

Foliicolous Lichens from Southeastern United States

Abstract. *Eleven species of foliicolous lichens from southeastern United States are reported. Among these are three new reports for continental United States: Asterothyrium leucophthalmum (Müll.Arg.) R. Sant., Echinoplaca intercedens Vězda and Tricharia santessonii Hawksw. The taxonomy of the Lopadium fuscum group is reexamined, and it is concluded that the specimens from the U.S. are to be identified as Lopadium puiggarii (Müll.Arg.) Zahlbr.*

During the 1976 American Bryological and Lichenological Society foray in Louisiana and during a field trip in northwestern Florida, I found several foliicolous lichens. This paper deals with the study of that collection. Table 1 gives a summary of the results.

In his world-wide monograph on foliicolous lichens, Santesson (1952) mentioned 11 species in the continental United States, mainly in the southeast. They are: *Opegrapha filicina* Mont. (only on bamboo culms), *Strigula elegans* (Fée) Müll.Arg., *S. complanata* (Fée) Mont., *Porina thaxteri* R.Sant. (type locality in Florida), *Gyalectidium filicinum* Müll. Arg., *G. rotuliforme* Müll. Arg., *Catillaria bouteillei* (Desm.) Zahlbr., *Byssoloma tricholomum* (Mont.) Zahlbr., *B. leucoblepharum* (Nyl.) Vain., *B. subdiscordans* (Nyl.) P. James [= *B. rotuliforme* (Müll. Arg.) R.Sant.], *Tapellaria epiphylla* (Müll.Arg.) R.Sant. and *Lopadium puiggarii* (Müll. Arg.) Zahlbr.

In the foliicolous lichens preserved at the Farlow Herbarium (FH), I found two other species occurring in the U.S.: *Aulaxina microphana* (Vain.) R.Sant. and *Lopadium fuscum* Müll.Arg. (Sérusiaux, 1976).

Critical taxa are briefly discussed in the following paragraphs.

Aulaxina microphana (Vain.) R.Sant., Symb. Bot. Upsal. XII (1):299. 1952. Basionym: *Bilimbia microphana* Vain., Ann. Acad. Scient. Fennicae, ser. A, 15, III: 87. 1921.

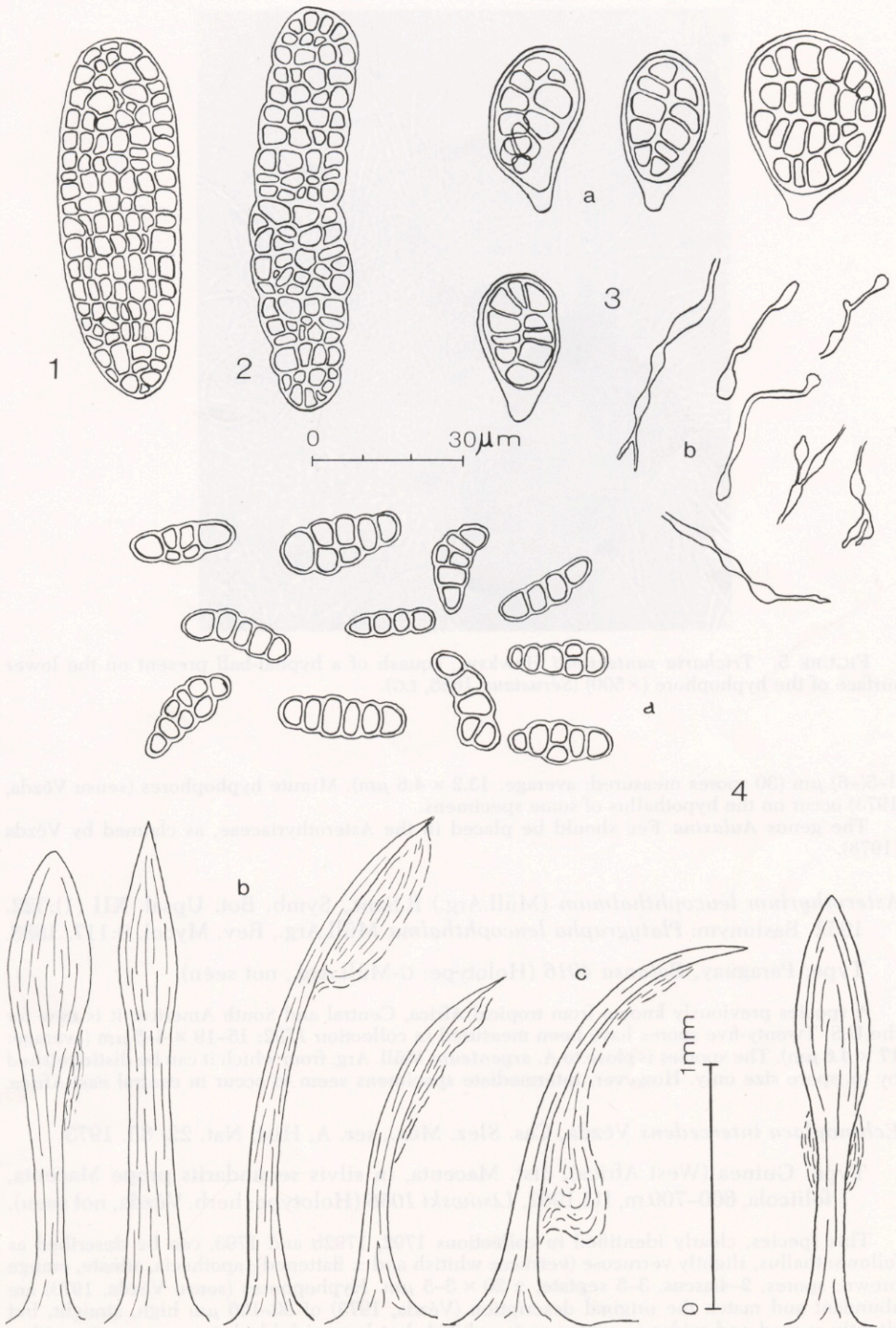
Type: Philippines, Polillo, *Robinson* VIII.1909 (Holotype: TUR:-Vainio 21552!)

