

## A REVISED CATALOG OF ARIZONA LICHENS

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### ABSTRACT

This revised “catalog” of lichens includes 969 species of lichenized fungi (lichens) presented for the state of Arizona (USA), and updates the original catalog published in 1975 by Nash and Johnsen. These taxa are derived from within 5 classes and over 17 orders and 54 families (the latter two with 3 and 4 additional groups of uncertain taxonomic position, “*Incertae sedis*”) in the phylum *Ascomycota*. The total number of species reported here represents approximately 20% of all species known from the North American lichen flora. The list was compiled by extracting Arizona records from the three volume published set of the *Lichen Flora of the Greater Sonoran Desert Region*, a collaborative, authoritative treatment of lichen groups for this region that encompasses the entire state of Arizona.

### INTRODUCTION

Nearly 80,000 species of fungi are known to science (Schmit and Mueller 2007). Of these, approximately 17% are lichenized, forming symbioses with green algae (*Chlorophyta*, *Viridiplantae*) or the so called blue-green algae (*Cyanobacteria*, *Bacteria*). These relationships produce symbiotic organisms commonly called lichens. The fungal partner (mycobiont) is thought to benefit by having access to photosynthates produced by the “algae” (photobiont), which, within the symbiosis, is thought to receive some form of protection (e.g., against desiccation or UV radiation); however, evidence for other interpretations (e.g., controlled parasitism) exist (see Nash 2008a). The perception of lichens as classic dual mutualistic symbionts is, perhaps, rather simplistic as a single lichen thallus may host complex communities of microbes, including lichenicolous (lichen-associated) or endolichenic (growing within the cells of the lichen mycobiont) fungi, both types of photobionts (tripartite lichens), and even non-photosynthetic bacteria (Lawrey & Diederich 2003, Diederich 2004, Suryanarayanan et al. 2005, Nash 2008a, Arnold et al. 2009, Grube et al. 2009, Hodkinson & Lutzoni 2009).

Despite this potential for lichens to act as multifaceted symbiotic systems, their taxonomy rests solely on the mycobiont, as lichen species names refer only to

the lichenized fungus. A full 98% of all lichen-forming fungi can be found within the phylum *Ascomycota*, although some are members of the *Basidiomycota* (e.g., *Lichenomphalia* spp.), and approximately 42% of all known ascomycetous fungi are lichenized, compared to only 0.3% for basidiomycetes (Honegger 2008). In total, lichen-forming fungi are found within 5 classes of the *Ascomycota*, the majority of species being found within the *Lecanorales* (*Lecanoromycetes*), and within 1 class (*Agaricomycetes*) of the *Basidiomycota* (Honegger 2008). In addition, a rather interesting borderline case of “lichenization” is the fungus *Geosiphon pyriforme*, which unlike “true” lichens does not have extracellular photobionts surrounded by hyphae. Instead, this species has an intracellular (e.g., contained within the hyphae) endosymbiotic cyanobacterium (*Nostoc*). Being found within the *Glomeromycota*, *G. pyriforme* is more closely related to arbuscular mycorrhizal fungi than all other lichen species (Gehrig et al. 1996).

In addition to their rich phylogenetic diversity, lichens also display a wonderful diversity of colors, which are the byproduct of the numerous secondary metabolites (ca. 700 organic compounds are known, with over 90% being specifically produced by lichens; Elix & Stocker-Wörgötter 2008), and growth forms (see Fig. 1A–I). For the latter, three principal growth forms are traditionally recognized: crustose (e.g., Fig. 1G), foliose (e.g., Fig. 1D), and fruticose (e.g., 1E). Representing the most rudimentary thallus structure, the crustose (crust-like) lichen has only an upper cortex, while the lower surface adheres to the substrate on which the lichen is growing. This type of thallus is desiccation resistant and less susceptible to disturbance (e.g., storms, wind, etc.), and as a result it is often able to survive under extreme conditions (e.g., at high altitude on rock surfaces) where other growth forms are not able to exist. In addition to this adaptive resilience, crustose lichens are able to thrive under a wide range of environmental conditions, and as a result are broadly distributed: from leaf surfaces in the tropics, to rock and wood surfaces in temperate areas, and even on desert soils. Foliose (leaf-like) lichens typically have upper and lower cortices and are more loosely attached to their substrate. This type of growth form is well represented and often quite conspicuous in more moderate climates, growing on rock, tree bark, or over soils. One interesting variation of this growth form, the vagrant lichen (Fig. 1B), does not attach to a substrate, and is found over soils, being blown about freely by wind. Fruticose lichens represent the most dimensional lichen growth form, having beard-, hair-, shrub-, and strap-like forms, and their thalli typically have a radial arrangement (a single, fairly uniform cortex surrounding a central axis). There is quite a bit of variation to the fruticose lichen thallus, ranging from a single stem-like appendage which elevates the apothecium (e.g., the podetium of *Cladonia* spp.), to highly-branched (e.g., *Usnea intermedia*; Fig. 1E) or long pendulous (e.g., *Usnea longissima*) forms. The fruticose growth form is preferentially distributed in temperate rain forests or dry areas where precipitation is infrequent but fog or dew events are regular (e.g., along arid coastal zones; Büdel & Scheidegger 2008).

Lichens are an important, but sometimes overlooked, part of the ecosystems in which they are found: as components in nutrient and mineral cycling; contributors to pedogenesis; providers of food, shelter, and nest building material for micro- and mega-fauna; and they can serve as bioindicators of ecosystem health or air quality

(reviewed in Nash 2008a). For example, lichens (particularly those with cyanobacterial photobionts that can fix atmospheric nitrogen) contribute, sometimes significantly, to total N inputs in many ecosystems (Nash 2008b). These numerous ecological roles are, perhaps, more fully appreciated in light of the fact that lichens are poikilohydric (their water status is passively dependent on environmental conditions) and that they also rely, almost entirely, on atmospheric deposition in order to obtain macro- and micro-nutrients required for life (see Nash 2008a).

The history of lichenology in Arizona is fairly extensive, dating back to the late seventeenth and early eighteenth centuries, with some of more prominent lichenologists of that time period citing records of lichens from Arizona or describing new species from specimens collected in the state. For example in the late 1800s, Edward Tuckerman, the pioneering American lichenologist, and Henry Willey described *Omphalodium hottentottum* var. *arizonicum* Tuck. ex Willey [= *Omphalora arizonica* (Tuck. ex Willey) T.H. Nash & Hafellner] based on a specimen collected in the Santa Rita Mountains (Willey 1881). The distinguished Austrian lichenologist Alexander Zahlbruckner (1908) published 6 new lichen species (and one novel variety) based on collections from the Carnegie Desert Botanical Laboratory near Tucson. The following year Bruce Fink (1909), another leading American lichenologist of this period and author of the *Lichen Flora of the United States*, noted additional species occurring in this same area and reported 33 species from the “desert lichen flora”. Additional like examples can be found in Nash and Johnsen (1975); however, it was not until the mid-1990s that lichen floras which focused on specific regions in the state were published (Darrow 1950, Weber 1963, Johnsen 1965).

Focus on the Arizona lichen flora intensified in the latter-half of the 1900s. In 1971, the Arizona State University Herbarium (ASU) began to expand its collection of lichens under the directorship of T.H. Nash III (from an original *ca.* 100 specimens, the majority being from Sweden, to the nearly 110,000 specimens today, approximately 50,000 attributed to Nash, originating from countries around the globe but focusing primarily on the greater Sonoran Desert region, and including Arizona), that eventually required these specimens to be housed separately from the vascular plant collection. Nash (1973b) began reporting records for the Arizona lichen flora and publishing on new species from the state (e.g., Nash 1973a). In the mid-1980s, the late Bruce D. Ryan enrolled in the graduate program at Arizona State University and received his doctorate degree in 1989, focusing on *Lecanora* subgen. *Placodium* for his dissertation. Ryan later served as the Lichen Herbarium Associate Curator (from 1989–2004), and amassed *ca.* 20,000 personal collections, deposited at ASU, many of which are from Arizona. The effort to increase knowledge of the Arizona lichen flora and to collect more extensively in the state continued on into the 20th century and resulted in publication of several regional floras for the state (Nash 1975, Nash 1977, Nash & Sigal 1981, Nash 1991, Boykin & Nash 1994, Sweat et al., 2004, Jackson et al. 2005), the original catalog of Arizona lichens (Nash & Johnsen 1975), consecutive additions to the flora (Moberg and Weber 1974, Nash 1985, Nash et al. 1998), as well as a field guide to epiphytic macrolichens from the state (Bungartz et al. 2002).

Nash and Ryan's combined and comprehensive knowledge of the area's lichen flora, the popular lichen keys produced by Dr. Ryan, the growing body of literature, and a fruitful collecting trip with the International Association of Lichenologists (IAL) in 1989 to the Sonoran Desert, which piqued the interest of several European lichen taxonomists, provided the foundation, network, and synergy for what eventually became a National Science Foundation funded project, the *Greater Sonoran Desert Lichen Flora*. This floristic effort, which included 92 collaborators from 23 countries coordinated by Nash, culminated with the publication of a three volume monograph (Nash et al. 2002, 2004, 2007) that provided keys, authoritative taxonomic treatments, as well as a thorough introduction to the science of lichenology. These volumes not only profoundly increased the understanding of the lichen floras of the Sonoran Desert and surrounding environs (e.g., southern California) as well as Arizona, but they expanded the taxonomic knowledge of the North American lichen flora in general and made a considerable contribution to lichenology in Mexico.

## METHODS

The compilation of this lichen "catalog" follows the methods outlined previously in the checklists of Arizona macrofungi and slime molds (Bates 2006, Bates & Barber 2008), with one notable exception: the records published here are referenced almost exclusively to the *Lichen Flora of the Greater Sonoran Desert Region* (Nash et al. 2002, 2004, 2007) as it represents the authoritative account of Arizona lichens. Reference specimens for the lichen flora of the state are housed in the Arizona State University Lichen Herbarium (ASU), which represents one of the more significant lichen collections (including important historical components; see e.g., Nash 2002) in North America, if not the world, and is irreplaceable in its value as a living regional collection. Synonymy and currently accepted names follow the *Cumulative Checklist for the Lichen-Forming, Lichenicolous and Allied Fungi of the Continental United States and Canada* (Esslinger 2010), and the classification system used conforms to the *CABI Index Fungorum* (<http://www.index-fungorum.org>).

