

Ontario Species at Risk Evaluation Report
for
Flooded Jellyskin (*Leptogium rivulare*)

Committee on the Status of Species at Risk in Ontario (COSSARO)

Assessed by COSSARO as Not at Risk

May, 2014

Final

Leptoge des terrains inondés (*Leptogium rivulare*)

Le leptoge des terrains inondés est un petit lichen semi-aquatique qui a besoin, périodiquement, d'être inondé pour se reproduire. Lorsqu'il est mouillé, ses lobes gonflent et prennent une texture gélatineuse, d'où son nom anglais de « jellyskin », qui signifie « peau gélatineuse ». Son habitude de croître à la base des troncs d'arbres et d'arbustes, sous le niveau de l'eau, dans des mares de petits terrains boisés ou le long des rivages riverains ou lacustres qui subissent des inondations périodiques le rend relativement peu visible. L'espèce, repérée pour la première fois en Ontario en 1946, était connue dans à peine 5 sites jusqu'en 2004, tandis qu'elle est largement répandue en Europe. De récents relevés effectués par le personnel du ministère des Richesses naturelles et de la Foresterie de l'Ontario (MRNF) ont donné lieu à 165 observations étalées à travers 11 comtés en Ontario, de l'extrême nord jusqu'au sud du territoire. Le taux de réussite très élevé des recherches ciblées porte à croire que le leptoge des terrains inondés est beaucoup plus courant et répandu qu'on l'avait d'abord imaginé, et qu'un plus grand nombre de recherches dans les habitats appropriés, riches en calcium, entraîneraient la découverte d'autres populations. Les relevés du MRNF ont révélé que l'espèce se sert principalement de l'écorce de spécimens jeunes et plus âgés d'une grande variété d'arbres et d'arbustes comme support de croissance, ce qui indique que la disponibilité d'habitats ne se limite pas aux espèces retrouvées en Ontario. Selon les nouveaux renseignements recueillis sur l'abondance, la répartition et la taille de la population du leptoge des terrains inondés, l'évaluation de cette espèce conclut qu'elle n'est pas en péril en Ontario.

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1.0 BACKGROUND INFORMATION

1.1 PRIMARY DATA SOURCES

Brinker, S. and C. Lewis. 2013. Improving our knowledge of lichens. OMNR Natural Heritage Information Centre Newsletter, Vol. 18.

Brinker, S., C. Lewis, S. Thompson, and G. Cameron. 2012. Summary of field surveys for Flooded Jellyskin (*Leptogium rofulare*) in Canada, 2010-2012. OMNR Natural Heritage Information Centre and OMNR Species at Risk Branch, Unpublished Report.

COSEWIC 2004. COSEWIC assessment and status report on the Flooded Jellyskin *Leptogium rivulare* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 30 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

Environment Canada. 2013. Recovery Strategy for the Flooded Jellyskin Lichen (*Leptogium rivulare*) in Canada. Species at Risk Act Recovery Strategy Series, Environment Canada. Ottawa. iv + 23 pp. (http://www.sararegistry.gc.ca/virtual_sara/files/plans/rs_flooded_jellyskin_e_final.pdf).

1.2 TECHNICAL SUMMARY

A summary of technical information for the species in Ontario is provided in Appendix 1.

2.0 ELIGIBILITY FOR ONTARIO STATUS ASSESSMENT

COSEWIC (2004) reported that only 5 sites in total (historical and recent) were known to be occupied by the Flooded Jellyskin in Ontario up to 2004. Since then intensive surveys for the Flooded Jellyskin were conducted by staff of OMNR at historical and new sites, ranging from the far north to the extreme south of the province (Brinker et al. 2012, Brinker and Lewis 2013). This effort increased the number of sites known to be occupied in the province greatly and increased our understanding of the abundance and habitat requirements of the species. Consequently, there is sufficient information available to perform a status assessment.

2.1 APPLICATION OF ELIGIBILITY CRITERIA

Taxonomic Distinctness: According to NatureServe (<http://explorer.natureserve.org/>), there are 7 species of jellyskin lichens (*Leptogium* spp.) that occur in Ontario. The Flooded Jellyskin is recognized as a distinct species (*L. rivulare*).

