

Contributions to the Lichen Flora of Pennsylvania: A Preliminary Checklist of the Lichens of Nescopeck State Park

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ABSTRACT. – A checklist of 68 species of lichens and lichenicolous fungi collected in Nescopeck State Park, Pennsylvania, USA, is provided. *Lepraria eburnea* J.R. Laundon, *Lepraria elobata* Tønsberg, *Rhizocarpon cinereovirens* (Müll. Arg.) Vainio, and *Rinodina vezdae* H. Mayrhofer are reported for the first time from Pennsylvania.

INTRODUCTION

In 2003 the authors received a grant from the Pennsylvania Department of Conservation and Natural Resources (DCNR) to study the lichen flora of Pennsylvania. The first phase of the grant involved the establishment of baseline floristic data for the eastern part of the state through field work in public park lands and several preserves privately managed by The Nature Conservancy (TNC) and The Natural Lands Trust (NLT) of eastern Pennsylvania. The results of some of this field work have already been reported in the form checklists of the Diabase Region of Upper Bucks and Montgomery Counties (Lendemer, 2005), the Delaware Water Gap National Recreation Area (Harris & Lendemer, 2005), and Lehigh Gorge State Park (Lendemer, 2004). This contribution continues these reports by providing a checklist of the lichens and lichenicolous fungi of Nescopeck State Park, Luzerne County, PA, based on two field visits in 2004-2005. As with similar surveys undertaken by the first author in Pennsylvania, the checklist presented here is intended to supplement the floristic inventory of the park already completed by A. Rhoads and T. Block (unpublished). Nescopeck State Park is located in the upper Nescopeck Valley of Luzerne County, Pennsylvania. It consists of 3,117 acres encompassing extensive hardwood forests, wetlands, and land formerly used for agriculture. The park is underlain by the Mauch Chunk Formation, which outcrops throughout the area (DCNR, 1980). Like Lehigh Gorge State Park, there are both glaciated and non-glaciated areas in the park (Crowl & Sevon 1980). Recent plans for development of the park make the establishment of baseline data of the lichen flora all the more urgent, as the level of human activity in the park is likely to increase with these changes.

CHECKLIST

The collection numbers following each abbreviated locality are those of the first author (JCL) and a full set of vouchers is deposited in the herbarium of the first author which is currently housed at The Academy of Natural Sciences of Philadelphia (PH) with a nearly complete set of duplicates in the herbarium of The New York Botanical Garden (NY). Additional material was widely distributed to other herbaria and several collections have been included in *Lichens of Eastern North America Exsiccati* distributed by the first author from PH.

