

COSSARO Candidate Species at Risk Evaluation Form
for
Rusty-patched Bumble Bee (*Bombus affinis*)

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

Assessed June 2010 by COSSARO as Endangered

June 2010

Final

PART 1

COSSARO Candidate Species at Risk Evaluation Form – June 2010

Rusty-patched Bumble Bee (*Bombus affinis*)

Current Designations:

GRANK – GU

NRANK Canada – N1

COSEWIC – Recommended status - Endangered

SARA –No schedule, No Status

General Status Canada – No Status

ESA 2007 – No Status

SRANK – S1

General Status Ontario – No Status

Distribution and Status Outside Ontario:

From southern Ontario (essentially Algonquin Park south) and southwestern Quebec south to Georgia and west to the Dakotas. In the southern parts of its range it occurs primarily at high elevations. Declines have been noted throughout the range. Although the species has no formal state or federal SAR status in the US, it is listed on the on the Xerces Society's red-list of pollinator insects as 'Imperiled (Thorpe and Shepherd, 2005).

ELIGIBILITY CRITERIA

Native Status

Yes

Taxonomic Distinctness

Yes

Designatable Units

No

PRIORITY-SETTING CRITERIA

Recent Arrival

No

PRIMARY CRITERIA (rarity and declines)

1. Global Rank

Not in any category. Ranked as GU (Unrankable) due to a lack of information about the species' distribution and occurrence.

2. Global Decline

- ✓ **EN.** There is a generally recognized range-wide population decline.

3. Northeastern North America Ranks

✓ **EN.** The species is currently ranked as S1 or SH in 89% of the northeastern North American jurisdictions in which it occurs or has occurred

4. Northeastern North America Decline

✓ **EN.** There is an unquantified but generally recognized northeastern North American population decline (Colla and Packer 2008; Evans et al 2008).

5. Ontario Occurrences

- ✓ **EN.** Only known from a few recent records

6. Ontario Decline

- ✓ **EN.** Virtually disappeared over a 20 year period

7. Ontario's Conservation Responsibility

Not in any category. We are at the northern edge of the extensive range

SECONDARY CRITERIA (threats and vulnerability)

1. Population Sustainability

- ✓ **EN.** Numbers are apparently very low

2. Lack of Regulatory Protection for Exploited Wild Populations

Not in any category.

3. Human Threats

Not in any category. Difficult to assess, but habitat alteration and movement of domestic bumblebee colonies are potentially important.

4. Specialized Life History or Habitat-use Characteristic

Not in any category. Nest sites or microclimate might be limiting, but this information is not available.

5. Mortality Trends

- ✓ **EN.** Pesticides and pathogen spillover have been suggested as possible causes of

the decline.

COSSARO CRITERIA MET (primary/secondary)

ENDANGERED – [5/2]

THREATENED – [0/0]

SPECIAL CONCERN – [0/0]

SUMMARY

This species has undergone a well-documented and precipitous decline throughout its range, for reasons unknown. Pesticides and pathogen spillover have been suggested as possible causes of the decline. At the same time some other *Bombus* species have become much more common and others, such as *B. fervidus*, have become less common. We have an excellent baseline from which to work in the form of extensive collections, theses and papers made by D.H. Pengelly and his students in the 1970s. Recent surveys by Colla et al (2008) and others have utilized the same sites studied by the Pengelly group, and have been able to show striking declines.

Information Sources

Colla, S.R. and L. Packer. 2008. Evidence for the decline of Eastern North American Bumblebees, with special focus on *Bombus affinis* Cresson. *Biodiversity and Conservation* 17:1379-1391

Evans, E., Thorp, R., Jepson, S., and S.H. Black. 2008. Status review of three formerly common species of bumblebee in the subgenus *Bombus*. Prepared for the Xerces Society for Invertebrate Conservation. [Online] http://www.xerces.org/wp-content/uploads/2008/12/xerces_2008_bombus_status_review.pdf

Appendix 1

NORTHEASTERN NORTH AMERICA RANK, STATUS AND DECLINE

CT	Not present
DE	Not present
IL	SNR
IN	SNR
IA	SH
KY	SH
LB	Not present
MA	SH
MB	Not present
MD	SH
ME	SH
MI	SH
MN	SH
NB	Not present
NF	Not present
NH	SH
NJ	SH
NS	Not present
NY	SH
OH	SH
ON	S1
PA	SH
PE	Not present
QC	SH
RI	Not present
VA	SH
VT	SH
WI	SH
WV	Not present

Occurs as a native species in 19 of 29 northeastern jurisdictions
Srank or equivalent information available for 17 of 19 jurisdictions = (89%)
S1, S2, SH, or SX in 17 of 19 = (89%)

PART 2
Ontario Evaluation Using COSEWIC Criteria

Regional (Ontario) COSEWIC Criteria Assessment

Criterion A – Declining Population

Yes [EN]. The species has declined dramatically since the 1980's but the exact timing of the decline within a single ten year period is unknown.

Criterion B – Small Distribution and Decline or Fluctuation

Yes [EN]. The EO and IAO are both 4km² (B1 and B2). The species has been found only at one site since the 1990's despite repeated searches for it throughout its previous Canadian range (B1a, B2a). Continuing decline in EO, IAO, number of locations and number of individuals is expected based upon any of the known threats (B1b(i, ii, iv, v), B2b(i, ii, iv, v)). Decline in habitat is also probable (B1b(iii) and B2b(iii)) but is less certain.

Criterion C – Small Population Size and Decline

Yes [EN]. The population size unknown but decline is certain. Small and Declining Number of Mature Individuals): The total number of individuals remains unknown, although is certainly very small and probably less than the 2,500 threshold for endangered but this cannot be stated with certainty.

Criterion D – Very Small or Restricted

Insufficient Information. Total population size is unknown.

Criterion E – Quantitative Analysis

NA. Quantitative Analysis: Not performed.

Rescue Effect

No. Problem exists in entire range