

***Cercidospora soror* and *Rhizocarpon malenconianum* from North America**

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Cercidospora soror Obermayer & Triebel

Recent studies on the lichen genus *Arthrorhaphis* and its fungal parasites have greatly improved our understanding of these groups (Hafellner & Obermayer 1995; Hansen & Obermayer 1999; Ihlen 1997a, 1997b; Obermayer 1994, 1996; Santesson & Tønsberg 1994). *Cercidospora* Körber, a genus of lichenicolous fungi in the Dothidiales, contains parasites specializing in *Arthrorhaphis* and various other genera (Navarro-Rosinés et al. 2004). One species parasitic on *Arthrorhaphis* has been reported for western North America, *C. trypetheliza* (Nyl.) Hafellner & Obermayer, as *Neonorrinia trypetheliza* (Nyl.) Sydow (Weber & Wittmann 1992; same

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listing in the latest available online version of the catalog of the Colorado flora).

Previously known from Greenland, Asia, Europe, and South America (Hafellner & Obermayer 1995, Hansen & Obermayer 1999, Ihlen 1997b), *Cercidospora soror* was recently found in western Oregon. The collection was on a sparsely fertile population of *Arthrorhaphis citrinella* (Ach.) Poelt, growing on the side of a large talus boulder. This pocket of talus, with many boulders 1-3 m in diameter, is surrounded by old forest. The area appears to have been little disturbed in recent centuries. Perhaps this is one factor leading to the occurrence of this and other rare or infrequent species in the Coast Range, including *Pyrenopsis furfurea* (Nyl.) Leighton, *Stereocaulon condensatum* Hoffm., *Umbilicaria angulata* Tuck., and *U. havaasii* Llano.

Cercidospora forms black perithecia, in section with a greenish black upper part, and containing 4-celled hyaline spores that are typically broader at one end than the other. See Hafellner & Obermayer (1995) for more details.

Specimen examined.— USA: Oregon, Benton Co., Coast Range, talus slope on south side of Marys Peak, light-colored volcanic rock, surrounded by old *Pseudotsuga* forest, 44° 30.004'N 123° 33.106'W, 970 m, Sept. 2003, *McCune 27071b* (OSC).

Rhizocarpon malenconianum (Llimona & Werner) Hafellner & Mayrhofer

Leciographa malenconiana Llimona and Werner was described as a lichenicolous lichenized fungus specializing on *Diploschistes steppicus* Reichert, now known as *D. diacapsis* (Ach.) Lumbsch. Initially it was reported from a number of sites in Spain (Llimona & Werner 1975), followed by North Africa (Casares-Porcel et al. 1994) as *Rhizocarpon malenconianum*.

This distinctive lichen can be readily recognized with a hand lens. The thallus forms small yellow mounds of areoles on *Diploschistes*, the areoles clustered around one to several jet black apothecia. The thallus color ranges from a very pale yellowish tan to an intense yellow, similar to *R. geographicum* (L.) DC. The general impression is of small thalli of *Epilichen*

scabrosus (Ach.) Clem., but growing on *Diploschistes* rather than *Baeomyces*. We found it only on *D. muscorum*.

Microscopically, the ascospores are distinctive: mostly 3-septate (occasionally more or less), and the spore septation and outline are often slightly asymmetrical or irregular. See Llimona and Werner (1975) for a full description and line drawings.

So far this species is known in North America from the steppe of south-central Washington. Most records are from a cluster of sites in an area about 8 km wide, the portion of Horse Heaven Hills managed by the Bureau of Land Management. This is a hilly escarpment of the Columbia Plateau, facing north toward the Yakima River near Benton City. The low elevations make this a relatively warm site, compared to the rest of the Columbia Basin. The ridgetop has very thin soils, is quite rocky, and is dominated by sparse cushion plants, lichens, and bryophytes. The slopes are steep to gentle, with some benches. The slopes and benches are dominated by bunchgrasses (especially *Pseudoroegneria spicata*) and, in areas without recent fire, *Artemisia tridentata*.

Diploschistes muscorum is a common component of the biotic crust on the soil. It seems to be particularly common in

areas without recent disturbance. *Diploschistes diacapsis*, the substrate for *R. malenconianum* in Spain, is not known from the study area.

Rhizocarpon malenconianum in Europe and North Africa is known from gypsiferous soils. While gypsiferous soils are not known from Horse Heaven Hills, some areas are weakly to moderately calcareous, due to exposure of caliche.

Another parasite frequently accompanied *Rhizocarpon malenconianum*. This parasite forms clusters of dark gray warts on *Diploschistes*, but no reproductive structures have been found.

Specimens examined.—USA: Washington: Benton Co., Horse Heaven Hills, 46° 14.63'N 119° 35.79'W, 390 m, Nov. 1998, *Ponzetti 1285a* (also *Ponzetti 955a, 1149a, 1189, 1245*, and *McCune 24291* from this vicinity, at 390-540 m elevation; specimens in OSC and the research herbaria of the authors); Yakima Co., 46° 31.57'N, 120° 24.74'W, 425 m, *Ponzetti 1582* (OSC).

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