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## *Chaenotheca olivaceorufa* (Caliciales) New to North America

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**Abstract.** *The lichen Chaenotheca olivaceorufa Vainio collected in California, Oregon, and Washington is here reported new for North America. The ecology of the species is discussed briefly and a map showing its known world distribution is provided.*

During a botanical excursion to California organized by the Department of Botany, University of Helsinki in 1992, the author collected *Chaenotheca olivaceorufa* Vainio, not earlier reported from North America. Since then the species has also been found from several localities in western Oregon and Washington.

*Chaenotheca olivaceorufa* is a small species, but easily recognized even in the field by its flexuous, often grouped ascomata and a protruding mazaeidium commonly extending as a column far beyond the edges of the apothecium (Fig. 1). The edges of the excipulum and the lower side of the capitulum are pruinose. The pruina is yellow in young apothecia and reddish brown in older ones. Ascospores are spheric, more or less smooth, and rather small (3.2)3.5–4.2(4.8)  $\mu\text{m}$ . The thallus is immersed, but may often give the substrate a greenish brown coloration. *Chaenotheca olivaceorufa* differs from most species of the genus in being lichenized with *Trentepohlia*. North American specimens agree well with previously described material, albeit having slightly larger spores. For a more detailed description, see Tibell (1983, 1987, 1996).

*Chaenotheca olivaceorufa* occurs mainly on lignum and dead, rotten bark in shaded forests. All North American localities are from low elevations (50–260 m), from conifer forests and mixed hardwood-conifer forests. Large populations have been seen in decorticated basal crevices of old, living trees (*Acer macrophyllum*, *Picea sitchensis*, *Taxus brevifolia*) and on large snags (*Pseudotsuga menziesii*, *Sequoia sempervirens*). It has also been found on conifer bark, on the basal trunks of *Abies grandis*, *Picea sitchensis*, *Pseudotsuga menziesii*, *Taxus brevifolia*, and *Tsuga heterophylla*. Other species of Caliciales *s.lat.* (Tibell 1984) from the same microhabitats have included *Calicium adpersum* Pers., *C. salicinum* Pers., *Chaenotheca brachypoda* (Ach.) Tibell, *C. chrysocephala* (Ach.) Th. Fr., *C. chlorella* (Ach.) Müll. Arg., *C. ferruginea* (Turner & Borrer) Mig., *C. furfuracea* (L.) Tibell, *C. hispidula* (Ach.) Zahlbr., *C. hygrophila* Tibell, *C. stemonea* (Ach.) Müll. Arg., *C. trichialis*

(Ach.) Th. Fr., *Chaenothecopsis consociata* (Nádv.) A. F. W. Schmidt, *C. debilis* (Sm.) Tibell, *C. savonica* (Räsänen) Tibell, *C. ussuriensis* Titov, *Cybebe gracilentia* (Ach.) Tibell, *Cyphelium inquinans* (Sm.) Trevis., *Microcalicium disseminatum* (Ach.) Vain., and *Stenocybe clavata* Tibell. Also branched groups of pycnidia, similar to those of *Chaenothecopsis viridireagens* (Nádv.) A. F. W. Schmidt have been present in some specimens (Tibell 1993).

*Chaenotheca olivaceorufa* and *C. hispidula* are among the few *Chaenotheca* species that are lichenized with *Trentepohlia*. In Oregon, they often occur in the same low elevation forests as *Sclerophora farinacea* (Chevall.) Chevall., *S. peronella* (Ach.) Tibell, and *Chaenothecopsis rubescens* Vainio, which also are associated with *Trentepohlia*. All of these species are characteristic of mature *Pseudotsuga-Quercus* woodlands and riparian hardwood stands in the Willamette Valley. The *Trentepohlia* photobionts of temperate and tropical Caliciales may be relatively sensitive to low temperatures. Thus, minimum temperatures could be important in explaining their restriction to low elevations and oceanic sites at higher latitudes (Rikkinen 1995).

The total range of *Chaenotheca olivaceorufa* covers temperate, subtropical, and tropical regions (Tibell 1994). It has been collected from Australasia and the Neotropics, and seems to be particularly common on the North Island of New Zealand (Tibell 1983, 1987, 1996). In tropical South America its range also extends to the Atlantic Coast. In the Northern Hemisphere it has been reported from the southernmost Kuril Islands (Titov 1991) and now from western North America. As it seems to be widespread on both sides of the Pacific and also occurs in tropical lowlands, it may well have a circum-Pacific distribution (Fig. 2). Among other lichens, some taxa in *Coccotrema*, *Placopsis*, and *Turgidosculum* show such distribution patterns (Galloway 1991).

*Specimens examined.*—U.S.A. CALIFORNIA. Mendocino Co., Rikkinen 92065. Humboldt Co., Rikkinen 98245. OREGON. Benton Co., Rikkinen 97124, 97125, 97207, 97215, 97341, 98367; Peterson 2805. Curry Co., Rikkinen

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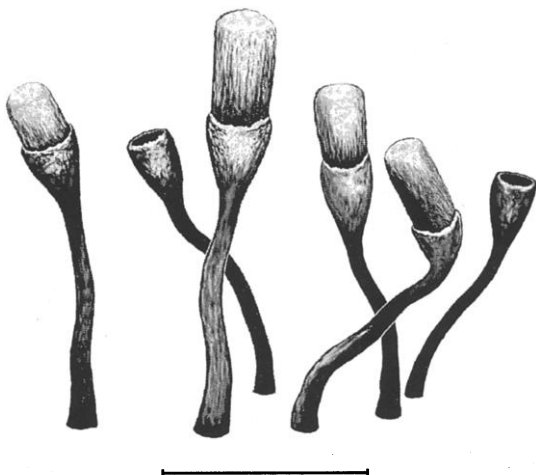


FIGURE 1. *Chaenotheca olivaceorufa* Vainio (U.S.A. OREGON, Rikkinen 98367). Bar = 0.5 mm.

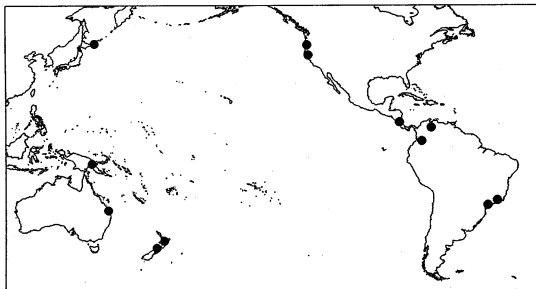


FIGURE 2. Known world distribution of *Chaenotheca olivaceorufa* Vainio (partly after Tibell 1987, 1996; Titov 1991).

98256; Josephine Co., Rikkinen 98099; Polk Co., Rikkinen 98014; Lane Co., Rikkinen 98138, 98144, 98148, 98149, 98153, 98182, 98184; Lincoln Co., Rikkinen 98342. WASHINGTON. Thursten Co., Rikkinen 98207, 98208 (all specimens in H and OSC).

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