Barn Swallow

Photo: © Gordon Court

Scientific name
Hirundo rustica

Taxon
Birds

COSEWIC status
Special Concern

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

Reason for designation

This aerial insectivore is among the world's most widespread birds, with about 6.4 million mature individuals in Canada. It experienced a substantial population decline in North America over more than two decades, beginning in the mid- to late 1980s. However, the Canadian population has remained largely stable over the past ten years (2009-2019), with a substantial increase in Saskatchewan largely offsetting ongoing declines in several other provinces. Key threats include declining populations of insect prey, increasing frequency of severe temperature fluctuations during spring migration and the breeding season, and in some regions, loss of suitable nesting sites. Although the Canadian population remains large and overall declines have abated, the species may once again become Threatened if threats continue or worsen.

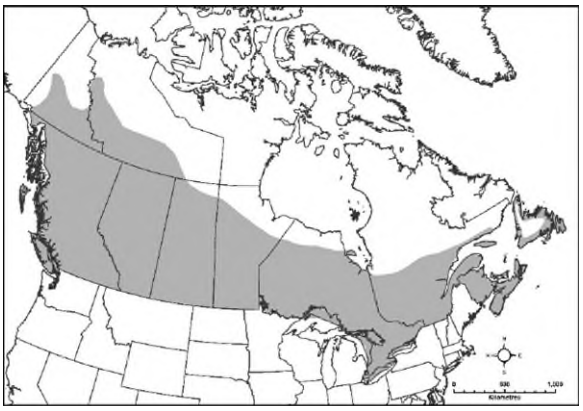
Wildlife Species Description and Significance

Barn Swallow is a medium-sized passerine with metallic blue upperparts, cinnamon underparts, and a chestnut throat and forehead. Its most recognizable feature is a deeply forked tail with long outer feathers. Males have a longer tail, somewhat glossier upperparts and a darker breast.

Barn Swallow is a member of the ecological guild known as aerial insectivores, of which many members are in decline globally.

Distribution

Barn Swallow is the most globally widespread species of swallow, occurring on every continent except Antarctica. In the western hemisphere, it breeds in Canada primarily south of the treeline, the United States and Mexico; Argentina also has a small breeding population. Barn Swallow has been documented breeding in every province and territory. Barn Swallow is a long-distance migrant, overwintering in the southern United States, parts of Mexico, and Central and South America.



Canadian breeding range of Barn Swallow

Source: COSEWIC. 2021. COSEWIC assessment and status report on the Barn Swallow *Hirundo rustica* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 60 pp.

Habitat

Before European colonization of North America, Barn Swallows largely nested on fissures in cliffs, rock overhangs, and caves. Thereafter, their preferred nest sites became human-made structures, including barns, stables, houses, sheds, and bridges. Barn Swallows prefer to forage over open spaces such as grasslands, agricultural fields, shorelines, woodland clearings, wetlands, sand dunes, tundra, and roads.

Biology

Barn Swallows nest in colonies or independently. They construct a small cup-shaped nest and affix it to a vertical, or occasionally a horizontal surface. The breeding season in Canada is typically from May through July. Most clutches contain 4-5 eggs; a second brood is often reared, particularly in southern Canada. Some Barn Swallows of both sexes breed in their first year. Barn Swallows forage mostly on the wing, actively pursuing and catching flying insects; however, they may forage on the ground opportunistically. Generation length is estimated to be approximately 3 years.

Population Sizes and Trends

In Canada, the Barn Swallow population is currently estimated to be at least 6.4 million mature individuals. This represents approximately 3.4% of the global Barn Swallow population and 13.6% of the population in the United States and Canada. Over 60% of the Canadian population currently breeds in the Prairie provinces.

Population trend estimates for Barn Swallow are based on Breeding Bird Survey data. For the period 1970-2019, there was a statistically significant annual trend of -2.34% (95% CI = -2.66% to -2.05%) per year in Canada, corresponding to an overall decline of 68.6% over 49 years. During the most recent 10-year period (2009-2019) the Canadian population has been close to stable, changing at -0.12% (95% CI = -1.07% to 0.89%) per year, amounting to a decrease of -1.2% over the decade. However, at a regional scale there has been a large increase in Saskatchewan, offsetting substantial ongoing declines in Ontario and Quebec. Comparisons of first and second generation breeding bird atlases in Alberta, Ontario, Quebec, and the Maritimes show results consistent with long-term declines of populations across Canada, with the largest reductions in eastern provinces (Ontario, Quebec, and the Maritimes).

Threats and Limiting Factors

Substantial research is still required to better understand threats affecting Barn Swallow. Currently the most pertinent concerns are thought to be modifications to the natural system (indirect threats such as pesticides and habitat loss reducing prey quality and quantity), climate change, housing and commercial development, changes in agriculture (annual and perennial non-timber crops, and livestock farming and ranching), roads and railroads, and pollution. These threats are thought to be reducing the quantity and quality of insect prey, causing lowered reproductive success and direct

mortality. Threats on the wintering grounds are not currently well understood, but are likely related to changes in land-use, resulting in the destruction of suitable foraging habitat, as well as the intensification of agricultural practices that reduce insect populations. The overall impact of threats on Barn Swallow over the next decade is considered to be medium. Limiting factors for Barn Swallow include a dietary dependence on insect prey and low post-fledging survival rates.

Protection, Status and Ranks

In Canada, the *Migratory Birds Convention Act,* 1994 protects Barn Swallow, its nests, and eggs. The species is also listed as Threatened under Schedule 1 of the *Species at Risk Act, 2002*. In Canada, Barn Swallow is listed as N3N4 (Vulnerable to Apparently Secure) nationally, and S2 (Imperilled) in the Yukon Territory, New Brunswick, Prince Edward Island and Newfoundland, S2? (Imperilled?) in the Northwest Territories, S2S3 (Imperilled to Vulnerable) in Nova Scotia, S3 (Vulnerable) in Alberta and Quebec, S3S4 (Vulnerable to Apparently Secure) in British Columbia, S4 (Apparently Secure) in Manitoba, and S5 (Secure) in Saskatchewan and Ontario. In the United States, Barn Swallow is protected under the *Migratory Bird Treaty Act*, and ranked nationally as N5 (Secure). Globally, Barn Swallow is considered G5 (Secure).

Source: COSEWIC. 2021. COSEWIC assessment and status report on the Barn Swallow *Hirundo rustica* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 60 pp.

