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of the New York State Museum Association

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A New Lichen for New York State, and a Brief History of Lichenology in New York

by Scott LaGreca, Harvard University Herbaria

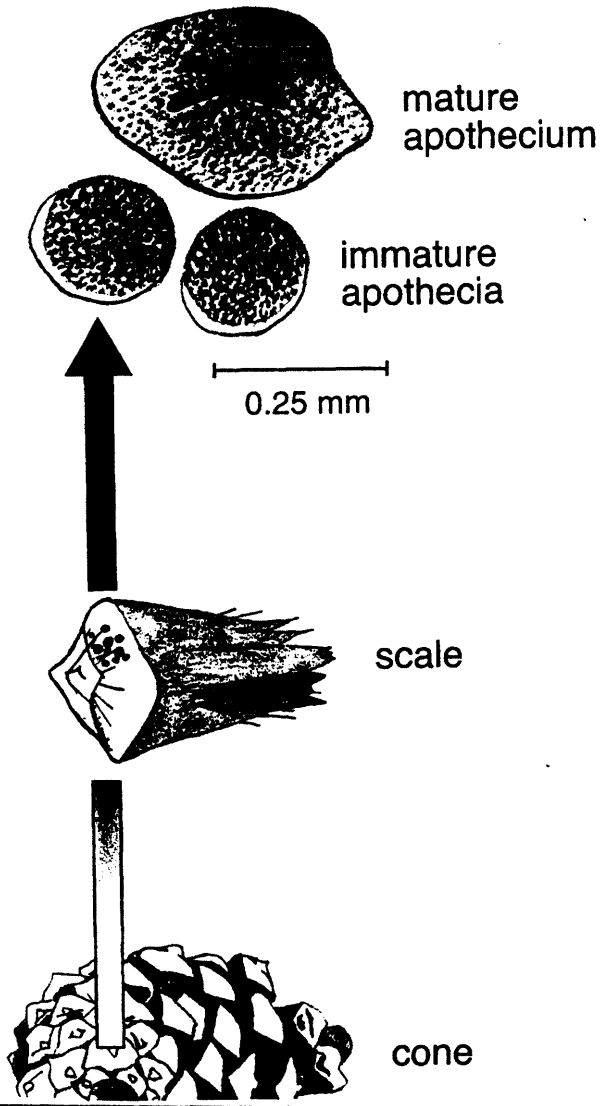
While driving home to Syracuse from Boston in May 2000, I took a short detour to visit the Pine Bush State Unique Area in the town of Guilderland, near Albany. Unfortunately, I didn't find the classic pine barrens that I had heard about (so I'll have to return with someone who knows the area better); I certainly saw a lot of pitch pines, however, and on some of those trees I found the tiny lichen *Lecanora minutella* Nyl. – a new lichen for New York State.

You need a hand-lens to find this lichen, since its dark brown to pale red-brown fruiting bodies (apothecia) are only 0.15-0.35 mm in diameter (see figure). A diagnostic character is the grayish or pale orange apothecial margin, which will only be seen on immature apothecia. Like all members of the genus *Lecanora*, it has hyaline, non-septate spores, which should help separate it from other, superficially similar lichens that may grow with it (*eg. Buellia* spp.).

Many of the apothecia of the specimens I collected were overgrown with a greenish-brown scurf. Microscopic examination showed that this was the vegetative thallus of the lichen *Scoliciosporum chlorococcum* (Stenh.) Vezda, which may bear tiny, black, round apothecia with long, dark, septate spores. On the trunks of the pitch pines I also found luxuriant growths of *Hypocenomyce scalaris*, another pitch pine specialist (Dirig, 1990).

Lecanora minutella occurs throughout the eastern and central United States, primarily on the cones of pitch pine (*Pinus rigida*). It only grows on older cones that have opened up, on scales which have maximum sun exposure (which is usually the top of the cone: see figure). It can also sometimes be found on pitch pine bark, the bark and cones of other pines, and on juniper wood. Until very recently, this lichen has been overlooked, probably because of its small size and unusual substrate preference (pine cones are not often examined as possible lichen substrates). As more botanists become aware of it, however, our knowledge of its distribution is improving (see LaGreca and Lumbsch, 2001 for a more complete account).