Designatable Units: No.

No morphological or genetic differences have been reported that would suggest there is more than one designatable unit in eastern North America.

Native Status: Yes

The Flooded Jellyskin was first recorded in Ontario in 1946 (COSEWIC 2004). The species is presumed to be a native species that was present but undetected prior to that initial discovery, owing to its small size, cryptic appearance, and unusual habitat (below the water line on the trunks of trees and shrubs in seasonally inundated pools, or on seasonally inundated rocks along the shorelines of lakes and rivers). There is no evidence suggesting the species is not native to Ontario.

Occurrence: Extant

The species is known to be present at many sites in the province.

2.2 ELIGIBILITY RESULTS

The Flooded Jellyskin (*Leptogium rivulare*) is eligible for status assessment in Ontario because the taxon is valid, it is presumed to be native to Ontario, and the species is currently present in the province.

3.0 ONTARIO STATUS BASED ON COSSARO CRITERIA**3.1 APPLICATION OF COSSARO CRITERIA FOR ONTARIO****Applicability of Criteria for Endangered or Threatened Status in Ontario****Criterion A – Decline in Total Number of Mature Individuals****Not applicable.**

The Flooded Jellyskin was known from only 5 sites in Ontario up to 2004 but is now confirmed to be in more than 21 "extant populations" in at least 11 municipalities (Brinker et al. 2012, Brinker and Lewis 2013, Environment Canada 2013). The total number of mature individuals known has undoubtedly also increased greatly. There is no evidence of a decline in the total number of individuals.

Criterion B – Small Distribution Range and Decline or Fluctuation**Not applicable.**

The range of the Flooded Jellyskin is broad, extending from northwestern Ontario to Temagami, Algonquin Park, and southeastern Ontario (Figure 1). The extent of occurrence of the Flooded Jellyskin in Ontario is therefore much greater than 20,000 km², the threshold for threatened status under this criterion. The area occupied by the jellyskin at each known location is likely small, consisting of the base of the trunks of trees or shrubs or a portion of the surface of rocks. However, expanded searches have continued to increase the number of known sites and the number of known individuals of the Flooded Jellyskin (e.g., Brinker et al. 2012, Brinker and Lewis 2013). Based on descriptions provided by Brinker et al. (2012), a great deal more suitable habitat probably exists in Ontario that has not yet been surveyed, and at least some of it is likely occupied by the Flooded Jellyskin. Therefore, it is unlikely that the population

suffers from severe fragmentation overall. For all of the foregoing reasons, the Flooded Jellyskin does not qualify for "at risk" status under this criterion.

Criterion C – Small and Declining Number of Mature Individuals

Not Applicable - Considering the very large range of the Flooded Jellyskin in Ontario (Figure 1), there is no doubt that there are more than 10,000 individuals in the Province. There is no evidence of a decline in the total number of individuals.