Lesser Yellowlegs

Photo: © Gary Donaldson

Scientific Name
Tringa flavipes

Taxon
Birds

COSEWIC Status
Threatened

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

Reason for designation

This medium-sized shorebird has 80% of its breeding range in Canada's boreal region, migrates through the United States and Caribbean, and winters mostly in South America. It has experienced substantial long- and short-term declines, most recently estimated at 25% over three generations (12 years) based on the Breeding Bird Survey, and greater than 50% over 10 years based on International Shorebird Surveys. Declines are expected to continue. Key concerns include the loss of wetland and intertidal habitat used on migration and in winter, and hunting for sport and subsistence, which has been reduced in some areas but likely remains the most significant threat. Additionally, emerging threats from climate change include increased risk of drought in breeding areas, coastal flooding, and greater severity of hurricanes during fall migration..

Wildlife Species Description and Significance

Lesser Yellowlegs is a small, slender shorebird with greyish plumage, a long neck, a straight black bill that is roughly the same length as its head, and long, bright-yellow legs. This migrant travels up to 30,000 km in a round trip between its breeding and wintering grounds. Approximately 80% of Lesser Yellowlegs breed in Canada.

Distribution

Lesser Yellowlegs breeds primarily in the boreal forest of Canada and Alaska, including all provinces and territories except the Maritimes. It winters in coastal areas from the southern United States through South America, with concentrations on the northern coast of South America and in the Pampas region of northern Argentina, Uruguay, and southern Brazil.

Canadian breeding range and estimate of extent of occurrence of Lesser Yellowlegs.

Source : COSEWIC. 2020. COSEWIC assessment and status report on the Lesser Yellowlegs *Tringa flavipes* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 64 pp.

Habitat

Lesser Yellowlegs nests on dry ground near peatlands, marshes, ponds, and other wetlands in the boreal forest and taiga. In winter and during migration, the species frequents coastal salt marshes, estuaries and ponds, as well as lakes, other freshwater wetlands, and anthropogenic wetlands such as flooded rice fields and sewage lagoons.

Biology

Lesser Yellowlegs can begin breeding at one year old, and is estimated to have a generation length of 4 years. Females typically lay a single clutch of four eggs in mid-May, and may lay a second clutch if the first is lost to predation. Incubation lasts approximately 22 days; the young leave the nest shortly after hatching. Lesser Yellowlegs is monogamous and only defends a small area around the nest or brood. Adults may travel many kilometres from the nest to the wetlands where they forage, so home range may be as large as several dozen square kilometres.

Population Sizes and Trends

The North American population of Lesser Yellowlegs as of 2020 is estimated to be at least 527,000 mature individuals, with 80% (422,000) breeding in Canada. Data from the North American Breeding Bird Survey (BBS) estimate an average annual trend of -2.40% in Canada over the most recent three generations (2007 to 2019), corresponding to a cumulative loss of 25%. From 1970 to 2019, the average annual BBS trend is -2.36%, amounting to a total decline of 69%. This is comparable to the significant 2.75% annual (69% cumulative) decline shown by shorebird migration monitoring data in North America between 1974 and 2016; over the most recent decade (2006 to 2016; slightly less than three generations) the decline based on these surveys accelerated to 7.28% annually, amounting to 53%. This estimate includes the Alaskan population, which BBS results indicate is declining more rapidly than the Canadian population. Periodic surveys at migratory stopovers in the Caribbean and at key wintering regions in South America also indicate steep rates of decline within the past three generations.

Threats and Limiting Factors

Hunting of Lesser Yellowlegs during migration and on wintering grounds in the Caribbean and South America appears to be the greatest threat to the species. Ongoing habitat loss is also a concern, especially with respect to agricultural expansion and shoreline development in South America. Various impacts related to climate change remain poorly understood but may be increasing in importance. Other threats which may contribute to ongoing declines are energy production and mining, increasing abundance of predators, and various forms of pollution.

Protection, Status and Ranks

In Canada, Lesser Yellowlegs and its nests and eggs are protected under the *Migratory Birds Convention Act, 1994*. The species was assessed as Threatened by COSEWIC in November 2020. NatureServe considers Lesser Yellowlegs to be Secure or Apparently Secure in Canada, although it is ranked Vulnerable in five provinces and territories, and Imperilled to Apparently Secure in the Northwest Territories. The Western Hemisphere Shorebird Reserve Network (WHSRN) aims to designate and protect migratory stopover sites of significance at regional to hemispheric scales, but offers no legal protection. Quill Lakes in Saskatchewan is the only Canadian WHSRN site with globally significant numbers of Lesser Yellowlegs, but habitat there has been severely degraded as a consequence of unregulated and unlicensed drainage of wetlands.

Source : COSEWIC. 2020. COSEWIC assessment and status report on the Lesser Yellowlegs *Tringa flavipes* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 64 pp.

For more information, please visit www.sararegistry.gc.ca.

Red Knot *islandica* subspecies

Photo: © Charles Francis

Scientific name
Calidris canutus islandica

Taxon
Birds

COSEWIC status
Not at Risk

Canadian range
Nunavut, Northwest Territories

Reason for designation

This medium-sized shorebird breeds in the northeastern Canadian High Arctic and migrates across the North Atlantic Ocean to overwinter in coastal Europe. About 120,000 birds breed in Canada and make up 40% of the global population. Winter surveys in Europe indicate that populations have been stable or fluctuating slightly over the past three generations. Individuals congregate at many sites in winter, where they may be exposed to threats such as disturbance and effects of shoreline stabilization. Risks from exposure to storms and severe weather during trans-oceanic migratory flights may increase with climate change. However, as past population declines have been halted, and former threats from shellfish harvesting in Europe are much reduced, the status of this population has improved since the last assessment.

Wildlife Species Description and Significance

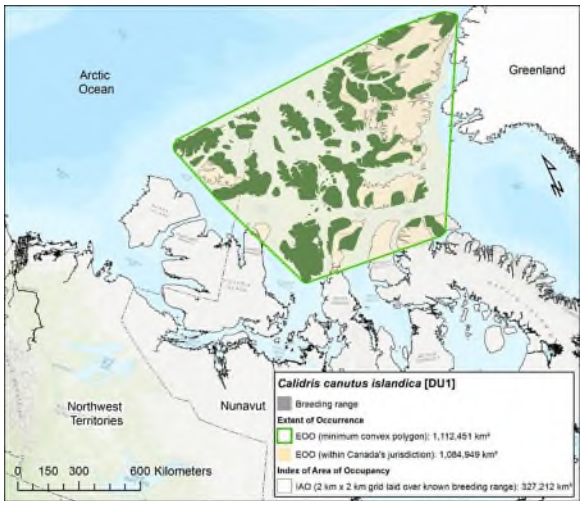
Red Knot (*Calidris canutus*) is a medium-sized shorebird with a typical "sandpiper" profile: medium-long bill and smallish head, longish legs, and long tapered wings giving the body an elongated streamlined profile. In breeding plumage, the face, neck, breast and much of the underparts are rufous red. The upperparts are dark brown or black spangled with rufous and grey. In winter plumage, knots (used throughout to refer to Red Knots in general) have white underparts and pale grey back.

