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# BOREALIS

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## The Summer of Clayoquot

Preserving the Wild Heart  
of North America

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A New Kind  
of National Park

Newfoundland Fisheries:  
The End of  
the Jiggin' Line

Chief Seattle & the  
Puget Sound Buffalo Wallow

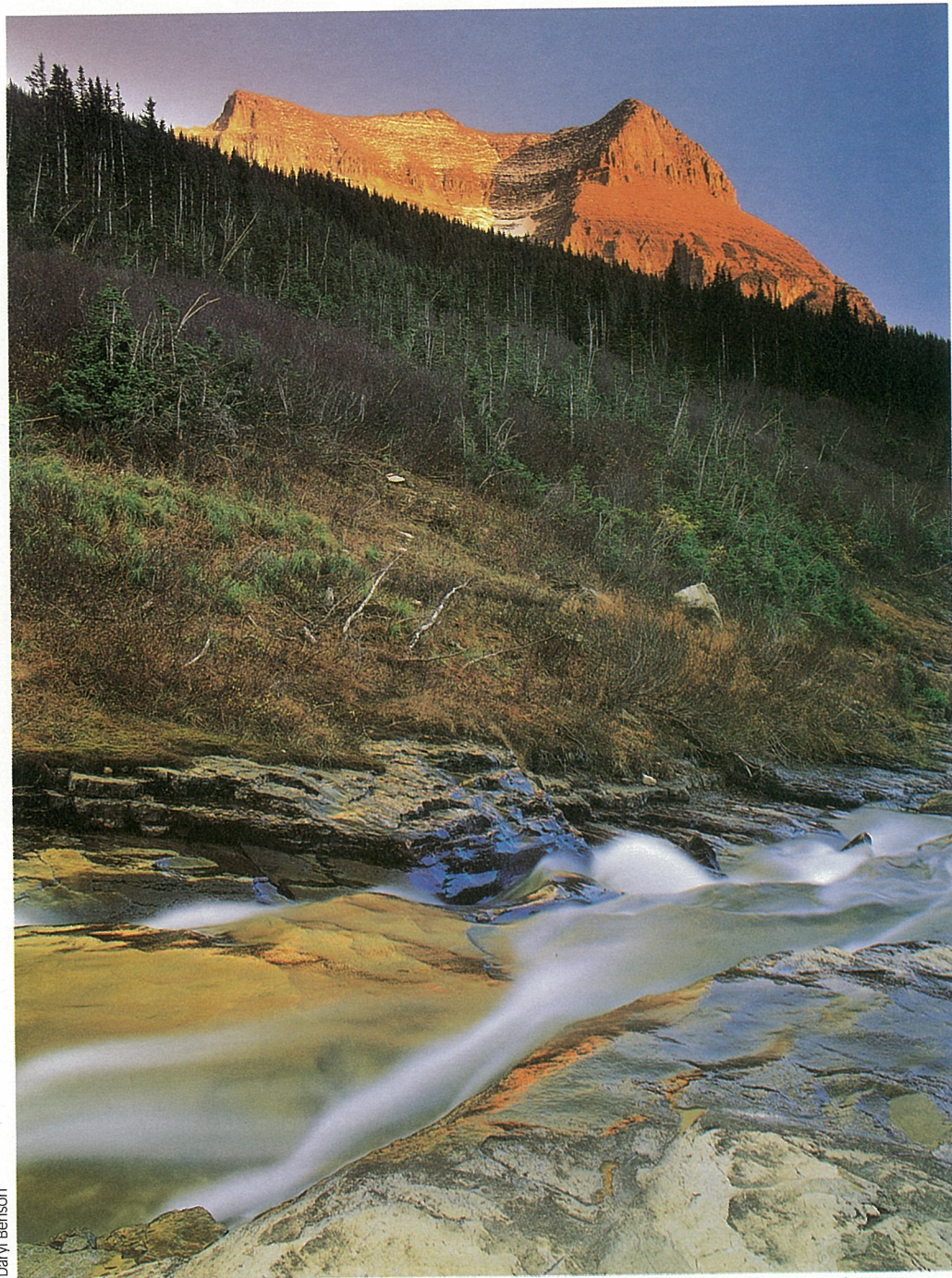




THE WILDLANDS PROJECT AND THE YELLOWSTONE TO YUKON BIODIVERSITY STRATEGY

# Preserving<sup>the</sup> Wild Heart of North America

ARTICLE BY HARVEY LOCKE



Daryl Benson



Fall is coming to the willows and birch shrubs in the Northern Canadian Rockies near Mile 200 of the Alaska Highway, north of Dawson Creek, B.C. On the shoulder of a tundra-covered ridge in the Caribou Range, we see nine moose and one caribou at one time in our binoculars. A slight rotation to the right and five more moose come into view. Looking back to the other group, we watch as the moose suddenly see the lone caribou. They scatter in all directions. The caribou makes a beeline for the ridge top, moving quickly and smoothly. The moose gather again. Life goes on. In October, hundreds of caribou will come here for the rut.

A few hundred kilometres to the south, close to the southern end of the range of woodland caribou in the Canadian Rockies, are Willmore Wilderness and Jasper National parks. Here the caribou are not doing so well. A combination of clearcutting old-growth forests in their wintering range outside the parks (in winter they depend on old-growth lichens for food), habitat fragmentation, highway mortality, hunting and wolf predation has brought their numbers perilously low.

Farther down the Canadian Rockies, in the Flathead Valley of southeast British Columbia and northwest Montana, a grizzly bear digs up the bulb of a bear grass plant. This valley, which is in the heart of an area known as the Crown of the Continent ecosystem, contains the densest concentration of grizzlies in the interior of North America.

The Flathead Valley is also where efforts to reintroduce the wolf into the western part of the lower 48 states of the United States began. Over the last 15 years the Montana Flathead wolf population has grown from a handful of isolated visitors from Canada to a more stable breeding population. Much of this has occurred under the watchful eye of wolf biologist Diane Boyd, who has been putting radio collars on wolves in the Flathead to monitor their movements and learn more about their biology.

