Table 5-7: Estimated Number of Barren-ground Caribou in the Study Area, 1998 to 2000, 2008, and 2009

Year	Spring Migration/calving	Post-calving through Fall Migration and Rut	Early Winter
1998	136	16	0
1999	12	692	-
2000	15 704	-	292
2008	780	39 467	-
2009	27	-	-
Overall	16 659	40 175	292

Note: "-" indicates no survey conducted

The mean density of barren-ground caribou observed during aerial surveys ranged from zero to 13 caribou/km^2. The highest density was observed during the spring migration/calving survey in 2000 where barren-ground caribou were distributed throughout the study area. Although large groups were observed during the post-calving through fall migration and rut survey in 2009, the study area was much larger reducing the mean density of barren-ground caribou/km^2.

Dominant behaviour of barren-ground caribou was classified as standing, running, walking, bedded, feeding, or trotting. The dominant behaviour of barren-ground caribou groups observed was standing (Figure 5-10).

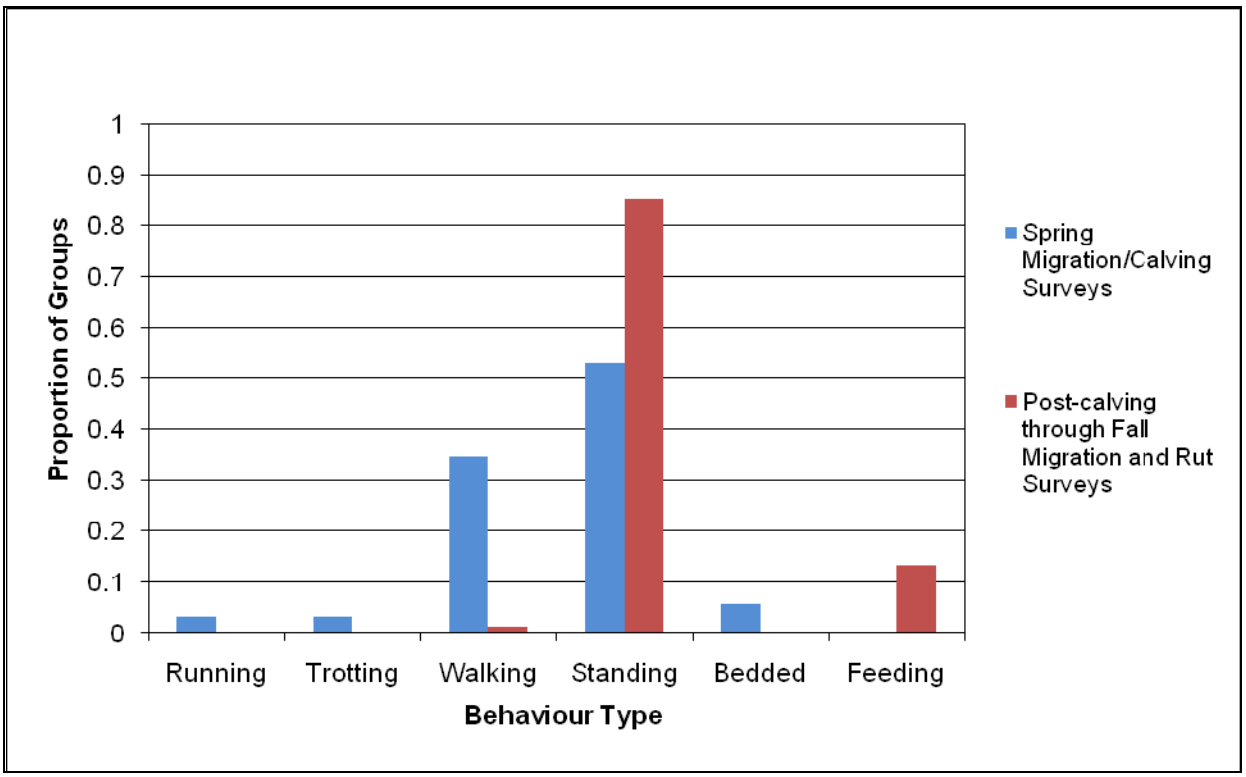


Figure 5-10: Proportion of Caribou Behaviour during Spring Migration/calving and Post-calving through Fall Migration and Rut Surveys

Habitat associations were recorded, and habitat was classified as heath tundra, sedge wetland, heath boulder, or esker. Barren-ground caribou were most frequently observed in heath tundra during the 2008 and 2009 surveys (Figure 5-11). Use of esker habitat was observed during the post-caving through fall migration and rut survey but not during the spring migration/calving surveys.

