

**COSEWIC**  
**Assessment and Status Report**

on the

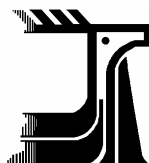
**Common Nighthawk**  
*Chordeiles minor*

in Canada



**THREATENED**  
**2007**

**COSEWIC**  
COMMITTEE ON THE STATUS OF  
ENDANGERED WILDLIFE  
IN CANADA



**COSEPAC**  
COMITÉ SUR LA SITUATION  
DES ESPÈCES EN PÉRIL  
AU CANADA

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## COSEWIC Assessment Summary

### Assessment Summary – April 2007

**Common name**

Common Nighthawk

**Scientific name**

*Chordeiles minor*

**Status**

Threatened

**Reason for designation**

In Canada, this species has shown both long and short-term declines in population. A 49% decline was determined for areas surveyed over the last three generations. Reduction of food sources has apparently contributed to the decline of this species, as with several other aerial insectivores. Reductions in habitat availability, caused by fire suppression, intensive agriculture, and declines in the number of gravel rooftops in urban areas, may also be factors in some regions.

**Occurrence**

Yukon, Northwest Territories, British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick, Prince Edward Island, Nova Scotia, Newfoundland and Labrador

**Status history**

Designated Threatened in April 2007. Assessment based on a new status report.



**COSEWIC**  
**Executive Summary**

**Common Nighthawk**  
*Chordeiles minor*

**Species information**

The Common Nighthawk is a medium-sized bird, with a large flattened head, large eyes, a small bill, a large mouth, long slender pointed wings and a long, slightly notched tail. It has dark brown plumage mottled with black, white and buff. In flight, adults have a white patch across the primaries. Seven subspecies are generally recognized in North America.

**Distribution**

The breeding range of the Common Nighthawk includes all of North America, Central America and possibly southeastern Colombia. In Canada, the species occurs in all Canadian provinces and territories, except Nunavut. The Common Nighthawk winters throughout South America, primarily in regions in eastern Peru and Ecuador and in southern Brazil.

**Habitat**

The breeding habitat of the Common Nighthawk is varied and includes open habitats where the ground is devoid of vegetation, such as sand dunes, beaches, logged areas, burned-over areas, forest clearings, rocky outcrops, rock barrens, prairies, peatbogs and pastures. From the start of European settlement, the Common Nighthawk probably took advantage of newly opened habitats created by massive deforestation in the eastern United States, as well as urban areas where it used flat gravel roofs for nesting. However, since the early 1900s, the quantity of available habitat has been declining due to forest fire suppression, reforestation, the intensive use of agricultural land and the gradual replacement of gravel roofs with tar covered roofs.

**Biology**

Generally, two eggs are laid directly on the ground, from the third week of May to mid-August. Incubation is carried out by the female only, and lasts 16 to 20 days, depending on the region. The nestlings remain in the nest from mid-June to the end of August and become fully developed at between 45 and 52 days. The life span of the Common Nighthawk is usually 4 to 5 years.

## **Population sizes and trends**

The current population size for Common Nighthawks in Canada is estimated at 400,000 breeding adults. In Canada, data from the Breeding Bird Survey (BBS) indicate a significant long-term (i.e. 1968-2005) decline of 4.2% per year. In the most recent 10 year period (1995-2005), BBS data show a significant decline of 6.6% per year. This corresponds to a 49.5% decrease in the population. Declines have also been observed along BBS routes in the boreal forest, suggesting that the declines are not limited to southern parts of the range. Declines have also been observed along BBS routes in the boreal forest, suggesting that the declines are not limited to southern parts of the range.

## **Limiting factors and threats**

The reasons for the decline in Common Nighthawk populations have not been determined. Reductions in insect prey due to large-scale pesticide use seem likely to have contributed to the decline, given the widespread declines observed in other species of aerial insectivores. Habitat loss and alteration, in particular the reforestation of abandoned agricultural fields and harvested forests, fire suppression, intensive agriculture and the gradual reduction of buildings with flat gravel covered rooftops, may also have contributed to the observed declines.

## **Special significance of the species**

The Common Nighthawk is one of the only species of insectivorous, crepuscular birds that uses a wide variety of habitats and is widely distributed in Canada.

## **Existing protection or other status designations**

In Canada, the Common Nighthawk, its nest and eggs are protected under the *Migratory Birds Convention Act, 1994*. Globally, NatureServe (2005) considers the species as secure (G5). The species has received NatureServe ranks in Newfoundland and Labrador and Prince Edward Island of S1S2B.



## 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

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

# **COSEWIC Status Report**

on the

## **Common Nighthawk**

*Chordeiles minor*

**in Canada**

2007

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## SPECIES INFORMATION

### Name and classification

The common English name of *Chordeiles minor* (Forster, 1771) is Common Nighthawk. The common French name is “Engoulevent d’Amérique”. Its taxonomy is as follows:

Class: Aves  
Order: Caprimulgiformes  
Family: Caprimulgidae  
Genus: Chordeiles  
Species: minor

Seven subspecies are generally recognized in North America (Poulin *et al.* 1996), of which three are found in Canada. *C. m. minor* breeds from southeastern Alaska to Vancouver Island, and from southern Canada including all Canadian provinces, to Virginia, North Carolina, Georgia, and Oklahoma. This subspecies is distinguished from the others by its darker ventral bars (Poulin *et al.* 1996). *C. m. sennetti*, occurs primarily in the Great Plains, eastern Montana, southern Saskatchewan and southern Manitoba, to North Dakota, Minnesota and Iowa, and is generally paler than the other subspecies. *C. m. hesperis* breeds in southwestern Canada, particularly in British Columbia and Alberta, and in the United States, in Washington, Montana, Nevada, Utah, the extreme north of Colorado and western Wyoming. The latter subspecies is similar to *C. m. minor* but has more grey and white. The differences between these subspecies are slight, and significant introgression zones have been noted (Salt and Wilk, 1958). This report will cover the species as a whole.

### Morphological description

The Common Nighthawk is a medium-sized bird (i.e. 21–25 cm long, 65–98 g; Poulin *et al.* 1996), and is characterized by long, slender, pointed wings and by a long, slightly notched tail (Poulin *et al.* 1996). This species has a rather large, flattened head, large eyes, a small bill and a large mouth. The species has cryptic colouration, generally dark brown, with black, white and buff mottling on the wings and upper parts and fine buff bars on the under parts. Females can be distinguished from males by their throat band, which is buff rather than white. In flight, adults have a pronounced white patch at the base of the primaries, which are also dark brown. The tail is brown with fine buff bars and males also have a white band near the tip. Juveniles are distinguished from adults primarily by the absence of the white or buff throat band.

