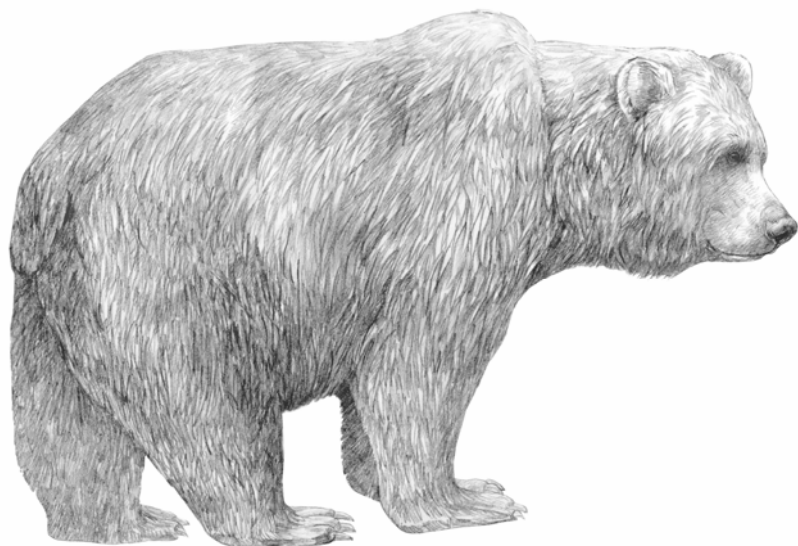


Recovery Strategy for the Grizzly Bear (*Ursus arctos*), Prairie Population, in Canada

Grizzly bear, Prairie population



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July 2007



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About the *Species at Risk Act* Recovery Strategy Series

What is the *Species at Risk Act* (SARA)?

SARA is the Act developed by the federal government as a key contribution to the common national effort to protect and conserve species at risk in Canada. SARA came into force in 2003, and one of its purposes is “*to provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity.*”

What is recovery?

In the context of species at risk conservation, **recovery** is the process by which the decline of an endangered, threatened or extirpated species is arrested or reversed, and threats are removed or reduced to improve the likelihood of the species’ persistence in the wild. A species will be considered **recovered** when its long-term persistence in the wild has been secured.

What is a recovery strategy?

A recovery strategy is a planning document that identifies what needs to be done to arrest or reverse the decline of a species. It sets goals and objectives and identifies the main areas of activities to be undertaken. Detailed planning is done at the action plan stage.

Recovery strategy development is a commitment of all provinces and territories and of three federal agencies — Environment Canada, Parks Canada Agency, and Fisheries and Oceans Canada — under the Accord for the Protection of Species at Risk. Sections 37–46 of SARA (www.sararegistry.gc.ca/the_act/default_e.cfm) outline both the required content and the process for developing recovery strategies published in this series.

Depending on the status of the species and when it was assessed, a recovery strategy has to be developed within one to two years after the species is added to the List of Wildlife Species at Risk. Three to four years is allowed for those species that were automatically listed when SARA came into force.

What’s next?

In most cases, one or more action plans will be developed to define and guide implementation of the recovery strategy. Nevertheless, directions set in the recovery strategy are sufficient to begin involving communities, land users, and conservationists in recovery implementation. Cost-effective measures to prevent the reduction or loss of the species should not be postponed for lack of full scientific certainty.

The series

This series presents the recovery strategies prepared or adopted by the federal government under SARA. New documents will be added regularly as species get listed and as strategies are updated.

To learn more

To learn more about the *Species at Risk Act* and recovery initiatives, please consult the SARA Public Registry (www.sararegistry.gc.ca/) and the Web site of the Recovery Secretariat (www.speciesatrisk.gc.ca/recovery/).

**Recovery Strategy for the Grizzly Bear (*Ursus arctos*),
Prairie Population, in Canada [Proposed]**

July 2007

Recovery of this species is considered not technically or biologically feasible at this time.

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Additional copies can be downloaded from the SARA Public Registry (www.sararegistry.gc.ca/).

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DECLARATION

This recovery strategy has been prepared in cooperation with the jurisdictions responsible for the grizzly bear, Prairie population. Environment Canada has reviewed and accepts this document as its recovery strategy for the grizzly bear, Prairie population, as required under the *Species at Risk Act*. This recovery strategy also constitutes advice to other jurisdictions and organizations that may be involved in recovering the species.