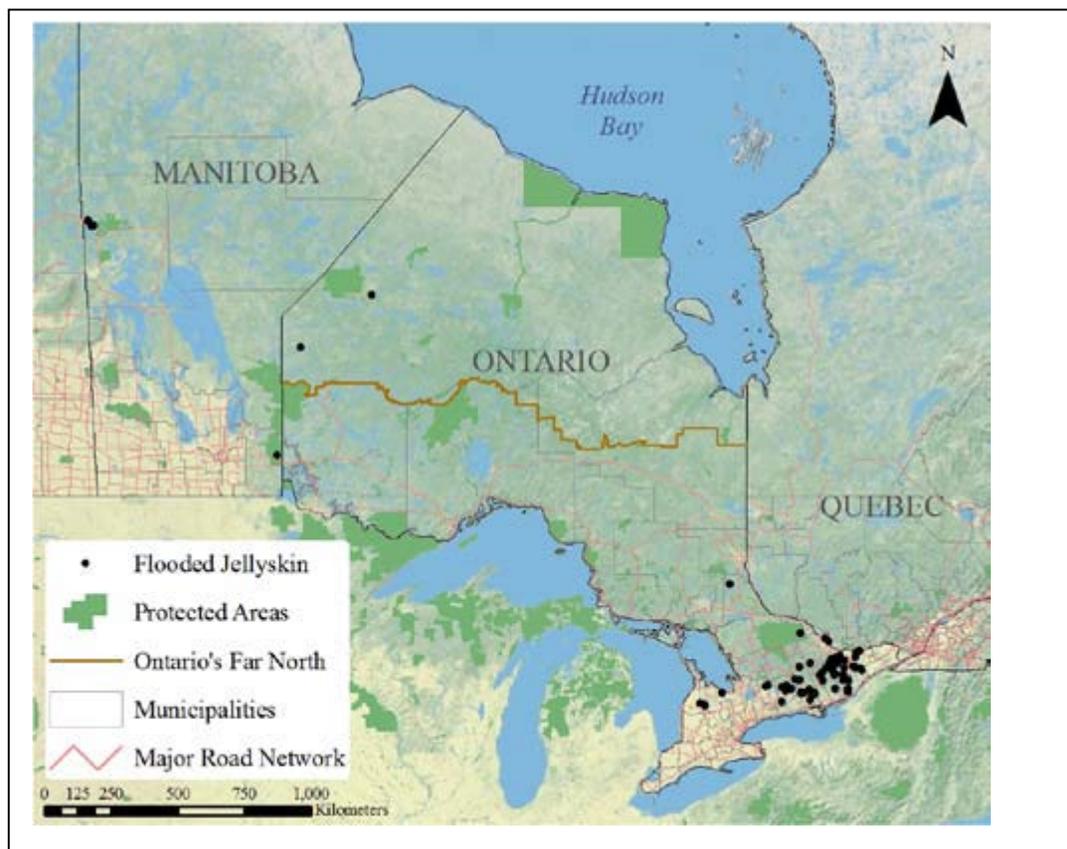
Criterion D – Very Small or Restricted Total Population

Not applicable - As noted above, the Flooded Jellyskin is known to be widely distributed (Figure 1) and to occur in at least 21 populations based on over 165 observations (Brinker and Lewis 2013, Environment Canada 2013). The range is also highly likely to contain more than 1,000 individuals. All the thresholds are therefore exceeded under this criterion.

Criterion E – Quantitative Analysis

No quantitative analysis has been performed.

Figure 1. Recent occurrences of the Flooded Jellyskin in Ontario (from Brinker and Lewis 2013).



3.2 SPECIAL CONCERN: No.

The Flooded Jellyskin is a cyanolichen that becomes established on suitable substrates (tree or shrub bark, rocks) that are periodically inundated by water (Brinker and Lewis 2013). Seasonal flooding stimulates spore production by the lichen. Brinker and Lewis (2013) explained that, at the landscape scale, Flooded Jellyskin appears to be restricted to areas with high calcium carbonate concentrations that reflect base rich soil that has developed from underlying bedrock (e.g., dolomite, marble, or limestone), or that reflects parent material with a high limestone fragment content (e.g., glacial tills, or glaciolacustrine sediments), or simply a base-rich water source. Overall, such sites are not rare on the landscape.

The Flooded Jellyskin is known to grow on both the rough bark of older trees and the smooth bark of younger trees and shrubs on a wide variety of species (COSEWIC 2004, Brinker et al. 2012, Brinker and Lewis 2013) which include:

- green and black ash,
- sugar maple and red maple,
- American elm,
- balsam poplar,
- bitternut hickory,
- yellow birch,
- red osier dogwood,
- buttonbush,
- speckled alder, and
- Bebb's willow and satiny willow.

Moreover, rocks along periodically flooded shorelines are also used (COSEWIC 2004). This broad habitat preference suggests that the Flooded Jellyskin is not as specialized as previously believed and therefore there is a low risk of extirpation or severe decline from Ontario in the foreseeable future. Certainly it is more widespread than previously believed with no evidence of widespread decline and therefore it does not qualify as special concern.

