Syntrichia laevipila

English name twisted oak moss

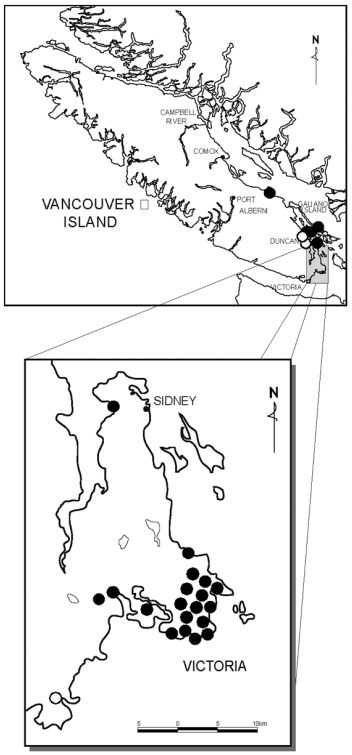
Scientific name *Syntrichia laevipila*

Family Pottiaceae

Other scientific names *Tortula laevipila*
According to Gallego et al. (2004), the following are also synonyms: *Syntrichia pagorum*, *Tortula pagorum*, *Barbula laevipila* var. *meridionalis*, *Barbula pagorum*, *Tortula laevipila* var. *meridionalis*, *Tortula laevipila* var. *notarisii*, *Tortula laevipila* var. *wachteri*

Risk status
BC: imperilled/vulnerable (S2/S3); blue-listed
Canada: not yet assessed (NNR); COSEWIC: special concern (2004)
Global: apparently secure (G3G5)
Elsewhere: Washington, Oregon, California – reported (SNR)

Range/known distribution
The global range of twisted oak moss is difficult to determine because of taxonomic uncertainty, in particular with the closely related species, *Syntrichia pagorum*. In North America, the range of twisted oak moss in the strict sense extends from southwestern British Columbia south to California. If *S. pagorum* is included in the same complex, the range includes much of southern and eastern United States. Globally, the species is found in Europe, Asia, Africa and South America. Records of the species in Mexico, New Zealand and Australia may be due to misidentification. Within British Columbia, the species is known from just north of Nanaimo to Victoria on southeastern Vancouver Island and on 2 of the Gulf Islands. There are 24 confirmed localities and 3 locations that could not be confirmed.



Distribution of *Syntrichia laevipila*
● recently confirmed sites
○ unconfirmed sites

Syntrichia laevipila

Field description

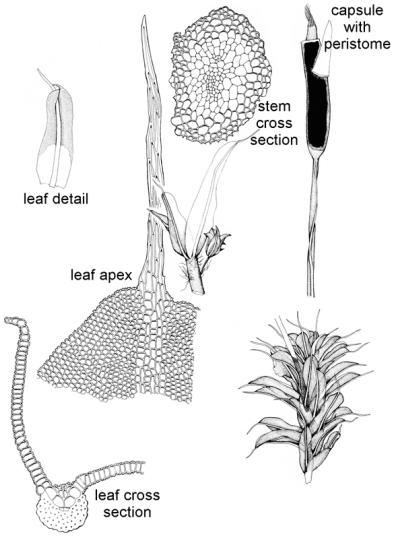
Although two varieties (var. *laevipila* and var. *meridionalis*) were formerly recognized, the differences are now thought to be variations caused by microhabitat differences and, possibly, herbivory. Twisted oak moss forms **green- to yellowish-green tufts mainly on the bark of Garry oak** (*Quercus garryana*) trees. The **stems are usually less than 5 mm** long. The small leaves (less than 2 mm long) are spoon-shaped, infolded with **hair-like awns at the tips**. The **leaves twist when dry** but spread and are slightly recurved when wet. Male sexual organs are found on short stems below the female sexual organs on the same plant. The capsules (spore sacs) are cylindrical and straight to slightly curved. The mouth of the capsule is surrounded by a long twisted peristome (row of tooth-like appendages) with a well-defined membrane at the base.

