Summer Use of a Highway Crossing by Mountain Caribou

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Johnson, Donald R. and Michael C. Todd. 1977. Summer use of a highway crossing by mountain caribou. Canadian Field-Naturalist 91(3): 312–314.

Abstract. Caribou use of a highway crossing point near Kootenay Pass, British Columbia was monitored with a time-lapse camera during the summer months when highway traffic was heaviest. Caribou approached the crossing on at least 11 occasions throughout the daylight hours, including times of peak traffic flow. The number of approaches declined as the season progressed. Additional approaches undoubtedly occurred during the daylight hours, but these were not recorded by the camera, and during periods of darkness when the camera was inoperative. We conclude that mountain caribou have become habituated to the presence of the highway and road traffic and that they continue to use a traditional movement route despite man-caused harassment and mortality.

Although caribou reaction to newly-placed movement barriers has received recent attention (Miller et al. 1972; Child 1973), little information is available on the reaction of caribou to permanent, man-made obstacles such as a heavily used highway. Klein (1971) briefly mentioned that wild reindeer terminated use of a range area a few years after construction of a main highway and railroad in Norway. Bergerud (1974) has discussed the reaction of caribou to visual, auditory, and olfactory stimuli including man-caused disturbances.

Mountain caribou, *Rangifer tarandus montanus*, have moved across heavily-traveled British Columbia Highway 3 near Kootenay Pass since the highway was completed in 1963. Most caribou have been observed crossing the highway at three locations both east and west of the summit (Freddy 1974, p. 40). Considering topographic features, it is likely that these crossings represent sites at which the highway intercepts traditional movement routes.

Methods

We monitored caribou approaches to one of these crossing points (North Fork of Summit Creek, 4 km east of Kootenay Pass) from 18 June through 23 August 1976 using a time-lapse movie camera in order to determine (1) the number and composition of caribou using the crossing, (2) the time of day the approaches occurred, (3) the pattern and frequency of approaches in relation to traffic flow, and (4) the reaction of caribou to the presence of motorists on the highway.

A Minolta D-6 Super 8-mm movie camera housed in a protective cover was mounted on a tree 5 m above the ground so that it monitored about 0.5 km of highway. The camera was powered by a 6-V rechargeable battery and fitted with instrumentation to regulate automatically exposure rate (Four Seasons Services, Laramie, Wyoming). A light sensor limited the camera operation to daylight hours. Through use of an exposure rate of 1 frame/minute, 800–1000 frames were exposed daily, depending on day length and cloud cover at dusk and dawn. At this exposure rate, a 3600-frame cartridge of color film (50 ft) was expended in 3.6 to 4.5 days. Because of logistical problems, we chose to monitor the site at weekly intervals rather than continuously. But monitoring occurred during some weekends when traffic was heaviest as well as during weekdays.

Exposed film was examined in a viewer and the presence of caribou and traffic on each frame was recorded. Slow-moving or stopped vehicles were recorded more than once since they represented a continuous disturbance at the site. The time of each approach and its duration were calculated from the time exposure commenced and the exposure rate.

Results and Discussion

During more than 570 h of camera operation, the occurrence of caribou at the crossing was confirmed on 11 occasions (Table 1). In 10 instances these represented either one or two animals; some of these could be identified as bulls, based on body and antler size. The cow-calf band, which has remained in the Summit or Carolina Creek basins during recent summers, was photographed at the crossing on 30 July.

Because of the possibility of repeat approaches by the same individuals, it is difficult to estimate the total number of caribou photographed at the site. Based on body size and the presence or absence of antlers, a minimum of 12 different animals was photographed (two large bulls, seven cows and subadults, three calves). Since the total number of caribou in the West Kootenay band is estimated at 25–30 animals (Johnson 1976), perhaps one half of these were photographed at this traditional crossing during the monitoring period.

Caribou approaches to the crossing occurred throughout the daylight hours (0618–1940 hours),

TABLE 1—Time of day, number and composition of caribou photographed on Highway 3. Only if animals were in certain positions could we see and record whether they were antlered or antlerless

Date	Time	Number and composition
19 June	1140–1142	1 antlered bull
20 June	1158–1621	2 antlered bulls
	1808–1940	2 subadults
25 June	1545	2 subadults
	1746	1 subadult
26 June	0618	1 subadult
	0657–0658	1 subadult
12 July	1248–1252	2 subadults
25 July	1052	1 antlerless cow; 1 calf
30 July	1007–1029	7 adults and subadults; 3 calves
21 August	1806	2 adults, anterless

including times of peak traffic flow (Figure 1). Caribou usually appeared only briefly within camera view. On 20 June, however, four caribou appeared in 27 frames over a 2-h period (Table 1). On several occasions caribou were photographed while they were licking at the surface of the highway, perhaps at oil spots. Loggers have reported that caribou licked grease fittings on their machinery parked overnight (Layser 1974).

There was a progressive increase in traffic throughout the summer. If we ignore days when stalled vehicles inflated the total, 29% of the frames exposed in June contained at least one motor vehicle; 36% of those exposed in July and 39% of those exposed in August contained at least one vehicle. There was a progressive decrease in the number of frames containing caribou during the same period. In June, caribou were found in 34 frames during four days; in July they occurred in eight frames during three days; and in August their presence was detected in only a single frame. We believe that this decrease in the use of the crossing by caribou was not related to increased traffic flow since caribou were not deterred from the crossing at times of peak traffic flow (Figure 1). It is more likely that caribou moved to higher elevations as the summer progressed and ground forage became available after snow melt.

