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# Conserving Yellowstone to Yukon: Putting Science into Action

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## Introduction

During the 1990's, research being done by wolf and bear biologists was proving wildlife species roam over very large distances in their searches for food, territory and mates (Forbes and Boyd 1997, 1230, Boyd et al. 1995, 137). Even though the existing levels of habitat protection and the societal support for preserving large carnivores were high; current protected areas alone were probably insufficient to ensure the viability of many carnivore populations (Carroll et al. 2001, 962). Wildlife need larger areas that cannot be contained within a single large park or even a complex of parks. Protected areas must, therefore, be part of a coherent network politically (by creating zones of international and local importance) and ecologically (by increasing connectivity to facilitate genetic exchange amongst populations) (Leitmann 1998, 134). Land management decisions outside parks and protected areas are as important as management inside parks if healthy populations of wide ranging carnivores and ungulates are to persist (Chambers and Ham 1995, 76).

The idea for the Yellowstone to Yukon Conservation Initiative (Y2Y) emerged from new and adaptive scientific research efforts designed to address landscape scale connectivity between protected areas. Y2Y is the only environmental organization to focus on the entire mountainous landscape reaching from the Yukon Territory to Yellowstone National Park in Wyoming. To effectively address this massive landscape, Y2Y employs the principles of ecosystem management and adaptive research while implementing a strong vision and awareness program to support conservation efforts. Biological science should be at the heart of any conservation strategy, but social science, economics, law, and public education must also be involved to identify politically acceptable solutions (Carroll et al. 2001, 978). By combining biophysical and social aspects of beauty, ecological health, and sustainability, Y2Y can embrace a flexible and adaptive process that addresses ecosystem dynamics and sustainability (Lackey 1998, 22).

### *The Yellowstone to Yukon Region and Conservation Initiative*

Covering parts of two Canadian provinces, two Canadian territories and five US states, the Yellowstone to Yukon region encompasses the Rocky Mountains from Yellowstone National Park to the Yukon's Mackenzie Mountains (Figure 1). The region stretches over 3,200 km (2000 mi) and has an area over 1.2 million $km^2$ (460,000 $mi^2$). It is characterized by extensive coniferous forests encircled by prairie grasslands (Harvey 1998, 11), and is home to myriad species. It is the only high-mountain ecosystem on earth where healthy populations of native species – grizzly bears, wolves, and caribou – still flourish (Laliberte and Ripple 2004, 127). Ten major river systems originate in the Yellowstone to Yukon region and drain into the Pacific, Arctic, and Atlantic Oceans. The region also boasts a geological and paleontological history millions of years old and has the oldest rocks in North America. The geological and biophysical attributes combined make this region one interconnected ecosystem (Harvey 1998, 11). This landscape comprises the traditional territory of thirty-one First Nations/Native American groups and is visited by increasing numbers of people annually. Only ten percent of the Yellowstone to Yukon region falls within the boundaries of a protected area, thus making conservation outside of protected areas important (Harvey 1998, 11).

By combining science and stewardship, Y2Y seeks to ensure that the world-renowned wilderness, wildlife, native plants and natural processes of the region continue to function as an interconnected web of life, capable of supporting all of its natural and human communities, for now and for future generations. To achieve this mission, Y2Y has implemented two different programs: conservation science and action, and vision and awareness. Based on priorities developed through Grizzly Bear,

Avian, and Aquatic Conservation Strategies, the conservation science and action program identifies and prioritizes Priority Areas (landscapes with the greatest conservation need). Y2Y then works with partners to develop a customized collaborative approach for addressing conservation needs and prioritizing on-the-ground projects in these Priority Areas. Y2Y's vision and awareness program focuses on creating public and financial support for the Y2Y conservation effort by promoting and branding the region as the earth's premier mountain ecosystem. Communication of this Y2Y vision is targeted at the public, in addition to other conservation organizations and government agencies. These efforts inspire our partners to willingly support, implement, and promote Y2Y's vision for conservation throughout the region. In the ten years since Y2Y was formally incorporated, over 300 organizations have collaborated in the mission to maintain and restore the Yellowstone to Yukon region (Yellowstone to Yukon Conservation Initiative).