Red Knot is a "flagship" species for shorebird conservation, with long, inter-continental migrations and high vulnerability to threats, as it concentrates in large numbers at a few key sites on migration and in winter. It crosses many international boundaries and is symbolic of the need for international cooperation for successful conservation. Conservation of sites used by knots also benefits many other shorebird species.

Distribution

Six subspecies of Red Knot are currently recognized worldwide, each with distinct biogeographical populations that differ to varying degrees in distribution, in scheduling of the annual cycle, and genetically. Three subspecies occur in Canada: *C. c. islandica*, *C. c. roselaari*, and *C. c. rufa*. The taxonomy of North American Red Knot populations has been revised since the 2007 COSEWIC Status Report, with the populations wintering in Tierra del Fuego, as well as those wintering in northern Brazil and in southeastern USA / Gulf of Mexico / Caribbean, which were formerly assigned to *C. c. roselaari*, all now regarded as part of *C. c. rufa*. These three populations of *rufa* are also treated here as separate designatable units (DUs). Red Knot

islandica subspecies breeds in the northeastern Canadian High Arctic, and winters on the European Atlantic seaboard.



Extent of occurrence (EOO) and index of area of occupancy (IAO) for Red Knot *C. c. islandica* (DU1) in Canada, based on the known breeding range within the northeastern Canadian Arctic

Source : COSEWIC. 2020. COSEWIC assessment and status report on the Red Knot *Calidris canutus, islandica* subspecies (*Calidris canutus islandica*), *roselaari* subspecies (*Calidris canutus roselaari*) and *rufa* subspecies (*Calidris canutus rufa*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxxv + 173 pp.

Habitat

Red Knot nests in barren habitats in the Arctic, such as windswept ridges, slopes, or plateaus, with little vegetation cover. On migration and wintering areas, knots use coastal areas with extensive sandflats, mudflats and rocky flats, where birds feed on bivalves and other invertebrates. Along the mid-Atlantic coast of the eastern United States, they use sandy beaches and feed on high-energy Horseshoe Crab eggs. They also use salt marshes, brackish lagoons, mangrove areas, mussel beds, peat banks, rocky intertidal platforms, inland saline lakes, and agricultural fields.

Biology

Red Knot is monogamous, with pairs usually laying a single clutch of four eggs in the latter half of June, and the eggs hatching about mid-July. Females depart soon thereafter, leaving the males to accompany the young until they fledge. Breeding success varies considerably, depending on weather and the abundance and impacts of predators. Red Knot has comparatively high adult annual survival, ranging from 0.62-0.92 (mean 0.80), which varies in response to foraging and weather conditions on wintering grounds and during migration. Red Knot has a generation time of about 7 years, and most individuals start breeding at age two years.

Red Knot undergoes significant physiological changes during migration, to increase flight efficiency and permit rapid accumulation of body stores after reaching the breeding grounds. Organs and tissues involved in flight increase in size, while digestive organs and leg muscles decrease. Stores of fat and protein remaining on arrival on the breeding grounds are then used to regrow the latter organs in preparation for the breeding attempt.

Population Sizes and Trends

Recent counts and mark-resighting estimates of *C. c. islandica* birds wintering in Europe suggest a Canadian population of about 128,000 mature individuals. Annual winter surveys in coastal Europe show a stable or slightly fluctuating population trend over the past three generations.

Threats and Limiting Factors

Many of the key threats to Red Knot are associated with its long-distance migrations and physiological changes that maximize flying efficiency and breeding success. Its relatively inflexible life history strategy makes Red Knot particularly sensitive to the effects of human interventions and changing climate and habitat

conditions. Threats affecting all five DUs to varying extents include ecosystem modifications/biological resource use which affect food resources needed at critical times of the year (e.g., Horseshoe Crab harvest in Delaware Bay, Grunion fishery in Mexico), habitat shifting and alteration (e.g., climate change effects on habitat conditions and predator relationships on the breeding grounds), and changes to coastal habitats resulting from sea-level changes. Significant disturbance from human activities occurs in many areas, and most DUs are affected by increased predation or disturbance from increasing falcon populations. Oil spills pose a threat to all DUs. Increased frequency and intensity of storms on the breeding grounds, and hurricanes in migration areas, may periodically cause significant mortality, especially for those DUs that undergo long trans-oceanic migratory flights.

Shoreline stabilization and dredging for cockles (now much reduced) in coastal wintering areas of NE Europe has reduced the quality of foraging and roosting habitats. Changing climate may affect breeding habitats and cause increased predation on breeding grounds and lead to reduced habitat quality at migration and wintering sites owing to sea level rise and ocean acidification.

Protection, Status and Ranks

Red Knot is protected in Canada under the *Migratory Birds Convention Act* (1994). It was listed on Schedule 1 of the *Species at Risk Act* in 2012, as follows: *C. c. rufa* Endangered (the southern Tierra del Fuego / Patagonia wintering population, now DU3); *C. c. roselaari* Threatened (including present DU2, the northeastern South America wintering population in northern Brazil and the southeastern USA / Gulf of Mexico / Caribbean wintering population, DU4 and DU5, now believed to be *C. c. rufa*), and *C. c. islandica* (now DU1) Special Concern (the previous DUs reflect earlier taxonomic designations). Red Knot (*C. c. rufa*) is also listed under species-at-risk legislation in Ontario, Quebec, New Brunswick, Nova Scotia, and Newfoundland and Labrador. *C. c. islandica* and *C. c. roselaari* are not listed under provincial or territorial species-at-risk legislation.

Red Knot (*C. c. rufa*) is listed federally in the United States as Threatened, and as Threatened in New Jersey and as of Special Concern in Georgia. *C. c. rufa* was added to Appendix 1 of the Convention on Migratory Species in 2005. Red Knot was listed as Critically Endangered on the Brazilian list in 2014 and categorized as Endangered in Argentina, Chile and Uruguay. France declared the species to be protected in Guadeloupe and Martinique in 2012 and in French Guiana in 2014. *C. c. roselaari* has been designated as Endangered in Mexico and as a species of management concern in the United States.

NatureServe lists *C. c. rufa* globally as G4T1, nationally in Canada as N1B and N1N, and nationally in the United States as N1N. It ranks *C. c. rufa* as S1 to S3 in Northwest Territories, Ontario, Quebec, Saskatchewan, Prince Edward Island, Nova Scotia, New Brunswick, and Newfoundland in Canada, and in Virginia in the United States. *C. c. islandica* is ranked N3B nationally and S2B in Northwest Territories.

