich: on *Leptogium*; **lethariae**: on *Letharia vulpina*; **lichenicola** Diederich: on *Violella fucata*; **lobariacearum** Diederich & M.S.Christ.: on *Lobaria* and *Pseudocyphellaria*; **macrobasidiata** J.C.Zamora, Pérez-Ortega & V.J.Rico: on *Lecanora*; **macroceratis** Diederich & Hafellner: on *Cladonia*; **mayrhoferi** J.C.Zamora, Millanes, Etayo & Wedin: on *Lecanora allophana*; **microcarpa** Diederich: on cf. *Megalospora*; **monospora** Diederich: on *Leptogium*; **montis-wilhelmii** Diederich: on *Normandina simodense*; **nashii** Diederich: on *Usnea*; **nephromatis** Diederich: on *Nephroma*; **normandinae** Diederich: on *Normandina pulchella*; **nieblae** Diederich: on *Niebla*; **papuana** Diederich: on *Hypogymnia*; **parmeliarum** Diederich: on *Parmotrema*; **parmeliellae** Diederich & Sérusiaux: on *Parmeliella*; **pertusariae** Diederich: on *Pertusaria*; **phaeographidis** Diederich, Coppins & Bandoni: on *Phaeographis*; **phaeographinae** Diederich & Aptroot: on '*Phaeographina*'; **phaeophysciae** Diederich & M.S.Christ.: on *Phaeophyscia*; **protoparmeliae** Diederich & Coppins: on *Protoparmelia*; **psoroglaenae** Diederich: on *Psoroglaena*; **psoromicola** Diederich: on *Psoroma*; **pyrenulae** Diederich, Millanes, Wedin & Common: on *Pyrenula*; **ramalinae** Diederich: on *Ramalina*; **rhizocarpicola** Diederich, Millanes & Wedin: on *Rhizocarpon*; **rinodinae** Diederich & M.S.Christ.: on *Rinodina*; **santessonii** Diederich: on *Usnea*; **stevensiana** Diederich: on *Usnea*; **stictae** Diederich: on *Dendriscocaulon* and *Sticta*; **sulcariae** Diederich & M.S.Christ.: on *Sulcaria*; **umbilicariae** Diederich & Millanes: on *Umbilicaria*; **tuckerae** Diederich: on *Ramalina*; **variae** Pérez-Ortega, Millanes, V.J.Rico & J.C.Zamora: on *Lecanora varia*; **wirthii** Diederich: on *Protoparmelia*.
Lit.: Ariyawansa et al. 2015; Diederich 1996, 2003, 2004d, 2007a, 2007b; Diederich et al. 2014b; Etayo 2018a; Lindgren et al. 2015; Sérusiaux et al. 2003; Millanes et al. 2011, 2012, 2014a, 2015; Werth et al. 2013; Zamora et al. 2016, 2017.

Class Tremellomycetes familia incertae sedis

Family **Heteroacanthellaceae** P.Roberts

Heteroacanthella Oberw.; type: *H. variabilis* Oberw. & Langer. Mol.: yes (T).
Species: 1-0-0 (3). **ellipsospora** J.C.Zamora, Pérez-Ortega & V.J.Rico: on *Lecanora carpinea*.
Lit.: Zamora et al. 2014.

Class AGARICOMYCETES Doweld

Order **Agaricales** Underw.

Family **Hygrophoraceae** Lotsy

Subfamily **Lichenomphaloideae** Lücking & Redhead

Arrhenia Fr.; type: *A. auriscalpia* (Fr.) Fr. (bryophylous). Mol.: yes (T, L). Most species bryophylous or phycophilous.

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Species: 1-0-0 (40). **peltigerina** (Peck) Redhead, Lutzoni, Moncalvo & Vilgalys [≡ *Omphalina p*. (Peck) P.Collin]: on *Peltigera*.
Lit.: Barrasa & Rico 2010; Collin & Lauron 1994; Garnier-Delcourt 2008; Orton 1977; Redhead et al. 2002; Santesson 1993a.

Eonema Redhead, Lücking & Lawrey; type: *E. pyriforme*. Mol.: yes (T, L).
Species: 0-0-1. **pyriforme** (M.P.Christ.) Redhead, Lücking & Lawrey [≡ *Athelia pyriformis* (M.P.Christ.) Jülich]: facultatively lichenicolous on *Cetraria aculeata*.
Lit.: Khodosovtsev et al. 2018.

Family **Tricholomataceae** Lotsy

Gamundia Raitelh.; type: *G. pseudoclusilis* (Joss. & Konrad) Raitelh. (saprotrophic) [possibly a synomym of *G. striatula* (Kühner) Raitelh.]. Mol.: yes. *G. leucophylla* (Fr.) H.E.Bigelow and *G. xerophila* (Lüthi & Röllin) Raithelh. are only doubtfully lichenicolous on moribund *Peltigera*.
Species: 0-0-1 (10). **striatula** (Kühner) Raithelh.: facultatively lichenicolous on *Cladonia* and *Peltigera*.
Lit.: Alstrup & Hawksworth 1990; Barrasa & Rico 2010; Moreau 2005.

Order **Atheliales** Jülich

Family **Atheliaceae** Jülich

Athelia Pers.; type: *A. epiphylla*. Mol.: yes (T, L). Sexual and asexual (sclerotia-forming).
Species: 0-0-4 (100). **alnicola** (Bourd. & Galz.) Jülich: facultatively lichenicolous; **arachnoidea** (Berk.) Jülich: frequently lichenicolous, on various lichens, also over bryophytes or bark; **epiphylla** Pers.: facultatively lichenicolous; **salicum** Pers.: facultatively lichenicolous.
Lit.: Arvidsson 1976, 1978; Jülich 1972; Lawrey et al. 2007; Parmasto 1998.

Order **Boletales** E.-J.Gilbert

Family **Coniophoraceae** Ulbr.

Leucogyrophana Pouzar; type: *L. mollusca* (Fr.) Pouzar (saprotrophic). Mol.: yes (T, L). Sexual and asexual (sclerotia-forming).
Species: 1-0-0 (10). **lichenicola** Thorn, Malloch & Ginns: on *Cladonia* and *Stereocaulon*.
Lit.: Lawrey et al. 2007; Thorn et al. 1998.

Order **Cantharellales** Gäum.

Order Cantharellales genera incertae sedis

Adamflakia Diederich & Lawrey; type: *A. applanata* [≡ *Bulbilla* Diederich, Flakus & Etayo, nom. inval.; type: *B. applanata*]. Mol.: yes (T, L). Asexual (bulbil-forming).
Species: 1-0-0. **applanata** Diederich & Lawrey [≡ *Bulbilla applanata* Diederich, Flakus & Etayo, nom. inval.]: on Peltigerales.
Lit.: Diederich et al. 2014a; Lawrey et al. 2016.

Burgella Diederich & Lawrey; type: *B. flavoparmeliae*. Mol.: yes (T, L). Asexual (bulbil-forming).
Species: 1-0-1. **flavoparmeliae** Diederich & Lawrey: on *Flavoparmelia baltimorensis*; **lutea** Diederich, Capdet, A.I.Romero & Etayo: facultatively lichenicolous over various lichens.
Lit.: Diederich & Lawrey 2007; Diederich et al. 2014a; Lawrey et al. 2007.