It was determined that the recovery of the grizzly bear, Prairie population, is not technically or biologically feasible at this time. The species still may benefit from general conservation programs in the same geographic area, and will receive protection through SARA and other federal, and provincial or territorial legislation, policies and programs.

This feasibility determination will be re-evaluated at a minimum, every five years as part of the report on implementation of the recovery strategy, or as warranted in response to changing conditions and/or knowledge.

In the spirit of the Accord for the Protection of Species at Risk, the Minister of the Environment invites all responsible jurisdictions and Canadians to join Environment Canada in supporting and implementing this strategy for the benefit of the grizzly bear, Prairie population, and Canadian society as a whole.

RESPONSIBLE JURISDICTIONS

Environment Canada
Government of Alberta
Government of Manitoba
Government of Saskatchewan

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STRATEGIC ENVIRONMENTAL ASSESSMENT

A strategic environmental assessment (SEA) is conducted on all SARA recovery planning documents, in accordance with the *Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals*. The purpose of a SEA is to incorporate environmental considerations into the development of public policies, plans, and program proposals to support environmentally sound decision-making.

Recovery planning is intended to benefit species at risk and biodiversity in general. However, it is recognized that strategies may also inadvertently lead to environmental effects beyond the intended benefits. The planning process based on national guidelines directly incorporates consideration of all environmental effects, with a particular focus on possible impacts on non-target species or habitats. The results of the SEA are incorporated directly into the strategy itself, but are also summarized below.

This recovery strategy concludes that recovery of the grizzly bear, Prairie population, is not technically and biologically feasible at this time. However, it may be possible to maintain the occasional presence of individual bears from the Northwestern population in a small region of the prairies, through the conservation of native prairie habitat. Alberta Sustainable Resource Development – Fish and Wildlife Division has developed a Prairie Grizzly Strategy (Morton and Lester 2004) to address the management of grizzly bears which foray onto the Prairies. No adverse effects on other species will result from this conservation approach.

RESIDENCE

SARA defines residence as: *a dwelling-place, such as a den, nest or other similar area or place, that is occupied or habitually occupied by one or more individuals during all or part of their life cycles, including breeding, rearing, staging, wintering, feeding or hibernating* [Section 2(1)].

Residence descriptions, or the rationale for why the residence concept does not apply to a given species, are posted on the SARA public registry: www.sararegistry.gc.ca/plans/residence_e.cfm

PREFACE

The grizzly bear, Prairie population, was designated as extirpated by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in 1991 and was officially listed under the *Species at Risk Act* (SARA) in June 2003. Section 37 of SARA requires the competent minister to prepare a recovery strategy for all listed extirpated, endangered or threatened species. The Canadian Wildlife Service – Prairie and Northern Region, Environment Canada led the development of this recovery strategy. It was determined that recovery of the grizzly bears, Prairie population, is not feasible at this time, owing to a lack of suitable habitat and threats that likely cannot be mitigated. The strategy was developed in cooperation or consultation with the governments of Alberta, Saskatchewan and Manitoba. All responsible jurisdictions reviewed and approved the strategy. The strategy meets SARA requirements in terms of content and process (SARA, sections 39–41).

EXECUTIVE SUMMARY

- Grizzly bears were considered common and widespread across the Prairies and the non-mountainous boreal regions of Alberta, Saskatchewan and Manitoba prior to European settlement. After 1900, the species could only be found in a few small populations on the Canadian Prairies. The settling of land and conversion to agriculture along with human intolerance and hunting were the main reasons for the grizzly bears' demise on the Prairies.
- The grizzly bear, Prairie population, was designated as extirpated in 1991 (Banci 1991). The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) re-confirmed the bears' extirpated status in May 2000 and May 2002 (COSEWIC 2002) and they were officially listed as extirpated under the *Species at Risk Act* in June 2003.
- Although grizzly bears are extirpated from the Prairies as a population, there have been occasional forays of individual bears from the foothills of the Rocky Mountains onto the prairies of southwestern Alberta. These bears are part of the Northwestern population.
- The recovery of the grizzly bear to the Prairies is not feasible due to a lack of habitat and an inability to mitigate threats.

