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LICHENS AND ALLIED FUNGI OF THE INDIANA FOREST ALLIANCE ECOBLITZ AREA, BROWN AND MONROE COUNTIES, INDIANA INCORPORATED INTO A REVISED CHECKLIST FOR THE STATE OF INDIANA

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ABSTRACT. Based upon voucher collections, 108 lichen species are reported from the Indiana Forest Alliance Ecoblitz area, a 900 acre unit in Morgan-Monroe and Yellowwood State Forests, Brown and Monroe Counties, Indiana. The lichen biota of the study area was characterized as: i) dominated by species with green coccoid photobionts (80% of taxa); ii) comprised of 49% species that reproduce primarily with lichenized diaspores vs. 44% that reproduce primarily through sexual ascospores; iii) comprised of 65% crustose taxa, 29% foliose taxa, and 6% fruticose taxa; iv) one wherein many species are rare (e.g., 55% of species were collected fewer than three times) and fruticose lichens other than *Cladonia* were entirely absent; and v) one wherein cyanolichens were poorly represented, comprising only three species. Taxonomic diversity ranged from 21 to 56 species per site, with the lowest diversity sites concentrated in riparian corridors and the highest diversity sites on ridges. Low Gap Nature Preserve, located within the study area, was found to have comparable species richness to areas outside the nature preserve, although many species rare in the study area were found only outside preserve boundaries. Sets of rare species are delimited and discussed, as are observations as to the overall low abundance of lichens on corticolous substrates and the presence of many unhealthy foliose lichens on mature tree boles. Sixty-four species are newly reported from Indiana and the delimitation of new reports is based on a newly presented modern checklist of Indiana lichens. The new checklist of Indiana lichens includes 222 species, with an additional 72 historically reported taxa considered questionable reports that require verification based on reexamination of the original vouchers.

Keywords: Anthropogenic change, Appalachian Mountains, biodiversity, floristics, obligate symbiosis, Ozarks, taxonomy, temperate eastern North America

INTRODUCTION

Lichens are obligate symbioses formed between fungi and algae or cyanobacteria (Ahmadjian 1993; Nash 1996, 2008). These fungi, and the symbioses that they form, are speciose and ecologically important components of a multitude of terrestrial ecosystems (Galloway 1992; Ahmadjian 1995; Cornelissen et al. 2007; Segerer 2009), including those in temperate eastern North America (Brodo et al. 2001). Although eastern North American lichens have been studied for more than two centuries, substantial gaps remain in the knowledge of distribution patterns of individual species, particularly crustose lichens (see Spribille et al. 2010; Lücking et al. 2011; Lendemer et al. 2013, 2014, 2016). Surprisingly the State of Indiana, a 94,321 km^2 area larger than the country of Portugal, comprises one such gap. Indeed, only a small number of publications have focused on Indiana lichens to date (Fink & Fuson 1918; Herre 1943a, b; Miller & Thomson 1959; Harris 1988; McCune 1988; Muir & McCune 1988; Wetmore 1988a; Bennett et al. 1996; Hyerczyk 1997a). The relative lack of baseline knowledge of Indiana lichens was already recognized, and critiqued more than half a century ago by Herre (1943b) when he published the first, and only, attempt at a comprehensive checklist for the state.

This paucity of study stands in contrast to adjacent Illinois (Calkins 1896; Winterringer & Vestal 1956; Skorepa & Snider 1967; Skorepa 1970, 1973, 1984; Stotler 1976; Wilhelm & Ladd 1985; McKnight et al. 1987; Wilhelm & Parker 1988; Basinger et al. 1996; Hyerczyk 1996, 1997b, 1998a-e, 2004, 2005; Ladd & Wilhelm 1998; Gillespie & Methven 2002; Edgin et al. 2004; Watchholder et al. 2004; Harris & Ladd 2005), Michigan (Nichols 1925; Darlington 1931, 1938; Lowe 1936; Hedrick 1940; Thomson 1951, 1993; Bevis 1960, 1962, 1965; Benninghoff & Cramer

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1963; Graham 1969; Hinds 1970; Harris 1973, 1977; Mahoney 1973; Henry & Hampton 1974; Harris & Buck 1978; Wetmore 1988b, 1990; Medlin 1996; Fryday et al. 2001) and Ohio (Tuckerman 1849; Bogue 1893; Fischer 1895; Hambleton 1906, 1910; Claassen 1912, 1917; Fink & Richards 1915; Carrington 1921; Fink 1921; Fulford 1937; Wolfe 1940; Taylor 1967, 1968; Rudolph 1974; Showman 1975, 1977, 1981a, b; Kaucher & Snider 1982; Flenniken & Showman 1990; Showman & Flenniken 2004; Washburn 2005; Andreas et al. 2007), whose lichens have been the subject of extensive and continued study for more than a century (summarized in Fig. 1 and Table 1).

Given the ecological and physiographic diversity of Indiana, as well as the panoply of lichen species reported from adjacent states, one would reasonably expect lichens to contribute substantially to the overall biodiversity of the state. Further, as is the case in many areas, understanding lichen species diversity, distribution, and frequency in Indiana is particularly important given the breadth and scale of anthropogenic impacts to the natural landscape of the region (Whitaker et al. 2012). Recognizing the critical need for baseline lichen floristic data in Indiana, the Indiana Forest Alliance (IFA hereafter) contacted the present author to inventory the lichens of a 364 ha (900 ac) unit of two state managed forests, a portion of which had already been designated as a state natural area because of its botanical significance (Higgs 2006). The results of this inventory are presented here.

Figure 1.—Graphical comparison of number of voucher specimens available in CNALH (accessed 25 May 2017) for Indiana and surrounding states in the Great Lakes, Mid-Atlantic, and Mid-South regions. (IFA Ecoblitz Study Area is indicated by the black star.)

In an effort to place the results of this inventory in a broader context, a new checklist of Indiana lichens was also compiled based on a comprehensive review of previously published literature. The checklist is presented here, together with an accounting of uncertain or questionable literature reports that require verification of the original

Table 1.—Tabular summary comparing the available lichen vouchers in CNALH (accessed 25 May 2017) to the total land area (square kilometers) for Indiana and surrounding states in the Great Lakes, Mid-Atlantic, and Mid-South regions (obtained from U.S. Census Bureau, 3 January 2018). An estimate of average collection density per state is given as the number of vouchers/total land area. Indiana, the state with the smallest number of vouchers in CNALH, and the lowest number of vouchers per-unit land area, is in bold.

State	# of CNALH vouchers	Land area (km^2)	Voucher per square kilometer
Illinois	12855	143793	0.0894
Indiana	**2994**	**92789**	**0.0323**
Iowa	13264	144669	0.0917
Kentucky	3599	102269	0.0352
Maryland	10094	25142	0.4015
Michigan	56594	146435	0.3865
Minnesota	57102	206232	0.2769
Missouri	21040	178040	0.1182
North Carolina	41546	125920	0.3299
Ohio	12501	105829	0.1181
Pennsylvania	18131	115883	0.1565
Tennessee	11519	106798	0.1079
Virginia	17155	102279	0.1677
West Virginia	13154	62259	0.2113
Wisconsin	29625	140268	0.2112

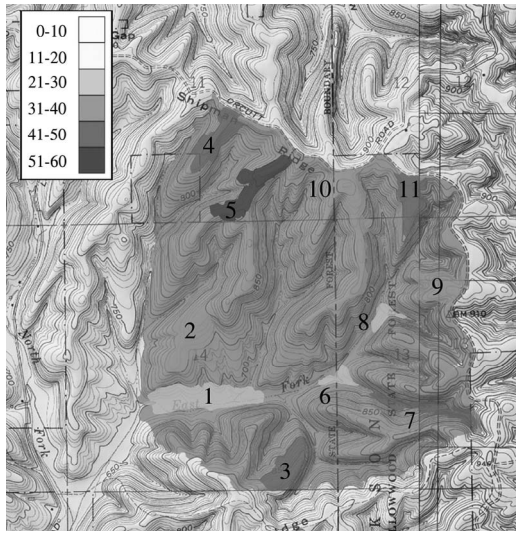


Figure 2.—Topographic map of the study region illustrating the delimitation of the study area (gray) and the delimitation of sites inventoried for this study (numbers follow those outlined in the methods section), with sites color coded based on taxonomic diversity (number of species + infraspecific taxa).

source material before they should be considered as occurring in the state.

MATERIALS AND METHODS

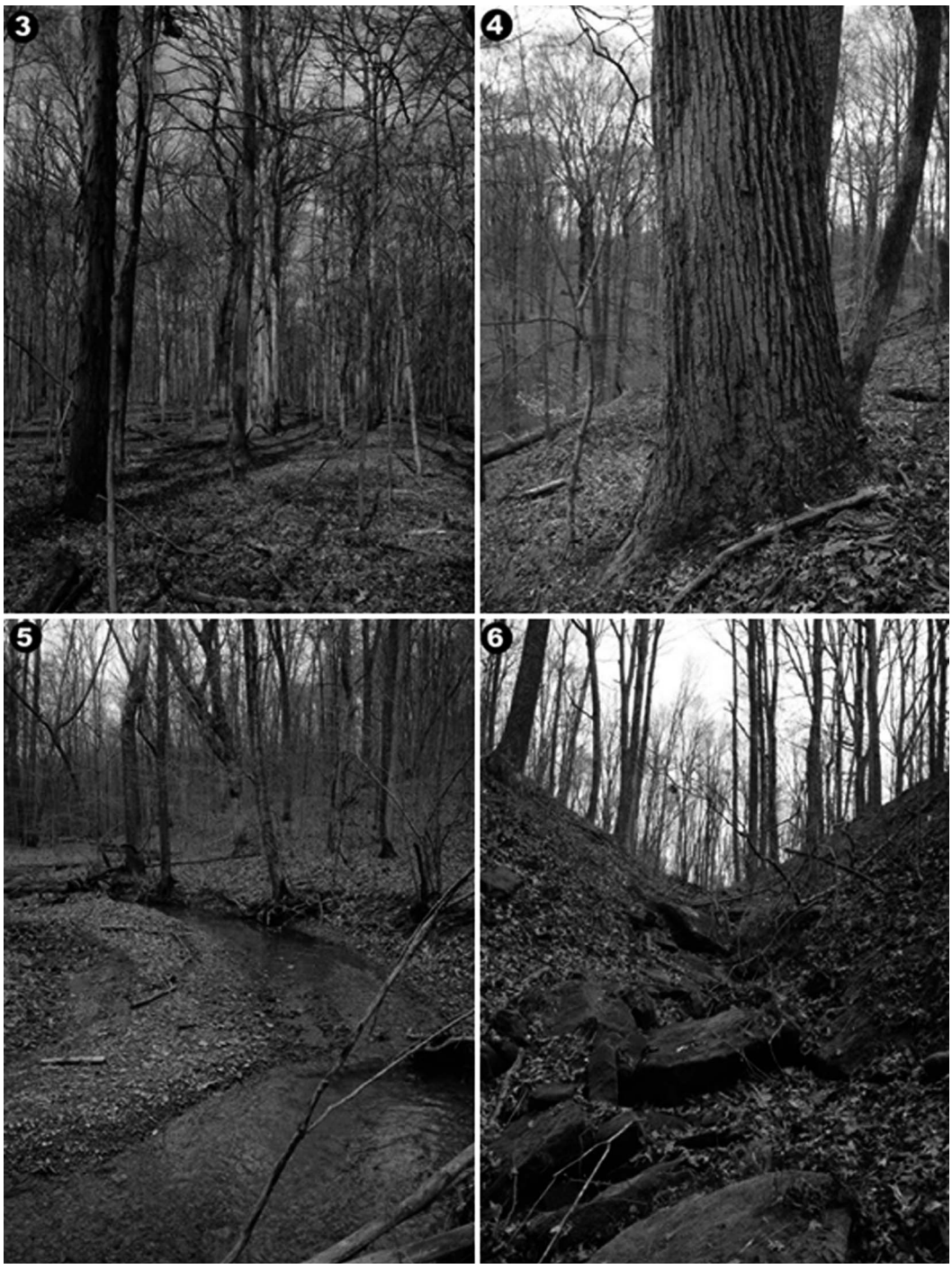
The study area.—This study focuses on the Indiana Forest Alliance Ecoblitz Area, a 364 ha unit of forested ridges and stream ravines associated with the East Fork of Honey Creek, in southern Indiana (Fig. 2). The ridges are forested by mixed hardwoods dominated by oak, hickory and maple. The stream ravines are also forested by mixed hardwoods including beech, sycamore and ironwood. Occasional stands of planted pines, and even spruce, also occur sporadically on the lower slopes of the ridges and along the stream ravines. Rocks are almost entirely absent from the area, except for small, isolated outcroppings of poorly consolidated sandstone located in the upper portions of the stream ravines.

