

The Yellowstone to Yukon Initiative: A New Conservation Paradigm to Protect the Heart of North America

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ABSTRACT

Recent research on animal movements and conservation biology theory indicates that our current protected areas are insufficient to sustain viable populations of large carnivores. A larger scale and more integrated approach is needed. Comprising over 100 conservation organizations as well as numerous scientists, the Yellowstone to Yukon Initiative (“Y2Y”) is a bi-national effort to maintain and restore habitat integrity and connectivity along 3,200 km of the Rocky Mountains from the greater Yellowstone Ecosystem in the south to Yukon’s Mackenzie Mountains in the north. Its goals are to ensure wildlife movements for all species between existing reserves as well as the creation of new protected areas to ensure population viability of all native species. Also proposed is a system of special management zones surrounding the core reserves in which carefully managed human uses may be permitted. Such an effort to promote ecological integrity can benefit human communities by diversifying economies, stimulating growth, and lessening boom-and-bust cycles of the past. Various mechanisms for creating this system are envisioned, including existing government land review processes, campaigns for new designated areas, private lands conservation, rail and highway crossings for wildlife, various cooperative programs, and development of a map-based conservation plan. As one of the few places in North America that still retains all of its native species, the Y2Y initiative presents an opportunity to proactively promote both healthy wildlife and human populations.

Key words: gray wolves, grizzly bear, national parks, protected areas, Rocky Mountains, Yellowstone to Yukon, Y2Y.

The Yellowstone to Yukon Conservation Initiative (Y2Y) is a joint Canada–United States effort of over 100 conservation organizations, wildlife scientists, planners, economists, and other individuals interested in protecting native wildlife, ecological processes, and wilderness in the Rocky Mountains of North America. This large-scale conservation effort seeks to establish a connected network of core reserve areas, transition zones, and wildlife movement corridors from the Greater Yellowstone Ecosystem in the south to the central Yukon in the north (Fig. 1). Existing national, state, and provincial parks and wilderness areas will anchor the system, while the creation of new protected and special management areas will provide the additional cores and corridors needed to complete it. This network will be based upon the principles of conservation biology, various focal species assessments, the knowledge of local and traditional residents, and the requirements for sustainable economies.

Footprints of human resource demands and development

are today creating an archipelago of isolated natural areas in much of the Rockies. At risk is the unique large carnivore assemblage (e.g., grizzly bears, gray wolves, wolverines, lynx, mountain lions, fishers) that formerly existed throughout much of western North America and in the foothill prairies to the east. None of the national parks in the Rocky Mountains appears large enough by itself to protect viable populations of all large carnivores (Newmark 1987), with individuals typically entering several different land use designations in a year (Raine and Riddell 1991, Herrero 1995). Numerous studies have indicated that many of the free-ranging populations of large carnivores, “indicator” species of Rocky Mountain ecosystems, are now threatened (Mattson et al. 1992, Paquet and Hackman 1995). With the human population in the Y2Y region projected to double over the next 30–40 years (Willcox et al. 1998), the fate of these species will be decided by the land management decisions and conservation actions taken today.

The comprehensive network that Y2Y envisions is thus a response to these alarming trends. It is based upon a large-scale, long-term strategy recommended by many conservation

