



WWF  
SUMMARY

CAN

2017

# LIVING PLANET REPORT CANADA

A national look at wildlife loss



50 YEARS  
OF CONSERVATION  
IN CANADA

THANK YOU  
FOR YOUR SUPPORT



## A Canadian problem

It's easy to assume shocking figures of wildlife decline don't apply here in Canada. Ours, after all, is a country of wide open spaces with ample room for grizzlies and gannets, belugas and bass, salamanders and swift foxes — isn't it?

In early 2016 we set out to discover if this assumption aligned with reality.

We studied 3,689 population trends for 903 monitored vertebrate species in Canada, for the period 1970 to 2014. The findings surprised even us: Half of our monitored species (451 of 903) are in decline, and of those, the index shows an average decline of 83 per cent. Even more surprising, the numbers for at-risk species, those protected by law, are just as bad — if not worse.

Yes, it's true the other half of the monitored species in our study are either stable or faring well. But it isn't time to celebrate, yet. We have to pay attention to the wildlife in trouble here at home, to figure out which species most need our help.

Wildlife loss is not someone else's problem. It's a Canadian problem. We all, collectively, have a moral duty — and a self-interest — to halt wildlife decline.

David Miller

President and CEO  
World Wildlife Fund Canada

# WILDLIFE TRENDS IN CANADA

Similar to the way a stock market index measures economic performance, a Living Planet Index (LPI) measures a nation's ecological performance. Rather than a daily indicator, it's an indicator of broad patterns of wildlife abundance over time — in this case, focusing on the vertebrate group of the animal kingdom.

The index is calculated using multiple datasets for different populations included in the study: Altogether, the Living Planet Index for Canada includes 3,689 population trends for the period 1970 to 2014 for 903 monitored vertebrate species (about half of the known vertebrates in Canada), including 106 species of mammals, 386 bird species, 365 fish species, and 46 amphibians and reptiles. (The index does not include the invertebrate group of animals; only a small fraction of this large group has long-term monitoring data that would be comparable for inclusion in this study.)

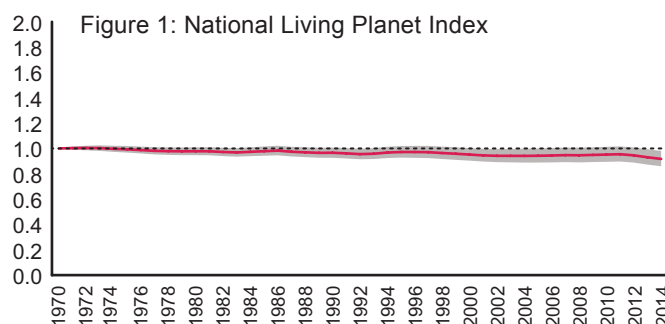
There have been successes, in that time, which is heartening. But as a wildlife conservation organization, it's our duty to use the Living Planet Index to identify groups of species that are in decline, and determine if and where patterns exist. This analysis can identify key trends that can then be used to identify priority areas for conservation efforts, to ensure the recovery and long-term survival of wildlife in Canada.

## Canada's Living Planet Index

Forty per cent of the monitored species included in the national LPI live in marine environments, 36 per cent are terrestrial, and 24 per cent are freshwater species. Birds and fish account for 43 per cent and 40 per cent of the species in the study, respectively, while mammals account for 12 per cent, and amphibians and reptiles account for five per cent. From 1970 to 2014, the national Living Planet Index reports an average downward trend in population size of eight per cent for monitored vertebrate species in Canada (Figure 1).

**The LPI shows a decline of 8 per cent (range: -2 to -14 per cent) between 1970 and 2014.**

*Trend in population abundance for 3,689 monitored populations of 903 vertebrate species (WWF-Canada, 2017).*



## HOW TO READ THE INDEX:

The Living Planet Index has a benchmark value of 1.0 in 1970. An increase in the index represents an increase in wildlife population abundances. The magnitude of the change in the Living Planet Index can be reported as a percentage — if the index value increases from 1 to 1.2, that's an increase of 20 per cent. The opposite is true for decreases in abundance: A decrease from 1 to 0.8 is a decrease of 20 per cent; a decrease from 1 to 0.2 is 80 per cent. Any finding within five per cent of the baseline is considered stable.

# THE STATE OF WILDLIFE

Since the national Living Planet Index is an average of trends in abundance for Canadian wildlife, it masks nuances of particular species groups. Closer examination reveals that, from 1970 to 2014, half (451 of 903) of monitored wildlife species in Canada declined in abundance. This is true for all monitored wildlife groups: Approximately half of the mammals (54 per cent), fish (51 per cent), birds (48 per cent), and amphibians and reptiles (50 per cent) included in the analysis exhibited declining trends during this time. Of the other half monitored, 407 species showed increases in abundance, and 45 species showed stable trends. While these success stories are encouraging, the discovery that half of the monitored wildlife in the study are in decline cannot be ignored.

