Consultation On Amending the List of Species under the *Species at Risk Act*

March 2004





Environment Canada Environnement Canada

Canada

Please send your comments on this consultation to the SARA Public Registry at:

http://www.sararegistry.gc.ca

For regular mail please send your comments to:

Lynda Maltby
Director, Species at Risk
Canadian Wildlife Service
Ottawa, Ontario,
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Comments specific to your Region should be sent to the appropriate Regional Director, Canadian Wildlife Service, Environmental Conservation Service, at the following addresses:

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For more information on the *Species at Risk Act*, please visit the Public Registry at
http://www.sararegistry.gc.ca

For more information on species at risk, please visit Environment Canada's Species at Risk website:
www.speciesatrisk.gc.ca

Information on species at risk is also available on the website of the Committee on the Status of Endangered Wildlife in Canada (COSEWIC):
www.cosewic.gc.ca

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FOREWORD FROM THE MINISTER OF THE ENVIRONMENT

With the passage of the *Species at Risk Act*, Canada took a major step towards protecting the natural heritage of current and future generations of Canadians. This important piece of legislation will help us prevent endangered or threatened wildlife from becoming extinct or lost from the wild and will guide the recovery actions for species at risk.

The provisions of the Act apply to species listed on Schedule 1, the List of Wildlife Species at Risk. It is important that this list reflects an accurate representation of the state of wildlife in Canada. Since the List was first established in 2002, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) has assessed or reassessed an additional 91 species as being at risk. The Government of Canada must now decide whether or not these species should be added to the List of Wildlife Species at Risk.

During the creation of the *Species at Risk Act*, the Government of Canada embarked on extensive consultations across the country with people and communities who depend on our natural environment, such as farmers, fishers, forest workers, miners, those in tourism and recreation and Aboriginal Peoples. The Government of Canada will continue with open and cooperative consultations to ensure Canadians have an opportunity to understand and comment on the potential impacts of listing new species under SARA.

As I launch Environment Canada's consultation process, I am pleased to provide you with a consultation document for species that are the responsibility of Environment Canada and are currently under consideration for addition to Schedule 1. I encourage you to review the document and provide comment on factors you think should be taken into consideration in making these important decisions.

Ultimately, the success of the *Species at Risk Act* will depend on Canadians and their willingness to take action to ensure that all species at risk survive and recover. Your willingness to provide input early in the decision making process will help ensure the needs and concerns of Canadians are addressed in the process of protecting species at risk.

I look forward to hearing your views.



The Honourable David Anderson, P.C., M.P.

Minister of the Environment.

Part I: Addition of species to the *Species at Risk Act*

Public consultation

Background

The Government of Canada proclaimed the *Species at Risk Act* (SARA) on June 5, 2003 as part of its strategy for the protection of wildlife species at risk. Attached to the Act is Schedule 1, the list of the species that receive protection under SARA, hereinafter referred to as the 'SARA list'.

The existing SARA list reflects the 233 species the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) had assessed and found to be at risk at the time of the reintroduction of SARA (then known as Bill C-5), to the House of Commons on October 9th, 2002. Since that time, COSEWIC has assessed or reassessed an additional 91 species as being at risk, making them eligible for consideration for addition to the SARA list. The Minister of the Environment is responsible for the listing of all 91 species. Sixty-three are included in this document (Table 1). The remaining 28 are aquatic species (Appendix 1) and are the subject of separate consultations being conducted by the Minister of Fisheries and Oceans. For more information on these consultations please contact Fisheries and Oceans Canada at:

info@dfo-mpo.gc.ca .

Nearly 40 per cent of the 91 newly eligible species occur in parks administered by the Parks Canada Agency, which was formerly under the authority of the Minister of Canadian Heritage and is now under the authority of the Minister of the Environment. Responsibility for those species (both terrestrial and aquatic) that occur within parks, is shared between the Parks Canada Agency and either Environment Canada or Fisheries and Oceans Canada.

Reflecting government policy, SARA has been designed to ensure the persistence of Canadian wildlife species and the habitats that support them, while embracing Canadian values of participation. Public involvement is integral to the process of listing species as being at risk, as it is to the ultimate protection of Canadian wildlife. The best way to secure the survival of species at risk and their habitats is through the active participation of all those concerned. Your comments on this document will be given serious consideration.

Purpose of the consultation

Having received the COSEWIC assessment of the species' status, the Minister of the Environment must recommend to the Governor in Council one of the following possible courses of action as set out in SARA:

a) that the COSEWIC assessment be accepted and the species be added to the SARA list, or be reclassified or removed from the list accordingly;
b) that the species not be added to the SARA list; or
c) that the species be referred back to COSEWIC for further information or consideration.

The Government of Canada is obligated to take one of these actions within nine months of the Governor in Council having received the assessment from the Minister of the Environment.

COSEWIC bases its assessments solely on its evaluation of the biological status of each species. Consultation with Canadians regarding the potential impacts of the addition of each species to the SARA list will occur before the Minister of the Environment can arrive at informed decisions as to the appropriate course of action, in accordance with the options outlined above. Of particular interest in these discussions is the identification of the benefits and costs of adding or not adding each of the species to the SARA list, relative to the potential impacts on these species and on society of

not adding them.

In this context, before the government makes decisions regarding the SARA list, Canadians will have the opportunity to express their views and concerns. This consultation allows those interested to contribute to the government decision-making process. Where applicable, Wildlife Management Boards will be consulted. Aboriginal people identified as being affected will have the opportunity to contribute to the process. Other members of the public that are either affected or interested will have the opportunity to provide their views. This includes, but is not limited to, industries, industry groups and resource users, landowners, land users and environmental non-government organizations.

Process of public consultations

Canadians are invited to comment on whether all or some of the species included in this document should be added to the SARA list. This document has been posted on the Public Registry. Affected Aboriginal people and other identified concerned groups will be contacted.

This document will be circulated to provincial and territorial jurisdictions, Wildlife Management Boards, federal departments and agencies. Notice will also be sent to recognized stakeholders, including environmental and industrial non-government organizations and individuals who have made their interests known to the Canadian Wildlife Service. Other audiences may be engaged directly through other forms of consultation.

Role and impact of public consultation

The results of this public consultation are of great relevance to the entire process of listing species at risk. The comments received will be carefully reviewed and evaluated. They will then be documented in a Regulatory Impact Analysis Statement (RIAS). The RIAS is an integral part of the federal regulatory process and is published with all regulatory proposals in the Canada Gazette Part I.

Following initial consultations, a draft Order (an instrument that serves notice of a decision taken by the executive arm of government) proposing to list all or some of the 63 species under consideration will be prepared. This draft Order will be published along with the RIAS in the Canada Gazette Part I for a comment period. The Minister of the Environment will take into consideration comments and any additional information received, following publication in the Canada Gazette Part I. The Minister will then make a recommendation to the Governor in Council on whether to add certain species to the SARA list or to refer them back to COSEWIC. The final decision will be published in Canada Gazette Part II and on the Public Registry.

Process of identifying and listing species at risk

The *Species at Risk Act*

The *Species at Risk Act* strengthens and enhances the Government of Canada's capacity to protect Canadian wildlife species, subspecies and distinct populations that are at risk of becoming Extinct or Extirpated. The Act applies only to species on the SARA list.

Openness and transparency, including public consultation, is required in making decisions about which species should be included on the SARA list. The process begins with the assessment of a species as being at risk by COSEWIC. Upon receipt of these assessments, the Minister of the Environment then has 90 days to report on how he or she intends to respond to the assessment and to the extent possible, provide timelines for action. The Minister will then make a recommendation to the Governor in Council on whether to add certain species to the SARA list or to refer them back to COSEWIC. Once a species is added to the SARA list, specific actions must be taken within specified time periods to help ensure that species' protection and recovery.

Process and role of COSEWIC

COSEWIC comprises experts on wildlife species at risk. Their backgrounds are in

the fields of biology, ecology, genetics, aboriginal traditional knowledge and other relevant fields and they come from various communities, including government, academia, Aboriginal organizations and non-government organizations.

Initially, COSEWIC commissions a status report for the evaluation of the conservation status of a species. To be accepted, status reports must be peer-reviewed and approved by a subcommittee of species specialists. In special circumstances assessments can be done on an emergency basis.

COSEWIC then meets to examine the status report, discuss the species and determine whether or not the species is at risk and if so, assess the level of risk.

For more information on COSEWIC visit:

www.cosewic.gc.ca .

Terms used to define the degree of risk to a species

The degree of risk to a species is categorized according to the terms Extirpated, Endangered, Threatened and Special Concern. A species is assessed by COSEWIC as Extirpated when it is no longer found in the wild in Canada but still exists elsewhere. It is Endangered if it is facing imminent extirpation or extinction. An assessment of Threatened means that the species is likely to become Endangered if nothing is done to reverse the factors leading to its Extirpation or Extinction. COSEWIC assesses a species as Special Concern if it may become a Threatened or Endangered species because of a combination of biological characteristics and identified threats.

Significance of the addition of a species to the SARA list

The protection that comes into effect following the addition of a species to the SARA list depends upon the degree of risk assigned to the species, the type of species and where it occurs.

Protection for listed Extirpated, Endangered and Threatened species

Under the Act, prohibitions protect individuals of Extirpated, Endangered and Threatened species. These prohibitions make it an offence to kill, harm, harass, capture or take an individual of a species listed as Extirpated, Endangered or Threatened, or to damage or destroy the residence of one or more individuals of an Endangered or a Threatened species. The Act also makes it an offence to possess, collect, buy, sell or trade an individual of a species that is Extirpated, Endangered or Threatened or a part or derivative of one. These prohibitions will come into force June 1st, 2004.

The focus of protection will be on those species for which the federal government has direct legal authority. The protection will be in force for all listed birds protected under the Migratory Birds Convention Act, 1994 and for listed aquatic species. The prohibitions will also apply to all listed species on federal lands.

For all other listed Endangered, Threatened and Extirpated species, the provinces and territories have the responsibility to ensure that they receive adequate protection. Should species not be effectively protected, SARA has “safety-net” provisions that give the federal government the power to make an Order securing their protection. The federal government would consult with the jurisdiction concerned and the public before any safety-net provisions would be invoked.

Exceptions to these prohibitions may be authorized by the Minister of the Environment or the Minister of Fisheries and Oceans These ministers can enter into agreements or issue permits only for research relating to the conservation of a species that is conducted by qualified scientists, for activities that benefit a listed species or enhance its chances of survival, and for activities that incidentally affect a listed species. These exceptions can be made only when it is established that all reasonable alternatives have been considered and the best solution has been adopted, when all feasible measures will be taken to minimize the impact of the activity, and when the survival or recovery of the species will not be jeopardized.

Protection for listed species of Special Concern

The prohibitions of SARA for species listed as Extirpated, Endangered and Threatened will not apply to species of Special Concern; however any existing protections and prohibitions, such as those authorized by the Migratory Birds Convention Act or the Canada National Parks Act, continue to be in force.

Recovery strategies and action plans for Extirpated, Endangered and Threatened species

The addition of an Extirpated, Endangered or Threatened species to the SARA list triggers the requirement for the preparation of a recovery strategy and action plan which will be the subject of separate consultations.

Recovery strategies will be completed and made available on the SARA Public Registry to allow for public review and comment, within one year for Endangered species and within two years for Threatened and Extirpated species.

Recovery strategies will address the known threats to the species and its habitat. They will identify areas where more research is needed and population objectives that will help ensure the species' survival or recovery and will include a statement of the timeframe. Recovery strategies and action plans will identify, to the extent possible, the critical habitat of the species. Action plans will include measures to address threats, help the species recover and protect critical habitat. Measures to implement the recovery strategy will also be identified in the action plan.

Recovery strategies and action plans will be prepared in cooperation with Wildlife Management Boards and aboriginal organizations directly affected by them and with the jurisdictions responsible for the management of the species. Landowners and other stakeholders directly affected by the recovery strategy will also be consulted.

Management plans for Species of Special Concern

For species of Special Concern management plans will be prepared and made available on the Public Registry within three years of their addition to the SARA list, allowing for public review and comment. Management plans will include appropriate conservation measures for the species and for its habitat.

Management plans will be prepared in cooperation with jurisdictions responsible for the management of the species, including directly affected Wildlife Management Boards and aboriginal organizations. Landowners, lessees and others directly affected by a management plan will also be consulted.

Public comments solicited on the addition of 63 species to the SARA list

The 63 wildlife species that appear in Table 1 have been assessed or reassessed by COSEWIC as species at risk and are being considered for addition to the SARA list.

Please e-mail your comments to the SARA Public Registry at:

SARAregistry@ec.gc.ca

by no later than the **14th of June, 2004**, or by regular mail, please address comments to:

Lynda Maltby
Director, Species at Risk
Canadian Wildlife Service
Ottawa, Ontario,
K1A OH3

Your comments will be reviewed and used to consider whether or not to place each species on the SARA list.

Table 1: Species eligible for addition to Schedule 1 with consultations conducted by Environment Canada

Taxon	Species	Scientific Name	Range
Extirpated			
Reptiles	Pacific Gophersnake	*Pituophis catenifer catenifer*	BC
Reptiles	Pacific Pond Turtle	*Actinemys marmorata*	BC
Molluscs	Puget Oregonian Snail	*Cryptomastix devia*	BC
Mosses	Incurved Grizzled Moss	*Ptychomitrium incurvum*	ON
Endangered			
Mammals	Townsend's Mole	*Scapanus townsendii*	BC
Mammals	Wolverine, Eastern population	*Gulo gulo*	QC NF
Birds	Western Screech-owl macfarlanei subspecies	*Megascops kennicottii macfarlanei*	BC
Reptiles	Blue Racer	*Coluber constrictor foxii*	ON
Molluscs	Oregon Forestsnail	*Allogona townsendiana*	BC
Lepidopterans	Mormon Metalmark, Southern Mountain population	*Apodemia mormo*	BC
Lepidopterans	Yucca Moth	*Tegeticula yuccasella*	AB
Vascular Plants	Bird's-foot Violet	*Viola pedata*	ON
Vascular Plants	Coastal Scouler's Catchfly	*Silene scouleri ssp. Grandis*	BC
Vascular Plants	Eastern Prairie Fringed-orchid	*Platanthera leucophaea*	ON
Vascular Plants	Forked Three-awned Grass	*Aristida basiramea*	ON QC
Vascular Plants	Howell's Triteleia	*Triteleia howellii*	BC
Vascular Plants	Kellogg's Rush	*Juncus kelloggii*	BC
Vascular Plants	Small-flowered Lipocarpha	*Lipocarpha micrantha*	BC ON
Vascular Plants	Small-flowered Sand-verbena	*Tripterocalyx micranthus*	AB SK
Vascular Plants	Streambank Lupine	*Lupinus rivularis*	BC
Mosses	Margined Streamside Moss	*Scouleria marginata*	BC
Mosses	Silver Hair Moss	*Fabronia pusilla*	BC
Mosses	Spoon-leaved Moss	*Bryoandersonia illecebra*	ON
Lichens	Boreal Felt Lichen, Atlantic population	*Erioderma pedicellatum*	NB NS
Threatened			
Mammals	Grey Fox	*Urocyon cinereoargenteus*	MB ON QC
Reptiles	Eastern Ribbonsnake, Atlantic population	*Thamnophis sauritus*	NS
Reptiles	Great Basin Gophersnake	*Pituophis catenifer deserticola*	BC
Reptiles	Massasauga	*Sistrurus catenatus*	ON
Reptiles	Spiny Softshell	*Apalone spinifera*	ON QC
Reptiles	Stinkpot	*Sternotherus odoratus*	ON QC
Molluscs	Dromedary Jumping-slug	*Hemphillia dromedarius*	BC
Lepidopterans	Mormon Metalmark, Prairie population	*Apodemia mormo*	SK
Vascular Plants	Common Hoptree	*Ptelea trifoliata*	ON
Vascular Plants	Crooked-stem Aster	*Symphyotrichum prenanthoides*	ON
Vascular Plants	Lakeside Daisy	*Hymenoxys herbacea*	ON
Vascular Plants	Lemmon's Holly Fern	*Polystichum lemmonii*	BC
Vascular Plants	Van Brunt's Jacob's-ladder	*Polemonium vanbruntiae*	QC
Vascular Plants	Western Spiderwort	*Tradescantia occidentalis*	AB SK MB
Vascular Plants	White Wood Aster	*Eurybia divaricata*	ON QC
Vascular Plants	Wild Hyacinth	*Camassia scilloides*	ON
Vascular Plants	Willowleaf Aster	*Symphyotrichum praealtum*	ON

Table 1 continued: Species eligible for addition to Schedule 1 with consultations conducted by Environment Canada

Taxon	Species	Scientific Name	Range
Special Concern			
Mammals	Grizzly Bear, Northwestern population	*Ursus arctos*	YT NT NU BC AB
Mammals	Polar Bear	*Ursus maritimus*	YT NT NU MB ON QC NL
Mammals	Wolverine, Western population	*Gulo gulo*	YT NT NU BC AB SK MB ON
Mammals	Woodland Caribou, Northern Mountain population	*Rangifer tarandus caribou*	YT NT BC
Birds	Cerulean Warbler	*Dendroica cerulea*	ON QC
Birds	Long-billed Curlew	*Numenius americanus*	BC AB SK
Birds	Western Screech-owl *kennicottii* subspecies	*Megascops kennicottii kennicottii*	BC
Reptiles	Eastern Ribbonsnake, Great Lakes population	*Thamnophis sauritus*	ON
Reptiles	Milksnake	*Lampropeltis triangulum*	ON QC
Reptiles	Northern Map Turtle	*Graptemys geographica*	ON QC
Reptiles	Rubber Boa	*Charina bottae*	BC
Reptiles	Western Skink	*Eumeces skiltonianus*	BC
Amphibians	Great Plains Toad	*Bufo cognatus*	AB SK MB
Amphibians	Northern Leopard Frog, Western Boreal/Prairie populations	*Rana pipiens*	NT AB SK MB
Amphibians	Red-legged Frog	*Rana aurora*	BC
Amphibians	Spring Salamander	*Gyrinophilus porphyriticus*	ON QC
Amphibians	Western Toad	*Bufo boreas*	YT NT BC AB
Molluscs	Warty Jumping-slug	*Hemphillia glandulosa*	BC
Vascular Plants	Athabasca Thrift	*Armeria maritima ssp. interior*	SK
Vascular Plants	Climbing Prairie Rose	*Rosa setigera*	ON
Vascular Plants	Tuberous Indian-plantain	*Arnoglossum plantagineum*	ON
Lichens	Boreal Felt Lichen, Boreal population	*Erioderma pedicellatum*	NL

Part II: Species proposed for amendment to the SARA list

Extirpated

Reptiles

Pacific Gophersnake

Pituophis catenifer catenifer

Status assigned by COSEWIC
Extirpated

COSEWIC reasons for status designation
There have been no sightings of this subspecies in almost 50 years.

Assessment date
May 2002

Previous Canadian range
British Columbia

Situation summary
The Pacific Gophersnake is known to have occurred in extreme southwestern British Columbia. It is one of three recognized subspecies of Gophersnake in Canada.

Urban encroachment and the resulting loss of the Pacific Gophersnake's grassland habitat may have lead to this subspecies' loss from Canada. In addition to the conversion of the grasslands of the lower Fraser Valley and Gulf Islands into farmland and urban developments, invasive Scotch broom has taken over much of the islands' remaining grasslands. Potential suitable habitat for this snake continues to decline rapidly in quality and size.

In Canada, the Pacific Gophersnake is known from only two records, both from a very small, restricted area in British Columbia at the very northern edge of *Pituophis catenifer* range. Despite this part of the province now being heavily populated, the Pacific Gophersnake has not been seen in Canada since 1957. The subspecies persists in the United States in western Oregon and California.

Both sightings of the Pacific Gophersnake in British Columbia were in grasslands, on Galiano Island and south of Abbotsford, near the international boundary at Sumas, Washington. This British Columbia population was probably a relict.

Gophersnakes play an important role; they have been known to remove large proportions of small mammal populations, some of which are a major threat to crops.

Conservation activities underway
A recovery strategy is under development and the species is included in multi-species recovery planning, under RENEW (Recovery of Nationally Endangered Wildlife in Canada), the national

recovery program established under the Accord for the Protection of Species at Risk.

Pacific Pond Turtle

Actinemys marmorata

Status assigned by COSEWIC
Extirpated

COSEWIC reasons for status designation
This species was found occasionally in southern British Columbia up to 1959. This species is at risk throughout its range and has disappeared from the northern parts of its range, in British Columbia and most of Washington, Oregon and northern California. As it has not been recorded in British Columbia since 1959, it can be considered to be extirpated from Canada.

Assessment date
May 2002

Previous Canadian range
British Columbia

Situation summary
The Pacific Pond Turtle has disappeared from the northern parts of its range, including from southern British Columbia, most of Washington, Oregon and northern California. Its main distribution is now coastal California and Baja California, with isolated inland populations.

Although it can inhabit a wide variety of habitats, in areas where the Pacific Pond Turtle still occurs, it is most often found in slow-moving streams, large rivers and sloughs. It can tolerate brackish water for short periods. It occurs in water bodies with rocky as well as muddy bottoms and prefers areas with emergent vegetation. It requires deep pools with large woody debris that provides refuges from predators. The Pacific Pond Turtle experiences seasonal drought in portions of its range, apparently surviving by migrating to persisting pools and aestivating in the mud. Nest sites are in dry, open areas. This turtle overwinters in both woodland areas and under water. Suitable basking areas are critical for Pacific Pond Turtles to maintain optimal body temperature.

In the mid-1800s, the Pacific Pond Turtle was common in the ponds and lakes of the southern British Columbia mainland and Vancouver Island, but no sightings have been recorded in Canada since 1959. The last record is from the Vancouver area. The species has become rare or extirpated in the northern and southernmost parts of its range and it is at risk throughout the remaining range in the United States, where extensive wetland habitat modification and destruction continue to limit its distribution.

In the late 19th and early 20th centuries, the Pacific Pond Turtle was subject to unrelenting commercial harvesting for food, which caused a significant decline in overall population numbers. Habitat has been and continues to be modified or lost as agricultural and urban development increases in North America. Dams and other water diversions have created unsuitable habitat for turtles by increasing water velocity, decreasing water temperature, removing bank vegetation and creating barriers that prevent the turtles from accessing terrestrial habitat. The American Bullfrog, an eastern North American species introduced to the west coast, is a major predator of juvenile Pacific Pond Turtles. In Canada, the Pacific Pond Turtle was also limited by climate as southern British Columbia is at the extreme northern limit of its former range.

Conservation activities underway
A Recovery strategy and action plan are under development and this species is included in multi-species recovery planning under RENEW (Recovery of Nationally Endangered Wildlife in Canada).

Molluscs

Puget Oregonian Snail

Cryptomastix devia

Status assigned by COSEWIC
Extirpated

COSEWIC reasons for status designation
In Canada, the species was known previously (1850-1905) from only three old records from Vancouver Island and southwestern mainland of British Columbia. In spite of surveys of 38 forested localities in 1986 and 450 localities since 1990 for terrestrial gastropods and 142 localities specifically to locate *C. devia* (total of about 110 person hours) no specimens have been found. Regions in which known localities for *C. devia* were said to have occurred have been heavily impacted by urbanization and agricultural use.

