

CALVING DISTRIBUTION OF THE
CENTRAL ARCTIC CARIBOU HERD, 1981

Preliminary Report

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BACKGROUND

The calving grounds of the Central Arctic Caribou Herd (CAH) lie on the Arctic coastal plain near Prudhoe Bay. Use of this area for calving was suggested by studies in the late 1960's and early 1970's (Gavin 1973; Child 1973; White et al. 1975) and was documented by the Alaska Department of Fish and Game (ADF&G) in 1975 (Cameron and Whitten 1979a). Detailed surveys of the calving grounds were begun by ADF&G in 1978. Initial emphasis was on calving distribution in relation to the active Prudhoe Bay oilfield and the developing Kuparuk oilfield, with less complete coverage of the relatively undisturbed area extending eastward to Bullen Point (Cameron and Whitten 1979b, 1980). The area of intensive research was expanded slightly in 1980 but still did not encompass the entire calving grounds of the CAH (Cameron et al. 1981). The purpose of the current research is to determine the boundaries of the CAH calving grounds and to assess use of various areas within those boundaries in relation to natural phenomena (e.g., terrain and weather) and to industrial activity.

METHODS

Calving ground surveys were conducted between 11 and 14 June; virtually all calves are born during the 7-10 days prior to this period. Observations were made during the same period in previous studies (Cameron and Whitten 1979b, 1980; Cameron et al. 1981). Distribution of calving caribou on the coastal plain was determined by flying a series of north-south transects, each extending 40 km inland from the coast.

Primary transects were at 9.7 km (6 mi) intervals from the National Petroleum Reserve-Alaska (NPRA) boundary on the west to Camden Bay on the east (Fig. 1). Additional transects were flown at 3.2 km (2 mi) intervals in the vicinity of the Kuparuk oilfield and at 4.8 km (3 mi) intervals through the Prudhoe Bay oilfield (see Fig. 2). Transect numbers and locations corresponded to those used in previous calving ground surveys (Cameron and Whitten 1979b, 1980; Cameron et al. 1981), except that new flight lines were added to both the east and west in 1981.

All transects were flown by Bell 206-B helicopter with the pilot and front-seat observer searching primarily in the direction of flight and two rear-seat observers searching to either side of the aircraft. For navigation and for marking locations of caribou groups, 1:63,360 USGS maps were used; only groups within approximately 1.6 km (1 mi) of each transect were used in the transect data analysis, although more distant groups were often classified for additional information purposes. Airspeeds of 110-130 km/hr and altitudes of 30-50 m were maintained until a group of caribou was sighted. Composition was determined by making a lower and slower pass with the helicopter or by hovering briefly at a distance of 50-300 m and using binoculars to observe the group. Individuals were classified on the basis of genitalia, body size, and/or antler development as bulls, cows, calves, or yearlings.

