



A Case for Buffer Zones

CANADA'S NATIONAL MOUNTAIN PARKS

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Background and Introduction

Biodiversity is declining around the globe, in large part to a decline Canada provides one of the greatest opportunities worldwide to ensure that wolves continue to thrive as part of a functioning predator-prey ecosystem. Large carnivores are declining across Canada and the globe. Presently, even the largest North American parks are inadequate in size to fully protect wolves (1,4,7,8).

Even though large carnivores such as wolves are protected within national parks, these predators are threatened by stresses such as human use and development inside parks, as well as hunting, land development, and other pressures that occur beyond park boundaries. From Ontario eastward, wolves have been lost from all national parks except Pukaskwa and La Mauricie. In the west, wolves have disappeared from Elk Island and Grasslands national parks. In several national parks, wolf populations are low and have a low probability of persistence. (16)

Wolf ecologists Paul Paquet and Lu Carbyn, who have been studying Canadian wolves both inside and outside of protected areas for several decades assert that the *'effectiveness of existing reserves that are too small, or have unsuitable configurations, could be improved by the creation of buffer zones'*.(8)

In the past, decision-makers have neglected to recognize the difference between existence of a species versus long-term persistence of ecological systems upon which the species depends (7). Although wolves may remain as a species in many parts of Canada due to their resilient nature, most ecologists would view this as an impoverished ecosystem which is not sustainable over the long term (7).

To avoid the extinction vortex often faced by small isolated populations of a species, habitats and regions must be interconnected to allow for genetic exchange and dispersal over long-distances. For wolves, whose territory requirements can be up to 3,000 square kilometers for a single pack in the Central Rocky mountains, there is no exception (7, 8). Rather, by protecting the habitat requirements of wide-ranging species such as wolves, ecological integrity can be maintained throughout the functioning ecosystem.

Biologists researching wolves on behalf of Parks Canada have recognized *C. lupus* as a keystone species, capable of causing a trophic cascade when populations dip below a critical threshold, (Hurd, et al. 2002). As wolves' numbers decline, elk density increases and adversely affects the growth of aspen and willow, with reduced plant biomass resulting in a reduction of active beaver lodges, negatively affecting songbird abundance and diversity, (Hebblewhite, et al. 2002). As the number of

grey wolves declines in the Central Rockies, a cascade effect is observed in which small mammals, fish, insects, birds, amphibians, ungulates, tree species and vegetation all suffer, (Banff National Park of Canada, 2004).

The combined role of indicator, umbrella, and keystone species for the wolf pack as a unit merits added protection for this species, as ecological studies have shown that loss of a keystone species is more apt to cause a series of linked extinction events, resulting in a degraded ecosystem where biological diversity suffers. (7,10). Figure 1 demonstrates an ecosystem with biological diversity severely depleted in Yellowstone National Park following the extirpation of wolves in the 1920's, and thriving again after wolves were reintroduced into the area in 1995 and 1996.



Figure 1 Yellowstone National Park with and without wolves

Canada is an important stronghold for wolves, *Canis Lupus*, as the species has been decimated or completely extirpated from many areas of its former range (8). Merely having wolves present is one thing, but preserving the species as part of a functioning ecosystem is a more challenging yet sound management decision.

A Case for Buffer Zones around the Mountain National Parks

areas by most Park jurisdictions across Canada, (Environment Canada, 2006).

Grey wolves (*Canis lupus*) used to roam the northern hemisphere, but they have declined significantly throughout their former range due to habitat and human exploitation. Many countries are currently trying to reintroduce wolves with limited success to restore ecological balance and return this awesome predator. In Canada, wolves are not protected outside of National Parks. In the past few decades, human use has intensified both within parks and surrounding these protected areas. Pressures from industrial, commercial, and recreational activities are compromising the ecological integrity of these 'wilderness areas', (CPAWS, 2007).

By expanding protected areas for wolves, the ecological integrity of these National Parks will be maintained. Top predators, such as wolves, are vital in maintaining the balance of a healthy ecosystem.

The Rocky Mountain Corridor is essential in maintaining a healthy gene flow among wolves between Canada and the United States, and a stretch of connected wilderness across North America.

As a keystone species, (Hurd, et al. 2002), wolves maintain balance and diversity within our natural environment. If we wait to take action, it may be too late to save this ecologically important species, and we will continue to lose biodiversity. Currently, most protected areas are too small and too isolated to ensure adequate protection of biodiversity and ecological integrity, (CPAWS, 2007).

Source populations of wolves residing in Banff National Park (BNP) have historically come from OUTSIDE the park, (Regional Perspectives on Ecosystem Indicators and Issues, 2002). Furthermore, biologists researching wolves in BNP recognize that the mostly alpine and subalpine habitats within the park provide less than optimal conditions for wolves to establish territories, (Regional Perspectives on Ecosystem Indicators and Issues, 2002). Wolves that are able to stay within BNP have greater survival rates than wolves outside the boundaries, (Regional Perspectives on Ecosystem Indicators and Issues, 2002). Jim Pissot, executive director of Defenders of Wildlife tells us that most packs that summer in protected areas winter at lower elevations in non-protected areas where the elk are, (Alberta Wildlife Enhancement Society, 2003). As of 2004, at least 2 of every 10 adult wolves were dying in BNP each year, which is a rate considered to be sustainable, but definitely high for a protected area, (Parks Canada, 2004). The park has stated "to have wolves inside the park, we

need healthy wolf populations and accessible habitat outside the park”, (Parks Canada, 2004). This will not be possible in the future unless we take steps now.

Kootenay and Yoho National Parks (KNP and YNP) both share low ungulate densities as well, causing wolves to require enormous territories to find an adequate prey base, (Kootenay National Park of Canada, 2008), and (Parks Canada, 2006).

