

**Ontario Species at Risk Evaluation Report for
American Burying Beetle
Nécrophore d'Amérique
(*Nicrophorus americanus*)**

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

Assessed by COSSARO as Extirpated

January 2024

Final

Executive summary

American Burying Beetle (*Nicrophorus americanus*) is a large (25 to 35 mm), black beetle with distinctive orange markings. This genus is unusual among insects in that both parents care for the young by burying carrion and building and defending a brood chamber. American Burying Beetle was formerly distributed across most of the eastern US and adjacent Ontario but has declined precipitously and is now restricted to less than 10% of its former range.

It is a habitat generalist, but the habitat requirements of this species in Ontario are unknown. In the United States, it has been found in a variety of forested and open habitats, including deciduous and coniferous forest, tallgrass prairie, shrub thicket, mown fields, and grazed pasture. There are likely several habitat requirements for the American Burying Beetle, including soil type, a sufficient supply of suitably-sized carrion, limited abundance of predators, and minimal competition for carcasses.

The cause of the extirpation of the American Burying Beetle in Ontario, and throughout much of its range, are unknown. Potential threats that reduced its population and range include habitat loss and fragmentation, increased use of artificial lighting (which may alter its behaviour), roadkill of wandering adults, mortality due to the use of insecticides, predation by dogs and cats, and reduction of appropriate sized cadavers. Other causes for its decline could be linked to diseases, pathogens, and parasites, and the local extirpation of top mammalian predators (allowing other scavengers to flourish, which reduced its food availability).

American Burying Beetle is classified as Extirpated in Ontario. It has not been recorded since 1972 despite extensive survey effort throughout its former Ontario range.

1. Eligibility for Ontario status assessment

1.1. Eligibility conditions

1.1.1. Taxonomic distinctness

American Burying Beetle is recognized as a distinct species in all taxonomic literature and is readily distinguished from other carrion beetles by its large size and distinctive orange markings. No subspecies have been described.

1.1.2. Designatable units

It was formerly represented by a single designatable unit in the Mixedwood Plains Ecozone.

1.1.3. Native status

American Burying Beetle is native in Ontario. The earliest Ontario record is from 1896.

1.1.4. Occurrence

Extirpated. No records in Ontario since 1972 (51 generations).

American Burying Beetle is a large, easily recognized species. Where present, it is easily captured in pitfall traps baited with carrion and at light traps. Over 300,000 pitfall and light trap nights have been conducted within the historical Ontario range by knowledgeable observers since 1960 (COSEWIC 2011). In 2010, targeted surveys (with baited traps) conducted at the 1972 collection site were unsuccessful and it is very unlikely that it persists in Ontario.

1.2. Eligibility results

American Burying Beetle (*Nicrophorus americanus*) is eligible for status assessment in Ontario.

2. Background information

2.1. Current designations

- GRANK: G3 (NatureServe 2023, assessed 12/6/2019)
- IUCN: Status (1996)
- NRANK Canada: NH
- COSEWIC: Extirpated (December 2022)
- SARA: Extirpated (Schedule 1)
- ESA 2007: Extirpated (January 24, 2013)
- SRANK: SH (ranked in 2020)

2.2. Distribution in Ontario

American Burying Beetle formerly occurred in southern Ontario, possibly as far north as Port Sydney east of Georgian Bay. It is known from 9-10 locations but has not been observed since 1972 (see Appendix 1).

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

American Burying Beetle formerly occurred across the eastern US from Maine to southern Ontario and the Dakotas, south to Florida and southern Texas with disjunct populations in Montana and south Texas. It is now extirpated across most of its range. Based on the last 15 years of surveys, it now occurs in portions of Arkansas, Kansas, Oklahoma, Nebraska, South Dakota, and Texas; on Block Island off the coast of Rhode Island; and in reintroduced populations on Nantucket Island off the coast of Massachusetts, southwest Missouri, and Ohio (USFWS 2023).