50%  
OF SPECIES ARE  
IN DECLINE



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## A CLOSER LOOK AT DECLINE

For the half of monitored species with declining trends, the Living Planet Index shows, on average, a decline of 83 per cent, from 1970 to 2014 (Figure 2). Furthermore, for species in decline, the annual rate of decline is four per cent. This study will examine, in more depth, patterns in wildlife populations in Canada's marine, terrestrial and freshwater environments, in different regions from coast to coast to coast, and for the major groups of species (mammals, fish, birds, amphibians and reptiles).

OF THOSE,  
THE DECLINE IS  
83%

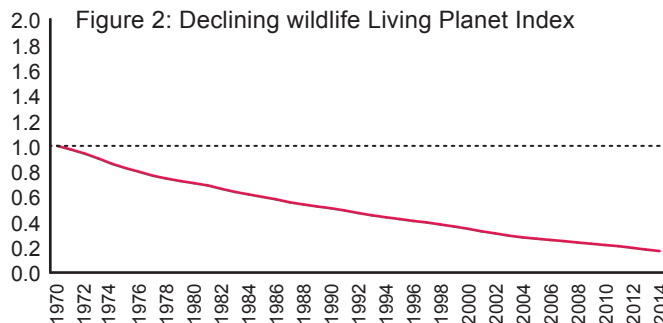
## Barren-ground caribou

Barren-ground caribou herds graze and travel across enormous stretches of the Arctic, their journeys taking them between the wintering grounds of the northern boreal forest and their traditional tundra calving grounds, where generation after generation from the same herd return to have their young.

More than two million caribou ranged across the Arctic in the early 1990s, but the population total is now estimated to be about 800,000. Several of the largest herds have shrunk by more than 90 per cent from their peak numbers. In 2016, COSEWIC assessed the barren-ground caribou as Threatened.

Climate change is warming the North faster than anywhere else in the world. The higher temperatures bring unseasonal rains that freeze to ground-glazing ice, preventing caribou from reaching lichen and plants they need to survive. At the same time, the altered climate is creating opportunities for industry – mining, tourism and shipping, among others – which could disturb calving grounds or disrupt migration corridors. Managing the harvest becomes difficult when herd numbers are dangerously low. The Government of Nunavut – home to most of the calving grounds – is developing an overarching land-use plan that will set a path for development and conservation in the territory.

*Of the 451 species experiencing population declines, the LPI shows an average decline of 83 per cent (range: -81 to -84 per cent) between 1970 and 2014. Trend in population abundance for 2,066 monitored populations of 451 vertebrate species (WWF-Canada, 2017).*



## WHAT'S IN THE INDEX:

Data standards for the index were developed by the Zoological Society of London, and include:

- Populations of native species must be consistently monitored in the same location, using the same method over time, for a minimum of two consecutive years.
- Data must be numerical (e.g. population counts or reliable proxy, such as spawning biomass or catch-per-unit effort), referenced and traceable.
- Population data must be available for at least two years in the period 1970 to 2016. (A lack of available data meant trends in the index are reported to 2014.)

# THE LIVING PLANET INDEX AND CANADA'S SPECIES AT RISK ACT

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At the federal level in Canada, the primary legal mechanism for protection of imperiled species is the Species at Risk Act, or SARA (2002). The first step toward receiving protections under the Act is a status assessment by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), a national panel of academics, government and non-government biologists and experts. This panel meets twice a year to assess a species as Extinct, Extirpated, Endangered, Threatened, of Special Concern, Data Deficient or Not at Risk (based on scientific and local evidence, against firm criteria) and makes recommendations to the Minister of Environment and Climate Change Canada.

Those recommendations are either sent up to the Governor-in-Council (which has nine months to either accept or reject the recommendation, or refer it back to COSEWIC for more information), or over to agencies like Fisheries and Oceans Canada or Parks Canada, and to stakeholder groups, for further consultation. Socioeconomic concerns – whether people's livelihoods will be affected by the decision – are considered.

As of 2017, approximately one-third of vertebrate populations assessed to be at risk by COSEWIC had not been officially listed under SARA.

Automatic prohibitions against killing or harming the species, or destroying its habitat, are triggered by a SARA listing. Recovery strategies and action plans are required for species listed as Threatened or Endangered. Clear timelines exist: Recovery strategies must be completed within two years for species listed as Threatened, and within one year for species listed as Endangered. Importantly, for these species, critical habitat must be defined in either the recovery strategy or the action plan – though there is no legally defined timeframe for completion of action plans.

The federal authority for protection of critical habitat under SARA is limited to areas under federal jurisdiction (except where additional mandates under the Fisheries Act and Migratory Birds Act extend protections to private lands). The provinces and territories have a critical role in implementing protection and recovery measures.

