

SPECIES FACT SHEET

Common Name: rust-stained pin lichen

Scientific Name: *Chaenotheca ferruginea* (Turner ex Sm.) Mig.

Division: Ascomycota

Class: Sordariomycetes

Order: Trichosphaeriales

Family: Coniocybaceae

Technical Description: Crustose lichen. Photosynthetic partner *Trebouxia*. Thallus visible or sometimes completely immersed inside substrate, when visible made of fine grains or small lumps, pale gray to cream colored or whitish, with yellowish to reddish spots or rings. Spore-producing structure (apothecium) pin-like, comprised of a narrowly to broadly obconical head (capitulum) 0.2-0.5 mm diameter on a slender stalk, the stalk 1-2 mm tall and 0.07 - 0.15 mm diameter, shiny black without any fine powder (pruina). Capitulum without any fine powder. Upper side of capitulum with a mass of powdery yellowish brown spores (mazaedium). Spore sacs (asci) cylindrical, 14-18 x 2.5-3.5 μm and disintegrating; spores arranged in one or two rows in the asci (uniseriate or biseriate), 1-celled, 5.6-7.7 μm , globose with ornamentation of coarse irregular cracks when mature.

Chemistry: Reddish spots on thallus K+ purple red, ascospore mass K+ red, all other spot tests negative.

Other descriptions and illustrations: Goward 1999, Nordic Lichen Flora 1999, Peterson (no date), Smith et al. 2009, Stridvall (no date), Tibell 1975.

Distinctive Characters: (1) Reddish spots or rings on the thin, whitish grainy thallus, (2) fine shiny black stalks without pruina.

Similar species:

No other species has the distinctive yellowish to reddish spots or rings on a thin cream colored or whitish thallus. For final determination, see some of the references listed below. Other common species with a thin, granular thallus and no fine powder on the stalks or beneath the head include:

Chaenotheca brunneola, *C. hygrophila* and *C. sphaerocephala* have immersed (not visible) or thin grayish green, granular thalli. The stalks are relatively short and thick without fine colored powder. The head has a brown spore mass made of globose spores.

Chaenotheca trichialis has a thin, greenish gray to brownish, granular to bumpy thallus. The pins can have a faint powder beneath the head or not. The spore mass is brown, formed of globose spores.

Chaenothecopsis spp. Some species have similar short pins without powder on the stalk or head, but they are non-lichenized so they have no visible thallus: the hyphae are within the substrate. In general, the stalks are short and thin, while *C. ferruginea* has short, relatively thick stalks. In

some species the spores have 2 cells, in others the spores are football shaped or cylindrical with rounded ends.

Habitat: Frequent over bark and wood of conifers in semi-open montane forests and foothills. Also on conifer boles in rainforests. Although it is found on *Pseudotsuga menziesii* throughout its range in the Pacific Northwest, it is also very frequently found on *Thuja plicata* and *Calocedrus decurrens* in riparian areas, especially in southern Oregon.

Life History: Details for *Chaenotheca ferruginea* 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, known from British Columbia, Oregon, Washington and California. It is common at low to mid elevations on the west side of the Cascade Mountains and less commonly, similar situations east of the Cascades.

National Forests: Documented in WA: Mt. Baker-Snoqualmie. Olympic OR: CRGNSA Mt. Hood, Siuslaw, Willamette, Umpqua, Fremont-Winema. CA: Shasta-Trinity. Suspected on Gifford Pinchot, Deschutes, Rogue River, Siskiyou.

BLM Districts: Salem, Eugene, Roseburg, Medford. Suspected on Coos Bay, Spokane. (Federal records, WTU: Burnett collections)

Other known sites: WA: Bald Hill Natural Area Preserve, Wind River Experimental Forest, Deception Pass State Park, Camano State Park, Index Town Wall area, Larrabee State Park, Washington Park (Anacortes), Bryant, Wallace Falls State Park. OR: H. J. Andrews Experimental Forest, Little Sinks Research Natural Area, McDonald Research Forest, Chip Ross Park (City of Corvallis), Wm. Finley National Wildlife Refuge, Elliot Corbett Memorial State Park, Newberry National Volcanic Monument (Rikkinen 2003, WTU: Burnett collections).

