

SPECIES FACT SHEET

Common Name: blistered jelly lichen

Scientific Name: *Collema nigrescens* (Hudson) DC.

Kingdom: Fungi

Division: Ascomycota

Class: Ascomycetes

Order: Lecanorales

Family: Collemataceae

Genus: *Collema* F.H. Wigg

Technical Description:

This is a foliose, small to medium-sized, gelatinous cyanolichen. The thallus is 2-5 cm diameter, but sometimes up to 10 cm; lobes are broadly rounded, 5-10 mm wide. It is gelatinous when wet, dark olive to brownish or black, sometimes with yellowish brown areas. Upper surface with “conspicuous blister-like pustules and ridges” (Brodo et al. 2001). Isidia usually absent, but sometimes with globular to slightly oblong or flattened isidia, marginal and laminal, up to 0.2 mm wide. Soredia lacking. Apothecia very common and numerous, often crowded, to 1 mm diameter, disk brownish red, without pruina. Spores 5-13 celled, colorless, needle-shaped with elongate pointed ends, straight or spirally curved, 50-100 µm long x 3-4.5 µm wide. Photobiont cyanobacterial (*Nostoc*). (Brodo et al. 2001; Nash et al. 2004; McCune & Geiser 1997).

Chemistry

Spot test reactions negative. No secondary metabolites have been detected.

Identification Tips

All *Collema* species are gelatinous lichens that swell and become jelly-like, translucent, and darker when wet. They are unstratified; the photobiont does not form a distinct layer within the thallus but is intermixed with fungal hyphae. They also lack an upper and lower cellular cortex. These features can best be seen with a compound microscope (see below).

C. nigrescens can be distinguished in part by substrate; it grows primarily on bark of deciduous trees and shrubs (occasionally on rock). Other characters include the broad, rounded thallus lobes (> 3 mm wide), and when present, the small, globular isidia (not cylindrical or coralloid). Spore characteristics are also diagnostic.

Similar Species

Leptogium and *Leptochidium* species are also darkly-colored gelatinous lichens. However, they're distinguished from *Collema* species by the presence of an upper and lower cellular cortex, which appears as a surface layer of square to

shortly rectangular cells. This can be observed with a wet mount of the thallus and a compound microscope; see illustrations on page 15 in Brodo et al. (2001). Additionally, *Leptochidium albociliatum* can be distinguished by marginal whitish hairs that are conspicuous with a hand lens. *Collema* species are never hairy.

Collema curtisporum is very similar, distinguished only by spore characteristics visible with a compound microscope. *C. curtisporum* spores have fewer cells (4) and are shorter (20-40 µm long) than *C. nigrescens* spores (McCune and Geiser 1997).

C. furfuraceum is similar, with broad lobes that are usually ridged with blister-like pustules, but differs in rarely having apothecia. It usually has abundant cylindrical isidia, covering at least the ridges. However, the isidia may be globular in immature specimens. (Brodo et al. 2001).

Keys to Identification of the Species

Useful dichotomous keys are available in Brodo et al. (2001), McCune & Geiser (1997), Goward et al. (1994), Nash et al. (2004), and Purvis et al. (1992).

Life History:

Collema nigrescens is thought to mature quickly. It reproduces primarily by spores, and is usually abundantly fertile. Apothecia are present year-round. It sometimes reproduces asexually through isidia. The thallus is visible and identifiable year-round, unless visibility is impeded by snow cover or inclement weather.

Range, Distribution, and Abundance:

Globally, this species is widespread, from the Arctic to Mediterranean areas of Europe, North Africa, Asia, Australia, eastern North America, the west coast of North America, and Central America (Nash et al 2004; Oregon Natural Heritage Information Center 2006).

In western North America, *C. nigrescens* is known from California to Alaska, primarily west of the Cascades (Brodo et al. 2001; McCune & Geiser 1997). In southern Oregon and northern California it is common on *Quercus garryana*, but becomes infrequent in northern Oregon and Washington.

Within the Northwest Forest Plan Area, it has been documented from the Western Washington Lowlands, Western Washington Cascades, Eastern Oregon Cascades, Western Oregon Cascades, Oregon Coast Range, Willamette Valley, Oregon Klamath, California Klamath, California Cascades, and California Coast Range Physiographic Provinces. Documented occurrences

have been found on the following federal lands in the Northwest Forest Plan Area: Columbia River Gorge National Scenic Area; Deschutes, Gifford Pinchot, Rogue River, Siskiyou, Siuslaw, Umpqua, and Willamette National Forests; Arcata, Roseburg, Medford, and Coos Bay BLM Districts.

Habitat Associations:

In the Pacific Northwest, *C. nigrescens* grows on bark of hardwood trees and shrubs, including Garry oak, canyon live oak, big-leaf maple, cottonwood, and vine maple. The texture of the bark substrate appears to be of critical importance to this species. In southern Oregon and northern California, *C. nigrescens* is common on *Q. garryana* trunks but rarely found on *Q. kelloggii* (Daphne Stone, personal comm.). The two trees have very different bark; *Q. garryana* has very rough, flaky bark while *Q. kelloggii* has hard, non-flaky bark. *C. nigrescens* is rarely found on *Q. chrysolepis*.

In northern Oregon, Washington and Alaska, it is found most frequently on the trunks and branches of *Populus trichocarpa*, which has rough bark similar to that of *Q. garryana*. It is also found on other hardwoods, and often in riparian, wetland, or coastal areas.

The species grows in a variety of forest stand types, including mature Douglas-fir, western hemlock, oak, mixed oak-conifer, red alder, and cottonwood stands. Other associated species include swordfern, snowberry, salmonberry, oxalis, devil's club, and horsetail (U.S. Department of Agriculture 2006). It is occasionally found on rocks (Nash et al. 2004).

Threats:

The primary threat to this species is forest management activities that remove host trees or degrade habitat. Timber harvest and hardwood conversion projects that remove or damage oaks, cottonwoods, big-leaf maple, and other hardwoods may directly threaten populations or reduce habitat.

Conservation considerations:

Known populations could be protected by restricting removal of host trees and nearby habitat. In southern Oregon and California, retention of oaks and other hardwoods could minimize loss of populations and habitat (Oregon Natural Heritage Information Center 2006). In northern regions, protection of riparian zones and retention of riparian hardwood trees and shrubs could also minimize habitat loss. In general, hardwoods often create important "hotspots" of lichen diversity, providing habitat for many species that are poorly represented in typical forests (Peterson & McCune 2003).

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ATTACHMENTS:

- (1) List of References**
- (2) Photographs**
- (3) Map of *Collema nigrescens* locations in Oregon and Washington**

Attachment 1 – List of References

Brodo, I., Sylvia Sharnoff, & Stephen Sharnoff. 2001. Lichens of North America. New Haven, CT: Yale University Press. 795 pp.

Esslinger, T. L. 2006. A cumulative checklist for the lichen-forming, lichenicolous and allied fungi of the continental United States and Canada. North Dakota State University:
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Attachment 2 - Photos of *Collema nigrescens* (Copyright Ulrich Kirschbaum 2006; used by permission)



Attachment 3 - Map of *Collema nigrescens* locations in Oregon and Washington from GeoBOB database (Oct. 2006)

