

COSSARO Candidate Species at Risk Evaluation
for
Slender Bush-clover, *Lespedeza virginica*

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

Assessed by COSSARO as Endangered

Lespédèze de Virginie (*Lespedeza virginica*)

Le lespédèze de Virginie est une plante vivace de la famille des pois qui produit des fleurs et des fruits à de nombreuses reprises au cours de son cycle de vie, qui peut durer jusqu'à 17 ans. Les plantes produisent des fleurs qui ressemblent à celle des pois, généralement de rose à pourpre, et peuvent être soit chasmogames (ouvertes) et pollinisées par les abeilles et les papillons, soit cléistogames (fermées), se pollinisant par autogamie dans le bourgeon. L'aire de répartition du lespédèze de Virginie comprend l'est du Texas et le nord de la Floride jusqu'au centre de la Nouvelle-Angleterre, le sud de l'Ontario et le sud du Michigan avec des populations disjointes au Wisconsin, au Minnesota et au Mexique. Au Canada, on ne connaît qu'une seule occurrence de l'espèce, dans la ville de Windsor, dans le sud de l'Ontario, où elle est restreinte dans les habitats en péril critique de la prairie de hautes graminées et de savane du complexe de la prairie Ojibway. En plus de la fragmentation de l'habitat et de la situation en péril critique de son habitat, le lespédèze de Virginie est menacé par la succession et par la concurrence interspécifique des espèces envahissantes. L'espèce est désignée comme étant **en voie de disparition** en Ontario.

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PART 1

CURRENT STATUS AND DISTRIBUTION

Current Designations:

GRANK – G5 (NatureServe, accessed 21/05/2013)
NRANK Canada –N1 (NHIC, accessed 21/05/2013)
COSEWIC – Endangered (COSEWIC, 2013)
SARA – Endangered (Environment Canada, 2003)
ESA 2007 – Endangered
SRANK – S1 (NHIC, accessed 21/05/2013)

Distribution in Ontario:

In Canada, Slender Bush-clover is currently known from a single population in southwestern Ontario in the City of Windsor.

Distribution and Status Outside Ontario:

Outside Ontario, Slender Bush-clover ranges from eastern Texas and northern Florida to central New England and southern Michigan. Disjunct populations occur in central Wisconsin, southern Minnesota, and northern Mexico.

PART 2

ELIGIBILITY FOR ONTARIO STATUS ASSESSMENT

2.1 APPLICATION OF ELIGIBILITY CRITERIA

Taxonomic Distinctness

Yes *Lespedeza virginica* (L.) Britt. [Trans. N.Y. Acad. Sci. 12: 64(1893)]

Designatable Units

Plants in the Ojibway Prairie complex comprise the only extant Canadian occurrence and are considered a single designatable unit (COSEWIC, 2013).

Native Status

Yes. Until 1977 Slender Bush-clover was thought to be extirpated from Canada because the only recorded specimen was one collected by John Macoun on July 30, 1892, at Leamington, Ontario (Pratt 1986). This location has become heavily urbanized over the past century and the original population has never been relocated. However, in 1977 the presence of Slender Bush-clover was reported by Joe Johnson in Windsor, Ontario (COSEWIC, 2003).

Presence/Absence

Present. One extant population remains in Ojibway Park, in the Ojibway Prairie complex of Windsor, 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

Not in any category. G5

2. Global Decline

Insufficient information Slender Bush-clover is globally secure, but has not been ranked in 22 out of the 32 states in which it occurs. It is state/province listed in only three jurisdictions (ON, NH, WI). There is no evidence of significant declines in aerial extent or abundance over its global range.

3. Northeastern North America Ranks

Special concern. Srank or equivalent information for Slender Bush-clover is available for only 10 out of the 19 Northeastern North American jurisdictions in which it occurs. It has an Srank of S1, S2, SH, or SX in 3 of these 10 assessed jurisdictions (30%). The threshold for this criterion may not be met if all states ranked this species. For example, in Michigan (SNR), it has a moderate distribution in the southern part of the state, having been reported from 17 out of the 41 most southerly counties (Michigan Flora Online 2011).

4. Northeastern North America Decline

Insufficient information. Detailed information about Slender Bush-clover in northeastern North America is lacking, although overall it is ranked as G5, secure. In northeastern North America it is ranked as critically imperiled in New Hampshire, imperiled in Wisconsin, and probably vulnerable in New York (although there is some uncertainty about the last classification; NatureServe 2013). In Delaware, Iowa, Kentucky, New Jersey, Virginia and West Virginia it is either secure or apparently secure, but elsewhere it has not been ranked.

