Distribution of Large Mammals between the Sagavanirktok and Staines Rivers, Alaska, Summer 1995

Final Report

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Prepared for

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Environmental and Regulatory Affairs Department
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EXECUTIVE SUMMARY

As part of an assessment of wildlife resources in the area of the Badami oil development prospect, aerial surveys of large mammals were conducted during June and July 1995 between the Sagavanirktok and Staines rivers on the Arctic Coastal Plain, Alaska. On the 5-6 June calving period survey, 31 cows and six calves were observed. The limited calving in the study area may be due in part to extensive snow cover during the calving period. All calves observed were east of the Shaviovik River and less than 10 km from the coast. Fourteen adult muskoxen were observed 1 km southwest of the proposed Badami well site on 6 June. During the 10-11 July post-calving survey, a total of 2,836 caribou were observed. Bulls comprised 19 percent of the total; cows, 44 percent; calves, 27 percent; and yearlings, 10 percent. The majority of these caribou were located between the Shaviovik River and Bullen Point, from the coast up to 7 km inland. On the 19-20 July survey, eight caribou (one bull, five cows, and two unclassified individuals) were observed widely dispersed across the study area. In contrast to 1994, no brown bears or moose were observed on any survey in 1995.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

In spring 1994, BP Exploration (Alaska) Inc. (BPXA) initiated development plans for the Badami prospect which includes placement of a gravel drilling pad, gravel mine site, and an associated pipeline that will connect the site with existing oil transport systems to the west. Although there has been extensive research on wildlife in relation to both the Prudhoe Bay oil fields and the Arctic National Wildlife Refuge (ANWR), relatively few studies have concentrated on the area between the Sagavanirktok and Staines rivers, an area encompassing the proposed project. During 1993 and 1994 and again in 1995, LGL Alaska Research Associates, Inc., (LGL) conducted summer aerial reconnaissance surveys in and around the Badami development area. These efforts focused on caribou (*Rangifer tarandus*), muskoxen (*Ovibos moschatus*), and brown bear (*Ursus arctos*). This report provides a synopsis on the occurrence of large mammals near the proposed Badami project and results of the 1995 surveys.

Caribou

One caribou herd occurs near the Badami development area: the Central Arctic Herd (CAH). This herd has grown from 5,000 animals in 1979 (Cameron and Whitten 1980) to approximately 23,000 animals in 1992 (Cameron 1993), concurrent with expanding oil field development. The eastern segment of the CAH uses a broad area along the Arctic Coastal Plain between the Sagavanirktok and Hulahula rivers as summer range (Clough et al. 1987). During spring migration, CAH caribou move from the northern foothills of the Brooks Range to the coastal plain. In general, cows arrive on the coastal plain between late April and early June, while bulls do not arrive at the coast until post–calving in early July (Whitten and Cameron 1985, Jakimchuk et al. 1987).

There are several routes traveled by migrating CAH caribou in the spring. Gavin (1983) reported heavy use of the Itkillik, Ivishak, Kuparuk, and Sagavanirktok rivers as spring travel routes from 1969–1979. The Canning, Kadleroshilik, and Kavik rivers were used to a lesser degree, although level of use of each river system varied from year to year. Carruthers et al. (1984:106) characterized spring migration in 1982 and 1983 as occurring, "...along a broad east–west front rather than along restricted routes of movement." Despite the fact that they found no indication of large numbers of caribou traveling along specific routes in spring, researchers did observe some northward migration along the Anaktuvuk, Itkillik, and Atigun rivers during the same study (Carruthers et al. 1984). Carruthers et al. (1984) suggested that Gavin's reports of major migratory movements along rivers may have been due to the concentration of his survey

efforts along river channels. More recently, Elison et al. (1986) noted that CAH females wintering in the mountains and foothills of ANWR's 1002 area (i.e., members of the eastern segment of the CAH) use the Canning River as a migratory route to calving grounds on or near the Canning and Staines river deltas; some females also migrate north–northwest across the uplands south of Camden Bay.

Since studies of caribou in the central Arctic region began in 1969, considerable effort has been expended to document calving distributions on the coastal plain. Several general areas of "concentrated calving" have been reported over the years, but the distribution of calving caribou is annually variable. Two areas—between Oliktok Point and the Kuparuk River (Milne Point) and between Bullen Point and the Canning River (immediately east of the Badami development area)—have been used consistently by calving caribou of the CAH in most years since at least 1969 (Cameron and Whitten 1978, Gavin 1983, Lawhead and Curatolo 1984, Whitten and Cameron 1985, Cameron et al. 1989). Calving caribou of the CAH also have been found west of the Colville River and east of the Canning River (Carruthers and Jakimchuk 1986). Curatolo and Reges (1984) described the 1984 CAH calving distribution as low–density and relatively dispersed, especially in comparison with other herds.

