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Crying Wolf?

Public Policy on Endangered Species in Canada

by Laura Jones

with Liv Fredricksen



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Critical Issues Bulletins

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Introduction

The Canadian identity is inextricably linked to wildlife. Beavers, loons, polar bears, caribou, osprey, and belted kingfishers appear on our coins and bank-notes. Our flag is the maple leaf. At our airports, souvenir shops overflow with postcards, mugs, T-shirts, and magnets depicting scenes of wildlife in their natural habitat; glossy brochures offer tourists fishing opportunities, hunting adventures, and whale-watching excursions.

This connection with wildlife has deep roots. The promise of fortune from fishing, trapping, and hunting attracted the first explorers and colonizers to this country. Fishermen settled on the Atlantic coast and fur traders traveled by canoe along river routes used for centuries by aboriginals, and built trading posts that eventually became major cities—Quebec, Winnipeg, and Edmonton. Some even argue that Canada exists today because of the demand in sixteenth-century Europe for hats made from beaver pelts (*Canada Yearbook 1997*: 35). Hunting, trapping, fishing, and logging are part of Canadians' collective memory.

The importance of wildlife throughout our history is constant but today we value wildlife for reasons that differ radically from those of the past: economic dependence, which in some cases led to severe over-exploitation, has largely been replaced by the view that Canada's plants and animals should be treasured for their inherent worth.

There is now a growing concern, fueled by environmentalists' predictions of a critical worldwide decline in biodiversity, that many species in Canada are endangered and at risk of becoming extinct. This concern has most recently been expressed in the proposed federal legislation, the *Canada Endangered Species Protection Act* (Bill C-65), which was designed to "prevent Canadian wildlife species from becoming extirpated or extinct and to provide for the recovery of those that are extirpated, endangered or threatened as a result of human activity" (Canada, Ministry of the Environment 1997: 1a). Although this bill died on the order paper in the spring of 1997, many expect that a new version will be introduced, possibly in the fall, 1999 or spring, 2000. Bill C-65 was not the first attempt to use federal laws and regulations to protect en-

dangered species in Canada. Such legislation was considered in the fall of 1994 (C-275) and the spring of 1996 (C-238) (Wilson 1998: 4–5), though both bills died on the order paper.

These efforts followed Canada's international commitment to enact legislation to protect endangered and threatened species made at the United Nations Convention on Biological Diversity held in Rio de Janeiro, Brazil, in 1992.¹ The failure to pass federal legislation since the summit in Rio de Janeiro has become the main focus of debates about whether Canada's wildlife is adequately protected from the threat of extinction. For example, on May 27, 1998 the article, Green Just Not Ottawa's Colour, in *The Globe and Mail* (McIlroy 1998a) gave details of the second annual report to Parliament from the Commissioner on the Environment and Sustainable Development. The article stressed that, "Canada's plants and animals are increasingly threatened by pollution and loss of habitat. But the government has done little to meet its obligations under the 1992 United Nations Convention on Biological Diversity . . . Ottawa still hasn't set goals, or allocated resources. (It still hasn't passed an endangered-species bill.)" (McIlroy 1998: A3).² In another story, Ottawa Called Flop at Saving Species, the *Toronto Star* reported the results of a study done by a coalition of environmental groups: "The coalition gave the federal government a D grade for its failed effort to pass Bill C-65, the Endangered Species Act." (Thompson 1997: A6). Another recent story in *The Globe and Mail* reports:

US environmentalists will ask their government tomorrow to enact trade sanctions against Canada because of Ottawa's failure to pass endangered-species legislation . . . At the very least, the legal petition will embarrass Canada, once seen as an international leader on environmental issues, but now increasingly viewed as a laggard.³ (McIlroy 1999b: A1)

The central premise of these news reports is that failure to pass federal endangered-species legislation is equivalent to failure to protect species at risk. Consequently, the need for this legislation has not been seriously debated. In-

stead, opponents have been arguing over the content of proposed bills. Environmental groups such as the Sierra Legal Defense Club claim that proposed legislation lacks “teeth” and is too watered down to be effective. On the other hand, to many contemporary wildlife authorities, the form and effectiveness of traditional endangered species legislation as an appropriate remedy is at issue. Further, many industry groups favour rewriting the bill to ensure that the rights to private property are protected.

In this Critical Issues Bulletin

There is no doubt that Canadians care about species at risk and will continue to do so in the future. To determine the best way to express this sentiment, however, we must abandon the rhetoric and simple-minded demands for more regulation that have dominated discussions about the state of endangered species in Canada and turn to careful consideration of the nature and extent of the threats to endangered species as well as the likely effects (including unintended consequences) of federal legislation.

This Critical Issues Bulletin evaluates the need for federal legislation to protect endangered species in Canada by asking fundamental questions that have been by-passed in the public debate. First, does the number of endangered species in Canada represent a problem serious enough to warrant the consideration of federal legislation? Second, is federal legislation the best way to protect endangered species or are there better means?

This paper first examines the nature and magnitude of the threats to endangered species in Canada by presenting an overview of the number of endangered species, as recorded by the Committee on the Status of Endangered Species in Canada (COSEWIC), and exposing some of the difficulties with using that number as representative of the actual number of endangered species in this country. Then, the idea that governments and private interests are not currently doing enough to protect Canada’s wildlife is challenged. Since legislative proposals in Canada have been similar to existing legislation in the United States, the final section of the paper examines what Canada can learn from the American experience. Policy recommendations are presented in the conclusion.

Table 1: COSEWIC Definitions of Risk Categories

Vulnerable	a species of special concern because of characteristics that make it particularly sensitive to human activities or natural events
Threatened	a species likely to become endangered if limiting factors are not reversed
Endangered	a species facing imminent extirpation or extinction
Extirpated	a species no longer existing in the wild in Canada, but occurring elsewhere
Extinct	a species that no longer exists
Indeterminate	a species for which there is insufficient scientific information to support status designation
Not at Risk	a species that has been evaluated and found to be not at risk

Source: COSEWIC 1998: iv.

glance. Almost half of the species on their list are in the least serious category, “vulnerable,” while an additional 22 percent fall in the next least serious category, “threatened” (see figure 2). Species considered “vulnerable” are *not* endangered or threatened but are considered particularly sensitive to human activities or natural events. Only 12 of the 339 species on the list represent actual extinctions (since 1844) and only two of these are mammals—the Sea Mink and the Queen Charlotte Island Woodland Caribou, which is not a species but a geographically defined (i.e. limited) population of a species.

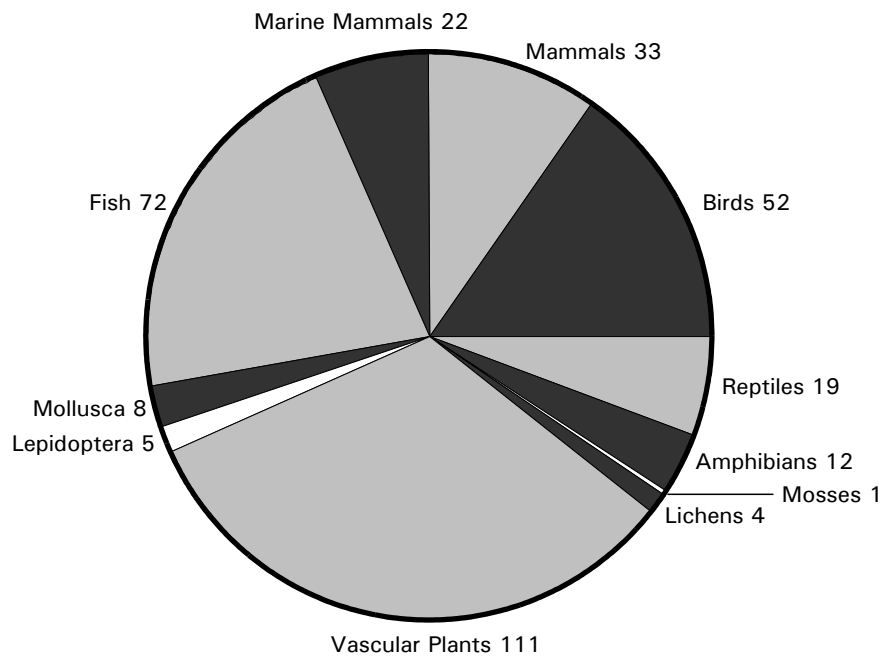
To gain some perspective on the number of species at risk, it is useful to compare it to the total number of recorded plant and animal species in Canada—around 72,000 (see

table 2).⁶ There may also be as many as 54,000, mostly insects, yet to be discovered (Bourdages 1996: 7). Using COSEWIC’s estimates, roughly 0.5 percent of the total recorded species in Canada are considered “at risk” (figure 3).⁷

While this gives a general impression about how many of Canada’s species need protection, it cannot be considered a completely reliable measure of the proportion of species at risk for two reasons. First, the known species list is continuously changing as is the list of species designated “at risk” by COSEWIC. For example, according to Environment Canada, COSEWIC’s list is almost exhaustive for mammals, birds, and fish as most of the animals in these categories whose status might be in doubt have been considered at least once by the committee. However, the list is

less complete for plants, reptiles, amphibians, insects, and other invertebrates as fewer resources have been devoted to their study. The second problem is that COSEWIC’s list overstates the number of species that need protection in Canada, at least in the most fully studied categories such as birds and mammals.