SINCE 2002,  
SARA-LISTED  
SPECIES FELL BY  
**28%**

## WILDLIFE SPOTLIGHT

### Little brown bat

The little brown bat – with soft, brown fur and large ears – is ecologically important as a predator of night-flying insects, including moths, beetles, flies, midges and mosquitoes. Some eat their body's weight's worth of prey in a single night. Scientists say Canada's bat populations have been suffering for years from habitat destruction. The bats now also face white-nose syndrome, a fungal disease that arrived in Eastern Canada in 2010 and grows on the muzzle of little brown bats during hibernation. The bats are aroused too early from their sleep by the fungus and deplete their body reserves of stored water, electrolytes and fat. Within three years of discovery, white-nose syndrome had wiped out 94 per cent of hibernating little brown bats in Nova Scotia, New Brunswick, Ontario and Quebec. Some ecologists consider this the most rapid decline of mammals ever documented. The disease is expected to infect the entire range in Canada by 2028. The little brown bat was emergency-listed as Endangered under SARA in 2014, one of three species ever to receive such treatment out of all vertebrates, invertebrates and flora.

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## Species under SARA protection

When we look retroactively to 1970 (from 2014), those species in our analyses that would eventually become listed under SARA show a decline in the Living Planet Index, on average, of 63 per cent (based on data from 256 populations of 87 species).

Consistent declining trends were also observed when analyzing the periods before and after SARA was enacted. For comparability, this analysis was limited to 64 SARA-listed species with data records in both study periods.

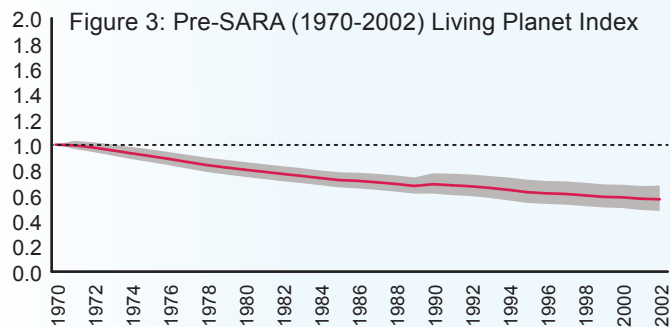
In the 1970–2002 period, the SARA-listed species showed an average population decline of 43 per cent and an average annual decline of 1.7 per cent (Figure 3). From 2002 to 2014 (post legislation), these populations declined, on average, by 28 per cent – with an average annual decline of 2.7 per cent (Figure 4). These results suggest the rate of decline of these at-risk species may actually have increased (to 2.7 per cent from 1.7 per cent), despite protections afforded by SARA.

However, although SARA was enacted in 2002, some species were listed (and received protections) years later. For long-lived species that are slow to reach sexual maturity, and have relatively few offspring, it can take decades before populations improve.

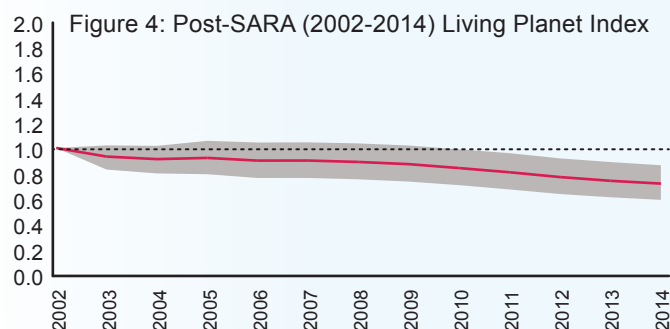
The Living Planet Index of SARA-listed species shows population declines of wildlife that are legally protected under the federal Act, but what about those scientifically assessed as at-risk that haven't received federal protection? For COSEWIC-assessed at-risk vertebrate wildlife, the Living Planet Index shows that monitored populations have declined by 64 per cent, on average, since 1970 (based on 61 species from 335 populations).

## Shortcomings in the process

According to researchers, SARA has faltered in its mission to protect Canada's most beleaguered wildlife. Scientists point to: 1) delays to listing on SARA; 2) failures to meet SARA's timelines for recovery strategies and in identifying and protecting critical habitat; 3) deference to socioeconomic considerations when deciding whether to list a species under SARA; and 4) lack of funding to support recovery plans and stewardship requirements to recover species.

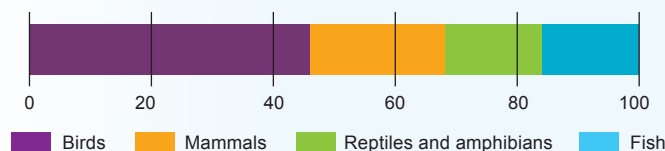


**The LPI shows a decline of 43 per cent (range: -32 to -52 per cent) between 1970 and 2002, with an average annual decline of 1.7 per cent.**  
Trend in population abundance for 184 monitored populations of 64 SARA-listed vertebrate species (WWF-Canada, 2017).



**The LPI shows a decline of 28 per cent (range: -14 to -41 per cent) between 2002 and 2014, with an annual average decline of 2.7 per cent.**  
Trend in population abundance for 154 monitored populations of 64 SARA-listed vertebrate species (WWF-Canada, 2017).

**Figure 5: Relative proportion of major species groups in pre- and post-SARA Living Planet indices (64 vertebrates species).**



The beluga of the St. Lawrence estuary is the most southerly whale of its kind. Once considered a prime source of oil, it was harvested in huge numbers. In the 1920s, when cod stocks suddenly declined, fishermen blamed the St. Lawrence belugas. In 1928, the Quebec government handed out rifles and offered a \$15 bounty for each beluga killed. Soon after, Quebec authorized aerial bombing of belugas for a few years. By the late 1970s, the population had dropped to a tenth of its historical estimated population size; a hunting ban was implemented in 1979.

