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STATUS AND
SURVEYS BRANCH

Status of the Wolverine (Gulo gulo) in Alberta

Stephen Petersen



Alberta Wildlife Status Report No. 2



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PREFACE

Every five years, the Wildlife Management Division of Alberta Natural Resources Service reviews the status of wildlife species in Alberta. These overviews, which have been conducted in 1991 and 1996, assign individual species to "color" lists which reflect the perceived level of risk to populations which occur in the province. Such designations are determined from extensive consultations with professional and amateur biologists, and from a variety of readily-available sources of population data. A primary objective of these reviews is to identify species which may be considered for more detailed status determinations.

The Alberta Wildlife Status Report Series is an extension of the 1996 *Status of Alberta Wildlife* review process, and provides comprehensive current summaries of the biological status of selected wildlife species in Alberta. Priority is given to species that are potentially at risk in the province (Red or Blue listed), that are of uncertain status (Status Undetermined), or which are considered to be at risk at a national level by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

Reports in this series are published and distributed by the Wildlife Management Division of Alberta Environmental Protection, and are intended to provide detailed and up-to-date information which will be useful to resource professionals for managing populations of species and their habitats in the province. The reports are also designed to provide current information which will assist the proposed Alberta Endangered Species Conservation Committee to identify species that may be formally designated as endangered or threatened under the Alberta Wildlife Act. To achieve these goals, the reports have been authored and/or reviewed by individuals with unique local expertise in the biology and management of each species.

EXECUTIVE SUMMARY

The Wolverine is a medium-sized carnivore and one of the largest members of the family Mustelidae. The species occupies vast areas of the tundra and boreal forest in North America, Scandinavia and Asia, at very low densities. Wolverines are considered to be scavenging predators because they feed largely on carrion, but they will also consume berries, insects, birds, and rodents. The reliance on carrion limits the number of individuals that an area can support, and this has led to an extremely dispersed population. The home range of a male Wolverine can be larger than 1500 km² and may contain a number of female home ranges. Not only are Wolverine populations small, but the species has a low reproductive output because of poor breeding success, high juvenile mortality and slow sexual maturity.

The Wolverine has always been considered scarce and presently its range is being reduced by human encroachment. Wolverines have been extirpated from large portions of their range in southern and eastern Canada and are now considered to be 'endangered' in eastern regions of this country. Western and northern Canada have healthier populations, although the Wolverine is considered to be 'vulnerable' in these areas, and at risk of further population declines and range contractions.

Wolverines were once found across Alberta, but are now restricted to the northern half of the province and along the mountains and foothills. Trapping data suggest that the highest populations are found in the western parts of the province, and that populations have declined in most regions of Alberta in the past two decades. Among the limiting factors for Wolverines in Alberta are the loss of isolated habitat, a reduction in the availability of large ungulate carrion, and trapping pressure. To date, no studies have been conducted on Wolverines in Alberta. This lack of information, along with recent declines in trapping harvest, has led to the inclusion of the Wolverine on the 'Blue List' of species that may be at risk in the Alberta. Almost all information on Wolverines in this province has been derived from trapping data, and current management is restricted to the setting of trapping season and quotas. Additional research is needed to better define the status of this species in Alberta.

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INTRODUCTION

The Wolverine or glutton (*Gulo gulo* L.) has a circumboreal distribution (Banfield 1974) but like most large carnivores, its range has contracted in recent years. On a global scale, the Wolverine is considered to be "vulnerable" (World Conservation Monitoring Center 1996), but its status on a regional scale varies. In eastern Canada, Wolverines are now considered to be "endangered*" by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), whereas those in western and northern regions of the country are classified as "vulnerable" (COSEWIC 1996). In Alberta, the Wolverine is included on the provincial "Blue List" of species that may be at risk (Alberta Wildlife Management Branch 1996).

This report presents the most current information on the biology and conservation of the Wolverine in Alberta, as a first step in updating the status of this species in the province.

HABITAT

Historically, the Wolverine occurred in all of Canada's ecozones, and therefore was found in a wide variety of habitats. Although the range of this species has contracted in recent years (see "Distribution", below), it is still found in a diversity of ecozones, including the boreal forest, tundra, and subalpine regions. Furthermore, home ranges of Wolverines, which are typically hundreds of square kilometres in size (Banci 1987, Magoun 1985), usually encompass a variety of habitat types. It is therefore not

surprising that specific habitat preferences for Wolverines have rarely been described. Rather, Wolverine density appears to be influenced more by food availability and proximity to humans than to specific attributes of the habitat (Banci 1994, Hatler 1989, Kelsall 1981).

Despite an absence of obvious habitat requirements, several aspects of habitat use by Wolverines have been noted. In Montana and south-central Alaska, Wolverines appear to occupy higher elevations during the summer than in winter, probably in response to changes in food availability (Gardner 1985, Hornocker and Hash 1981, Whitman et al. 1986). Hornocker and Hash (1981) found the Wolverines in Montana tended to cross clearcuts and natural openings in a straight line, as opposed to the slow, wandering movements used in forested areas. This observation, and the tendency of Wolverines to climb trees to escape from wolves (Boles 1977, Burkholder 1962), suggests that the availability of wooded areas may be important for avoiding predation. However, Banci (1978) found that Wolverines showed no reluctance to cross large natural openings in the southwestern Yukon, indicating that the availability of trees is not the most important aspect of habitat use in that area. The presence of trees is also not a factor in habitat use by Wolverines inhabiting tundra regions.