Burgellopsis Diederich & Lawrey; type: *B. nivea*. Mol.: yes (T, L). Asexual (bulbil-forming).
Species: 1-0-0. **nivea** Diederich & Lawrey: on sterile, crustose lichen.
Lit.: Diederich et al. 2014a.

Burgoa Goid.; type: *B. verzuoliana* Goid. (saprotrophic). Mol.: yes (T, L). Asexual (bulbil-forming). Related to *Sistotrema* Fr. s.l. (sexual)
Species: 1-0-0 (7). **angulosa** Diederich, Lawrey & Etayo: on various lichens.
Lit.: Diederich & Lawrey 2007; Lawrey et al. 2007.

Ceratobasidium D.P.Rogers; type: *C. calosporum* S.P.Rogers (saprotrophic). Mol.: yes (L). Sexual and asexual (sclerotia/bulbil-forming).
Species: 1-0-0 (10). **bulbillifaciens** Diederich & Lawrey: on various lichens.
Lit.: Diederich et al. 2014a.

Minimedusa Weresub & P.M.LeClair; type: *M. polyspora* (Hotson) Weresub & P.M.LeClair (saprotrophic). Mol.: yes (T, L). Asexual (bulbil-forming).
Species: 1-0-0 (3). **pubescens** Diederich, Lawrey & Heylen: on various lichens.
Lit.: Diederich & Lawrey 2007; Lawrey et al. 2007.

Neoburgoa Diederich, E.Zimm. & Lawrey; type: *N. freyi*. Mol.: yes (T, L). Asexual (bulbil-forming).
Species: 1-0-0. **freyi** Diederich, E.Zimm. & Lawrey: on *Cladonia rangiferina*.
Lit.: Lawrey et al. 2016.

Order **Corticiales** K.-H.Larss.

Family **Corticiaceae** Herter

Corticium Pers.; type: *C. roseum* Pers. Mol.: yes (T, L). Sexual.
Species: 1-0-0 (20). **silviae** Diederich, E.Zimm. & Lawrey: on *Thamnolia*.
Lit.: Diederich et al. 2018.

Erythricium J.Erikss. & Hjortstam; type: *E. laetum* (P.Karst.) J.Erikss. & Hjortstam (saprotrophic) [= *Marchandiobasidium* Diederich & Schultheis; type: *M. aurantiacum*]. Mol.: yes (T, L). Sexual and asexual (bulbil-forming).
Species: 1-0-0 (7). **aurantiacum** (Lasch) D.Hawksw. & A.Henrici [≡ *Marchandiomyces aurantiacus* (Lasch) Diederich & Etayo; = *Marchandiobasidium aurantiacum*

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Diederich & Schultheis]: on *Physcia* and rarely other lichens.
Lit.: Diederich 1990; Diederich & Lawrey 2007; Diederich et al. 2003; Hawksworth & Henrici 2015; Lawrey et al. 2008.

Laetisaria Burds.; type: *L. fuciformis* (McAlpine) Burds. (graminicolous). Mol.: yes (T, L). Sexual or asexual (bulbil-forming).
Species: 2-0-0 (7). **buckii** (Diederich & Lawrey) Diederich, Lawrey & Ghobad-Mejhad [≡ *Marchandiomyces buckii* Diederich & Lawrey]: on various lichens; **lichenicola** Diederich, Lawrey & Van den Broeck: on *Physcia*.
Lit.: Diederich & Lawrey 2007; Diederich et al. 2011a.

Lawreymyces Lücking & Moncada; type: *L. palicei*. Mol.: yes (T, L). Sexual, asexual, hyphal and yeast stages unknown. Endolichenic. Cannot be detected or identified without DNA sequences. Not validly published (Hawksworth et al. 2017). DNA sequences obtained from the host of the generic type (*Agonimia foliacea*) led previous authors to erroneously conclude that the host was a lichenized member of Corticiaceae.
Species: 7-0-0. **bogotensis** Lücking & Moncada: endolichenic in *Normandina* sp.; **columbiensis** Lücking & Moncada: endolichenic in *Normandina columbiensis*; **confusus** Lücking & Moncada: endolichenic in *Normandina* aff. *columbiensis*; **foliaceae** Lücking & Moncada: endolichenic in *Agonimia foliacea*; **palicei** Lücking & Moncada: endolichenic in *Agonimia foliacea*; **pulchellae** Lücking & Moncada: endolichenic in *Normandina pulchella*; **spribillei** Lücking & Moncada: endolichenic in *Agonimia foliacea*.
Lit.: Lücking & Moncada 2017.

Marchandiomyces Diederich & D.Hawksw.; type: *M. corallinus*. Mol.: yes (T, L). Asexual (bulbil-forming).
Species: 1-0-0 (3). **corallinus** (Roberge) Diederich & D.Hawksw.: on various lichens.
Lit.: Diederich & Lawrey 2007; Etayo & Diederich 1996a; Hawksworth 1979a; Lawrey et al. 2007; Sikaroodi et al. 2001.

Nomenclatural and Taxonomic Novelties

After the revision of the genus *Didymocyrtis*, including now many species that have a former *Phoma* species as the asexual stage (Ertz et al. 2015), it became obvious that both *Phoma lobariae* and *P. psoromatis* do not belong there. Instead, the morphological characters of both perfectly fit the current circumscription of *Abrothallus*, including species mainly known from the asexual stage that were formerly described in *Vouauxiomyces*. The two following new combinations become therefore necessary.

Abrothallus lobariae (Diederich & Etayo) Diederich & Ertz, comb. nov.
Basionym: *Phoma lobariae* Diederich & Etayo, in Etayo & Diederich, Flechten Follmann, Contributions to Lichenology in Honour of Gerhard Follmann: 213 (1995)
MycoBank MB 827766

Abrothallus psoromatis (Zhurb. & U.Braun) Diederich & Zhurb., comb. nov.
Basionym: *Phoma psoromatis* Zhurb. & U.Braun, Lichenologist 45: 587 (2013)
MycoBank MB 827767

Arthonia polydactylonis Diederich & Ertz, nom. nov.
Replaced synonym: *Arthonia ceracea* Etayo & Breuss, Österr. Z. Pilzk. 7: 206 (1998) nom. illeg. non *Arthonia ceracea* Fée, Essai Crypt. Ecorces Exot. Offic., Suppl. Révis. (Paris): 42 (1837)
MycoBank MB 827768
Type: CANADA. British Columbia: Wells Gray Provincial Park, Trophy Mountain Recreation Area, 51°46′N, 119°54′W, 1800-1900 m, on *Peltigera polydactylon*, 24 Aug. 1994. *O. Breuss 10.658* (LI–holotype, UPS–isotype, non vid.).

Asteroglobulus pyramidalis (Etayo) Diederich, comb. nov.
Basionym: *Cornutispora pyramidalis* Etayo, Opuscula Philolichenum 8: 134 (2010)
MycoBank MB 827769

Based on the original description and a further specimen studied by us, this species does not belong to *Cornutispora*, but is a typical member of *Asteroglobulus*.