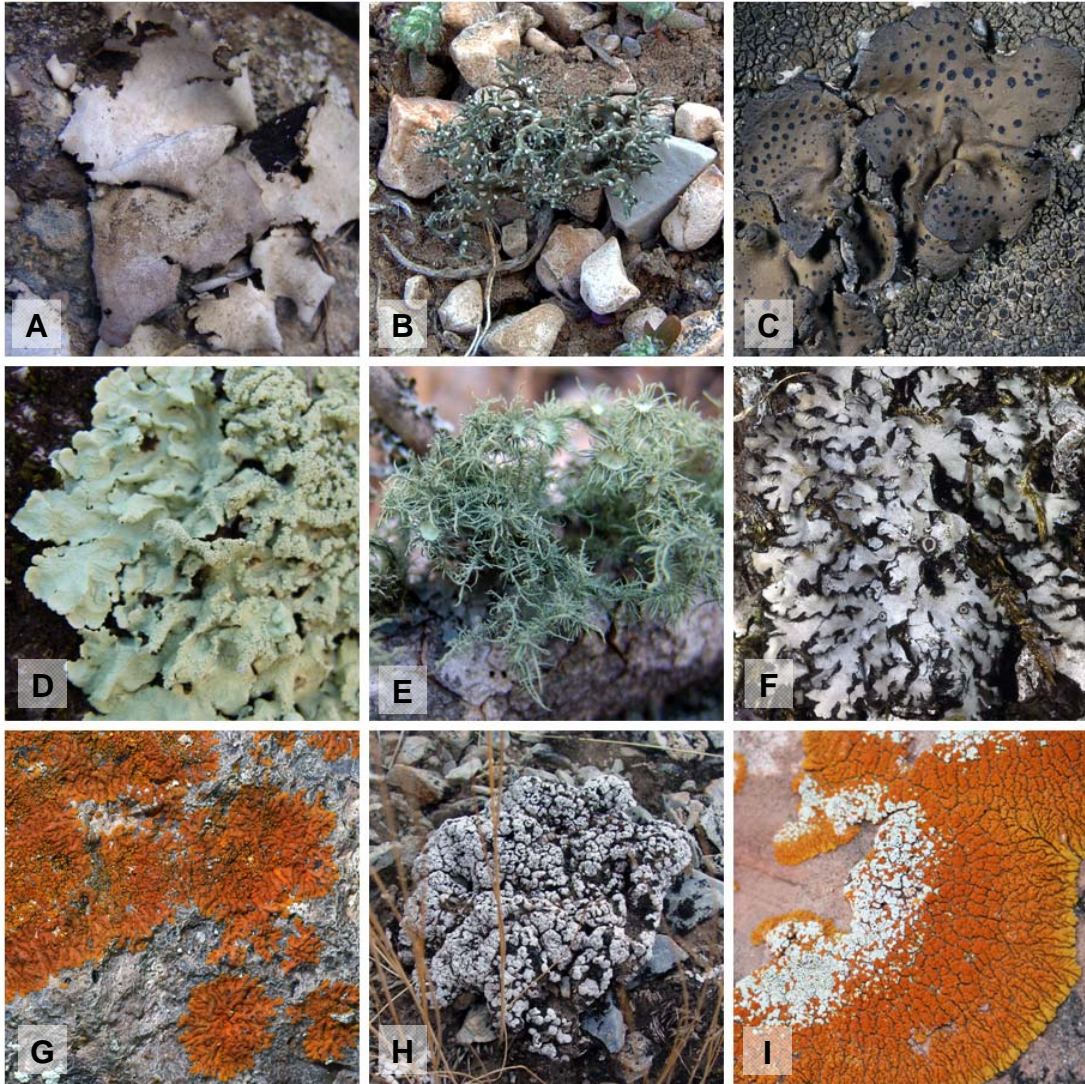
As with previous Arizona checklists (Bates 2006, Bates & Barber 2008), the data from this publication are available online (<http://www.azfungi.org/checklist/>), now as the *Checklist of Arizona Macrofungi, Lichens, and Slime Molds*, which includes approximately 7000 records of lichenized and non-lichenized fungi (and slime molds) from the state. In addition, many species in the online checklist are linked to images, which were generated primarily through the *Arizona Mycota Project* ([www.azfungi.org/amp/](http://www.azfungi.org/amp/)). Perhaps more importantly, these data as well as those related to the *Lichen Flora of the Greater Sonoran Desert Region* and the ASU Lichen Herbarium are now accessible online in conjunction with data from several other lichen herbaria on the Symbiota (<http://www.symbiota.org>) lichen node, *Consortium of North American Lichen Herbaria* (CNALH; <http://symbiota.org/nalichens/>). Those data, representing a comprehensive coverage of North American lichens, are presented as a searchable database and as dynamic checklists (e.g., United States and Canada, Mexico, numerous U.S. National Parks,

as well as Arizona and specific regions within the state; <http://symbiota.org/nalichens/checklists/>) generated from the available herbaria records in real-time. Each checklist is also presented as a “user-friendly”, interactive symbiota keying system (<http://symbiota.org/nalichens/ident/>), which lead the user through a series of progressive, multiple character decisions (based on a hierarchical ranking of character importance relevant to differing taxonomic levels). In addition, a large image database is also linked with species presented on the CNALH website, which include digitized photographs of herbarium specimens (including types) as well as from the field (including the extensive collection of Stephen Sharnoff; see Brodo et al. 2001).

## RESULTS, DISCUSSION, AND CONCLUSIONS

Records for nine hundred sixty-nine species of lichenized fungi (and 13 additional varieties or subspecies) from 54 families (and 3 additional groups of uncertain taxonomic position), 17 orders (and 4 additional groups of uncertain taxonomic position), and 5 classes (all of the classes known to contain lichen-forming fungi), within the *Ascomycota*, are reported here. By far, the *Lecanoromycetes* represents the single largest group (~84% of all lichen species in the flora) of lichens at the class level, and this class also includes the most species-rich lichen families; the *Parmeliaceae* (~15% of all lichen species), the *Lecanoraceae* (~11% of all lichen species), and the *Physciaceae* (at 7.9% of all lichen species). Interestingly, the second largest class level group (*Eurotiomycetes*) represents only about 9% of all lichen species in the flora, yet it contains the fourth most species-rich lichen family (*Verrucariaceae* at 7.7% of all lichen species). When parsed by growth forms, crustose lichens (including subgroups such as endolithic, peltate, placodioid, and squamulose lichens) comprise the largest group, representing approximately 60% of all lichens in the flora, followed by foliose lichens (~30%), and then fruticose lichens (~10%). Two additional growth forms, leprose and calicioid, each account for roughly 1% of the flora.

Arizona has an exceptional variety of biomes which has resulted in an extensive diversity of macrofungi (see Bates 2006); likewise, the diversity of lichens present in the state is also considerably rich; representing approximately half of species recorded for the *Lichen Flora of the Greater Sonoran Desert Region* and nearly 20% of the known lichen flora of North America. The list of Arizona lichen species included here is noticeably larger, over a two-fold increase, than that presented in the original catalog (Nash and Johnsen 1975). This increased understanding of the Arizona lichen flora is the product of the tremendous effort and rigorous scientific study that was inherit in monographing the flora of the Greater Sonoran Desert Region, which resulted in the publication of over 400 taxa new to science and included the discovery of 2 novel genera (see the preface of Nash et al. 2007). These figures highlight the value of concentrated and continued work in monography as well as alpha-taxonomy, and point to the fact that, even for a “well studied” area such as the United States, a comprehensive understanding of the Earth’s fungal biota (for both lichenized and non-lichenized groups) is far from being achieved.



**Arizona Lichens** Figure 1. Diversity of growth forms of lichenized fungi (lichens). (A) *Umbilicaria americana* (foliose/umbilicate, on rock); (B) *Aspicilia hispida* (fruticose, vagrant over soil); (C) *Umbilicaria phaea* (foliose/umbilicate, on rock); (D) *Flavoparmelia baltimorensis* (foliose, on rock); (E) *Usnea intermedia* (fruticose, on bark); (F) *Phaeophyscia hispidula* (small-foliose, on rock); (G) *Caloplaca brouardii* (crustose, on rock); (H) *Psora cerebriformis* (crustose/squamulose, on soil); (I) *Acarospora stapfiana* (crustose, parasitic on *Caloplaca* sp.) – (Photos C, F, G by F. Bungartz; A, B, D, E, H by S.T. Bates; I by J. Siminitus).

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### □ FUNGI

#### • ASCOMYCOTA

#### † ARTHONIOMYCETES ARTHONIOMYCETIDAE ARTHONIALES

##### *Arthoniaceae*

*Arthonia patellulata* Nyl. [3]

##### *Chrysothricaceae*

*Chrysothrix candelaris* (L.) J.R. Laundon [2]

#### † DOTHIDEOMYCETES DOTHIDEOMYCETIDAE INCERTAE SEDIS

##### *Mycoporaceae*

*Mycoporum antecellens* (Nyl.) R.C. Harris [1]\*

#### INCERTAE SEDIS INCERTAE SEDIS

##### *Protothelenellaceae*

*Protothelenella sphinctrinoidella* (Nyl.) H. Mayrhofer & Poelt [1]

##### *Thelenellaceae*

*Thelenella inductula* (Nyl.) H. Mayrhofer [1]

*Thelenella muscorum* (Fr.) Vain. var. *muscorum* [1]\*

#### PLEOSPOROMYCETIDAE PLEOSPORALES

##### *Arthopyreniaceae*

*Arthopyrenia punctiformis* (Schränk) A. Massal. [1]

*Arthopyrenia rhyponia* (Ach.) A. Massal. [1]

*Leptorhaphis atomaria* (Ach.) Szatala [1]

#### † EUROTIOMYCETES CHAETOTHYRIOMYCETIDAE PYRENULALES

##### *Monoblastiaceae*

*Anisomeridium biforme* (Borrer) R.C. Harris [1]

#### VERRUCARIALES

##### *Incertae sedis*

*Agonimia tristicula* (Nyl.) Zahlbr. [1]

*Staurothele areolata* (Ach.) Lettau [1]

*Staurothele clopimoides* (Bagl. & Carestia) J. Steiner [1]

*Staurothele drummondii* (Tuck.) Tuck. [1]

*Staurothele effigurata* J.W. Thomson [1]

*Staurothele elenkinii* Oxner [1]

*Staurothele lecideoides* B. de Lesd. [1]

*Staurothele monicae* (Zahlbr.) Wetmore [1]

*Staurothele polygonia* B. de Lesd. [1]

*Staurothele verruculosa* J.W. Thomson [1]

##### *Verrucariaceae*

*Bagliettoa baldensis* (A. Massal.) Vězda [3]

*Bagliettoa calciseda* (DC.) Gueidan & Cl. Roux [3]\*

*Catapyrenium psoromoides* (Borrer) R. Sant. [1]

*Catapyrenium squamellum* (Nyl.) J.W. Thomson [1]

*Dermatocarpon americanum* Vain. [2]

*Dermatocarpon bachmannii* Anders [2]

*Dermatocarpon leptophyllodes* (Nyl.) Zahlbr. [2]

*Dermatocarpon luridum* (With.) J.R. Laundon [2]

*Dermatocarpon moulinsii* (Mont.) Zahlbr. [2]

*Dermatocarpon polyphyllizum* (Nyl.) Blomb. & Forssell [2]

*Dermatocarpon reticulatum* H. Magn. [2]

*Dermatocarpon schaechtelinii* Werner [2]

*Dermatocarpon taminium* Heiðm. [2]

*Dermatocarpon tenue* (Müll. Arg.) Heiðm. [2]

*Digitothyrea polyglossa* (Nyl.) P.P. Moreno & Egea [1]

*Endocarpon loscosii* Müll. Arg. [1]

*Endocarpon pallidulum* (Nyl.) Nyl. [1]

*Endocarpon petrolepideum* (Nyl.) Nyl. [1]

*Endocarpon pusillum* Hedw. [1]

*Endocarpon schisticola* (B. de Lesd.) Servít [1]

*Normandina pulchella* (Borrer) Nyl. [2]

