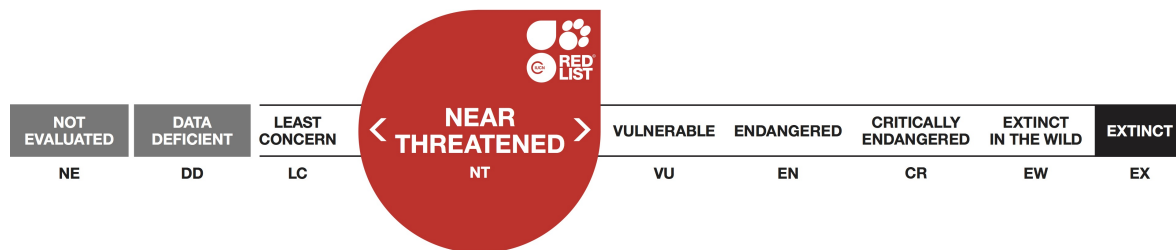


Leptogium rivulare, Flooded Jellyskin Lichen

Assessment by: Randlane, T.



View on www.iucnredlist.org

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Taxonomy

Kingdom	Phylum	Class	Order	Family
Fungi	Ascomycota	Lecanoromycetes	Peltigerales	Collemataceae

Taxon Name: *Leptogium rivulare* (Ach.) Mont.

Synonym(s):

- *Leptogium crenatellum* Tuck.
- *Leptogium sernanderi* Du Rietz
- *Lichen rivulare* Ach.
- *Lichen rivularis* Ach.

Common Name(s):

- English: Flooded Jellyskin Lichen

Assessment Information

Red List Category & Criteria: Near Threatened [ver 3.1](#)

Year Published: 2015

Date Assessed: July 2, 2015

Justification:

Leptogium rivulare is a globally rare lichen with very restrictive habitat requirements (the periodically inundated substrate, bases of trees or rocks; Jørgensen 2007). Potential habitats are easily diminished or even eliminated by natural processes (e.g. interference with the extent or duration of spring flooding) or the deterioration of habitats may be caused by human activities.

This taxon has only a few rich subpopulations of stable condition worldwide (in Republics of Marii El and Komi, Russia, and in Ontario, Canada). In most documented locations it is represented by single or few thalli although suitable substrate is present and careful searching for the species has been performed. In six historical locations (Canada, Estonia, Finland and USA), this taxon is considered extinct. **Assessment** Considering criterion A, information about population reduction is based on records of this species. Altogether 30 localities in Europe and North America are documented and of these six are considered extinct (single localities in Estonia and Finland, subpopulations in Illinois and Vermont in USA, and two subpopulations in Ontario, Canada). Population size reduction is estimated at 20% over the last three generations. This is less than 30% and thus, this species does not qualify for Vulnerable. However, future decline is projected in quality of habitat as the largest subpopulations in Canada (Ontario, Ottawa) are under threat of urban development and recreational activity. In Russia, for example in Republics of Marii El and Komi, the pollution of rivers is another potential threat for this species as only unpolluted water streams are considered suitable for it. This species is assessed as Near Threatened.

Geographic Range

Range Description:

The species occurs in the Northern Hemisphere, in eastern North America and scattered in Europe, altogether in nine countries.☐

Europe

- In Belarus, there is one site in the Gomel region (Motiejūnaitė and Golubkov 2005).
- In Estonia, there is one site, which was recorded in 1957 (Randlane 1987) and this species is Critically Endangered according to the official Red List of Estonia (2008) but it is now considered extinct.
- In Finland, it was known from Lapponia kittilensis but is now extinct (Santesson *et al.* 2004).
- There are records from France but locality data are not available (Roux 2012).
- In Lithuania, there is one site in Zarasai district (Motiejūnaitė *et al.* 2011).
- In Russia, in the Republic of Komi there are 30 separate observations in seven sites (Pystina *et al.* 1999, Red Data Book of the Republic Komi 2009). In the Republic of Marii El, there have been 15 separate observations (Bogdanov and Urbanavichus 2008). There have been observations from the central parts of Ural Mts. (Urbanavichus 2010, Paukov and Teptina 2012) and in the Murmansk region, former Kutsa Nature Reserve (Halonen 1996).
- In Sweden, this species occurs in Östergötland, Södermanland, Uppland, Dalarna and Gästrikland (Santesson *et al.* 2004).

