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POPULATION ECOLOGY OF WOLVES IN GATES OF THE ARCTIC NATIONAL PARK
AND PRESERVE, ALASKA-1987 PROGRESS REPORT

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NATURAL RESOURCES PROGRESS REPORT
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BACKGROUND

Gates of the Arctic National Park and Preserve (GAAR) was established in 1980 "to maintain the wild and undeveloped character of the area, ... and the natural environmental integrity and scenic beauty of the mountains, forelands, rivers, lakes and other natural features, ... and to protect habitat for and populations of fish and wildlife, including but not limited to caribou, grizzly bears, Dall sheep, moose, wolves, and raptorial birds" (ANILCA; Public Law 96-487, 1980; emphasis added). Wolves are an important component of the natural ecosystem within GAAR and an understanding of their population dynamics and ecology is necessary in order to intelligently address potential effects of man's activities on them.

The National Park Service (NPS) is responsible for maintaining natural and healthy wildlife populations and providing for subsistence uses of those populations within GAAR as well as other hunting and trapping within the Preserve Areas of GAAR. The Alaska Department of Fish and Game (ADF&G) is charged with the management of wildlife and their uses statewide. With these responsibilities, NPS and ADF&G have a mutual interest in the understanding of wolves in GAAR.

Management concerns regarding wolves in GAAR center on a lack of basic information. Wolves are being harvested in the Park by subsistence users and by both subsistence and other users in the Preserve of GAAR. Little documentation of the extent of such harvest is available. No information exists on the population size or structure to allow for assessment of the effects of such harvest. The locations of wolf pack territories, dens, and rendezvous sites are not well known, and therefore the effects of summer recreational activities on wolves cannot be assessed. It is important and timely to establish baseline information on wolves within GAAR for future comparisons. Such information will allow the comparison of GAAR wolves with other wolf populations that have been intensively studied to determine the applicability of those research results to GAAR wolves.

Although no large scale telemetry studies of wolves have been done in GAAR, the basic ecology of wolves is generally known, largely because of information contributed by local residents. During the early 1970's, Stephenson (1974) conducted research in the Anaktuvuk Pass area. Relying to a large extent on the knowledge of the Nunamiut Eskimos, he determined the location and characteristics of den sites, general wolf distribution and abundance, historical fluctuations in wolf density, and various details of wolf natural history. In 1982, an aerial population survey was conducted by ADF&G in the northern half of the Park and Preserve (ADF&G, unpublished data). In 1982 and 1985, several known den sites were visited during late summer; scats were collected for future evaluation of summer food habits.

The research project discussed in this report began in spring 1986 with the completion of a wolf track survey to estimate wolf abundance (Adams and Stephenson 1986). In addition, we collected harvest information and purchased carcasses in Anaktuvuk Pass during the 1985-86 winter.

OBJECTIVES

1. Estimate population size and distribution of wolves.
2. Determine present wolf harvest levels and characteristics (such as age and sex composition, method and season of take, etc.) in and adjacent to GAAR and evaluate the effects of harvest on the wolf population.
3. Determine pack sizes, litter sizes, mortality rates, causes of mortality and dispersal characteristics.
4. Determine pack territories, den sites, and rendezvous sites for several study packs.
5. Assess seasonal food habits of wolves and evaluate predator/prey relationships.

METHODS

Our efforts to capture and radiocollar wolves began in March 1987. Capture efforts were focused in the central and eastern portions of the park, excluding the Kobuk, Noatak, and Nigu River drainages on the west and the Hammond River drainage on the east (Figure 1). Three pilot/observer teams in PA-18 Super Cubs located and followed fresh wolf tracks until wolves were found. Conditions for tracking wolves were excellent with deep snow in the southern drainages at the beginning of the capture effort. A 20cm snowfall occurred throughout the study area a few days later. This snowfall allowed

GATES OF THE ARCTIC NATIONAL PARK AND PRESERVE

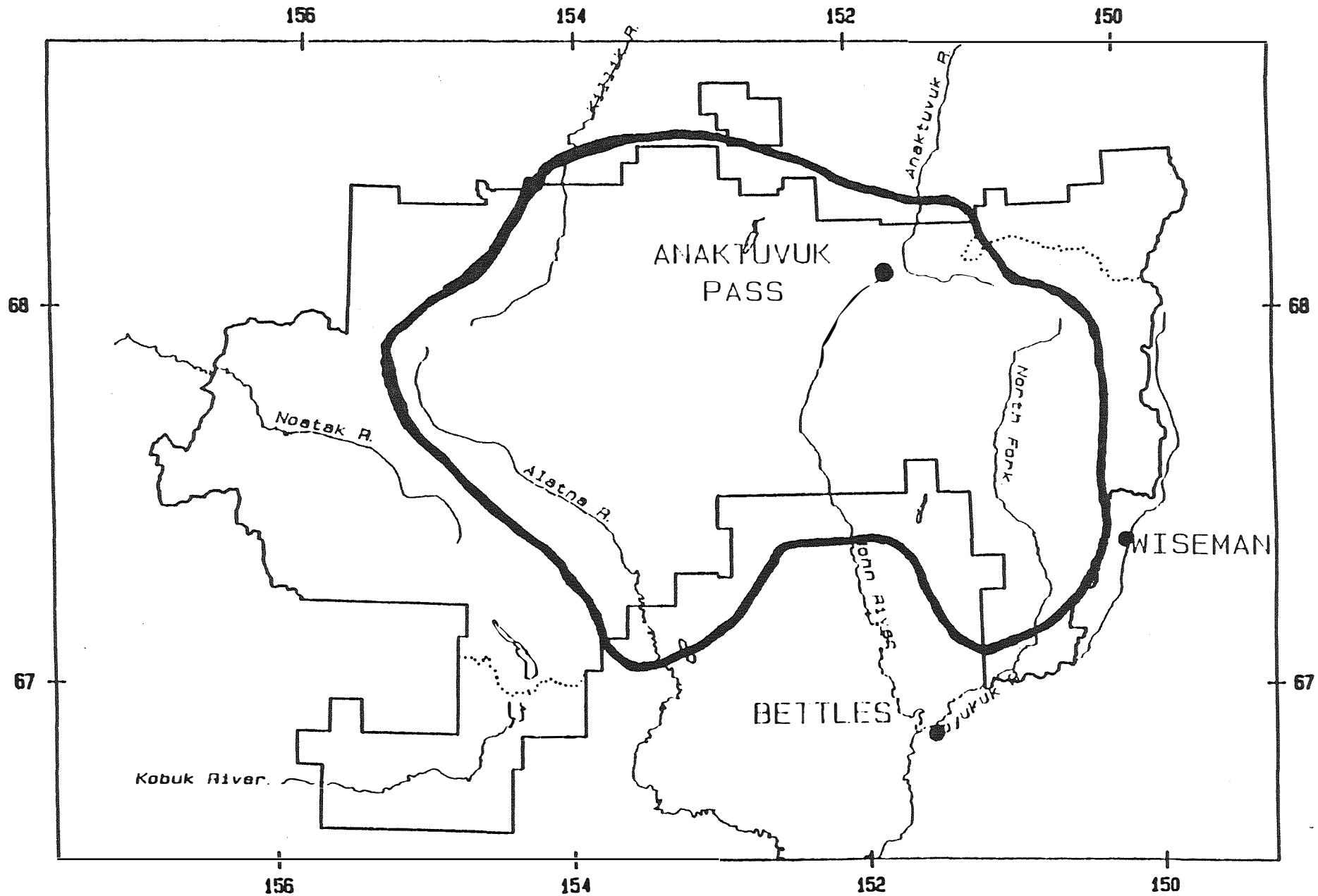


Figure 1. Wolf study area in and adjacent to Gates of the Arctic National Park and Preserve, Alaska.

location of wolves in northern drainages that are usually wind scoured during most of the winter.

Once wolves were located, one or two pack members were immobilized using standard helicopter darting techniques. Two drug combinations were used during the course of the capture effort. Most wolves (n=24) were immobilized with a mixture of ketamine and xylazine. The drugs were initially received in a solution of 200mg ketamine and 35mg xylazine per ml. However, we diluted the solution with 100 mg/ml ketamine and/or sterile water to circumvent the problem of drugs crystallizing out of solution. The final concentrations varied for ketamine (117-149 mg/ml) and xylazine (19-26 mg/ml) depending on the extent of crystallization and the subsequent diluent used to overcome it. The resultant drug combination was injected using a 5ml CAP-CHUR dart with total doses in the range of 584 to 745mg ketamine/95 to 130mg xylazine (Table 1). The drug combination worked well at the dosages administered. Wolves that began to recover their mobility during handling were given an additional 200 to 400mg of ketamine.

Six wolves were immobilized with 2.0 to 2.5mg etorphine hydrochloride (M-99). Five of those wolves were given 50 to 100 mg of xylazine in combination with the etorphine and the remaining wolf was immobilized with only etorphine (Table 1).

Once immobilized, wolves were radiocollared and eartagged. Each wolf was weighed and physical measurements were taken (Table 2). Wolves were examined to determine overall body condition and the

Table 1. Immobilization results for wolves captured by helicopter darting during March-April 1987 in and adjacent to Gates of the Arctic National Park and Preserve, Alaska.

EAR TAG NUMBER	SEX	AGE ¹	WEIGHT KILOS	DARTS	KETAMINE (MG)	XYLAZINE (MG)	M(99) (MG)	INDUCTION TIME(MIN)	DRUG EFFECT ²	MUSCLE RELAXATION ³	ANALGESIC EFFECT ³
301	MALE	PA	50.9	1	647	95	---	---	5	1	1
302	MALE	YA	51.8	1	647	95	---	4.00	5	1	1
303	MALE	YA	50.9	1	647	95	---	7.86	5	1	1
304	FEMALE	P	34.5	1	647	95	---	4.72	5	1	1
305	MALE	P	45.4	1	745	95	---	2.27	5	1	1
306	FEMALE	PA	47.2	1	745	95	---	8.67	3	3	4
307	MALE	PA	45.5	1	745	95	---	---	5	1	1
308	FEMALE	PA	44.5	1	745	95	---	---	5	1	1
309	FEMALE	OA	40.0	1	745	95	---	12.15	5	1	1
310	MALE	PA	52.2	1	745	95	---	3.05	5	1	1
311	FEMALE	Y	37.2	1	745	95	---	---	5	1	1
312	MALE	P	40.9	1	745	95	---	7.65	3	1	1
313	MALE	PA	48.1	1	745	95	---	---	5	1	1
314	FEMALE	PA	38.1	2	1490	190	---	---	-	-	-
315	MALE	YA	42.7	1	730	130	---	---	3	3	2
316	FEMALE	YA	41.8	1	730	130	---	7.32	5	1	1
317	MALE	Y	43.6	1	730	130	---	5.05	3	1	2
318	FEMALE	YA	40.9	1	730	130	---	---	3	1	3
319	FEMALE	Y	34.0	3 ⁴	---	50	2.0	---	1	1	---
320	FEMALE	YA	38.6	1	584	104	---	3.22	-	-	-
321	MALE	P	45.4	1	584	104	---	---	1	3	-
322	FEMALE	PA	42.7	1	730	130	---	5.23	1	3	2
323	MALE	P	45.4	1	730	130	---	5.85	2	3	1
324	MALE	OA	50.9	1	730	130	---	2.60	5	1	1
325	FEMALE	P	27.2	1	584	104	---	---	4	2	1
326	MALE	P	37.7	1	---	50	2.0	4.32	5	1	1
327	FEMALE	PA	33.6	2	---	100	4.0	32.08	5	1	1
328	MALE	Y	42.7	2	---	100	4.0	24.45	4	1	1
329	MALE	Y	41.8	1	---	50	2.5	7.75	4	2	1
330	FEMALE	OA	37.2	1	---	0	2.5	6.33	4	2	1

1 = P=PUP, Y=Yearling, YA=Young Adult, PA=Prime Adult, OA=Old Adult

2 = 1=Light to 5=Heavy

3 = 1=Very Good to 4=Very Poor

4 = 2 darts did not inject drug due to freezing

Table 2. Physical measurements of wolves captured during March-April 1987, in and adjacent to Gates of the Arctic National Park and Preserve, Alaska.

EAR TAG NUMBER	SEX	AGE ¹	WEIGHT (KILOS)	CONTOUR BODY LENGTH (CM)	TAIL (CM)	HEART GIRTH (CM)
301	Male	PA	50.9	149	48	78
302	Male	YA	51.9	138	54	77
303	Male	YA	50.9	143	50	77
304	Female	P	34.5	134	51	69
305	Male	P	45.4	140	50	69
306	Female	PA	47.2	132	49	75
307	Male	PA	45.4	131	49	76
308	Female	PA	44.5	128	47	74
309	Female	PA	40.0	133	43	74
310	Male	PA	52.2	144	46	-
311	Female	Y	37.2	135	50	81
312	Male	P	40.9	127	51	77
313	Male	PA	48.1	139	41	81
314	Female	PA	38.1	125	47	77
315	Male	YA	42.7	132	52	78
316	Female	YA	41.8	133	46	72
317	Male	Y	43.6	133	56	76
318	Female	YA	40.9	-	-	-
319	Female	YA	34.0	131	45	75
320	Female	YA	38.6	122	45	72
321	Male	P	45.4	144	54	76
322	Female	PA	42.7	132	45	71
323	Male	P	45.4	146	49	78
324	Male	OA	50.9	140	47	87
325	Female	P	27.2	127	39	68
326	Male	P	37.7	142	47	74
327	Female	PA	33.6	135	47	69
328	Male	Y	42.7	141	47	77
329	Male	Y	41.8	137	53	72
330	Female	OA	37.2	140	46	69
MEAN			42.2	136	48	75
STD.DEV.			13	7	3	4

1. P = pup, Y = yearling, YA = young adult, PA = prime adult, OA = old adult

presence of any injuries. Their teeth were examined to determine the extent of wear and breakage and to roughly estimate age. Measurements of their upper canines were taken (Table 3). Measurements of testicles and mammae were taken, to aid in determining reproductive status. A 30ml blood sample was taken for hematology and serology. Each animal was given 5ml Flocillin, a long acting antibiotic, to minimize any capture related infection.