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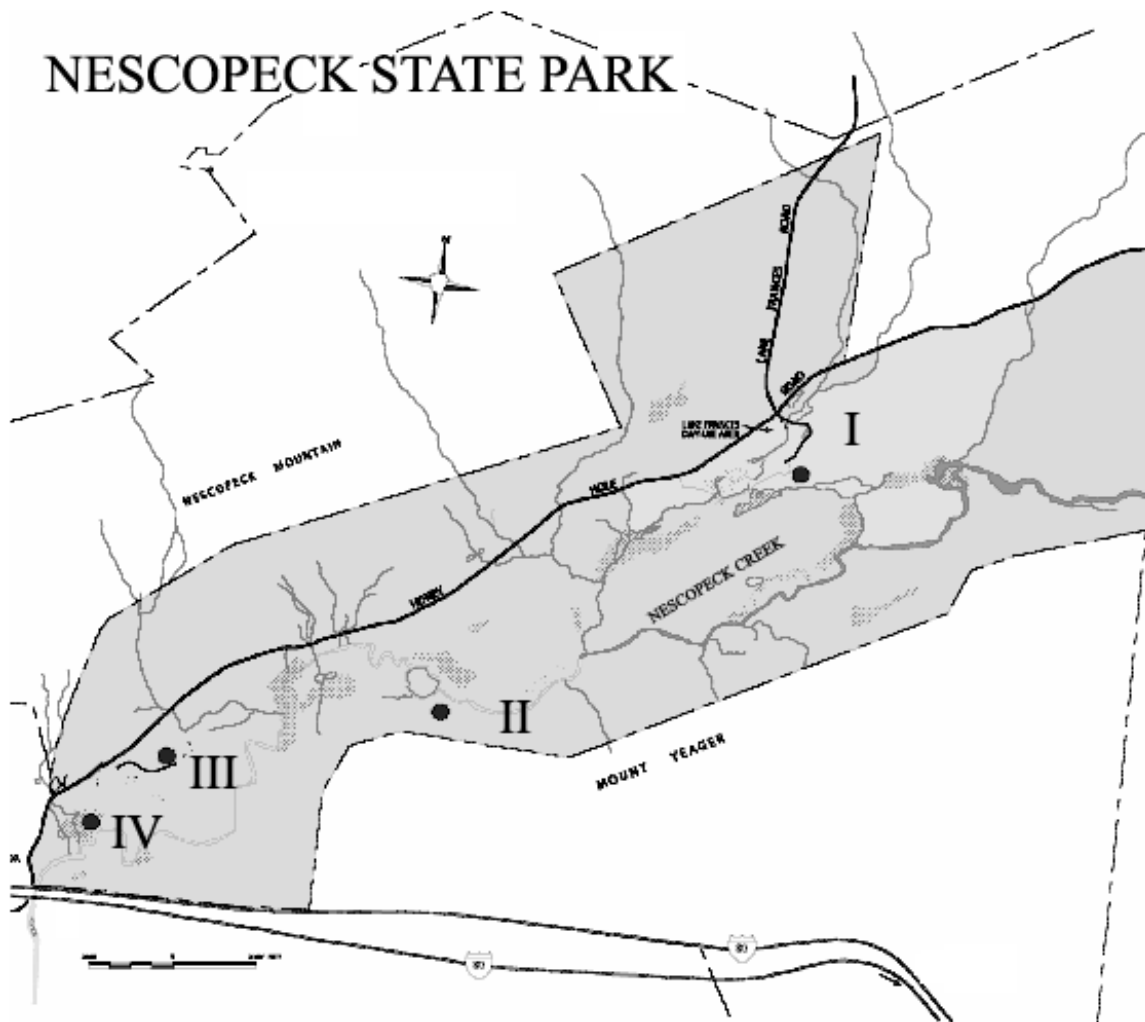


Plate 1. Map of Nescopeck State Park, Luzerne County, Pennsylvania, USA. (alteration of original map: http://www.dcnr.state.pa.us/stateparks/parks/maps/nescopceck_mini.pdf; 4.xii.2005)

Abrothallus caerulescens Kotte* – NSCIII, 2067 (on *Xanthoparmelia conspersa*).

Agonimia sp. – NSCI, 2064.

Allocetraria oakesiana (Tuck.) Randle & A. Thell – NSCI, 2024.

Anisomeridium polypori (Ellis & Everh.) M.E. Barr – NSCIII, 3941.

Aspicilia sp. – NSCII, 3952 (stictic acid).

The status of *Aspicilia* in eastern North America is problematic, as there seem to be several broad taxa widely used and poorly defined (e.g. including various thallus types, chemistry, spore sizes, and conidia types). The above collection could possibly be referred to *A. laevata* (Ach.) Arn.

Aspicilia sp. – NSCI, 2367.

This collection has a dull blue-gray thallus with diffuse margins.

Bacidina delicata (Leight.) Poelt & Vězda ? – NSCII, 3932 (apothecia + pycnidia).

The material agrees with that reported by Harris & Lendemer (2005) in having a thallus composed of goniocysts and apothecia/pycnidia without any pigmentation.

Biatora longispora (Degel.) Lendemer & Printzen – NSCII, 2077.

Biatora printzenii Tønberg – NSCII, 2015, 2040, 2042 (all collections sterile).

