COSSARO Candidate Species at Risk Evaluation

for

Dwarf Lake Iris (*Iris lacustris*)

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

Assessed by COSSARO as SPECIAL CONCERN

May 2011

Final
PART 1

CURRENT STATUS AND DISTRIBUTION

Current Designations:

NRANK Canada – N3 (Assessment date unknown) (NatureServe, accessed 12/01/2011)
COSEWIC – Special concern (COSEWIC 2010).
SARA – Threatened (Schedule 1) (Environment Canada 2010)
ESA 2007 – Threatened (Ministry of Natural Resources 2011)
SRANK – S3 (NatureServe, accessed 12/01/2011)

Distribution in Ontario:

Dwarf Lake Iris occurs in Ontario along the east shore of the Bruce Peninsula north to Tobermory, with two disjunct populations along the southern shore of Manitoulin Island. In Canada, the species occurs only in Ontario.

Distribution and Status Outside Ontario:

Dwarf Lake Iris occurs in only 3 Great Lake jurisdictions - Ontario, Michigan and Wisconsin. It is restricted to the north shores of Lakes Michigan and Huron. It is listed as Threatened federally under the U.S. Endangered Species Act, and designated as Threatened in Wisconsin and Michigan (USFWS 2007). It is also designated as the state flower of Michigan.
PART 2

ELIGIBILITY FOR ONTARIO STATUS ASSESSMENT

2.1 APPLICATION OF ELIGIBILITY CRITERIA

**Taxonomic Distinctness**

Yes. Originally considered a subspecies and a variety of Crested Iris (*Iris cristata*), but now recognized as a distinct species “based on morphology, habitat, range, and chromosome configuration and number” (COSEWIC 2010).

**Designatable Units**

Only one designatable unit is recognized due to restricted Canadian (and Ontario) range within one ecological region (Great Lakes Plains Ecological Area).

**Native Status**

Yes. Endemic to the Great Lakes basin with a number of extant and historical occurrences in Ontario.

**Presence/Absence**

Present. Currently occurs in Ontario.

2.2 ELIGIBILITY RESULTS

1. The putative taxon or DU is valid. Yes.
2. The taxon or DU is native to Ontario. Yes.
3. The taxon or DU is present in Ontario, extirpated from Ontario or extinct? Present.
PART 3
ONTARIO STATUS BASED ON COSSARO EVALUATION CRITERIA

3.1 APPLICATION OF PRIMARY CRITERIA (Rarity and Declines)

1. Global Rank

Threatened.

2. Global Decline

Not in any category. There is no clear indication of a quantifiable, non-cyclical decline, although some populations have been reduced in area (COSEWIC 2010).

3. Northeastern North America Ranks

Not in any category. It is ranked as S3 in all 3 North American jurisdictions where it occurs.

4. Northeastern North America Decline

Not in any category. The global range is co-extensive with the northeastern North American range. (Moreover, while the species is clearly of limited distribution, there is no indication of a significant range-wide decline.)

5. Ontario Occurrences

Special concern. There are currently 29 extant Element Occurrences (EOs) in the NHIC database, including 7 EOs ranked as Historic (not seen in at least 20 years) which may still be extant (NHIC 2011). According to COSEWIC (2010) there are approximately 40 populations present in Ontario, ranging from very small patches to colonies many km$^2$ in size. The species is now known to be much more extensive and abundant than previously reported, based upon new populations being discovered, more comprehensive surveys of previously known populations, and re-evaluation of existing data (COSEWIC 2010). It is not believed that the population itself has actually expanded. With this new information, the known areal extent in Canada (Ontario) has increased to approximately 25 km$^2$ from the <1 km$^2$ estimate in the previous 2004 COSEWIC status report (COSEWIC 2004, COSEWIC 2010).