3.3 STATUS CATEGORY MODIFIERS

Rescue Effect: Not applicable.

High Conservation Responsibility: Yes

It is possible that the Canadian range of the Flooded Jellyskin accounts for about 1/3 of the known world total. Most of the population in Canada is found in Ontario, although the species is also known to occur at 8 sites in Manitoba, and 1 site in Quebec (Brinker and Lewis 2013, Environment Canada 2013). In the USA there is only one known site in Wisconsin, and 2 historical collections dating from the 19th century in Illinois and Vermont (COSEWIC 2004, Bennet and Bartkowiak 2013). The species also has a wide range in wetland areas of northern Europe extending into northern Russia (Environment

Canada 2013). NatureServe (<http://www.natureserve.org/explorer/>) lists the species as G3/G5 with a rounded status of G4. The subnational rank for Ontario is S3.

Ontario's Conservation Responsibility:

It is possible that the Ontario range of the Flooded Jellyskin accounts for up to 1/3 of the known world total.

G RANK – NatureServe (<http://www.natureserve.org/explorer/>) lists the species as G3/G5 with a rounded status of G4.

(Last Reviewed 25 May, 2004) (NatureServe, accessed 21 May, 2014)

3.4 DATA DEFICIENT: No

3.5 NOT AT RISK: Yes

As the Flooded Jellyskin does not qualify under any of the above classifications, it is assessed as Not at Risk.

3.6 SUMMARY OF STATUS EVALUATION

The Flooded Jellyskin (*Leptogium rivulare*) is classified as Not at Risk in Ontario.

Applicable Criteria: None.

Classification Summary: The information used in the following summary comes from COSEWIC 2004, Brinker et al. (2012) and Brinker and Lewis (2013).

The Flooded Jellyskin is a semi-aquatic lichen requiring periodic inundation by water to reproduce. When wet, its lobes swell and become jelly-like, giving it the name "jellyskin". Its habit of developing low on the trunks of trees and shrubs below the water line in small woodland pools or along the margins of rivers or lakeshores that are periodically flooded makes it relatively obscure. The species was first identified in Ontario in 1946 and was known at only 5 sites up to 2004. It is widely distributed in Europe. Recent surveys by OMNR staff have resulted in 165 observations spread across 11 counties in Ontario from the far north to the south. The success rate of targeted searches has been high, suggesting that the Flooded Jellyskin is much more common and widespread than previously thought, and that more searches in appropriate calcium-rich habitat would yield more populations. OMNR surveys revealed that the species uses primarily the bark of young and older trees from a wide variety of species of trees and shrubs as a substrate, suggesting that habitat supply is not limiting the species in Ontario. Based on the new information on abundance, distribution, and population size, **the Flooded Jellyskin has been assessed as Not at Risk in Ontario.**

Statements relating to a status category modification: None.

4.0 INFORMATION SOURCES

4.1 LITERATURE CITED

Bennet, J.P., and M.E. Bartkowiak. 2013. Three New Species of *Leptogium* in Wisconsin. *Evansia*: 30 (2): 72- 75.

Brinker, S. and C. Lewis. 2013. Improving our knowledge of lichens. NHIC Newsletter 18:3-6.

Brinker, S. and C. Lewis. 2012. Summary of field surveys for Flooded Jellyskin (*Leptogium rivulare*) in Canada, 2010-2012. OMNR NHIC and Species at Risk Branch Unpublished Report.

COSEWIC 2004. COSEWIC assessment and status report on the Flooded Jellyskin *Leptogium rivulare* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 30 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

Environment Canada. 2013. Recovery Strategy for the Flooded Jellyskin Lichen (*Leptogium rivulare*) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada. Ottawa. iv + 23 pp. (http://www.sararegistry.gc.ca/virtual_sara/files/plans/rs_flooded_jellyskin_e_final.pdf).

4.2 COMMUNITY AND ABORIGINAL TRADITIONAL KNOWLEDGE SOURCES

No community and aboriginal traditional knowledge was received.

