

Sticta (Schreber) Ach.
(LOBARIACEAE)

After Harris, Hale, Thomson, and others

Rev. 5/94

Thallus foliose, dorsiventral, heteromerous, often large (to 30 cm diam., but mostly only a few cm in N. American species), lobate, spreading or sometimes (in some nonN. American species) stalked with a fruticose, erect frond sometimes arising from a \pm woody, spreading holdfast, \pm loosely adnate or ascending, single to multilobed; lobes \pm rounded, \pm dichotomously branching to broad, rounded, irregular, complex, overlapping to variously indented or incised, often laceratenotched, tough, coriaceous to fragile, thin or thick; upper surface greenish (bright green wet), or brownish, bluegray or blackish (brownish or yellowish gray when wet), smooth or wrinkled, rarely foveolateimpressed, \pm matt, often maculate, scabrid or hairy, without pseudocyphellae; both surfaces with paraplectenchymatous cortex with anticlinal hyphae; soredia, isidia or phyllidia present or absent; internal cephalodia sometimes present below upper cortex; attached to substrate by short or long rhizoids; rhizoids sometimes almost forming a tomentum, which may be \pm confined to a central umbilicuslike area; lower surface glabrous or tomentose, always pierced by scattered white or pale, recessed pores (cyphellae). Medulla white. Cephalodia internal or erumpent, usually present in species with green photobiont.

Apothecia mostly very rare or absent, laminal or rarely marginal, sessile to \pm stipitate, hemiangiocarpic, thalloid exciple usually well developed, smooth, verrucoseareolate or hairy, entire or crenate; disk round, flat to concave, matt or shining, rarely pruinose; hypothecium pale or colored; paraphyses unbranched; asci clavate to ovateclavate, Peltigeratype, unitunicate, I+ blue; spores 8, oblongfusiform to acicular, transversely 13(7)septate, hyaline or \pm pale brown, thinwalled.

Pycnidia often frequent, Lobariatatype, warty, immersed, marginal or laminal, punctate to \pm globose or ovoid; wall redbrown at ostiole, paler below; fulcrum endobasidial; pycnospores bacilliform, ampulliform, or constricted in the middle. Chemistry variable; usually no acetonesoluble substances, but rich in watersoluble compounds, including methylamine and trimethylamine, which often impart a fishy smell do damp thalli, especially in species with a bluegreen photobiont. Photobiont bluegreen (Nostoc), or green (Palmella, Trebouxia or Myrmecia),

with Nostoc in cephalodia. On rock or bark in humid regions, characteristic of sheltered woodlands, best developed in the tropics, but extending to boreal or arctic areas.

The genus is unique among lichens in having cyphellae, which are pale pores recessed into the lower surface of the thallus and are small but usually quite conspicuous at least with a lens.

1. Without isidia or soredia. Algae green or bluegreen.

.....2

1. With isidia or soredia. Algae bluegreen.

5

2. Growing in California. Upper surface pale brown. Thallus rather thick. Tomentum on underside pale, tan to light brown, rather long and thick. On Salix, Samoa Peninsula, Humboldt Bay. (det. by Thomson; description from Lindsay, 1973; not listed by Egan). S. cf. lacinata Ach.

2. Arctic or eastern boreal. 3

3. Algae bluegreen. Upper side smooth, ± glossy, brown. Lobes short, ± rounded, sinuate. Lobes to 30 mm long, 12 mm broad, the edges somewhat crisped and turned up. Underside pale at edges, dark centrally, with a fine tomentum and scattered cyphellae; rhizines simple or branched. No substances. Apothecia and pycnidia unknown. Among mosses and on hummocks in both dry and moist tundras, Arctic (Alaska to Baffin Island). S. arctica

3. Algae green. 4

4. Upper side with fine hairs, especially at the margins. Lower side with large bare areas. Marginal lobes and lobules crisped and often outward curved. Spores 5565 um long, 2celled. Pycnidia in thallus warts. Looks like a Lobaria because of the underside. Fertile. No substances. Material from British Columbia has a K medulla; Gyelnik, 1931 stated that the cortex (rather than the medulla, as stated by Yoshimura), is K+ yellow. Alaska, British Columbia. Originally described from Japan. S. wrightii Tuck.

4. Upper side smooth, glabrous. Lower side ± uniformly felted tomentose. Thallus 15(15) cm diam., often forming extensive patches; lobes to 1 cm diam., elongate and dichotomously branched, discrete or overlapping, apices ± truncate, axils ± rounded; upper surface pale green or glaucous green, sometimes tinged brown (exposed sites), bright green when wet, ± shiny,

often with a median channel; lower surface flat to somewhat ribbed, whitish to redbrown, ± darkening to brownblack towards center; cyphellae scattered, rounded, 0.30.6 mm diam. Apothecia rare; disc to 7 mm, redbrown; thalline exciple paler, entire or ± crenulate, of small, ± rounded cells with ± uniformly thickened, colorless walls; epithecium redbrown, K, conglutinated; hypothecium dense, pale graybrown, not clearing in K. Paraphyses ca. 3 µm wide, not swollen at apex. Spores colorless, (20)2328(32) x 67(8) µm, 1(3)septate. Pycnidia level or slightly elevated, with a dark brown apex. Conidia 57 µm, straight, both ends slightly swollen. On damp, shaded rocks and trees. Ontario. S. canariensis (Bory) Bory ex Delise (green algal morph., not yet seen in N. America)