Label information for the specimen I collected is: Albany Co.: Town of Guilderland: just northwest of the city of Albany. On north side of Lydius St. East near intersection with Kings Road. On *Pinus rigida* cones



The Lichen, *Lecanora minutella* Nyl., was recently found in New York State for the first time. It grows on the cone scales of pitch pine, *Pinus rigida*.

taken off of branches which have fallen to the ground. LaGreca 561, 12 May, 2000. Duplicates are deposited in FH and NYS.

Upon returning to Boston, I contacted Bob Dirig (BH, CUP), Dick Harris (NY) and Claire Schmitt (NYS), who verified that my collection was indeed the first state record of this lichen. These three people manage the state's largest lichen herbaria and are actively studying the state's lichen flora. Bob Dirig focuses on macrolichens throughout the state (Dirig, 1986), especially the Pine Bush, Long Island (Dirig, 1994a, 1996) Shawangunk Mountains (Dirig 1992, 1994b), and Catskills; Claire Schmitt specializes in lichens of the Adirondacks (Schmitt, 1994, Schmitt and Slack, 1990); and Dick Harris, who is the state's only professionally trained lichenologist, looks comprehensively at the entire lichen flora of New York (Harris, 1989, 1994; Harris and Buck, 2000; Harris *et al.*, 1987; Royte *et al.*, 1985), with a special focus on pyrenolichens. Together with bryologist Bill Buck (NY) – a formidable lichenologist in his own right – he organized two major lichen identification workshops in New York State: one in the Catskills (May, 1994) and one in Limerick, Jefferson County (May, 1997).

Background:

Lichens are dual organisms, consisting of a fungus (most of the biomass of the lichen) living in an intimate symbiotic association with either a green alga or cyanobacterium ("blue-green alga"). They are fascinating because they combine to produce macroscopic thalli that perennate above ground, much like vascular plants. Traditionally, mycologists, algologists, bacteriologists and vascular-plant botanists have shown little interest in lichens, so lichen enthusiasts are often left to pursue their work in isolation.

For example, two of the state's more prolific lichen collectors, Stewart H. Burnham and Roy Latham, had no serious training in lichenology. The first State Botanist of New York, Charles H. Peck was a notable exception, however. His main interests (at least later in life) were mycology and bryology, but he still collected lichens extensively. Most of Peck's specimens are now housed at NYS. Although he undoubtedly included lichens in his official "Reports of the State Botanist", the only list I could find was in his report: "Plants of the summit of Mt. Marcy" (1880). Those who wish to wade through his annual reports for more lichen lists should probably consult Barnhart (1889) first.

History:

The first surveys of the New York's lichen flora took place in the New York City area and on Long Island. One of the earliest published accounts is Halsey's (1823) list of lichens collected "in the vicinity of New York". Other early collections from New York City include those of George Brainerd and George Hulst during the 1860s (now deposited at BKL) and Edmond Southwick from 1896 to 1902 (now at NY; Prince, 1977).

Lichens are sensitive to pollution, and they are some of the first plants to disappear from developing industrial and housing areas; therefore, early collections provide a good basis for reconstructing the lichen flora of the New York City area prior to urbanization (Brodo, 1968). In the late 1800s and early 1900s, many people collected lichens from Long Island in connection with other, regional, vascular flora projects. Collectors included: Stanley Cain; Abel J. Grout; S.E. Jelliffe (1899); G.S. Wood (1905, 1914); and Burnam and Latham (Burnham and Latham, 1914-1925; Latham, 1945-1948; Latham, 1949).