5. Ontario Occurrences

Endangered. Two element occurrences have been documented in Canada: the Ojibway Prairie complex subpopulation, and the Leamington subpopulation (NHIC, accessed May, 2013). The latter is now extinct (last seen in 1892), leaving only a single extant population in Ontario which comprises three sites: Ojibway Park, Tallgrass Heritage Park, and Black Oak Heritage Park. The proximity of the three sites, which are all separated by a break in habitat of <1 km, combined with the potential for both seeds and pollinators to disperse between sites, led COSEWIC (2013) to conclude that they collectively represent a single population, and NHIC to designate this a single Element Occurrence (NHIC, 2013). In 2011 the only site identified in Ontario as having mature Slender Bush-clover plants was at Ojibway Park (COSEWIC, 2013). Personal communication with Dan Barcza (Sage Earth, London, ON) and Paul Pratt (City of Windsor Ojibway Nature Centre) confirmed that there are no additional records. Although no

Slender Bush-clover has been seen at Tallgrass Heritage Park or Black Oak Heritage Park for >20 years, there may be a viable seedbank at each of these sites because Slender Bush-clover seeds obtained from herbarium specimens have been shown to remain viable for at least 54 years (Clewell 1966).

6. Ontario Decline

Threatened. Two occurrences have been documented in Canada, but one of these, the Leamington occurrence, has not been observed since 1892 and is considered extinct. Although mature plants have been found at only two of the three sites within the Ojibway Prairie complex over the last twenty years, there is no evidence of a collective decline in numbers of individuals at that site: in 2011 the Ojibway Prairie complex occurrence comprised 165 mature individuals in Ojibway Park, compared to 168 mature individuals in Ojibway Park and Tallgrass Heritage Park combined during the previous status assessment (COSEWIC, 2013). The classification of threatened for this category is based on the fact that one of two element occurrences (50%) has been lost in Ontario from historic times to the present.

7. Ontario's Conservation Responsibility

Not in any category. Less than 1% of the global range of Slender Bush-clover extends into Canada (COSEWIC, 2013).

3.2 APPLICATION OF SECONDARY CRITERIA (Threats and Vulnerability)

8. Population Sustainability

Not in any category. In 2011 the Ojibway Prairie complex subpopulation consisted of 165 mature individuals limited to one site (Ojibway Park), down from 168 mature individuals in 2 sites (Ojibway Park and Tallgrass Heritage Park) documented during the previous status assessment (COSEWIC, 2013).

9. Lack of Regulatory Protection for Exploited Wild Populations

Not in any category. The species is listed under Schedule 1 of Ontario's *Endangered Species Act, 2007* (ESA).

10. Direct Threats

Endangered. The destruction of much of the Slender Bush-clover original habitat has severely fragmented the landscape, isolating the remaining subpopulations from other areas of suitable habitat, thus limiting the species' ability to expand. In addition to habitat loss and fragmentation, current threats to Slender Bush-clover include: 1) altered disturbance regime resulting in successional changes to habitat, reducing open areas for germination and overall growth and survival, and 2) interspecific competition from invasive species, particularly Crown-vetch, Spotted Knapweed, and Autumn Olive. A recovery strategy has not been prepared for this species. The extant populations are within protected areas that have management plans, although these plans are not likely addressing threats specific to Slender Bush-clover.

11. Specialized Life History or Habitat-use Characteristics

Endangered. The tallgrass prairie and savanna habitats that the species currently occupies are critically imperiled in Ontario.

3.3 COSSARO EVALUATION RESULTS

1. Criteria satisfied in each status category

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

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

2. Data Deficiency

No.

3. Status Based on COSSARO Evaluation Criteria

The application of COSSARO evaluation criteria suggests that **Slender Bush-clover** is **Endangered** in Ontario.

PART 4

ONTARIO STATUS BASED ON COSEWIC EVALUATION CRITERIA

4.1 APPLICATION OF COSEWIC CRITERIA

Criterion A (Decline in Total Number of Mature Individuals):

Not applicable. Lack of evidence for decline.

Criterion B (Small Distribution Range and Decline or Fluctuation):

Meets Endangered B1 and B2, because of small EO and IAO, and occurring at a single location, with inferred declines in habitat quality (iii), and projected declined in extent of occurrence (i) and area of occupancy (ii).

Criterion C (Small and Declining Number of Mature Individuals):

Not met. Lack of evidence for decline in mature individuals.

