

## SPECIES FACT SHEET

**Common Name:** yellow-headed pin lichen

**Scientific Name:** *Chaenotheca chrysocephala* (Turner ex Ach.) Th. Fr.

Division: Ascomycota

Class: Sordariomycetes

Order: Trichosphaeriales

Family: Coniocybaceae

**Technical Description:** Crustose lichen. Photosynthetic partner *Trebouxia*. Thallus visible on substrate, made of fine grains or small lumps or continuous, greenish yellow. Sometimes thallus completely immersed and not visible on substrate. Spore-producing structure (apothecium) pin-like, comprised of a obovoid to broadly obconical head (capitulum) 0.2-0.3 mm diameter on a slender stalk, the stalk 0.6-1.3 mm tall and 0.04 -0.8 mm diameter; black or brownish black or brown with dense yellow colored powder on the upper part. Capitulum with fine chartreuse-yellow colored powder (pruina) on the under side. Upper side with a mass of powdery brown spores (mazaedium). Spore sacs (asci) cylindrical, 14-19 x 2.0-3.5  $\mu\text{m}$  and disintegrating; spores arranged in one line in the asci (uniseriate), 1-celled, 6-9 x 4-5  $\mu\text{m}$ , short ellipsoidal to globose with rough ornamentation of irregular cracks.

**Chemistry:** all spot tests negative. Thallus and powder on stalk (pruina) contain vulpinic acid, which gives them the chartreuse-yellow color. This acid also colors *Letharia* spp., the wolf lichens.

**Other descriptions and illustrations:** Nordic Lichen Flora 1999, Peterson (no date), Sharnoff (no date), Stridvall (no date), Tibell 1975.

**Distinctive Characters:** (1) bright chartreuse-yellow thallus with yellow pruina under capitulum and on the upper part of the stalk, (2) spore mass brown, (3) spores unicellular (4) thallus of small yellow lumps.

**Similar species:** Many other pin lichens look similar to *Chaenotheca chrysocephala*. Many are listed here with brief descriptions, but microscopic characters must be used for final determination. See some of the references listed below.

*Calicium viride* has a bright yellow, granular to bumpy yellow-green thallus. The heads have a brown powder beneath. The spore mass is black and made of 2-celled spores.

*Chaenotheca brachypoda* has yellow-green powder covering the stalk and head. The spore mass is brown and made of 1-celled, globose to cuboid spores. The thallus is immersed in the substrate, so not visible.

*Chaenotheca chlorella* has yellow powder on the stalk and beneath the head. The spore mass is brown and made of 1-celled, globose to broadly ellipsoid spores. The thallus is granular to bumpy, usually fairly thick, and grayish green.

*Chaenotheca furfuracea* has yellow powder completely covering the stalk and head. The stalks are relatively tall, to 2.6 mm tall and 0.1 mm wide. The spore mass is brown and made of 1-celled, globose spores. The thallus is made of yellow-green granules and is usually quite extensive, growing on soil, roots, wood, rocks and fallen leaves. It is usually found in the hollow beneath roots on the downhill side of an old-growth tree or in small protected caves and cracks in rocks and rock outcrops.

*Chaenotheca hispidula* has yellow powder on the upper part of the stalk and beneath the head. The stalks are relatively short, to 1.0 mm tall and 0.08 mm wide. The spore mass is brown and made of 1-celled, globose spores. The thallus is immersed in the substrate, so not visible.

*Chaenotheca laevigata* has yellow powder covering the stalk and beneath the head. The spore mass is brown and made of 1-celled, ellipsoid to short cylindrical spores. The thallus is immersed in the substrate, so not visible.

*Chaenotheca olivaceorufa* has yellow powder on the upper part of the stalk and beneath the head. The stalks are relatively short, to 1.0 mm tall and 0.08 mm wide. The spore mass is brown and made of 1-celled, globose spores. The thallus is immersed in the substrate, so not visible.

*Chaenotheca phaeocephala* has faint yellow powder on the stalk and beneath the head. The spore mass is brown and made of 1-celled, globose spores. The thallus is olive-brown to greenish, thick and bumpy.