CONSERVATION BIOLOGY

The Wolverine is the largest terrestrial member of the mustelid family. Its pelage is dark brown, usually with two tan stripes

* See Appendix for definitions of selected status designations.

running along the flanks and joining over the rump. The fur consists of dense under-fur from which long straight guard hairs protrude; the length and structure of these guard hairs make them exceptional at keeping the fur frost free (Hardy 1948, Quick 1952). This characteristic, as well as the beauty and rarity of Wolverine fur, makes it very valuable to arctic and sub-arctic peoples for parka trims (Hash 1987, Holbrow 1976, Kelsall 1981, Pasitschniak-Arts and Lariviere 1995, Quick 1952).

The Wolverine is both a scavenger and a predator, depending on the time of year. During the summer months, Wolverines are primarily predatory, with the most common prey being marmots, ground squirrels, mice, voles, birds and insects. Eggs and berries also may be included in the summer diet (Banci 1987, Doyle 1995, Gardner 1985, Hornocker and Hash 1981, Magoun 1985). During the winter, Wolverines are primarily scavengers and rely heavily on carrion of large ungulates killed by other predators or that have died of disease or starvation. However, live American Porcupines (Erethizon dorsatum), mice and voles may supplement their winter diet (Banci 1987, Gardner 1985, Hash 1987, Hornocker and Hash 1981, Magoun 1985), and Wolverines have been known to kill Caribou (Rangifer tarandus) and Moose (Alces alces) if snow conditions are favorable or if the prey is weakened (Burkholder 1962, Haglund 1966, Krott 1959, Pulliainen 1968). The importance of a large population of ungulates, and therefore a supply of carrion, seems to be critical to the survival of Wolverines during the winter (Banci 1994, Dauphine

1989, Hash 1987, Hatler 1989, Kelsall 1981).

Due to their scavenging lifestyle, Wolverines forage over large areas. Home range size is inversely related to the availability of food resources and will fluctuate with season, year, habitat type, age and sex (Banci 1987). In Alaska, annual home ranges for males range from 488 km² to 917 km², and average 666 km² (Magoun 1985). In central Idaho, four adult males had an average home range size of 1525 km² (Copeland 1996 in Weaver et al. 1996). Females have smaller home ranges than males. In Alaska for example, home ranges of females averaged 104 km² (range: 53 to 232 km², Magoun 1985). Females have even smaller home ranges while nursing young (Banci 1987, Gardner 1985, Hornocker and Hash 1981, Magoun 1985). Home ranges are arranged so that one male's range may encompass all or parts of several females' ranges (Banci 1987, Gardner 1985, Hornocker and Hash 1981, Magoun 1985). Home ranges of both males and females are marked using glandular secretions, scats and urine (Hatler 1989, Koehler et al. 1980). Wolverines have anal glands, plantar glands on the hind feet, and possibly an abdominal gland (Buskirk et al. 1986 in Banci 1994, Hall 1926). The function of scent marking may be to maintain spacing in time rather than space, notifying other individuals that an area is already being hunted (Koehler et al. 1980). Scent marking may also communicate information on the reproductive status of individuals (Banci 1994).

Although documented daily movements are generally small (mean = 1.5 km, Banci

1987), these estimates are straight-line distances obtained with telemetry, and may underestimate actual daily movements (Banci 1994, Hatler 1989, Magoun 1985). Magoun (1985) found that in Alaska, actual daily movements obtained by tracking were 33% greater than estimates calculated from straight-line distances between telemetry relocations. Dispersing juveniles or transients will cover much greater distances than resident Wolverines. For example, one male moved 378 km in 20 months (Gardner 1985, Gardner et al. 1986), whereas Magoun (1985) documented a juvenile female that moved 300 km in four months (Magoun 1985). Sightings or trapping of animals far outside their normal range may represent such dispersal movements.

Wolverines are solitary animals except during the breeding season and while the female still has kits. Mating takes place between May and August with the peak in June (Banci and Harestad 1988, Blomqvist 1995, Liskop et al. 1981, Magoun and Valkenburg 1983, Mead et al. 1991, Mehrer 1976, Rausch and Pearson 1972). The long mating season is thought to increase the likelihood that the male can find all females that may be in his home range (Banci 1994, Hatler 1989, Magoun 1985).

Like most mustelids, Wolverines exhibit delayed implantation (Wright and Rausch 1955). After implantation, and a 30 to 40 day gestation period, the young are born in late February and early March (Banci and Harestad 1988, Blomqvist 1995, Liskop et al. 1981, Magoun and Valkenburg 1983, Mead et al. 1991, Mehrer 1976, Rausch and Pearson 1972).