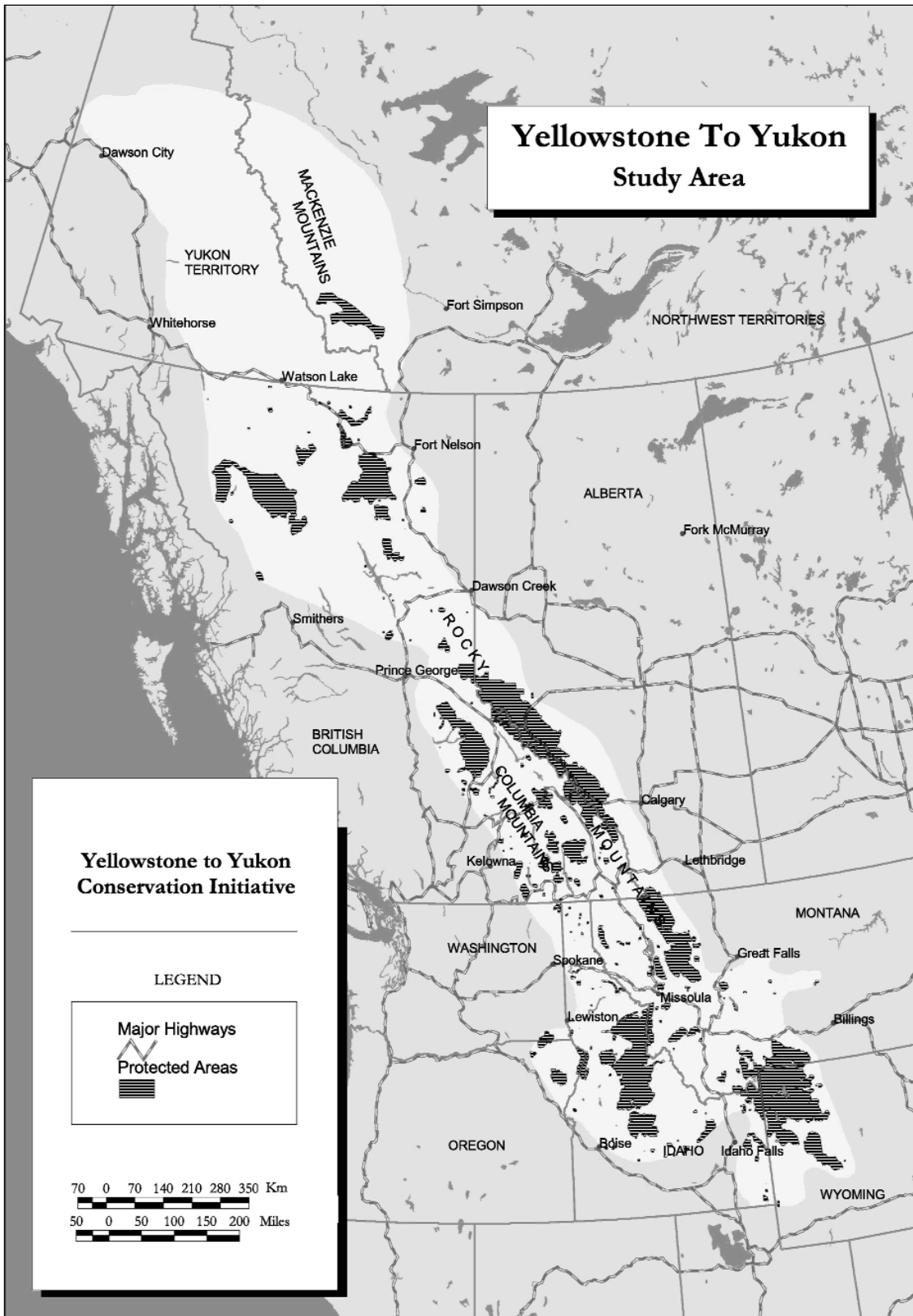


Figure. 1. Yellowstone to Yukon Initiative study area.

biologists (Shaffer 1992, Noss and Cooperrider 1994, Paquet and Hackman 1995) and which is currently being used in conservation proposals for the state of Florida, the “sky island” ecosystem of the southwestern United States and northern Mexico, the coastal rainforests of British Columbia, and in parts of Central and South America. Under this strategy, the core protected areas would provide large, secure refuges for all native species and accommodate nonindustrial human use consistent with the refuge goal. The corridors would ensure the landscape is permeable so there are no barriers to genetic exchange among subpopulations of any species. The transition zones would allow for human use of increasing intensity as one moves away from the core areas.

The Y2Y region also contains a variety of communities that are home to many people. The Initiative thus supports community development that is consistent with the extraordinary conservation values of the area. It envisions healthy communities based on sustainable economies as opposed to being wholly dependent on extractive industries. Indeed, a fundamental principle of Y2Y is that its effort to promote ecological integrity can benefit human communities by diversifying economies, stimulating growth, and lessening boom-and-bust cycles of the past.