The study area is roughly bisected by the Monroe County-Brown County line, which also serves as the boundary between Morgan-Monroe State Forest and Yellowwood State Forest, the two management units within which the area is located. A 129 ha (320 ac) portion of the study area was formally designated Low Gap Natural Area due to the occurrence of rare plants and animals, as well as its being "one of the largest uninterrupted tracts of high quality forest in Indiana's Brown County Hills Section of the Highland Rim Natural Region (IDNR, undated; Higgs 2006). Extensive reports of the ecology, geology, and vegetation of the study area, together with results of biodiversity inventories for organismal groups other than lichens have been published by IFA (2015, 2016).

Field methods.—The field component of this study was carried out by the author during 10–14 April 2017. During this time total biodiversity inventories were conducted at a total of 11 sites within the EcoBlitz area. The sites spanned the diversity of habitats and vegetation types within the study area (Figs. 3–6) and were each delimited to comprise only a single habitat type (e.g., ridge-top hardwood forest, stream ravine, or riparian floodplain forest; see Figs. 2 & 3). Lichen biodiversity inventory methods followed those outlined in detail by Lendemer et al. (2016) and were performed at each site for up to 1.5 hr (90 min). A voucher specimen of each species encountered at each site was collected and examined using the methods outlined below.

Laboratory and herbarium methods.—All newly collected voucher specimens were deposited in the herbarium of The New York Botanical Garden (NY). Numerous other vouchers already deposited at NY were also used for comparison, or were otherwise revised to determine whether a given taxon had already been reported from Indiana. Georeferenced voucher data for all specimens examined can be accessed via the C.V. Virtual Herbarium at NY (http://sweetgum.nybg.org/science/vh/). Specimens were examined using an Olympus SZ-STB dissecting microscope. Microscopic morphology and anatomy were studied using hand sections prepared with a razor blade, mounted in water, and then examined using an Olympus BX53 compound microscope. The chemistry of specimens was studied using standard spot tests (K, C, KC, P, UV) following Brodo et al. (2001). In cases where it was necessary to study chemistry in more detail, specimens were subjected to Thin Layer Chromatography (TLC) using Solvent C following Culberson & Kristinsson (1970) but as modified for the peanut butter jar by Lendemer (2011).

Assembly of the Indiana lichen checklist.—As part of this study it was necessary to determine



Figures 3–6.—Typical habitat types in the study area. 3. Ridge forest with mixed hardwoods; 4. Ridge forest with mature mixed hardwoods (tulip poplar, *Liriodendron tulipifera*, pictured); 5. Floodplain hardwood forest; 6. Narrow stream ravine with occasional sandstone boulders.

whether species collected in the study area had previously been reported from Indiana. Because no checklist of Indiana lichens had been published since that of Herre (1943b), and the taxonomy of that list has become greatly outdated, the author decided to compile the existing literature and create a modern checklist for the state (see Appendix II). This list was prepared by compiling the taxa reported in publications indexed in Recent Literature on Lichens (Culberson et al. 2017) that had been tagged with the keyword "Indiana". Each publication was carefully examined and only taxa actually reported from the state were included (e.g., Wetmore (1988a) published a checklist of lichens from Indiana Dunes that included both his own collections from Indiana and taxa reported from adjacent Illinois by Calkins (1896); only the Indiana records were included here). The nomenclature and taxonomy were updated from the original publications to follow that of Esslinger (2016). In order to provide transparency to this process a translation table was prepared and appended to the end of the checklist. The compiled list of originally reported names and updated names was then examined in detail and parsed into three categories: 1) *checklist names*: names derived from reliable records published in modern times (e.g., Harris 1988, Wetmore 1988a, Hyerczyk 1997a); 2) *synonyms and excluded species*: names derived from records that were misidentified, correspond to species that are very unlikely to occur in Indiana (e.g., published modern range maps do not include the region), or represent well-documented taxonomic synonyms; 3) *questionable records*: names derived largely from historicl records whose occurrence in Indiana is possible, but the identity of the source voucher material should be examined and confirmed before the species is added to the checklist.

RESULTS AND DISCUSSION

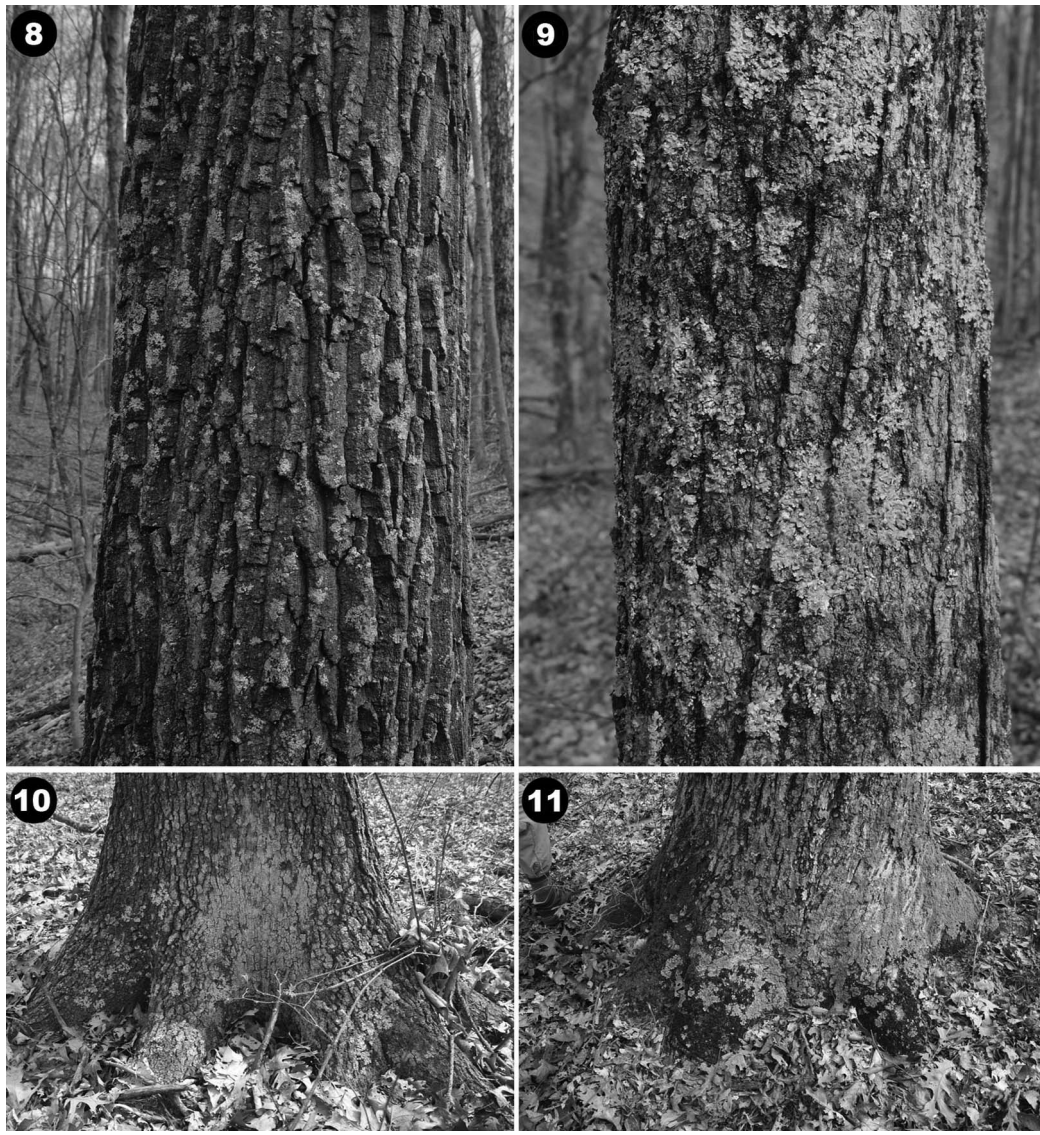
A total of 11 sites was inventoried in the study area over the span of three field days. This inventory resulted in the collection of 460 vouchers representing 108 species of lichens (100, 93%), lichenicolous fungi (2, 2%), and non-lichenized fungal species traditionally treated with lichens (6, 6%) (see Appendix I). The number of species documented by this inventory comprises nearly half (49%, or 108 of 222 taxa) of the total diversity of lichens and allied fungi currently considered to occur in Indiana (see Appendix II). That such a large percentage of Indiana lichens were found in such a small study area, in comparison to the total land area of the state, likely reflects the overall lack of study of lichens in Indiana. Nonetheless it is also possible that the number reflects a naturally occurring local concentration of lichen biodiversity found in a large area of unfragmented, high quality forest.

Of the 100 species of lichen-forming fungi, the majority (80 species, 80%) was associated with green coccoid algal photobionts and 17 species (17%) were associated with the chain-forming green algal photobiont *Trentepohlia*. Lichen-forming fungi that associate with *Trentepohlia* are more diverse and frequent in tropical regions (Aptroot & van Herk 2007, Marini et al. 2011) and thus the small number of species associated with this photobiont genus likely reflects the northern temperate climate and biogeographic history of the biota. Cyanolichens were the most poorly represented in the dataset, both in terms of total species diversity (3 species, 3% of all lichens found) and with respect to the number of vouchers made (8 vouchers, 1.9% of the total vouchers collected). With respect to dominant reproductive modes, species that reproduce primarily asexually through the dispersal of lichenized propagules comprised nearly half (53 taxa, 49%) of the diversity while sexually reproducing species comprised 44% (47 taxa) of the diversity. The remainder of the species either reproduce through the dispersal of asexual non-lichenized propagules (*Dictyocatenulata alba*), or were treated as polymorphic because they are members of the genus *Cladonia* that produce abundant lichenized propagules together with pycnidia and apothecia on the same thallus. Approximately half (59, 55%) of 108 species found during the inventory were collected fewer than three times, while only a small percentage were commonly encountered (Fig. 7). Similar patterns of lichen species frequency across sites have been documented elsewhere in North America (e.g., Lendemer et al. 2016) and suggest that, at the landscape level, a substantial proportion of the lichens in a given region may be infrequent, rare, or otherwise highly localized. In the study area, the majority of species were found on the trunks and bases of hardwood trees (Figs. 8–11), and several species were found to be highly localized on the bases of mature hardwoods (e.g., *Collema subflaccidum* on a single hickory at site 10, or *Anaptychia palmulata* on a single chestnut oak at site 3).

Figure 7.—Bar chart summarizing the numbers of vouchers collected per taxon as part of this study.