Females usually dig a den under the snow down to ground level for the kits, or they may use blown-down trees or rock crevices that have been covered in snow (Hash 1987, Krott 1959, Magoun 1985, Pulliainen 1968). There is some indication that female Wolverines use the same area for denning in consecutive years (Lee and Niptanatiak 1996). Wolverines may be sensitive to human disturbances at this time, as females have been known to move their young to less secure dens to avoid human contact (Banci 1994, Pulliainen 1968). Kits are weaned in seven to eight weeks (Myhre and Myrberget 1975) and can attain adult size by the first winter, when they usually disperse (Hash 1987, Hatler 1989, Rausch and Pearson 1972).

Like most large carnivores, the reproductive potential of Wolverines is low. Major contributors to the low fecundity are juvenile mortality and poor breeding success (Hash 1987, Kelsall 1981). Up to six embryos have been found in the carcasses of trapped females, but the average litter size at birth is less than three in all studies conducted to date (Hatler 1989). Blomqvist (1995) found that the average litter size in captive Wolverines was 2.1. Magoun (1985) found that females produced an average of 0.6 offspring per year in Alaska. Rausch and Pearson (1972) estimated an average first-year mortality rate of 1.5 young per litter. Reproductive success of free ranging females of all age classes is heavily dependent on food availability (Banci 1987, Magoun 1985, 1987).

The Wolverine's low reproductive rate is also caused by relatively slow sexual maturity. In free-ranging Wolverines,

females may breed by the age of two years (Hatler 1989), but a study of captive-born Wolverines found that most females did not become sexually mature until 3.5 years of age (Blomqvist 1995). For captive females, a peak in fecundity (20% probability of conceiving) occurred when individuals were six years old (Blomqvist 1995). Captive male Wolverines matured an average of one year later than females, and attained peak fecundity at seven to nine years of age (Blomqvist 1995).

DISTRIBUTION

1. Alberta. - Prior to the turn of the century, Wolverines were found throughout the province (Holbrow 1976). However, fur records from 1970 to 1995 show that the recent range extends north of a line between Cold Lake and Edson, and along the eastern slopes of the Rocky Mountains (Figure 1). The majority of Wolverines have been harvested from the northern quarter of the province, and along the foothills in areas outside of Banff, Jasper and Waterton Lakes National Parks, where trapping is prohibited. This pattern corresponds closely with Boyd (1977), who noted that the majority of pelts during the first five years of pelt registration (1970 to 1975) were reported from areas along Alberta's borders with the Northwest Territories and British Columbia. The current range is also consistent with the distribution shown by Smith (1993), but much larger than that of Van Zyll de Jong (1975). This difference is because Van Zyll de Jong (1975) considered Wolverines trapped in central Alberta to represent dispersing juveniles and not residents.

In general, the current range of Wolverines in Alberta corresponds with areas that have relatively low levels of human development.

2. Other Areas. - Historically, the Wolverine was distributed across Canada, with the exception of eastern portions of the maritime provinces. This distribution extended southward into the United States, as far as Illinois and Indiana in the east and New Mexico and California in the west (Kelsall 1989, Seton 1929).

The distribution of Wolverines has been greatly reduced since the turn of the century, especially in the eastern and southern portions of the range (Figure 2; Holbrow 1976, Kelsall 1981). Until recently, the Wolverine was thought to be almost extirpated from eastern Canada, as there were no sightings of Wolverines from Labrador for a period of over 15 years, and few records from Quebec between 1972 and 1982 (Dauphine 1989, Kelsall 1981, Prescott 1983). However, four to five Wolverine per year have been sighted in Quebec in recent years (RENEW 1996), and tracks have recently been reported in Labrador (C. Dauphine, pers. comm.). This suggests that small populations still occur in these areas.

Further west, Wolverines occur in northwestern Ontario, in Manitoba north of 54°N in areas that have not been cleared or farmed, and in northern Saskatchewan where there are Barren-ground Caribou (Banci 1994, Dauphine 1989, Kelsall 1989, Wilson 1982). Wolverines occupy most of British Columbia, although the range is much reduced in southwestern regions of the province due to rural and urban