Figure 1: Species at Risk by Category

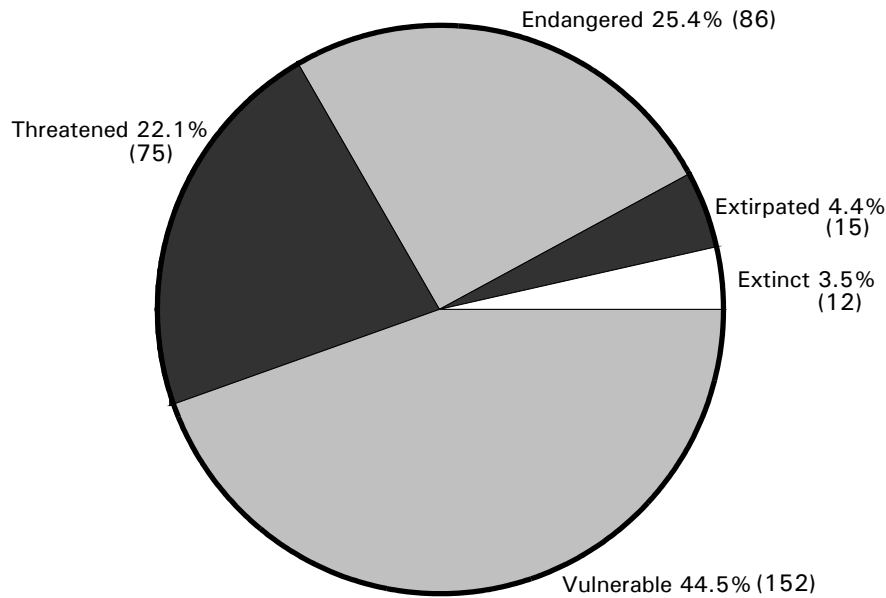


Source: Data from COSEWIC 1999.

Problems with COSEWIC’s list of species designated at risk

COSEWIC’s report, *Canadian Species at Risk*, is riddled with problems. In some cases, a listed species is not a species at all but a subspecies or specific population of a species that is not as a whole at risk. In other cases, species that are plentiful in the United States appear on

Figure 2: Status of Species at Risk in Canada



Source: Data from COSEWIC 1999.

the Canadian list because only the very northernmost part of their range crosses into southern Canada.

Aside from concerns about which species appear on the list, the dearth of pertinent information included about each listing is also disturbing. Common species name, Latin species name, date of listing, and the province or provinces

where the species are considered at risk are included but an explanation of why species are considered to be at risk is not. This poses a problem because it is often incorrectly assumed that most, if not all, of the species on the list are in jeopardy due to human activity—particularly competitive human uses and encroachment on habitat—but also overhunting, pollution, and the introduction of invasive foreign species.

Species at risk?

The title of the report in which the list of species designated in the five risk categories appears, *Canadian Species at Risk*, is inaccurate. COSEWIC’s use of the term “species” does not correspond to the biological definition of species. A standard biological definition

of species is based on common characteristics and reproductive behavior. A recently published dictionary of science, for example, defines a biological species as follows: “A category used in the classification of organisms that consists of a group of similar individuals that can usually breed among themselves and produce fertile off-spring.” (Oxford

Table 2: Wild Species in Canada

Plant and Animal Groups	Known Species	Suspected Species	Total
Algae and diatoms	5,323	2,800	8,123
Slime molds, fungi, and lichens	11,400	3,600	1,500
Mosses and liverworts	965	50	1,015
Ferns and fern allies	141	15	156
Vascular plants	4,187	100	4,287
Molluscs	1,121	100	1,221
Crustaceans	3,008	1,100	4,108
Insects	33,755	32,800	66,555
Spiders, mites and ticks	3,171	7,700	10,871
Other invertebrates	6,879	5,000	11,879
Sharks, bony fish, and lampreys	1,091	513	1,604
Amphibians and reptiles	83	2	85
Birds	578	0	578
Mammals (excluding humans)	193	0	193
Total	71, 895	53,780	125,675

Source: Bourdages 1996: 7.

Paperback Reference Concise Science Dictionary 1996: s.v. “species”).⁸ Instead of accepting this definition, COSEWIC creates its own, much broader, definition: “Any indigenous species, subspecies, variety, or geographically defined population of wild fauna and flora” (COSEWIC 1998: iv).

Subspecies are a further division of species based upon variations in appearance and behavior such as darker feathers, more spots or different nesting behavior.⁹ Determining which distinctions within species should justify a subspecies categorization is far more subjective and open to human bias than categorizing species based on reproductive ability. A geographically defined (i.e. limited) population is an even more subjective category, which has no biological rationale and could, in the ridiculous extreme, be used to differentiate the grasshoppers in my backyard from those in yours.

This broad approach to listing species has been criticized by many experts commenting on similar problems in the United States:

The distinct population and subspecies groupings probably mislead our officials, media and the general public by giving a distorted perception of exactly how plant and animal populations as a whole are faring. For example, pronghorn antelope at the species level have enjoyed a remarkably positive population curve between 1910 and 1990. In stark contrast to antelope as a species, a struggling subgroup of antelope described as the subspecies *Antelopicapra americanis sonorensis* or the Sonoran antelope, has been on the endangered species list since 1967. (Simon 1994: 12)

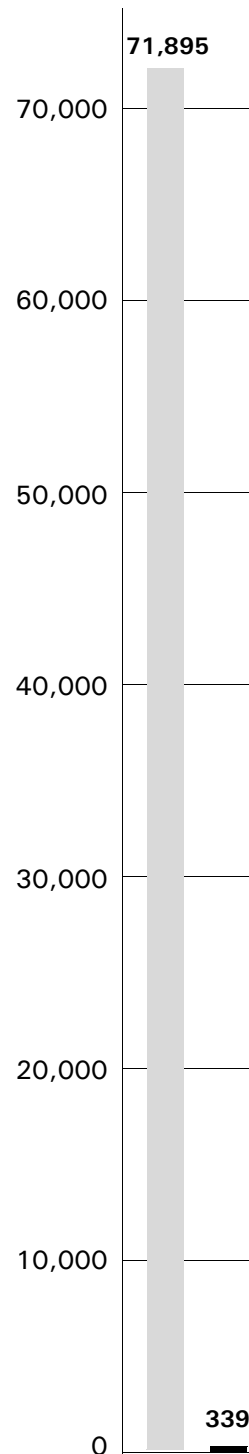
Examples of subspecies and geographically defined species on the Canadian list abound.¹⁰ The Queen Charlotte Islands population of the Woodland Caribou (*Rangifer tarandus dawsoni*), listed as one of two mammal extinctions in Canada, is not a species by the standard biological definition but a subspecies (*dawsoni*) of the plentiful species *Rangifer tarandus*. Further, this extinct subspecies is, in fact, a population of *Rangifer tarandus* geographically limited to the Queen Charlotte Islands.

A more egregious problem than counting subspecies is that of counting geographically defined populations. In many cases, this leads to listing species and subspecies more than once. For example, the grizzly bear (*Ursus arctos*) is listed as extirpated in Alberta, Manitoba, and Saskatchewan and listed as vulnerable in Alberta, British Columbia, the Northwest Territories, and the Yukon Territories. If grizzly bears are extirpated—no longer occurring in the wild—how can they also be vulnerable? The answer, it turns out, is that while there are plenty of healthy populations of grizzly bears in the wild in Canada, there are no longer any grizzly bears on the prairies. The extirpated grizzly bear listed by COSEWIC refers to the *prairie population* of grizzly bears, which they claim disappeared around 1880, while the vulnerable listing refers to a concern that the existing, healthy populations of grizzlies have characteristics that make them sensitive to human activities or natural events.

In another case, a sub-species of caribou, the Peary caribou (*Rangifer tarandus pearyi*), appears on COSEWIC’s list three times. The Banks Island population and the High Arctic population in the Northwest Territories are both listed as endangered while the Low Arctic Peary Caribou in the Northwest Territories are considered threatened. Counting the Peary Caribou three times clearly leads to an overstatement of the number of species at risk: the species should appear on the list just once, with a note indicating the geographical areas of particular concern.¹¹

In total, over 80 of the 339 “species” listed in *Canadian Species at Risk* are actually subspecies or geographically defined populations of species. Counting subspecies and geographically defined populations as separate species is misleading. The decline of a

Figure 3: Total Number of Species Considered “At Risk” in Canada Relative to the Total Number of Known Species in Canada



Sources: Data from COSEWIC 1999; Bourdages 1996.

subspecies or particular population of caribou, while regrettable, is clearly not nearly as serious an issue as the entire species being at risk. Where the decline of subspecies and geographically defined species are of particular concern, they should appear on a separate list so that the *Canadian Species at Risk* report is not confused with what would be more accurately titled *Canadian Species, Subspecies, and Geographically Defined Populations at Risk*.

To some, this analysis may seem uncaring. However, it is important to remember that resources for addressing the problem of endangered species are limited. Spending time, energy, and money to protect plants and animals that are not unique comes at the expense of those species that are truly in need of conservation. The process of generating American lists of endangered species is a path that Canadians would do well to avoid:

The ranks of the federal endangered species program continue to swell with slight variants of otherwise abundant species well beyond the ability of any agency to effectively manage them. And those who would invoke the Act for other than its ostensible purpose are afforded a convenient tool in that the subjectivity of determining subspecies and distinct populations allows one to find some plant or animal with which to oppose virtually anything. This type of abuse will certainly hurt true conservation efforts in the long run as the public becomes more skeptical about the crisis species of the day and no conservation program will succeed without the support of the public. (Simon 1994: 13)

Canadians truly concerned about the fate of endangered species must guard against “crying wolf” too often.

Endangered or Northernmost Range?

Many of the species on the “at risk” list are not actually endangered or threatened throughout their range but simply at the northern periphery of their natural range. They may be locally rare in Canada but globally plentiful. For some species, arguably including humans, the area along the border between Canada and United States represents the northernmost part of their range. That these species are rare within Canada is simply a reflection of the fact that at the limits of a species’ natural range its population decreases and can be far more variable than in the central parts of its range.