The species was first described from a Philippines collection (Santesson, 1952) and considered endemic to that archipelago until it was found in Guinea (West Africa) by Vězda (1974) and in the U.S. by myself (1976).

The species is abundant in the Appalachian National Forest. It can be briefly described as follows: thallus irregular and dispersed, aligerous patches irregular in outline, usually monocarpous, greenish brown, slightly nitidous and with a distinct corticiform layer; apothecia abundant, like a truncate cone, 0.1-0.25 mm diam., with a grey, non-pruinose disc and a prominent, thin, black, nitidous margin; excipule brownish black, hymenium uncolored, 1-, paraphyses branched and anastomosing; asci, clavate; spores, 8/ascus, ellipsoid, 3-(exceptionally) 4-septate (very exceptionally with one longitudinal septum), slightly constricted at the septa, 11-15(-16) ×

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FIGURE 1-4 — 1. *Lopadium puiggarii* (Müll.Arg.) Zahlbr., spore (Sérusiaux 1792, LG). — 2. *Tapellaria epiphylla* (Müll.Arg.) R.Sant., spore (Sérusiaux 1792, LG). — 3. *Echinoplaca intercedens* Vězda, a = asci with spores, b = hyphae present on lower surface of hyphophores (Sérusiaux 1792b, LG). — 4. *Tricharia santessonii* Hawksw., a = spores (*Thaxter* 2301, UPS); b = hyphophores (*Thaxter* 2301, UPS); c = hyphophores (holotype, So CB673, IMI).



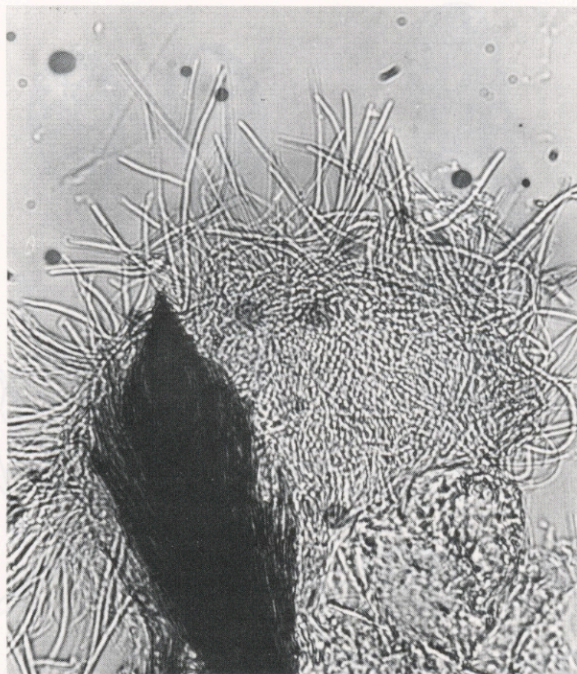


FIGURE 5. *Tricharia santessonii* Hawksw., squash of a hyphal-ball present on the lower surface of the hyphophore ($\times 500$) (Sérusiaux 1685, LG).