Though the St. Lawrence beluga was SARA-listed as Threatened in 2005, a recovery strategy – including a plan to protect vital summer habitat – was repeatedly delayed past the 2007 deadline. It wasn't until 2012, with the population hovering at approximately 900 whales, that critical habitat was finally identified and the recovery strategy was published. Still, legal protection of the area was delayed until 2016. The St. Lawrence beluga was uplisted to Endangered in 2017.

A safe, disturbance-free habitat is essential to the whales, which continue to suffer from contaminants in the food chain, prey-fish availability, entanglement in fishing gear, the effects of climate change, shipping activity and disease.



**WILDLIFE SPOTLIGHT**

**St. Lawrence beluga**

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# A CLOSER LOOK AT WILDLIFE

## Mammals

MAMMAL  
POPULATIONS  
DECLINED BY  
**43%**

Canada is home to approximately 200 mammal species, including blue whales longer than two school buses and tiny pygmy shrews no heavier than a nickel. As symbols of vast wilderness and expanse, mammals are, perhaps, most emblematic of wildlife. According to the Living Planet Index, monitored mammal populations shrank by 43 per cent, on average, between 1970 and 2014 (based on 549 monitored populations of 106 species).

Some terrestrial mammals, such as bats and woodland and barren-ground caribou, show an even more precipitous drop. Several Canadian whale species have seen populations bounce back since the baseline year of 1970, thanks in part to the 1972 global and federal ban on commercial whaling. Yet studies have shown that the already Endangered southern resident orcas (killer whales) in British Columbia have declined since 1995, and in the east North Atlantic right whales and the St. Lawrence beluga whales remain Endangered.

### Swift fox

This cat-size fox was once at home in grasslands throughout Canada's southern prairies, of which 80 per cent have now been converted to intensive agricultural use. Along with losing habitat, swift foxes were also caught in traps and died by poisoning by some land-owners. The last sighting of a wild swift fox was in 1938. In 1973, swift foxes were brought from the U.S. for a captive breeding program, and reintroduction of the swift fox into the wild in Saskatchewan and southern Alberta began 10 years later. After being declared extirpated (locally extinct) from Canada in 1978, the swift fox population had grown to 647 in 2009. (However, captive breeding is not always successful: One-third of species reintroduction efforts fail.) While the swift fox status moved from Endangered to Threatened under SARA in 2012, the current population of swift fox only occupies three per cent of its former range.

### WILDLIFE SPOTLIGHT



## Fish

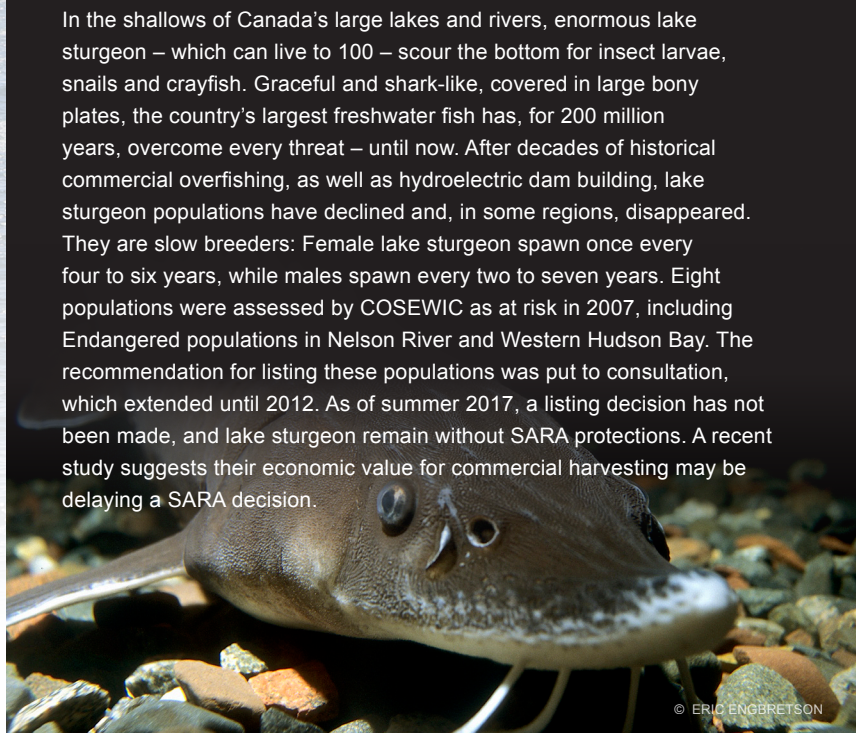
At nearly 1,050 species, Canada's fish species are the most diverse of our vertebrate groups. Tens of thousands of Canadians make their living directly from fishing and fishing-related activities, and exports of fish and seafood products were worth \$6.6 billion in 2016. The Living Planet Index shows fish populations have dropped 20 per cent on average between 1970 and 2014 (based on data from 2,527 monitored populations of 365 fish species, including sharks, skates and rays). Given that most of the records included in the dataset are from Canada's East Coast, Atlantic marine fish are most responsible for the observed trend. Less is known about Canada's approximately 180 species of freshwater fishes due to a lack of monitoring and available information about their populations.

