

COSEWIC
Status Appraisal Summary

on the

Pallid Bat
Antrozous pallidus

in Canada

THREATENED
2010

COSEWIC
Committee on the Status
of Endangered Wildlife
in Canada



COSEPAC
Comité sur la situation
des espèces en péril
au Canada

COSEWIC status appraisal summaries 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. 2010. COSEWIC status appraisal summary on the Pallid Bat *Antrozous pallidus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii pp. (www.sararegistry.gc.ca/status/status_e.cfm).

Production note:

COSEWIC would like to acknowledge Mark Brigham for writing the status appraisal summary on the Pallid Bat *Antrozous pallidus* in Canada, prepared under contract with Environment Canada. This status appraisal summary was overseen and edited by Justina Ray, Co-chair of the Terrestrial Mammals Specialist Subcommittee.

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Également disponible en français sous le titre Sommaire du statut de l'espèce du COSEPAC sur la chauve-souris blonde (*Antrozous pallidus*) au Canada.

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Catalogue No. CW69-14/2-7-2011E-PDF
ISBN 978-1-100-18582-8



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COSEWIC Assessment Summary

Assessment Summary – November 2010

Common name

Pallid Bat

Scientific name

Antrozous pallidus

Status

Threatened

Reason for designation

This relatively large but rare bat is restricted to the semi-arid shrub-steppe of the southern Okanagan Valley, BC at the northern limit of its global distribution. Although the number of known individuals has increased since the last assessment, this can be attributed to increased survey effort and the enhanced knowledge of roost sites. Nevertheless, the population is still thought to be small (fewer than 1000 individuals), cliffs available for roosting are very limited and foraging habitat is in continuing decline.

Occurrence

British Columbia

Status history

Designated Special Concern in April 1988. Status re-examined and designated Threatened in May 2000. Status re-examined and confirmed in November 2010.



COSEWIC Status Appraisal Summary

Antrozous pallidus

Pallid Bat

Chauve-souris blonde

Jurisdictions: British Columbia, Parks Canada, CWS

Current COSEWIC Assessment:

Status category:

XT E T SC

Date of last assessment: May 2000

Reason for designation at last assessment:

Very small distribution; much of critical foraging habitat has been destroyed by agricultural and urban development, and habitat loss is continuing. Rescue effect is possible from adjacent populations in Washington state.

New reason for designation (only if different from above):

This relatively large but rare bat is restricted to the semi-arid shrub-steppe of the southern Okanagan Valley, B.C. at the northern limit of its global distribution. Although the number of known individuals has increased since the last assessment, this can be attributed to the enhanced knowledge of roost sites and increased survey effort. Nevertheless, the population is still thought to be small (< 1000), roosting habitat is very limited, foraging habitat is in continuing decline, and rescue effect from neighbouring Washington State is highly unlikely.

Criteria applied at last assessment:

Designated Threatened due to high probability of rescue effect, although met criteria for Endangered, B1+2c.

If earlier version of criteria was applied¹, provide correspondence to current criteria:

B1ab(iii) + 2ab(iii)

If different criteria are proposed based on new information, provide explanation:

New criteria proposed: D1

Meets criterion for B1 and B2 based on small EO and IAO, but only 1 of 3 subcriteria (continuing habitat decline) can be invoked, since number of locations is unknown but likely to be more than five and the population is highly unlikely to be severely fragmented or undergoing fluctuations.

Meets D for Threatened, because the available evidence points to there being at least 250 mature individuals in the Canadian population, but considerably fewer than 1000.

If application of current specific criteria is not possible, provide explanation:

Not applicable

¹ An earlier version of the quantitative criteria was used by COSEWIC from October 1999 to May 2001 and is available on the COSEWIC website: http://www.cosewic.gc.ca/eng/sct0/original_criteria_e.cfm

Recommendation: Update to the status report NOT required (wildlife species' status category remains unchanged)

Reason:

- sufficient information to conclude there has been no change in status category
- not enough additional information available to warrant a fully updated status report

Evidence (indicate as applicable):

Wildlife species:

Change in eligibility, taxonomy or designatable units: yes no

Explanation:

There is no change.

Range:

Change in Extent of Occurrence (EO): yes no unk

Change in Area of Occupancy (AO) : yes no unk

Change in number of known or inferred current locations: yes no unk

Significant new survey information yes no

Explanation:

EO and AO were not calculated in the last status report, but the distribution of Pallid Bat is thought to be essentially unchanged since the last assessment. No directed surveys for Pallid Bats have been conducted outside the known range. Recent surveys have discovered a number of additional natural day roost sites (rock crevices; see below), and the species is still restricted to the Okanagan Valley south of Penticton. The extent of occurrence (EO) and index of area of occupancy (IAO) have been calculated and mapped for this status appraisal. The EO (MCP) method= 244 km² (Figure 1) and the IAO (2x2 km grid) is calculated as 144 km² (Figure 2).

