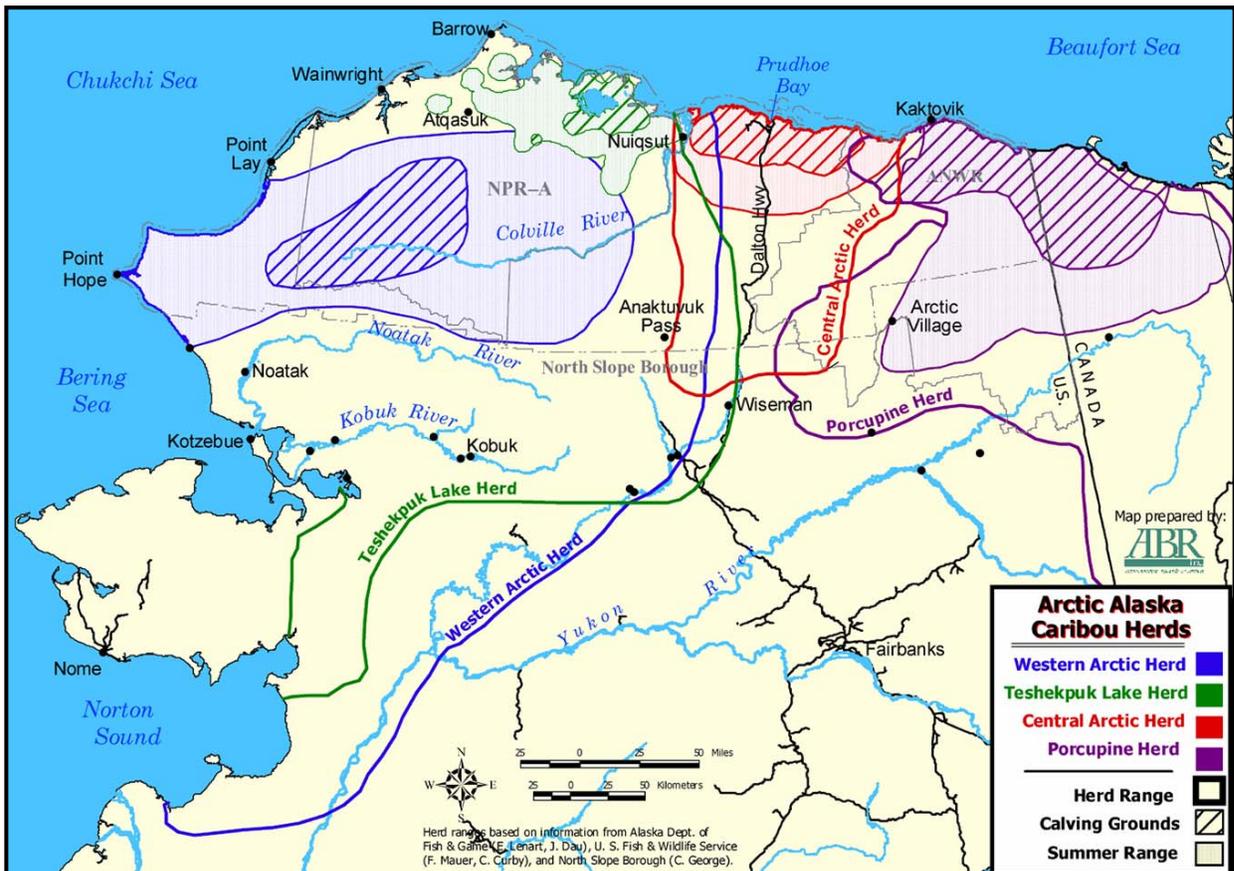


# Fish and Wildlife of Alaska's North Slope

## CARIBOU

Four distinct caribou herds are found on the North Slope in Alaska. Since the mid-1970s, the number of caribou (*Rangifer tarandus* or *tuttu*) in the Central Arctic, the Teshekpuk, and the Western Arctic herds has grown dramatically. There has, however, been a slight decrease in the Porcupine Herd. The Central Arctic Herd is currently almost ten times larger than it was when herd size was first estimated in the mid-1970s. Part of this herd inhabits the most developed part of the Arctic Coastal Plain — the area that includes the Prudhoe Bay and Kuparuk oilfields — and it has become one of the most intensively studied herds in Alaska. However, despite increased herd size, concerns remain that oilfield infrastructure and activity may eventually cause displacement of caribou from some areas, lead to a decrease in calf production, and eventually lead to a decline in herd size. Some have expressed this concern for over 20 years, although the Central Arctic Herd continues to grow and to have high rates of calf production.



Distribution of Arctic Alaska caribou herds, including those that frequent the North Slope oilfields (map prepared by ABR, Inc.).

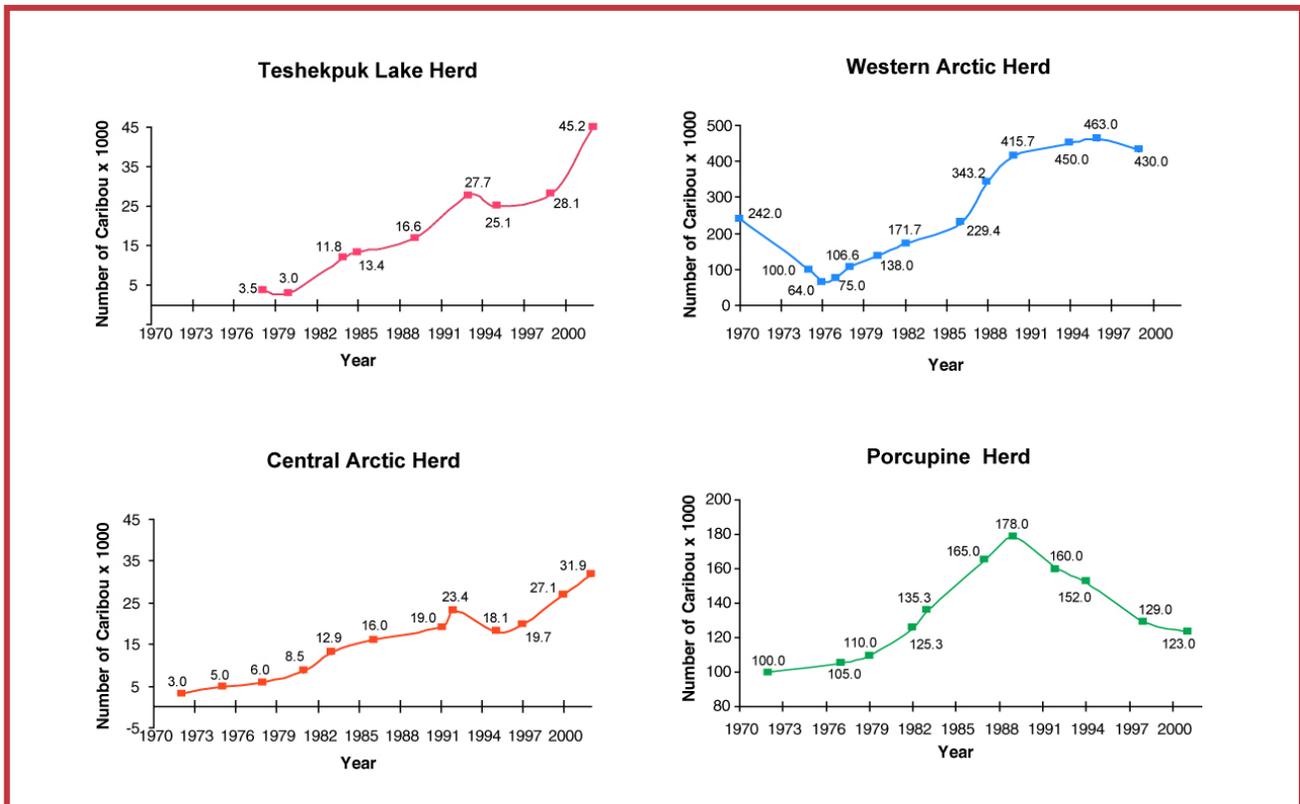


Caribou grazing on the tundra.