*Chaenotheca subroscida* has faint yellow powder beneath the head. The spore mass is brown and made of 1-celled, globose spores. The thallus is made of whitish, minute granules, 0.05-0.1 mm in diameter and often barely visible.

*Sclerophora nivea* has a pale yellow stalk and yellow powder on top of and beneath the head. The spore mass is pale and made of globose spores. The thallus is immersed, so not visible.

**Habitat:** Frequent on bark and wood of old conifers including *Abies* spp., *Picea* spp., *Pseudotsuga menziesii*, *Thuja plicata* and decorticated snags. Prefers semi-open forests at relatively low elevations (80-1150 m) and is most abundant on conifer trunks in mixed forests and in edge habitats, also in relatively young stands. More or less absent from conifer trunks in closed, low-elevation rainforests. (Rikkinen 2003).

**Life History:** Details for *Chaenotheca chrysocephala* are not documented. The stalked apothecia may facilitate spore dispersal by wind or contact with passing arthropods and birds. Growth and dispersal rates of *Chaenotheca* are probably very slow.

**Range, Distribution, and Abundance:** In the Pacific Northwest widespread and apparently common, known from British Columbia, Oregon, Washington, California.

National Forests: Documented in WA: Mt. Baker-Snoqualmie, Okanogan-Wenatchee. OR: Columbia River Gorge National Scenic Area, Deschutes, Siuslaw, Mt. Hood, Umpqua,

Willamette. CA: Shasta-Trinity, Six Rivers. Suspected on Gifford Pinchot, Rogue River-Siskiyou.

BLM Districts: Known on Eugene, Medford, Roseburg, Salem, Coos Bay. (Ponzetti 1996, Federal records, WTU: Burnett collections)

Other known sites: WA: Bald Hill Natural Resource Preserve, Wind River Experimental Forest, Twin Falls State Park, Index Town Wall, Wallace Falls State Park, Ross Lake National Recreation Area, Bald Hill Lake area (Thurston Co.). OR: Humbug Mountain State Park, H.J. Andrews Experimental Forest, Little Sinks Research Natural Area, McDonald Research Forest, Chip Ross Park (City of Corvallis), Walnut City Park (City of Corvallis), Wm. Finley National Wildlife Refuge, Elliot Corbett Memorial State Park (Rikkinen 2003, WTU: Burnett collections).

Cool temperate to temperate areas of both hemispheres (Eurasia, North America, Africa Australasia and Central and South America)

**Threats:** Pervasive logging of old-growth forests in North America and Europe has diminished habitat and opportunities for dispersal of *Chaenotheca chrysocephala*. Altered fire frequency and intensity resulting from fire suppression and fuel buildup may threaten remaining populations.

**Conservation Considerations:** Selva (2003) searched forests in the Acadian Forest Ecosystem in northeastern North America, and found that the number of pin lichens increased with undisturbed age of the forest. Because the number and type of microhabitats increase with the age of a forest, "...it is the presence or absence of these [calicioid] species that provides the evidence whether a forest that looks old really *is* old and has been little disturbed over a long period of time."

The best opportunities to protect *Chaenotheca chrysocephala* are on federal lands, because stands of old trees on private lands are more likely to be logged. Protection of known sites from logging, road and trail work, and scorching of tree trunks during prescribed fire will help minimize risk to populations. Fire kills these crustose lichens; survival through a burn depends on escaping the fire in deep bark crevices, such as are found in old growth bark, or islands of unburned trees.

Maintaining microhabitat humidity is critical to their survival; pin lichens grow in areas protected from direct rainfall or trickle-down but need humidity provided by shade and retained moisture in the forest. Manage understory in known sites to maintain existing conditions.

Search in areas of OR and WA where it has not yet been found to determine accurate range in the PNW.