Assessment date
November 2002

Previous Canadian range
British Columbia

Situation summary
The Puget Oregonian Snail occurs in the western Cascade Range and the Puget Trough. Its range once extended from southwestern British Columbia south to western Washington and to the Oregon side of the Columbia Gorge. Occurrence of the species is patchy throughout its remaining range in the United States where it is typically found at scattered localities. The only three Canadian records are from an extremely restricted area at the northern edge of the species' known range on Vancouver Island and on the southwestern mainland of British Columbia.

The habitat of the Puget Oregonian Snail is moist old-growth forests where large diameter decaying maple logs provide refuge from predators and severe weather. This snail is a mature forest specialist which inhabits moist old-growth and late-successional stage forests and riparian areas at low and middle elevations. The canopy closure is usually 70% or greater. The snails are frequently associated with hardwood debris or talus and are often found under decaying logs or leaf litter, especially around seepages or springs. Juveniles may be found on the mossy trunks of large Bigleaf Maples.

Probably never common within its Canadian range, the snail was last seen in 1905. Despite surveys for terrestrial gastropods of 38 forested localities in 1986 and 450 additional localities since 1990 and despite a survey of 142 localities specifically directed at locating this species, no Puget Oregonian Snail specimens were found.

The reasons for the extirpation of the Puget Oregonian Snail from Canada are unknown. Available information indicates that the species was likely uncommon when it did occur in Canada. Populations at the extreme northern edge of their range are more vulnerable to climatic fluctuations and stochastic events, and habitats in the vicinity of reported historical localities of

the Puget Oregonian Snail have been modified extensively since the original records were made between 1850 and 1905. This snail cannot survive the lower humidity and higher temperatures that occur in clear-cuts and younger forests. Extensive habitat loss and fragmentation from urbanization and agriculture have led to deterioration in the quality of any remaining habitat, making it largely inhospitable to the snail. Non-native slugs are more common in urban and agricultural areas than in natural habitats and may also pose a problem through predation or competition.

Conservation activities underway

A recovery strategy is under development under RENEW (Recovery of Nationally Endangered Wildlife in Canada).

Mosses

Incurved Grizzled Moss

Ptychomitrium incurvum

Status assigned by COSEWIC

Extirpated

COSEWIC reasons for status designation

A small moss that is widely distributed in the eastern deciduous forests of eastern North America and whose frequency of occurrence attenuates toward the northern portion of its range. In Canada, the only known location for the species is a single record from a boulder in southern Ontario in 1828. Despite many years of collection made in the region, the species has never been rediscovered.

Assessment date

November 2002

Previous Canadian range

Ontario

Situation summary

The Incurved Grizzled Moss has a temperate global distribution. Most populations are centred in the eastern and southeastern United States and some occur in the mountainous regions of Europe. Widely distributed in the deciduous forests of eastern North America, this moss becomes increasingly uncommon toward the northern portion of its range. In Canada, the only known location for this species is a single record from a boulder in southern Ontario in 1828.

The Incurved Grizzled Moss grows in the eastern deciduous forest on both calcareous and non-calcareous rocks. It is commonly found on the surface and in small crevices of boulders in open hardwood forests and rarely at the base of trees or on logs. The Incurved Grizzled Moss appears adaptable to anthropogenic substrates, such as rock walls and gravestones.

In North America, the distribution of the Incurved Grizzled Moss is concentrated in the southeastern United States, but the moss is also relatively widespread and common in the eastern states. Over the last 150 to 200 years, this species has disappeared from New York State and its distribution is apparently retracting southward. This moss is small, inconspicuous and easily overlooked. In Canada, it is known from only one specimen collected in 1828 in the Niagara area, presumably in Ontario. Despite many years of collections made in the region, the

species has never been rediscovered.

It is not known why the Incurved Grizzled Moss became extirpated from Canada. Apparently suitable habitat remains plentiful in Ontario and there are no known threats to the species. The historical record shows that the moss was at the extreme northern limit of its range and species at the edge of their ranges are more vulnerable to stochastic events. Human activities resulting in pollution and the loss of habitat may have contributed to the extirpation of this species from southern Ontario.

Conservation activities underway
None

Endangered

Mammals

Townsend's Mole

Scapanus townsendii

Status assigned by COSEWIC
Endangered

COSEWIC reasons for status designation
There are only about 450 mature individuals in a single Canadian population with a range of 13 km², adjacent to a small area of occupied habitat in the United States of America. Threats to the population include trapping by pest removal companies and property owners. The habitat has been degraded through fragmentation and urbanization. There is no evidence of decline over the last 10 years. It is uncertain whether immigration across the international border may rescue the Canadian population.

Assessment date
May 2003

The Townsend's Mole was designated by COSEWIC as Threatened in April of 1996. It was re-examined and up listed in 2003.

Canadian range
British Columbia

Applicable lands
None confirmed

Situation summary
The Townsend's Mole is found in the Pacific Coast Region of northern California, Oregon and Washington. In Canada, a single population occurs in an extremely restricted area of less than 13 km^2 on the southern mainland of British Columbia. This population consists of fewer than 500 mature individuals and is adjacent to a small population in the United States.

Townsend's Moles are fossorial, spending most of their lives underground. They typically inhabit

lowland areas, such as pastures, farmland and lawns, usually in medium-textured silt loam soil with good humus content. They are also found in open forests and light sandy soils.

In British Columbia, this species is limited by climate and available suitable habitat. Historically, the Townsend's Mole may have benefited from the creation of farmland, the drying of wet meadows by dyking and the introduction of large species of earthworms (such as *Lumbricus terrestris*) which have become a major food for the mole. New suitable habitat is no longer being created in significant amounts to benefit Townsend's Moles and populations are believed to have since declined. The loss of farmland through urban sprawl and habitat fragmentation contributes to lower population numbers. Intensive agricultural practices (such as constant tilling and the application of fertilizers and pesticides on farms growing vegetables, berries and flowers) create soils with poor structure and less earthworm biomass. Some moles may also be killed by pesticides and farm equipment. Over the last ten years, the species' range has been relatively stable, with no evidence of further population decline; however stable populations may be the result of immigration across the international border. Further loss of mole habitat outside Agricultural Land Reserve areas can be expected.

The primary threats to the species are from trapping by pest removal companies and property owners who do not always distinguish Townsend's Moles from more common moles. Molehills cause damage to farm machinery and livestock and the moles themselves eat some types of crops, leading some homeowners and farmers to treat moles as pests. The relatively low reproductive rate of the Townsend's Mole makes it slow to recover from population declines. While Coast Moles, a more common species, quickly re-invade areas from which they have been cleared, an area cleared of Townsend's Moles may be reinvaded by Coast Moles instead.

Conservation activities underway

None.

Wolverine, Eastern population

Gulo gulo

Status assigned by COSEWIC

Endangered

COSEWIC reasons for status designation

There have been no verified reports of this species in Quebec or Labrador for about 25 years but there are unconfirmed reports almost every year. Any remaining population would be extremely small and therefore at high risk of extinction from stochastic events such as incidental harvest. The apparent lack of recovery despite the recent high local abundance of caribou suggests that this population may be extirpated.

Assessment date

May 2003

In 1982, all Wolverines in Canada were considered a single unit. In April of 1989, the unit was split into an Eastern and a Western population, at which time the Eastern population was designated by COSEWIC as Endangered. This status was re-examined and confirmed in May of 2003.

Canadian range

Quebec, Newfoundland and Labrador

Applicable lands
Wildlife Management Boards

Situation summary
In eastern Canada, Wolverines never occurred on the island of Newfoundland, in Nova Scotia or Prince Edward Island. They have probably been eliminated from New Brunswick in the early 19th century. There have been no verified reports of Wolverines in Quebec since 1978 or in Labrador since 1950, but there are unconfirmed reports almost every year. Any remaining population would be extremely small and at high risk of extinction.

Wolverines combine low reproductive rates with large home ranges and low population densities. Rather than being specific to a particular topography or plant association, they are most abundant where large ungulates are common and where carrion is available in winter. They require vast, undisturbed areas to maintain viable populations.

Although Wolverines were once much more widespread, their population in eastern Canada may have always been quite low. Historical data is considered unreliable because an unknown portion of the pelts in fur-trading records that are attributed to Quebec may have originated elsewhere. The current total population is unknown, but based on the lack of reliable reports for approximately 25 years, it is believed to be extremely low or non-existent.

Declines in the Eastern population of the Wolverine are related to a combination of factors: hunting and trapping in the late 19th century, dwindling caribou herds in the early 20th century, human encroachment on habitat, reduction in the number of wolves and the indiscriminate use of poison bait. Wolverines are most abundant where large ungulates are common and benefit from the carrion generated by other large carnivores. Increases in Wolverine populations have been noted elsewhere in Canada where caribou have increased. The apparent lack of recovery of Wolverines in Quebec despite both the recent high local abundance of caribou, and the recovery of wolves that followed the cessation of poisoning, suggests that the Eastern population — which is believed isolated from that in Ontario, may no longer exist.

Conservation activities underway
A recovery strategy is under development and a stewardship project is ongoing under RENEW (Recovery of Nationally Endangered Wildlife in Canada).

Birds

Western Screech-owl, *macfarlanei* subspecies

Megascops kennicottii macfarlanei

Status assigned by COSEWIC
Endangered

COSEWIC reasons for status designation
This subspecies has a very low population in Canada where it depends on mature riparian woodlands for nesting and roosting. These woodlands have been heavily impacted by agricultural and urban developments over the last century. It also relies on cavities in old, large trees for nesting and roosting, trees which have become rare even within the woodlands that remain.

Assessment date
May 2002

In 1995 the species was considered a single unit and assigned a status of Data Deficient. In May of 2002 it was split into two subspecies, each of which was assessed separately.

Canadian range
British Columbia

Applicable lands
Parks Canada Agency

Situation summary
The *macfarlanei* subspecies of the Western Screech-owl is found in western North America from southern Alaska to central Mexico. In Canada, the subspecies occurs in low numbers in a small restricted area. Its population is concentrated in the highly populated and developed Okanagan Valley in the southern interior of British Columbia.

The habitats in which the Western Screech-owl occurs are quite varied. In Canada and the northern United States, the owl prefers lower-elevation riparian areas with mature woodlands for nesting and roosting, but the forest type and proportion of coniferous to deciduous trees may vary.

There is no hard data on the subspecies' population size or trend, but the owl appears to have always been relatively uncommon and local in the central southern interior of the province and very rare in the west and east Kootenay region. The current population size is very small (estimated at 50 to 200 birds) and is thought to have been declining during the last 30 to 40 years. Over 50% of the owl's habitat has been lost to housing, agriculture and forestry and its range may also be contracting.

Habitat loss is considered the main factor contributing to the species' decline. The valley bottomlands preferred by the Western Screech-owl *macfarlanei* subspecies are more likely to be developed than are other habitats. Forestry operations may negatively affect screech-owl habitat. Current forestry practices dictate the removal of old, large trees and snags, making suitable nesting and roosting sites rare within the remaining woodlands. This loss could be mitigated by the provision of nest boxes, which the Western Screech-owl is known to use.

The Barred Owl has become common in British Columbia in the last few decades. Anecdotal reports allude to a link between Barred Owl predation and the decline of the Western Screech Owl. Collisions with motorized vehicles may also have a significant negative impact on such a small population.

Conservation activities underway
An update recovery plan and strategy are under development and stewardship projects are ongoing under RENEW (Recovery of Nationally Endangered Wildlife in Canada).

Reptiles

Blue Racer

Coluber constrictor foxii

Status assigned by COSEWIC
Endangered

COSEWIC reasons for status designation

The snake is almost certainly extirpated from mainland Ontario and blue racers are now found only in the eastern two-thirds of Pelee Island. Continued development for cottages, residences and other structures and an increase in vehicular traffic further reduce and fragment the amount of suitable habitat remaining.

Assessment date

May 2002

The Blue Racer was first designated Endangered by COSEWIC in April 1991. This status was confirmed in 2002.

Canadian range

Ontario

Applicable lands

None confirmed

Situation summary

This subspecies of *Coluber constrictor* has a distribution limited to an area south of the Great Lakes, from Iowa east to Ohio and north to extreme southwestern Ontario. In Canada, it is now found only on Pelee Island. The range of the Blue Racer in Canada has decreased; at one time this snake was more widely distributed on Pelee Island and also occurred in other areas of southwestern Ontario.

In Canada, Blue Racers prefer the open to semi-open habitat of Pelee Island's alvar savannahs, old fields and shorelines. During the summer, they live in open habitats with abundant cover, such as dense woody and/or herbaceous vegetation, rock outcrops and hedgerows. Blue Racers hibernate in quarries, old cisterns and areas where limestone bedrock is close to the surface. They have an extremely large activity range, which is in part attributable to the combination of their requirement for a variety of habitat types and to the high degree of habitat fragmentation that has occurred on the island.

All mainland populations, including those that once occurred in provincial parks, appear to have been lost. The Blue Racer now persists only on Pelee Island. Its range is undergoing further contraction and suitable habitat continues to become increasingly fragmented. In 1995 there were about 205 adult Blue Racers on Pelee Island, largely restricted to the eastern two thirds of the Island. Since then, the number of Blue Racers appears to have declined.

Loss of habitat is an important limiting factor. Blue Racers inhabit an area that is densely populated by humans and much of their habitat, particularly nesting and hibernating sites, has been lost. Continued development (for cottages, residences and other structures) and an increase in vehicular traffic further reduce and fragment the remaining suitable habitat. When compared with other racer populations in North America, the Blue Racers on Pelee Island range over an extremely large area — the average range is 75 ha for females and 140 ha for males — probably because habitat fragmentation on Pelee Island forces the snakes to travel greater distances to obtain the resources they need.

Accidental killing of snakes on roads and the deliberate killing of snakes by humans are two other significant threats to the continued existence of this subspecies in Canada. Furthermore, Blue Racers appear to be less tolerant of high levels of human activity than other snakes.

Conservation activities underway

A recovery strategy is in development and a stewardship project is ongoing on Pelee Island, under RENEW (Recovery of Nationally Endangered Wildlife in Canada).

Molluscs

Oregon Forestsnail

Allogona townsendiana

Status assigned by COSEWIC
Endangered

COSEWIC reasons for status designation
The species is restricted to a very small area of the extreme southwestern British Columbia mainland and southern Vancouver Island. Populations are severely fragmented with continuing declines observed in extent of occurrence, area of occupancy and area, extent and quality of habitat due mainly to urban development. Even though there may be other locations, the species is still very uncommon.

Assessment date
November 2002

Canadian range
British Columbia

Applicable lands
None confirmed

Situation summary
The Oregon Forestsnail has a limited global distribution. It is found only in two northwestern United States, on the extreme southwestern British Columbia mainland and on southern Vancouver Island. The British Colombia records are largely from the Fraser Valley in the Mission/Abbotsford/Chilliwack area and from the lower Chilliwack Valley. Two additional locations in Langley and on southern Vancouver Island are outside this core region.

The Oregon Forestsnail occupies low-elevation, mixed-wood and deciduous lowland forests that are typically dominated by Bigleaf Maple. In Canada, almost all the known sites where the snail occurs are at elevations under 360 m. A dense herbaceous cover was present at all sites and Stinging Nettles were often present. In addition to providing food, Stinging Nettles may discourage trampling. This snail is believed to require coarse woody debris, copious amounts of leaf litter and both living and senescent vegetation. Shade provided by the forest canopy conserves moisture and reduces fluctuations in temperature and humidity on the forest floor.

Throughout its Canadian range, the Oregon Forestsnail has a patchy distribution. Populations are severely fragmented with continuing declines observed in extent of occurrence, area of occupancy and the area, extent and quality of habitat, due mainly to urban development. Population trends cannot be determined due to the lack of historical information on population sizes. Recent searches have established 19 sites where the Oregon Forestsnail still occurs. Although the species may occur at other locations, it is very uncommon.

The most significant threat to the Oregon Forestsnail is that it lives adjacent to some of the most heavily modified and used land in British Columbia. Agriculture, logging and recent urbanization threaten snail populations. Because these activities increase habitat fragmentation, subpopulations are becoming more isolated, and habitat fragmentation can be expected to further degrade microhabitats. The minimum habitat size that can support a viable snail population is unknown. The poor dispersal ability of this species makes it unlikely that habitat patches will be recolonized if all the local individuals die. Numerous introduced slugs (such as

Arion rufus and *Deroceras reticulatum*) may prey upon the Oregon Forestsnail or compete with it for resources. Brush burning, trampling and pesticide use are also presumed to be detrimental to the snail's survival.

Conservation activities underway
A recovery strategy and action plan are under development and the species is included in a multi-species recovery plan under RENEW (Recovery of Nationally Endangered Wildlife in Canada).

Lepidopterans

Mormon Metalmark, Southern Mountain population

Apodemia mormo

Status assigned by COSEWIC
Endangered

COSEWIC reasons for status designation
The Southern Mountain population of this species is a very small, disjunct, northern outlier of a species whose main range occurs in the southwestern US. The butterflies are confined to a very small area in a narrow valley in a populated area in southern British Columbia. The valley bottom is also an important transportation and utility corridor. The butterfly is vulnerable to natural stochastic events and human activity can easily cause the extirpation of colonies.

Assessment date
May 2003

Canadian range
British Columbia

Applicable lands
Department of Indian Affairs and Northern Development

Situation summary
The Southern Mountain population of the Mormon Metalmark is one of two populations found in Canada. It is a very small, disjunct population, far to the north of the species' main range in the southwestern United States. This population occurs only in a tiny part of the Similkameen Valley in a populated part of southern British Columbia.

The Mormon Metalmark is a butterfly of arid regions, and is associated with hillsides, dunes and embankments with sandy or gravelly soils where the buckwheat larval host plants grow. The Southern Mountain population of the Mormon Metalmark, consisting of fewer than 100 mature individuals, is likely limited by climate and by the distribution of larval host plants. The area occupied by the population is stable over time, but the population is subject to extreme fluctuations in numbers.

Casual field observations and comparisons to a California subspecies, *Apodemia mormo langei*, suggest that adult butterflies may move very little during their life span. The adult of the California subspecies averages a lifetime displacement of only 10 meters and achieves a maximum of 600 meters.

The valley bottom inhabited by the Southern Mountain population of the Mormon Metalmark is an

important transportation and utility corridor through a densely populated part of British Columbia. Because this corridor is subject to further development, the few, minute habitat patches occupied by the butterfly are vulnerable to destruction. The Metalmark's apparently low dispersal capabilities make it vulnerable to natural stochastic events and the combination of such an event with human activities, such as the roadside application of herbicides, could easily lead to the loss of this population. The Snow Buckwheat and Common Rabbitbrush plants on which this metalmark depends are less common than they were prior to the introduction of such Eurasian weeds as Diffuse Knapweed, Dalmation Toadflax and Downy Brome.

Conservation activities underway
None

Yucca Moth

Tegeticula yuccasella

Status assigned by COSEWIC
Endangered

COSEWIC reasons for status designation
Only one viable population of the moth persists in an extremely small and restricted area; another small population has been lost recently. The moth has an obligate mutualism relationship with its host plant, the Soapweed, which is threatened by ungulate herbivory and loss of plants to human activities.

Assessment date
May 2002

Canadian range
Alberta

Applicable lands
Agriculture Canada

Situation summary
The Yucca Moth is found in Yucca plant populations throughout the Great Plains, from the southern boundary of Texas to southern Canada and in all regions east of the plains northward to Michigan and Connecticut. The moth reaches the northern extent of its distribution in the dry mixed-grass subregion of the Prairies in southeastern Alberta, where two Yucca populations occupy a restricted area alongside the Lost and Milk rivers.

Several plants of the Yucca genus are used by Yucca Moths across their range. In Alberta, the Yucca Moth relies on Soapweed, with which it has an obligate mutualistic relationship. The Yucca Moth deposits its eggs only on Soapweed and its larvae feed only on Soapweed seeds. The Soapweed in turn is only able to produce seeds if Yucca Moths pollinate its flowers. Neither the plant nor the moth can survive without the other. Soapweed typically occupies dry, eroded and sparsely vegetated slopes with prickly pear cactus and sagebrush.

The Lost River population of Yucca Moths appears to be stable, but numbers undergo extreme fluctuations, both within and among years. Without long-term data, it is difficult to determine if there are enough individuals to sustain the species over the long term.

Moths are notably absent from the Milk River population of Soapweed and for at least five years the plants there have not produced any seeds. Although the larvae can remain dormant in the

soil for several years, mortality rates are high with extended dormancy, and there is an estimated 50% loss each winter. It is therefore likely that this population is no longer viable.

In Canada, the main threats to the survival of the Yucca Moth are its occurrence in small, isolated populations and its northerly distribution. At the northern edge of the species' range, the Alberta populations are physiologically limited by temperature and are isolated by at least 200 kilometres from those in the main range in the United States. Yucca Moths are short-lived and are likely incapable of dispersing long distances over inhospitable terrain. With little intervening native habitat for Soapweed plants, were the plants where existing Canadian moth populations occur to be eliminated — either by a chance event or by a series of climatically unfavourable years — Yucca Moths would probably be unable to recolonize other Soapweed plants in Alberta.

Other threats unrelated to latitude include herbivory of Soapweed flowers and fruit by Mule Deer and Pronghorn Antelope, and competition from other insects. Anthropogenic threats include habitat alteration, the collection of Soapweed plants for horticultural purposes, trampling of plants by off-road vehicles, the grazing of cattle and potential threats from herbicide and insecticide use.

Conservation activities underway
None

Vascular Plants

Bird's-foot Violet

Viola pedata

Status assigned by COSEWIC
Endangered

COSEWIC reasons for status designation
A species found in rare oak savannah habitats with a highly restricted geographical range of only 5 occurrences. Populations have experienced significant declines.

Assessment date
May 2002

This plant was designated Threatened by COSEWIC in April 1990. It was re-examined and uplisted in May of 2002

Canadian range
Ontario

Applicable lands
None confirmed

Situation summary
The Bird's-foot Violet occurs in eastern North America from southern Ontario and New York south to Georgia and west to Minnesota and Texas. Canadian populations occur as isolated pockets separated from the main range of the species in the United States.

The Bird's-foot Violet is a perennial that occurs in an extremely restricted area of 1.5 km^2 in the Carolinian zone of southwestern Ontario. It is typically found in Black Oak savannahs where the soils are sandy, acidic and well drained. Occasional disturbance resulting from natural events

(such as fire or flood) or selective cutting is necessary to limit excessive shading from encroaching trees and shrubs.

In Canada, the violet is known from five populations: three occur on private land and two on public (provincial) land. In total, there are fewer than 7,000 Bird's-foot Violets, a decline of between 25 and 50% from 1991 to 2001.

Destruction of habitat caused by the expansion of agriculture and urban development has limited populations of the Bird's-foot Violet. The violet occurs in one of the most developed parts of the country, where the oak savannah habitat required by the species is rare. Competition from woody plants is also a problem. In the past, the savannahs inhabited by Bird's-foot Violets were often the scenes of fires, but as human control of fires increases, other species of plants are taking over the habitat. The largest remaining population of this violet occurs in a provincial park where inappropriate management has included unduly severe burns that resulted in the loss of plants. There has also been a loss of habitat within the park to invasive Scot's Pine and other shrubs, and violets near a picnic area were damaged by excessive mowing. Sites remaining on private property are likely to be lost to development in the near future. Other human activities that are detrimental to the Bird's-foot Violet include herbicide application, roadside erosion and all terrain vehicle use.

