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Wynns, Anja Amtoft

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Author(s): Anja Amtoft

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Pyxine subcinerea in the Eastern United States

ANJA AMTOFT

New York Botanical Garden, Bronx, NY 10458-5126, U.S.A.

Abstract. *Pyxine subcinerea* Stirton is newly reported for New York State. The distribution of *Pyxine subcinerea* in the eastern United States is established. Morphological and chemical differences between *P. subcinerea*, *P. albovirens*, and *P. caesiopruinosa* are recognized, clarified, and expanded upon.

While collecting to develop a baseline list of lichens for the New York Botanical Garden Grounds I encountered *Pyxine subcinerea* Stirton. It is new to the state of New York (Harris, pers. com.). This pantropical/subtropical species was recorded in the United States from Arizona only relatively recently (Nash 1985). Previously it had been confused with *P. caesiopruinosa* (Nyl.) Imshaug and *P. sorediata* (Ach.) Mont. (Imshaug 1957). When Culberson and Hale (1965) discovered that *P. caesiopruinosa* differed from *P. sorediata* in having lichexanthone in the cortex and not atranorin, they included *P. subcinerea* in their concept of *P. caesiopruinosa*. As a result of this confusion the distribution of *P. subcinerea* in eastern North America has not been well understood. In order to clarify its distribution as well as document the northern range extension noted above, I compiled eastern United States records based on 233 herbarium specimens from DUKE, NY, and US.

The specimens from DUKE and US were filed and mixed with *P. albovirens* (G. Meyer) Aptroot or *P. caesiopruinosa*. Aptroot (1987) considered *P. caesiopruinosa* as synonymous with *P. albovirens*. Harris (1995) preferred to recognize two species based on differences in asexual reproductive structures and terpenoid chemistry (Fig. 1), but could not determine the application of the names as Aptroot did not indicate whether the type of *Lecidea albovirens* G. Meyer bore dactyls (isidangia sensu Kalb 1987; schizidia sensu Brodo et al. 2001) or soralia. This seemed an opportune time to resolve the problem. The lectotype was borrowed from (GOET) and discovered to be soraliolate. Kalb (1987) and Harris (1995) had found the type of *P. cocoes* var. *caesiopruinosa* Nyl. to bear marginal dactyls. (The original description [Syn. lich. 2: 2. 1869] is clearly attributable to Nylander alone and not “Tuck. in Nyl.” and the citation in Esslinger (2001) should be corrected.) Thus what previously has been considered a single taxon with lichexanthone (*P. caesiopruinosa*) is now treated as three species, *P. caesiopruinosa*, *P. albovirens*, and *P. subcinerea*.

In the eastern United States, five species of *Pyxine* react UV+ golden-yellow due to the presence of lichexanthone in the upper cortex: *Pyxine subcinerea*, *P. caesiopruinosa*, *P. albovirens*, *P. cocoes* (Sw.) Nyl., and *P. berteriana* (Fée)Imshaug. *Pyxine subcinerea* can be distinguished from *P. albovirens* and *P. caesiopruinosa* by its yellow medulla (K–) that can vary from pale yellow (rarely almost white) to a yellowish salmon-orange in (poorly dried?) herbarium specimens (DUKE). *Pyxine subcinerea* bears marginal to laminal, crescent shaped or irregularly rounded soralia of farinose pale yellow soredia, and when present, dense pads to scattered patches of pruina. Both *Pyxine caesiopruinosa* and *P. albovirens* are usually more robust and have a salmon colored medulla (K+ purple) that is thicker than that of *P. subcinerea*. *Pyxine caesiopruinosa* can be separated from *P. albovirens* by its marginal dactyls (schizidia) and coarse soredia. *Pyxine albovirens* has round laminal to sometimes marginal soralia and smaller, more numerous soredia. In Brodo et al. (2001) couplet 29 on p. 548 leading to *P. caesiopruinosa* should be changed to *P. albovirens* since it is *P. albovirens* that does not bear marginal schizidia.

