

COSEWIC
Rapid Review of Classification

on the

American Burying Beetle
Nicrophorus americanus

in Canada

EXTIRPATED
2022

COSEWIC
Committee on the Status
of Endangered Wildlife
in Canada



COSEPAC
Comité sur la situation
des espèces en péril
au Canada

The rapid review of classification process is used by COSEWIC for wildlife species that have not changed status since the previous COSEWIC assessment. Readily available information from the previous status report or status appraisal summary, recovery documents, recovery teams, jurisdictions, conservation data centres, and species experts is initially reviewed by the relevant Species Specialist Subcommittees before being reviewed by COSEWIC. The following is a summary of the relevant information.

COSEWIC Rapid Review of Classification are working documents used in assigning the status of wildlife species suspected of being at risk in Canada. This document may be cited as follows:

COSEWIC. 2022. 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>).

Production note:

COSEWIC would like to acknowledge Jennifer M. Heron for writing the Rapid Review of Classification on the American Burying Beetle *Nicrophorus americanus* in Canada, prepared under contract with Environment and Climate Change Canada. This report was overseen and edited by David McCorquodale, Co-chair of the COSEWIC Arthropods Specialist Subcommittee.

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Également disponible en français sous le titre Examen rapide de la classification du COSEPAC sur le Nécropore d'Amérique (*Nicrophorus americanus*) au Canada.



COSEWIC Assessment Summary

Assessment Summary – December 2022

Common name

American Burying Beetle

Scientific name

Nicrophorus americanus

Status

Extirpated

Reason for designation

There is sufficient information to document that no individuals of the wildlife species remain alive in Canada. This includes a lack of sightings for 49 years despite (1) being a large, distinctive, and conspicuous insect; (2) a tenfold increase in the number of field entomologists/community scientists as well as studies of carrion-feeding beetles; (3) the fact that it comes to lights yet it has not been captured during an estimated 300,000 trap nights; and (4) directed search in the general area where last seen.

Occurrence

Ontario, Quebec

Status history

Designated Extirpated in November 2011. Status re-examined and confirmed in December 2022.



COSEWIC Rapid Review of Classification

PREFACE

The American Burying Beetle (*Nicrophorus americanus*) is a carrion beetle (family Silphidae), and reproduction depends upon the availability of small vertebrate carcasses (e.g., bird chicks, rodents). The taxonomy has not changed since the initial COSEWIC (2011) status report. The species is distinct and there are no proposed subspecies or forms. The American Burying Beetle occurs only in North America from the prairie states east to the Atlantic Coast, and from the Upper Peninsula of Michigan south to Texas. In Canada there are historical records from Ontario and Quebec. The most recent collection in Canada took place in 1972. A report on the presence of this species in Nova Scotia (Madge 1956) is considered to have originated in an error, despite it still being referenced in some reports. The record for Manitoba (NatureServe 2021) is unsubstantiated (see Appendix 1 in COSEWIC 2011). No new observations of the American Burying Beetle have been made in Canada since 1972. The historical observations are summarized in the 2011 COSEWIC assessment.

The American Burying Beetle was listed as “Extirpated” on Schedule 1 under the federal *Species at Risk Act* (SARA) in 2017 and as “Extirpated” under the Ontario *Endangered Species Act* (ESA) in 2013 (King’s Printer for Ontario, 2014). In Quebec, this species is not listed as “Threatened” or “Vulnerable” under the *Loi sur les espèces menacées ou vulnérables* (LEMV) (RLRQ, c E-12.01) [Act respecting threatened or vulnerable species] (CQLR, c E-12.01). In addition, this species is not integrated on the *Liste des espèces susceptibles d’être désignées menacées ou vulnérables* [list of wildlife species likely to be designated threatened or vulnerable] (Province of Quebec 2021). There are no national or provincial recovery strategies for the species.

Globally, the American Burying Beetle is listed in the IUCN Red List as “Critically Endangered.” The species is listed as “Endangered” under the United States *Endangered Species Act*. The species is globally listed as G2 (imperilled), nationally listed as N2N3 for the United States and listed as NH (historical) for Canada. In the United States it has been reported from 35 states and remains in the wild in only eight – listed as “Endangered” in all.

It is believed that the species has been extirpated in Canada and from all states conterminous with Canada. It appears very unlikely that the American Burying Beetle has been present but undocumented anywhere within its Canadian range since the most recent collection (in 1972). The American Burying Beetle is a large, distinctive beetle that is easily identified. Natural recolonizing by the species of its former range in Canada appears extremely unlikely. The species might be reintroduced from United States populations.

Status History

Designated Extirpated in November 2011. Status re-examined and confirmed in December 2022.

Updated Map

No change in distribution known; see previous assessment (COSEWIC 2011). There was one additional specimen of the American Burying Beetle found within a drawer of unidentified beetles at the Royal Saskatchewan Museum. There was no locality information accompanying the specimen (Sheffield pers. comm. 2021).