Caloplaca oxfordensis Fink ex J. Hedrick – NSCI, 2298.
Candelaria concolor (Dick.) Stein – NSCI, 1996.
Chromofulvea dialyta (Nyl.) Marbach – NSCI, 2076.
Cladonia conista A. Evans – NSCI, 2036.
Cladonia furcata (Huds.) Schrad. – NSCI, 2022; NSCI, 2023.
Cladonia ochrochlora Flörke – NSCI, 2025, 2028, 2029; NSCI, 2027, 4022, 4023; NSCI, 4024.
Cladonia parasitica (Hoffm.) Hoffm. – NSCI, 2002.
Cladonia petrophila R.C. Harris – NSCI, 2000; NSCI, 4079.
Cladonia polycarpoides Nyl. – NSCI, 2061.
Cladonia rei Schaer. – NSCI, 2049, 4029
Cladonia verticillata (Hoffm.) Schaer. – NSCI, 2050.
Flavoparmelia baltimorensis (Gyelnik & Förriss) Hale – NSCI, 2045; NSCI, 2008; NSCI, 3935.
Lecanora polytropa (Hoffm.) Rabenh. – NSCI, 3940.
 This species is apparently confined to the limited glade-like rock exposures in a series of abandoned fields and is heavily infected with an undetermined fungus. McGrath (1991) reported this species for the state from a single collection made by G.R. Proctor. We have not examined that voucher because McGrath's report does not indicate the herbaria in which the vouchers he examined were located.
Lecanora pulicaris (Pers.) Ach. – NSCI, 2319.
 Harris & Lendemer (2005) were the first to report this species from the state. It appears uncommon but widespread.
Lecanora strobilina (Spreng.) Keiff. – NSCI, 2073, 2240.
Lecanora symmicta (Ach.) Ach. – NSCI, 2074, 2290.
Lecanora thysanophora R.C. Harris – NSCI, 2038; NSCI, 2016.
Lecidea cyrtidia Tuck. – NSCI, 3926.
 "Lecidea" *ahlesii* Körb. – NSCI, 3927, 3933.
Lepraria sp. – NSCI, 3998.
 Though containing fumar/protocetraric acid and atranorin, this collection does not seem referable to *L. normandinoides* ined. or *L. nivalis*, as the thallus is composed of large soredia that aggregate together in a manner similar to *L. caesiella*. The collection lacks both a medulla and lobes.
Lepraria caesiella R.C. Harris – NSCI, 4195; NSCI, 3996, 4229; NSCI, 3995; NSCI, 4230.
Lendemer 3995 is a rather uncommon saxicolous collection of *L. caesiella*.
Lepraria caesioalba (de Lesd.) J.R. Laundon – NSCI, 4004.
Lepraria eburnea J.R. Laundon - NSCI, 2058 (musciolous/saxicolous).
 The above collection is not corticolous, and is referred to *Lepraria eburnea* with some hesitation, as the medulla is not very well developed. *Lepraria eburnea* has not previously been reported from Pennsylvania.
Lepraria elobata Tønsberg – NSCI, 3949.
Lepraria lobificans Nyl. – NSCI, 2055, 2056; NSCI, 2057, 3942, 3945, 3946, 3957, 4002.
Lepraria neglecta (Nyl.) Erichsen – NSCI, 3951.
Lepraria normandinoides ined. – NSCI, 3999.
 This species is superficially similar to *Lepraria nivalis*. It seems to be distinguished by larger soredia, a thicker medulla, and much more robust thallus. It will be described in a future publication.
Leptogium dactylinum Tuck. – NSCI, 2408.
 The material is poorly developed and the species is apparently not common in the park.
Loxospora pustulata (Brodo & Culb.) R.C. Harris – NSCI, 2004.
Micarea peliocarpa (Anzi) Coppins & R. Sant. – NSCI, 3930, 3938; NSCI, 2299.
Mycocalicium subtile (Pers.) Szatala – NSCI, 2409.
Myelochroa aurulenta (Tuck.) Elix & Hale – NSCI, 3937.
Ochrolechia yasudae (Vain.) Oshio – NSCI, 1999.
Parmelia sulcata Taylor – NSCI, 2003.
Peltigera didactyla (With.) J.R. Laundon – NSCI, 2096, 4034.
Peltigera evansiana Gyelnik – NSCI, 2010, 2013.
Peltigera horizontalis (Huds.) Baumg. – NSCI, 2078.