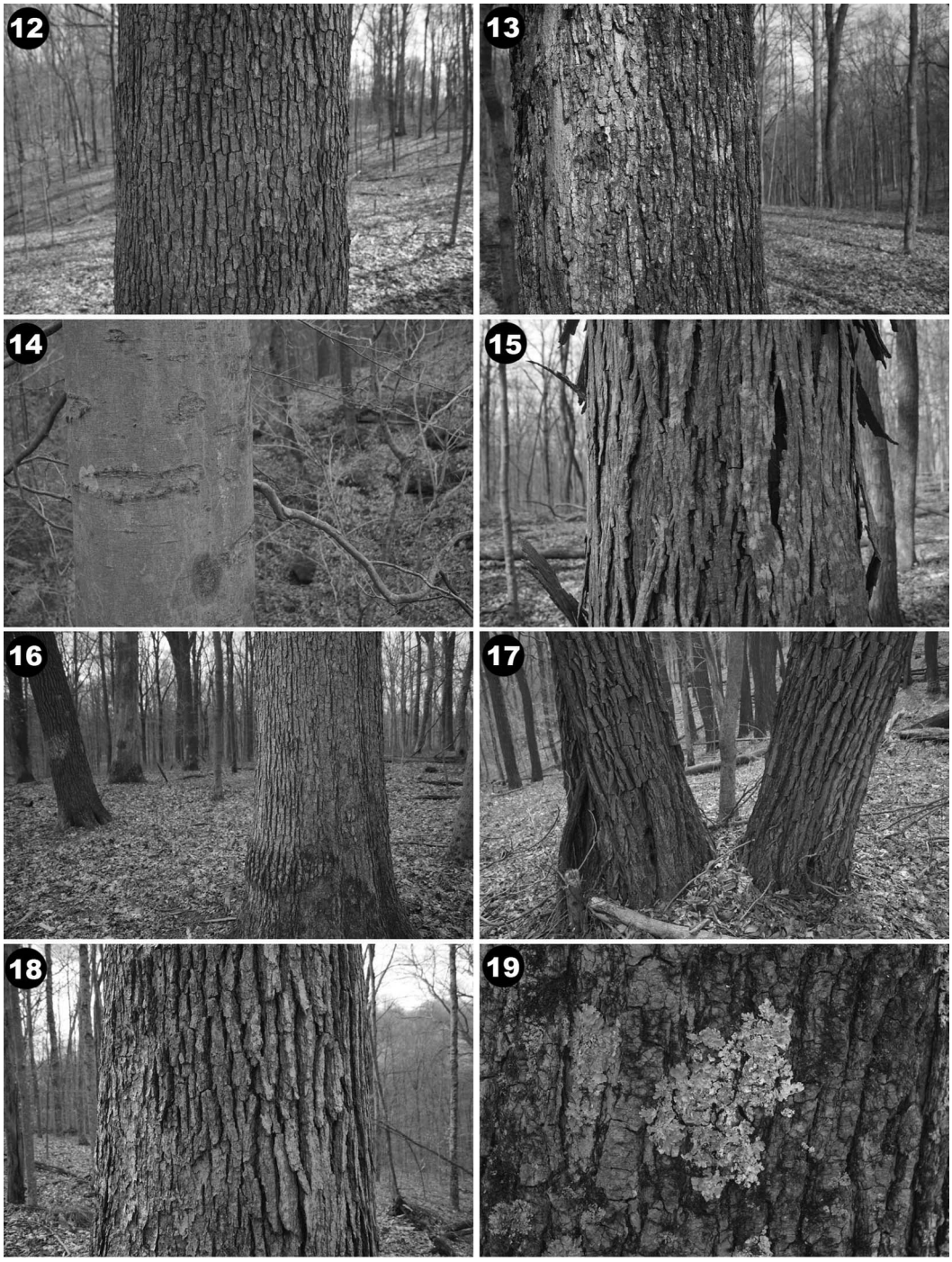
The most frequent, or commonly encountered, species, as defined by having been collected more than ten times, were *Dictyocatenulata alba* (12 vouchers), *Flavoparmelia caperata* (11 vouchers), *Graphis scripta* (10 vouchers), *Lepraria finkii* (12 vouchers), *Myelochroa aurulenta* (11 vouchers), *Punctelia missouriensis* (12 vouchers), *Punctelia rudecta* (13 vouchers), and *Pyxine subcinerea* (10 vouchers). All of those species have been documented to be common, disturbance tolerant, widespread species with wide ecological amplitudes (e.g., Brodo et al. 2001; Lendemer & Harris 2004; Hinds & Hinds 2007). In contrast, the species that were collected only once were: *Anaptychia palmulata, Anisomeridium leucochlorum, Arthonia apatetica, Bacidia purpurans, Cladonia peziziformis, Collema subflaccidum, Fellhanera silicis, Heterodermia obscurata, Lecanora hybocarpa, Lecidea cyrtidia, Lecidea erythrophaea, Lepraria harrisiana, Micarea micrococca, Micarea prasina, Opegrapha varia, Parmelia squarrosa, Pyrenula laevigata, Sarea difformis, Scoliciosporum chlorococcum, Thelidium minutulum, Trapeliopsis flexuosa, Violella fucata*, and *Xanthomendoza weberi*. Similarly, the following taxa were collected only twice: *Acrocordia megalospora, Arthonia helvola, Arthonia quintaria, Chaenothecopsis debilis, Cladonia petrophila, Heterodermia speciosa, Lecanora appalachensis, Lecanora layana, Lepra pustulata, Lepraria* sp., *Leptogium cyanescens, Lithothelium hyalosporum, Micarea soralifera, Nectriopsis* sp., *Opegrapha vulgata, Parmotrema gardneri, Pertusaria pustulata, Porpidia albocaerulescens*, and *Trapelia placodioides*.

The taxa encountered one or two times during the inventory can be subdivided into several groups as follows: i) cyanolichens (*Collema subflaccidum, Leptogium cyanescens*); ii) species characteristic of mature or high-quality forests (*Anaptychia palmulata*); iii) seemingly rare or infrequent species (*Acrocordia megalospora, Anisomeridium leucochlorum, Arthonia apatetica, Bacidia purpurans, Lecidea erythrophaea, Lithothelium hyalosporum, Pyrenula laevigata, Sarea difformis, Parmotrema gardneri*); iv) saxicolous species whose occurrences in the study area were limited by the availability of rock substrates (*Cladonia petrophila, Fellhanera silicis, Porpidia albocaerulescens, Thelidium minutulum, Trapelia placodioides*); and v) species that are typically more frequent based on studies in the central Appalachians and Ozarks (*Arthonia helvola, Arthonia quintaria, Chaenothecopsis debilis, Cladonia peziziformis, Heterodermia obscurata, Heterodermia speciosa, Lecanora appalachensis, Lecanora hybocarpa, Lecanora layana, Lecidea cyrtidia, Lepra pustulata, Lepraria* sp., *Lepraria harrisiana, Micarea micrococca, Micarea prasina, Micarea soralifera, Nectriopsis* sp., *Opegrapha varia, Opegrapha vulgata, Parmelia squarrosa, Pertusaria pustulata, Scoliciosporum chlorococcum, Trapeliopsis flexuosa, Violella fucata,* and *Xanthomendoza weberi*). Although the apparent rarity of some species, such as those belonging to groups iii and iv, is not surprising, others merit



Figures 8–11.—Appearance of trees in the study area with moderate to abundant lichen growth. 8. Mature chestnut oak (*Quercus prinus*) bole; 9. Sugar maple (*Acer saccharum*) bole; 10. Base of mature red oak (*Quercus rubra*), with conspicuous colony of *Bacidia sorediata*; 11. Base of mature hickory (*Carya*) with colonies of *Collema subflaccidum* and *Leptogium cyanescens* growing on roots.

comment. The overall low frequency of cyanolichens, is unusual given that the species found to be rare in the study area are among the most common and widespread members of this group (e.g., Brodo et al. 2001; Hinds & Hinds 2007; McMullin & Anderson 2014). Similarly, based on the experience of the author (Lendemer unpublished data) the small number of species typical of mature forests is unusual given the overall apparent maturity of tree stands and lack of fragmentation in the study area. By the same token the low frequency of species that are common elsewhere in their ranges (i.e., group v) is noteworthy. The cause of the low frequency of certain otherwise common species and cyanolichens, coupled with the absence of fruticose lichens other than those of the genus *Cladonia*, is unclear and requires further study. Air pollution



Figures 12–19.—Appearance of trees with noticeable lack of lichen cover (12–18) and typical appearance of damaged thallus of foliose lichen (19). 12. White oak (*Quercus alba*) bole; 13. Sugar maple (*Acer saccharum*) bole; 14. Beech (*Fagus grandifolia*) bole; 15. Shagbark hickory (*Carya laciniata*) bole; 16. Mature white oak in forest stand; 17. Mature sassafras (*Sassafras albida*) in forest stand; 18. Tulip poplar (*Liriodendron tulipifera*) bole; 19. Detail of damaged *Punctelia rudecta* thallus.

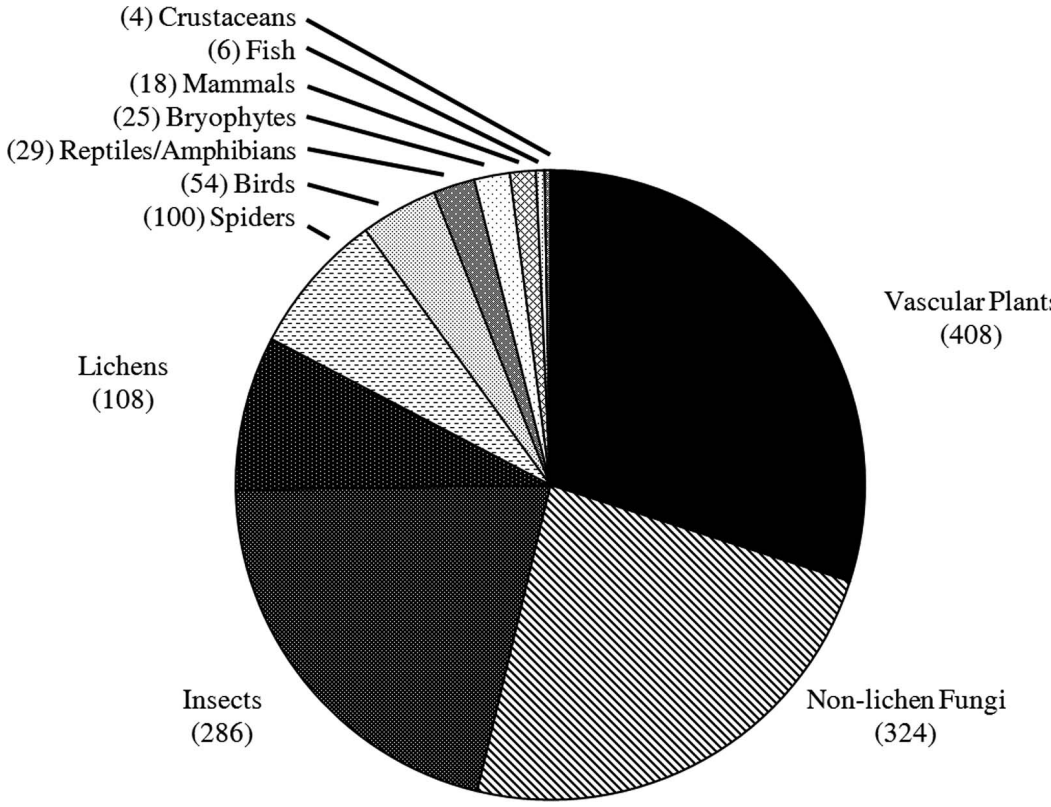


Figure 20.—Comparison of taxonomic diversity of organismal groups in the IFA Ecoblitz Area (numbers of taxa for groups other than lichens follows IFA (2016))

has been implicated as a primary player in such impacts to lichen communities in the past (e.g., McCune 1988; McCune et al. 1997; Cleavitt et al. 2015; Root et al. 2015; Will-Wolf et al. 2015, 2017) and as levels of certain pollutants such as sulfur dioxide have declined in many areas of the United States, lichens have responded accordingly (Showman 1981a, 1990, 1997; McClenahen et al. 2012). While legacy impacts from air pollution could account for patterns of rarity for some species in the study area, this neither explains the unusually low levels of lichen cover observed on many corticolous substrates (Figs. 12–18) nor the unhealthy and dead thalli of common species observed on mature trees on the ridgetops in the study area (Fig. 19).

Taxonomic diversity varied considerably across the inventoried sites ranging from a minimum of 21 species to a maximum of 56 species, and an average of 38 ± 10 species per site. Seven of the inventoried sites comprised dry forest ridges and the upper slopes of ridges, while four comprised riparian corridors and floodplain forests. The four riparian and floodplain sites were the least species-rich inventoried (all sites $<$ 30 taxa) in contrast to the forested ridge sites, all of which hosted more than 30 taxa (Fig. 2). Overall, species assemblages were moderately similar across sites (Sørensen Coefficient 0.44 ± 0.12, n = 55), and species assemblages among ridge top sites were more similar to each other (Sørensen Coefficient 0.54 ± 0.08, n = 19) than species assemblages among riparian sites (Sørensen Coefficient 0.41 ± 0.08, n = 6). Taxonomic diversity was also similar between the two habitats that were surveyed, with 87 species found in riparian habitats and 92 species found in ridge habits, and the lichen assemblages found in the two habitats also overlapped substantially (Sørensen Coefficient 0.78 comparing pooled riparian vs. ridge assemblages).