Roy Latham was especially prolific: his collection of ca. 2000 specimens makes up a sizable portion of the NYS lichen herbarium (Dirig, 1994a). Another botanist of this period with a strong interest in lichens was Raymond Torrey, a distant relative of John Torrey, for whom the Torrey Botanical Club was named. Together with Gladys Anderson, R. Torey collected extensively in the vicinity of New York City (Torrey, 1932, 1933, 1935) as well as upstate (1934a-b); these collections are now housed at the New York Botanical Gardens (NY).

The Long Island lichen flora was the dissertation topic of Irwin (Ernie) Brodo, who, along with Dick Harris, received his Ph.D. under the tutelage of lichenologist Henry Imshaug (MSC). The Lichens of Long Island, New York (Brodo, 1968), and his ecological studies (Brodo, 1961, 1965, 1966), still stand as the definitive lichen treatments for this part of New York State. Future work may be needed, though, as suggested by a recent survey of Kings and Queens Counties (Delendick, 1994), which revealed that some lichens may be recolonizing that part of western Long Island, perhaps as a result of recently improved air quality there.

Upstate, the most detailed lichenological investigation was probably Josiah Lowe's astute thesis on *Lecidea* of the Adirondack Mountains (Lowe, 1939). Although his nomenclature is now out-of-date, Lowe's species concepts were solid. Another remarkable study of upstate New York lichens is that of George Clinton and Mary Wilson, who provided the lichen section in Day's flora of the Buffalo region (Day, 1883). Their extensive collecting in this region throughout the 1870s provides important baseline information on the lichen flora of that period (Harris, 1987). Their specimens can be found at The Buffalo Museum of Science (BUF).

In addition to his Long Island work, Stewart Burnham was very interested in the lichens of the Lake George region (Burnham, 1922), where he spent his childhood. In 1934, Charles Plitt reported further on the lichens of this region (Plitt, 1934). Both studies (especially Plitt's) relied on the many collections of Frank Dobbin, mainly from Shushan (Washington County). Soon after this, Lucy Raup (1938), published a short list of lichens found at the Black Rock Forest (Orange County) as part of a

general forest survey organized by her husband, Dr. Hugh Raup (of the Arnold Arboretum, Harvard Univ.).

Babette Brown's ambitious statewide epiphyte survey (Brown, 1948a) included lichens; her classic work in Bergen Swamp, Genesee County (Brown, 1948b) was particularly noteworthy. Her specimens were deposited at Cornell (CUP), where she studied under Walter Muenscher. In 1952, the Mycological Society of America went on a foray near Ithaca, Tompkins County, and reported 27 species of lichens (Rudolph, 1954). Later that decade, Ernie Brodo (then, like Brown, a graduate student at Cornell), sampled the lichen flora of the Shackleton Point Biological Station on Oneida Lake, Madison County. Brodo also put together the list of lichens found during the 1963 foray of the American Bryological and Lichenological Society to the High Peaks of the Adirondacks, Essex County (Redfearn and Thomson, 1965).

A list of 28 lichen species was published for Westchester County in 1979 by C. Richard Prince, Dick Harris' predecesor at NY. In the 1990s, Elizabeth Kneiper and Elisabeth Lay compiled a lichen list for the Ashokan region of the eastern Catskills, Ulster County (Bierhost, 1995), and Marian Glenn and colleagues used lichens as air pollution indicators at sites near New York City (Glenn and Webb, 1997, Orsi and Glenn, 1991). Most recently, the Forest Health Monitoring Program (http://www.na.fs.fed.us/spfo/fhm/index.htm) has been using lichen communities across upstate New York as indicators of forest health (these data have not yet been published, but see McCune, 2000 for a general discussion).

Other important New York State lichen collectors include Carolyn Harris (Long Island and Adirondacks; Harris, 1906, 1907; Wood, 1905), George Nearing (Shawangunk Mountains, the Lower Hudson Valley, and New York City; Nearing, 1939-1940), Dan Smiley (Shawangunk Mountains; Smiley, 1940, Smiley and George, 1974), and Annie Morrill Smith (Adirondacks; Harris, 1907). In addition, both Burnham (1922) and Torrey (1932, 1934b) acknowledged many upstate collectors, too numerous to list here. Many botanists have, through the years, commented on the unusual Shawangunk Mountain lichen flora (see Dirig, 1994b for a complete list).