Once the processing was completed, wolves that received xylazine were given 0.15mg Yohimbine/kg body weight (5mg/ml solution) to reverse the xylazine effects. Wolves immobilized with etorphine were given 50mg Naloxone/mg etorphine (50mg/ml solution) to reverse the etorphine effects.

Following their instrumentation, we attempted to locate each wolf several times during a one week period each month. When instrumented wolves were located, the following information was collected: number, age and color combination of wolves observed; location and habitat characteristics; wolf activity; and the presence and species of kills. Den locations were also determined.

After dens were abandoned in late summer, scats were collected and prey remains inspected at those den sites for future assessment of summer food habits of wolves. During winter, prey species killed by instrumented wolf packs were recorded, and some kills were investigated to assess characteristics of the individuals preyed upon.

Table 3. Upper Canine measurements of wolves captured March-April 1987, in and adjacent to Gates of the Arctic National Park and Preserve, Alaska.

EAR TAG NUMBER	SEX	AGE ¹	LENGTH (MM)	DEPTH ² (MM)	WIDTH ³ (MM)
301	Male	PA	31.5	16.8	12.3
302	Male	YA	29.7	16.4	13.1
303	Male	YA	30.9	15.8	10.8
304	Female	P	23.2	12.2	9.3
305	Male	P	27.5	14.5	10.5
306	Female	PA	27.2	14.7	9.5
307	Male	PA	29.6	15.4	9.9
308	Female	PA	34.4	16.6	13.5
309	Female	OA	23.0	14.2	10.7
310	Male	PA	32.5	17.3	12.3
311	Female	Y	27.5	14.2	10.2
312	Male	P	27.2	14.5	10.0
313	Male	PA	30.0	15.0	9.0
314	Female	PA	27.6	14.0	9.2
315	Male	YA	30.8	15.5	11.4
316	Female	YA	28.7	14.4	9.7
317	Male	Y	32.6	16.5	11.8
318	Female	YA	-	-	-
319	Female	YA	24.8	12.2	8.5
320	Female	YA	27.5	14.6	10.2
321	Male	P	26.2	14.5	11.6
322	Female	PA	26.6	15.7	10.8
323	Male	PA	28.5	13.5	10.5
324	Male	OA	-	-	-
325	Female	P	23.6	11.7	8.1
326	Male	P	27.0	14.0	11.1
327	Female	PA	26.7	13.7	10.8
328	Male	Y	29.6	16.6	10.6
329	Male	Y	32.7	16.2	11.7
330	Female	OA	8.9	6.2	11.7
MEAN			27.7	14.5	10.7
STDEV			4.7	2.2	1.3

1. P = pup, Y. = yearling, YA = young adult, PA = prime adult, OA = old adult
2. Depth = measurement of canine front to back at gumline
3. Width = measurement of canine from the labial face to the lingual face at gumline.

In order to gain information on harvest characteristics we utilized ADF&G pelt sealing records and carcasses purchased from hunters and trappers. In Anaktuvuk Pass, a village elder recorded wolf harvest by village residents and purchased carcasses. In southern areas such as Bettles, Coldfoot, and Wiseman, we used sealing records and the opportunistic purchase of wolf carcasses to estimate harvest. Carcasses were necropsied to determine physical condition, stomach contents, and reproductive characteristics.

RESULTS

Wolf Capture

Between 28 March and 8 April 1987, we captured and instrumented 30 wolves in 17 apparently distinct associations (Table 4). We attempted to select socially dominant animals for darting but radiocollared captured animals regardless of meeting this goal. In all, 18 adults, 5 yearlings, and 7 pups were radiocollared. There were no capture related mortalities.

Radiolocation

During April-December 1987, we relocated individual, instrumented wolves 593 times. This amounted to 475 locations of wolf groups that included one or more radiocollared wolves. Wolves were observed 376 (79%) of those 475 locations. The number of locations per individual, instrumented wolf varied from 10 to 34 (mean=21) excluding wolf 315, which was harvested within a few days of capture, and wolves 321 and 328, both of which dispersed by mid-May. Although the number of relocations are inadequate to depict actual pack territories (Ballard et al. 1987, Mech and Beckoff

Table 4. Peck designations and sizes during spring, summer, and early winter periods for wolves radiocollared in and adjacent to Gates of the Arctic National Park and Preserve, Alaska.

SPRING (3-5/1987)	TOTAL	SUMMER (6-8/1987)	ADULT TOTAL	PUP TOT	EARLY WINTER (9-12/1987)	TOTAL
Hunt Fork (301,302)	7	Hunt Fk M(302) Iniakuk (301)	1 2	"	..... .....	2 6
Tinayguk (303,304,315 ¹)	9	.....	4	1	.....	5
Agiak (395,316)	7	.....	5	4	.....	10
Sixtymile (306,321 ² ,323)	7	.....	"	5 ³	 60 MI F (306)	7 1
Okomilat (307)	3	.....	3	5	.....	7
Killik (308,318)	7	.....	7	"	.....	10
Wild River (309)	4	.....	2	"	.....	6
Clear River (310,311)	2	Clear R. M(310) Clear R. F(311)	1 ⁴ 1 ⁴		..... .....	2 1
Tulilik (312,322)	9	.....	5	6	.....	13
Akmalik (313,314)	6	.....	6	4	.....	9
Nahtuk(317)	1	.....	1		.....	2
Unakserak (319,326)	6	 Pegeeluk(319 ⁵)	6 1	6	.....	16
Shivering Mtn.(320)	2	.....	2	6	.....	8
Publituk (324,325)	10	Publituk M(324) Allen R. (325)	1 3		..... .....	1 3
Redstar (327,328 ⁶)	4	Redstar F	1		.....	1
Bluecloud (329)	6	Bluecloud M(329)	1		.....	2 ⁷
Hanging Glacier(330)	7	.....	3	2	.....	9

1 Harvested 4/7/87 near Anaktuvuk Pass.

2 Dispersed after 5/12/87. Relocated in Yukon Territories 10/87.

3 Five pups observed in late May but only 1 observed late July.

4 Last seen together on 6/27/87.

5 Missing since 8/23/87.

6 Dispersed after 5/7/87. Relocated in Yukon Territories 10/87.

7 329 trapped near Wiseman in late December.

1984), home range polygons based on present information for instrumented packs are provided as an approximation of territory size and location (Figure 2).

Instrumented Wolf Packs (Refer to Table 4)

Hunt Fork Pack: Two grey adult males (301,302) were captured from this pack 2 km north of VABM Pamich between the John River and the headwaters of Mashooshalluk Creek on 28 March 1987. At the time they were associated with two black wolves. During April, these wolves continued to inhabit that area (Figure 3). In May, 301 had moved to the Alatna River-Tobuk Creek area and on 25 July was observed with four black pups. Subsequently, 301 has been regularly located with a black female wolf and the four pups in the Alatna River drainage south of Takahula Lake and east to the north end of Iniakuk Lake (Figure 3). This pack is now referred to as the Iniakuk Pack. The Hunt Fork Male (302) was sporadically located in the northern tributaries of the Alatna River until July. He was not located again until mid-November when he was found with another grey wolf west of the Killik River and south of Karupa Lake (Figure 3). This pair has been located several times in that area.

Tinayguk Pack: On 28 March, a black young adult male (303) and black female pup (304) were captured on the Tinayguk River 9km above the mouth of Wolf Creek. At the time, they were with seven other wolves (3 greys, 3 blacks, 1 unknown). An additional black young adult male (315) in this pack was captured 9km east of Inukpasugruk Creek and south of the Anaktuvuk River on 2 April 1987. He was shot by an Anaktuvuk Pass resident on 7 April 1987 in Inukpasugruk Creek. The remaining radiocollared wolves were

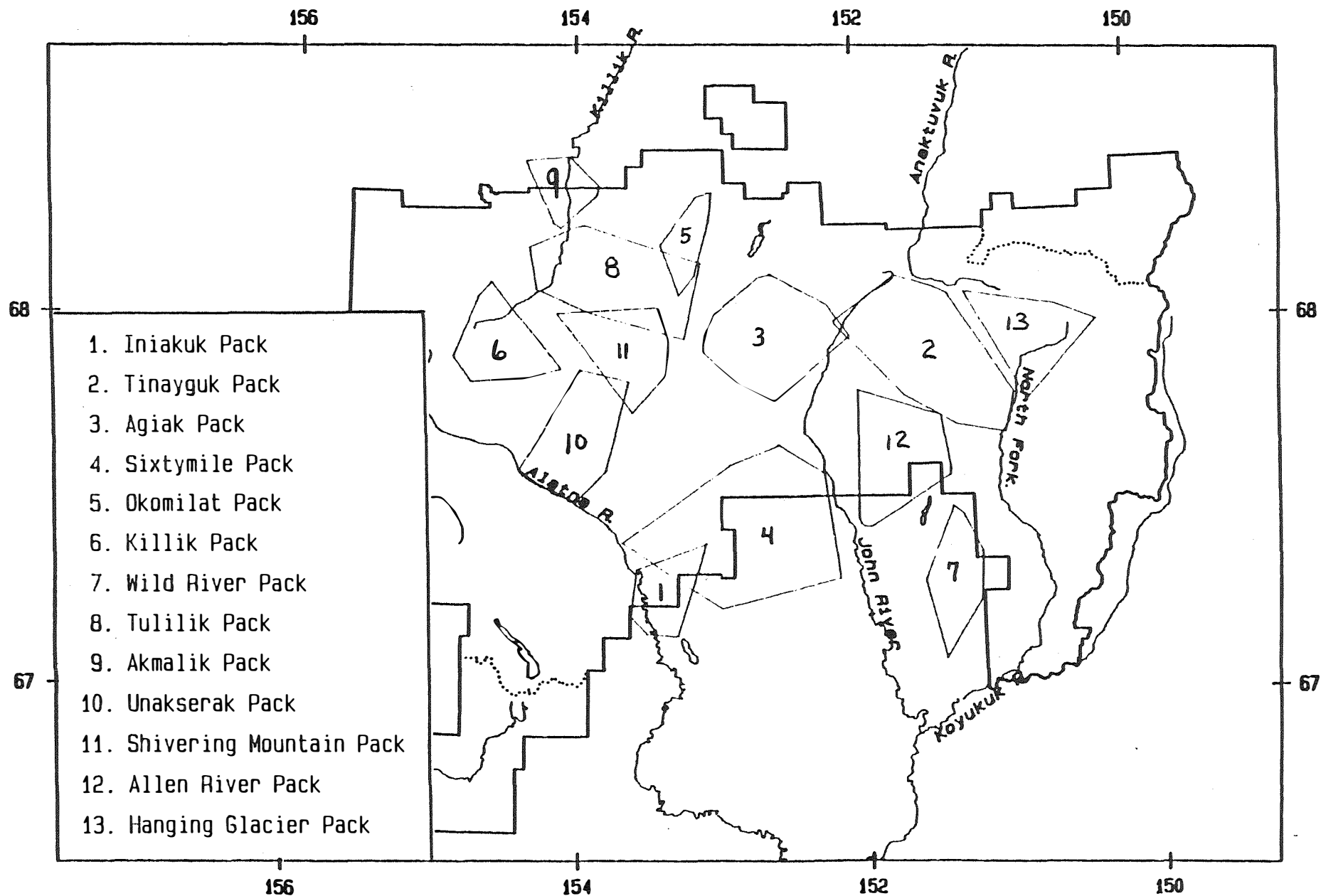


Figure 2. Approximate home ranges of radiocollared wolf packs in and adjacent to areas of the Wrangell National Park and Preserve, Alaska.

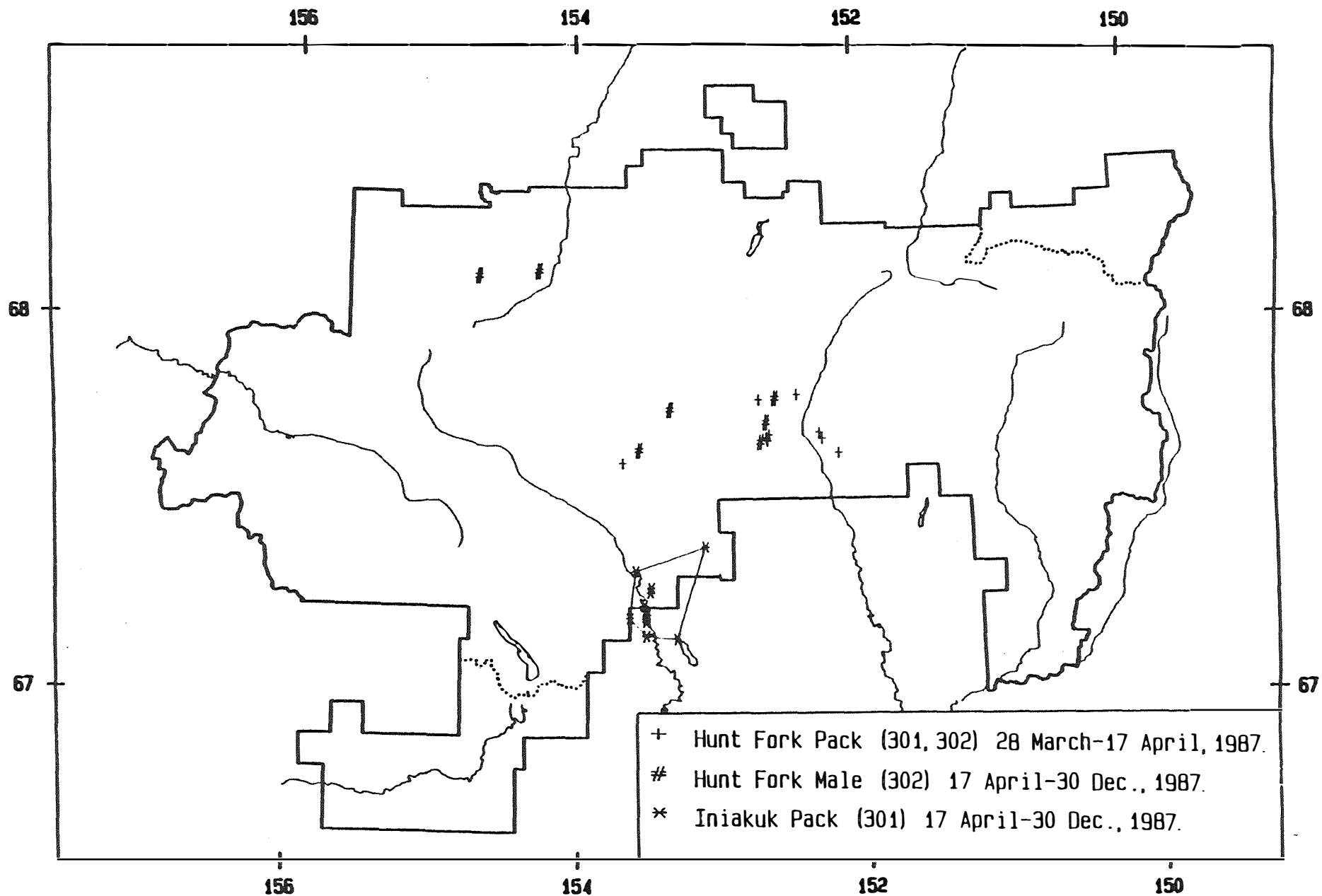


Figure 3. Radiolocations and approximate home ranges of wolves 301 and 302, Gates of the Arctic National Park and Preserve, Alaska, April-December 1987.

regularly located for the remainder of the year in the upper Tinayguk River above Wolf Creek, the upper Anaktuvuk River drainage south of the river and east of the village, west of the North Fork of the Koyukuk River, and occasionally on the John River (Figure 4). During the summer, four adult wolves (2 greys, 2 blacks) could be accounted for and on one occasion a single pup was observed with a nonradioed wolf but a den site was never located. In the fall and early winter six wolves (2 greys, 4 blacks) were regularly observed within the packs home range.

