

Solorina Ach.
(PELTIGERACEAE)

After Thomson (1984) and Gilbert

Rev. 5/94

Thallus foliose, lobate, dorsiventral, heteromerous, widespreading, or in one species, reduced to a collar around the apothecia. Lobes rounded, margins slightly raised. Upper surface green gray, ± bright green when wet, smooth to scabrid, matt or slightly shining. Lower surface indistinctly veined, tomentose, and with clusters of simple or ± branched rhizines. Photobiont Coccomyxa, in a continuous layer below upper cortex; cephalodia bluegray, containing Nostoc, internal in a zone above the lower cortex, or external.

Apothecia large, rounded, irregularly scattered, impressed to ± deeply immersed in the upper surface; disk dark redbrown, slightly to very deeply concave. Thalline exciple absent. Paraphyses simple, conglutinate, not or little swollen at the apex. Asci clavate, Peltigeratype. Spores (1)2, 4, or 8, redbrown or brown, ellipsoid to fusiform, 1(5)septate with a median constriction; wall ± uniformly thickened, surface ornamented or ± warted.

Conidiomata unknown. Mostly without substances; one species with solorinic acid (orange pigment). On soil, mostly markedly calcicolous, one species (S. crocea) calcifuge. Arcticalpine to boreal.

The genus is easily recognizable by the presence of ± impressed apothecia which have given rise to the popular name "socket lichens". Some species are parasitized by a fungus that distorts and discolors the thallus to the "Dacampia" form."

1. Lower side and medulla brilliant orangered. Thallus foliose, 4-10 cm across, forming large rosettes of rather thick lobes with ± rounded, scarcely indented apices; upper surface olivegreen when moist, redbrown when dry, ± uneven or scabrid; lower surface tomentose with a ± reticulate pattern of brown veins; external cephalodia absent; internal cephalodia present. Apothecia to 7-10 mm diam. (but often much smaller), common (rare according to Gilbert, but quite common in material I've seen from Washington), dark brown, ± round, not, or only little, depressed into thallus. Spores 68 per ascus, 3545 x 1012 um. Medulla and underside K+ purple (solorinic acid). On ± acidic soil, especially in moist seepage areas, below late snowbanks, and in spring seepages,

usually on clay soils; sometimes also on solifluction lobes or frost boils and in drier limestone barrens. Arcticalpine, south to Labrador, Quebec, New Mexico, and Washington. S. crocea (L.) Ach.

1. Lower surface white or gray; medulla white.2

2. Thallus poorly developed, often confined to a continuous or ± lacerate, narrow collar of granules, squamules and external cephalodia surrounding the apothecia, frequently resting on a spongy cushion of dark gray, ± densely coralloidwarted or nodulose, gelatinous when wet, partially buried cephalodia.

External cephalodia with Nostoc, becoming dark and spongelike when wet. Apothecia scattered, to 5 mm diam., urceolate. Spores (2)4/ascus, 3050 x 1824 µm; epispore thickened and ornamented with pits (smooth according to ?). In moist, calcareous habitats similar to those of S. saccata but less often in crevices.

Arcticalpine, south to Newfoundland, Ontario, Colorado and Washington. S. spongiosa (Ach.) Anzi

2. Thallus usually well developed and foliose (but sometimes of small squamules with deep disk of apothecium in center, in S. bispora and S. octispora); cephalodia internal. Epispore pitted and furrowed.3

3. Spores mostly 4 per ascus. Thallus to 7 cm across, generally well developed, spreading, composed of conspicuous, rounded lobes with ± wavy margins; upper side pale gray, ± tinged brown when dry, bright green when wet, naked to ± densely whitepruinose; lower surface white or pale, densely tomentose, rhizino-se but not, or indistinctly, veined. Apothecia to 6 mm diam., frequent, brownblack, deeply sunk in depressions in upper surface. Spores 3250 x 1827 µm, ellipsoidoblong, 1-septate, with a thick, redbrown epispore when mature. Internal cephalodia with Nostoc, visible on underside as dark spots, occasionally spanning the entire thickness of the thallus so that their position is also denoted by blackish areas on the upper surface. At higher altitudes the thallus may be much reduced with a densely whitepruinose surface closely resembling that of S. bispora. On calcareous substrates, especially in very moist places as in spray from waterfalls, in moist microhabitats such as hummock sides, sides of animal burrows, edges of solifluction lobes, seepages, and moist shaded cliff sides. Arctiboreal, south to British Columbia, Alberta, South Dakota, Wisconsin and

Vermont. S. saccata (L.) Ach.

3. Spores 2 per ascus or 8 per ascus. 4

4. Spores (in typical variety) 2 per ascus, (60)90(105) x

(27)40(60) um. **Upperside of thallus gray to graybrown, usually pruinose**, not green when wet. Thallus poorly developed, consisting of mostly scattered, ± rounded or irregular lobes, ca. 510 mm diam., with a single urceolate apothecium 25 mm diam., towards the center of each lobe; upper surface pale gray to browngray, often pruinose. Cephalodia internal, rarely external. Spores normally 1septate, ± ellipsoid to broadly fusiform. Variety macrospora (Harm.) H. Olivier has spores averaging 110 um long and reaching to 140 um long; var. monospora (Gyelnik) Frey has spores 1/ascus, 2(35)septate), 95175 x 3345 um. On calcareous soils, sometimes on humus, at edges of frost boils, on earth edges, or cliffs, usually in somewhat moist sites, arcticalpine, south to Colorado..... S. bispora Nyl.

4. Spores 8 per ascus, 3540 x 1821 um. Upperside of thallus + brownish green or reddish brown, epruinose. Thallus foliose, consisting of several lobes, or reduced to a single lobe surrounding the apothecium, thin, somewhat concave with raised margins; upper surface roughened; underside pale to reddish brown, with pale to brown rhizines. Upper cortex paraplectenchymatous. Thallus KC+ red, containing methylgyrochorate. Apothecia not quite as sunken as in S. bispora but concave, often surrounded by remnants of cortex; disk reddish brown; subhymenium pale brownish; hymenium hyaline below, yellowing above, 210260 um; paraphyses coherent, septate, scarcely branched, the tips darkening, not thickened; asci clavate, 180 x 26 um; spores 1septate, ellipsoid, becoming redbrown, 3530 x 1821 um. On soils and humus, sometimes on soil over rock, arcticalpine, southwest in the Rocky Mountains to Colorado and New Mexico. S. octospora (Arnold) Arnold

Literature

Galloway, D. 1985. Flora of New Zealand Lichens.

Gilbert, O. L. 1992. Solorina. In: Purvis, et al., Lichen Flora of Great Britain and Ireland.

Poelt, J. 1969. Bestimmungsschlüssel europischer Flechten.

Thomson, J. W. 1984. American Arctic Lichens I. The Macrolichens. Columbia University Press, New York. [More information on species other than S. octospora could be added from this source].