To implement conservation throughout the Yellowstone to Yukon region, Y2Y has created three distinct but complimentary conservation strategies; each founded in landscape scale scientific research. A Grizzly Bear Conservation Strategy uses this carnivore as an umbrella species for terrestrial conservation. An Avian Conservation Strategy is based on the habitat requirements for twenty focal species, and an Aquatics Strategy uses focal fish species to identify priority watersheds across the landscape. The Grizzly Bear Conservation Strategy has divided the landscape into nine Priority Areas, one of which is the Cabinet-Purcell Mountain Corridor (hereafter the Cabinet-Purcells). This was one of the first priority areas in which Y2Y began implementing the Grizzly Bear Conservation Strategy at the regional and local scale. This paper will discuss the lessons learned throughout the process of distilling a landscape scale conservation strategy to local on-the-ground action in the Cabinet-Purcells.

**Y2Y's Grizzly Bear Conservation Strategy**

Without a substantial increase in conservation efforts, there will be a gradual northward contraction of grizzly bears in the Yellowstone to Yukon region. Grizzly bears require hundreds of square km to meet their dietary, reproductive, and denning needs (Craighead and Vyse 1996, 330, Schwartz et al. 2003, 559). In the southern half of the Yellowstone to Yukon region approximately twenty-eight percent of source areas for grizzly bears fall within protected areas; these are the last large areas of secure habitat available. Increasing habitat fragmentation throughout the region has affected the long-term viability of bears occupying smaller refugia outside of protected areas (Carroll et al 2001, 961). For grizzly bears to persist across North America these isolated populations need to be connected. This requires conservation strategies consider the status and management of regional metapopulations over an area that encompasses both source and sink populations (Carroll et al. 2001, 976).

Grizzly bear conservation requires the management of sufficiently large areas of habitat that many other species also receive a conservation benefit. In this way grizzly bears can function as an umbrella species (Lambeck 1997, 852). Several important species (e.g., Lynx) have habitat needs that do not overlap entirely with those of grizzly bears (Carroll et al. 2001, 961), thus grizzly bears are an imperfect umbrella species (Roberge and Angelstam 2004, 80). These potential conservation gaps will be addressed through Y2Y's avian and aquatic strategies. Figure 1: The Yellowstone to Yukon ecoregion. Approximately 10% of the region falls within protected areas, which are highlighted in green.


The work of Y2Y is guided by science and incorporates traditional Aboriginal knowledge and expert opinion. Over ten years, Y2Y and Wilburforce Foundation have contributed $1.5 million to scientific research investigating the habitat and resource requirements of grizzly bears and other wildlife. Using an adaptive approach to conservation, research is continually updated leading to regular amendments of the Grizzly Bear Conservation Strategy. This includes continual refinement of Priority Area boundaries. Y2Y now defines nine such Priority Areas (Figure 2), one of which is the Cabinet-Purcells.

**The Cabinet-Purcell Mountain Corridor Project**

The Cabinet-Purcell Mountain Corridor, which contains four small grizzly bear populations, does not have many large, secure areas of habitat. This priority area represents approximately twenty percent of the entire Yellowstone to Yukon region, extending from Missoula, Montana to Golden, British Columbia (BC) and covering 70,000 $km^2$ (43,750 $mi^2$) (Figure 3). The area is comprised of four mountain ranges: the Purcell, Cabinet, and South Selkirk Mountains in southeast BC, and the Bitterroot Mountains in Idaho and Montana. This vital movement corridor is increasingly fragmented by human activity, which may irreversibly alter habitat connectivity.

The Cabinet-Purcells is one of two transboundary areas within the Yellowstone to Yukon region that provides a genetic link between Canadian and US grizzly bear populations. One of Y2Y's goals is to connect the Cabinet-Purcell Mountain Corridor and the grizzly bears within it, to other surrounding Priority Areas. Restoring ecological connectivity will help to connect the highly isolated Yellowstone grizzly bear population to other populations, thus increasing the likelihood of its survival in perpetuity.