Agiak Pack: A large light grey male pup (305) was captured on 29 March on a northeastern spur of Mt. 6180 south of Agiak Creek and 8km east of Lonely Lake. On 2 April, a black adult female (316), apparently the alpha female, was captured on the south slope of Mount MacVicar. Two attempts to capture a large light grey wolf, thought to be the alpha male, failed. This pack initially consisted of seven wolves (3 greys, 4 blacks). The pack denned in the vicinity of Loon Lake. Four pups (2 greys, 2 blacks) were observed and five adults (3 greys, 2 blacks) could be accounted for during the summer. In the fall and early winter ten wolves (5 greys, 5 blacks) were observed in this pack. Since April the pack has inhabited the Agiak Creek-Hunt Fork area (Figure 5).

Sixtymile Pack: A grey adult female (306), was radiocollared north of the headwaters of Sixtymile Creek on 30 March. A dark grey male pup from this pack (321) was captured 3 km north of Wolverine Creek and above the mouth of Shokoklu Creek on 4 April, and another grey male pup (323) was captured in the headwaters of Sixtymile Creek on 6 April. This pack totalled seven grey wolves following capture. Wolf 321 was last located in the area on 12 May and was

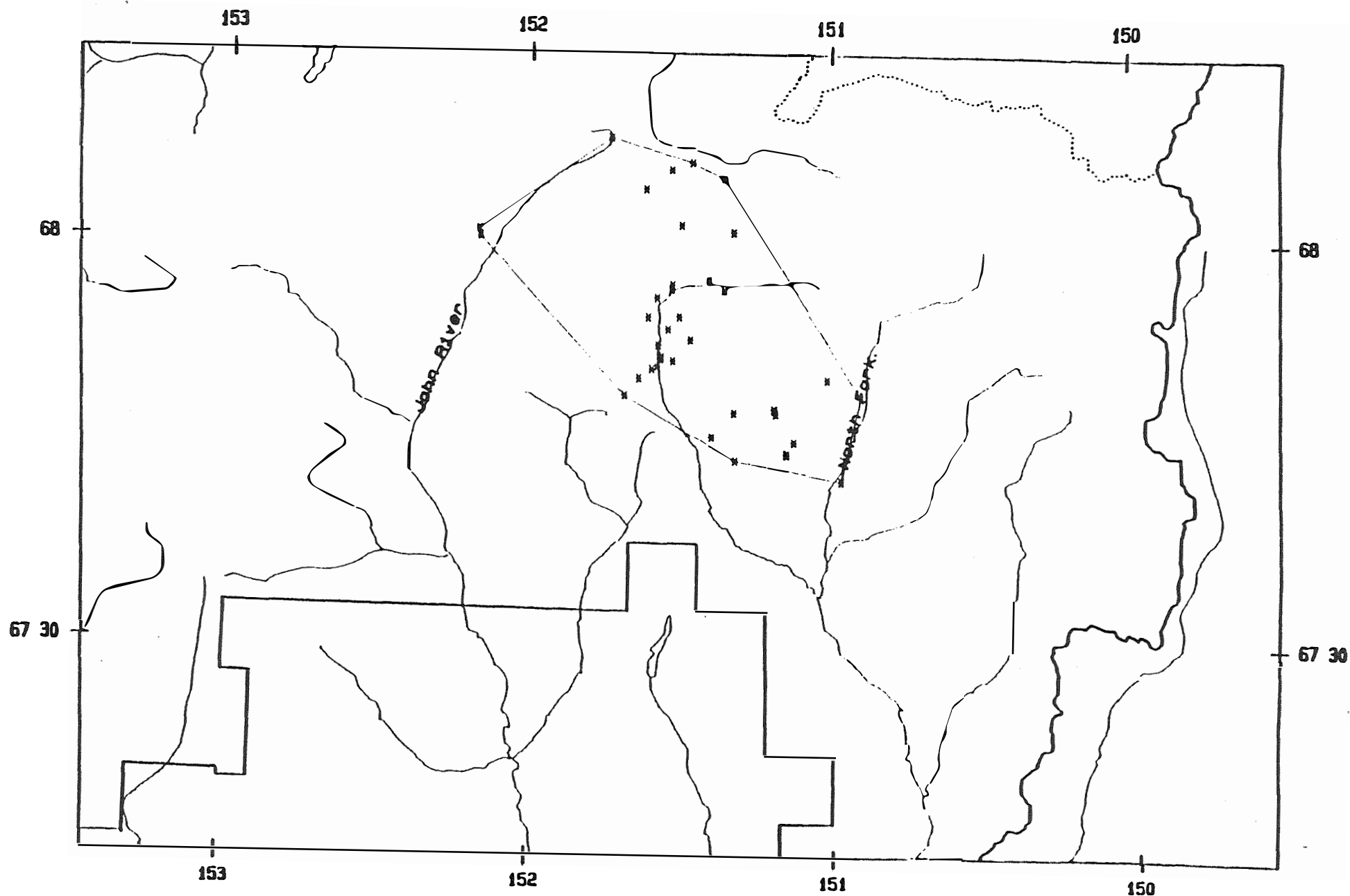


Figure 4. Radiolocations and approximate home range of wolves 303, 304, and 315 (Tinayguk Pack), Gates of the Arctic National Park and Preserve, Alaska, April-December 1987.

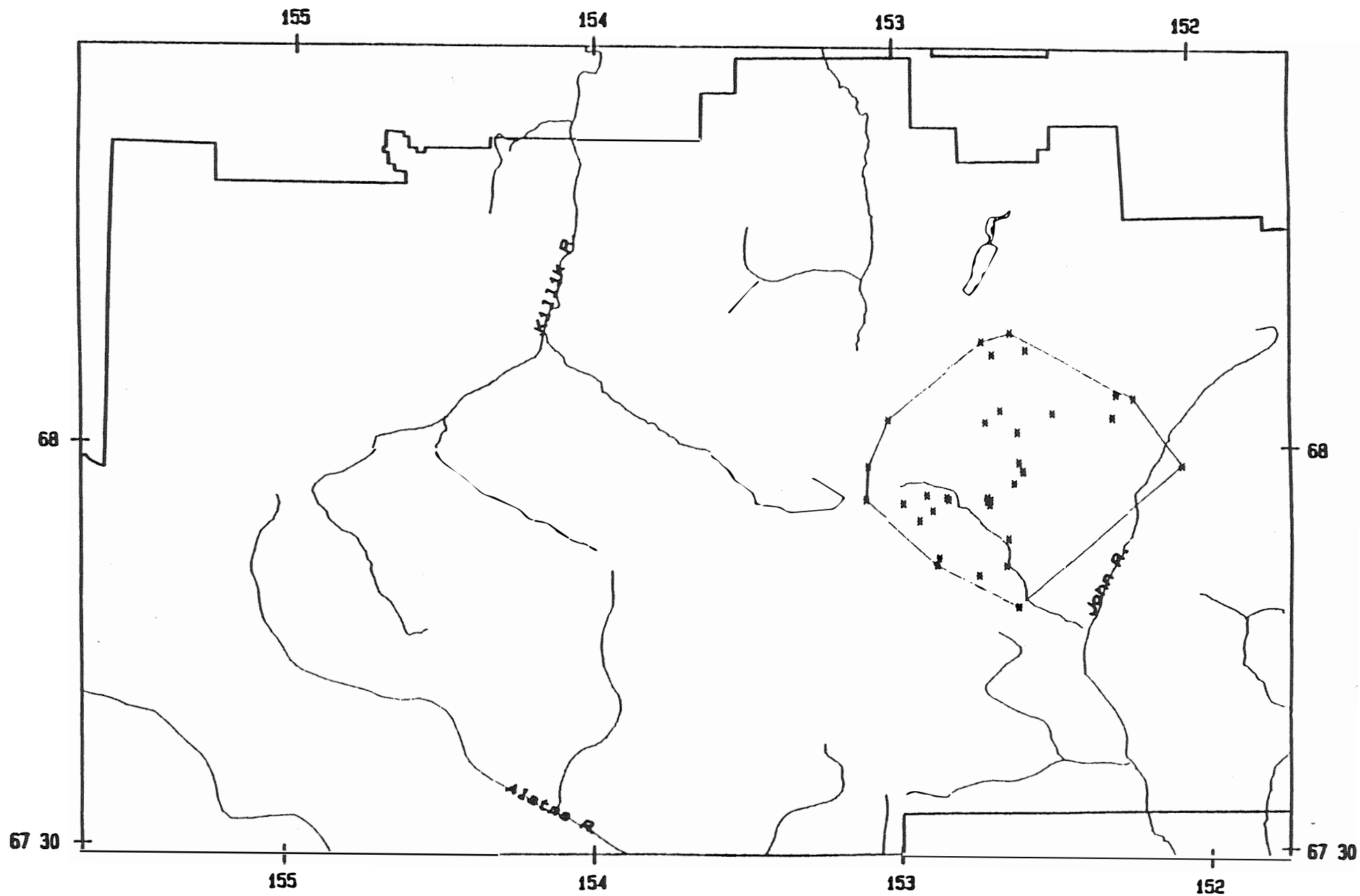


Figure 5.. Radiolocations and approximate home range of wolves 305 and 316 (Agiak Pack), Gates of the Arctic National Park and Preserve, Alaska, April-December 1987.

subsequently located by staff of the Arctic National Wildlife Refuge on the Old Crow Flats of the northern Yukon Territories, Canada on 4 October, approximately 500 km from his capture location. He was apparently alone and in the vicinity of wintering caribou of the Porcupine Herd. The remaining wolves denned on Sixtymile Creek and five pups were observed in late May. One pup was observed in July and apparently was the only survivor of the litter at that time. During the summer four adult wolves could be accounted for including the two radiocollared wolves that remained in the area. After August, wolf 306, was not found until late November when she was located south of the pack's territory in the Alatna Hills on the headwaters of Henshaw Creek (Figure 6). She was alone at an old moose kill. The pack continued to inhabit the mountains between the John River and the Iniakuk River and south of Wolverine Creek (Figure 6). In December, the pack consisted of seven grey wolves.

Okomilat Pack: On 30 March, a grey adult male wolf (307), who was seen with two other grey wolves, was captured between the head of Suluak Creek and a southern tributary of Kugukpak Creek. These wolves have inhabited the Okokmilaga drainage throughout the year (Figure 7). The pack denned near the Okokmilaga River and five grey pups were observed on 24 August. The pack has been composed of seven grey wolves since September.

