This is a photo of a Least Bittern, along with a photo of suitable habitat for this bird in the Rat River Swamp in southeastern Manitoba.

The Least Bittern is listed as Threatened under the *Species at Risk Act* due to a loss of habitat from drainage of wetlands and the natural filling in of wetlands with woody vegetation such as shrubs and trees. Human disturbance during the nesting period, such as wave action from boats, can cause nesting failure. They are also killed by cars and hydro lines during flight.

Least Bittern photo taken by Brian E. Small and found at
http://www.speciesatrisk.gc.ca/search/speciesDetails_e.cfm?SpeciesID=51

Habitat photo taken by Ron Bazin, CWS Winnipeg

This presentation produced by Joanne Tuckwell, Parks Canada, September 2006

Canada

What is an Ecosystem?

What is an Ecosystem?

All biotic and abiotic components, and their interactions with each other, in a defined area

- Habitats
- Species (including humans)
- Interactions
  transfer of energy and matter

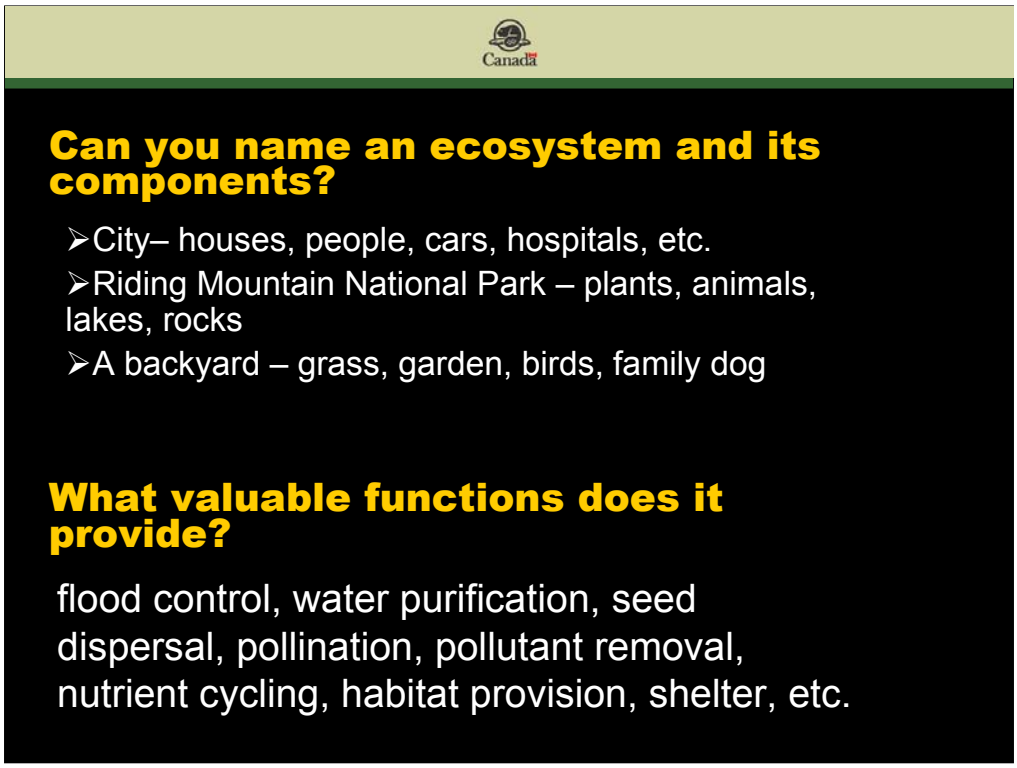
An ecosystem is an assemblage of living organisms living together in their environment and acting as a complex and dynamic whole. The size and scale of an ecosystem can vary from an entire ocean to a drop of water.

Photographer: M. Finkelstein, 1980

Canada

Can you name an ecosystem and its components?

What valuable functions does it provide?



An ecosystem is an area on the Earth that is a community of living organisms and their surrounding environment. Every person, animal, plant, rock, stream, and piece of land belongs to one or more ecosystems. Ecosystems are incredibly diverse, both in size and in form-a large city that contains millions of people, their homes, and a built-up landscape is an urban ecosystem, while a small wildlife preserve within that city serves as a natural ecosystem.

Canada

Ecosystem Hotspots

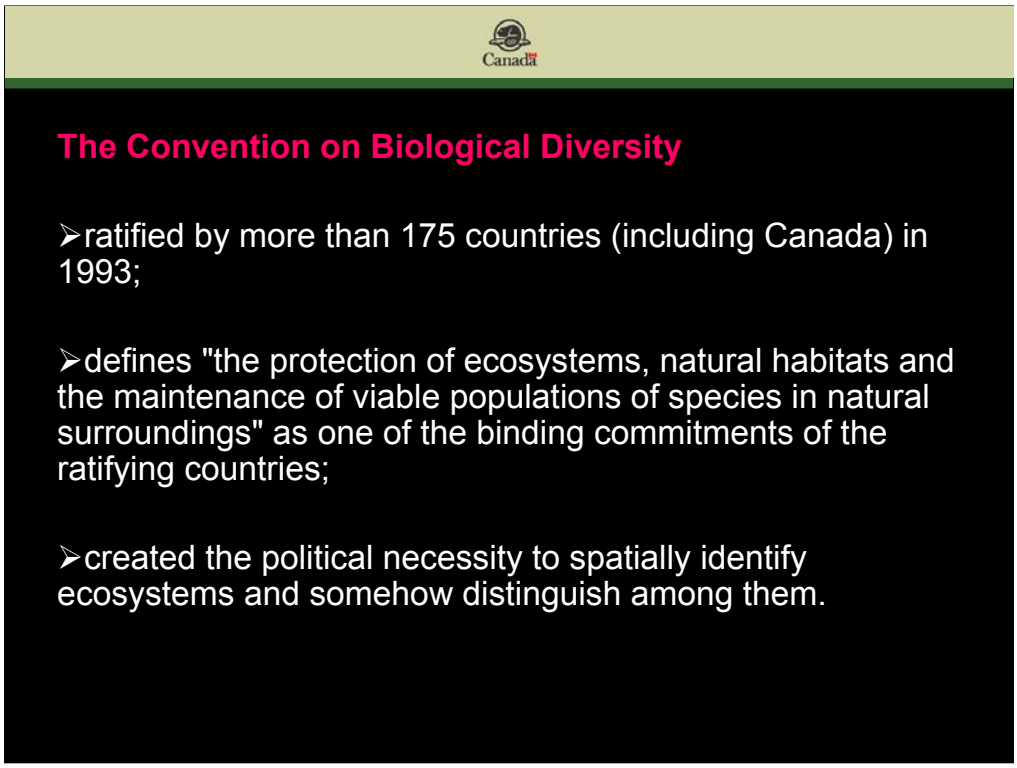
Ecosystems that support a relatively large number of species at risk:

- Carolinian forest
- Tallgrass prairie
- Douglas fir forest

Hotspots are key areas for conservation

Photo: A carolinian forest in Pt. Pelee National Park of Canada

Photographer: B. Morin, 2003



Much like a person, an ecosystem has a given level of health. A healthy ecosystem performs many valuable functions, such as flood control, water purification, seed dispersal, pollination, pollutant removal, nutrient cycling, and habitat provision. These functions are beneficial to both humans and other inhabitants of ecosystems. Consider the value of one wetland ecosystem that helps remove toxic substances from drinking water, provides a nursery for baby fish, and supplies shelter for clams and mussels-and these are only a few of the services provided by this ecosystem. Many ecosystems experience the effects of disturbances. These disturbances can be caused by human actions, such as bulldozing a forest to build a highway, or they can be a result of natural events, such as soil erosion from heavy rains. Disturbances often decrease the ability of an ecosystem to provide valuable function, and thereby decrease the health of the ecosystem. A feature of ecosystems, from the smallest backyard to the entire globe, is that they tend to be resilient. Given time, ecosystems can often recover from disturbances, maintain their health, and continue to provide the functions necessary to sustain life on Earth.