Source: COSEWIC. 2020. COSEWIC assessment and status report on the Red Knot *Calidris canutus, islandica* subspecies (*Calidris canutus islandica*), *roselaari* subspecies (*Calidris canutus roselaari*) and *rufa* subspecies (*Calidris canutus rufa*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxxv + 173 pp.

Red Knot rufa subspecies (Northeastern South America wintering population)

Photo: © Raymond Belhumeur

Scientific name
Calidris canutus rufa

Taxon
Birds

COSEWIC status
Special Concern

Canadian range
Nunavut, Northwest Territories, Alberta, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and Labrador

Reason for designation

This medium-sized shorebird breeds in the central Canadian Arctic and migrates long distances to overwinter on the northeastern coast of South America, centred in northern coastal Brazil. Overall numbers appear to be stable, with an estimated wintering population of about 19,800 mature individuals. During migration, the population congregates at key sites on the eastern seaboard of the United States, where it is vulnerable to threats from human harvesting of Horseshoe Crab (whose eggs are an essential food source for northbound migrants) in Delaware Bay, disturbance and predation from recovering falcon populations, and disturbance from recreational activities. Risks from exposure to storms and severe weather during long migratory flights may increase with climate change.

Wildlife Species Description and Significance

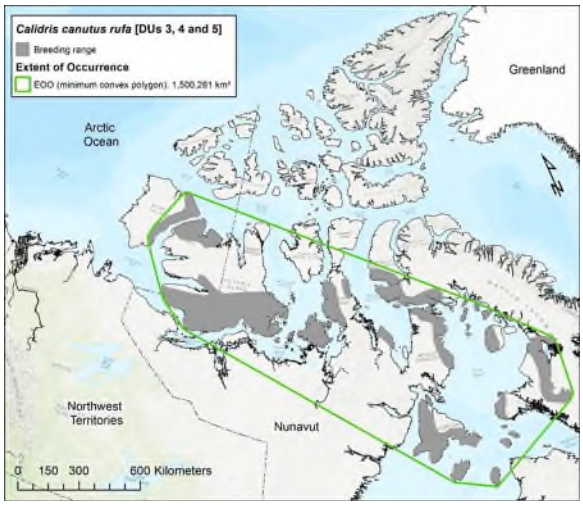
Red Knot (*Calidris canutus*) is a medium-sized shorebird with a typical “sandpiper” profile: medium-long bill and smallish head, longish legs, and long tapered wings giving the body an elongated streamlined profile. In breeding plumage, the face, neck, breast and much of the underparts are rufous red. The upperparts are dark brown or black spangled with rufous and grey. In winter plumage, knots (used throughout to refer to Red Knots in general) have white underparts and pale grey back.

Red Knot is a “flagship” species for shorebird conservation, with long, inter-continental migrations and high vulnerability to threats, as it concentrates in large numbers at a few key sites on migration and in winter. It crosses many international boundaries and is symbolic of the need for international cooperation for successful conservation. Conservation of sites used by knots also benefits many other shorebird species

Distribution

Six subspecies of Red Knot are currently recognized worldwide, each with distinct biogeographical populations that differ to varying degrees in distribution, in scheduling of the annual cycle, and genetically. Three subspecies occur in Canada: *C. c. islandica*, *C. c. roselaari*, and *C. c. rufa*. The taxonomy of North American Red Knot populations has been revised since the 2007 COSEWIC Status Report, with the populations wintering in Tierra del Fuego, as well as those wintering in northern Brazil and in

southeastern USA / Gulf of Mexico / Caribbean, which were formerly assigned to *C. c. roselaari*, all now regarded as part of *C. c. rufa*. These three populations of *rufa* are also treated here as separate designatable units (DUs). Red Knot rufa subspecies (Northeastern South America wintering population) breeds in the central Canadian Arctic, and winters on the northeastern coast of South America, centred in the Maranhão district of northern Brazil.



Extent of occurrence (EOO) for Red Knot *C. c. rufa* (DUs 3, 4, and 5) in Canada, based on the known breeding range of the subspecies within the central Canadian Arctic

Source : COSEWIC. 2020. COSEWIC assessment and status report on the Red Knot *Calidris canutus, islandica* subspecies (*Calidris canutus islandica*), *roselaari* subspecies (*Calidris canutus roselaari*) and *rufa* subspecies (*Calidris canutus rufa*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxxv + 173 pp.

Habitat

Red Knot nests in barren habitats in the Arctic, such as windswept ridges, slopes, or plateaus, with little vegetation cover. On migration and wintering areas, knots use coastal areas with extensive sandflats, mudflats and rocky flats, where birds feed on bivalves and other invertebrates. Along the mid-Atlantic coast of the eastern United States, they use sandy beaches and feed on high-energy Horseshoe Crab eggs. They also use salt marshes, brackish lagoons, mangrove areas, mussel beds, peat banks, rocky intertidal platforms, inland saline lakes, and agricultural fields.

Biology

Red Knot is monogamous, with pairs usually laying a single clutch of four eggs in the latter half of June, and the eggs hatching about mid-July. Females depart soon thereafter, leaving the males to accompany the young until they fledge. Breeding success varies considerably, depending on weather and the abundance and impacts of predators. Red Knot has comparatively high adult annual survival, ranging from 0.62-0.92 (mean 0.80), which varies in response to foraging and weather conditions on wintering grounds and during migration. Red Knot has a generation time of about 7 years, and most individuals start breeding at age two years.

Red Knot undergoes significant physiological changes during migration, to increase flight efficiency and permit rapid accumulation of body stores after reaching the breeding grounds. Organs and tissues involved in flight increase in size, while digestive organs and leg muscles decrease. Stores of fat and protein remaining on arrival on the breeding grounds are then used to regrow the latter organs in preparation for the breeding attempt.

Population Sizes and Trends

Some 32,500 Red Knots of all ages were found on the northeastern coast of Brazil during aerial surveys in 2019. This total was considerably higher than on previous surveys, although the difference likely reflects improved methodology designed specifically for Red Knots. Numbers overall appear to be relatively stable or fluctuating slightly, with an estimated population of about 19,800 mature individuals wintering in northeastern South America.

Threats and Limiting Factors

Many of the key threats to Red Knot are associated with its long-distance migrations and physiological changes that maximize flying efficiency and breeding success. Its relatively inflexible life history strategy makes Red Knot particularly sensitive to the effects of human interventions and changing climate and habitat conditions. Threats affecting all five DUs to varying extents include ecosystem modifications/biological resource use which affect food resources needed at critical times of the year (e.g., Horseshoe Crab harvest in Delaware Bay, Grunion fishery in Mexico), habitat shifting and alteration (e.g., climate change effects on habitat conditions and predator relationships on the breeding grounds), and changes to coastal habitats resulting from sea-level changes. Significant disturbance from human activities occurs in many areas, and most DUs are affected by increased predation or disturbance from increasing falcon populations. Oil spills pose a threat to all DUs. Increased frequency and intensity of storms on the breeding grounds, and hurricanes in migration areas, may periodically cause significant mortality, especially for those DUs that undergo long trans-oceanic migratory flights.