FISH  
POPULATIONS  
DECLINED BY  
**20%**

### Lake sturgeon

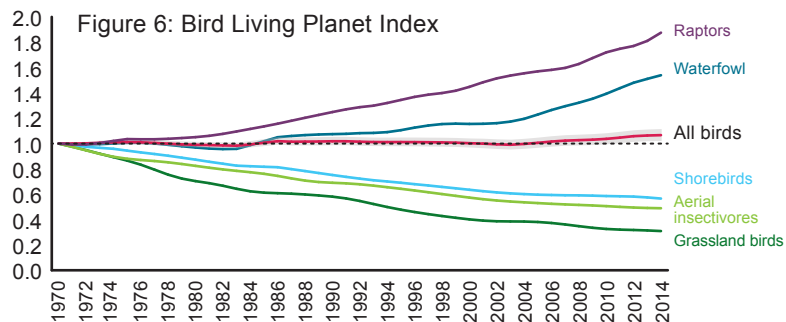
In the shallows of Canada's large lakes and rivers, enormous lake sturgeon – which can live to 100 – scour the bottom for insect larvae, snails and crayfish. Graceful and shark-like, covered in large bony plates, the country's largest freshwater fish has, for 200 million years, overcome every threat – until now. After decades of historical commercial overfishing, as well as hydroelectric dam building, lake sturgeon populations have declined and, in some regions, disappeared. They are slow breeders: Female lake sturgeon spawn once every four to six years, while males spawn every two to seven years. Eight populations were assessed by COSEWIC as at risk in 2007, including Endangered populations in Nelson River and Western Hudson Bay. The recommendation for listing these populations was put to consultation, which extended until 2012. As of summer 2017, a listing decision has not been made, and lake sturgeon remain without SARA protections. A recent study suggests their economic value for commercial harvesting may be delaying a SARA decision.

### WILDLIFE SPOTLIGHT



# Birds

Overall, bird populations in Canada increased on average by seven per cent between 1970 and 2014 (based on data from 474 monitored populations of 386 bird species), according to the Living Planet Index. But some separate bird groups show widely differing trends. For instance, populations of grassland birds in Canada plunged on average by 69 per cent since 1970 (based on data from 26 monitored populations across 26 species), according to the LPI. Populations of aerial insectivores, such as swifts and swallows, fell on average by more than 51 per cent since 1970 (based on data from 27 monitored populations across 27 species). Shorebird populations declined on average by 43 per cent since 1970 (based on data from 40 monitored populations across 37 species). These results are consistent with *The State of Canada's Birds* (2012).



**The LPI shows an increase of 7 per cent (range: 2 to 11 per cent) for all birds between 1970 and 2014.**

Trend in population abundance for 474 monitored populations of 386 bird species (WWF-Canada, 2017). The LPI shows an increase for raptors (88 per cent) and waterfowl (54 per cent), and a decrease for shorebirds (-43 per cent), aerial insectivores (-51 per cent), and grassland birds (-69 per cent).

## Reptiles and amphibians

REPTILE  
AND AMPHIBIAN  
POPULATIONS  
DECLINED BY  
**34%**

Only a small number of reptile and amphibian species thrive in Canada's cold climate. According to the Living Planet Index, amphibian and reptile populations declined by 34 per cent on average between 1970 and 2014 (based on data from 139 monitored populations of 46 species). While there's a comparatively high degree of variation in this trend over time (the range is 40 to minus 69 per cent), the decline in this group of species is well documented both in Canada, and around the world. In Canada, 42 per cent of amphibians and 77 per cent of reptile species were COSEWIC-assessed as at risk as of 2014.

## WILDLIFE SPOTLIGHT

### Piping plover

The piping plover's pale brown, grey and white feathers make it hard to spot as it forages along retreating waves or nests at the back of wide beaches.

When beach-goers and their pets disturb nests, the wary birds abandon them. More humans on beaches, more waterfront cottages and other landscape alterations have battered the plover's populations in Canada, and in its wintering grounds on the coast in the southern U.S. In the prairies, agriculture is a stressor.

One-third of the global breeding population is found in Canada, but their numbers have dropped by more than a quarter since 1970. The piping plover was listed by SARA as Endangered in 2003. The recovery strategy was finalized in October 2006. In recent years, a small number have returned to the Great Lakes to breed – they were previously extirpated there as a breeding species. Before the plover came under the federal program, conservation efforts to rescue and recover the species were already underway. The education of land owners and beach goers, as well as the introduction of programs to protect nests and young with cage-like predator enclosures, are offsetting some of the declines caused by disturbed habitat. The piping plover has become conservation-dependent.