Conservation activities underway

This species is included in a multi-species recovery plan under RENEW (Recovery of Nationally Endangered Wildlife in Canada).

Coastal Scouler's Catchfly

Silene scouleri ssp. grandis

Status assigned by COSEWIC

Endangered

COSEWIC reasons for status designation

This is a species of highly restricted geographical occurrence in Canada with fewer than 350 plants comprising two remaining populations present on very small islands. Along with other historical population extirpations, a Vancouver Island population has recently been extirpated. These islands are located within an area of active shipping and recreational activities where invasive plants and human activities present on-going risks.

Assessment date

May 2003

Canadian range

British Columbia

Applicable lands

Department of Fisheries and Oceans

Situation summary

The Coastal Scouler's Catchfly is endemic to western coastal North America. It occurs from south of San Francisco Bay north to southeast Vancouver Island in British Columbia.

A habitat specialist, Coastal Scouler's Catchfly is restricted in Canada to areas in the lowland coastal Douglas Fir zone that are wet in winter and dry in summer. The Coastal Scouler's Catchfly prefers grassy openings on gently sloping sites along the coast, locally referred to as

maritime meadows. It is absent from shrub thickets and from patches of introduced robust grasses. Sites that formerly supported this perennial plant were probably burned frequently by First Nations communities seeking to improve camas production on adjacent uplands.

Of the approximately 12 populations of the Coastal Scouler's Catchfly that once occurred on southeast Vancouver Island and small adjacent islands, only two remain. Their combined total population is less than 350 plants. A third population on Vancouver Island has recently disappeared. It is possible that viable seeds persist in the soil of apparently lost sites where there continues to be suitable habitat.

Habitat destruction was the major cause of the decline of this species. Remaining populations are threatened by habitat degradation from invasive species, trampling, mowing, fire suppression, herbicides and oil pollution. Fire has been almost completely suppressed for several decades, favouring the growth of introduced shrubs and native woody species. The Coastal Scouler's Catchfly on the Trial Island Lightstation property is threatened by increasing foot traffic, introduced invasive plants, and trampling and grounds maintenance by the staff of the lighthouse, the radio-communications towers and associated facilities. Lack of management directed at the protection of this plant has been an issue for both the Alpha Islet and Little Trial Island populations. Kayakers frequently visit all three properties. In 2000, an escaped beach fire may have killed some plants. The heavy build-up of exotic shrubs and grasses provides fuel for fires of greater intensity than the light fires that benefit the catchfly, killing the plant caudices. The remaining populations are also at risk from potential marine pollution as the islands on which they occur are close to an extremely active oil-shipping lane. This plant has limited seed production.

Conservation activities underway
None

Eastern Prairie Fringed-orchid

Platanthera leucophae

Status assigned by COSEWIC
Endangered

COSEWIC reasons for status designation
This is a perennial species of scattered remnant wetland habitats and of mesic prairies that has undergone significant declines in population size and is at continued risk from further habitat change due to successional processes, land development, water table impacts and spread of invasive species.

Assessment date
May 2003

This orchid was first assessed in 1986 as Special Concern. It was re-examined and uplisted in May of 2003.

Canadian range
Ontario

Applicable lands
Environment Canada (National Wildlife Areas), Parks Canada Agency, Department of Indian Affairs and Northern Development

Situation summary

The Eastern Prairie Fringed-orchid once occurred from Maine west to southern Ontario and Wisconsin, south to Oklahoma and Louisiana and east to central Virginia and Pennsylvania. In addition to Ontario, it was once known to occur in 13 states but is now found in only 7.

The Eastern Prairie Fringed-orchid is a narrow habitat specialist adapted to fluctuating water levels. It usually occurs in fen and wet prairie habitats, both of which are now rare in southern Ontario. The orchid's population appears to undergo extreme fluctuations as plants remain dormant or vegetative in areas that are too wet or too dry, but the plants are perennials that can persist underground during unsuitable conditions. In fens, the changing water levels interrupt succession; which restarts when the shrubs are flooded out, die after excessive drying, or are burned. The same is true of some prairie sites where either drought or high water levels prevent succession from proceeding, thus perpetuating an intermediate successional stage suitable for the orchids. Populations in old fields usually last only a decade before being lost to successional habitat change.

The rarity of suitable habitats is a direct and indirect result of human activities, including urban development, agriculture and railroad and highway development. Changes in the water levels of wetlands and drainage of wetlands are the main limiting factor for the Eastern Prairie Fringed-orchid.

Despite the increased interest in this orchid that led to the finding of new sites in Ontario, the 34 formerly identified sites have diminished to 20 extant sites. Six sites were lost in the last 20 years. The current total population is estimated at approximately 1,000 plants. It has declined 8% in the last decade, and the decline is apparently continuing because of ongoing losses in habitat quantity and quality.

Contemporary agricultural land use is contributing to the loss of populations. During prolonged periods of low water levels, agriculture now extends onto lower ground than it did historically. With the return of a wet year, cropland is flooded, but the Eastern Prairie Fringed-orchid does not reappear because the natural habitat that once supported has been destroyed. Population decline has also been associated with the growth of woody plants and invasive alien species, such as Glossy Buckthorn and Purple Loosestrife, which are contributing to the loss of fen habitat. One of the most showy and popular orchids native to North America, the Eastern Prairie Fringed-orchid is also threatened by collecting for gardens, for both private and commercial use. This plant is considered Threatened in the United States where populations have also undergone severe declines.

Conservation activities underway

A recovery strategy and an action plan are under development and a habitat stewardship project is ongoing under RENEW (Recovery of Nationally Endangered Wildlife in Canada). Research and monitoring activities are ongoing.

Forked Three-awned Grass

Aristida basiramea

Status assigned by COSEWIC

Endangered

COSEWIC reasons for status designation

Few disjunct and fragmented populations found in very small habitats within populated areas subject to further habitat disruption and loss through activities such as sand extraction, recreational use and urban development.

Assessment date
November 2002

Canadian range
Ontario, Quebec

Applicable lands
Parks Canada Agency

Situation summary
The Forked Three-awned Grass is restricted to North America, with a primarily midwestern range. Outside this main range, five populations are known to occur in Canada, four of which are in Ontario (three in Simcoe County, one in Muskoka County) and one is in Quebec near Cazaville.

The Forked Three-awned Grass is an annual that inhabits dry, acidic, open sand barrens but can tend to more weedy, disturbed habitats, such as roadsides and pastures. This habitat specialist is apparently intolerant of competition from other plants and is unable to survive in areas of dense plant cover or shade. The four populations in Ontario all occur on low sand ridges or dunes on post-glacial shorelines. In Quebec, the Forked Three-awned Grass is found in disturbed sites within an urban area.

Fieldwork in 2001 revealed that more than 20,000 plants are distributed across the five known populations, with two populations accounting for the majority of those individuals. It is possible, however, that some new sites may still be found in the relatively small area where the plants are concentrated. No information on overall population trends is available, but one subpopulation is known to have expanded while another has been lost. The species probably has always been very rare in Canada and suitable habitat is declining. A population of more than 500 plants occurs in Georgian Bay Islands National Park.

The Forked Three-awned Grass is restricted to a habitat that is severely limited and fragmented, and is also subject to urban expansion, extraction of sand and use by all-terrain vehicles. Fire suppression and the planting of conifers is altering the nature of some of the existing sand barrens. Invasive species, especially Scot's Pine, may out-compete the Forked Three-awned Grass in some areas.

Conservation activities underway
None

Howell's Triteleia

Triteleia howelli

Status assigned by COSEWIC
Endangered

COSEWIC reasons for status designation
This is a geographically highly restricted species with a small population occurring at a few scattered sites within remnant Garry Oak habitats. It is located within a highly urbanized region with on-going risks to the species from such factors as habitat loss, habitat fragmentation and competition with invasive species.

Assessment date
May 2003

Canadian range
British Columbia

Applicable lands
None confirmed

Situation summary
The Howell's Triteleia ranges from southwestern British Columbia south through Washington and Oregon to northern California. In Canada it is known only from southeastern Vancouver Island.

A member of the lily family, Howell's Triteleia is a perennial herb that is a habitat specialist with highly restricted habitat requirements. It occurs only in a few scattered sites in remnant Garry Oak habitats on rock outcrops, in highly disturbed sites dominated by weeds and along roadsides. Historically, human activity has always heavily influenced Garry Oak communities and grass dominated meadows. The arrival of European settlers changed the nature of this activity, leading to the elimination of almost all Garry Oak communities found outside parks or ecological reserves.

There are 12 known sites of the Howell's Triteleia, 9 of which are still extant. Some of these populations are very small, consisting of only a few plants. The total population at all sites is approximately 700 mature individuals. The number of populations and their size have remained stable over the last six years.

The main threat is habitat destruction and fragmentation from urbanization, associated fire suppression and the invasion of introduced species such as Scotch Broom. Habitat loss and degradation limit potential dispersal. These factors have contributed to the formation of sufficiently small populations so that the remaining plants may be at risk of inbreeding depression, genetic drift and loss of genetic fitness, lowering the possibility of long-term survival for this species.

Conservation activities underway
None

Kellogg's Rush

Juncus kelloggii

Status assigned by COSEWIC
Endangered

COSEWIC reasons for status designation
This is a tiny, inconspicuous, annual species that likely numbers fewer than 600 plants. It occurs in a single, seasonally wet microhabitat that is subject to impacts from human recreational and developmental activities within an urban park located in a nationally rare Garry Oak habitat.

Assessment date
May 2003

Canadian range
British Columbia

Applicable lands
None

Situation summary

The Kellogg's Rush occurs sporadically in California, Oregon and Washington. The only known Canadian population is a disjunct northern outlier in British Columbia on southeastern Vancouver Island.

The Kellogg's Rush, an annual with drought tolerant seeds, requires seasonally wet depressions and vernal pools that are moist to wet in winter and spring and dry in summer. Suitable conditions usually occur in low spots in fields and meadows within Garry Oak habitat.

The Kellogg's Rush has not been the subject of extensive search efforts. It is a tiny, inconspicuous and often overlooked species that is easily confused with related species. It may exist at additional sites, but its overall range in Canada is likely to be extremely restricted. The total population at the known Canadian site is believed to number fewer than 600 plants and occupies an area of less than 25 m^2. This population has remained relatively stable over the 15-year period since it was found, but it undergoes extreme yearly fluctuations. Its size varies greatly depending on precipitation. Germination experiments conducted on closely allied species in this genus indicate that not all seeds germinate in the same year, suggesting that Kellogg's Rush seeds can survive unfavourable years. Considering its tiny size, highly restricted occurrence, and the fact that it shares its habitat with numerous other rare species, it has likely been in this location for a very long time.

Any activity altering the hydrological regime is a potential threat to this species. The only known population occurs in an open area of nationally rare Garry Oak habitat, in a municipal park that is heavily used by walkers and bicyclists and therefore threatened by trampling and park development. The municipality does not have a management plan for the Kellogg's Rush in the park and has been engaging in activities on and around the site that, if escalated, could threaten the population.

Conservation activities underway

None

Small-flowered Lipocarpha

Lipocarpha micrantha

Status assigned by COSEWIC

Endangered

COSEWIC reasons for status designation

A disjunct species occurring in only three sites with the largest population at risk from potentially significant habitat and population losses.

Assessment date

November 2002

This plant was designated Threatened by COSEWIC in April 1992. Its status was re-examined and uplisted to Endangered in November 2002.

Canadian range

British Columbia, Ontario

Applicable lands

Department of Indian Affairs and Northern Development

Situation summary

The Small-flowered Lipocarpha is fairly widely distributed, occurring from Brazil north throughout Central America, into Mexico and as far north as northwestern Ontario and eastwards to the coast of the United States. There are a number of disjunct populations — including in California, Florida, the Galapagos Islands and British Columbia. The Small-flowered Lipocarpha reaches its northern limit at locations near the international border in British Columbia, Ontario and Quebec.

The Small-flowered Lipocarpha is an annual plant that grows on exposed, wet, sandy shorelines in areas prone to flooding. It requires some protection from waves and strong currents and does not tolerate the presence of organic sediment. It appears to prefer fairly open sites, avoiding strong competition from other plant species.

The population in British Columbia is disjunct, while that in Ontario is at the northern extent of the main range of the population in the United States. The Quebec population, also disjunct, has not been documented since 1957 and is presumed to no longer exist. Only two populations of Small-flowered Lipocarpha could still be found in Canada in 2001, but a third site may also be extant. The first is a large population that has been known to exist at Lake Osoyoos in the Okanagan Valley of British Columbia since 1982. Favourable growing conditions and increased survey efforts yielded an estimate of 30,000 to 50,000 plants — the highest population estimate ever for this site. The second is a site first discovered in 1995 on Sable Island in Lake of the Woods, Ontario where approximately 1,800 plants were counted in 2001. At a third site, discovered at Pound Net Bay on Rainy Lake in Northern Ontario in 2000, 75 plants were found. The entire site was under water in 2001, but plants may germinate from the existing seed bank when conditions become favourable. The Small-flowered Lipocarpha is an annual and its numbers fluctuate widely with environmental conditions, making it very difficult to track population trends. The quality of the habitat at the former site at Holiday Beach in Essex County, Ontario, has deteriorated since water levels have been kept unnaturally high to enhance fall duck hunting. Small-flowered Lipocarphas were last reported at this site in 1987.

The greatest threats to this species are loss and degradation of habitat and manipulation of water levels. The Lake Osoyoos population is on Indian reserve land. In the past, the local band considered development plans that would have resulted in the loss of 70% of the remaining habitat. The habitat at both of the northwestern Ontario populations that are known or presumed extant could be destroyed by water level management. Recreational use of shoreline habitat and invasive plant species could also threaten habitat quality at these sites.

Conservation activities underway

A recovery strategy and action plan for the population that occurs in British Columbia are under development under RENEW (Recovery of Nationally Endangered Wildlife in Canada). A habitat stewardship project is ongoing in Ontario.

Small-flowered Sand-verbena

Tripterocalyx micranthus

Status assigned by COSEWIC

Endangered

COSEWIC reasons for status designation

An annual of a few widely dispersed sand hill habitats where populations occupy very small sites and consist of low numbers that fluctuate greatly with precipitation levels.

Assessment date

November 2002

This plant was designated Threatened by COSEWIC in April 1992. Its status was re-examined and uplisted to Endangered in November 2002.

Canadian range
Alberta, Saskatchewan

Applicable lands
Environment Canada (National Wildlife Area), Department of National Defence, Agriculture Canada

Situation summary
The Small-flowered Sand-verbena is a species of western North America that reaches the northern extent of its range in Western Canada. It is found in a very restricted area in the mixed-grass prairie region of Alberta and Saskatchewan. In southeastern Alberta, it occurs at multiple sites in the general area where the Bow, Oldman and South Saskatchewan rivers come together. In Saskatchewan, it has been found at only one site just east of the Alberta border where the South Saskatchewan River joins the Red Deer River.

The Small-flowered Sand-verbena is a habitat specialist that grows on sand-hill areas in very dry conditions and usually requires some drifting or unstable sand. The largest populations occur on fine, hard-packed sand on level ground, but it is also found on slopes or the ridge tops of dunes.

Population trends for the Small-flowered Sand-verbena are difficult to interpret. The abundance of this ephemeral annual species is heavily dependent on rainfall — when conditions are appropriate, the species germinates, flowers, sets seed and dies in a relatively short time. The extremely hardy seeds lay dormant awaiting suitable conditions for germination the following or subsequent spring when the cycle is repeated. Surveys of all known sites in 2001 revealed only two plants, whereas more than 3,000 were counted on similar surveys in 2002. Two new populations were discovered in Alberta in 2002 and one of the previously known populations is presumed to have been lost. No plants were found at the Saskatchewan site in either 2001 or 2002. The Small-flowered Sand-verbena occurs in Canadian Forces Base Suffield National Wildlife Area in Alberta.

Dune stabilization has resulted in a dramatic loss of habitat for the Small-flowered Sand-verbena throughout its range in Canada. The little suitable habitat that is left continues to decline. The absence of fire and the decreased grazing of prairie areas have resulted in less drifting or unstable sand, allowing the establishment of other species on the dunes — including alien invasive weeds. The cultivation of areas surrounding existing populations of the Small-flowered Sand-verbena also decreases the opportunities for it to spread naturally. One of the sites with the largest number of plants in 2002 is currently threatened by sand removal and levelling of the main dune area.

Conservation activities underway
A recovery strategy is under development under RENEW (Recovery of Nationally Endangered Wildlife in Canada).

Streambank Lupine

Lupinus rivularis

Status assigned by COSEWIC
Endangered

COSEWIC reasons for status designation

A highly restricted species with very few populations extant and extremely low numbers of plants remaining. Populations are all close to industrial and other development and at risk from impacts such as habitat loss, herbicide spraying, predation by exotic slugs and subject to genetic swamping through hybridization with a non-native lupine species.

Assessment date

November 2002

Canadian range

British Columbia

Applicable lands

None confirmed

Situation summary

Globally, the Streambank Lupine is found only along the Pacific Coast of North America, from northwestern California to southwestern British Columbia. In Canada, there are six known populations in the southwestern corner of British Columbia: five are in the lower Fraser Valley and one is on Vancouver Island.

The Streambank Lupine is a perennial plant and a habitat specialist. It generally occurs along riverbanks in sites with little ground cover, but it can grow under trees where there is sufficient light penetration. Before the building of dykes, these riverbank sites would have flooded regularly, creating suitable habitat. The lupine prefers sandy or gravelly soil at low elevations close to the coast, where there is little competition from other plants. It can also occur along railway tracks.

The Streambank Lupine is believed to have always been rare in Canada, but it was likely more widespread along the Fraser Valley before industrial development of the region. It occurs in a restricted area. The size of each of the six naturally occurring populations in British Columbia ranges from 1 to 100 plants. Trend information is not available, but the Streambank Lupine is known to have suffered extensive habitat alteration and loss.

With industrial development, dykes built along the coastal stretch of the Fraser riverbank may have left Streambank Lupine populations too dry to prosper. Most extant populations persist in artificially created habitats where disturbances are common. Maintenance work along the dykes and railway lines where the lupine still occurs, including herbicide spraying and mowing, may kill mature plants.

Hybridization with the invasive Yellow Bush Lupine, *Lupinus arboreous*, is a serious threat to the Streambank Lupine because it can result in genetic swamping (the genes of one species are overwhelmed by the genes of the other). Wildflower seed packets sold in British Columbia often contain Streambank Lupine seeds. Such Streambank Lupine seeds are likely to originate from California; and so have a higher probability of being from plants that have hybridized with Yellow Bush Lupine. The spread of these hybrids and of Yellow Bush Lupine itself could lead to the eradication of the Streambank Lupine. The destruction of seedlings by non-native slugs, such as the European Furrowed Slug and the picking of flowers by people also pose a threat to this species.

Conservation activities underway

None

Mosses

Margined Streamside Moss

Scouleria marginata

Status assigned by COSEWIC
Endangered

COSEWIC reasons for status designation
This moss is a large, showy species that occurs just above water's edge along small montane streams. A rare North American endemic, its northern-most and single occurrence in Canada is in southern British Columbia. Although the species was not relocated at this station in recent surveys, the species may be present in nearby watersheds.

Assessment date
November 2002

Canadian range
British Columbia

Applicable lands
None confirmed

Situation summary
Globally, the Margined Streamside Moss is restricted to the Pacific Northwest in North America. The only population known to occur in Canada is in the Kootenay region of British Columbia near the border with the United States.

The Margined Streamside Moss is a rare endemic that is patchily distributed throughout its range. It is a habitat specialist that grows on wet rocks, particularly granite, just above the water's edge along small montane streams. It requires cool clean water and may grow in exposed or submerged situations. It can occur at a range of elevations. The population found in southern British Columbia was on wet rocks at an elevation of 1,300 metres.

It is difficult to distinguish this moss in the field from Blackmat Splashzone Moss *Scouleria acquatica*, a closely related but more common species that occupies the same habitat. The Margined Streamside Moss was collected only once in Canada in 1997, hence no information is available on its population size or trends. The moss has not been found at the original site since its discovery. As the area has been heavily disturbed, it is possible that the species is no longer present at this location. However, apparently suitable habitat occurs in the vicinity, but has not been searched because of difficult access.

Flooding, access of cattle to streambanks and sedimentation are potential threats to the Margined Streamside Moss. In particular, deposits of silt on boulders in streams interfere with the establishment of the moss.

Conservation activities underway
None

Silver Hair Moss

Fabronia pusilla

Status assigned by COSEWIC
Endangered

COSEWIC reasons for status designation
Silver Hair Moss is a small species that typically grows among other mosses as an epiphyte on trees. In Canada, it is known from two locations: one that is now submerged and a second associated with a cliff in southwestern British Columbia. The latter is the northernmost location for this species. Although the species was not relocated at its extant site during recent surveys, the expanse of available habitat at the only known sites combined with small stature of the moss, suggest that the species may still be present in Canada.

Assessment date
November 2002

Canadian range
British Columbia

Applicable lands
None confirmed

Situation summary
Globally, the Silver Hair Moss is found in western North America, western Europe and northern Africa — principally in Mediterranean-type climates. In Canada, it is at the northern limit of its distribution and has only been found at two sites in British Columbia: near Lower Arrow Lake in the Kootenay Valley and on Sumas Mountain east of Abbotsford.

The Silver Hair Moss grows on semi-exposed rocks or on tree trunks. Both of the known sites in British Columbia have hot summers and cool to cold winters. The small size of the Silver Hair Moss, its habit of growing intermixed with other larger mosses and the inaccessibility of much of its potential habitat in British Columbia make the Silver Hair Moss difficult to find during field surveys.

The Arrow Lake site has been submerged behind a dam and the Silver Hair Moss has not been collected from that area since the late 1800s. It was collected from the Abbotsford site in 1968, but was not found during three excursions to this site in 2001. Because the habitat appears to be stable and is not currently threatened, the moss may persist at this site.

Although the Silver Hair Moss is relatively widespread in the southern portions of its range in the United States, it becomes less common northward. The British Columbia population may be a relict from a drier, oak-dominated ecosystem that was present in southern British Columbia some 6,000 to 7,000 years ago.

Conservation activities underway
None

Spoon-leaved Moss

Bryoandersonia illecebra

Status assigned by COSEWIC
Endangered

COSEWIC reasons for status designation
This species is endemic to eastern North America. The species reaches its northernmost limit in southern Ontario where it is known presently from only three locations and covers an area of less than 14 meters². Although previously recorded from an additional five sites in Canada, the species was not relocated in recent field studies. The species grows in humid deciduous woods and does not disperse easily. In Canada, it occurs in woodlots that are severely fragmented by intense urbanization and agriculture. The status of this species is based on a small number of locations, very small population size and decline in the quality and quantity of forest habitat.