Canada

What is a Species at Risk?

A species at risk is a plant or animal that is at risk of extinction because of certain threats caused by humans. These threats can sometimes cause a species to go extinct. A lot of species are at risk due to a loss of their habitat from activities such as building houses and golf courses, cutting down trees and planting crops in areas where species at risk live.

Photographers: Barrett & McKay, 1986

Some species have already disappeared completely from Canada. For example, we used to have Grizzly Bears on the prairies but they no longer exist. They disappeared in the 1800's with the advancement of European settlers and the advent of firearms. As well, we used to have Black-footed Ferrets in the mixed-grass prairies of southern Canada. They disappeared from Canada in the late 1930s likely because of a loss of habitat and a loss of prey species (food).

Parks Canada is leading a team that is working towards the recovery of the black-footed ferret in Canada. The recovery of the plains grizzly bear is not feasible in Canada because there is not enough habitat left for them in the Canadian prairies.

Photographers: grizzlies (W. Lynch 1986), ferret (Mike Lockhart)

A group of experts, using the best science and traditional knowledge available, determines what level of risk to assign to species that are at risk:

Special Concern - a species that may become threatened because of certain biological characteristics and identified threats

Threatened – a species that may become endangered unless actions are taken to reverse the factors leading to its extirpation

Endangered – at imminent threat of extirpation

Extirpated – gone from the wild in Canada, but not other parts of the world

Extinct – no longer exist anywhere in the world

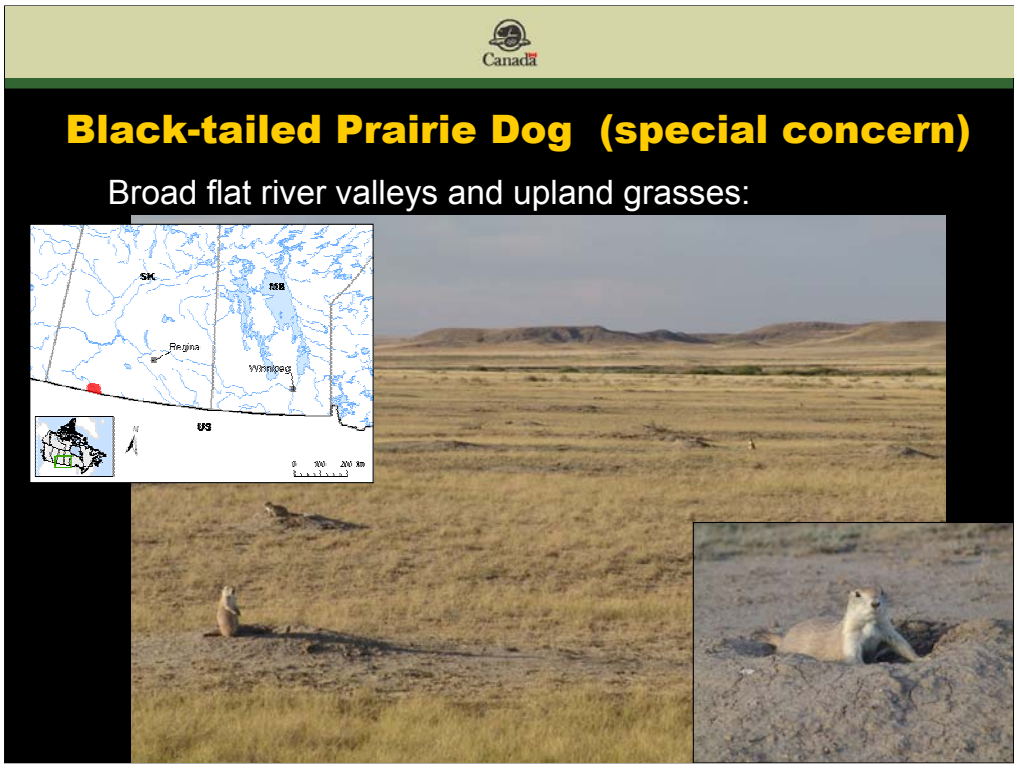
Canada

Extinction

- Natural phenomenon - continuous low rate
- Mass extinctions have been relatively rare
- Due to humans, the extinction rate has increased
- We could be in another mass extinction period
- Half the species existing may be extinct by 2100

Canada

Examples of Species at Risk in Canada and their Habitats:



Black-tailed prairie dogs occur in the arid grasslands of the Great Plains of North America, from Mexico to Saskatchewan. In Canada, they only occur in the Frenchman River Valley and upland areas in Grasslands National Park in the very southern part of Saskatchewan.

They establish large colonies, digging extensive burrows in the deep colluvial (rocky material at the base of a slope) or alluvial soil (fine soil deposited by water) and building large mounds. The vegetation in and around the colonies is often dominated by sage (Artemesia) and wheat grass (Agropyron). The shorter vegetation of these areas helps the species to more easily detect predators.

Black-tailed Prairie Dogs live in colonies in river valleys and grasslands. They are mainly herbivourous, grazing on vegetation such as buffalo grass (Bromus) and thistle (Circium), but sometimes eat insects including grasshoppers and beetles.

Canadian Black-tailed Prairie Dogs are particularly sensitive to human activities and natural events because of their restricted distribution at the northern edge of the species' range, and their apparent geographical isolation. Their social and colonial nature makes them very susceptible to disease. In addition, Black-tailed Prairie Dog seasonal activities and survival are likely constrained by climate. Grazing and disturbance of grasslands by the species places it in conflict with cattle production. Finally, pest control and social tolerance by humans are also concerns for the species.

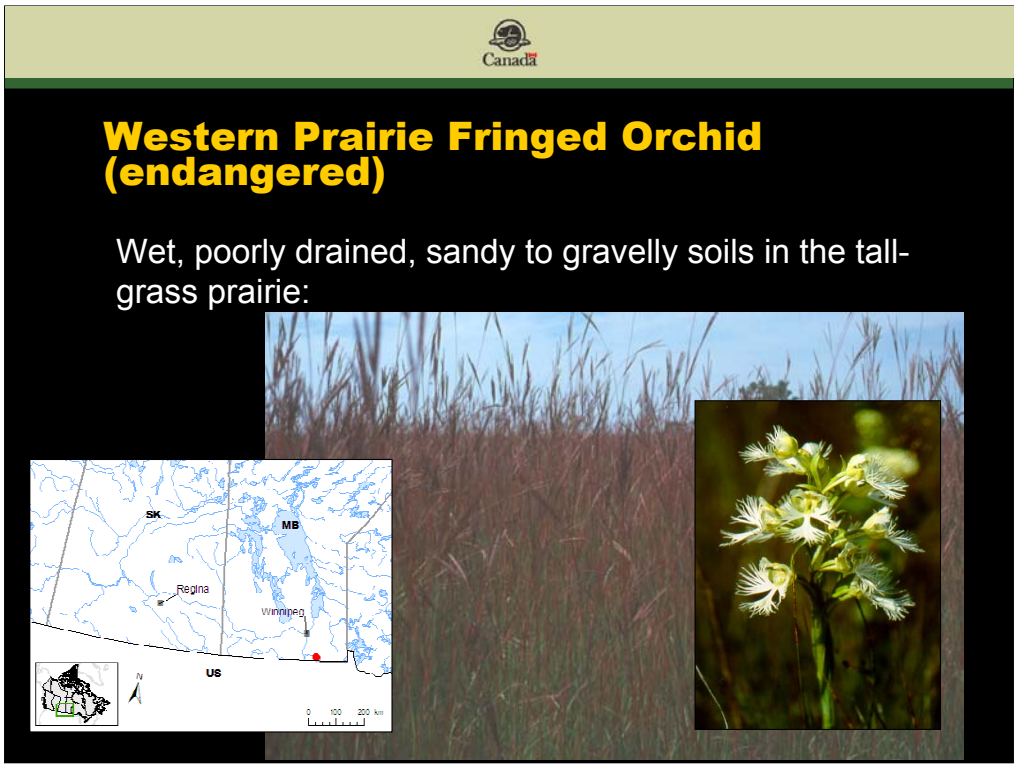
Map and description provided by the Canadian Wildlife Service at
http://www.speciesatrisk.gc.ca/search/speciesDetails_e.cfm?SpeciesID=151