Killik Pack: A grey adult female (308) was captured on 30 March near a small lake 1.5km east of Mt. 5170 in the upper Killik River, and on 3 April, a grey young adult female (318) was captured near the confluence of the Killik River and April Creek. This pack was composed of seven grey wolves at that time and has since inhabited

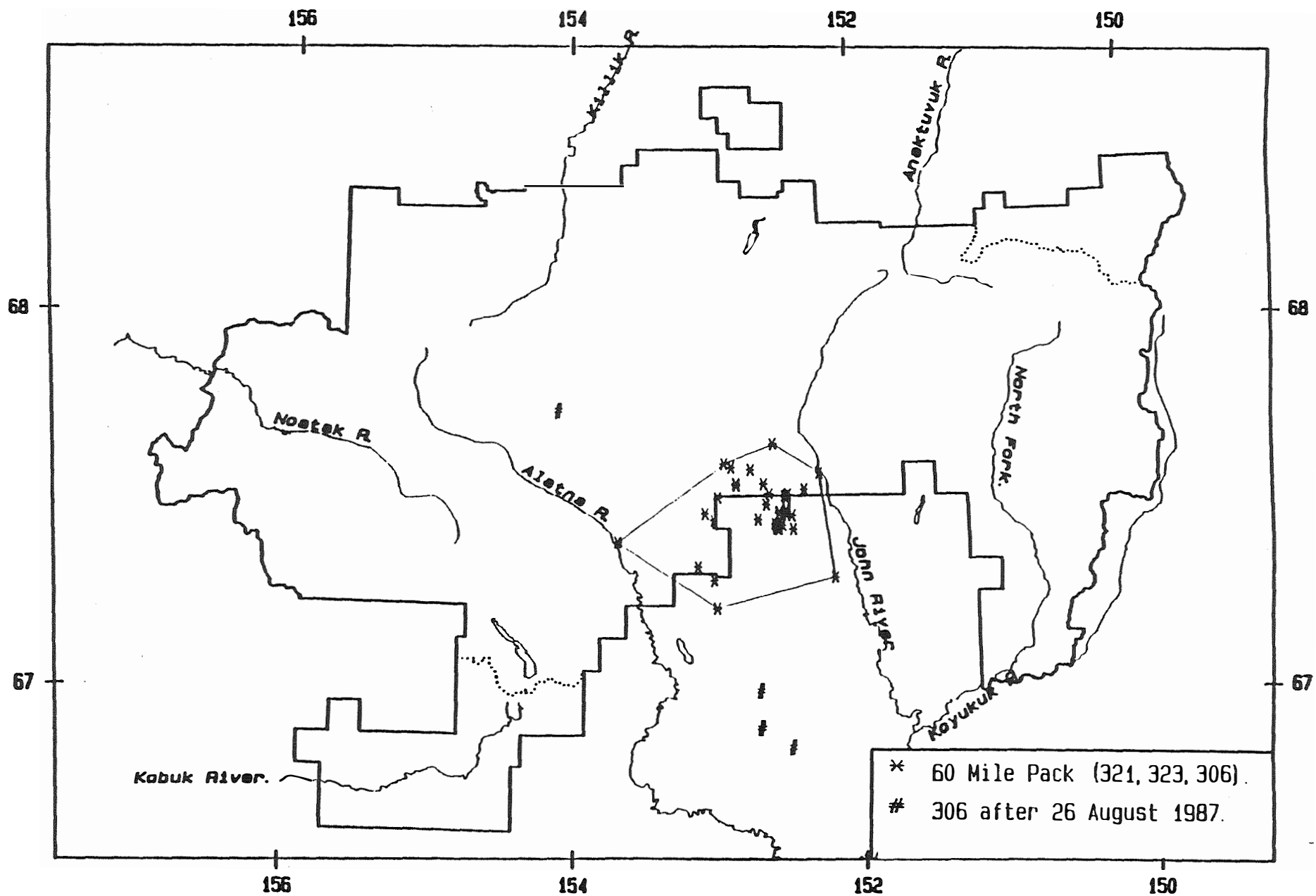


Figure 6. Radiolocations and approximate home range of wolves 306, 321, and 323 (Sixtymile Pack), Gates of the Arctic National Park and Preserve, Alaska, April-December 1987.

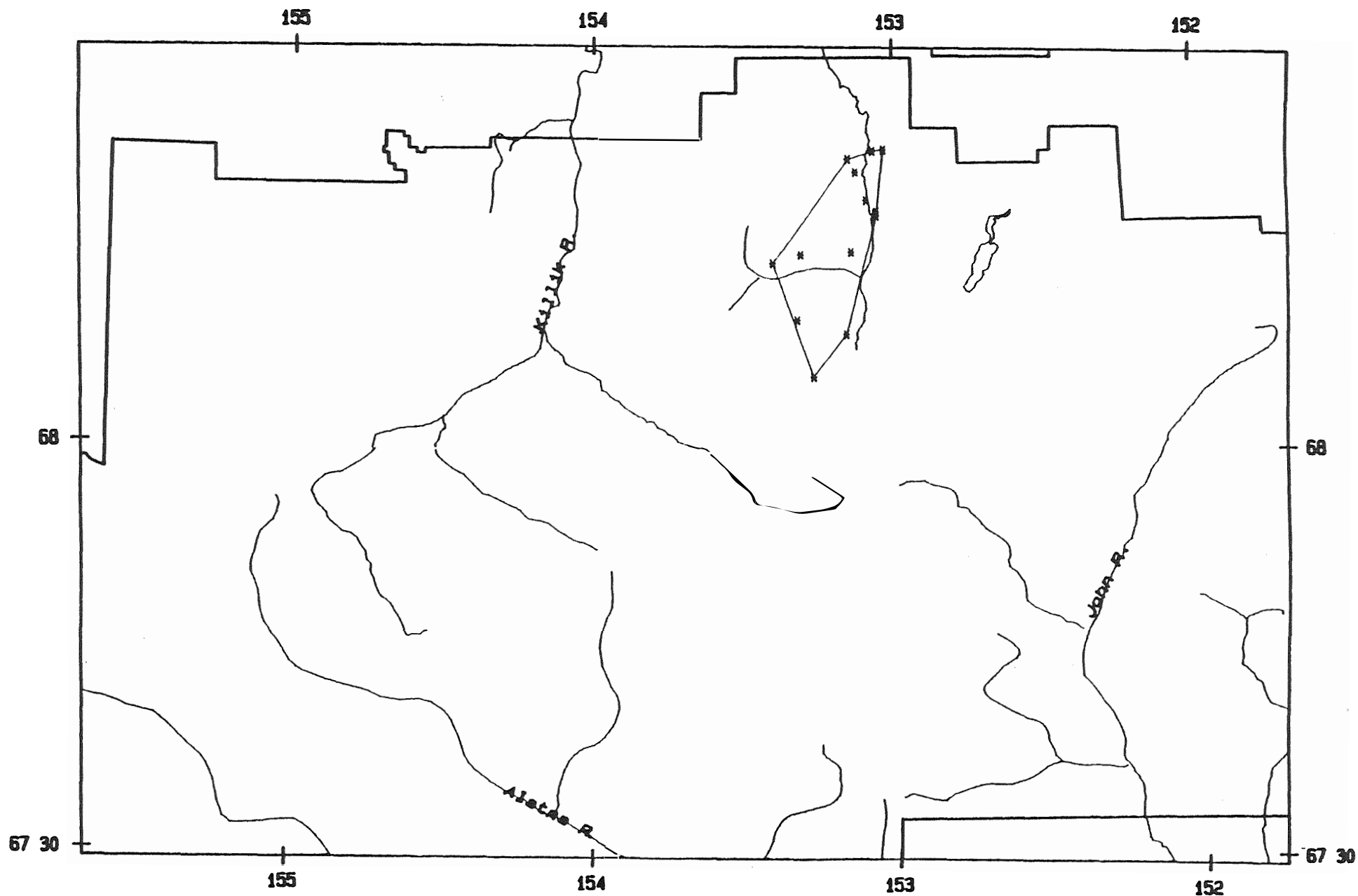


Figure 7. Radiolocations and approximate home range of wolf 307 (Okomilat Pack), Gates of the Arctic National Park and Preserve, Alaska, April-December 1987.

the Upper Killik, April Creek, Nigu Bend area (Figure 8). They denned in the April Creek area and four grey pups were observed at one of the den sites in June. Since September, the pack has been composed of ten grey wolves.

Wild River Pack: On 1 April, a grey adult female (309) was captured on Michigan Creek near the mouth of East Creek. She was associated with three other grey wolves. The pack inhabited the Wild River drainage throughout the year (Figure 9). They denned below Flat Creek on the Wild River and four pups were observed at the den. Following the denning period, up to six grey wolves were observed in this pack. In November, the six greys were located during an apparent foray up the Clear River, near Willow Creek, where caribou were locally abundant.

Clear River Pair: A pair of grey wolves (310-male, 311-female) were captured near Chimney Pass on the Clear River on 1 April. They stayed together for the remainder of the spring and were expected to den. However, they were last seen together on 6 June (Figure 10). After that, 310 has mainly inhabited the Clear River drainage but occasionally has moved west to the North Fork. Beginning in October, he has been associating with another grey wolf. The female (311) has been found on the North Fork south of Eroded Mountain and east to Nolan. She was alone throughout the fall and early winter.

Tulilik Pack: On 1 April, a light grey male pup (312) was captured while travelling with eight other grey wolves on the Killik north of Easter Creek. Five days later, a light grey adult female (322), the alpha female, was captured in Nigaktoviakvik Creek on the

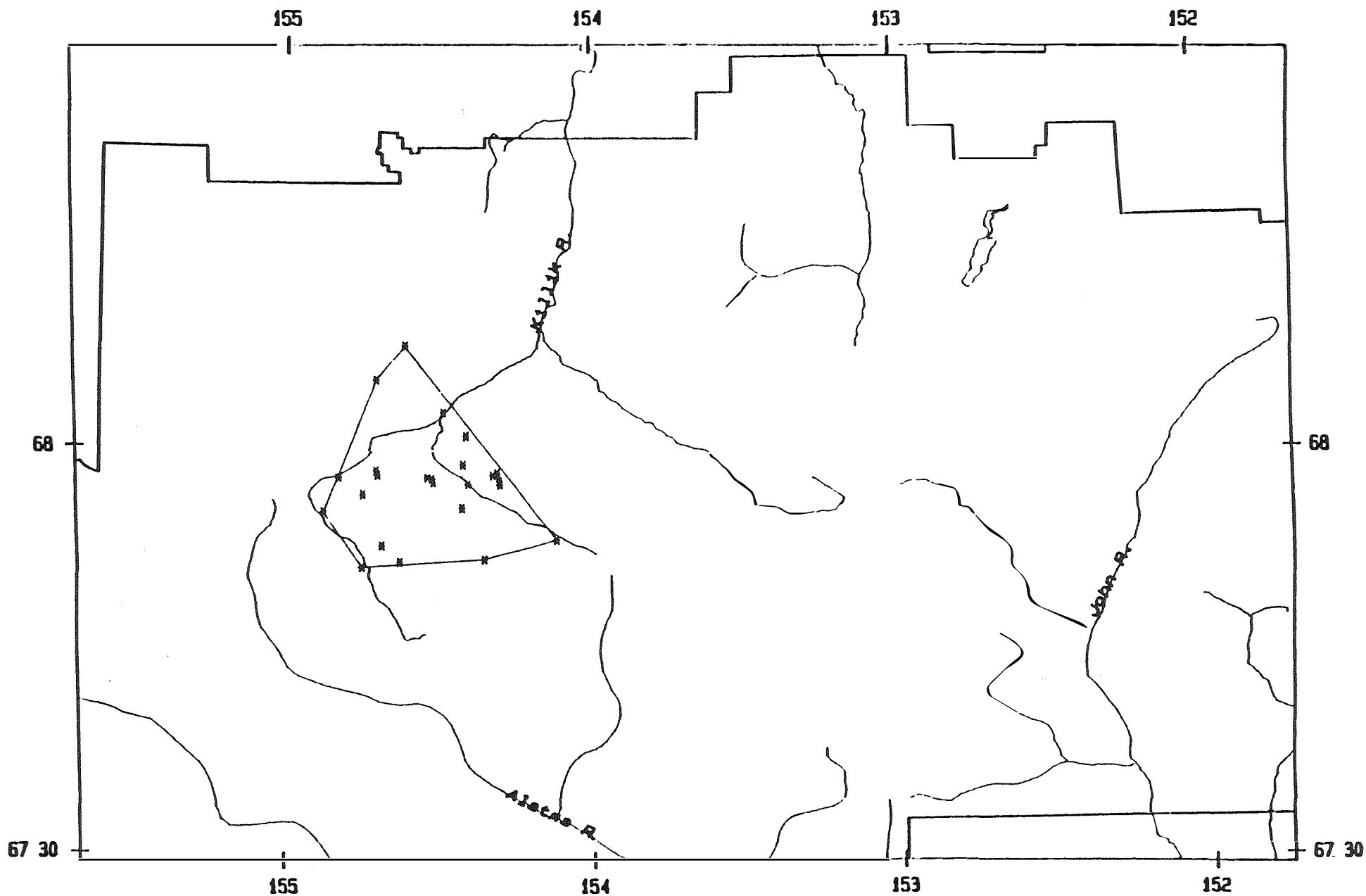


Figure 8. Radiolocations and approximate home range of wolves 308 and 318 (Killik Pack), Gates of the Arctic National Park and Preserve, Alaska, April-December 1987.

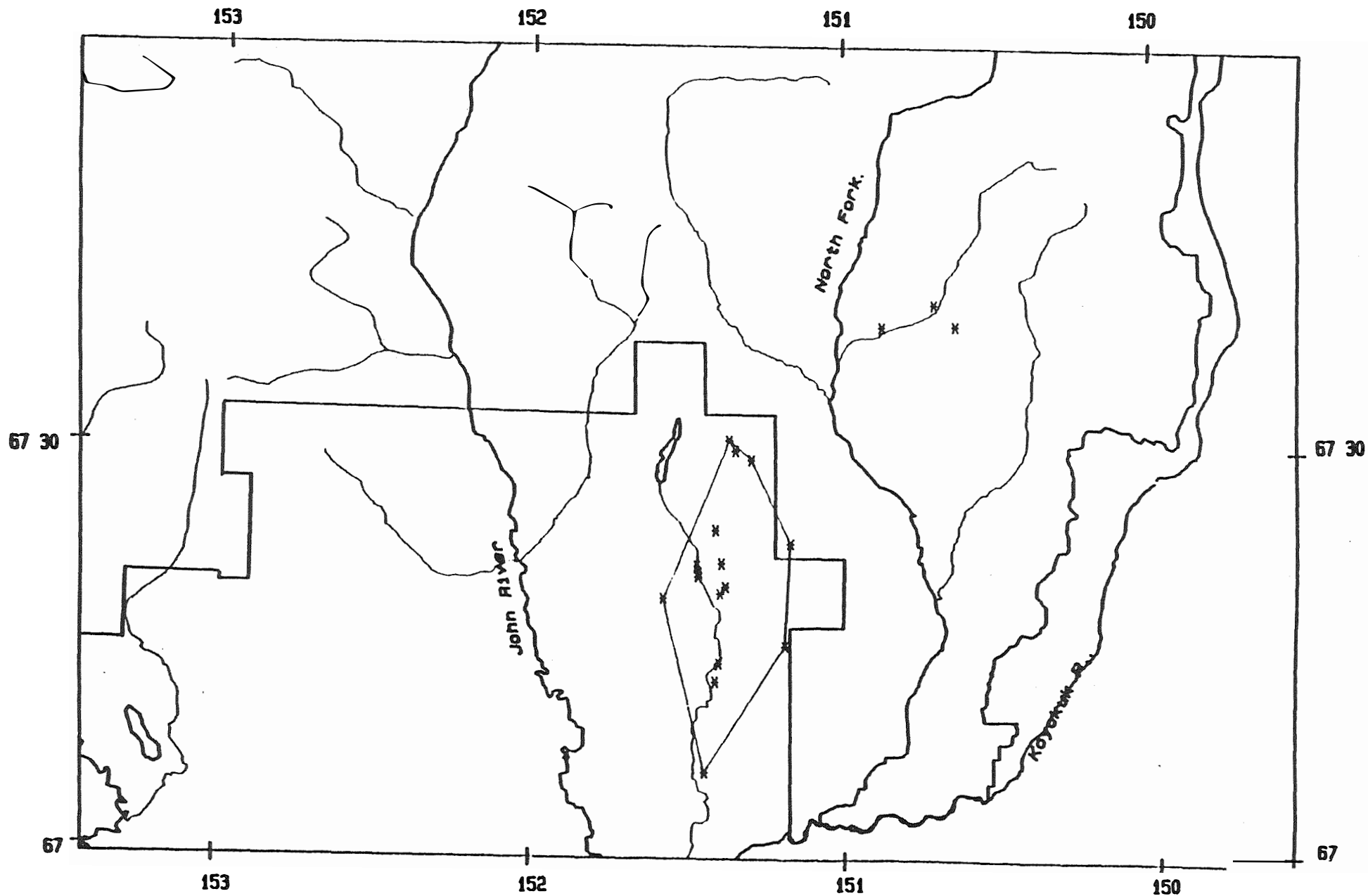


Figure 9. Radiolocations and approximate home range of wolf 309 (Wild River Pack), Gates of the Arctic National Park and Preserve, Alaska, April-December 1987.