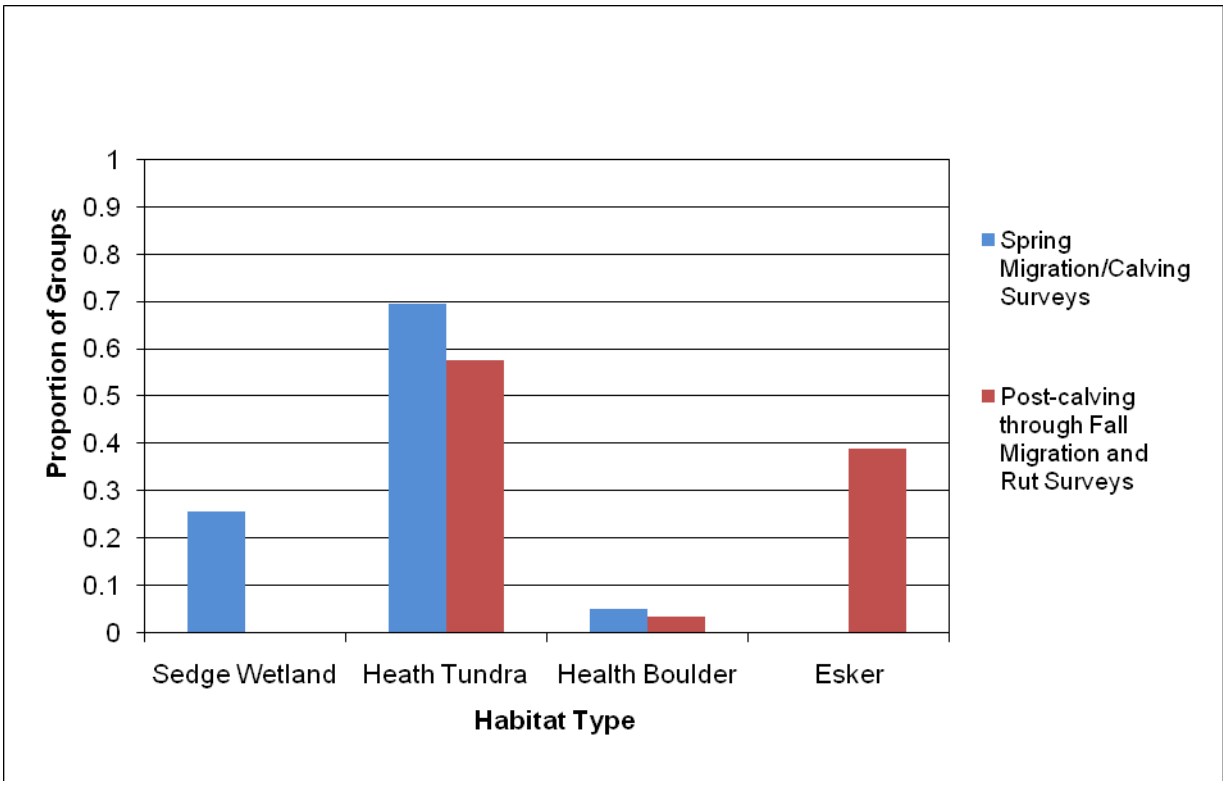


Figure 5-11: Proportion of Barren-ground Caribou Groups and Habitat Type Use during Spring Migration/calving and Post-calving through Fall Migration and Rut Surveys

5.3 Fox Dens

Arctic foxes are a common terrestrial carnivore species in the Project area (Jalkotzy 1999, 2000a, 2000b; Golder 2008), and dens have previously been identified in the study area (Hubert and Associates 2007; Golder 2008).

