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Contributions to the Lichen Flora of Maryland: Recent Collections from the Delmarva Peninsula

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ABSTRACT. – Results of a recent collecting trip to the Delmarva Peninsula in Maryland, USA, are presented. The Delmarva Peninsula (coastal Delaware, Maryland, and Virginia) is the northern limit of the geographic distribution of numerous typical coastal plain species. Lichen checklists for six localities are provided, and 46 taxa are reported for the first time from the state.

Despite the proximity of the Delmarva Peninsula to several major eastern North American cities in which lichenologists have resided, the lichens of the region are poorly known. Biechele (2002) provided the only current checklist of the lower portion of Maryland's Eastern Shore, consisting of seventy-two species. We recently spent several days collecting in the Maryland portion of the Delmarva Peninsula. We visited a number of interesting habitats typical of the Atlantic Coastal Plain of southeastern North America, notable among them being several sand ridges and cypress swamps. Our brief trip to the Delmarva Peninsula resulted in so many interesting lichenological discoveries, especially of taxa apparently at the northern edge of their range, that it is necessary to compile this report. All of the localities visited are managed by the Maryland Department of Natural Resources. This report will begin to fill the large gap in our knowledge of the lichen flora of the Delmarva Peninsula, especially with respect to crustose lichens, as well as provide information that may be helpful in managing these localities.

At present there is no comprehensive specimen-based checklist of Maryland lichens. There is an online literature-based checklist (Uebel and Feuerer 2003), however literature-based checklists are often plagued with incorrect reports from misidentifications and out-of-date taxonomy. As in other reports compiled by the first author, this report is arranged in three parts as follows: checklists for each locality, additions to the checklist of Uebel and Feuerer (2003), and general discussion of the lichen flora of the Delmarva Peninsula and its relation to the rest of Atlantic Coastal Plain in eastern North America.

CHECKLISTS

We present the results of our trip as separate checklists for each State Wildlife Management Area or State Forest, arranged chronologically as they were visited. This is, in part, an effort to make the data available to those responsible for the management of the area. A brief discussion of each locality is also provided in order to place it in the context of the Delmarva Peninsula as a whole. The checklists are arranged alphabetically by genus and species, with unplaced sterile crusts at the end of the list. Lichenicolous fungi are indicated with an asterisk "*" and the identity of the host lichen is provided. Discussions of problematic collections and interesting discoveries are included throughout the lists. The collection numbers are those of the first author (JCL); vouchers of all collections have been deposited in the herbarium of the first author (PH-hbL), with a nearly full set of duplicates in the herbarium of the New York Botanical Garden (NY). Numerous duplicates have also been deposited in the herbarium of the University of California, Riverside (UCR).

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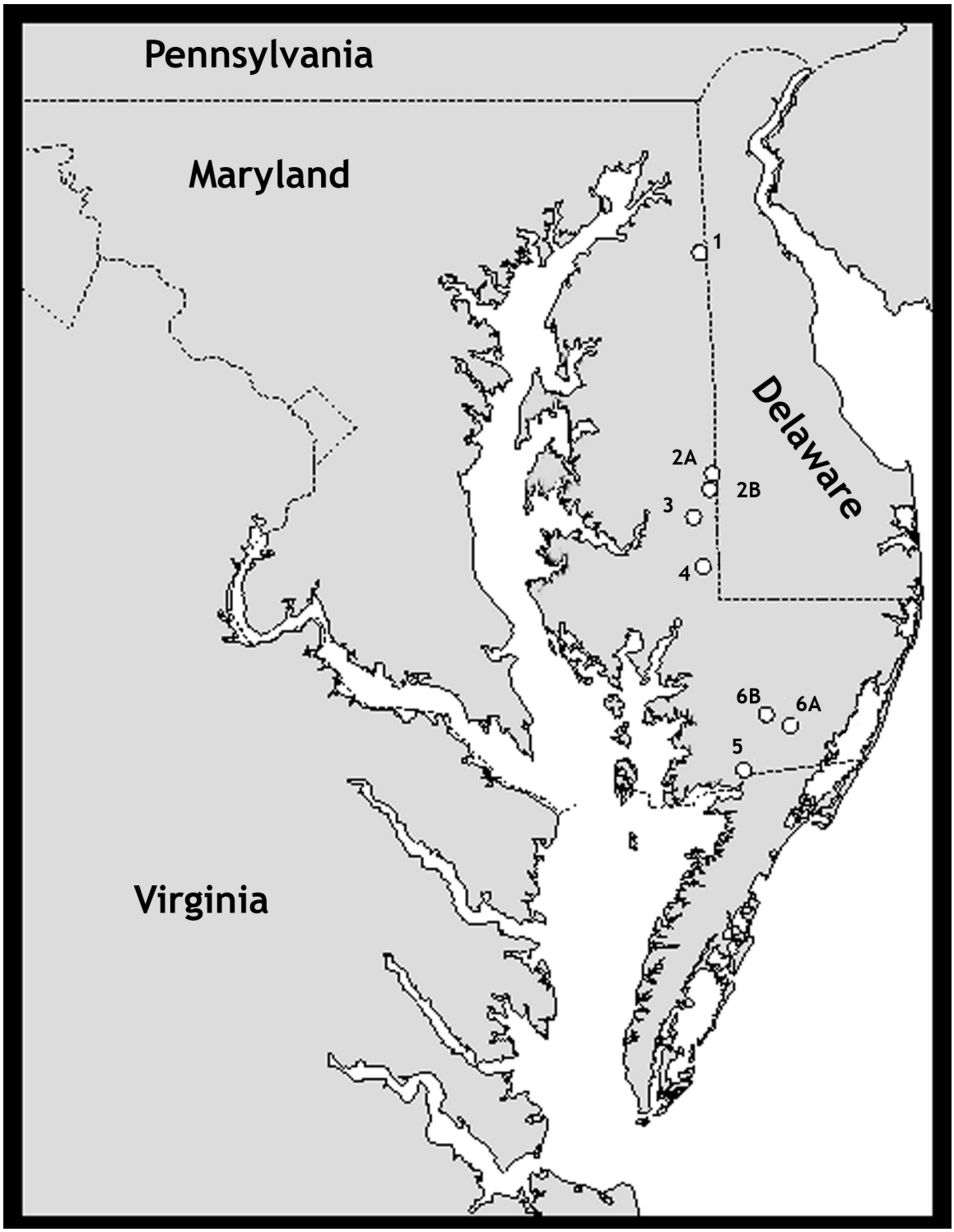