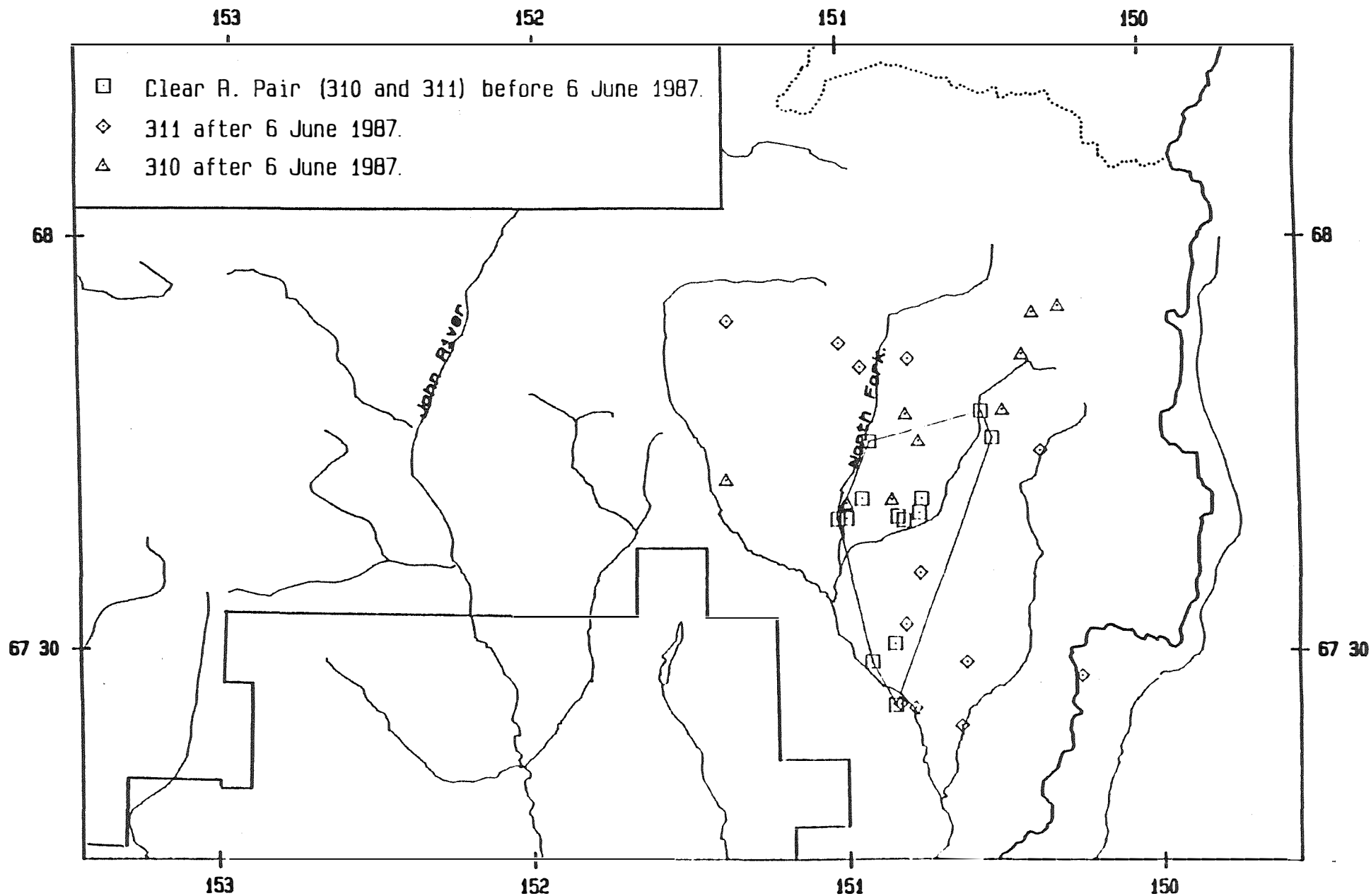


Figure 10. Radiolocations and approximate home ranges of wolves 310 and 311 (Clear River Pair), Gates of the Arctic National Park and Preserve, Alaska, April-December 1987.

Killik River. This pack has inhabited the area west of the Killik River from Togoyuk Creek south to and including most of the Easter Creek drainage (Figure 11). They denned on Easter Creek and produced six grey pups. Since denning, thirteen grey wolves have been observed in this pack.

Akmalik Pack: On 1 April, a black male (313) and a grey female (314), the alpha pair, were captured on the Killik River near Akmalik Creek. They were accompanied by four wolves (1 grey, 3 blacks) thought to be pups based on their behavior. The pack inhabited the Killik River drainage near the northern edge of the mountains (Figure 12). A den was located near the Killik River and four pups (1 grey, 3 blacks) were observed. During the fall and early winter nine wolves (2 greys, 7 blacks) have comprised this pack.

Nahtuk Male: A grey young adult male (317) was instrumented on the ridge west of Nahtuk Creek on 3 April. He was alone throughout the spring and summer and inhabited the southwestern tributaries of the Alatna and the upper Kobuk River above Walker Lake (Figure 13). In November, he was located with a black wolf in Kaluluktok Creek above Walker Lake.

Unakserak Pack: On 4 April, a grey yearling female (319) was captured in the Gull Creek drainage. Three days later, we captured a grey male pup (326) who was with four grey wolves on the Unakserak River. On two occasions in mid-April, the instrumented wolves were located on and/or near a kill with other wolves. Throughout the spring and summer 319 (Pegeeluk Female) was observed alone on the northern tributaries of the Alatna in and around the home range of the Unakserak Pack. Her signal was last heard on 23

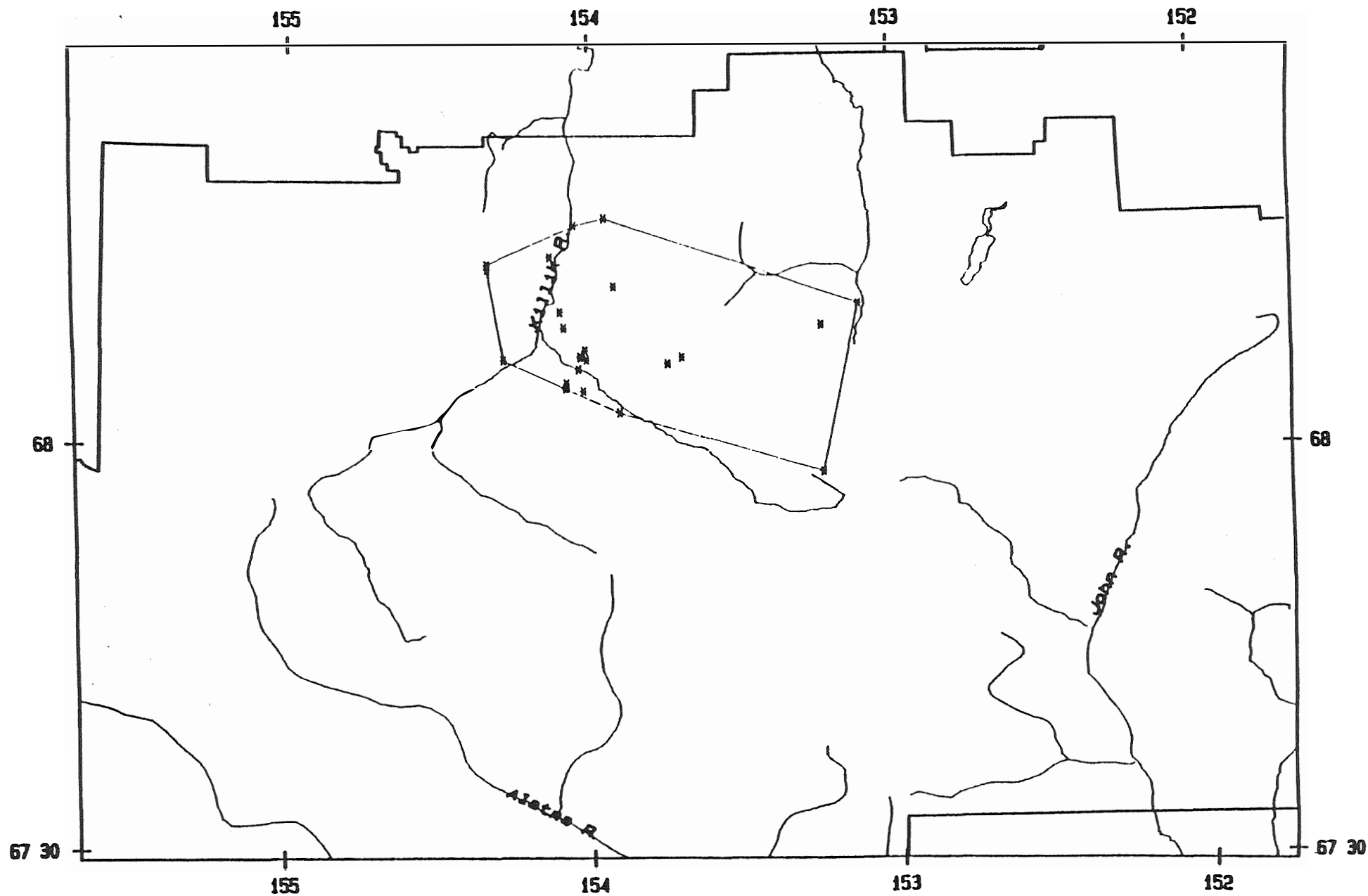


Figure 11. Radiolocations and approximate home range of wolves 312 and 322 (Tulilik Pack), Gates of the Arctic National Park and Preserve, Alaska, April-December 1987.

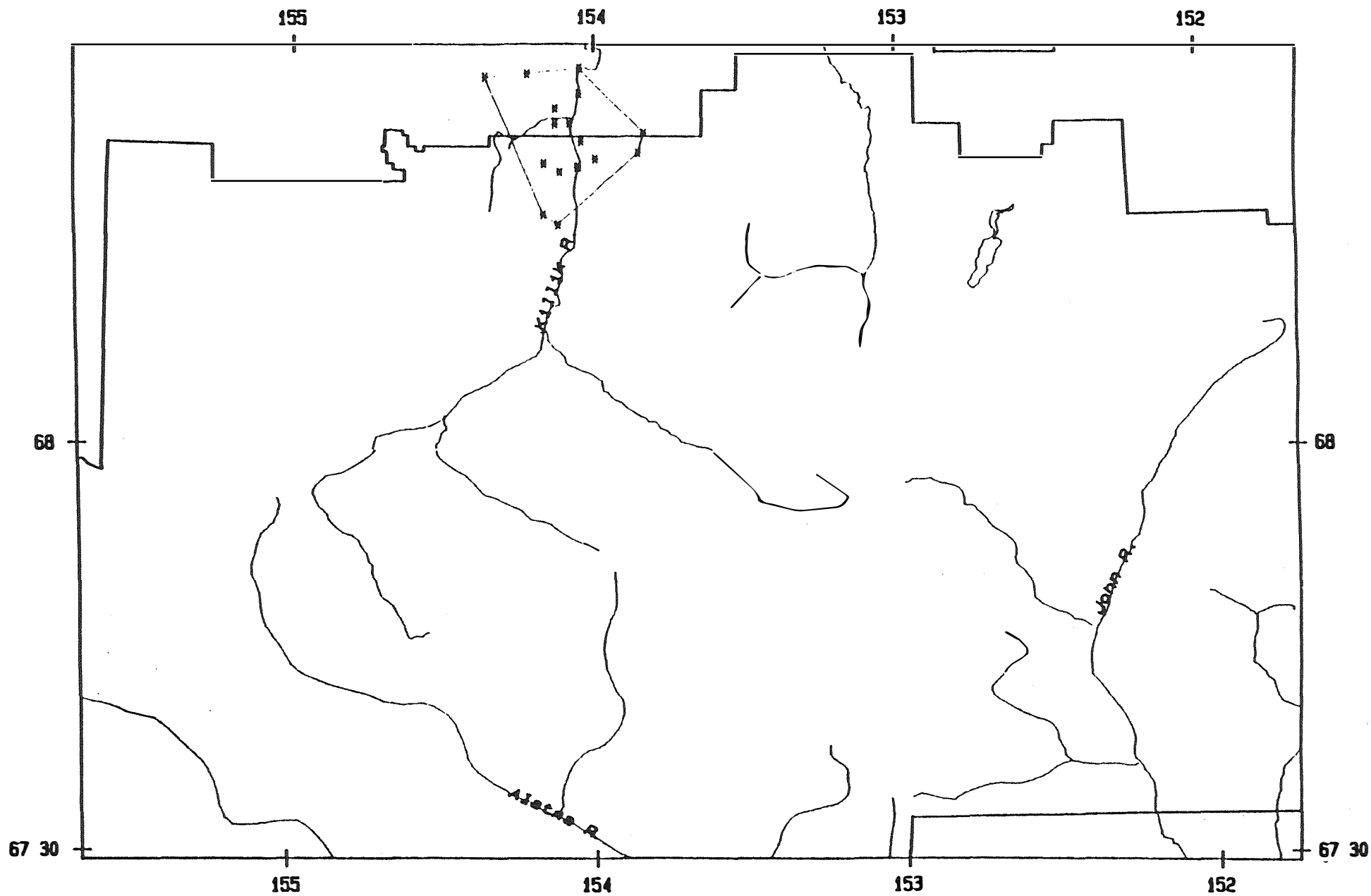


Figure 12. Radiolocations and approximate home range of wolves 313 and 314 (Akmalik Pack), Gates of the Arctic National Park and Preserve, Alaska, April-December 1987.