Specimen examined: AZORES. Sao Migue: Furnas, on the shore of Lagoa das Furnas, on bark of *Cryptomeria japonica*, on *Parmotrema robustum*, 30 July 2010, *P. Diederich 16968* (herb. Diederich).

Bachmanniomyces D.Hawksw., Bull. Brit. Mus. (Nat. Hist.), Bot. 9: 10 (1981); type: *B. uncialicola* (Zopf) D.Hawksw.
Syn. nov.: *Phaeopyxis* Rambold & Triebel, Notes Roy. Bot. Gard. Edinburgh 46: 380 (1990); type *P. punctum* (A.Massal.) Rambold, Triebel & Coppins

Pino-Bodas et al. (2017) included the type species of both genera in a molecular phylogenetic analysis and found that both cluster together in a well-supported clade within the Ostropomycetidae, and their results suggested that *Bachmanniomyces uncialicola* represents the asexual stage of *Phaeopyxis punctum*. Consequently, we consider both

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species and both genera to be synonymous. As *Bachmanniomyces* (1981) predates *Phaeopyxis* (1990), and after the deletion of Art. 57.2 in the new Shenzhen Code (ICN), the name *Bachmanniomyces* has to be used for this genus in the absence of a formal conservation proposal. The following new combinations and synonymy become therefore necessary:

Bachmanniomyces australis (Rambold & Triebel) Diederich & Pino-Bodas, comb. nov.
BASIONYM: *Phaeopyxis australis* Rambold & Triebel, Notes Roy. Bot. Gard. Edinburgh 46: 381 (1990)
MYCOBANK MB 827770

Bachmanniomyces carniolicus (Arnold) Diederich & Pino-Bodas, comb. nov.
BASIONYM: *Biatora carniolica* Arnold, in Głowacki, Verh. K. K. Zool.-Bot. Ges. Wien 20: 453 (1870); ≡ *Phaeopyxis carniolica* (Arnold) Rambold & Triebel, Notes Roy. Bot. Gard. Edinburgh 46: 382 (1990)
MYCOBANK MB 827771

Bachmanniomyces muscigenae (Alstrup & E.S.Hansen) Diederich & Pino-Bodas, comb. nov.
BASIONYM: *Phaeopyxis muscigenae* Alstrup & E.S.Hansen, Graphis Scripta 12: 44 (2001)
MYCOBANK MB 827772

Bachmanniomyces punctum (A.Massal.) Diederich & Pino-Bodas, comb. nov.
BASIONYM: *Nesolechia punctum* A.Massal., Schedulae criticae in lichenes exsiccatos Italiae: 96 (1856); ≡ *Phaeopyxis punctum* (A.Massal.) Rambold, Triebel & Coppins, Notes Roy. Bot. Gard. Edinburgh 46: 384 (1990)
SYN. NOV.: *Phyllosticta uncialicola* Zopf, Hedwigia 35: 324 (1896); ≡ *Bachmanniomyces uncialicola* (Zopf) D.Hawksw., Bull. Brit. Mus. (Nat. Hist.), Bot. 9: 11 (1981)
MYCOBANK MB 827773

Bachmanniomyces varius (Coppins, Rambold & Triebel) Diederich & Pino-Bodas, comb. nov.
BASIONYM: *Phaeopyxis varia* Coppins, Rambold & Triebel, Notes Roy. Bot. Gard. Edinburgh 46: 385 (1990)
MYCOBANK MB 827774

Didymocyrtis grumantiana (Zhurb. & Diederich) Zhurb. & Diederich, comb. nov.
BASIONYM: *Phoma grumantiana* Zhurb. & Diederich, in Diederich et al., Lichenologist 39: 160 (2007)
MYCOBANK MB 827775

Although no sequences are available from this species, it strongly resembles other *Phoma* species recently included in *Didymocyrtis* and is most probably closely related to them.

Epithamnolia atrolazulina (Etayo) Diederich, comb. nov.
BASIONYM: *Hainesia atrolazulina* Etayo, Opera Lilloana 50: 205 (2017)
MYCOBANK MB 827776

Suija et al. (2018) revised the lichenicolous *Hainesia* Ellis & Sacc. species and suggested including them in an enlarged concept of the genus *Epithamnolia* Zhurb. *Hainesia atrolazulina* obviously belongs to the same genus, but is distinguished from all other species by the dark blue, instead of brownish conidiomatal wall (Etayo 2017).

Gyalolechia epiplacynthium (Etayo) Diederich, comb. nov.
BASIONYM: *Fulgensia epiplacynthium* Etayo, Guineana 16: 170 (2010)
MYCOBANK MB 827777

This species was described for a lichenized taxon with a reduced or sometimes almost absent thallus, growing parasitically over *Placynthium*, otherwise strongly resembling *Fulgensia bracteata*. As the genus *Fulgensia* has recently been shown to be a younger synonym of *Gyalolechia*, and as molecular data placed *F. bracteata* close to the generic types of both *Gyalolechia* and *Fulgensia* (Arup et al. 2013), this new combination becomes necessary.

Divakar et al. (2015) showed that *Phacopsis* s.l. (see Triebel et al. 1995) represents three phylogenetically distinct genera, *Phacopsis* s.str., *Nesolechia* and the new *Raesaenenia*. Divakar et al. (2017) used a temporal phylogenetic method to harmonize family- and genus-level classification and concluded that *Nesolechia* should be considered as a synonym of *Punctelia*, and *Raesaenenia* of *Protousnea*. Molecular data obtained from Peršoh & Rambold (2002) are still unsufficient for *Phacopsis* s.str., although Divakar et al. (2015) found, based on a single ITS sequence, that the generic type *P. vulpina* formed a sister relationship with the *Relicina* + *Pseudoparmelia* clade.

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As *Nesolechia* was the sister clade of *Punctelia*, and *Raesaenenia* of *Protousnea*, in the phylogenetic tree obtained by Divakar et al. (2017), and as both lichenicolous genera are morphologically and anatomically rather different from the lichenized genera, we continue accepting *Nesolechia* and *Raesaenenia* as distinct genera.

The three taxa combined below were described within *Phacopsis* s.l., but are oviously congeneric with the type of *Nesolechia*, and consequently are combined there.

Nesolechia doerfeltii (Alstrup & P.Scholz) Diederich, comb. nov.
Basionym: *Phacopsis doerfeltii* Alstrup & P.Scholz, in Scholz, Sauteria 9: 38 (1998)
MycoBank MB 827779

Nesolechia falcispora (Triebel & Rambold) Diederich, comb. nov.
Basionym: *Phacopsis falcispora* Triebel & Rambold, in Triebel et al., Bryologist 98: 76 (1995)
MycoBank MB 827780

Nesolechia oxyspora var. ***fusca*** (Triebel & Rambold) Diederich, comb. nov.
Basionym: *Phacopsis oxyspora* var. *fusca* Triebel & Rambold, in Triebel et al., Bryologist 98: 80 (1995)
MycoBank MB 827781

Phaeoseptoria Speg.

