

SPECIES FACT SHEET

Common Name: Rock broom, sandwort microcalicium

Scientific Name: *Microcalicium arenarium*

Division: Ascomycota

Class: Dothideomycetes

Order: undetermined

Family: Microcaliciaceae

Taxonomic Note: *Microcalicium arenarium* is a non-lichenized, free-living fungus that lacks a photosynthetic algal partner (photobiont, phycobiont). Although not a lichen, it and several similar fungi are usually included in treatments of pin lichens because they often occur in the same habitats and are difficult to differentiate in the field.

Technical Description: Thalli tiny, crustose. Algal partner lacking. Thallus embedded in the substrate (immersed), often visible as an indistinct whitish stain. The spore-producing structure (apothecium) is attached to free-living green algae or leprose lichens. Apothecium 0.8-1 (1.6) mm tall, comprised of a cup-shaped head (capitulum) on a slender cylindrical unbranched stalk (stipe), the stipe 0.06-0.10 mm thick, dull black or grayish, smooth or granular. The capitulum contains a convex mass of loose, powdery greenish-black spores (mazaedium), usually with faint yellow pruina that tint the mazaedium greenish. Spores two-celled, 6-8 (11) μm long, spirally ridged (striate).

Chemistry: apothecia K⁺ yellowish brown (Tibell 1999).

Distinctive characters: (1) Black or grayish stalked apothecia without a thallus, (2) spores produced in a greenish mazaedium, the spores spirally striate, and (3) no algal photobiont. Peterson (2003a) cautioned against some errors in Goward's (1999) keys and description of *Calicium adspersum* that could cause confusion with *Microcalicium*. **Similar species:** *Microcalicium ahlneri* also has a black, stalked apothecia and spirally striate spores but (1) the stipe of the apothecium is cone-shaped instead of cylindrical, expanding gradually to the capitulum, usually 0.4-0.7 mm tall, with a coarsely granular surface, and (2) the spores of the mazaedium protrude in a cylindrical mass well beyond the rim of the capitulum. *Calicium adspersum* has similar black apothecia with greenish mazaedia and spirally striate spores, but it has (1) spores 8-16 μm long, (2) an algal photobiont, and (3) a clearly visible crustose thallus. **Other descriptions and illustrations:** Goward 1999: 191; Tibell 1999: 55.

Life History: Details for *Microcalicium arenarium* are not documented. It parasitizes algae and lichens, in contrast to some other non-lichenized calicioids that are wood decayers (saprobes). The stalked apothecia may facilitate spore dispersal by wind or contact with passing arthropods and birds (Peterson 2006). Growth and dispersal are probably very slow, and substrate requirements are such that it does not appear in forests until they are at least 100 years old (Peterson 2003b). For this reason it has been documented as an indicator of forest age and continuity (e.g., Selva 1996).

Range, Distribution, and Abundance: Interruptedly circumboreal and bipolar. In the Pacific Northwest, Alaska south to California. Scandinavia, UK, Europe, Asia, eastern North America, Australasia, southern South America.

National Forests: documented from the Willamette NF. BLM Districts: none documented; suspected on the Coos Bay, Eugene, and Salem districts, and the Columbia River Gorge National Scenic Area.

Widespread globally but rare in portions of its range. Probably undercollected in the Pacific Northwest but known to be more abundant in eastern North America and Scandinavia (Peterson 2003b).

Habitat: Forming small colonies on free-living green algae (e.g., *Stichococcus*, *Trebouxia*) or leprose lichens (e.g., *Calicium*, *Chaenotheca*, *Chrysothrix*, *Psilolechia*; Goward 1999, Tibell 1999, Peterson 2003b) growing in drier microhabitats such as bark, wood, root, and rock faces that are sheltered from precipitation. In the Pacific Northwest, *Microcalicium arenarium* is probably restricted to old-growth forests because its host species often appear only in forests older than 100 years (Peterson 2003b). Known elevations are below 2000 feet. Forest types are *Pseudotsuga menziesii* and *Tsuga heterophylla* associations (Rikkinen 2003).

Threats: Pervasive logging of old-growth forests in North America and Europe has diminished habitat and opportunities for dispersal of *Microcalicium arenarium*, but there is evidence that it can survive forest fragmentation and disperse to new sites (Peterson 2003b). Altered fire frequency and intensity resulting from fire suppression and fuel buildup may threaten remaining populations (Peterson 2006).

Conservation Considerations: Consider revisiting all known localities and monitoring the status of populations. Search for new populations on federal lands. Protection of known sites from logging, road or trail work, and scorching of tree trunks during prescribed fire will minimize risk to populations. Manage understory in known sites to maintain open conditions.

Conservation rankings: Global: G4G5; National: NNR. Oregon Natural Heritage Information Center: List 2 (S1).

Preparer: John A. Christy, with edits from Daphne Stone, Rob Huff

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Links are provided below to guide you to additional information that be helpful in understanding this species. Included are links to illustrations, photographs, maps and ranking information used to determine threats and status by State Heritage Programs.

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