*Placidium acarosporoides* (Zahlbr.) Breuss [1]

*Placidium andicola* (Breuss) Breuss [1]

*Placidium arboreum* (Schwein. ex E. Michener)

Lendemere [1]\*

*Placidium chilense* (Räsänen) Breuss [1]

*Placidium fingens* (Breuss) Breuss [1]

*Placidium lachneum* (Ach.) B. de Lesd. [1]

*Placidium lacinulatum* var. *atrans* Breuss [1]

*Placidium lacinulatum* var. *erythrostratum* Breuss [1]

*Placidium lacinulatum* (Ach.) Breuss var. *lacinulatum* [1]

*Placidium michelii* A. Massal. [1]

*Placidium pilosellum* (Breuss) Breuss [1]

*Placidium rufescens* (Ach.) A. Massal. [1]

*Placidium squamulosum* (Ach.) Breuss [1]

*Placidium umbrinum* (Breuss) M. Prieto & Breuss [1]\*

*Placopyrenium caeruleopulvinum* (J.W. Thomson)

Breuss [1]

*Placopyrenium lecideoides* (A. Massal.) Gueidan &

Cl. Roux [3]\*

*Placopyrenium stanfordii* (Herre) K. Knudsen [1]\*

*Verrucaria alutacea* Wallr. [3]

*Verrucaria americana* (B. de Lesd.) Breuss [3]

*Verrucaria amylicata* Hepp [3]

*Verrucaria beltraminiana* (A. Massal.) Trevis. [3]

*Verrucaria bernaicensis* Malbr. [3]

*Verrucaria bernardinensis* Breuss [3]

*Verrucaria calkinsiana* Servít [3]

*Verrucaria cetera* Breuss [3]

*Verrucaria compacta* (A. Massal.) Jatta [3]

*Verrucaria confluens* A. Massal. [3]

*Verrucaria dolosa* Hepp [3]

*Verrucaria elaeina* Borrer [3]

*Verrucaria endocarpoides* Servít [3]

*Verrucaria falcata* Breuss [3]

*Verrucaria funckii* (Spreng.) Zahlbr. [3]

*Verrucaria furfuracea* (B. de Lesd.) Breuss [3]

*Verrucaria fusca* Pers. [3]

*Verrucaria fuscoatroides* Servít [3]

*Verrucaria glaucovirens* Grunmann [3]

*Verrucaria hydrela* Ach. [3]

*Verrucaria incrassata* Breuss [3]

*Verrucaria inficiens* Breuss [3]

*Verrucaria inornata* Servít [3]

*Verrucaria macrostoma* Dufour ex DC. [3]

*Verrucaria maculicarpa* Breuss [3]

*Verrucaria margacea* (Wahlenb.) Wahlenb. [3]

*Verrucaria minor* Breuss [3]

*Verrucaria muralis* Ach. [3]

*Verrucaria murorum* (Arnold) Lindau [3]

*Verrucaria nigrescens* Pers. [3]

*Verrucaria nigrofusca* Servít [3]

*Verrucaria onegensis* Vain. [3]

*Verrucaria papillosa* Ach. [3]

*Verrucaria prosoplectenchymatica* Servít [3]

*Verrucaria quercina* Breuss [3]  
*Verrucaria rubrocincta* Breuss [3]  
*Verrucaria rupicola* (B. de Lesd.) Breuss [3]  
*Verrucaria schindleri* Servit [3]  
*Verrucaria sphaerospora* Anzi [3]  
*Verrucaria trabicola* Arnold [3]  
*Verrucaria viridula* (Schrad.) Ach. [3]

† **LECANOROMYCETES**  
**ACAROSPOROMYCETIDAE**  
**ACAROSPORALES**

**Acarosporaceae**

*Acarospora affinis* K. Knudsen [3]  
*Acarospora badiofusca* (Nyl.) Th. Fr. [3]  
*Acarospora brouardii* B. de Lesd. [3]  
*Acarospora calcarea* K. Knudsen [3]  
*Acarospora chrysops* (Tuck.) H. Magn. [3]  
*Acarospora contigua* H. Magn. [3]  
*Acarospora dispersa* H. Magn. [3]  
*Acarospora erythrophora* H. Magn. [3]  
*Acarospora fuscata* (Nyl.) Arnold [3]  
*Acarospora glaucocarpa* (Ach.) Körb. [3]  
*Acarospora heufleriana* Körb. [3]  
*Acarospora interspersa* H. Magn. [3]  
*Acarospora macrospora* (Hepp) A. Massal. ex Bagl. [3]  
*Acarospora nevadensis* H. Magn. [3]  
*Acarospora nodulosa* (Dufour) Hue [3]  
*Acaospora novomexicana* H. Magn. [3]  
*Acarospora obnubila* H. Magn. [3]  
*Acarospora obpallens* (Nyl.) Zahlbr. [3]  
*Acarospora oligospora* (Nyl.) Arnold [3]  
*Acarospora peliocypha* (Wahlenb.) Th. Fr. [3]  
*Acarospora rhabarbarina* Hue [3]  
*Acarospora rouxii* K. Knudsen, Elix & Reeb [3]  
*Acarospora rosulata* (Th. Fr.) H. Magn. [3]\*  
*Acarospora scabrida* Hedl. ex H. Magn. [3]  
*Acarospora schleicheri* (Ach.) A. Massal. [3]  
*Acarospora scotica* Hue [3]  
*Acarospora socialis* H. Magn. [3]  
*Acarospora stapfiana* (Müll. Arg.) Hue [3]  
*Acarospora strigata* (Nyl.) Jatta [3]  
*Acarospora thamnina* (Tuck.) Herre [3]  
*Acarospora tuckerae* K. Knudsen [3]  
*Acarospora veronensis* A. Massal. [3]  
*Glypholecia scabra* (Pers.) Müll. Arg. [1]  
*Pleopsidium flavum* (Bellardi) Körb. [3]  
*Polysporina gyrocarpa* (H. Magn.) N.S. Golubk. [3]\*  
*Polysporina simplex* (Davies) Vězda [3]  
*Polysporina subfuscescens* (Nyl.) K. Knudsen & Kocourk. [3]\*  
*Polysporina urceolata* (Anzi) Brodo [3]  
*Sarcogyne clavus* (DC.) Kremp. [3]  
*Sarcogyne dakotensis* H. Magn. [3]  
*Sarcogyne desolata* (H. Magn.) K. Knudsen & S. Standl. [3]  
*Sarcogyne privigna* (Ach.) A. Massal. [3]  
*Sarcogyne regularis* Körb. [3]  
*Sarcogyne similis* H. Magn. [3]

**INCERTAE SEDIS**  
**CANDELARIALES**

**Candelariaceae**

*Candelaria concolor* (Dicks.) Stein [1]  
*Candelaria fibrosa* (Fr.) Müll. Arg. [1]  
*Candelaria pacifica* M. Westb. & Arup [4]  
*Candelariella antennaria* Räsänen [2]  
*Candelariella aurella* (Hoffm.) Zahlbr. [2]

*Candelariella citrina* B. de Lesd. [2]  
*Candelariella complanata* M. Westb. [2]  
*Candelariella deppeanae* M. Westb. [2]  
*Candelariella efflorescens* R.C. Harris & W.R. Buck [2]  
*Candelariella kansuensis* H. Magn. [3]  
*Candelariella lutella* (Vain.) Räsänen [2]  
*Candelariella rosulans* (Müll. Arg.) Zahlbr. [2]  
*Candelariella subdeflexa* (Nyl.) Lettau [2]  
*Candelariella vitellina* (Hoffm.) Müll. Arg. [2]  
*Candelariella xanthostigma* (Ach.) Lettau [2]  
*Candolina mexicana* (de Lesd.) Poelt [1]  
*Candolina submexicana* (de Lesd.) Poelt [1]  
*Placomaronea mendozae* (Räsänen) M. Westb. [2]

**INCERTAE SEDIS**

**Incertae sedis**

*Pycnora praestabilis* (Nyl.) Hafellner [1]  
*Pycnora sorophora* (Vain.) Hafellner [1]

**UMBILICARIALES**

**Ophioparmaceae**

*Hypocomyce anthracophila* (Nyl.) P. James & Gotth. Schneid. [1]  
*Hypocomyce castaneocinerea* (Räsänen) Timdal [1]  
*Hypocomyce friesii* (Ach.) P. James & Gotth. Schneid. [1]  
*Hypocomyce oligospora* Timdal [1]  
*Hypocomyce scalaris* (Ach. ex Lilj.) M. Choisy [1]  
*Hypocomyce sierrae* Timdal [1]

**Umbilicariaceae**

*Lasallia papulosa* (Ach.) Llano [2]  
*Lasallia pennsylvanica* (Ach.) Llano [2]  
*Umbilicaria americana* Poelt & T.H. Nash [2]  
*Umbilicaria cinereorufescens* (Schaer.) Frey [2]  
*Umbilicaria cylindrica* (L.) Delise ex Duby [2]  
*Umbilicaria decussata* (Vill.) Zahlbr. [2]  
*Umbilicaria deusta* (L.) Baumg. [2]  
*Umbilicaria hyperborea* (Ach.) Hoffm. [2]  
*Umbilicaria krascheninnikovii* (Savicz) Zahlbr. [2]  
*Umbilicaria muehlenbergii* (Ach.) Tuck. [2]  
*Umbilicaria nylanderiana* (Zahlbr.) H. Magn. [2]  
*Umbilicaria phaea* Tuck. [2]  
*Umbilicaria polyphylla* (L.) Baumg. [2]  
*Umbilicaria subglabra* (Nyl.) Harm. [2]  
*Umbilicaria torrefacta* (Lightf.) Schrad. [2]  
*Umbilicaria vellea* (L.) Ach. [2]  
*Umbilicaria virginis* Schrad. [2]

**LECANOROMYCETIDAE**

**INCERTAE SEDIS**

**Coniocybaceae**

*Chaenotheca chrysocephala* (Turner ex Ach.) Th. Fr. [2]  
*Chaenotheca furfuracea* (L.) Tibell [2]

**LECANORALES**

**Aphanopsidaceae**

*Steinia geophana* (Nyl.) Stein [2]

**Biatorrellaceae**

*Piccolia ochrophora* (Nyl.) Hafellner [3]\*

**Cladoniaceae**

*Cladonia acuminata* (Ach.) Norrl. [1]  
*Cladonia bacilliformis* (Nyl.) Glück [1]  
*Cladonia borealis* S. Stenroos [1]