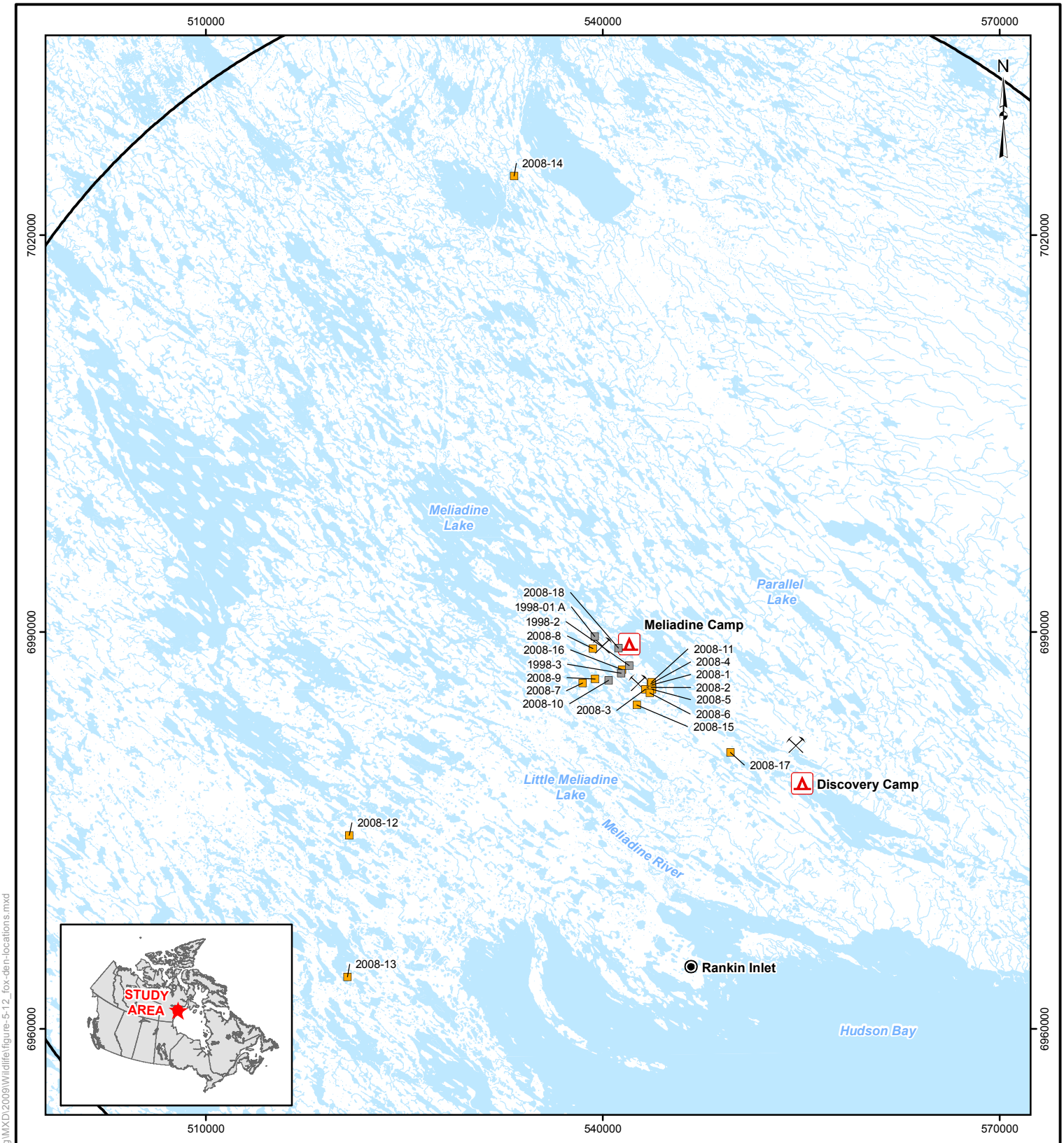
Arctic foxes are dependent on den sites for reproduction and generally use the same den throughout a breeding season, unless disturbed (Angerbjörn et al. 1997). Eberhardt et al. (1983) found that some adult and juvenile foxes have den fidelity in successive years. Dens are often large and well-defined structures that can be used for generations (Frafjord 2002). In tundra habitat, dens are generally large and conspicuous with lush vegetation, which makes them easily detectable (Smits et al. 1988). Dens could be inactive due to low prey concentrations in the area, disturbance, or instability of the burrow (Dalerum et al. 2002).

Four fox dens were located during the 1998 field season (Appendix B2; Figure 5-12). Three of the 4 dens (1998-01, 1998-02, 1998-04) were located on southerly aspects; the fourth (1998-03) was under a large boulder in flat terrain. All were in substrates that were easy to dig, such as sand or gravel. Den site 1998-01 was located at the base of a large esker. Water was within 250 m in all cases. All 4 dens appeared used during the summer of 1998

based on the presence of fresh scats, feathers, hair, and egg shells. At least 5 pups were raised at den site 1998-01 northwest of camp, and at least another 2 were raised at den site 1998-03 southwest of camp. Arctic foxes were frequently observed in the study area but additional surveys for active dens were not completed in 1999, 2000, or 2009.