Assessment date
May 2003

Canadian range
Ontario

Applicable lands
None confirmed

Situation summary
The Spoon-leaved Moss is a large, easily identified moss that is endemic to eastern North America. The Carolinian zone of Southern Ontario marks its northernmost limit.

The Spoon-leaved Moss grows in humid deciduous woods and does not disperse easily. It prefers soil substrates, particularly on banks, but it sometimes occurs on rocks or tree bases. Canadian collections have come from a variety of forested habitats.

The moss is known to have occurred at eight locations in Ontario, but five of these appear to have been lost. It is extant at only three locations, all of which represent small populations and cover a combined area of less than 14 m^2. Because not all suitable habitat has been surveyed, the moss may exist at additional sites. This moss is dioecious (male and female reproductive parts occur on different plants), but all Canadian collections appear to be female with no sign of fruiting bodies.

In Canada, the Spoon-leaved Moss occurs in a very restricted area where high human populations, and intense urbanization and agriculture result in significant loss and fragmentation of forests inhabited by the moss. As the distances between moss populations increase, the opportunity for genetic exchange diminishes, and the moss' vulnerability increases. No specific threats have been identified, but this moss appears to be threatened by climate change, ecological succession, disturbance and habitat alteration. All these factors lead to a decline in the quality and quantity of forest habitat, and have resulted in the loss of some sites. Because the group of mosses to which the Spoon-leaved Moss belongs is known to be susceptible to atmospheric pollutants, the poor air quality of Southwestern Ontario may contribute to the loss of populations even where other factors appear ideal.

Conservation activities underway
None

Lichens

Boreal Felt Lichen, Atlantic population

Erioderma pedicellatum

Status assigned by COSEWIC
Endangered

COSEWIC reasons for status designation
A population restricted to regions with a cool, humid oceanic climate, highly sensitive to atmospheric pollutants such as acid precipitation. It has experienced a dramatic decline of over 90% in occurrences and individuals over the last two decades due, in particular, to air pollution and other sources of habitat loss and/or degradation. Extirpation of the few remaining individuals at three sites is imminent.

Assessment date
May 2002

Canadian range
New Brunswick, Nova Scotia

Applicable lands
None confirmed

Situation summary
The Boreal Felt Lichen is a globally rare, relict species. Its range once included Atlantic Canada and Europe (Sweden and Norway), but despite very intensive surveys over the past few years, it was not found at its last known sites in Norway and is now considered lost from Scandinavia and Europe. It is believed that the Boreal Felt Lichen now persists only in Canada where there are two disjunct populations: the Boreal population (on the island of Newfoundland) and the Atlantic population (of Nova Scotia and New Brunswick).

Typical habitat for the Boreal Felt Lichen consists of northerly exposed, forested slopes where cool and moist conditions prevail throughout most of the year. These mature forest sites are also rich in moisture-loving species such as sphagnum mosses and Cinnamon Fern. In well-lit forests, the Boreal Felt Lichen is found predominantly on tree trunks, most frequently on Balsam Fir, whereas in more shaded habitats it most often occurs on branches.

Most of the Atlantic population of the Boreal Felt Lichen has disappeared. The lichen persists at only three of the 47 locations where it is known to have occurred in New Brunswick and Nova Scotia. All three sites are in Halifax County, Nova Scotia and the entire Atlantic population now consists of only 13 individuals.

This lichen's rapid disappearance is largely due to habitat loss and degradation. It requires a cool, humid, oceanic climate and it is highly sensitive to air pollution and acid precipitation. Of all the lichens (which as a group are considered valuable indicators of air quality), the Boreal Felt Lichen is one of the most sensitive to air pollution. It is threatened by acid fog, acid rain, exhaust from pulp mills and other air pollutants. It has experienced a dramatic decline of over 90% over the past 20 years, which represent less than one generation for this lichen. The remaining Atlantic population is in imminent danger of disappearing.

The Boreal Felt Lichen is an ancient life form that lives symbiotically with a fungus that first evolved approximately 440 million years ago. The lichen is listed as critically endangered on the

Red List of Lichenized Fungi of the World. With a complex life cycle that is unique among lichens and as yet not fully understood, the evolutionary significance of this species is considerable.

Conservation activities underway
None

Threatened

Mammals

Grey Fox

Urocyon cinereoargenteus

Status assigned by COSEWIC
Threatened

COSEWIC reasons for status designation
The grey fox range in Canada is limited to small pockets in southern Ontario. It is accidental in Manitoba. Its woodland habitat has been reduced through human development. Some are caught accidentally in traps set for other species.

Assessment date
May 2002

The Grey Fox was designated by COSEWIC as Special Concern in April 1979. Its status was re-examined and uplisted to Threatened in May 2002.

Canadian range
Manitoba, Ontario

Applicable lands
None confirmed

Situation summary
The Grey Fox can be found from southern Canada to northern Colombia and Venezuela. In Canada, the populations of this primarily southern species are very small. The Grey Fox is currently thought to occur in two regions in Canada: the Rainy River District of Ontario (west of Lake Superior) west into southeastern Manitoba and the area from southeastern Ontario (Windsor) to southwestern Quebec (Sherbrooke). Breeding has been confirmed only on Pelee Island in southern Ontario. Foxes observed in the more westerly region may be individuals that have come across the border from the United States and may not be breeding in Canada.

Grey Foxes are able to climb trees and inhabit open forests and marshes. They make their dens in many different kinds of substrate (rock outcrops, hollow trees or logs, underground burrows dug by other animals, or piles of brush), but the dens are usually located in an area of dense brush fairly close to a water source. In spite of these habitat preferences, the species is considered a habitat generalist and often occurs on the outskirts of cities.

It impossible to estimate the number of individuals present in Canada because there is no

quantitative population study of the Grey Fox in this country. Grey Foxes were once abundant in eastern Canada, but they disappeared 300 years ago, before the arrival of European settlers. Since 1900, the species has gradually extended its range northward into the Great Lakes region of Canada and the United States, but there is no data after the 1940s that would support either a population increase or decline in Canada. The population on Pelee Island consists of approximately 60 individuals, with perhaps 12 to 15 breeding pairs. Between 1980 and 2000, typically fewer than 10 Grey Foxes a year were reported caught in traps set for Red Foxes in Ontario. The majority of Grey Fox habitat is likely on privately owned land, but the species is known to occur in the Fish Point Provincial Nature Reserve on Pelee Island, Ontario and is thought to be present in St. Lawrence Islands National Park, Ontario, and Whiteshell Provincial Park, Manitoba.

In the United States, the most important factor limiting Grey Fox populations is hunting and trapping by humans. In Canada, factors limiting the Grey Fox are not well understood. Few Grey Foxes are harvested, but the species reaches the northern limit of its range here, and climate, especially harsh winters, may be a limiting factor. Diseases, such as canine distemper and rabies, could be limiting in an outbreak situation. Deforestation, which is occurring in the regions this species occupies, reduces the availability of dense cover and the variety of habitats that the foxes require, and may therefore have a negative impact on the population. Neither predation (by eagles and large carnivores) nor competition (with Red Foxes and Coyotes) is thought to have a significant influence on population levels in Canada.

Conservation activities underway

A habitat stewardship project is ongoing under RENEW (Recovery of Nationally Endangered Wildlife in Canada).

Reptiles

Eastern Ribbonsnake, Atlantic population

Thamnophis sauritus

Status assigned by COSEWIC

Threatened

COSEWIC reasons for status designation

This ribbonsnake population is a small, isolated postglacial relic confined to a small area in Nova Scotia. As such, it is unique and susceptible to demographic and environmental fluctuations. In addition, shoreline development poses a threat.

Assessment date

May 2002

Canadian range

Nova Scotia

Applicable lands

Parks Canada Agency

Situation summary

The North American distribution of the Eastern Ribbonsnake extends from around the Great

Lakes east of Lake Michigan south to Florida. In Canada, there are two populations: the Great Lakes population of southern Ontario that is part of the main range of the species in the United States, and the separate Atlantic population in Nova Scotia. The latter is limited to three watersheds in the southern portion of the province. It is thought to be a relict from when a milder climate existed in North America approximately 5,000 years ago.

The Eastern Ribbonsnake is semi-aquatic. It is a habitat specialist that occurs along wetland margins, usually the edges of shallow ponds, streams, marshes, swamps, or bogs, where borders of dense vegetation provide cover. Abundant exposure to sunlight is also required. Upland areas adjacent to wetlands may be used for nesting.

Eastern Ribbonsnakes are rare in Nova Scotia. The Atlantic population is a relict occurring in a very restricted area at the northern edge of the species' range. In 1998, the Atlantic population was estimated at 1,000 to 3,000 individuals. Because no earlier population estimates exist, trends for this population are unknown.

The greatest threat to the Atlantic population of the Eastern Ribbon Snake is habitat loss due to an increase in lakeshore cottage development, combined with increased predation by house cats. A general decline in amphibian prey, collecting, accidental death on roads and natural predation may also threaten the population.

The Eastern Ribbonsnake occurs in Kejimkujik National Park.

Conservation activities underway

Research and monitoring activities are ongoing.

Great Basin Gophersnake

Pituophis catenifer deserticola

Status assigned by COSEWIC

Threatened

COSEWIC reasons for status designation

There has been a significant loss of habitat as more agricultural land is converted from range land and shrub-steppe to orchards, vineyards and houses. There has been increased mortality through intentional and accidental killings in agricultural areas. Increasing numbers of roads and traffic also increase mortality rates.

Assessment date

May 2002

Canadian range

British Columbia

Applicable lands

Environment Canada (Migratory Bird Sanctuary, National Wildlife Area), Department of Indian Affairs and Northern Development

Situation summary

The Great Basin Gophersnake is distributed throughout the western United States and reaches its northern limit in southcentral British Columbia.

Canadian populations inhabit grasslands, shrub steppes and open forests where summers are hot and dry and winters are comparatively mild with little snow. In the United States, studies in

Utah revealed that the Great Basin Gophersnake typically uses the abandoned burrows of mammals as nesting sites. These sites usually are on south-facing slopes with no perennial vegetation.

The Great Basin Gophersnake occurs at low densities in British Columbia. There are five separate populations in the interior of the province, four of which are connected to populations south of the Canada-United States border. The most northerly population however, has become completely isolated from the remainder of the range. There are no population trends or estimates available for the Great Basin Gophersnake, and the British Columbia Conservation Data Centre has fewer than 100 occurrences on record. Females do not reproduce every year and have a low reproductive rate. Hatchlings are probably subject to high winter mortality. Because of these characteristics, the Great Basin Gophersnake likely recovers slowly from declines.

Continuing degradation and loss of habitat are the most important factors causing the decline of the Great Basin Gophersnake. Suitable habitat, present in only a very small area in the province, is being rapidly destroyed as rangeland and shrub-steppe are converted to houses, orchards and vineyards, with a concomitant increase in paved roads and traffic. This situation leads to substantial mortality from inadvertent road kills and purposeful killing. Human persecution is exacerbated by this species' superficial resemblance to rattlesnakes.

Conservation activities underway

A recovery strategy and action plan are in development under RENEW (Recovery of Nationally Endangered Wildlife in Canada).

Massasauga

Sistrurus catenatus

Status assigned by COSEWIC

Threatened

COSEWIC reasons for status designation

The Massasauga has undergone a large decline in distribution and abundance because of persecution by humans, mortality on the expanding road system in southern Ontario, loss of habitat via drainage of wetlands and destruction of hibernacula and fragmentation of habitat by roads. Recent efforts by the Recovery Team have reduced persecution by people, but expanding road systems and cottage and urban development continue to reduce the range and abundance of this species.

Assessment date

November 2002

This assessment confirms the previous designation of Threatened assigned by COSEWIC in April 1991.

Canadian range

Ontario

Applicable lands

Environment Canada (Migratory Bird Sanctuaries, National Wildlife Areas), Parks Canada Agency, Department of Indian Affairs and Northern Development

Situation summary

The Massasauga ranges from Texas through the midwestern United States to the Great Lakes

Basin. In Canada, the Massasauga occurs in four disjunct locations in Ontario at the northern edge of its range. Two of these locations are in central Ontario and the other two in the southern part of the province. Massasaugas occur within the boundaries of two national parks (Georgian Bay Islands and Bruce Peninsula) and in a National Wildlife Area.

Across the Massasauga's range, its habitat varies from wet prairies, sedge meadows and peatlands, to old fields, bedrock barrens and coniferous forests. However each of these habitat types offers similar habitat components that meet the snake's needs for: cover from predators, access to basking sites, and hibernacula. Sufficient moisture is apparently key to surviving the winter, and the hibernacula of Massasaugas are often associated with wetlands or small, wet depressions in the terrain.

Populations of the Massasauga are declining. The total Ontario population (all four disjunct populations combined) is estimated at 18,000 to 32,000 snakes. Less than 100 individuals are judged to be living in each of the two very small southwestern Ontario populations, one of which occurs in an area near Windsor and the other in the Wainfleet Bog on the northeast shore of Lake Erie. Historical evidence suggests that these two populations were once continuous. The current small numbers of Massasaugas in these two populations make them vulnerable to loss as a result of a stochastic event. They may not be viable over the long term. Two larger populations occur in central Ontario, along the eastern shores of Georgian Bay and on the Bruce Peninsula. The relative size of the four extant populations roughly parallels the quantity of habitat existing at each site. The quantity and quality of habitat remaining at all four sites has been declining since 1991.

The Massasauga's situation is aggravated by its low reproductive capacity. The greatest threats to the snake are loss of habitat to development, the drainage of wetlands, the destruction of hibernacula and the fragmentation of its habitat by roads. Increased development also results in an increase in the number of snakes accidentally killed on roads. Active persecution by humans is another significant threat to Massasaugas in Canada. Severe habitat fragmentation and degradation continue, and if unchecked, are likely to cause further population declines.

Conservation activities underway

An update recovery strategy and action plan are under development and habitat stewardship projects are ongoing under RENEW (Recovery of Nationally Endangered Wildlife in Canada). Current recovery actions include education, conservation research and management.

Spiny Softshell

Apalone spinifera

Status assigned by COSEWIC

Threatened

COSEWIC reasons for status designation

Substantial habitat loss in the past has restricted the distribution of this species to a small part of its former range. Habitat degradation through development and recreation may be blocking access to nesting, hibernation, feeding and basking sites. Other potential threats include the partial or complete isolation of segments of the population by dams and other structures, the reduction of juvenile recruitment by high predation rates on nests and high mortality rates due to collisions with motor boats, trapping and incidental mortality from fisheries.

Assessment date

May 2002

This assessment confirms the previous designation of Threatened assigned by COSEWIC in

April 1991.

Canadian range
Ontario, Quebec

Applicable lands
Environment Canada (National Wildlife Areas), Parks Canada Agency

Situation summary
The Spiny Softshell occurs from the Great Lakes Basin south through the central and eastern United States to the Gulf of Mexico. It reaches the northern limit of its range in eastern Ontario and Quebec.

Spiny Softshells have been found in a variety of habitats, including marshy creeks, swift-flowing rivers, lakes, impoundments, bays, marshy lagoons, ditches and ponds near rivers. Common habitat features include a soft, sandy or muddy bottom, sandbars and mud flats and some aquatic vegetation. Habitat components that appear to be essential are sand or gravel nesting areas close to the water and relatively clear of vegetation, shallow, muddy or sandy areas to bury in, deep pools for hibernation, basking areas, and suitable habitat for crayfish and other food species. These habitat features may be distributed over a considerable area as long as the intervening habitat doesn't prevent the turtles from traveling between them.

The Spiny Softshell has undergone drastic declines since the 18th century. It was once much more widely distributed and occurred throughout the Great Lakes/ St. Lawrence watershed, from the upper St. Lawrence to lower Lake Huron. The range has contracted and the turtle now occurs in small, isolated areas throughout its range.

In Canada, the Spiny Softshell is currently restricted to two subpopulations. The first is located in the Ottawa River/St. Lawrence River/Richelieu River-Lake Champlain system, with the majority of individuals occurring in Lake Champlain. The second, much larger subpopulation is located in Lake St. Clair, Lake Erie (including major tributaries) and western Lake Ontario, with the majority of individuals in the Thames and Sydenham rivers and at two sites in Lake Erie. This southwestern Ontario subpopulation consists of approximately 800 to 1,000 individuals and has been relatively stable over the past five years. The generation time for the Spiny Softshell is more than 18 years, but in some areas, researchers have found very few individuals less than 5 years of age, indication that recruitment rates in some subpopulations are close to zero. This situation could lead to the collapse of those subpopulations. In Quebec, Spiny Softshells occur in small, isolated areas. There is no estimate for the Quebec population, but observations suggest that it is about 100 individuals.

Habitat loss is likely the most significant cause of the historic decline of the Spiny Softshell, but habitat degradation is now a more serious problem. Extensive bank stabilization and urban and agricultural development along shorelines can reduce access to critical basking and nesting areas and impede movement between habitat components. Environmental contamination and sewage are detrimental to these turtles and may be associated with high numbers of infertile eggs. Fluctuating water levels destroy eggs and lower reproductive success. Adults are at risk of injury or death from collisions with boats and may be captured during commercial or sport fishing. Spiny Softshells have hard-shelled eggs, and so can nest in dry, sandy areas unsuitable to other turtles but popular for recreation, as is the case with several of the largest remaining nesting sites. The recreational use of these areas causes nest disturbance and lowers the already poor nesting success. Human encroachment in the form of habitat fragmentation and recreation also leads to an increase in the populations of some predators, particularly raccoons, and gives them greater access to turtle nests. Egg mortality rates vary from site to site but can be very high, with racoons destroying 100% of the eggs in some areas. Egg predation has the potential of becoming a threat to the survival of the Spiny Softshell in Canada.

In Ontario, two nesting sites are on publicly owned land, affording the species some protection

from development; however, these two sites also experience the highest levels of recreational activity of all the Ontario nest sites.

Conservation activities underway

A recovery strategy and action plan are under development and the species is included in multi-species recovery planning under RENEW (Recovery of Nationally Endangered Wildlife in Canada). Habitat stewardship projects and research and monitoring activities are ongoing in Ontario and Quebec.

Stinkpot

Sternotherus odoratus

Status assigned by COSEWIC

Threatened

COSEWIC reasons for status designation

This species has disappeared over most of the southern half of its range and is vulnerable to shoreline development and increased mortality from outboard motors. The specific causes of this species' decline are unclear, but the species does not appear to do well in conjunction with increased anthropogenic activity.

Assessment date

November 2002

Canadian range

Ontario, Quebec

Applicable lands

Parks Canada Agency

Situation summary

The Stinkpot ranges from the southern United States north to Ontario and Quebec. In Canada, it is found mostly along the southern edge of the Canadian Shield. It has been reported at various locations close to the edges of Lake Huron, Lake Erie and Lake Ontario. The northernmost locations are in the Outaouais region of Quebec, just north of the Ottawa River.

Stinkpot turtles require shallow water with a slow current and a soft substrate. Nesting habitat is variable, but it must be close to the water and exposed to direct sunlight. The species is highly aquatic and rarely leaves the water except when females lay their eggs. Some females lay eggs on the open ground or dig shallow excavations in decaying vegetation or rotting wood. Nests have also been found in shallow gravel or rock crevices. Stinkpot turtles are extremely awkward on land and are very vulnerable to desiccation. Their home range varies from .05 ha to 155 hectares and is likely confined to a single body of water.

Stinkpot turtles are secretive and are not normally observed unless one deliberately searches for them. Typically, they are nocturnal, remaining buried in the mud or resting on the bottom during daylight hours. In Canada, females mature between eight and nine years of age. While nesting success and recruitment are very low, survival of adults is relatively high and the turtles are long-lived.

The limited data available indicate that the Stinkpot has disappeared from much of its original range in southern Ontario. It is currently confined primarily to the Georgian Bay area and to southeastern Ontario/southwestern Quebec. Within much of its current Canadian range, the

Stinkpot occurs in low numbers in scattered, fragmented localities. Between 1881 and 1997, 27 Ontario districts documented occurrences of Stinkpot turtles; however, 11 of these districts have had no sightings since 1984. Most of these districts were in southwestern Ontario, indicating an apparent loss of the Stinkpot from 40% of southwestern Ontario districts in the last 17 years.

The most significant threat to Stinkpots is habitat destruction resulting from agriculture and urbanization, primarily through wetland drainage, pollution and shoreline development. Extremely vulnerable to drought, Stinkpots can tolerate low water levels but not complete drainage and cannot easily escape drained areas as they desiccate rapidly when out of water. Drainage of Stinkpot hibernation sites has led to high mortality. Abnormally high water levels after the nesting season can drown eggs. Heavy motorboat traffic and intense fishing increase adult mortality rates.

Conservation activities underway

A Recovery strategy and action plan are under development and the species is included in multi-species recovery planning, under RENEW (Recovery of Nationally Endangered Wildlife in Canada). Research and monitoring activities and habitat stewardship are ongoing in Ontario and Quebec.

Molluscs

Dromedary Jumping-slug

Hemphillia dromedaryus

Status assigned by COSEWIC

Threatened

COSEWIC reasons for status designation

A rare mollusc found on Vancouver Island. All known sites are in old growth forest or in forests that contain old growth characteristics.

Assessment date

May 2003

Canadian range

British Columbia

Applicable lands

National Park

Situation summary

The Dromedary Jumping-slug is endemic to western North America. Its range extends from Vancouver Island south to the Cascade Range and Olympic Peninsula in western Washington. Confirmed Canadian records all date since 1999, but there is a record from the early 20th century referring to a large jumping-slug that was probably this species.

The Dromedary Jumping-slug's dependency on older forests has not been established, but all known sites are in old-growth forests or forests that contain old-growth characteristics. These sites are either on the wet, west coast of Vancouver Island or at elevations above 700 meters in

the southern interior of the island. Most sites contain abundant coarse woody debris, including large-diameter pieces; these pieces are thought to be important in providing refuge and egg-laying sites to the jumping-slug.

In British Columbia, the Dromedary Jumping-slug is known only from seven localities on southern and western Vancouver Island. One of these localities was recently found in Pacific Rim National Park Reserve. It is very possible that other sites will be found, but the extent of the search effort already undertaken in proportion to the number of sites identified indicates that the distribution is very patchy and that the jumping-slug occurs only in a restricted range. No information is available on population size and trends, but where the Dromedary Jumping-slug occurs, densities are usually very low, with only one to two individuals found at most sites.

All known threats are associated with habitat loss, fragmentation and degradation incurred by logging. While the jumping-slug may persist in some habitat remnants, the species' capacity to colonize isolated, unoccupied habitats is restricted. Isolated habitat patches from which the jumping-slug has disappeared are not likely to be repopulated through immigration. Habitat fragmentation leads to a restriction in gene flow, ultimately undermining the long-term viability of the species. Habitat fragmentation also allows greater access to the jumping-slug for predators that do not live in old-growth forests but make forays into them. Predators of slugs include invertebrates (such as carnivorous slugs, snail and beetles) and vertebrates (such as rodents or birds). The edge effect can also affect the jumping-slug's microhabitat by lessening the insulation from climatic extremes provided by the forest; changing the light levels, temperature and humidity of the forest floor. This leaves the Dromedary Jumping-slug more vulnerable to fluctuations in weather which could further compromise this species' viability. This slug may also be facing threats from predation or competition from exotic species, but more research is necessary to assess these threats.