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1. BACKGROUND

1.1 Species Assessment Information from COSEWIC

Date of Assessment: May 2002

Common Name: Grizzly Bear (Prairie population)

Scientific Name: *Ursus arctos*

COSEWIC Status: Extirpated

Reason for Designation: Extirpated in the prairie region of Canada.

Canadian Occurrence: AB, SK, MB

COSEWIC Status History: The species was considered a single unit and designated Not at Risk in April 1979. Split into two populations in April 1991 (Prairie population and Northwestern population). The Prairie population was designated Extirpated in April 1991. Status re-examined and confirmed in May 2000 and in May 2002. Last assessment based on an update status report.

1.2 Description

The grizzly bear (*Ursus arctos*) is larger than the black bear (*Ursus americanus*). It has a distinctive hump between its shoulder blades that is not present in the black bear. The grizzly bear has a nose that turns up at the end, unlike that of the black bear, whose nose arches down. Grizzlies are typically browner than black bears, although they can range from nearly white through blond to black. The guard hairs on the shoulders and back of grizzlies are often tipped with white, which gives the fur a grizzled appearance.

Apart from a few anecdotal reports, there is little information on the physical characteristics of grizzly bears found on the Prairies. Spry (1968) reported that a female grizzly shot on the Prairies in 1857 was 34 inches at the shoulder, which is similar to the average shoulder height of northwestern grizzlies (35–59”).

The grizzly bear historically ranged from northern Canada south to Mexico. They used a variety of habitats including the Rocky Mountains, coastal mountains, and sagebrush desert, but likely had limited use in desert areas and prairie areas in the contiguous U.S. (Mattson and Merrill 2002).

1.3 Separation of the Prairie and Northwestern Populations

In 1990, Canadian bear and habitat biologists met to determine appropriate land units for evaluating the status of grizzly bears (Banci 1991). They decided upon 14 “grizzly bear zones” in Canada, identified using ecological constraints and reflecting physiography, climate and vegetation (Banci 1991). These zones are areas where the climate and the landforms have

influenced grizzly bear behaviour, populations, vegetation and land use activities (Banci 1991). Grizzly bears are extirpated in two of the zones that historically supported the species (the non-mountainous boreal plains and the glaciated prairies). Although they were not glaciated during the Tertiary (Project Planning Team 2005), the Cypress Hills were included in the glaciated prairie zone during status assessment (Banci 1991). Following this evaluation, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) reviewed the status of the grizzly bear and split the grizzly bear's Canadian range into two populations: the Northwestern population and the Prairie population. The Prairie population, sometimes called the Plains grizzly, was designated as extirpated in 1991 (Banci 1991). Its status was re-examined and confirmed in May 2000 and May 2002 (COSEWIC 2002).

When assessing a species status, COSEWIC will, on occasion, designate groups below the species level (e.g., population level) when a single status designation for a species is not sufficient to accurately portray the probability of extinction within the species. COSEWIC identified the two populations of grizzly bears based on their occupancy of different eco-geographic regions. The current and historic range of the grizzly bear is shown in Figure 1.

1.4 Historical Distribution and Abundance of the Grizzly, Prairie Population

In the late 1700s, high densities of grizzly bears were found in Alberta along the North Saskatchewan River near Edmonton and along the shores of the Bow River and Red Deer River (Nielsen 1975). They were also found along the Athabasca River, the Peace River and the South Saskatchewan River (Nielsen 1975). In the mid-1800s, the grizzly bear seemed to be wide-ranging in Alberta based on the observations of Hind, Palliser and others (Nielsen 1975). The grizzly bear was also wide-ranging in Saskatchewan, occurring east of the South Saskatchewan River in the Birch Hills (near present-day Saskatoon), to the west in the Sandy Hills and along the Baptiste River and the North Saskatchewan River (Nielsen 1975). They ranged north to the Pasquia Hills and the Wapaweecka Hills (White 1965) and south to the Cypress Hills. In Manitoba, the grizzly bear ranged east to the Red River and was found in most areas west of Lake Manitoba (Seton 1921). Grizzly bears were not considered numerous along the Red River in Manitoba, but were more abundant in the Pembina Mountains (Seton 1953). South of Manitoba, grizzly bears were considered to be as common as the black bear at Devil's Lake, North Dakota in 1800, and one journal entry reported that on the Cheyenne [Sheyenne] River, "grizzly-bears are to be seen in droves" (Henry 1897 in Seton 1953).