*Cladonia cariosa* (Ach.) Spreng. [1]  
*Cladonia carneola* (Fr.) Fr. [1]  
*Cladonia cenotea* (Ach.) Schaer. [1]  
*Cladonia cervicornis* (Ach.) Flot. subsp. *cervicornis* [1]  
*Cladonia chlorophaea* (Flörke ex Sommerf.) Spreng. [1]  
*Cladonia coniocraea* (Flörke) Spreng. [1]  
*Cladonia deformis* (L.) Hoffm. [1]  
*Cladonia fimbriata* (L.) Fr. [1]  
*Cladonia furcata* (Huds.) Schrad. [1]  
*Cladonia gracilis* (Ach.) Ahti subsp. *turbinata* [1]  
*Cladonia humilis* (With.) J.R. Laundon [1]  
*Cladonia jaliscana* Ahti & Guzm.-Dáv. [1]  
*Cladonia macilenta* Hoffm. [1]  
*Cladonia macrophyllodes* Nyl. [1]  
*Cladonia multiformis* G. Merr. [1]  
*Cladonia ochrochlora* Flörke [1]  
*Cladonia parasitica* (Hoffm.) Hoffm. [1]  
*Cladonia pleurota* (Flörke) Schaer. [1]  
*Cladonia pocillum* (Ach.) O.J. Rich. [1]  
*Cladonia pulvinella* S. Hammer [1]  
*Cladonia pyxidata* (L.) Hoffm. [1]  
*Cladonia subfimbriata* Ahti [1]  
*Cladonia subradiata* (Vain.) Sandst. [1]  
*Cladonia subulata* (L.) Weber ex F.H. Wigg. [1]  
*Cladonia sulphurina* (Michx.) Fr. [1]  
*Cladonia symphyocarpa* (Flörke) Fr. [1]

#### Gypsoplacaceae

*Gypsoplaca macrophylla* (Zahlbr.) Timdal [3]

#### Haematommataceae

*Haematomma fenzlianum* A. Massal. [2]

#### Incertae sedis

*Botryolepraria lesdainii* (Hue) Canals, Hern.-Mar.,  
 Gómez-Bolea & Llimona [3]  
*Lecania arizonica* B.D. Ryan & van den Boom [2]  
*Lecania coeruleorubella* (Mudd) M. Mayrhofer [2]  
*Lecania polycycla* (Anzi) Lettau [2]  
*Leprocaulon albicans* Nyl. [1]  
*Leprocaulon gracilescens* (Nyl.) I.M. Lamb &  
 A.M. Ward [1]  
*Leprocaulon microscopicum* (Vill.) Gams ex  
 D. Hawksw. [1]  
*Myxobilimbia sabuletorum* (Schreb.) Hafellner [2]  
*Psilolechia lucida* (Ach.) M. Choisy [3]  
*Scoliosporum intrusum* (Th. Fr.) Hafellner [2]\*  
*Scoliosporum umbrinum* (Ach.) Arnold [2]  
*Tremolecia atrata* (Ach.) Hertel [2]  
*Vahliella californica* (Tuck.) P.M. Jørg. [1]\*  
*Vahliella hookerioides* (P.M. Jørg.) P.M. Jørg. [1]\*  
*Vahliella leucophaea* (Vahl) P.M. Jørg. [1]\*

#### Lecanoraceae

*Carbonea latypizodes* (Nyl.) Knoph & Rambold [2]  
*Carbonea vorticiosa* (Flörke) Hertel [2]  
*Clauzadeana macula* (Taylor) Coppins & Rambold [2]  
*Lecanora albella* (Pers.) Ach. [2]  
*Lecanora albellula* (Nyl.) Th. Fr. [2]  
*Lecanora allophana* (Ach.) Nyl. [2]  
*Lecanora arenisaxicola* B.D. Ryan & T.H. Nash [2]  
*Lecanora argentata* (Ach.) Malme [2]  
*Lecanora argentea* Oxner & Volkova [2]  
*Lecanora argopholis* (Ach.) Ach. [2]  
*Lecanora bicincta* Ramond [2]  
*Lecanora bipruinosa* Fink ex J. Hedrick [2]  
*Lecanora boligera* (Th. Fr.) Hedl. [2]  
*Lecanora brodoana* Lumbsch & T.H. Nash [2]  
*Lecanora cadubriae* (A. Massal.) Hedl. [2]

*Lecanora caesiorubella* Ach. [2]  
*Lecanora campestris* (Schaer.) Hue [2]  
*Lecanora carpinea* (L.) Vain. [2]  
*Lecanora cavicola* Creveld [2]  
*Lecanora cenisia* Ach. [2]  
*Lecanora chlarotera* Nyl. [2]  
*Lecanora circumborealis* Brodo & Vitik. [2]  
*Lecanora comoduensis* T.H. Nash & Hertel [2]  
*Lecanora coniferarum* Printzen [2]  
*Lecanora crenulata* (Dicks.) Hook. [2]  
*Lecanora densa* (Sliwa & Wetmore) Printzen [2]  
*Lecanora dispersa* (Pers.) Röhl. [2]  
*Lecanora flowersiana* H. Magn. [2]  
*Lecanora gangaleoides* Nyl. [2]  
*Lecanora garovaglioii* subsp. *cascadensis* (H. Magn.)  
 B.D. Ryan & T.H. Nash [2]  
*Lecanora garovaglioii* (Körb.) Zahlbr. subsp. *garovaglioii* [2]  
*Lecanora geiseriae* B.D. Ryan [2]  
*Lecanora hagenii* (Ach.) Ach. [2]  
*Lecanora horiza* (Ach.) Linds. [2]  
*Lecanora hybocarpa* (Tuck.) Brodo [2]  
*Lecanora* aff. *hypoptoides* (Nyl.) Nyl. [2]  
*Lecanora impudens* Degel. [2]  
*Lecanora intricata* (Ach.) Ach. [2]  
*Lecanora juniperina* Śliwa [2]  
*Lecanora kofae* B.D. Ryan & T.H. Nash [2]  
*Lecanora laatokkensis* (Räsänen) Poelt [2]  
*Lecanora marginata* (Schaer.) Hertel & Rambold [2]  
*Lecanora mazatzalensis* B.D. Ryan & T.H. Nash [2]  
*Lecanora melaena* (Hedl.) Fink [2]  
*Lecanora meridionalis* H. Magn. [2]  
*Lecanora mughicola* Nyl. [2]  
*Lecanora muralis* var. *brunneola* (Mereschk.) B.D. Ryan &  
 T.H. Nash [2]  
*Lecanora muralis* (Schreb.) Rabenh. var. *muralis* [2]  
*Lecanora nashii* B.D. Ryan [2]  
*Lecanora neodegelii* B.D. Ryan & T.H. Nash [2]  
*Lecanora novomexicana* H. Magn. [2]  
*Lecanora opiniconensis* Brodo [2]  
*Lecanora oreinoides* (Körb.) Hertel & Rambold [2]  
*Lecanora orizabana* Vain. [2]  
*Lecanora pacifica* Tuck. [2]  
*Lecanora peltastictoides* Hasse [2]\*  
*Lecanora phaedrophthalma* var. *christoi* (W.A. Weber)  
 B.D. Ryan [2]  
*Lecanora phaedrophthalma* Poelt var. *phaedrophthalma* [2]  
*Lecanora plumosa* Müll. Arg. [2]  
*Lecanora polytropa* (Ehrh.) Rabenh. [2]  
*Lecanora pringlei* subsp. *brandegei* (Tuck.) B.D. Ryan [2]  
*Lecanora pseudistera* Nyl. [2]  
*Lecanora pulicaris* (Pers.) Ach. [2]  
*Lecanora rupicola* (L.) Zahlbr. [2]  
*Lecanora saligna* (Schrad.) Zahlbr. [2]  
*Lecanora semipallida* H. Magn. [2]\*  
*Lecanora subcavicola* B.D. Ryan [2]  
*Lecanora subimmergens* Vain. [2]  
*Lecanora subintricata* (Nyl.) Th. Fr. [2]  
*Lecanora subrugosa* Nyl. [2]  
*Lecanora swartzii* (Ach.) Ach. [2]  
*Lecanora symmicta* (Ach.) Ach. [2]  
*Lecanora thallophila* H. Magn. [2]  
*Lecanora umbrosa* Degel. [2]  
*Lecanora valesiaca* var. *sibirica* Poelt [2]  
*Lecanora valesiaca* (Müll. Arg.) Stizenb. var. *valesiaca* [2]  
*Lecanora viridiflava* B. de Lesd. [2]  
*Lecanora weberi* B.D. Ryan [2]  
*Lecanora wetmorei* Śliwa [2]  
*Lecidella anomaloides* (A. Massal.) Hertel & H. Kilius [2]  
*Lecidella asema* (Nyl.) Knoph & Hertel [2]