Major threats include ongoing issues with Horseshoe Crab abundance in Delaware Bay, increased predation and disturbance from increasing falcon populations, and possible effects from climate change, including increasing storm frequency on breeding grounds (habitat alteration, predation) and on migration and wintering areas (e.g., sea-level rise).

Protection, Status and Ranks

Red Knot is protected in Canada under the *Migratory Birds Convention Act* (1994). It was listed on Schedule 1 of the *Species at Risk Act* in 2012, as follows: *C. c. rufa* Endangered (the southern Tierra del Fuego / Patagonia wintering population, now DU3); *C. c. roselaari* Threatened (including present DU2, the northeastern South America wintering population in northern Brazil and the southeastern USA / Gulf of Mexico / Caribbean wintering population, DU4 and DU5, now believed to be *C. c. rufa*), and *C. c. islandica* (now DU1) Special Concern (the previous DUs reflect earlier taxonomic designations). Red Knot (*C. c. rufa*) is also listed under species-at-risk legislation in Ontario, Quebec, New Brunswick, Nova Scotia, and Newfoundland and Labrador. *C. c. islandica* and *C. c. roselaari* are not listed under provincial or territorial species-at-risk legislation.

Red Knot (*C. c. rufa*) is listed federally in the United States as Threatened, and as Threatened in New Jersey and as of Special Concern in Georgia. *C. c. rufa* was added to Appendix 1 of the Convention on Migratory Species in 2005. Red Knot was listed as Critically Endangered on the Brazilian list in 2014 and categorized as Endangered in Argentina, Chile and Uruguay. France declared the species to be protected in Guadeloupe and Martinique in 2012 and in French Guiana in 2014. *C. c. roselaari* has been designated as Endangered in Mexico and as a species of management concern in the United States.

NatureServe lists *C. c. rufa* globally as G4T1, nationally in Canada as N1B and N1N, and nationally in the United States as N1N. It ranks *C. c. rufa* as S1 to S3 in Northwest Territories, Ontario, Quebec, Saskatchewan, Prince Edward Island, Nova Scotia, New Brunswick, and Newfoundland in Canada, and in Virginia in the United States. *C. c. islandica* is ranked N3B nationally and S2B in Northwest Territories.

Source: COSEWIC. 2020. COSEWIC assessment and status report on the Red Knot *Calidris canutus, islandica* subspecies (*Calidris canutus islandica*), *roselaari* subspecies (*Calidris canutus roselaari*) and *rufa* subspecies (*Calidris canutus rufa*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxxv + 173 pp.

For more information, please visit www.sararegistry.gc.ca.

Red Knot rufa subspecies (Southeastern USA / Gulf of Mexico / Caribbean wintering population)

Photo: © Raymond Belhumeur

Scientific name
Calidris canutus rufa

Taxon
Birds

COSEWIC status
Endangered

Canadian range
Nunavut, Northwest Territories, Alberta, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and Labrador

Reason for designation

This medium-sized shorebird breeds in the central Canadian Arctic and overwinters along the coasts of southeastern United States, Gulf of Mexico and islands in the Caribbean Sea. Migration and wintering surveys indicate that the population has experienced steep declines, in the range of 33-84% over three generations, with no evidence of recovery. The current population is estimated to be about 9300 mature individuals. During migration it congregates at a few key sites on the eastern seaboard of the United States, making it vulnerable to threats from human harvesting of Horseshoe Crabs (whose eggs are an essential food source for northbound migrants) in Delaware Bay, disturbance and predation from recovering falcon populations, and disturbance from recreational activities. Risks from exposure to storms and severe weather during fall and winter may increase with climate change.

Wildlife Species Description and Significance

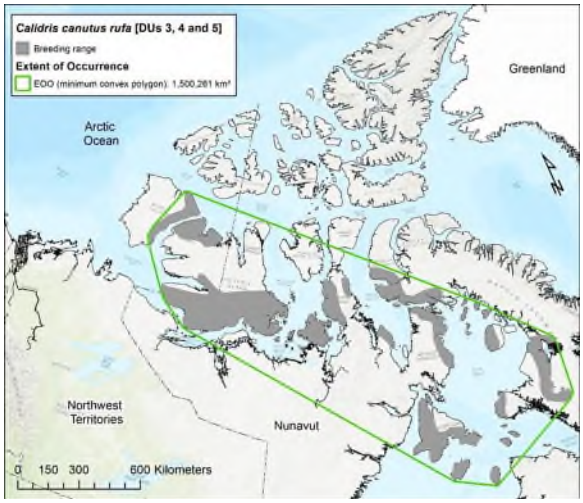
Red Knot (*Calidris canutus*) is a medium-sized shorebird with a typical “sandpiper” profile: medium-long bill and smallish head, longish legs, and long tapered wings giving the body an elongated streamlined profile. In breeding plumage, the face, neck, breast and much of the underparts are rufous red. The upperparts are dark brown or black spangled with rufous and grey. In winter plumage, knots (used throughout to refer to Red Knots in general) have white underparts and pale grey back.

Red Knot is a “flagship” species for shorebird conservation, with long, inter-continental migrations and high vulnerability to threats, as it concentrates in large numbers at a few key sites on migration and in winter. It crosses many international boundaries and is symbolic of the need for international cooperation for successful conservation. Conservation of sites used by knots also benefits many other shorebird species.

Distribution

Six subspecies of Red Knot are currently recognized worldwide, each with distinct biogeographical populations that differ to varying degrees in distribution, in scheduling of the annual cycle, and genetically. Three subspecies occur in Canada: *C. c. islandica*, *C. c. roselaari*, and *C. c. rufa*. The taxonomy of North American Red Knot populations has been revised since the 2007 COSEWIC Status Report, with the populations wintering in Tierra del Fuego, as well

as those wintering in northern Brazil and in southeastern USA / Gulf of Mexico / Caribbean, which were formerly assigned to *C. c. roselaari*, all now regarded as part of *C. c. rufa*. These three populations of *rufa* are also treated here as separate designatable units (DUs). Red Knot rufa subspecies (Southeastern USA / Gulf of Mexico / Caribbean wintering population) breeds in the central Canadian Arctic, and winters along the coasts of the southeastern United States, Gulf of Mexico, and Caribbean Sea.