In 2008, 21 fox den sites were observed in the study area (Figure 5-12). One report of an occupied den near a drill site in the vicinity of the mine was obtained from Project employees. No dens observed in June appeared to have pups but due to the limited amount of time spent on observations, it is possible that pups were present at some but not observed. No active dens (i.e., with pups) were recorded during the July aerial wildlife survey or were recorded by Project employees. The July survey of dens was conducted during the aerial wildlife survey, so some of these dens may have been used successfully to rear young, although no definitive evidence was observed from the air. Two dens noted as being active during the June surveys did not show evidence of activity in July.

Results and incidental observations from 1998 to 2000, 2008, and 2009 indicate that arctic fox were common within 10 km of camp and persistent scavengers around camp in some years (Jalkotzy 1999, 2000a, 2000b; Golder 2008). Specific observations are noted in Section 5.9 Incidental Observations. Although observations suggest that arctic foxes are common residents of the survey area, no conclusions can be made about population size and productivity.



LEGEND

- Camp
- Fox Den - Active
- Fox Den
- Proposed Mine Site
- Watercourse
- Terrestrial Regional Study Area
- Waterbody

REFERENCE

Base data obtained from NTDB. Wildlife data obtained from field survey.
Projection: UTM Zone 15 Datum: NAD 83

DRAFT

PROJECT

COMAPLEX MINERALS CORP

COMAPLEX MINERALS CORPORATION
MELIADINE GOLD PROJECT
NUNAVUT

TITLE

FOX DEN LOCATIONS

Golder Associates
Edmonton, Alberta

PROJECT NO. 09-1373-0010			PHASE No. 1000	
DESIGN	PS	23 Oct. 2009	SCALE AS SHOWN	REV. 0
GIS	JW	6 Nov. 2009		
CHECK	PS	13 Nov. 2009		
REVIEW	MJ	13 Nov. 2009		

FIGURE 5-12

N:\Bur-Graphics\Projects\2007\1373\07-1373-0055\Mapping\MXD\2009\Wildlife\figure-5-12_fox-den-locations.mxd

5.4 Raptors

Raptors have been identified as indicators of environmental change to assess the impact of human activities (Bildstein 2001). Population declines in nesting raptors can occur due to disturbance from human activity and development (Newton 1979). The selection of a breeding site in the spring is a sensitive stage of the raptor reproductive period. Effects of disturbance may become evident with reduced nest site occupancy (Fyfe and Oldendorff 1976). The Rankin Inlet area supports the highest density of breeding Peregrine Falcons in the arctic region (Ferguson 1987). Nesting occurs on cliffs surrounding the community, and has been the subject of long-term and intensive studies (Johnstone 1998; Court et al. 1988). The Peregrine Falcon and Short-eared Owl are listed as "Special Concern" by COSEWIC (2008) and SARA (2008), and are listed as "May be at Risk" and "Sensitive", respectively, by the Government of Nunavut (2000).

Between 1998 and 2000, and in 2008 and 2009, 37 nest sites were observed in the study area (Appendix B3, Figure 5-13). All nests belonged to one of the following 4 raptor species:

- Rough-legged Hawk (*Buteo lagopus*)
- Peregrine Falcon (*Falco peregrinus*)
- Gyrfalcon (*Falco rusticolus*)
- Short-eared Owl (*Asio flammeus*)

In 1998, Peregrine Falcons, Gyrfalcon, and Rough-legged Hawks and their sign were recorded within approximately a 10 km radius of the Project location (Table 5-8). Eyries or nests for all 3 species were identified. Nests or potential nesting areas identified by Project staff were also documented. Seven eyries that were occupied by Peregrine Falcons in 1998 or were occupied by Peregrine Falcons in previous years were documented (nests H98-01, H98-02, G98-01, G98-02, A98-02, A98-03, and A98-05; Figure 5-13; Appendix B3). One historic Gyrfalcon eyrie was identified by Project staff but was unoccupied in 1998 (nest A08-01). Another Gyrfalcon eyrie was identified by Project staff but was located farther than 10 km from the Project and therefore was not visited. Three Rough-legged Hawk nests were identified during barren-ground caribou aerial surveys in June and July or by Project staff (nests G98-03, J98-01, and J98-02; Figure 5-13; Appendix B3). These nests were not checked for productivity, as they were located farther than 10 km from the Project.