Four sites (sites 1, 2, 4 and 5) were located within Low Gap Nature Preserve, while the remaining seven sites were located on adjacent

state forest lands. Species richness was similar between the nature preserve (83 species) and the adjacent area (94 species), as were the lichen species assemblages in the two areas (Sørensen 0.78 comparing pooled nature preserve vs. non-nature preserve sites). Nonetheless, despite the large number of taxa located both within the nature presence and on adjacent lands, the species only found outside of the nature preserve included members of several rare or sensitive groups outlined above (group i: *Collema subflaccidum, Leptogium cyanescens*; group ii: *Anaptychia palmulata*; group iii: *Bacidia purpurans*, *Lithothelium hyalosporum,* and *Pyrenula laevigata*).

Of the species located during the inventory, 70 (65%) were crustose, 31 (29%) were foliose, and 7 (6%) of were species of *Cladonia* with polymorphic thalli comprised of a squamulose primary thallus and fruticose secondary thallus. Thus, crustose microlichens comprise nearly two thirds (65%) of the species richness in the study area, while foliose, fruticose and squamulose macrolichens comprise only slightly more than one third (36%) of the species richness. No fruticose lichens other than members of the genus *Cladonia* were found in the study area. Generally, fruticose lichens such as members of the genera *Ramalina* and *Usnea* are considered to be sensitive to air pollution (Will-Wolf et al. 2015), and their absence from the study area is noteworthy.

The results presented here from the lichen biodiversity inventory of the IFA Ecoblitz Area offer a timely and nuanced perspective of lichen diversity in southern Indiana. A total of 108 species of lichens, lichenicolous, and allied fungi were documented in a single 364 ha tract of core forest habitat. Despite more than a century of study, albeit of a static nature and limited in scope, 64 of the species found during this study appear to be new records for Indiana. Comparison with levels of species richness for other taxonomic groups illustrates that lichens contribute substantially to the overall biodiversity of the study area (Fig. 20). Indeed, of the 1362 taxa reported from the study area to date, insects and spiders together with lichens and other non-lichenized fungi comprise more than half (60%, 818 species) of the total biological diversity. This result is significant because direct comparisons of diversity across taxonomic groups are rare as they are typically hindered by of a lack of consistency in the areas studied for different groups (see discussion in Lendemer & Allen 2014).

Although 108 may be a surprising number of lichens for such a small area, it must be recognized that more than half of these appear to be rare in the study area and many of those rare species were found only in mature forest stands on ridgetops, often outside the boundaries of the existing nature preserve. Likewise, despite the levels of documented lichen diversity, the low frequency and diversity of cyanolichens coupled with the absence of fruticose lichens other than *Cladonia* is noteworthy. Also notable was the observed lack of lichen cover on many tree boles, and the occurrence of many dead or unhealthy lichen thalli on the boles of some mature ridgetop hardwood trees. Nonetheless, these observations must be placed in the broader context that the study area comprises a significant area of intact core-forest surrounded by a dense, complex matrix of lands fragmented by agriculture, development, infrastructure, and forests managed for resource extraction. This core-forest likely functions as an essential reservoir for lichen diversity that has been substantively impacted elsewhere in the region.

ACKNOWLEDGMENTS

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APPENDIX I

CHECKLIST OF LICHENS AND ALLIED FUNGI IN THE IFA ECOBLITZ STUDY AREA

The checklist presented below comprises all of the species collected as part of the present study in the IFA Ecoblitz Study Area. The checklist is arranged alphabetically by genus and species. Taxonomy largely follows Esslinger (2016), although any deviations from that work reflect the opinions of the present author. All cited voucher specimens were collected by the author and as such only the collection number for each voucher is given below. The vouchers have been deposited in the herbarium of The New York Botanical Garden (NY). Lichenicolous fungi are denoted by an asterisk (*) and non-lichenized fungi treated with lichens are denoted by a dagger (†). B = Brown County collections; M = Monroe County collections.

Acrocordia megalospora (Fink) R.C. Harris (hardwood bark) – B: *51043*. M: *50846*.

Amandinea polyspora (Willey) E. Lay & P. May (fallen hardwood branches) – B: *52092, 51207*. M: *50894*.

Anaptychia palmulata (Michx.) Vain. (hardwood bark) – M: *51181*.

Anisomeridium leucochlorum (Müll. Arg.) R.C. Harris (fallen hardwood branches) – M: *50862*.

Anisomeridium polypori (Ellis & Everh.) M.E. Barr (hardwood bark) – B: *50960, 51071, 51134, 51223*.

Arthonia apatetica (A. Massal.) Th. Fr. (hardwood bark) – M: *50832*.

Arthonia helvola (Nyl.) Nyl. (hardwood bark) – B: *50997*. M: *51250*.

†*Arthonia quintaria* Nyl. (fallen hardwood and conifer branches) – B: *51208*. M: *51274*.

Bacidia purpurans R.C. Harris, Lendemer & Ladd (hardwood bark) – B: *51106*.

Bacidia schweinitzii (Fr. *ex* Tuck.) A. Schneid. (hardwood bark) – B: *50978, 51013, 51107, 51137, 51211*. M: *50084, 50928, 51184, 51255*.

Bacidia sorediata Lendemer & R.C. Harris (hardwood bark) – B: *50953, 50962, 51019, 51078, 51128*. M: *50890, 50927, 51254-A, 51269*.

Biatora printzenii Tønsberg (hardwood bark) – B: *50961, 50983, 50996, 51030, 51061, 51076*. M: *50865, 51164, 51254*.

Buellia wheeleri R.C. Harris (hardwood bark) – B: *51023, 51094*. M: *50918*,

The discovery of this species in Indiana is noteworthy and as it is a northern range extension beyond the currently established range (Lendemer & Hodkinson 2009).

Candelaria concolor (Dicks.) Stein (hardwood bark) – B: *51037, 51054, 51149, 51203*. M: *50835, 50902, 51259*.

Candelariella cf. *efflorescens* R.C. Harris & Buck (hardwood bark and fallen branches) – B: *50954, 51109, 51059, 51093, 51150*. M: *51263*.

All of the specimens of this species collected during the inventory lacked apothecia, and thus it is not possible to determine with certainty that they represent *C. efflorescens* (Lendemer & Westberg 2010).

Canoparmelia texana (Müll. Arg.) Elix & Hale (hardwood bark and canopy branches) – B: *50987*. M: *50859, 51157*.

Catillaria nigroclavata (Nyl.) Schul. (hardwood bark and canopy branches) – B: *51005, 51041, 51060*. M: *50933, 51262*.

†*Chaenothecopsis debilis* (Turner & Borrer *ex* Sm.) Tibell (decorticate standing trunks) – M: *50909, 51271*.

Chrysothrix caesia (Flot.) Ertz & Tehler (hardwood bark and fallen branches) – B: *50947, 50952, 51068, 51074, 51092, 51209*. M: *50892, 50936*.

Cladonia caespiticia (Pers.) Flörke (lignum) – B: *51053*. M: *50875, 50914*.

Cladonia macilenta var. *bacillaris* (Genth.) Schaer. (lignum and hardwood bark) – B: *51103*. M: *50863, 50871, 50910, 51176, 51241*.

Cladonia ochrochlora Flörke (lignum) – B: *50949, 51004, 51052, 51096*. M: *50873, 50911, 51177, 51242*.

Cladonia parasitica Hoffm. (lignum) – B: *50950*. M: *50876, 51243*.

Cladonia petrophila R.C. Harris (sandstone) – B: *51111*. M: *51194*.

Cladonia peziziformis (With.) J.R. Laundon (hardwood bark) – B: *51028*.

Cladonia ramulosa (With.) J.R. Laundon (lignum) – B: *51002, 51097*. M: *50874, 50913, 51178*.

Coenogonium pineti (Ach.) Lumbsch & Lücking (lignum and hardwood bark) – B: *51102*. M: *50940, 51179, 51244, 51247, 51248*.

Collema subflaccidum Degel. (hardwood bark) – B: *51016*.

Crespoa crozalsiana (Harm.) Lendemer & B.P. Hodk. (hardwood bark) – B: *51040*. M: *50881, 50908, 51155*.

Dictyocatenulata alba Finley & E.F. Morris (hardwood bark) – B: *50975, 51029, 51066, 51080, 51133, 51220*. M: *50836, 50889, 50904, 51166, 51229, 51249*.

Fellhanera silicis R.C. Harris & Ladd (sandstone) – B: *51115*.

Flavoparmelia caperata (L.) Hale (hardwood bark) – B: *50951, 50989, 51039, 51056, 51087, 51148, 51199*. M: *50852, 50930, 51191, 51237*.

Graphis scripta (L.) Ach. (hardwood bark) – B: *50956, 50994, 51070, 51079, 51218, 51219*. M: *50837, 50937, 51156, 51277*.

Heterodermia obscurata (Nyl.) Trevis. (hardwood bark) – M: *51154*.

Heterodermia speciosa (Wulfen) Trevis. (hardwood bark) – M: *51173, 51227*.

Hypotrachyna livida (Taylor) Hale (fallen hardwood branches) – B: *51145, 51200*. M: *51187*.

†*Julella fallaciosa* (Stizenb.) R.C. Harris (hardwood bark) – B: *50968, 51064*. M: *50847, 50922, 51175*.

Lecania croatica (Zahlbr.) Kotlov (hardwood bark) – B: *50957, 50963, 51048, 51049, 51108*. M: *50878, 50903*.

Lecanora appalachensis Lendemer & R.C. Harris (hardwood bark) – B: *50976*. M: *51251*.

Lecanora hybocarpa (Tuck.) Brodo (hardwood bark) – B: *51224*.

Lecanora layana Lendemer (hardwood bark) – B: *51036*. M: *51258*.

Lecanora nothocaesiella R.C. Harris & Lendemer (hardwood bark) – B: *51026, 51077, 51124, 51141*. M: *50880, 50886, 51282*.

Lecanora strobilina (Spreng.) Kieff. (fallen hardwood and conifer branches) – B: *51008, 51090, 51206*. M: *50891, 51189, 51275*.

Lecanora thysanophora R.C. Harris (hardwood bark) – B: *50980, 51140, 51215*. M: *50883, 50935, 51169*.

Lecidea cyrtidia Tuck. (non-calcareous pebbles) – B: *50993*.

Lecidea erythrophaea Flörke *ex* Sommerf. (hardwood bark) – M: *51281*.

Lepra pustulata (Brodo & Culb.) Lendemer & R.C. Harris (hardwood bark) – B: *51225*. M: *51168*.

Lepraria caesiella R.C. Harris (hardwood bark) – B: *50998*. M: *50870, 50917, 51172*.

Lepraria finkii (de Lesd.) R.C. Harris (hardwood and conifer bark, sandstone) – B: *50979, 51034, 51065, 51118, 51122, 51139*. M: *50869, 50921, 51159, 51256, 51264, 51280*.

Lepraria harrisiana Lendemer (conifer bark) – M: *51273*.

Lepraria hodkinsoniana Lendemer (hardwood bark) – B: *51020, 51120, 51131*. M: *50920*.

Lepraria sp. (hardwood bark) – M: *50851, 51257*.
This species does not belong to *Lepraria* in a strict sense because it produces usnic acid and zeorin (Lendemer & Hodkinson 2013); further study with molecular methods is needed to determine its true generic affinities.

Leptogium cyanescens (Rabenh.) Körb. (hardwood bark) – B: *51017*. M: *51165*.

Lithothelium hyalosporum (Nyl.) R.C. Harris (hardwood bark) – B: *51138, 51210*.

Micarea micrococca (Körb.) D. Hawksw. (conifer bark) – M: *51267*.

Micarea peliocarpa (Anzi) Coppins & R. Sant. (lignum and sandstone) – B: *51098, 51119*. M: *51195*.

Micarea prasina Fr. (lignum) – B: *51050*.

Micarea soralifera Guz.-Krzemiń., Czarnota, Łubek & Kukwa (lignum) – M: *50877, 51246*.

Myelochroa aurulenta (Tuck.) Elix & Hale (hardwood bark) – B: *50977, 50999, 51086, 51135, 51213*. M: *50843, 50856, 50857, 50900, 51153, 51287*.

Myelochroa galbina (Ach.) Elix & Hale (hardwood bark and fallen branches) – B: *50985, 51146*. M: *50898, 51186*.