- Lecidella carpathica* Körb. [2]  
*Lecidella chiricahuana* Knoph & Leuckert [2]  
*Lecidella effugiens* (Nilson) Knoph & Hertel [2]  
*Lecidella elaeochroma* (Ach.) M. Choisy [2]  
*Lecidella euphorea* (Flörke) Hertel [2]  
*Lecidella granulosa* (Nyl.) Knoph & Leuckert [2]  
*Lecidella latypiza* (Nyl.) M. Choisy [2]  
*Lecidella nashiana* Knoph & Leuckert [2]  
*Lecidella patavina* (A. Massal.) Knoph & Leuckert [2]  
*Lecidella stigmata* (Ach.) Hertel & Leuckert [2]  
*Lecidella tumidula* (A. Massal.) Knoph & Leuckert [2]  
*Lecidella viridans* (Flot.) Körb. [2]  
*Lecidella wulfenii* (Ach.) Körb. [2]  
*Miriquidica garovaglioii* (Schaer.) Hertel & Rambold [2]  
*Psorinia conglomerata* (Ach.) Gotth. Schneid. [1]  
*Ramboldia elabens* (Fr.) Kantvilas & Elix [2]  
*Rhizoplaca chrysoleuca* (Sm.) Zopf [1]  
*Rhizoplaca melanophthalma* (DC.) Leuckert [1]  
*Rhizoplaca peltata* (Ramond) Leuckert & Poelt [1]  
*Rhizoplaca subdiscrepans* (Nyl.) R. Sant. [1]  
*Strangospora microhaema* (Norman) R.A. Anderson [3]  
*Strangospora moriformis* (Ach.) Stein [3]
- Parmeliaceae**
- Ahtiana sphaerosporella* (Müll. Arg.) Goward [1]  
*Arctoparmelia centrifuga* (Oxner) Hale [1]  
*Brodoa oroarctica* (Krog) Goward [1]  
*Bryoria chalybeiformis* (L.) Brodo & D. Hawksw. [1]  
*Bryoria furcellata* (Fr.) Brodo & D. Hawksw. [1]  
*Bryoria fuscescens* (Gyeln.) Brodo & D. Hawksw. [1]  
*Bryoria lanestris* (Ach.) Brodo & D. Hawksw. [1]  
*Bryoria simplicior* (Vain.) Brodo & D. Hawksw. [1]  
*Canoparmelia crozalsiana* (B. de Lesd.) Elix & Hale [1]  
*Canoparmelia texana* (Tuck.) Elix & Hale [1]  
*Cetraria ericetorum* subsp. *reticulata* (Räsänen) Kärnefelt [1]  
*Evernia divaricata* (L.) Ach. [1]  
*Flavoparmelia baltimorensis* (Gyeln. & Főriss) Hale [1]  
*Flavoparmelia caperata* (L.) Hale [1]  
*Flavopunctelia darrowii* (J.W. Thomson) Hale [2]  
*Flavopunctelia flaventior* (Stirt.) Hale [2]  
*Flavopunctelia praesignis* (Nyl.) Hale [2]  
*Flavopunctelia soledica* (Nyl.) Hale [2]  
*Hypogymnia austerodes* (Nyl.) Räsänen [1]  
*Hypogymnia bitteri* (Lyng.) Ahti [1]  
*Hypogymnia farinacea* Zopf [1]  
*Hypogymnia physodes* (L.) Nyl. [1]  
*Hypotrachyna dactylifera* (Vain.) Hale [1]  
*Hypotrachyna laevigata* (Sm.) Hale [1]  
*Hypotrachyna meridensis* Hale & López-Fig. [1]  
*Hypotrachyna pulvinata* (Fée) Hale [1]  
*Hypotrachyna punoensis* Kurok. & K.H. Moon [1]  
*Hypotrachyna pustulifera* (Hale) Skorepa [1]  
*Hypotrachyna revoluta* (Flörke) Hale [1]  
*Hypotrachyna subsaxatilis* (B. de Lesd.) Hale [1]  
*Imshaugia aleurites* (Ach.) S.L.F. Mey. [1]  
*Imshaugia placorodia* (Ach.) S.L.F. Mey. [1]  
*Letharia columbiana* (Nutt.) J.W. Thomson [1]  
*Letharia vulpina* (L.) Hue [1]  
*Melanelixia disjuncta* (Erichsen) Essl. [1]  
*Melanelixia panniformis* (Nyl.) Essl. [1]  
*Melanelixia tominii* (Oxner) Essl. [1]  
*Melanelixia albertana* (Ahti) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch [1]\*  
*Melanelixia fuliginosa* (Fr. ex Duby) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch [1]\*  
*Melanelixia glabroides* (Essl.) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch [1]\*  
*Melanelixia subargentifera* (Nyl.) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch [1]\*  
*Melanelixia villosella* (Essl.) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch [1]\*  
*Melanohalea elegantula* (Zahlbr.) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch [1]\*  
*Melanohalea exasperatula* (Nyl.) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch [1]\*  
*Melanohalea subolivacea* (Nyl.) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch [1]\*  
*Myelochroa aurulenta* (Tuck.) Elix & Hale [1]  
*Neofuscelia ahtii* (Essl.) Essl. [1]  
*Neofuscelia atticoides* (Essl.) Essl. [1]  
*Neofuscelia brunella* (Essl.) Essl. [1]  
*Neofuscelia chiricahuensis* (R.A. Anderson & W.A. Weber) Essl. [1]  
*Neofuscelia infrapallida* (Essl.) Essl. [1]  
*Neofuscelia occidentalis* (Essl.) Essl. [1]  
*Omphalora arizonica* (Tuck. ex Willey) T.H. Nash & Hafellner [1]  
*Parmelia fraudans* (Nyl.) Nyl. [1]  
*Parmelia glabra* (Schaer.) Nyl. [1]  
*Parmelia saxatilis* L. (Ach.) [1]  
*Parmelia sulcata* Taylor [1]  
*Parmelinopsis horrescens* (Taylor) Elix & Hale [1]  
*Parmelinopsis minarum* (Vain.) Elix & Hale [1]  
*Parmeliopsis ambigua* (Wulfen) Nyl. [1]  
*Parmeliopsis hyperopta* (Ach.) Vain. [1]  
*Parmotrema chinense* (Osbeck) Hale & Ahti [1]  
*Parmotrema crinitum* (Ach.) M. Choisy [1]  
*Parmotrema euryacum* (Hue) Hale [1]  
*Parmotrema hababianum* (Gyeln.) Hale [1]  
*Parmotrema mordenii* (Hale) Hale [1]  
*Parmotrema stuppeum* (Taylor) Hale [1]  
*Parmotrema subinctorium* (Zahl.) Hale [1]\*  
*Protoparmelia atriseda* (Fr.) R. Sant. & V. Wirth [2]  
*Protoparmelia badia* (Hoffm.) Hafellner [2]  
*Protoparmelia cupreobadia* (Nyl.) Poelt [2]  
*Pseudephebe minuscula* (Arnold) Brodo & D. Hawksw. [1]  
*Pseudevernia intensa* (Nyl.) Hale & W.L. Culb. [1]  
*Punctelia graminicola* (B. de Lesd.) Egan [2]  
*Punctelia hypoleucites* (Nyl.) Krog [2]  
*Punctelia perreticulata* (Räsänen) G. Wilh. & Ladd [2]  
*Punctelia rudecta* (Ach.) Krog [2]  
*Punctelia stictica* (Delise ex Duby) Krog [2]  
*Rimelia cetrata* (Ach.) Hale & A. Fletcher [1]  
*Rimelia reticulata* (Taylor) Hale & A. Fletcher [1]  
*Rimelia simulans* (Hale) Hale & A. Fletcher [1]  
*Tuckermanella arizonica* Essl. [2]  
*Tuckermanella coralligera* (W.A. Weber) Essl. [2]  
*Tuckermanella fendleri* (Nyl.) Essl. [2]  
*Tuckermanella weberi* (Essl.) Essl. [2]  
*Usnea amblyoclada* (Müll. Arg.) Zahlbr. [3]  
*Usnea cavernosa* Tuck. [3]  
*Usnea ceratina* Ach. [3]  
*Usnea cirrosa* Motyka [3]  
*Usnea cornuta* Körb. subsp. *cornuta* [3]  
*Usnea diplotypus* Vain. [3]  
*Usnea halei* P. Clerc [3]  
*Usnea hirta* (L.) Weber ex F.H. Wigg. subsp. *hirta* [3]  
*Usnea intermedia* Jatta [3]  
*Usnea lapponica* Vain. [3]  
*Usnea myrmaicaina* P. Clerc [3]  
*Usnea parvula* Motyka [3]  
*Usnea praetervisa* (Asahina) P. Clerc [3]  
*Usnea scabrata* Nyl. [3]  
*Usnea subfloridana* Stirt. [3]  
*Usnea substerilis* Motyka [3]  
*Vulpicida pinastri* (Scop.) J.-E. Mattsson [1]

*Xanthoparmelia ahtii* (Essl.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch [1]\*  
*Xanthoparmelia ajoensis* (T.H. Nash) Egan [2]  
*Xanthoparmelia amableana* (Gyeln.) Hale [2]  
*Xanthoparmelia atticoides* (Essl.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch [1]  
*Xanthoparmelia australasica* D.J. Galloway [2]  
*Xanthoparmelia brunella* O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch [1]  
*Xanthoparmelia californica* Hale [2]  
*Xanthoparmelia chlorochroa* (Tuck.) Hale [2]  
*Xanthoparmelia coloradoensis* (Gyeln.) Hale [2]  
*Xanthoparmelia conspersa* (Ehrh. ex Ach.) Hale [2]  
*Xanthoparmelia cumberlandia* (Gyeln.) Hale [2]  
*Xanthoparmelia dierythra* (Hale) Hale [2]  
*Xanthoparmelia digitiformis* (Elix & P.M. Armstr.) Filson [2]  
*Xanthoparmelia dissensa* (T.H. Nash) Egan [2]  
*Xanthoparmelia eganii* Elix & T.H. Nash [2]  
*Xanthoparmelia huachuensis* (T.H. Nash) Egan [2]  
*Xanthoparmelia hypomelaena* (Hale) Hale [2]  
*Xanthoparmelia incerta* (Kurok. & Filson) Elix & J. Johnst. [2]  
*Xanthoparmelia isidiigera* (Müll. Arg.) Elix & J. Johnst. [2]  
*Xanthoparmelia lavicola* (Gyeln.) Hale [2]  
*Xanthoparmelia lineola* (E.C. Berry) Hale [2]  
*Xanthoparmelia lobulatella* T.H. Nash & Elix [2]  
*Xanthoparmelia maricopensis* T.H. Nash & Elix [2]  
*Xanthoparmelia mexicana* (Gyeln.) Hale [2]  
*Xanthoparmelia montanensis* Hale [2]  
*Xanthoparmelia monticola* (J.P. Dey) Hale [2]  
*Xanthoparmelia neocongensis* (Hale) Hale [2]  
*Xanthoparmelia neoconspersa* (Gyeln.) Hale [2]  
*Xanthoparmelia neorimalis* (Elix & P.M. Armstr.) Elix & T.H. Nash [2]  
*Xanthoparmelia neowomingica* Hale [2]  
*Xanthoparmelia nigrolavicola* T.H. Nash & Elix [2]  
*Xanthoparmelia nigropsoromifera* (T.H. Nash) Egan [2]  
*Xanthoparmelia nigroweberi* T.H. Nash & Elix [2]  
*Xanthoparmelia novomexicana* (Gyeln.) Hale [2]  
*Xanthoparmelia oleosa* (Elix & P.M. Armstr.) Elix & T.H. Nash [2]  
*Xanthoparmelia planilobata* (Gyeln.) Hale [2]  
*Xanthoparmelia plittii* (Gyeln.) Hale [2]  
*Xanthoparmelia pseudocongensis* Hale [2]  
*Xanthoparmelia psoromifera* (Hale) Hale [2]  
*Xanthoparmelia standaertii* (Gyeln.) Hale [2]  
*Xanthoparmelia stenophylla* (Ach.) Ahti & D. Hawksw. [2]  
*Xanthoparmelia subcumberlandia* Elix & T.H. Nash [2]  
*Xanthoparmelia subdecipiens* (Vain. ex Lynge) Hale [2]  
*Xanthoparmelia subplittii* Hale [2]  
*Xanthoparmelia substenophylloides* Hale [2]  
*Xanthoparmelia subtasmanica* Elix & T.H. Nash [2]  
*Xanthoparmelia tasmanica* (Hook. f. & Taylor) Hale [2]  
*Xanthoparmelia tinctina* (Maheu & A. Gillet) Hale [2]  
*Xanthoparmelia tuberculata* (Gyeln.) T.H. Nash & Elix [2]  
*Xanthoparmelia tuckeriana* Elix & T.H. Nash [2]  
*Xanthoparmelia tucsonensis* (T.H. Nash) Egan [2]  
*Xanthoparmelia weberi* (Hale) Hale [2]  
*Xanthoparmelia wyomingica* (Gyeln.) Hale [2]

#### **Pilocarpaceae**

*Micarea denigrata* (Fr.) Hedl. [3]  
*Micarea micrococca* (Körb.) Gams ex Coppins [3]  
*Micarea misella* (Nyl.) Hedl. [3]

#### **Psoraceae**

*Protoblastenia rupestris* (Scop.) J. Steiner [2]  
*Psora cerebriiformis* W.A. Weber [1]

*Psora crenata* (Taylor) Reinke [1]  
*Psora decipiens* (Hedw.) Hoffm. [1]  
*Psora globifera* (Ach.) A. Massal. [1]  
*Psora himalayana* (C. Bab.) Timdal [1]  
*Psora icterica* (Mont.) Müll. Arg. [1]  
*Psora luridella* (Tuck.) Fink [1]  
*Psora nipponica* (Zahlbr.) Gotth. Schneid. [1]  
*Psora pseudorussellii* Timdal [1]  
*Psora russellii* (Tuck.) A. Schneid. [1]  
*Psora tuckermanii* R.A. Anderson ex Timdal [1]  
*Psorula rufonigra* (Tuck.) Gotth. Schneid. [1]