Extent of occurrence (EOO) for Red Knot *C. c. rufa* (DUs 3, 4, and 5) in Canada, based on the known breeding range of the subspecies within the central Canadian Arctic

Source : COSEWIC. 2020. COSEWIC assessment and status report on the Red Knot *Calidris canutus, islandica* subspecies (*Calidris canutus islandica*), *roselaari* subspecies (*Calidris canutus roselaari*) and *rufa* subspecies (*Calidris canutus rufa*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxxv + 173 pp.

Habitat

Red Knot nests in barren habitats in the Arctic, such as windswept ridges, slopes, or plateaus, with little vegetation cover. On migration and wintering areas, knots use coastal areas with extensive sandflats, mudflats and rocky flats, where birds feed on bivalves and other invertebrates. Along the mid-Atlantic coast of the eastern United States, they use sandy beaches and feed on high-energy Horseshoe Crab eggs. They also use salt marshes, brackish lagoons, mangrove areas, mussel beds, peat banks, rocky intertidal platforms, inland saline lakes, and agricultural fields.

Biology

Red Knot is monogamous, with pairs usually laying a single clutch of four eggs in the latter half of June, and the eggs hatching about mid-July. Females depart soon thereafter, leaving the males to accompany the young until they fledge. Breeding success varies considerably, depending on weather and the abundance and impacts of predators. Red Knot has comparatively high adult annual survival, ranging from 0.62-0.92 (mean 0.80), which varies in response to foraging and weather conditions on wintering grounds and during migration. Red Knot has a generation time of about 7 years, and most individuals start breeding at age two years.

Red Knot undergoes significant physiological changes during migration, to increase flight efficiency and permit rapid accumulation of body stores after reaching the breeding grounds. Organs and tissues involved in flight increase in size, while digestive organs and leg muscles decrease. Stores of fat and protein remaining on arrival on the breeding grounds are then used to regrow the latter organs in preparation for the breeding attempt.

Population Sizes and Trends

Recent estimates based on population modelling indicate that a total of about 10,400 Red Knot of all ages winter in coastal areas of the southeastern United States, with at least 5,000 additional knots likely wintering on islands in the Caribbean, for a total of about 15,400 birds. Adults likely make up about 60% of these totals, resulting in an overall southeastern USA / Gulf of Mexico / Caribbean wintering population (DU5) estimate of 9,300 mature individuals. The weight of evidence from migration and wintering surveys indicates that the population has

experienced steep long-term declines, in the range of 33-84% over three generations, with no evidence of recovery.

Threats and Limiting Factors

Many of the key threats to Red Knot are associated with its long-distance migrations and physiological changes that maximize flying efficiency and breeding success. Its relatively inflexible life history strategy makes Red Knot particularly sensitive to the effects of human interventions and changing climate and habitat conditions. Threats affecting all five DUs to varying extents include ecosystem modifications/biological resource use which affect food resources needed at critical times of the year (e.g., Horseshoe Crab harvest in Delaware Bay, Grunion fishery in Mexico), habitat shifting and alteration (e.g., climate change effects on habitat conditions and predator relationships on the breeding grounds), and changes to coastal habitats resulting from sea-level changes. Significant disturbance from human activities occurs in many areas, and most DUs are affected by increased predation or disturbance from increasing falcon populations. Oil spills pose a threat to all DUs. Increased frequency and intensity of storms on the breeding grounds, and hurricanes in migration areas, may periodically cause significant mortality, especially for those DUs that undergo long trans-oceanic migratory flights.

Disturbance by recreationists significantly affects quality of foraging and roosting areas on wintering and migration areas in eastern North America. Major threats include ongoing issues with Horseshoe Crab abundance in Delaware Bay, increased predation and disturbance from increasing falcon populations, and possible effects from climate change, including increasing storm frequency on breeding grounds (habitat alteration, predation) and on migration and wintering areas

Protection, Status and Ranks

Red Knot is protected in Canada under the *Migratory Birds Convention Act* (1994). It was listed on Schedule 1 of the *Species at Risk Act* in 2012, as follows: *C. c. rufa* Endangered (the southern Tierra del Fuego / Patagonia wintering population, now DU3); *C. c. roselaari* Threatened (including present DU2, the northeastern South America wintering population in northern Brazil and the southeastern USA / Gulf of Mexico / Caribbean wintering population, DU4 and DU5, now believed to be *C. c. rufa*), and *C. c. islandica* (now DU1) Special Concern (the previous DUs reflect earlier taxonomic designations). Red Knot (*C. c. rufa*) is also listed under species-at-risk legislation in Ontario, Quebec, New Brunswick, Nova Scotia, and Newfoundland and Labrador. *C. c. islandica* and *C. c. roselaari* are not listed under provincial or territorial species-at-risk legislation.

Red Knot (*C. c. rufa*) is listed federally in the United States as Threatened, and as Threatened in New Jersey and as of Special Concern in Georgia. *C. c. rufa* was added to Appendix 1 of the Convention on Migratory Species in 2005. Red Knot was listed as Critically Endangered on the Brazilian list in 2014 and categorized as Endangered in Argentina, Chile and Uruguay. France declared the species to be protected in Guadeloupe and Martinique in 2012 and in French Guiana in 2014. *C. c. roselaari* has been designated as Endangered in Mexico and as a species of management concern in the United States.

NatureServe lists *C. c. rufa* globally as G4T1, nationally in Canada as N1B and N1N, and nationally in the United States as N1N. It ranks *C. c. rufa* as S1 to S3 in Northwest Territories, Ontario, Quebec, Saskatchewan, Prince Edward Island, Nova Scotia, New Brunswick, and Newfoundland in Canada, and in Virginia in the United States. *C. c. islandica* is ranked N3B nationally and S2B in Northwest Territories.

Source: COSEWIC. 2020. COSEWIC assessment and status report on the Red Knot *Calidris canutus, islandica* subspecies (*Calidris canutus islandica*), *roselaari* subspecies (*Calidris canutus roselaari*) and *rufa* subspecies (*Calidris canutus rufa*) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxxv + 173 pp

For more information, please visit www.sararegistry.gc.ca.

Ross's Gull

Photo: © Mark Mallory

Scientific name
Rhodostethia rosea

Taxon
Birds

COSEWIC status
Endangered

Canadian range
Nunavut, Manitoba, Newfoundland and Labrador, Arctic Ocean, Atlantic Ocean

Reason for designation

This small little-known gull nests at 1-3 known colonies in the Canadian High Arctic and likely winters in the Labrador Sea. Fewer than 20 mature individuals are known to breed in Canada, although roughly similar numbers may occur undetected. Large numbers of fall migrants seen annually off northern Alaska likely come from a separate large population in eastern Russia. This species has low productivity in Canada, with frequent breeding deferral, nest abandonment, and no chicks fledged over a period of 14 years at the only known active Canadian colony. These factors contribute to inferred continuing population decline. The abandonment of Low Arctic nesting sites since the last assessment has reduced its range and number of locations in Canada, and its breeding range is now limited to the High Arctic. Major threats impeding reproductive success include the killing of chicks by Arctic Terns at colonies, and contamination from airborne toxic chemicals. Effects of ongoing climatic changes on food availability, reproductive success, and adult survival are largely unknown.