Photos by Mike Lockhart, 2005.

The Burrowing Owl that lives in southwestern Manitoba depends upon areas of grazed grasslands. They nest and live in burrows that are usually created by animals such as ground squirrels, prairie dogs, or badgers, but they will build their own if none are available. Cultivated areas usually have been altered from their natural state so that they no longer contain the best type of soil for digging burrows or for finding insects to eat.

Map and description provided by the Canadian Wildlife Service at http://www.speciesatrisk.gc.ca/search/speciesDetails_e.cfm?SpeciesID=20

Photo by Geoff Holroyd, Canadian Wildlife Service



Presently, the Canadian population of Western Prairie Fringed-orchids is restricted to a 48 km2 area around the Manitoba townships of Vita and Stuartburn. During a recent survey, there were at least 8,000-9,000 flowering plants in the Canadian population.

This orchid is at the northern edge of its range and is limited by climate. It probably has a low reproductive potential and is sensitive to various periodic climatic effects, particularly precipitation and temperature. Habitat loss is the main factor responsible for population declines. Tall-grass prairie has been cultivated to form agricultural fields. Loss of habitat may also be affecting the populations of the orchid's pollinators, thereby reducing the plants' ability to reproduce. Overgrazing, intensive hay mowing, drainage of wet areas, competition with introduced species and fire suppression (which allows shrubby species to become established and crowd out, or shade out, the orchids) also negatively influence the orchids. Road maintenance activities, including ditch clearing and spraying with herbicides, has destroyed some plants.

Map and description provided by the Canadian Wildlife Service at http://www.speciesatrisk.gc.ca/search/speciesDetails_e.cfm?SpeciesID=200

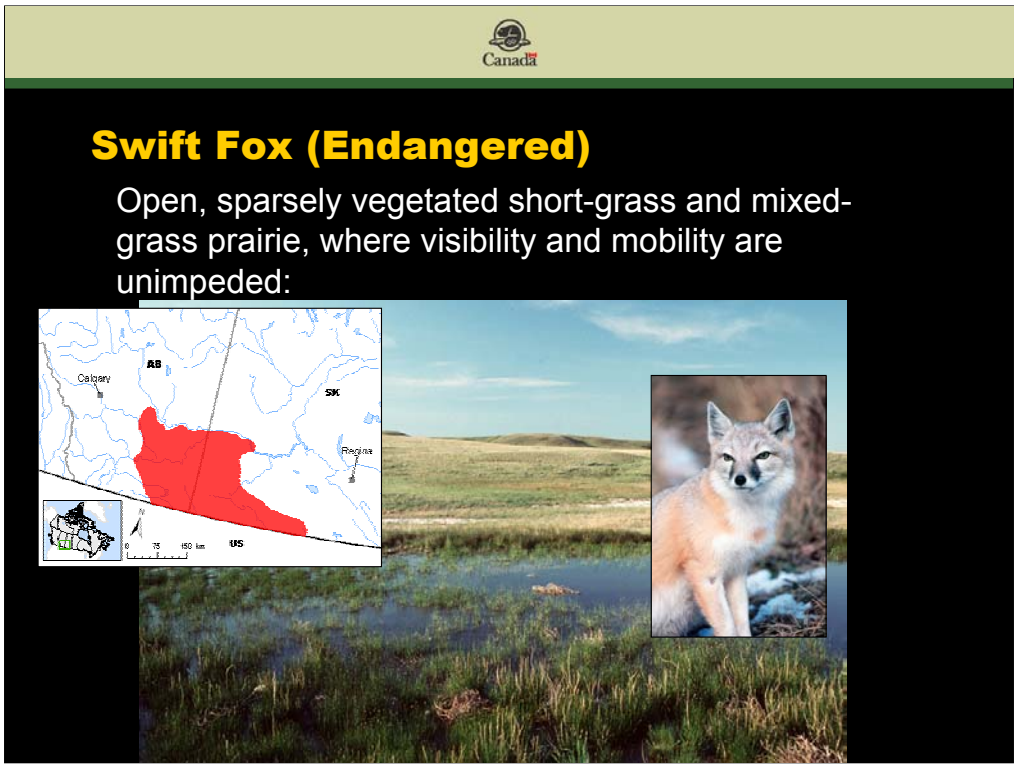
Photos provided by Jason Greenall, Manitoba Conservation

The Western Silvery Aster occurs in central North America from Manitoba to Texas. In Canada, it is at the northern limit of its distribution and a total of about 6,500 stems occur at two major sites and a number of smaller ones in Ontario and southeastern Manitoba.

The natural limiting factors for the Western Silvery Aster are not well known, but restricted distribution and low seed production are cause for concern. Loss of habitat as a result of human activities (residential development, recreational use, gravel extraction, fire suppression, pasture enhancement and haying) and invasion of grasslands by alien species and woody vegetation are considered to be limiting factors. Many small populations occurring along roadsides are at risk from road maintenance operations.

Map and description provided by the Canadian Wildlife Service at http://www.speciesatrisk.gc.ca/search/speciesDetails_e.cfm?SpeciesID=269

Photo provided by Manitoba Conservation



Swift foxes disappeared from Canada in 1928. Through re-introduction efforts there are now small populations living in south-eastern Alberta and south-western Saskatchewan.

The conversion of native prairie grasslands to farmland has reduced both the quantity and quality of habitat available to the Swift Fox over much of its former range. The Swift Fox is very vulnerable to shooting and trapping since it is not wary of humans, and poison used to kill coyotes has been detrimental to the species. Predation by coyotes, eagles, and Red-tailed and Rough-legged Hawks is a potential threat to the Swift Fox.