TECHNICAL SUMMARY

Nicrophorus americanus

American Burying Beetle

Nécrophore d'Amérique

Range of occurrence in Canada: Ontario, Quebec

Demographic Information

Generation time	1 year	Only one brood per year in Canada.
Is there an [observed, inferred, or projected] continuing decline in number of mature individuals?	No	
Estimated percent of continuing decline in total number of mature individuals within [5 years or 2 generations, whichever is longer up to a maximum of 100 years]	No	
[Observed, estimated, inferred, or suspected] percent [reduction or increase] in total number of mature individuals over the last [10 years, or 3 generations, whichever is longer up to a maximum of 100 years].	No	
[Projected or suspected] percent [reduction or increase] in total number of mature individuals over the next [10 years, or 3 generations, whichever is longer up to a maximum of 100 years].	No	
[Observed, estimated, inferred, or suspected] percent [reduction or increase] in total number of mature individuals over any period [10 years, or 3 generations, whichever is longer up to a maximum of 100 years], including both the past and the future.	No	
Are the causes of the decline clearly understood?	Partially	Habitat loss and fragmentation, increased use of artificial lighting, which may confuse the species' behaviour; roadkill of wandering adults; mortality due to the use of insecticides; predation by dogs and cats; reduction of appropriate sized cadavers.
Have the causes of the decline ceased?	No	
Are the causes of the decline clearly reversible?	No	

Are there extreme fluctuations in number of mature individuals?	Unknown	
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Extent and Occupancy information

Estimated extent of occurrence (EOO)	Not applicable	The most recent record in Canada is from 1972.
Index of area of occupancy (IAO), reported as 2x2 km grid value.	Not applicable	The most recent record in Canada is from 1972.
Is the 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 (b) separated from other habitat patches by a distance larger than the species can be expected to disperse?	a. Not applicable b. Not applicable	
Number of “locations”*	None	The most recent record in Canada is from 1972.
Is there an [observed, inferred, or projected] continuing decline in extent of occurrence?	Yes	Historical decline to extirpation.
Is there an [observed, inferred, or projected] continuing decline in index of area of occupancy?	Yes	Historical decline to extirpation.
Is there an [observed, inferred, or projected] continuing decline in number of subpopulations?	Yes	Historical decline to extirpation.
Is there an [observed, inferred, or projected] continuing decline in number of “locations”**?	Yes	Historical decline to extirpation.
Is there an [observed, inferred, or projected] continuing decline in [area, extent and/or quality of] habitat?	Yes	Historical decline to extirpation.
Are there extreme fluctuations in number of subpopulations?	No	No evidence of extreme fluctuations.
Are there extreme fluctuations in number of “locations”**?	No	
Are there extreme fluctuations in extent of occurrence?	No	
Are there extreme fluctuations in index of area of occupancy?	No	

* See Definitions and Abbreviations on [COSEWIC website](#) for more information on this term.

Number of Mature individuals (in each subpopulation)

Subpopulations	No. Mature Individuals (give plausible ranges)	Notes on individual estimates.
Total	No data	No data.

Quantitative Analysis

Is the probability of extinction in the wild at least [20% within 20 years or 5 generations whichever is longer up to a maximum of 100 years, or 10% within 100 years]?	Unknown	Analysis not conducted.
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Threats and Limiting Factors

Was a threats calculator completed for this species?	No	There has not been a national or provincial recovery strategy prepared. A threat assessment is not presented for the American Burying Beetle as no extant occurrences are known for this species in Canada. As a result, threats cannot be scored for scope or severity to determine individual threat impacts, nor is it possible to estimate the overall threat impact at this time. Historical threats, indirect or cumulative effects of the threats, as well as threats that can be hypothesized to affect future reintroduced populations (based on threats affecting naturally occurring and reintroduced populations in the US) are presented in the Description of Threats section.
<p>Threats identified in the COSEWIC (2011) status report that may have led to extirpation include:</p> <ul style="list-style-type: none"> • Use of artificial lighting, which may confuse the species' behaviour. • Roadkill of wandering adults. • Mortality due to the use of insecticides. • Direct predation by domestic and/or feral dogs and cats, which likely disturb carcasses. • Reduction of brood cadaver resources. • Habitat alteration and fragmentation are generally considered to be the primary cause for decline. Fragmentation increases the need for species' movement across unsuitable habitats and over roads. The development of dense understorey in cleared forest areas increases the difficulty of burying cadavers and increases the opportunity for predation. 		
<p>What additional limiting factors are relevant? Distribution and abundance of brood cadavers, competition for cadaver resources with other <i>Nicrophorus</i> species; minimum spatial area of forest required to sustain beetle subpopulations (e.g., habitat fragmentation decreases the minimum size); soil type required for successful burying of cadaver and progeny development.</p>		

Rescue Effect (natural immigration from outside Canada)