The New York State Museum, in Albany, houses an extensive archive of black and white photographs of lichens, mostly taken by the third State Botanist, Eugene Ogden, who also took a great interest in the field.

For those interested in pursuing lichenology in New York State, I would suggest Brodo's 1968 work for Long Island and vicinity; for all other areas, I recommend his (1988) Lichens of the Ottawa Region (2nd ed.) and The Lichens of Southern Ontario, Canada (Wong and Brodo 1992). I also highly recommend his upcoming book Lichens of North America (co-authored with Sylvia and Stephen Sharnoff), which will be published this year by Yale University Press. To place an order, visit: www.lichen.com

Acknowledgments:

I would like to thank the "lichen group" of Harvard University, and H. Thorsten Lumbsch, for introducing me to *Lecanora minutella*. I am also grateful to Bob Dirig, Doug Goldman and Dick Harris for their comments on the text. Much of the information in the review portion of this article was compiled from other sources, especially Brodo (1968), Dirig (1994b), and House (1942).

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NYFA Field Trip June 8-9, 2001

The New York Flora Association has scheduled a field trip to visit wetlands located along the eastern shore of Lake Ontario in Oswego County. We hope to see some of the interesting fen communities and red maple-tamarack peat swamps, as well as swales scattered within the Great Lakes dunes system.

Plants that we expect to see include *Arethusa bulbosa*, *Calopogon tuberosus*, *Carex chordorrhiza*, *Prunus pumila* var. *pumila* and *Salix cordata*. The flora of the local fen communities is unique, and the Oswego area offers some of the best examples in the state. In order to see some of the more interesting areas, **we will have to get wet.** All those who attend should plan on occasionally wading through water that may be just above the knee. Since seeing *Arethusa* populations is a focus of this trip, wading through is a necessity.

For those who are able to arrive Friday evening, we are planning a NYFA meeting and demonstration of the new beta-version of a NYFA Digital Plant Atlas. This is an update of Preliminary Vouchered Atlas of New York State Flora produced by our organization in 1990. The digital plant atlas, once installed, will invite all herbaria with New York flora information to upload county level data to a common database from which web-based maps for each species will be generated.

Following the demonstration, Dr. Andrew Nelson of the Rice Creek Field Station will present a seminar discussing the flora and ecology of Oswego County.

Schedule

Friday Evening:
NYFA meeting (7 p.m.);
Atlas demo by Troy Weldy (7:30 p.m.)
Seminar by Andy Nelson (8 p.m.)
all at the Rice Creek Field Station
Saturday 9-4: Field trip to Oswego County Wetlands
Saturday evening: Dinner (local restaurant to be determined)
Sunday: Return home - those who spend Saturday night.

Lodging: There are numerous hotels in Oswego with campgrounds scattered around the region. We have conducted some research to assist those in finding a room in the area. The cost for these options follows:

Days Inn-Oswego [315-343-3136]: $67/night if you call the phone number but as low as $55/night (depending on options selected) if you reserve through their website: http://www.the.daysinn.com/oswego05065

Best Western -Captain's Quarters [(800) 528-1234]: rack rate of $96/night

Twin Pines Cabins & Campsites [(315) 343-2475]: cabin $60/night - two people; $25 per extra person.

Selkirk Shores State Park offers additional camping.