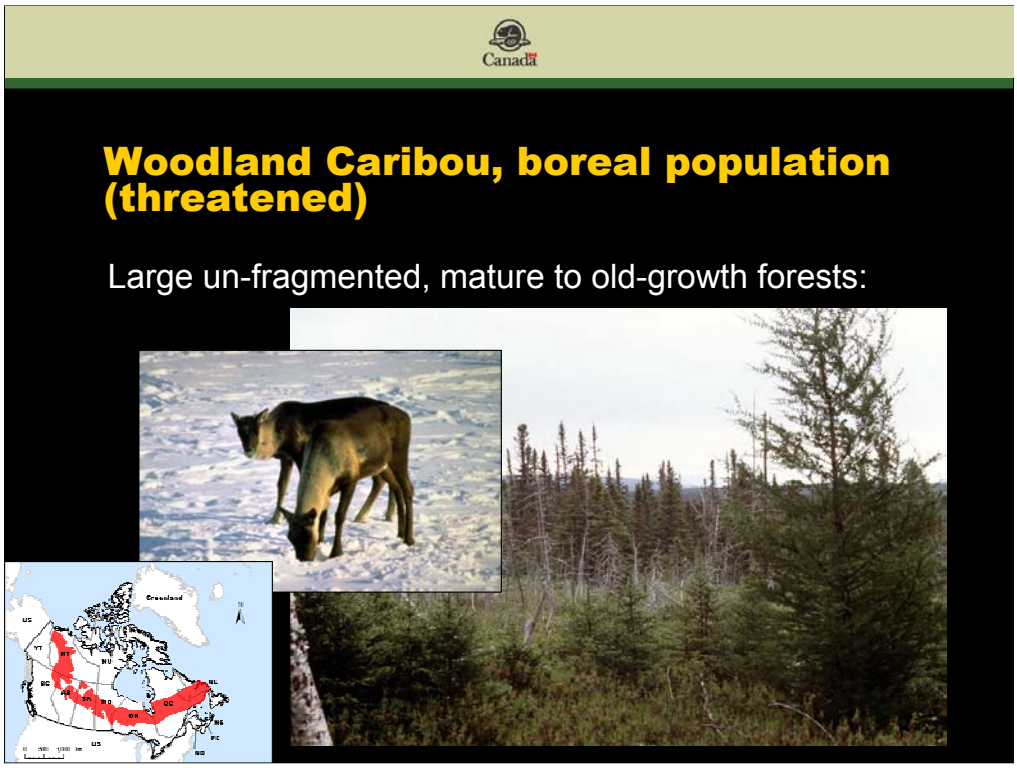
Map and description provided by the Canadian Wildlife Service at http://www.speciesatrisk.gc.ca/search/speciesDetails_e.cfm?SpeciesID=140

Photographer: Grasslands National Park of Canada - W. Lynch, 1989 Swift Fox – W. Lynch, 2002

In Canada, the Northern Prairie Skink is found only in southwestern Manitoba. Severe weather conditions may affect breeding and thus limit the populations of Northern Prairie Skinks. Loss of habitat is an important limiting factor for the species.

Map and description provided by the Canadian Wildlife Service at http://www.speciesatrisk.gc.ca/search/speciesDetails_e.cfm?SpeciesID=282

Photos by Jim Duncan, Manitoba Conservation



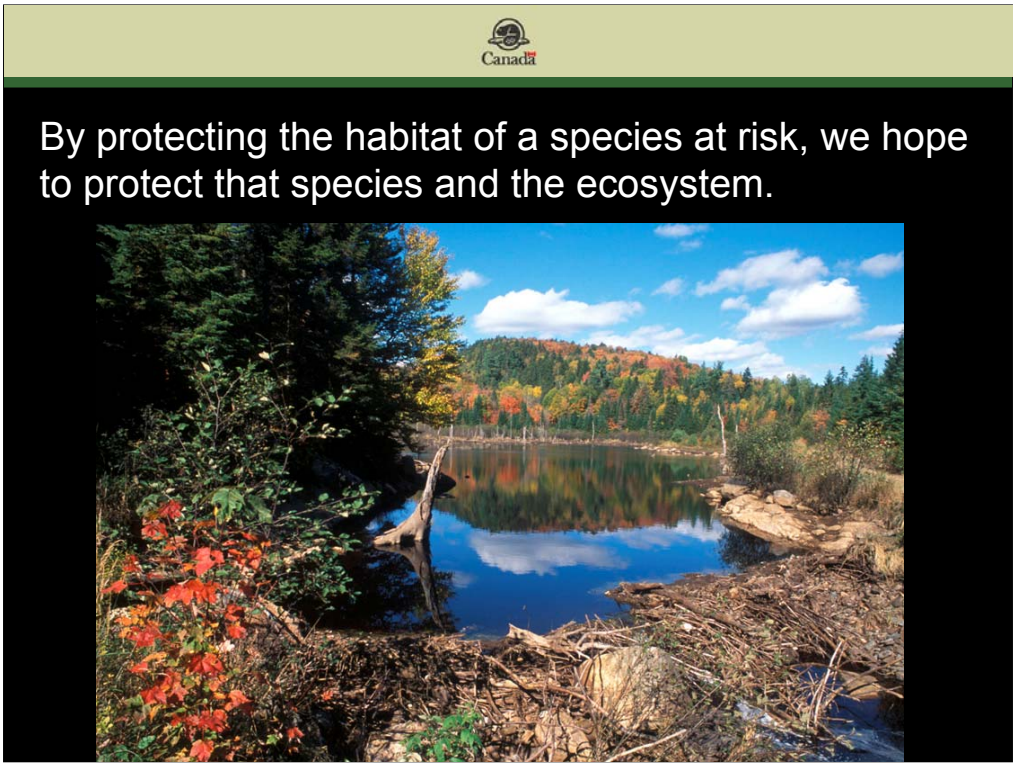
Many subpopulations of the Woodland Caribou (Boreal population) show a preference for peatlands; they generally avoid clear cuts, shrub-rich habitat, and aspen-poplar dominated sites. The most common tree species in preferred habitats are Black Spruce, White Spruce, and Tamarack.

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 caribou habitat. Factors beyond our control, such as 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.

Map and description provided by the Canadian Wildlife Service at
http://www.speciesatrisk.gc.ca/search/speciesDetails_e.cfm?SpeciesID=636

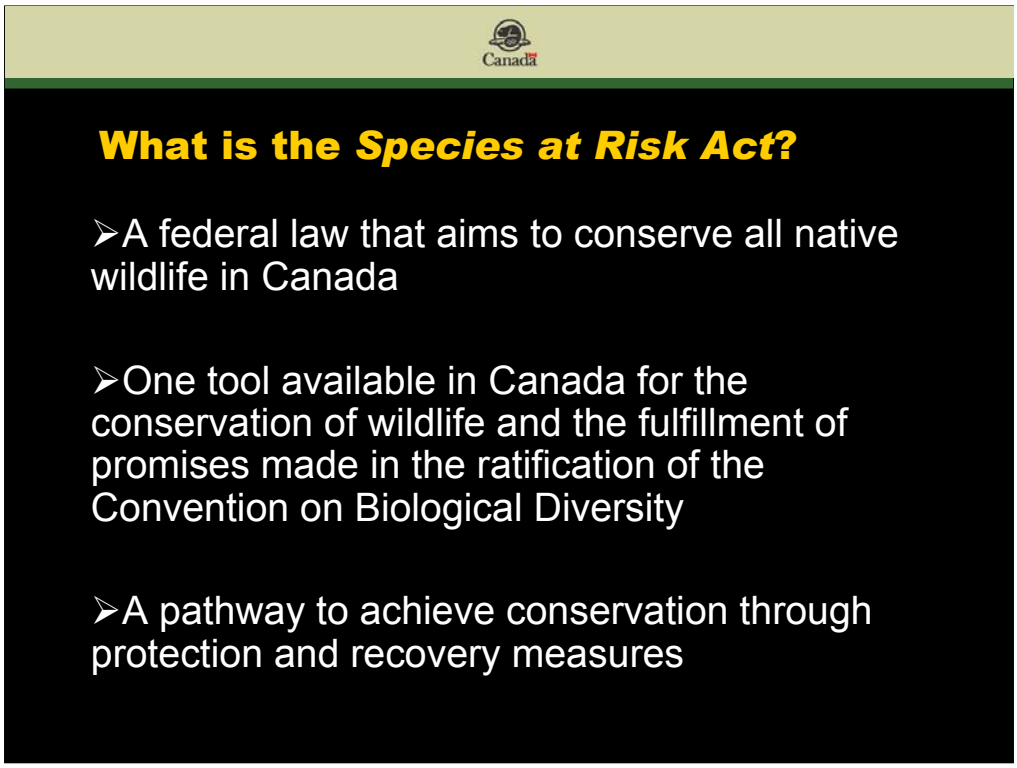
Habitat: A. Savoie, 1980 Terra Nova National Park of Canada

Woodland Caribou: Parks Canada



By protecting the habitat of a species at risk, we hope to protect that species, prevent its extirpation and we hope to protect the ecosystem.