The Common Nighthawk resembles three other species that occur in Canada: Whip-poor-will (*Caprimulgus vociferus*), Common Poorwill (*Phalaenoptilus nuttallii*) and Chuck-will’s-widow (*C. carolinensis*). It can be distinguished from these species by the lack of rictal bristles (long, fine feathers surrounding the bill), the presence of white patches on the primaries, the shape of the tail and its coloration patterns, and by its long pointed wings.

## Genetic description

Few molecular or genetic studies have been conducted to distinguish the Common Nighthawk from the other species in the family. The species is considered to be closely related to the Antillean Nighthawk (*C. gundlachii*) of southern Florida, the Bahamas and Greater Antilles. The two species were considered conspecifics until 1982, when they were separated because of differences in their calls, size, egg colouring and juvenile plumage, as well as their allozymic differences (Poulin *et al.* 1996).

## DISTRIBUTION

### Global range

The breeding range of the Common Nighthawk includes most of North America, and disconnectedly, Central America (Figure 1). In Canada, the species is distributed in all provinces and territories except Nunavut. In the United States, it breeds in all continental states. However, it is absent from eastern California, southern Nevada and southwestern Arizona (Poulin *et al.* 1996).

Although the Common Nighthawk winters throughout the whole of South America, it is most abundant in eastern Peru, eastern Ecuador and southern Brazil (Poulin *et al.* 1996). In most South American countries, its distribution is still poorly known, because of the difficulty in distinguishing this species from the Lesser Nighthawk (*C. acutipennis*), the difficulty in differentiating migrants from resident birds, and the general lack of information on the species (Poulin *et al.* 1996).

### Canadian range

In Canada, the Common Nighthawk breeds in all provinces and territories except Nunavut (Figure 1). Breeding Bird Survey (BBS) data indicate that about 37% of the breeding range of this species is in Canada, although only 10% of the total world population is believed to breed in Canada (P. Blancher, unpubl. data).

In eastern Canada, the species breeds only in the southern part of Labrador and is considered a rare visitor to the island of Newfoundland (Todd, 1963; Godfrey, 1986). The species is generally common and widely distributed in all of the Maritime provinces, with the exception of Prince Edward Island (Erskine, 1992; NatureServe, 2005; S. Blaney, pers. comm. 2005).

In Quebec, the range of the species includes regions south of the 54th parallel, including the south coast of James Bay, Fermont, Lake Mistassini and Waskaganish (Todd, 1963; Godfrey, 1986; Gauthier and Aubry, 1996; J. Gauthier, pers. comm. 2005). There is no confirmation of this species breeding on the Magdalen Islands and Anticosti Island (Cyr and Larivée, 1995; Gauthier and Aubry, 1996). In Ontario, the species occurs throughout the province except for the coastal regions of James Bay and Hudson Bay (Cadman *et al.* 1987).

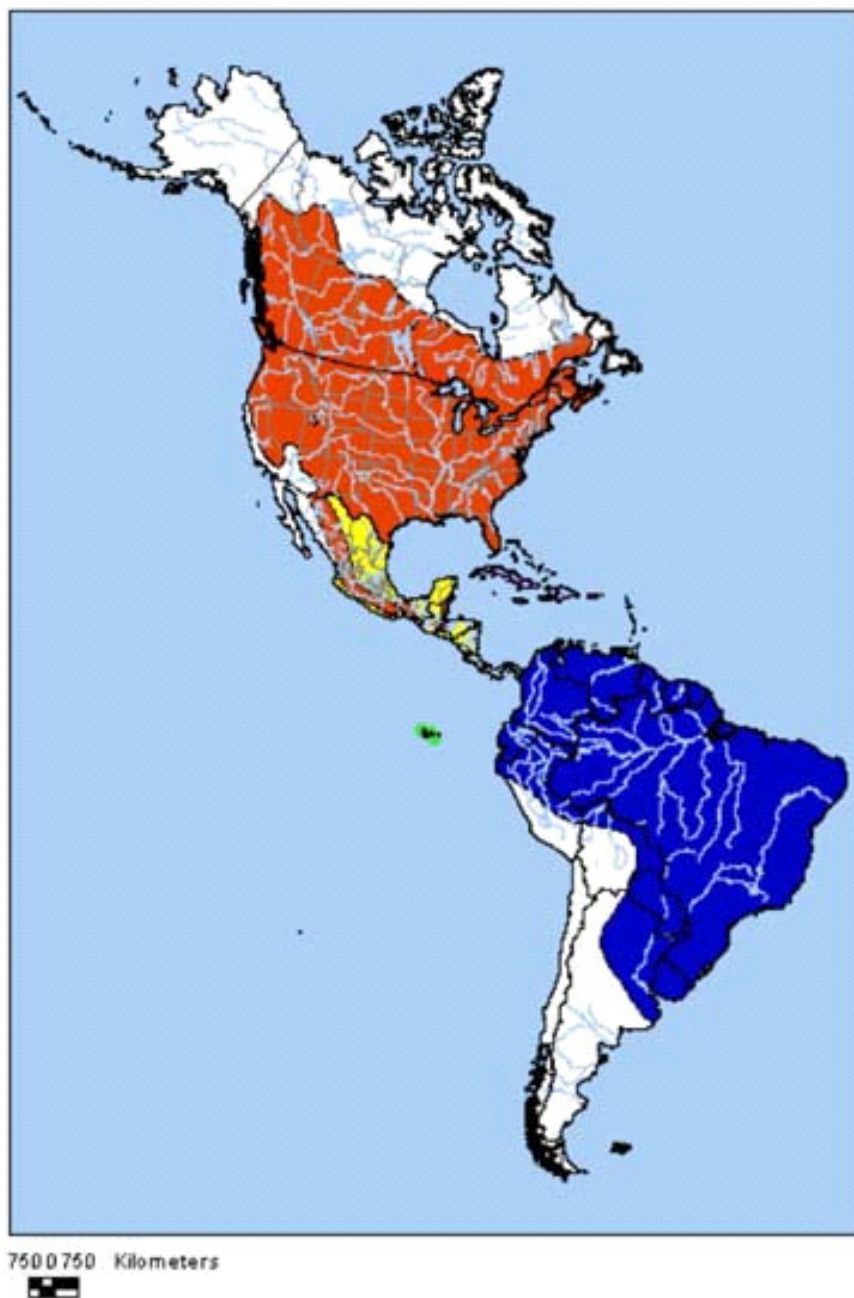


Figure 1. Breeding (red), wintering (blue) and migratory (yellow) locations of the Common Nighthawk (from Ridgely *et al.* 2003).