Motorists frequently stopped at the crossing because of car trouble, to pick berries, or to view caribou. On several occasions the camera recorded vehicles stopped along the highway and a number of people standing on the shoulder of the road. Caribou were often photographed soon after the motorists moved on. The presence of several stopped vehicles indicated that caribou probably were present along the highway on 27 July and 10 August but no animals were photographed on these days. The limitations of a single camera with a 1-min exposure rate are obvious. We have also confirmed the use of the crossing at night although we do not know if the frequency of use differs between daylight and darkness.

Our direct observation of caribou behavior at the crossing during the summer months indicated that

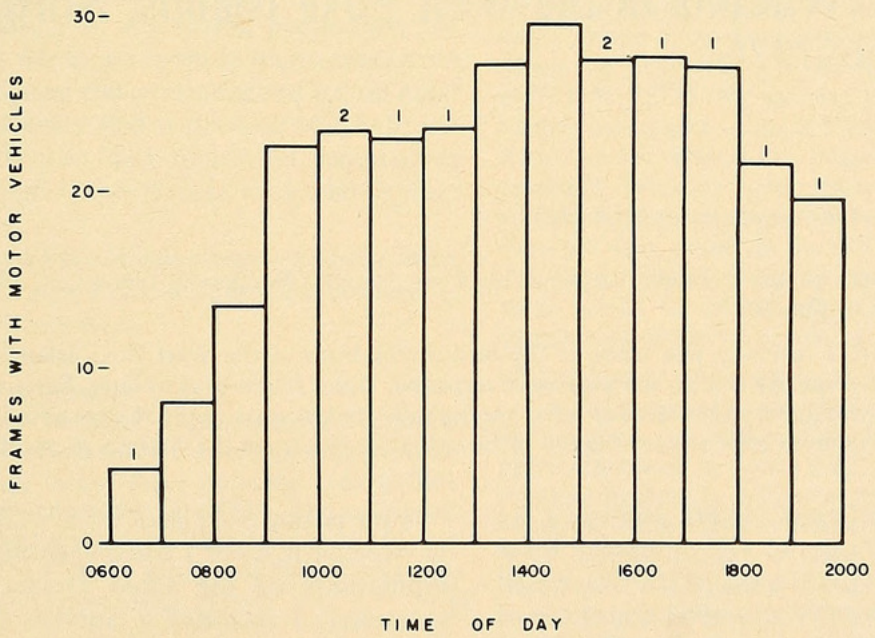

FIGURE 1. Caribou approaches (singly or in groups) to the North Fork Highway Crossing in relation to traffic flow. Numbers indicate approaches within time intervals.

some animals approach the highway with caution and seek cover in the nearby timber if motorists stop to view them. Others remain alert but continue to feed beside the highway or move off slowly in response to the presence of motorists nearby. At least seven caribou have been killed in collisions with motor vehicles since the highway was opened, including a cow and calf in separate incidences at the North Fork Crossing in 1976. Caribou have been shot illegally along the highway (Freddy 1974). Despite this harassment and mortality they continue to cross the highway at what appears to be traditional locations.

Completion of British Columbia Highway 3 through the Kootenay Pass region has fostered the development of a utility corridor along its route including a natural gas pipeline and two power lines (Johnson 1976). Although restriction of these developments to a narrow corridor localizes their environmetal impact, the continued increase in the number of these hazards may eventually interrupt the normal north-south movement of caribou in this region. The impact of these developments on caribou movement needs further study.

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Changes in the Avifauna of the West Foxe Islands, Northwest Territories, 1956–1976

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F. G. Cooch. 1977. Changes in the avifauna of the West Foxe Islands, Northwest Territories, 1956–1976. Canadian Field-Naturalist 91(3): 314–317.

Abstract. During July 1976, a resurvey was made of the bird populations of the West Foxe Islands near Cape Dorset, Northwest Territories. Three species new to the area were recorded: Great Black-backed Gull, Eastern Kingbird, Yellow-rumped Warbler. Changes in numbers and status of other species since the last survey in 1956 were noted. Heavy snow during the winter of 1975–76 and delayed melt are considered to be causative factors in the changes in numbers of most species.

Macpherson and McLaren (1959) published an annotated list of the birds of the southern Foxe Peninsula, Baffin Island (64° 14′ N, 76° 13′ W), based on their observations of 1954 and 1955 and those of Cooch in 1955 and 1956 (Cooch, F. G. 1957. Birds observed in the vicinity of Cape Dorset, Baffin Island, in the summers of 1955 and 1956. Typed report, on file National Museum of Canada. 13 pp.).

In the period 8–19 July 1976, while on a resurvey of the Northern Eider (*Somateria mollissima borealis*) populations of the Cape Dorset Migratory Bird Sanctuary, I recorded a number of species new to Cape Dorset, as well as changes in population status of species noted previously. The West Foxe Islands (Figure 1), South Island in Andrew Gordon Bay, and Sakkiak Island near Cape Dorset, were set aside as a