

EFFECTS OF FOX CONTROL AT TUTAKOKE RIVER
1988 PROGRESS REPORT

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Arctic foxes (Alopex lagopus) are major predators of black brant (Branta bernicla nigricans) eggs on the Yukon-Kuskokwim Delta (YKD) (Sedinger 1985). In response to intensive predation in the early 1980's, the brant colony at the mouth of the Tutakoke River was the site of localized fox control in 1986 and 1987. This fox control resulted in the removal of large numbers of foxes from a relatively small area and a significant increase in brant nesting success (Flint and Anthony 1987). Control was continued in 1988 to continue to protect the brant colony from excessive predation on nests, to assess the ability to control foxes in localized areas, to further evaluate the effect of control on nesting success, and to gain further understanding of the sex and age structure of foxes using the outer coastal fringe of the YKD.

METHODS

Foxes were trapped with Woodstream 1 1/2 double coil "soft catch" traps between 3 May and 20 June. Between 3 May and 12 May traps were placed near observation towers and exposed driftwood, starting about 5 km north and extending 16 km south of the Tutakoke River (Sets 1-20, Figure 1). Sets were modified bait holes and scent post sets. Baits used were sardines, tuna fish, fish meal/lard, and tainted food scraps combined with a variety of commercial lures. Traps were covered with snow or grass depending on location and weather. Traps were checked daily by snowmachine.

Trapping from 13 May - 20 June, was conducted on foot in the core area of the colony. A line of traps was maintained along the beach ridge from about 2 km north to 4 km south of the Tutakoke River (Figure 1). Sets were bait holes and scent posts. Traps were covered with sifted dirt and grass.

Foxes were shot with .22-250 caliber rifles whenever observed in the study area. Incidental scans for animals were conducted while checking traps and during observation of birds from towers.

Standard measurements were made on each animal captured, including: weight, total length, tail length, hind foot length, ear notch depth, and neck circumference. Gastro-intestinal tracts, gonads, and skulls were removed from all animals. Gastro-intestinal tracts were preserved in isopropal alcohol. Testes were preserved in 10 percent, buffered formalin. Stage of molt and staining of pelage were also recorded.

The area was scanned for foxes between 2 May and 28 May from observation towers located in nesting areas (Figure 2). Observations were conducted daily with the aid of a 15-60X, zoom spotting scope. These watches were conducted between 2200 - 2400 hours when light conditions allowed the greatest visibility. Observations were also conducted after hatching, between 19 June and 15 July from towers located in brood rearing areas (Figure 2). These watches were conducted daily, usually 12-14 hours per day, covering most daylight hours.

Beginning on 19 May nest searches were conducted on 36 circular plots with 50-m radius. Nests were revisited weekly until hatch to determine nesting success and assess predation by foxes. Causes of nesting failure were noted as abandonment, avian predation, mammalian predation, or unknown.

RESULTS AND DISCUSSION

A total of four foxes, all males, were taken from the Tutakoke River study area (Table 1). No foxes were trapped; all were shot after being observed in the study area. A total of 29 traps were used at 28 sets, which resulted in 783 trap nights and 757 set nights. These are overestimates of effective trapping effort because snow, ice, and meltwater frequently made both individual traps and entire sets unavailable to foxes for variable periods of time.

The smaller number of foxes trapped in 1988 than in 1986 (30) or 1987 (18) may have been the result of several factors. Trapping was initiated later relative to break-up in 1988 than in 1987. Snow conditions in 1988 made traveling, and trap placement and concealment difficult. Patches of bare ground and the presence of birds before trapping probably reduced the effectiveness of bait. Further, extremely high populations of tundra voles (Microtus oeconomus) in areas of upland pingos may have caused foxes to use areas further inland.

The absence of marine mammal carcasses in the study area may also have been a factor influencing fox density. Aerial surveys produced three walrus carcasses south of the study area. Two of the four foxes taken were shot on the southern edge of the study area (Figure 1). Staining of one of these foxes indicated previous use of marine mammal carrion (Table 1). Limited staining of the remaining three animals indicated little or no use of mammal carcasses.

The collection of four lone males from the Tutakoke River area in 1988 is consistent with the hypothesis that unpaired and non-reproductive foxes are the predominant users of this area (Flint and Anthony 1988, Anthony and Youkey 1987).

Effects of Control - Black brant nesting success for 1988 was 79%. Fox predation was responsible for 8.5% of the nesting failures. Success in 1988 was slightly lower than in the previous two years of fox control (84% in 1987; 83% in 1986). However, little or no fox predation was documented during those years. A majority of the fox predation in 1988 occurred in low density nesting areas on the southern fringe of the colony.

The nearest available den sites to the colony showed signs of fox activity on 29 May (Den 1, Figure 2). Pups were moved into the den on the north bank of the Tutakoke River some time during late June (Den 2, Figure 2). The adults from this den were observed hunting in brood rearing areas on five occasions. Inspection of the den in late July produced many remains of brant, suggesting a heavy dependence on goslings at this time.