Globally, American Burying Beetle is listed in the IUCN Red List as Critically Endangered. The species was listed as Endangered under the United States Endangered Species Act but was reclassified as Threatened in 2020 (USFWS 2023).

The southern Great Lakes region was likely once part of its broader biologically relevant geographical range given similar habitats and a dispersal distance of about 12 km (NatureServe 2023). It is however extirpated from all regions adjacent to Ontario (Table 1). Reports also exist from Quebec, Nova Scotia, and Manitoba, but these are considered unconfirmed, erroneous, and unsubstantiated, respectively.

The American Burying Beetle is listed as Extirpated on Schedule 1 of the *Species at Risk Act* and in Ontario under Ontario's *Endangered Species Act*.

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	Yes	SH	Last record from 1913 (COSEWIC 2011).
Manitoba	n/a	n/a	-
Michigan	Yes	SH	There is a record from western Michigan in 2017 (MNFI 2023).
Minnesota	Yes	SX	-
Nunavut	n/a	n/a	-
New York	Yes	SH	-
Ohio	Yes	SX	Reintroduction efforts are also under way in Ohio. Survival of reintroduced American Burying Beetles into the next year, after successful overwintering, was documented in 2019 (USFWS 2023).
Pennsylvania	Yes	SH	-
Wisconsin	Yes	SX	-
<i>Other Relevant Jurisdiction</i>	-	-	-

2.4. Ontario conservation responsibility

Low, even prior to its decline less than 5% of its range occurred in Ontario.

2.5. Direct threats

Potential threats that reduced its population and range include habitat loss and fragmentation, increased use of artificial lighting (which may alter its behaviour), roadkill of wandering adults, mortality due to the use of insecticides, predation by dogs and cats, and reduction of appropriate sized cadavers (COSEWIC 2022). Other causes for its decline could be linked to diseases, pathogens, and parasites, and the local extirpation of top mammalian predators (allowing other scavengers to flourish, which reduced its food availability) (MNFI 2023).

2.6. Specialized life history or habitat use characteristics

American Burying Beetle is a habitat generalist but requires a source of carrion that is between 50 and 200 grams.

2.7. Existing Conservation and Recovery Actions

A draft recovery strategy has been proposed (ECCC 2022). No recovery actions have occurred other than multiple unsuccessful attempts to locate the species within its

former Canadian range (ECCC 2022).

There have been several reintroduction projects in the US (USFWS 2023).

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

Does not apply.

3.3.1. Ontario's conservation responsibility

Not applied.

3.3.2. Status modification based on level of risk in broader biologically relevant geographic range

Not applied.

3.3.3. Rescue Effect

While the American Burying Beetle can disperse approximately 12 km (NatureServe 2023), it is extirpated from all the regions in its former range that were adjacent to Ontario.

3.4. Other status categories

3.4.1. Data deficient

Does not apply.

3.4.2. Extinct or extirpated

Extirpated.

3.4.3. Not at risk

Does not apply.

4. Summary of Ontario status

American Burying Beetle (*Nicrophorus americanus*) is classified as Extirpated, in Ontario. It has not been observed since 1972.

5. Information sources

COSEWIC. 2022. IN PRESS. COSEWIC Rapid Review of Classification on the American Burying Beetle *Nicrophorus americanus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii pp. (<https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html>).

COSEWIC. 2011. COSEWIC assessment and status report on the American Burying Beetle *Nicrophorus americanus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 35 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

Environment and Climate Change Canada. 2022. Recovery Strategy for the American Burying Beetle (*Nicrophorus americanus*) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment and Climate Change Canada, Ottawa. viii + 21 pp.

