



NDF WORKSHOP CASE STUDIES  
**WG 5 – Mammals**  
**CASE STUDY 3**  
*Ursus arctos horribilis*  
Country – **CANADA**  
Original language – English

## **THE NDF PROCESS FOR *URSUS ARCTOS HORRIBILIS* (GRIZZLY BEAR) IN CANADA**

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## **I. BACKGROUND INFORMATION ON THE TAXA**

### **1. BIOLOGICAL DATA**

#### **1.1. Scientific and common names**

*Ursus arctos horribilis* (Grizzly Bear, Brown Bear) is a sub-species of grizzly bear which is found exclusively in Canada and the United States of America (USA). Two other sub-species of *U. arctos* also exist: *Ursus arctos middendorffii* (Kodiak Bear) is found on the Kodiak Islands off the coast of Alaska, USA and *Ursus arctos arctos* (Eurasian Brown Bear) is found only in the Eurasian portion of the species' range.

#### **1.2. Distribution**

Historically grizzly bears were found across much of North America (including northern Mexico), Europe, Asia, the Middle East, and North Africa. Presently, grizzly bears occupy approximately 5,000,000 km<sup>2</sup> of the north-western portion of North America, 800,000 km<sup>2</sup> of Europe (excluding Russia), and much of northern Asia (IUCN, 2008).

Globally the grizzly bear has lost approximately 50% of its range and abundance since the mid-1800s (Servheen, 1990) and many populations in Eurasia, and several of the southern portions of the North American range, are insular, small, and endangered (Servheen *et al*, 1999; Swenson *et al*, 2000).

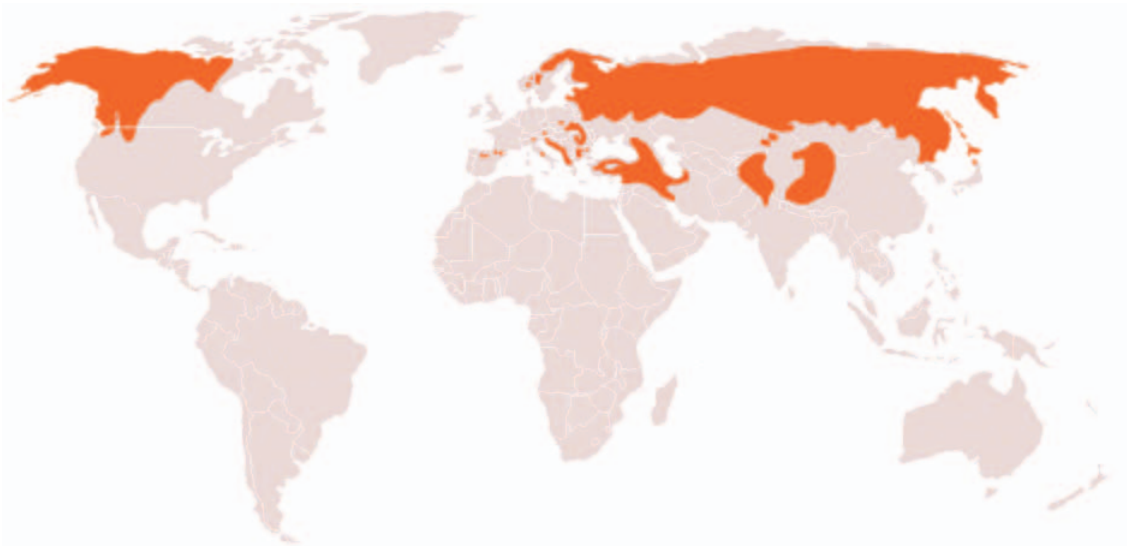


Figure 1. Current global distribution of *Ursus arctos* (International Association for Bear Research and Management, 2005).

The grizzly bear is currently distributed across approximately 26% of Canada's total land mass (~ 2.6 million km<sup>2</sup>). The Prairie population of grizzly bear in Canada has been extirpated since the 1880s in the grassland portions of the provinces of Saskatchewan, Manitoba, and



Figure 2. Current and historic North American range of *Ursus arctos horribilis* (Grizzly bear). Adapted from Servheen (1990).