In western Canada, the species breeds throughout Alberta and Saskatchewan and south of the tree line in Manitoba (Semenchuk, 1992; Smith, 1996; Manitoba Avian Research Committee, 2003). In British Columbia, it occurs throughout the province, including Vancouver Island, but is absent from the Coast Mountains and from the Queen Charlotte Islands (Campbell *et al.* 1990; Poulin *et al.* 1996). In the Yukon, the species breeds in the southern part of the territory, up to the Dawson region (Sinclair

*et al.* 2003). In the Northwest Territories, the species occurs along the border with Alberta and Saskatchewan and extends north along the Mackenzie River Valley to Norman Wells (Poulin *et al.* 1996; R. Popko, pers. comm. 2005). The species is considered an accidental visitor in Nunavut (M. Settingington, pers. comm. 2005).

The Extent of Occurrence (EO) for the species in Canada is estimated at 4,817,780 km<sup>2</sup> (Bird Studies Canada, unpubl. data.), while the Area of Occupancy (AO) is approximately 54,000 km<sup>2</sup>. The latter assumes a population estimate of 200,000 breeding pairs (see below), each with an average territory area of 0.27 km<sup>2</sup> (Wedgwood, 1973).

## HABITAT

### Habitat requirements

The breeding habitat of the Common Nighthawk includes open habitats, such as sand dunes, beaches, recently logged areas, recently burned-over areas, forest clearings, short-grass prairies, pastures, open forests, peatbogs, marshes, lakeshores, gravel roads, river banks, rocky outcrops, rock barrens, railways, mine tailings, quarries, urban parks, military bases, airports, mines and commercial blueberry fields (Peck and James, 1983; Gauthier and Aubry, 1996; Poulin *et al.* 1996; Manitoba Avian Research Committee, 2003). The species is also present in mixed and coniferous forests, as well as in pine stands (Gauthier and Aubry, 1996). In Alberta and Saskatchewan, canyons, grassy plains and dune complexes are also favoured habitats for the Common Nighthawk (Dale *et al.* 1999; A.R. Smith, pers. comm. 2005). At the beginning of the 20<sup>th</sup> century, the species also nested in cultivated fields, corn and potato fields, orchards, parks and gardens in residential areas and railways (Gross, 1940). Since the end of the 1870s, it has also used flat gravel-covered roofs in urban areas for nesting (Gross, 1940). Although nighthawks may have benefited from the new habitats provided by urban areas, they generally prefer natural sites (Brigham, 1989). It is not clear, however, what proportion of the Canadian population breeds in poorly surveyed areas, such as the boreal forest.

### Habitat trends

Little is known about the habitat trends of the Common Nighthawk in Canada (Poulin *et al.* 1996). In the early days of European settlement, the Common Nighthawk probably took advantage of newly opened habitat created by extensive deforestation in the eastern United States and parts of Canada (Poulin *et al.* 1996). The appearance of gravel rooftops on urban buildings in the second half of the 19th century further contributed to the expansion of Common Nighthawk habitat in North America (Weir, 1989; Gauthier and Aubry, 1996) to the point that, at the beginning of the 1990s, the species bred almost exclusively on the roofs of buildings in urban areas in Ohio and Pennsylvania (Peterjohn and Rice, 1991; Brauning, 1992).

Since the beginning of the 20<sup>th</sup> century, however, forest fire suppression and changes in forest harvesting practices that reduce the number of open areas, along with extensive reforestation and intensive use of agricultural land, have all contributed to the

decline in the quantity and quality of Common Nighthawk habitat (Gauthier and Cyr, 1996; R.M. Brigham pers. comm. 2007). Similarly, gravel rooftops are gradually being replaced by tar-covered roofs, which further reduce the amount of available breeding habitat in urban areas (Poulin *et al.* 1996). Habitat does not appear to be declining in some areas. For instance, in the Maritimes logged-over areas, commercial blueberry fields, coal mines and gravel quarries, which provide suitable breeding habitat, are constantly being created (S. Blaney, pers. comm. 2005).

### **Habitat protection/ownership**

In Canada, the quantity of habitat available to the Common Nighthawk or the degree of habitat protection on public lands is unknown. Some habitat on public lands will undoubtedly be protected by the creation of protected areas, although these areas account for less than 8% of the total area of Canada (Natural Resources Canada, 2005). There are no programs for the protection of Common Nighthawk habitat within Canada's protected areas. Nevertheless, controlled burning programs in specific national parks could increase the species' habitat (Campbell *et al.* 1990; R.M. Brigham, pers. comm. 2005). In managed forests, there are no specific programs for Common Nighthawk habitat protection.

Data are equally lacking on the level of habitat protection for this species in private areas (i.e. urban and agricultural areas).

## **BIOLOGY**

### **Reproduction**

The age of sexual maturity for this species is one year (Poulin *et al.* 1996). The two eggs are laid directly on soil, sand, gravel or bare rock (Dexter, 1952; Weller, 1958; Peck and James, 1983; Poulin *et al.* 1996; Sinclair *et al.* 2003). The species generally has one brood per year, but a second clutch may be produced in the southern part of its range (Weller, 1958). The eggs are generally laid from the second week of May to mid-August (Gauthier and Aubry, 1996; Poulin *et al.* 1996). Only the female incubates the eggs, for an incubation period of 16 to 20 days, depending on the region (Rust, 1947; Foyle, 1946; Campbell *et al.* 1990). Nestlings generally remain in the nest from mid-June to late August (Poulin *et al.* 1996). During this period, the female broods the nestlings continually and the male feeds the female and the nestlings in the nest (Granza, 1967; Brigham, 1989). The nestlings are semi-precocial and are able to move short distances in search of shade within the first few days (Gross, 1940). The young begin to fly after 18 days and can capture their first insects near the ground after 25 to 30 days, (Gross, 1940; Rust, 1947). The nestlings reach full development at between 45 and 52 days (Gross, 1940; Rust, 1947). In Quebec, the period of dependency after leaving the nest has been estimated to be from the second week of June to the last week of July (Gauthier and Aubry, 1996). In the Yukon, juveniles still dependent on adults and not yet able to sustain flight over large distances were reported as late as 22<sup>nd</sup> August (Sinclair *et al.* 2003).

## Survival

Very little information is available on annual adult survival rates on breeding or wintering grounds. Moreover, no studies have been conducted on reproductive success or fledgling survival rates (Poulin *et al.* 1996). The life span of the Common Nighthawk is generally 4-5 years (Poulin *et al.* 1996), although banded birds aged 9 years have been reported (Dexter, 1961). Similarly, extremely high temperatures on roof surfaces in summer (i.e. 60°C) can cause nestling mortality (Gross, 1940).