Consider, for example, the Sage thrasher (*Oreoscoptes montanus*), a bird listed as “endangered” by COSEWIC. According to the COSEWIC status report on the Sage thrasher, it “breeds from extreme southern British Columbia, central

Idaho and south-central Montana south through the Great Basin to northeastern Arizona, west-central and northern New Mexico, northern Texas, and western Oklahoma” and winters from “central California, southern Nevada, northern Arizona, central New Mexico and central Texas south to central Mexico” (see figure 9, p. 24). The report goes on to state that the population of Sage Thrashers in Canada may only ever have been as high as 30 pairs, and today it is suspected there are between 5 and 10 pairs (Cannings 1992: 1). The Sage thrasher is naturally rare in Canada but, nevertheless, it is included on the “at risk” list with no explanation.

The White-headed woodpecker (*Picoides albolarvatus*) appears on COSEWIC’s “at risk” list in the “threatened” category. Since the population is estimated at less than 100 birds, this may seem like a reasonable designation. But, when you consider that the only Canadian breeding grounds for the bird are in the south Okanagan Valley of British Columbia, it is clearly not defensible to include the bird on the list without explaining that they are naturally rare in Canada. According to the status report: “The White-headed woodpecker is considered rare throughout the northern part of its range” (Cannings 1992b: 4).

The Mountain plover (*Charadrius montanus*) is listed as “endangered” in Canada even though its range has never extended more than a few kilometres into Saskatchewan and it is plentiful in Montana, Colorado, and Wyoming. In the plant category, the Pink milkwort (*Polygala incarnata*) is listed as endangered because its Canadian distribution is limited to the Walpole Island Indian Reserve on the border. The plant is common in the dry prairies of the eastern and central United States (Shank 1996: 7). Blanchard’s Cricket frog (*Acris crepitans*) is widely distributed in the southern and central United States but considered endangered in Canada, where it was known historically only from Point Pelee and Pelee Island in southern Ontario (Canadian Wildlife Service 1997: 4)

Incredibly, some of the species that appear on the list have expanded their range to include Canada as a result of human activity. For example, it is believed that Henslow’s sparrow (*Ammodramus henslowii*), categorized by COSEWIC as “endangered,” expanded its range into Ontario during the early 1900s following the clearing of forests (Austen and Cadman 1993: 1). Most of its breeding range is in the United States. The Nature Conservancy gives it a rank of G4, which indicates that the species is “apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery” (Austen and Cadman, 1993: 7).

A conservative estimate suggests that no less than 70 of COSEWIC’s listings (20 percent) are totally or partially attributable to species being at the northern periphery of their natural range. According to one government wildlife

biologist: “Perhaps as many as 40 per cent of bird species and 33 percent of terrestrial mammals on the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) list might be considered as ‘peripheral’, depending on one’s definition of the term” (Shank 1996: 7). Cases such as the Henslow’s sparrow and the Sage thrasher may very well be of concern to Canadians, but to include them on the list species at risk without an explanation of why they are on the list is misleading when that list is being used as a basis for legislation that will curtail human activity in order to protect species.

Extinction of species in Canada

The category of ultimate concern to policy makers is “extinct,” the most serious of the “at risk” categories. According to Environment Canada, the extinction of species is something that should continue to concern Canadians as at least eight distinct animal species and one population of caribou have become extinct since the arrival of the Europeans (Canadian Wildlife Service 1999: 2). While these extinctions, which include three species of birds, six species of fish, and one species of mollusc, are unfortunate, there has

been no recent, alarming growth in this most serious category of the list. In fact, the latest extinction of a mammal, the Woodland Caribou on the Queen Charlotte Islands (as we saw above, a geographically limited population of a species still considered plentiful elsewhere), occurred 78 years ago and the last extinction of a bird, the passenger pigeon, occurred 84 years ago.

Table 3 lists the species that have become extinct in Canada as well as the date and probable cause of the extinctions. When considering whether Canada needs more legislation and regulation to protect endangered species, there are two relevant questions to ask regarding these extinctions. First, why did the extinctions occur? Second, is this a trend that we expect will continue?

While it is important to remember that extinctions have occurred throughout history as part of natural dynamics—and, indeed, as an integral part of the evolutionary process since the appearance of biological life on earth¹²—most of the extinctions on the Canadian list were a result of human activities—unregulated hunting, trapping, and commercial fishing. The Woodland caribou, the great Auk, the Labrador duck and the Passenger pigeon became extinct due to overhunting. The Sea mink was probably never naturally very abundant and pressure from trapping contributed to its

Table 3: Extinctions in Canada

Species	Category	Date of Extinction	Probable Cause of Extinction
Caribou, Woodland (Queen Charlotte Islands Population) (<i>Rangifer tarandus dawsoni</i>)	Mammal	1920	Past unregulated hunting
Mink, Sea (<i>Mustela macrodon</i>)	Mammal	1894	Past unregulated trapping
Auk, Great (<i>Pinguinus impennis</i>)	Bird	1844	Past unregulated hunting
Duck, Labrador (<i>Camptorhynchus labradorius</i>)	Bird	1875	Past unregulated hunting, habitat alteration
Pigeon, Passenger (<i>Ectopistes migratorius</i>)	Bird	1914	Past unregulated hunting, habitat alteration
Cisco, Deepwater (<i>Coregonus johanna</i>)	Fish	1952	Commercial Fishing, predation by introduced species
Cisco, Longjaw (<i>Coregonus alpenae</i>)	Fish	1975	Commercial Fishing, predation by introduced species
Dace, Banff Longnose (<i>Rhinichthys cataractae smithi</i>)	Fish	1986	Predation by introduced species
Stickleback, Hadley Lake (benthic) (<i>Gasterosteus</i> spp)	Fish	* 1999	Predation by introduced species
Stickleback, Hadley Lake (limnetic) (<i>Gasterosteus</i> spp)	Fish	* 1999	Predation by introduced species
Walleye, Blue (<i>Stizostedion vitreum glaucum</i>)	Fish	1965	Commercial Fishing, habitat alteration
Limpet, Eelgrass (<i>Lottia alveus</i>)	Mollusca	1929	Natural Causes

Sources: Committee on the Status of Endangered Wildlife in Canada 1998, 1999:1–2; Environment Canada 1996b: 14-13.

*Year in which these species were added to COSEWIC’s list.

demise. Three of the four fish species on the list became extinct primarily as a result of overfishing. These extinctions are grievous because these species may well have survived if it were not for their over-exploitation. But, when considering whether these extinctions represent a trend that is likely to continue, it must be remembered that the problem of overhunting, with the exception of the fisheries, has been solved. According to Environment Canada, “extinctions and extirpations from harvesting of wildlife have declined because of improved knowledge of the threats to species and because of changing policies and legislation, combined with better management and enforcement” (Environment Canada 1996b: 14–12). If overhunting is no longer a serious threat to wildlife, why are agencies like Environment Canada insisting that the extinction of species is something for Canadians to continue worrying about?

According to groups concerned about the future of wildlife in Canada, the greatest new threat to wildlife is human encroachment on habitat.

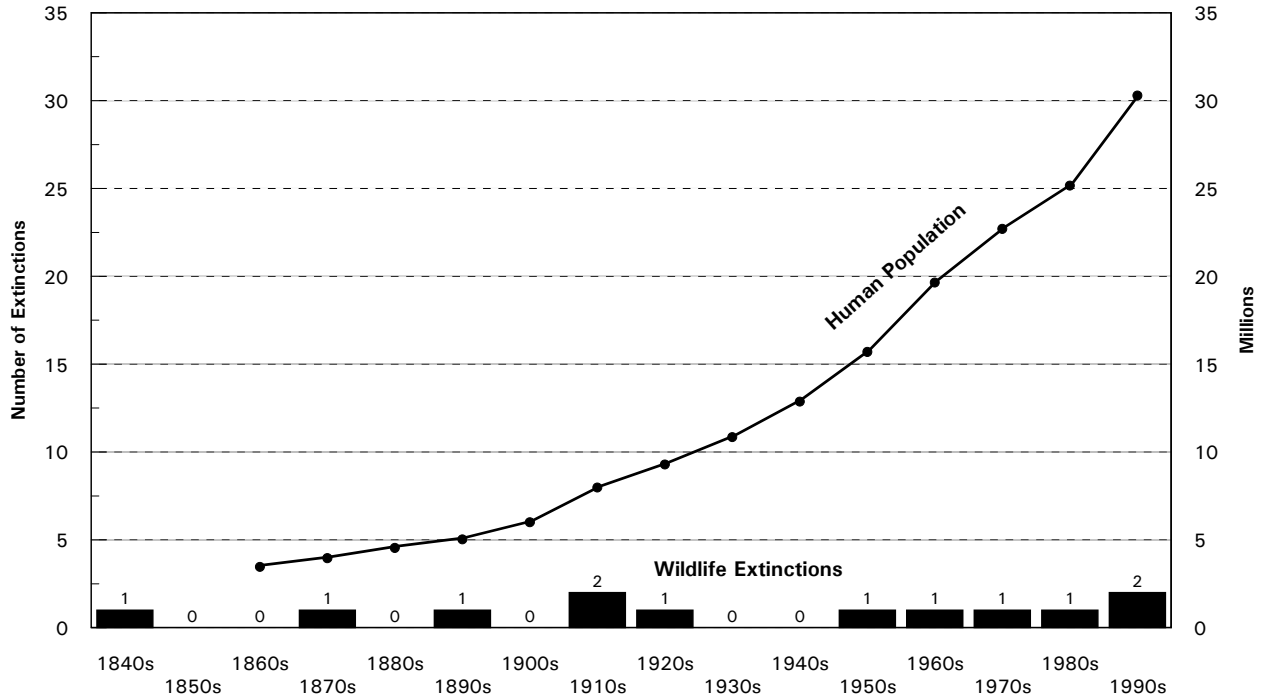
The greatest threat to biodiversity in Canada is the extensive alteration by people of a number of economi-

cal regions, largely because of competing land uses such as agriculture and urbanization ... The prairies and southern Ontario have been greatly transformed. (Canadian Wildlife Service 1995: 3)

This is the threat that legislation is supposed to address. The evidence, however, does not support the idea that Canada’s wildlife is facing an increasing threat of extinctions.