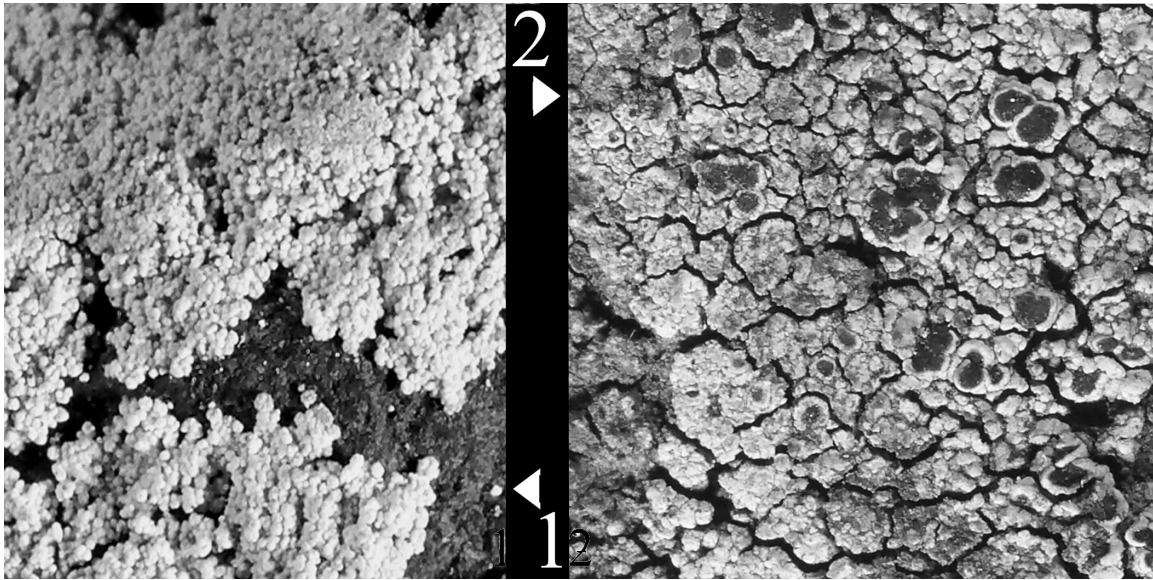


Plate 2. Fig. 1. *Lepraria* sp., Lendemera 3998, detail of thallus and thallus margins. Fig.2. *Rinodina vezdae*, Lendemera 3955, detail of thallus showing margins and apothecia.

Pertusaria plittiana Erichsen – NSCI, 2065.

Phaeocalicium polyporaenum (Nyl.) Tibell – NSCI, 4194.

Phaeophyscia adiaestola (Essl.) Essl. – NSCI, 1994, 1997, 1998; NSCII, 2009; NSCIII, 2019.

Phaeophyscia rubropulchra (Degel.) Essl. – NSCII, 2041, 3928.

Lendemera 3928 is saxicolous and has coarse soredia that become lobulate in some parts of the thallus.

Phlyctis petraea ined. – NSCI, 2007, 2051; NSCIII, 4026.

This is the common saxicolous species also reported from New York by Harris (2004). The taxon is common throughout eastern North America and contains abundant norstictic acid.

Porpidia albocaerulescens (Wulfen) Hertel & Knoph – NSCIII, 2075.

Porpidia crustulata (Ach.) Hertel & Knoph – NSCII, 2239, 3931.

Punctelia rudecta (Ach.) Krog – NSCI, 2001, 1995, NSCII, 2014, 2039, 3929.

Punctelia subrudecta auct. Amer. – NSCIII, 4197 (fertile); NSCIV: 3939.

Rhizocarpon cinereovirens (Müll. Arg.) Vain. – NSCI, 2068.

This is the first report of the species from Pennsylvania.

Rhizocarpon infernulum f. *sylvaticum* Fryday – NSCII, 4211.

Rinodina vezdae H. Mayrhofer – NSCIII, 3955.

All previous reports of this species from Pennsylvania refer to *Rinodina oxydata* (A. Massal.) A. Massal. s. lat., from which *R. vezdae* differs primarily in spore size and thallus type. The collection reported here is the first confirmed report of *R. vezdae* from the state. It should be noted that *R. vezdae* does not appear in the North American checklist (Esslinger, 2005), and we are unaware if it has been reported previously.

Sarcogyne regularis Körb. – NSCIV, 3936.