Conservation activities underway
None.

Lepidopterans

Mormon Metalmark, Prairie population

Apodemia mormo

Status assigned by COSEWIC
Threatened

COSEWIC reasons for status designation
The Prairie population of this species is a small, northern outlier of a species whose main range occurs in the southwestern US. Known populations are not currently threatened by human activities and half the known sites are within the boundaries of a National Park. However, the total population is quite small, likely undergoes extreme fluctuations, is a habitat specialist and occurs in a highly restricted area, making it vulnerable to stochastic events.

Assessment date
May 2003

Canadian range
Saskatchewan

Applicable lands
Parks Canada Agency

Situation summary
The main range of the Mormon Metalmark is in the southwestern United States, with a number of different outlier populations to the north. One of these is the Prairie population which occurs within the current and the proposed boundaries of Grasslands National Park in southwestern Saskatchewan. It is considered part of a disjunct population extending into eastern Montana and North Dakota.

Adult Mormon Metalmarks live only 10 days and seldom move more than 50 meters. Across their range, the Mormon Metalmark lives in arid regions, making use of a variety of host plants; however, each population depends on only one or two particular plant species for nectar and for larval food. The limited movements of the adult Mormon Metalmark and its demands for a specific host are traits shared with other species of butterflies that are at risk, and contrasts with the lack of specific microhabitat needs and the extensive range of the individual adults of more widespread butterfly species.

Likely limited by climate, in Saskatchewan the Mormon Metalmark is at the northern edge of its range. The range does not appear to have contracted, but the distribution of host plants appears to limit the butterfly within this range, although there is suitable habitat that is unoccupied. The population size is unknown, but is believed to be between 200 and 1,000 mature individuals. It is likely that it undergoes extreme fluctuations; however, the population appears stable over the long term. All known populations occur within a highly restricted area of the current or proposed boundaries of Grasslands National Park, making it vulnerable to stochastic events. The larval host plant, Fewflower Buckwheat, may be threatened by cattle grazing in three southern colonies found in 2002 in pastureland belonging to ranchers. This problem was only observed where grazing was heavy. In other areas where there was an abundance of grass, grazing of Fewflower Buckwheat was not a problem.

Conservation activities underway
Research and monitoring activities are ongoing.

Vascular Plants

Common Hoptree

Ptelea trifoliata

Status assigned by COSEWIC
Threatened

COSEWIC reasons for status designation
A species of restricted range in Canada and small population size occurring primarily along sandy shoreline habitats. It has experienced substantial losses at some sites from cottage land development, damage to habitats by increasing numbers of nesting cormorants and other unknown factors. A newly recognized potential threat of unknown impact is posed by a recently discovered twig-boring beetle, which is causing damage to flowers and large portions of the tree crown.

Assessment date
November 2002

The Common Hoptree was previously designated Special Concern in April 1984.

Canadian range
Ontario

Applicable lands
Parks Canada Agency

Situation summary
The Common Hoptree occurs in North America from the Great Lakes Basin to Florida. In Canada, it is restricted to extreme southern Ontario and grows primarily along the shore of Lake Erie.

In Canada, the Common Hoptree, a habitat specialist, grows in sandy soils in areas with a lot of natural disturbance — such as the outer edge of shoreline vegetation, sand spits and sand points — and is intolerant of shade. It occurs in areas with a long growing season where the climate is moderated by Lake Erie.

There are an estimated 875 to 1,025 mature individuals (and additional seedlings and saplings) of the Common Hoptree in Canada. Surveys done in Ontario from 2000 to 2002 catalogued 34 sites. Although three sites known from 1982 no longer exist, four new ones were recorded. These new sites were likely overlooked in the past rather than representing recently established populations. For the 17 sites with data from both 1982 and the 2000 to 2002 survey, 6 populations declined and 11 were stable or increasing. There is evidence of on-going reproduction, but the overall trend appears to be a decline.

Occurring in an area of high human density, the Common Hoptree is threatened mainly by loss of habitat (primarily through cottage development), replacement of indigenous vegetation by cultivated plants, intensive beach grooming and the construction of seawalls and other structures. Increasing numbers of nesting cormorants have incurred significant damage to the Common Hoptree at one site, as accumulations of cormorant droppings damage vegetation. The cormorant population explosion is connected to a number of human activities, including the over-harvesting of predatory fish, that increases the abundance of prey fish. A twig-boring beetle has recently been observed causing significant damage in a few Hoptree populations.

The Common Hoptree has a long history of medicinal and economic use, including by Aboriginal people. This species has a significant role in stabilizing vegetation along sections of the Lake Erie shoreline. It is also significant as one of two native species on which the larvae of the rare Giant Swallowtail Butterfly feed.

Conservation activities underway
This species is included in multi-species recovery planning and an ongoing habitat stewardship project under RENEW (Recovery of Nationally Endangered Wildlife in Canada). This species will be included in the Eastern Prickly Pear Cactus - Lake Erie Sand Spit Savannas Recovery Strategy.

Crooked-stem Aster

Symphyotrichum prenanthoides

Status assigned by COSEWIC
Threatened

COSEWIC reasons for status designation
A species of restricted geographical range and small population size occupying few scattered forested edges of streams with potential risks of habitat disturbance and losses from roadside maintenance.

Assessment date
May 2002

The Crooked-stem Aster was previously designated Special Concern in April 1999.

Canadian range
Ontario

Applicable lands
None confirmed

Situation summary
In the United States, the Crooked-stem Aster occurs naturally from the Great Lakes Basin south to Tennessee and North Carolina. In Canada, the aster is restricted to southwestern Ontario, where it has been found only in Elgin County (multiple populations) and in Halimand-Norfolk Regional Municipality and Oxford County (one population each). A Middlesex County population apparently no longer exists.

The Crooked-stem Aster grows along the banks of streams and creeks draining into northern Lake Erie. It prefers rich, sandy, loamy soil and is usually found at the edge of woods in partial to full shade.

Twenty-two existing populations of the aster are known, most of them averaging about 20 shoots each. The actual number of plants may be lower because this is a clonal species and multiple shoots may arise from one root. No information on population trends is available for this species in Ontario, but considerable suitable habitat has been lost in the province and the Crooked-stem Aster has likely undergone historic declines.

The shaded banks of streams and creeks in wooded areas that are home to most populations of the Crooked-stem Aster are unsuitable for agriculture. While the plants are not directly threatened by farming, they are vulnerable to the cutting of trees for wood. Populations along roadsides are threatened by habitat modification and loss from road maintenance, and construction or agricultural activities on adjacent properties. Significant modifications to stream and river courses, the cutting of woodlots and housing construction, may be the most critical forms of habitat loss for this species.

Conservation activities underway
None

Lakeside Daisy

Hymenoxys herbacea

Status assigned by COSEWIC
Threatened

COSEWIC reasons for status designation
A Great Lakes endemic of global importance, geographically restricted to two shoreline regions of very restricted and provincially rare alvar habitats with large populations subject to risks from natural herbivores and increasing recreational use of its habitat.

Assessment date
May 2002

Canadian Range
Ontario

Applicable lands
Parks Canada Agency

Situation summary
The Lakeside Daisy is a rare endemic of the Great Lakes region with 95% of its global range in Canada. Thirty-eight populations are currently known from two large, relatively undisturbed regions in Ontario, the Bruce Peninsula and southern Manitoulin Island.

With narrow ecological tolerances, this perennial is predominantly found in globally rare alvars. These sparsely vegetated habitats are characteristically flat, receive a high amount of sunlight and have sparse soil over dolomite or limestone bedrock. Lakeside Daisies grow mostly in cracks in the limestone or on tufts of low-growing vegetation (such as mosses), but occasionally occur in grasslands and on cliffs. The habitat is wet in spring and fall and moderately dry in summer.

Although it occurs in a very restricted area, the Lakeside Daisy can be locally abundant. In 2000, the number of flowering adults per population ranged from 3 to an estimated 3,540,000. The total size of the extant Canadian population is probably not changing appreciably; however populations that have been monitored in the most heavily travelled locations are declining noticeably. There appear to be suitable unoccupied habitats within the species' geographic range. It is not known whether the absence of the Lakeside Daisy from these locations is due to the plant's poor ability to disperse or to environments that are unsuitable for its establishment.

Quarrying activity and cottage construction are rapidly reducing the amount of suitable habitat available on private property, while human traffic is adding to the damage incurred in public areas. Trampling of the plants on shoreline habitat and the conversion of alvar habitats into camping areas are examples of threats to the species. Alvar habitat is rare and may be experiencing increasing climatic stresses.

Conservation activities underway
Surveys were done in 1999 and 2000 to delineate the size and distribution of the population. Bruce Peninsula National Park has an active interpretation program to inform park visitors about species at risk in the park.

Lemmon's Holly Fern

Polystichum lemmonii

Status assigned by COSEWIC
Threatened

COSEWIC reasons for status designation
This species consists of a single small population occurring within a geographically highly restricted area of specialized habitat. The habitat consists of shallow soils over serpentine bedrock high in heavy metals. The population is considerably disjunct from other such populations in the adjoining state to the south and occurs in an area potentially subject to mineral extraction.

Assessment date
May 2003

Canadian range
British Columbia

Applicable lands
None confirmed

Situation summary
Endemic to western North America, the Lemmon's Holly Fern occurs sporadically from south-central British Columbia south to Washington and Oregon, with its main range in Southern Oregon and Northern California. In Canada, a single population is known from the Baldy Mountain area on the eastern side of the Okanagan Valley, in British Columbia. It is a highly disjunct northern outlier.

This perennial fern is a habitat specialist that requires shallow soil over ferromagnesian or ultramafic rock outcrops.

In Canada, the Lemmon's Holly Fern occurs in a very restricted area at the extreme northern edge of the species' range. This population of 853 plants (approximately 30% of which are young vigorous plants) is spread over two adjacent rocky ridges, and has been stable over the last 15 years. The Lemmon's Holly Fern is capable of spore production, but there is no sign of sexual reproduction occurring in the Canadian population. Instead, clones are formed vegetatively by subterranean rhizome elongation. The soil at the British Columbia site is dry, sandy to gravelly, and rapidly drained, conditions that are not favourable to spore production or gamete fertilization.

There are no imminent threats to this population. The most serious potential threats are mineral extraction and quarrying for gravel for road construction, which could destroy the rock outcrops to which the fern is restricted. Because of its small, extremely restricted range, the fern is also vulnerable to stochastic events.

Conservation activities underway
None

Van Brunt's Jacob's Ladder

Polemonium vanbruntiae

Status assigned by COSEWIC
Threatened

COSEWIC reasons for status designation
Few extant populations occupying very small habitats at risk from agricultural impacts, logging and other development pressures and recreational activities.

Assessment date
November 2002

Van Brunt's Jacob's ladder was first designated Threatened by COSEWIC in April 1994.

Canadian Range
Quebec

Applicable Lands
None confirmed

Situation summary
The Van Brunt's Jacob's-ladder grows in the central Appalachians of eastern North America. It is rare, sporadic, and limited to a relatively small area that extends from eastern West Virginia to southeastern Quebec, where it reaches its northern limit. It is also known from one historic site in New Brunswick, but there is some speculation that this population may have been introduced. All other known Canadian populations (past and present) occur in a restricted area in the Eastern Townships and the Bois Francs region of southeastern Quebec.

The Van Brunt's Jacob's-ladder grows in rich soil in open or semi-open habitat that floods in the spring but does not have standing water all summer. It has specific moisture requirements; it cannot tolerate changes that prolong spring flooding or cause the habitat to become too dry. This type of habitat is found in riparian meadows, swamps or non-wooded depressions that are often at the bottom of slopes or near streams. Grassy clearings that are too wet for large trees are also suitable. Most populations are associated with a variety of common and invasive grasses. The Van Brunt's Jacob's-ladder does not usually spread well in areas where competition is very strong. It is able to adapt to some change however, and can colonize roadside ditches and agricultural fields where suitable conditions exist.

Large populations of the Van Brunt's Jacob's-ladder occur at a number of sites, but it has undoubtedly undergone population declines in the past and may still be declining. In 2001, an estimated total of 20,000 plants were growing in 12 populations within eight general areas. Two of these were new populations discovered in previously unexplored sites. Two previously known populations have disappeared. Additional populations may still be discovered, but such discoveries are unlikely to change significantly the species' overall range or situation. All populations of this plant in Canada are on privately owned land. In 2001, the Quebec Society for Wetland Conservation, a private organization, purchased an important site for the Van Brunt's Jacob's-ladder and negotiations are under way to acquire a second property.

The greatest threats to the Van Brunt's Jacob's-ladder are continued habitat degradation and loss, particularly from agriculture, logging, modification of road infrastructure and residential construction (and drainage associated with these activities). Other threats include mowing, ploughing, the cultivation of Christmas trees and all-terrain vehicle traffic.

Conservation activities underway:

None

Western Spiderwort

Tradescantia occidentalis

Status assigned by COSEWIC
Threatened

COSEWIC reasons for status designation
A perennial restricted to four disjunct sand dune habitats where the species is at risk from invading leafy spurge, cattle grazing and dune stabilization.

Assessment date
November 2002

Western Spiderwort was first designated Threatened by COSEWIC in April 1992.

Canadian Range
Alberta, Saskatchewan, Manitoba

Applicable Lands
None confirmed

Situation summary
The Western Spiderwort is distributed in the central United States from Texas, New Mexico and Arizona north to Montana and the Dakotas. It reaches the northern limit of its range in Canada where it occurs at only four sites in the southern part of the Prairies: Pakowki Lake Sand Hills in southeastern Alberta, Douglas Provincial Park in Saskatchewan and Lauder and Routledge Sand Hills in southwestern Manitoba.

Limited by climate and the availability of suitable sites, the Western Spiderwort is a habitat specialist that is restricted to partly stabilized sand dune ridges. It usually prefers the crests and steeper south-facing slopes and is typically associated with areas of active, drifting sand where vegetation is relatively sparse. It has also been known to grow in meadows and in shaded habitat, especially in grazed areas.

At the four Canadian sites there are five disjunct populations, three of which are large. Surveys from 1996 to 2002 indicate that the Western Spiderwort population in Canada has fluctuated from a low of about 15,000 to a high of about 50,000 plants, the majority of which occur in Manitoba. The large fluctuations in numbers reflect variations in precipitation. At the Alberta site, 7,450 plants were counted after a high spring rainfall in 2002; only 7 plants were found at the same site during the drought of 2001.

Loss of habitat is the main factor in the decline of Western Spiderwort populations. The historical conversion of native prairie into agricultural lands greatly decreased the amount of suitable habitat for the species, as have fire suppression policies, first implemented in the early 20th century. Fire suppression has led to excessive vegetation that causes shading and stabilizes dune slopes, resulting in a habitat that is unsuitable for Western Spiderwort. Moderate cattle grazing can offset the effects of dune stabilization by preventing the encroachment of vegetation, but overgrazing can be harmful to the plant. Dune stabilization may lead to the elimination of the Pakowki Lake Sand Hills population of the Western Spiderwort.

The alien Leafy Spurge is a potential threat. Although no ill effects have been reported yet, this invasive plant spreads very quickly into spiderwort habitat, and forms dense stands that exclude other plants. Other potential threats include human activities that lead to the destruction of the ecologically sensitive dune habitats, such as sand and gravel excavation, oil exploration, recreational activities that result in the trampling of plants and the use of off-road vehicles. Transplanting of Western Spiderworts into gardens is also a problem.

Conservation activities underway:

A recovery strategy is under development and habitat stewardship projects are ongoing under RENEW (Recovery of Nationally Endangered Wildlife in Canada).

White Wood Aster

Eurybia divaricata

Status assigned by COSEWIC
Threatened

COSEWIC reasons for status designation
Geographically restricted and fragmented populations at risk from continued habitat loss, invasive

species, deer browsing and recreational activities impacting populations along trails.

Assessment date
November 2002

White Wood Aster was first designated Threatened by COSEWIC in April 1995.

Canadian range
Ontario, Quebec

Applicable lands
Environment Canada (Migratory Bird Sanctuary), Department of National Defence

Situation summary
The White Wood Aster is generally common throughout its main range in the Appalachian Mountains of the United States. In Canada, the aster reaches the northern extent of its range and occurs as scattered populations in a small, restricted area in southern Ontario and in extreme southwestern Quebec. In Ontario, two populations of the White Wood Aster occur in Shorthills Provincial Park, two are in conservation areas and two are located in Areas of Natural and Scientific Interest (ANSIs). One of the ANSIs is privately owned and part of the other is on Department of National Defence property. In Quebec, all populations are on private land, with the exception of one that occurs in the Philipsburg Migratory Bird Sanctuary.

The White Wood Aster is a plant of open, dry, deciduous forests. It has been suggested that it may benefit from some disturbance as it often grows along trails. The forests where it occurs in Ontario are dominated by Sugar Maple or American Beech, but also contain Red, White and Black Oak, Shagbark Hickory and Basswood. The mean daily temperature in the aster's Canadian range remains above zero from April through November.

Fieldwork in the fall of 2002 brought the total number of known populations of White Wood Aster in the Niagara region of Ontario up to fifteen — an increase from the 8 reported in 2000. This increase likely reflects increased search effort rather than representing newly established populations. There are 10 records of the plant growing in Quebec, but these populations have not been monitored and it is not known how many are still extant.

The greatest threat to the White Wood Aster is habitat loss. Part of one population was lost when a peach orchard was planted, and the remainder is vulnerable should the orchard be expanded. Populations within protected areas are also vulnerable to trampling and erosion. The plants in two populations are potentially threatened by competition from Garlic Mustard, an invasive alien plant that has become common in the wooded areas inhabited by White Wood Aster. Current high deer populations in southern Ontario are a potential threat as preferential browsing on the White Wood Aster by deer has been noted in the United States.

Conservation activities underway
A recovery strategy is under development and stewardship projects in Quebec are ongoing under RENEW (Recovery of Nationally Endangered Wildlife in Canada).

Wild Hyacinth

Camassia scilloides

Status assigned by COSEWIC
Threatened

COSEWIC reasons for status designation

This species is present at only 6 island sites within a highly restricted and limited habitat subject to significant risks from cormorants and continued land development.

Assessment date

May 2002

Wild Hyacinth was first designated Special Concern by COSEWIC in April 1990.

Canadian Range

Ontario

Applicable Lands

Parks Canada Agency

Situation summary

The Wild Hyacinth ranges from the southwestern United States through the Mississippi valley to the Great Lakes basin. It reaches the extreme northern edge of its range on the Lake Erie islands in Ontario. The Middle Island (in Lake Erie) population is on land managed by Point Pelee National Park, but it is seriously threatened by nesting cormorants. Other populations occur on lands that belong to the Ontario Ministry of Natural Resources or the Essex Regional Conservation Authority.

The Wild Hyacinth grows in deciduous forests and hawthorn scrub where soil is rich in organic matter but where limestone bedrock is close to the surface. It needs a long growing season as well as a hot climate that is humid during spring and dry in summer.

There are currently six known populations of Wild Hyacinth in Canada. Estimates in 1998 and 2001 revealed that five of these populations are large — each contains between 2,000 and 5,000 or more individuals — and are apparently stable. A sixth population has been reduced to 15% of its previous size. Two of three other populations that formerly occurred in Ontario were lost to housing developments. The total extant population of the Wild Hyacinth in Canada is approximately 21,200 plants.

The hyacinth is vulnerable to loss of habitat to housing and cottage development. One population has recently been lost and another significantly affected by large colonies of nesting cormorants. These cormorant colonies have increased dramatically in recent years and are having a direct impact on the habitat. The cormorants are killing much of the vegetation (including the trees where they nest) and their nutrient-rich guano supports a dense weed population. Invasive Garlic Mustard and Norway Maple are present at the largest site, increasing competition and canopy shading, conditions which will likely eventually have a severe impact on the Wild Hyacinth and other flora.

Conservation activities underway:

Research and monitoring activities are ongoing.

Willowleaf Aster

Symphyotrichum praealtum

Status assigned by COSEWIC

Threatened

COSEWIC reasons for status designation

This is a geographically highly restricted species that has undergone range contraction and

occurs mainly in fragmented remnant prairie habitats. There are few occurrences and on-going risks from further habitat and population losses due to presence primarily in urbanized centres.

Assessment date
May 2003

Canadian range
Ontario

Applicable lands
Department of Indian and Northern Affairs

Situation summary
The Willowleaf Aster is common in the midwestern United States and extends north to southwestern Ontario, where it is at the northern limit of its range.

Across its range, the Willowleaf Aster is found in thickets, meadows and prairies as well as in oak savannahs. It occurs mainly in fragmented, remnant prairie habitats, but it has also colonized railways, roadsides and old abandoned fields.

The range of this geographically highly restricted perennial has contracted. In Ontario, there are 12 known extant sites concentrated in two areas and an additional 1 to 5 sites from which the plant may have disappeared. The aster is locally common in the extant sites. Populations vary from 1 to more than 100 individuals, with the total Canadian population numbering several thousand. The aster reproduces by seeds but can also grow from root fragments.

With much of the Willowleaf Aster's typical prairie habitat lost or degraded, the species is now found primarily in a variety of open disturbed sites in highly populated, urbanized centres. The main threat to the Willlowleaf Aster is continued habitat degradation and destruction from industrial and urban development. There is also the on-going potential for loss of populations of roadside plants to road maintenance and from the conversion of remnant prairie to agricultural lands. Some of the existing sites are protected, but most occur on private land.

Conservation activities underway
Habitat stewardship projects are ongoing under RENEW (Recovery of Nationally Endangered Wildlife in Canada).

Special Concern

Mammals

Grizzly Bear, Northwestern population

Ursus arctos

Status assigned by COSEWIC
Special Concern

COSEWIC reasons for status designation

The grizzly bear's habitat is at risk from expanding industrial, residential and recreational developments. Habitat and population fragmentation are underway in the southern part of the bear's distribution. The life history characteristics of this bear make it particularly sensitive to human-caused mortality (including hunting, poaching, accidents and nuisance kills). Its behaviour frequently brings it into conflict with people, leading to increased mortality where human activities expand. It has disappeared from a substantial part of its historic range, but there are still over 26,000 grizzly bears in Canada. The grizzly bear's area of occupancy has not decreased substantially over the past 20 years. The future of several populations that are either completely or mostly isolated is highly uncertain and dependent on conservation.

Assessment date

May 2002

The species was considered a single unit and assigned a status of Not at Risk in April 1979. In April 1991, it was split into two populations (Prairie population and Northwestern population) and the Northwestern population was designated by COSEWIC as Special Concern in April 1991.

Canadian Range

Yukon, Northwest Territories, Nunavut, British Columbia, Alberta

Applicable Lands

Environment Canada (Migratory Bird Sanctuaries, National Wildlife Areas), Parks Canada Agency, Wildlife Management Boards, Department of Indian Affairs and Northern Development.

Situation summary

The Grizzly Bear (known as the Brown Bear in Europe) has an extensive Holarctic distribution. It occurs in Canada, the United States and at least 42 Eurasian countries, however many populations in Eurasia are isolated, small and endangered. In Canada, with the exception of a few isolated groups in southern British Columbia, the Grizzly Bear continues to persist as one essentially continuous population across Alberta, British Columbia, the Yukon, the Northwest Territories and Nunavut, but it is extirpated from the Prairies.