Widespread in temperate and cool areas of both hemispheres, including Europe, Asia, Australasia, North and South America.

Threats: Pervasive logging of old-growth forests in North America and Europe has diminished habitat and opportunities for dispersal of *Chaenotheca ferruginea*. 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 (not just the age of the trees), "...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."

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.

Fire kills these crustose lichens. Survival through a burn depends on escaping the fire in deep bark crevices of old growth trees or patches of unburned trees in riparian areas.

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 National: ORBIC: no rank. WNHP: not yet ranked.

Preparer: Daphne Stone

Date Completed: February 2012

References

Brodo, I., S. D. Sharnoff and S. Sharnoff. 2001. Lichens of North America. Yale University Press, New Haven.

Goward, T. 1999. The Lichens of British Columbia Part 2 - Fruticose Species. British Columbia Ministry of Forests, Victoria, BC.

Nordic Lichen Flora. Ahti, T., P. M. Jørgensen, H. Kristinsson, R. Moberg, U. Sjøchting and G. Thor, Eds. 1999. Volume 1, Introductory parts and Calicioid lichens and fungi. Uddevalla, Sweden.

Peterson, E. B. 2002. A preliminary Key to Calicioid Lichens and Fungi in the Pacific Northwest., Unpublished draft.

Peterson, E. no date. Crustose.net, photography from the lichenological community. Photographs of *Chaenotheca ferruginea* by John Villella.

<http://photos.crustose.net/main.php/v/jvillella/Chaenotheca+ferruginea+on+Incense+Cedar.JPG.html> site last visited 24 February 2012.

Ponzetti, J. 1996. Caliciales in managed and unmanaged Oregon Coast Range forests. Oregon State University, unpublished. (location of sites visited: pers. comm. Eric Peterson)

Rikkinen, J. 2003. Calicioid lichens and fungi in the forests and woodlands of western Oregon. Acta Botanica Fennica 175: 1-41.

Selva, S. B. 2003. Using calicioid lichens and fungi to assess ecological continuity in the Acadian Forest Ecoregion of the Canadian Maritimes. The Forestry Chronicle 79(3): 550-558.

Stridvall, L. no date. Our Plant Galleries. Photographs of *Chaenotheca ferruginea*.

<http://www.stridvall.se/lichens/gallery/Chaenotheca/NIKA9616> Site last visited 22 February 2012.

Smith, C. W., A. Aptroot, B. J. Coppins, A. Fletcher, O. L. Gilbert, P. W. James and P. A. Wolseley, Eds. 2009. *The Lichens of Great Britain and Ireland*. The British Lichen Society, London.

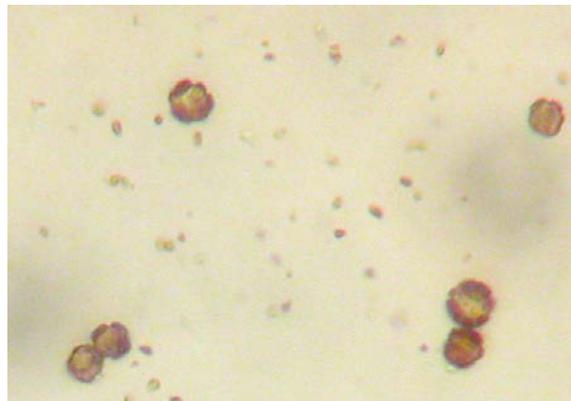
Tibell, L. 1975. The Caliciales of boreal North America. *Symb. Bot. Upsaliensis* 21 (2):1-128.

Tibell, L. 1984: A reappraisal of the taxonomy of Caliciales. - *In*: H. Hertel & F. Oberwinkler (eds.): *Beitrage zur Lichenologie. Festschrift J. Poelt*. Beiheft zur Nova Hedwigia 79. J. Cramer, Vaduz, pp. 597-713.