In all years 1970–1977, Gavin (1978) reported observing more calves in the Bullen Point area than in the Milne Point area. In 1984, however, a larger proportion of CAH cows were observed calving in the Milne Point area than in the Bullen Point area, and nearly 50 percent of the cows calved outside the two concentration areas (Curatolo and Reges 1984). Sopuck and Jakimchuk (1986) reported that an average of 64 percent of cows and calves observed on transects during mid–June post–calving surveys in 1981–1985 were west of the Sagavanirktok River. In contrast, most cows apparently calved east of the Sagavanirktok River in 1986 in response to extensive snow cover on calving grounds west of the river. Calving caribou generally scatter throughout calving grounds in groups of less than ten animals (Bergerud 1978). In 1993 and 1994, little calving occurred in the Badami study area; however, greater concentrations of calving caribou were seen to the south of the current study area in 1993 (BPXA 1995).

The area between the Sagavanirktok River and the Hulahula River (which encompasses the Badami study area) is also used by the CAH during the post–calving period. Because of their value as insect–relief habitats, certain areas (e.g., the Beaufort Sea Coast, river deltas, river channels, wind–swept uplands and ridges) are used regularly by mosquito–harassed caribou during the post–calving period. During Gavin's surveys, for example, large groups were often observed near the Franklin Bluffs, on the deltas of the Kadleroshilik, Sagavanirktok, and

Shaviovik rivers, as well as along the Staines River (Gavin 1983). During post–calving surveys in 1981–1983, aggregations were observed on the Sagavanirktok River Delta and north of the Franklin Bluffs (Carruthers et al. 1984). Lawhead and Curatolo (1984) reported that large aggregations sought relief on or near deltas of the Kuparuk, Shaviovik, and Canning rivers during intense insect harassment, although caribou groups were observed along the coast within the entire Oliktok Point–Canning River zone.

Muskoxen

By the late 1800's, muskoxen were exterminated from the North Slope of Alaska and little is known about historic levels (Clough et al. 1987). Muskoxen were reintroduced into ANWR in 1969 and 1970, and the population has grown exponentially since 1974. The year–round range of muskoxen is primarily within ANWR, and the major calving areas occur within the 1002 area. However, mixed–sex herds are dispersing into new areas east of the Aichilik River on the eastern ANWR border (Clough et al. 1987) and west of the Canning River on the western ANWR border in the area encompassing the Badami study area (P. Reynolds, pers. comm.). Mixed-sex herds of muskoxen have been observed at least as far west as the Kuparuk River (R. Pollard, pers. observ.).

Muskoxen are non–migratory but move in response to seasonal changes in snow cover and vegetation. During summer and fall, they are found primarily in riparian habitats but move to adjacent uplands in winter and spring (Clough et al. 1987). Riparian habitats are also important travel routes and muskoxen feed on riparian vegetation year–round. Muskoxen distributions, from aerial surveys in 1993 and 1994, were concentrated along rivers in the study area (BPXA 1995).

Brown Bear

Little information exists on the distribution and abundance of brown bears in the project study area. Research on brown bears in northeastern Alaska has been concentrated primarily in ANWR (Clough et al. 1987) and, more recently, in the Prudhoe Bay oil field (Shideler, ADF&G, pers. comm.). Coastal areas in ANWR are used seasonally by brown bears. They move north from denning areas in the foothills in late May and are most abundant during June and July when caribou are on the coastal plain. In late July, they gradually move south to the foothills after caribou have migrated south (Clough et al. 1987). Riparian areas are used as travel routes and contain abundant prey and preferred vegetation. During aerial surveys conducted in June through early September 1993, no bears were sighted in the study area (BPXA 1995). Brown bears were observed on two July surveys conducted in 1994 (BPXA 1995).

STUDY AREA AND METHODS

The current study area extends from Heald Point on the west to the Staines River on the east, and from the Beaufort Sea inland to 70° 05' N latitude (Fig. 1, Map Pocket). Much of this area falls within the Arctic Coastal Plain physiographic province (Wahrhaftig 1965), characterized by flat, poorly-drained plains with many thaw lakes. Several river drainages exist in the study area, including the Sagavanirktok, Kadleroshilik, Shaviovik, and Staines rivers.