Quaedvlieg et al. (2013) and Phookamsak et al. (2014) showed in multigene phylogenetic analyses that sequences of the type of *Phaeosphaeria* (sexual) and *Phaeoseptoria* (asexual) group together and consequently synonymized *Phaeoseptoria* under *Phaeosphaeria*. However, after the deletion of Art. 57.2 in the new Shenzhen Code (ICN), the earlier name *Phaeoseptoria* (1908) must be used for these species, and not *Phaeosphaeria* (1909).

Although no sequences are available from *Phaeoseptoria peltigerae*, the only known lichenicolous species of the genus, we nevertheless regard it here as a typical member of *Phaeoseptoria*, based on morphological resemblances with the generic type.

Preussia peltigerae (Brackel) Diederich, comb. nov.
Basionym: *Sporormiella peltigerae* Brackel, Ber. Bayer. Bot. Ges. 79: 36 (2009)
MycoBank MB 827782

Kruys & Wedin (2009) proposed to treat *Sporormiella* Ellis & Everh. as a synonym of *Preussia* Fuckel, based on multigene phylogenetic analyses. Consequently the only known lichenicolous species of *Sporormiella* needs to be combined in *Preussia*.

Sclerococcum Fr. : Fr., Syst. mycol. 1: XL (1821); type: *S. sphaerale* (Ach. : Fr.) Fr.
Syn. nov.: *Dactylospora* Körb., Syst. Lich. Germ.: 271 (1855); type: *D. floerkei* Körb. [= *D. parasitica* (Flörke) Zopf]

Dactylosporaceae Bellem. & Hafellner, Cryptog. Mycol. 3: 79 (1982); type: *Dactylospora* Körb.
Syn. nov.: Sclerococcaceae Réblová, Unter. & W.Gams, Mycol. Progr. 16: 35 (2017); type: *Sclerococcum* Fr. : Fr.

Diederich et al. (2013) presented a first phylogenetic study of *Sclerococcum* in which five species were transferred to *Cladophialophora*. The generic type, *S. sphaerale*, was found to be a member of a strongly supported clade that also included the two non-lichenicolous marine *Dactylospora*, *D. haliotropha* and *D. mangrovei*, and an unidentified rock isolate. Schoch et al. (2009) found that two further sequences of the lichenicolous *D. lobariella* and the saprotrophic *D. imperfecta* belonged to another lineage, concluding that the genus *Dactylospora* was polyphyletic. Réblová et al. (2017) erroneously concluded that the generic type of *Dactylospora*, the lichenicolous *D. parasitica*, must belong to the clade also containing the lichenicolous *D. lobariella*, and that the family name Dactylosporaceae consequently refers to that lineage. Subsequently, they described the new family Sclerococcaceae for the lineage containing the type of *Sclerococcum* and the two marine *Dactylospora* species. However, Pino-Bodas et al. (2017) have shown that the generic type *D. parasitica* clusters with *S. sphaerale*, both species being included in a lineage with the lichenicolous *D. ahtii*, *D. deminuta*, *D. glaucomarioides*, *D.* sp. RP391 and the saprotrophic *D. haliotrepha*, *D. mangrovei* and *D. vrijmoediae*. Our own analyses including newly generated sequences of *D. parasitica* confirm its close relationship with *Sclerococcum sphaerale* (**Fig. 4**). Moreover, our newly generated sequences of *D. lobariella* cluster with *D. parasitica* suggesting that the published nuLSU sequence of *D. lobariella* by Schoch et al. (2009) is a

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contaminant. In our phylogenetic tree (**Fig. 4**), this sequence ('*Dactylospora lobariella* 4′) is placed in the outgroup, thus outside of the Sclerococcales because it belongs to the Chaethotyriales. The presumed polyphyly of *Dactylospora* (Schoch et al. 2009) seems thus to be based on contaminant sequences. Two species were reported by Schoch et al. (2009) as belonging to another lineage: *D. lobariella*, for which we can prove, based on newly obtained sequences, that the sequence is a contaminant, and the saprotrophic *D. imperfecta*, for which we had no way to check the quality of the sequence, but we suspect a similar explanation. Moreover, the published mtSSU sequence of *D. deminuta* (KY661681) was not included in our phylogenetic analysis (**Fig. 4**) because it is obviously also a contaminant with a Chaetothyriales species, while the ITS sequence places the species close to other *Dactylospora* s.str. As a result, in Pino-Bodas et al. (2017), the single specimen of *D. deminuta* is placed in the Dactylosporaceae but as the earliest diverging taxon of the family because the mtSSU pulls it out of the core group, giving the impression that it might represent a distinct genus.

In Pino-Bodas et al. (2017) and in our phylogenetic tree (**Fig. 4**), *D. parasitica* is heterogeneous, rending the correct phylogenetic position of the type of *Dactylospora* within the Dactylosporaceae uncertain. One specimen ('*D. parasitica* 2′ in **Fig. 4**) appears to be so close to *Sclerococcum sphaerale* that it might represent its sexual stage.

As a conclusion, *Dactylospora* + *Sclerococcum* appears to represent a monophyletic group, for which the family name Dactylosporaceae has to be used, Sclerococcaceae becoming a new synonym. Further, the two genera *Sclerococcum* and *Dactylospora* cannot be kept as separate. As *Sclerococcum* (1821) predates *Dactylospora* (1855), and after the deletion of Art. 57.2 in the new Shenzhen Code (ICN), the name *Sclerococcum* has to be used for this genus. A proposal to conserve the more species-rich genus *Dactylospora* would not likely be accepted, as *Sclerococcum* currently includes 20 species, as many recent papers dealt with the taxonomy of *Sclerococcum* species, as several recent papers dealt with the molecular phylogeny of *Sclerococcum*, and as the genus is the type of the order Sclerococcales. For the moment, we recognize a single genus in Dactylosporaceae because no morphological characters support the recognition of more than one genus. Indeed, Hafellner (1979) studied many *Dactylospora* species in his *Karschia* monograph, including lichenicolous and saprotrophic species, and the genus appeared as morphologically homogeneous. Now, almost 40 years later, no attempt of splitting the genus or of excluding some species has been done, and many more species have been described that fit the genus as circumscribed by Hafellner (1979). Molecular phylogenetic results (except one sequence that we prefer to consider as doubtful) also support the hypothesis of the monophyly of the genus.

The following new name and new combinations become therefore necessary for the lichenicolous taxa:

Sclerococcum acarosporicola Ertz & Diederich, nom. nov.

REPLACED SYNONYM: *Karschia acarosporae* H.Magn., Svensk Bot. Tidskr. 37: 285 (1943) non *Sclerococcum acarosporae* S.Y.Kondr., in Kondratyuk & Zelenko, Ukr. Bot. Journ. 59: 600 (2002); ≡ *Dactylospora acarosporae* (H.Magn.) Hafellner, Nova Hedw., Beih. 62: 96 (1979)

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Sclerococcum aeruginosum (Holien & Ihlen) Ertz & Diederich, comb. nov.

BASIONYM: *Dactylospora aeruginosa* Holien & Ihlen, in Ihlen et al., Bryologist 107: 358 (2004)

MYCOBANK MB 827702

Sclerococcum ahtii (Zhurb. & Pino-Bodas) Ertz & Diederich, comb. nov.