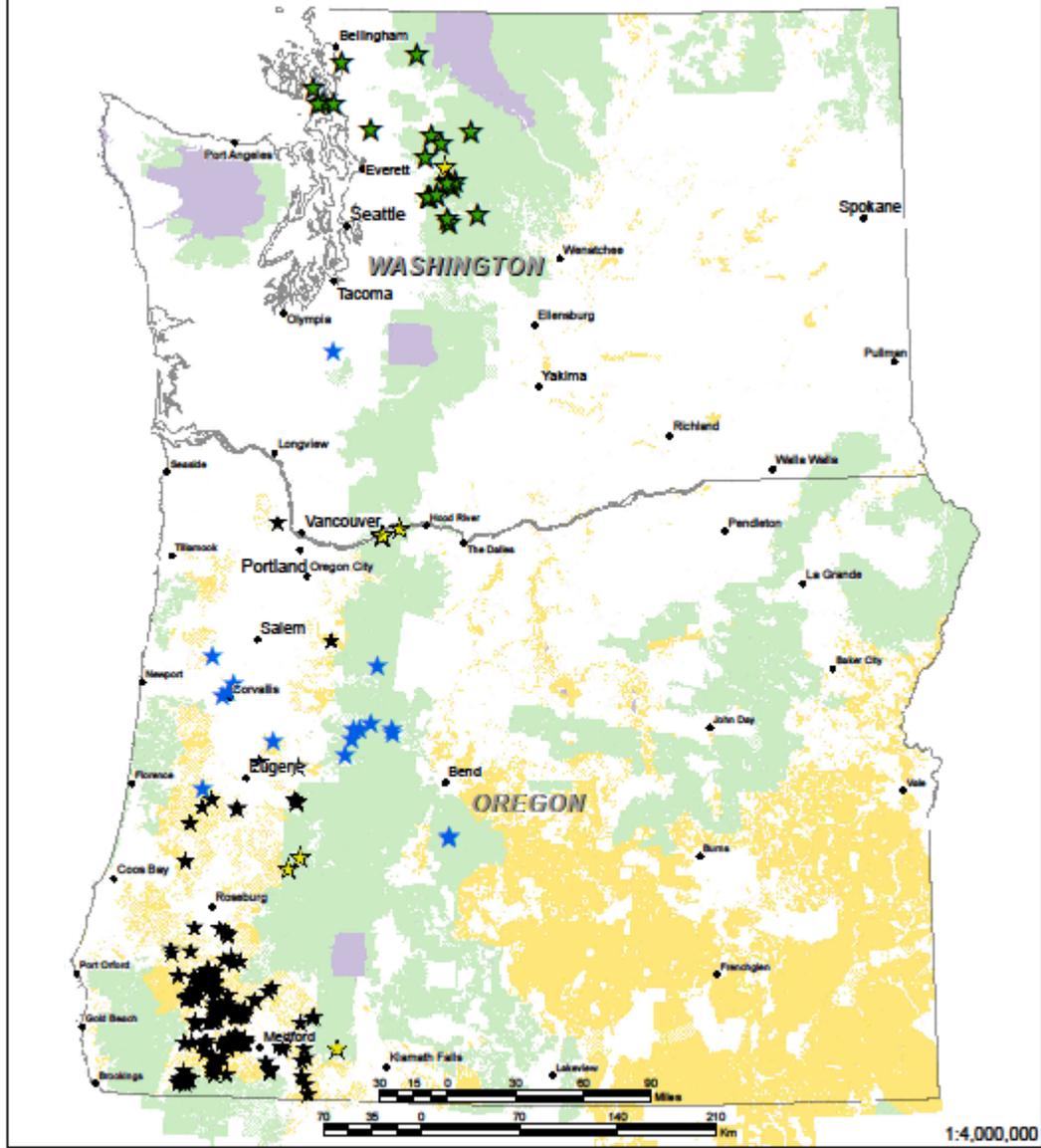
above: Habit, with orange-stained thallus.

below: Spores (each approx 6 μ m diameter). Note ornamentation of coarse cracks.



Photos by Daphne Stone

Chaenotheca ferruginea CHFE7



Legend

- ★ WTU Burnett collections
- ★ FS CHFE7
- ★ BLM CHFE7
- ★ Other Source CHFE7
- Cities of Interest
- Bureau of Land Management
- U.S. Forest Service
- National Park Service



4/16/2012