**Conservation rankings:** Global: G4G5, Red-listed in Denmark. National: no rank. ORBIC: no rank. WNHP: not yet ranked.

**Preparer:** Daphne Stone

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**Edited by:** Rob Huff, FS/BLM Portland, Oregon; June 2012

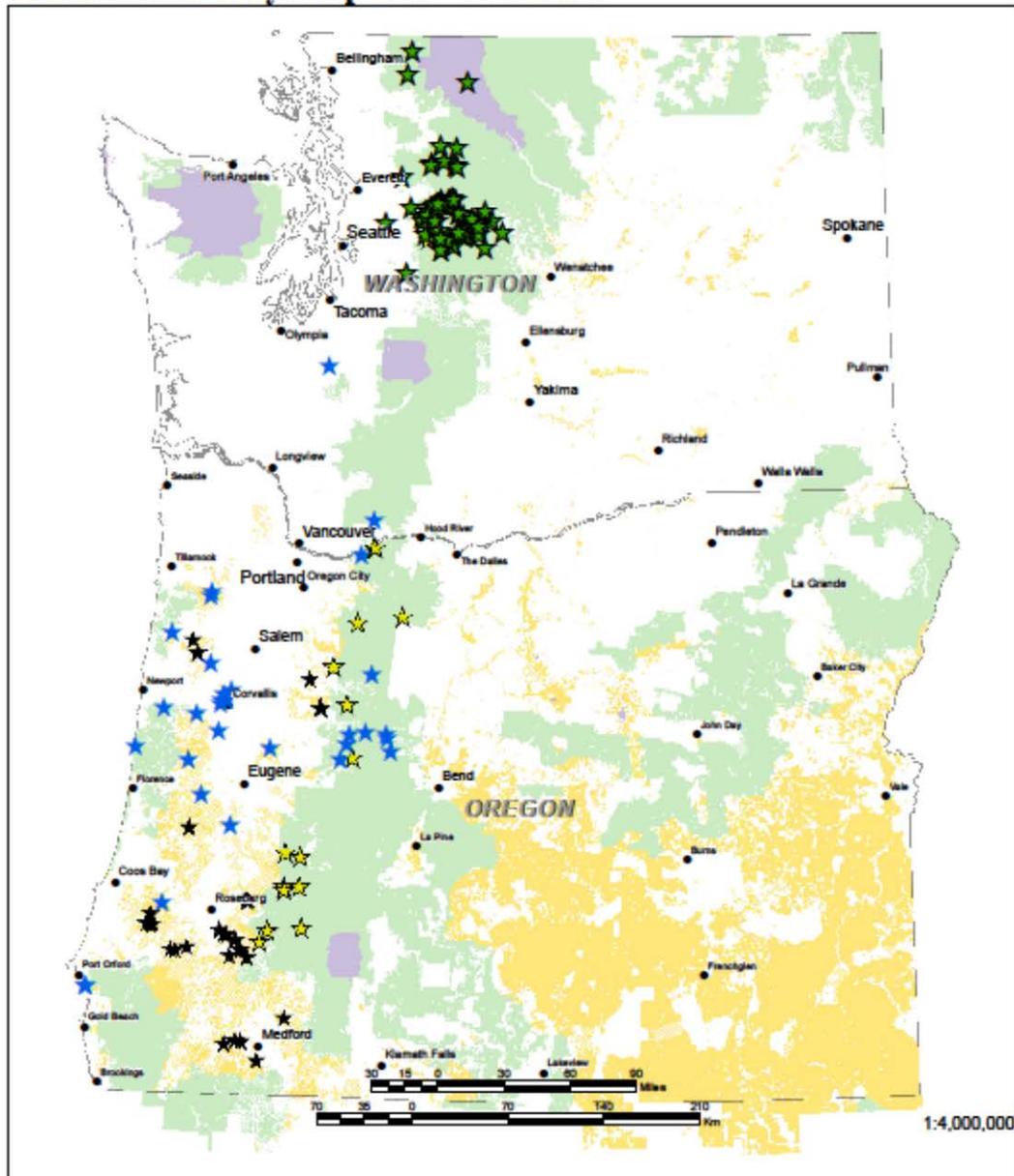
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# Chaenotheca chrysocephala CHCH14



**Legend**

★ WTU Bumett collections	■ Bureau of Land Management
★ FS CHCH14	■ U.S. Forest Service
★ BLM CHCH14	■ National Park Service
★ Other Source CHCH14	■ Other Ownership
● Cities of Interest	

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