6. Ontario Decline
Not in any category. Of 33 Ontario EOs, 7 (21%) are ranked as Historic and 4 (12%) as Extirpated (11 in total, or 33%). Although it is probable that some of the EOs ranked as Historic are still extant, the species may have been lost from ≥ 25% of its known Ontario sites. However, a decline of only 5% in area of occupancy has been documented in Ontario since the 1890s (COSEWIC 2010). Eight small populations (<10 m²) are thought to be in decline due to succession or habitat alteration, and portions of the population have been lost at 3 sites, although these would collectively represent a relatively small portion of the total provincial population and range. New populations have been documented, although they are thought to represent newly located occurrences rather than newly colonized or expanding populations (COSEWIC 2010).

7. Ontario’s Conservation Responsibility

Endangered. Ontario makes up an estimated 30% of the global distribution, without considering the size of populations (COSEWIC 2010). Ontario contains about 23% of the number of extant global populations (29 of 95) (COSEWIC 2010).

3.2 APPLICATION OF SECONDARY CRITERIA (Threats and Vulnerability)

8. Population Sustainability

Not in any category. No PVA has been conducted, and there is no evidence of reproductive or recruitment failure in Ontario of the magnitude that would suggest that the species is unlikely to sustain itself in the province. Some smaller populations are declining in size.

9. Lack of Regulatory Protection for Exploited Wild Populations

Not in any category. The species is currently protected as a Threatened species under the federal Species at Risk Act and the provincial Endangered Species Act, 2007, which provides species protection. Habitat protection under the ESA is not yet in effect.

10. Direct Threats

Special concern. Approximately 37% of the provincial population occurs in areas under some type of protection (COSEWIC 2010). Human threats are primarily shoreline development activities resulting in habitat alteration, including residential and cottage development, road clearing and use of heavy machinery (COSEWIC 2010). COSEWIC (2010) noted that there are several situations where the species can co-exist or even thrive in association with human activity. Partial clearing of natural forested lots may actually enhance habitat in some cases by creating canopy gaps and removing the litter layer. Loss of habitat thorough forest succession is a natural threat, and the lack of insect pollinators is also a concern (COSEWIC 2010).
11. Specialized Life History or Habitat-use Characteristics

**Special concern.** In most cases it is restricted to along the shoreline of Lake Huron or within a few km of shoreline within a 160 km long strip. There is a second disjunct population in western Manitoulin Island (COSEWIC 2010). The species spreads by thick rhizomes and has low dispersal ability relative to its colony size.

### 3.3 COSSARO EVALUATION RESULTS

1. **Criteria satisfied in each status category**

Number of primary and secondary criteria met in each status category:

- ENDANGERED – [1/0]
- THREATENED – [1/0]
- SPECIAL CONCERN – [1/2]

Number of Ontario-specific criteria met in each status category:

- ENDANGERED – [1]
- THREATENED – [0]
- SPECIAL CONCERN – [1]

2. **Data Deficiency**

No.

3. **Status Based on COSSARO Evaluation Criteria**

The application of COSSARO evaluation criteria suggests that Dwarf Lake Iris is **Special Concern** in Ontario.
PART 4

ONTARIO STATUS BASED ON COSEWIC EVALUATION CRITERIA

4.1 APPLICATION OF COSEWIC CRITERIA

**Regional (Ontario) COSEWIC Criteria Assessment**

**Criterion A – Decline in Total Number of Mature Individuals**

*Not in any category.* No decline significant or long-term enough to meet criterion.

**Criterion B – Small Distribution Range and Decline or Fluctuation**

*Not in any category.* Estimated Extent of Occurrence – 8,232 km\(^2\) (>5000, <20,000); Index of Area of Occupancy – 348 km\(^2\) (<500) (COSEWIC 2010). Population not severely fragmented, projected continuing decline in area of occupancy (COSEWIC 2010), no extreme fluctuations in number of populations, number of locations, extent of occurrence, or area of occupancy (COSEWIC 2010). Meets B1biii (Threatened) and B2biii (Endangered) but not a or c.