## Dispersal/migration

The Common Nighthawk has one of the longest north-south migration distances of any species in North America (Poulin *et al.* 1996). Nighthawks arrive in Canada from early May to the beginning of June (Weir, 1989; Manitoba Avian Research Committee, 2003) and migration to South America occurs from mid-August to mid-September (Ouellet, 1974; Manitoba Avian Research Committee, 2003). These autumnal migratory flights are often associated with the emergence of flying ants (hymenoptera) in August (Poulin *et al.* 1996) and involve flocks ranging from 10 to an estimated 16,000 individuals (Ouellet, 1974; Tuft, 1986; Weir, 1989; Poulin *et al.* 1996).

Factors affecting dispersal from the natal site are unknown (Poulin *et al.* 1996). Studies involving banded birds have found that female nighthawks exhibit nest site fidelity (Dexter, 1961; Poulin *et al.* 1996). No data are available for males (Poulin *et al.* 1996).

## Diet and feeding habits

The Common Nighthawk is an aerial insectivore that feeds primarily at dusk and dawn (Poulin *et al.* 1996) at heights varying from 1 m to more than 80 m (Brigham, 1990; Poulin *et al.* 1996). Unlike other species of nightjar which use echolocation, the Common Nighthawk visually detects its prey, aided by a highly developed *tapetum lucidum*, which improves its vision in low-light environments (Poulin *et al.* 1996). Where insect densities are high, the species can feed in groups ranging from a few dozen to several hundred individuals (Brigham and Fenton, 1991; Brigham and Barclay, 1995). In urban areas, nighthawks often forage near street and building lights, where they capture insects attracted by the light (Poulin *et al.* 1996). During breeding and migration periods, the species is regularly seen feeding on trichoptera over water (Montreal, Ouellet, 1974; Okanagan Valley, Firman *et al.* 1993; northwestern Saskatchewan, C. Savignac, pers. obs. 2005).

The diet of the Common Nighthawk includes a wide variety of insects (over 50 species), with the species showing a preference for homoptera, coleoptera, hymenoptera, diptera and orthoptera (Gross, 1940; Blem, 1972; Caccamise, 1974; Brigham, 1990; Brigham and Fenton, 1991; Firman *et al.* 1993; Todd *et al.* 1998). Analyses of stomach contents have shown that flying ants and coleoptera represent 25% (i.e. 200 to 1,800 ants/stomach) and 20% of the total food eaten, respectively (n = 87 individuals, Gross, 1940).

## **Interspecific interactions**

The Common Nighthawk is aggressive toward other similar species, such as the Antillean Nighthawk and the Chuck-will's-widow (Bjorklund and Bjorklund, 1983). However, it is subordinate to bats at some feeding sites (Shields and Bildstein, 1979). The Lesser Nighthawk excludes the Common Nighthawk from its territory in certain desert regions of the southern United States where insect densities are low (Caccamise, 1974).

Potential predators of adult nighthawks include domestic cats (*Felix catus*), American Kestrels (*Falco sparverius*) and Peregrine Falcons (*Falco peregrinus*) (Poulin *et al.* 1996). Predation of eggs and nestlings by the American Crow (*Corvus brachyrhynchos*), Common Raven (*Corvus corax*), gulls, owls, coyotes (*Canis latrans*), striped skunks (*Mephitis mephitis*), dogs, foxes and snakes is regularly reported (Marzilli, 1989; Wedgwood, 1991).

## **Home range and territory**

The Common Nighthawk is highly territorial and males seldom cross territorial boundaries (Wedgwood, 1973). Average territory size varies according to habitat and is estimated at approximately 10 ha in urban areas (Rust, 1947; Armstrong, 1965; Wedgwood, 1973) and 28.3 ha in natural areas (Wedgwood, 1973). Territory size can also vary according to the availability of suitable nest sites, as demonstrated by a study carried out in Florida, where the average distance between 16 nests was only 73 m (Sutherland, 1963). In Saskatchewan, the density of Common Nighthawk territories is higher in urban areas (1 male/18.6 ha) than in suburban areas (1 male/36.6 ha, n = 48, Wedgwood, 1973).

## **Behaviour and adaptability**

Since the middle of the 19<sup>th</sup> century, the Common Nighthawk has adapted well to urban areas in which buildings with flat gravel roofs provide suitable nest sites (Poulin *et al.* 1996). The species has also benefited from the abundance of insects around city lights and artificial habitats, such as treatment ponds.

# **POPULATION SIZES AND TRENDS**

## **Search effort**

### Breeding Bird Survey (BBS)

The BBS is a large-scale monitoring program that surveys North American bird populations during the breeding season (Sauer *et al.* 2005). Bird abundance data are collected by volunteers, who record all birds seen and heard within a 400 m radius circle at stops positioned every 800 m along roads (Downes *et al.* 2005). Although the BBS

can track Common Nighthawks because the species is highly visible (Poulin *et al.* 1996; Sauer *et al.* 2005), it is considered to have only Fair accuracy for establishing population indices (Rich *et al.* 2004). One limitation of this method for tracking Common Nighthawks in Canada is that regions, such as the boreal forest, will not be as well represented as the more southerly and populated parts of the breeding range. Additionally, because the birds are crepuscular they tend to be detected only on the first stops of a BBS route on a given day. This limitation is somewhat countered by the fact that the species is detected on a large number of routes, providing a good sample size for trends (P. Blancher pers. comm. 2006).

### Étude des populations des oiseaux du Québec (EPOQ)

In Quebec, the EPOQ database, which manages ornithological checklist data provided by thousands of volunteers since 1969, is the tool of choice for examining bird population trends in Quebec (Cyr and Larivée, 1995). The EPOQ database primarily covers regions (i.e. St. Lawrence lowlands) south of the 52nd parallel and includes all seasons (Cyr and Larivée, 1995). The main disadvantage of this method is that it tends to cover mostly inhabited areas where access is easier.

### Ontario Breeding Bird Atlas

The Ontario Breeding Bird Atlas surveyed breeding bird populations in Ontario during the periods of 1981-1985 and 2001-2005. It provides information on changes in the distribution of Common Nighthawks in the province in the 20 years between surveys (Cadman *et al.* 1987; Ontario Breeding Bird Atlas, 2006). Population trends are determined by comparing the percentage of 10 X 10 km squares reporting Common Nighthawks between the two time periods and also by comparing the number of squares per 100 km x 100 km block divided by the total number of squares/block surveyed.

### Additional surveys

In British Columbia, Alberta, Saskatchewan and Manitoba, information on Common Nighthawk trends comes mostly from local ornithological knowledge (i.e. notes and observations from amateur ornithologists, see Manitoba Avian Research Committee, 2003) and includes counts of migrating birds as they pass fixed stations in Manitoba (Taylor, 1996) and mapping of breeding bird territories in Saskatchewan (Wedgwood, 1973).