If, in recent history, we faced a serious problem protecting wildlife in Canada due to an increase in human encroachment on habitat, one might expect to see a dramatic increase in the number of species that have become extinct as human population expanded. In other words, population expansion would be a good proxy for human encroachment on wildlife habitat. However, far from revealing a dramatic rise in the number of species becoming extinct in this country as human population increased, there appears to be no correlation between the growth of the human population and animal extinctions. Figure 4, which shows human population on the same graph as animal extinctions, illustrates that species extinction has been spread fairly evenly across time since 1840, despite rapid population growth.

Figure 4: Increase in Human Population and Wildlife Extinctions per Decade in Canada, 1840–1999



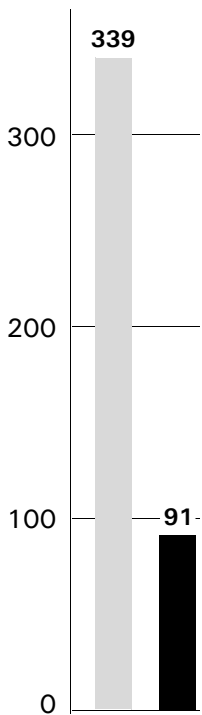
Sources: Statistics Canada 1996/1997. *Canadian Economic Observer*. Cat. no. 11-210XPB: 25; Statistics Canada 1992. *Postcensal Annual Estimates of Population by Marital Status, Age, Sex and Components of Growth for Canada, Provinces and Territories, June 1, 1992* (Volume 10). Cat. no. 91-210: 34–35.

Note: The extinction in the 1920s was a distinct population of woodland Caribou. The extinctions in the 19760s, 1980s, and 1990s were distinct populations or subspecies of fish.

How many species are really at risk?

One of the difficulties with trying to describe the state of Canada’s wildlife is that everyone has a different view of what constitutes a problem. To some, that any species is at risk of extinction is a sufficient reason to declare a national emergency. To others, that there are only 339 species designated “at risk” by COSEWIC, less than one percent of the species known to exist in Canada, is reassuring. But to make those assessments, however different they may be, an accurate list of species at risk is needed.

Figure 5: Number of Plants and Animals Considered “At Risk” in Canada: According to COSEWIC (light grey bar); Adjusted (black bar)



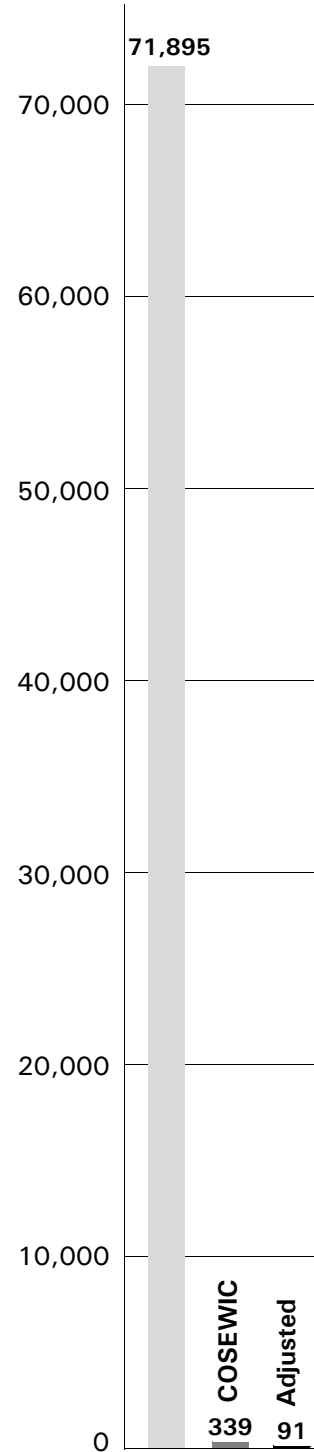
Sources: COSEWIC 1999; authors.

Earlier discussion suggests that subspecies, distinct populations, multiple-listings, and species at risk primarily because southern Canada is the northernmost part of their range should be taken off the list. As well, extinctions should be removed because they are no longer “at risk.”¹³ It is also reasonable to exclude vulnerable species because they are not actually at risk, but just of special concern.¹⁴ Indeed, this category is particularly subjective. In a dynamic system that is constantly changing, species are in some sense always vulnerable to various kinds of natural and human influences.

When these adjustments are made, the list published by COSEWIC is dramatically reduced from 339 species to 91 species (figure 5) or 0.16 percent of the species known to exist in Canada (figure 6). Figure 7 shows that most of the remaining species are either plants or fish. Does this mean that Canada has an endangered-species crisis? That, of course, is a subjective question. But it is clear that the endangered species problem in Canada has been overstated.

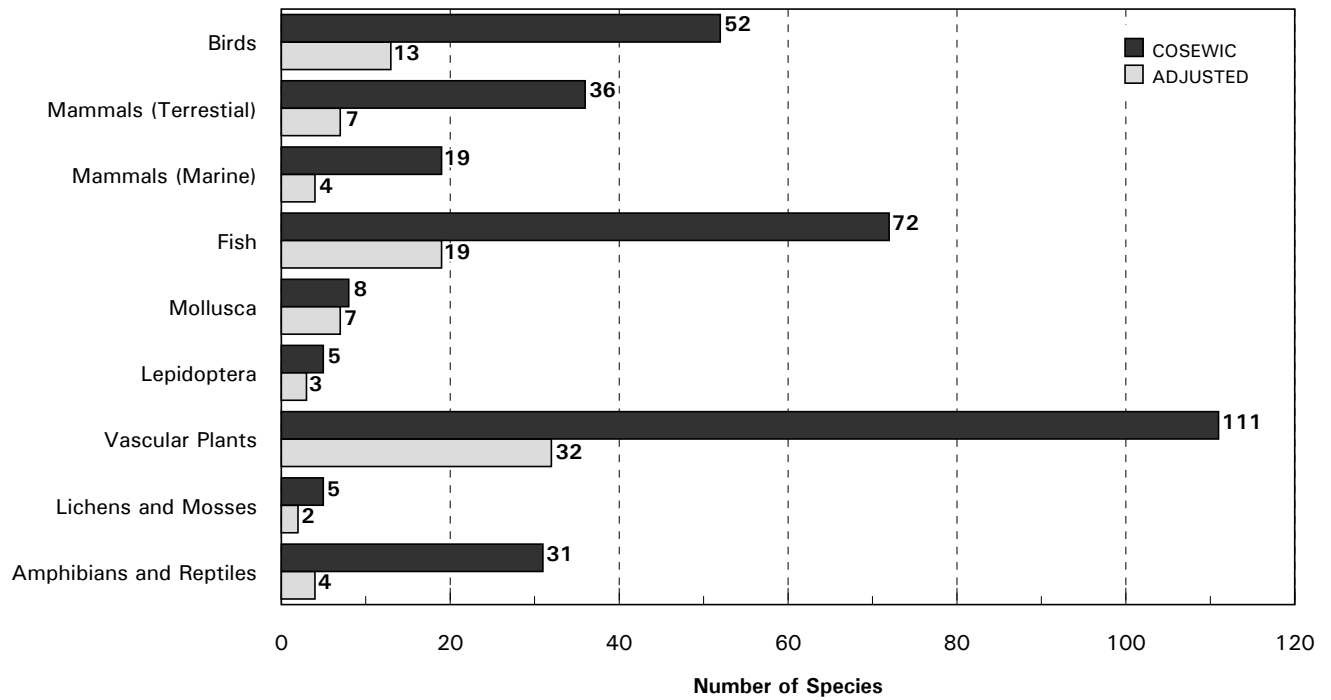
If the list of species at risk has been inflated so that Canadians will be more concerned about endangered species and thus more likely to support more intervention by the federal government, this strategy may backfire. Exaggerating the seriousness of problems could jeopardize the public’s faith in COSEWIC’s supposedly scientific evaluations. When people begin to lose faith in the credibility of the scientific evidence that governments use to support their claims that more legislation and regulation are needed, it is effective and efficient public policy-making that is placed “at risk.”

Figure 6: Total Number of Known Species in Canada Relative to Number of Species Considered “At Risk” (COSEWIC (light grey bar); Adjusted (black bar)) in Canada



Sources: COSEWIC 1999; authors; Bourdages 1996.

Figure 7: Plants and Animals Considered at Risk in Canada by Category



Sources: COSEWIC 1999; authors.



Protecting Endangered Species in Canada

The debate about protecting endangered species in Canada has focused on federal legislation and regulation. Before endorsing this approach to the conservation of species, however, Canadians should consider the counter-arguments. While environmentalists talk about the number of endangered species in Canada as if it had reached crisis proportions, this position, as we saw above, is difficult to justify.

Given the relatively small number of species at risk in Canada, it seems that federal legislation and the bureaucracy that inevitably would be needed to maintain, monitor, and enforce the new rules is simply not justified. This is particularly true since there are already hundreds of initiatives for conserving wildlife in Canada.

Moreover, even if the number of endangered species in Canada could be labeled a serious problem, it is unlikely that federal legislation would be the most effective way to address it. Local decentralized agencies, both public and private, are in a much better position to direct resources effectively and efficiently. Finally, the experience in the United States, which will be discussed more fully in the next section, indicates that the unintended consequences of federal endangered-species legislation could be disastrous for Canada's wildlife.