Photographer: J. Pleau, 2004, La Mauricie National Park of Canada



The *Species at Risk Act* (SARA), is a federal law that aims to protect all native species in Canada. It does this through both protection of the species and recovery actions for the species. It is just one tool available to Canada to help conserve species at risk.

Once a species is listed at one of these levels under the *Species at Risk Act*, it is illegal to:

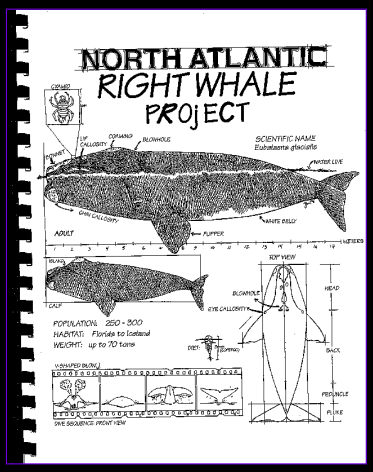
•Kill, harm, harass, capture or take and individual of a species listed as threatened, endangered or extirpated

•Possess, collect, buy, sell or trade an individual of a species listed as threatened, endangered or extirpated, or any part or derivative of such an individual

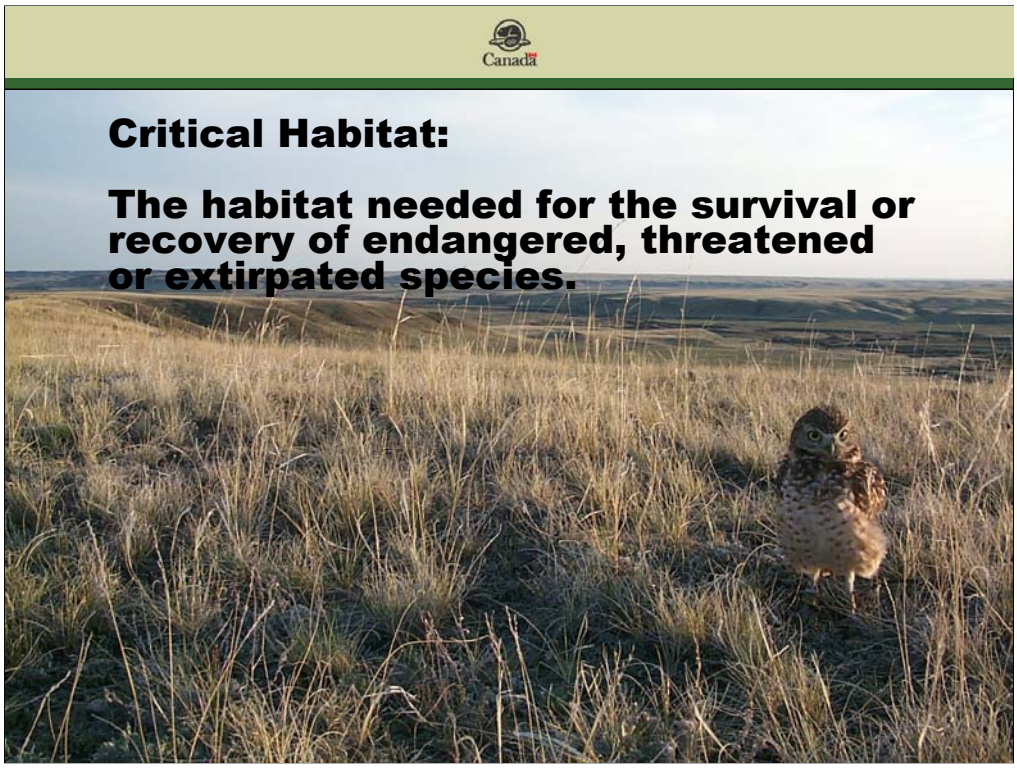
•Damage or destroy the residence of one or more individuals of a species listed as threatened, endangered or extirpated

Canada

Recovery plans must be written for all listed species

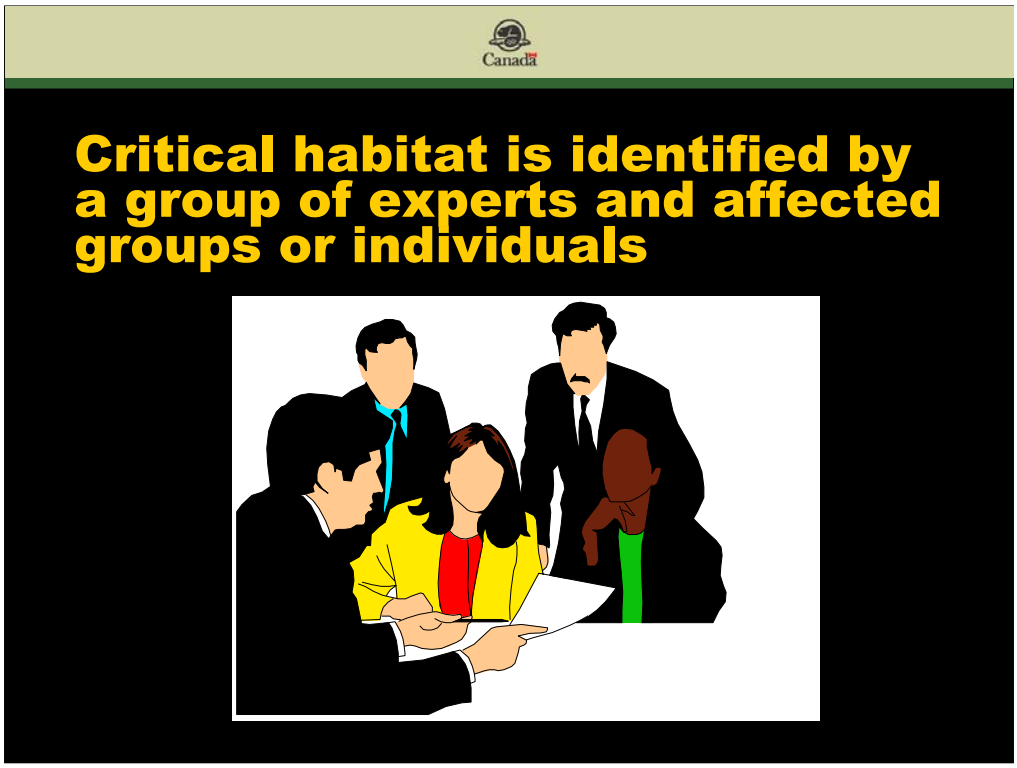


Once a species is listed under SARA, a plan is written to outline the actions that will be taken to recover that species and move it off the list of species at risk.



