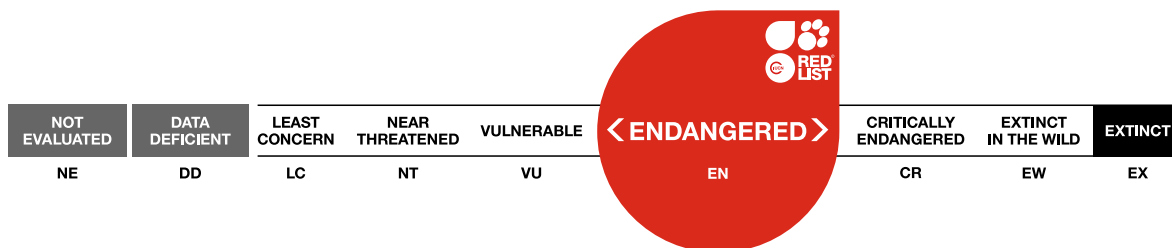


## *Seiophora aurantiaca*, Arctic Orangebush Lichen

Assessment by: Sokoloff, P. & McMullin, T.



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## Taxonomy

Kingdom	Phylum	Class	Order	Family
Fungi	Ascomycota	Lecanoromycetes	Teloschistales	Teloschistaceae

**Scientific Name:** *Seiophora aurantiaca* (R. Br.) Frödén

**Synonym(s):**

- *Borrera aurantiaca* R. Br.
- *Teloschistes arcticus* Zahlbr.
- *Xanthapychia aurantiaca* (R. Br.) S.Y. Kondr. & Ravera
- *Xanthoanapychia arctica* (Zahlbr.) S.Y. Kondr. & Kärnefelt

**Common Name(s):**

- English: Arctic Orangebush Lichen

**Taxonomic Source(s):**

Index Fungorum Partnership. 2020. Index Fungorum. Available at: <http://www.indexfungorum.org>.

## Assessment Information

**Red List Category & Criteria:** Endangered A3c [ver 3.1](#)

**Year Published:** 2020

**Date Assessed:** August 3, 2020

**Justification:**

*Seiophora aurantiaca* is a conspicuous fruticose lichen endemic to the Inuvialuit Settlement Region of the Northwest Territories, Canada. This species primarily occurs in cracks on sedimentary substrates along ice-and-wind scoured shorelines, old beach ridges, and sandy or rocky hummocky tundra not far from the coast. This species is only known from 12 geographically distant or topographically separated locations (as defined by the IUCN) in the Canadian Arctic, documented by 18 herbarium collections. These sites are few and far between in an area with over 6,600 documented lichen collections made at dozens of collecting sites in the western Canadian Arctic, at sites surveyed by trained lichenologists, and by biologists unlikely to miss such a conspicuous species (CNALH 2020). This indicates that the species itself is rare across its global range, even if some sites are documented to contain moderately-abundant numbers of individual thalli. Risks facing this species are predominantly linked to climate change, including habitat loss due to coastal erosion and permafrost slumping, and increased ice melt and saline wash from storm surges. Recommended conservation actions include visiting older collection areas to evaluate species persistence, exploration of similar habitats for new sites, protection of existing localities, and raising awareness of this unique species at a local, national, and international level.

This species is considered Endangered under the A3c criterion due to a suspected rapid decline of over 75% within its next three generations. The decline will likely be caused by sea-level rise and substantial coastal erosion due to climate change. Permafrost slumping, ice melting, and wave action will also lead to substantial declines of the species.

## Geographic Range

### Range Description:

*Seiophora aurantiaca* is endemic to the Inuvialuit Settlement Region in the Northwest Territories, Canada, where it occurs on Banks Island, Melville Island, Victoria Island, and the Cape Parry area of the Northwest Territories mainland (Brown 1823, Lambert 1966, Thomson 1984, Brodo *et al.* 2001, McMullin and Sokoloff 2018). Despite its large range in the Canadian Western Arctic, the locations this species occupies are geographically scattered across its range, and rarely encountered within it (McMullin and Sokoloff 2018). This species is only known from 12 sites in the Canadian Arctic, documented by 18 herbarium collections.