BASIONYM: *Dactylospora ahtii* Zhurb. & Pino-Bodas, in Pino-Bodas et al., Persoonia 39: 102 (2017)

MYCOBANK MB 827703

Sclerococcum allantoideum (Alstrup & D.Hawksw.) Ertz & Diederich, comb. nov.

BASIONYM: *Dactylospora allantoidea* Alstrup & D.Hawksw., Meddel. Grønland Biosci. 31: 23 (1990)

MYCOBANK MB 827704

Sclerococcum amygdalariae (Triebel) Ertz & Diederich, comb. nov.

BASIONYM: *Dactylospora amygdalariae* Triebel, Biblioth. Lichenol. 35: 197 (1989)

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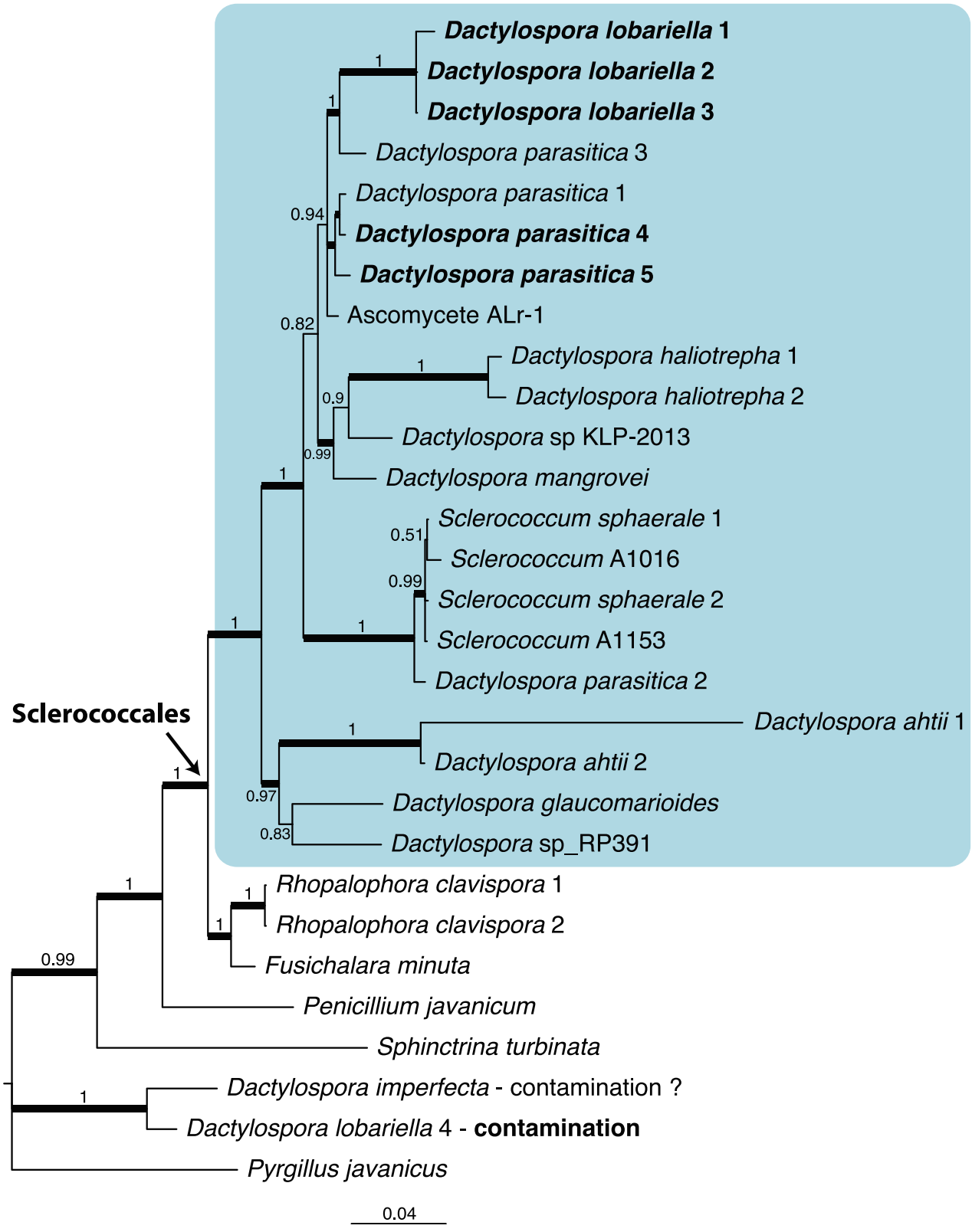

Figure 4. Phylogenetic relationships among 24 samples of Sclerococcales resulting from a Bayesian analysis based on a data set of nuLSU and mtSSU sequences. *Penicillium javanicum, Pyrgillus javanicus* and *Sphinctrina turbinata* were chosen as outgroup. Posterior probabilities are shown near internal branches. Internal branches, considered strongly supported (Posterior probabilities ≥0.95) are represented by thicker lines. The newly sequenced samples are in bold. The genus *Sclerococcum* (including *Dactylospora*, considered here as a synonym of *Sclerococcum*) is highlighted with a colored box.

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Table 6. Species names, voucher specimens and GenBank accession numbers for the specimens included in the phylogenetic inference depicted in Fig. 4. GenBank accession numbers in bold refer to sequences generated by this project.