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## WILDLIFE SPOTLIGHT

### Snapping turtle

The snapping turtle, Canada's largest freshwater turtle, is found in mainland Nova Scotia, southern New Brunswick, southern and central Quebec, southern and central Ontario, southern Manitoba and southeastern Saskatchewan. Decaying plants and animals make up a significant portion of their diet, highlighting the role that snapping turtles play keeping lakes and wetlands clean. While turtles have been on Earth for more than 200 million years, freshwater turtles are now among the most endangered vertebrates on the planet. Snapping turtles, which can live for more than a century, are especially vulnerable. The turtles take up to 20 years to reach breeding age – the loss of even one turtle can have a big impact on the population. The snapping turtle is currently listed as a species of Special Concern under the federal Species at Risk Act. Threats include habitat loss, degradation and road mortality from a growing network of busy roadways where mature females are often killed as they cross in search of well-drained sandy soil to lay their eggs.

# REALMS

## FRESHWATER

The freshwater system is the least-well studied of the three realms in Canada. The index shows a stable finding (within five per cent of the baseline, on average) for populations of freshwater vertebrate species between 1970 and 2014.

## MARINE

Monitored populations of marine fish, birds, mammals and a reptile (the leatherback sea turtle) that live in the ocean or along Canada's 243,000 kilometres of coast have dropped, on average, by nine per cent overall between 1970 and 2014 (based on data from 2,313 monitored populations of 367 vertebrate marine species, of which 79 per cent are fish and 14 per cent are birds).

## TERRESTRIAL

Monitored populations of terrestrial species have fallen, on average, nine per cent between 1970 and 2014 (based upon 784 monitored populations of 334 species). Many of the terrestrial species in this study are birds (73 per cent), followed by mammals (23 per cent) and reptiles (four per cent).

# WILDLIFE LOSS ACROSS CANADA

The Pacific, Prairie, Central, Atlantic and Arctic regions feature characteristic geography, climates, plants and animals. The population trends that follow are those for which wildlife decline is most evident in each region, and therefore of greatest conservation concern.

## Pacific region

The Living Planet Index reveals that **monitored populations of birds, mammals, fish, amphibians and reptiles that live in or depend on freshwater ecosystems in this region have declined by 14 per cent** on average since 1970 (based on data from 140 monitored populations of 68 vertebrate species). Along with habitat loss and fragmentation and pollution, the changing climate has impacted the region's freshwater ecosystems, through low water levels from evaporation, higher water temperatures, the accelerated melting of mountain glaciers and resulting changes in flow. Fish and other freshwater species are especially affected.

## Prairie region

According to the Living Planet Index, **monitored grassland bird populations in this region dropped by 55 per cent**, on average, from 1970 to 2014 (based on data from 62 monitored populations of 23 grassland bird species). The most significant threat to the region's wildlife is habitat loss, as the grasslands have been converted into agricultural fields or divided by other development. In Canada, less than 20 per cent of native grassland habitats remain, mainly in southeastern Alberta and southwestern Saskatchewan, with fragments distributed throughout southern Manitoba.

## Central region

According to the Living Planet Index, **monitored populations of reptiles and amphibians in this region – those snakes, turtles, lizards, frogs and salamanders that are vital to woodland and wetland ecosystems – declined by 16 per cent** on average between 1970 and 2014 (based on data from 73 monitored populations of 28 species). There is large variance for this index, including range from 69 to minus 59 per cent, in part due to small sample size. However, this finding is supported by recent studies that also found average declines in amphibian and reptile populations in the central region. Habitat loss, in combination with fragmentation, road mortality and pollution are some of the major threats to wildlife in the region.

## Atlantic region

According to the LPI, from 1970 to 2014, **monitored marine fish populations along Canada's Atlantic coast – Nova Scotia, Newfoundland and Labrador, New Brunswick, Prince Edward Island and the marine waters extending to Canada's Exclusive Economic Zone – dropped by 38 per cent** on average (based on data from 2,224 monitored populations of 139 fishes within national boundaries). Overexploitation and climate change are notable threats. Ocean surface temperatures have warmed in the Northwestern Atlantic Shelf, and the number and types of species in Canadian waters are expected to change as southern species shift north. Ocean acidification can impact fish and limit their ability to survive.

## Arctic region

Scientists in the Arctic have successfully documented wildlife populations in an area that is unduly difficult to study. An impressive 224 species from 639 records were collected within the Canadian territories, most of which were birds. However, despite the large amount of data, **scientific experts deemed all of the sub-indices for this region inconclusive, in large part because significant population increases of birds and especially waterfowl (which are heavily represented) skew trends upwards, thereby masking other important wildlife trends**. Further, there is poor data availability on population abundance from 1970 to 1975. The lack of data in this timeframe hampers the ability to create an accurate LPI using a baseline of 1970. It is for these reasons that many of the sub-indices calculated for the Arctic region are not congruent with current scientific understanding, and are therefore reported as inconclusive. We do know the region has undergone significant change since 1970. Warming air and ocean temperatures are rapidly shrinking sea ice extent, by 13.3 per cent per decade relative to the 1981–2010 September minimum sea-ice average.

