

COSSARO Candidate Species at Risk Evaluation
for
Northern Barrens Tiger Beetle (*Cicindela patruela*)

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

Assessed by COSSARO as ENDANGERED

November 2009

La **cicindèle des pinèdes** se reconnaît grâce à sa couleur vert métallique et elle occupe les forêts clairsemées sur sol sablonneux. Il s'agit d'une espèce relativement furtive, facilement ignorée en raison de sa similitude avec la très répandue cicindèle à six points. Son aire de répartition comprend le nord-est et le centre-nord de l'Amérique du Nord, atteignant sa frontière nordique dans le sud de l'Ontario. En Ontario, elle se retrouve dans le Parc provincial The Pinery où elle a été identifiée pour la première fois en 1991. Elle avait précédemment été identifiée à baie Constance sur la rivière des Outaouais (dans les années 1950), mais cette population est aujourd'hui considérée comme disparue, possiblement en raison de la succession forestière et de la pulvérisation de DDT. Cette espèce rare décline dans l'ensemble de son aire de répartition. Les menaces importantes sont liées à la perte d'habitat à la suite de la succession naturelle, du piétinement et d'une augmentation des prédateurs le long des sentiers pédestres. La cicindèle des pinèdes est désignée « **en voie de disparition** » en raison de la faiblesse de la population, de la taille de son aire de répartition et de son déclin apparent à l'échelle de l'Ontario et mondiale.

Cette publication hautement spécialisée (Northern Tiger Beetle COSSARO Evaluation) n'est disponible qu'en Anglais en vertu du Règlement 411/97 qui en exempte l'application de la Loi sur les services en français. Pour obtenir de l'aide en français, veuillez contacter le secrétariat de COSSARO par courrier électronique à l'adresse COSSAROsecretariat@ontario.ca.

PART 1: COSSARO candidate species at risk evaluation form – November 2009

Northern Barrens Tiger Beetle (*Cicindela patruela*)

Current designations:

GRANK – G3

NRANK Canada – N3

COSEWIC – N/A

SARA – N/A

General status Canada – May be at Risk

ESA 2007 – N/A

SRANK – S1

General status Ontario – May be at Risk

Distribution and status outside Ontario:

The historic range includes Ontario, Quebec, and 24 states in the north central and eastern US. Its distribution is discontinuous and very local throughout its range. In Canada, it was historically known from two sites along the Ottawa River valley in Ontario and Quebec. The only confirmed extant site in Canada is at Pinery Provincial Park.

Eligibility criteria:

Native status

Yes.

Taxonomic distinctness

Yes. Treated as a full species by all relevant authorities (e.g. Freitag 1999, Wallis 1961). Three subspecies have been described, of which only the nominate subspecies *patruela* is found in Canada.

Designatable units

Single Designatable Unit. The Pinery and Ottawa River populations are more or less connected through the US (although its distribution is discontinuous throughout its range). Pinery and Ottawa River populations are the same subspecies (*C. p. patruela*), but no genetic studies have been completed. Both populations occur in the Great Lakes Plains Ecological Area. The Ontario portion of the Ottawa River population is considered to be extirpated (COSEWIC 2009).

Priority-setting criteria

Recent arrival

No. Ontario collections dating back to 1950s or earlier.

Non-resident

No.

Primary criteria (rarity and declines)

1. Global rank

THREATENED. G3.

2. Global decline

ENDANGERED. Rapidly declining short-term trend of 10-30% (based on old localities lacking extant populations). Long term decline of 25-90% (NatureServe 2007).

3. Northeastern North America ranks

ENDANGERED. Occurs as a native species in 20 of 29 northeastern jurisdictions. Srank or equivalent information available for 20 of 20 jurisdictions = 100%. S1, S2, SH, or in 15 of 20 = 75%.

4. Northeastern North America decline

ENDANGERED. Rapidly declining short-term trend (based on old localities lacking extant populations) of 10-30%. Long term decline of 25-90% (NatureServe 2007).

5. Ontario occurrences

ENDANGERED. Marshall's (1997) web site on the Tiger Beetles of Ontario pointed out that this "tantalizingly rare" species was previously known from a site in the Ottawa area but at that time extant populations were only known from Pinery Park. This remains the case, with only the population of beetles within the Pinery confirmed by recent search effort. One extant occurrence; one historical occurrence is apparently extirpated.

6. Ontario decline

THREATENED. Likely extirpated from main historical site at Constance Bay on the Ottawa River since 1950. The Pinery population has apparently declined since it was discovered in 1991, but quantitative data are lacking (COSEWIC 2009).

7. Ontario's conservation responsibility

Not in any category. Ontario populations are <10% global range

Secondary criteria (threats and vulnerability)

1. Population sustainability

Insufficient Information. No quantitative analysis of population sustainability.

2. Lack of regulatory protection for exploited wild populations

Not in any category. Not protected under the *Species at Risk Act* in Canada, or under any provincial legislation, but collecting is prohibited in Pinery Provincial Park. There is no known exploitation of this species other than some possible commercial collecting.

