

Ontario Species at Risk Evaluation Report for
Frosted Elfin
Lutin givré
(*Callophrys irus*)

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

Assessed by COSSARO as Extirpated

November 2020

Lutin givré (*Callophrys irus*)

Le lutin givré est un petit papillon d'une envergure d'environ 2,5 cm, qui tire son nom des écailles gris pâle qui bordent l'extrémité de ses ailes postérieures et leur donne un air givré. Les ailes antérieures du mâle sont brun-gris; celles de la femelle sont brun rougeâtre. Il arbore un point noir distinct près la queue. Les chenilles sont vert jaunâtre, présentent des lignes blanches dans le dos et sont couvertes de poils brunâtres.

Le lutin givré se rencontre principalement dans les habitats de savanes à chênes et de landes à pins, de même que dans les bois dégagés et les lisières de forêt. En Ontario, les femelles pondent leurs œufs sur les boutons floraux du lupin vivace, et les chenilles se nourrissent des fleurs et des gousses de la plante. Vers la fin de l'été, les chenilles fabriquent un abri dans la litière du sol en attachant des feuilles ensemble avec de la soie, et elles y passent l'hiver au stade nymphal. Au début du printemps, les papillons adultes sortent de leur chrysalide.

Cette espèce est en péril partout dans le monde et affiche un déclin dans la totalité de son aire de répartition. En Ontario, il existait autrefois un seul emplacement connu où se trouvait l'espèce, dans une zone abritant les vestiges d'une savane à chênes près de la station forestière de St. Williams, dans le comté de Norfolk. La dernière observation de l'espèce à cet endroit ou ailleurs dans la province date de 1988, et ce, malgré des relevés répétés. Le lutin givré est considéré comme une espèce disparue de l'Ontario.

Cette publication hautement spécialisée «COSSARO Candidate Species at Risk Evaluation for Frosted Elfin» n'est disponible qu'en anglais conformément au Règlement 671/92, selon lequel il n'est pas obligatoire de la traduire en vertu de la Loi sur les services en français. Pour obtenir des renseignements en français, veuillez communiquer avec le ministère l'Environnement, de la Protection de la nature et des Parcs au cossarosecretariat@ontario.ca.

Executive summary

Frosted Elfin is a tiny butterfly with a wingspan of about 2.5 cm. It gets its name from the pale gray scales along the edge its hind wings that give it a frosted look. The male has gray-brown upper wings and the female's are reddish brown. A distinct black spot is located near the tail. The caterpillar is yellowish green with white dashes and is covered with brownish hairs.

Frosted Elfin is found predominately in oak savannah and pine barren habitats, as well as open woods and forest edges. In Ontario, females only lay eggs on the flower buds of Wild Lupine, and the caterpillars feed on the flowers and seedpods. In late summer, the caterpillars build a shelter in the leaf litter on the ground by tying leaves together with silk, and they overwinter in the pupal stage. In early spring, the adult butterflies emerge.

This species is globally imperilled and has declined throughout its entire range. In Ontario it was historically known only from a single site in remnant oak savannah within St. Williams Conservation Reserve in Norfolk County. It has not been seen at this or any other site in the province since 1988, despite repeated searches. Frosted Elfin is assessed as Extirpated in Ontario.

1. Eligibility for Ontario status assessment

1.1. Eligibility conditions

1.1.1. Taxonomic distinctness

Frosted Elfin is considered a valid species (COSEWIC, 2019).

1.1.2. Designatable units

None

1.1.3. Native status

Frosted Elfin is considered native in Ontario. It was first observed in 1967 (COSEWIC, 2019).

1.1.4. Occurrence

Frosted Elfin was last recorded in the province in 1988 (COSEWIC, 2019).

1.2. Eligibility results

Frosted Elfin (*Callophrys irus*) is eligible for status assessment in Ontario.

2. Background information

2.1. Current designations

- GRANK: G2G3 (NatureServe 2020)
- IUCN: Not assessed
- NRANK Canada: NX
- COSEWIC: Extirpated (May 2019) Designated Extirpated in April 1999. Status re-examined and confirmed in May 2000, April 2010 and May 2019.
- SARA: Extirpated (Schedule 1)
- ESA 2007: Extirpated (June 2010)
- SRANK: SX

2.2. Distribution in Ontario

The only known Canadian site for this species was in an area of oak savannah near the St. Williams Forestry Station in Norfolk County in southern Ontario. Annual sightings occurred between 1969-1971 and 1973-1979. No records occurred in 1980-1985, however the species was reported again in 1986 and 1988. None were seen in 1990 and 1991 despite intensive searches. No individuals have been reported since, despite repeated searches.