North of the Flathead in Banff National Park, Dr. Paul Paquet has been doing similar work. At a recent gathering of large carnivore biologists in Banff, Boyd and Paquet presented some data on wolf movements that have some stunning implications. One of the wolves Boyd collared in the Montana Flathead travelled all the way up the Canadian Rockies to a point near Daw-

son Creek, B.C. — mile 0 on the Alaska Highway. There it was shot. The implications were clear. The Canadian Rockies are part of one gigantic linear ecosystem.

In addition to possessing some of the world's most beautiful mountain scenery, the Canadian Rockies also still have the full complement of large carnivores and ungulates indigenous to western North America. Nowhere else in North America will you find significant numbers of people living

tems. The arid plains of Montana, Alberta and Saskatchewan depend on snowfall and glacier melt from the Rockies to feed their rivers. The Canadian Rockies are the natural heart of western North America.

Unfortunately, these high country ecosystems are not managed in a way that recognizes their seminal importance to life in North America. Many biologists think this must change if these ecosystems are to remain healthy. According to biologists, the first step is to



Harvey Locke

adjacent to an area that has retained its large carnivores.

Geologically the Canadian Rockies are not just Canadian. They start just south of the Bob Marshal Wilderness in Montana, where they are called the Northern Rockies by Americans, run north-northeast up the British Columbia-Alberta boundary and through northeast British Columbia and terminate at the Liard River just south of the Yukon Territory. They are bounded on the east by foothills and prairies and on the west by a remarkable feature known as the Rocky Mountain Trench, a deep valley that runs their entire length. The ecology of the Rockies also ignores political boundaries. A grizzly in the Crown of the Continent ecosystem region can, in a day's travel, visit corners of Montana, British Columbia and Alberta.

Most of western North America's great rivers trace their source to this ecologically rich area, including the Missouri, Columbia, Saskatchewan, Fraser and Peace-Athabasca-Mackenzie sys-

LEFT: SIYEH CREEK IN GLACIER NATIONAL PARK, MONTANA.