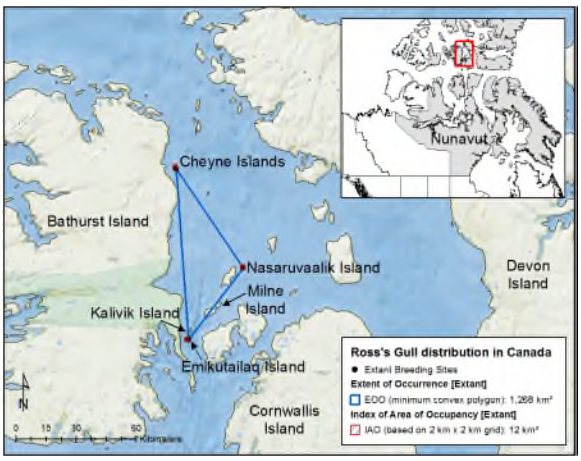
Wildlife Species Description and Significance

Ross's Gull is a small Arctic gull with light, buoyant flight and quick, shallow wingbeats, characterized by a unique wedge-shaped tail. Breeding adults have a distinctive black collar, and the pale head and body feathers take on a light pink cast. Juvenile birds have black outer primaries and a broad black diagonal band across the inner wing.

Ross's Gull is the only member of the genus *Rhodostethia,* and its plumage, vocal repertoire, courtship behaviour, and general ecology are unique among gulls. Scientific studies are largely limited to opportunistic observations at small colonies in Russia and Canada and of migrating gulls at Point Barrow, Alaska. Its winter ecology is largely unknown, although its winter range likely overlaps with pelagic gulls and alcids in subarctic waters. Ross's Gull is known to Inuit in Nunavut and Indigenous residents of Barrow, Alaska, and sought by birdwatchers as a rare winter visitor to lower latitudes.

Distribution

Ross's Gull's breeding stronghold is assumed to lie in eastern Russia, with scattered nesting records from Canada and Greenland. Large flocks of Ross's Gull that annually migrate past Point Barrow each fall are thought to originate in eastern Russia. Birds from the very small Canadian Arctic breeding population likely overwinter in the Labrador Sea.



Extant breeding sites of Ross's Gull in Canada

Source : COSEWIC. 2021. COSEWIC assessment and status report on the Ross's Gull *Rhodostethia rosea* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 35 pp.

Habitat

Ross's Gull typically nests in flat, low-lying areas with low vegetative cover, and has nested in two habitat types in Canada. Ross's Gull is now most frequently encountered on High Arctic islands in Queens Channel, Nunavut, on small sparsely vegetated gravel islands adjacent to marine open-water polynyas. Small numbers formerly nested in marshy Low Arctic floodplain habitat near Churchill, Manitoba, where it has not been confirmed breeding since 2005.

Biology

Ross's Gull likely first breeds after 2 years, with a generation time of about 5 years. It lays 1-3 eggs in a scrape on the ground, in loose colonies, typically of 2-10 pairs. Ross's Gull frequently defers or abandons nesting, or relocates to a different nesting site, in response to snow cover, prolonged inclement weather, or terrestrial predators. Studies of tagged birds have shown very low overall breeding success and mate fidelity.

Adult Ross's Gulls feed on small invertebrates in freshwater environments, and on zooplankton and small fish on migration and when overwintering at sea. Its eggs and chicks are vulnerable to terrestrial and avian predators. Sympatrically nesting Arctic Terns have been observed killing Ross's Gull chicks at High Arctic colonies, and are likely an important cause of breeding failure in Canada.

Population Sizes and Trends

Little is known about the population status of Ross's Gull in Canada. It has only been monitored regularly at Nasaruvaalik Island, in High Arctic Nunavut, where 1-6 pairs nest annually. It is likely that much fewer than 250 mature individuals breed in Canada. Extensive areas of apparently suitable habitat may host small undetected colonies. Migration counts and extrapolations from breeding surveys in Siberia suggest a global population of about 50,000 mature individuals.

The number of breeding Ross's Gull in Canada has varied over the past three generations, and has been relatively stable or declining slightly over the short-term. A projected continuing population decline is inferred from lack of reproductive output in 14 years of study at the only known Canadian colony. Ross's Gull is no longer known to breed near Churchill, in Low Arctic Canada, resulting in a significant decline in apparent extent of occurrence. However, surveys of Ross's Gull migrating past Point Barrow do not suggest that global populations have declined overall.

Threats and Limiting Factors

Threats to Ross's Gull in Canada are poorly understood. High rates of chick mortality as a result of attacks by Arctic Terns in shared colonies, and predation and disturbance by Polar Bear and Arctic Fox are major threats. Low hatching rates may be a result of egg infertility linked to high levels of mercury and persistent organic pollutants from airborne sources. Most Ross's Gulls nest in remote areas where human activity is limited or absent. Shipping activity in the Labrador Sea poses a low risk to birds that winter there. Many climate-related changes in

terrestrial High Arctic breeding habitats are unlikely to affect this species within three generations, and effects of shifts in marine conditions in breeding and wintering areas are unknown.

Protection, Status and Ranks

Ross's Gull, its eggs and nests are protected in Canada under the *Migratory Birds Convention Act 1994*, and the species was listed as Threatened under the *Species at Risk Act 2002*. It is listed as Endangered under Manitoba's *Endangered Species Act*. Internationally, Ross's Gull is listed as a Threatened or Endangered Species in Russia's Red Book, and is fully protected in Russia and Greenland against deliberate harm or disturbance. It is protected in the United States under the *Migratory Bird Treaty Act*. Ross's Gull is assessed by the IUCN in Canada as Critically Imperilled/Imperilled, and globally as a species of Least Concern.

Source: COSEWIC. 2021. COSEWIC assessment and status report on the Ross's Gull *Rhodostethia rosea* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 35 pp.