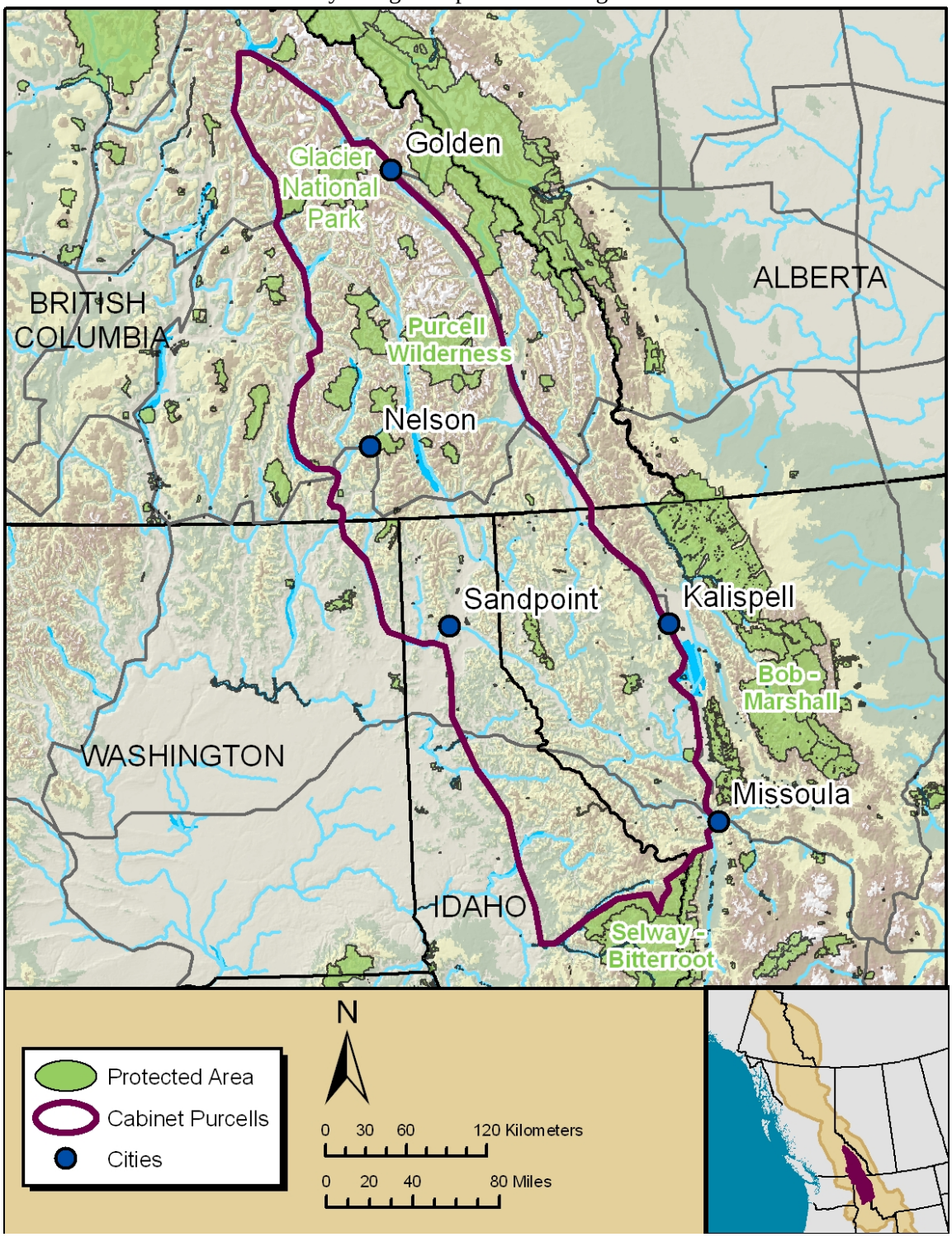
*Methodology: from priority area identification to on-the-ground project implementation*
Every conservation strategy must begin with an understanding of the threats to the area's sustainability; this assessment should attempt to maximize voluntary involvement of local stakeholders (Leitmann 1998, 136). In 2004, Y2Y was granted seed funding to conduct a thorough investigation of the Cabinet-Purcell landscape. After potential partners were identified, Y2Y distributed a "Lay of the Landscape" survey. This survey solicited expert opinion regarding threats, opportunities, and capacity of the region. One challenge to successful management is accurately determining a system's capacity to achieve any conservation goal (Lackey 1998, 23). Understanding regional capacity is also crucial for Y2Y's goal of adding value to, rather than duplicating, existing efforts. Survey results helped focus Y2Y's efforts in the Cabinet-Purcells on attracting additional funds to the region, facilitating networking amongst partner organizations, and placing local and regional efforts into a continental context. Y2Y then worked with partners to address information gaps at a finer ecological scale. Initial projects involved the identification of linkage zones (human use areas connecting patches of high quality habitat) where conservation action could be targeted for maximum effect. Much of Y2Y's subsequent work has been centred on these linkage zones; identifying, securing, restoring, and enabling wildlife movement across them.