## **Abundance**

According to BBS abundance estimates (after Rich *et al.* 2004), the current population of Common Nighthawks in Canada, is approximately 400,000 breeding adults or 200,000 breeding pairs (P. Blancher, pers. comm. 2007).

Other than the estimates provided by the BBS, very few studies exist which assess the abundance of the Common Nighthawk in Canada. Data on the density of the species are only available for the Saskatoon and Cluff Lake areas in Saskatchewan. Reported



densities range from a minimum of 0.03 male/ha in urban areas around Saskatoon (Wedgwood, 1973) to 0.11 male/ha (33 males/24 stops) in boreal forest dominated by a 25 year old burn in the Cluff Lake area (C. Savignac, unpubl. data 2005).

## **Fluctuations and trends**

### Breeding Bird Survey

In the United States, where most of the breeding population of Common Nighthawks occurs, the long-term BBS data show a significant decline of 1.83% per year ( $n = 1498$  routes,  $P < 0.00$ ) between 1968 and 2005 and, on the short-term, a significant decline of 1.58% per year ( $n = 995$ ,  $P = 0.02$ ) between 1995 and 2005 (Sauer *et al.* 2005).

In Canada, long-term BBS data show a significant decline of 4.2% per year ( $n = 312$  routes,  $P < 0.05$ ) between 1968 and 2005, which corresponds to an 80% decline in population over this time period (Downes *et al.* 2005; Figure 2). In the most recent 10-year period (1995-2005), BBS data show a significant decline of 6.6% per year ( $n = 164$  routes,  $P < 0.05$ ), which amounts to a 49.5% decrease in the population (Downes *et al.* 2005). BBS routes in parts of the boreal forest also show declines on both the long and short-term (Boreal Taiga Plains: 1968-2005: -13.7%/year,  $n = 47$  routes,  $P < 0.05$ ; 1995-2006: -17.5%/year,  $n = 23$  routes,  $P > 0.05$ ; Boreal Hardwood: 1968-2005: -6.8%/year,  $n = 40$  routes,  $P < 0.05$ ).

### Étude des populations des oiseaux du Québec

The EPOQ database for Quebec shows a significant long-term decline of 0.24% per year ( $Y = -0.0024x + 4.9$ ,  $P \leq 0.01$ ) between 1970 and 2004 (Larivée, 2005; Figure 3) and a non-significant short-term decline of 0.20% per year ( $Y = -0.002x + 4.6$ ,  $P = 0.25$ ) between 1991 and 2004 (Larivée, 2005).

### Ontario Breeding Bird Atlas

A comparison of data from the first (1981-1985) to the second (2001-2005) atlas period shows a decrease in the number of squares reporting a Common Nighthawk between the two survey periods (1981-1985: 38% of squares, 2001-2005: 21%, Cadman *et al.* 1987; A. Darwin unpubl. data 2005). Similarly, the number of 100 x 100 km blocks where there were fewer squares with Common Nighthawks in the second atlas than the first ( $n = 115$ ) was greater than the number of blocks where the squares with nighthawks had increased ( $n = 14$ ) or stayed the same ( $n = 1$ ) (Wilcoxon Sign test  $_{2\text{-tailed}} = -8.8$ ,  $P \leq 0.001$ ; A. Darwin, unpubl. data 2005).

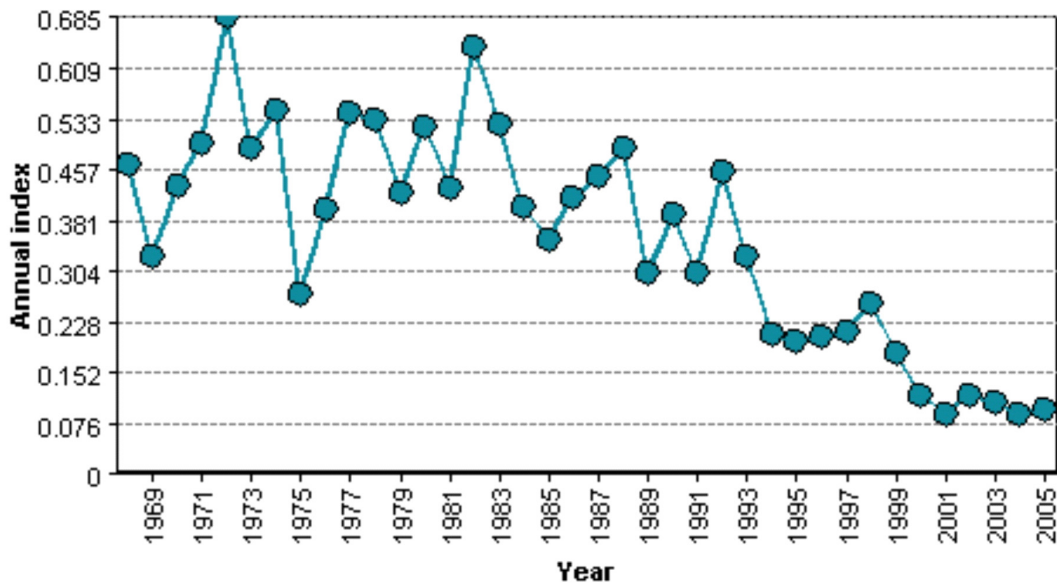


Figure 2: Annual index of abundance for the Common Nighthawk in Canada between 1968 and 2005 according to BBS data (from Downes *et al.* 2005)