The considerable variations in the colour and size of Grizzly Bears across the North American range do not reflect taxonomic differences; geographic size variations reflect differences in the quantity and quality of available food.

Grizzly Bears are habitat generalists and can be found from sea level to high-elevation alpine environments. In Canada, they occupy habitats as diverse as temperate coastal rain forests, semi-desert arctic tundra, boreal forests and subalpine forests. To be suitable for Grizzly Bears, habitat must provide an adequate food supply, appropriate denning sites and isolation from human disturbance. The bears are opportunistically omnivorous. The contribution of vegetation to the diet of adult females has been estimated as ranging from 19% in coastal Alaska to 98% in Kluane National Park. Because the consumption of a variety of plants is very important for most Grizzly Bears, habitat associations are strongly seasonal and the bears' movements reflect food availability and vegetation phenology. In some mountainous areas, bears descend in the spring from high elevation dens to valley bottoms to feed on ungulate carcasses and early emergent plants. As the snow melts, they return to higher elevations following the developing vegetation. The size of the home range of Grizzly Bears tends to be inversely proportional to the quality of the habitat, with bears in temperate coastal areas tending to have small ranges while those in the drier and colder areas tending to have much larger ranges.

Population numbers compiled from provincial and territorial jurisdictions over 2001 / 2002 yielded an estimated total Canadian population of 26,916 to 29,150 Grizzly Bears. British Columbia has the largest population, with at least 14,000 bears. There are an estimated 1,000 Grizzly Bears in Alberta, 6,000 to 7,000 in the Yukon and 5,100 in the Northwest Territories. The population in Nunavut is unknown but is probably between 800 and 2,000 bears. Overall, the population of

Grizzly Bears in Canada is believed to have been generally stable since 1990. Although it still occupies a large range in western and northern Canada, the Grizzly Bear has undergone significant historical range contractions and population declines, particularly in the southern portions of its range and is now absent from the Prairies. Population viability analyses predict continuing population declines, as pressures on bear habitat continue and are likely to increase.

There is some natural mortality in Grizzly Bear populations, but most bears die as a result of human activities. Populations in most areas in Canada are hunted; licensed hunters kill over 450 Grizzly Bears each year. An additional 100 bears die from various documented anthropogenic causes and substantial numbers are killed but not reported. Activities undertaken by humans within Grizzly Bear habitat — including mining, forestry, agriculture, residential development and recreation — degrade the quality of the habitat for bears and increase the animals' risk of dying. The development of roads, railroads, power lines and other linear features in Grizzly Bear habitat pose a particular threat. The use of roads by humans and the avoidance by bears of both the roads, and buffer zones around them, greatly decrease the amount of available habitat. Roads also provide access for hunters who, legally or illegally, kill bears that would otherwise be less vulnerable. Human activities have resulted in the geographic or genetic isolation of several populations of Grizzly Bears, including eight in southern British Columbia. Each of these remnant populations is small, with fewer than 100 bears and the rescue potential from neighbouring populations is low to non-existent.

Grizzly Bears live an average of 20 years. Females have their first young when they are five to seven years old and typically have litters of one to three cubs. Because cubs stay with their mothers two to four years to learn the complex behaviours that enable them to survive on their own, females are able to reproduce only every three or four years. These life history characteristics result in a low lifetime reproductive potential. Grizzly Bear populations are difficult to monitor precisely, making it is also difficult to assess population viability. Because of bear longevity, an apparently viable population can be composed of individuals past their reproductive years and have no potential for future recruitment. Although more males can be harvested than females without detriment to the population, recent evidence suggests that the harvesting of established resident males may have a negative impact on reproductive success by alienating females from preferred habitat in the interests of protecting their young from potentially infanticidal males.

Approximately 8% of the range of the Northwestern population of the Grizzly Bear falls within national parks or wildlife sanctuaries and is classified as federally protected, however hunting and other activities that may degrade Grizzly Bear habitat, are permitted in some of these areas.

Conservation activities underway:

Provincial management plans for local populations are published or under development. Habitat stewardship projects are ongoing under RENEW (Recovery of Nationally Endangered Wildlife in Canada). Research, monitoring, management and education activities are ongoing.

Polar Bear

Ursus maritimus

Status assigned by COSEWIC

Special Concern

COSEWIC reasons for status designation

This very large carnivore plays a key role in Canada's Arctic ecosystem and is of tremendous importance to northern native peoples. The wealth of long-term information available for this species indicates that most populations appear stable. A few populations have declined and corrective measures are being taken to reverse those trends. This species, however, has a slow

reproductive rate and is highly vulnerable to over-harvest of adult females. Its conservation is therefore heavily dependent on appropriate management strategies. Polar bears are also affected by climate change. In the southern part of their distribution, a trend towards longer ice-free seasons has affected their life history. Additionally, as top predators, the bears concentrate a number of pollutants in their bodies, which could increase mortality if the levels become toxic.

Assessment date

November 2002

The Polar Bear was first designated Not at Risk by COSEWIC in April 1986. It was re-examined and unlisted to Special Concern in April 1991. Its status was re-examined and confirmed as Special Concern in April 1999 and in November 2002.

Canadian Range

Yukon, Northwest Territories, Nunavut, Manitoba, Ontario, Quebec, Newfoundland and Labrador

Applicable Lands

Environment Canada (Migratory Bird Sanctuaries, National Wildlife Areas), Parks Canada Agency, Wildlife Management Boards, Department of Indian Affairs and Northern Development

Situation summary

The Polar Bear is distributed throughout the circumpolar Arctic. Present in most of its historic range in Canada, the Polar Bear occupies ice-covered areas from Labrador to the Alaskan border and from James Bay to northern Ellesmere Island.

The two most critical components of the Polar Bear's habitat are maternity denning sites and spring feeding areas. Typically found on land-fast and pack ice, along or near coasts and on islands, Polar Bears may occur more than 200 kilometres offshore. The productivity of their habitat is closely linked to the type and distribution of sea ice and the density and distribution of Ringed Seals, their preferred prey. Rich hunting grounds are often in areas of annual ice interspersed with open water, refrozen ice and pressure ridges. As the arctic ice cap melts in summer, some bears follow the retreating ice to continue hunting, while others spend their summers on land living off stored body fat. The latter leave land to resume life on the sea ice only when the ice returns in the fall. Pregnant females usually enter maternity dens — which are most commonly on land within 50 kilometres of the coast but may be on multi-year pack ice — by about late October. The rest of the population remains active through the winter, although individuals may dig temporary dens during periods of particularly cold or inclement weather. Pregnant females need suitable habitat in which to dig a snow den to give birth and to nurture their cubs. They usually excavate dens in snowdrifts, although in western Hudson Bay and James Bay, bears may dig their dens in small banks along lakes or streams. Most females return annually to the same general denning area.

Information compiled in 1997 indicates there are between 22,000 and 27,000 Polar Bears in the world, of which 55% to 65% occur in Canada. There are 19 relatively discrete Polar Bear populations globally. Fourteen of these, ranging in size from 100 to 2,300 bears, occur solely or partially in Canada. Twelve of the fourteen Canadian populations are believed stable and a small population on Viscount Melville Sound is recovering; however a large population on Baffin Bay may be declining. Polar Bears occur at low densities throughout their range.

Only a very low harvest of Polar Bears is sustainable. Polar Bears are long-lived and slow-maturing and are therefore susceptible to gradual declines that are difficult to detect until they are serious. Because bears are particularly vulnerable to over-harvesting of adult females, the maintenance of healthy populations is heavily dependent on appropriate management. With females breeding every 3.6 years on average, the reproductive rate is very low. Consequently populations are slow to recover once their numbers are reduced. The doubling time for a typical population of Polar Bears is 24 years — even in the absence of any harvest, a depleted population would in all probability take decades to recover.

Regulation of Polar Bear hunting in Canada falls under provincial and territorial jurisdiction. A Federal/Provincial/Territorial Polar Bear Technical Committee conducts an annual review of the boundaries and status of each population in Canada, determines the sustainable harvest levels and monitors the annual kill. Enforceable harvest quotas are in effect in the Yukon, Northwest Territories, Nunavut and Labrador. Despite these quotas, it is possible to over-harvest Polar Bears under current regimes, particularly as additional bears are lost each year to defence kills. Since 1976, Polar Bear management and research have been coordinated internationally under the Agreement on the Conservation of Polar Bears, to which Canada is a signatory and according to which the taking of Polar Bears is restricted to "local people". In Canada this is interpreted to mean Aboriginal people or sport hunters guided by Aboriginal people.

Polar Bears are vulnerable to pollution, particularly from oil spills. A single major oil spill in a critical area could cause a significant reduction in population numbers. Polar Bears are threatened by bioaccumulation of toxic contaminants in their prey. Various chemicals, such as DDT and dieldrin, are borne by wind and water to all parts of the Arctic and have shown up in the tissues of Polar Bears and their prey. The full effects of these chemicals on Polar Bears have yet to be assessed. Increased industrial activity in the north has led to the destruction and disturbance of denning and feeding areas, which could seriously affect individual populations. This activity has also resulted in an increase in the storage of foreign compounds in areas accessible to wildlife; putting Polar Bears with their highly investigative behaviour, at a greater risk of ingesting harmful or deadly substances. Increased human habitation of the North puts key denning and spring-feeding habitats at greater risk of disturbance. Climate change also affects Polar Bears adversely. A trend toward longer ice free seasons in the southern part of their range has made it difficult for some animals to hunt effectively; natality and mortality rates may already be affected.

Conservation activities underway:

Provincial and territorial monitoring and management plans are in place for selected populations. A stewardship project is ongoing under RENEW (Recovery of Nationally Endangered Wildlife in Canada). Research, monitoring, management and education activities are ongoing.

Wolverine, Western population

Gulo gulo

Status assigned by COSEWIC

Special Concern

COSEWIC reasons for status designation

Estimated total population size exceeds 13,000 mature individuals. Declines have been reported in Alberta and parts of British Columbia and Ontario. A distinct subspecies may be extirpated from Vancouver Island. Many pelts used locally are not included in official statistics and harvest levels may be underreported. There is no evidence, however, of a decline in harvest. There are no data on overall population trends other than those provided by local knowledge and harvest monitoring programs. This species' habitat is increasingly fragmented by industrial activity, especially in the southern part of its range and increased motorized access will increase harvest pressure and other disturbances. The species has a low reproductive rate and requires vast secure areas to maintain viable populations.

Assessment date

May 2003

In April 1982, all wolverines in Canada were considered by COSWIC as a unit and were designated Special Concern. In April 1989 the unit was split into Eastern and Western

populations and the Western population was designated by COSEWIC as Special Concern. This status was re-examined and confirmed in May of 2003.

Canadian range

Yukon, Northwest Territories, Nunavut, British Columbia, Alberta, Saskatchewan, Manitoba, Ontario

Applicable lands

Wildlife Management Boards, Parks Canada Agency, Environment Canada (National Wildlife Areas)

Situation summary

The Western population of the Wolverine persists in northern Canada and extends south into northern Ontario, Manitoba, Saskatchewan, the Alberta Rockies and the southern interior of British Columbia.

Because of a low reproductive rate, low population density and large home range, the Wolverine requires vast undisturbed areas to maintain viable populations. Wolverines inhabit a variety of treed and treeless areas at all elevations. They occur in the northern forested wilderness, in the alpine tundra of the western mountains and in the arctic tundra. Wolverines are most abundant where large ungulates are common. Viable populations of other large carnivores may also be important; in addition to hunting their own prey, Wolverines use abandoned carrion. Dens must be close to appropriate kit rearing habitat and are constructed either among boulders, under fallen trees or in snow tunnels. They must provide protection from predators — such as Golden Eagles, bears and wolves — as well as adequate insulating snow cover that persists throughout the denning period.

The total Western population of the Wolverine in Canada is estimated at 15,000 to 19,000 individuals. The Wolverine population is healthy and stable in all regions of the Yukon. In the Northwest Territories, densities vary with location; they are highest in the southwest and lowest on the Arctic Islands and on the mainland east of the Thelon Wildlife Sanctuary. In Nunavut, densities are moderate in the west and low on the Arctic Islands and in the east. Populations are believed to be stable over much of British Columbia, but are declining in the southern mountains. A distinct subspecies may no longer be extant on Vancouver Island, where Wolverines have not been seen since 1992; their decline may be related to that of the Endangered Vancouver Island Marmot, a potential summer food. In Alberta, Wolverines are most abundant in the west, but appear to be declining throughout the province. In Saskatchewan, they are common in the north, but are rare and possibly declining in the southern boreal forest. In Manitoba, the highest densities are in the northeast and northwest, while numbers in the north central part of the province are unknown. Wolverines are found in small numbers in northwestern Ontario and may have increased recently in some areas, but are known to have disappeared from others. Overall numbers for Ontario indicate a decline. Although records exist for their occurrence in the Prairie and Great Lakes Plains ecological areas, Wolverine populations may have never been viable in these regions.

The Wolverine was once much more widespread and numerous. With the extensive human settlement in its range that began in the mid 19th century, the Wolverine has undergone range contractions and population reductions. Wolf control programs that were in effect from the 1950s and into the 1990s contributed to this species' decline. The Wolverine's habitat, particularly in the southern part of its range, is subject to loss, degradation and fragmentation from oil, gas and mineral exploration and extraction, forestry, roads, agriculture and urban development. Although Wolverines are known to use snowmobile trails and scavenge from traps, backcountry recreation can lead to habitat alienation for these secretive animals. Increased access of motorized vehicles into remote areas may also increase harvest pressure on the Wolverine and on its ungulate prey, particularly the Threatened Southern Mountain population of Woodland Caribou. In the arctic tundra, developments frequently attract Wolverines, which are then at risk of being killed as nuisance animals. As an economically valuable furbearer, the Wolverine is subject to

trapping and has been over-harvested in some areas. In addition to having been negatively affected by wolf-control programs, they have declined with reductions in ungulate populations.

Conservation activities underway

Habitat stewardship projects are ongoing under RENEW (Recovery of Nationally Endangered Wildlife in Canada). Research and monitoring activities are ongoing.

Woodland Caribou, Northern Mountain population

Rangifer tarandus caribou

Status assigned by COSEWIC

Special Concern

COSEWIC reasons for status designation

Forestry, roads and other developments in the range of this population are beginning to affect some herds through habitat modification and increased human access. Most of the habitat is currently remote and has changed little. Most of the population of over 35,000 adults appears stable but is particularly dependent on conservation actions, such as management plans. Two of 39 herds within this population are declining and may be at risk from changing predator-prey relationships and greater motor vehicle access.

Assessment date

May 2002

The Woodland Caribou, Northern Mountain population, was designated by COSEWIC as Not at Risk in May 2000. Prior to 2000, this population was considered part of the "Western population" (now de-activated).

Canadian Range

Yukon, Northwest Territories, British Columbia

Applicable Lands

Parks Canada Agency, Wildlife Management Boards

Situation summary

In Canada, Woodland Caribou occur in all jurisdictions except Nova Scotia, New Brunswick, Prince Edward Island and Nunavut. The Northern Mountain population is comprised of under 40 populations in the Yukon (south of 65º latitude), the Northwest Territories and northwestern British Columbia. Bordered by Alaska in the west and the Mackenzie Mountains of the Northwest Territories in the east, their territory overlaps slightly with that of the Southern Mountain population of Woodland Caribou in northwestern British Columbia.

In winter, the Northern Mountain population of Woodland Caribou moves to lower altitudes, usually to mature Lodgepole Pine or spruce forests in lower subalpine areas where the snow cover is relatively light; there caribou feed primarily on terrestrial lichens and secondarily on arboreal lichens. Alternatively, some Woodland Caribou may winter at high elevations on windswept slopes where terrestrial lichens are accessible. They spend much of the summer in alpine and upper subalpine areas. They frequent open or semi-open habitat, such as alpine tundra, peat lands, islands and shorelines where nutritious plants such as forbs and sedges are available. Fire and succession are natural processes that profoundly affect the forested parts of caribou range. Fire is necessary to regenerate some plant species, including pine. Caribou occasionally feed in young stands after fire or logging. They have adapted to shift their winter

range in relation to successional patterns. In the range of the Northern Mountain population of Woodland Caribou in British Columbia, the average time interval for spruce-willow-birch forests to return to their pre-fire state averages 200-350 years — compared to 40-80 years in the southern boreal forest in Alberta and Saskatchewan.

The 2001 estimate for the Northern Mountain population of the Woodland Caribou is 44,000 — 24% of all Woodland Caribou in Canada. The population consists of 36 herds; each contains more than 100 caribou and 20 have more than 500 animals. Population trends for these herds were: 4 increasing, 15 stable, 3 decreasing and 14 unknown.

Habitat destruction, hunting, disturbance by humans (including construction of roads and pipelines) and predation (by wolves, coyotes and bears) have all contributed to the decline of Woodland Caribou. In many parts of Woodland Caribou range, forestry practices and the spread of agriculture and mining have resulted in the loss, alteration and fragmentation of important habitat. Stochastic events, weather and climate change are also influential. One of the current challenges in caribou management is to learn more about how these factors interact and how to decrease their threat to Woodland Caribou populations.

Conservation activities underway:

Research, monitoring and management activities are ongoing.

Birds

Cerulean Warbler

Dendroica cerulea

Status assigned by COSEWIC
Special Concern

COSEWIC reasons for status designation
This species breeds in mature deciduous forests in southern Ontario and southwestern Quebec, a habitat which has disappeared from much of its Canadian range in the last 200 years. The species has been steadily declining in numbers (three per cent per annum over the last 30 years), but most of this decline has been occurring in the core of the species' range in the U.S. and numbers may be relatively stable in eastern Ontario. Numbers in southwestern Ontario, however, have declined markedly and overall numbers in Canada are low—less than 2,000 mature individuals. The two major limiting factors for this species are habitat destruction on breeding, migration and wintering grounds; and fragmentation of existing habitats.

Assessment date
May 2003

Canadian range
Ontario, Quebec

Applicable lands
Environment Canada (National Wildlife Areas), Parks Canada Agency, Department of Indian and Northern Affairs and the National Capital Commission.

Situation summary
The Cerulean Warbler has a patchy distribution throughout its range. It winters in mature

evergreen forests in South America and breeds from north-central Minnesota south to west-central Arkansas, east to western North Carolina, north towards the coast of New York State and northwest to southern Ontario. In Canada there are two main breeding clusters in Ontario, one in Carolinian forests between lower Lake Huron and Lake Ontario and a more northerly cluster that occurs in a band between the Bruce Peninsula and the Ottawa River. There are also a small number of breeding birds in southern Quebec.

Cerulean Warblers occupy mature deciduous forests with large trees and an open understory. They are believed to be area-sensitive. They exhibit a strong preference for certain microhabitats and are found in both wet bottomland forests and upland locations on mesic slopes. In Ontario, they also occupy second-growth deciduous forests. Territories are usually characterized by well-spaced large trees with high canopies and dense foliage cover in the upper mid-story and canopy. They tend to avoid areas of dense understory and spend most of their time in the upper canopy. Not all apparently suitable habitat is occupied.

According to Breeding Bird Survey data, the North American population of the Cerulean Warbler has undergone an average decline of 3% per year for the period from 1966 to 2000, among the most severe declines of all passerine species. The Canadian population is estimated at 500 to 1,000 breeding pairs and its breeding range has remained unchanged over the last ten years. Some areas in Ontario are showing signs of an increase in population numbers as forests re-grow, however overall trend information for Canadian populations is difficult to determine because reporting for this species is inconsistent.

Cerulean Warbler habitat has disappeared from much of this species' Canadian range in the last 200 years. Current silvicultural practices result in fewer forests reaching maturity. Remaining habitat is fragmented and often degraded by acid rain, gypsy moths and the pollution of watercourses. High site fidelity puts the Cerulean Warbler at risk; birds seem not to recognize habitat degradation and continue to use areas that are no longer suitable. Mature evergreen forests on the species' wintering grounds in South America are disappearing, however the warblers can use shade coffee plantations and are relatively resilient to habitat disturbance.

Conservation activities underway

Habitat stewardship projects are ongoing under RENEW (Recovery of Nationally Endangered Wildlife in Canada). Research and monitoring activities are ongoing.

Long-billed Curlew

Numenius americanus

Status assigned by COSEWIC

Special Concern

COSEWIC reasons for status designation

The species is associated with prairie habitat that has declined and is projected to decline further. The global population is in decline.

Assessment date

November 2002

The Long-billed Curlew was first examined and designated Special Concern by COSEWIC in April 1992. This status was confirmed in November 2002.

Canadian Range

British Columbia, Alberta, Saskatchewan

Applicable Lands

Environment Canada (National Wildlife Areas), Parks Canada Agency, Department of Indian Affairs and Northern Development, Department of National Defence, Prairie Farm Rehabilitation Administration

Situation summary

During the winter, the Long-billed Curlew is found in small numbers as far south as Costa Rica and as far north as North Carolina in the United States. The core of the winter range is in Mexico and the southwestern United States. During the breeding season, the curlew can occur from northern Texas eastward to central Nebraska and west to central Oregon and Nevada in the United States. Its range continues northwards into the southern parts of Saskatchewan, Alberta and British Columbia. Long-billed Curlews breed in southwestern Saskatchewan, north as far as Biggar and east to Moose Jaw and Regina. They breed throughout southeastern Alberta, bounded in the north by Stettler and in the east by Provost. They are found in the foothills near Calgary and in scattered small populations in central British Columbia south of Prince George.

Long-billed Curlews nest in grasslands, primarily native short-grass and mid-grass prairie. The birds show a preference for nesting in irregular grass clumps. Once the eggs have hatched, curlews seem to prefer taller, more dense grass, possibly because it offers better camouflage for the young and reduces heat stress. Although Long-billed Curlews are more numerous in native grassland, they appear to be able to use some agricultural areas for feeding and raising young. They prefer to rest and feed along the shores of shallow, inland and coastal waters during migration and on their wintering grounds.

The Canadian population is estimated at a minimum of 23,500 birds, 19,000 of which occur in Alberta, 4,000 in Saskatchewan and 500 in British Columbia. The number of Long-billed Curlews in Canada declined drastically since the beginning of the 20th century, when they were common throughout the southern prairies — including southern Manitoba, and fall migrants could be found on the Atlantic coast of Canada. The curlew has not occurred in Manitoba since the mid 1980s. Although the continent-wide population appears to have declined at a rate of 1.7% / yr over the last 20 years, most of the declines have been in the species' core range in the United States. In Canada, however, the overall number of breeding birds and the species' range have remained relatively stable over the last 10 years.

At the beginning of the 20th century, Long-billed Curlews were killed for market in large numbers. Sport hunters also killed many as they are easy targets. Cultivation of native prairie on the nesting grounds contributed to the early declines in both numbers and range. It continues to be a problem that is exacerbated by urban encroachment and resource extraction. Habitat loss is now the greatest threat to the Long-billed Curlew and there is the added problem of increasing risk of predation. Habitat fragmentation creates easier access to curlews for the increasing number of Coyotes and other predators. The remaining grasslands are fragmented, subjected to fire control and disturbed by industry, overgrazing and the invasion of exotic plants. In British Columbia, habitat loss to vineyards, orchards, ginseng plantations and urban expansion has been significant and continues, primarily in the Thompson and Okanogan valleys. Forest encroachment into what was once intermontane grassland is also a problem. Less than 5% of curlew habitat in Canada is considered protected. Curlews are relatively common in Grasslands National Park in Saskatchewan and in the Suffield National Wildlife Area in Alberta.