Short-eared Owl

Photo: © Christian Artuso

Scientific name
Asio flammeus

Taxon
Birds

COSEWIC status
Threatened

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

Reason for designation

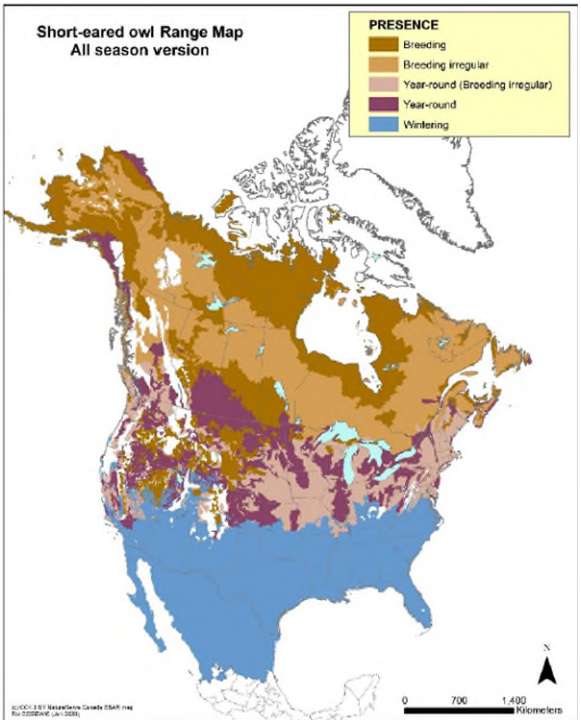
The Canadian population of this widespread nomadic owl breeds in open grassland, tundra, and wetland habitats in all provinces and territories, and winters in southern Canada and the United States. The use of new atlas-based population estimation procedures suggests that the size of the Canadian population is about 31,000 mature individuals, roughly 10% of previous estimates. Its numbers vary over space and time in response to cycles in the availability of small mammals—its main prey. This adds uncertainty to estimates of the rate of decline in the Canadian population. Data from both the Breeding Bird Survey and Christmas Bird Counts indicate a decline of more than 30% over the past three generations. The Canadian population is projected to continue to decline because of future threats, including reduced availability of nesting and wintering habitat resulting from crop conversion, agricultural intensification, urbanization, and invasive plants. In low Arctic habitats, increased growth of shrubs as a result of climate warming (shrubification) will further reduce prey availability and increase predation risk.

Wildlife Species Description and Significance

Short-eared Owl (*Asio flammeus*) is a medium-sized owl, approximately 34-42 cm in length. Plumage is mottled brown above and buff with heavy streaking below, varying only slightly by sex and age. Short-eared Owl is largely crepuscular and hunts through the evening and into the night, and is recognizable by its agile, moth-like flight over open areas.

Distribution

Short-eared Owl has the broadest global distribution of any owl, with a range that includes most of North America and Eurasia, parts of South America, Africa, and many oceanic islands. North American breeding range extends from the Canadian Arctic south to Nevada in the west and Massachusetts in the east, and the winter range spans from southern Canada to Mexico. It breeds across Canada, regularly in the subarctic tundra and prairies, and more sparsely elsewhere.



Breeding, wintering, and year-round distribution of Short-eared Owl in North America

Source : COSEWIC. 2021. COSEWIC assessment and status report on the Short-eared Owl *Asio flammeus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 69 pp.

Habitat

Short-eared Owl favours open habitats throughout the year, including grasslands, tundra, and wetlands. Breeding typically occurs in open landscapes at least 50-100 ha in area, and nests are preferentially located on the ground near clumps of taller vegetation that provide concealment. In winter, Short-eared Owls roost in conifers adjacent to open areas used for hunting or on the ground in the shelter of tall grasses or forbs. Declines in the extent and quality of open grassland and wetland habitats have likely reduced the distribution and abundance of Short-eared Owl in southern Canada.

Biology

Age of first breeding is thought to be one year; lifespan is poorly documented but generation time is considered to be about 4 years. A single brood is raised annually, although a replacement clutch may be laid in cases of early nest failure. Diet primarily comprises voles, lemmings, and other small mammals. Short-eared Owls tend to be nomadic, often moving relatively long distances through the year to areas with high rodent abundance. This results in substantial fluctuations in abundance at local and regional scales, complicating the estimation of overall numbers and population trends.

Population Sizes and Trends

The previous COSEWIC estimate of the size of the Canadian Short-eared Owl population of about 350,000 mature individuals was based on Breeding Bird Survey (BBS) data. However, the BBS samples only a small part of the Canadian breeding range with low sample sizes. Interpretation and extrapolation of breeding bird atlas results from the past two decades likely provide a more accurate estimate of approximately 31,000 mature individuals, over half of which breed in Northwest Territories and Nunavut.

Short-eared Owl population trends estimated from BBS data indicate declines of -70% between 1970 and 2019, and -31% over the most recent three-generation period, although the BBS does not sample the core of the Canadian population breeding in the tundra. There is greater overlap between the wintering range and coverage by the Christmas Bird Count (CBC). CBC trends for Canada show similar declines of -79% between 1970 and 2019, and -27% over the past three generations, with steepest decreases in Alberta, Manitoba, Ontario, and Quebec. The winter distribution of Canadian birds is poorly known, but most individuals likely overwinter in the United States. At a continental scale, CBC trend estimates for 2007 to 2019 range from -6.5% to -33.6%,

depending on the method of analysis. Declines in numbers and range have also been documented by breeding bird atlases completed in British Columbia and Quebec since the previous status report.

Threats and Limiting Factors

Natural system modifications, and climate change and severe weather, are the most important threats to Short-eared Owl, and each is expected to have a low to medium impact on populations. In low Arctic habitats, where a large percentage of the population nests, increased growth of shrubs as a result of climate warming (shrubification) will further reduce prey availability and increase predation risk. The cumulative effect of these threats and six others considered to be of low impact is anticipated to have a medium to high overall impact on the species.

Protection, Status and Ranks

Short-eared Owl is listed as a species of Special Concern under Canada's *Species at Risk Act*. It is listed under provincial endangered species legislation in Manitoba (Threatened), Ontario (Special Concern), New Brunswick (Special Concern), and Newfoundland and Labrador (Vulnerable). In Quebec, it is on the list of wildlife species likely to be designated threatened or vulnerable.

In the United States, Short-eared Owl is protected under the *Migratory Bird Treaty Act,* but is not listed under the *Endangered Species Act*. It is considered Endangered in 11 states, and Threatened or Special Concern in five others.

Globally, Short-eared Owl is classified as Least Concern by IUCN. NatureServe ranks Short-eared Owl as Secure (G5) globally, Apparently Secure as a breeder and migrant but Vulnerable as a non-breeding/wintering population in Canada (N4B-N3N-N4M in Canada), and nationally Secure (N5) in the United States. The breeding status of Short-eared Owl is ranked as Critically Imperilled to Vulnerable (S1 to S3) in all provinces and territories, with status having worsened in four provinces and one territory since the previous status report.

Source: COSEWIC. 2021. COSEWIC assessment and status report on the Short-eared Owl *Asio flammeus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 69 pp.

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