ConocoPhillips scientists and engineers understand these concerns, and to help ensure oilfields are designed and operated in a manner to guard against these potential effects, they have conducted a wide variety of studies over the past two decades. A number of these studies were conducted in cooperation with the North Slope Borough and state and federal resource agencies. Studies have included review of the effectiveness of different road and pipeline designs in allowing free passage of caribou, different types of gravel ramps over pipelines, different pipeline heights, and different traffic patterns. Additional studies monitored caribou distribution and abundance, calving success, and seasonal movement patterns throughout the region (including the oilfields). These studies also included a review of caribou attraction to gravel pads during the insect season and access to coastal areas for insect relief. Annual reports of the results of these studies are distributed and used to improve the design for new oilfield developments.

On several occasions, caribou biologists from resource agencies, the University of Alaska, North Slope Borough, the oil industry, and expert caribou consultants have gathered with industry design engineers and reviewed data from scientific studies. These meetings were held to ensure that correct interpretations of study results were being incorporated in new engineering designs so the best mitigation (measures to reduce impacts) was being used in the development of new oilfields.

This long-term commitment by ConocoPhillips to caribou protection has led to positive results, as measured by continued herd growth and continued movement of caribou through the Kuparuk and Prudhoe Bay oilfield region. ConocoPhillips remains committed to this effort. As new oilfields are discovered and brought on line, our scientists and engineers work in full partnership with resource agencies to ensure the best



Of the four caribou herds in northern Alaska, only one has shown a population decrease in the past 30 years.

knowledge and mitigation measures are incorporated into the facility designs for developing these areas.

## Displacement of Caribou at Kuparuk

Concerns about displacement of caribou can be grouped into two categories: displacement of cows and calves during the calving period (May-June) and displacement of movements during the period of insect harassment after calving (July-August). At other times of the year, large numbers of caribou are not present in the vicinity of North Slope oilfields.



*Limiting traffic on facility roads during calving time reduces caribou displacement.*

The Kuparuk and Milne Point oilfields began producing oil in 1981 and 1985, respectively, and data on caribou from before and after development are available for both fields. These data indicate that during the calving period, cows with newborn calves may be displaced 0.5 to 2.5 miles from roads with even low levels of traffic. This distribution effect lasts for about two to three weeks and is seen primarily in cows with new calves. After calves are older than three weeks, the displacement effect weakens, and distribution and movements begin to be affected by insect harassment.

Over the past decade, the highest densities of calving caribou have shifted to the south of the Kuparuk oilfield. The idea that calving caribou avoid roads with traffic is widely accepted; however, apparent larger shifts in the distribution of calving caribou may not be from oilfield development. Instead, some caribou scientists believe shifts may be a result of a range expansion related to increased herd size or other factors.

After calving, caribou movement is primarily influenced by the availability of preferred foods and the need to avoid mosquitoes and oestrid flies. Telemetry studies show that caribou move coastward, where cool winds tend to blow more frequently, to avoid insects during warm, still days. More than 20 studies have examined the effects of pipelines, roads, and traffic on these movements. These studies show that, with proper design of pipelines elevated at least five feet above the tundra and separated from adjacent roads by at least 500 feet, seasonal caribou movements are not significantly affected. Caribou still occur throughout the summer season in the Kuparuk area in numbers similar to or greater than those recorded before the oilfield was fully developed.