Alberta (COSEWIC, 2002). With the exception of a few isolated populations in the southern portion of British Columbia, the grizzly bear's current range in Canada is best described as one continuous metapopulation across the provinces and territories of the Yukon Territory, the Northwest Territories, Nunavut, Alberta and British Columbia.

### **1.3. Biological characteristics**

#### **1.3.1. Provide a summary of general biological and life history characteristics of the species (e.g. reproduction, recruitment, survival rate, migration, sex ratio, regeneration or reproductive strategies, tolerance toward humans).**

Grizzly bears share the typical ursid body form and are thus large, muscular, and robust. They have a prominent shoulder hump, concave facial profile and long front claws. Fur colour ranges from blonde through shades of brown and nearly black. Typical body mass for an adult female can range from 100 kg for individuals of interior populations, to 200 kg or more for those of coastal populations (COSEWIC, 2002). Males are on average nearly twice as heavy as females.

Grizzly bears are slow-growing, long-lived, and have a low reproductive output (Jonkel, 1987). Their lifespan is usually 20-25 years, although individuals as old as 34 have been recorded. The survival rate of adult females in Canada is typically higher (> 90%) than adult males (~ 80%), including in hunted populations, in part due to protection for females with cubs and hunter preference for larger specimens (COSEWIC, 2002).

Typically, females have their first litter between five and seven years of age, and have litters of one to three cubs, which are born inside dens in January or February (Schwartz *et al*, 2003). Cubs generally remain with their mother for two to four years, and as a result females have litters approximately every three years. Lack of food and harsh weather compel most grizzly bears to hibernate during the winter and individuals may spend up to seven months inside their dens. Pregnant females generally enter dens first and emerge last with their cubs in tow. However, duration of denning is also related to latitude, with both male and females at higher latitudes entering earlier and emerging later compared to individuals at lower latitudes (Schwartz *et al*, 2003).

Grizzly bears require constant and substantial amounts of food to meet their nutritional needs, especially when establishing large fat reserves in preparation for hibernation. Although grizzly bears have the feeding and digestive anatomy of a carnivore, they are omnivorous and food habits and movements depend largely on season and the availability of various food sources (COSEWIC, 2002). Often plants

and berries comprise the majority of a grizzly bear's diet, although they can be very effective predators of moose, caribou and salmon. Grizzly bears are opportunistic and will also feed on insects, small mammals, dead animals and garbage.

In their search for food, the home range of grizzly bears is heavily dependent on the quality of their habitat. Bears with access to predictably abundant, high-quality food and long growing seasons tend to have smaller ranges (McLoughlin & Ferguson, 2000). Home ranges for males are typically several times larger than those of females, likely due to breeding activity and/or the increased energy demands of larger body size (McLoughlin *et al*, 1999).

### 1.3.2 *Habitat types: Specify the types of habitats occupied by the species and, when relevant, the degree of habitat specificity.*

At the broad scale, Grizzly bears are habitat generalists, and can be found from sea level to high-elevation alpine environments. Within their home ranges they select specific habitats for specific resources (food, cover) in different (phenological) seasons. Their large home ranges may give the impression that Grizzly bears are very adaptable and can occupy poor quality habitat because of the wide variety of foods and habitats they use. However, their large body sizes, high nutritional requirements, limited ability to digest coarse vegetation and omnivorous diet are responsible. In order to obtain the very specific resources they require, they move to very specific habitats in different seasons, some of which can be regarded as "critical habitat". In Canada, they occupy habitats as diverse as temperate coastal rain forests and semi-desert Arctic tundra, and historically roamed the Great Plains (COSEWIC, 2002). Suitable grizzly habitat must provide an adequate food supply, appropriate denning sites, and isolation from human disturbance. As the diet of most grizzly bears is dominated by vegetation, their habitat associations are strongly seasonal and reflect local plant development. However, in systems where salmon are present they may form an important component of the grizzly bear diet. In mountainous regions, dietary vegetation dependency may result in seasonal migrations across elevational gradients.