The wolf pack in Kootenay requires a territory of almost 3,000 km², as only ¼ of the valley bottom is suitable for prey, (Kootenay National Park of Canada, 2008). Wolves collared in KNP travel as far as 250 km outside of Park boundaries, (Kootenay National Park of Canada, 2008). The last pack residing in Yoho covered an area of about 1,000 km², (Parks Canada, 2006). As of 2000, Yoho National Park recognized that it “did not contain sufficient habitat and prey animals to wholly support a wolf pack”, and stated that Yoho wolves would “always be dependent on adjacent provincial lands”, (Parks Canada, 2006). YNP has identified that in order for wolves to be present in the area, the park must work with private landowners, local citizens and recreationists, (Parks Canada, 2006), quintessentially, this will require the formation of buffer zones.

In 2002 the Central Rockies Wolf Project indicated that out of 12 packs, 9 needed protection beyond the National Parks if ecological integrity were to be maintained without wolves being introduced from other regions, (Regional Perspectives on Ecosystem Indicators and Issues, 2002). Researcher Carolyn Callahan of the Central Rockies Wolf Project tells us that “very few wolves that occupy [the Bow Valley region in BNP] are actually fully protected by national parks”, (Ellis, 2002).

A year-round ban on hunting and trapping in the areas surrounding these National Parks will likely reduce the annual mortality rate of wolves and assist in achieving stable populations. For example, over a period of 4 years (winter 1999 – spring 2004), 13 adult wolves died within the boundaries of BNP, which greatly exceeds a sustainable rate of loss, (Banff National Park of Canada, 2004).

Banff National Park has already asked the province of Alberta to limit access to motorized vehicles surrounding the Park, requesting a buffer zone be placed around the boundaries in this regard, (Syme, 2003). BNP has also recognized that wolf numbers reflect the level of human-caused mortality, (Parks Canada, 2004).

Although wolves require an adequate prey base, the defining factor in wolf persistence is protection from humans, (Regional Perspectives on Ecosystem Indicators and Issues, 2002). Human use and access can be directly linked to wolf mortality rates and locations, (Regional Perspectives on Ecosystem Indicators and

Issues, 2002). Where prey abundance is low, human use becomes even more significant to adversely affect wolves.

In 2002 Banff National Park's wildlife biologist Tom Hurd affirmed that in areas with low ungulate populations, such as Yoho and Kootenay, emphasis needs to be placed on reducing human-caused mortality of wolves, and developing co-ordinated inter-jurisdictional objectives, (Hurd, et al. 2002). Indeed, biologists have recommended that human-caused mortality of wolves must be minimized to manage the decline of wolves in the area, and it has even been suggested that population restoration may be required, (Dalman, et al. 2002). We can prevent this.

World Wildlife Fund tells us 'history has shown that, if deliberate efforts are not made to conserve large carnivores, they are doomed', (Hummel & Pettigrew, 1991). In the past 100 years, the interactions between humans and parts of the ecosystem have changes significantly, resulting in cumulative effects detrimental to wildlife. On crown land surrounding the parks, there has been an increase of land use for seismic lines, oil and gas and timber, (Alberta Wildlife Enhancement Society, 2003).

Canada still has one of the healthiest wolf populations in the world. On a global basis, this provides us with a unique and imperative conservation opportunity as well as responsibility. As WWF puts it, "Canada has a chance to do something no other country has done: deliberately to conserve healthy wild populations of different types of wolves on one of the last landscapes still capable of supporting such a conservation goal", (Hummel & Pettigrew, 1991). We need a national strategy in order to maintain this situation.

Wolves' numbers have not declined so far as to be lost...yet. But their numbers will not remain abundant unless we RESOLVE that they will. We can learn from the majority of the world that has lost this species, and not make the same mistakes.

"...species that are secure for now must become a priority because we still have a chance to do things differently with them, and thereby maintain some of the last wild, viable populations of these magnificent animals to be found anywhere in the world", (Hummel & Pettigrew, 1991)..

Science has shown us that these designated wilderness areas are not big enough to maintain a healthy population of wolves, and are too small to effectively conserve biodiversity. We wish to prevent a trophic cascade within our Parks by increasing the protected areas of **keystone species** such as wolves.

The International Union for the Conservation of Nature and Natural Resources (IUCN) Manifesto on Wolf Conservation recognizes the effects economic

development has had on the environment, and states that the importance and status of wolves should be taken into account by legislation and in planning for the future of any region, (Hummel & Pettigrew, 1991). They also advocate excluding economic development that is detrimental to the wolf and its habitat; the prohibition of hunting, poisons, bounty systems and use of mechanized vehicles; and legislation requiring the registration of each wolf killed (Hummel & Pettigrew, 1991). We need to pass legislation to perpetuate existing populations where they occur, as recommended by the IUCN's guidelines on wolf conservation, (Hummel & Pettigrew, 1991). We have a worldwide task of preserving biological diversity, (Hummel & Pettigrew, 1991).

Historically, the Canadian government has often favoured protecting the interests of industries over the needs of wildlife. One view is that hunting and trapping, as well as industrial practices and resource extraction are needed for the Canadian economy. Wilderness tourism can mean long-term financial benefits for our country. For example, the wolves reintroduced to the Greater Yellowstone area benefits the U.S. Northern Rockies' economy to the tune of \$35-million tourist dollars annually, (Defenders of Wildlife, 2006). By improving our conservation efforts, we can improve our environmental image and protect the long-term health of our wilderness, which can attract millions of tourism dollars.

A broad legislative tool protecting buffer zones would enable us to properly manage the land use of areas adjacent to protected land. Incompatible land use has been ranked as the most serious threat to parks and protected

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