## The Meltwater Project

ConocoPhillips has completed construction and startup of a new oilfield located about 10 miles southwest of the Kuparuk oilfield. This area is at the western edge of a consistently productive calving area for the Central Arctic Herd. To reduce the impacts on caribou by this development, which consists of one drill pad and an access road, ConocoPhillips worked with resource agencies and caribou biologists from the Alaska Department of Fish and Game and the North Slope Borough to incorporate special mitigation features into the project design and operation. Construction and some operations were curtailed or stopped during and after the calving period, pipelines were raised to a minimum of seven feet above the tundra, and traffic was limited and con-



*Caribou travel under pipelines that are at least 5 feet above tundra.*



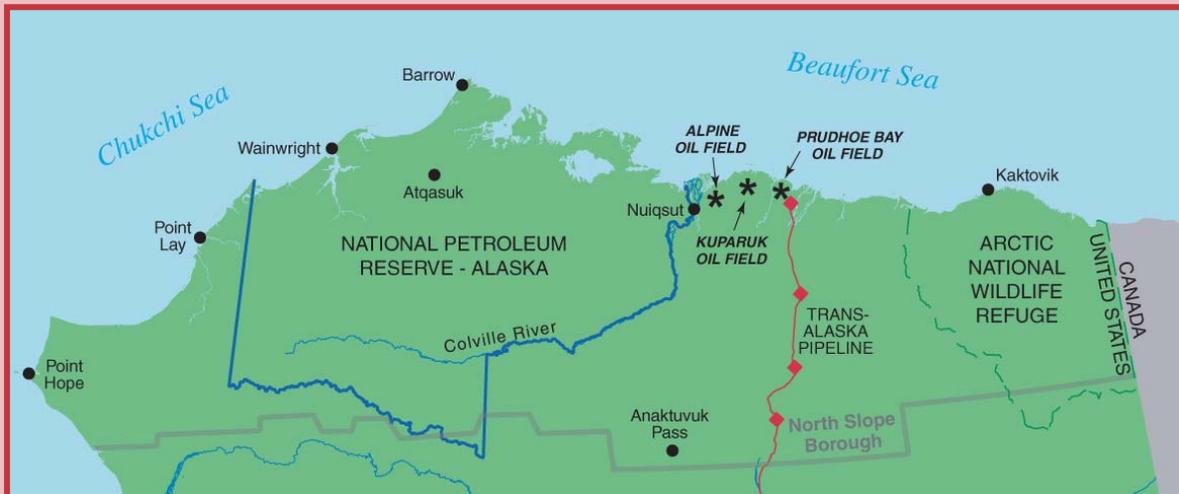
Caribou grazing and resting in a North Slope oilfield.

voyed during the calving season. In addition, a three-year monitoring study was conducted in cooperation with the Alaska Department of Fish and Game to investigate the effectiveness of these mitigation features at reducing project impacts on caribou distribution and movements.

Additional caribou research includes a study started by the Alaska Department of Fish and Game, with cooperation from ConocoPhillips, to investigate how exposure to varying levels of anthropogenic (human-caused) disturbance in caribou calving and summer ranges affect production, growth, survival, and movements of caribou calves. As part of this study, 26 adult caribou cows were captured and equipped with global positioning system

(GPS) collars in March 2003, and 26 more cows were captured and collared during March 2004. GPS collars will determine the animal's location at intervals of 5 hours during May-October and every 2 days during November-April. Location data will be stored in the collars and relayed via the Argos satellite system.

The study area encompasses the range of the Central Arctic Herd, extending from the Chandalar River drainage in the southern Brooks Range north to the Arctic Coast. Since caribou herds in the Arctic fluctuate in size, the current growth trend in the Central Arctic Herd will likely not continue indefinitely. When the herd does begin to decline, questions will be raised regarding the importance of anthropogenic versus density-dependent or environmental effects. The objective of this study is to determine the importance of these factors to fluctuations in North Slope caribou populations.



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