### 1.3.3 *Role of the species in its ecosystem*

Grizzly bears are umbrella, keystone and indicator species. Grizzly bears are of paramount importance to the functioning of the ecosystems in which they inhabit. Ecosystems that are healthy enough to support grizzly bear populations are *ipso facto* adequate to maintain populations of many other species with requirements of large land tracts (Peek *et al*, 2003).

Through their feces, grizzly bears transport and disperse the seeds and berries of plants on which they have been feeding. Grizzly bears promote vegetation diversity and regeneration by providing fertile ground via their digging for edible roots and tubers, as well as fossorial rodents (Tardiff & Stanford, 1998). Grizzly bears also play an important role in maintaining forest health by transporting and depositing nutrients from salmon (through urine and feces, as well as the carcass itself) considerable distances from salmon streams (Hilderbrand et al, 1999). Scavengers may also benefit from incompletely consumed carcasses, especially salmon, abandoned by grizzly bears.

Grizzly bears are often regarded as indicators of ecosystem health because of their sensitivity to human intrusion into occupied wilderness areas. There are few other species as commonly viewed as icons of the Canadian wilderness.

## **1.4. Population**

### **1.4.1. Global Population size: (Population size may be estimated by reference to population density, having due regard to habitat type and other methodological considerations, or simply inferred from anecdotic data)**

Grizzly bears have been extirpated from North Africa and the range of the grizzly bear has contracted in North America, Europe and Asia (IUCN, 2008). Nonetheless, this species remains widespread across three continents and is still considered to be a widely distributed terrestrial mammal. The global population of grizzly bears is estimated to be more than 200,000 (IUCN, 2008). Reliable population estimates are available for several areas in North America and Europe but few areas in Asia (IUCN, 2008 and references therein).

Canadian grizzly bear populations are stable and total approximately 29,900 individuals (based primarily on expert opinion models and a combination of capture, telemetry, and observation data) with an estimated range of about 27,000 to 34,200 individuals (COSEWIC, 2002). The breeding-age number of grizzly bears in Canada is estimated to be between 6900 and 16,000 individuals (COSEWIC, 2002).

Within Canada, the province of British Columbia has about half of the country's grizzly bears with at least 17,000 individuals (Hamilton et al, 2004). There are estimated to be approximately 6000-7000 grizzly bears in the Yukon Territory, about 500 in the province of Alberta, and 5100 in the Northwest Territories (COSEWIC, 2002). The number of grizzly bears in the territory of Nunavut is unknown but is estimated to be 800 to 2000 individuals (Dumond, 2005).

**1.4.2. Current global population trends:**

increasing       decreasing       stable       unknown

According to IUCN (2008), the global grizzly bear number remains large and is not significantly declining. Although Canadian grizzly bear populations have been greatly reduced compared to historic levels numbers are currently stable (COSEWIC, 2002).

**1.5. Conservation status**

**1.5.1. Global conservation status** (according to IUCN Red List):

Critically endangered       Near Threatened  
 Endangered       Least concern  
 Vulnerable       Data deficient

The grizzly bear was assessed as 'Least Concern' according to the IUCN Red List in 1996 and in 2008, as the global number large and widely distributed across three continents. Although there are some small, isolated populations that are in jeopardy of extirpation, others that are under more protection are expanding.

**1.5.2. National conservation status for Canada**

The prairie populations of grizzly bear are considered '*Extirpated*' by the national Committee on the Status of Endangered Wildlife in Canada (COSEWIC). The species disappeared from the prairie provinces of Saskatchewan, Manitoba, and some parts of Alberta in the 1880s.

The northwestern populations of grizzly bears are collectively considered as a '*Species of Special Concern*' by COSEWIC (2002). This national-level designation includes grizzly bears in the provinces and territories of Yukon Territory, Northwest Territories, Nunavut, British Columbia, and Alberta. A species is considered to be of 'Special Concern' by COSEWIC if it possesses characteristics that make it particularly sensitive to human activities or natural events. Although grizzly bears are not currently at risk of extirpation nationally, special attention is required to ensure they do not become at risk. Recovery efforts are required in 9 Grizzly Bear populations in British Columbia and throughout Alberta to prevent localized extirpation.