Population Information:

Change in number of mature individuals: yes no unk

Change in total population trend: yes no unk

Change in severity of population fragmentation: yes no unk

Change in trend in area and/or quality of habitat: yes no unk

Significant new survey information yes no

Explanation:

Prior to 1988 Pallid Bats had been recorded only 6 times in Canada. There were 22 further records between 1988 and 2000 (COSEWIC 2000). The species is difficult to detect using standard bat inventory techniques, but some enhanced survey efforts since 2000 have yielded a substantial increase in the total number of records. Four surveys were conducted in the south Okanagan from 2002 to 2005 (Rambaldini and Brigham 2004; Rambaldini 2005; Rambaldini 2006). Although a population estimate of 200-500 individuals was reported in the Recovery Strategy (Pallid Bat Recovery Team [PBRT] 2008), no such estimate appears in the provided citation (Rambaldini and Brigham 2004). Rambaldini (2006) indicated that "at least" 250 Pallid Bats reside in the Okanagan Valley during summer months as judged from roost surveys. However, this is likely an underestimate of the total population as several additional sites known to be occupied by this species were not included. On the other hand, most bats captured have been males, although some reproductive females and juveniles were included. The known number of Pallid Bats in Canada since 2000 appears to have increased due to increased search effort. While there was also considerable research and search effort for bats in the 1980s and 1990s, this increase in new records does not likely reflect a true population increase as much as enhanced knowledge of roosting sites.

There is no new information regarding reproductive biology, population demographics, over-wintering sites, etc. Recent surveys have also contributed some improvements to our understanding of Pallid Bat habitat use. Members of this species are opportunistic generalists, foraging over open or cluttered native habitat (*i.e.*, grassland, shrub-steppe, and Ponderosa Pine habitats); agricultural fields (*e.g.*, ranch pastures, vineyards, and fruit orchards); talus slopes; and gravel roads generally less than 1 km from roosts. However, these bats appear to prefer native habitats for foraging (Rambaldini 2005; 2006). The main foraging habitat used is the antelope-brush – needle and thread grass plant community. It is estimated that from 60 to 72% of this habitat has been converted to agricultural (mainly vineyard) and urban uses since 1860 (Lea 2008; PBRT 2008). Habitat conversion is continuing at a rate of greater than 4% per year (PBRT 2008). PBRT (2008) did not identify critical habitat features due to limited knowledge about such sites. Although natural Pallid Bat habitat has continued to decline since the last status report, there is limited evidence since the last status report from one location that bats will forage in vineyards and are able to use human-modified habitats such as agricultural fields (Rambaldini 2006).

Threats:

Change in nature and/or severity of threats:

yes no unk

Explanation:

Pallid Bats continue to be threatened by the loss of foraging habitat from a rapidly increasing human population, urban expansion, recreational use, and agriculture (particularly vineyards). These threats have not changed in magnitude since the last assessment, nor have they abated. There is, however, tremendous pressure on natural habitats in this region. There is no evidence that Pallid Bat distribution or abundance has changed in response to these continuing threats, or that roosting habitat is in significant decline. There is a chance that White-nose syndrome, a fungal disease that has been associated with mass die-off of hibernating bats in eastern North America, may spread into British Columbia, in which case Pallid Bats are potentially vulnerable where they hibernate in caves (US Geological Survey 2009). Because nothing is known of the wintering ecology of Pallid Bats in Canada, or whether or not they will be susceptible to the disease should it arrive in the Okanagan Valley, the extent of this risk is unknown.

Protection:

Change in effective protection:

yes no

Explanation:

A draft Recovery Strategy for Pallid Bats in Canada has been completed (PBRT 2008), but has not resulted in any changes in effective protection thus far.

Rescue Effect:

Evidence of rescue effect:

yes no

Explanation:

While there is no direct evidence for rescue, Pallid Bats have been recorded in the northwestern United States within a few km of the international border and, given their mobility, could easily fly into Canada. Thus the potential for individuals to move into Canada is high if there is habitat available to support them (PBRT 2008). The Recovery Strategy assumes the Canadian population is likely part of a larger, contiguous population in Washington State where it is ranked S2S3 but there has been little work done in this state, and what has been done has found little evidence of Pallid Bats residing in the northern part of the state near the Canadian border. Thus, if anything, rescue seems less likely than was presumed by COSEWIC in 2000. Further, a rescue effect should not be considered in light of the ongoing habitat loss in Canada.