Figure 1. Map of collection sites discussed in this paper.

1. Millington State Wildlife Management Area

Located on the northern portion of the Delmarva Peninsula in Kent Co., Maryland. These seasonally inundated hardwood-dominated forests, generally referred to as wet-woods or flat woods, are typical of the native northern Delmarva forests. They are dominated by *Acer rubrum* L., *Nyssa sylvatica* Marsh., and various oak species (*Quercus* spp.). The dense shrub layer is composed largely of *Vaccinium corymbosum* L. and *Clethra alternifolia* L. and the herbaceous layer is sparse.

USA. Maryland. Kent Co.: Millington State Wildlife Management Area, along McKays Corner Road (Maryland Line Road), ~0.3 miles east of Golts, ~3 miles northeast of Massey, Millington Quad. – elev. 75 ft. – Low flatwoods with *Acer rubrum* and *Nyssa*.

Arthonia caesia (Flot.) Körb. – 6195.
Buellia curtisii (Tuck.) Imshaug – *6197.*
Cladonia ochrochlora Flörke – *6192.*
Lecanora hybocarpa (Tuck.) Brodo – *6199.*
Lecanora subpallens Zahlbr. – *6196.*
This taxon does not appear previously to have been reported from the state, and it is likely that most previous reports of *L. caesiorubella* Ach. from the Delmarva Peninsula belong here.
Lecanora thysanophora R.C. Harris – *6185.*
Lepraria aff. *incana* (L.) Ach. – *6184.*
Nadvornikia sorediata R.C. Harris – *6187.*
Parmotrema hypotropum (Nyl.) Hale – *6190.*
Pertusaria paratuberculifera Dibben – *6194.*
Pertusaria pustulata (Ach.) Duby – *6186.*
Phaeophyscia rubropulchra (Degel.) Essl. – 6198.
Punctelia rudecta (Ach.) Krog – 6193.
Pyxine sorediata (Ach.) Mont. – *6191.*
Sterile sorediate crust 1 (atranorin, zeorin) – *6188.*

2 & 3. Idylwild State Wildlife Management Area and Chesapeake State Forest

Located on the central-Delmarva Peninsula, this Wildlife Management Area and State Forest is near the northernmost expanse of Late Pleistocene Sand Ridge deposits on the Delmarva. These forested ridges are composed largely of *Pinus rigida* P. Mill., *P. virginiana* P. Mill., *Carya pallida* (Ashe) Engl. & Graebn., and *Quercus falcata* Michx., with typical shrubs consisting of *Vaccinium pallidum* Ait., *Gaylussacia frondosa* (Wangenh.) K. Koch, and *G. baccata* (L.) Torr. & Gray *ex.* Torr.

The two localities visited in the Idylwild State Wildlife Management Area are located in Caroline County. Collections from these two localities have been merged and the localities lettered A, and B. The collection numbers are given following each numbered locality. A checklist of the locality in Dorchester County is provided separately.

A. **USA. Maryland. Caroline Co.:** Idylwild State Wildlife Management Area, ~1 mile southwest of Smithville, Hickman Quad. – elev. ~40 ft. – Sandpit bordered by mixed hardwood forests (*Acer, Quercus*), former habitation sites with planted trees, and low wet depressions with rotting logs and red maple (*Acer rubrum*).

B. **USA. Maryland. Caroline Co.:** Idylwild State Wildlife Management Area, ~1 mile west of Route 306, south of Houston Branch, along dirt access road, Seaford West Quad. – elev. 30-40 ft. – Upland mixed hardwood forest of *Carya pallida, Quercus, Acer,* and sparse *Pinus*..

Amandinea punctata (Hoffm.) Coppins & Scheid. – A: *6239.*
Bacidia schweinitzii (Fr. *ex* E. Michener) A. Schneid. – B: *6266.*
Candelaria concolor (Dicks.) Stein. – B: *6271.*
Canoparmelia caroliniana (Nyl.) Elix & Hale – A: *6222*; B: *6265.*
Canoparmelia crozalsiana (de Lesd.) Elix & Hale – A: *6202*; B: *6529.*
Canoparmelia texana (Tuck.) Elix & Hale – A: *6237.*
Cladonia didyma (Fée) Vainio var. *didyma* – A: *6229.*
Cladonia grayi G. Merr. *ex* Sandst. – A: *6234, 6249*.
Cladonia incrassata Flörke – A: *6233.*
Cladonia macilenta Hoffm. – A: *6207*; B: *6521*.
Cladonia parasitica (Hoffm.) Hoffm. – A: *6245.*
Cladonia polycarpoides Nyl. – A: *6224.*
Cladonia ramulosa (With.) J.R. Laundon – A: *6206.*
Cladonia sobolescens Nyl. *ex* Vainio – A: *6225.*
Cladonia subtenuis (Abbayes) Mattick – A: *6235*.
Heterodermia obscurata (Nyl.) Trevis. – B: *6253.*
Heterodermia speciosa (Wulfen) Trevis. – B: *6255.*
Hypotrachyna livida (Taylor) Hale – A: *6219.*
Lecanora sp. 1 – A: *6200* (fertile), *6231, 6232* (?).