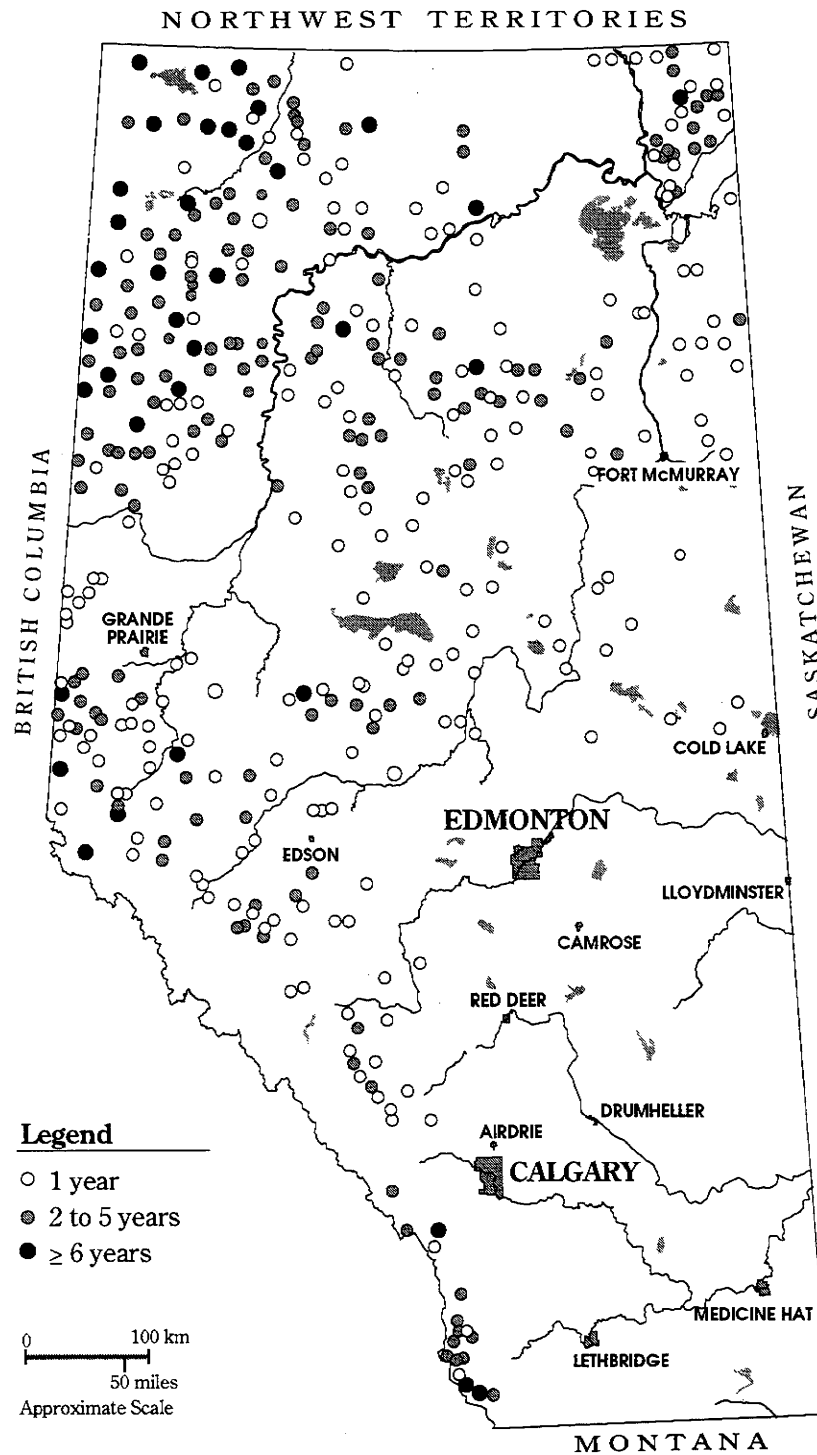


Figure 1. Distribution of the Wolverine in Alberta, according to provincial fur affidavits, 1970-1995. Points are plotted at the centre of each Registered Fur Management Area reporting Wolverines during this period, and are shaded according to the number of years that Wolverines were harvested in each area (see legend). The absence of records in Banff, Jasper and Waterton Lakes National Parks reflects a trapping ban in these areas.