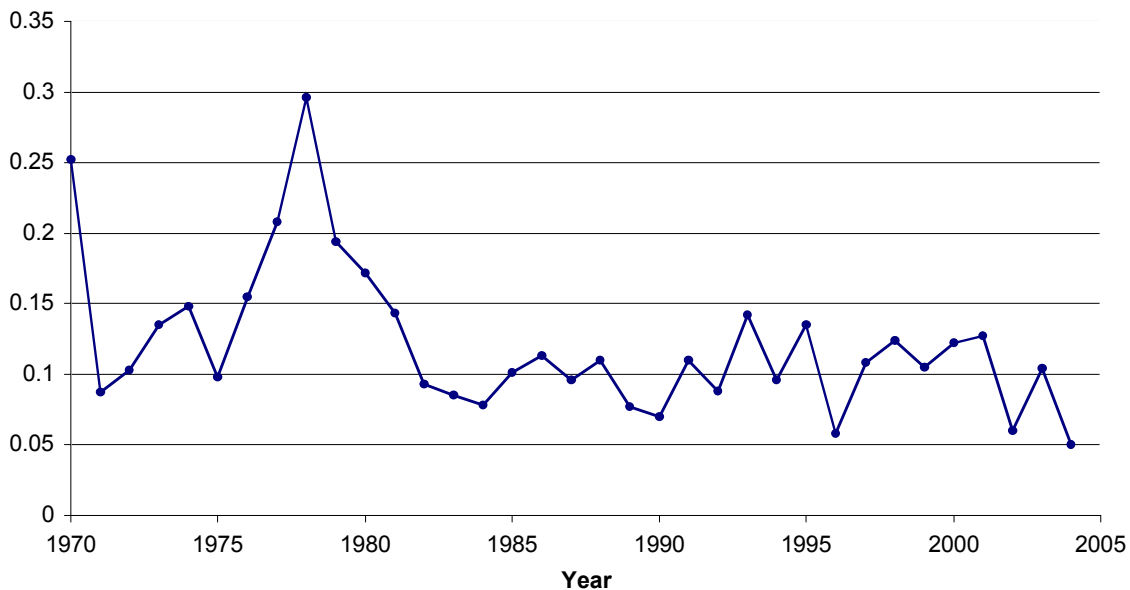


Figure 3. Annual index of abundance for the Common Nighthawk in Quebec between 1970 and 2004 according to the EPOQ database (Larivée, 2005).

Recent results show significant declines between the two atlas periods in the Southern Shield Region, one of the population strongholds for this species in Ontario, of 31% and declines in the Carolinian (14%), Simcoe-Rideau (21%), and Northern Shield (20%) Regions (L. Friesen, pers. comm. 2007). The only region that did not report a significant decline was the Hudson Bay Lowlands, lying at the extreme northern edge of the species' range (L. Friesen, pers. comm. 2007).

## Additional surveys

### Manitoba

Although the species is still relatively abundant and widely distributed throughout the province, data coming primarily from the ornithological community of Manitoba indicate that the species has declined in several urban centres, including Winnipeg (Manitoba Avian Research Committee, 2003; P. Taylor pers. comm. 2005). Visual counts of migrating birds (probably from the boreal forest) in the Pinawa area suggest that the species declined by 75% between the periods 1976-1981 and 1992-1997 (Taylor, 1996; P. Taylor pers. comm. 2005; Figure 4). However, counts increased during the 2000-2005 period (P. Taylor pers. comm. 2005).

### Saskatchewan

The comparison of an exhaustive Common Nighthawk survey in Saskatoon from 1971 to 1990 suggested a decline in breeding populations of 58% (i.e. 68 territories in 1971 vs. 28 in 1990, Wedgwood, 1991).

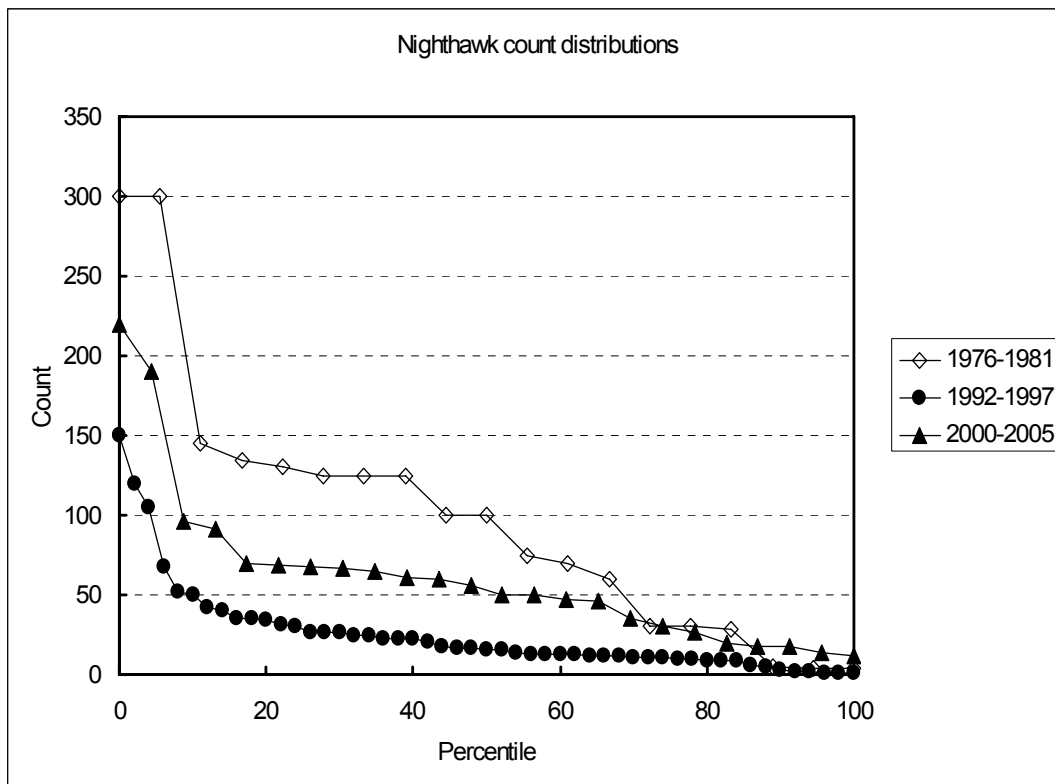


Figure 4. Distribution of sunset count totals of Common Nighthawks (usually feeding flocks) during the fall migration peak (11-25 August) at Pinawa, MB sewage lagoons for three 6-year periods. Counts during the periods 1992-1997 (n=51) and 2000-2005 (n=24) were more frequent and systematic than in 1976-1981 (n=19). The values on the x axis are individual counts assigned a percentile ranking between 0 and 100 to normalize the x-axis and allow comparisons across the three time periods (P. Taylor, unpubl. data).

## Historical

Historical references to Common Nighthawk abundance are also consistent with the decline suggested by the above survey data. For instance, in the mid-1800s in the Montreal area, the species was considered a common resident that nested on the gravel rooftops of city houses (Wintle, 1882, 1896 in Ouellet, 1974). In the 1970s, the species was also considered a common summer resident in the Montreal and Montérégie areas and nested in small numbers in all cities and towns, although the species was not as common as in the 1800s (Ouellet, 1974). More recently, a significant decline in the species has been reported in these areas and in several other towns of the St. Lawrence Valley, notably Rimouski, Quebec City and Gatineau (J. Larivée pers. comm. 2005; J. Gauthier pers. comm. 2005).

In the early 1900s in Ontario, the species was considered abundant by Macoun and Macoun (1909). A decline was first reported in the early 1970s (Goodwin and Rosche, 1970, 1974).

In summary, both long and short-term BBS data, including routes in the boreal forest, show significant declines in the abundance of Common Nighthawk populations. Further, counts from Manitoba, which likely sample birds on migration from the boreal forest, have also shown long-term declines. These results are consistent with provincial surveys (e.g. Ontario Breeding Bird Atlas) that also show declines in nighthawk abundance. Although it is not clear what portion of the population occurs outside the populated areas (e.g. the boreal forest), the evidence suggests that the observed declines are widespread across the breeding range.