## CHINOOK SALMON & SOUTHERN RESIDENT KILLER WHALES

The largest Pacific salmon species, chinook, are born in freshwater inland streams and leave for the ocean before returning to their birthplace to spawn. Southern resident killer whales, or orcas, feed near-exclusively on chinook. That's a problem, since chinook populations have declined drastically over the last century, because of commercial fishing and because of river barriers (hydroelectric dams and reservoirs). In 2005, COSEWIC declared the chinook salmon that spawn in the Okanagan River system to be Endangered. According to researchers, falling numbers of chinook have had a corresponding impact on the southern resident killer whales, whose population has earned the same Endangered designation in both Canada, under SARA, and in the United States. Between 1995 and 2017, the number of southern resident killer whales has fluctuated from a high of 98 individuals to a precarious low of just 78 (as of July, 2017).



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## BOBOLINK

Bobolinks were once a common sight in meadows, pasturelands and plains across much of southern Canada. The sparrow-like bird – whose males have a distinctively jet-black front, a lighter back and a buff-coloured mark on the neck and head – could be seen bursting from fields. The intensification of farming operations has resulted in widespread loss and deterioration of this grassland habitat, so that the bobolink population has shrunk by 88 per cent in the past 40 years. Ground-nesting bobolinks in hay fields often lose their eggs or young to mowing. The use of pesticides is also a serious threat. Bobolink young killed by mechanical farm operations in Canada are estimated at 667,000 each year, based on a 2013 study. Bobolinks were declared Threatened by COSEWIC in 2010. In 2017, a SARA listing was proposed for this species as Threatened.



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Salamanders are the unsung heroes of Canada's forest ecosystems. Usually hidden under woodland rocks and old logs, these small, slender amphibians serve as important predators that eat mosquito larvae (as young), water mites and assorted insects. The eight members of this amphibian group in Canada are also vital ecological conduits, moving nutrients into the forest from enriched ponds where they typically spend part of their lives. The sleek Jefferson salamander, which lives in isolated populations in Ontario's Carolinian woods and along the Niagara Escarpment, was uplisted from Threatened to Endangered under SARA in the spring of 2017. Road mortality is a major threat. Salamanders cross roads from woods to wetlands to breed in the spring. The salamander's habitat of fishless, springtime pools and upland forest is shrinking because of endless expansion and urbanization, depleting populations. Most of the historical sites where the species were still being found in 1990 and 1991 had no populations of the salamander remaining by 2003 and 2004, according to studies conducted then.

## JEFFERSON SALAMANDER



© JOHN MACGREGOR GETTY

## ATLANTIC BLUEFIN TUNA

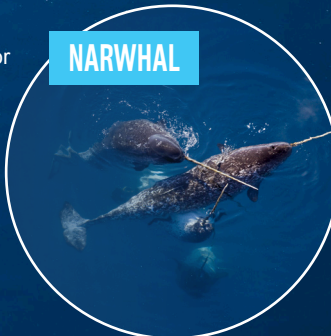
The powerful Atlantic bluefin tuna can power through the sea at speeds of up to 40 kilometres an hour and cross the Atlantic in less than a month. The bluefin is also the prime catch of a commercial fishery in which a single tuna once sold for almost \$1.5 million (U.S.) in Japan. Numbers of mature western Atlantic bluefin tuna have dropped by approximately 75 per cent from 1970 to 2010. Recovery of bluefin populations has been led by the International Commission for the Conservation of Atlantic Tunas (ICCAT), which adopted a 20-year rebuilding plan for the western stock in 1999. In 2014, ICCAT reported the spawning stock biomass had begun to recover, up to 55 per cent of 1970 levels. In 2017, the Government of Canada decided not to list the western population of bluefin tuna under SARA. Recovery will be managed under the DFO-led Integrated Fisheries Management Plan process as guided by ICCAT's allotment of total allowable catch.



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Canada is home to 90 per cent of the global narwhal population during the summer. In the winter, narwhal – renowned for its long ivory tusk – disappear for months into the deepest areas of Baffin Bay and Davis Strait, diving up to 1,500 metres to feed on Greenland halibut, and surfacing to breathe through small openings in the sea ice. This highly specialized whale has eluded much of the scientific scrutiny of more southerly whales, but recent studies show that the narwhal is so uniquely adapted to life with ice that it is the most vulnerable of all Arctic marine mammals to the threats posed by climate change. In 2004, the narwhal was assessed as Special Concern by COSEWIC.

## NARWHAL



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## WHAT'S DRIVING WILDLIFE LOSS?

### HABITAT LOSS

Habitat loss is the greatest threat to species in Canada, from forestry, agriculture, urbanization and industrial development. City growth doubled over the last century; almost 216,000 square kilometres of intact forests were disturbed between 2000 and 2013; over 80 per cent of original wetland habitat was converted; and dams and canals altered habitats.

### CLIMATE CHANGE

In Canada, the rate of warming has increased at nearly double the global average. Oceans are warming and becoming more acidic; seasons are shifting. Species are feeling the effects in different ways – the most vulnerable are long-lived, slow to reproduce, require specialized habitats and foods, and are unable to move in response.