Quantitative Analysis:

Change in estimated probability of extirpation:

yes no unk

Details:

None

Summary and Additional Considerations: [e.g., recovery efforts]

The range of the species in Canada represents less than 1% of the total species range. Most records for day roosts of Pallid Bats in Canada occur on Osoyoos (Nk'Mip) Indian Band land.

In summary, from a positive perspective there have been recent discoveries of many additional individuals and sites used, with additional roosts known or suspected. However, all have been within the core range of the species and have not served to enlarge the known extent of occurrence or area of occupancy for this species. On the negative side, records have been male-dominated and there is a continuing loss of natural habitats. There is some potential habitat for this species outside the known extent of occurrence, but targeted surveys have yet to be undertaken in those areas. The extent to which the current population in Canada relies on demographic rescue from neighbouring Washington State or will continue to in the future is unknown but presumed to be low. Notwithstanding, rescue should not be considered relevant because ongoing habitat loss within Canada negates any opportunity for immigration to increase population size.

In 2000, criterion B was applied to the COSEWIC assessment of Pallid Bats. Although no explanation is provided in the report, this assessment was likely made on the basis of 3 known pallid bat day roosts and continuing habitat decline.

List of authorities contacted to review the status appraisal:

*Denotes that information was provided by authority contacted.

The Status Appraisal Summary was sent to the following jurisdictions for review:

- Canadian Wildlife Service
- Parks Canada Agency
- Pallid Bat Recovery Team
- Province of British Columbia
- South Okanagan – Similkameen Conservation Program Recovery Team

Consultations:

Jurisdiction of British Columbia; Orville Dyer (Chair of Recovery Team), Dave Fraser (BC Conservation Data Centre).

Sources of information:

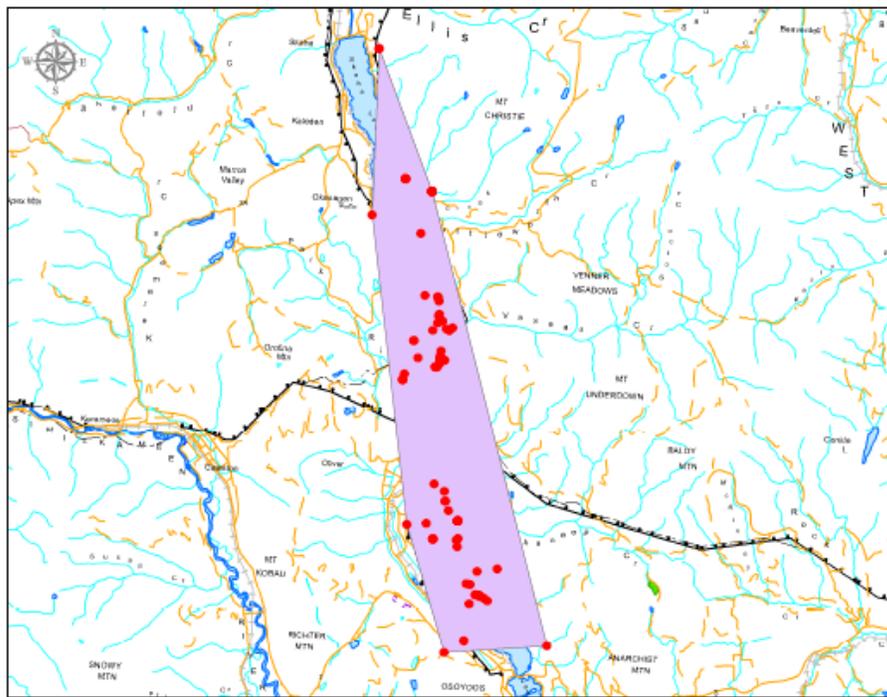
COSEWIC 2010. Wildlife Species Search: Pallid Bat *Antrozous pallidus*.

http://www.cosewic.gc.ca/eng/sct1/searchdetail_e.cfm?id=165&StartRow=1&boxStatus=All&boxTaxonomic=All&location=All&change=All&board=All&commonName=pallid%20bat&scienceName=&returnFlag=0&Page=1.