The Cypress Hills, bordering Alberta and Saskatchewan, were considered the last remaining refuge of grizzly bears in the Prairies (Nelson 1973). By the mid-19th century, farming and ranching had spread throughout the surrounding prairies, yet the Cypress Hills remained undisturbed for many more years (Nielsen 1975). The Hills supported a large population of grizzly bears and hundreds of skins were obtained in the 1870s; however, by the mid-1880s, grizzlies were extirpated from the Cypress Hills (Stegner 1962 in Nielsen 1975).

The grizzly was no longer considered an inhabitant of the Prairies by the 1880s, but rather a frequent visitor (Macoun 1882 in Nielsen 1975). After 1900, grizzly bears were largely absent from the Canadian Prairies, except for a few small populations. In Manitoba, the last grizzly bear

was shot in 1923 (Sutton 1967). Grizzly bears continued to be found around the Pasquia Hills of eastern Saskatchewan and western Manitoba in the 1920s (Sutton 1967). There were some possible sightings of grizzly bears in Saskatchewan from the mid-1900s, including a bear that was shot in 1939 south of Pasquia Hills, a sighting in the mid-1950s in the Pasquia Hills and a reliable sighting of a grizzly bear in the Porcupine Hills in 1960 (White 1965).



Figure 1. Current and historic range of the grizzly bear in North America (adapted from Mattson et al. 1995, McLellan 1998, Kansas 2002, Ross 2002, and Hamilton et al. 2004).

A number of factors contributed to the changing landscape of the Prairies in the late 1880s, which led to the extirpation of the Prairie population of grizzlies. European settlement, agricultural land conversion, the arrival of the Canadian Pacific Railroad, coal mining and forestry resulted in a greater human presence on the landscape. The consequences were devastating for wildlife species such as the grizzly bear (Nielsen 1975). Hunting of the grizzly was likely the cause for its demise in at least a few locations, including the Cypress Hills and the shores of the North Saskatchewan River, which was a major transportation route. In southern Alberta, the conversion of land for farming and ranching "...dealt the final blow to the grizzly..." (Nielsen 1975:19).

In addition, the decline of the grizzly bear on the prairies coincided with the concurrent decline of the Plains bison, an important food source of the grizzly bear (Mattson and Merrill 2002).

The loss of grizzly bears from the non-mountainous boreal plains was not as rapid as in the southern prairies. Although not well documented, the extirpation in this region was likely the result of habitat loss to agriculture, increased settlement, oil and gas development and human intolerance (Banci 1991).

1.5 Recent Sightings

Although grizzly bears are extirpated from the Prairies as a *population*, there have been occasional forays of *individual* bears from the Northwestern population in the Rocky Mountain foothills to the Prairies (Morton and Lester 2004). Since 1998, there has been an increase in sightings of "Prairie" grizzly bears along the St. Mary River and the Milk River in southwestern Alberta (Morton and Lester 2004). While most sightings of grizzlies on the Prairies are of short duration, on occasion bears have established a semi-permanent residence, including a sow that successfully reared two cubs along the St. Mary River, and a sub-adult boar that showed up intermittently along the Milk River (Morton and Lester 2004).

The Alberta Fish and Wildlife Branch completed a Prairie grizzly strategy in 2004. Their approach to dealing with individual grizzly bears on the Prairies depends on the behaviour of the individual bear and the specific site location. In general, attempts are made to capture, radio-collar (or GPS collar) and track all individuals if the opportunity exists. Tracking the bears provides information on habitat use and potential conflict areas and can aid in alleviating fears and misconceptions the public may have (Morton and Lester 2004). Bears that are not deemed to be a problem are monitored, while problem bears may require intervention such as removal of the attractant or relocation of the bear (Morton and Lester 2004).

1.6 Needs of the Grizzly Bear, Prairie Population

1.6.1 Habitat and biological needs

Home range

Grizzly bears require large areas to meet their social and ecological requirements. Annual home ranges for female grizzly bears in Alberta ranged from 152 to 2932 km² and male home ranges

from 501 to 4748 km² (Eastern Slopes Grizzly Bear Project, unpubl. data, Foothills Model Forest, unpubl. data, AGBRT 2005). Home ranges can be especially large in less productive areas where food sources are widely dispersed. In general, they are much larger as bears are found further away from the mountains (G. Stenhouse, pers. comm.).