Name	Voucher	nuLSU	mtSSU	Host for lichenicolous fungi
Pyrgillus javanicus	AFTOL-ID 342	DQ823103	FJ225774	
Penicillium javanicum	AFTOL-ID 429	EF413621	FJ225778	
Sphinctrina turbinata	AFTOL-ID 1721	EF413632	FJ713611	
Fusichalara minuta	CBS 709.88	KX537758	KX537762	
Rhopalophora clavispora 1	CBS 129.74	KX537755	KX537759	
Rhopalophora clavispora 2	CBS 281.75	KX537756	KX537760	
Dactylospora ahtii 1	USA, Talbot CHI17-37a (H), RP182	NA	KY661687	*Cladonia rangiferina*
Dactylospora ahtii 2	Iceland, Hognabba 1325a (H), RP23	KY661659	KY661686	*Cladonia uncialis* subsp. *biuncialis*
Dactylospora glaucomarioides	Russia, Zhurbenko 13107 (LE), RP275	KY661660	KY661683	*Ochrolechia akagiensis*
Dactylospora haliotrepha 1	AFTOL-ID 798	FJ713617	NA	
Dactylospora haliotrepha 2	AFTOL-ID 758	FJ176855	KJ766382	
Dactylospora imperfecta	AFTOL-ID 5006	FJ176896	NA	
Dactylospora lobariella 1	Canary Islands, Ertz 13794 (BR)	**MH698497**	NA	*Lobaria pulmonaria*
Dactylospora lobariella 2	Austria, Diederich 17708 (hb Diederich)	**MH698498**	**MH698502**	*Lobaria pulmonaria*
Dactylospora lobariella 3	France, Diederich 18109 (hb Diederich)	**MH698499**	**MH698503**	*Lobaria pulmonaria*
Dactylospora lobariella 4	AFTOL-ID 2137	FJ176891	NA	?
Dactylospora mangrovei	AFTOL-ID 2108; CBS 110444	FJ176890	KJ766383	
Dactylospora parasitica 1	Russia, Tugi (LE), RP422	KY661666	KY661690	*Ochrolechia* sp.
Dactylospora parasitica 2	Russia, Zhurbenko 12135 (LE), RP423	NA	KY661691	*Ochrolechia* sp.
Dactylospora parasitica 3	Finland, Pykala 39145 (H), RP424	KY661667	KY661692	*Ochrolechia* sp.
Dactylospora parasitica 4	Belgium, Ertz 16080 (BR)	**MH698500**	**MH698504**	*Ochrolechia turneri*
Dactylospora parasitica 5	Canary Islands, van den Boom 46349 (hb v.d.Boom)	**MH698501**	**MH698505**	on sorediate crust cf. *Pertusaria flavicans*
Dactylospora sp RP391	Chile, Buck 60495a (H)	KY661664	KY661689	*Cladonia rangiferina*
Dactylospora sp KLP-2013	isolate NTOU4002	KC692153	NA	
Ascomycete ALr-1	isolate ALr-1	EF210108	NA	*Lecanora rupicola*
Sclerococcum sphaerale 1	Luxembourg, Diederich 17279 (hb Diederich)	JX081672	JX081677	*Pertusaria corallina*
Sclerococcum sphaerale 2	Belgium, Ertz 17425 (BR)	JX081674	JX081676	*Pertusaria corallina*
Sclerococcum A1016	Austria, Muggia & Fleischhacker (GZU)	KT263077	KT263115	lichen thalli
Sclerococcum A1153	Austria, Muggia	MF071425	MF085485	*Pertusaria corallina*

Sclerococcum anziae (Zhurb., Ezhkin, Skirina & Y.Ohmura) Ertz & Diederich, comb. nov.

BASIONYM: *Dactylospora anziae* Zhurb., Ezhkin, Skirina & Y.Ohmura, Folia Cryptog. Estonica 54: 13 (2017)

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Sclerococcum aspiciliicola (Alstrup & D.Hawksw.) Ertz & Diederich, comb. nov.

BASIONYM: *Dactylospora aspiciliicola* Alstrup & D.Hawksw., Meddel. Grønland Biosci. 31: 24 (1990)

MYCOBANK MB 827707

Sclerococcum athallinum (Müll.Arg.) Ertz & Diederich, comb. nov.

BASIONYM: *Buellia athallina* Müll.Arg., Mem. Soc. Phys. Genève 16: 64 (1862); ≡ *Dactylospora athallina* (Müll.Arg.) Hafellner, Beih. Nova Hedwigia 62: 99 (1979)

MYCOBANK MB 827708

Sclerococcum attendendum (Nyl.) Ertz & Diederich, comb. nov.

BASIONYM: *Lecidea attendenda* Nyl., Flora 49: 419 (1866); ≡ *Dactylospora attendenda* (Nyl.) Arnold, Flora 57: 108 (1874)

MYCOBANK MB 827709

Sclerococcum australe (Triebel & Hertel) Ertz & Diederich, comb. nov.

BASIONYM: *Dactylospora australis* Triebel & Hertel, in Triebel, Biblioth. Lichenol. 35: 205 (1989)

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Sclerococcum boreale (Holien & Ihlen) Ertz & Diederich, comb. nov.
Basionym: *Dactylospora borealis* Holien & Ihlen, in Ihlen et al., Bryologist 107: 359 (2004)
MycoBank MB 827711

Sclerococcum cladoniicola (Alstrup & Olech) Ertz & Diederich, comb. nov.
Basionym: *Dactylospora cladoniicola* Alstrup & Olech, Polish Polar Res. 14: 35 (1993)
MycoBank MB 827712

Sclerococcum crassum (Sarrión & Hafellner) Ertz & Diederich, comb. nov.
Basionym: *Dactylospora crassa* Sarrión & Hafellner, Lichenologist 34: 361 (2002)
MycoBank MB 827713

Sclerococcum davidii (Hafellner & H.Mayrhofer) Ertz & Diederich, comb. nov.
Basionym: *Dactylospora davidii* Hafellner & H.Mayrhofer, Biblioth. Lichenol. 95: 233 (2007)
MycoBank MB 827714

Sclerococcum deminutum (Th.Fr.) Ertz & Diederich, comb. nov.
Basionym: *Lecidea parasitica* var. *deminuta* Th.Fr., Öfvers. Kongl. Vetensk.-Akad. Förh. 13: 127 (1856); ≡ *Dactylospora deminuta* (Th.Fr.) Triebel, Biblioth. Lichenol. 35: 209 (1989)
MycoBank MB 827715

Sclerococcum dobrowolskii (Olech & Alstrup) Ertz & Diederich, comb. nov.
Basionym: *Dactylospora dobrowolskii* Olech & Alstrup, Polish Polar Res. 17: 166 (1996)
MycoBank MB 827716

Sclerococcum frigidum (Hafellner) Ertz & Diederich, comb. nov.
Basionym: *Dactylospora frigida* Hafellner, Herzogia 7: 166 (1985)
MycoBank MB 827717

Sclerococcum glaucomarioides (Tuck.) Ertz & Diederich, comb. nov.
Basionym: *Buellia glaucomarioides* Tuck., Synops. North Americ. Lich. 2: 108 (1888); ≡ *Dactylospora glaucomarioides* (Tuck.) Hafellner, Beih. Nova Hedwigia 62: 109 (1979)
MycoBank MB 827718

Sclerococcum hafellnerianum (Sérus.) Ertz & Diederich, comb. nov.
Basionym: *Dactylospora hafellneriana* Sérus., in Sérusiaux & Wessels, Mycotaxon 19: 499 (1984)
MycoBank MB 827719

Sclerococcum heterodermiae (Etayo) Ertz & Diederich, comb. nov.
Basionym: *Dactylospora heterodermiae* Etayo, Opera Lilloana 50: 165 (2017)
MycoBank MB 827720

Sclerococcum homoclinellum (Nyl.) Ertz & Diederich, comb. nov.
Basionym: *Lecidea homoclinella* Nyl., Flora 55: 361 (1872); ≡ *Dactylospora homoclinella* (Nyl.) Hafellner, Beih. Nova Hedwigia 62: 112 (1979)
MycoBank MB 827721

Sclerococcum inconspicuum (Etayo) Ertz & Diederich, comb. nov.
Basionym: *Dactylospora inconspicua* Etayo, Biblioth. Lichenol. 98: 79 (2008)
MycoBank MB 827722

Sclerococcum inquilinum (Tuck.) Ertz & Diederich, comb. nov.
Basionym: *Buellia inquilina* Tuck., Lich. Calif. 32 (1866); ≡ *Dactylospora inquilina* (Tuck.) Hafellner, Beih. Nova Hedwigia 62: 116 (1979)
MycoBank MB 827723

Sclerococcum lobariellum (Nyl.) Ertz & Diederich, comb. nov.
Basionym: *Lecidea lobariella* Nyl., Flora 52: 296 (1869); ≡ *Dactylospora lobariella* (Nyl.) Hafellner, Beih. Nova Hedwigia 62: 118 (1979)
MycoBank MB 827724

Sclerococcum microsporum (Etayo) Ertz & Diederich, comb. nov.
Basionym: *Dactylospora microspora* Etayo, Candollea 46: 391 (1991)
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Sclerococcum orygmaeum (Nyl.) Ertz & Diederich, comb. nov.