Habitat

According to many environmentalists, the biggest threat to wildlife is human encroachment on habitat. By that measure, Canada's small population relative to its landmass affords most of its species a high level of natural protection. With a population of just over 30 million people (0.5 percent of the world's population) and a surface area that is the one of the largest in the world (7 percent of the global land mass), Canada's average population density is just 3 people per kilometre (Environment Canada 1996b:10-1). The "footprint" of Canada's population is even smaller as 80 percent of Canadi-

ans live in urban areas covering only 0.2 percent of the total land area (Environment Canada 1996b:10-1). Canada's yearbook describes the country:

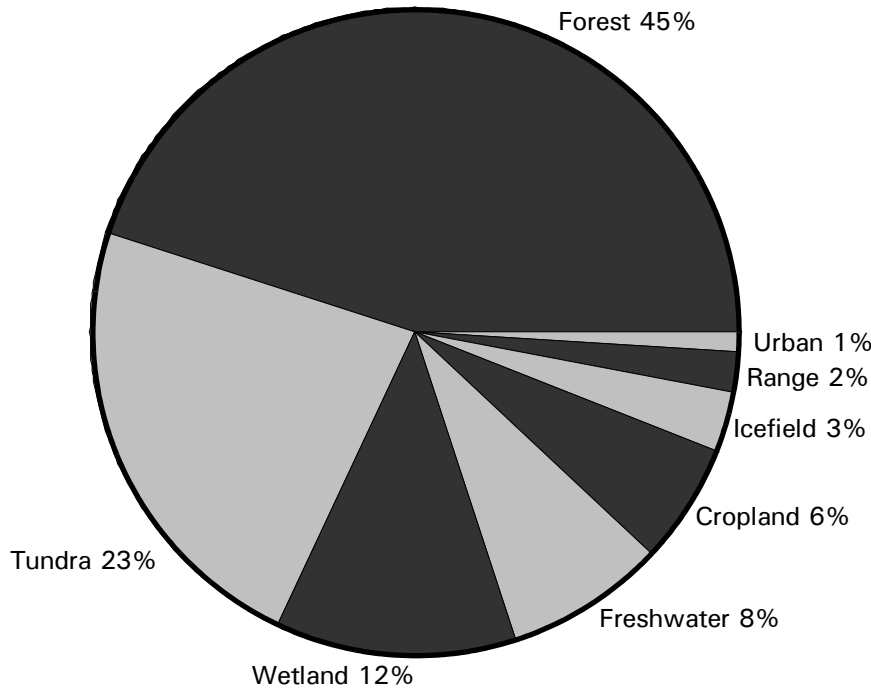
Most of Canada's 10 million square kilometres are uninhabited. Indeed, about three in four Canadians live in a widely-spaced string of cities close to the border with the United States. To travel north from these cities is to enter uninhabited forests or plains; wilderness remains always at the back door. (*Canada Year Book 1997*: 3)

Figure 8 shows land cover in Canada. Less than 1 percent of Canada is urban, 6 percent is crop land, 2 percent is range land, while 45 percent is forest. The United States, by comparison, is almost 5 percent developed area, 20 percent rangeland, 20 percent crop land and only 20 percent forest land. Even resource industries such as forestry, which take place outside of urban areas, disturb only a small fraction of the Canada's land base. According to Environment Canada, in 1992 roughly 9,332 square kilometers were logged in Canada, roughly 0.09 percent of the total land base (Environment Canada 1996b: 10-58).

Although most of Canada is wilderness, it still has a substantial network of national, provincial, and territorial parks, as well as national wildlife areas, migratory bird sanctuaries, and lands protected through private initiatives. Since the creation of Banff National Park in 1885, the amount of protected area in Canada has grown to almost 800,000 square kilometres, or about 8 percent of the country (Environment Canada 1996b: 14-20).

The amount of natural protection that Canada's wildlife enjoy does not, however, mean that Canadians are complacent about finding further ways to protect species, particularly those most directly threatened by human activities. There are hundreds of organizations and thousands of individuals working hard to protect species and their habitat

Figure 8: Canadian Land Cover



Source: Canada Yearbook 1997: 1.

in Canada. According to one estimate by Environment Canada, as of 1991 there were over 120 government and private organizations addressing wildlife issues in Canada (Environment Canada 1991: 20-3). Given that the number of organizations has likely increased since 1991, there are probably more organizations operating to help wildlife in this country than there are endangered species.

Initiatives to protect wildlife in Canada

There are too many initiatives to protect Canada's wildlife to describe in full in this report. In order to give a general impression of their scope of activities, however, some examples of efforts by individuals, conservation groups, corporations, and governments are given below.

Non-profit conservation groups

Table 4 shows the amount of land protected by some of the larger conservation organizations in this country. The amount of land protected by these groups alone is now close to 2 million hectares. Perhaps even more impressive than the total amount of land protected by these organizations is the increase of 90 percent in the amount of land protected over just four years earlier. These groups directly protect wildlife through their programs of buying or leasing land and work-

ing with private landowners. Ironically, precisely because they are more concerned with direct conservation than with lobbying governments and alarming the public, their important contribution towards preserving Canada's wildlife often goes unrecognized. Highlighting the success of private conservation efforts is simply not in the interests of the many environmentalists, bureaucrats, and politicians who favour a legislative approach to protecting wildlife. The following summaries of the activities of just a few conservation organizations working in Canada provide some sense of the scope of innovative work carried out by these groups.

The Alberta Fish and Game Association, established in 1908, is Alberta's oldest and largest conservation group and has the support of 15,000 mem-

bers and 120 clubs. Their mission is to promote the conservation and utilization of fish and wildlife and to protect and enhance fish and wildlife habitat (www.afga.org/ 2/24/98). Operation Burrowing Owl, one of the Association's programs, provides an example of how co-operation with private landowners can help protect species at risk. Under the program, which has been in place for ten years, landowners sign voluntary five-year habitat protection agreements to conserve habitat around owl nests. In return, landowners are given a lapel pin and a gate sign indicating that they are part of the program. The program started with 50 landowners and now includes over 200 landowners, who own 23,000 hectares of land in southern Alberta (personal communication with Julie Spicer, AFGA, February 1999). Operation Burrowing Owl has been so successful that a new program of the same type, Operation Grassland Community, which takes a multi-species approach towards conservation, was initiated by the Alberta Fish and Game Association in 1994, and Saskatchewan has since opened a chapter of Operation Burrowing Owl. The Alberta Fish and Game Association operates many other wildlife related programs, such as a Wildlife Trust Fund where people are encouraged to donate money and land to be set aside for wildlife habitat.

The Nature Conservancy of Canada is another non-profit organization that is "dedicated to preserving ecologically signifi-

Table 4: Conservation Lands Owned or Managed by Selected Non-Governmental Organizations, 1993 and 1997

Organization	1993 (hectares)	1997 (hectares)
Ducks Unlimited Canada	964,784	1,428,387
Nature Conservancy of Canada	36,339	485,623
Alberta Fish and Game Association*	25,481	57,595
British Columbia Nature Trust	11,589	12,378
Manitoba Wildlife Federation	10,419	6,222
Federation of Ontario Naturalists	547	1,183
Ruiter Valley Land Trust	175	219
New Brunswick Nature Trust	94	816
Total	1,049,428	1,992,423

Original source for 1993: Environment Canada 1996b. Other sources: personal communication between Liv Fredricksen and Judy Eising, Federation of Ontario Naturalists, October 28, 1998; personal communication between Liv Fredricksen and Dan Buffett, Ducks Unlimited Canada, October 14, 1998 and Ducks Unlimited Canada *1998 Annual Report*; personal communication between Liv Fredricksen and Edna Ralston, Nature Conservancy of Canada, October 14, 1998; personal communication between Liv Fredricksen and Paul Smith, Ontario Heritage Foundation, October 14, 1998; personal communication between Liv Fredricksen and Brad Fenson, Alberta Fish and Game Association, October 6, 1998; personal communication with the New Brunswick Nature Trust, October 23, 1998, and website: www.naturetrust.nb.ca/george.htm; personal communication with the Ruiter Valley Land Trust, October 16, 1998; personal communication with the British Columbia Nature Trust October 23, 1998; personal communication with the Manitoba Wildlife Federation, October 9, 1998.

*AFGA 1997 numbers refer to the number of hectares secured in their Habitat Steward Program.

cant natural areas, places of special beauty and educational interest, through outright purchase, land donation and conservation agreement” (Nature Conservancy of Canada 1997: 1). The Nature Conservancy’s work is supported by individuals, corporations, and governments. In their 1997 annual report, they record the protection of 546,327 hectares of land at 700 properties. These diverse properties include a large portion on the Minesing Swamp in Ontario, home to many species at risk including the Prairie Fringed Orchid, Loggerhead Shrike, and Spotted Turtle, and the Manitoba Tall Grass Prairie preserve in southeastern Manitoba.

In one recent interesting project, a donation to the Nature Conservancy by Shell Canada Limited, Chevron Canada Resources, Petro-Canada, Mobil Oil Canada, and Ranger Oil Limited helped establish the first national marine conservation area of 118,057 hectares off the west coast of Canada. The Nature Conservancy plans to transfer these rights to the Government of Canada to establish the Gwaii Haanas National Marine Conservation Area Reserve. The reserve will help protect an area in the Queen Charlotte Islands where more than 293 marine species have been documented (Nature Conservancy of Canada 1997: 4).

Non-profit conservation activities also include events specifically aimed at funding conservation. The *Baillie Birda-*

thon is a 24-hour count of birds conducted in May across the country. Participants are sponsored on a per-species basis or with a flat amount. The *Baillie Birdathon* is Canada’s largest annual fundraiser for the conservation of wild birds and their habitats: since it began in 1976, the event has raised over \$1.4 million for bird research and conservation with over 100 different organizations across the country. Funds raised through the birdathon go to support conservation organizations and projects ranging from bird-related research to protecting Piping plover habitat in Prince Edward Island to surveying Marbled murrelets in British Columbia (Gallant 1999).