ABOVE: MOSS CAMPION ON THE TOP OF STARLIGHT RANGE IN WILLMORE WILDERNESS PARK.

begin ignoring political boundaries.

Dr. Bruce McLellan is a grizzly bear biologist who has spent the last 14 summers studying grizzly bears in the Flathead Valley. "The most important grizzly bear population for the United States is in southern Canada," he says. "Without bears in B.C.'s Flathead and Alberta's Castle River drainages, the grizzly bear population in Glacier National Park, Montana and the surrounding Crown of the Continent ecosystem will become genetically isolated, which usually results in extirpation."

A glance at a map of current and historic distribution of grizzly bears in North America (see page 24) that McLellan has prepared confirms his point. In 1922, isolated populations of grizzly bears were found in California, New Mexico and Colorado. They were all



wiped out. Now the only grizzly bears in California are found in zoos and on the California state flag.

The importance of keeping large carnivore populations interconnected prompted World Wildlife Fund Canada to fund research into how large an area must be to ensure survival of a given species. Their results were used to define the Carnivore Conservation Area concept. "You can't save large carnivores without protecting large wilderness," Monte Hummel, president of

In 1992, Alberta's Natural Resources Conservation Board held a hearing on whether or not to approve a massive resort and housing development proposed for the Bow Valley and the Wind Valley adjacent to Banff National Park. A number of environmental groups intervened. A coalition of the Alpine Club of Canada, the Canadian Parks and Wilderness Society and the Sierra Club of Western Canada were particularly concerned about the effect on the regional ecosystem of development in the Wind Valley.

It is one thing to say that the Canadian Rockies must be managed as a whole and another thing to achieve it. How do you begin to create a framework to manage so vast an area? In what has become an important conservation essay, "The Wildlands Project Land Conservation Strategy," Dr. Reed Noss, editor of *Conservation Biology*, outlines a strategy for preserving and restoring ecological integrity over big areas. "Systems of interlinked wilderness areas and other large nature reserves, surrounded by multi-

ple-use buffer zones managed in an ecologically intelligent manner, offer the best hope for protecting sensitive species and intact ecosystems," says Noss.

The essence of the strategy is demonstrated graphically in a hypothetical matrix of wilderness surrounded by buffers and connected corridors.

To implement the matrix, the first step is to identify core wilderness areas. In the case of the Canadian Rockies, the starting point for cores is easy to identify: the vast Northern Rockies of northeastern British Columbia, the Four Mountain Parks of Banff, Jasper, Kootenay and Yoho in Alberta (and important provincial parks adjoining them like Kananaskis, Mt. Assiniboine and Willmore Wilderness Park) and Waterton-Glacier International Peace Park in the Crown of the Continent Ecosystem (and adjoining protected areas like the Bob Marshall Wilderness). These protected cores could run from Yellowstone

to Yukon through the entire length of the Canadian Rockies.

Next, corridors must be established between these areas and other similar areas to ensure that genetic exchange continues in the future. In the Canadian Rockies, these corridors would follow valleys, connecting the cores. Corridors are important because "a fundamental principle for designing regional reserve systems is connectivity," explains Noss. "Unless the cores are many millions of hectares in size, individual core reserves will not be able to function alone as whole ecosystems, in the sense of maintaining viable populations of large animals and ecological and evolutionary processes. In the long term, regions themselves must be functionally interconnected to allow for long-distance dispersal and migration in response to climate change. To maintain ecological integrity, many or most core reserves will have to be



Harvey Locke

MOOSE IN THE CARIBOU RANGE IN BRITISH COLUMBIA'S NORTHERN ROCKIES. THE REGION SUPPORTS ONE OF THE RICHEST WILDLIFE CONCENTRATIONS IN THE CANADIAN ROCKIES.

World Wildlife Fund Canada explains. "Protection of representative samples of natural regions in a system of protected areas, while important, won't do the job for the large carnivores at the top end of the food chain. We must also think in terms of maintaining the ecological integrity of an area."