2.3. Distribution, status and the broader biologically relevant geographic range outside Ontario

The range of the Frosted Elfin extends from New England west to Minnesota, and south to Alabama. It is globally imperilled and imperilled or extirpated in every state where it occurs.

Throughout its eastern North American range, Frosted Elfin has declined largely as a result of habitat loss. Its preferred oak savannah habitat is one of the most threatened habitats in eastern North America and Ontario (Bakowsky et al., 1994). Frosted Elfin is currently under considered for listing under the Endangered Species Act in the U.S.

Table 1. Condition of the Species in Adjacent Jurisdictions and Broader Biologically Relevant Geographic Range

Adjacent Jurisdictions	Biologically Relevant to Ontario (n/a, yes, no)	Condition	Notes & Sources
Quebec	No		Does not occur
Manitoba	No		Does not occur
Michigan	No	S2S3	State listed: Threatened (Michigan Natural Features Inventory, 2020)
Minnesota	No		Does not occur
Nunavut	No		Does not occur
New York	No	S1S2	State listed: Threatened (New York Department of Environmental Conservation, 2020)
Ohio	No	S1	State listed: Endangered (Ohio Department of Natural Resources, 2020)
Pennsylvania	No	S1S2	
Wisconsin	No	S1	State listed: Threatened (Wisconsin Department of Natural Resources, 2020)
<i>Other</i>			

2.4. Ontario conservation responsibility

Frosted Elfin had a very small and restricted range in Ontario that comprised less than one percent of distribution and population of the species.

2.5. Direct threats

Frosted Elfin was likely never common or widespread in Ontario. It was only discovered here in 1967 and has only been confirmed at one location. Natural succession and the planting of pines in the 1940s at the site eventually created shady conditions that

lupines could not tolerate. As the Wild Lupine (*Lupinus perennis*) disappeared, so did the Frosted Elfin

2.6. Specialized life history or habitat use characteristics

Frosted Elfin have two key characteristics that increase their vulnerability:

- The larvae only feed on Wild Lupine which has a restricted and patchy distribution.
- It does not disperse over long distances, and sites where it became locally extinct may not be recolonized.

3. Ontario status assessment

3.1. Application of endangered/threatened status in Ontario

3.1.1. Criterion A – Decline in total number of mature individuals

Does not apply.

3.1.2. Criterion B – Small distribution range and decline or fluctuation

Does not apply.

3.1.3. Criterion C – Small and declining number of mature individuals

Does not apply.

3.1.4. Criterion D – Very small or restricted total population

Does not apply.

3.1.5. Criterion E – Quantitative analysis

Does not apply.

3.2. Application of Special Concern in Ontario

Does not apply.

3.3. Status category modifiers

3.3.1. Ontario's conservation responsibility

Does not apply.

3.3.2. Status modification based on rescue effect or level of risk in broader

biologically relevant geographic range

Does not apply.

3.4. Other status categories

3.4.1. Data deficient

Does not apply.

3.4.2. Extinct or extirpated

Frosted Elfin is extirpated from Ontario. It was historically known only from a single site in remnant oak savannah within the St. Williams Conservation Reserve, Norfolk County. It has not been seen at this or any other site in the province since 1988 despite repeated searches.

3.4.3. Not at risk

Does not apply

4. Summary of Ontario status

Frosted Elfin (*Callophrys irus*) is classified as Extirpated in Ontario. It has not been observed since 1988 despite repeated searches.

This status of this species is consistent with the definition of Extirpated under the Endangered Species Act, 2007.

5. Information sources

Bakowsky, W., & Riley, J. L. (1994). *A survey of the prairies and savannas of southern Ontario*. Paper presented at the Proceedings of the Thirteenth North America Prairie Conference.

COSEWIC. (2019). *COSEWIC status appraisal summary on the Frosted Elfin Callophrys irus in Canada*. Ottawa Retrieved from <https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html>

Environment and Climate Change Canada. (2019). *Recovery Strategy for the Karner Blue (Lycaeides melissa samuelis), Frosted Elfin (Callophrys irus) and Eastern Persius Duskywing (Erynnis persius persius) in Canada*. Ottawa

Michigan Natural Features Inventory. (2020). Michigan's Rare Plants and Animals. Retrieved from <https://mnfi.anr.msu.edu/species>

New York Department of Environmental Conservation. (2020). Endangered Species.