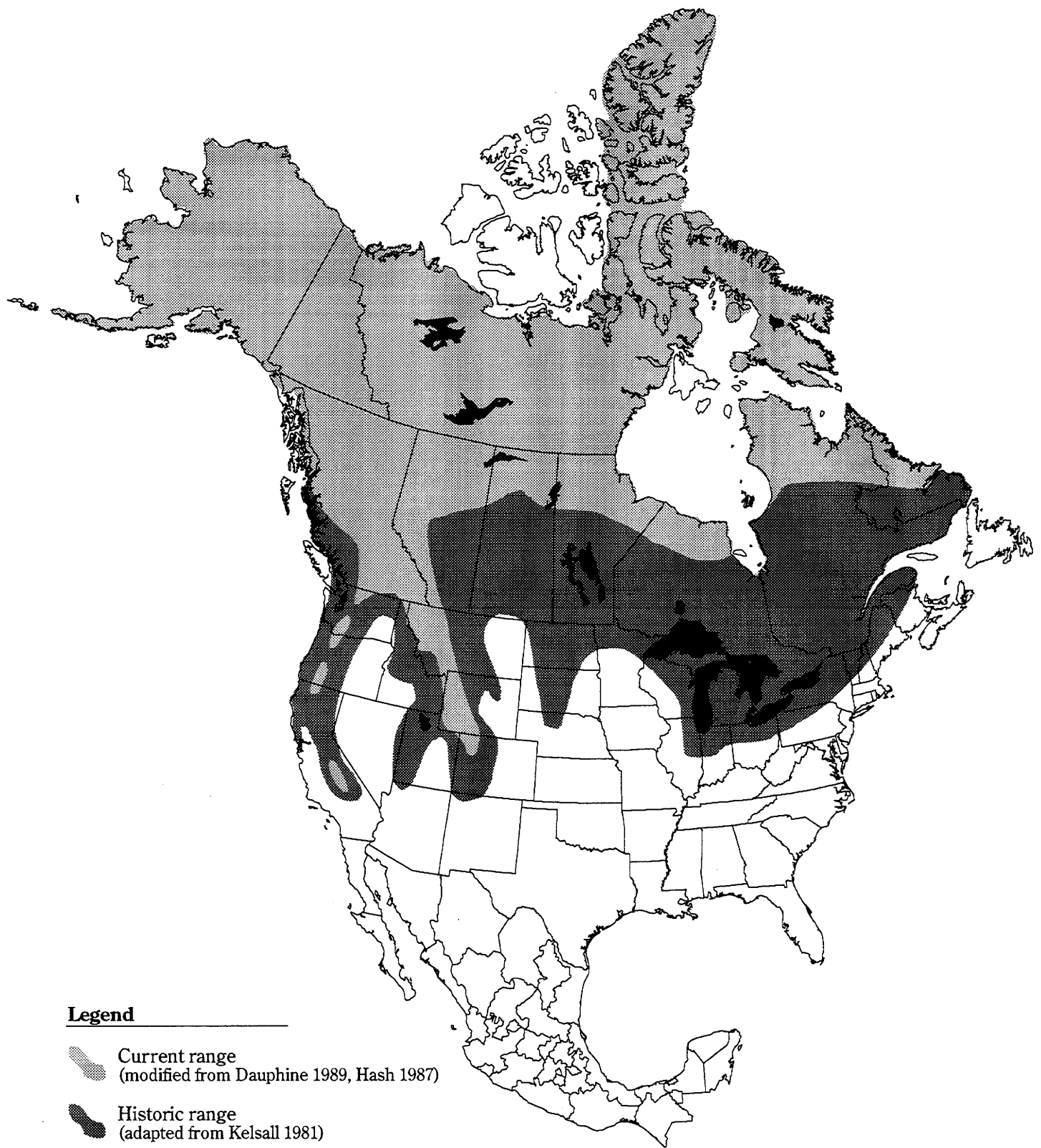


Figure 2. Current and historic ranges of the Wolverine in North America.

development (Hatler 1989). The entire Northwest Territories and the Yukon support Wolverines (Dauphine 1989, Kelsall 1989).

In the United States, resident populations of Wolverines occur in Alaska and along the Rocky Mountains into Montana, Idaho and Colorado, and along the Cascade Mountains through Washington, Oregon and into California (Banci 1994, Copeland 1996 in Weaver et al. 1996, Hash 1987, Hatler 1989, Wilson 1982). In the last 20 years, some areas of the U.S. along the continental divide have been recolonized from Canada (Wilson 1982).

Data on the distribution of Wolverines in Eurasia are sketchy. The species' range in Scandinavia appears to be concentrated in the mountainous central and northern portions of Norway and Sweden, as well as in Finland (Kvam et al. 1988, Nyholm 1993 and Andersson 1995 in Blomqvist 1995). Wolverines also occupy the taiga and northern coniferous forest of the former Soviet Union (M. S. Blinnikov, pers. comm.).

POPULATION SIZE AND TRENDS

1. Alberta. - Although the 1996 Status of Alberta Wildlife report (Alberta Wildlife Management Branch 1996) estimates less than 1000 breeding individuals in the province, there have been no specific studies of the Wolverine in Alberta, so no accurate population estimates are available. Trapping records indicate that this species is most common along Alberta's borders with British Columbia and the Northwest Territories, and that density decreases towards the east and

south (Figure 1, Boyd 1977). B. Johnson (pers. comm.) indicates that areas northwest of Manning (Wildlife Management Unit 524) and south of Grande Prairie (WMU 356) have produced the most pelts in recent years, and as a whole, Fur Management Zone (FMZ) 2 in the northwestern part of the province typically yields as many pelts in a given year as all other areas of the province combined (Figure 3). In the mountain parks, the Wolverine is considered to be rare (Smith 1993) with approximately 10 Wolverines being sighted per year by back country wardens (W. Bradford, pers. comm.).

Harvest data (Figure 4.) show peaks in the late 1920s, 1970s and 1980s, and an almost steady decline from 1984 to the present. A breakdown of harvest data by Fur Management Zone (FMZ) shows a pronounced decrease in pelts harvested in the past 10 years from the northwestern part of the province (FMZ 2), where the Wolverine is most abundant. The other FMZs show low harvest numbers with no discernable population trend since 1971.

For a number of reasons, however, fur records may not accurately reflect population trends. First, harvest data may not account for pelts that are used locally. Moreover, because trapping effort can vary greatly from year to year in response to prices of Wolverine pelts, harvest numbers may reflect varying effort, rather than actual abundance. Wolverine harvest may also be affected by prices of other fur-bearing species, if additional effort directed at such species increases the incidental harvest of Wolverines.

Table 1. Wolverine density estimates from North American studies.