### Country Occurrence:

**Native, Extant (resident):** Canada (Northwest Territories)

# Distribution Map

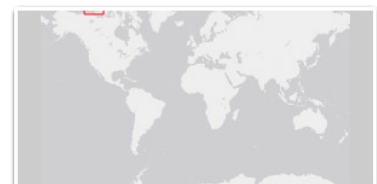


## Legend

● EXTANT (RESIDENT)

Compiled by:

IUCN (International Union for Conservation of Nature) 2020



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

## Population

Though scattered, sites on south-western Banks Island (Lambert, 1966) and at Cape Parry (P. Sokoloff *pers. obs.*) are reported to have moderately large numbers of individual thalli, certainly numbering in the hundreds at the Cape Parry site on Wise Bay. This bright orange microlichen is conspicuous on the landscape and would be hard to overlook even by non-specialist collectors. Despite there being over 6,600 lichen specimens known from the Inuvialuit region (CNALH 2020), *Seiophora aurantiaca* is only presently known from 18 collections made at 12 sites. This suggests that this species is both narrowly endemic to this Arctic region, and rare throughout its global range.

A population reduction is suspected in the next c.99 years (three generations) due to extensive loss of habitat due to sea-level rise and coastal erosion. While all known sites are at risk from overarching threats, four sites are potentially sufficiently far from the coast (>10 km) such that coastal erosion may not be the primary, immediate threat facing these individuals. One of these four locations is based on an older specimen for which complete collection data are sparse, and future examination may place its true location closer to the shore. Therefore, we conclude that three sites are at lesser risk, and 75% of the population is suspected to be lost within the next three generations.

**Current Population Trend:** Decreasing

## Habitat and Ecology (see Appendix for additional information)

*Seiophora aurantiaca* is endemic to the Inuvialuit Settlement Region in the Northwest Territories, Canada, where it occurs on Banks Island, Melville Island, Victoria Island, and the Cape Parry area of the NT mainland (Brown 1823, Lambert 1966, Thomson 1984, Brodo *et al.* 2001, McMullin and Sokoloff 2018). Despite its large range in the Canadian Western Arctic, this species is scattered and rarely encountered (McMullin and Sokoloff 2018). It grows on the ground near coastlines, or on hummocky, poorly vegetated tundra nearby (Lambert 1966). This species appears to prefer sedimentary substrates in harsh areas where ice and/or wind action have created hummocks or cracks in the soil (Lambert 1966). Such crevices, and sheltered areas amongst nearby vegetation, appear to provide suitable microhabitats (P. Sokoloff *pers. obs.*).

**Systems:** Terrestrial

## Threats (see Appendix for additional information)

As this species is narrowly restricted to coastal environments in western parts of the Canadian Arctic it is particularly susceptible to changing weather patterns and sea ice reduction linked to climate change. For example, *Seiophora aurantiaca* is threatened by a loss of habitat from rapidly eroding coasts, increased ocean ice melt and increased saline wash from storm surges, and permafrost melting. All these threats are linked to a changing climate in the Beaufort Sea (Manson and Solomon 2007, Lantuit and Pollard 2008, Jones *et al.* 2009, Kokelj *et al.* 2012, Sankar *et al.* 2019). These are the same threats facing a federally listed Canadian endemic vascular plant: *Braya pilosa*, that occurs in the same area. That status report (COSEWIC 2013) expands on these localised threats. Other climate change-linked threats include the advancement of southern vegetation communities and the introduction of invasive species.