This species was reported from New Jersey by Lendemer (2006) and the collections reported here extend the range southward. *Lendemer 6232* differs from other collections of this species in having a smoother thallus, more discrete soralia with finer soredia, and occurring on lignum.

Lecanora sp. 2 – B: *6252* (fertile?).

Lendemer 6252 is possibly fertile specimen of a sorediate species widespread in eastern North America that contains atranorin and zeorin. There are few apothecia on the collection and it is not clear if they are associated with the sorediate crust.

Lecanora cinereofusca H. Magn. – A: *6228.*
Lecanora minutella Nyl. – A: *6241*.
Lecanora strobilina (Spreng.) Keiffer – A: *6240.*
Lecanora subpallens Zahlbr. – B: *6262.*
Lecidea plebeja Nyl. – B: *6263.*
Lepraria caesiella R.C. Harris – A: *6226.*
Lepraria aff. *incana* (L.) Ach. – A: *6203.*
Lepraria lobificans Nyl. – B: *6256*.
Loxospora pustulata (Brodo & Culb) R.C. Harris – A: *6221.*
Micarea erratica (Körber) Hertel et al. – A: *6220.*
Opegrapha vulgata Ach. – A: *6223, 6236*.
Parmelinopsis horrescens (Taylor) Elix & Hale – A: *6217.*
Parmelinopsis minarum (Vainio) Elix & Hale – A: *6215, 6216*; B: 6272.
Parmotrema hypotropum (Nyl.) Hale – B: *6258.*
Parmotrema subisidiosum (Müll. Arg.) Hale – A: *6242.*
Pertusaria paratuberculifera Dibben – B: *6264.*
Pertusaria subpertusa Brodo – B: *6257.*
Pertusaria texana Müll. Arg. – A: *6230.*
Pertusaria velata (Turner) Nyl. (lichexanthone lacking chemotype) – A: *6214.*
Phaeocalicium polyporaeum (Nyl.) Tibell – A: *6211.*
Phaeographis inusta (Ach.) Müll. Arg. – B: *6268.*
Phaeophyscia rubropulchra (Degel.) Essl. – A: *6244.*
Physcia americana G. Merr. – B: *6261.*
Physcia millegrana Degel. – A: *6247.*
Physcia pumilior R.C. Harris – A: *6204.*
Placynthiella sp. – A: *6246.*
Placynthiella uliginosa (Schrad.) Coppins & P. James – A: *6250.*
Pseudosagedia cestrensis (Tuck. *ex* E. Michener) R.C. Harris – A: *6210*; B: 6260.

Punctelia missouriensis G. Wilh. & Ladd – A: *6248.*
Pyrenula pseudobufonia (Rehm) R.C. Harris – B: *6267.*
Pyrrhospora varians (Ach.) R.C. Harris – A: *6213*; B: *6269.*
Pyxine sorediata (Ach.) Mont. – A: *6209*
Ramonia microspora Vězda – A: *6218, 3243.*
Scoliciosporum chlorococcum (Graewe ex Stenh.) Vězda – A: *6238.*
Trapeliopsis flexuosa (Fr.) Coppins & P. James – A: *6208*.
Usnea pensylvanica Motyka – A: *6212.*
Usnea subscabrosa Nyl. *ex* Motyka – A: *6205.*
Sterile isidiate crust – B: *6270.*

This taxon is abundant on the Delmarva Peninsula, and is known farther south from North Carolina.

Sterile sorediate crust 2 (perlatolic acid group unknown) – A: *6201.*
Sterile sorediate crust 3 (xanthone?) – A: *6227.*

The above collection is corticolous and has some resemblance to *Biatora pontica* Printzen & Tønsberg, which is also KC+ yellow-orange. Our collection is sterile, and appears chemically discordant with *B. pontica* in containing only a xanthone.

USA. Maryland. Dorchester Co.: Chesapeake State Forest, ~2.5 miles southwest of Federalsburg, along Tara Road, Federalsburg Quad. – elev. 5-35 ft. – Disturbed sandy roadside in pine (*Pinus*) plantation and mixed hardwood forest (*Acer, Quercus, Carya*).

Buellia curtisii (Tuck.) Imshaug – *6281.*
Candelariella reflexa (Nyl.) Lettau – *6288.*
Cladonia grayi G. Merr. *ex* Sandst. – *6277.*
Cladonia macilenta Hoffm. var. *bacillaris* (Genth.) Schaer. – *6273, 6276, 6279.*
Cladonia polycarpia G. Merr. – *6274.*
Cladonia subtenuis (Abbayes) Mattick – *6278.*
Lepraria lobificans Nyl. – *6275.*
Opegrapha vulgata Ach. – *6287.*
Peltigera praetextata (Flörke *ex* Sommerf..) Vainio – *6289.*
Trapeliopsis flexuosa (Fr.) Coppins & P. James – *6280.*

4. Sharptown Dunes

Located on the mid-Delmarva Peninsula, this Sand Ridge is composed largely of Evesboro Sands and is dominated by *Pinus virginiana* with infrequent *Quercus* spp. The understory is nearly absent and composed largely of *Gaylussacia baccata* and *Vaccinium pallidum.*

USA. Maryland. Wicomico Co.: Sharptown Dunes, ~1.2 miles northeast of Hollering Point, ~1 mile southwest of Sharptown, along east shore of the Nanticoke River, Sharptown Quad. – elev. 5-20 ft. – Sand ridge complex densely forested with *Pinus virginiana* and sparse *Carya* and *Quercus*, small relict openings with mixed hardwoods (*Acer, Carya, Quercus*) and wet areas with *Ilex opaca*.