According to the Canadian Endangered Species Conservation Council (2006), in British Columbia, Yukon Territory, the Northwest Territories, and in Nunavut, grizzly bears have been assigned the status of '*Sensitive*'. In Alberta, the grizzly bear is provincially considered a species that '*May be at Risk*'.

### 1.5.3. *Main threats within Canada*

No Threats

Habitat Loss/Degradation (human induced)

Invasive alien species (directly affecting the species)

Harvesting [illegal hunting for parts and trophies]

Accidental mortality (e.g. collisions with vehicles and trains)

Persecution (e.g. defence of life and/or property kills)

Pollution (affecting habitat and/or species)

Other \_\_\_\_\_

Unknown

Habitat loss and degradation (due to urban encroachment, agricultural development commercial timber harvests, oil/gas development and exploration, and mining) are the primary threats to grizzly bears in Canada (COSEWIC, 2002). Additional threats include illegal harvesting for the trafficking of parts (e.g. bile, gall, paws) and trophies, kills as a result of a perceived threat to life or property, and collisions with automobiles and trains (COSEWIC, 2002). Note that the legal harvest of grizzly bears in jurisdictions where permitted is sustainably managed and therefore does not constitute a threat to the long-term viability of Canadian grizzly bear populations.

## 2. SPECIES MANAGEMENT WITHIN CANADA

### 2.1. Management measures

#### 2.1.1. *Management history*

Grizzly bears have historically been one of the most important icons for Canadian Aboriginal Peoples and the symbolic and spiritual significance of this species continues today (Shepard, 1986; Rockwell, 1991). Grizzly bears have been hunted throughout history as a source of food, pelts, and ornamental specimens (Black, 1998)

In Canada, grizzly bears have been managed as a game species in the provincial and territorial jurisdictions under Wildlife Acts, Wildlife Management Boards, and Land Claims Agreements with Aboriginal Peoples for many decades. Grizzly bears are also under federal legislation via the *Canada Wildlife Act* (1985) and the *Canada National Parks Act* (2000).

Brown bears, including grizzly bears were listed in Appendix I of CITES in 1990. However in 1992, all populations were down-listed to Appendix II except those in Bhutan, China, Mongolia, and Mexico (which remain in Appendix I). The grizzly bear population in Canada is not considered at risk, but is regulated by CITES as it is a look-alike to those populations in Appendix I (including other species of ursids).

### 2.1.2. *Purpose of the management plan*

The management of grizzly bears in Canada promotes its sustainable use and benefit as a valued wildlife species. The primary goals are to ensure a viable population at present-day levels, to maintain the current distribution, to protect and maintain suitable grizzly bear habitat, and to minimize conflicts with humans. Provincial management plans also include opportunities, where sustainable, for a carefully managed sport harvest and for recreational and commercial Grizzly bear viewing.

### 2.1.3. *General elements of the management plan*

The management of grizzly bear in Canada is the responsibility of the provincial and territorial jurisdictions in which it occurs in consultation with Wildlife Management Boards. Wildlife Management Boards are established under Land Claims Agreements and are co-management agreements that guarantee Aboriginal Peoples meaningful involvement and participation in decisions relating to the preservation of wildlife and the future development of lands. The management and research of grizzly bear is coordinated nationally and reviewed annually through federal/provincial/territorial consultations. Wildlife Acts in each of the jurisdictions outline the legal context for the management of grizzly bears.

Grizzly bear harvests in Canada are monitored by species experts and wildlife managers in the provincial and territorial jurisdictions. Estimates of grizzly bear population size are determined using a combination of field techniques, models, Mark-Recapture census using hair-snagging and subsequent DNA analysis, and Traditional Ecological Knowledge (TEK). Population estimates and allowable harvests are maintained at conservative levels to account for uncertainties.

Based on population estimates and model predictions, sustainable harvest levels are determined. All hunting is conducted under a license system and licenses are awarded to resident hunters only, in some cases exclusively to Aboriginal Peoples. In some provinces, outfitters possessing a valid license may allocate their tag to a non-resident if the grizzly bear is to be harvested under their supervision during a guided hunt. In British Columbia, Guide Outfitters are assigned strict 5-year allocations to legally guide non-resident hunters (a quota of a specific number of bears they can take).