Part of this plan may involve identification of the critical habitat of a species. The critical habitat is the habitat needed for the survival or recovery of a threatened, endangered or extirpated species.

Photo provide by Geoff Holroyd, Canadian Wildlife Service.



A group of experts, along with any affected groups or individuals, identifies this critical habitat for a species.

Once critical habitat is officially designated under SARA, it is illegal to destroy any part of it. Destruction can mean many different things and will be defined by the same group of people who define critical habitat for a particular species.

Photographer: A. Savoie, 1980

Socio-economic Factors:

Recovery plans must be written with the cooperation or consultation of directly affected people and organizations.

These plans must include an analysis of the effects of the plan on socio-economic factors.

Efforts are made to incorporate recovery activities that minimize the negative effects for local landowners and industry.

Canada

Examples of Recovery Actions that consider Socio-economic Factors:

Conservation Easements – landowners are given money to manage their land in a sustainable manner for a particular species.

Photographer: J. Pleau, 1999

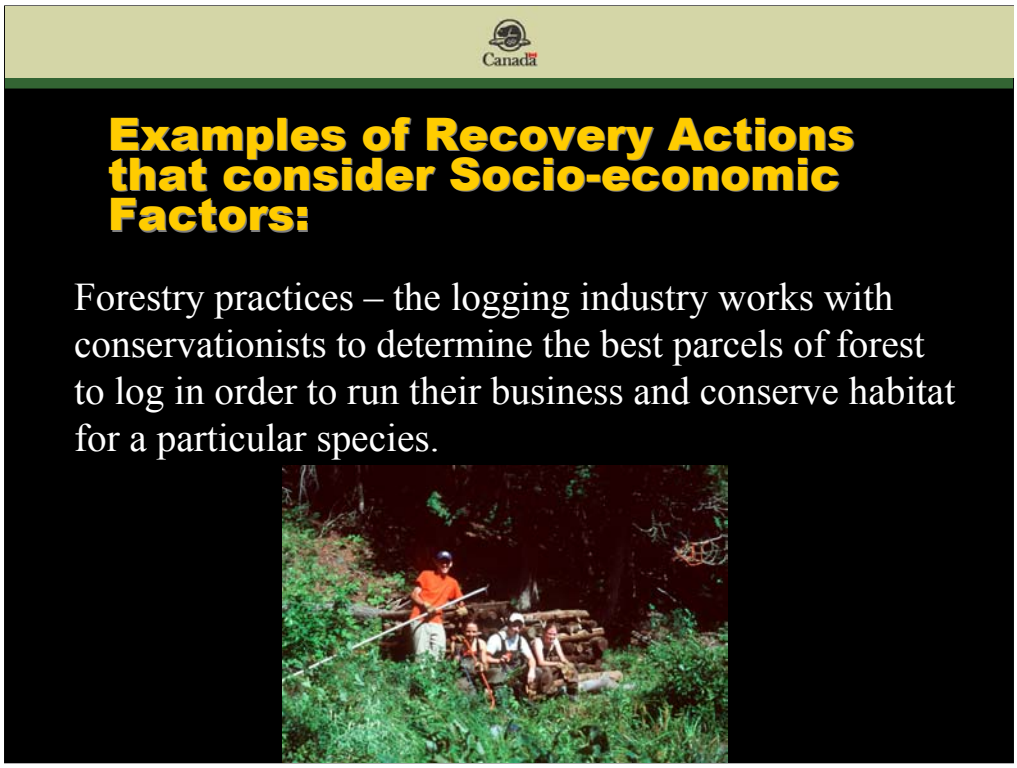


Photo © Parks Canada Agency

Photographer: L. Gélinas, 2001

Canada

Examples of Recovery Actions that consider Socio-economic Factors:

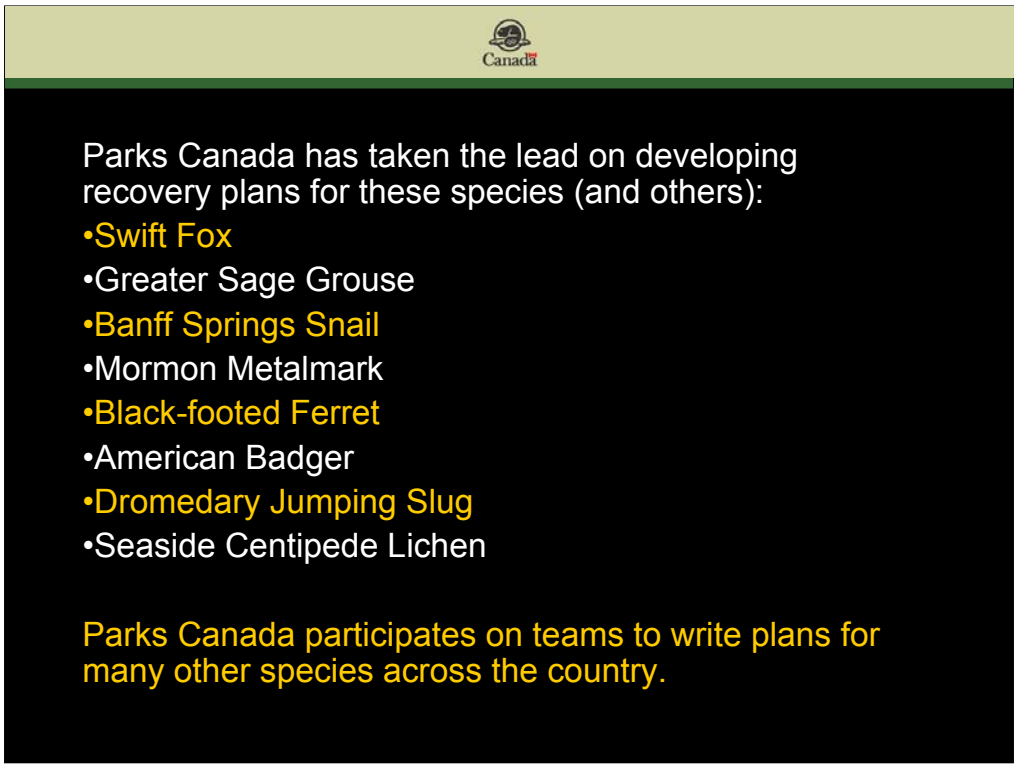
Aboriginal harvesting quotas – aboriginal groups sit on recovery teams to develop sustainable hunting and fishing quotas while maintaining their aboriginal rights.

Photographer: W. Lynch, 1991

Canada

Where does Parks Canada fit into the efforts to save Species at Risk?

Parks Canada manages Canada's National Parks, National Marine Conservation Areas, and National Historic Sites. Parks Canada is responsible for all species at risk on these lands. Parks Canada also manages the Pingo Canadian Landmark north of Inuvik in the Northwest Territories.