Anisomeridium polypori (Ellis & Everh.) M.E. Barr – *6296.*
Bacidia schweinitzii (Fr. *ex* E. Michener) A. Schneid. – *6312.*
Buellia stillingiana J. Steiner – *6298.*
Canoparmelia caroliniana (Nyl.) Elix & Hale – *6294, 6310, 6315.*
Cladonia subtenuis (Abbayes) Mattick - *7114.*
Flavoparmelia caperata (L.) Hale – *6300.*
Heterodermia obscurata (Nyl.) Trevis. – *6319.*

Hypotrachyna livida (Taylor) Hale – *6305.*
Hypotrachyna osseoalba (Vainio) Park & Hale – *6307, 6309.*
Lecanora hybocarpa (Tuck.) Brodo – *6297.*
Lecanora subpallens Zahlbr. – *6317.*
Lepraria caesiella R.C. Harris – *6291.*
Loxospora pustulata (Brodo & Culb.) R.C. Harris – *6316.*
Minutoexcipula mariana V. Atienza* (on *Pertusaria*) – *6299.*
Opegrapha vulgata Ach. – *6304.*
Parmelinopsis horrescens (Taylor) Elix & Hale – *6313, 6320.*
Parmeliopsis subambigua Gyeln. – *6308.*
Parmotrema hypoleucinum (J. Steiner) Hale – *6292.*
Parmotrema submarginale (Michx.) DePriest & B.W. Hale – *6218.*
Parmotrema hypotropum (Nyl.) Hale – *6290.*
Phaeocalicium polyporaeum (Nyl.) Tibell – *6322.*
Phaeographis inusta (Ach.) Müll. Arg. – *6302.*
Pseudosagedia raphidosperma (Müll. Arg.) R.C. Harris – *6295*
Punctelia subrudecta auct. Amer. – *6306.*
Pyxine sorediata (Ach.) Mont. – *6314.*
Schismatomma glaucescens (Nyl. *ex* Willey) R.C. Harris – *6304.*
Trypethelium virens Tuck. *ex* E. Michener – *6301.*
Tuckermanopsis americana (Sprengel) Hale – *6321.*
Usnea subscabrosa Nyl. *ex* Motyka – *6293.*
Sterile isidiate crust – *6311.*

5. Hickory Point Cypress Swamp

Located on the southern Delmarva Peninsula along the Pocomoke River, this southern-affinity Cypress Swamp is near the northern extreme of its range. Located in this swamp are many southern species considered rare in Maryland. The canopy is composed of various *Quercus* spp., *Acer rubrum*, *Taxodium distichum* (L.) L.C. Rich., and *Chamaecyparis thyoides* (L.) B.S.P. Understory trees and shrubs consist of *Persea palustris* (Raf.) Sarg., *Vaccinium corymbosum*, *Magnolia virginiana* L. *Ilex opaca* Ait. and *Itea virginica* L.

USA. Maryland. Worcester Co.: Hickory Point Cypress Swamp, along Hickory Point Road, east shore of the Pocomoke River, ~2 miles northeast of Cedar Hall, Kingston Quad. – elev. 0-10 ft. – Extensive cypress (*Taxodium*) swamp with *Magnolia, Acer, Ilex,* and *Chamaecyparis* and bordered by upland mixed hardwood forests of *Pinus, Quercus, Carya,* and *Acer*.

Arthonia rubella (Fée) Nyl. – *6365, 6378.*
Bacidia sp. – *6369.*
Bacidia schweinitzii (Fr. *ex* E. Michener) A. Schneid. – *6324, 6328.*
Bacidina egenula (Nyl.) Vězda – *6331.*
Brigantiaea leucoxantha (Spreng.) R. Sant. & Hafellner – *6371.*
Byssoloma meadii (Tuck.) S. Ekman – *6344, 6359.*
Byssoloma leucoblepharum Vainio – *6327, 6367.*
Chrysothrix candelaris (L.) J.R. Laundon – *6345.*
Chrysothrix flavovirens Tønsberg *s. lat.* – *6355* (*Chamaecyparis thysoides*), *6361* (*Pinus*).
See Harris & Lendemer (2005) for a discussion of the use of this name for North American material. In the material so far seen by the author *C. flavovirens* has been confined to conifers and *C. candelaris* to hardwoods (*Acer*). All previous reports of *C. candelaris* need to be restudied.
Coenogonium pineti (Ach.) Lücking & Lumbsch – *6357.*
Dactylospora inquilina Hafellner* (on *Pertusaria paratuberculifera*) – *6347.*

Fissurina insidiosa Hook. & C. Knight – *6358.*
Lecanora sp. 2 – *6334.*
Lecanora cinereofusca H. Magn. – *6341.*
Lecanora hybocarpa (Tuck.) Brodo – *6362.*
Lecanora thysanophora R.C. Harris – *6368.*
Leptogium cyanescens (Rabenh.) Körber – *6343.*
Lichenoconium erodens M.S. Christ. & D. Hawksw.* (on *Lecanora cinereofusca*) – *6348.*
Lobaria quercizans Michx. – *6373.*
Myelochroa aurulenta (Tuck.) Elix & Hale – *6372.*
Nadvornikia sorediata R.C. Harris – *6350.*
Ochrolechia pseudopallescens Brodo – *6330.*
Opegrapha sp. ? – *6323.*

This taxon, also known from the Ozarks, is a sorediate species with gyrophoric acid, easily overlooked in the field. Our collection is sterile.