Nadvornikia sorediata R.C. Harris (hardwood bark) – B: *51221, 51136*. M: *50882, 51129, 51183*.

**Nectriopsis* sp. (*Physcia stellaris* on fallen branches) – B: *51072*. M: *50861*.

Opegrapha varia Pers. (hardwood bark) – B: *51103*.

Opegrapha vulgata Ach. (hardwood bark) – M: *50888, 50939*.

Parmelia squarrosa Hale (fallen hardwood branches) – B: *51147*.

Parmotrema gardneri (C.W. Dodge) Hale (hardwood bark and fallen branches) – B: *51198*. M: *51289*.

Parmotrema hypotropum (Nyl.) J. Steiner (hardwood bark and fallen branches) – B: *51142, 51204-A*. M: *50838, 51235, 51285*.

Parmotrema reticulatum (Ach.) M. Choisy (hardwood bark and fallen branches) – B: *50984, 50990*. M: *50839*.

Pertusaria pustulata (Ach.) Duby (hardwood bark) – M: *50938, 51162*.

†*Phaeocalicium polyporaeum* (Nyl.) Tibell (*Trichaptum biforme* on dead hardwood trunks) – B: *50967, 51033*. M: *50864, 50897, 51230*.

Phaeophyscia adiastola (Essl.) Essl. (hardwood bark) – B: *50959, 50964, 51027, 51062, 51069, 51126*. M: *50831, 51231*.

Phaeophyscia pusilloides (Zahlbr.) Essl. (hardwood bark) – B: *51042, 51084*. M: *50834, 50901, 51283*.

Phaeophyscia rubropulchra (Degel.) Essl. (hardwood bark) – B: *51000, 51081, 51085, 51132*. M: *50844, 51152, 51239, 51288*.

Phaeophyscia squarrosa Kashiw. (hardwood bark) – B: *51212, 51012, 51018, 51127*. M: *50923, 51174*.

Physcia americana G. Merr. (hardwood bark) – B: *50955, 51032, 51125, 51214*. M: *50850, 50896, 51182, 51252, 51284*.

Physcia millegrana Degel. (hardwood bark and branches) – B: *50958, 51006, 51088, 51204*. M: *50854, 50879, 50931, 51233*.

Physcia stellaris (L.) Nyl. (fallen branches) – B: *50946, 51007, 51058, 51073*. M: *50895, 50907, 51190, 51236*.

**Piccolia nannaria* (Tuck.) Lendemer & Beeching (*Scoliciosporum pensylvanicum* on hardwood bark) – B: *50972*. M: *50868, 51170*.
As has been discussed by Lendemer & Harris (2014) it is unclear whether this species is always a juvenile parasite on other crustose lichens. Although those authors illustrated and discussed the species as a parasite on *Pyrrhospora varians*, the material collected during this study was consistently associated with *S. pensylvanicum*. Further study of this species is clearly required.

Placynthiella icmalea (Fr.) Coppins & P. James (lignum and conifer bark) – B: *51051, 51121*. M: *50872, 50912, 51245*.

Porpidia albocaerulescens (Wulfen) Hertel & Knoph (sandstone) – B: *51113*. M: *51197*.

Pseudosagedia cestrensis (Tuck.) R.C. Harris (hardwood bark) – B: *51067, 51110, 51130, 51222*. M: *50887, 51253, 51279*.

Pseudosagedia isidiata (R.C. Harris) R.C. Harris (hardwood bark) – B: *51031*. M: *50849, 51185*.

Punctelia caseana Lendemer & B.P. Hodk. (fallen branches) – B: *51205*. M: *50860, 50906, 51192, 51232*.

Punctelia graminicola (de Lesd.) R.S. Egan (hardwood bark) – B: *50945, 50991, 50992, 50995, 51046, 51083*. M: *51160*.

Punctelia missouriensis G. Wilh. & Ladd (hardwood bark) – B: *50982, 51024, 51045, 51082, 51144*. M: *50841, 50853, 50934, 51151, 51193, 51238, 51286*.

Punctelia rudecta (Ach.) Krog (hardwood bark) – B: *50944, 50981, 51025, 51044, 51095, 51143, 51201*. M: *50842, 50855, 50929, 51158, 51228, 51260*.

**Pyrenidium aggregatum* K. Knudsen & Kocourk. (*Phaeophyscia rubropulchra* on hardwood bark) – B: *51001*. M: *50905, 50926*.

Pyrenula laevigata (Pers.) Arnold (hardwood bark) – B: *51104*.

Pyrenula pseudobufonia (Rehm) R.C. Harris (hardwood bark) – B: *50973, 51101*. M: *50866*.

Pyrenula subelliptica (Tuck.) R.C. Harris (hardwood bark) – B: *51105, 51123, 51216*.

Pyrrhospora varians (Ach.) R.C. Harris (fallen hardwood and conifer branches) – B: *51010, 51089*. M: *51276*.

Pyxine sorediata (Mont.) Tuck. (hardwood bark) – B: *50974, 50986, 50988, 51035*. M: *50858, 50919, 51161, 51270*.

Pyxine subcinerea Stirt. (hardwood bark and fallen branches) – B: *51015, 51038, 50155, 51109, 51202*. M: *50885, 50899, 50932, 51163, 51261*.

Rinodina papillata H. Magn. (hardwood bark) – B: *50943*. M: *50833, 50941, 51047*.

Rinodina pyrina (Ach.) Arnold (fallen branches) – B: *50948, 51057*. M: *50893, 51188*.
The discovery of this species in Indiana is noteworthy as it is an eastern extension of the range of this species (Sheard 2010).

Ropalospora viridis (Tønsberg) Tønsberg (hardwood bark) – B: *50942, 50965, 51021, 51075*. M: *50845, 50915, 51167*.

†*Sarea difformis* (Fr.) Fr. (conifer resin) – M: *51265*.

†*Sarea resinae* (Fr.) Kunze (conifer resin) – M: *51266, 51272*.

Scoliciosporum chlorococcum (Stenh.) Vězda (fallen branches) – B: *51011*.

Scoliciosporum pensylvanicum R.C. Harris (hardwood bark) – B: *50966, 51022*. M: *50840, 50867, 50916, 51171*.

Scytinium dactylinum (Tuck.) Otálora, P. M. Jørg. & Wedin (hardwood bark and sandstone) – B: *50969, 50971, 51014, 51099, 51117*. M: *50848, 51180*.

Thelidium minutulum Körb. (sandstone) – B: *51116*.

Trapelia placodioides Coppins & P. James (sandstone) – B: *51114*. M: *51196*.

Trapeliopsis flexuosa (Fr.) Coppins & P. James (lignum) – M: *51240*.

Trypethelium virens Tuck. (hardwood bark; *Carpinus* and *Fagus*) – B: *51100, 51217*. M: *51278*.

Verrucaria phloeophila Breuss (bryophytes and bark of white oaks) – B: *50970, 51063*. M: *50924, 51226*.

Violella fucata (Stirt.) T. Sprib. (hardwood bark) – M: *50925*.

Xanthomendoza weberi (Kondr. & Karnef.) L. Lindblom (fallen branches) – M: *51234*.

APPENDIX II

MODERN CHECKLIST OF INDIANA LICHENS

The checklist presented below is arranged alphabetically by genus and species. Lichenicolous fungi are denoted with an asterisk (*) and allied fungi are denoted with a dagger (†). Species newly reported herein for Indiana are printed in bold text. The source, or sources, of the original literature reports are presented following each name. Nomenclature and name usage follows Esslinger (2016) although any deviations (e.g., lack of recognition of the recent generic seggragtes in *Caloplaca*) from that work represent the opinions of the present author. Questionable historical reports that require verification or further study before being formally incorporated into the Indiana checklist are detailed at the end of the list. A translation table that details the updates of names used in original literature is also appended following the list of questionable historical reports.

Checklist of Lichens, Lichenicolous and Allied Fungi Reported from Indiana

***Acrocordia megalospora* (Fink) R.C. Harris**

Acarospora immersa Fink (Wetmore 1988a)

Amandinea dakotensis (H. Magn.) P. May & Sheard (Sheard & May 1997: Fig. 1)

***Amandinea polyspora* (Willey) E. Lay & P. May**

Amandinea punctata (Hoffm.) Coppins & Scheid. (Fink & Fuson 1918 as *Buellia myriocarpa*, Herre 1943b; Wetmore 1988a; Hyerczyk 1997a)

Anaptychia palmulata (Michx.) Vain. (Miller & Thomson 1959)

Anisomeridium biforme (Borr.) R.C. Harris (Wetmore 1988a; Hyerczyk 1997a)

***Anisomeridium leucochlorum* (Müll. Arg.) R.C. Harris**

***Anisomeridium polypori* (Ellis & Everh.) M.E. Barr**

***Arthonia apatetica* (A. Massal.) Th. Fr.**

Chrysothrix caesia (Flot.) Ertz & Tehler (Fink & Fuson 1918 as *Arthonia lecideella*; Herre 1943b as *A. lecideella*; Miller & Thomson 1959; Wetmore 1988a; Hyerczyk 1997a)

***Arthonia helvola* (Nyl.) Nyl.**

Arthonia lapidicola (Taylor) Branth & Rostr. (Herre 1943b)

†***Arthonia quintaria* Nyl.**

Arthonia radiata (Pers.) Ach. (Harris 1988)

Arthothelium spectabile A. Massal. (Herre 1943b; Harris 1988)

Bacidia granosa (Tuck.) Zahlbr. (Harris 1988 as *B. trachona*)

***Bacidia purpurans* R.C. Harris, Lendemer & Ladd**

Bacidia schweinitzii (Fr. *ex* Tuck.) A. Schneid. (Fink & Fuson 1918; Herre 1943b; Miller & Thomson 1959)

***Bacidia sorediata* Lendemer & R.C. Harris**

Baglietto calciseda (DC.) Gueidan & Cl. Roux (Miller & Thomson 1959)

***Biatora printzenii* Tønsberg**

Blennothallia crispa (Hudson) Otálora, P. M. Jørg. & Wedin (Harris 1988 as *Collema crispum*)

***Buellia wheeleri* R.C. Harris**

Caloplaca atroalba (Tuck.) Zahlbr. (Harris 1988)

Caloplaca cerina (Hedw.) Th. Fr. (Wetmore 1988a)

Caloplaca citrina (Hoffm.) Th. Fr. (Miller & Thomson 1959)

Caloplaca feracissima H. Magn. (Wetmore 1988a; Hyerczyk 1997a)

Caloplaca flavovirescens (Wulfen) Dalla Torre & Sarnth. (Herre 1943b; Miller & Thomson 1959)

Caloplaca holocarpa (Ach.) M. Wade (Harris 1988; Hyerczyk 1997a)