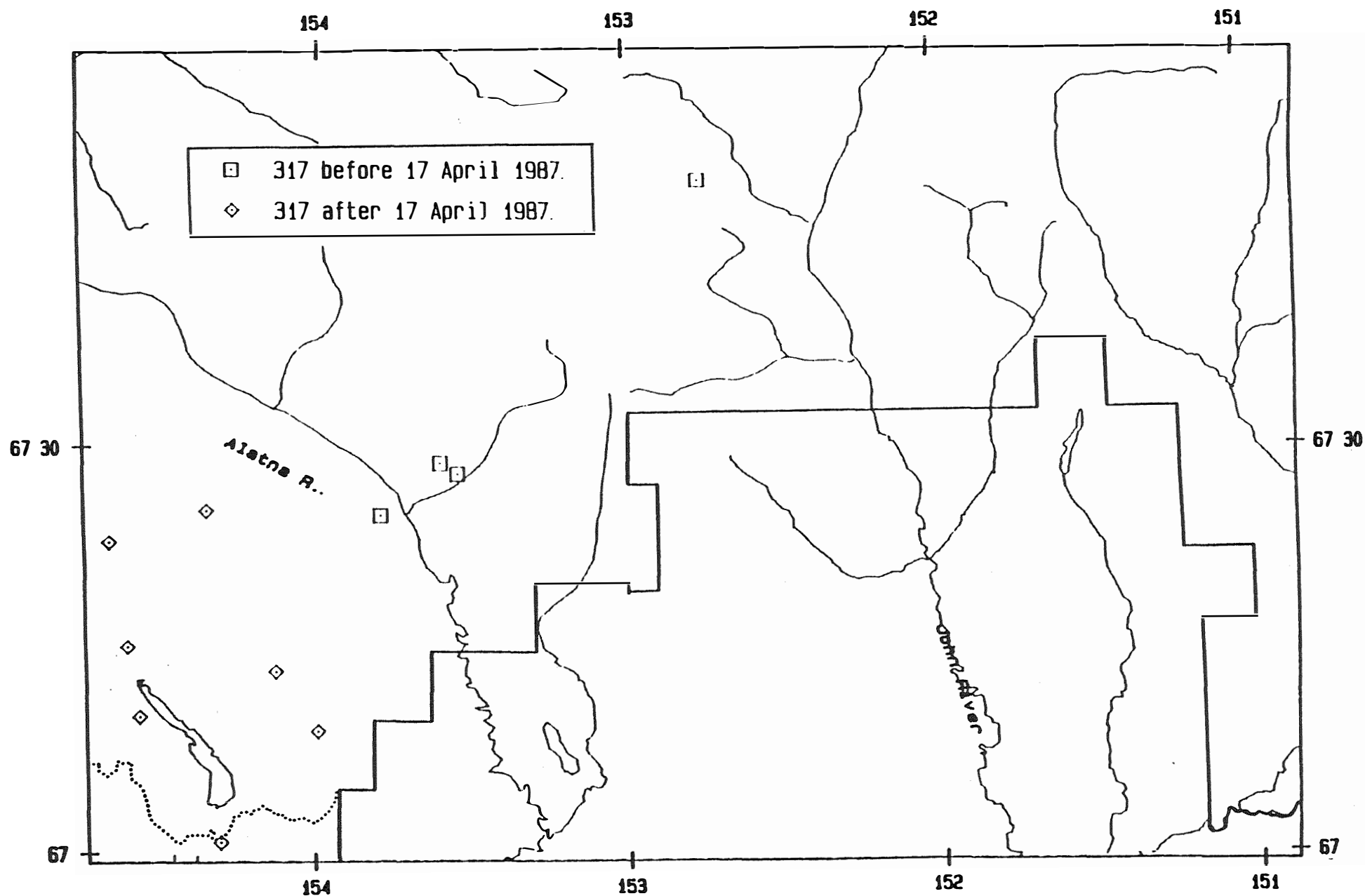


Figure 13. Radiolocations of wolf 317 (Nahtuk Male), Gates of the Arctic National Park and Preserve, Alaska, April-December 1987.

August. Wolf 326 remained with its packmates and was observed at a den on the Kutuk River where six pups were observed. Since the summer, the pack has included 16 grey wolves and has inhabited the Alatna River north of the mouth of the Unakserak River (Figure 14).

Shivering Mountain Pack: On 4 April, a black young adult female (320) was captured 6km east of Shivering Mountain. An attempt to capture a large grey adult wolf that was with her was unsuccessful. This pair was observed together throughout the spring and summer in the upper Easter Creek, Shivering Mountain, and Natat Mountain area (Figure 15). We suspected that they denned in a tributary of Easter Creek based on localized activity of 320, but no den or pups were observed during the summer. Finally in August, six pups (3 greys, 3 blacks) were observed with the adults after they abandoned the den. Likely den locations within the area 320 inhabited during summer were examined and the den was located. By November, we could account for only five of the eight wolves that had been present in August.

Publituk Pack: We captured a light grey old adult male (324) and a small grey female pup (325) from a pack of ten wolves on the upper Allen River on 6 April. Wolf 324 associated with the pack until 16 April after which he was observed alone for the remainder of the year. He has inhabited the upper Allen River and Wild Lake area for most of the year (Figure 16). During the summer he was found near mining camps on Flat Creek, probably feeding on the garbage, and in November he was on the North Fork where caribou were locally abundant. The female pup (325) was alone most of the summer, including a long foray to Agiak Creek, and did not lead us to a den. Since the summer, 325 has been associated with two other

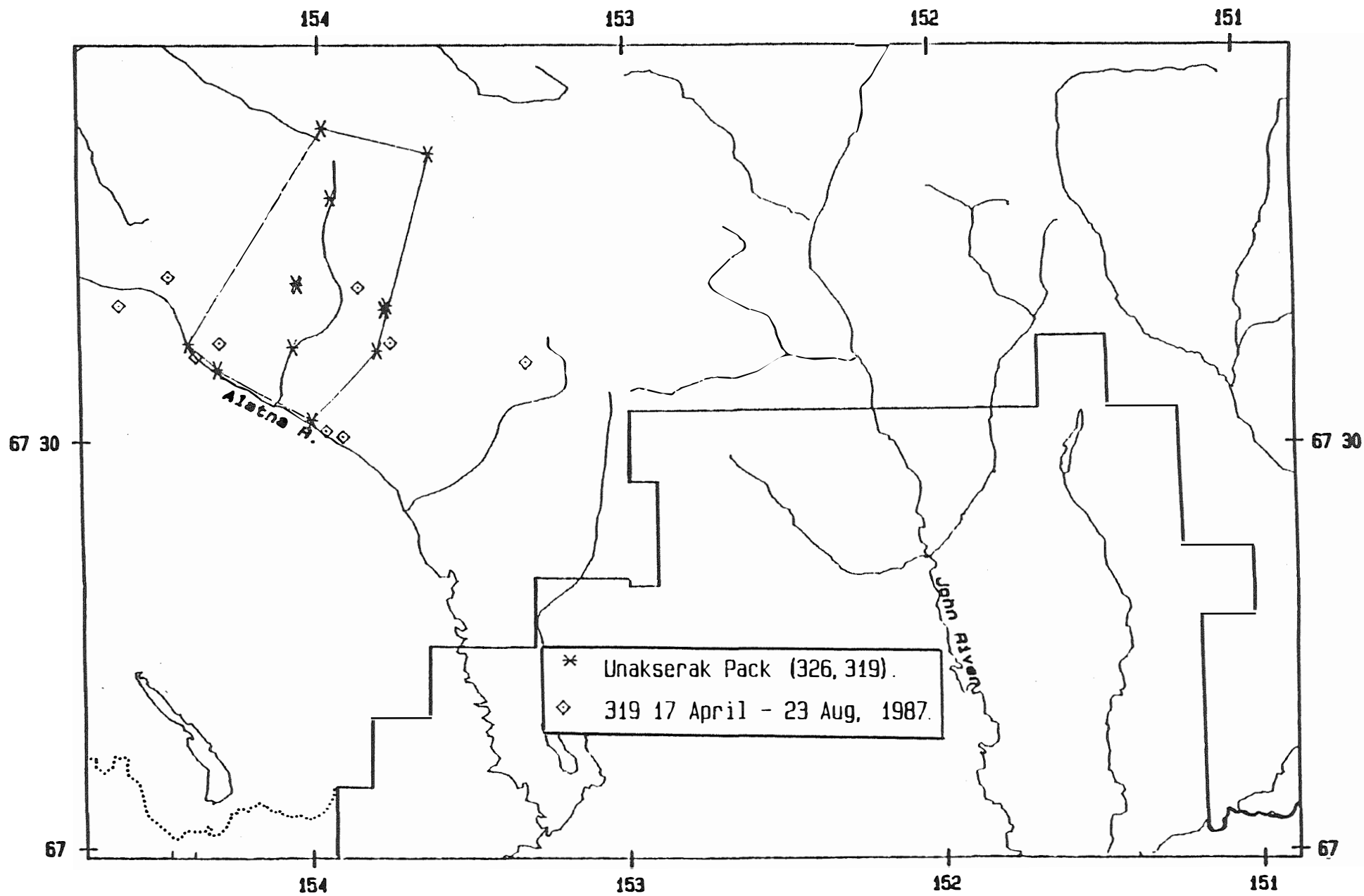


Figure 14. Radiolocations and approximate home range of wolves 319 and 326 (Unakserak Pack), Gates of the Arctic National Park and Preserve, Alaska, April-December 1987.

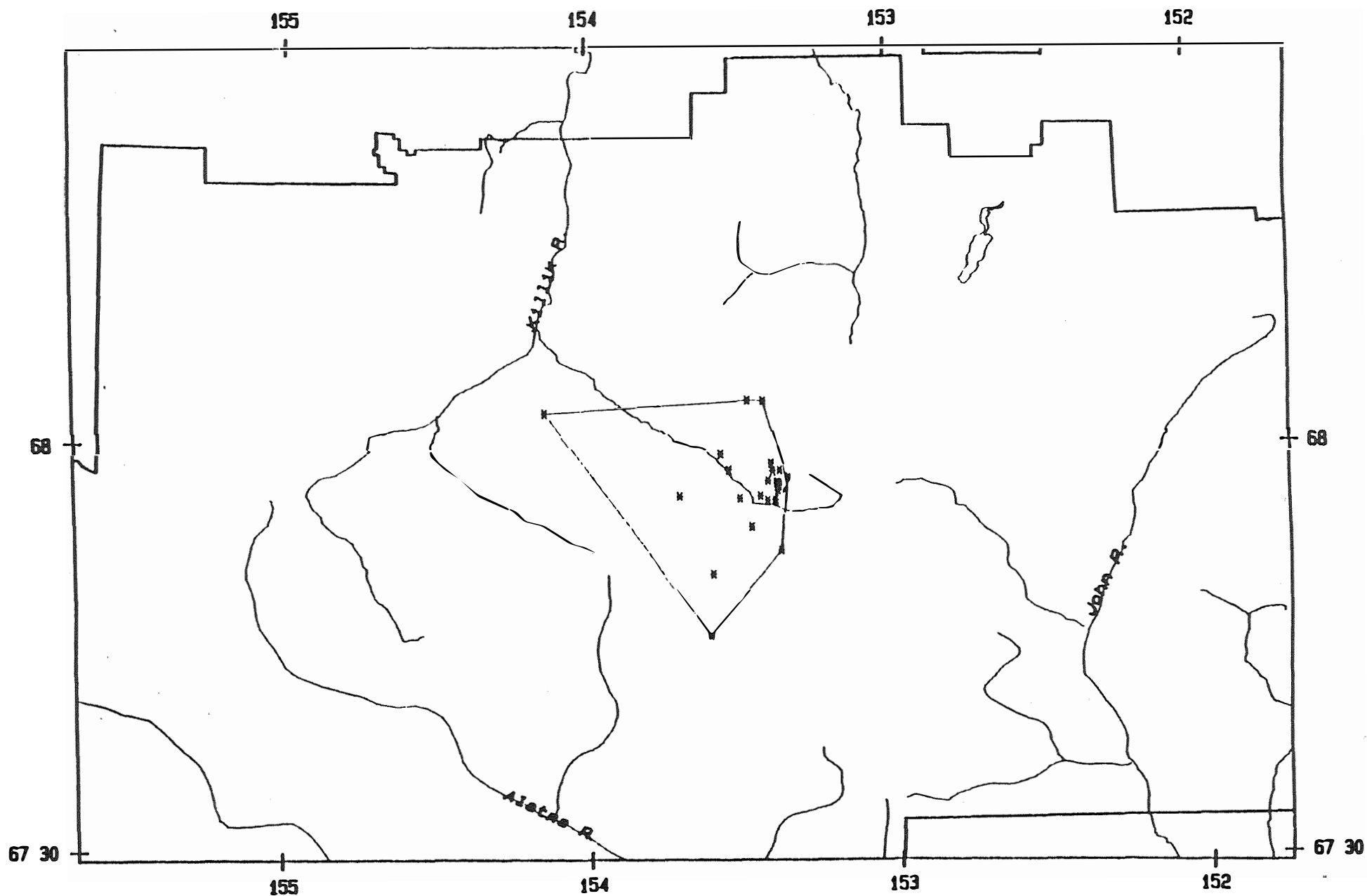


Figure 15. Radiolocations and approximate home range of wolf 320 (Shivering Mountain Pack), Gates of the Arctic National Park and Preserve, Alaska, April-December 1987.