In addition to requiring large areas to meet their habitat requirements, grizzly bears also need space with limited human access. Human activities and developments can make even the most productive habitat less attractive to grizzly bears and may result in grizzly bears using less productive areas (Gibeau and Stevens 2005). In addition, a large source of grizzly bear mortality is human-related (see section 1.7.2), and is linked to the numbers and distribution of people and people's attitudes and behaviour (Mattson *et al.* 1996).

The historical home range for grizzly bears on the prairies is unknown, but was likely related to the distribution of food on the prairies.

Habitat

Historically, the grizzly, Prairie population, occupied prairie grasslands and the boreal plain. Little is known of the specific habitat requirements of the Prairie population of grizzly, other than anecdotal reports of them occurring along all major rivers in the Prairies (Spry 1968; Nielsen 1975) and the non-mountainous boreal plains (Nielsen 1975). The greater abundance of sightings along rivers may have been a result of preferred habitat or common movement corridors, or it could have been due to the fact the fur traders and early explorers used these routes (Macey 1979).

Habitat across the historic range of the Prairie population of grizzly bears has been lost and fragmented due to agriculture, urbanization and extensive industrial activities such as oil and gas development. It is estimated that 61 to 99 % of the mixed-grass prairie and 86% of the short-grass prairie have been lost across Canada's Prairies (Samson and Knopf 1994). The remaining habitat is fragmented by a network of roads and other human developments and activities.

Diet

There is very little information on the diet of the Prairie population of grizzly bears. In general, grizzly bears found in other parts of their range utilize a wide variety of plant and animal food sources. Munro *et al.* (2006) examined the seasonal food habits of grizzly bears in west-central Alberta. They found in early spring, pre green-up, grizzly bears predominately ate sweet vetch roots (*Hedysarum* sp). In late spring (late May to late June), ungulate matter became an important component of their diet, especially in the foothills where the bears diet was 49% ungulate matter. Rodents, insects (primarily ants), and birds were also consumed. Early summer (July) diets predominately included green vegetation such as horsetails (*Equisetum* sp.), and a variety of graminoids and forbs. From early August to mid-September the fruits of soopolallie/buffaloberry (*Sheperdia canadensis*), mountain huckleberry (*Vaccinium membranaceum*) and other berries were important. Bear then switched back to sweet vetch roots until den entry (Munro *et al.* 2006).

On the Prairies, anecdotal reports suggest the fruit of buffaloberry was a favorite food of the grizzly bears during the mid-1800s (Spry 1968). The carcasses of drowned bison (*Bison bison bison*) may have been an important component of the grizzly bear's diet (Nielsen 1975), as well as other grassland ungulates, including antelope.

1.6.2 Limiting factors

Grizzly bears have a low reproductive potential, resulting from a late onset of reproduction, small litters and a long interval between litters. In Alberta, female grizzly bears, typically produce their first litter between 4 and 8 years of age (Herrero 1978, Garshelis et al. 2004), have a mean litter size of 1.4 to 2.2 cubs per litter (Nagy and Russell 1978, Russell et al. 1979, Nagy et al. 1989, Garshelis et al. 2004), and a mean birth intervals from 3 to 4.4 years (Nagy and Russell 1978, Nagy et al. 1989, Garshelis et al. 2004). These factors limit the growth and recovery of existing populations and would be a major factor limiting a population on the Prairies.

1.7 Threats

Throughout the Prairies, the conversion and use of land for ranching and farming, the extirpation of free-ranging bison and human intolerance were responsible for the extirpation of the Prairie population of grizzly bears (Banci 1991). The main threats and obstacles to a re-establishment of grizzly bears include a lack of habitat, human-related mortality, and a lack of social acceptance.

1.7.1 Lack of habitat and habitat fragmentation

The re-establishment of grizzly bears on the Prairies is severely limited by a lack of suitable habitat. Grizzly bears require large areas of land to meet their social and ecological requirements. Since European settlement, 61 to 99% of the grassland habitat has been lost on the Canadian Prairies (Samson and Knopf 1994) and remaining areas are highly fragmented by and subject to a variety of human uses, thus precluding the establishment of large grizzly bear home ranges.