Criterion D (Very Small or Restricted Total Population):

Meets Endangered D1 with fewer than 250 mature individuals.

Criterion E (Quantitative Analysis):

Not done.

Rescue Effect

No. The nearest population of Slender Bush-clover is in adjacent Michigan at the Middlebelt Prairie in the Greater Detroit area, roughly 26 km southwest of Ojibway Park, but due to the degree of development in areas between the two populations and the physical barrier of the Detroit River, the likelihood of recruitment is low (COSEWIC, 2013).

Special Concern Status

Not applicable.

4.2 COSEWIC EVALUATION RESULTS

Criteria satisfied in each status category

ENDANGERED – [yes]
THREATENED – [no]
SPECIAL CONCERN – [no]

2. Data Deficiency

No. There is insufficient information to assess potential patterns of global and northeastern North American decline, but there is adequate information to conclude that this species is endangered.

3. Status Based on COSEWIC Evaluation Criteria

The application of COSEWIC evaluation criteria suggests that **Slender Bush-clover** is **Endangered** 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

Slender Bush-clover is classified as **Endangered** in Ontario.

Slender Bush-clover (*Lespedeza virginica*) is a perennial herb in the pea family that produces flowers and fruits many times over its lifespan, which can last up to 17 years. Plants produce flowers that are pea-like in appearance, normally pink to purple, and can be either chasmogamous (open) flowers, pollinated mainly by bees and butterflies, or cleistogamous (closed) flowers that self-pollinate in bud. The distribution of the Slender Bush-clover ranges from eastern Texas and northern Florida to central New England, southern Ontario, and southern Michigan, with disjunct populations in Wisconsin, Minnesota, and Mexico. In Canada, it is currently known from a single occurrence in the City of Windsor, southern Ontario, where it is restricted to the critically imperiled habitats of tallgrass prairie and savanna of the Ojibway Prairie complex. In addition to habitat fragmentation and the critically imperiled state of its habitat, Canadian Slender Bush-clover is threatened by succession, and by interspecific competition from invasive species.

Information Sources

1. Literature Cited

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Personal communications cited (based on correspondence from June 13, 2013):

Dan Barcza, Terrestrial and Restoration Ecologist, *Sage Earth, Palgrave, London* ; <http://www.sageearth.ca/>

Paul Pratt, Ojibway Nature Centre Naturalist, Windsor, Ontario. ppratt@city.windsor.on.ca

2. Community and Aboriginal Traditional Knowledge Sources.

There was no known Community or Aboriginal Traditional knowledge on this species.

3. Acknowledgements

APPENDIX 1

NORTHEASTERN NORTH AMERICA STATUS RANK AND DECLINE

	Subnational Rank	Sources	Decline	Source
CT	SNR	NatureServe 2013	No information	
DE	S5	NatureServe 2013	No information	
IL	SNR	NatureServe 2013	No information	
IN	SNR	NatureServe 2013	No information	
IA	S4	NatureServe 2013	No information	
LB	Not present	NatureServe 2013		
KY	S5	NatureServe 2013	No information	
MA	SNR	NatureServe 2013	No information	
MB	Not present	NatureServe 2013		
MD	SNR	NatureServe 2013	No information	
ME	Not present	NatureServe 2013		
MI	SNR	NatureServe 2013	No information	
MN	Not present	NatureServe 2013		
NB	Not present	NatureServe 2013		
NF	Not present	NatureServe 2013		
NH	S1 State listed: Threatened	NatureServe 2013	Restricted distribution, but no information on decline	USDA, 2013
NJ	S5	NatureServe 2013	No information	
NS	Not present	NatureServe 2013		
NY	S3?	NatureServe 2013	Restricted distribution, but no information on decline	Weldy et al. 2013
OH	SNR	NatureServe 2013	No information	
ON	S1	NatureServe 2013		
PA	SNR	NatureServe 2013	No information	
PE	Not present	NatureServe 2013		
QC	Not present	NatureServe 2013		
RI	SNR	NatureServe 2013	No information	
VA	S4	NatureServe 2013	No information	
VT	Not present	NatureServe 2013		
WI	S2 State listed: Threatened	NatureServe 2013	Recognized but unquantified decline	Wisconsin Dept. of Natural Resources, 2013
WV	S4	NatureServe 2013	No information	

Occurs as a native species in 19 of 29 northeastern jurisdictions
 Srank or equivalent information available for 10 of 19 jurisdictions = 53%
 S1, S2, SH, or SX in 3 of 10 = 30%