BASIONYM: *Lecidea orygmaea* Nyl., Flora 52: 296 (1869); ≡ *Dactylospora orygmaea* (Nyl.) S.Y.Kondrat. & D.J.Galloway, Biblioth. Lichenol. 57: 336 (1995)

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Sclerococcum parasitaster (Nyl.) Ertz & Diederich, comb. nov.

BASIONYM: *Lecidea parasitaster* Nyl., Flora 58: 105 (1875); ≡ *Dactylospora parasitaster* (Nyl.) Arnold, Flora 58: 346 (1875)

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Sclerococcum parasiticum (Flörke) Ertz & Diederich, comb. nov.

BASIONYM: *Lecidea parasitica* Flörke, Deutsche Lichenen 6: 3 (1819); ≡ *Dactylospora parasitica* (Flörke) Zopf, Hedwigia 35: 159 (1896)

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= *Dactylospora floerkei* Körb., Systema lichenum Germaniae: 271 (1855), nom. illeg. superfl.

SYN. NOV.: *Sclerophyton occidentale* Herre [as *occidentalum*], Bryologist 43: 27 (1940). TYPE: U.S.A. CALIFORNIA: Santa Clara Co., Los Gatos, on *Quercus californica*, on *Ochrolechia turneri* (identification kindly confirmed by M. Kukwa based on photographs), 30.ix.1907, *A. Herre 1183* (F – lichenicolous apothecia, lectotype here designated; M! – isolectotype).

Notes: The holotype is now kept in F (kindly examined by T. Lumbsch and compared with our photos from the M specimen) and entirely agrees with an isotype kept in M examined by us. The type material represents a thallus of *Ochrolechia turneri* parasitized by apothecia of *Sclerococcum parasiticum*. As Herre's name is based on a mixture of a lichen and a lichenicolous fungus, we herewith lectotypify it on the lichenicolous apothecia present in the type specimen kept in F.

Sclerococcum parellarium (Nyl.) Ertz & Diederich, comb. nov.

BASIONYM: *Lecidea parellaria* Nyl., Flora 59: 239 (1876); ≡ *Dactylospora parellaria* (Nyl.) Arnold, Flora 60: 300 (1877)

MYCOBANK MB 827729

Sclerococcum pertusariicola (Tuck.) Ertz & Diederich, comb. nov.

BASIONYM: *Buellia pertusariicola* Tuck. [as *pertusaricola*], Synops. North Americ. Lich. 2: 108 (1888); ≡ *Dactylospora pertusariicola* (Tuck.) Hafellner, Beih. Nova Hedwigia 62: 122 (1979)

MYCOBANK MB 827730

Sclerococcum pleiospermum (Triebel) Ertz & Diederich, comb. nov.

BASIONYM: *Dactylospora pleiosperma* Triebel, in Hafellner, Mycotaxon 84: 300 (2002)

MYCOBANK MB 827731

Sclerococcum polysporum (Triebel) Ertz & Diederich, comb. nov.

BASIONYM: *Dactylospora polyspora* Triebel, Biblioth. Lichenol. 35: 212 (1989)

MYCOBANK MB 827732

Sclerococcum porphyreum (Hafellner & Kalb) Ertz & Diederich, comb. nov.

BASIONYM: *Dactylospora porphyrea* Hafellner & Kalb, in Hafellner, Herzogia 7: 169 (1985)

MYCOBANK MB 827733

Sclerococcum protothallinum (Anzi) Ertz & Diederich, comb. nov.

BASIONYM: *Abrothallus prothallinus* Anzi, Catal. Lich. Sond.: 116 (1860); ≡ *Dactylospora protothallina* (Anzi) Hafellner, Beih. Nova Hedwigia 62: 124 (1979)

MYCOBANK MB 827734

Sclerococcum purpurascens (Triebel) Ertz & Diederich, comb. nov.

BASIONYM: *Dactylospora purpurascens* Triebel, Biblioth. Lichenol. 35: 214 (1989)

MYCOBANK MB 827735

Sclerococcum pyrenaicum (Etayo) Ertz & Diederich, comb. nov.

BASIONYM: *Dactylospora pyrenaica* Etayo, Guineana 16: 147 (2010)

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Sclerococcum rhyparizae (Arnold) Ertz & Diederich, comb. nov.

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Basionym: *Dactylospora rhyparizae* Arnold, Flora 57: 108 (1874)
MycoBank MB 827737

Sclerococcum rimulicola (Müll.Arg.) Ertz & Diederich, comb. nov.
Basionym: *Buellia rimulicola* Müll.Arg., Flora 55: 500 (1872); ≡ *Dactylospora rimulicola* (Müll.Arg.) Hafellner, Beih. Nova Hedwigia 62: 126 (1929)
MycoBank MB 827738

Sclerococcum rostrupii (Alstrup) Ertz & Diederich, comb. nov.
Basionym: *Dactylospora rostrupii* Alstrup, in Alstrup et al., Frodskaparrit 40: 89 (1994)
MycoBank MB 827739

Sclerococcum saxatile (Schaer.) Ertz & Diederich, comb. nov.
Basionym: *Calicium saxatile* Schaer., Naturwiss. Anz. Allg. Schweiz. Ges. Gesammten Naturwiss. 5: 35 (1821); ≡ *Dactylospora saxatilis* (Schaer.) Hafellner, Beih. Nova Hedwigia 62: 129 (1979)
MycoBank MB 827740

Sclerococcum saxatile var. ***laureri*** (Hafellner) Ertz & Diederich, comb. nov.
Basionym: *Dactylospora saxatilis* var. *laureri* Hafellner, Beih. Nova Hedwigia 62: 135 (1979)
MycoBank MB 827741

Sclerococcum suburceolatum (Coppins & Fryday) Ertz & Diederich, comb. nov.
Basionym: *Dactylospora suburceolata* Coppins & Fryday, Lichenologist 44: 725 (2012)
MycoBank MB 827742

Sclerococcum tegularum (Arnold) Ertz & Diederich, comb. nov.
Basionym: *Buellia tegularum* Arnold, Ber. Bayer. Bot. Ges. 1 (suppl.): 130 (1891); ≡ *Dactylospora tegularum* (Arnold) Hafellner, Beih. Nova Hedwigia 62: 149 (1979)
MycoBank MB 827743

Sclerococcum urceolatum (Th.Fr.) Ertz & Diederich, comb. nov.
Basionym: *Buellia urceolata* Th.Fr., Lich. Arctoi 3: 333 (1860)
MycoBank MB 827744

The following new species has been contributed by Dr B. Coppins:

Sclerococcum ophthalmizae Coppins, sp. nov.
MycoBank MB 827745
Differs from S. parasitica in having 16-spored asci, ascospores to 7-septate, and a different internal pigmentation.
Type: BRITISH ISLES. Scotland: Westerness (VC 97): N side of Loch Sunart, c. 10 km WSW of Salen, Rubha Aird Druimnich, NM597610, 0–30 m elev., on thallus of *Lepra ophthalmiza* on *Betula* trunk, 8.iii.1983, *B.J. Coppins 9274* & *P.M. Jørgensen* (E – holotype; GZU – isotype).