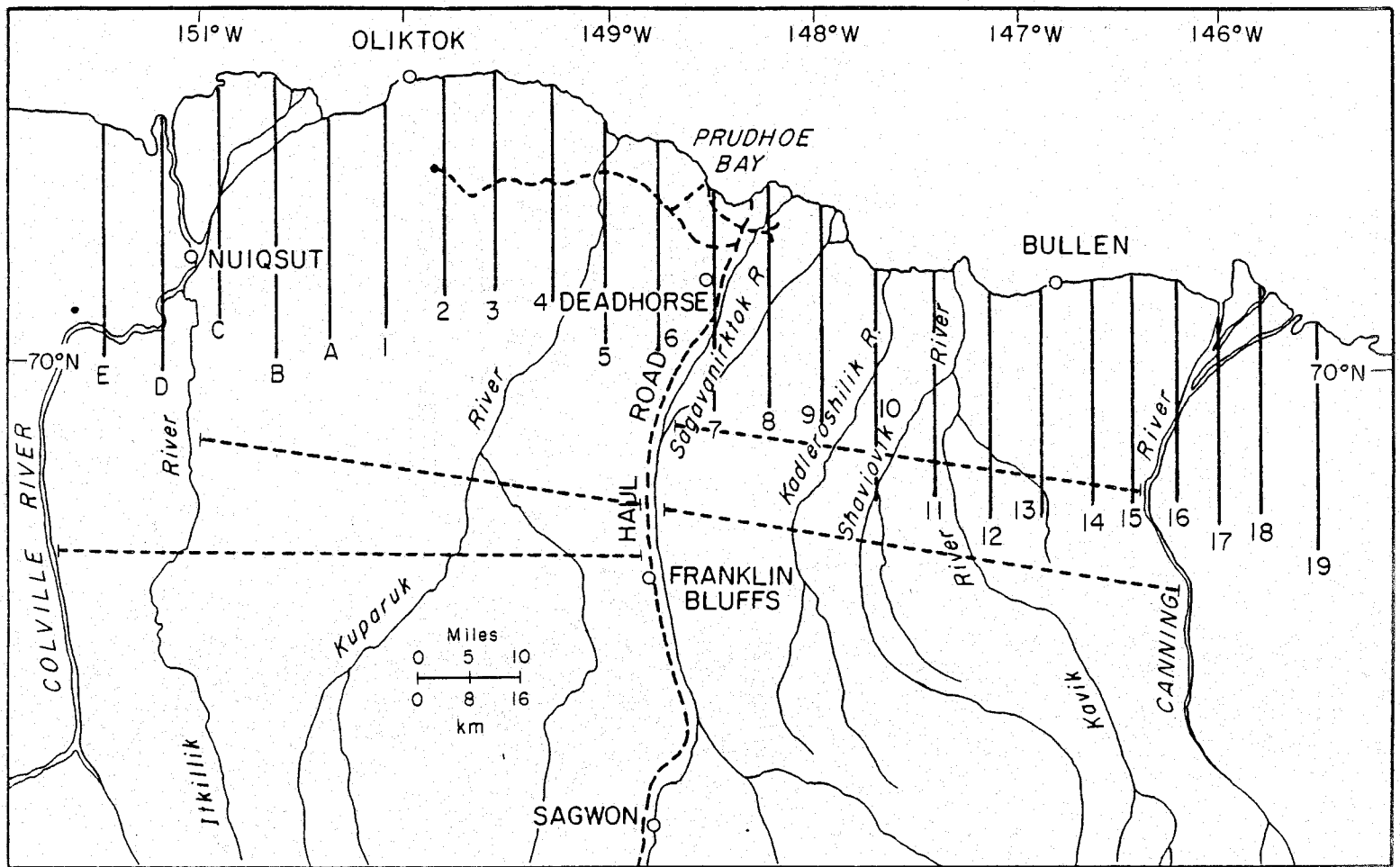


Fig. 1. Aerial survey transects flown within the calving grounds of the Central Arctic Herd.

— helicopter coverage; - - - fixed-wing coverage.

