SPECIES FACT SHEET

Common Name: streamside vinyl
Scientific Name: *Leptogium rivale* Tuck.
Division: *Ascomycota*
Class: *Ascomycetes*
Order: *Lecanorales*
Family: *Collemataceae*

Technical Description: Thallus gelatinous foliose, 0.5-2 cm diameter, lead grey, brownish grey to bluish grey when dry, rubbery and brownish grey when wet. Photosynthetic partner (photosymbiont) the cyanobacterium *Nostoc*. Lobes 0.2-1.5 mm, flat, thin (45-150 µm in wet cross-section mounted on slide), round to elongate with rounded tips, margins entire or sometimes irregularly lobate, surface smooth, shiny or dull, completely attached to rock substrate or ends of lobes free. Thallus appears to be crustose when dry, but when wet the lobes become apparent. Upper and lower surfaces with distinct cortices of a single layer of isodiametric cells, 3-9 µm diameter, cells of lower cortex slightly larger than those of the upper cortex (Sierk 1964). **Medulla** of isodiametric fungal cells resembling parenchyma (requires a very thin cross-section examined under a compound scope), cells 5-12 µm in diameter. *Nostoc* cells distributed among the fungal cells. **Apothecia** occasional; on the lobe surface or sunken, 0.2-0.4 mm in diameter, immersed to broadly attached, with a margin the same color as the thallus or darker, disc brownish black, concave. **Spores** 8 per ascus, 16-33 x 5-9 µm, colorless, submuriform, 1-5 septate transversely and 0-1 septate longitudinally.

Chemistry: All spot tests negative.

Distinctive Characters: Small thalli made of tiny grey lobes on river rocks, submerged at least part of the year, with a parenchyma-like medulla. The small thalli look like crustose species, especially when dry. **Similar species:** *Leptogium polycarpum* is greyish with rounded lobes, but is at least an order of magnitude larger and not aquatic. *Peltigera hydrothyrea* (= *Hydrothyrea venosa*) is grey, found on submerged river rocks in similar habitats, but is larger (3-10 mm wide), with ruffled lobes that widen towards the tips and with raised veins beneath. Species of *Verrucaria* form dark thalli that can be confused with *Leptogium rivale* on river rocks. *Verrucaria* is crustose and has urn-shaped fruiting bodies (perithecia).. Non-lichenized colonies of the cyanobacterium *Nostoc parmeloides* grow in similar habitats, but occur as horizontal, cartilagenous, bracket-like thalli attached along one side to the downstream edges of rocks. **Other descriptions and illustrations:** Droker (2007); Goward et al. (1994): 68; Jørgensen (1994); McCune & Geiser (2009): 181; Mikulin (no date); Sierk (1964); Villella (2005).

Life History: Details for *Leptogium rivale* are not documented. Presumably spread by fragmentation and spores.

Range, Distribution, and Abundance: Washington east to Montana and Colorado, south to California. Range in Washington and Oregon follows mid-elevations the Cascade Mountains (ISSSSP 2007).

National Forests: documented from Deschutes, Fremont-Winema, Gifford Pinchot, Mt. Hood, Okanogan-Wenatchee, Rogue River-Siskiyou, Umpqua, and Willamette forests (ISSSSP 2007; Glavich 2009). BLM Districts: documented from Coos Bay, Eugene, Medford, Roseburg, and Salem districts (Oregon State University Herbarium, ISSSSP 2007; Glavich 2009).

Glavich (2009) investigated the habitat and frequency of *Leptogium rivale* in the area of the Northwest Forest Plan and concluded that it cannot be considered rare in that area. Both the wide geographic range and high frequency of occurrence (26%) across the study area suggest that it is common. It is known from about 115 sites in Oregon and Washington, and presumably was overlooked previously because it is camouflaged among streamside rocks when dry. When wet or dry, it is easily confused with ubiquitous species of *Verrucaria*.

Habitat: Stones, boulders, and occasionally wood along streams and rivers, submerged at least part of the year and averaging 2 cm above mean summer water levels. *Leptogium rivale* appears to be restricted to streams with no scouring disturbance and no or only minor siltation and unpolluted water. It is significantly correlated with forests over 80 years old (Glavich 2009, McCune et al. 2007).

Threats: Upstream disturbance such as road construction, logging, dredging, or landslides that may alter streamflow and sedimentation (McCune et al. 2007). Recreational canyoneering can abrade and dislodge thalli and degrade riparian habitat.

Conservation Considerations: The number of known sites and probability occurrence within existing riparian buffers or other protected land allocations may be adequate to maintain viability and dispersal (Glavich 2009). Permanent monitoring locations could be established at sites near stream gauges, which could provide information on the effects of scouring high flow events on lichens. Conserving aquatic lichen populations would primarily result from the

maintenance of stream health and shading regimes. Activities that alter shading regimes at current aquatic lichen sites are likely to affect their populations (Glavich 2009). The best opportunity for conservation would be on federal land and in state parks.

Conservation rankings: Global: G3G5Q; National: NNR; Oregon Natural Heritage Information Center: List 3 (S3).

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Updated in August 2011 by Rob Huff; update removed the Mt. Baker-Snoqualmie NF as having a documented site of this species.

References:

Droker, R. 2007. Online photograph of *Leptogium rivale.* University of Washington Herbarium Image Collection. http://biology.burke.washington.edu/herbarium/imagecollection/taxon.php?ID=18743. Accessed 29 December 2008.

Glavich, D. 2009. Distribution, rarity and habitats of three aquatic lichens on federal land in the U.S. Pacific Northwest. The Bryologist 112(1): 54-72.

Goward, T., B. McCune, & D. Meidinger. 1994. The Lichens of British Columbia. Part 1. Foliose and Squamulose Species. British Columbia Ministry of Forests. Crown Publications Inc., Victoria, B.C. 181 pp.

ISSSSP (Interagency Special Status / Sensitive Species Program). 2007. Distribution map for *Leptogium rivale.* USDA Forest Service/USDI Bureau of Land Management, Oregon – Washington.http://www.fs.fed.us/r6/sfpnw/issssp/documents/maps/lichens/cpt-map-li-leptogium-rivale-2007-11.pdf. Accessed 28 February 2009.

Jørgensen, P. M. 1994. Further notes on European taxa of the lichen genus *Leptogium*, with emphasis on the small species. Lichenologist 26(1): 1-29.

McCune, B. & L. Geiser. 2009. Macrolichens of the Pacific Northwest, 2nd Edition. Oregon State University Press. Corvallis, Oregon. 464 pp.

McCune, B. M., J. Grenon, L. S. Mutch and E. P. Martin. 2007. Lichens in relation to management issues in the Sierra Nevada national Parks. Pacific Northwest Fungi 2(3): 1-39.

http://www.pnwfungi.org/pdf_files/manuscripts_volume_2/pnwf20073.pdf. Accessed 29 December 2008.

Mikulin, A. (no date). Lichen Illustrations, U.S. Forest Service, National Lichens and Air Quality Database and Clearinghouse. http://gis.nacse.org/lichenair/index.php?page=illustrations&image=lepriv.gif&name=Leptogium+rivale. Accessed 29 December 2008.

Sierk, H.A. 1964. The genus *Leptogium* in North America north of Mexico. The Bryologist 67(3): 245-317.

Villella, J. 2005. Crustose net, Photography from the Lichenological Community. http://photos.crustose.net/main.php/v/jvillella/Leptogium+rivale.jpg.html. Accessed 29 December 2008.