

**IV. Axils/cups Closed;**  
**Apothecia and pycnida brown;**  
**Thallus yellowish (usnic acid)**  
**Ochroleucae**

**IVA. Thallus esorediate, corticate.**

**1. Podetia tiny, 0.51(2) cm tall, cylindrical, cupless or rarely with pseudocups on the branches, pale with pale fleshcolored to brownish apothecia, containing usnic and barbatic acids.** Primary squamules persistent or disappearing, very small, not over 1.5 mm long, crenate to incised crenate or subdigitate laciniolate, flat or involute or convex, ascending or appressed, rarely in little tufts; upper side yellowish or yellowish glaucescent, rarely olivaceous galcuescent; underside white, esorediate or sparsely granulose sorediate. Podetia sparingly branched above, the branches diverging widely, the axils closed or becoming split; cortex verruculose areolate or diffract areolate, the areoles quite small; lacking squamules or with a few at the base; opaque, dull, yellowish or yellowish glaucescent, the decorticate portion white, yellowish white or yellowish. Apothecia small to middlesized, entire to lobate or perforated, solitary or in small clusters at tips of branches or on main part of podetium. On rotten wood and occasionally on earth rich in humus, in coniferous forests. Alaska to NE Canada, south to to Alberta and Great Lakes area. ....C. botrytes

**1. Podetia short (13 cm tall), stout, commonly obconical (some cylindrical); apothecia dark brown; containing only usnic acid.** Podetia sparingly branched, moderately squamulate over most of the surface. Primary squamules medium-sized, usually well developed. Pycnidia and apothecia common. Podetia and squamules with a yellowish cast (usnic acid). Common on sandy soil in open woods and along roadbanks, Eastern (Appalachian and Ozark regions). ....C. piedmontensis

**IVB. Thallus sorediate with farinose soredia or granular.**

**1. Podetia with broad cups; soredia farinose or rarely granular (similar to C. pleurota) but somewhat transparent when wet.**

Usnic (and barbatic?), without zeorin (or sometimes with it according to Thomson). Primary squamules persistent or disappearing, middlesized to large, to 13 mm long and 10 mm wide but usually much less, broadly lobed or narrowly laciniate, crenate, flat or convolute, ascending; upper side yellowish glaucescent or yellowish to olivegreen; underside white or yellowish, darkening toward the base; esorediate or with the underside sparsely granulose. Podetia to 40 mm tall but usually much less; cups tapering from the base or more abruptly flaring, entire margined or with proliferations from the margin, the interior of the cup closed; the base or varying heights of the podetium corticate; cortex subcontinuous to areolate; rest of podetium yellowish sorediate, usually esquamulose or with a few squamules at the base; yellowish or yellowish glaucescent. Apothecia middlesized to large, to 6 mm broad, on stipes or sessile around the margins or from the centers of the cups, pale, waxy yellowish or pale brown. On soil rich in humus and on rotting wood. Alaska to Iceland, south to Great Lakes area in the east and to Oregon and northern Rockies in the west. (Note: sterile forms of normally redfructed species will also key out here; see Cocciferae key for more info.) .....C. carneola

**1. Podetia with narrow cups or subulate and cupless; containing usnic and barbatic acids. ....2**

**2. Podetia tall and slender, 28 cm high, commonly slightly branched, with thin coating of farinose soredia.** Primary squamules persistent or disappearing, small or middle sized, to 6.5 mm long and 1 mm broad, usually narrowly laciniate, crenate, flat or involute concave, ascending; upper side esorediate, yellowish or yellowish glaucescent, the margins and underside with farinose or granular soredia; underside white or pale yellowish. Podetia subulate and cupless or with rudimentary cups; surface distinctly yellowish or with a bluish tinge toward the base; base slightly corticate or the podetium usually entirely decorticate and covered with soredia. Apothecia at tips of podetia, small, pale brownish or yellowish. Usnic and barbatic acids. On humus, soil rich in humus, and rotten wood. Alaska to Greenland, south to Washington in the west and northeasternmost U.S. in the east. Northern .....C. cyanipes

**2. Podetia short, (0.5)12(3) cm high, unbranched, thickly**

**sorediate with masses of farinose soredia.** Primary squamules usually persistent, small, to 3 mm long and 0.3 mm broad, subentire or crenate to incisedcrenate,  $\pm$  concave, ascending or appressed; upper side yellowish; underside yellowish or yellowish white; farinose sorediate. Podetia to 2 mm thick, truncate or with narrow or obsolete cups, the margins of the cups with slender proliferations. K, P, KC+ yellow. Usnic and barbatic acids. On mosses, rocks, or rotten wood. Arcticalpine (Alaska to Greenland, south to Alberta and northern Great Lakes area, and Colorado). .....C.  
bacilliformis