Caloplaca microphyllina (Tuck.) Hasse (Fink & Fuson 1918; Herre 1943b; Hyerczyk 1997a)
Caloplaca oxfordensis Fink *ex* J. Hedrick (Herre 1943b)
Caloplaca sideritis (Tuck.) Zahlbr. (Fink & Fuson 1918; Herre 1943b)
Caloplaca ulmorum (Fink) Fink (Fink & Fuson 1918; Herre 1943b)
Candelaria concolor (Dicks.) Stein (Herre 1943b; Miller & Thomson 1959; Harris 1988; Wetmore 1988a; Hyerczyk 1997a)
Candelariella aurella (Hoffm.) Lettau. (Fink & Fuson 1918; Herre 1943b)
Candelariella efflorescens R.C. Harris & Buck (Wetmore 1988a)
Candelariella xanthostigma (Ach.) Lettau (Wetmore 1988a)
Candelariella xanthostigmoides (Müll. Arg.) R.W. Rogers (Hyerczyk 1997a)
***Canoparmelia texana* (Müll. Arg.) Elix & Hale**
***Catillaria nigroclavata* (Nyl.) Schul.**
†***Chaenothecopsis debilis* (Turner & Borrer ex Sm.) Tibell**
Cladonia apodocarpa Robbins (Harris 1988)
Cladonia arbuscula (Wallr.) Flot. (Harris 1988)
Cladonia bacilliformis (Nyl.) Sarnth. (Wetmore 1988a)
Cladonia caespiticia (Pers.) Flörke (Herre 1943b; Miller & Thomson 1959; Harris 1988; Wetmore 1988a)
Cladonia chlorophaea (Flörke *ex* Sommerf.) Spreng. (Herre 1943b; Miller & Thomson 1959; Harris 1988; Wetmore 1988a)
Cladonia conista (Ach.) A. Evans (Harris 1988 as *C. humilis*)
Cladonia cristatella Tuck. (Herre 1943a; Miller & Thomson 1959; Harris 1988; Wetmore 1988a)
Cladonia cryptochlorophaea Asah. (Harris 1988; Wetmore 1988a)
Cladonia cylindrica (A. Evans) A. Evans (Herre 1943b; Miller & Thomson 1959; Harris 1988; Wetmore 1988a)
Cladonia fimbriata (L.) Fr. (Herre 1943a, 1943b; Wetmore 1988a)
Cladonia furcata (Huds.) Schaer. (Herre 1943a, 1943b; Miller & Thomson 1959; Harris 1988)
Cladonia grayi G. Merr. *ex* Sandst. (Herre 1943b; Miller & Thomson 1959; Harris 1988; Wetmore 1988a)
Cladonia macilenta var. *bacillaris* (Genth.) Schaer. (Fink & Fuson 1918; Herre 1943b; Miller & Thomson 1959; Harris 1988; Wetmore 1988a)
Cladonia macilenta Hoffm. var. *macilenta* (Fink & Fuson 1918; Herre 1943b)
Cladonia mitis Sandst. (Wetmore 1988a)
Cladonia multiformis G. Merr. (Harris 1988)
Cladonia ochrochlora Flörke (Fink & Fuson 1918 as *C. coniocraea*; Herre 1943b as *C. coniocraea*; Miller & Thomson 1959 as *C. coniocraea*; Harris 1988; Wetmore 1988a)
Cladonia parasitica Hoffm. (Miller & Thomson 1959 as *C. delicata*)
***Cladonia petrophila* R.C. Harris**
Cladonia peziziformis (With.) J.R. Laundon (Herre 1943a, 1943b as *C. mitrula*; Miller & Thomson 1959 as *C. capitata* f. *microcarpa* and f. *imbricatula*; Harris 1988; Wetmore 1988a; Hyerczyk 1997a)
Cladonia phyllophora Hoffm. (Harris 1988)
Cladonia piedmontensis G. Merr. (Miller & Thomson 1959; Harris 1988)
Cladonia pleurota (Flörke) Schaer. (Harris 1988; Wetmore 1988a)
Cladonia polycarpoides Nyl. (Harris 1988; Wetmore 1988a; Hyerczyk 1997a)
Cladonia pyxidata (L.) Hoffm. (Herre 1943a, 1943b; Wetmore 1988a)
Cladonia ramulosa (With.) J.R. Laundon (Wetmore 1988a; Hyerczyk 1997a)
Cladonia rei Schaer. (Wetmore 1988a)
Cladonia robbinsii A. Evans (Miller & Thomson 1959)
Cladonia sobolescens Nyl. *ex* Vain. (Harris 1988)
Cladonia squamosa Hoffm. (Miller & Thomson 1959)
Cladonia strepsilis (Ach.) Grogn. (Wetmore 1988a)
Cladonia subtenuis (Abbayes) Mattick (Miller & Thomson 1959; Harris 1988)
Cladonia rangiferina (L.) Nyl. (Wetmore 1988a)
Cladonia uncialis (L.) F.H. Wigg. (Herre 1943b as *C. uncialis* f. *obtusata*)
Cladonia verticillata (Hoffm.) Schaer. (Herre 1943b; Miller & Thomson 1959; Harris 1988; Wetmore 1988a)
***Coenogonium pineti* (Ach.) Lumbsch & Lücking**
Collema nigrescens (Huds.) DC. (Herre 1943a, 1943b)
Collema pulchellum Ach. (Herre 1943a, 1943b as *Leptogium pulchella*)
Collema ryssoleum (Tuck.) A. Schneid. (Herre 1943b)
***Collema subflaccidum* Degel.**
***Crespoa crozalsiana* (Harm.) Lendemer & B.P. Hodk.**
Cyphelium tigillare (Ach.) Ach. (Hyerczyk 1997a)
Dibaeis absoluta (Tuck.) Kalb & Gierl (Miller & Thomson 1959 as *Baeomyces absolutus*)
***Dictyocatenulata alba* Finley & E.F. Morris**
Diploschistes scruposus (Schreb.) Norman (Wetmore 1988a)
Enchylium conglomeratum (Hoffm.) Otálora, P.M. Jørg. & Wedin (Herre 1943b as *Collema pycnocarpum*)
Enchylium tenax (Sw.) Gray (Harris 1988 as *Collema tenax*)
Evernia mesomorpha Nyl. (Wetmore 1988a)
***Fellhanera silicis* R.C. Harris & Ladd**
Flavoparmelia caperata (L.) Hale (Herre 1943a, 1943b; Miller & Thomson 1959; Harris 1988; Wetmore 1988a)
Flavopunctelia flaventior (Stirt.) Hale (Wetmore 1988a; Hyerczyk 1997a)
Graphis scripta (L.) Ach. (Herre 1943b; Miller & Thomson 1959; Harris 1988)
***Heterodermia obscurata* (Nyl.) Trevis.**
Heterodermia speciosa (Wulfen) Trevis. (Miller & Thomson 1959; Harris 1988)

Hyperphyscia adglutinata (Flörke) H. Mayrh. & Poelt (Hyerczyk 1997a)
Hypogymnia physodes (L.) Nyl. (Herre 1943b)
***Hypotrachyna livida* (Taylor) Hale**
†*Julella fallaciosa* (Stizenb.) R.C. Harris
Lathagrium fuscovirens (With.) Otálora, P. M. Jørg. & Wedin (Harris 1988 as *Collema fuscovirens*)
Lecania croatica (Zahlbr.) Kotlov (Harris & Lendemer 2010)
Lecania perproxima auct. (Miller & Thomson 1959)
***Lecanora appalachensis* Lendemer & R.C. Harris**
***Lecanora hybocarpa* (Tuck.) Brodo**
***Lecanora layana* Lendemer**
***Lecanora nothocaesiella* R.C. Harris & Lendemer**
Lecanora saligna (Schrad.) Zahlbr. (Wetmore 1988a)
Lecanora strobilina (Spreng.) Kieff. (Hyerczyk 1997a)
Lecanora symmicta (Ach.) Ach. (Hyerczyk 1997a)
Lecanora thysanophora R.C. Harris (Wetmore 1988a)
Lecidea cyrtidia Tuck. (Miller & Thomson 1959)
***Lecidea erythrophaea* Flörke *ex* Sommerf.**
Lecidea virginiensis Calk. & Nyl. (Miller & Thomson 1959)
Leimonis erratica (Körb.) R.C. Harris & Lendemer (Miller & Thomson 1959)
***Lepra pustulata* (Brodo & Culb.) Lendemer & R.C. Harris**
***Lepraria caesiella* R.C. Harris**
Lepraria finkii (de Lesd.) R.C. Harris (Harris 1988; Wetmore 1988a)
***Lepraria harrisiana* Lendemer**
***Lepraria hodkinsoniana* Lendemer**
Leptogium cyanescens (Rabenh.) Körb. (Miller & Thomson 1959; Harris 1988)
Leptogium juniperinum Tuck. (Herre 1943a, 1943b)
Leptogium lichenoides (L.) Zahlbr. (Herre 1943b; Miller & Thomson 1959; Harris 1988)
***Lithothelium hyalosporum* (Nyl.) R.C. Harris**
Lobaria pulmonaria (L.) Hoffm. (Herre 1943b; Harris 1988)
Lobaria quercizans Michx. (Harris 1988)
Melanelixia subaurifera (Nyl.) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch (Wetmore 1988a; Hyerczyk 1997a)
***Micarea micrococca* (Korb.) D. Hawksw.**
Micarea peliocarpa (Anzi) Coppins & R. Sant. (Harris 1988)
Micarea prasina Fr. (Wetmore 1988a)
***Micarea soralifera* Guz.-Krzemiń., Czarnota, Łubek & Kukwa**
Myelochroa aurulenta (Tuck.) Elix & Hale (Miller & Thomson 1959; Harris 1988)
***Myelochroa galbina* (Ach.) Elix & Hale**
Myriolecis dispersa (Pers.) Śliwa, Zhao Xin & Lumbsch (Fink & Fuson 1918; Herre 1943b; Harris 1988; Wetmore 1988a; Hyerczyk 1997a)
Myriolecis hagenii (Ach.) Śliwa, Zhao Xin & Lumbsch (Fink & Fuson 1918; Herre 1943b; Wetmore 1988a)
***Nadvornikia sorediata* R.C. Harris**
Ochrolechia trochophora (Vain.) Oshio (Harris 1988 as *O. rosella*)
Opegrapha varia Pers. (Fink & Fuson 1918; Herre 1943b)
***Opegrapha vulgata* Ach.**
Parmelia squarrosa Hale (Harris 1988)
Parmelia sulcata Taylor (Wetmore 1988a; Hyerczyk 1997a)
***Parmotrema hypotropum* (Nyl.) J. Steiner**
Parmotrema perforatum (Jacq.) A. Massal. (Herre 1943b; Harris 1988)
***Parmotrema reticulatum* (Ach.) M. Choisy**
Peltigera canina (L.) Willd. (Herre 1943a, 1943b; Harris 1988)
Peltigera didactyla (With.) J.R. Laundon (Herre 1943b as *P. spuria*; Harris 1988)
Peltigera evansiana Gyeln. (Miller & Thomson 1959; Harris 1988)
Peltigera horizontalis (Huds.) Baumg. (Fink & Fuson 1918; Herre 1943b; Harris 1988)
Peltigera hymenina (Ach.) Delise (Harris 1988 as *P. lactucifolia*)
Peltigera malacea (Ach.) Funck (Herre 1943b)
Peltigera neckeri Müll. Arg. (Harris 1988)
Peltigera polydactyla (Neck.) Hoffm. (Herre 1943a, 1943b)
Peltigera praetextata (Sommerf.) Zopf (Fink & Fuson 1918; Herre 1943a, 1943b, Miller & Thomson 1959 as *P. canina* var. *rufescens* f. *innovans*; Harris 1988)
Peltigera rufescens (Weiss) Humb. (Herre 1943b; Miller & Thomson 1959; Harris 1988; Wetmore 1988a)
Pertusaria pustulata (Ach.) Duby (Fink & Fuson 1918; Herre 1943b)
†*Phaeocalicium polyporaeum* (Nyl.) Tibell
Phaeophyscia adiastola (Essl.) Essl. (Harris 1988)
Phaeophyscia ciliata (Hoffm.) Moberg (Miller & Thomson 1959; Wetmore 1988a)
Phaeophyscia hirsuta (Mereschk.) Essl. (Harris 1988; Wetmore 1988a)
Phaeophyscia kairamoi (Vain.) Moberg (Harris 1988)
Phaeophyscia orbicularis (Necker) Moberg (Miller & Thomson 1959; Harris 1988)
Phaeophyscia pusilloides (Zahlbr.) Essl. (Wetmore 1988a)
Phaeophyscia rubropulchra (Degel.) Essl. (Wetmore 1988a)
***Phaeophyscia squarrosa* Kashiw.**
Physcia adscendens (Th. Fr.) H. Olivier (Wetmore 1988a; Hyerczyk 1997a)
***Physcia americana* G. Merr.**
Physcia aipolia (Humb.) Fürnr. (Harris 1988)
Physcia millegrana Degel. (Miller & Thomson 1959; Harris 1988; Wetmore 1988a; Hyerczyk 1997a)
Physcia stellaris (L.) Nyl. (Herre 1943b; Miller & Thomson 1959; Harris 1988; Wetmore 1988a; Hyerczyk 1997a)
Physciella chloantha (Ach.) Essl. (Wetmore 1988a)
Physconia detersa (Nyl.) Poelt (Wetmore 1988a)
***Piccolia nannaria* (Tuck.) Lendemer & Beeching**