1.7.2 Human-related mortality

Human-related mortality is the greatest threat to the persistence of grizzly bears today (Gibeau 2005). Human-related mortality includes bear mortality resulting from legal harvest, concerns over public safety, incidents with garbage or agriculture, self-defense, misidentification and collisions with trains or highway vehicles (Gibeau 2005).

Access and road developments are strongly correlated with greater grizzly bear mortality (Mattson et al. 1987, Nagy et al. 1987, McLellan 1989, Mace et al. 1996). Roads can raise grizzly bear mortality by facilitating access for a variety of human activities, increasing the frequency of energetically costly flight responses and increasing vehicle-related mortalities (e.g., Mattson et al. 1987, McLellan and Shackleton 1988, Nagy et al. 1989, Gibeau et al. 1996).

The cumulative effects of human use and developments such as railways, highways and trails in the Banff area were shown to limit access to important habitat, thereby negatively impacting

grizzly bears (Gibeau and Stevens 2005). Female grizzly bears underutilize productive habitat that is in proximity to human developments or activities, which may have implications for their productivity and survival (e.g., Mattson et al. 1987, McLellan and Shackleton 1988, Mace et al. 1996, Gibeau and Stevens 2005). In areas that have little human presence, grizzly bears can make more efficient use of higher quality habitats (Gibeau and Stevens 2005). Bears in close proximity to humans are more likely to become habituated and these same bears are also the most likely to die from human-related mortality (Mattson et al. 1992; McLellan et al. 1999).

The extensive road system on the Canadian Prairies represents a huge threat to grizzly bears. Grizzly bears on the Canadian Prairies are subject to a substantial human presence, resulting in reduced productivity and survival. Because grizzly bears are already limited by a low reproductive potential, exposure to a landscape with such a high level of human presence and lack of suitable habitat would prevent their recovery and persistence on the landscape.

1.7.3 Lack of social acceptance

A negative perception and a lack of social acceptance of having grizzly bears near human settlements could threaten recovery efforts of grizzly bears in the prairies. This is especially important considering that a large portion of the prairie landscape is privately owned or leased for agriculture. A few studies have examined public attitudes towards grizzly bears, and have often shown a mixed response. Resource-dependent groups (e.g., farmers, livestock producers, rural residents) generally have a negative attitude towards grizzly bears (Kellert 1994, Kellert et al. 1996, Kaczensky et al. 2004), while other groups including the general public, hunters, recreationalists, and those that live further away tend to have a positive attitude (McCool and Braithwaite 1989, Anderson and Ozolins 2004, Kaczensky et al. 2004, Strumpf-Allen et al. 2004). Threats to human safety and livestock depredation/economic loss are the main reasons for opposing recovery efforts of grizzly bears and negative perspectives towards grizzly bears and carnivores in general (Kellert 1994, Responsive Management 2001, Kleiven et al. 2004). Conflict between grizzly bears and humans, such as bear damaging property and livestock depredation, often lead to human-caused bear mortality (Gunther et al. 2004).

In southern Alberta, although the community response to grizzly bears in the grassland areas of the St. Mary's and Milk River basins has been mixed, there has been some very strong opposition to the presence of bears voiced by rural residents that reside in the immediate vicinity of travel corridors used by the bears (Morton and Lester 2004). The Alberta Fish and Wildlife Division staff have taken a proactive approach to all grizzly bear sightings in an attempt to build confidence and trust with the local community (Morton and Lester 2004). The area of the St. Mary's and Milk River basins is relatively small with relatively low human use in comparison to much of the rest of the prairies. The strong opposition from some communities would be a major barrier towards recovery of grizzly bears on the prairies.

2, RECOVERY

2.1 Recovery Feasibility

According to Environment Canada (2005), the recovery of the grizzly bear, Prairie population, is not feasible based on the four criteria discussed below.

Are individuals capable of reproduction currently available to improve the population growth rate or population abundance?