Not surprisingly, the only area identified in southern Canada that seems to have potential for maintaining the biodiversity of carnivores is the Canadian Rockies centred around Banff, Jasper, Kootenay and Yoho national parks. These parks, known collectively as the Four Mountain Parks, are contiguous and cover an area roughly the size of Switzerland. However, even they are not large enough to do the job.

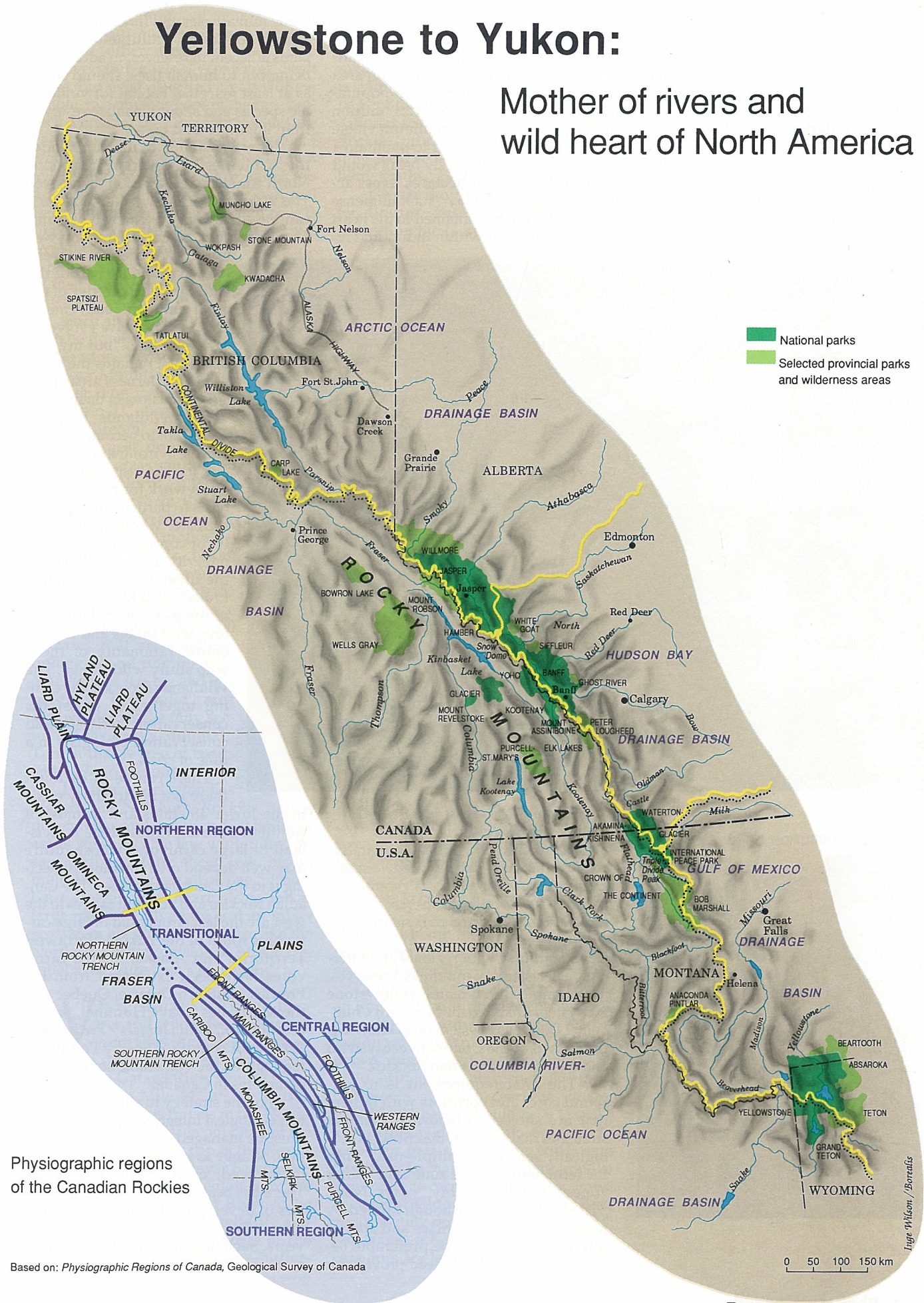
Dr. Stephen Herrero, an internationally renowned grizzly bear biologist and one of the researchers who worked on the Carnivore Conservation Area concept, was called as an expert witness. His testimony made it clear that the large fen located in the Wind Valley area was critical to the grizzly bear population of Banff National Park. Fortunately, the Natural Resources Conservation Board listened to his evidence and the evidence of other experts and denied permission to build a golf course and resort in the Wind Valley because of the devastating impact it would have had on the ecology of the Canadian Rockies.