**Criterion C – Small and Declining Number of Mature Individuals**

*Not in any category.* >50 million ramets (COSEWIC 2010).

**Criterion D – Very Small or Restricted Total Population**

*Not in any category.* > 1000 mature individuals, > 20 km\(^2\) area of occupancy, > 5 locations (COSEWIC 2010).

**Criterion E – Quantitative Analysis**

*Not in any category.* None available.

**Rescue Effect**

*NO.* Adjacent populations are on the Lake Huron shoreline (across the lake) and the species is apparently capable of occasional long-distance dispersal. However, the long barriers of open water and unsuitable habitat probably preclude rescue from the U.S. populations (COSEWIC 2010). The restricted range despite apparently suitable habitat may reflect its low dispersal ability and slow colonization after glaciation (Jalava 2008, from COSEWIC 2010).
**Special Concern Status**

Yes. The species meets Special Concern criteria:

a) “the wildlife species has declined to a level of abundance at which its persistence is increasingly threatened by genetic, demographic or environmental stochasticity, but the decline is not sufficient to qualify the wildlife species as Threatened” – 7 populations have been lost, low genetic diversity, continuing habitat decline (COSEWIC 2010); and

b) “the wildlife species may become Threatened if factors suspected of negatively influencing the persistence of the wildlife species are neither reversed not managed with demonstrable effectiveness”

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**4.2 COSEWIC EVALUATION RESULTS**

1. **Criteria satisfied in each status category**

   ENDANGERED – [No]
   THREATENED – [No]
   SPECIAL CONCERN – [Yes]

2. **Data Deficiency**

   No.

3. **Status Based on COSEWIC Evaluation Criteria**

The application of COSEWIC evaluation criteria suggests that Dwarf Lake Iris is Special Concern in Ontario.
PART 5

ONTARIO STATUS DETERMINATION

5.1 APPLICATION OF COSSARO AND COSEWIC CRITERIA

COSSARO and COSEWIC criteria give the same result. Yes.

5.2 SUMMARY OF STATUS EVALUATION

Dwarf Lake Iris is classified as Special Concern in Ontario.

The Dwarf Lake Iris is a small perennial that is endemic to the Great Lakes basin, restricted to the northern shorelines of Lakes Huron and Superior. It is ranked as G3 globally, and as S3 in all 3 jurisdictions where it occurs (Ontario, Michigan, Wisconsin). There is little indication of a broad decline globally, although Ontario’s population appears to have declined. Ontario represents approximately 30% of the global species’ distribution and 23% of its global population. Human threats include shoreline development, road clearing and use of heavy machinery. Partial clearing of natural forest may enhance habitat in some cases by creating canopy gaps and removing the litter layer. The species has a specialized life history that restricts it to moist habitats (e.g. alvars, bedrock shorelines, sand or gravel beach ridges, calcareous soils in forest openings) within a few km of great lakes shorelines. Although the global rarity of this species and the significant portion of its global range in Ontario suggest a higher designation, the Dwarf Lake Iris is designated as Special Concern in Ontario due to several newly discovered populations, the lack of significant population decline, limited direct threats, and the fact that documented declines have been focused primarily on smaller, more fragmented populations.
Information Sources

1. Literature Cited


2. Community and Aboriginal Traditional Knowledge Sources

No sources used for this report.
## Appendix 1 – Dwarf Lake Iris G3
### NORTHEASTERN NORTH AMERICA RANK, STATUS AND DECLINE

(NatureServe 2011)<sup>1</sup> • 2

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Occurs as a native species in 3 of 28 northeastern jurisdictions
Srank or equivalent information available for 3 of 3 jurisdictions = 100 %
S1, S2, SH, or SX in 0 of 3 = 0 %

<sup>1</sup> Accessed Jan. 12 2011
<sup>2</sup> Note that Newfoundland and Labrador are considered separate jurisdictions as this is how they are referenced by NatureServe.