Trapelia sp. – NSCIII, 2368, 2401.

The above two collections are poorly developed and may represent an extreme of *T. glebulosa* (Sm.) J.R. Laundon.

Trapelia coarctata (Turner ex Sm.) M. Choisy ? – NSCII, 4077 (ascomata immature).

Trapelia placodioides Coppins & P. James – NSCI, 2083, 2407; NSCIII, 2084.

Umbilicaria mammulata (Ach.) Tuck. – NSCI, 2011, 2012.

Verrucaria sp. – NSCII: 3934.

Xanthoparmelia conspersa (Ehrh. ex Ach.) Hale – NSCIII, 2046, 3948.

Xanthoparmelia cumberlandia (Gyelnik) Hale – NSCIII, 2005.

Xanthoparmelia plittii (Gyelnik) Hale – NSCIII, 2006, 2047.

Sterile sorediate crust sp. 1 (TLC: perlatolic acid group unknown) – NSCII, 3961, 3964, 3974; NSCIII: 3963.

This taxon is widely distributed throughout the state (and eastern North America) and likely represents a species of *Fuscidea* or *Ropalospora*.

Sterile sorediate crust sp. 2 (TLC: atranorin, roccellic acid?) – NSCI: 2089; NSCII: 2087, 4027, 4028

The above collections represent a saxicolous species with a thick greenish blastidiate/granular thallus containing atranorin and roccellic acid?, it could represent a species of *Lecanora*.

However, no fertile collections have been found.

Sterile sorediate crust sp. 3 (TLC: usnic acid, zeorin tr. (?)) – NSCIII: 4950.

DISCUSSION

A total 68 species of lichens and lichenicolous fungi are reported from Nescopeck State Park. The species can mostly be divided into two groups reflecting the two primary habitat types that were surveyed: taxa occurring in rich shaded woods on the lower slopes of Mount Yeager, and those found in extensive open areas with sparse rock outcrops. The lower slopes of Mount Yeager are covered by northern hardwood forest; there is extensive dry oak – heath forest in the vicinity of Lake Francis. The lichens found in these two forest types did not differ significantly and any such differences in the checklist are likely the result of collection bias. The abandoned area in the Lower Day Use Area is of particular interest, because human disturbance has exposed small areas of flat bedrock, forming glade-like habitats where species of *Cladonia*, *Peltigera*, and *Xanthoparmelia* can dominate. A number of crustose lichens were found only in these open areas. Of particular interest are the reports of *Caloplaca oxfordensis* and *Lecanora polytropa*, as well as the first correct report of *Rinodina vezdae* from the state. Several species are thus reported for the first time from the Pennsylvania, namely: *Lepraria eburnea*, *Lepraria elobata*, *Rhizocarpon cinereovirens*, and *Rinodina vezdae*.

ACKNOWLEDGEMENTS

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APPENDIX I

INDEX TO LOCALITIES

NSCI - USA. PENNSYLVANIA. LUZERNE CO.: Nescopeck State Park, south of intersection of Honey Hole Road and Lake Frances Road, “Reilly” on topographic map, just south of Lake Frances Day Use Area, along the north shore of an unnamed lake southeast of Lake Frances. – elev. ca. 1200 ft. - Lat. 41° 05' 22"N, Long. 75° 52' 28"W - Moist mixed northern hardwood forest (*Acer*, *Betula*, *Fraxinus*, etc.) with sparse hemlock, on a south-facing slope with abundant rock outcrops.

NSCII - USA. PENNSYLVANIA. LUZERNE CO.: Nescopeck State Park, south of Honey Hole Road, on the lower north facing slopes of Mount Yeager. – elev. ca. 1100 ft. - Lat. 41° 04' 22"N, Long. 75° 54' 23"W – Wet (many small streams and seeps), slope forested by *Acer*, *Betula*, *Fraxinus*, and *Tsuga* with abundant shaded sandstone ledges and exposed rock outcrops.

NSCIII - USA. PENNSYLVANIA. LUZERNE CO.: Nescopeck State Park, south of Honey Hole Road, on gentle southeast facing slopes above Nescopeck Creek, Lower Day-Use Area. – elev. ca. 1200 ft. – Lat. 41° 03' 59"N, Long. 75° 55' 20"W – Abandoned open pastureland with abundant disturbance based vegetation (*Rubus*, *Rosa*, etc.), with gentle sloping rock exposures and the remnants of stone walls bordering the fields.