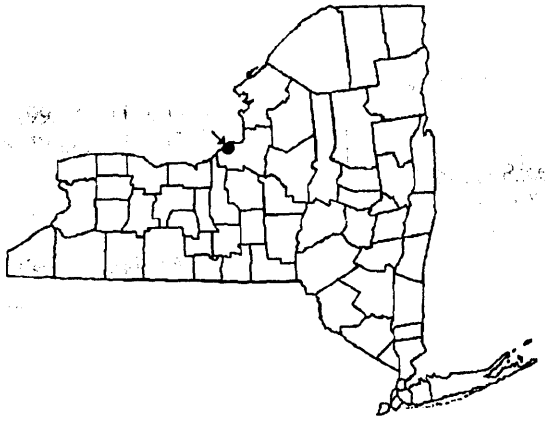
Directions to Rice Creek Field Station

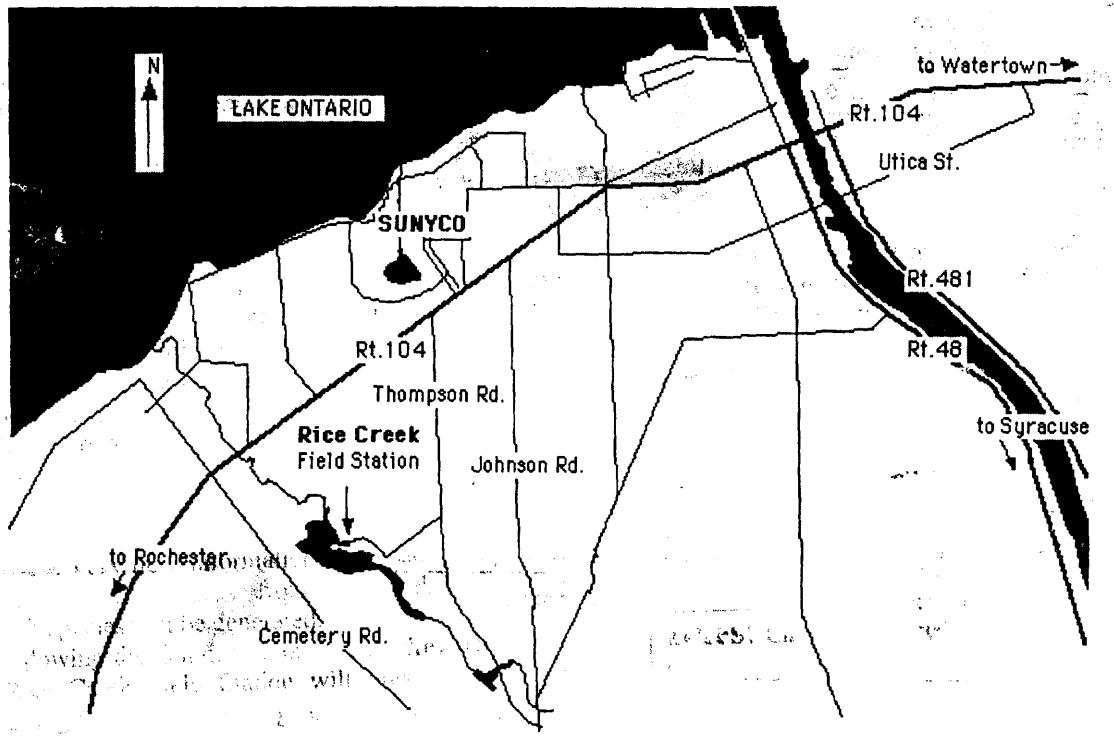
See the map on page six: Rice Creek Field Station is located near the eastern end of the Lake Ontario Lake Plain, near the western edge of the City of Oswego, Oswego County, New York. The main building at the field station is approximately 1.5 mi from the SUNY Oswego Campus and the shoreline of Lake Ontario. The entrance to the field station grounds is on Thompson Road, a mile south of its junction with New York State Route 104, immediately west of the main entrance to the SUNY Oswego campus.

Additional information on the Rice Creek Field Station: http://www.oswego.edu/other_campus/rcreek/

Questions? Please contact Troy Weldy at: twweldy@gw.dec.state.ny.us or (518) 783-3926.

Dues: Check your envelope (above your address) to see the last year you paid up. Stay with us, please! We don't want to lose you.

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