Density estimate	Study area	Reference
1/207 km ²	northern British Columbia	Quick 1935
1/65 km ²	Montana	Hornocker and Hash 1981
1/139 km ²	northwestern Alaska	Magoun 1985
1/213 km ²	Alaska	Becker et al. 1992
1/177 km ²	Yukon	Banci and Harestad 1990
1/136-226 km ²	Northwest Territories	Lee and Niptanatiak 1993

An alternative source of information for population trends is trapper opinion surveys. A survey in 1987 indicated that the population was stable north of 56°N latitude, but declining elsewhere in the province (Skinner and Todd 1988). In the most recent opinion survey, trappers considered the Wolverine population to be decreasing throughout Alberta (Alberta Environmental Protection 1996).

2. Other Areas. - Estimates of population density of Wolverines from other areas are variable. Although these differences may partly reflect variations in census methodology, all suggest that the species is quite sparsely distributed. In North American studies (Table 1), population estimates range from one Wolverine per 65 km² in Montana (Hornocker and Hash 1981) to less than one Wolverine per 200 km² in northern British Columbia (Quick 1935), Alaska (Becker et al. 1992), and the Northwest Territories (Lee and Niptanatiak 1993).

In Eurasia, data on current Wolverine populations are scarce. In Norway, the population was estimated to be 120 to 180 individuals (Kvam et al. 1988), in Sweden less than 100 individuals (Andersson 1995 in Blomqvist 1995), and in Finland

approximately 90 individuals (Nyholm 1993 in Blomqvist 1995). In the conservation parks of Russia, the average number of encounters with Wolverine tracks along 10 km transects ranged from 0.03 to 1.8 (Russian Research Center 1992).

LIMITING FACTORS

The naturally low population density of Wolverines, coupled with a low reproductive potential, makes the species susceptible to population declines resulting from human activities. Such activities can be grouped into two major classes of human impact: direct and indirect. Direct impacts include trapping, hunting, and rabies-control programs. Indirect impacts include habitat loss and reductions in ungulate populations.

1. Direct Impacts. - Wolverines are trapped in many parts of their range, and this activity has no doubt had an impact on population size in the same areas. In Montana, for example, Hornocker and Hash (1981) believed that trapping was the greatest source of mortality for Wolverine populations.

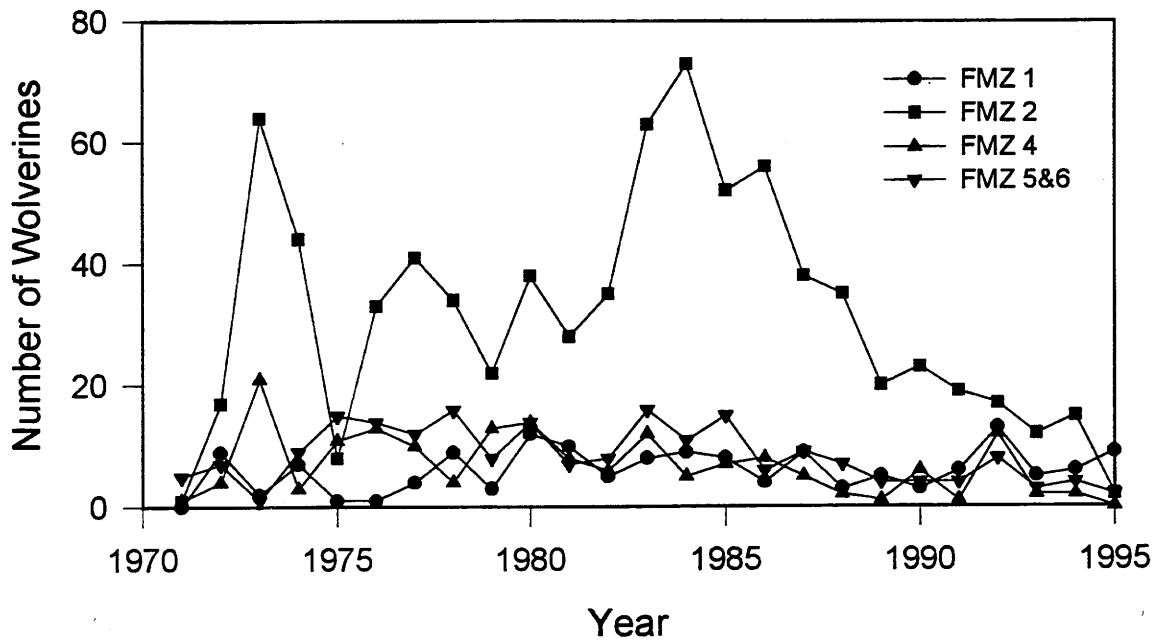


Figure 3. Wolverine harvest by Fur Management Zone (FMZ), 1971 to 1995.

FMZ 1 = northeast; FMZ 2 = northwest; FMZ 4 = west-central;
FMZ 5 & 6 = mountains and foothills.

Intuitively, the impacts of trapping should be greatest when fur prices are high (as high as \$254.00 in 1995-1996). However, the Wolverine population is so small and dispersed that the species is rarely the target of specific trapping efforts (Dauphine 1989). More likely, Wolverine harvest increases when the price of more common furbearers, which require the same size of traps, is high (Dauphine 1989).