The Delta Waterfowl Foundation, which was formerly known as the North American Wildlife Foundation, was founded in 1911 by sportsmen and conservationists to protect waterfowl. It runs the “Adopt-a-Pothole” program, which compensates farmers for protecting nesting areas in water-filled depressions known as potholes in Manitoba, North Dakota, and Minnesota. Donors to the program contribute from \$125 to \$500 and receive a certificate, a photo mosaic of the potholes typically adopted, the name and address of the landowner who owns the pothole, a window decal, and Delta’s Waterfowl reports. Landowners involved with the program typically sign a 10-year contract to grow habitat

suitable for the nesting of ducks. Landowners agree not to clear, drain, burn, break, spray, graze, fill, hay, or cultivate the areas within their contract (Delta Waterfowl Foundation 1999). The amount of land protected in Manitoba under this program has increased more than four-fold in the last 7 years, from 811 acres in 1991 to 4,110 acres in 1998.

The Federation of Ontario Naturalists is a membership-based, not-for-profit organization founded in 1931 that works to protect Ontario's natural heritage through education, scientific research, public policy, and nature protection. The Federation represents 15,000 individual members and a network of 89 local naturalists' clubs. It operates the largest non-governmental nature reserve system in Ontario, with a total of 16 properties covering 2,900 acres. Properties including Heronry Island in Georgian Bay, the Crossley Nature Reserve in Muskoka, and the G.G. Newton Nature Reserve near Goderich have been donated. Other properties, including the 330 acre Dorcas Bay Nature Reserve, were purchased. The volunteer committee that runs the system prides itself on seeking out lands that would otherwise not be protected (Federation of Ontario Naturalists 1999).

The Wildlife Rescue Association of British Columbia is a small, non-profit society supported by its members and donors. They work to ensure that injured wildlife has a place to be treated. For example, when a small oil spill occurred in Burrard Inlet in 1998, the Association helped treat 214 birds, 126 of which were successfully released. Since 1979 they have treated 170 different species and have seen over 35,000 cases (Wildlife Rescue News Spring 1998).

Ducks Unlimited Canada is another example of a private, non-profit organization that is dedicated to conservation. Specifically, Ducks Unlimited Canada along with Ducks Unlimited, Inc. in the United States and DUMAC in Mexico is dedicated to the conservation of wetlands to ensure the perpetuation of North America's waterfowl. Since 1938, the organization has had an impressive conservation record in Canada. It has invested over \$800 million and influences 18 million acres of habitat through active management and agreements with governments (Ducks Unlimited Canada 1998: 2). Its habitat programs benefit over 600 wildlife species. Most of the fundraising for Ducks Unlimited's conservation projects comes from a system of dinner auctions and events held across the country. A paragraph from the President's Message section of their 1998 annual report is indicative of the organization's commitment to using its resources efficiently:

We also want to invest every dollar as efficiently as we can. Existing and potential Ducks Unlimited supporters have a right to expect us to be good stewards for their contributions. We take this responsibility very seriously. With over 87 percent of the budget invested in support of its conservation programs, Ducks Unlimited Canada is determined to be the best managed non-profit organization in the world. (Ducks Unlimited Canada 1998: 2)

Ducks Unlimited Canada sees working with Canada's private landowners as a critical part of their success. Some of their innovative work with landowners is described in their 1998 annual report:

An exciting new initiative was the introduction of a full-scale test of flushing bars on haying equipment in Alberta. A flushing bar is a device attached to haying machinery that prevents birds and mammals from being harmed during the course of normal haying operations. Sixty landowners demonstrated enthusiasm for this conservation tool by signing 10-year agreements to equip their pull-type hay mowers with this inexpensive but effective device. (Ducks Unlimited Canada 1998: 5)

Non-profit conservation groups, of which the above are just a few examples, offer an alternative to the legislative approach and they offer a mechanism by which those willing to pay for habitat protection can do so.

The role of industry

Many corporations are also playing an important role in protecting species and their habitat in Canada. In some cases, resource companies have voluntarily relinquished oil, gas, mineral, or logging rights and donated land to protect habitat. For example, in 1992 Shell Oil donated a large holding in British Columbia to the Nature Conservancy of Canada. Forest companies have a long history of donating land. Cathedral Grove, one of the best-known old-growth forests in the country, was donated by MacMillan Bloedel in the 1940s, and wetlands have been periodically donated by Bowater-Mersey Forest Products Ltd. in New Brunswick. In some cases, donated land is returned to the government and, in other cases, it is managed for conservation purposes by non-governmental organizations (Environment Canada 1996b: 10-72). In addition to donating land, corporations support conservation associations through financial contributions. For

example, Ducks Unlimited has over 300 corporations who support them with donations between \$5,000 and \$1,000,000 or more; many more corporations contribute smaller amounts. Donations to conservation activities come from a variety of different companies including banks, mining companies, chemical companies, energy companies, and forestry companies.

Many companies in the resource sector, who are most directly connected to land use, also have their own wildlife conservation initiatives in place. Canadian Forest Products, for example, has been actively involved in conservation efforts for 25 years. Their conservation initiatives take place mostly on Vancouver Island but also in other areas such as Prince George, the Lower Mainland, and Grande Prairie. They spent between \$200,000 and \$700,000 a year between 1992 and 1998 on activities including wildlife inventory and mapping (for bald eagles, marbled murrelets, mountain goats, and spotted owls), wildlife habitat research (for bats, small mammals, forest birds, black bears, and flying squirrels), and habitat enhancement (bat-roosting boxes, bird-nesting boxes, stream restoration) (personal communication with John Deal, Canfor, November 1998).

TimberWest Forest Corporation has been involved with conservation efforts for over 20 years. It employs a full-time biologist and two consultants to work specifically on wildlife conservation. Their operations budget for conservation is roughly \$100,000 year. Most of their work involves habitat management and enhancement, including stream rehabilitation, but they also inventory fish and wildlife (personal communication with Dave Lindsay, November 19, 1998).

Crestbrook Forest Industries Ltd. is another example of a forest company actively involved in conservation for the last 20 years, primarily in the east Kootenay region of British Columbia. They spend \$200,000 a year specifically on wildlife conservation, which includes hiring a wildlife consultant, wildlife mapping, and biodiversity assessments (personal communication with Daryll Hebert, November 29, 1998).

Repap Manitoba Inc. works with the provincial government in Manitoba to conduct winter surveys to determine the wintering areas of woodland caribou. Weyerhaeuser and Weldwood in Alberta are also involved in studies involving the woodland caribou (Martel and Nadeau 1997: 5).

The Canadian Cattlemen's Association (CCA) recognize cattle producers who are voluntarily changing production practices to make their operations more environmentally sustainable through an annual National Environmental Stewardship Award.

The responsible action taken by the cattle industry in species preservation has for the most part gone unnoticed. Cattle producers have simply incorporated responsible environmental stewardship into their everyday management systems. Farmers and ranchers across Canada are taking part voluntarily in programs that are successfully ensuring the preservation of the environment. In many cases their actions are helping to increase numbers of species that are extirpated, endangered, threatened, or vulnerable. (Canadian Cattlemen's Association 1998).

Individuals

This brief description of projects initiated and supported by organizations and companies leaves untouched the actions of individual Canadians who own land and worry about preserving habitat on that land. Together, these efforts form an effective patchwork. Common sense should dictate that, more than regulation, it is these actions that will best protect our species. Ironically, because these groups are more interested in acting to protect species than publicizing their actions, they often get little recognition.

Initiatives from the federal government

In addition to the large number of private and corporate initiatives in place to help wildlife, the federal government has a number of initiatives meant to protect Canada's flora and fauna. A number of federal statutes, including the *Fisheries Act*, *Migratory Birds Convention Act*, *Canada Wildlife Act*, and the *National Parks Act*, provide protection for endangered species of plants and animals in Canada.

The *Fisheries Act* of 1868 gives the Governor in Council the power to regulate all matters relating to fishing, including the conservation and protection of fish. The Act is supposed to protect all species of fish, marine plants, and their habitat (Bourdages 1996: 13). This means that the 94 species, subspecies, and distinct populations of fish and marine mammals that constitute close to one-third of the total species on COSEWIC's list are *already covered by federal legislation*. The effectiveness of that protection, of course, is another matter. Some might even try to make the perverse argument that since the federal Department of Fisheries and Oceans has a mixed record on conservation, more federal intervention is necessary. But why should Canadians have any confidence that a federal Minister of Environment would do a better job protecting fish under an endangered species act than the Minister of Fisheries and Oceans has done under the *Fisheries Act*?

Birds also have specific protection under Canadian law. In 1916, Canada and the United States signed the Migratory Birds Convention, a treaty to ensure the protection of migratory birds, and the following year Parliament passed the *Migratory Birds Convention Act*, which gives the federal government responsibility for the management of certain migratory birds and “regulates hunting, deters trade and marketing, controls the use of migratory birds through permits and licences, and allows for the creation of sanctuaries to control and manage protected areas.” The Act was revised in 1994 to include protection for sperm, embryos, and tissue cultures from migratory birds as well as the birds themselves and their eggs. Under the act, the federal government has established 98 migratory bird sanctuaries totaling approximately 11.3 million hectares. There are sanctuaries in all provinces and territories except Manitoba and the Yukon (www.ec.gc.ca/cws-scf/hww-fap/nwambs/nwambs.html 2/11/98).

The *Canada Wildlife Act*, passed in 1973, affords more general protection for species by allowing the federal authorities to undertake research on wildlife and work with the provinces to carry out conservation and recreational activities affecting wildlife and their habitats. According to this Act, the Minister of Environment has the authority to acquire and manage habitat for birds and, with the consent of the provinces, other wildlife. There are 48 National Wildlife Areas, where wildlife and habitat receive protection under the Act, covering approximately 489,330 hectares of habitat (www.ec.gc.ca/cws-scf/hww-fap/nwambs/nwambs.html 2/11/98).