### 2.1.4. *Restoration or alleviation measures*

Most current populations of grizzly bears in Canada are not considered to be at risk of extinction or extirpation. However, to ensure the species does not become at risk in the future, the species is managed



sustainably and various levels of protection to habitat are provided through a series of provincial/territorial and national parks and protected areas. In total, approximately 215,000 km<sup>2</sup> (~ 8%) of the current grizzly bear range in Canada is within protected areas where the mandate includes the preservation of grizzly bear habitat (COSEWIC, 2002). Resource extraction (e.g. mining, commercial timber) is prohibited in protected areas. However, depending on which provincial or territorial jurisdiction the protected area is located, hunting for sport and/or subsistence by Aboriginal Peoples may be permitted and recreation activities or urban development may also occur nearby thereby affecting habitat quality. Protected areas most likely serve as a core refuge to grizzly bears, but are dependent on adjacent, unprotected areas to sustain and link viable populations. Important habitats outside of protected areas may also be protected. In British Columbia, much critical Grizzly bear habitat (stand level) is protected as Wildlife Habitat Areas under the Forest and Range Practices Act.

In British Columbia, all bear hunting licenses include a surcharge for the Habitat Conservation Fund, which helps provide financial support for grizzly bear research and management throughout the province. The isolated populations at the southern edge of the range in British Columbia are managed separately for recovery and various recovery actions are proposed or underway, including motorized access management, habitat restoration, mortality risk reduction around communities, and enhanced protection of critical habitats. Population augmentation has been proposed for one population, the North Cascades.

## **2.2. Monitoring system**

### **2.2.1. *Methods used to monitor harvest***

Harvest of grizzly bear is closely monitored in Canada through the issuance of licences, tags, and quotas. Grizzly bears killed as a result of road or train accidents, illegal harvest, and in Defence of Life or Property are documented and considered when determining sustainable harvest levels. In the province of British Columbia, an inspection of the carcass is compulsory and includes the collection of tooth, hair, and tissue samples for age determination and genetic relatedness testing. These same samples have also been used to determine stable isotope signatures, and those, in addition to stable isotope data from other samples collected during inventories and research, are used as a component of the revised British Columbia population estimate process.

Grizzly bear harvest in Canada for the purpose of international trade is also monitored via the issuance of CITES Export permits.

Population estimates and modelling are used to predict the effects of harvest on grizzly bear in Canada and sustainable harvest levels are set based on the best available information. Managers account for uncertainty in population estimates when setting deliberately conservative harvest levels.

#### **2.2.2. Confidence in the use of monitoring**

The legal harvest of grizzly bears in Canada is strictly monitored by the provincial and territorial jurisdictions. Compliance and the quality of reporting are high because jurisdictions have a shared interest to ensure a long-term, sustainable harvest as well as a legal mandate under federal and provincial or territorial legislation related to wildlife management.

#### **2.3. Legal framework and law enforcement: Provide details of national and international legislation relating to the conservation of the species.**

Management of grizzly bears in Canada is conducted through a variety of provincial and territorial legislation and agreements such as Wildlife Acts, Wildlife Management Boards, and Land Claims Agreements with Aboriginal Peoples. The grizzly bear is also managed under federal legislation via the *Canada Wildlife Act* and the *Canada National Parks Act* which affords protection to individuals found in national parks and historic sites.

Provincial and territorial legislation in the form of Wildlife Acts provide the legal context for the management of grizzly bear in Canada and substantial penalties exist for those found illegally harvesting grizzly bears. Protection is afforded to cubs (up to and including 2 years of age) and bears with cubs, and well as those in dens. Baiting is prohibited although hunting with dogs is permitted in some jurisdictions. All kills (hunting or otherwise) must be reported and in the province of British Columbia are subject to a compulsory inspection by a Wildlife Officer. Defence of Life or Property kills are allowed.

The Canadian population of grizzly bear is listed on Appendix II of CITES which is administered in Canada using the *Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act*.