#### **Ramalinaceae**

*Bacidia bagliettoana* (A. Massal. & De Not.) Jatta [2]  
*Bacidia beckhausii* Körb. [2]  
*Bacidia circumspeta* (Norrl. & Nyl.) Malme [2]  
*Bacidia subincompta* (Nyl.) Arnold [2]  
*Bacidia vermifera* (Nyl.) Th. Fr. [2]  
*Bacidina "dissecta"* S. Ekman ad int. [2]  
*Bacidina egenula* (Nyl.) Vězda [2]  
*Biatora chrysantha* (Zahlbr.) Printzen [2]  
*Biatora globulosa* (Flörke) Fr. [2]  
*Biatora meiocarpa* (Nyl.) Arnold [2]  
*Japewia tornensis* (Nyl.) Tønsberg [2]  
*Mycobilimbia carnealbida* (Müll. Arg.) S. Ekman & Printzen [2]  
*Mycobilimbia tetramera* (De Not.) Vitik., Ahti, Kuusinen, Lommi & T. Ulvinen [2]  
*Ramalina intermedia* Delise ex Nyl. [2]  
*Ramalina pollinaria* (Westr.) Ach. [2]  
*Ramalina sinensis* Jatta [2]

#### **Stereocaulaceae**

*Hertelidea botryosa* (Fr.) Printzen & Kantvilas [2]  
*Lepraria borealis* Loht. & Tønsberg [2]  
*Lepraria caesioalba* (B. de Lesd.) J.R. Laundon [2]  
*Lepraria elobata* Tønsberg [2]  
*Lepraria lecanorica* Tønsberg [2]  
*Lepraria lobifigans* Nyl. [2]  
*Lepraria neglecta* (Nyl.) Erichsen [2]  
*Lepraria nivalis* J.R. Laundon [2]  
*Lepraria rigidula* (B. de Lesd.) Tønsberg [2]  
*Lepraria vouauxii* (Hue) R.C. Harris [2]  
*Squamarina lentigera* (Weber) Poelt [1]  
*Stereocaulon sasakii* Zahlbr. [1]

#### **Tephromelataceae**

*Calvitimela armenyiaca* (DC.) Hafellner [2]  
*Tephromela atra* (Huds.) Hafellner [2]

#### **Vězdaeaceae**

*Vězdaea rheocarpa* Poelt & Dobbeler [2]

#### **LECIDEALES**

##### **Lecideaceae**

*Lecidea atrobrunnea* (Ramond) Schaer. subsp. *atrobrunnea* [2]  
*Lecidea atrobrunnea* subsp. *saxosa* Hertel & Leuckert [2]  
*Lecidea atrobrunnea* subsp. *stictica* Hertel & Leuckert [2]  
*Lecidea berengeriana* (A. Massal.) Nyl. [2]  
*Lecidea cruciaria* Tuck. [2]  
*Lecidea diducens* Nyl. [2]  
*Lecidea holopolia* (Tuck.) Zahlbr. [2]  
*Lecidea laboriosa* Müll. Arg. [2]  
*Lecidea leprarioides* Tønsberg [2]  
*Lecidea nylanderii* (Anzi) Th. Fr. [2]  
*Lecidea promiscens* Nyl. [2]  
*Lecidea pseudaglaea* Hertel [2]

*Lecidea sauteri* Körb. [2]  
*Lecidea tessellata* Flörke [2]  
*Lecidea trapelioides* Printzen [2]

#### Porpidiaceae

*Bellemeria alpina* (Sommerf.) Clauzade & Cl. Roux [3]  
*Bellemeria sanguinea* (Kremp.) Hafellner & Cl. Roux [3]  
*Immersaria athrocarpa* (Ach.) Rambold & Pietschm. [2]  
*Porpidia crustulata* (Ach.) Hertel & Knoph [2]  
*Porpidia macrocarpa* (DC.) Hertel & A.J. Schwab [2]  
*Romjularia lurida* (Ach.) Timdal [3]

#### PELTIGERALES

##### Coccocarpiaceae

*Coccocarpia erythroxyli* (Spreng.) Swinscow & Krog [1]  
*Coccocarpia palmicola* (Spreng.) Arv. & D.J. Galloway [1]  
*Spilonema revertens* Nyl. [1]

##### Collemaaceae

*Collema callopismum* A. Massal. [2]  
*Collema coccophorum* Tuck. [2]  
*Collema conglomeratum* Hoffm. [2]  
*Collema crispum* (Huds.) Weber ex F.H. Wigg. [2]  
*Collema cristatum* (L.) Weber ex F.H. Wigg. [2]  
*Collema flaccidum* (Ach.) Ach. [2]  
*Collema furfuraceum* Du Rietz [2]  
*Collema fuscovirens* (With.) J.R. Laundon [2]  
*Collema occultatum* var. *populinum* (Th. Fr.) Degel. [2]  
*Collema polycarpon* Hoffm. [2]  
*Collema subflaccidum* Degel. [2]  
*Collema subnigrescens* Degel. [2]  
*Collema subparvum* Degel. [2]  
*Collema tenax* (Sw.) Ach. [2]  
*Collema texanum* Tuck. [2]  
*Collema undulatum* var. *granulosum* Degel. [2]  
*Leptogium arsenei* Sierk [2]  
*Leptogium austroamericanum* (Malme) C.W. Dodge [2]  
*Leptogium burgessii* (L.) Mont. [2]  
*Leptogium burnetii* C.W. Dodge [2]  
*Leptogium californicum* Tuck. [2]  
*Leptogium chloromelum* (Ach.) Nyl. [2]  
*Leptogium coralloideum* (Meyen & Flot.) Vain. [2]  
*Leptogium cyanescens* (Pers.) Körb. [2]  
*Leptogium "denticulatum"* Nyl. Senu Sierk [2]  
*Leptogium digitatum* (A. Massal.) Zahlbr. [2]  
*Leptogium gelatinosum* (With.) J.R. Laundon [2]  
*Leptogium hypotrachynum* Müll. Arg. [2]  
*Leptogium juniperinum* Tuck. [2]  
*Leptogium laceroides* B. de Lesd. [2]  
*Leptogium lichenoides* (L.) Zahlbr. [2]  
*Leptogium milligranum* Sierk [2]  
*Leptogium papillosum* (B. de Lesd.) C.W. Dodge [2]  
*Leptogium phyllocarpum* (Pers.) Mont. [2]  
*Leptogium plicatile* (Ach.) Leight. [2]  
*Leptogium pseudofurfuraceum* P.M. Jørg. & A.K. Wallace [2]  
*Leptogium resupinans* Nyl. [2]  
*Leptogium rugosum* Sierk [2]  
*Leptogium saturninum* (Dicks.) Nyl. [2]  
*Leptogium subaridum* P.M. Jørg. & Goward [2]  
*Leptogium subtile* (Schrad.) Torss. [2]  
*Leptogium tenuissimum* (Hoffm.) Körb. [2]

##### Lobariaceae

*Sticta beauvoisii* Delise [2]  
*Sticta fuliginosa* (Dicks.) Ach. [2]  
*Sticta leucoblephara* (Müll. Arg.) D.J. Galloway [2]  
*Sticta sylvatica* (Huds.) Ach. [2]

*Sticta xanthotropa* (Kremp.) D.J. Galloway [2]

##### Massalongiaceae

*Leptochidium albociliatum* (Desm.) M. Choisy [1]  
*Massalonia carnosa* (Dicks.) Körb. [1]

##### Nephromataceae

*Nephroma bellum* (Spreng.) Tuck. [1]  
*Nephroma helveticum* Ach. [1]  
*Nephroma parile* (Ach.) Ach. [1]  
*Nephroma resupinatum* (L.) Ach. [1]

##### Pannariaceae

*Fuscopannaria mediterranea* (Tav.) P.M. Jørg. [1]  
*Fuscopannaria praetermissa* (Nyl.) P.M. Jørg. [1]  
*Pannaria conoplea* (Pers.) Bory [1]  
*Pannaria subfusca* P.M. Jørg. [1]  
*Pannaria tavaresii* P.M. Jørg. [1]  
*Parmeliella triptophylla* (Ach.) Müll. Arg. [1]  
*Protopannaria pezizoides* (Weber ex F.H. Wigg.) P.M. Jørg. & S. Ekman [1]  
*Psoroma hypnorum* (Vahl) Gray. [1]  
*Psoroma tenue* var. *boreale* Henssen [1]

##### Peltigeraceae

*Peltigera collina* (Ach.) Röhl. [2]  
*Peltigera didactyla* (With.) J.R. Laundon [2]  
*Peltigera elisabethae* Gyeln. [2]  
*Peltigera extenuata* (Nyl.) Vain. [2]  
*Peltigera fibrilloides* (Gyeln.) Vitik. [2]  
*Peltigera horizontalis* (Huds.) Baumg. [2]  
*Peltigera lepidophora* (Nyl.) Bitter [2]  
*Peltigera leucophlebia* (Nyl.) Gyeln. [2]  
*Peltigera malacea* (Ach.) Funck [2]  
*Peltigera membranacea* (Ach.) Nyl. [2]  
*Peltigera monticola* Vitik. [2]  
*Peltigera neckeri* Hepp ex Müll. Arg. [2]  
*Peltigera neopolydactyla* (Gyeln.) Gyeln. [2]  
*Peltigera polydactylon* (Neck.) Hoffm. [2]  
*Peltigera ponojensis* Gyeln. [2]  
*Peltigera praetextata* (Flörke ex Sommerf.) Vain. [2]  
*Peltigera rufescens* (Weiss) Humb. [2]  
*Peltigera venosa* (L.) Hoffm. [2]  
*Solorina spongiosa* (Huds.) Anzi [2]

##### Placynthiaceae

*Koerberia bififormis* A. Massal. [1]  
*Koerberia sonomensis* (Tuck.) Henssen [1]  
*Placynthium asperellum* (Ach.) Trevis. [1]  
*Placynthium nigrum* (Huds.) Gray [1]  
*Placynthium stenophyllum* var. *isidiatum* Henssen [1]  
*Placynthium subradiatum* (Nyl.) Arnold [1]

#### RHIZOCARPALES

##### Catillariaceae

*Catillaria chalybeia* (Borrer) A. Massal. [3]  
*Catillaria glaucograna* (Tuck.) Hasse [3]  
*Catillaria lenticularis* (Ach.) Th. Fr. [3]  
*Catillaria nigroclavata* (Nyl.) Schuler [3]  
*Halecania australis* Lumbsch [2]  
*Sporastatia testudinea* (Ach.) A. Massal. [2]  
*Toninia candida* (Weber) Th. Fr. [1]  
*Toninia cinereovirens* (Schaer.) A. Massal. [1]  
*Toninia lutosa* (Ach.) Timdal [1]  
*Toninia massata* (Tuck.) Herre [1]  
*Toninia philippea* (Mont.) Timdal [1]  
*Toninia ruginosa* (Tuck.) Herre subsp. *ruginosa* [1]  
*Toninia sculpturata* (H. Magn.) Timdal [1]

*Toninia sedifolia* (Scop.) Timdal [1]  
*Toninia squalida* (Ach.) A. Massal. [1]  
*Toninia subdiffracta* Timdal [1]  
*Toninia submexicana* B. de Lesd. [1]  
*Toninia tristis* subsp. *arizonica* Timdal [1]  
*Toninia tristis* subsp. *asiae-centralis* (H. Magn.) Timdal [1]  
*Toninia tristis* (Th. Fr.) Th. Fr. subsp. *tristis* [1]  
*Toninia weberi* Timdal [1]