METHODS

The thinking behind Y2Y is based upon several key lessons from wildlife research conducted over the past 2 decades. By mapping carnivore movements and home ranges, researchers have been able to delineate wildlife usage of the landscape and the importance of a contiguous wildland matrix, interconnected by habitat corridors linking core protected areas. The large-scale result of this carnivore mapping exercise delineates an area from the Greater Yellowstone Ecosystem to the Peace River country in the northern Rockies of British Columbia (Clark et al. 1996). The inclusion of the Yukon recognizes the importance of large undisturbed areas as source areas for wildlife in the greater Rocky Mountain region—as well as the fact that little of the key habitat in the Yukon is currently protected.

Furthermore, this mapping research has demonstrated that many of the keystone and indicator wildlife species of the Rockies travel much greater distances and thus require much more protected habitat than was previously realized. One study (Hummel and Pettigrew 1991) concluded that maintaining a viable population of as few as 390 grizzlies in the Rockies may require an area of 81,430 km²—over 9 times the size of Yellowstone National Park. Also evident is the heightened importance of fostering connectivity between our protected areas. Research into wolf movements has shown that dispersal distance of individuals looking for a mate or territory can be hundreds of kilometres. One wolf was tracked from the Flathead Valley in Montana to Mile 0 on

the Alaska Highway—a straight-line distance of 840 km (Boyd et al. 1995).

Another key lesson stemming from this wildlife research is that many predators on the top of the food chain act as keystone species, playing an important role in maintaining the integrity of the entire system (Terbough 1988, Mitchell 1998). Evidence collected by ecologists indicates that protection of habitat for these top-level predators can provide an umbrella for other species' needs. One study (Paquet et al. 1996) in the central Rockies of Canada found that by protecting habitat for the gray wolf, the complete habitat needs of 334 of the 381 native vertebrate species were taken care of and habitat for another 32 vertebrate species were partially addressed. This leaves the habitat needs of just 15 vertebrate species unaccounted for by protecting sufficient wolf habitat.

Finally, research into island biogeography has demonstrated that isolated populations tend to eventually die out because of greater fluctuations in population numbers, problems of genetic inbreeding, and higher mortality rates from disease and natural disturbances (Noss et al. 1996). This research further indicates that reserve size, inter-area distance, shape, number, buffering, and connectivity are critical factors in determining long-term population viability (Soule and Simberloff 1986). The current status of the grizzly bear in the United States provides clear evidence of the isolation problem. Currently less than 1,000 bears, or 1% of their original numbers, survive in 6 shrinking islands of habitat—all located within the Y2Y region (Shaffer 1992). Despite significant efforts to protect these bears from illegal killing and food conditioning, many biologists believe that these numbers have not increased appreciably since the populations were listed as threatened in 1975 (Wilkinson 1998).

RATIONALE FOR Y2Y

Clearly, a fundamental disconnect exists between many of the findings of wildlife researchers and our current protected areas system. While the conservation accomplishments of our ancestors in setting aside national parks, creating game refuges, and regulating sport hunting were critical and remain impressive in many ways, the symptoms of a growing biodiversity crisis in the Rocky Mountains remain (Table 1). A variety of factors have contributed to this current state of our protected areas system in the Rockies not fully working from an ecological standpoint (Table 2).

A primary problem has been the limited habitat and ecological features represented in most protected areas. Land protection in much of the Rocky Mountains is skewed heavily toward higher elevation areas (“rock and ice”) that do not support many species or function to link populations. The low elevation valleys and riparian areas that contain the highest biodiversity and upon which many wildlife species rely for winter range and migration are instead being rapidly developed and fragmented over much of the region. An

Table 1. Symptoms of growing biodiversity crisis in Rocky Mountains.