North America

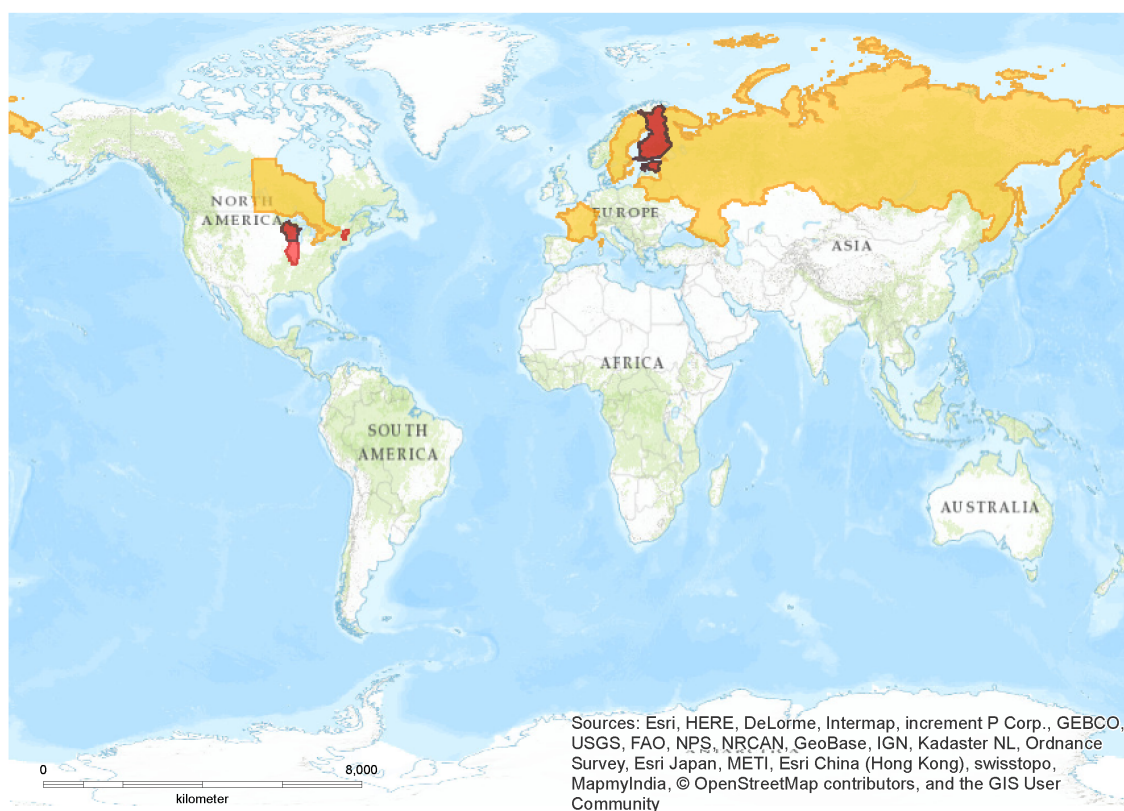
- In Canada, in Ontario there are three extant localities with hundreds of observations and two localities which are probably extinct. There is one extant subpopulation in Manitoba (COSEWIC 2004).
- In USA, there are records from Illinois and Vermont, but both subpopulations are probably extinct according to COSEWIC (2004), and in Wisconsin (CNALH 2012).

Country Occurrence:

Native: Belarus; Canada (Manitoba, Ontario); France (France (mainland)); Lithuania; Russian Federation; Sweden; United States (Illinois - Possibly Extinct, Vermont - Possibly Extinct, Wisconsin)

Regionally extinct: Estonia; Finland

Distribution Map

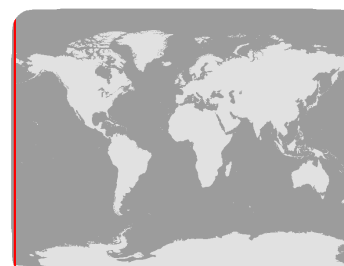


Leptogium rivulare

Range

- Extant (resident)
- Extinct
- Possibly Extinct

Compiled by:
International Union for the
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The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.