### **3. UTILIZATION AND TRADE FOR RANGE STATE FOR WHICH CASE STUDY IS BEING PRESENTED.**

#### **3.1. Type of use (origin) and destinations (purposes) (e.g. commercial, medicinal, subsistence hunting, sport hunting, trophies, pet, food). Specify the types and extent of all known uses of the species. Indicate the extent to which utilization is from captive-bred, artificially propagated, or wild specimens.**

Grizzly bears are highly prized as hunting trophies. In Canada, trophy harvest is sustainably managed by the provincial and territorial jurisdictions in which grizzly bears occur. All specimens are from the wild.

Some Asian medicine has relied on bear parts for thousands of years. Bear bile and galls are valuable and documented retail prices can reach US\$500/g for bile and US\$2000 for whole gall bladders (Servheen *et al*, 1999). Although bile and gall bladders are the most widely sought after parts, a market also exists for other body parts, especially paws (COSEWIC, 2002). Recent cases show an increase in the illegal demand for full trophies (hides and mounts) for use as decorative elements in large country "estates" in the American west. The harvest of grizzly bears for trade in such parts is prohibited in Canada. However, harvest of grizzly bears as hunting trophies is legal with a valid hunting license. Harvest for skins and/pelts is also permitted as long as the specimens are accompanied by valid tags and any necessary interprovincial trade permits.

#### **3.2. Harvest:**

##### **3.2.1. *Harvesting regime* (extractive versus non extractive harvesting, demographic segment harvested, harvesting effort, harvesting method, harvest season)**

Harvest of grizzly bears in Canada is primarily for hunting trophies and harvest limits have been set at 1-6% of the population depending on the jurisdiction. The majority of harvest is of adult male grizzly bears as they are usually larger and thus generally preferred by hunters as trophy specimens over females. Cubs under the age of two are not hunted.

##### **3.2.2. *Harvest management/ control* (quotas, seasons, permits, etc).**

Harvest of grizzly bears in Canada is highly managed. All hunting is conducted under license system and all harvests must be by a licensed hunter with valid tags. In some provinces, non-resident hunters may hunt grizzly bears only if accompanied by a licensed Canadian outfitter or guide who has allocated this valid tag to the hunter. In British

Columbia, non-residents must also be accompanied by a guide, but rather than allocating a tag, the Guide Outfitter operates under a limited quota system. Hunting seasons are either in the spring or the spring and fall depending on the provincial/territorial jurisdiction. Any export or trade in grizzly bear from Canada requires a valid CITES Export permit, and may also require a provincial export permit.

**3.3. Legal and illegal trade levels: To the extent possible, quantify the level of legal and illegal use nationally and export and describe its nature.**

Of the approximately 500 grizzly bear mortalities each year in Canada, about 84% are the result of legal harvest (including harvest by Aboriginal Peoples); Defence of Life or Property kills account for another 13% (COSEWIC, 2002). Based on population estimates, human-caused mortality of grizzly bears in Canada accounts for approximately 2% of the total number of individuals.

Between 2002 and 2005, Canada issued approximately 250 CITES export permits annually for grizzly bear hunting trophies. Sport hunting is a lucrative industry in Canada as grizzly bear trophies are highly prized. An annual average of about \$2.8 million is spent on grizzly bear hunting in the province of British Columbia alone (Province of British Columbia, 1995).

Although it is difficult to evaluate due to the underground nature of illegal activity, harvest of grizzly bears in Canada for the purpose of trade in parts for medicinal purposes still occurs to some extent despite it being prohibited. The high value of trophies also results in some degree of poaching and trafficking as indicated by reports of seizures and prosecutions (BCMOE, 2001; COSEWIC, 2002).

## II. NON-DETRIMENT FINDING PROCEDURE (NDFs)

For grizzly bear in Canada there is currently a positive NDF (i.e. harvest of grizzly bear is considered non-detrimental to the species in the wild).

**1. IS THE METHODOLOGY USED BASED ON THE IUCN CHECKLIST FOR NDFS?**

\_yes    \_no

## **2. CRITERIA, PARAMETERS AND/OR INDICATORS USED**

In Canada, the IUCN Checklist for non-detriment findings is followed closely when making an NDF. All elements of tables 1 and 2 of the Checklist are considered by wildlife managers and species experts in the jurisdictions. This information is provided to the CITES Scientific Authority for consideration. When the Scientific Authority reviews and finalises the Checklist, consideration is given to the primary experience of managers and experts in the management and research of wild populations, as well as to any additional sources of information that are available (e.g. scientific journal articles, technical reports, and consultations with additional experts, wildlife management boards, species-specific committees and associations, etc).