During summer 1995, we conducted three, strip–transect aerial surveys (Caughley 1977) from fixed–wing aircraft (Cessna 206 or 207) covering 100 percent of the study area. One survey was conducted during the caribou calving period on 5-6 June, and two surveys were conducted during the post–calving period on 10-11 and 19-20 July. Transect centerlines were spaced at 1.6 km intervals, oriented north–south, and centered on township and section lines mapped on 1:63,360–scale U.S. Geological Survey (USGS) topographic maps. Surveys were conducted at a flying height of 90 m above ground level and at 115 km/hr airspeed. Two observers recorded data during surveys; each observer was responsible for searching an 800 m wide swath on one side of the transect centerline.

During each survey, we recorded species, number, sex/age composition (i.e., for caribou: bulls, cows, calves, yearlings, and unclassified adults; for muskoxen: adults and calves; for brown bears: adults, yearlings, and females with cubs), and location of observation. When a large group of caribou was encountered, the survey aircraft left the transect and circled the group to facilitate counting and classifying. Incidental observations of other large mammals were also made and recorded.

As with previous aerial surveys conducted by LGL in the Prudhoe Bay oil field (Pollard et al. 1992a,b; Pollard and Ballard 1993; Pollard and Noel 1994), a Global Positioning System (GPS) was used to navigate the aircraft during surveys and to facilitate accurate locations of animals sighted. After the field season, animal observation data was combined with basemap data in MapInfo®. Spatial data was used to produce maps of large mammal distributions observed during each survey.

RESULTS AND DISCUSSION

On the 5-6 June survey, a total of 37 caribou (31 cows and six calves) were observed widely scattered across the study area (Table 1, Fig. 1). All cow/calf pairs observed were located east of the Shaviovik River less than 10 km from the coast. Snow cover was 50-70 percent between the Sagavanirktok River and Bullen Point and about 80 percent between Bullen Point

and the Staines River. Much of the variability in caribou distributions during calving has been attributed to variations in snow cover and flooding during that season (Whitten and Cameron 1985). In seasons of deep snow and/or extensive flooding on the coastal plain, concentrations of CAH caribou have tended to calve inland near drier upland sites. Deep snow in the foothills of the Brooks Range also may delay migration and cause cows to have their calves further inland (Gavin 1983). Thus, the relative lack of calving caribou in our study area during 1995 may be due, in part, to snow and flood conditions that existed during calving period surveys. Similar conditions existed in 1994 and, again, few caribou calved in the study area considering that the most recent photocensus (1992) of the CAH estimated that 8,602 animals were in the eastern segment of the herd (Valkenburg 1993). Additional sightings on 6 June included fourteen adult muskoxen that were observed approximately 1 km southwest of the proposed Badami well site (Table 2, Fig. 1).

Table 1. Numbers and sex/age composition of caribou observed in the study area during aerial surveys conducted in June and July 1995.

		Number of Caribou					
Survey	Date	Bulls	Cows	Calves	Yearlings	Unclass.	Total
1	5-6 Jun	0	31	6	0	0	37
2	10-11 Jul	527	1235	774	296	4	2836
3	19-20 Jul	1	5	0	0	2	8

Table 2. Number of muskoxen adults and calves observed in the study area during aerial surveys conducted in June and July 1995.

		Number of Muskoxen		
Survey	Date	Adults	Calves	Total
1	5-6 Jun	14	0	0
2	10-11 Jul	0	0	0
3	19-20 Jul	0	0	0

A total of 2,836 caribou in 32 groups (527 bulls, 1,235 cows, 774 calves, 296 yearlings, and four unclassified adults) were observed on the 10-11 July survey (Table 1). Most groups were cow/calf-dominated, and group size ranged from one to 395; mean group size was 88.6. Seventy-five percent of all caribou, including 70 percent of all calves observed, were located

between the Shaviovik River and Bullen Point, from the coast up to 7 km inland (Fig. 1). Two large cow/calf groups were located on the Sagavanirktok River, approximately 10 km south of the proposed pipeline route (Fig. 1). No muskoxen were observed during this survey (Table 2). The total number of caribou observed (2,836) on the 10-11 July 1995 survey was similar to the number of caribou (3,316) observed on the 5-6 July survey conducted in 1994. During both surveys, the majority of caribou were distributed east of the Shaviovik River.