5. Thallus with grayblue, granular, linear and marginal soralia, and scattered patches of laminal soralia. Lobes broadly rounded; upper surface gray to dull browngray or olivegreen, smooth or wrinkled, matt or somewhat glossy. Medulla and underside K+ dingy yellow or K+ redpurple; C, P. Thallus ± loosely attached or occasionally ± erect, anchored at one point, 0.52(4) cm broad, somewhat coriaceous; lobes rounded to irregular, often distinctly monophyllous and ± cochleate, the margins entire, eroded or sorediate. Lower surface ± uniformly densely tomentose, pale yellowbrown at margins, darker centrally; cyphellae small, scattered, flat, pale, whitish. On mossy bark and rocks. Pacific coast; Appalachians. Small specimens can be confused with Nephroma parile, which lacks cyphellae. S. limbata

5. Thallus without soralia; with laminal or marginal isidia or folioles, the isidia cylindrical to coralloid, not flattened; thallus coarsely divided; underside ± brown. 5

6. Margin dissected, fringed with ± flattened isidia or folioles which also occur on upper surface. Thallus 15 cm diam., often forming extensive colonies; lobes to 2 cm diam., overlapping; margins rounded, irregularly incised, very thin and wrinkled, ± minutely dissected into small terete or often flattened, branched isidia to 0.5 mm diam., often aggregated into tight clusters, 0.21 mm diam., occasionally becoming densely imbricate and covering entire surface of older parts of thallus; upper surface pale gray to dark graybrown, matt, sometimes whitemarbled; lower surface finely whitetomentose, pale brownwhite, ± reticulately ridged, with white, scattered cyphellae. Amongst mosses on trees and rocks in perpetually moist, very sheltered, deeply shaded sites, often under a canopy of ferns or other herbaceous

vegetation. Ontario. S. canariensis (cyanobacterial morph. ["S. dufourii Delise"])

6. Margin ± smooth; isidia either granular or ± cylindrical. 7

7. Isidia marginal. [Note: Wetmore (1993, pers. comm.) does not believe the next two species, distinguished by Harris, are distinct from each other]. 7

7. Isidia mostly laminal, rarely along cracks on upper side., usually simple cylindrical. Thallus sometimes rather finely divided ("Dendriscoaulon"). 8

8. Upper side ± bluegray, somewhat glossy. Tomentum hairs simple, swollen at tips. Lobes irregularly branched. No rhizines. Medulla and underside K+ dingy yellow or K+ redpurple; C, P. Spores 3035 um long, simple to 4celled (according to Vainio, based on tropical material). On mossybark, Florida (and elsewhere?); reports from the Arctic and western N. America appear to be based mostly if not entirely on S. beauvoisii. S. weigeli

8. Upper side ± brown. Tomentum hairs with elongated branches, not swollen. Lobes ± regularly branched, often forming rosettes, narrow and elongate, to 1.5 cm broad, the edges crisped and with an abundance of black soredia and isidia; the isidia may also line the edges of cuts and holes in the upper side. Underside with mat of fine tomentum, lighter brown towards tips, blackening centrally, with numerous scattered cyphellae. Scattered rhizines present. Apothecia rarely if ever present. On mossy bark and rocks. Arctic to temperate, Alaska, to southern Canada, southeast to Georgia, southwest to Arizona and New Mexico. [Some material that keys out here may be another species]. S. beauvoisii

7. Thallus broad, ± singlelobed or slightly indented, little divided; margins not ascending; upper side dull, with irregularly scattered isidia; underside ± brown (paler at margins, dark towards center), ± uniformly tomentose; cyphellae 12 mm diam., white, round to irregular. Thallus monophyllous, often deeply indented and appearing polyphyllous, attached by a single rather deformed umbilicus, 28(12) cm diam.; lobes undulate, folded or ± free, margins entire; upper surface ± shallowly foveolatewrinkled or pitted, pale bluish gray when dry or sometimes ± blackened, dark browngray or bluish brown when wet, often also with white maculae (x10 lens). Isidia scattered, terete, simple or coralloid, often ± delicately stalked, very delicate and friable,

sometiems in clusters. Medulla and underside K+ dingy yellow or K+ redpurple; C, P. On mossy trees and damp rocks in humid, sheltered situations. NE U.S., Pacific coast (Washington to California), southern Arizona. F. ciliata Degel. has thallus provided marginally with 0.20.3 mm long cilia, and lobes small, to 0.5 cm broad. S. fuliginosa

7. Thallus moderately broad, strongly divided, often + dichotomously; margins ascending; at least the young lobes somewhat glossy, with reticulate depressions with isidia developed mainly on their ridges; underside dark brown, lighter at the margins. On mossy trees and rocks, usually in humid, sheltered situations. Western U.S. Immature specimens are often difficult to distinguish from S. fuliginosa, but older specimesn have amore lobed, unevenmargined thallus. S. sylvatica

Literature

- Galloway, D. 1985. Flora of New Zealand Lichens.
- Gyelnik, . 19 .
- Hale, M. E. 1979. How to Know the Lichens. Wm. C. Brown, Dubuque.
- Harris, R. C. 19___. Sticta: An "easy" genus becomes more difficult. Evansia
- Lindsay, J. R. 1973. Lichens of Samoa Peninsula, Humboldt Bay, California. M. A. Thesis, California State University, Humboldt.
- Poelt, J. 1969. Bestimmungsschlssel europischer Flechten.
- Purvis, O. W. 1992. Sticta. In: Purvis, et al., Lichen Flora of Great Britain and Ireland.
- Rogers, 19 . Genera of Australian Lichens.
- Thomson, J. W. 1984. American Arctic Lichens I. The Macrolichens. Columbia University Press, New York.
- Yoshimura, . 19 .