Opegrapha viridis Pers. – *6366.*
Parmelinopsis minarum (Vainio) Elix & Hale – *6375.*
Parmotrema perforatum (Jacq.) A. Massal. – *6337.*
Parmotrema subisidiosum (Müll. Arg.) Hale – *6370.*
Parmotrema submarginale (Michx.) DePriest & B.W. Hale – *6335.*
Pertusaria epixantha R.C. Harris – *6340, 6351.*
Pertusaria multipunctoides Dibben – *6332.*
Pertusaria ophthalmiza (Nyl.) Nyl. – *6333.*
Pertusaria paratuberculifera Dibben – *6329, 6377.*
Pertusaria velata (Turner) Nyl. (lichexanthone lacking chemotype) – *6364.*
Phlyctis ludoviciensis (Müll. Arg.) Lendemer – *6339.*
Physcia americana G. Merr. – *6342.*
Porina heterospora (Fink *ex* J. Hedrick) R.C. Harris – *6354.*
Punctelia rudecta (Ach.) Krog – *6374.*
Pyrenula pseudobufonia (Rehm) R.C. Harris – *6326.*
Pyrenula punctella Trevis. – *6346.*
Pyrrhospora varians (Ach.) R.C. Harris – *6363.*
Thelidium minutulum Körber – *6325.*
Thelotrema subtile Tuck. – *6356.*
Trypethelium virens Tuck. *ex* E. Michener – *6360.*
Usnea subscabrosa Nyl. *ex* Motyka – *6336.*
Sterile isidiate crust – *6349.*
Sterile sorediate crust 5 (atranorin) – *6338.*

This species is widely distributed in the mid-Atlantic states and has been reported from New Jersey (Lendemer 2006) and Pennsylvania (Harris & Lendemer 2005). The green corticolous/muscicolous thallus is often found near the bases of trees and the diffuse green soralia are rather distinctive.

Sterile sorediate crust 6 (atranorin) – *6352.*
Sterile sorediate crust 7 (atranorin, terpenoids) – *6353.*

6. Pocomoke State Forest

We visited two localities in Pocomoke State Forest. The localities are numbered A and B and the collection numbers follow the locality number. The cypress swamp is likely part of the area from which the records mentioned by Biechele (2002) are derived. It is interesting that we did not recollect all of the taxa mentioned by Biechele, and that we discovered a number of additional interesting macrolichens at the locality.

The first locality is on the southern Delmarva Peninsula near the mouth of Corbin Branch at the Pocomoke River. This tidally influenced freshwater Riverine Cypress Swamp supports an interesting mix of southern vascular plants and bryoflora. The swamp is characterized by *Taxodium distichum* and scattered *Acer rubrum*, *Ilex opaca*, and *Fraxinus profunda* (Bush) Bush.

The second locality, also on the southern Delmarva Peninsula, is a sand ridge characterized by soils of the Rutlage and Lakeland Formations. This sand ridge is significantly different than others on the Peninsula in being dominated by *Pinus echinata* P. Mill. Other species located in this forest are *Carya pallida, Pinus serotina* Michx., and various oak species, including *Quercus marilandica* Muenchh. and *Q. nigra* L..

A. - **USA. Maryland. Worcester Co.:** Pocomoke State Forest, along Corbin Branch where it enters the Pocomoke River, ~1 mile northwest of Milburn Landing, Snow Hill Quad. – elev. 0 ft. – Tidal freshwater cypress swamp with large *Taxodium*, and mixed hardwoods (*Acer, Nyssa, Carpinus*).

B. - **USA. Maryland. Worcester Co.:** Pocomoke State Forest, just north of Red House Road, ~0.5 miles west of Nassawango Creek, Snow Hill Quad. – elev. 50 ft. - Open sand ridge in pine (*Pinus*) – oak (*Quercus*) forest with sparse hickory (*Carya*).