Also Brodo et al. (2001) stated “*Pyxine subcinerea* is almost identical to *P. cocoes* except the medulla is yellow.” Actually *Pyxine subcinerea* is more likely to be confused with small forms of *P. albovirens*. *Pyxine cocoes*, in addition to having a white medulla, has mostly laminal small punctiform irregularly shaped soralia, with rather few granular soredia, pads of pruina, and commonly bears apothecia. The distribution of *Pyxine caesiopruinosa* and *P. albovirens* overlaps with that of *P. subcinerea* in the southern Coastal Plain, North Carolina west to Texas. *Pyxine cocoes* is less common and found only in northern Florida southwards. *Pyxine berteriana* can be distinguished from the other four UV+ *Pyxine* species by its lack of asexual reproductive structures and its restricted distribution to southern Florida.

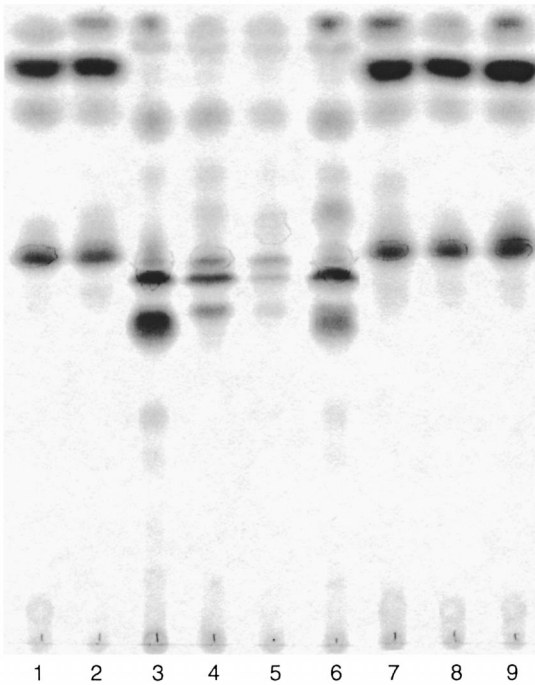


FIGURE 1. Terpenoid patterns of *Pyxine* spp. [Solvent G (Culberson et al. 1981), Merck Silica Gel 60 F254]. — 1. *Pyxine subcinerea*, Missouri, Harris 25949 (NY). — 2. *P. subcinerea*, Alabama, Evans 49 (NY). — 3. *P. caesiopruinosa*, Florida, Harris 37086 (NY). — 4. *P. albovirens*, Florida, Harris 41756 (NY). — 5. *P. albovirens*, Suriname (type, GOET). — 6. *P. caesiopruinosa*, Alabama, Harris 28380 (NY). — 7. *P. subcinerea*, Mississippi, Harris 28794 (NY). — 8. *P. subcinerea*, Indiana, Hale 14081A (US). — 9. *P. subcinerea*, Kentucky, Hale 13437 (US).

KEY TO THE UV+ PYXINE SPECIES OF THE EASTERN UNITED STATES

- 1. Medulla yellow or white, K- or K+ yellow 2
- 2. Asexual reproductive structures present 3
- 3. Medulla yellow, soredia in ± discrete crescent shaped to irregularly rounded soralia, soredia powdery, pruina on lobe tips present in dense pads to scattered patches or absent, apothecia rare, collected in northern Florida northwards *P. subcinerea*
- 3. Medulla white, soredia in scattered punctiform soralia or in dense clusters and then forming linear patches, soredia coarse, lobes often with horizontal cracks, pads of pruina on lobes, apothecia common, collected in northern Florida southwards *P. cocoes*
- 2. Asexual reproductive structures absent, collected in southern Florida *P. berteriana*
- 1. Medulla pale salmon-orange, K+ purple, collected in the Coastal Plain, North Carolina to Florida 4
- 4. Lobes with distinctly round, laminal soralia *P. albovirens*
- 4. Lobes with marginal dactyls and coarse soredia *P. caesiopruinosa*

The distribution of *P. subcinerea* in the eastern United States is fairly broad (Fig. 2). With collections ranging from New York, Illinois, and Ohio to Florida, Louisiana, and Texas its range spans from the subtropical to the more temperate regions of the eastern United States.