3–5(–6) μm (30 spores measured; average: $13.2 \times 4.6 \mu\text{m}$). Minute hyphophores (sensu Vězda, 1973) occur on the hypothallus of some specimens.

The genus *Aulaxina* Fée should be placed in the Asterothyriaceae, as claimed by Vězda (1978).

Asterothyrium leucophthalmum (Müll.Arg.) R.Sant., Symb. Bot. Upsal. XII (1):322. 1952. Basionym: *Platygrapha leucophthalma* Müll.Arg., Rev. Mycol. 9:117. 1888.

Type: Paraguay, *Balansa 4016* (Holotype: G-Müll.Arg., not seen).

A species previously known from tropical Africa, Central and South America: it is new for the U.S. Twenty-five spores have been measured in collection 1792: $15\text{--}19 \times 4\text{--}5 \mu\text{m}$ (average: $17 \times 4.6 \mu\text{m}$). The species is close to *A. argenteum* Müll. Arg. from which it can be distinguished by its spore size only. However, intermediate specimens seem to occur in central east Africa.

Echinoplaca intercedens Vězda, Čas. Slez. Mus., ser. A, Hist. Nat. 22: 83. 1973.

Type: Guinea (West Africa), dist. Macenta, in silvis secundariis prope Macenta, foliicola, 600–700 m, III.1962, *Lisowski 1056* (Holotype: herb. Vězda, not seen).

This species, clearly identified in collections 1792, 1792b and 1793, can be described as follows: thallus, slightly verrucose (verrucae whitish and \pm flattened); apothecia, adnate, orange brown; spores, 2–4/ascus, 3–5 septate, $\pm 20 \times 3\text{--}5 \mu\text{m}$. Hyphophores (sensu Vězda, 1973) are abundant and match the original description (Vězda, 1973) of 80–100 μm high, straight, but slightly curved and wider in upper parts, whitish but brownish-black in upper parts, with a

TABLE 1. Foliicolous lichens in the southeastern United States (coll. E. Sérusiaux). Localities: all collections on living leaves of non-coniferous trees or shrubs. Collection numbers: 1654—Louisiana, Kisatchie Natl. Forest, about 35 min. WNW of Alexandria, hardwood forest in a bottom; 1684—1685—1805—Louisiana, Fricke's Cave, S of Franklinton, boggy hardwood forest; 1792—1793—1794—Florida, Appalachian Natl. Forest, along Sopchoppy R., hardwood forest (1794, on palmetto leaves). The specimens are in LG, some of them have been duplicated for FH and for Vězda private herbarium. x = present; ° = also observed on twigs.

	1654	1684	1685	1792			1793	1794	1805
				-	b	t			
<i>Strigula elegans</i> (Fée) Müll.Arg.	x ^a			x ^a	x ^a				
<i>Aulaxina microphana</i> (Vain.) R.Sant.			x	x	x ^b	x	x	x	x
<i>Asterothyrium leucophthalmum</i> (Müll. Arg.) R.Sant.	x		x ^c	x					x ^c
<i>Gyalectidium filicinum</i> Müll.Arg.			x	x ^h	x		x	x	x
<i>G. rotuliforme</i> Müll.Arg.				x	x		x	x	
<i>Echinoplaca intercedens</i> Vězda			x	x	x		x ^o	x	x
<i>Tricharia santessonii</i> Hawksw.			x	x	x		x	x	x
<i>Catillaria bouteillei</i> (Desm.) Zahlbr.		x	x	x		x	x		x
<i>Bacidia</i> sp.									x ^d
<i>Byssoloma leucoblepharum</i> (Nyl.) Vain.		x	x						x
<i>B. subdiscordans</i> (Nyl.) James					x		x	x	x
<i>Tapellaria epiphylla</i> (Müll.Arg.) R.Sant.				x	x	x	x	x ^e	x
<i>L. puiggarii</i> (Müll.Arg.) Zahlbr.		x		x ^f			x	x ^g	x
Parasymbiont:									
<i>Pyrenotrichum splitgerberi</i> Mont.		x	x	x	x	x	x	x	x

^a Var. *elegans* & var. *stellata* (Nyl. & Cromb.) R.Sant. occurring in mixture.