Conservation activities underway:

Stewardship projects are ongoing under RENEW (Recovery of Nationally Endangered Wildlife in Canada).

Western Screech-owl, *kennicottii* subspecies

Megascops kennicottii kennicottii

Status assigned by COSEWIC
Special Concern

COSEWIC reasons for status designation
This owl prefers open forest for foraging and requires cavities in old, large trees for nesting and roosting. Modern forestry practices have created large areas of dense young forests that have very few suitable nesting snags. Populations have apparently declined in southern Vancouver Island and the Lower Mainland concurrently with the recent arrival of the Barred Owl, which is likely a predator of this species.

Assessment date
May 2002

The Western Screech-owl was designated by COSEWIC as Data Deficient in April 1995. In May 2002, it was split into two subspecies and each was assessed separately.

Canadian Range
British Columbia

Applicable Lands
Parks Canada Agency, Wildlife Management Board

Situation summary
The Western Screech-owl is found in western North America from southern Alaska to central Mexico. In Canada, the species occurs only in British Columbia. The *kennicottii* subspecies occurs along the coast of British Columbia, including Vancouver Island, but excluding the Queen Charlotte Islands.

Throughout its range, the Western Screech-owl is found in quite varied habitats: semi-open woodlands, treed suburban areas and even cactus deserts. In Canada, this owl occurs in lower-elevation forested areas, frequently close to water. The forest type and the proportion of coniferous to deciduous trees may vary, but like the *macfarlanei* subspecies, the *kennicottii* subspecies requires large old trees for nesting and roosting.

The population of the *kennicottii* subspecies of the Western Screech-owl along the extreme southeastern coast of Vancouver Island and the Lower Mainland coast appears to be low, is likely declining rapidly, and no longer occurs at some sites. The owl seems to be relatively common and perhaps stable on the remainder of Vancouver Island and through much of the remaining mainland coast, however the status of this subspecies in the area from the upper mainland coast to the Alaska border is poorly known. An overall estimate of the numbers of *kennicottii* subspecies in Canada is between 3,000 and 10,000 individuals.

Along the south coast of British Columbia, habitat loss to development is a threat to populations of the *kennicottii* subspecies of the Western Screech-owl. The relationship between the owls and forestry has not been studied, but forestry operations may negatively affect screech-owl habitat, both through timber harvesting and the removal of dead trees that serve as potential nest-cavity sites. The loss of nesting sites can be mitigated to a certain extent as the screech-owl readily uses nest boxes. The Barred Owl has recently expanded its range to overlap with that of the Western Screech-owl and anecdotal reports suggest Barred Owl predation as a probable cause of declines of the *kennicottii* subspecies in the Lower Mainland and southeastern Vancouver Island.

Conservation activities underway:

A habitat stewardship project is ongoing under RENEW (Recovery of Nationally Endangered Wildlife in Canada).

Reptiles

Eastern Ribbonsnake, Great Lakes population

Thamnophis sauritus

Status assigned by COSEWIC
Special Concern

COSEWIC reasons for status designation
There are few quantitative data on ribbonsnakes in Ontario where this species suffers from extreme loss of its wetland habitats. Modification of shoreline habitat may be particularly problematic for ribbonsnakes. In addition, ribbonsnakes are highly susceptible to mortality on roads through wetland areas.

Assessment date
May 2002

Canadian Range
Ontario

Applicable Lands
Environment Canada (National Wildlife Areas), Parks Canada Agency

Situation summary
The North American distribution of the Eastern Ribbon Snake extends from around the Great Lakes east of Lake Michigan south to Florida. There are two populations in Canada: the Great Lakes population of southern Ontario that is part of the main range of the species in the United States and the disjunct Atlantic population in Nova Scotia. The distribution of the Great Lakes population is relatively restricted and roughly follows the southern edge of the Canadian Shield, with the most persistent sightings over time coming from the Georgian Bay region, particularly Bruce County. The Eastern Ribbon Snake occurs within several national parks.

The Eastern Ribbon Snake is a habitat specialist. It is semi-aquatic and is most frequently found along the edges of shallow ponds, streams, marshes, swamps, or bogs that are bordered by dense vegetation that provides cover. Abundant exposure to sunlight is also required and adjacent upland areas may be used for nesting.

The snake has probably always been rare in Ontario. It may be limited by the availability of wintering sites. Although there have been no direct studies examining the size of the Great Lakes population, there is some evidence that the snake is uncommon and becoming increasingly localized, even disappearing, in areas where it was once more common. It nevertheless appears to persist throughout much of its historic range.

Threats to the Great Lakes population of the Eastern Ribbon Snake include loss and degradation of wetland and lakeshore habitats, persecution, collecting, accidental death on roads and predation by pets and native wildlife. Ribbonsnakes in Canada may also be extremely sensitive to the decline of amphibians — some American studies have shown amphibians to comprise

90% or more of the Ribbonsnake's diet. The snake probably has a low reproductive output and low recruitment rate, making the species slow to recover from population declines.

Conservation activities underway:

This species is included in the Greater Georgian Bay Reptile Awareness Program.

Milksnake

Lampropeltis triangulum

Status assigned by COSEWIC
Special Concern

COSEWIC reasons for status designation
This species is still widespread in Ontario, but anecdotal information indicates that it occurs in small numbers. The species maintains a small but apparently stable population in Quebec. The milksnake is subject to high levels of road kill and is still deliberately killed because of its resemblance to venomous species. Currently, there is only anecdotal information on this species' biology in Canada, with no quantitative data on life history and demographic measures and no quantitative data on abundance or trends in abundance.

Assessment date
May 2002

Canadian Range
Ontario, Quebec

Applicable Lands
Environment Canada (National Wildlife Areas), Parks Canada Agency

Situation summary
Milksnakes are found from southern Canada southward throughout the United States and Mexico and into northern South America. There are 25 subspecies of the Milksnake in North America. Only one subspecies, the Eastern Milksnake, has a distribution that extends into a restricted area of Canada. In Ontario, the snake can be found as far north as Lake Nipissing and Sault Ste. Marie. In Quebec, it occurs along the border between Quebec and Ontario, south of the St. Lawrence River and east of the St. Francois River. It occurs in at least five national parks.

The Milksnake is best known for inhabiting rural areas where it is most frequently reported in and around buildings, especially old structures. It occurs in a wide variety of habitats, however, from prairies, pastures and hayfields to rocky hillsides and various forest types. Two important features of good Milksnake habitat are proximity to water and suitable locations for basking and egg-laying. Milksnakes do not bask as openly as other snakes. They are frequently discovered beneath an object that is in direct sunlight, absorbing heat from its underside.

No data on population estimates for the Milksnake are available for either Quebec or Ontario. Observations in Ontario suggest that it has maintained much of its historical range, although the species likely no longer occurs in some large urban centres or areas of intensive agricultural use where habitat has been lost. In Quebec, the population is small but apparently stable.

The two greatest causes of population decline are likely road mortality and deliberate killing by humans. The snakes' tendency to frequent houses, sheds and barns when looking for rodents and hibernation sites makes them particularly vulnerable to deliberate persecution. When threatened, Milksnakes flee, but if one is cornered, it will hold its ground, raise its head and strike.

It also vibrates its tail against the ground, creating a rattling sound (especially against dry leaves). These behaviours lead some people to mistake Milksnakes for rattlesnakes and kill them because they believe the snakes are dangerous. Milksnakes are also affected by habitat loss and modification due to urbanization, and by predation (both by natural predators and dogs and cats).

Conservation activities underway:

This species is included in the Greater Georgian Bay Reptile Awareness Program. Habitat stewardship projects are ongoing in Ontario and Quebec under RENEW (Recovery of Nationally Endangered Wildlife in Canada).

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Northern Map Turtle

Graptemys geographica

Status assigned by COSEWIC
Special Concern

COSEWIC reasons for status designation
There have been no quantitative or long-term studies of this species in Canada and, therefore, there is little evidence of recent range contraction or local extirpation of the species. However, the long-lived life history with delayed age of maturity and numerous potential threats to this species and habitat suggest a significant susceptibility to population decline. This species should be the focus of monitoring of populations to identify demographic trends and establish some estimates of population size.

Assessment date
May 2002

Canadian Range
Ontario, Quebec

Applicable Lands
Environment Canada (National Wildlife Areas), Parks Canada Agency, Department of Indian Affairs and Northern Development

Situation summary
The Northern Map Turtle ranges throughout the northeastern United States. It reaches its northern limit in southern Ontario and southwestern Quebec, where it is associated with the Great Lakes Basin and the St. Lawrence River.

The Northern Map Turtle inhabits both lakes and rivers, showing a preference for slow-moving currents, muddy bottoms and abundant aquatic vegetation. These turtles need suitable basking sites (such as rocks and logs) and exposure to the sun for at least part of the day. They are extremely wary, diving into the water from basking sites at the slightest provocation. Individuals rarely leave the water except during nesting.

It is not known whether Map Turtle population levels are increasing, decreasing or stable because there are no programs monitoring the Northern Map Turtle in Canada. Estimates of 15

to 35 turtles per kilometre of shoreline have been made along the Ottawa River and for localized Quebec populations. The turtle occurs in numerous national parks and wildlife areas.

The Northern Map Turtle's distribution coincides with the most densely populated and industrialized areas of Ontario and Quebec. As a result, numerous factors threaten its survival. Shoreline development and recreational boating make habitat inaccessible for these naturally wary turtles. Northern Map Turtles combine a long life of more than twenty years with late maturity (females may not breed until they are at least twelve years old) and a low reproductive output. These life history characteristics, combined with the turtle's distribution make it highly vulnerable to population declines. Loss of habitat and use of waterways for recreation are perhaps the most significant threats to this species. The control of water levels, particularly with dams, may adversely affect the turtles by submerging nesting sites and altering habitat. The diet of the Northern Map Turtle (including freshwater mussels, many of which are declining) makes it vulnerable to accumulation of heavy metals and other toxins. The spread of the invasive Zebra Mussel, which the Northern Map Turtle eats only when preferred prey are scarce, could have a long term effect on turtle populations and needs more study, particularly because Zebra Mussels contain higher levels of contaminants than the Northern Map Turtle's preferred prey. The numerous threats to this species include wildlife trade (for food or as pets) because the Northern Map Turtle resembles other highly desirable species. All these pressures are likely to continue increasing as the human population in the turtle's range continues to increase.

Conservation activities underway:

This species is included in the Greater Georgian Bay Reptile Awareness Program. Habitat stewardship projects are ongoing in Ontario and Quebec under RENEW (Recovery of Nationally Endangered Wildlife in Canada). Research and monitoring activities are ongoing.

Rubber Boa

Charina bottae

Status assigned by COSEWIC
Special Concern

COSEWIC reasons for status designation
Although this species may be widespread in British Columbia its status is difficult to determine because the species is cryptic. However, searches indicate that this species is uncommon and patchily distributed. Because the species' abundance is poorly documented, it could qualify as Data Deficient, but the species' life history traits – low reproductive rate, delayed age at maturity and extended longevity, make it sensitive to human activity. Therefore, this species merits the current status until further investigation shows that it is at higher risk or is secure.

Assessment date
May 2003

Canadian range
British Columbia

Applicable lands
Parks Canada Agency

Situation summary
The Rubber Boa occurs in British Columbia and the western United States, from Washington south to central California and eastward as far as Montana, Wyoming and northwestern

Colorado. The Canadian distribution of the Rubber Boa is patchy and confined to the southern third of mainland British Columbia where the species appears to be limited by climate. Most records are from south of the Thompson River Basin, with the northernmost record from Quesnel, British Columbia.

Rubber Boas occupy a wide variety of habitats, including riparian areas, chapparal, grasslands and montane forests. The major habitat requirement appears to be an abundance of coarse woody debris, which the snakes use for protective cover and to aid in thermoregulation. Rubber Boas can exist close to human habitation and have been found in vacant city lots. They spend a considerable amount of time underground in rock crevices and in abandoned rodent burrows. They are slow to rebound from population declines because they are long-lived, late-maturing and have a low reproductive potential.

Although there is no information on the size of the Canadian population of the Rubber Boa, the species appears to be rare throughout its Canadian range. The snake's cryptic nature, combined with nocturnal and subterranean habits, makes it difficult to observe. Moreover, searches indicate that this species is uncommon and patchily distributed. This species' delayed age at maturity and low reproductive rate make it sensitive to human activity.

The principle threat to this snake is from degradation and loss of habitat, largely as a result of urban development and extensive conversion of ranch land to houses, orchards and vineyards. Development has also lead to an increase in paved roads and traffic, resulting in higher road mortality. Forest management practices that remove coarse woody debris severely reduce the habitat quality for the Rubber Boa, unless significant rock cover remains. Haying is the largest source of mortality in the Cariboo region.

Conservation activities underway

Research and monitoring activities are ongoing.

Western Skink

Eumeces skiltonianus

Status assigned by COSEWIC

Special Concern

COSEWIC reasons for status designation

This species has a very small area of occupancy, apparently occurs in low numbers and undergoes large fluctuations in numbers. The species' Canadian range is undergoing extensive development and habitat loss is occurring due to agriculture and urbanization. No quantitative studies have been conducted on this species, however its restricted range, low densities, population fluctuations and loss of habitat make it a species of concern.

Assessment date

May 2002

Canadian Range

British Columbia

Applicable Lands

Environment Canada (Migratory Bird Sanctuary)

Situation summary

The Western Skink occurs in the western United States and as far south as the tip of Baja

California in Mexico. It reaches the northern limit of its distribution in western Canada where it is restricted to a small area in the extreme southern portion of mainland British Columbia. There have been two unconfirmed sightings on Vancouver Island. Skilton's Skink is a common name for the only subspecies of the Western Skink that occurs in Canada.

Western Skinks are found in a diverse assortment of habitats, including woodlands, grasslands, forested areas and dry hillsides. They seem to prefer locations with numerous hiding places provided by rocks, decaying logs, leaf litter and vegetation and can be particularly abundant along riverbanks. They are secretive and are seldom seen unless the cover they are hiding under is disturbed. They hibernate communally, apparently in their summer habitat and no seasonal migration occurs.

Nothing is known of population densities or trends for the Western Skink in British Columbia. This species reaches the northern extent of its range in southern British Columbia and its dependence on relatively warm, dry conditions probably restricts its distribution and potential for range expansion within the province.

Habitat alteration and fragmentation is probably the major factor limiting the distribution and persistence of the Western Skink within its range. An increased human population has resulted in increased residential development, road construction and extraction of talus (rock debris), all of which destroy skink habitat. Human population trends and associated habitat declines are expected to continue. Overgrazing by cattle may adversely affect the herbaceous cover in forest openings used by the skinks. With their vibrant blue tails and striped patterns, these skinks are also potentially attractive to the pet trade.

Conservation activities underway

None

Amphibians

Great Plains Toad

Bufo cognatus

Status assigned by COSEWIC

Special Concern

COSEWIC reasons for status designation

This species is widespread but occurs as scattered populations that fluctuate widely in size. This species of toad is adversely affected by fragmentation of habitats, limited dispersal and conversion of its habitat to agriculture.

Assessment date

May 2002

The Great Plains Toad was first designated Special Concern by COSEWIC in April 1999.

Canadian Range

Alberta, Saskatchewan, Manitoba

Applicable Lands

Environment Canada (National Wildlife Areas), Department of National Defence

Situation summary

The Great Plains Toad occurs throughout an extensive range in western North America and the northern half of Mexico. In Canada, it is likely widely both sparsely and patchily distributed within its range. In Alberta, the species is restricted to the southeastern grasslands; in Saskatchewan, most of the few records are near the Alberta border. Since 1983, there have been reports of the species in extreme southwestern Manitoba.

The Great Plains Toad is an inhabitant of mixed-grass prairie. This toad breeds mainly in temporary prairie wetlands that fill with water following heavy rains in late spring and early summer. In many years, however, there is insufficient rainfall for the toads to breed. Metamorphosis is highly synchronous, but often unsuccessful. In a good breeding year, enormous numbers of tadpoles hatch, but many often die because breeding pools dry up before the tadpoles metamorphose into toads. Winter mortality of juveniles is also believed to be high. Adult toads are relatively long-lived. They can avoid dry conditions, including high air temperatures with low humidity, by burrowing into the soil. Their heart rate decreases (brachycardia) and there is a shift to anaerobic metabolism to cope with the lack of oxygen during burrowing.

In Alberta, past concerns about declining populations may have resulted from a lack of investigations during years of higher precipitation when the species can be detected more readily. More recent surveys (1994, 1996) suggest there are large numbers of toads at Suffield National Wildlife Area, Alberta. No information is available to assess the size or trend of populations in Saskatchewan or Manitoba.

Grassland habitat may be widely available for this species within its range, but many grassland areas do not include depressions (such as sloughs) suitable for breeding when high spring runoff or heavy rains trigger breeding. Progressive conversion of grasslands to cropland, application of herbicides and pesticides, and local impacts from grazing and trampling of shoreline vegetation may be slowly reducing the quantity and quality of available habitat. Large numbers of cattle can damage water quality, possibly lowering the survival rate of larvae. Habitat fragmentation by roads is another problem that can also lead to high mortality — particularly for toads crossing roads with heavy traffic, to breed in nearby wetlands.

Conservation activities underway:

Stewardship projects are ongoing under RENEW (Recovery of Nationally Endangered Wildlife in Canada).

Northern Leopard Frog, Western Boreal/Prairie populations

Rana pipiens

Status assigned by COSEWIC

Special Concern

COSEWIC reasons for status designation

This species remains widespread but has experienced a severe contraction of range and loss of populations, particularly in the west. This has been accompanied by increased isolation of remaining populations, which fluctuate widely in size. The species is adversely affected by habitat conversion, including wetland drainage and eutrophication, game fish introduction, collecting and pesticide contamination and fragmentation, which curtails recolonization and rescue of declining populations.

Assessment date

November 2002

The Northern Leopard Frog, Western Boreal/Prairie population was first designated Special Concern by COSEWIC in April 1998.

Canadian Range

Northwest Territories, Alberta, Saskatchewan, Manitoba

Applicable Lands

Environment Canada (National Wildlife Areas), Parks Canada Agency

Situation summary

The Northern Leopard Frog is a species of cooler climates and has a range that encompasses most of the northern portion of the United States, extending into all provinces and the Northwest Territories in Canada. Northern Leopard Frogs in Manitoba, Saskatchewan, Alberta and the Northwest Territories belong to the Western Boreal/Prairie populations.

Although breeding can occur in the same water body as winter hibernation, most Northern Leopard Frogs require a minimum of three distinct habitats: temporary ponds in which to breed, terrestrial habitats for summer foraging and permanent ponds in which to overwinter. When foraging in summer, the frogs usually avoid heavily treed areas, grass that is more than a meter tall and open sandy areas. They overwinter in well-oxygenated water bodies, such as streams or larger ponds that do not freeze solid. Recruitment is low. On average, less than 10% of eggs survive to become young frogs and only 40% of these survive until the following spring.

While the Northern Leopard Frog is still widespread, its range has recently shrunk considerably and many populations, particularly in the west, have disappeared. This has left the remaining populations, whose numbers fluctuate widely, more isolated. Widely fluctuating numbers can lead to the gradual disappearance of smaller populations, while population isolation can have negative effects on the long-term viability of a species. Population declines were first noticed across the prairies (in Canada as well as in the adjacent United States) in the 1970s. The frogs suffered varying degrees of decline in different regions. They underwent significant range and population reductions and were virtually eliminated from some areas, including the provinces of Manitoba and Alberta. The cause of these serious declines is unknown. The Northern Leopard Frog has subsequently shown signs of some recovery in the prairies. It remains widespread, but populations tend to be isolated and densities remain generally low. There is no sign of recolonization of some of the areas from which it had become eliminated. In Manitoba, the frog has reoccupied much of its historic range although densities are far below previous levels. In Alberta, data from the 1990s show that only 26 of 74 known breeding populations remain, with breeding confirmed in only 12 of these; most of these 12 are in the southeastern corner of the province. The Northern Leopard Frog has a limited distribution in the Northwest Territories, ranging between the Alberta border and Great Slave Lake. Reports from 1995 confirmed the continued presence of the species in the area.

The threats to the Northern Leopard Frog include habitat destruction and degradation and presence of invasive species. The destruction or modification of a population's breeding, summer or overwintering habitats, or a change that prevents the frogs from moving from one habitat type to another, can result in the elimination of that population. Introduction of species, such as the Common Carp or Purple Loosestrife, can make habitat unsuitable for Northern Leopard Frogs. Commercial collection of Northern Leopard Frogs may threaten local populations in Manitoba.

Conservation activities underway:

Stewardship projects are ongoing under RENEW (Recovery of Nationally Endangered Wildlife in Canada). Research and monitoring activities are ongoing.

Red-legged Frog

Rana aurora

Status assigned by COSEWIC
Special Concern

COSEWIC reasons for status designation
The species range is restricted and fragmented as it occurs on Vancouver Island and on the mainland without any possibility of dispersal across salt water. Some declines in populations have occurred in urban areas. Notably, the species is considered endangered (United States Endangered Species Act) in its southern range in the United States. The species has a limited range in Canada and is susceptible to habitat degradation as well as predation and competition from introduced bullfrogs and green frogs.

Assessment date
May 2002

The Red-legged Frog was first designated Special Concern by COSEWIC in April 1999.

Canadian Range
British Columbia

Applicable Lands
Department of Indian Affairs and Northern Development, Parks Canada Agency

Situation summary
The Red-legged Frog occurs along the west coast of North America from Baja California in Mexico to Canada, where it reaches the northern extent of its range in extreme southwestern British Columbia. The only subspecies of the Red-legged Frog that occurs in Canada is the Northern Red-legged Frog, *Rana aurora aurora*. In British Columbia, it has a small range and occurs on Vancouver Island, the Gulf Islands, the mainland adjacent to the Strait of Georgia and through the Fraser Valley to Hope.

This relatively large, secretive frog is associated with streams, ponds and marshes, but may be found in moist forests far from open water. It tends to be restricted to lower altitudes. Adults breed in cool ponds or lake margins, slow-moving streams, marshes, bogs or swamps where open water is likely to remain until development from tadpole to adult has been completed. Frogs that spend the summer in forests far from open water appear to prefer mature forests with plenty of leaf litter and fallen logs.

There is no information on the current population numbers of the Red-legged Frog in Canada, but most of its range is subject to an expanding human population and is under considerable pressure from development. Some population declines have occurred in urban areas, particularly with the expansion of the city of Vancouver into the surrounding areas of the lower Fraser Valley, but the frog is thought to remain locally common at some sites on Vancouver Island.

The main threats to the survival of this species are degradation and loss of habitat, and predation and competition from introduced Bullfrogs. The destruction of small ponds and other habitats appears to be eliminating some populations of the Northern Red-legged Frog.