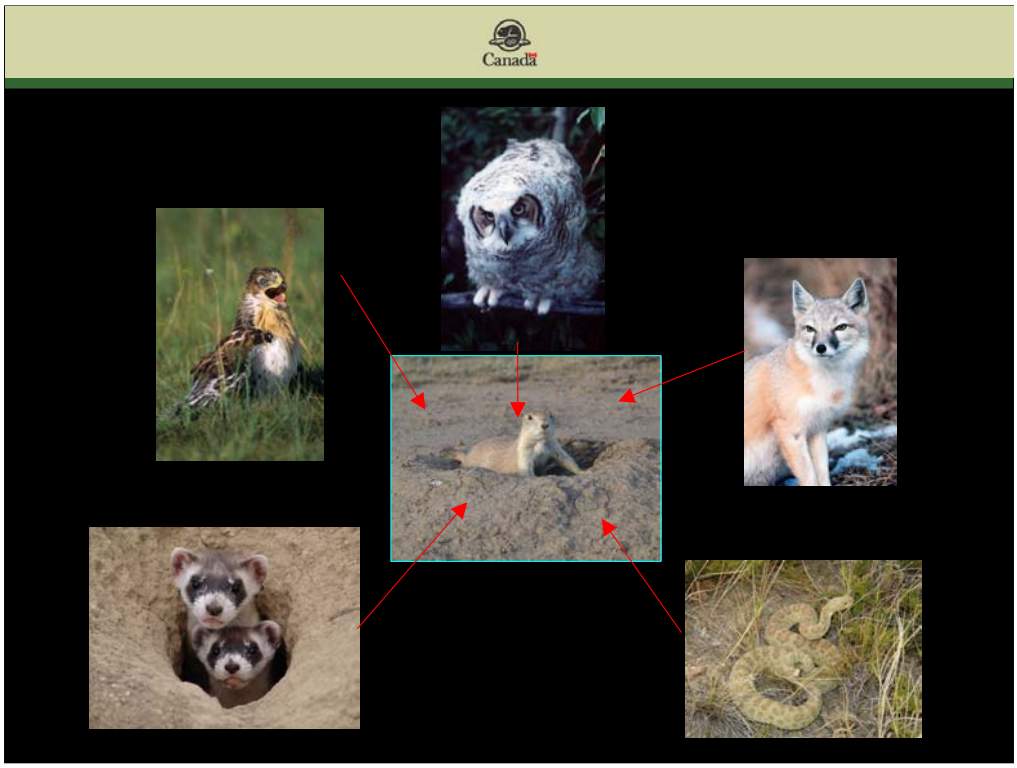
Parks Canada is leading the development of over 10% of all recovery strategies in Canada. Environment Canada, through the Canadian Wildlife Service is leading on the majority of terrestrial plants and animals, while the Department of Fisheries and Oceans is leading on most aquatic species. Parks Canada also participates in, but does not lead, the development of over 50% of all recovery strategies across Canada. Some of these species include the Woodland Caribou, Burrowing Owl and Peregrine Falcon.

Canada

Why are all species important?

Each species plays a role in an ecosystem and removing that species can have far-reaching effects on the entire community.

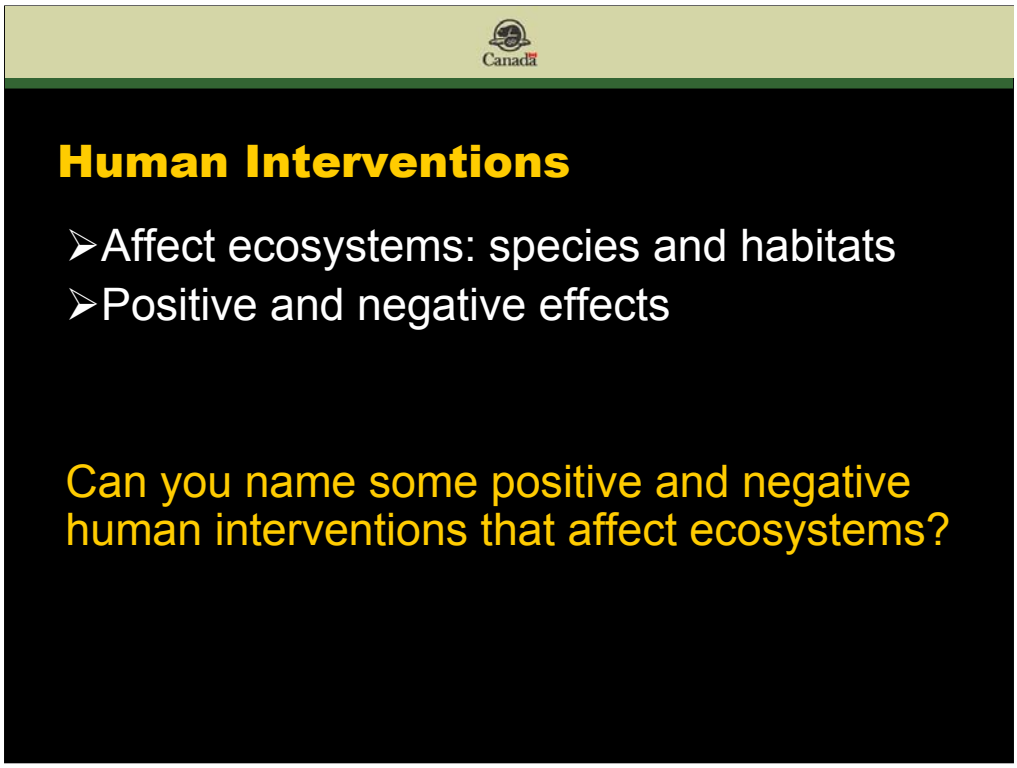
Photo by: Mike Lockhart



For example, the Black-tailed Prairie Dog lives in the northern mixed-grass prairie is southern Saskatchewan and is considered a keystone species. This means that prairie dogs have a large effect on their environment even though they are such small animals and there aren't a lot of them around. The prairie dogs build a colony where hundreds of them live together in a series of burrows that they dig. Many species depend on these burrows for their homes, such as swift foxes, rattlesnakes, frogs, bees and black-footed ferrets. Many species also depend on the prairie dogs for food, such as Ferruginous Hawks, black-footed ferrets, foxes and Great-horned Owls. The black-tailed prairie dog is considered a species of special concern under the *Species at Risk Act*. It is at risk because of threats from shooting, poisoning and risk of disease. If this species disappears from Canada all of the species that depend upon it for food or shelter will be affected. This is why it is important that the Federal Government has listed this species and is working on its conservation.

Black-tailed prairie dog, black-footed ferret and prairie rattlesnake photos provided by Mike Lockhart.

Photographers: Great-horned Owl (W. Lynch 1987), swift fox (W. Lynch 2002), Ferruginous Hawk (W. Lynch 2002)