## Conservation Actions (see Appendix for additional information)

*Seiophora aurantiaca* is not currently recognised as a protected species at the federal level in Canada, however it has been recently proposed to be assessed by the Committee on the Status of Endangered Wildlife in Canada (McMullin and Sokoloff 2018). Similarly, it is not currently listed at the territorial level in the Northwest Territories (Government of the Northwest Territories 2020), where all known localities of this species occur. Due to a high number of lichen collections from the western Canadian Arctic, and the conspicuous nature of this species, it is unlikely that additional search efforts would expand the global range; however, targeted searches will likely reveal new occurrences in suitable habitat. Predictive models will assist in locating potential search locations. In addition to searching for new sites, previously collected sites, especially the localities on Melville Island which were last collected in the 1800's, should be re-surveyed to confirm the species is extant at these locations. Raising awareness of and discussing local knowledge on this unique species in the communities of Ulukhaktok and Sachs Harbour, where this species occurs, can help meet conservation goals. And while the process to have this species protected by the Canadian federal government is underway, we recommend initiating a similar process with the Government of the Northwest Territories.

## Credits

**Assessor(s):** Sokoloff, P. & McMullin, T.

**Reviewer(s):** Lendemer, J.

**Facilitator(s) and  
Compiler(s):** Bishop, G. & Allen, J.

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## External Resources

For [Supplementary Material](#), and for [Images and External Links to Additional Information](#), please see the Red List website.



## Appendix

### Habitats

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

Habitat	Season	Suitability	Major Importance?
4. Grassland -> 4.1. Grassland - Tundra	Resident	Suitable	Yes

### Plant Growth Forms

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

Plant Growth Form
LC. Lichen
M. Fungus

### Threats

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

Threat	Timing	Scope	Severity	Impact Score
8. Invasive and other problematic species, genes & diseases -> 8.1. Invasive non-native/alien species/diseases -> 8.1.1. Unspecified species	Ongoing	-	-	Low impact: 3
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.2. Species disturbance 2. Species Stresses -> 2.3. Indirect species effects		
11. Climate change & severe weather -> 11.1. Habitat shifting & alteration	Ongoing	Whole (>90%)	Rapid declines	High impact: 8
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance 2. Species Stresses -> 2.3. Indirect species effects		
11. Climate change & severe weather -> 11.4. Storms & flooding	Ongoing	Whole (>90%)	Rapid declines	High impact: 8
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance 2. Species Stresses -> 2.3. Indirect species effects		

### Conservation Actions in Place

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

<b>Conservation Action in Place</b>
In-place research and monitoring
Action Recovery Plan: No
Systematic monitoring scheme: No
In-place land/water protection
Percentage of population protected by PAs: 1-10
Area based regional management plan: No
Occurs in at least one protected area: No

## Conservation Actions Needed

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

<b>Conservation Action Needed</b>
1. Land/water protection -> 1.1. Site/area protection
4. Education & awareness -> 4.3. Awareness & communications
5. Law & policy -> 5.1. Legislation -> 5.1.2. National level

## Research Needed

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

<b>Research Needed</b>
1. Research -> 1.2. Population size, distribution & trends
1. Research -> 1.3. Life history & ecology
3. Monitoring -> 3.1. Population trends
3. Monitoring -> 3.4. Habitat trends

## Additional Data Fields

<b>Distribution</b>
Estimated area of occupancy (AOO) (km <sup>2</sup> ): 44
Continuing decline in area of occupancy (AOO): Unknown
Estimated extent of occurrence (EOO) (km <sup>2</sup> ): 142270
Continuing decline in extent of occurrence (EOO): Unknown
Extreme fluctuations in extent of occurrence (EOO): No
Number of Locations: 12

<b>Distribution</b>
Continuing decline in number of locations: Unknown
Extreme fluctuations in the number of locations: No
Lower elevation limit (m): 0
Upper elevation limit (m): 90
<b>Population</b>
Continuing decline of mature individuals: Yes
Population severely fragmented: No
<b>Habitats and Ecology</b>
Continuing decline in area, extent and/or quality of habitat: Yes
Generation Length (years): 33

## The IUCN Red List Partnership



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