Placynthiella icmalea (Ach.) Coppins & P. James (Wetmore 1988a)
Placynthiella oligotropha (J.R. Laundon) Coppins & P. James (Wetmore 1988a)
Placynthiella uliginosa (Schrad.) Coppins & P. James (Fink & Fuson 1918; Herre 1943b)
Placynthium nigrum (Huds.) Gray (Miller & Thomson 1959; Harris 1988)
Porpidia albocaerulescens (Wulfen) Hertel & Knoph (Miller & Thomson 1959; Harris 1988)
***Pseudosagedia cestrensis* (Tuck.) R.C. Harris**
***Pseudosagedia isidiata* (R.C. Harris) R.C. Harris**
Psorotichia schaereri (A. Massal.) Arnold (Miller & Thomson 1959)
Punctelia bolliana (Müll. Arg.) Krog (Wetmore 1988a)
***Punctelia caseana* Lendemer & B.P. Hodk.**
***Punctelia graminicola* (de Lesd.) R.S. Egan**
Punctelia missouriensis G. Wilh. & Ladd (Wilhelm & Ladd 1992)
Punctelia rudecta (Ach.) Krog (Fink & Fuson 1918; Herre 1943b; Miller & Thomson 1959; Harris 1988; Wetmore 1988a; Hyerczyk 1997a)
****Pyrenidium aggregatum* K. Knudsen & Kocourk.**
Pyrenopsis fuscoatra Fink (Fink & Fuson 1918; Herre 1943b)
***Pyrenula laevigata* (Pers.) Arnold**
***Pyrenula pseudobufonia* (Rehm) R.C. Harris**
***Pyrenula subelliptica* (Tuck.) R.C. Harris**
***Pyrrhospora varians* (Ach.) R.C. Harris**
Pyxine sorediata (Mont.) Tuck. (Fink & Fuson 1918; Herre 1943b; Miller & Thomson 1959)
***Pyxine subcinerea* Stirt.**
Ramalina americana Hale (Harris 1988)
***Rinodina papillata* H. Magn.**
***Rinodina pyrina* (Ach.) Arnold**
***Ropalospora viridis* (Tønsberg) Tønsberg**
†***Sarea difformis* (Fr.) Fr.**
†***Sarea resinae* (Fr.) Kunze**
Scoliciosporum chlorococcum (Stenh.) Vězda (Miller & Thomson 1959; Wetmore 1988a)
***Scoliciosporum pensylvanicum* R.C. Harris**
Scytinium dactylinum (Tuck.) Otálora, P. M. Jørg. & Wedin (Herre 1943a, 1943b as *Leptogium dactylinum*)
Strigula submuriformis (R.C. Harris) R.C. Harris (Harris 1988)
Thelidium microcarpum (Leight.) A.L. Smith (Hyerczyk 1997a)
***Thelidium minutulum* Körb.**
Thelocarpon laureri (Flot.) Nyl. (Wetmore 1988a)
Thrombium epigaeum (Pers.) Wallr. (Herre 1943b)
Trapelia glebulosa (With.) J.R. Landon (Wetmore 1988a)
***Trapelia placodioides* Coppins & P. James**
Trapeliopsis flexuosa (Fr.) Coppins & P. James (Wetmore 1988a)
Trypethelium virens Tuck. (Fink & Fuson 1918; Herre 1943b)
Usnea strigosa (Ach.) A. Eaton (Harris 1988)
Verrucaria muralis Ach. (Fink & Fuson 1918; Harris 1988; Wetmore 1988a)
Verrucaria iovensis Servít (Miller & Thomson 1959)
***Verrucaria phloeophila* Breuss**
Verrucaria nigrescens Pers. (Fink & Fuson 1918; Herre 1943b)
Verrucaria sordida Fink (Fink & Fuson 1918; Herre 1943b)
***Violella fucata* (Stirt.) T. Sprib.**
Willeya diffractella (Nyl.) Müll. Arg. (Harris 1988 as *Staurothele catalepta*)
Xanthomendoza fallax Søchting, Kärnefelt & S.Y. Kondr. (Miller & Thomson 1959; Wetmore 1988a; Hyerczyk 1997a)
Xanthomendoza weberi (Kondr. & Karnef.) L. Lindblom (Lindblom 1997, 2006 as *Xanthoria fulva*)
Xanthoria polycarpia (Hoffm.) Rieber (Harris 1988)

QUESTIONABLE HISTORICAL REPORTS

Taxa listed in this section are those that have been previously reported from Indiana, but whose identities require further study. In many cases these are reports that were made in the 19th or early 20th centuries and there is a strong probability that the supporting voucher specimen represents a taxon distinct from that to which the name is currently applied.

Acarospora cervina A. Massal. (Fink & Fuson 1918; Herre 1943b) – The identities of these records require verification.
Arthonia dispersa (Schrad.) Nyl. (Fink & Fuson 1918; Herre 1943b) – The identities of these records require verification.
Arthonia radiata (Pers.) Ach. (Fink & Fuson 1918; Herre 1943b) – The identities of these records require verification.
Bacidia inundata (Fr.) Körb. (Fink & Fuson 1918; Herre 1943b) – This species is now treated as *Bacidina inundata* (Fr.) Vězda. However, the name was widely applied to nearly any saxicolous *Bacidina* species historically and thus many records represent other taxa.
Bacidia rubella (Hoffm.) A. Massal. (Fink & Fuson 1918, Herre 1943b sub. *B. luteola*) – While it is possible that *B. rubella* occurs in Indiana, it is likely that the records represent other taxa.
Caloplaca lactea (A. Massal.) Zahlbr. (Miller & Thomson 1959) – The identity of this record requires verification.
Catillaria chalybeia (Borrer) A. Massal. (Miller & Thomson 1959) – While this species is still recognized, the majority of historical records from eastern North America belong to other members of the genus such as *C. lenticularis*.
Cladonia cariosa (Ach.) Spreng. (Fink & Fuson 1918; Herre 1943a, 1943b) - The identities of these records require verification, particularly given that Brodo et al. (2001) did not map the species as occurring in Indiana.

Cladonia clavulifera Vain. (Miller & Thomson 1959) – This name was often used for members of the *C. subcariosa* group historically. However, the supporting vouchers for such records need to be studied both morphologically and chemically to assign them to species as currently delimited.

Cladonia rangiformis Hoffm. (Herre 1943b) – This name was widely applied to various highly branched *Cladonia* species historically in North America, but the only confirmed report of the species from the continent is of a single population on the Avalon Peninsula of Newfoundland, Canada.

Cladonia subcariosa Nyl. (Herre 1943b; Miller & Thomson 1959) – This name was often used for members of the *C. subcariosa* group historically. However, the supporting vouchers for such records need to be studied both morphologically and chemically to assign them to species as currently delimited.

Cladonia subcariosa var. *evoluta* Vain. (Herre 1943b) – This name was often used for members of the *C. subcariosa* group historically. However, the supporting vouchers for such records need to be studied both morphologically and chemically to assign them to species as currently delimited.

Cladonia symphycarpia (Flörke) Fr. (Herre 1943b) – This name was often used for members of the *C. subcariosa* group historically. However, the supporting vouchers for such records need to be studied both morphologically and chemically to assign them to species as currently delimited.

Cladonia tenuis (Flörke) Harm. (Herre 1943b) – Historical records under this name from eastern North America often represent *C. subtenuis*. However, study of the supporting vouchers is needed to verify this.

Dermatocarpon hepaticum (Ach.) Th. Fr. (Miller & Thomson 1959) – Following Esslinger (2016) most records under this name would belong to *Placidium squamulosum* (Ach.) Breuss. However, the name was widely misapplied in the past to multiple squamulose pyrenolichens in eastern North America and the record requires verification.

Lecanora subfusca (L.) Ach. (Herre 1943b) – This name was widely misapplied historically to a multitude of taxa (Brodo 1984).

Lecanora varia (Hoffm.) Ach. (Fink & Fuson 1918; Herre 1943b) – This name was widely misapplied historically to a multitude of taxa and the majority of historical reports correspond to *L. strobilina* (see e.g., Printzen 2001).

Lecidea coarctata (Turner) Ach. (Fink & Fuson 1918; Herre 1943b) – Although this species is now treated as *Trapelia coarctata* (Turner) M. Choisy, many historical records belong to other members of the genus and thus verification of the supporting vouchers is required (see e.g., Brodo & Lendemer 2015).

Lecidea enteroleuca Ach. (Fink & Fuson 1918) – The identity of this record requires verification.

Lecidea myriocarpoides Nyl. (Fink & Fuson 1918; Herre 1943b) – The identity of this record requires verification.

Lecidea russellii Tuck. (Herre 1943a, 1943b) – Record likely is *Psora pseudorussellii* but requires verification.

Lecidea vulgata Zahlbr. (Herre 1943b) – This report refers back to the report of *L. enteroleuca* from Fink and Fuson (1919).

Leptogium chloromelum (Ach.) Nyl. (Herre 1943a, 1943b) – The identities of these records require verification, particularly given that it is not mapped as occurring in Indiana (Brodo et al. 2001; Sierk 1964).

Leptogium lichenoides var. *pulvinatum* (Hoffm.) Zahlbr. (Herre 1943b) – The identity of this record requires verification.

Leptogium tremelloides (Ach.) Gray (Fink & Fuson 1918; Herre 1943b) – Records likely are *L. cyanescens* but require verification.

Microthelia macularis Hampe ex A. Massal. (Herre 1943b) – The identity of this record requires verification.

Parmelia borreri (Sm.) Turner (Herre 1943b) – This species is now treated as *Punctelia borreri* (Sm.) Krog, however, historical records are often misidentifications of other members of the genus and require verification.

Parmelia centrifuga (L.) Ach. (Herre 1943b) – This species is now treated as *Arctoparmelia centrifuga* (L.) Hale. However, the range of the species as mapped by Brodo et al. (2001) does not include Indiana.

Parmelia cetrata Ach. (Herre 1943b) – This species is now treated as *Parmotrema cetratum* (Ach.) M. Choisy, however, historical records could refer to this taxon or several other morphologically similar species such as *P. despectum* Kurok.

Parmelia ciliata (DC.) Nyl. (Fink & Fuson 1918) – The identity of this record requires verification.

Parmelia conspersa (Ach.) Ach. (Fink & Fuson 1918; Herre 1943b) – While this species is now treated as *Xanthoparmelia conspersa* (Ach.) Hale, historical specimens could represent any number of species within that genus that are now recognized.

Parmelia conspersa f. *imbricata* A. Massal. (Herre 1943b) – The identity of this record requires verification.

Parmelia perlata (Huds.) Ach. (Herre 1943b) – While this species is now treated as *Parmotrema perlatum* (Huds.) M. Choisy, the identity of this record requires verification, particularly given that Brodo et al. (2001) did not map the species as occurring in Indiana.

Parmelia saxatilis (L.) Ach. (Herre 1943b) – The identity of this record requires verification, particu-

larly given that Brodo et al. (2001) did not map the species as occurring in Indiana.

Parmelina quercina (Willd.) Hale (Herre 1943a, 1943b) – The exact identities of these reports requires further study. Most historical records of *P. quercina* refer to *Hypotrachyna livida*, although they can also refer to *Myelochroa galbina* and even other species.

Parmeliopsis diffusa (Körb.) Poetsch (Herre 1943b) – The identity of this record requires verification.

Pertusaria copiosa Erichsen (Miller & Thomson 1959) – This species is now treated as *Lepra commutata* (Müll. Arg.) Lendemer & R.C. Harris (Lendemer & Harris 2017), however, that species is not known to occur in Indiana (Dibben 1980) and the record requires further study.

Physcia aquila (Ach.) Nyl. (Fink & Fuson 1918, Herre 1943b sub. *Anaptychia fusca*) – The identities of these records require verification, although it is likely that they refer to *A. palmulata*.

Physcia astroidea Nyl. (Fink & Fuson 1918) – The identity of this record requires verification.

Physcia clementiana (Ach.) J. Kickx (Herre 1943b) – The identity of this record requires verification, although it likely corresponds to *Physcia americana*.

Parmelia dubia (Hoffm.) Röhl. (Fink & Fuson 1918) – The identity of this record requires verification, particularly given that Brodo et al. (2001) did not map the species as occurring in Indiana.

Physcia endochrysea (Nyl.) Hampe (Fink & Fuson 1918; Herre 1943b) – The identities of these records require verification.

Physcia leucoleiptes (Tuck.) Lettau (Fink & Fuson 1918; Herre 1943b) – The identity of this record requires verification, although it likely is correct and if so, then *Physconia leucoleiptes* (Tuck.) Essl. should be added to the Indiana checklist.