## Rescue effect

BBS data for the United States, the potential source of immigrants for Canada, also show significant long and short-term declines in nighthawks (see above).

## LIMITING FACTORS AND THREATS

While there are no specific studies on the subject, the decline of the Common Nighthawk may be partly related to a general decline in insect populations in both the breeding and wintering grounds, due to large-scale insecticide use since the mid-1900s (Cane and Tepedino, 2001; Conrad *et al.* 2004). For example, it has been assumed that mosquito control programs in most urban areas in North America are probably responsible for the decrease in several species of aerial insectivores such as the Common Nighthawk (Poulin *et al.* 1996). Similarly, the decline in the Eurasian Nightjar (*Caprimulgus europaeus*) is believed to be due in part to the decrease in insect populations from large-scale pesticide spraying programs in Europe (Conrad *et al.* 2004; UK Forestry Commission, 2006; UK Biodiversity Action Plan, 2006).

Data from the United States suggest that factors such as the alteration and loss of habitat may also affect Common Nighthawk populations in Canada (Poulin *et al.* 1996). For example, fire suppression, changes in harvesting practices that reduce the number of open areas in forested regions and an increase in intensive agriculture are all believed to be responsible for the decline in several open-habitat species such as the Common Nighthawk (Askins, 1993; Degraff and Yamasaki, 2003; R.M. Brigham pers. comm. 2007). In the prairie provinces, the loss and alteration of native prairies from cultivation, fire suppression, and cattle grazing are believed to be the primary factors in the decline of the species since 1900 (Jones and Bock, 2002, Northern Prairie Wildlife Research Centre, 2005). In addition, in urban areas, the gradual replacement of gravel-covered roofs with tar-covered roofs is believed to be a primary cause of habitat loss (Poulin *et al.* 1996). It is also thought that the recent colonization of large roofs by Ring-billed Gulls (*Larus delawarensis*) in some major cities (such as Montreal) reduces the amount of habitat available to the Common Nighthawk (J. Gauthier, pers. comm. 2005). In northern Canada, where some unknown portion of the population occurs, Common Nighthawk populations may be little affected by the alteration and loss of habitat.

The increase in terrestrial predators, such as domestic cats, striped skunks and raccoons (*Procyon lotor*), as well as avian predators, such as American Crows and Common Ravens may play a role in the decline of the species, especially in urban areas (Poulin *et al.* 1996; R.M. Brigham, pers. comm. 2005).

Collisions with motor vehicles have been reported as a mortality factor for several Common Nighthawk populations in North America. Populations that use dirt roads in managed forests as roost or nest sites are affected by increased vehicle traffic (including ATVs), which collide with adults or destroy nests (Bender and Brigham, 1995; Poulin *et al.* 1996; J. Gauthier, pers. comm. 2005). Nighthawks can also collide with aircraft. Indeed, relatively high mortality rates have been reported during fall migration at some sites (Cumming *et al.* 2003).

Extreme climatic fluctuations in the spring could also affect adult survival and breeding success, although this has not been documented. Given that the Common Nighthawk does not enter into torpor as frequently as other goatsuckers (Fletcher *et al.* 1993), the species is more susceptible to prolonged periods of cold weather in the spring. Moreover, the increased frequency of tropical storms in the Gulf of Mexico may negatively affect nightjars during their autumn migration (e.g. Chimney Swifts, *Chaetura pelagica*, J. Gauthier, pers. comm. 2005). Further studies are necessary to assess the effect of climate change on the ecology of the Common Nighthawk.

### **SPECIAL SIGNIFICANCE OF THE SPECIES**

The Common Nighthawk is one of the only species of insectivorous bird that is both crepuscular and widely distributed in Canada.

## EXISTING PROTECTION OR OTHER STATUS DESIGNATIONS

In Canada, the Common Nighthawk, its nest and eggs are protected under the Migratory Birds Convention Act, 1994 (Environment Canada, 2004).

At the global level, the species is considered as secure (G5, last reviewed in 1996; NatureServe 2005; Table 1). It is also considered to be secure in the United States (last reviewed in 2000; NatureServe 2005; Table 1). However, it is considered critically imperiled (S1) or imperiled (S2) in five eastern U.S. states (Connecticut, Rhode Island, New Hampshire, Vermont and Delaware).

In Canada, the species is not on any species-at-risk list and is generally considered secure by NatureServe (2005, Table 1). It is also considered a low-responsibility species in Canada, because less than 10% of the North American population breeds in Canada (Dunn *et al.* 1999). NatureServe (2005) gives a rank of S1S2B in two Atlantic Provinces: Newfoundland and Labrador, and Prince Edward Island (Table 1). The General Status of Species in Canada gives the species an overall rank of 4 or Secure in Canada. It is considered 3 or Sensitive in AB, NB, NS, and PE and 4 or Secure in YT, NT, BC, SK, MB, ON, and QC (CESCC 2006).

**Table 1. Rankings assigned to the Common Nighthawk (NatureServe 2005).**

Region	Rank*
Global	G5
United States	N5B
Canada	N5B
British Columbia	S4S5B
Alberta	S5
Northwest Territories	SNRB
Newfoundland /Labrador	S1S2B
New Brunswick	S4B
Nova Scotia	S4B
Prince Edward Island	S1S2B
Yukon Territory	SNRB
Saskatchewan	S5B
Manitoba	S4B
Ontario	S4B
Quebec	S5

S1 means that the species is critically imperiled due to extreme rarity (often 5 or fewer occurrences) or other factors, such as a significant decline that makes it vulnerable to extinction;

S2 means that the species is imperiled due to its rarity or to certain factors that make it very vulnerable to extinction, usually with 6 to 20 occurrences or few remaining individuals (i.e. 1,000 to 3,000);

S3 means that the species is vulnerable within a particular state or province because it is rare or uncommon, or because it is found only in a restricted range, or because other factors make it vulnerable to extinction;

S4 means that the species is very uncommon but that it is not rare and that it is of long-term concern due to population declines or other factors;

S5 means that the species is secure, because it is common, widespread and globally abundant.

**G** is a global status rank; **N** is a national status rank; **S** is a subnational (state or province) status rank; **B** refers to breeding populations; **N** refers to non-breeding populations.