Fox trapping on the outer coastal fringe did not remove territorial animals as close as five miles inland. This may have been a result of the

high Microtus numbers inland directing fox activity away from the control area in early spring. However, it appears that the brant colony is too far from these den locations for predation from these animals to have a major effect during nesting.

Capture of Non-target Species-Non-target species captured included three glaucous gulls (Larus hyperboreus), two black turnstones (Arenaria melanocephala), two oldsquaw ducks (Clangula hyemalis), one parasitic jaeger (Stercorarius parasiticus), one black brant, and one short-tailed weasel (Mustella erminea). The increased number of birds captured was a result of continued trapping effort during nesting. Given that only two foxes have been trapped after nest initiation in three years of control, non-target captures could be reduced, without affecting the control effort, by cessation of trapping after nesting has started.

LITERATURE CITED

- Anthony, R.M., and D.E. Youkey. 1988. Effect of fox control on productivity of brant at Tutakoke River in 1987. Unpubl. Rep., U. S. Fish and Wildl. Serv. 15 pp.
- Flint, P.L. and R.M. Anthony. 1987. Effect of fox trapping on productivity of brant at Tutakoke River: annual report. Unpubl. Rep., U. S. Fish and Wildl. Serv. 33 pp.
- Sedinger, J.S., D.H. Ward, and D. Welsh. 1985. The status and biology of geese nesting at Tutakoke, 1985: a progress report. Unpubl. Rep., U. S. Fish and Wildl. Serv.

Table 1. Attributes of foxes captured in 1988 in the Tutakoke River study area.

ID.			Total	Tail	Hind Foot	Ear		
No.	Date	Sex	Length	Length	Length	Length	Weight	Staining*
			(mm)	(mm)	(mm)	(mm)	(g)	
01	2 May	M	825	312	123	60	2910	None
02	3 May	M	825	275	132	63	3690	F, C, L
03	5 May	M	880	315	135	64	3860	None
04	8 May	M	860	305	142	60	3725	None