### POLLUTION

Though some persistent chemical pollutants (e.g., DDT, PCBs) have been banned or tightly restricted for use, other pesticides and pollutants remain, including sewage effluent and agricultural runoff, plastic waste and microplastics. Heat, noise and light pollution also disturb wildlife and transform environments.

# COLLECTIVE ACTION TO HALT THE LOSS OF WILDLIFE

**T**he findings of WWF-Canada's national Living Planet Index make it clear we need to do more to protect species at risk, and to halt the decline of other wildlife before they land on the at-risk list in the first place. From a preventative standpoint, we need to maintain sustainable populations, so we aren't forced to resort to less effective, reactive and resource-intensive recovery strategies. This is a challenge we must all embrace. We need actions from all corners of society – from communities, industry, government, all of us, collectively. As a nation, to increase our chances of solving this problem together, we need to:

## Collect and share data on ecosystem health and species habitat

Our analysis identified a shortfall in wildlife monitoring for certain ecosystems and regions. As a result, we lack sufficient data to answer key questions about the status of wildlife and to track and evaluate trends over time. To effectively manage and conserve biodiversity, we need a standardized and openly accessible monitoring network designed to ensure representation of regions, ecosystems and taxonomic groups, and including Traditional Ecological Knowledge. This is especially critical as the climate changes.

Creation of this framework can be a collective undertaking involving communities, research institutions, environmental groups and governments. All Canadians can get involved in collecting the data. Furthermore, investment in monitoring through new technologies like environmental DNA can help build the applicability of citizen science in a standardized monitoring network. In these ways, individuals and communities can become a driving force in collecting data for underrepresented geographic areas or species groups. Findings should then be used to identify habitats in need of threat reduction, protection and actual restoration.

## Enhance research on the impacts of, and response to, climate change

Knowledge is still limited as to exactly how climate change is contributing to species decline. Robust data will contribute to a greater understanding of how species and ecosystems will respond to climate change, allowing us to build evidence-based strategies for mitigating climate change impacts and for enhancing ecosystem resilience. Research institutions, communities and government all have a role to play.

## INVASIVE SPECIES

Introduced species compete with native species for space, food and other resources; and some prey on native species. As human travel and transport of goods increases, coinciding with climate-driven ecosystem changes, the rate of invasions is gaining momentum.

## UNSUSTAINABLE HARVEST

In all three realms, overexploitation has taken its toll. Marine fish along our East Coast (such as cod) have been the most affected. Bycatch is a compounding factor; porbeagle sharks in the northwestern Atlantic, for example, have been reduced to just a quarter of their 1961 population through commercial fishery and as bycatch.

## CUMULATIVE AND CASCADING EFFECTS

The effects of these aforementioned stressors are cumulative and cascading (changes in the status of one species triggers changes in the other). At-risk species face more than two broad-scale threats (on average) at the same time. For instance, wolverines at the southern and eastern portions of their Canadian range are experiencing habitat loss and fragmentation from both climate change and increasing development, as well as a shortage of food as woodland caribou populations decline.

## Enhance SARA implementation and shift toward ecosystem-based action plans

Single-species conservation is too resource-intensive to be scaled for hundreds of species at risk. It's essential we take an ecosystems-based approach, which research indicates is more likely to improve SARA conservation outcomes, can benefit a wide range of at-risk species and ecosystem processes, and contribute to potential cost savings. A more effective response is one that takes into account how multiple species (including predators and prey) and their habitats will shift as a consequence of climate change, and how disturbance regimes (patterns of floods, fire and drought that wildlife have adapted to over millennia) will be altered.

The opportunity to protect and promote the recovery of SARA-listed species could be vastly expanded if government implements mechanisms for financial incentives for individual landowners to protect (and restore) critical habitat on private land. Finally, the SARA process must have adequate funding of its core mechanisms (nearly 100 countries provide better funding to protect their species at risk), and must be implemented in a timely manner.

## Expand Canada's network of protected areas

Long-term persistence of wildlife species requires that we make sufficient space available to ensure habitat remains intact, with core areas for critical activities like feeding and breeding free from disturbance from human activity, and spacious enough for movement like migration or dispersal. This last requirement, the ability to move through a network of connected landscapes, is critical to enhance wildlife resilience in the face of ongoing climate change. Protected areas also have huge value as a source of study of natural systems, which is increasingly important for assessing the effects of climate change.

Dedicating more space for protection takes the willingness and concerted effort of individual community members, industry and government. A recent example is Tallurutiup Imanga (Lancaster Sound), a 109,000-sq.-km. national marine conservation area at the eastern entrance to the Northwest Passage, identified and fought for by Inuit communities for decades. In the future, similar Indigenous and community-led protected areas will be critical for wildlife protection.

## Make a commitment to nature

Overall, these solutions are far more likely to be realized with broad public support for difficult resource allocation and land-use decisions that have a goal of benefitting nature at their core. As ecosystems are put under increasing pressure, and as the bad news mounts, individuals can feel powerless to make a difference. That doesn't have to be the case. By helping to monitor wildlife, and protect and restore habitats, individual actions, collectively, will help reverse the decline of wildlife across Canada.



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