Fish and Wildlife of Alaska's North Slope

GRIZZLY BEARS

The grizzly bear population on the Arctic Coastal Plain reaches the northern limit of the species' distribution in Alaska and North America. Grizzly bears (*Ursos arctos* or agjaq) were probably not common in the North Slope oilfield region before development. Beginning in 1991, as bear use of the oilfields increased, ConocoPhillips and BP Exploration initiated and sponsored a long-term study by the Alaska Department of Fish and Game (ADF&G) on grizzly bears in the oilfield region and concurrently developed programs to mitigate attraction of bears to facilities. They found lower bear densities on the coastal plain than farther inland, except during the 1990s when a locally high concentration of bears occurred near Prudhoe Bay due to easy availability of *anthropogenic* (human-related) food sources such as unsecured garbage.

Grizzly bear (Ursos arctos *or* agjaq).

Normal densities for the Arctic Coastal Plain are 1 to 2 bears per 100 square miles. In the foothills of the Brooks Range, where there is a greater variety of food, densities reach 7 bears per 100 square miles. Bear density generally reflects food availability, suggesting that on the Arctic Coastal Plain, lack of an abundant and predictable food resource limits the population. This also underscores why anthropogenic food sources can become an attractive target for bears that have fewer alternative foods. ConocoPhillips' grizzly bear education and waste management programs have helped to reduce the immediate impacts of development on bears and the potential for human-bear interactions.

To meet all their nutrition needs, including almost seven months of hibernation, North Slope grizzly bears select foods from a wide variety of sources. Bears feed seasonally on vegetation, such as succulent plants, roots, and berries, and they prey and scavenge on a variety of wildlife species, such as arctic ground squirrels and other rodents, bird eggs and nestlings, fox pups, musk ox, caribou, marine mammal carcasses, and other carrion. Bears on the Arctic Coastal Plain prefer *riparian* habitats (areas along rivers and streams) because these areas provide the greatest diversity of foods. Because the major oilfield region is sandwiched between the Sagavanirktok and Colville rivers — two of the largest riparian areas on the North Slope — bears have ample opportunity to encounter oilfield facilities and activities.

Techniques for Impact Mitigation

Concerns about oil and gas development in bear habitat include human safety as well as impacts on bears and other wildlife species. Over the three decades of oil and

Alaska Department of Fish and Game biologists collect physiological data from a North Slope grizzly bear.

gas activity on the North Slope, bears have caused no human fatalities or serious injuries — in spite of numerous close encounters. Potential impacts on bears in the oilfields include: (a) opening access for uncontrolled hunting in a previously inaccessible area, (b) allowing bears to obtain anthropogenic food sources which can result in increased mortality from hunter harvest and "defense of life and property" (DLP) kills, and (c) disturbance and displacement from natural habitats such as den sites or riparian feeding areas. Predation by bears on local populations of other wildlife species can also increase when the bears concentrate their activities in areas with anthropogenic food sources.

Uncontrolled harvest has not occurred in the North Slope oilfields. The oilfield road system is off limits to all but industrial users, companies prohibit firearm use in the oilfields, and state regulations prohibit big game hunting in much of the oilfield.

Until the 1990s, use of anthropogenic food by bears was a problem. Intentional feeding of bears occasionally occurred during oilfield construction in the 1970s and 1980s, but subsequent ConocoPhillips and other oilfield operators' policies prohibiting bear feeding have been strictly enforced and such feeding is now extremely rare. A bigger problem was attraction of bears to garbage in the North Slope Borough-managed regional landfill, food waste and containers in open dumpsters, and improperly stored food at oilfield work sites. Bears learn to seek out such food sources — a process called *food conditioning* — around areas of human activity, and this puts them into potential conflict with humans. Oilfield bears that have become food-conditioned and habituated (i.e., learned to ignore) to humans became a potential safety hazard and also were more vulnerable to harvest by hunters when the bears moved away from the oilfields. In the past, 16 food-conditioned bears had to be killed in DLP situations, and 10 were killed by Agency personnel in Deadhorse when the bears began to break into buildings. Six more food-conditioned and habituated bears were killed at villages in the region, or by hunters along the Dalton Highway, often because they were perceived as a threat when they ignored humans or were destroying property.

In response to increased grizzly bear use of the oilfields, ConocoPhillips and other oilfield operators, advised by ADF&G, implemented a program that included employee education about bear safety and minimizing human-bear interaction, improved management of garbage and human food at work sites, and training by ADF&G in proper hazing techniques to reduce bear-human encounters. As part of the ConocoPhillips overall bear interaction program, regular training is provided to North Slope workers to

reduce the potential for human-bear interactions. ConocoPhillips has also prepared bear interaction mitigation plans for specific development areas such as Alpine, Tarn, and Meltwater. In addition, a Slope-wide Wildlife Avoidance and Interaction Plan was prepared to provide additional guidance for North Slope workers.

Although training and education programs provided by the oilfield operators continue to be effective in reducing the immediate impacts of development on bears and the potential for human-bear interactions, some bears still found garbage in dumpsters and at the regional landfill. To eliminate these food sources, ConocoPhillips initiated a Slope-wide program to implement a solution. With cooperation from ADF&G, the North Slope Borough, the Alaska Department of Environmental Conservation, and the North Slope Environmental Alliance (a cooperative of all oilfield operators), oilfield operators agreed to purchase bear-proof dumpsters and use them at their facilities. In addition, the North Slope Borough installed an electrified fence at its regional landfill, and the fence has been effective in excluding bears.