Pyxine subcinerea is mostly a corticolous species that can be found growing on species of *Carpinus*, *Carya*, *Hibiscus*, *Juniperus*, *Liquidambar*, *Magnolia*, *Prunus*, *Quercus*, *Robinia*, and *Ulmus* in the

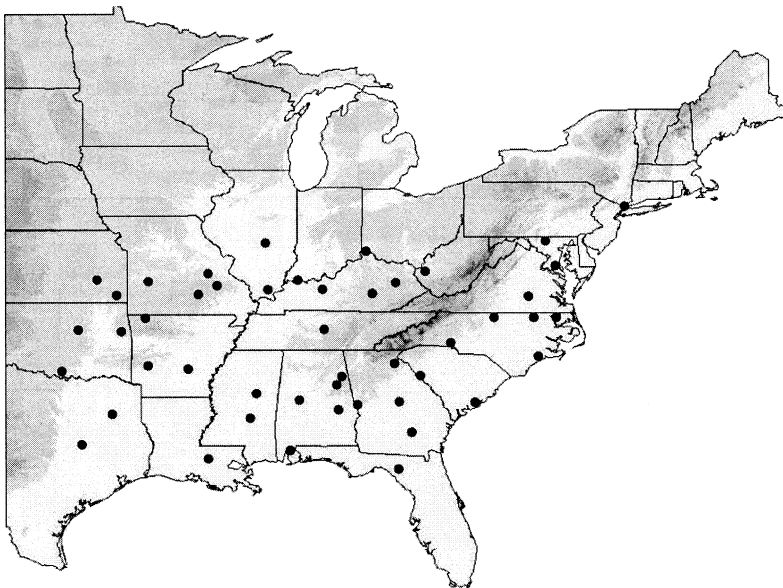


FIGURE 2. The distribution of *Pyxine subcinerea* in the eastern United States based upon representative herbarium specimens examined in DUKE, NY, and US.

eastern United States. There are only a few collections on mortar, rock, and dead wood. *Pyxine subcinerea* appears to prefer low elevations (Fig. 2). It can be found in hardwood-pine forests, on roadside trees and in open areas such as yards, farms, gardens, and glades. The specimens of *Pyxine subcinerea* found in the Botanical Garden were growing in part shade, within knee length to ground, on the base of a *Carya cordiformis*, *Quercus alba*, and *Quercus palustris*.

In New York, *Pyxine subcinerea* is known in Bronx County only from the Botanical Garden Grounds and Woodlawn Cemetery (where it was seen by the author, but not collected). It is not clear if *P. subcinerea* has existed in New York for some time, or if it was introduced to the state by way of a tree or shrub brought into the Botanical Garden. In order to understand its establishment and to track its possible migration northwards, more populations of *P. subcinerea* should be sought in New York and the New England states, especially in the coastal regions. The population of *P. subcinerea* in Bronx County should be monitored carefully. Until more populations of *Pyxine subcinerea* are found, its conservation status in New York should be considered rare and added to a watch list.

Specimens examined.—U.S.A. NEW YORK. Bronx Co., The New York Botanical Garden, in legume collection on the base of *Carya cordiformis*, 1 Dec 2000, *Amtoft* 15 (NY), along the north end of the wetlands trail on the base of *Quercus alba*, 23 July 2001, *Amtoft* 174 (NY), along

the NE corner just past the pinetum on the base of a *Quercus palustris*, 7 Sep 2001, *Amtoft* 210 (NY).

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