The *National Parks Act* protects plants and animals in parks. According to the Act, the Governor in Council has the power

to make regulations concerning the preservation, control and management of parks; the protection of fauna, including the taking of specimens for scientific or propagation purposes; the destruction or removal of dangerous or superabundant species; and the management and regulation of fishing and the protection of fish, including the prevention and remedying of any obstruction or pollution of waterways. (Bourdages 1996: 14)

The Act also allows for heavy fines to be imposed on those caught poaching species that are protected or at risk in national parks.

In addition to the federal laws in place to protect species, there are two other important federal initiatives administered under the bureaucracies. The committee that lists

species at risk, COSEWIC, as well as another committee to design and implement recovery plans, are both managed by the Canadian Wildlife Service, which is part of Environment Canada. Providing a list of species that are at risk in Canada is clearly a very important function and one that the federal government would seem to be in a good position to continue—if the list were based in sound science. To complement COSEWIC’s work in listing species, the Recovery of Nationally Endangered Wildlife (RENEW) Committee was set up in 1988 to prepare recovery plans for listed species. The committee is made up of provincial and territorial wildlife directors and representatives from the Canadian Nature Federation, the Canadian Wildlife Federation, and the World Wildlife Fund Canada. Currently its mandate includes birds, mammals, amphibians, and reptiles. Since it was founded in 1988, over 100 groups have contributed nearly \$20 million to the recovery of terrestrial vertebrates on Canada’s list of species at risk. These contributions come from a variety of sources including government agencies, companies, non-governmental organizations, private donors, and universities (Canadian Wildlife Service 1997: 16).

Initiatives from the provincial governments

In 1996 the Canadian Council of Wildlife Ministers (CCWM) agreed to the National Accord for the Protection of Species at Risk in Canada. Under the Accord, the provinces committed to review their existing legislation and policies regarding endangered species and to develop complementary legislation and programs to protect species at risk in Canada, if necessary. The provinces with endangered species legislation now include New Brunswick (1974), Quebec (1989), Ontario (1971), Manitoba (1990), Nova Scotia (1996), Saskatchewan (1997), and Prince Edward Island (1998). Alberta and British Columbia have amended their Wildlife Acts since the Accord (Rounthwaite 1998: 3).

Most Canadians are unaware of the many programs that exist to protect species in this country: there are federal and provincial initiatives, park programs, local government programs, non-profit organizations, and private initiatives. What value, then, is added by federal endangered-species legislation that will surely generate more bureaucracy to maintain, monitor, and support its programs? Representatives of Environment Canada argue that it will provide an “umbrella” or “safety net” that will fill in the gaps between current protections. But, if we believe that there are not enough resources devoted to protecting species and that there are those significant “gaps,” should we not consider that a better way to protect them would be to devote more resources to existing efforts?



Protecting Endangered Species in the United States

Critics of the Canadian government’s environmental record are quick to equate a failure to introduce new regulations to a failure to protect the environment. For example, Canada, unlike the United States, does not have federal endangered-species legislation, and has been targeted as, therefore, not having a serious commitment to the fate of the environment in general and to endangered species in particular. This belief that more regulation is the solution to environmental problems is so strongly held that people will often vehemently defend it even when it flies in the face of basic economic theory and years of evidence.

The idea that imposing more restrictions on land use would protect endangered species and their habitat was so intuitively appealing to people in the United States that federal legislation, the *Endangered Species Act (ESA)*, similar to the type that has been proposed in Canada, passed virtually unopposed in 1973. Today, however, the *Endangered Species Act* is highly controversial in the United States and is targeted for major revision. Its critics include environmentalists, politicians, and property owners, who charge that in addition to its high costs and heavy-handed approach, the legislation fails to accomplish its mission of protecting endangered species.

The basic problem with the American legislation is that it creates the perverse incentive for landowners to view endangered species as a liability. If evidence of endangered species are found on your property in the United States, you can be told by the Fish and Wildlife Service, under the authority of the *Endangered Species Act*, that you cannot build, cut down trees, plow fields, dig, or fill ditches, or in any other way alter your land. These controls have often led to substantial uncompensated reductions in property values. As a result, in order to protect themselves from the uncompensated taking of private property in the name of protecting wildlife, some in the United States have resorted to what has been called a policy of “shoot, shovel, and shut-up.” In the extreme, landowners will kill endangered species and dis-

pose of them in order to prevent their property from coming under the control of the Fish and Wildlife Service. The best way to understand this perverse incentive caused by the American legislation is to consider some cases where the law has affected property owners.

Consider Benjamin Cone (Stroup 1995a: 81–83). After Cone inherited 7,200 acres of land in North Carolina, he cleared underbrush to attract wildlife and selectively harvested small areas of timber. Likely as a result of his land management, red-cockaded woodpeckers, a rare species of bird on the American endangered species list, were discovered on his property. Initially, this was not an unwelcome discovery. But when Cone wanted to cut some of his timber, the Fish and Wildlife Service informed him that no timber could be harvested within a half-mile radius of each woodpecker colony. Any harvester, he was told, would face severe fines or imprisonment under the *Endangered Species Act*. There was no compensation for the loss of over 1,100 acres of land that thus came under the control of the Fish and Wildlife Service. In fact, Cone is still required to pay taxes on the land’s value before it was dramatically reduced by the logging restrictions. As a result, Cone has increased the size of clear-cuts and shortened the cutting cycle from a 75-year to 80-year rotation to a 40-year rotation in order to discourage any additional woodpeckers from nesting on his property. According to Michael Bean of the Environmental Defense Fund, the red-cockaded woodpecker is closer to extinction today than it was when protection began in 1973 (Stroup 1995b: 1).

Margaret Rector’s story provides another example of the perverse incentives that landowners face. She was planning to sell her 15-acre plot of land in Texas Hill County to finance her retirement. But when the Fish and Wildlife service in the United States listed the Golden-cheeked Warbler as endangered, most of her retirement savings evaporated. The value of her land fell from \$870,000 to roughly \$30,000 (Smith 1996: 4). Ironically, she suffered this loss even though the Golden-cheeked warbler has never even been spotted on

her land. According to the American law, property can be designated as endangered species habitat even if the endangered species in question does not actually live within the habitat. In Ms. Rector's case, because the endangered bird *might* take up residence on her property at some future time, she is not allowed to cut down cedar trees, where the birds like to nest, to build a house or to make any other improvements to her land.

In yet another example, people in Riverside County, California suffered enormous losses as a result of the listing of the Stephens' kangaroo rat in 1988. Michael Rowe owns 20 acres that are affected by the listing. He bought the property in the late 1980s in order to build a house for his family but, when he tried to file plans for building the house with the county, he was told that he would have to pay thousands of dollars to have his property surveyed for kangaroo rats. Mr. Rowe's neighbors, the Domenigonis, were told that 800 acres of their farm that had been fallowed had kangaroo rats on it. They were also told that if they replanted the 800 acres they would face penalties of up to \$50,000 and a year in jail for *each* violation under the ESA. The Domenigonis estimate that the annual production losses from the lost farming activity exceed \$75,000. In addition, they spent \$175,000 on legal fees and biological surveys. In October of 1993, a fire in the area caused 29 families to lose their homes. Many of the home owners had been unable to create the firebreaks that may have saved their property because under the ESA they might have disturbed kangaroo rat habitat (Hollingsworth 1998: 3–5).

How have landowners responded? Not surprisingly, many—even those who previously enjoyed having diverse flora and fauna on their property—have taken steps to make their land unattractive to wildlife. In Riverside County, for example, many farmers now disk and plow their fields several times a year and have reduced the number of fields they leave fallow in order to prevent kangaroo rats from taking up residence on their property (Hollingsworth 1998: 14). In another case, landowners have eliminated wildflowers on their property to deter the Quino checkerspot butterfly.

To prevent the presence of the butterflies, and since it is difficult for laymen to identify the particular wildflowers the butterflies use, many landowners are now sterilizing their land of all wildflowers by mechanical or chemical means. Some of the most beautiful California vistas (to say nothing of the chances for the butterfly) threaten to be snuffed out as the unfortunate result of a failed system of conservation. (Hollingsworth 1988: 15)

What can Canadians learn from America's 25 years of experience with endangered species legislation? First, incentives matter. In order to achieve the goal of protecting endangered species, landowners must not view them as a liability. At the very least, landowners must be compensated for any loss in the value of their land that they experience as a result of efforts to save species. Otherwise, the perverse incentive to "shoot, shovel, and shut-up" will likely harm more species than legislation could ever hope to protect. Compensation is also critical to ensure the success of conservation groups, such as Operation Burrowing Owl, that rely on the co-operation of landowners to protect critical habitat.

Compensating landowners would also make the government agency responsible for listing species accountable for its actions. If compensation does not have to be paid, it is relatively cheap for regulators to list a species and secure its habitat; there is no incentive for governments to prioritize and be discriminate about their listings. Evidence of this problem abounds in the United States where many species are listed and then later delisted when it is discovered that populations are much higher than originally suspected. These mistakes are very costly to private landowners. When the United States Fish and Wildlife Service mistakenly listed the fairy shrimp, for example, private property owners lost hundreds of millions of dollars. The listing closed a gold and gravel mine. It delayed construction of roads and city dumps and closed an airport (Madsen 1998: 6).

Grant Madsen, a representative of the organization, Defenders of Property Rights (Washington, DC), sums up the problem:

In the United States, government has confused this question [how best to protect species and who will pay for it] by making it seem that endangered species legislation is really about protecting species with little or no cost to anyone. In fact, it is really about controlling vast swatches of land with a great deal of cost to those most closely connected to it: farmers, ranchers, miners, real estate developers, and ranchers. (Madsen 1998: 8)

In light of this evidence, Ottawa should reconsider the legislative approach to saving species.