What the Wind Valley case demonstrates is that good information on ecology can influence decision makers to make good decisions. On the other hand it also illustrates that unless the Canadian Rockies are managed as one continuous ecosystem, their long-term ecological integrity is at risk.



# Yellowstone to Yukon:

Mother of rivers and wild heart of North America



Based on: *Physiographic Regions of Canada*, Geological Survey of Canada

0 50 100 150 km



functionally joined to other protected areas," explains Noss.

The size needed for the areas is dependent on what they contain. "Habitat quality, social behaviour and other factors will determine how minimum population estimates translate into reserve size estimates," explains Noss. "Reserves of 10,000 to 100,000 hectares might maintain viable populations of small herbivores and omnivorous animals, but large carnivores and ungulates require reserves on the

scale of 1 to 12 million hectares," explains Noss.

One of the findings of World Wildlife Fund's carnivore conservation area research was that grizzly bear populations in Canada require 12.1 million hectares to maintain a minimum viable population size of 50 and to maintain a population of 1,000 grizzly bears would require 242 million hectares. Noss acknowledges that today "such immense areas could not be contained in the heart of North America within individual re-

many human uses and function as much more than buffers. Multiple-use public lands adjacent to reserves, in addition to being put to human uses, should serve as at least marginal habitat for vulnerable species and should insulate reserves from intensive land uses."

Noss's vision is to use this model for wilderness recovery throughout North America. It is a vision that drives The Wildlands Project, a North American-based group of which Noss and Dave Foreman, of Earth First, are two

founders. Foreman is well-known for being part of the hard direct-action edge of the environmental movement. "My feelings have evolved," says Foreman, "but my primary goal remains the same — big wilderness areas with large predators in them."

The Wildlands Project's goal is not to become another mega-environmental group, but rather to provide a framework for regional activists to participate in part of a greater whole: to act locally for continental ecological integrity. Foreman describes the ideas of the Wildlands Project as "a rare confluence of the passion of those who love wild things and the scientific rationality of those who study wild things. The Wildlands Project is the coming together of grassroots conservation activists and conservation biologists in a time of crisis."

There can be little doubt there is a biodiversity crisis

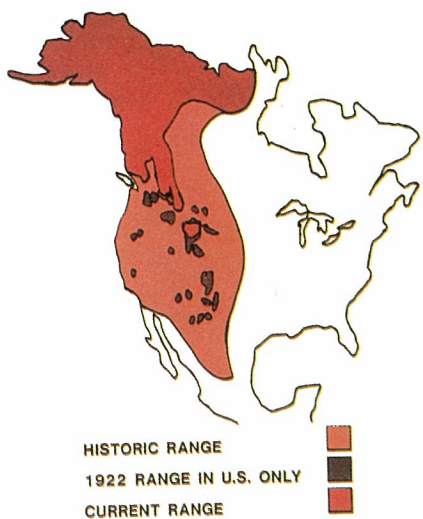
in the lower 48 states and in most of southern Canada. Yellowstone is an island of large carnivores whose future may well depend on a corridor connecting it to the Canadian Rockies. The Canadian Rockies and adjacent ranges to the west are the last stronghold of large carnivores south of the Yukon, Northwest Territories and Alaska. "Large carnivores have been extirpated from the Prairies, southern Ontario, Quebec and the Maritimes," says Hummel, whose recent book, *Wild Hunters - Predators in Peril*, with co-author Sherry Pettigrew, highlighted the vulnerable state of large carnivores in Canada.