Michigan Natural Features Inventory (MNFI). 2023. American Burying Beetle (*Nicrophorus americanus*). Accessed April 2023. <https://mnfi.anr.msu.edu/species/description/11553/Nicrophorus-americanus>

NatureServe. 2023. American Burying Beetle (*Nicrophorus americanus*). Accessed April 2023. https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.113123/Nicrophorus_americanus

United States Fish and Wildlife Service (USFWS). 2023. American Burying Beetle (*Nicrophorus americanus*). Accessed April 2023. <https://www.fws.gov/species/american-burying-beetle-nicrophorus-americanus>

Appendix 1: Technical summary for Ontario

Species: American Burying Beetle (*Nicrophorus americanus*)

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?	No Extirpated
Estimated percent of continuing decline in total number of mature individuals within 5 years or 2 generations.	No Extirpated
Observed, estimated, inferred, or suspected percent reduction or increase in total number of mature individuals over the last 10 years or 3 generations.	No Extirpated
Projected or suspected percent reduction or increase in total number of mature individuals over the next 10 years or 3 generations.	No Extirpated
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.	No Extirpated
Are the causes of the decline (a) clearly reversible, and (b) understood, and (c) ceased?	a. Unknown b. Unknown c. Unknown
Are there extreme fluctuations in number of mature individuals?	No Extirpated

Extent and occupancy information in Ontario

Extent and occupancy attributes	Value
Estimated extent of occurrence (EOO). <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: (a) smaller than would be required to support a viable population, and	a. Does not apply b. Does not apply

Extent and occupancy attributes	Value
(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>	9-10
Is there an observed, inferred, or projected continuing decline in extent of occurrence?	Yes, observed historical decline
Is there an observed, inferred, or projected continuing decline in index of area of occupancy?	Yes, observed historical decline
Is there an observed, inferred, or projected continuing decline in number of sub-populations or EOs?	Yes, observed historical decline
Is there an observed, inferred, or projected continuing decline in number of locations?	Yes, observed historical decline
Is there an observed, inferred, or projected continuing decline in [area, extent and/or quality] of habitat?	Yes, observed historical decline
Are there extreme fluctuations in number of populations?	Does not apply
Are there extreme fluctuations in number of locations?	Does not apply
Are there extreme fluctuations in extent of occurrence?	Does not apply
Are there extreme fluctuations in index of area of occupancy?	Does not apply

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

Sub-population (or total population)	Number of mature individuals
<i>Ontario</i>	0

NHIC Occurrences

1. Toronto 1896: One adult collected.
2. St. Thomas 1925: One adult collected.
3. Chatham 1936: One adult collected. 1930: One adult collected.
1970: One adult collected and remains at the University of
4. Hamilton Guelph repository.
5. Port Sydney 1970: One adult collected.
6. Strathroy 1970: One adult collected. 1934: One adult collected.
7. Ontario 1970: One adult collected.
8. Queenston 1933: One adult collected.
9. Harrow 1972: One adult collected. 1951: One adult collected.
10. Guelph 1930: One adult collected.

Quantitative analysis (population viability analysis conducted)

Probability of extinction in the wild is not applicable.

Threats

This species is extirpated, and a threats calculator was not prepared.

The causes of the extirpation of the American Burying Beetle in Ontario, and throughout much of its range, are unknown. Potential threats that reduced its population and range include habitat loss and fragmentation, increased use of artificial lighting (which may alter its behaviour), roadkill of wandering adults, mortality due to the use of insecticides, predation by dogs and cats, and reduction of appropriate sized cadavers (COSEWIC 2022). Other causes for its decline could be linked to diseases, pathogens, and parasites, and the local extirpation of top mammalian predators (allowing other scavengers to flourish which reduced its food availability) (MNFI 2023).

Rescue effect

Rescue effect attribute	Value
Does the broader biologically relevant geographic range for this species extend beyond Ontario?	Probably
Status of outside population(s) most likely to provide immigrants to Ontario	Extirpated
Is immigration of individuals and/or propagules between Ontario and outside populations known or possible?	No
Would immigrants be adapted to survive in Ontario?	Possibly
Is there sufficient suitable habitat for immigrants in Ontario?	Unknown
Are conditions deteriorating in Ontario?	Probably
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

Extirpated.

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
SH: Possibly Extirpated
SX: Presumed Extirpated
IUCN: International Union for Conservation of Nature and Natural Resources
CDSEPO: Le Comité de détermination du statut des espèces en péril en Ontario