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- Loss of biological connectivity across the landscape.
 - Increased isolation of habitats, wildlife populations, and ecosystems.
 - A continual decline in wildlife numbers, especially large carnivores.
 - Impairment and simplification of habitat stemming from suppression of ecological forces (wildfire, floods, etc.) and introduction of non-native species.
 - More conversion of natural landscapes to humanscapes.
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enduring features gap analysis of the Y2Y region concluded, “Even though this region of North America is known for its spectacular national parks, the physical variability in the region as a whole was found to be poorly represented. High elevations were found to be strongly emphasized in the region with many low elevation landforms totally missing” (Strittholt and Frost 1997). This finding has direct consequences for wildlife. A recent study (Gibeau in press) of grizzly bear habitat use in the upper Bow River watershed found that the most secure grizzly bear habitat is located in the land jurisdictions with the least amount of protection and the higher zones of human use.

Another important factor is the status of keystone species such as wolves and grizzlies. Historical persecution has suppressed their numbers in many areas. Yet, though these species now receive some level of protection, they are still often not allowed to play out their critical ecological role. Even our protected areas system has problems. In Banff National Park, development around the town of Banff has prevented wolves from preying on resident populations of elk and mule deer. The result has been unnaturally high ungulate numbers resulting in increased herbivory on aspen and other detrimental ecological effects (Page et al. 1996).

Roads and railways inside and between our protected areas also impact on wildlife. Human transportation corridors act as wildlife mortality zones that block migration and genetic and demographic exchange between populations. One study found that 523 large animals were killed on Canadian Pacific Railway’s main line from 1981 to 1998 in the Bow Valley alone (Gibeau and Heuer 1996). Across the Y2Y region, 8 permanent highways and rail lines run east–west bisecting habitat and wildlife travel routes (Willcox et al. 1998). Major transportation corridors such as the British Columbia/Alberta Highway 3 and the Trans-Canada Highway may be critical population-fragmenting elements for grizzly bears inhabiting the Rocky Mountains, which primarily run north to south. For example, despite construction of wildlife underpasses and overpasses on the Trans-Canada Highway in Banff National Park, the highway remains a total barrier to crossing by adult female grizzly

Table 2. Key problems with current protected areas system.

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- Historically areas protected primarily for aesthetic and recreational reasons. Thus, much of the resulting protected habitat is lower value “rock and ice.”
 - Keystone species and natural disturbance regimes still suppressed—even in protected areas.
 - Mortality and fragmentation associated with transportation corridors are not effectively addressed.
 - Political boundaries and management objectives make little ecological sense.
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bears (Gibeau and Herrero 1997).

A final factor worth noting is the challenge of political boundaries and jurisdictions not operating at the same scale as ecological processes necessary to support wildlife populations. Whether at the international, provincial/state, or local level, the laws, regulations, and agency practices work at odds with regional conservation. Consider the international border running through the Flathead Valley of northwest Montana and southeast British Columbia. Represented by a “cutline” a few metres wide, a grizzly bear can wander across it in seconds. The same habitat and grizzly population exists on both sides. Yet, to the south of the line, the bear is a protected species under the U.S. Endangered Species Act. An individual caught shooting a bear there would face a fine of up to \$50,000 and 10 years in prison. But once the bear crosses north of this line, it can be shot as a legally hunted animal.

Y2Y’S APPROACH

Y2Y is different than traditional approaches to conservation in many ways. First, Y2Y’s ecosystem-based approach recognizes people and their cultural traditions and views humans as a fundamental component of the natural community. Y2Y is also different in that it is science based and focused on protecting connections—both the habitat connections many species need to continue to thrive and the connections to the natural world that supports much of the economy in this region, our quality of life, and our cultural identity (see Rasker and Alexander 1997). Finally, Y2Y is different in that it is a departure from the problematic and common mode of reacting in a piecemeal way to various site-specific threats and trying to work only through government defined processes that operate in response to political jurisdictions and realities. Instead, Y2Y is proactive and holistic, and proposes to set up a citizen-led effort defined upon ecological boundaries and realities.

The on-the-ground specifics of the Y2Y proposal are still evolving. To plan, gather, and organize on a more workable scale that still makes ecological sense, the Y2Y region has been subdivided into 7 smaller areas (Table 3). Over the next 2 years, each region will undertake a conservation planning process that will result in a series of regional map-based

Table 3. Y2Y subregional conservation planning areas.