4.3 ACKNOWLEDGEMENTS

COSSARO is grateful to Sam Brinker and Chris Lewis for providing information, and to OMNR for conducting surveys to locate populations of this interesting lichen.

APPENDIX 1: TECHNICAL SUMMARY FOR ONTARIO

Species: Flooded Jellyskin

Demographic Information	
Generation time.	Unknown. COSEWIC (2004) estimates 3-4 years.
Is there an [observed, inferred, or projected] continuing decline in number of mature individuals?	No decline is noted. Expanded searches in suitable habitat continue to yield new locations occupied by the Flooded Jellyskin in Ontario (e.g., Brinker et al. 2012, Brinker and Lewis 2013).
Estimated percent of continuing decline in total number of mature individuals within 6 years.	No decline has been noted.
[Observed, estimated, inferred, or suspected] percent [reduction or increase] in total number of mature individuals over the last 10 years.	No decline has been noted. Expanded searches in suitable habitat have continued to yield new locations occupied by the Flooded Jellyskin (e.g., Brinker et al. 2012, Brinker and Lewis 2013). The number of individuals at these sites is likely to be large.
[Projected or suspected] percent [reduction or increase] in total number of mature individuals over the next 10 years.	No decline has been noted.
[Observed, estimated, inferred, or suspected] percent [reduction or increase] in total number of mature individuals over any [10 year period or over a time period including both the past and the future].	No decline has been noted. It is likely that searches in suitable habitat that has not yet been explored would most likely yield new locations occupied by the Flooded Jellyskin.
Are the causes of the decline clearly reversible and understood and ceased?	No decline has been observed.
Are there extreme fluctuations in number of mature individuals?	No.

Extent and Occupancy Information in Ontario	
Estimated extent of occurrence.	The known range of the species in Ontario extends from the Municipality of Kenora in northwestern Ontario, to Temagami and southeastern Ontario. The extent of occurrence is extremely large.
Index of area of occupancy.	Based on the extremely large extent of occurrence of the species in Ontario, the area of occupancy of the Flooded Jellyskin is also likely to be large.
Is the total population severely fragmented?	No. The blank spots in the distribution of the Flooded Jellyskin in Ontario (Figure 1) likely reflect a lack of search effort in suitable habitat rather than inhospitable terrain.

Number of locations.	Many
Number of NHIC Elemental Occurrences	Once updated with recent information on the Flooded Jellyskin, the NHIC database would indicate that there are many EOs.
Is there an [observed, inferred, or projected] continuing decline in extent of occurrence?	No. It is increasing.
Is there an [observed, inferred, or projected] continuing decline in index of area of occupancy?	No. It is increasing.
Is there an [observed, inferred, or projected] continuing decline in number of populations?	No. The number of known populations is increasing.
Is there an [observed, inferred, or projected] continuing decline in number of locations?	No. The number of known locations is increasing.
Is there an [observed, inferred, or projected] continuing decline in [area, extent and/or quality] of habitat?	No. The species has reasonably broad habitat preferences (below the high water mark along lakeshores, rivers, and in woodland pools where it may occur on rocks or on the trunks of young and older trees of a wide variety of species).
Are there extreme fluctuations in number of populations?	No.
Are there extreme fluctuations in number of locations?	No.
Are there extreme fluctuations in extent of occurrence?	No.
Are there extreme fluctuations in index of area of occupancy?	Unknown but unlikely.

Number of Mature Individuals In Each Population or Total Population	
Population (or Total Population)	N of Mature Individuals
	A very large number is likely, based on the very large extent of occurrence.

Quantitative Analysis (population viability analysis conducted)
None has been conducted.

Threats (refer to Threats Calculator and text in status report)
See Environment Canada 2013.

Rescue Effect (immigration from outside Ontario)
Not needed.

Ontario's Conservation Responsibility
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It is possible that Ontario's population may account for up to 33% of the known global range of the species.
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G-rank (see also section 3.3 Status Category Modifiers)
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G4 (G3/G5)