Conservation activities underway:

Research and monitoring activities are ongoing.

Spring Salamander

Gyrinophilus porphyriticus

Status assigned by COSEWIC
Special Concern

COSEWIC reasons for status designation
This species has a limited, fragmented range and specialized habitat requirements. It is susceptible to habitat degradation leading to population loss. Because of low dispersal rates, as well as late sexual maturity, populations that are lost have little chance of recovery.

Assessment date
May 2002

The Spring Salamander was first designated Special Concern by COSEWIC in April 1999.

Canadian Range
Ontario, Quebec

Applicable Lands
None confirmed

Situation summary
The Spring Salamander is restricted to eastern North America. In Canada, the species occurs in a restricted area in the St. Lawrence Lowlands of southern Quebec at the northwestern limit of the species' range. Two Canadian populations exist, one in the Adirondack Mountains and the other in the Appalachian Mountains. Their combined distribution represents about 5% of the total range of the species in North America. Two early records of the Spring Salamander from Ontario (near Ottawa and in the Niagara region) have not been confirmed by any subsequent surveys.

The Spring Salamander is a habitat specialist. It is associated mainly with cool, clear streams in forested mountain regions. Individuals have also been found in streams in open areas, ponds, lake edges, peat habitats and caves. Permanent, well-oxygenated water is required for the aquatic respiration of the larvae. The lungless adults are restricted by skin respiration to moist, cool environments. During the summer, adults are usually found under large flat rocks at the edges of streams or in the vicinity of water. Small headwater streams free of predatory fish can support substantial numbers of Spring Salamanders. The salamanders probably spend the winter in wet underground cavities or unfrozen springs.

The size and trend of the Canadian population of the Spring Salamander are unknown. This salamander is characterized by late sexual maturity and low recruitment rate, indicating that it is probably slow to recover from population losses. The species is considered rare and usually only a few individuals are located when suitable habitat is searched. In areas of local abundance, from 5 to 20 individuals may be found per 25 m of stream. It has been estimated that about 850 adults may occur in the Quebec portion of the Adirondacks.

Habitat modification and destruction by forestry, housing developments and intensive recreation are the major threats to the Spring Salamander. Sedimentation resulting from road construction and canal work affects the survival of larvae. Pumping of aquifers near springs and changes in stream conditions following the cutting of forests at stream edges are also detrimental. The Spring Salamander may be vulnerable to contamination from atmospheric pollutants or pesticides used in forestry and agriculture, although detrimental effects have not been documented.

Conservation activities underway:

Habitat stewardship projects are ongoing in Quebec under RENEW (Recovery of Nationally

Endangered Wildlife in Canada).

Western Toad

Bufo boreas

Status assigned by COSEWIC
Special Concern

COSEWIC reasons for status designation
This species has suffered population declines and population extirpations, at least one of which is well documented. It is relatively intolerant of urban expansion and the conversion of habitat for agricultural use. Dependent upon oligotrophic and fishless ponds and small lakes for breeding, it is also sensitive to habitat deterioration, introduced exotic predators and competitors and disease. This species remains widespread and locally abundant throughout most of its historic range in Canada despite its known vulnerabilities to urban expansion, conversion of habitat for agriculture, habitat deterioration, introduced exotic predators and competitors and disease, all of which have severely reduced its abundance and range further south.

Assessment date
November 2002.

Canadian Range
Yukon, Northwest Territories, British Columbia, Alberta

Applicable Lands
Parks Canada Agency, Wildlife Management Boards

Situation summary
The Western Toad ranges from the West Coast to central Alberta and from Alaska south through the western United States to Baja California in Mexico. In Canada, the species occurs throughout much of British Columbia and central Alberta and is found in the Liard River Basin in southern Yukon.

The Western Toad occurs from sea level to 3,660 m and is one of few amphibians to inhabit alpine areas. It breeds in a wide range of natural and artificial aquatic habitats — from the shallow margins of lakes to roadside ditches. It appears that warm water temperatures and the absence of predators are desirable. Adult females may return each year to the same site to lay their eggs. Studies using radio tracking of Western Toads have shown that outside the breeding season toads spend up to 90% of their time in terrestrial habitats. Adult toads can be found in forested areas, wet shrublands, avalanche slopes, and meadows. They appear to favour dense shrub cover, perhaps because it provides protection from desiccation and predators.

This toad is an explosive breeder with widely fluctuating populations. In years when conditions are favourable, the species can appear very common as huge numbers of toads survive, producing a large number of offspring. Long-term monitoring is particularly important to obtain accurate estimates of population sizes and trends for this type of species. Because neither long-term data nor intensive population studies are available for the Western Toad in Canada, it is impossible to determine population trends. Although the toad appears to be doing relatively well overall, recent records indicate that the species has undergone declines, and some local populations on southern and central Vancouver Island and on the heavily populated Lower Mainland coast of British Columbia have been lost.

The degradation and loss of habitat to development and agriculture, particularly in the Greater

Vancouver and Victoria areas, have lead to population declines. As the remaining populations become more fragmented, they are more vulnerable to stochastic events and more likely to be lost, particularly during years with unfavourable climatic conditions. Western Toads in Canada are vulnerable to a long list of other factors, including mortality on roads, introduced alien predators, pesticides and contaminants. Clear-cut logging may create ponds that are attractive to the toads but which may act as population sinks. Predation or competition with introduced species, such as bullfrogs and stocked fish, are also a concern. The practice of stocking lakes where no fish occurred naturally may be one of the greatest threats to the Western Toad. The fish do not prey on the toads, but they carry diseases to which the toads and their tadpoles are susceptible.

The Western Toad has declined, in some cases precipitously, in the southern portion of its range (in the United States and Mexico). As a result, the IUCN listed the toad globally "endangered." Canadian populations are particularly important because they appear to be the last stronghold of the species.

Conservation activities underway:

Research and monitoring activities are ongoing.

Molluscs

Warty Jumping-slug

Hemphillia glandulosa

Status assigned by COSEWIC
Special Concern

COSEWIC reasons for status designation
Habitat loss and fragmentation through clear-cut logging forest practices are altering quantity and quality of coarse woody debris that provides refuges for the slugs and may be restricting dispersal movements. The species exists at the northern extremity of its range on southern Vancouver Island and the low numbers of scattered populations render it vulnerable to both natural and human disturbances.

Assessment date
May 2003

Canadian range
British Columbia

Applicable lands
None confirmed

Situation summary
The known range of the Warty Jumping-slug is small and extends from Vancouver Island, British Columbia, through Washington State to west-central Oregon. In Canada, the species is known from southern Vancouver Island south of Nanaimo, where it is at the northern edge of its range. There are no known records from the British Columbia mainland.

The Warty Jumping-slug occupies a variety of moist, forested habitats and riparian sites from low to middle elevations. The presence of adequate shelter is important. Suitable cover includes

decaying logs and other woody debris, leaf litter and the bases of Sword Ferns. The Warty Jumping-slug occupies forests of different ages, from old growth to younger seral stages. Although it has been found in some stands that were less than 15 years old, it is more common in stands that are more then 35 years old.

In Canada, the species is known from 14 localities in British Columbia. Because not all suitable habitat has been searched, it is likely that this jumping-slug occurs at additional sites. It has a patchy distribution in a restricted range and occurs at low densities, usually one to three individuals per site. As many as seven have been found in one location in the recent past and 12 were found at one site in 1900. There is no information on population size or trends.

The greatest threat to this species is clear-cut logging, which results in habitat loss, degradation and fragmentation. Logging alters the quality and quantity of coarse woody debris used by the Warty Jumping-slug for refuge. It isolates populations and restricts gene flow because this slug is relatively sedentary and has poor dispersal abilities. The low number of scattered populations leaves the species more vulnerable to natural and human disturbances. Isolated sites where the jumping-slug dies out are unlikely to be recolonized. Most of the land on which this species occurs is owned by forest companies.

Conservation activities underway
None

Vascular Plants

Athabasca Thrift

Armeria maritime ssp. interior

Status assigned by COSEWIC
Special Concern

COSEWIC reasons for status designation
A Canadian endemic occurring sparsely within a unique sand dune ecosystem of limited geographical extent supporting at least 10 endemic plant species with various threats indicated.

Assessment date
May 2002

The Athabasca Thrift was first designated Threatened by COSEWIC in April 1981. It was re-assessed and downlisted to Special Concern in April 1999.

Canadian Range
Saskatchewan

Applicable Lands
None confirmed

Situation summary
The Athabasca Thrift is a Canadian endemic subspecies. It is found only in Athabasca Sand Dunes Wilderness Provincial Park in northwestern Saskatchewan. It occurs in three large dune fields along the south shore of Lake Athabasca (known as the William River, Thomson Bay and MacFarlane River dunes).

The Athabasca Thrift is sparsely distributed within a unique, geographically limited, sand dune ecosystem. The plant's habitat, consisting of gravel pavements within areas of active sand dunes, is highly localized and fragile. Gravel pavements are created by wind action on a sandy gravel soil. They are uncommon and the vegetation on them is very sparse.

Exact population numbers and trends for the Athabasca Thrift are unknown, but there is no evidence to suggest that this plant has declined in recent years. It is, however, limited by its small population size, specialized habitat and extremely restricted range.

Although the Athabasca Thrift occurs in a wilderness park, it is subject to multiple potential threats. Tourism is increasing in the area and the impact of camping by canoeists on its habitat is becoming more significant. Degradation of habitat by all-terrain vehicle traffic is a potential threat — despite a ban on the use of these vehicles on the dunes. Mining exploration is permitted up to the edge of the park. Seeds of the Athabasca Thrift have been collected from inside the park for potential use in the rehabilitation of mine tailings, a practice that is incompatible with the protection of the plant in its native habitat. Overall, the pressures from mining, tourism, recreational use and other commercial activities are increasing. The Athabasca sand dunes support at least ten Canadian endemic plant species, all of which are subject to the same threats.

Conservation activities underway

None

Climbing Prairie Rose

Rosa setigera

Status assigned by COSEWIC

Special Concern

COSEWIC reasons for status designation

This is a shrub of remnant prairie habitats and clearings that is capable of also colonizing a variety of open disturbed sites within a geographically and climatically restricted region where decline in the extent and quality of habitat continues. Threats include factors such as urban expansion and intensive agricultural land use.

Assessment date

May 2003

The Climbing Prairie Rose was first designated Special Concern in April 1986. It was re-assessed and uplisted to Threatened in May 2002.

Canadian Range

Ontario

Applicable Lands

Parks Canada Agency, Department of Indian Affairs and Northern Development

Situation summary

The Climbing Prairie Rose occurs in the central United States and reaches the northern extent of its range in extreme southwestern Ontario. It occurs primarily in Essex County, with additional populations in the adjacent Chatham-Kent region, Lambton County and Middlesex County.

The Climbing Prairie Rose is an early successional species — it colonizes open habitats such as prairies, shrub meadows, abandoned agricultural fields and unoccupied urban land. The species shows a preference for sites with heavy soils, but is occasionally found on sandy or shallow soils

that dry out during part of the growing season. In Canada, the Climbing Prairie Rose occurs in areas with a long growing season and a climate moderated by Lake Erie.

The area occupied by the rose has likely decreased from that occupied during historic times. Surveys showed that the number of individuals in Ontario declined by about 20% between 1984 and 2000 to 2001. In 2000 to 2001, the population was estimated at about 150 mature plants, but surveys carried out during the more favourable 2002 season when precipitation was higher and when the resulting increased bloom made the plants more conspicuous, indicate that the Climbing Prairie Rose is more abundant than previously thought. It has been recorded at from 80 to 100 scattered locations and probably occurs at additional undocumented sites. Although it has disappeared from some sites, it is an opportunistic species and may colonize new sites. At most of the known sites, it occurs in low numbers, but may be locally common. More surveys are needed to determine the size of the current population, however there is no evidence of recent overall population declines.

Because this rose grows in open habitats, natural succession is a threat. If appropriate management is not undertaken to prevent the growth of trees, the habitat will become too shaded to support the Climbing Prairie Rose. This rose inhabits an area with a dense human population and its habitat is being lost to urban development (especially around Windsor) and recreational use of all-terrain vehicles. Invasive exotic shrubs occur in some habitats and could become significant competitors.

Conservation activities underway:

This species is included in a multi-species plan under RENEW (Recovery of Nationally Endangered Wildlife in Canada). Habitat stewardship projects are ongoing.

Tuberous Indian-plantain

Arnoglossum plantagineum

Status assigned by COSEWIC
Special Concern

COSEWIC reasons for status designation
Limited occurrences present within 5 shoreline areas of Lake Huron subject to recreational development and use but with some populations in protected areas.

Assessment date
May 2002

The Tuberous Indian-plantain was first designated Special Concern by COSEWIC in April 1988. Its status was re-examined and confirmed in April 1999.

Canadian Range
Ontario

Applicable Lands
Parks Canada Agency

Situation summary
The Tuberous Indian-plantain occurs in the central United States, from Ohio and Michigan south to Texas and Alabama. It reaches the northern extent of its range in Canada, where it occurs only in southern Ontario. The principle range of the species in southern Ontario is along the west side of the Bruce Peninsula. The Tuberous Indian-plantain is a habitat specialist that requires

wet, calcium-rich meadows or shoreline fens.

The species has undergone some historic population losses. Population estimates from 1998 indicate that there are approximately 5,000 flowering shoots at 13 sites. Comparison with information from 1988 reveals that the population is apparently stable, but there may be a slight decline in habitat availability.

The main threat to Canadian populations of the Tuberous Indian-plantain is the loss of habitat to cottage development (including drainage, lawn creation and mowing). Plants at some sites are vulnerable to trampling by fishermen, fossil hunters and all-terrain vehicles. In addition to populations on private property, significant populations occur in a national park.

Conservation activities underway
None

Lichens

Boreal Felt Lichen, Boreal population

Erioderma pedicellatum

Status assigned by COSEWIC
Special Concern

COSEWIC reasons for status designation
A population restricted to regions having a cool, humid oceanic climate, highly sensitive to atmospheric pollutants such as acid precipitation; numerous losses of populations have been documented as a consequence of habitat loss and/or degradation but the species is still widely dispersed throughout its traditional range with some very large populations in protected areas.

Assessment date
May 2002

Canadian Range
Newfoundland and Labrador

Applicable Lands
Parks Canada Agency, Department of Indian Affairs and Northern Development

Situation summary
The Boreal Felt Lichen is a globally rare species of great evolutionary significance. It has been documented in Atlantic Canada, Sweden and Norway, but is currently believed to exist only in Canada. There are two disjunct populations: the Boreal population on the island of Newfoundland and the Atlantic population (designated Endangered) in Nova Scotia and New Brunswick.

Typical habitat for the Boreal Felt Lichen is northerly exposed forested slopes where cool and moist conditions prevail throughout most of the year. These mature forest sites are also rich in moisture-loving species, such as sphagnum mosses and Cinnamon Fern. In well-lit forests, the Boreal Felt Lichen is found predominantly on tree trunks, whereas in more shaded habitats it usually grows on branches.

The Boreal population of the lichen is known from a total of 94 existing and historical sites

scattered across the western and southern regions of the island of Newfoundland. The lichen has disappeared from about 20 of these sites, resulting in an estimated loss of about 12% of the known individuals. Increased search efforts from 1995 to 2000 resulted in the discovery of numerous new occurrences of Boreal Felt Lichen on the island of Newfoundland and more sites probably remain to be found. It will therefore be difficult to estimate the overall population size until more of the potentially suitable habitat is surveyed.

The greatest threat to the Boreal Felt Lichen on the island of Newfoundland is likely logging. Even if lichen-bearing trees are not cut down, the removal of neighbouring trees results in changes in microhabitat (such as moisture levels) which can cause the lichen to die. The Boreal Felt Lichen has a complex life history that is not yet fully understood. Of all the lichens (which as a group are considered valuable indicators of air quality), the Boreal Felt lichen is one of the most sensitive to air pollution. It is extremely sensitive to acid rain, acid fog, industrial exhaust (e.g., pulp mills and oil refineries) and other air pollutants. Other threats include pesticides and possibly climate change.

The Boreal Felt Lichen is listed as critically endangered on the Red List of Lichenized Fungi of the World. The Boreal population of the Boreal Felt Lichen has a special significance as the last remaining viable population of this ancient and once far-ranging species. It is still widely dispersed in Newfoundland and occurs in most of its range on the island. A number of extant sub-populations are healthy and reproducing well and some occur in a national park.

Conservation activities underway

None

Glossary

alvar: rock barrens with little or no brush cover and no tree cover.

Applicable Lands: lands under the responsibility of a federal department where a species is known to occur.

COSEWIC: The Committee on the Status of Endangered Wildlife in Canada. The committee comprises experts on wildlife species at risk. Their backgrounds are in the fields of biology, ecology genetics and other relevant fields such as aboriginal traditional knowledge. These experts come from various communities, including among others, governments and academia.

disjunct: populations that are separate to the degree that there is no genetic exchange occurring between them.

endemic: a species occurring naturally only in one region.

fragmentation: the division of larger areas of natural habitat into smaller ones separated by a different (usually modified) habitat.

Governor in Council: The Governor General of Canada acting on the advice of the Queen's Privy Council for Canada (i.e. Cabinet)

Order: Order in Council (OIC). An instrument that serves notice of decision taken by the executive arm of government, for example, an Order in Council accompanies all regulations.

outlier: an individual or group of individuals distant from the main part of the species' range.

Privy Council Office (PCO): PCO assists the Clerk of the Privy Council Office in providing professional, non-partisan support to the Prime Minister in his or her role as head of government on all policy and operational issues. For more on the Privy Council Office, visit: http://www.pco-bcp.gc.ca/.

rescue potential: the likelihood that a declining population will be bolstered by individuals immigrating from neighbouring populations.

relict: a surviving species or population remaining in isolated localities despite environmental changes that have resulted in its extirpation from neighbouring areas.

RENEW (Recovery of Nationally Endangered Wildlife in Canada), the national recovery program established under the Accord for the Protection of Species at Risk.

RIAS: An analysis of the expected impact of each regulatory initiative must be done. The results of this analysis are summarized in a Regulatory Impact Analysis Statement (RIAS). The RIAS is, in effect, a public accounting of the need for each regulation in terms of this policy.

SARA list: Schedule 1 of the *Species at Risk Act* (SARA); the list of the species that receive protection under SARA.

stochastic: involving an element of chance or randomness.

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- *Tegeticula yuccasella* 19–20

Lichens
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- Wolverine
  - Western population 56–58
- Yucca Moth 19–20

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- Coastal Scouler's Catchfly 21–22
- Great Basin Gophersnake 36–37
- Grizzly Bear
  - Northwestern population 52–54
- Howell's Triteleia 24–25
- Jumping-slug
  - Dromedary 41–42
  - Warty 74
- Kellogg's Rush 25–26
- Lemmon's Holly Fern 46–47
- Long-billed Curlew 60–61
- Margined Streamside Moss 30
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- Pacific Gophersnake 8–9
- Pacific Pond Turtle 9–10
- Puget Oregonian Snail 10–11
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- Silver Hair Moss 31
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  - Western population 56–58
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- Northern Leopard Frog
  - Western Boreal / Prairie populations 69–70
- Polar Bear 54–56
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- Wolverine
  - Western population 56–58

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  - Atlantic population 33–34

Newfoundland and Labrador
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  - Boreal population 78–79
- Polar Bear 54–56
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Woodland Caribou
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Appendix 1: Species eligible for addition to Schedule 1 with consultations conducted by Fisheries and Oceans Canada

	Prov/Terr to be consulted	DFO Region	Status/Year assessed
Mammals			
Right whale (N Atl)	QC, NS, NB, PE, NL	Maritimes	EN 03
Blue whale (Atlantic)	NU, QC, NB, NS, PE, NL	Québec	EN 02
N Bottlenose whale	NS	Maritimes	EN 02
Blue whale (Pacific)	BC	Pacific	EN 02
Harbour porpoise (NW Atl)	NU, NB, NS, PE, QC, NL	Nfld/Lab	SC 03
Sei whale (Pacific)	BC	Pacific	EN 03
Humpback whale (N Pac)	BC	Pacific	TH 03
Fish			
Cusk	NS	Maritimes	TH 03
Atlantic cod (NL & Lab)	NL, QC	HQ	EN 03
Sockeye salmon (Sakinaw L)	BC	Pacific	EN 03
Sockeye salmon (Cultus L)	BC	Pacific	EN 03
Coho salmon (Int Fraser R)	BC	Pacific	EN 02
Atlantic cod (Laurentian North)	QC, NL, NB, NS, PEI	HQ	TH 03
Shortjaw cisco	NT, AB, SK, MB, ON	Central & Arctic	TH 03
Bocaccio	BC	Pacific	TH 02
Salish sucker	BC	Pacific	EN 02
Enos L sticklebacks, Limnetic	BC	Pacific	EN 02

Enos L sticklebacks, Benthic	BC	Pacific	EN 02
Northern madtom	ON	Central & Arctic	EN 02
Pugnose shiner	ON	Central & Arctic	EN 02
Speckled dace	BC	Pacific	EN 02
Atlantic cod (Arctic)	NU	Central & Arctic	SC 03
Atlantic cod (Maritimes)	NB, NS, PE, QC	HQ	SC 03
Channel darter	ON, QC	Central & Arctic	TH 02
Banded killifish (Nfld)	NL	Nfld/Lab	SC 03
Molluscs			
Lake Winnipeg physa	MB	Central & Arctic	EN 02
Kidneyshell	ON	Central & Arctic	EN 03
Round hickorynut	ON	Central & Arctic	EN 03

Appendix 2: Contacts for consultations conducted by Fisheries and Oceans Canada for species eligible for addition to Schedule 1

Newfoundland & Labrador
Catherine Hood
(709) 772-5693
Hoodc@dfo-mpo.gc.ca
For:
- Harbour porpoise
- Banded killifish

Maritimes
Arran McPherson
(902) 426-8503
McPhersonA@mar.dfo-mpo.gc.ca
For:
- Northern Bottlenose
- Right Whale
- Cusk

Québec
Richard Bailey
(418) 775-0585
BaileyR@dfo-mpo.gc.ca
For:
- Blue Whale (Atlantic)

Central & Arctic (Centre & Arctique)
Ray Ratynski
(204) 983-4438
RatynskiR@dfo-mpo.gc.ca
For:
- Channel Darter
- Northern Madtom
- Pugnose Shiner
- Shortjaw Cisco
- Lake Winnipeg Physa snail
- Kidneyshell
- Round hickorynut
- Atlantic cod (Arctic)

Pacific
Don Lawseth
(250) 756-7003
For a workbook for Pacific Region please contact:
rca@pac.dfo-mpo.gc.ca
For:
- Blue Whale (Pacific)
- Sei Whale (Pacific)
- Humpback Whale (North Pacific population)
- Coho Salmon
- Bocaccio
- Sockeye salmons (Cultus Lake & Sakinaw populations)
- Enos Lakes Sticklebacks
- Speckled Dace
- Salish Sucker

National Capital Region
Michel Vermette
(613) 991-6651
VermetteM@dfo-mpo.gc.ca
For:
- Atlantic cod (Maritimes)
- Atlantic cod (NL and Lab)
- Atlantic cod (Laurentian North)



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