Status of outside population(s) most likely to provide immigrants to Canada.	All US states adjacent to Canada SH (possibly extirpated) or SX (presumed extirpated)	Illinois: SH, Indiana: SX, Michigan: SH, Minnesota: SX, New York: SH, Ohio: SX, Pennsylvania: SH, Wisconsin: SX
Is immigration known or possible?	Not known; not possible	All US states adjacent to Canada SH or SX. All US states adjacent to Canada have SH or SX status, although reintroduction is under way in Ohio (USFW Service 2020).
Would immigrants be adapted to survive in Canada?	Possibly	Viable, natural populations exist in the US and along with well-established captive populations could provide breeding and release stock. It is suspected that the beetle's origin may influence its ability to adapt to local conditions (e.g., varying climate regime) (US Fish and Wildlife Service 2020).
Is there sufficient habitat for immigrants in Canada?	Unknown	
Are conditions deteriorating in Canada?+	Yes	Habitat subject to threats listed above.
Are conditions for the source (i.e., outside) population deteriorating?+	Yes	USFWS (2020) downlisted the species from "Endangered" to "Threatened"; threats have been reduced to the point that it is not currently in danger of immediate extinction throughout all or a significant portion of its range, but it is likely to become so within the foreseeable future (NatureServe 2021).
Is the Canadian population considered to be a sink?+	Not applicable	
Is rescue from outside populations likely?	No	Rescue would require active release programs. Unassisted immigrants extremely unlikely.

Occurrence Data Sensitivity

Are occurrence data of this species sensitive?	No	
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+ See [Table 3](#) (Guidelines for modifying status assessment based on rescue effect).

Status and Reasons for Designation

Status: Extirpated	Alpha-numeric codes: Not applicable
Reasons for designation: There is sufficient information to document that no individuals of the wildlife species remain alive in Canada. This includes a lack of sightings for 49 years despite (1) being a large, distinctive, and conspicuous insect; (2) a tenfold increase in the number of field entomologists/community scientists as well as studies of carrion-feeding beetles; (3) the fact that it comes to lights yet it has not been captured during an estimated 300,000 trap nights; and (4) directed search in the general area where last seen.	
Reason for change of status:	Not applicable

Applicability of Criteria

A: Decline in total number of mature individuals Not applicable.
B: Small distribution range and decline or fluctuation Not applicable.
C: Small and declining number of mature individuals Not applicable.
D: Very small or restricted population Not applicable.
E: Quantitative analysis Not applicable.

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INFORMATION SOURCES

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COSEWIC HISTORY

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) was created in 1977 as a result of a recommendation at the Federal-Provincial Wildlife Conference held in 1976. It arose from the need for a single, official, scientifically sound, national listing of wildlife species at risk. In 1978, COSEWIC designated its first species and produced its first list of Canadian species at risk. Species designated at meetings of the full committee are added to the list. On June 5, 2003, the *Species at Risk Act* (SARA) was proclaimed. SARA establishes COSEWIC as an advisory body ensuring that species will continue to be assessed under a rigorous and independent scientific process.

COSEWIC MANDATE

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses the national status of wild species, subspecies, varieties, or other designatable units that are considered to be at risk in Canada. Designations are made on native species for the following taxonomic groups: mammals, birds, reptiles, amphibians, fishes, arthropods, molluscs, vascular plants, mosses, and lichens.

COSEWIC MEMBERSHIP

COSEWIC comprises members from each provincial and territorial government wildlife agency, four federal entities (Canadian Wildlife Service, Parks Canada Agency, Department of Fisheries and Oceans, and the Federal Biodiversity Information Partnership, chaired by the Canadian Museum of Nature), three non-government science members and the co-chairs of the species specialist subcommittees and the Aboriginal Traditional Knowledge subcommittee. The Committee meets to consider status reports on candidate species.

DEFINITIONS (2022)

Wildlife Species	A species, subspecies, variety, or geographically or genetically distinct population of animal, plant or other organism, other than a bacterium or virus, that is wild by nature and is either native to Canada or has extended its range into Canada without human intervention and has been present in Canada for at least 50 years.
Extinct (X)	A wildlife species that no longer exists.
Extirpated (XT)	A wildlife species no longer existing in the wild in Canada, but occurring elsewhere.
Endangered (E)	A wildlife species facing imminent extirpation or extinction.
Threatened (T)	A wildlife species likely to become endangered if limiting factors are not reversed.
Special Concern (SC)*	A wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.
Not at Risk (NAR)**	A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.
Data Deficient (DD)***	A category that applies when the available information is insufficient (a) to resolve a species' eligibility for assessment or (b) to permit an assessment of the species' risk of extinction.

* Formerly described as "Vulnerable" from 1990 to 1999, or "Rare" prior to 1990.

** Formerly described as "Not In Any Category", or "No Designation Required."

*** Formerly described as "Indeterminate" from 1994 to 1999 or "ISIBD" (insufficient scientific information on which to base a designation) prior to 1994. Definition of the (DD) category revised in 2006.



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