Identification tips

Because of variation caused by environmental conditions, it can be very difficult to distinguish twisted oak moss from both *Syntrichia princeps* and *S. ruralis*, which occur in the same habitat. Twisted oak moss can be distinguished from these species by its small size (including smaller leaves) and straight rather than recurved leaf margins. In addition, *S. princeps* has male and female structures folded together, whereas twisted oak moss has male structures on small branches below the female structures.

Wynne Miles

Syntrichia laevipila



S. laevipila

Syntrichia laevipila

Life history

In Canada, the plants occasionally produce sporophytes and spores. Spores are dispersed by wind, or by water running along the bark of trees. There is no information on dispersal distances, viability, or reproductive success. Twisted oak moss also reproduces asexually through clonal plant fragments (gemmae). The gemmae are small (0.4 mm long) and are usually found in the axils of the upper leaves. Increased asexual reproduction may be a response to environmental stress such as grazing by insects or slugs, or microclimate extremes. In Oregon, twisted oak moss showed signs of heavy grazing.

Habitat

Twisted oak moss grows in small clumps on exposed tree bark. An examination of over 1600 Garry oak trees found twisted oak moss on just over 4% of the trees as well as on a single big-leaf maple (*Acer macrophyllum*). Habitats include isolated boulevard trees, remnant trees in open fields, as well as on trees in more intact Garry oak ecosystems. Twisted oak moss is most common in protected areas on tree boles, in particular, in "rain tracks" and at the base of the trunk. It may also occur in bark cracks, on branches, and in the "Y" of trees. Twisted oak moss is rarely found growing directly with other mosses or lichens and may be unable to compete with other species effectively. Adjacent species include other mosses such as *Homalothecium nuttallii*, *Zygodon viridissimus*, *Syntrichia* spp. *Antitrichia californica*, *Scleropodium cespitans*, and *Orthotrichum* spp. In Europe, twisted oak moss has a wider range of habitat and has been recorded on willow, tulipwood, elderberry, concrete, and brick.

Why the species is at risk

Although half of the sites are protected from development in parks or Ecological Reserves, the other half may be threatened by development. In urban areas, there are very few young Garry oak trees to replace mature trees that die. Grazing and invasive species may limit Garry oak seedlings in natural areas. Cutting branches of oak trees also destroys habitat. Human disturbance from landscaping may remove moss from trees and dogs may dig or urinate on trunks. The impact of air pollution on twisted oak moss in Canada is not known.

Syntrichia laevipila

What you can do to help this species

Management practices should be tailored to the specific circumstances at the site. Potential management tools will depend on the specific circumstances and may require experimentation prior to implementation. **Before taking any action, expert advice must be obtained and no action taken without it. Please refer to the introductory section of this manual.**

Mature Garry oak trees should be protected and seedlings should be planted to replace older trees. Public and private landowners should be made aware of new populations of this species if they are discovered, and appropriate management practices suggested.

References

COSEWIC. 2004. COSEWIC Assessment and Status Report on the Twisted Oak Moss *Syntrichia laevipila* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa, ON.

Gallego, M., M. Teresa, M. Cano and J. Guerra. 2004. A taxonomic study of *Syntrichia laevipila* (Pottiaceae, Musci) complex. Botanical Journal of the Linnean Society 145 (2): 219-230.

McIntosh, T. 2009. Personal communication. Bryologist, Vancouver, BC.

Merrifield, K. 2000. Bryophytes on isolated *Quercus garryana* trunks in urban and agricultural settings in the Willamette Valley, Oregon. The Bryologist 103(4): 720-724.

Mishler, B.D. 2006. Syntrichia. Provisional Publication for the Bryophyte Flora of North America Project, Missouri Botanical Garden.

For further information, contact the Garry Oak Ecosystems Recovery Team, or see the web site at: www.goert.ca.

*Refers to non-native species.