#### **Rhizocarpaceae**

*Rhizocarpon arctogenum* Gelting [2]  
*Rhizocarpon badioatrum* (Flörke ex Spreng.) Th. Fr. [2]  
*Rhizocarpon dimelaenae* Timdal [2]  
*Rhizocarpon disporum* (Nägeli ex Hepp) Müll. Arg. [2]  
*Rhizocarpon distinctum* Th. Fr. [2]  
*Rhizocarpon effiguratum* (Anzi) Th. Fr. [2]  
*Rhizocarpon eupetraeum* (Nyl.) Arnold [2]  
*Rhizocarpon geminatum* Körb. [2]  
*Rhizocarpon geographicum* (L.) DC. [2]  
*Rhizocarpon grande* (Flörke ex Flot.) Arnold [2]  
*Rhizocarpon macrosporum* Räsänen [2]  
*Rhizocarpon cf. obscuratum* (Ach.) A. Massal. [2]  
*Rhizocarpon polycarpum* (Hepp) Th. Fr. [2]  
*Rhizocarpon riparium* Räsänen [2]  
*Rhizocarpon simillimum* (Anzi) Lettau [2]  
*Rhizocarpon superficiale* (Schaer.) Malme [2]  
*Rhizocarpon viridiatrum* (Wulfen) Körb. [2]

#### **TELOSCHISTALES**

##### **Caliciaceae**

*Amandinea dakotensis* (H. Magn.) P.F. May & Sheard [3]\*  
*Amandinea polyspora* (Willey) E. Lay & P.F. May [3]\*  
*Amandinea punctata* (Hoffm.) Coppins & Scheid. [3]\*  
*Buellia aethalea* (Ach.) Th. Fr. [3]  
*Buellia badia* (Fr.) A. Massal. [3]  
*Buellia cedricola* Werner [3]  
*Buellia disciformis* (Fr.) Mudd [3]  
*Buellia dispersa* A. Massal. [3]  
*Buellia eganii* Bungartz [3]  
*Buellia erubescens* Arnold [3]  
*Buellia lacteoides* B. de Lesd. [3]  
*Buellia mamillana* (Tuck.) W.A. Weber [3]  
*Buellia mexicana* J. Steiner [3]  
*Buellia nashii* Bungartz [3]  
*Buellia navajoensis* Bungartz [3]  
*Buellia pullata* Tuck. [3]  
*Buellia sequax* (Nyl.) Zahlbr. [3]  
*Buellia spuria* (Schaer.) Anzi [3]  
*Buellia subaethalea* B. de Lesd. [3]  
*Buellia subdispersa* Mig. [3]  
*Buellia tesserata* Körb. [3]  
*Buellia triseptata* A. Nordin [3]  
*Buellia tyrolensis* Körb. [3]  
*Buellia uberior* Anzi [3]  
*Buellia vilis* Th. Fr. [3]  
*Calicium abietinum* Pers. [2]  
*Calicium corynellum* (Ach.) Ach. [2]  
*Calicium montanum* Tibell [2]  
*Calicium salicinum* Pers. [2]  
*Calicium trabinellum* (Ach.) Ach. [2]  
*Calicium viride* Pers. [2]  
*Cyphelium lucidum* (Th. Fr.) Th. Fr. [2]  
*Cyphelium tigillare* (Ach.) Ach. [2]  
*Dimelaena oreina* (Ach.) Norman [2]  
*Dimelaena thysanota* (Tuck.) Hale & W.L. Culb. [2]  
*Diplotomma alboatrum* (Hoffm.) Flot. [3]\*  
*Diplotomma venustum* (Körb.) Körb. [3]\*  
*Dirinaria neotropica* Kalb [2]

*Gassicurtia coccinea* Fée [3]\*  
*Pyxine cocoes* (Sw.) Nyl. [1]  
*Pyxine petricola* Nyl. [1]  
*Pyxine sorediata* (Ach.) Mont. [1]  
*Pyxine subcinerea* Stürt. [1]  
*Tetramelas chloroleucus* (Körb.) A. Nordin [3]\*  
*Tetramelas triphragmioides* (Anzi) A. Nordin & Tibell [3]\*

##### **Physciaceae**

*Anaptychia elbursiana* (Szatala) Poelt [1]  
*Culbersonia nubila* (Moberg) Essl. [1]  
*Heterodermia albicans* (Pers.) Swinscow & Krog [1]  
*Heterodermia appalachensis* (Kurok.) W.L. Culb. [1]  
*Heterodermia granulifera* (Ach.) W.L. Culb. [1]  
*Heterodermia hypoleuca* (Mühl.) Trevis. [1]  
*Heterodermia japonica* (M. Sató) Swinscow & Krog [1]  
*Heterodermia leucomela* (L.) Poelt [1]  
*Heterodermia obscurata* (Nyl.) Trevis. [1]  
*Heterodermia podocarpa* (Bél.) D.D. Awasthi [1]  
*Heterodermia pseudospeciosa* (Kurok.) W.L. Culb. [1]  
*Heterodermia rugulosa* (Kurok.) Trass [1]  
*Heterodermia speciosa* (Wulfen) Trevis. [1]  
*Heterodermia tropica* (Kurok.) Kurok. [1]  
*Hyperphyscia adglutinata* (Flörke) H. Mayrhofer & Poelt [1]  
*Phaeophyscia adiastrata* (Essl.) Essl. [2]  
*Phaeophyscia ciliata* (Hoffm.) Moberg [2]  
*Phaeophyscia decolor* (Kashiw.) Essl. [2]  
*Phaeophyscia endococcinoides* (Poelt) Essl. [2]  
*Phaeophyscia hirsuta* (Mereschk.) Moberg [2]  
*Phaeophyscia hispidula* (Ach.) Moberg [2]  
*Phaeophyscia insignis* (Mereschk.) Moberg [2]  
*Phaeophyscia kairamoi* (Vain.) Moberg [2]  
*Phaeophyscia nigricans* (Flörke) Moberg [2]  
*Phaeophyscia orbicularis* (Neck.) Moberg [2]  
*Phaeophyscia pusilloides* (Zahlbr.) Essl. [2]  
*Phaeophyscia sciastra* (Ach.) Moberg [2]  
*Physcia adscendens* (Th. Fr.) H. Olivier [1]  
*Physcia aipolia* (Ehrh. ex Humb.) Fűrnr. [1]  
*Physcia biziana* (A. Massal.) Zahlbr. [1]  
*Physcia caesia* (Hoffm.) Hampe ex Fűrnr. [1]  
*Physcia convexa* Müll. Arg. [1]  
*Physcia dimidiata* (Arnold) Nyl. [1]  
*Physcia dubia* (Hoffm.) Lettau [1]  
*Physcia erumpens* Moberg [1]  
*Physcia halei* J.W. Thomson [1]  
*Physcia nashii* Moberg [1]  
*Physcia phaea* (Tuck.) J.W. Thomson [1]  
*Physcia poncinsii* Hue [1]  
*Physcia sinuosa* Moberg [1]  
*Physcia stellaris* (L.) Nyl. [1]  
*Physcia tribacia* (Ach.) Nyl. [1]  
*Physcia undulata* Moberg [1]  
*Physciella chloantha* (Ach.) Essl. [2]  
*Physciella melanchra* (Hue) Essl. [2]  
*Physciella nepalensis* (Poelt) Essl. [2]  
*Physconia detera* (Nyl.) Poelt [1]  
*Physconia elegantula* Essl. [1]  
*Physconia enteroxantha* (Nyl.) Poelt [1]  
*Physconia isidiomuscigena* Essl. [1]  
*Physconia leucoleiptes* (Tuck.) Essl. [1]  
*Physconia muscigena* (Ach.) Poelt [1]  
*Physconia perisidiosa* (Erichsen) Moberg [1]  
*Rinodina archaica* (Ach.) Arnold [2]  
*Rinodina athallina* H. Magn [2]  
*Rinodina aurantiaca* Sheard [2]  
*Rinodina bischoffii* (Hepp) A. Massal. [2]  
*Rinodina boulderensis* Sheard [2]  
*Rinodina capensis* Hampe [2]  
*Rinodina castanomela* (Nyl.) Arnold [2]

*Rinodina coloradiana* H. Magn. [2]  
*Rinodina confragosa* (Ach.) Körb. [2]  
*Rinodina efflorescens* Malme [3]  
*Rinodina glauca* Ropin [2]  
*Rinodina grandilocularis* Sheard [2]  
*Rinodina guzzinii* Jatta [2]  
*Rinodina herrei* H. Magn. [2]  
*Rinodina intermedia* Bagl. [2]  
*Rinodina juniperina* Sheard [2]  
*Rinodina metaboliza* Vain. [2]  
*Rinodina milvina* (Wahlenb.) Th. Fr. [2]  
*Rinodina mniaraea* (Ach.) Körb. [2]  
*Rinodina oxydata* (A. Massal.) A. Massal. [2]  
*Rinodina parasitica* H. Mayrhofer & Poelt [2]  
*Rinodina perreagens* Sheard [2]  
*Rinodina trevisanii* (Hepp) Körb. [2]  
*Rinodina verruciformis* Sheard [2]  
*Rinodina zwackhiana* (Kremp.) Körb. [2]

#### Teloschistaceae

*Caloplaca albovariegata* (B. de Lesd.) Wetmore [3]  
*Caloplaca ammiospila* (Wahlenb.) H. Olivier [3]  
*Caloplaca arenaria* (Pers.) Müll. Arg. [3]  
*Caloplaca arizonica* H. Magn. [3]  
*Caloplaca atroalba* (Tuck.) Zahlbr. [3]  
*Caloplaca atroflava* (Turner) Mong. [3]  
*Caloplaca brouardii* (B. de Lesd.) Zahlbr. [3]  
*Caloplaca cerina* (Ehrh. ex Hedw.) Th. Fr. [3]  
*Caloplaca chlorina* (Flot.) H. Olivier [3]  
*Caloplaca chrysodeta* (Vain. ex Räsänen) Domb. [3]  
*Caloplaca cinnabarina* (Ach.) Zahlbr. [3]  
*Caloplaca citrina* (Hoffm.) Th. Fr. [3]  
*Caloplaca cladodes* (Tuck.) Zahlbr. [3]  
*Caloplaca conversa* (Kremp.) Jatta [3]  
*Caloplaca crenulatella* (Nyl.) H. Olivier [3]  
*Caloplaca dakotensis* Wetmore [3]  
*Caloplaca decipiens* (Arnold) Blomb. & Forssell [3]  
*Caloplaca demissa* (Körb.) Arup & Grube [3]  
*Caloplaca durietzii* H. Magn. [3]  
*Caloplaca epithallina* Lynge [3]  
*Caloplaca ferruginea* (Huds.) Th. Fr. [3]  
*Caloplaca flavovirescens* (Wulfen) Dalla Torre & Sarnth. [3]  
*Caloplaca furfuracea* H. Magn. [3]  
*Caloplaca grimmiae* (Nyl.) H. Olivier [3]  
*Caloplaca holocarpa* (Hoffm.) A.E. Wade [3]  
*Caloplaca microthallina* Wedd. [3]  
*Caloplaca parviloba* Wetmore [3]  
*Caloplaca pelloidella* (Nyl.) Hasse [3]  
*Caloplaca persimilis* Wetmore [3]  
*Caloplaca phyllidizans* Wetmore [3]  
*Caloplaca pinicola* H. Magn. [3]  
*Caloplaca saxicola* (Hoffm.) Nordin [3]  
*Caloplaca schoeferi* Poelt [3]  
*Caloplaca sideritis* (Tuck.) Zahlbr. [3]  
*Caloplaca sinapisperma* (Lam. & DC.) Maheu & A. Gillet [3]  
*Caloplaca sonora* Wetmore [3]  
*Caloplaca squamosa* (B. de Lesd.) Zahlbr. [3]  
*Caloplaca stellata* Wetmore & Kärnefelt [3]  
*Caloplaca subsoluta* (Nyl.) Zahlbr. [3]  
*Caloplaca tetraspora* (Nyl.) H. Olivier [3]  
*Caloplaca tirolensis* Zahlbr. [3]  
*Caloplaca tominii* Savicz [3]  
*Caloplaca trachyphylla* (Tuck.) Zahlbr. [3]  
*Caloplaca variabilis* (Pers.) Müll. Arg. [3]  
*Caloplaca wetmorei* Nimis, Poelt & Tretiach [3]  
*Fulgensia desertorum* (Tomlin) Poelt [2]  
*Fulgensia subbracteata* (Nyl.) Poelt [2]  
*Seiophora contortuplicata* (Ach.) Frödén [2]\*