Anzia americana Yoshim. & Sharp – A: *6431.*
Anzia colpodes (Ach.) Stizenb. – A: *6396, 6419.*
Arthonia rubella (Fée) Nyl. – A: *6417.*
Arthothelium interveniens (Nyl.) Zahlbr. – A: *6437.*
Bacidia schweinitzii (Fr. *ex* E. Michener) A. Schneid. – A: *6406* (pigment deficient)*, 6421.*
Bathelium carolinianum (Tuck.) R.C. Harris – A: *6423.*
Brigantiaea leucoxantha (Spreng.) R. Sant. & Hafellner – A: *6422.*
Buellia vernicoma Tuck. – A: *6403.*
Byssoloma meadii (Tuck.) S. Ekman – A: *6394, 6438.*
Byssoloma leucoblepharum Vainio – A: *6408, 6441.*
Calicium salicinum Pers. – B: *6454.*
Canoparmelia caroliniana (Nyl.) Elix & Hale – B: *6453.*
Cladonia incrassata Flörke – A: *6397.*
Cladonia squamosa Hoffm. – A: *6427.*
Coenogonium luteum (Dicks.) Kalb & Lücking – A: *6392.*
Cresponea sp. – A: *6435.*
Fissurina insidiosa Hook. & C. Knight – A: *6393.*
Heterodermia speciosa (Wulfen) Trevis. – B: *6451.*
Hypotrachyna livida (Taylor) Hale – A: *6420.*
Lecanora cinereofusca H. Magn. – A: *6387.*
Lecanora hybocarpa (Tuck.) Brodo – A: *6404.*
Lepraria sp. – A: *6415.*
Leptogium cyanescens (Rabenh.) Körber – A: *6395.*
Myelochroa aurulenta (Tuck.) Elix & Hale – A: *6425, 6434.*
Nadvornikia sorediata R.C. Harris – A: *6385, 6386.*
Opegrapha varia Pers. – B: *6444.*
Parmelia squarrosa Hale – A: *6390.*
Parmelinopsis horrescens (Taylor) Elix & Hale – B: *6447.*
Parmeliopsis subambigua Gyelnik – B: *6450.*
Parmotrema hypoleucinum (J. Steiner) Hale – B: *6452.*
Parmotrema hypotropum (Nyl.) Hale – A: *6384.*
Parmotrema subisidiosum (Müll. Arg.) Hale – A: *6400, 6401, 6414*
Parmotrema submarginale (Michx.) DePriest & B.W. Hale – A: *6413.*
Parmotrema xanthinum (Müll. Arg.) Hale – A: *6383, 6426.*
Pertusaria paratuberculifera Dibben – A: *6436.*
Pertusaria propinqua Müll. Arg. – A: *6402, 6439.*

Pertusaria subpertusa Brodo – A: *6388.*
Pertusaria velata (Turner) Nyl. (lichexanthone lacking chemotype) – B: *6445.*
Phaeocalicium polyporaeum (Nyl.) Tibell – A: *6409.*
Porina heterospora (Fink *ex* J. Hedrick) R.C. Harris – A: *6405, 6424.*
Punctelia rudecta (Ach.) Krog – B: *6446.*
Pyrenula punctella Trevis. – A: *6418.*
Pyrrhospora varians (Ach.) R.C. Harris – A: *6416.*
Tephromela atra (Huds.) Hafellner – A: *6433.*
Thelotrema monospermum R.C. Harris – A: *6389.*

Among the coastal plain species reaching their northern limit in Delmarva, perhaps *T. monospermum* is the most interesting. It was described from Florida (Harris 1990), and has not previously been found farther north (the report from North Carolina by Lendemer & Yahr (2004) was based on a misidentification).

Thelotrema subtile Tuck. – A: *6391, 6410.*
Usnea pensylvanica Motyka – A: *6398.*
Usnea strigosa (Ach.) A. Eaton – A: *6411, 6412, 6429*
Usnea subscabrosa Nyl. *ex* Motyka – A: *6382.*
Usnea trichodea Ach. – A: *6399, 6432.*
Lichenicolous fungus* (on *Pyrrhospora varians*) – A: *6430.*

The above collection is lichenicolous on the thallus of *Pyrrhospora varians* and the ascus type is similar to that of *Strangospora* (*fide* R.C. Harris), the asci are polysporous, and ascospores simple, hyaline 4.5-5.2 x 3-3.5µm.

Sterile isidiate crust – A: *6407.*
Sterile sorediate crust 4 (lecanoric acid) – A: *6428, 6440.*

New Reports For Maryland

Using the checklist of Uebel & Feuerer (2003) as a baseline, we report the following taxa for the first time from the state of Maryland.

Anzia americana Yoshim. & Sharp
Arthonia rubella (Fée) Nyl.
Arthothelium interveniens (Nyl.) Zahlbr.
Bacidina egenula (Nyl.) Vězda
Bathelium carolinianum (Tuck.) R.C. Harris
Buellia vernicoma Tuck.
Byssoloma leucoblepharum (Nyl.) Vainio
Byssoloma meadii (Tuck.) S. Ekman
Candelariella reflexa (Nyl.) Lettau
Chrysothrix candelaris (L.) J.R. Laundon
Chrysothrix flavovirens Tønsberg *s. lat.*
Cladonia ochrochlora Flörke
Cladonia polycarpia G. Merr.
Cladonia ramulosa (With.) J.R. Laundon
Cladonia sobolescens Nyl. *ex* Vainio
Coenogonium luteum (Dicks.) Kalb & Lücking
Coenogonium pineti (Ach.) Lücking & Lumbsch
Cresponea sp.
Dactylospora inquilina Hafellner*
Fissurina insidiosa Hook. & C. Knight
Lecanora cinereofusca H. Magn.

Lecanora minutella Nyl.
Lecanora subpallens Zahlbr.
Lecanora thysanophora R.C. Harris
Lepraria caesiella R.C. Harris
Lepraria aff. *incana* (L.) Ach.
Lepraria lobificans Nyl.
Lichenoconium erodens M.S. Christ. & D. Hawksw.*
Loxospora pustulata (Brodo & Culb) R.C. Harris
Minutoexcipula mariana V. Atienza*
Nadvornikia sorediata R.C. Harris
Opegrapha vulgata Ach.
Phaeocalicium polyporaeum (Nyl.) Tibell
Phaeographis inusta (Ach.) Müll. Arg.
Phlyctis ludoviciensis (Müll. Arg.) Lendemer
Physcia pumilior R.C. Harris
Pseudosagedia raphidosperma (Müll. Arg.) R.C. Harris
Punctelia missouriensis G. Wilh. & Ladd
Ramonia microspora Vězda
Schismatomma glaucescens (Nyl. *ex* Willey) R.C. Harris
Thelidium minutulum Körber
Thelotrema monospermum R.C. Harris
Thelotrema subtile Tuck.
Tuckermanopsis americana (Sprengel) Hale
Usnea pensylvanica Motyka
Usnea subscabrosa Nyl. *ex* Motyka