In most Canadian provinces, the species is not at risk and is therefore not monitored by conservation data centres (Yukon, Sinclair *et al.* 2003; Northwest Territories, L. Armer, pers. comm. 2005; British Columbia, K. Stipek, pers. comm. 2005; Saskatchewan, Saskatchewan Environment, 2006; Manitoba, Manitoba Conservation, Wildlife and Ecosystem Protection Branch, 2006; Ontario, Ontario Ministry of Natural Resources, 2005; Quebec, Ministère des ressources naturelles et faune du Québec, 2006; Maritimes, S. Blaney, pers. comm. 2005). In Alberta, the species is considered a sensitive species because its numbers are declining due to the effects of pesticides on insect populations in urban and suburban areas (Alberta Government, 2003).

The Common Nighthawk is not on the Partners in Flight Watch List (Rich *et al.* 2004). However, the species is listed by Partners in Flight as a species of concern in six Bird Conservation Regions in the southern United States (PIF species assessment database <http://www.rmbo.org/pif/scores/scores.html>), out of 34 Bird Conservation Regions where it breeds.

## TECHNICAL SUMMARY

### ***Chordeiles minor***

Common Nighthawk

Engoulevent d'Amérique

Range of occurrence in Canada: Yukon, Northwest Territories, British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick, Prince Edward Island, Nova Scotia, Newfoundland and Labrador

<b>Extent and Area Information</b>	
<ul style="list-style-type: none"> <li>• Extent of occurrence (EO) (km<sup>2</sup>) Canadian range according to NatureServe calculated by Bird Studies Canada, unpubl. data.</li> </ul>	4,817,780 km <sup>2</sup>
<ul style="list-style-type: none"> <li>• <i>Specify trend in EO</i></li> </ul>	Stable
<ul style="list-style-type: none"> <li>• <i>Are there extreme fluctuations in EO?</i></li> </ul>	No
<ul style="list-style-type: none"> <li>• Area of occupancy (AO) (km<sup>2</sup>) Number of breeding pairs in Canada (200,000)* average territory area of 0.27 km<sup>2</sup></li> </ul>	Approx. 54,000 km <sup>2</sup>
<ul style="list-style-type: none"> <li>• <i>Specify trend in AO</i></li> </ul>	Decline
<ul style="list-style-type: none"> <li>• <i>Are there extreme fluctuations in AO?</i></li> </ul>	No
<ul style="list-style-type: none"> <li>• <i>Number of known or inferred current locations</i></li> </ul>	not applicable
<ul style="list-style-type: none"> <li>• <i>Specify trend in #</i></li> </ul>	not applicable
<ul style="list-style-type: none"> <li>• <i>Are there extreme fluctuations in number of locations?</i></li> </ul>	not applicable
<ul style="list-style-type: none"> <li>• <i>Specify trend in area, extent or quality of habitat</i></li> </ul>	Decline
<b>Population Information</b>	
<ul style="list-style-type: none"> <li>• <i>Generation time (average age of parents in the population)</i></li> </ul>	2 -3 years
<ul style="list-style-type: none"> <li>• <i>Number of mature individuals</i> Based on BBS abundance estimates</li> </ul>	Approx. 400,000
<ul style="list-style-type: none"> <li>• <i>Total population trend:</i> <ul style="list-style-type: none"> <li>• <i>% decline over the last/next 10 years or 3 generations</i> Based on BBS data: decline of 49.5% in most recent 10 year period (1995-2005)</li> </ul> </li> </ul>	49.5%
<ul style="list-style-type: none"> <li>• <i>Are there extreme fluctuations in number of mature individuals?</i></li> </ul>	No
<ul style="list-style-type: none"> <li>• <i>Is the total population severely fragmented?</i></li> </ul>	No
<ul style="list-style-type: none"> <li>• <i>Specify trend in number of populations</i></li> </ul>	not applicable
<ul style="list-style-type: none"> <li>• <i>Are there extreme fluctuations in number of populations?</i></li> </ul>	not applicable
<ul style="list-style-type: none"> <li>• <i>List populations with number of mature individuals in each:</i> not applicable</li> </ul>	
<b>Threats (actual or imminent threats to populations or habitats)</b>	
<ul style="list-style-type: none"> <li>• Reduced insect abundance due to pesticides</li> <li>• Habitat loss and alteration in forest, agricultural and urban areas</li> <li>• Other possible factors include increases in predators in urban and farming areas, collisions with motor vehicles, and climate change</li> </ul>	
<b>Rescue Effect (immigration from an outside source)</b>	
<ul style="list-style-type: none"> <li>• <i>Status of outside population(s)?</i> <b>USA:</b> significant decline of 1.83% per year (1968-2005)</li> </ul>	
<ul style="list-style-type: none"> <li>• <i>Is immigration known or possible?</i></li> </ul>	yes
<ul style="list-style-type: none"> <li>• <i>Would immigrants be adapted to survive in Canada?</i></li> </ul>	yes
<ul style="list-style-type: none"> <li>• <i>Is there sufficient habitat for immigrants in Canada?</i></li> </ul>	yes
<ul style="list-style-type: none"> <li>• <i>Is rescue from outside populations likely?</i></li> </ul>	Unlikely because declining throughout its range



<b>Quantitative Analysis</b>	None
<b>Current Status</b>	COSEWIC: THREATENED (April 2007)

**Status and Reasons for Designation**

<b>Status:</b> Threatened	<b>Alpha-numeric code:</b> A2b
<p><b>Reason for Designation:</b>  In Canada, this species has shown both long and short-term declines in population. A 49% decline was determined for areas over the last three generations. Reduction of food sources has apparently contributed to the decline of this species, as with several other aerial insectivores. Reductions in habitat availability, caused by suppression, intensive agriculture, and declines in the number of gravel rooftops in urban areas, may also be factors in some regions.</p>	
<p><b>Applicability of Criteria</b></p>	
<p><b>Criterion A:</b> (Declining Total Population): Meets Threatened A2b because population has declined by 49% in the last three generations.</p> <p><b>Criterion B:</b> (Small Distribution and Decline or Fluctuation): Does not meet criterion.</p> <p><b>Criterion C:</b> (Small Total Population Size and Decline): Does not meet criterion.</p> <p><b>Criterion D:</b> (Very Small Population or Restricted Distribution): Does not meet criterion.</p> <p><b>Criterion E:</b> (Quantitative Analysis): None available.</p>	

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From a very early age, Carl Savignac was interested in bird watching. He has an M.Sc. in Biological Sciences from Université Laval (1996) on the ecology of the Pileated Woodpecker (*Drycopus pileatus*) in the forests of southern Quebec. Carl is now director of Dendroica Environnement et Faune, an avian ecology consulting firm operating throughout Canada that primarily specializes in studies on threatened species, biodiversity and environmental impact assessments on avian fauna. He is the author of 15 technical reports and scientific publications on the woodpeckers, raptors and passerines of Canada's temperate and boreal forest. In his free time he also likes to photograph and paint animals.