1. Greater Yellowstone Ecosystem: Yellowstone and Grand Teton national parks; 7 surrounding national forests; and 3 national wildlife refuges.
2. Greater Salmon–Selway/Hells Canyon: Central Idaho Wilderness Areas and Hells Canyon region in eastern Oregon and Idaho.
3. Crown of the Continent Ecosystem: Waterton Lakes–Glacier Peace Park; the Bob Marshall Wilderness complex; Rocky Mountain front of Montana; Akamina–Kishenina Provincial Park; Flathead Valley; and Castle–Crown area.
4. Central Rockies/Yellowhead Ecosystem: Banff–Yoho–Kootenay–Jasper Park complex; Kananaskis Country and White Goat/Siffleur, Willmore, and Ghost River wildernesses in Alberta; Mount Assiniboine, Height of the Rockies, Elk Lakes, Mount Robson, and Hamber provincial parks in B.C.
5. Interior Rainforest: Cabinet/Yaak/Selkirk ecosystem of Idaho; Greater Purcells (Purcell, Valhalla, and Kokanee Glacier parks in B.C.); and Columbia Mountains Ecosystem (Glacier, Revelstoke, Bugaboo, and Monashee parks)
6. Northern B.C.: Fraser Basin (northern Rocky Mountain Trench); Kwadacha and Spatsizi parks; Muskwa–Kechika protected area; and Cassiar Range.
7. Yukon/Northern Rockies: Liard Plain and Hyland area on B.C.–Yukon border; Mackenzie Mountains in western NWT; Selwyn Mountains; and Wind, Snake, and Bonnet Plume watersheds in the Yukon.

proposals that identify the proposed core reserves, habitat linkages, and transition zones. Using a geographic information system (GIS), the process will incorporate the principles of conservation biology, the best available wildlife habitat and population data, and the knowledge of those locals who know the land best. Following scientific review, the regional plans will be compiled to form a Y2Y-wide proposal that will be continually updated and revised, as new and better information becomes available. An inclusive and transparent process will be used in all stages.

To implement this map-based proposal will require various mechanisms including the potential use of existing government planning processes. Connecting and expanding the current system of federal, state, provincial, and privately protected lands will involve a mixture of economic, political, administrative, and legal decisions and incentives. More than new land designations will be needed. Transportation wildlife mitigation structures, restoration efforts, municipal growth management plans, land acquisition and exchanges, conservation easements, and cooperative management agreements are just some of the other mechanisms that could be part of Y2Y's regional conservation plans.

To minimize the need for new laws and planning processes, Y2Y will incorporate the results of existing land use processes in its planning, granting that the results reflect the

needs of wildlife and support ecosystem integrity. The Fort Nelson and Fort St. John (British Columbia) Land Resource Management Plans (LRMP) which were completed in late 1997 demonstrate how a planning process can dovetail with the spirit and intent of the Y2Y initiative. In that case, Y2Y leaders were able to work through the LRMP stakeholder roundtables to achieve a connected system of new protected areas and special management areas, which serve as transition zones, in the Muskwa–Kechika area of north-central British Columbia (Hume 1998).

CONCLUSION

Clearly, a comprehensive conservation vision for the Rocky Mountains of North America is needed—to protect the remaining critical habitat and to ensure connectivity in this mosaic of mixed patterns of land ownership and land use management objectives. Y2Y's large, connected network of core protected areas, movement corridors, and transition zones would restore species' natural pathways and reconnect wildlife populations across the backbone of the continent. It would also promote natural ecological processes and foster the transition to more sustainable economies in the region.

The Y2Y Initiative is among the largest scale conservation efforts ever undertaken in North America. It is obviously an ambitious undertaking in both geographic and human terms. Yet, the Y2Y landscape—the heart of North America—is truly a special place. A symbol of the wild across the world, this region is the last refuge for many of the great carnivores, for many ungulates, for sensitive fish species, and for vast untrammeled watersheds. It is certainly a place worthy of our best efforts at protection and restoration. If we cannot save wildlife and wilderness in the Rocky Mountains of Canada and the United States, 2 of the most prosperous countries on earth, there is little hope for either in the world.

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