Discussion

The lichen flora of the Delmarva Peninsula is of considerable interest because the peninsula itself is geologically younger than the adjacent portions of the Inner Coastal Plain in Maryland and Virginia. Thus the land became available for colonization by terrestrial life after surrounding portions of the coastal plain. Since the terrestrial flora of the peninsula is younger than that of the surrounding coastal plain the composition of the vascular plant flora, and the distribution and frequency of some vascular plant species on the Peninsula differ significantly from other seemingly identical areas at comparable latitudes of the coastal plain. The geologic formations of the Coastal Plain west of the Chesapeake Bay, in descending percent of landmass, are from the Cretaceous, Tertiary: Pliocene, Tertiary: Miocene through Paleocene, and Quaternary formations (Schmidt 1992). The geologic formations of Maryland's Eastern Shore are markedly younger and are, in descending percent of landmass, from the Quaternary, Tertiary: Pliocene, Cretaceous, and Tertiary: Miocene through Paleocene formations (Schmidt 1992). These geologic differences may be the reason for the vegetative differences of these coastal areas, which are found at the same latitude. East of the Chesapeake Bay species that are frequent or common such as *Taxodium distichum, Alnus maritima* (Marsh.) Muhl. ex Nutt., *Symplocos tinctoria* (L.) L'Her., *Pityopsis graminifolia* (Michx.) Nutt., and *Pinus serotina* Michx. are rare or absent. The peninsula also hosts the northernmost occurrences of several habitats more typical of the southern coastal plain, most notable among these being extensive cypress swamps, two of which we visited.

The lichen flora of the Delmarva Peninsula clearly shows that the region is part of the transition zone between the southern and northern coastal plain, both hosting an assemblage of lichen taxa with an affinity to one or the other area (Brodo 1968, Lendemer 2006). Within eastern North America the coastal plain can be divided into two distinct subunits, one with a primarily tropical element and one with a primarily temperate/boreal element. The portion of the costal plain extending from Long Island, New York through southern New Jersey and the southern portion of the Delmarva Peninsula is essentially the

transition zone between these two major subunits of the coastal plain, a conclusion supported by Beaven & Oosting (1939).

The Delmarva Peninsula and adjacent southern New Jersey are significant in having many taxa at the northern or southern edge of their ranges within the coastal plain. The following taxa found on the Delmarva Peninsula fall into this category (taxa marked with a dagger have their northernmost record from southern New Jersey): *Anzia americana, Arthonia rubella, Arthothelium interveniens, Bathelium carolinianum, Brigantiaea leucoxantha, Byssoloma meadii, B. leucoblepharum, Candelariella reflexa*†, *Canoparmelia caroliniana, C. texana, Cresponea sp., Fissurina insidiosa*†, *Hypotrachyna osseoalba*†, *Opegrapha viridis, Parmelinopsis horrescens*†, *Parmotrema submarginale, P. xanthinum, Pertusaria epixantha, Phlyctis ludoviciensis, Porina heterospora, Pyrenula punctella, Ramonia microspora*, *Thelotrema monospermum*. Perhaps the most striking discovery was a population of *Thelotrema monospermum* in Pocomoke State Forest.

The distribution of some species within the coastal plain (and eastern North America) essentially follows the distribution of their typical substrates. On the Delmarva Peninsula two such taxa are *Lecanora minutella* with *Pinus rigida* and *Trypethelium virens* with *Ilex opaca*. Several species found in and north of southern New Jersey were also conspicuously absent from the Delmarva Peninsula; these include *Biatora longispora* and *B. printzenii*. As discussed by Lendemer (2006), the lichens of the coastal plain in North America, especially with respect to the crustose taxa, are very poorly known, and discoveries continue to be made, even in areas purported to be well studied.

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Literature Cited

Beaven, G.F. and H.J. Oosting. 1939. Pocomoke Swamp: A Study of a Cypress Swamp on the Eastern Shore of Maryland. Bulletin of the Torrey Botanical Club, 66: 367-389.

Biechele, L.T. 2002. The lichen flora of the lower eastern shore of the Delmarva Peninsula. Evanisa, 19(1): 17-19.

Brodo, I.M. 1968. The Lichens of Long Island, New York: A Vegetational and Floristic Analysis. Bulletin of the New York State Museum. & Science Service, no. 410, i-330 pp.

Harris, R.C. 1990. Some Florida Lichens. Publ. by the Author, Bronx, N.Y. 109 pp.

Harris, R.C. and J.C. Lendemer. 2005. Contributions to the Lichen Flora of Pennsylvania: A Checklist of the Lichens Collected During the 1st Howard Crum Bryological Workshop, Delaware Water Gap National Recreation Area. Opuscula Philolichenum, 2: 1-10.

Lendemer, J.C. 2006. Contributions to the Lichen Flora of New Jersey: A Checklist of the Lichens of Wharton State Forest. Opuscula Philolichenum, 3: 21-40.

Lendemer, J.C. and Yahr, R. 2004. Changes and additions to the checklist of North American Lichens. – II. Mycotaxon, 90(2): 319-322.