*Xanthomendoza fallax* (Hepp) Søchting, Kärnefelt & S.Y. Kondr. [2]  
*Xanthomendoza montana* (L. Lindblom) Søchting, Kärnefelt & S.Y. Kondr. [2]  
*Xanthomendoza ulophyllodes* (Räsänen) Søchting, Kärnefelt & S.Y. Kondr. [2]  
*Xanthoria candelaria* (L.) Th. Fr. [2]  
*Xanthoria elegans* (Link) Th. Fr. [2]  
*Xanthoria soreidiata* (Vain.) Poelt [2]

#### OSTROPOMYCETIDAE

##### AGYRIALES

##### Agyriaceae

*Lignoscripta atroalba* B.D. Ryan & T.H. Nash [2]  
*Trapeliopsis flexuosa* (Fr.) Coppins & P. James [2]  
*Trapeliopsis granulosa* (Hoffm.) Lumbsch [2]  
*Xylographa crassithallia* B.D. Ryan & T.H. Nash [2]  
*Xylographa parallela* (Ach.) Fr. [2]  
*Xylographa pruinosca* B.D. Ryan & T.H. Nash [2]  
*Xylographa vitiligo* (Ach.) J.R. Laundon [2]

##### Schaereriaceae

*Schaereria dolodes* (Nyl.) Schmall & T. Sprib. [3]  
*Schaereria fuscocinerea* (Nyl.) Clauzade & Cl. Roux [2]

##### Trapeliaceae

*Placynthiella icmalea* (Ach.) Coppins & P. James [2]  
*Placynthiella oligotropha* (J.R. Laundon) Coppins & P. James [2]  
*Placynthiella uliginosa* (Schrad.) Coppins & P. James [2]  
*Rimularia insularis* (Nyl.) Rambold & Hertel [2]  
*Trapelia coarctata* (Turner ex Sm.) M. Choisy [2]  
*Trapelia glebulosa* (Sm.) J.R. Laundon [2]\*

#### BAEOMYCETALES

##### Baeomycetaceae

*Baeomyces rufus* (Huds.) Rebert. [1]

#### OSTROPALES

##### Gyalectaceae

*Gyalecta foveolaris* (Ach.) Schaer. [2]

##### Stictidaceae

*Absconditella lignicola* Vězda & Pišút [2]

##### Thelotremataceae

*Diploschistes actinostomus* (Ach.) Zahlbr. [1]  
*Diploschistes aeneus* (Müll. Arg.) Lumbsch [1]  
*Diploschistes arabiensis* Lumbsch [1]  
*Diploschistes badius* Lumbsch & Elix [1]  
*Diploschistes caesioplumbeus* (Nyl.) Vain. [1]  
*Diploschistes diacapsis* (Ach.) Lumbsch [1]  
*Diploschistes muscorum* (Scop.) R. Sant. [1]  
*Diploschistes scruposus* (Schreb.) Norman [1]

#### PERTUSARIALES

##### Megasporaceae

*Aspicilia americana* B. de Lesd. [3]  
*Aspicilia aquatica* Körb. [3]  
*Aspicilia arizonica* Owe-Larss. & A. Nordin [3]  
*Aspicilia boykinii* Owe-Larss. & A. Nordin [3]  
*Aspicilia cinerea* (L.) Körb. [3]  
*Aspicilia contorta* (Hoffm.) Kremp. [3]  
*Aspicilia desertorum* (Kremp.) Mereschk. [3]  
*Aspicilia determinata* (H. Magn.) J.C. Wei [3]

*Aspicilia hispida* Mereschk. [3]  
*Aspicilia olivaceobrunnea* Owe-Larss. & A. Nordin [3]  
*Aspicilia substrictica* Owe-Larss. & A. Nordin [3]  
*Lobothallia alphoplaca* (Wahlenb.) Hafellner [2]  
*Lobothallia praeradiosa* (Nyl.) Hafellner [2]  
*Lobothallia radiosa* (Hoffm.) Hafellner [2]  
*Megaspora verrucosa* var. *mutabilis* (Ach.) Nimis & Cl. Roux [3]  
*Megaspora verrucosa* (Ach.) Hafellner & V. Wirth var. *verrucosa* [3]

#### **Ochrolechiaceae**

*Ochrolechia africana* Vain. [2]  
*Ochrolechia androgyna* (Hoffm.) Arnold [2]  
*Ochrolechia mexicana* Vain. [2]  
*Ochrolechia pseudopallescens* Brodo [2]  
*Ochrolechia splendens* Lumbsch & Messuti [2]  
*Ochrolechia subisidiata* Brodo [2]  
*Ochrolechia subpallescens* Verseghy [2]

#### **Pertusariaceae**

*Pertusaria amara* (Ach.) Nyl. [1]  
*Pertusaria azulensis* B. de Lesd. [1]  
*Pertusaria flavicunda* Tuck. [1]  
*Pertusaria hymenea* (Ach.) Schaer. [1]  
*Pertusaria mariae* B. de Lesd. [1]  
*Pertusaria moreliensis* B. de Lesd. [1]  
*Pertusaria ophthalmiza* (Nyl.) Nyl. [1]  
*Pertusaria saximontana* Wetmore [1]  
*Pertusaria sommerfeltii* (Sommerf.) Fr. [1]  
*Pertusaria stenhammarii* Hellb. [1]  
*Pertusaria tejocotensis* B. de Lesd. [1]  
*Pertusaria wulfenoides* B. de Lesd. [1]

#### † **LICHINOMYCETES**

#### **LICHINOMYCETIDAE**

#### **LICHINALES**

#### **Gloeoheppiaceae**

*Gloeoheppia polyspora* Henssen [1]  
*Gloeoheppia squamulosa* (Zahlbr.) M. Schultz [3]

#### **Lichinaceae**

*Anema progidulum* (Nyl.) Henssen [1]  
*Ephebe ocellata* Henssen [2]  
*Ephebe perspinulosa* Nyl. [2]  
*Heppia adglutinata* (Kremp.) A. Massal. [1]  
*Heppia conchiloba* Zahlbr. [1]  
*Heppia despreauxii* (Mont.) Tuck. [1]  
*Heppia lutosa* (Ach.) Nyl. [1]  
*Lemmopsis arnoldiana* (Hepp) Zahlbr. [1]

*Lempholemma chalazanum* (Ach.) B. de Lesd. [2]  
*Lempholemma cladodes* (Tuck.) Zahlbr. [2]  
*Lempholemma polyanthes* (Bernh.) Malme [2]  
*Lichinella americana* Henssen [3]  
*Lichinella cribellifera* (Nyl.) P.P. Moreno & Egea [3]  
*Lichinella flexa* Henssen, Büdel & T.H. Nash [3]  
*Lichinella granulosa* M. Schultz [3]  
*Lichinella intermedia* Henssen, Büdel & T.H. Nash [3]  
*Lichinella iodopulchra* (Couderc ex Croz.) P.P. Moreno & Egea [3]  
*Lichinella minnesotensis* (Fink) Essl. [3]  
*Lichinella myriospora* (Zahlbr.) P.P. Moreno & Egea ex Schultz [3]  
*Lichinella nigritella* (Lettau) P.P. Moreno & Egea [3]  
*Lichinella sinaica* (Galun & Marton) P.P. Moreno & Egea [3]  
*Lichinella stipatula* Nyl. [3]  
*Metamelanea melambola* (Tuck.) Henssen [2]  
*Peccania arizonica* Tuck. ex Herre [3]  
*Peccania subnigra* (B. de Lesd.) Wetmore [3]  
*Peccania tiruncula* (Nyl.) Henssen [3]  
*Phloeopeccania pulvinulina* J. Steiner [3]  
*Porocyphus coccodes* (Flot.) Körb. [1]  
*Psorotichia hassei* Fink ex J. Hedrick [3]  
*Psorotichia montinii* (A. Massal.) Forssell [3]  
*Psorotichia murorum* A. Massal. [3]  
*Psorotichia schaeferi* (A. Massal.) Arnold [3]  
*Psorotichia taurica* (Nyl.) Vain. [3]  
*Pterygiopsis cava* M. Schultz [3]  
*Stromatella bermudana* (Riddle) Henssen [1]  
*Synalissa mattogrossensis* (Malme) Henssen [1]  
*Thyrea confusa* Henssen [1]

#### **Peltulaceae**

*Peltula bolanderi* (Tuck.) Wetmore [1]  
*Peltula clavata* (Kremp.) Wetmore [1]  
*Peltula euploca* (Ach.) Poelt ex Ozenda & Clauzade [1]  
*Peltula farinosa* Büdel [1]  
*Peltula michoacanensis* (B. de Lesd.) Wetmore [1]  
*Peltula obscurans* var. *deserticola* (Zahlbr.) Wetmore [1]  
*Peltula obscurans* var. *hassei* (Zahlbr.) Wetmore [1]  
*Peltula obscurans* (Nyl.) Gyeln. var. *obscurans* [1]  
*Peltula omphaliza* (Nyl.) Wetmore [1]  
*Peltula patellata* (Bagl.) Swinscow & Krog [1]  
*Peltula placodizans* (Zahlbr.) Wetmore [1]  
*Peltula psammophila* (Nyl.) Egea [1]  
*Peltula richardsii* (Herre) Wetmore [1]  
*Peltula tortuosa* (Nees) Wetmore [1]  
*Peltula zahlbruckneri* (Hasse) Wetmore [1]

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**Annotation Key.** Annotations [in brackets] follow each taxon, and those with an asterisk ‘\*’ have been updated according to the *North American Lichen Checklist* of Esslinger 2010. Each record cites the source with a number (see *Literature Cited*):

**1** – Nash, Ryan, Gries, and Bungartz 2002; **2** – Nash, Ryan, Diederich, Gries, and Bungartz 2004; **3** – Nash, Gries, and Bungartz 2007; **4** – Westberg and Arup 2010

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