Unknown. The Prairie population and the Northwestern population were identified as being two separate populations based on occupying different eco-geographical zones, rather than genetics. It is possible that bears from the Northwestern population have the same or comparable genetic make-up and that they could provide a source to re-establish a Prairie population. However, because of differences in habitat use, they could have different behaviours, a difference that might jeopardize the bears' survival. Furthermore, because the geographically closest extant bears in Alberta are of conservation concern (i.e., recommended as threatened by the Alberta Endangered Species Conservation Committee (AGBRT 2005)), there would likely be reluctance to use these bears for any potential reintroduction. It is unknown what would constitute a viable population of grizzly bears on the Prairies. It has been estimated that populations of 500 interbreeding grizzlies may be required to maintain normal levels of genetic diversity, an estimate that would equate to an effective population size of 2000 bears, as not all bears breed (Allendorf et al. 1991). Others have shown that, even with protection, populations with fewer than 200 animals will continue to decline, while populations with 450 bears will continue to grow (Mattson and Reid 1991). Achieving a population of 450 bears in the prairie eco-region of Canada is not feasible, especially when grizzly bears in areas with more suitable habitat are struggling to persist on the landscape.

Is sufficient suitable habitat available to support the species or could it be made available through habitat management or restoration?

No. There is not enough suitable habitat to re-establish a population of grizzly bears on the Prairies. Most of the historical habitat used by grizzly bears in the prairies of Alberta, Saskatchewan and Manitoba is settled and virtually all of the land is being used for agriculture with unsettled areas subject to high public use (Banci 1991). While there may be some habitat available to support the occasional individual that wanders onto the Prairies from the Rocky Mountain foothills, there is not enough suitable habitat to support a *population* of bears separate from the Northwestern population. Mattson et al. (1995) suggest that populations with ranges less than 29 500 km² are at substantially greater risk of extinction. Even relatively large intact areas of grasslands, such as Grasslands National Park, are much too small to support a population of grizzly bears. Grasslands National Park is 907 km², which is only slightly larger than the 760 km² home range of a single adult female grizzly bear in the boreal forest foothills (G. Stenhouse, pers. comm.).

Can significant threats to the species or its habitat be avoided or mitigated through recovery actions?

No. Although it may be possible to alleviate some concerns regarding the negative perception of grizzly bears, it is not possible to remove the other threats of human-related mortality and lack of habitat, given the intensive human use and development on the landscape.

Do the necessary recovery techniques exist and are they demonstrated to be effective?

No. While recovery techniques such as reintroductions exist, they have never been implemented for a population of grizzly bears and they would not be successful where there is not enough suitable habitat. Although some populations of grizzly bears have been able to naturally expand to reoccupy former range (Pyare et al. 2004), grizzly bears have never been introduced into an area they once occupied, suggesting that landscapes and human activities usually develop to a point where grizzly bears are no longer compatible (Herrero 2005).

2.2 Critical Habitat

Critical habitat is defined in Canada's *Species at Risk Act* as "the habitat that is necessary for the survival or recovery of a listed wildlife species and that is identified as the species' critical habitat in the recovery strategy or in an action plan for the species."

Critical habitat cannot be identified for the Prairie population of grizzly bears, as we have no data to make this evaluation in terms of either feeding data or habitat use from this era. In addition, there is very little to no suitable habitat remaining and not enough could be created for a re-established population.

2.3 Conservation Approach

Recovery of an entire *population* of grizzly bears on the Prairies is not feasible. However, it may be feasible to maintain the occasional presence of individual bears from the Northwestern population in a small region of the Prairies, including the St. Mary River and the Milk River of southwestern Alberta. These bears are considered part of the Northwestern population, as they only spend part of their life in this prairie habitat.

It is recommended that the Prairie Grizzly Strategy developed by the Alberta Sustainable Resource Development – Fish and Wildlife Division (Morton and Lester 2004) should continue to be followed to manage grizzly bears which foray onto the Prairies. In addition, the habitat for these bears, especially along the Alberta/Montana border should be conserved, as it has lower human density than Alberta's foothills and a relatively high ratio of native grassland compared to most other areas in southern Alberta. This area is already recognized as a high priority prairie conservation area for species at risk in Alberta (R. Quinlan, pers. comm.), and conservation initiatives (e.g. MULTISAR <http://www.multisar-milkriverbasin.com/Index.html>) are underway to conserve habitat in this area for species at risk.

Conservation of the remaining grizzly bears in the Northwestern population is important for maintaining grizzly bears as a whole and in maintaining the possibility of individual bears wandering onto the prairies of southern Alberta.

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