Schmidt, M.F. 1993. Maryland's Geology. Tidewater Publishers, Centreville, MD.

Uebel, E. and T. Feuerer, 2003. Checklist of lichens and lichenicolous fungi of Maryland (USA). Version November 2004. http://www.checklists.de.

Appendix

Table 1. Primary substrates for taxa. L = lichenicolous; L/M = lignicolous/muscicolous; S = saxicolous; T = terricolous; C = conifer; H = hardwood; O = other.

Taxon	L	L/M	S	T	C	H	O
Amandinea punctata						x	
Anisomeridium polypori						x	
Anzia americana						x	
Anzia colpodes						x	
Arthonia caesia						x	
Arthonia rubella						x	
Arthothelium interveniens						x	
Bacidia schweinitzii						x	
Bacidina egenula			x				
Bathelium carolinianum						x	
Brigantiaea leucoxantha						x	
Buellia curtisii						x	
Buellia vernicoma						x	
Buellia stillingiana						x	
Byssoloma meadii						x	
Byssoloma leucoblepharum						x	
Calicium salicinum		x					
Candelaria concolor						x	
Candelariella reflexa						x	
Canoparmelia caroliniana					x		
Canoparmelia crozalsiana						x	
Canoparmelia texana						x	
Chrysothrix candelaris						x	
Chrysothrix flavovirens					x		
Cladonia didyma		x					
Cladonia grayi		x		x			
Cladonia incrassata		x		x	x		
Cladonia macilenta		x			x		
Cladonia ochrochlora		x				x	
Cladonia parasitica		x					

Table 1. *Continued*.							
Taxon	L	L/M	S	T	C	H	O
Cladonia polycarpia				x			
Cladonia polycarpoides				x			
Cladonia ramulosa		x					
Cladonia sobolescens				x			
Cladonia squamosa					x		
Cladonia subtenuis				x			
Coenogonium luteum						x	
Coenogonium pineti		x					
Cresponea sp.					x		
Dactylospora inquilina	x						
Fissurina insidiosa						x	
Flavoparmelia caperata						x	
Heterodermia obscurata						x	
Heterodermia speciosa						x	
Hypotrachyna livida						x	
Hypotrachyna osseoalba					x		
Lecanora sp. 1		x(?)				x	
Lecanora sp. 2						x	
Lecanora cinereofusca						x	
Lecanora hybocarpa						x	
Lecanora minutella					x		
Lecanora strobilina						x	
Lecanora subpallens						x	
Lecanora thysanophora						x	
Lecidea plebeja		x					
Lepraria sp.						x	
Lepraria caesiella						x	
Lepraria aff. incana						x	

Table 1. *Continued*.							
Taxon	L	L/M	S	T	C	H	O
Lepraria lobificans						x	
Leptogium cyanescens						x	
Lichenoconium erodens	x						
Lobaria quercizans						x	
Loxospora pustulata						x	
Micarea erratica			x				
Minutoexcipula mariana	x						
Myelochroa aurulenta						x	
Nadvornikia sorediata						x	
Ochrolechia pseudopallescens						x	
Opegrapha sp.						x	
Opegrapha varia						x	
Opegrapha viridis						x	
Opegrapha vulgata						x	
Parmelia squarrosa						x	
Parmelinopsis horrescens					x		
Parmelinopsis minarum						x	
Parmeliopsis subambigua					x		
Parmotrema hypoleucinum					x		
Parmotrema hypotropum						x	
Parmotrema perforatum						x	
Parmotrema subisidiosum						x	
Parmotrema submarginale						x	
Parmotrema xanthinum						x	
Peltigera praetextata		x					
Pertusaria epixantha						x	
Pertusaria multipunctoides						x	
Pertusaria ophthalmiza						x	

Table 1. *Continued*.							
Taxon	L	L/M	S	T	C	H	O
Pertusaria paratuberculifera						x	
Pertusaria propinqua						x	
Pertusaria subpertusa						x	
Pertusaria texana						x	
Pertusaria velata						x	
Phaeocalicium polyporaeum							x
Phaeographis inusta						x	
Phaeophyscia rubropulchra						x	
Phlyctis ludoviciensis						x	
Physcia americana						x	
Physcia millegrana						x	
Physcia pumilior						x	
Placynthiella sp.		x					
Placynthiella uliginosa				x			
Porina heterospora						x	
Pseudosagedia cestrensis						x	
Pseudosagedia raphidosperma						x	
Punctelia missouriensis						x	
Punctelia rudecta						x	
Punctelia subrudecta					x	x	
Pyrenula pseudobufonia						x	
Pyrenula punctella						x	
Pyrrhospora varians					x	x	
Pyxine sorediata						x	
Ramonia microspora						x	
Schismatomma glaucescens						x	
Scoliciosporium chlorococcum						x	
Tephromela atra						x	

Table 1. *Continued*.							
Taxon	L	L/M	S	T	C	H	O
Thelidium minutulum			x				
Thelotrema monospermum					x		
Thelotrema subtile						x	
Trapeliopsis flexuosa		x			x		
Trypethelium virens							x(Ilex)
Tuckermanopsis americana					x		
Usnea pensylvanica						x	
Usnea strigosa						x	
Usnea subscabrosa					x		
Usnea trichodea					x		
sterile isidiate crust						x	
sterile sorediate crust 1						x	
sterile sorediate crust 2						x	
sterile sorediate crust 3						x	
sterile sorediate crust 4						x	
sterile sorediate crust 5						x	
sterile sorediate crust 6						x	
sterile sorediate crust 7						x	