^b Distributed in Vězda, Lich. Sel. Exsicc. 1557.

^c Spores not seen: identification doubtful.

^d Two different species of *Bacidia* occur in this collection but material is too scanty to allow proper identification. 1. Thallus powdery, greenish; apothecia 0.1 mm diam., constricted at the base, orange brown with or without an extremely thin pale margin; hymenium not yet developed. 2. Thallus powdery, greenish; apothecia 0.1–0.15 mm diam., constricted at the base, urceolate, gray, ± translucent; spores, 8/ascus, 3-septate, constricted at the septa but more distinctly at the middle one, fusiform to ellipsoid, macrocephalic and distinctly tapering towards one end.

^e Distributed in Vězda, Lich. Sel. Exsicc. 1566.

^f Distributed in Vězda, Lich. Sel. Exsicc. 1567A.

^g Distributed in Vězda, Lich. Sel. Exsicc. 1567B.

^h Distributed in Vězda, Lich. Sel. Exsicc. 1556.

hyphal-ball on the lower surface. These hyphae are 0.9–1.0 μm diam. and locally swollen to 3–4 μm . Previously known only from West Africa.

Another species most probably occurs in collections 1685 and 1792b. It has 6–8 spores/ascus and the spores are 6–9 septate measuring 23–30 \times 7–8 μm . It is close to *E. pellicula* (Müll.Arg.) R.Sant. but its exact identity requires much more material.

Tricharia santessonii Hawksw., Lichenologist 5: 321. 1972.

Type: Hong-Kong, Tain Po Kau, orchard, on leaves of *Citrus sinensis* var. *Ming Laui*, V. So, CB 673, 14.IV.1969 (Holotype: IMI 160016!).

Hawksworth (1972) noted that, according to Santesson, this taxon may be the same as that collected by Thaxter in Burbank, Tennessee, U.S.A. and distributed as "Reliquiae Farlowianae n° 956" under the name *Strigula feei* Mont. [= *S. elegans* (Fée) Müll.Arg.]. I had the opportunity to examine that collection (FH, UPS) and found it identical to *T. santessonii*. The specimens

collected in Florida and Louisiana are also conspecific with that taxon. In the American specimens, spores are 4-6(-8)/ascus, with 3-5(-6) transverse septa and 0-2(-3) longitudinal septa in the median cells, slightly constricted at the septa, (14-)17-25 × (5-)6-11 μm (80 spores measured with average of 21 × 8 μm). Hyphophores (sensu Vězda, 1973) have been found abundant among thallus hairs both in Hong-Kong and American specimens.

Lopadium puiggarii (Müll.Arg.) Zahlbr., Cat. Lich. Univ. 4: 313. 1926. Basionym: *Heterothecium puiggarii* Müll.Arg., Flora 64: 105. 1881.

Type: Brazil, *Puiggari* 363 (Holotype: G-Müll.Arg.!).

According to Santesson (1952: 526), three foliicolous species of *Lopadium* [*L. fuscum* Müll.Arg.¹ *L. puiggarii* (Müll.Arg.) Zahlbr. and *L. subcoerulescens* Zahlbr.²] form a very homogenous pantropical group and can be distinguished from each other by the color of the apothecium disc and of the hypothecium. Intermediate specimens are frequent, however, and after having examined several collections from all parts of the world, I suggest the following treatment:

1. Apothecial disc russet, without any bluish or verticis tinge; hypothecium light brown to brick-red; apothecial base aerugineous *L. fuscum*
1. Apothecial disc very variable, from ± bluish brown to jet black; hypothecium dark brown to black, usually with an aerugineous tinge; apothecial base dark aerugineous *L. puiggarii* (= *L. subcoerulescens*)

Lopadium fuscum has been seen from tropical areas and *L. puiggarii* from tropical and subtropical areas. Specimens previously reported as *L. fuscum* from the U.S. (Sérusiaux, 1976) are *L. puiggarii*.