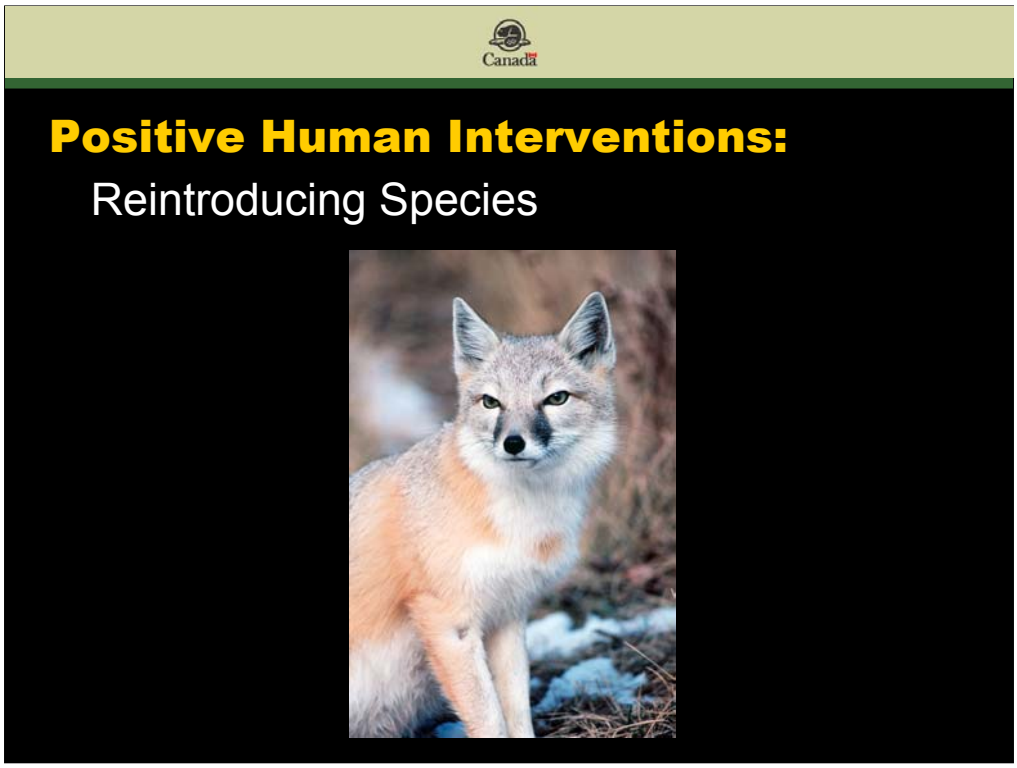


Human activities can affect species and their ecosystems and habitats. For species that are already at risk, these activities can have strong negative effects from which the species may not be able to recover. They can also have positive effects that help preserve the ecosystem and conserve species at risk.

Examples of positive Human Interventions:

Many efforts have been undertaken in Canada to protect the habitats of species at risk. These include protecting the nesting habitat of Piping Plovers (Endangered) on the beaches of Lake Winnipeg.

Photo: Alex Miller



Examples of positive Human Interventions:

Many species that have already been extirpated from Canada have been successfully reintroduced and are living in the wild in Canada once again. The Swift Fox is an example of a species that has been successfully reintroduced in the mixed-grass prairie of Saskatchewan and Alberta.

Photographer: W.Lynch, 2002

Examples of negative human interventions:

Fire – naturally caused by lighting, fire is a natural process that helps restore an ecosystem. Suppressing this process can lead to unnatural conditions not suitable for species in the ecosystem.

Photo by Wybo Vanderschuitt, Riding Mountain National Park of Canada

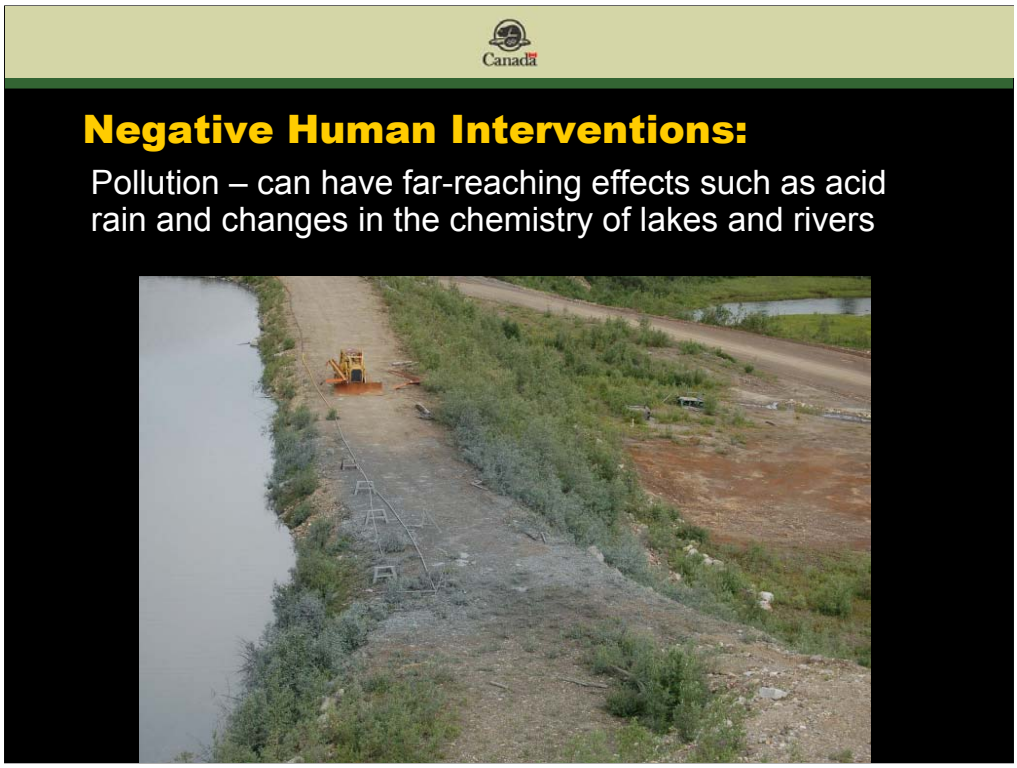
Examples of human-caused habitat changes that affect species at risk in Manitoba:

Resource Extraction = logging, mining, farming, etc.

Species that rely on the boreal forest for their habitat are affected by clear-cut logging in the forest. For example, woodland caribou are being forced to live in small remaining patches of forest that have not been logged and are being isolated from other individuals in other patches. The woodland caribou is considered threatened under the *Species at Risk Act*.

Draining wetlands in order to grow crops destroys the habitat for species such as the Least Bittern. The Least Bittern is considered threatened under the *Species at Risk Act*.

This is a photo of a mine in the Northwest Territories.



Examples of human-caused habitat changes that affect species at risk in Manitoba:

Pollution – pollution causes many habitat changes. The effects can be far-reaching. For example, the fertilizer used to grow a crop can leach into the nearby lakes and create chemical levels in the lakes that are not suitable for the fish. Car exhaust causes acid rain which can harm trees and change the chemistry of lakes so that fish cannot survive.

This is a photo of mine tailings (waste from a mining process) spilled on the land from a mine in the Northwest Territories.

Canada

What can you do to help species at risk?

Canada

What you can do

Learn more about Species at Risk:

SPECIES AT RISK : An interactive web site for youth about species at risk in Canada. Explore related issues, such as habitat loss, and take the Species at Risk Quiz.
http://www.on.ec.gc.ca/wildlife/sarwheel/ec-sar-flash/index.html

Kids Zone – Canadian Wildlife Service http://www.ec.gc.ca/youth/

EcoKids On-line - http://www.ecokidsonline.com/pub/

WWF for kids -
http://www.wwf.ca/satellite/wwfkids/index.html?IGNOREcart=

Oceans Canada – Kid's Corner - http://www.dfo-mpo.gc.ca/canwaters-eauxcan/bbb-lgb/index_e.asp

What you can do

Learn more about Species at Risk:

http://www.spaceforspecies.ca/

http://www.ec.gc.ca/eco/main_e.htm

Join Environmental Groups:

Sierra Youth Coalition - http://www.syc-cjs.org/tiki-index.php

Many schools hold a fundraiser and donate the money to an environmental group of their choice (such as the Sierra Club, the World Wildlife Fund or your local wildlife rehabilitation centre).

What you can do

Volunteer:

NATURE WATCH : Existing monitoring programs such as FrogWatch, IceWatch, PlantWatch and WormWatch form the founding components of NatureWatch. These programs encourage schools, community groups and individuals to engage in the monitoring of soil, air, water and other aspects of environmental quality.http://www.naturewatch.ca/english/

You can Adopt an Animal through the Toronto Zoo: http://www.torontozoo.com

Do you want something interesting to do during Canada's long winters? Project FeederWatch participants count the birds at their feeders and submit their data: http://www.bsc–eoc.org/national/pfw.html