Y2Y hosted the first regional partner meeting in 2006, where partners created a Collaborative Conservation Framework (CCF). This document includes an executive summary of the Cabinet-Purcell Mountain Corridor Conservation Project and a strategic plan. The collaborative vision for the Cabinet-Purcells is to restore and maintain an intact Cabinet-Purcell Mountain Corridor that fosters maintenance and movement of healthy wildlife populations and ultimately resilient ecosystems. The collaborative Cabinet-Purcell partner network will achieve this vision through cooperative engagement, efforts, and shared leadership. The CCF defines seven conservation goals and explains the science supporting them; all goals have been identified and prioritized by partners to address the main threats to the Cabinet-Purcell corridor. The strategic plan defines

Figure 2: Priority Areas in the Yellowstone to Yukon Region as identified in the Grizzly Bear Conservation Strategy.


Figure 3: The Cabinet-Purcell Mountain Corridor Priority Area, as identified in Y2Y's Grizzly Bear Conservation Strategy.short and long term measurable outcomes for the project and the seven goals. Seven working groups consisting of regional experts representing different partner organizations have been created to focus on each goal. Each working group member is a volunteer of the Cabinet-Purcell Steering Committee and integrates work for this project into their existing employment responsibilities. Goals must be continually evaluated to ensure they reflect participants' values and priorities, and

additional research results (Lackey 1998, 24). Therefore, the CCF and all conservation goals are reexamined and amended annually at regional partner meetings.




Scientific findings must be communicated in a manner that is easily understood and accessible to project participants (Mills et al. 2001, 11). Y2Y hosts two transboundary partner meetings each year. In addition to refining the CCF, these partner meetings focus on information sharing to ensure all goals and on-the-ground projects are prioritized effectively. The fall partner meeting serves to review the past field

season's results and identify potential projects for the coming year, whereas the spring meeting focuses on prioritizing projects and identifying potential funding sources. Other issues, such as developing a communications strategy for the entire region, are also addressed at these meetings. Each spring, funding is allocated to the implementation of local on-the-ground projects that have been prioritized by the working groups and fit within the context of Y2Y's landscape scale vision. These regional partner meetings are inspiring for all in attendance partly due to increased networking opportunities, but also due to the vast amount and diversity of experience captured in the room. This also motivates working group members to connect several times annually to discuss progress towards the goals defined in the CCF. Each member of the steering committee represents a different perspective on landscape scale conservation, which is freely shared among the group. With this open communication, it is easy to identify where the common ground lies and brainstorm projects to address conservation throughout the region.