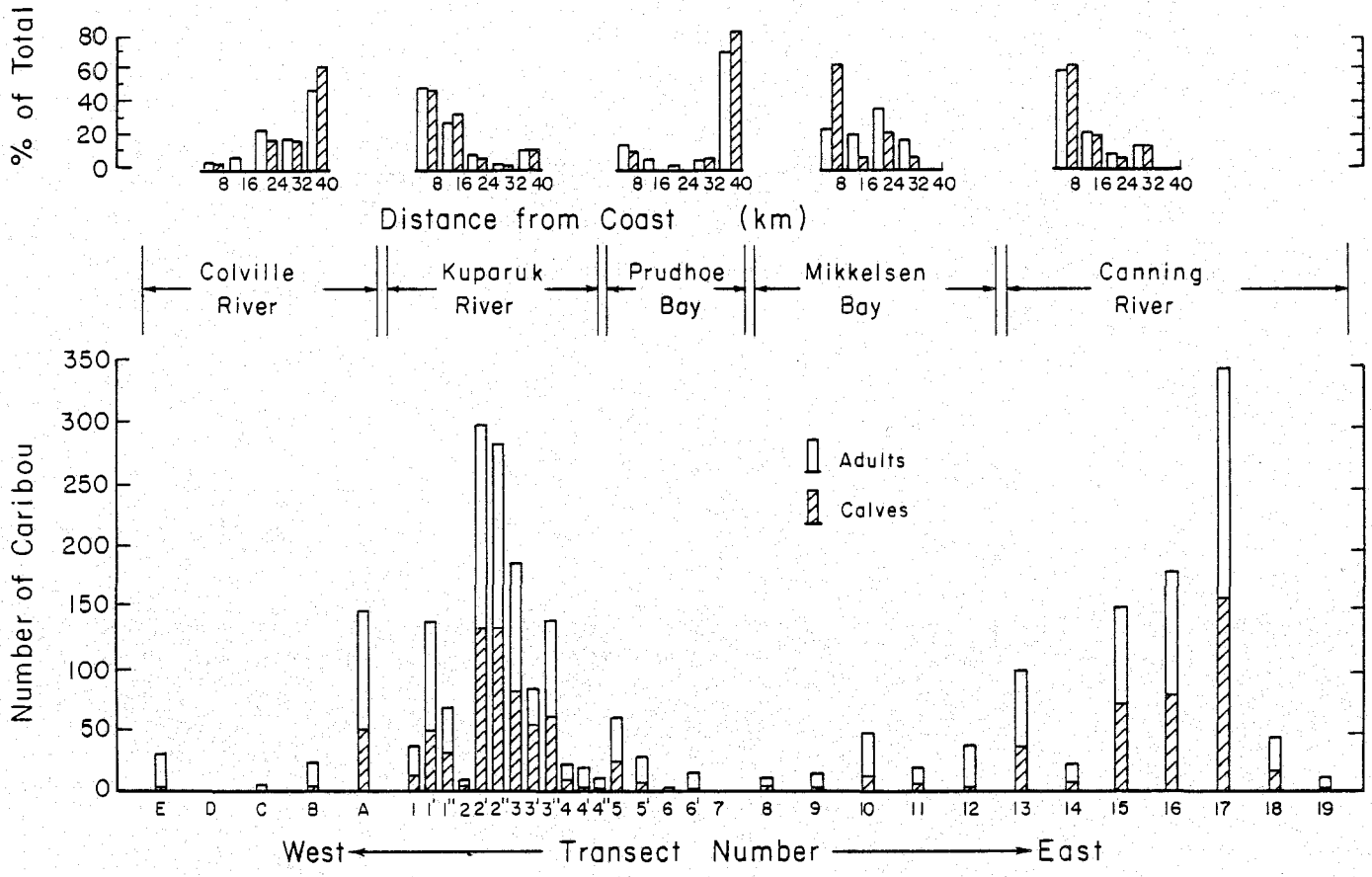


Fig. 2. Distribution of caribou on the Central Arctic Herd calving grounds.

The southern limit of the coastal calving area was estimated by flying east-west or southeast-northwest transects roughly along the southern edge of the north-south transects, as well as 15-20 km farther inland (Fig. 1). These transects were flown by fixed-wing aircraft. Locations of caribou were noted on 1:250,000 USGS maps; only group size and number of calves were recorded. When caribou were still in sight at the southern end of a transect, the helicopter crew continued southward until caribou numbers diminished. These off-transect data were also helpful in establishing the southern limits of calving.

RESULTS AND DISCUSSION

During 1981, observations indicated that virtually all CAH occurred within the area of coverage. Caribou numbers declined sharply at both the east and west limits of the transect coverage (Fig. 2). This low density apparently extended at least 40 km beyond the survey area to the edges of the Porcupine Herd and Teshekpuk Herd calving grounds on the east and west, respectively (D. Ross and P. Reynolds, pers. comm.). A total of 3,446 caribou (2,620 on transect) was classified. Initial productivity was very good, at 85 calves/100 cows.

There were two distinct centers of calving. One, in the vicinity of the Kuparuk oilfield, has been quantitatively described in previous studies; the other, in the Canning River Delta area, was observed during 1978 and 1979 surveys and was tentatively quantified in 1980 (Cameron and Whitten 1979b, 1980; Cameron et al. 1981). From observations made on primary transects, the Canning River area appears to support at least as many calving caribou as the Kuparuk area. This is consistent with counts of post-calving aggregations which have shown more caribou east of Prudhoe Bay and the haul road corridor than west of there (Cameron and Whitten, unpubl.).