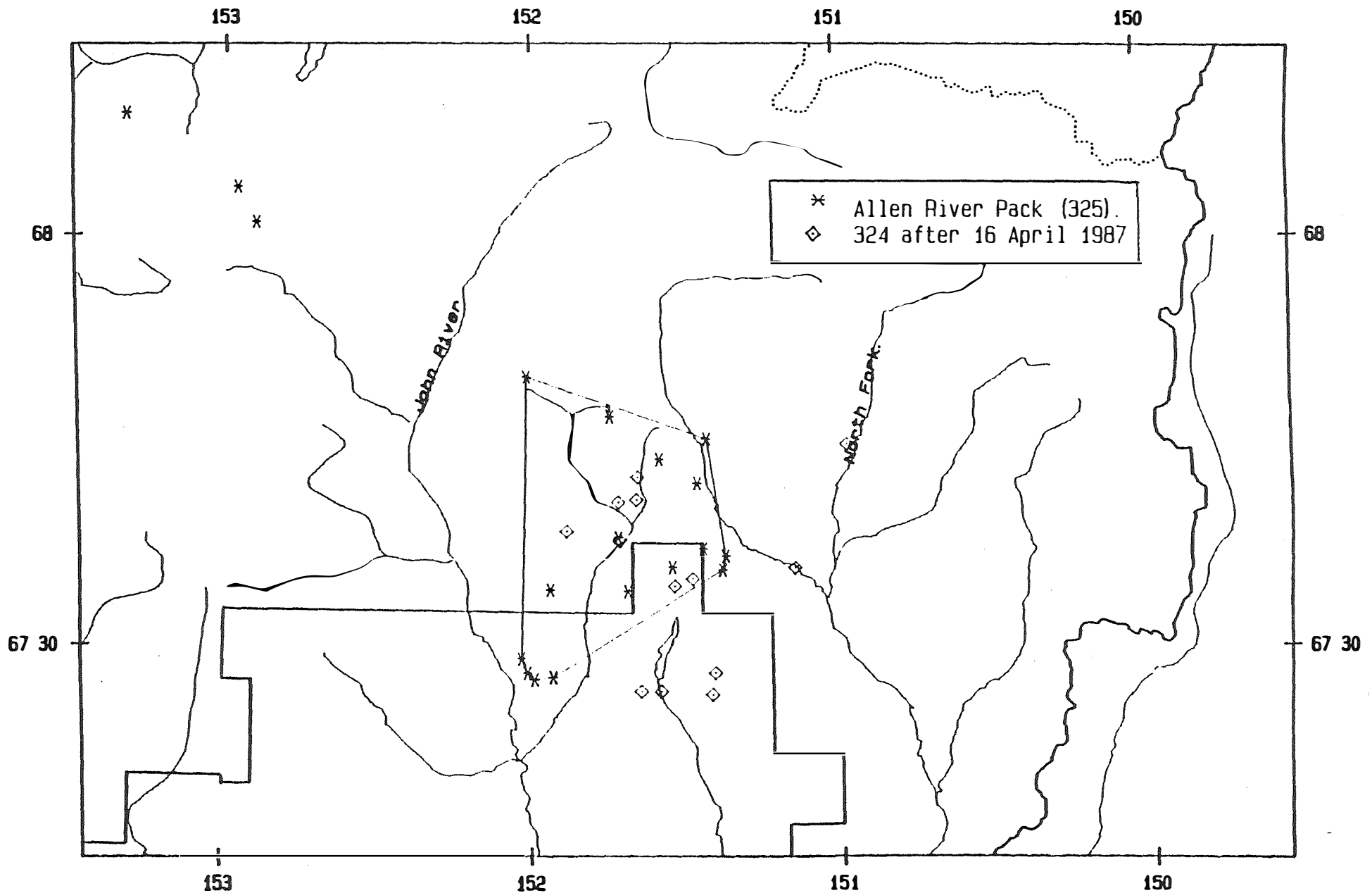


Figure 16. Radiolocations and approximate home ranges of wolves 324 and 325 (Publituk Pack), Gates of the Arctic National Park and Preserve, Alaska, April-December 1987.

grey wolves and the pack's name has been changed to the Allen River Pack. They have inhabited the upper Allen River drainage and areas east to the Tinayguk drainage (Figure 16).

Redstar Pack: A grey adult female (327) and a grey male yearling (328) were captured out of a group of four grey wolves on 7 April 9km east of Tobin Mountain. They inhabited the lower John River and Wild Lake area (Figure 17) during the spring. Wolf 328 was last seen in the study area on 7 May. He was subsequently located on 2 October on Thomas Creek north of the Old Crow Flats in the northern Yukon Territories, Canada, a distance of over 500 km from his capture site. He was accompanied by a radiocollared female wolf that had been instrumented by the Yukon Department of Renewable Resources. Wolf 327 was apparently alone for the remainder of the year and travelled throughout the Wild Lake-John River area and ranged as far south as the South Fork of the Koyukuk River (Figure 17). She was located in or near a mining camp on Flat Creek in July, and apparently killed a dog at the Crevice Creek homesite after that.

Bluecloud Male: On 8 April, we captured a grey young adult male from a pack of six wolves on Mascot Creek. He was located with the other wolves on 15 April, but was alone for the remainder of the summer and fall during which time he had moved to the east near the Haul Road (Figure 18). By 19 November, he was accompanied by another grey wolf. In late December, 329 was snared by a trapper in the vicinity of Wiseman.

Hanging Glacier Pack: A black adult female (330), the alpha female, was captured from a pack of five greys and two blacks on the west flank of Twoprong Mountain on 8 April. This pack has

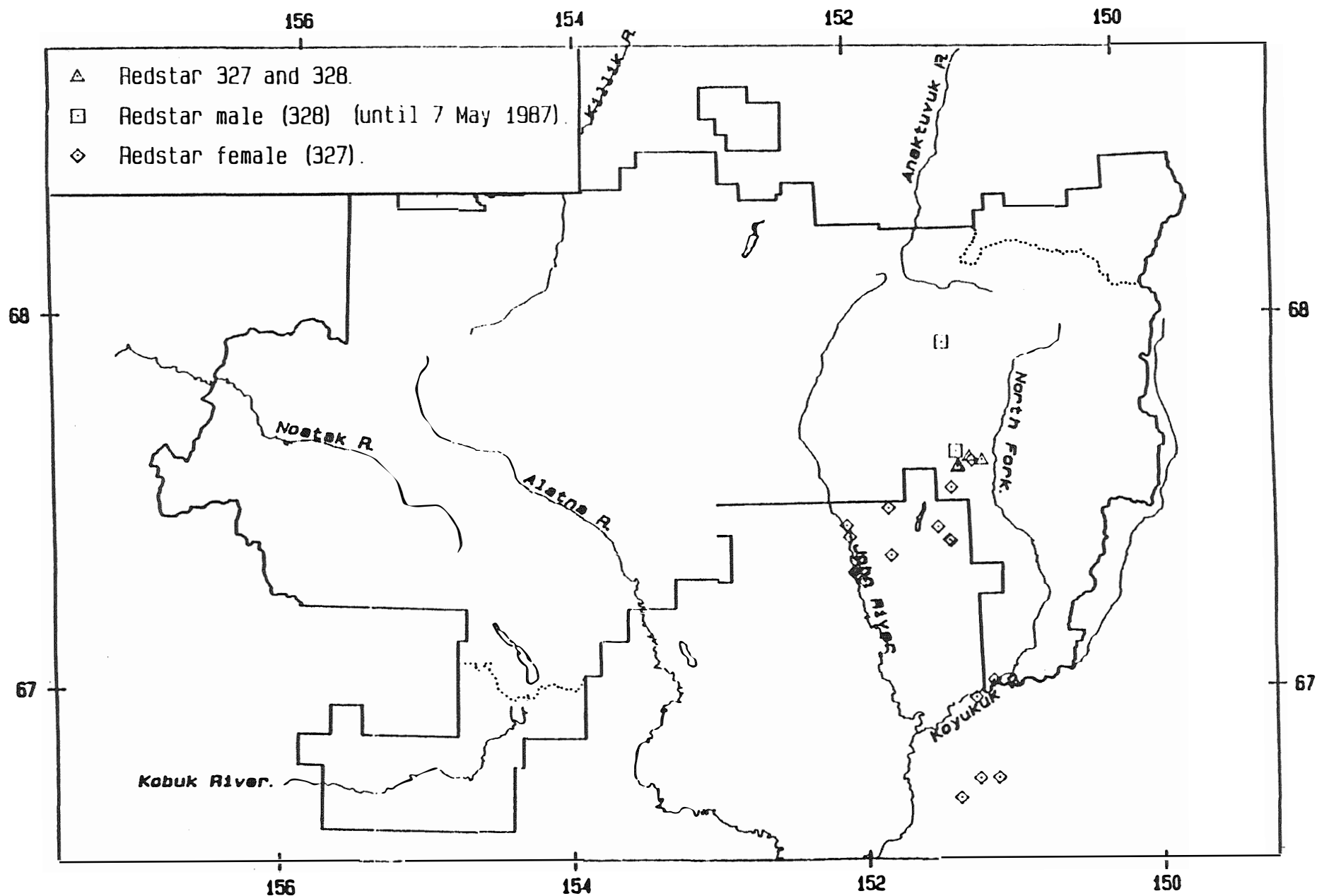


Figure 17. Radiolocations of wolves 327 and 328 (Redstar Pack), Gates of the Arctic National Park and Preserve, Alaska, April-December 1987.

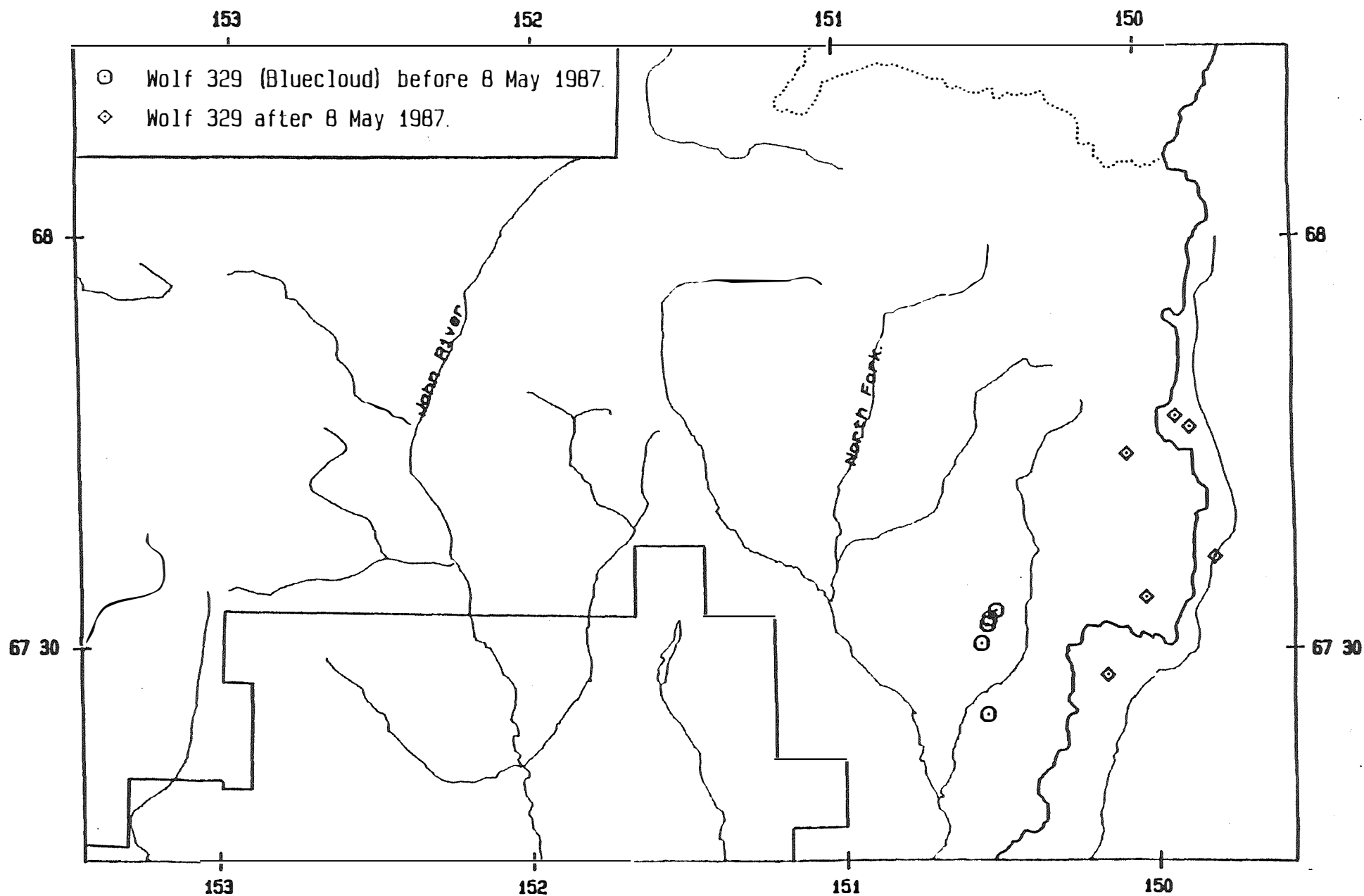


Figure 18. Radiolocations of wolf 329 (Bluecloud Male), Gates of the Arctic National Park and Preserve, Alaska, April-December 1987.

inhabited the upper North Fork throughout the year (Figure 19). Two pups were produced at a den on the North Fork. Nine wolves were observed in October and seven (3 greys, 4 blacks) could be accounted for in November.