Population

Information about population reduction is based on records of this species. Altogether 30 localities in Europe and North America are documented but of these, six localities are considered extinct or possibly extinct (single localities in Estonia and Finland, subpopulations in Illinois and Vermont in USA, and two further subpopulations in Ontario, Canada).

It seems that subpopulations are more threatened in the European Nordic countries (it is Extinct in Finland and Estonia, and Endangered in Sweden), while there are new records from Belarus and Lithuania (one locality in either country). Russian subpopulations, especially those from the Republic of Marii El, are evaluated as stable (Bogdanov and Urbanavichus 2008). In the Republic of Komi, there are 30 separate observations of which only two were evaluated as rich populations; all other records were of a few thalli (Pystina *et al.* 1999). In the Middle Urals, this species is found as the only large specimen and no other findings were made so far although suitable substrate is abundant in this area and despite thorough searches (Paukov and Teptina 2012, Paukov pers. comm.).

In Canada, *Leptogium rivulare* is currently known in Manitoba, and in three localities in Ontario, where the subpopulations are 15 to 35 km apart. In two of these localities, the lichen occurs almost exclusively on tree bases around seasonal ponds. It forms irregular growths on dozens to many hundreds of trees in these places. On some trees, it is barely present; on others, it forms large, encrusting patches about 50 cm across. The great numbers of small thalli often scattered over the bark indicate that successful reproduction is occurring, while the large patches show persistence over many years. Almost all individuals are fertile, and are capable of reproducing when only a few years old. The total amount of *Leptogium rivulare* in Ontario is c. 40 m² (COSEWIC 2004).

On the other hand, the region where the species is now found has been well studied by lichenologists, and careful searching of the full range of habitat possibilities in more than 60 sites in the vicinity and region of the existing and historical subpopulations, has failed to turn up any sign of this species (COSEWIC 2004). In summary, *Leptogium rivulare* is a globally rare lichen having only a few rich subpopulations of stable condition (in Republics of Marii El and Komi, Russia, and in Ontario, Canada). However, even in these countries it is at high extinction risk; it is threatened in Canada, category 1 (Endangered) in Komi and category 3 (Rare) in Marii El Republics. In most documented localities, it is represented by single or few thalli although suitable substrate is present and careful searching for the species has been performed. In six historical locations worldwide (Canada, Estonia, Finland and USA) the taxon is considered extinct; however, most of the historical localities have not been revisited because of too vague locality data.

Current Population Trend: Decreasing

Habitat and Ecology (see Appendix for additional information)

The species has very restricted habitat requirements, found primarily at the margins of seasonal (vernal) pools or small rivers, where it grows on rocks and at the base of living deciduous trees between seasonal high and low water marks. It is vulnerable to changes in normal patterns of annual flooding, as well as to death of host trees (COSEWIC 2004). It has been noticed that this species can survive on fallen trunks for three years, after this it would disappear (Bogdanov and Urbanavichus 2008). In Nordic countries, this species inhabits partially inundated roots or bases of trees, particularly *Alnus glutinosa* and *Populus tremula* along rivers, or rocks (Jørgensen 2007). In Russia, this species has been

recorded on different phorophyte species (*Alnus*, *Betula*, *Pinus*, *Populus*, *Quercus*, *Salix* and *Ulmus*), but mainly on *Populus tremula*, in the area where water stays for a long time during springs (Hermannson and Kudryatseva 1995, Pystina *et al.* 1999, Bogdanov and Urbanavichus 2008). In Canada, the old and present collections are from coniferous and deciduous tree species (*Abies*, *Acer*, *Cornus*, *Fraxinus*, *Quercus*, *Rhamnus*, *Salix*, *Thuja*, *Ulmus* and *Vitis*) in virtually identical habitats: the periodically inundated bases of trees, usually around the margins of basins that fill with meltwater each spring to form seasonal ponds (COSEWIC 2004). All recorded localities of this species are at low elevations, from 20-300 m asl.

Systems: Terrestrial, Freshwater

Use and Trade

This species is not utilised.