Within the two high-density calving areas, caribou were concentrated near the coast. This pattern also characterized the relatively low-density calving area south of Mikkelsen Bay. However, low-density calving in the vicinity of Prudhoe Bay and the Colville Delta was distributed mainly inland from the coast (Fig. 2). The absence of calving near the coast at Prudhoe Bay has been interpreted previously as an avoidance reaction to industrial activity in the Prudhoe Bay oilfield (Cameron and Whitten 1979b, 1980; Cameron et al. 1981). Localized avoidance of road and camp areas in the Kuparuk region has been identified, but the area in general remains a major calving ground (Cameron and Whitten 1979b; Cameron et al. 1981).

The more inland dispersal of caribou around the Colville Delta (Fig. 2) may reflect a lack of use of the flooded and sparsely vegetated delta. It is also possible that because of the proximity of foothill areas to the coastline near the Colville River the transects intercepted an isolated pod of caribou distinct from the main coastal calving concentration. Transects through the Colville Delta area revealed very low caribou numbers, except for Transect A (Figs. 1, 2); a fairly large concentration of calving caribou was observed at the southern end of that transect in a well-drained, hilly area south of the coastal plain.

A similar inland calving concentration was observed near Franklin Bluffs. Each of these areas supported about 200 caribou. Isolated calving concentrations may have been present elsewhere as well, although the fixed-wing surveys indicated that very little calving occurred more than 40 km inland. The flight-lines closest to the southern end of the north-south transects intercepted 13 caribou groups, including 61 adults and 13 calves; more southerly flight-lines located only 9 groups with 33 adults and no calves.

Weather patterns over the past 4 years have affected calving distribution. When weather conditions have been mild, the coastal plain has been the preferred calving area for the CAH. Such was the case in 1981, when snow had melted by 1 June, and the calving grounds were snow-free and well-drained. Conditions were similar in 1979, as was the pattern of caribou distribution (Cameron and Whitten 1980). Conversely, during years of adverse weather conditions, at least part of the CAH did not use the preferred coastal calving areas. Instead, hilly inland sites, such as Franklin Bluffs and the area south of Transect A, which were only lightly used in dry years, became primary calving areas. Thus, in 1978 and 1980, when there was still significant snow/ice cover and extensive flooding during calving surveys, relatively few caribou used the coastal plain (Cameron and Whitten 1978b; Cameron et al. 1981). In all years, however, relative distribution of caribou utilizing the coastal calving areas has been similar; that is, caribou have been most numerous in the Kuparuk and Canning River areas, and calving has been concentrated near the coast, except in the Prudhoe area (Cameron et al. 1981).

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LITERATURE CITED

- Cameron, R. D. and K. R. Whitten. 1979a. Seasonal movements and sexual segregation of caribou determined by aerial survey. *J. Wildl. Manage.* 43:626-633.
- _____ and _____. 1979b. Distribution and movements of caribou in relation to the Kuparuk Development Area. First Interim Rept. to ARCO, EXXON, and SOHIO. Alaska Dept. Fish and Game, Fairbanks. 32pp.
- _____ and _____. 1980. Distribution and movements of caribou in relation to the Kuparuk Development Area. Second Interim Rept. to ARCO, EXXON, and SOHIO. Alaska Dept. Fish and Game, Fairbanks. 34pp.

_____, _____, and W. T. Smith. 1981. Distribution and movements of caribou in relation to the Kuparuk Development Area. Third Interim Rept. to ARCO, EXXON, and SOHIO. Alaska Dept. Fish and Game, Fairbanks. In press.

Child, K. N. 1973. The reactions of barren-ground caribou (Rangifer tarandus granti) to simulated pipeline and pipeline crossing structures at Prudhoe Bay, Alaska. Compl. Rept., Alaska Coop. Wildl. Rest. Unit, Univ. of Alaska, Fairbanks.

Gavin, A. 1973. 1972 wildlife survey, Prudhoe Bay area of Alaska. Rept. publ. by Atlantic-Richfield Co.

White, R. G., B. R. Thomson, T. Skogland, S. J. Person, D. E. Russell, D. F. Holleman, and J. R. Luick. 1975. Ecology of caribou at Prudhoe Bay, Alaska. In Ecological investigations of the tundra biome in the Prudhoe Bay region, Alaska. Biol. Pap., Univ. of Alaska, Fairbanks, Spec. Rept. No. 2.