Table 5-8: Raptor Nest Sites Surveyed and Occupancy, 1998 to 2000, 2008, and 2009

Species	1998		1999		2000		2008		2009		Average Occupancy Rate per Species (%)
	# Nests Surveyed	# Nests Occupied	# Nests Surveyed	# Nests Occupied	# Nests Surveyed	# Nests Occupied	# Nests Surveyed	# Nests Occupied	# Nests Surveyed	# Nests Occupied	
Peregrine Falcon	7	3	3	3	3	1	3	3	1	1	65
Rough-legged Hawk	3	2	2	2	5	3	8	5	5	3	65
Gyrfalcon	1	0	0	0	1	0	0	0	0	0	0
Short-eared Owl	0	0	0	0	0	0	1	0	0	0	0
Unidentified Raptor	0	0	0	0	0	0	6	0	0	0	0
TOTAL	11	5	5	5	9	4	18	8	6	4	-
Occupancy Rate (%)	45		100		44		44		67		-

Note: % = percent; "-" indicates not applicable

In 1999, Peregrine Falcons were observed, likely nesting, and successfully raised fledglings about 2 km north of the Project across Meliadine Lake (Jalkotzy 2000a). Two Peregrine Falcon eyries were found by Project staff. One eyrie was located 25 km west of the Project (later named K99-01), whereas the other was 24 km northwest (later named M99-01) and fledglings were raised at both of these sites. No specific coordinates or locations were noted. Two Rough-legged Hawk nest sites were found in 1999. One was approximately 3.5 km north of the Project, situated on a large boulder (nest later named A08-01). This location fledged young. The second nest site was also located on a large boulder, located northwest of Peter Lake and contained young when surveyed in July (later named N99-01, unknown coordinates). Gyrfalcons were not observed during the 1999 field program.

During the summer of 2000, Peregrine Falcons and Rough-legged Hawks and their sign were observed. A Peregrine Falcon nest south of the Project (nest H98-01) was occupied in July; the eyries 3 km north of the Project were not occupied (nests A98-01, A98-02, and A98-03). Five Rough-legged Hawk nests were located in 2000. Three of these nests were occupied (nests J98-01, J98-02, and A08-01), and 2 were unoccupied (nests C00-01 and J00-01). Short-eared Owls were seen twice during surveys in July. Snowy Owls (*Bubo scandiacus*) were recorded twice in the wildlife log by Project staff. Nests for either species were not observed. Gyrfalcons were not observed during the 2000 field program.

In 2008, 3 raptor species were identified in the study area, including Short-eared Owl, Rough-legged Hawk, and Peregrine Falcon. Eight occupied nests were located within the study area based on the presence of at least one adult at the nest, 2 adults in close proximity to the nest, or presence of eggs or young. Most nests were found during the July survey and were located on cliffs along Meliadine Lake, north and east of the Project. Ten unoccupied nests were recorded within the study area. Two unoccupied nests had sign of species presence and were classified as occupied based on feathers and scat present in the area (nests E08-01 and C08-01). Four unoccupied nests were found within 200 m of occupied nests and were considered alternate nest sites within an occupied territory (Court et al. 1988) (nests A08-04A, A08-05A, D08-02, and F08-03). All occupied raptor nests belonged to Peregrine Falcons (3) or Rough-legged Hawks (5). Two unoccupied nests had sign of species presence. One nest located in the Discovery area was classified as an unoccupied Rough-legged Hawk nest (E08-01), and one nest located west of the Project was classified as an unoccupied Short-eared Owl nest (C08-01). One Short-eared Owl was observed during a waterfowl aerial survey in June, confirming species presence in the area. Other unoccupied nests were likely either Rough-legged Hawk or Peregrine Falcon nests, but confirmation could not be made without sign or adult presence.

Peregrine Falcons nested successfully at 3 sites in the Project area in 2008. One nest potentially contained young because an adult peregrine refused to leave the nest during a flyover; however, young were not observed. A second nest was considered successful because it contained 4 nestlings during the July survey. A third Peregrine Falcon nest was attended to by 2 adults and contained 3 eggs during the July survey. Due to the late presence of eggs in July, this nest may not have been successful. All 3 occupied Peregrine Falcon nests were located on cliffs.

Eight Rough-legged Hawk nests were located and 5 were considered occupied. One large stick nest was found on top of a large boulder, approximately 3 m above the ground, with 4 nestlings occupying it in July (A08-1). Five of 5 occupied nests produced 19 fledglings, for a productivity rate of 3.8 fledglings/nest. Five of 8 were located on cliffs.

Gyrfalcons were not observed in the study area during the 2008 field program.