## **3. MAIN SOURCES OF DATA, INCLUDING FIELD EVALUATION OR SAMPLING METHODOLOGIES AND ANALYSIS USED**

Wildlife managers in the provincial and territorial jurisdictions, in collaboration with species experts, are responsible for the management of wild grizzly bear populations. The Canadian CITES Scientific Authority relies on these managers and experts to provide it with up-to-date information on the status of grizzly bears in Canada, primarily in the form of the IUCN Checklist, but also through consultations, when making an NDF.

Standard field techniques include telemetry, mark/re-capture, and den/aerial surveys. Historically, the Fuhr-Demarchi habitat-based model (Fuhr and Demarchi, 1990) was used to estimate historic, potential, and current habitat capability based on biogeoclimatic mapping in British Columbia. Progressive step-downs accounted for habitat loss, alteration, displacement, and fragmentation, as well as historic levels of human-caused grizzly bear mortalities. Habitat capability ratings were generally revised every three years. Population-Viability Analysis (PVA) models (Herrero *et al*, 2000) were also utilised to predict population status and trends, as well as the extinction risk for populations. Input variables were region-specific and population characteristics and habitat conditions had to be known and foreseeable.

British Columbia's current population estimate (Hamilton *et al*. 2004) is based on two methods: a multiple regression for the majority of the province and an expert-based model for the coast. A relationship between Grizzly bear density and ultimate measures of ecosystem productivity and mortality was established for known-density areas then extrapolated to areas where no Mark-Recapture estimates were available. Grizzly bear density in non-coastal environ-

ments was related to mean annual rainfall and temperature, human caused mortality, human density and the presence of salmon. Densities on the coast were heavily influenced by the abundance and distribution of Pacific salmon.

The Canadian CITES Scientific Authority itself does not participate in field evaluations or surveys of grizzly bear populations. All field evaluations and statistical analyses to estimate populations and determine harvest levels are conducted by the wildlife managers and species experts in the provincial jurisdictions.

#### **4. EVALUATION OF DATA QUANTITY AND QUALITY FOR THE ASSESSMENT**

Given that all jurisdictions have mandates to protect wildlife, and have the scientific and management information and expertise that contribute to the making of an NDF, the data and information provided to the Scientific Authority is assured to be of a high standard. It should be noted that the conservation and management of wild species is multi-jurisdictional in Canada, falling under the authority of various provincial, territorial, and federal acts and legislation related to wildlife management.

The details provided by the experts in the range jurisdictions are reviewed by the Scientific Authority to ensure that all the necessary information is complete. Whether trade will be detrimental to the species in the wild is determined based on the information provided by the wildlife managers/species experts in the jurisdictions.

#### **5. MAIN PROBLEMS, CHALLENGES OR DIFFICULTIES FOUND ON THE ELABORATION OF NDF**

As management of wildlife in Canada is multi-jurisdictional, coordinating the numerous people involved in the NDF process can be challenging. Budget and time constraints are factors affecting the Scientific Authority and the wildlife managers in regards to making NDFs.

Due to the large geographical area in which grizzly bears reside it can be difficult to determine their exact population size and demographics. A variety of methods must be utilised to gather accurate information and data analyses are complex. Undocumented mortalities may contribute to uncertainty when determining population estimates and sustainable harvest levels.

#### **6. RECOMMENDATIONS**

The Canadian CITES Scientific Authority has had great success in using the IUCN Checklist, either formally or via consultations, as a method to gather the information that is required to make an NDF. The IUCN Checklist covers a wide scope of the parameters that may be conside-

red when developing an NDF and the format is useful in terms of focusing the approach for gathering information, recognizing gaps in information or management, and identifying the vulnerabilities for the species in question. Collectively it ensures a thorough analysis of the status and management practices currently in place for a species, regardless of taxa, and ensures consistency when making a NDF. It is recommended that Parties consider the IUCN Checklist when developing NDFs.

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