There has been some confusion in the literature over the identity of *Cyphella subcyanea* Ell. & Everh. and *Heterothecium augustini* Tuck. as Farlow (Burt, 1915) claims these taxa are identical. In fact, *Cyphella subcyanea* is a synonym of the deuteromycete *Pyrenotrichum splitgerberi* Mont., a parasymbiont. *Heterothecium augustini* Tuck. is a corticolous species that should be named *Lopadium augustini* (Tuck.) Zahlbr.

Cyphella subcyanea Ell. & Everh., Jour. Mycol. 2: 37. 1885.

Type: Louisiana, on living leaves of *Sabal palmetto*, *Langlois*, 57 (Holotype: NY, not seen; isotype: FH!) = *Pyrenotrichum splitgerberi* Mont., as it can be stated just by the description.

A collection on bamboo culms made by *Langlois* near St. Martinville, Louisiana in 1898 was distributed in Cummings Lich. Bor. Am., II, 244 under the name of *Opegrapha filicina* Mont. (Santesson, 1952). A sample of that collection has been found in FH filed as *Heterothecium augustini* Tuck. The label bears the following information: "*Cyphella subcyanea* E. & E. (...), *Heterothecium augustini* Tuck., det. by Dr. Farlow (...)" In fact there are *Opegrapha filicina*, *Pyrenotrichum splitgerberi* and other fungi in that specimen.

Another collection made by *Langlois* in the same locality in 1890 was distributed in Ellis & Everhart, North American Fungi, Second Series, n° 2602 under the name of *Cyphella subcyanea* Ell. & Everh. It was collected on living stems of *Smilax* and cited by Burt (1915) who refers to a letter from Farlow and claims it is *Heterothecium augustini*. The specimen preserved in BPI contains *Pyrenotrichum splitgerberi* Mont. only.

Lopadium augustini (Tuck.) Zahlbr., Cat. Lich. Univ. 4: 299. 1926. Basionym: *Heterothecium augustini* Tuck., Syn. N. Am. Lich. 2: 59. 1888.

Type: Florida, St. Augustine, *Sprague* s.n., 1879 (Holotype: FH-Tuck.!).

¹ *L. fuscum* Müll.Arg., Flora 64: 108. 1881. Type: Brazil, *Puiggari* 359. 1879. (Holotypus: G-Müll. Arg.!).

² *L. subcoerulescens* Zahlbr., Trans. New Zeal. Inst. 59: 312, 1928. Type: New Zealand, Ketchener Park, on *Alectryon excelsum*, *Allan* (Holotype: W!).

This taxon is very different from *L. puiggarii* and belongs most probably to the *L. flammeum*-group (Santesson, 1952): thallus formed of \pm round patches, dispersed; apothecia blackish \pm rufescent with a thin, non-prominent, whitish margin; hymenium hyaline, I + blue, hypothecium brown, paraphyses abundant, branched and anastomosed; asci, 1-spored, muriform, ellipsoid, $50-75 \times 14-23 \mu\text{m}$.

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LITERATURE CITED

- BURT, E. A. 1915 (1914). The Telephoraceae of North America. III. Ann. Missouri Bot. Gard. 1: 357-381.
- HAWKSWORTH, D. L. 1972. A new species of *Tricharia* Fée em. R. Sant. from Hong-Kong. Lichenologist 5: 321-322.
- SANTESSON, R. 1952. Foliicolous Lichens. I. Symb. Bot. Upsal. XII (1), 590 pp.
- SÉRUSIAUX, E. 1976. Some Foliicolous Lichens from the Farlow Herbarium. I. Occ. Pap. Farlow Herb. 10, 21 pp.
- VÉZDA, A. 1973. Foliicole Flechten aus der Republik Guinea (W. Africa) I. Čas. Slez. Mus., Ser. A, Hist. Nat. 22: 67-90.
- . 1974. Foliicole Flechten aus der Republik Guinea (W. Africa) II. Čas. Slez. Mus., Ser. A, Hist. Nat. 23, 173-190.
- . 1978. Flechtensystematische Studien XI. Beiträge zur Kenntnis der Familie Asterothyriaceae W. Wats. ex R. Sant. (Discolichenes). (im Druck).

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