Physcia obscura (Ehrh.) Hampe ex Fürnr. (Fink & Fuson 1918; Herre 1943b) – The identities of these records require verification.

Physcia pulverulenta (Schreb.) Hampe ex Fürnr. (Fink & Fuson 1918; Herre 1943b) – The identities of these records require verification, although it is likely that they refer to *Physconia subpallida* Essl.

Physcia setosa (Ach.) Nyl. (Herre 1943a, 1943b) – The identities of these records require verification.

Physcia tribacia (Ach.) Nyl. (Fink & Fuson 1918; Herre 1943b) – The identities of these records require verification.

Physcia virella (Ach.) Flagey (Herre 1943a, 1943b) – The identities of these records require verification.

Peltigera praetextata var. *isidiata* Gyeln. (Herre 1943b) – The identity of this record requires verification, although it likely refers to *P. evansiana*.

Placodium pyraceum (Ach.) Anzi (Fink & Fuson 1918, Herre 1943b sub. *Caloplaca pyracea*) – The identities of these records require verification.

Placodium variabile (Pers.) Hepp (Fink & Fuson 1918, Herre 1943b sub. *Caloplaca variabilis*) – The identities of these records require verification.

Pyrenula cinerella (Nyl.) Branth & Rostr. (Fink & Fuson 1918) – The identity of this record requires verification.

Pyrenula farrea (Ach.) Branth & Rostr (Herre 1943b) – The identity of this record requires verification.

Pyrenula leucoplaca (Wallr.) Körb. (Fink & Fuson 1918) – The identity of this record requires verification.

Pyrenula nitida (Weigel) Ach. (Fink & Fuson 1918; Herre 1943b) – The identities of these records require verification.

Ramalina calicaris (L.) Röhl. (Herre 1943b) – The identity of this record requires verification.

Ramalina fraxinea (L.) Ach. (Fink & Fuson 1918; Herre 1943b) – The identities of these records require verification.

Ramalina subamplicata (Nyl.) Fink (Herre 1943b) – The identity of this record requires verification.

Rhizocarpon albineum (Tuck.) Fink (Herre 1943b) – The identity of this record requires verification. Nonetheless, it is likely to be *R. reductum* Th. Fr.

Rhizocarpon concentricum (Davies) Beltr. (Miller & Thomson 1959) – The identity of this record requires verification.

Rinodina lecanorina (A. Massal.) A. Massal. (Fink & Fuson 1918; Herre 1943b, sub. *R. ocellata*) – The identities of these records require verification.

Sticta weigelii Isert (Herre 1943b) – The identity of this record requires verification, although it likely refers to *S. beauvoisii* Delise.

Teloschistes lychneus (Ach.) Tuck. (Fink & Fuson 1918; Herre 1943b sub. *Xanthoria candelaria*) – While this species is now treated as *Xanthoria candelaria* (L.) Th. Fr., it was not mapped as occurring in Indiana by Lindblom (1997) or Brodo et al. (2001).

Thelidium microbolum (Tuck.) Hasse (Herre 1943b) – The identity of this record requires verification.

Thelocarpon prasinellum Nyl. (Fink & Fuson 1918; Herre 1943b) – The identities of these records require verification.

Usnea dasopoga Ach. (Herre 1943b) – The identity of this record requires verification.

Usnea florida (L.) F.H. Wigg. (Herre 1943b) – This species does not occur in eastern North America and the historical record likely refers to either *U. endochrysea* Stirt. or *U. strigosa*.

Verrucaria epigaea (Pers.) Ach. (Fink & Fuson 1918) – The identity of this record requires verification.

Verrucaria rupestris Schrad. (Fink & Fuson 1918; Herre 1943b) – The identities of these records require verification.

Verrucaria viridula (Schrad.) Ach. (Fink & Fuson 1918; Herre 1943b) – The identities of these records require verification.

Xanthoria candelaria var. *laciniosa* (Dufour) Arnold (Herre 1943b) – The identity of this record requires verification, especially given that *X. candelaria* is not considered to occur in Indiana (Brodo et al. 2001; Lindblom 1997).

Xanthoria parietina (L.) Th. Fr. (Herre 1943b) – While this species is now still recognized, the identity of this record requires verification given that it is not considered to occur in Indiana (Brodo et al. 2001; Lindblom 1997).

SYNONYMS AND EXCLUDED SPECIES

This section comprises a translation table between previously used names and current names, as well as an enumeration of species reported from Indiana but whose supporting vouchers represent other taxa.

Allarthonia caesia (Flot.) Zahlbr. = *Chrysohrix caesia*
Allarthonia lapidicola (Taylor) Zahlbr. = *Arthonia lapidicola*
Anaptychia speciosa (Wulfen) A. Massal. = *Heterodermia speciosa*
Anisomeridium nyssigenum (Ellis & Everh.) R.C. Harris = *A. polypori*
Arthonia caesia (Flot.) Körb. = *Chrysohrix caesia*
Arthonia lecideella Nyl. = *Chrysohrix caesia*
Bacidia chlorococca (Graewe *ex* Stenh.) Lettau = *Scoliciosporum chlorococcum*
Bacidia trachona (Ach.) Lettau – Record published by Harris (1988) is *B. granosa*
Baeomyces absolutus Tuck. = *Dibaeis absoluta*
Buellia punctata (Hoffm.) A. Massal. = *Amandinea punctata*
Candelaria concolor var. *effusa* (Tuck.) G. Merr. & Burnham = *C. concolor*
Candelariella reflexa (Nyl.) Lettau = records from North America are *C. xanthostigmoides*
Cladina arbuscula (Wallr.) Hale & Culb. = *Cladonia arbuscula*
Cladina mitis (Sandst.) Hustich = *Cladonia mitis*
Cladina rangiferina (L.) Nyl. = *Cladonia rangiferina*
Cladina subtenuis (Abbayes) Hale & Cub. = *Cladonia subtenuis*
Cladonia bacillaris Nyl. = *C. macilenta* var. *bacillaris*
Cladonia bacillaris f. *clavata* (Ach.) Vain. = *C. bacillaris*
Cladonia bacillaris var. "*abbreviata*" = *C. bacillaris*
Cladonia borbonica f. *cylindrica* A. Evans = *C. cylindrica*
Cladonia capitata f. *imbricatula* (Nyl.) A. Evans = *C. peziziformis*
Cladonia capitata f. *microcarpa* (A. Evans) A. Evans = *C. peziziformis*
Cladonia chlorophaea f. "*simplex*" = *C. chlorophaea*
Cladonia coniocraea (Flörke) Spreng. – Records likely correspond to *C. ochrochlora*
Cladonia coniocraea f. *ceratodes* (Flörke) Dalla Torre & Sarnth. = *C. ochrochlora*
Cladonia cristatella f. *beauvoisii* (Delise) Vain. = *C. cristatella*
Cladonia cristatella f. "*ochrocarpia*" = *C. cristatella*
Cladonia cristatella f. "*vestita*" = *C. cristatella*
Cladonia cristatella f. "*squamosissima*" = *C. cristatella*
Cladonia cylindrica f. *squamulosa* (Robbins) A. Evans = *C. cylindrica*
Cladonia delicata (Ehrh.) Flörke = *C. parasitica*
Cladonia fimbriata var. *simplex* (Weiss) Flot. *ex* Vain. = *C. fimbriata*
Cladonia fimbriata var. coniocraea (Flörke) Nyl. = *C. coniocraea*
Cladonia furcata f. *foliolosa* (Duby) Vain. = *C. furcata*
Cladonia furcata f. *squamulifera* Sandst. = *C. furcata*
Cladonia furcata var. *corymbosa* (Ach.) Nyl. = *C. furcata*
Cladonia furcata var. *pinnata* (Flörke) Vain. = *C. furcata*
Cladonia furcata var. *racemosa* (Hoffm.) Flörke = *C. furcata*
Cladonia grayi f. *carpophora* A. Evans = *C. grayi*
Cladonia grayi f. *squamulosa* Sandst. = *C. grayi*
Cladonia humilis (With.) J.R. Laundon – Records are *C. conista*
Cladonia mitrula Tuck. = *C. peziziformis*
Cladonia mitrula f. *imbricatula* (Nyl.) Vain. = *C. peziziformis*
Cladonia mitrula f. *squamulosa* G. Merr. = *C. peziziformis*
Cladonia piedmontensis f. *lepidifera* (Vain.) Robbins = *C. piedmontensis*
Cladonia pyxidata f. *simplex* (Ach.) Harm. = *C. pyxidata*
Cladonia uncialis f. *obtusata* (Ach.) Vain. = *C. uncialis*
Cladonia verticillata var. *evoluta* Th. Fr. = *C. verticillata*
Cladonia verticillata f. *phyllocephala* (Flot.) Vain = *C. verticillata*
Collema crispum (With.) J.R. Laundon = *Blennothallia crispa*
Collema fuscovirens (With.) J.R. Laundon = *Lathagrium fuscovirens*
Collema pycnocarpum Nyl. = *Enchylium conglomeratum*
Collema tenax (Sw.) Ach. = *Enchylium tenax*
Dermatocarpon miniatum (L.) Mann. – Records likely are other members of the genus (e.g., *D. muhlenbergii*).
Endocarpon pusillum Hedw. – Records are either *E. pallidulum* or *E. petroleptideum* (see Lendemer 2007).
Lecanora dispersa (Pers.) Röhl. = *Myriolecis dispersa*
Lecanora hagenii (Ach.) Ach. = *Myriolecis hagenii*
Leptogium dactylinum Tuck. = *Scytinium dactylinum*
Leptogium pulchellum (Ach.) Nyl. = *Collema pulchella*
Lecidea albocaerulescens (Wulfen) Ach. = *Porpidia albocaerulescens*
Lecidea erratica Körb. = *Leimonis erratica*
Melanelia subaurifera (Nyl.) Essl. = *Melanelixia subaurifera*
Ochrolechia rosella (Tuck.) Ves. – Record published by Harris (1988) is *O. trochophora*
Parmelia aurulenta Tuck. = *Myelochroa aurulenta*
Parmelia bolliana Müll. Arg. = *Punctelia bolliana*
Parmelia caperata (L.) Ach. = *Flavoparmelia caperata*
Parmelia flaventior Stirt. = *Flavopunctelia flaventior*
Parmelia physodes (L.) Ach. = *Hypogymnia physodes*
Parmelia rudecta Ach. = *Punctelia rudecta*
Parmelia subaurifera Nyl. = *Melanelixia subaurifera*
Peltigera canina var. *rufescens* (Weiss) Mudd = *P. rufescens*

Peltigera canina f. *innovans* (Körb.) J.W. Thomson = *P. praetextata*
Peltigera lactucifolia (With.) J.R. Laudon = *P. hymenina*
Peltigera spuria (Ach.) DC. = *P. didactyla*
Phaeophyscia cernohorskyi (Nádv.) Essl. = *P. hirsuta*
Phaeophyscia chloantha (Ach.) Moberg = *Physciella chlorantha*
Physcia ciliata (Hoffm.) Du Rietz = *Phaeophyscia ciliata*
Physcia orbicularis (Baumg.) Poetsch = *Phaeophyscia orbicularis*
Physcia tribacioides Nyl. – Records are *Physcia americana* (Esslinger 2016)
Placodium aurellum (Hoffm.) Hepp = *Candelariella aurella*
Placodium microphyllinum Tuck. = *Caloplaca microphyllina*
Placodium sideritis (Tuck.) Fink = *Caloplaca sideritis*
Placodium ulmorum (Fink) Fink = *Caloplaca ulmorum*
Staurothele catalepta sensu Malme – Record published by Harris (1988) is *Willeya diffractella*
Trapelia involuta (Taylor) Hertel = *T. glebulosa*
Verrucaria calciseda DC. = *Bagliettoa calciseda*
Xanthoria fallax (Hepp) Arn. = *Xanthomendoza fallax*
Xanthoria fulva (Hoffm.) Poelt & Petut. – Although this species is now treated as *Xanthomendoza fulva* (Hoffm.) Søchting, Kärnefelt & S.Y. Kondr. (Lindblom 1997), the eastern North American records belong to *X. weberi* (Lindblom 2006; Knudsen et al. 2011).

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