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- Lea, T. 2008. Historical (pre-settlement) ecosystems of the Okanagan Valley and Lower Similkameen Valley of British Columbia – pre-European contact to the present. *Davidsonia* 19(1):3–36
- Pallid Bat Recovery Team (PBRT) 2008. Recovery Strategy for the Pallid Bat (*Antrozous pallidus*) in British Columbia. Prepared for the B.C. Ministry of Environment, Victoria, B.C. 18 pp.
- Rambaldini, D.A. 2005. The ecology of torpor use by pallid bats (*Antrozous pallidus*) at the northern extreme of the species' range. M.Sc. thesis University of Regina.
- Rambaldini, D.A. 2006. Unpublished report prepared for Osoyoos (Nk'Mip) Indian Band (Oliver), BC Ministry of Environment (Penticton), and Canadian Wildlife Service (Delta). 82 pp.
- Rambaldini, D.A. and R.M. Brigham. 2004. Habitat use and roost selection by Pallid bats (*Antrozous pallidus*) in the Okanagan Valley, British Columbia Final Report prepared for the British Columbia Ministry of Land, Water and Air Protection, Osoyoos (Nk'Mip) Indian Band, World Wildlife Fund, Canadian Wildlife Service, Habitat Conservation Trust Fund, The Nature Trust of British Columbia, and Public Conservation Trust Fund. 65 pp.
- Rambaldini, D.A. and R.M. Brigham. 2008. Torpor use by free-ranging pallid bats (*Antrozous pallidus*) at the northern extent of their range. *J. Mammal.* 89: 933-941.
- U.S. Geological Survey. 2009. White-Nose Syndrome threatens the survival of hibernating bats in North America. Publications of the US Geological Survey, University of Nebraska, Lincoln. Available at: <http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1025&context=usgspubs>.



BC Conservation Data Centre - Pallid Bat Extent of Occurrence using a minimum convex polygon (MCP)



- Legend**
- Pallid Bat observations
 - Pallid bat MCP

**Extent of Occurrence:
244 sq km**

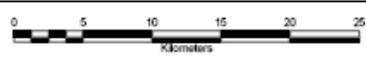
Occurrence data is updated frequently. This map should be considered out of date after February 15, 2010.

The absence of data in any particular area does not necessarily mean that species is not present.

For more information about the BC CDC visit <http://www.gov.bc.ca/cdc>



MAP COMPILATION
Projection: Albers Equal Area Conic
Datum: NAD 83

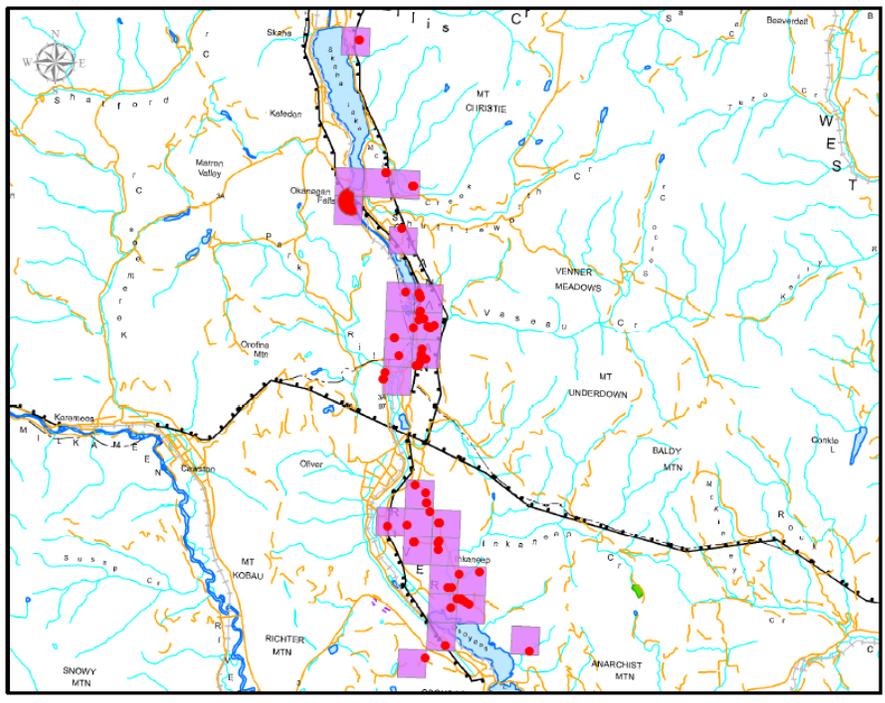


Province of British Columbia
Ministry of Environment
Sept 10, 2010

Figure 1. Extent of occurrence of Pallid Bat in Canada.



BC Conservation Data Centre - Pallid Bat Area of Occupancy using 2 km by 2 km grid



- Legend**
- Pallid Bat observed locations
 - Pallid Bat source poly
 - Area of Occupancy

Area of Occupancy:
36 cells = 144 sq km

Occurrence data is updated frequently.
This map should be considered out of date after February 23, 2010

The absence of data in any particular area does not necessarily mean that species is not present.