* F = Face

C = Chest

L = Legs

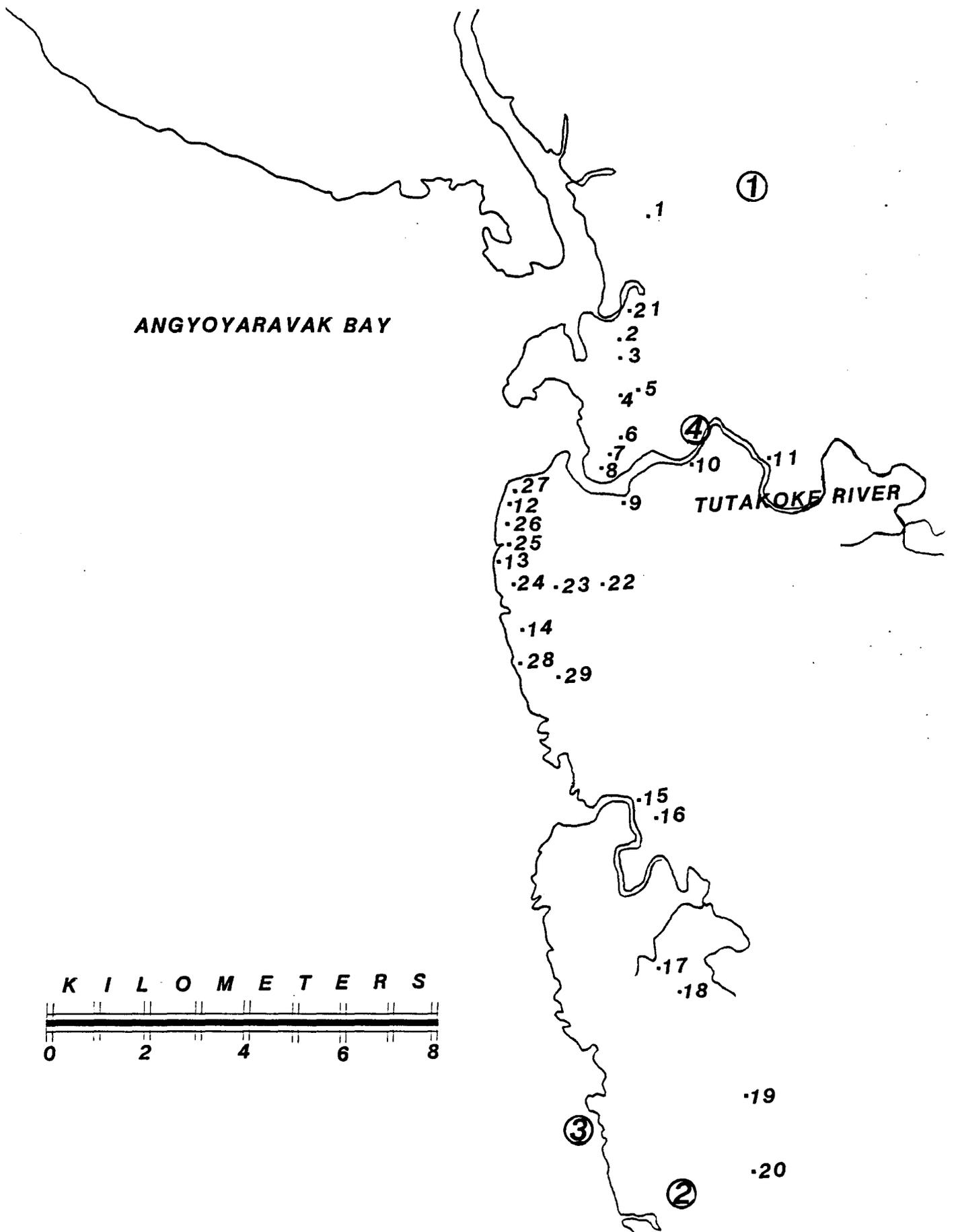


Figure 1. Locations of 29 trap sites (•) and 4 foxes (○) collected at the Tutakoke River study area in 1988.

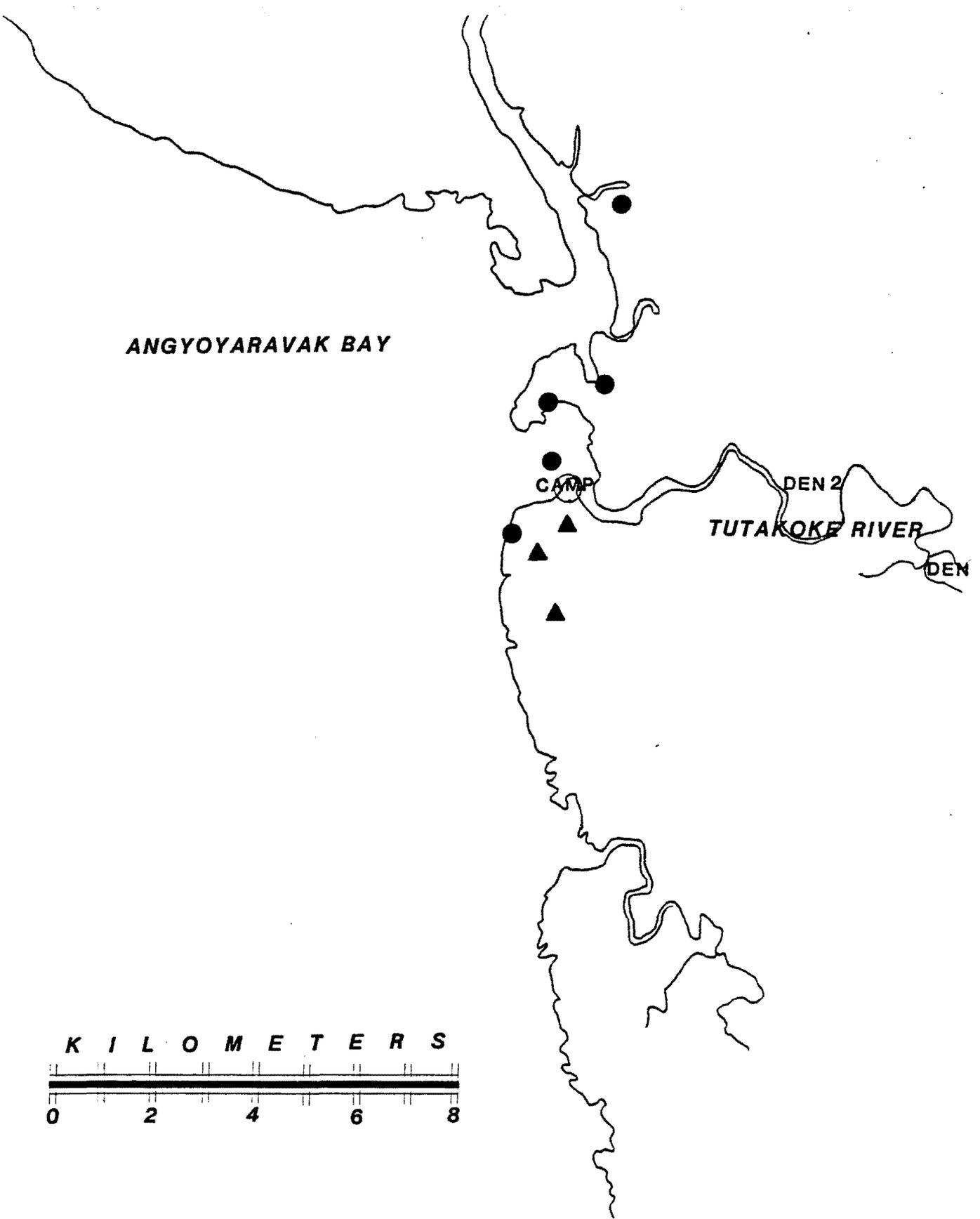


Figure 2. Locations of field camp, 2 fox dens, observation towers used during nesting (▲), and towers used during brood rearing (●) at Tutakoke River study area in 1988.