On the 19-20 July survey, eight caribou (one bull, five cows, and two unclassified animals) were observed in the study area (Table 1). These caribou were widely dispersed across the study area, from the Sagavanirktok River delta to about 15 km west of the Staines River (Fig. 1). Two wolverines were observed feeding on a caribou calf carcass approximately 9 km southeast of the proposed Badami well site. No muskoxen were observed during this survey (Table 2). Relatively low numbers of caribou (476 total) were also present in the study area during the 19-20 July survey in 1994 (BPXA 1995).

No moose or brown bears were observed in the study area during the three 1995 surveys, and muskoxen were observed only on the 5-6 June survey. In 1994, ten surveys were conducted and adult moose were seen on several surveys, and muskoxen were observed on all but one survey. Brown bears were observed in the study area on two surveys in 1994 (BPXA 1995).

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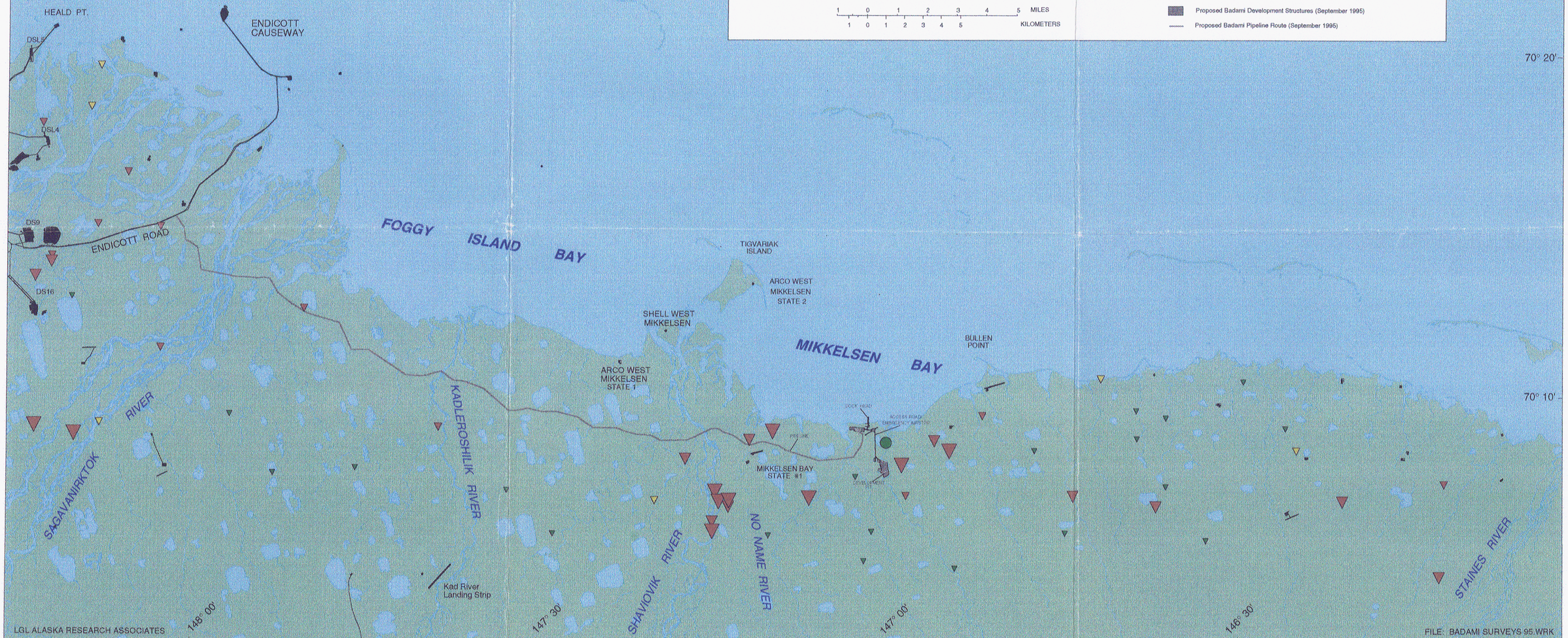
BP EXPLORATION (ALASKA) INC.

Locations of Large Mammals Observed During Aerial Surveys Conducted in the Badami Study Area

DATE: 9/20/95	SCALE: 1"=2.5 MILES	FIGURE: 1



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