Would the legislative approach have different results in Canada?

Some have argued that American experience is irrelevant to Canada because previous legislative proposals in Canada

have applied to species found on federal land only. Therefore, supporters of legislation argue, the “shoot, shovel, and shut-up” incentive will not be a problem. Before putting too much stock in this defence of using the legislative approach in Canada, however, two points need to be considered.

First, the original legislation in the United States was meant only to apply to federal land and was then extended to include state land and private land. So, it is not inconceivable that any Canadian legislation originally meant to apply only to federal land could be extended to include other areas.

Second, previous legislative proposals in Canada have actually been unclear about exactly where an endangered species act will apply. The last bill stated that it would apply on “all federal lands including the two territories: the oceans out to the 200 mile limit; this represents approximately 60 percent of Canada” (Environment Canada 1996a: 2). While that statement makes it sound as if the bill would apply only to federal lands, an earlier draft of the legislative proposal had indicated that “the Act would allow for the regulation of the willful taking, killing, harming, wounding, capturing, collecting, molesting, or disturbing of federally listed species, including their parts, derivatives, or embryos anywhere in Canada” (Fox 1998: 21). In addition, under the subheading “Partnership,” the following comment appears in the Summary of the last bill: “Species will be protected everywhere in Canada with this Act and through complementary provincial and territorial legislation and programs agreed to in principle under the National Accord for the Protection of Species at Risk” (Environment Canada 1996a: 3). This suggests that the legislative approach will include provincial and private land.

How attractive will regulators find private land in Canada? While estimates suggest that only 20 percent of endangered species live on private land in Canada, compared to 50 percent in the United States, regional concentrations of these species are located mostly on private land in southern British Columbia, Alberta, Manitoba and Ontario (Fox 1998: 1). This concentration suggests that applying restrictions to private land would be attractive from the point of view of those in government who view these restrictions as the best way to protect endangered species.

Even if the legislation in Canada were to apply strictly to federal land, there is still potential for conflict. Although most of the controversy surrounding the United States Endangered Species Act arises from its impact on owners of private land, there have also been conflicts on federally owned lands (Fox 1998: 6). One of the best-known conflicts over public land in the United States involved the protection of

the spotted owl. As a result of the ESA, millions of acres of public land in California, Oregon, and Washington were set aside as critical habitat for spotted owls and were no longer available for commercial harvesting of trees. This caused extended and costly battles fought in the political arena over issues that could have been resolved through the normal functioning of the market.

Conflicts can also arise between government departments. In Canada, conflicts may arise between the Department of Fisheries and Oceans and Environment Canada. There also may be conflicts that arise, for example, when federal land is leased for grazing or other activities. Then the law will come into direct conflict with individuals and, to the extent that these individuals are not compensated for cancellations in leases and so on, they will face the incentive to “shoot, shovel, and shut-up.” The actual or possible presence of an endangered species on public land weakens and possibly dissolves other property claims to public lands such as rights to timber harvest or other actions that might alter the habitat for the listed species (road development, mineral extraction, grazing). In the United States, environmental groups have taken control of public forest lands by using ESA regulations to limit timber harvests.

By its very nature, the legislative approach is adversarial. For example:

The fact that land owned and managed by cattle producers may now be targeted for legislated wildlife protection is testimony to the responsible management of producers. Many producers resent the implication that somehow they are no longer able or willing to provide the protection that they have historically provided. (Canadian Cattlemen’s Association 1998).

Co-operative approaches, such as those described in the previous section, are likely to be more successful and less costly as they do not require monitoring and enforcement.

Even if the perverse incentives are avoided with appropriate compensation, there is still a larger question. Is the top-down legislative approach the best way to accomplish the goal of protecting species? Here again, the American example can be instructive. Consider, for example, the comments of Fish and Wildlife Service officials like Philip Laumeyer during a December public meeting. Of the \$1.9 million budget his Columbia Basin office receives each year, he complained that “only \$2,000 is designated for actual recovery work. The rest goes primarily to regulating private industry and land” (Madsen 1998: 5).



Conclusion

The debate over how best to protect endangered species in this country is an emotional one because Canadians care deeply about wildlife. Their concern is expressed through the work of hundreds of non-profit organizations that receive the support of thousands of individual Canadians as well as governments and corporations. It is also reflected by existing government initiatives that emphasize co-operation with other government agencies and non-profit organizations such as the Committee on the Recovery of Nationally Endangered Wildlife (RENEW).

This largely decentralized approach to protecting wildlife in Canada has been tremendously successful. While we still have a number of species in this country that, for a variety of reasons including natural ones, are in some danger of extinction, there have been no recently recorded extinctions of mammals or birds and the recovery of most species at risk is underway through existing initiatives. Contrary to the rhetoric of the federal government, there are not many species currently “falling through the cracks” of a “patchwork” system. Rather, the patchwork has been an efficient and effective way to direct society’s limited resources.

Fortunately, although Canada’s human population has expanded, the number of wildlife extinctions has not increased. In addition, many of the threats to wildlife in the past, such as over-hunting and the use of potent pesticides like DDT, have been eliminated. This can, at least in part, be attributed to affluence. As incomes increase, so do concerns about environmental amenities, including wildlife. As a result, people are willing to donate money and time to nature organizations. Corporations, in order to keep their customers happy, put more emphasis on being environmentally responsible.

There are those environmental groups, however, who let emotion overwhelm reality. They “cry wolf” to get attention for their cause and paint a bleak picture of the condition of wildlife in Canada and of Canadians’ commitment toward protecting that wildlife. Because they have no faith that the many initiatives by individual people, non-profit organizations and corporations will be enough to provide a reasonable degree of protection for Canada’s wildlife, they insist

that more centralized government intervention is necessary. They are so convinced that this heavy-handed approach to conservation is necessary that they are unwilling to consider the possibility that this may not be the best way to protect wildlife although, as the evidence in the United States suggests, it may actually further threaten them. Besides these extreme environmental groups’ “crying wolf,” the media that get more attention when they report a crisis, politicians and corporations anxious to appear “green,” and bureaucrats with incentives to expand their empires increase the support for more command-and-control-style regulation.

Unfortunately, the command-and-control approach to wildlife protection fails to be a reasonable solution. First, the adversarial approach that it takes with landowners will surely be a threat to species. Many ranchers and farmers in this country, for example, have already expressed their distaste for the legislative approach. They work closely with the land and are, for the most part, very good stewards. Many of them find the legislation insulting and wonder whether it will threaten their property rights. Thus, a centralized approach may actually threaten the work of non-profit organizations working to preserve habitat and wildlife, first, because landowners may not want to co-operate with these groups for fear of losing the use of their land and, second, because, as the government devotes more resources towards conservation, they may “crowd out” private giving. That is, people will be less willing to make donations to non-profit charities when more of their tax dollars are going towards conservation through government initiatives.

Finally, it is difficult to imagine that dollars spent on inventing new regulations to support the legislation, on monitoring and enforcing those new regulations is the best way to spend resources to protect wildlife. It is undoubtedly better to put those resources directly into habitat protection or innovative programs that work with landowners to improve their land management practices. Indeed, the plethora of private initiatives that exist have to be taken as a reflection of the will of Canadians to protect their wildlife without a centralized government having to do it for them.

Policy recommendations

1 Avoid “crying wolf”

Create a list of species at risk in Canada that is free of inflation. Such a list should not contain species at the northernmost part of their range in Canada that are plentiful in other countries, or subspecies, distinct populations, extinctions or populations that are vulnerable. These groups should be on separate lists.

2 COSEWIC should remain scientific in its approach

The Committee on the Status of Wildlife in Canada should be composed of independent scientists only. It should not include representatives from environmental organizations who believe that lobbying for more regulation is the best approach to species protection; this is a clear conflict of interest. It should also not include bureaucrats associated with Environment Canada or the Department of Fisheries and Oceans. Again, the potential incentives for the corruption of sound science are too great.

3 The list of species at risk should give the likely cause of the species’ decline and indicate the reliability of the listing

COSEWIC’s annual report should include a discussion of why particular species are considered at risk and how certain these estimates are. In some cases, there is considerable uncertainty about the size and range of populations of species at risk. The extent of this uncertainty should be indicated in each listing. This is important because in both the United States and Canada, species have been listed and then delisted when it is discovered that populations of the species at risk are higher than originally suspected. In some cases in the United States, this has caused serious financial hardship to landowners and industries without any benefit to society. Since COSEWIC completes status reports for each species on its list, including this information should not be difficult.

4 Collection of data on conservation carried out by non-profit organizations and individuals

Non-profit organizations have a variety of approaches to protecting wildlife but there is little information available about their activities. For example, there is no aggregated information available about the total number of groups working to protect wildlife in Canada, the amount of land and number of species that these groups protect or the success of their conservation efforts.

5 Reduce tax burdens

Reduce tax burdens so that individual Canadians will have more after-tax dollars to support non-profit organizations. One important point that is often neglected in the debate about whether or not to introduce legislation is how it would affect private conservation groups. The higher tax rates needed to support additional government activity can “crowd out” private donations to non-profit groups.

When high-income families perceive themselves to be unfairly overtaxed, they (1) have less disposable income left to give, and (2) do not feel so generous. People may also react to punitive tax brackets in ways that reduce their ability to be generous—one spouse drops out of the labor force, the other retires early (Reynolds 1997: 24).

Evidence suggests that lowering marginal tax rates, on the other hand, encourages contributions.

6 Abandon the legislative approach

This approach has failed in the United States; we do not need to import that failure to Canada. Even with modifications that include compensating landowners, this approach is a recipe for disaster.