3. Direct threats

THREATENED. Forest succession due to fire suppression contributed to the demise of Northern Barrens Tiger Beetle at Constance Bay. Prescribed burning is conducted at Pinery Provincial Park, but future burning is subject to financial and social constraints. Historical use of DDT at Constance Bay likely contributed to decline of that population. Trampling of larval burrows and soil compaction by hikers and bikers are potential ongoing threats at the Pinery. Flushing of adults by hikers may also reduce foraging efficiency and increase predation. Disturbance of tiger beetle larvae by human traffic on trails can disrupt feeding and reduce survivorship (S.A. Marshall, pers. comm.). Habitat destruction through housing developments, sand and gravel extraction, and ATVs are documented threats at US locations. Commercial collecting might be a problem in some cases (some globally rare tiger beetles can be worth thousands of dollars to collectors) (COSEWIC 2009).

4. Specialized life history or habitat-use characteristics

SPECIAL CONCERN. Requires dry, coarse-grained, sandy soils and bare to sparsely vegetated forest openings in mixed pine-oak forest, oak savannahs, and woodlands. Also inhabits dirt roads, trails, transmission lines, and eroded slopes. Regular fires are often required to maintain openings.

COSSARO criteria met (primary/secondary)

Endangered – [4/0]

Threatened – [2/1]

Special concern – [0/1]

Recommended Status: Endangered

Summary

Northern Barrens Tiger Beetle (*Cicindela patruela*) is an attractive metallic green beetle inhabiting sandy open forests. This is a relatively elusive species, easily overlooked because of its similarity to the very common Six-spotted Tiger Beetle. Its range includes northeastern and north central North America, reaching its northern limit in southern Ontario. In Ontario, it occurs in Pinery Provincial Park where it was first discovered in 1991. It formerly occurred at Constance Bay on the Ottawa River (discovered in the 1950s), but this population is believed to be extirpated, probably due to forest succession and DDT spraying. The species is rare and declining throughout its range. Habitat loss, particularly due to natural succession, trampling and increased predation along pedestrian trails, are significant threats. Northern Barrens Tiger Beetle is classified as Endangered due to its small population size, restricted range, and apparent decline in Ontario and globally.

Information sources

- COSEWIC. 2009. COSEWIC status report on the Northern Barrens Tiger Beetle, *Cicindela patruela* in Canada. 6-month Interim Report, November 2009. Committee on the Status of Endangered Wildlife in Canada. Ottawa. iv + 33 pp.
- Freitag, R. 1999. Catalogue of the tiger beetles of Canada and the United States. National Research Council, Ottawa. 195 pp.
- Freitag, R. 2007. Email correspondence to R. Foster. March 2007. Professor of Biology (emeritus), Lakehead University, Thunder Bay, ON.
- Marshall, S.A. 1997 (last updated 2000) Tiger Beetles of Ontario.
<http://www.uoguelph.ca/debu/tiger-beetles.htm>
- NatureServe. 2009. NatureServe Homepage: A Network Connecting Science with Conservation. Web site: www.natureserve.org [accessed October 2009].
- Wallis, J.B. 1961. The Cicindelidae of Canada. Univ. of Toronto Press, Toronto. 74 pp.
- Wildspecies. 2005. The general status of species in Canada. Web site:
<http://www.wildspecies.ca/wildspecies2005/index.cfm?lang=e> [accessed March 2009]. Link inactive.

Appendix 1: Northeastern North America rank, status and decline

Location	Rank
CT	SU
DE	SH
IL	(SX) <i>C. patruela</i> specimens from the early 1900s have been recently confirmed by Freitag (2007) and represent the first recorded occurrences of the species in IL (COSEWIC 2009)
IN	S3
IA	Not present
KY	S2S3
LB	Not present
MA	S1
MB	Not present
MD	S1
ME	Not present
MI	S3
MN	S3
NB	Not present
NF	Not present
NH	SH
NJ	SH
NS	Not present
NY	S1
OH	S3
ON	S1
PA	S2S3
PE	Not present
QC	SH
RI	SH
VA	S2
VT	S1
WI	S3
WV	S2S2

Occurs as a native species in 20 of 29 northeastern jurisdictions (excluding CT)

Rank or equivalent information available for 20 of 20 jurisdictions = (100%)

S1, S2, SH, or in 15 of 20 = (75%)

PART 2: Ontario evaluation using COSEWIC criteria

Regional (Ontario) COSEWIC criteria assessment

Criterion A – declining population

N/A. Extirpated from one of the two known Ontario sites between 1950 and 2008, but population trend over the past 10 years is unknown.

Criterion B – small distribution and decline or fluctuation

Yes (EN, B1ab(i,ii,iii,iv) + 2ab(i,ii,iii,iv)). Extent of Occurrence is < 5000 km² and Area of Occupancy is < 500 km². Known from a single extant location in Ontario. Range is fragmented throughout its distribution. Adult populations apparently fluctuate, but magnitude of fluctuations are unknown.

Criterion C – small population size and decline

N/A. Pinery population estimated at 400 to 1000 individuals (ballpark estimate). Only one extant population in Ontario. Population trends over the past 10 years are unknown.

Criterion D – very small or restricted

Yes (TH, 2). Area of Occupancy is < 2 km². Vulnerable to stochastic events, such as weather or extreme fire. Also vulnerable to human disturbance including increased recreational use or fire suppression.

Criterion E – quantitative analysis

N/A. No Population Viability Analyses have been conducted for the species in Ontario.

Rescue effect

No. Recolonization from US populations unlikely given distances and intervening unsuitable habitat.