For the strategy to successfully protect ecological integrity, protected areas must be managed explicitly for protection. Strange as it may sound, this is not guaranteed, even in national parks. There has been almost half a billion dollars of development within the boundaries of Banff National Park in the last 10 years. Such destruction of the protected cores must stop.



Mark Degner

**DISTRIBUTION OF GRIZZLY BEARS**



GRIZZLY BEARS REQUIRE LARGE STRETCHES OF HABITAT. THIS IS BECOMING INCREASINGLY DIFFICULT TO MAINTAIN AS HUMAN POPULATIONS CLOSE IN. THE MAP OF DECLINING GRIZZLY BEAR RANGE SHOWS THE IMPORTANCE OF CREATING A CONTINUOUS CORRIDOR OF PROTECTED WILDERNESS TO ENSURE THE BEARS SURVIVAL.

serves, but only with regional and inter-regional systems of interlinked reserves, for example, the Greater Yellowstone Ecosystem linked to the Northern Continental Divide Ecosystem (also known as the Crown of the Continent ecosystem) and on into the Canadian Rockies."

The final requirement is to surround cores and corridors with buffers that are subject to land-management strategies that could be described as ecologically sensitive multiple-use. "I use the term 'multiple-use zone' and 'buffer zones' interchangeably," says Noss. "The former term, although tainted by misuse by public agencies and special interest groups, may be preferable because such zones can indeed provide for



Another important step is to perform a “gap analysis,” to determine whether other areas are needed to achieve your goals. “What you don’t have, but need, is called a gap. For example, two obvious gaps in the core protected areas of the Canadian Rockies are the Akamina-Kishinena and Flathead Valleys in B.C. and the Castle-Crown Wilderness in Alberta all of which are adjacent to Waterton-Glacier national parks. With them, the protected core is big enough — without them, it is not,” explains Miles Scott-Brown, a biologist and chairperson of the Calgary-Banff chapter of CPAWS.

Such an analysis should also be done on the Greater Yellowstone Ecosystem and the Four Mountain Parks in Alberta. For the Northern Rockies in B.C., however, the task is different. Here is one of the largest unprotected wilderness areas south of 60 degrees in North America. The area is rich in the big mammals that are symbolic of wild North America — moose, caribou, elk, bison, stone sheep, bears, wolves and wolverines. It contains over 50 contiguous drainage systems larger than 5,000 hectares that are roadless, unlogged and unmined. In other words, it is big and it is pristine. This wild area sprawls across the only section of the Rocky Mountain Trench that is free of roads and hydro reservoirs.

Dr. Bruce McLellan has visited the Northern Rockies half a dozen times and conducted 30 hours of aerial surveys. One late winter day, he saw caribou, stone sheep, elk, bison, mule deer and moose all on one hillside. Four wolves were nearby. “As far as large mammal diversity and an intact ecosystem goes, there’s no place like the Northern Rockies outside of Africa. It is a global treasure,” says McLellan.

**W**ayne Sawchuk is a guide, trapper and wilderness enthusiast from Chetwynd, B.C. He has a trapper’s cabin in the heart of this vast area on the Gataga River, four days in by horse from Mile 442 on the Alaska Highway. In all his travels in the Northern Rockies, he has seen only half of the area. His longest pack trip in the Northern Rockies was 85 days. Sawchuk’s dream is for the entire region from the Peace River to the Liard River to be managed to maintain its wildlife and wilderness. The big advantage of the Northern Rockies is that a core-buffer-

corridor mosaic can be put into place not as part of a wilderness recovery program, but rather as part of a wilderness maintenance program. Sawchuk’s point is simple. “It’s wilderness now. It should be kept that way in perpetuity. The traditional uses present in the Northern Rockies, properly managed, will ensure long-term ecological and economic stability for this spectacular area.”

George Smith, CPAWS conservation director, shares Sawchuk’s dream of protecting the Northern Rockies. Since

correctly to allow genetic exchange between populations of wide-ranging species to continue. Here, high technology comes into play.