NSCIV – USA. PENNSYLVANIA. LUZERNE CO.: Nescopeck State Park, south of Honey Hole Road, along tributary to Nescopeck Creek, below Lower Day-Use Area. – elev. ca. 1130 ft. - UTM 18 422854E 4546944N – Lat. 41° 04' 12"N, Long. 75° 55' 06"W – Swampy floodplain on sandy soil (*Acer*, *Quercus*, *Tsuga*, etc.).

APPENDIX II

PRIMARY SUBSTRATES FOR TAXA

	corticolous	lichenicolous	lignicolous	muscicolous	saxicolous	terricolous	other
<i>Abrothallus caerulescens</i>		x					
<i>Agonimia</i> sp.				x			
<i>Allocetraria oakesiana</i>	x						
<i>Anisomeridium polypori</i>	x						
<i>Aspicilia</i> sp. 1					x		
<i>Aspicilia</i> sp. 2					x		
<i>Bacidina delicata</i>					x		

<i>Appendix II continued</i>	corticolous	lichenicolous	lignicolous	muscicolous	saxicolous	terricolous	other
<i>Biatora longispora</i>	x						
<i>Biatora printzenii</i>	x						
<i>Caloplaca oxfordensis</i>					x		
<i>Candelaria concolor</i>	x						
<i>Chrimofulvea dialyta</i>	x						
<i>Cladonia conista</i>						x	
<i>Cladonia furcata</i>			x				
<i>Cladonia ochrochlora</i>			x				
<i>Cladonia parasitica</i>			x				
<i>Cladonia petrophila</i>					x		
<i>Cladonia polycarpoides</i>						x	
<i>Cladonia rei</i>						x	
<i>Cladonia verticillata</i>			x				
<i>Flavoparmelia baltimorensis</i>					x		
<i>Lecanora polytropha</i>					x		
<i>Lecanora pulicaris</i>	x						
<i>Lecanora strobilina</i>	x						
<i>Lecanora symmicta</i>	x						
<i>Lecanora thysanophora</i>	x						
<i>Lecidea cyrtidia</i>					x		
<i>Lepraria sp.</i>					x		
<i>Lepraria caesiella</i>	x						
<i>Lepraria caesioalba</i>					x		
<i>Lepraria eburnea</i>				x			
<i>Lepraria lobificans</i>	x						
<i>Lepraria neglecta</i>					x		
<i>Lepraria normandinoidea</i>					x		
<i>Leptogium dactylinum</i>				x			
<i>Loxospora pustulata</i>	x						
<i>Micarea peliocarpa</i>					x		
<i>Mycobilimbia ahlesii</i>					x		
<i>Mycocalicium subtile</i>			x				

<i>Appendix II continued</i>	corticolous	lichenicolous	lignicolous	muscicolous	saxicolous	terricolous	other
Myelochroa aurulenta	x						
Ochrolechia yasudae					x		
Parmelia sulcata	x						
Peltigera didactyla						x	
Peltigera evansiana			x				
Peltigera horizontalis			x				
Pertusaria plittiana					x		
Phaeocalicium polyporaenum							x
Phaeophyscia adiastrata					x		
Phaeophyscia rubropulchra	x						
Phlyctis petraea ined.					x		
Porpidia albocaerulescens					x		
Porpidia crustulata					x		
Punctelia rudecta	x						
Punctelia subrudecta	x						
Rhizocarpon cinereovirens					x		
Rhizocarpon infernum f. sylvaticum					x		
Rinodina vezdae					x		
Sarcogyne regularis					x		
Trapelia sp.					x		
Trapelia coarctata					x		
Trapelia placodioides					x		
Umbilicaria mammulata					x		
Verrucaria sp.					x		
Xanthoparmelia conspersa					x		
Xanthoparmelia plittii					x		
Sterile sorediate crust sp. 1	x						
Sterile sorediate crust sp. 2					x		
Sterile sorediate crust sp. 3	x						