ADF&G has successfully used dogs to chase bears away from facilities and manmade food sources.

Although most of the bears that became food-conditioned in the early 1990s have been killed, since the late 1990s no new bears have become food-conditioned, and the surviving food-conditioned bears have been kept from DLP situations. Part of the recent success of hazing has been due to the use by ADF&G of Karelian bear dogs to chase bears away from facilities where vehicles cannot operate. This breed was developed in Finland specifically to hunt bears and defend small farms from bear depredations. Use of dogs expands a toolbox of methods already implemented by security and other trained hazing personnel.

The third potential impact of oil and gas activities is disturbance. Bears appear to be remarkably resilient to noise and other human activity when they are not denning. Indeed, at least 21 marked bears have continued to use natural habitats in and around oilfield facilities. Although these bears avoid intensive activity areas such as processing facilities and camps, they will walk on remote access roads and drill sites. Most exploration and construction activity away from the road system occurs in winter when ice roads and pads are being built, and seismic exploration and overland equipment hauls could encounter denning bears. Although very few grizzly bear dens have been disturbed by winter activity, disturbance during denning remains a concern. ADF&G provides oilfield operators with locations of radio-marked bears prior to the winter construction season so that operators can avoid these sites. However, this mitigation depends on precise location of the den, and since not all bears are radio-marked, there is potential to disturb them unless another method for den detection is developed.

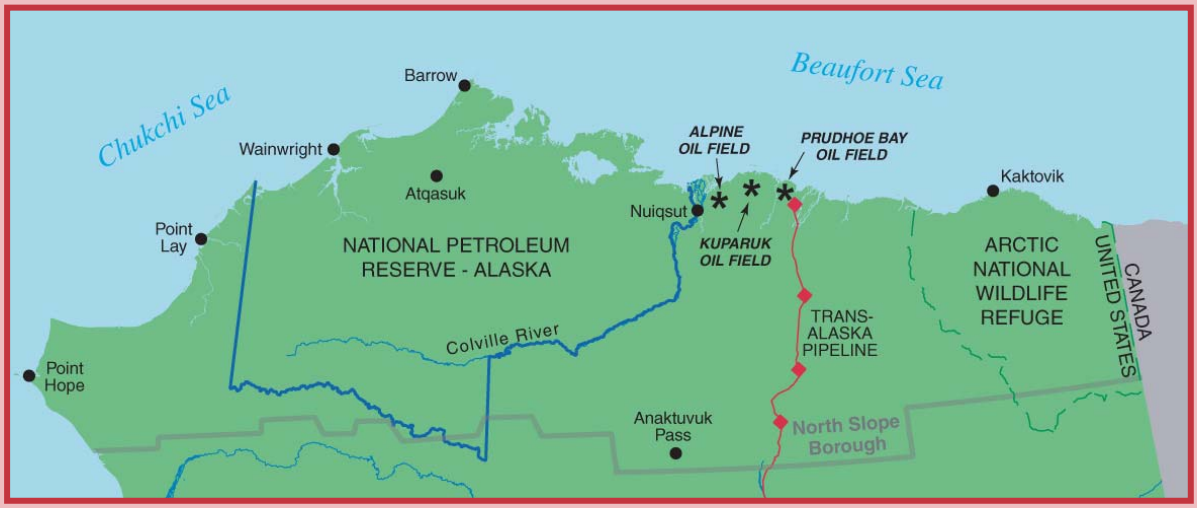
New Grizzly Bear Research

In recent years as ConocoPhillips has expanded exploration and production westward to the Alpine area in the Colville River delta and the National Petroleum Reserve-Alaska, the company has sponsored ADF&G studies to evaluate grizzly bear use in those areas. In addition, ConocoPhillips has supported an ADF&G pilot study to evaluate two additional methods to detect denning bears. Using the den locations of bears already radio-collared in the ongoing study, ADF&G is using forward-looking infrared (FLIR) thermal imaging to locate heat escaping from the dens under the snow. This method has been tested on polar bear dens but has yet to be rigorously evaluated on

A ConocoPhillips biologist poses with a tranquilized grizzly bear during field research.

grizzly bears. Preliminary results look promising, but the problem of the FLIR yielding "false positives" (i.e., detecting a heat source that is not a den) indicates the need for a method of ground-truthing the location. That's where the second method comes in. ADF&G is testing the ability of the Karelian bear dogs to detect the exact location of dens that are identified from the air by the FLIR or from radio-telemetry. Again, preliminary results are encouraging. In spring 2004, the dogs found four dens tested within 4 yards of their true location. If these methods prove successful under operational conditions, ConocoPhillips can further mitigate potential disturbance of denning bears.

Other possible future research projects include (1) using DNA fingerprinting to determine the relationships between bears, especially to see if newly-collared bears might be surviving cubs of previously food-conditioned females, and (2) analyzing bear and prey species hair and tissue samples using stable isotope analyses to look at the proportion of different prey species each bear has been eating over the past season.



For Additional Information, Contact:

Environmental Studies Program
ConocoPhillips Alaska, Inc.
P.O. Box 100360
Anchorage, Alaska 99510-0360
Telephone (907) 276-1215

April 2005