Ascomata 0.12-0.4 mm diam., scattered, black; disc concave to flat; margin smooth. Exciple 25-30 µm wide, reddish brown (K–) or green tinged in upper part; cells to 10 µm diam. Hymenium 50-60 µm tall, colourless; epihymenium brown, K–. Hypothecium pale grey- or reddish-brown, K–. Paraphyses 1.5–1.7 µm thick; apices to 3 µm. *Asci* c. 50 × 12-17 µm, 16-spored. Ascospores (10.5–)12–18 × 3.5–4.5 µm, narrowly ellipsoid, oblong or fusiform, sometimes curved, brown, smooth-walled or slightly roughened when old, 3(–7)-septate.

Distribution and host: Known from Scotland (Isle of Skye, Westerness: Loch Sunart, West Ross), always on the thallus of *Lepra ophthalmiza*.

Additional specimens examined: BRITISH ISLES. SCOTLAND. Westerness (VC 97): N side of Loch Sunart, Glenborrodale, RSPB Nature Reserve, NM6060, on *Quercus*, 15.vi.1992, *B.J. Coppins* 15293 (E). Kintyre (VC 101): Knapdale, Loch Coill-Bharr, NR780897, birch-oak wood, on *Quercus*, 22.x.2001, *B.J.* & *A.M. Coppins* 20460 (E). West Ross (VC 105): Inverpolly NNR, N side of Allt Geann an t-Strathain, NC090163, 30–50 m elev., SE-facing hazel pasture woodland, on large boulder, 8.vi.1999, *B.J.* & *A.M. Coppins* 18765 (E, sub *Lepra ophthalmiza*); Beinn Eighe NNR, Coille na Glas-leitir, NE of Cnoc na Gaoithe, NG9964, *c.* 150 m elev., 14.iv.2001, *B.J.* & *A.M. Coppins* 19731 (E); Loch Maree, Eilean Dubh na Sròine. NG910720. 15 m elev., on *Pinus*, 31.v.1999, *B.J. Coppins* 18555 & *V.J. Giavarini* (E, sub *Lepra ophthalmiza*).

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Although this species has never been formally described, the name *Dactylospora ophthalmizae* Coppins has been used for many years by British lichenologists, as it is included in the keys to British, Iberian and Canarian lichenicolous fungi (Hawksworth et al. 2010a).

We further combine in *Sclerococcum* three non-lichenicolous *Dactylospora* species that have been included in recent phylogenetic analyses (Diederich et al. 2013; Pino-Bodas et al. 2017; Réblová et al. 2017) and that belonged to the same clade as the type:

Sclerococcum haliotrephum (Kohlm. & E.Hohlm.) Ertz & Diederich, comb. nov.
BASIONYM: *Buellia haliotrepha* Kohlm. & E.Kohlm., Nova Hedwigia 9: 90 (1965); ≡ *Dactylospora haliotrepha* (Kohlm. & E.Kohlm.) Hafellner, Beih. Nova Hedwigia 62: 111 (1979)
MYCOBANK MB 827746

Sclerococcum mangrovei (E.B.G.Jones, Alias, Abdel-Wahab & S.Y.Hsieh) Ertz & Diederich, comb. nov.
BASIONYM: *Dactylospora mangrovei* E.B.G.Jones, Alias, Abdel-Wahab & S.-Y.Hsieh, in Jones et al., Mycoscience 40: 317 (1999)
MYCOBANK MB 827747

Sclerococcum vrijmoediae (K.L.Pang, S.Y.Guo, Alias, Hafellner & E.B.G.Jones) Ertz & Diederich, comb. nov.
BASIONYM: *Dactylospora vrijmoediae* K.L.Pang, S.Y.Guo, Alias, Hafellner & E.B.G.Jones, Botanica Marina 57: 317 (2014)
MYCOBANK MB 827748

The genus *Libertiella* Speg. & Roum. with the type *L. malmedyensis* Speg. & Roum. resembles mesoconidial stages of *Scutula* so much that there is no doubt that both genera are synonyms (Triebel et al. 1997). As all currently accepted species of *Scutula* are confined to hosts belonging to Peltigerales, we combine here in *Scutula* two species of *Libertiella* described from *Peltigera*. We refrain from combining a further species, *L. fennica* Alstrup, also growing on *Peltigera*, as it differs by the ovoid or pyriform to subglobose conidia, distinct from conidia of all other known *Scutula* species, as well as *L. lepraria*e Etayo & Diederich (on *Lepraria*) and the poorly known *L. obscurior* Gerber (on *Brodoa*) known from hosts not belonging to the Peltigerales.

Scutula curvispora (D.Hawksw. & Miądl.) Diederich, comb. nov.
BASIONYM: *Libertiella curvispora* D.Hawksw. & Miądl., Mycol. Res. 101: 1127 (1997)
MYCOBANK MB 827783

Scutula didymospora (D.Hawksw. & Miądl.) Diederich, comb. nov.
BASIONYM: *Libertiella didymospora* D.Hawksw. & Miądl., Mycol. Res. 101: 1128 (1997)
MYCOBANK MB 827784

Stigmidium haesitans (Nyl.) Diederich, comb. nov.
BASIONYM: *Verrucaria haesitans* Nyl., in Kihlman, Meddeland. Soc. Fauna Fl. Fenn. 18: 59 (1891); ≡ *Pharcidia haesitans* (Nyl.) Vouaux, Bull. Soc. Mycol. France 28: 249 (1912)
MYCOBANK MB 827785

Mayrhofer (1987: 336) reported *Pharcidia haesitans* from Sweden and wrote that it belonged to *Stigmidium*, fide Hafellner (pers. comm.). Later, the species was incorrectly referred to as *S. haesitans* (Nyl.) Hafellner (Santesson 1993a), although such a combination was never published. This error was later addressed by Santesson et al. (2004) who used the same name and authorities, by adding "comb. not published". The name is hereby validly combined in *Stigmidium*.

Stigmidium parvum (Henssen) Diederich, comb. nov.
BASIONYM: *Pharcidia parva* Henssen, Symb. Bot. Upsal. 18: 112 (1963)
MYCOBANK MB 827786

Santesson (1993a) named this taxon "*Stigmidium parvum* (Henssen) (Provisionally placed here, Art. 34.1b)", followed by the basionym, but without a full reference to that basionym. As this author clearly did not intend to publish a new combination, and according to Art. 41.1 of ICN, the new combination was not validly published. We herewith validly combine the species in *Stigmidium*.

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Supplementary document online:

Supplementary Table S1. Summary statistics for all taxa listed in the 2018 classification and checklist of lichenicolous fungi in spreadsheet format.

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