*Lessons Learned*

1. Adaptive scientific research fundamentally drive process

With the inherent adaptability of the CCF, Y2Y has incorporated new scientific results and amended conservation priorities accordingly. In 2007 the boundaries of the Cabinet-Purcell Priority Area were amended to include the entire Selkirk Mountain range when it was found that the previous boundary did not account for that grizzly bear population's entire habitat. The Trans-border Grizzly Bear Project has gathered detailed grizzly bears movement data around the transboundary portion of this Priority Area, which has delineated precise locations of linkage zones. Consequently, Y2Y has targeted conservation efforts on exact locations. Y2Y's partnership with several organizations enabled the purchase of an eighty-acre parcel of land which was identified through these research results. The success of this project is exemplary science guiding conservation action.

2. Working across an international boundary is challenging

One challenge facing the partner network is the difference in legislation and available information on either side of the border. Grizzly bears are endangered in the lower forty-eight states and Canada lynx are threatened (US Fish and Wildlife), but both species are legally hunted in BC. Data regarding off-road recreational vehicles in the US is abundant, but it is not in Canada. These differences require creative solutions that are addressed at transboundary meetings or through working group teleconferences. In many instances, it is effective to examine problems within the national context focusing issues specific to either country. Transboundary linkage zones, however, present unique opportunities for project coordination. In these instances, Y2Y's facilitates the connection of key partners on either side of the Canada-US border. Once these key partners identify the issues, opportunities, and objectives of the transboundary project, other relevant partners are included. This principle of starting with a handful of partners and slowly including others has been a fundamental strategy in the Cabinet-Purcells.

3. Collaboration is inspiring, but not easy

Connecting and coordinating a partner network that currently consists of more than sixty-five organizations is challenging. Over eighty-five organizations have been involved with the Cabinet-Purcell project since its inception in 2004, but twenty of those have fallen out of direct contact with the project. To remedy this, Y2Y is creating a communications strategy, a part of which will specifically target the unengaged partners. Another challenge is dealing with disagreement amongst partners on the steering committee. Although each organization within the partner network has its own specific mission and vision, Y2Y has continually emphasized the common ground on which the CCF is founded. By continually emphasizing the larger spatial and temporal scale, partners are able to put these differences aside and focus on the larger collaborative vision for the Cabinet-Purcell landscape.

4. The power of a landscape scale vision

Y2Y's vision encompasses a massive landscape and all of its inhabitants; it inspires funders and partners

alike. Through a successful vision and awareness program targeted at audiences outside of the Cabinet-Purcells, Y2Y has attracted new funders to the region. Some funds for on-the-ground projects have been disbursed through Y2Y, but other funding opportunities have been extended to Y2Y's partners. This has in turn increased the capacity of partner organizations and the number of on-the-ground projects being implemented. The large spatial and temporal scale of the Y2Y vision also inspires partners to work within a collaborative network of like-minded conservationists. By placing local projects within the larger regional and even international context, partners are able to see how their projects directly impact conservation across a much broader landscape. This context provides everyone within the partner network with common ground and larger vision to work towards.

**Conclusion**

Any comprehensive or large carnivore conservation strategy must be coordinated across multiple land-use types, ownerships, and protected area designations (Carroll et al. 2001, 976). Y2Y's approach to conservation has been to divide the Yellowstone to Yukon region into more manageable conservation strategies, each with its own set of Priority Areas. Each Priority Area has its own unique set of threats and opportunities. The Cabinet-Purcell Mountain Corridor has become one of Y2Y's flagship projects and the lessons learned here are now being applied to other Priority Areas with in the Yellowstone to Yukon region. Of the nine Priority Areas identified in the Grizzly Bear Conservation Strategy, Y2Y is supporting on-the-ground conservation projects in six. As a single organization, Y2Y cannot do what needs to be done, or even significant portions of it, all at once or on its own. It takes the work of multiple organizations, agencies and individuals to ensure the necessary policies and decisions are in place to preserve biodiversity across the Yellowstone to Yukon region. Y2Y facilitates these actions by working with partners to implement collaborative conservation projects on the ground. Communicating the significance of this magnificent landscape outside of the Yellowstone to Yukon region has proven invaluable for attracting additional funding to the region and increasing capacity of partner organizations. This in turn has dramatically increased the success of Y2Y as an organization, and contributed to ensuring the health of the Yellowstone to Yukon region as a functioning interconnected ecosystem.

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