Retrieved from <https://www.dec.ny.gov/animals/7181.html>

Ohio Department of Natural Resources. (2020). State Listed Species. Retrieved from <https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-ODNR/wildlife/state-listed-species>

Wisconsin Department of Natural Resources. (2020). Wisconsin's Endangered and Threatened Species Laws. Retrieved from <https://dnr.wisconsin.gov/topic/endangeredresources/laws>

Appendix 1: Technical summary for Ontario

Species: Frosted Elfin (*Callophrys irus*)

Demographic information

Demographic attribute	Value
Generation time. Based on average age of breeding adult: age at first breeding = X year; average life span = Y years.	1 year
Is there an observed, inferred, or projected continuing decline in number of mature individuals?	Not applicable
Estimated percent of continuing decline in total number of mature individuals within 5 years or 2 generations.	Not applicable
Observed, estimated, inferred, or suspected percent reduction or increase in total number of mature individuals over the last 10 years or 3 generations.	Not applicable
Projected or suspected percent reduction or increase in total number of mature individuals over the next 10 years or 3 generations.	Not applicable
Observed, estimated, inferred, or suspected percent reduction or increase in total number of mature individuals over any 10 years, or 3 generations, over a time period including both the past and the future.	Not applicable
Are the causes of the decline (a) clearly reversible, and (b) understood, and (c) ceased?	a. Yes b. Yes c. Partially
Are there extreme fluctuations in number of mature individuals?	Unknown

Extent and occupancy information in Ontario

Extent and occupancy attributes	Value
Estimated extent of occurrence (EEO). <i>If value in COSEWIC status report is not applicable, then use geocat.kew.org. State source of estimate.</i>	0 km ²
Index of area of occupancy (IAO). <i>If value in COSEWIC status report is not applicable, then use geocat.kew.org. State source of estimate.</i>	0 km ²
Is the total population severely fragmented? i.e., is >50% of its total area of occupancy in habitat patches that are:	Not applicable

Extent and occupancy attributes	Value
(a) smaller than would be required to support a viable population, and (b) separated from other habitat patches by a distance larger than the species can be expected to disperse?	
Number of locations. <i>See Definitions and Abbreviations on COSEWIC and IUCN websites for more information on the term "location". Use plausible range to reflect uncertainty if appropriate.</i>	0
Number of NHIC Element Occurrences <i>Request data from MNRF.</i>	Not applicable
Is there an observed, inferred, or projected continuing decline in extent of occurrence?	Not applicable
Is there an observed, inferred, or projected continuing decline in index of area of occupancy?	Not applicable
Is there an observed, inferred, or projected continuing decline in number of sub-populations or EOs?	Not applicable
Is there an observed, inferred, or projected continuing decline in number of locations?	Not applicable
Is there an observed, inferred, or projected continuing decline in [area, extent and/or quality] of habitat?	Not applicable
Are there extreme fluctuations in number of populations?	Not applicable
Are there extreme fluctuations in number of locations?	Not applicable
Are there extreme fluctuations in extent of occurrence?	Not applicable
Are there extreme fluctuations in index of area of occupancy?	Not applicable

Number of mature individuals in each sub-population or total population (if known)

Sub-population (or total population)	Number of mature individuals
<i>St. Williams Conservation Reserve</i>	0

Quantitative analysis (population viability analysis conducted)

Not applicable.

Threats

Natural succession and the planting of pines in the 1940s at the site eventually created shady conditions that lupines could not tolerate.

Rescue effect

Rescue effect attribute	Value
Does the broader biologically relevant geographic range for this species extend beyond Ontario?	No
Status of outside population(s) most likely to provide immigrants to Ontario	Imperilled
Is immigration of individuals and/or propagules between Ontario and outside populations known or possible?	No
Would immigrants be adapted to survive in Ontario?	Unknown
Is there sufficient suitable habitat for immigrants in Ontario?	Unknown (Environment and Climate Change Canada, 2019)
Are conditions deteriorating in Ontario?	No. There are currently efforts to restore Oak Savannah and Wild Lupine in the Norfolk area.
Is the species of conservation concern in bordering jurisdictions?	Yes
Is the Ontario population considered to be a sink?	No
Is rescue from outside populations likely?	No

Sensitive species

No

Acronyms

COSEWIC: Committee on the Status of Endangered Wildlife in Canada
COSSARO: Committee on the Status of Species at Risk in Ontario
ESA: Endangered Species Act
EO: Element occurrence (as defined by NHIC)
EOO: extent of occurrence
GRANK: global conservation status assessments
IAO: index of area of occupancy
IUCN: International Union for Conservation of Nature and Natural Resources
MNRF: Ministry of Natural Resources and Forestry
NHIC: Natural Heritage Information Centre
NNR: Unranked
NRANK: National conservation status assessment
SARA: Species at Risk Act
SNR: unranked
SRANK: subnational conservation status assessment
S1: Critically Imperiled
S2: Imperiled
S3: Vulnerable
S4: Apparently Secure
S5: Secure
IUCN: International Union for Conservation of Nature and Natural Resources
CDSEPO: Le Comité de détermination du statut des espèces en péril en Ontario