Trapping may also impact reproductive success by causing a shortage of male Wolverines (Hatler 1989, Lee 1994, Magoun 1985, Rausch and Pearson 1972). In this species, males have much larger home ranges than females, and several females may occur within the range of a single male (Banci 1987, Gardner 1985, Hornocker and Hash 1981, Magoun

1985). Because males travel greater distances than females, they may be more prone to encountering traps. Thus, the loss of a single male may impact reproductive success of several females in the area.

In the 1950s, a rabies-control program in Alberta may have caused a reduction in the provincial population. Ballantyne (1958) noted that along with 5,461 wolves culled over the four years of this program, a single Wolverine was killed. However, Kelsall (1968) found that predator control programs in the Northwest Territories, using similar methods as the Alberta rabies-control campaign, killed one Wolverine per 8.5 Wolves. This suggests that Ballantyne's estimate for Alberta may be far below the actual number of Wolverines poisoned during that program.

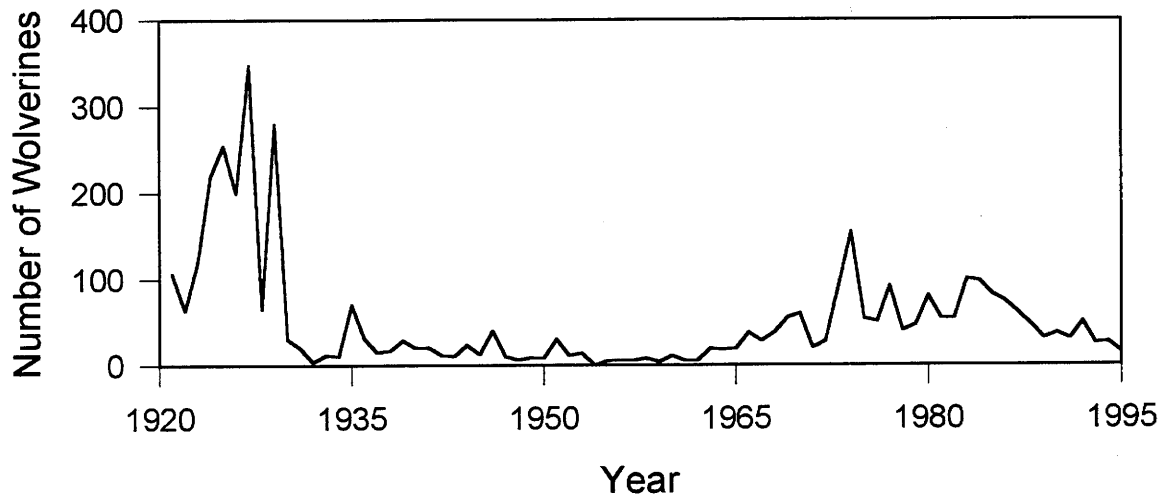


Figure 4. Wolverine harvest in Alberta, 1921 to 1995. Data through 1978 are from Todd and Geisbrecht (1979), more recent data are from provincial fur affidavits.

Given the low reproductive output of Wolverines, recovery from a substantial reduction in numbers, if it occurred, may have taken decades (A. Todd, pers. comm.).

In the absence of accurate information on the density of Wolverines in Alberta, the impacts of trapping and predator control programs remain difficult to assess.

2. Indirect Impacts. - Research has shown that habitat loss is also an important factor currently affecting Wolverine numbers (Hornocker and Hash 1981, Kelsall 1981, Pasitschniak-Arts and Lariviere 1995). Banci (1994) comments that "Wolverines seem to have been most affected by activities that fragment and supplant habitat, such as human settlement, extensive logging, oil and gas development, mining, recreational developments and the accompanying access". More generally, other researchers conclude that Wolverines avoid human contact and therefore human settlement has contributed to reducing the range of

Wolverines (Banfield 1974, Dauphine 1989, Kelsall 1981, Van Zyll de Jong 1975).

Large reductions in the ungulate prey base by humans before the turn of the century, are thought to have aided in the reduction of the Wolverines' range (Dauphine 1989, Holbrow 1976). Large declines in Caribou populations in Quebec and Labrador have been correlated with declines in Wolverine pelt harvests (Dauphine 1989). In Scandinavia, the management of ungulates has been implicated in the decline of Wolverines by reducing the amount of carrion available (Landa and Skogland 1995).

The extent to which habitat loss and changes in ungulate populations limit Wolverine populations in Alberta is unknown. It is certainly likely that these two factors played an important role in the extirpation of this species on the prairies following human settlement. The impacts of more recent land-use changes (e.g., agriculture, forest harvest, oil and gas

development) on Wolverine populations in the foothills and in northern areas of the province remains to be seen. However, it is clear that contact with humans has eroded the edge of the species' range on a provincial and global scale. With an ever-expanding human population, there may be a time when most Wolverine populations will be restricted to large protected areas like the proposed carnivore conservation areas (Hummel 1990), or to areas included in the Yellowstone to Yukon project. These proposals are aimed at setting aside areas large enough to protect viable populations of species, like Wolverines, which require large areas of wilderness.