Threats (see Appendix for additional information)

Leptogium rivulare is vulnerable to changes in normal patterns of annual flooding, as well as to death of host trees. Restrictive dependence of this species on a limited and unstable habitat may be one threatening factor, as well as ineffective dispersal. It is suggested that the species can thrive only in unpolluted water streams (Paukov and Teptina 2012) and therefore, pollution of streams, rivers or pools is a considerable threat for subpopulations in Russia. Major threats to the largest subpopulations in Canada include urban development and recreational activity.

Conservation Actions (see Appendix for additional information)

In Russia, Belarus and Lithuania some localities are from protected areas. Of the three localities currently known in Ontario, Canada, only one is in a way protected (COSEWIC 2004).

Credits

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Reviewer(s): Scheidegger, C. & McMullin, T.

Contributor(s): Aptroot, A., Spribille, T., Perez-Ortega, S & Paukov, A.

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External Resources

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Appendix

Habitats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Habitat	Season	Suitability	Major Importance?
1. Forest -> 1.1. Forest - Boreal	Resident	Suitable	Yes
5. Wetlands (inland) -> 5.2. Wetlands (inland) - Seasonal/Intermittent/Irregular Rivers/Streams/Creeks	Resident	Suitable	Yes
5. Wetlands (inland) -> 5.7. Wetlands (inland) - Permanent Freshwater Marshes/Pools (under 8ha)	Resident	Suitable	No

Threats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Threat	Timing	Scope	Severity	Impact Score
1. Residential & commercial development -> 1.1. Housing & urban areas	Ongoing	Minority (50%)	Causing/could cause fluctuations	Low impact: 5
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		
5. Biological resource use -> 5.3. Logging & wood harvesting -> 5.3.4. Unintentional effects: (large scale)	Ongoing	Unknown	Slow, significant declines	Unknown
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
7. Natural system modifications -> 7.2. Dams & water management/use -> 7.2.2. Abstraction of surface water (commercial use)	Ongoing	Unknown	Unknown	Unknown
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
7. Natural system modifications -> 7.2. Dams & water management/use -> 7.2.11. Dams (size unknown)	Ongoing	Unknown	Causing/could cause fluctuations	Unknown
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
9. Pollution -> 9.1. Domestic & urban waste water -> 9.1.1. Sewage	Ongoing	Unknown	Slow, significant declines	Unknown
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality		

Conservation Actions in Place

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Conservation Actions in Place
In-Place Research, Monitoring and Planning
Action Recovery plan: No
Systematic monitoring scheme: No
In-Place Land/Water Protection and Management
Conservation sites identified: Yes, over part of range
Occur in at least one PA: Yes
In-Place Species Management
Harvest management plan: No
Successfully reintroduced or introduced benignly: No
Subject to ex-situ conservation: No
In-Place Education
Subject to recent education and awareness programmes: No
Included in international legislation: No
Subject to any international management/trade controls: No

Conservation Actions Needed

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Conservation Actions Needed
1. Land/water protection -> 1.1. Site/area protection

Research Needed

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Research Needed
1. Research -> 1.2. Population size, distribution & trends
3. Monitoring -> 3.1. Population trends
3. Monitoring -> 3.4. Habitat trends

Additional Data Fields

Distribution
Estimated area of occupancy (AOO) (km ²): 128
Continuing decline in area of occupancy (AOO): Yes

Distribution
Extreme fluctuations in area of occupancy (AOO): No
Estimated extent of occurrence (EOO) (km ²): 3777163
Continuing decline in extent of occurrence (EOO): No
Extreme fluctuations in extent of occurrence (EOO): No
Number of Locations: 23-29
Continuing decline in number of locations: Yes
Extreme fluctuations in the number of locations: No
Lower elevation limit (m): 20
Upper elevation limit (m): 300
Population
Continuing decline of mature individuals: Yes
Extreme fluctuations: No
Population severely fragmented: No
Continuing decline in subpopulations: Yes
Extreme fluctuations in subpopulations: No
Habitats and Ecology
Continuing decline in area, extent and/or quality of habitat: Yes
Generation Length (years): 33
Movement patterns: Not a Migrant

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