Geographic Information Systems (GIS) is a powerful tool for identifying corridors. “GIS enables you to overlay topography, vegetation, human impacts, physical features and multi-species animal movement patterns. If supported by good data, it gives biologists the tools to map the critical corridors for all species,” explains Scott-Brown.

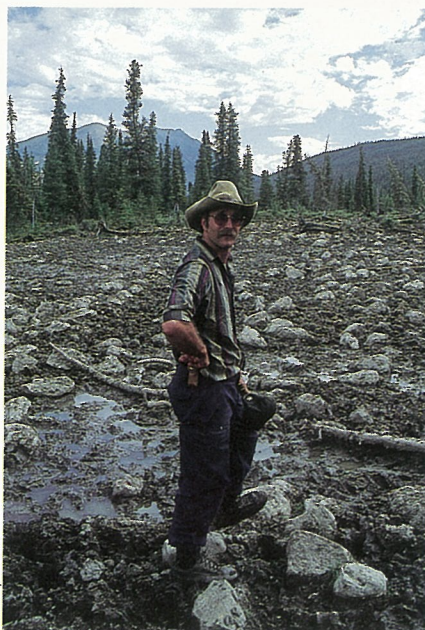


Leslie Degner

ABOVE: WOLVERINES ARE AMONG THE MANY LARGE CARNIVORES THAT REQUIRE VAST STRETCHES OF WILDERNESS FOR THEIR SURVIVAL. RIGHT: WAYNE SAWCHUK EXAMINES A LARGE ANIMAL LICK BESIDE KELLY CREEK IN THE NORTHERN ROCKIES OF BRITISH COLUMBIA.

1992, Smith and Sawchuk have jointly led a campaign to protect the area (see article on page 50).

Protection of the Northern Canadian Rockies would provide the wild anchor for the four core areas on the Yellowstone to Yukon axis. The corridors required to link the cores must also be identified and protected. For large carnivores, regional corridors longer than 16 kilometres should be at least 1.6 kilometres wide, with no bottlenecks less than half a kilometre wide, says Hummel. To maintain resident populations of large carnivores, corridors must be several kilometres wide. These are good starting points, but more research will have to be carried out to ensure corridors are large enough and located



Harvey Locke



Not all the necessary data are available, but a significant body of information is. The Canadian Parks and Wilderness Society in Canada and American Wildlands in the United States have already begun to map the critical corridors from the Canadian Rockies down to Greater Yellowstone.

"To be effective in preserving biodiversity in Glacier and Yellowstone, we have to ensure they are connected to each other by corridors and, just as importantly, ensure they be connected by corridors to the great gene pools farther north in the Canadian Rockies. We are going to use GIS technology to establish one giant information base for the Yellowstone to Yukon area that is not restricted by political boundaries," says Sally Ranney, president of the Colorado-based American Wildlands.

Such mapping is more than a scientific exercise. Its practical value is enormous. For example, if caribou movement corridors between the Northern Rockies and the Jasper/Willmore area were identified and protected, the population decline in the Jasper/Willmore area could be reversed by such measures as a natural exchange of animals and restrictions on incompatible land uses. A few years ago the Alberta government

proposed (but did not implement) a much less satisfactory solution for dealing with low caribou populations — kill the wolves that depend on them for survival.

Implementing a system of cores, corridors and multi-use buffers as the basis for managing the Yellowstone to Yukon axis is a daunting but achievable task. It involves protection of a large part of B.C.'s Northern Rockies as an enormous genetic reservoir for the entire range. It will also involve the protection of additional critical lands near existing protected areas in the Canadian and U.S.

Rockies. Also required is research to identify important corridors and to identify and create ecological management plans for buffer zones. The basic building blocks are there. It simply requires commitment to implement the vision. And a compelling vision it is — a Yellowstone to Yukon biodiversity strategy that will ensure the heart of western North America always beats wild. □

HARVEY LOCKE IS A CALGARY LAWYER, THE NATIONAL PRESIDENT OF CPAWS AND A DIRECTOR OF THE WILDLANDS PROJECT.

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