STATUS DESIGNATIONS

1. Alberta - In 1991, the Wolverine was included on the "Blue List" of species which may be at risk in the province (Alberta Fish and Wildlife 1991). This designation was assigned because of reduced harvests and unknown population status. The "Blue List" designation was maintained in a 1996 review (Alberta Wildlife Management Division 1996), because of the naturally low population size, an aversion to humans, and because there was too little information to clearly define the status of the species in the province. The Wolverine is also designated as a "fur-bearing animal" in Alberta (Alberta Environmental Protection 1995), and is subject to trapping quotas and other harvest restrictions.

2. Other Areas. - For management purposes, western and eastern populations of Wolverines in Canada are arbitrarily separated by a line running south from Hudson Bay. The western population is

considered to be "vulnerable" by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), because healthy populations exist in British Columbia and the northern territories (Dauphine 1989, RENEW 1996). The eastern population of Wolverine is officially listed as "endangered" by COSEWIC (Dauphine 1989) and a team has been formed to develop a recovery plan (RENEW 1994). Presently, the team, is studying large ungulate populations to determine if their numbers are responsible for differences in the size of eastern and western populations of Wolverines (RENEW 1996).

Globally, the Wolverine is considered to be a "vulnerable" species (World Conservation Monitoring Center 1996), indicating that it faces a high risk of extinction in the wild in the next 10 years. In Norway, Sweden and Finland, Wolverines are considered to be "endangered", and legislation and penalties have been established to protect local populations (Blomqvist 1995). Some groups in the United States are lobbying to list the Wolverine as "threatened" or "endangered" in all of the 48 contiguous states. However, the species has not yet been listed under the federal Endangered Species Act due to insufficient data concerning their population size and risk of extinction (Kucera and Zielinski 1995). Alaska and Montana are the only states that allow trapping of Wolverines, and Montana limits the harvest to one animal per trapper per year.

RECENT MANAGEMENT IN ALBERTA

The Wolverine is classified as a fur-bearer, which allows for limited management by means of harvest quotas, closures and regulated trapping seasons (Alberta Environmental Protection 1995). Presently, the season is restricted to 1 November to 31 January in most management areas, which corresponds to the period when the fur is in prime condition. As well, there is an official quota of one animal per Registered Fur Management Area in most Fur Management Zones to allow problem animals to be removed (B. Johnson, pers. comm.). Two zones (FMZ 7 and 8), which are in the southeastern part of the province and outside of the species' normal range, are closed for Wolverine harvest (Alberta Environmental Protection 1995).

Other than population management through harvest regulations, there have been no specific research or management activities focusing on the Wolverine in Alberta.

SYNTHESIS

The Wolverine was once distributed across most of Canada and the northern United States, as well as throughout Scandinavia and northern Asia. In eastern Canada, populations are now at very low

levels, and western populations have retreated to northern areas and along the Rocky Mountains. In Alberta, Wolverines were once found throughout the province, but now are found only in areas relatively free of human activity.

The population size and reproductive output of Wolverines is naturally low and populations throughout the range occur at relatively low densities. Threats to the Wolverine population in Alberta include trapping, development of wilderness areas and activities that reduce the amount of carrion available during the winter.

In Alberta, almost all information on Wolverine populations has been derived from trapping records, and these data probably do not accurately reflect population size or trends in the province. Thus, it is nearly impossible to determine accurately the provincial status of this species, and to assess whether potential threats to local populations place the species in danger of future declines or range contractions. There is clearly a need for further research into the biology and management of Wolverines in Alberta. To be most useful, this information should be obtained from sources other than trapping records (e.g., telemetry, direct observation). Such studies would be extremely challenging, but would go a long way in gaining a more complete understanding of this species in Alberta.

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APPENDIX. Definitions of selected legal and protective designations.

A. Status of Alberta Wildlife color lists (after Alberta Wildlife Management Division 1996)

Red	Current knowledge suggests that these species <u>are</u> at risk. These species have declined, or are in immediate danger of declining, to nonviable population size
Blue	Current knowledge suggests that these species <u>may be</u> at risk. These species have undergone non-cyclical declines in population or habitat, or reductions in provincial distribution
Yellow	Species that are not currently at risk, but may require special management to address concerns related to naturally low populations, limited provincial distributions, or demographic/life history features that make them vulnerable to <u>human-related</u> changes in the environment
Green	Species not considered to be at risk. Populations are stable and key habitats are generally secure
Undetermined	Species not known to be at risk, but insufficient information is available to determine status

B. Alberta Wildlife Act

Species designated as “endangered” under the Alberta Wildlife Act include those defined as “endangered” or “threatened” by *A Policy for the Management of Threatened Wildlife in Alberta* (Alberta Fish and Wildlife 1985):

Endangered	A species whose present existence in Alberta is in danger of extinction within the next decade
Threatened	A species that is likely to become endangered if the factors causing its vulnerability are not reversed

C. Committee on the Status of Endangered Wildlife in Canada (after COSEWIC 1996)

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

D. United States Endangered Species Act (after National Research Council 1995)

Endangered	Any species which is in danger of extinction throughout all or a significant portion of its range
Threatened	Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range

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