For more information about the BC CDC visit <http://env.gov.bc.ca/cdc>



MAP COMPILATION
Projection: Albers Equal Area Conic
Datum: NAD 83



Province of British Columbia
Ministry of Environment
August 23, 2010

Figure 2. Index of area of occupancy of Pallid Bat in Canada.

TECHNICAL SUMMARY

Antrozous pallidus

Pallid Bat

Chauve-souris blonde

Range of occurrence in Canada (province/territory/ocean): B.C.

Demographic Information

Generation time (usually average age of parents in the population; indicate if another method of estimating generation time indicated in the IUCN guidelines(2008) is being used)	2 yrs
Is there an [observed, inferred , or projected] continuing decline in number of mature individuals?	Unknown
Estimated percent of continuing decline in total number of mature individuals within [5 years or 2 generations]	Unknown
[Observed, estimated, inferred, or suspected] percent [reduction or increase] in total number of mature individuals over the last [10 years , or 3 generations].	None – apparent increase in known population size is likely related to search effort, rather than a real increase in population
[Projected or suspected] percent [reduction or increase] in total number of mature individuals over the next [10 years , or 3 generations].	Unknown. Although there has been continued habitat loss during last 10 years, there is no evidence of a population decline
[Observed, estimated, inferred, or suspected] percent [reduction or increase] in total number of mature individuals over any [10 years, or 3 generations] period, over a time period including both the past and the future.	Unknown
Are the causes of the decline clearly reversible and understood and ceased?	Unknown
Are there extreme fluctuations in number of mature individuals?	Unlikely

Extent and Occupancy Information

Estimated extent of occurrence (MCP)	244 km ²
Index of area of occupancy (IAO)	144 km ²
Is the total population severely fragmented?	No
Number of locations*	Unknown
Is there an [observed, inferred , or projected] continuing decline in extent of occurrence?	Unlikely
Is there an [observed, inferred , or projected] continuing decline in index of area of occupancy?	Unknown
Is there an [observed, inferred , or projected] continuing decline in number of populations?	Unknown
Is there an [observed, inferred , or projected] continuing decline in number of locations*?	Unknown
Is there an [observed, inferred , or projected] continuing decline in [area, extent and/or quality] of habitat?	Yes, in both extent and quality
Are there extreme fluctuations in number of populations?	No
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](#) and [IUCN 2010](#) for more information on this term.

Number of Mature Individuals (in each population)

Population	N Mature Individuals
Rambaldini (2006)	At least 250, but less than 1000

Quantitative Analysis

Probability of extinction in the wild is at least [20% within 20 years or 5 generations, or 10% within 100 years].	Not done
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Threats (actual or imminent, to populations or habitats)

Habitat loss, fragmentation, and degradation from continued urban and exurban expansion, recreational use, and agriculture (particularly vineyards), potential future threat of White-nose syndrome.
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Rescue Effect (immigration from outside Canada)

Status of outside population(s)? Secure in United States, unknown status in Washington State.	
Is immigration known or possible?	Possible
Would immigrants be adapted to survive in Canada?	Yes
Is there sufficient habitat for immigrants in Canada?	Not likely
Is rescue from outside populations likely?	Unlikely given ongoing habitat decline in Canada

Current Status

COSEWIC: Threatened (November 2010)

Status and Reasons for Designation

Status: Threatened	Alpha-numeric code: D1
Reasons for designation: This relatively large but rare bat is restricted to the semi-arid shrub-steppe of the southern Okanagan Valley, B.C., at the northern limit of its global distribution. Although the number of known individuals has increased since the last assessment, this can be attributed to increased survey effort and the enhanced knowledge of roost sites. Nevertheless, the population is still thought to be small (fewer than 1000 individuals), cliffs available for roosting are very limited and foraging habitat is in continuing decline.	

Applicability of Criteria

Criterion A (Decline in Total Number of Mature Individuals): Not applicable: no evidence of a decline in number of mature individuals
Criterion B (Small Distribution Range and Decline or Fluctuation): Meets criterion for B1 and B2 based on small EO and IAO, but only 1 of 3 subcriteria (continuing habitat decline).
Criterion C (Small and Declining Number of Mature Individuals): Not applicable: No evidence of a decline in number of mature individuals.
Criterion D (Very Small or Restricted Total Population): Meets D1, because the most plausible population estimate lies between 250 and 1000 mature individuals.
Criterion E (Quantitative Analysis): Not applicable



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 (2010)

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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Service

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de la faune



The Canadian Wildlife Service, Environment Canada, provides full administrative and financial support to the COSEWIC Secretariat.