Productivity

Of the 15 pairs or packs expected to have litters, we know that 12 produced pups (Table 4). Late summer minimum litter size averaged 3.9 pups/litter. Nine of the packs were known to have four to six pups.

Of the remaining three packs, the Sixtymile Pack was known to have five pups on 1 June. By 26 July, only one pup could be verified and it is assumed that the others did not survive.

Only one pup could be accounted for in the Tinayguk Pack and it was observed only on 30 June as it nursed a nonradioed pack member. These wolves wandered out of a dense stand of spruce that could have contained additional wolves. The spruce stand was searched for a den in September and there were abundant scats, but no actual den was located. Since no other pups were ever observed and the pack size did not increase after the denning season, it is unlikely that more pups survived.

The Hanging Glacier Pack apparently had two pups. One black pup was observed unattended at the den on 2 July. A grey pup was observed on 17 September, and a black pup on the following day. In both situations where the pack members were not observed, they

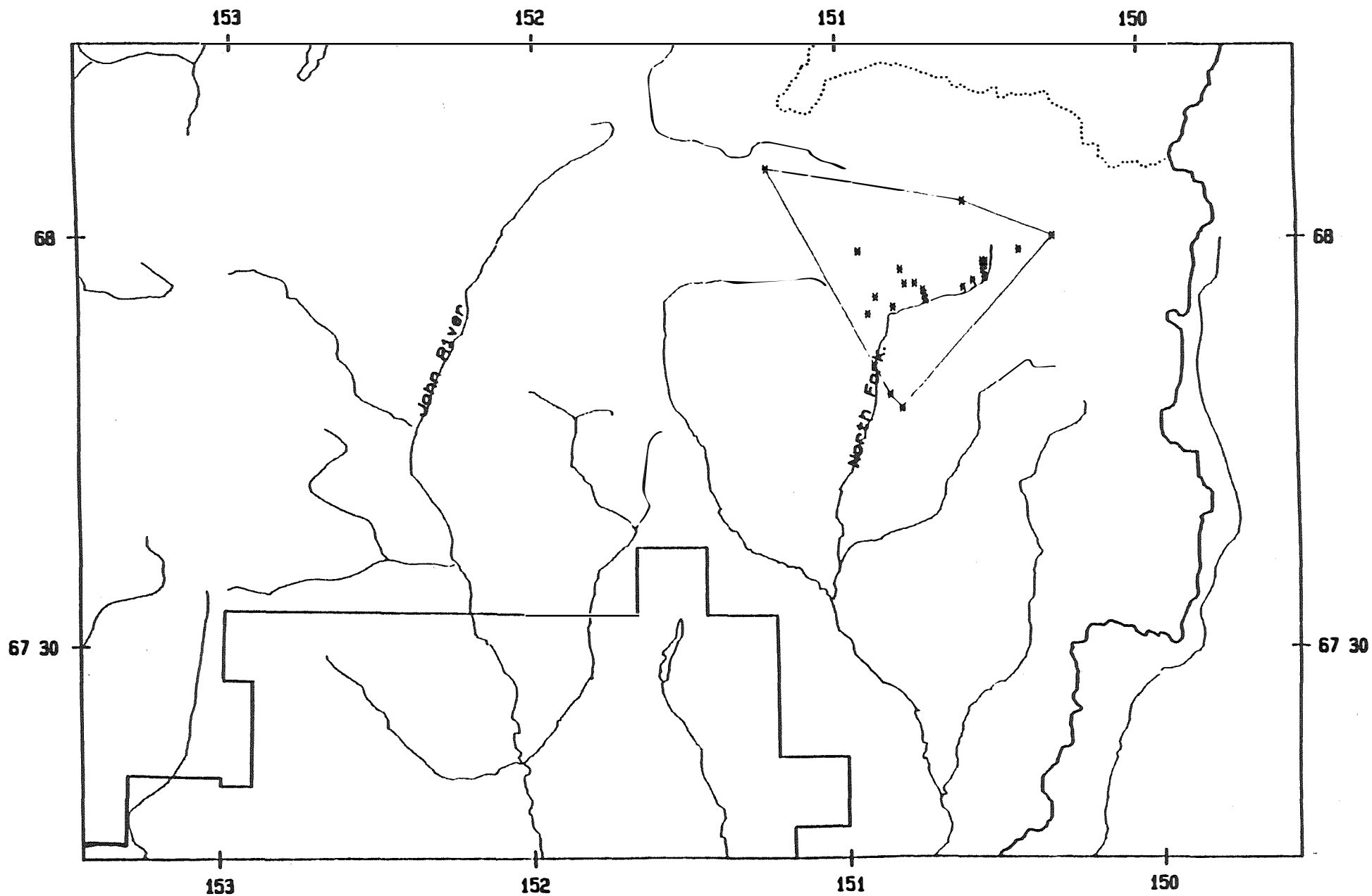


Figure 19. Radiolocations and approximate home range of wolf 330 (Hanging Glacier Pack), Gates of the Arctic National Park and Preserve, Alaska, April-December 1987.

could have been present but obscured by trees and brush. Although it is possible that these two observations were of the same pup and that differences in lighting may account for the color differences between days, the pre-denning pack size increased by two wolves after denning, indicating that it is likely that two pups were produced.

For two of the three remaining packs, Redstar and Publituk, the individuals we radiocollared did not lead us to dens and we are unable to assess the likelihood of pup production. The Clear River Pair was observed together during the mating and early denning period but split up in late June. If the pair produced pups, they did not survive.

1986-87 Harvest

During the 1986-87 winter, 42 wolves were taken by residents of Anaktuvuk Pass (Tables 5,6). Of these 31 were taken within the boundaries of GAAR. The harvest was spread from November to mid-April with slightly less than half of the wolves being taken during March alone. Overall, roughly half the wolves were trapped and half were shot; however, within GAAR, 66% of the harvested wolves were trapped (Table 6). Trappers took wolves throughout the winter; whereas hunters were successful early and late in the winter when daylength was more conducive for travelling by snowmachine.

In addition, 17 wolves were harvested in and adjacent to the southern and eastern boundaries of GAAR as determined from ADF&G

Table 5. Wolves harvested by residents of Anaktuvuk Pass, Alaska, in and adjacent to Gates of the Arctic National Park and Preserve (GAAR), during winter, 1986-1987.

<u>Date</u>	<u>Location</u>	<u>GMU</u>	<u>Sex</u>	<u>Color</u>	<u>Method</u>	<u>In GAAR ?</u>
11-9	Okomilat	26	F	Gy	Shot	X
11-9	Okomilat	26	F	Gy	Shot	X
11-11	Ben Creek	26	F	Bk	Trap	X
11-15	Upper Chandler	26	M	Gy	Shot	X
11-18	Upper Chandler	26	M	Gy	Shot	X
11-86	Chandler	26	F	Gy	Shot	X
12-1	Chandler	26	M	Gy	Trap	X
12-6	Hunt Fork	24	F	Bk	Trap	X
12-6	Hunt Fork	24	F	Bk	Trap	X
12-6	Hunt Fork	24	F	Bk	Trap	X
12-22	Loon Lake	24	M	Bk	Shot	X
1-4	Hunt Fork	24	F	Gy	Trap	X
1-11	Hunt Fork	24	F	Gy	Trap	X
1-11	Hunt Fork	24	F	Gy	Trap	X
1-14	Chandler	26	F	Gy	Trap	X
1-19	Allen R.	24	M	Gy	Trap	X
2-4	Okomilat	26	M	Gy	Shot	X
2-20	North Fork	24	F	Gy	Trap	X
2-21	Yenituk	24	M	Gy	Trap	X
2-22	Yenituk	24	M	Gy	Trap	X
2-23	Hunt Fork	24	M	Gy	Trap	X
3-4	Unk.	?	?	Bk	Trap	
3-6	Upper Chandler	26	M	Gy	Trap	
3-6	Upper Chandler	26	M	Gy	Trap	X
3-8	North Fork	24	M	Gy	Trap	X
3-11	Hunt Fork	24	M	Gy	Shot	X
3-11	Hunt Fork	24	M	Gy	Trap	X
3-12	Killik (Agaak)	26	F	Gy	Trap	X
3-14	Castle Mountain	26	M	Gy	Shot	
3-14	Castle Mountain	26	M	Gy	Shot	
3-14	Castle Mountain	26	F	Gy	Shot	
3-14	Castle Mountain	26	F	Gy	Shot	
3-14	Wolverine Creek	24	M	Gy	Trap	X
3-17	Chandler	26	M	Bk	Trap	X
3-21	Chandler/Gunsight	26	M	Gy	Trap	
3-25	Anaktuvuk River	26	M	Bk	Shot	X
3-31	Gunsight	26	M	Gy	?	
3-87	Sukuk	26	M	Gy	Shot	
3-87	Sukuk	26	F	Gy	Shot	
4-2	Kollutyak	24	M	Bk	Shot	X
4-7	Giant Creek	24	M	Bk	Shot	X
4-18	N. of Chandler	26	F	Gy	Shot	

Table 6. Total known wolf harvest in and adjacent to Gates of the Arctic National Park and Preserve, Alaska, winter 1986-87.

MONTH	IN GAAR				IN AND ADJACENT TO GAAR					
	SEX		METHOD OF TAKE		SEX			METHOD OF TAKE		
	M	F	SHOT	TRAP	M	F	UNK	SHOT	TRAP	UNK
ANAKTUVUK PASS RESIDENTS										
11/86	2	4	5	1	2	4		5	1	
12/86	2	3	1	4	2	3		1	4	
1/87	1	4	0	5	1	4			5	
2/87	4	1	1	4	4	1		1	4	
3/87	8	1	2	7	13	4	1	8	9	1
4/87	2	0	2	0	2	1		3		
TOTAL	19	13	11	21	24	17	1	18	23	1
OTHER HARVEST (ADF&G SEALING RECORDS EXCLUDING ANAKTUVUK PASS)										
11/86					1	1			2	
12/86					2	3		1	4	
1/87					1			1		
2/87					3				3	
3/87					4	2		5	1	
TOTAL					11	6		7	10	
GRAND TOTAL					35	23	1	25	33	1

sealing records (Tables 6,7). Of those, five were taken in minor drainage units that include some portion of GAAR and it is at least possible that they were taken in GAAR. As with the Anaktuvuk Pass harvest, wolves were taken by trapping throughout the winter with the bulk of the hunting take (71%) occurring in March.

Carcass Necropsy

Necropsy data were obtained from wolves harvested in and around GAAR (Tables 8, 9). The majority of wolves in this sample were taken by residents of Anaktuvuk Pass (16 in 1985-86, and 32 in 1986-87).

The wolves examined were, with few exceptions, in fair to good nutritional condition based on measurements of subcutaneous and visceral fat reserves. Pup and adult body sizes were comparable to most other Alaskan wolf populations and showed normal variation (ADF&G, unpublished data). Food remains identified in stomachs suggest that caribou were the most important prey during winter. Of the 22 stomachs containing food (1985-86 and 1986-87 winter samples combined), seventeen (77.3%) contained caribou, two (9.1%) contained moose, one (4.6%) contained sheep, and two (9.1%) contained remains of wolves.

The level of radiocesium in each wolf was determined to aid in assessing the relative importance of caribou in the winter diet. The radiocesium method has been used to evaluate food selection and consumption in wolves (Holleman and Stephenson 1981). This method utilizes the accumulation of fallout radiocesium (Cesium

Table 7. Wolves harvested in and adjacent to Gates of the Arctic National Park and Preserve, Alaska, winter 1986-87, from Alaska Department of Fish and Game pelt sealing records. Wolves accounted for in Table 5 have been deleted.

Date	IN GAAR? ¹	Location	GMU	Sex	Color	Method
11/86		HAUL ROAD E.	24	f	gy	trap
11/86		HAUL ROAD E.	24	m	gy	trap
12/86		HAUL ROAD E.	24	m	gy	trap
12/86		HAUL ROAD E.	24	f	gy	trap
12/86		HAUL ROAD E.	24	f	gy	trap
12/86		MALAMUTE-JOHN	24	m	gy	shot
12/86		MALAMUTE-JOHN	24	f	gy	trap
1/87	POSSIBLE	HAUL ROAD	24	m	bk	shot
2/87	POSSIBLE	HAUL ROAD W.	24	m	gy	trap
2/87	POSSIBLE	HAUL ROAD W.	24	m	gy	trap
2/87	POSSIBLE	HAUL ROAD W.	24	m	bk	trap
3/87		METTENPHERG	24	m	bk	shot
3/87		METTENPHERG	24	m	bk	shot
3/87		METTENPHERG	24	m	bk	shot
3/87		METTENPHERG	24	f	bk	shot
3/87		METTENPHERG	24	f	bk	shot
3/87		METTENPHERG	24	m	bk	shot
3/87		METTENPHERG	24	m	bk	shot
3/87		METTENPHERG	24	m	bk	shot
3/87		METTENPHERG	24	f	bk	shot
3/87		METTENPHERG	24	f	bk	shot
3/87	POSSIBLE	HAUL ROAD	24	m	bk	trap

¹ REPORTED FROM MINOR DRAINAGES THAT INCLUDE SOME PORTION OF GAAR.

Table 8. Necropsy data from 16 wolves killed by residents of Anaktuvuk Pass, Alaska, 1985-1986.

Acc.#	Location	Harvest Date	Age	Sex	Color ¹	Est.Wt. (kilos)	Nutritional Condition	Stomach Contents	Radiocesium picocuries /kg.	Reproductive Condition	Comments
62077	April Cr-Killik	12/85	pup	F	--	35.0	good	empty	434	immature	
62079	April Cr-Killik	12/85	pup	F	Gy	27.2	fair	empty	697	immature	
62080	April Cr-Killik	12/85	pup	F	Gy	25.0	fair	empty	536	immature	
62075	Anaktuvuk River foothills	Unknown	pup	M	--	40.9	good	caribou	1170	-----	
62082	Anaktuvuk River foothills	Unknown	ylg	M	--	45.4	good	caribou	1810	-----	
62082	North Fork	03/08/86	pup	M	Bk	36.3	good	empty	1910	-----	
62078	Shainin Lake	01/15/86	pup	F	--	29.5	good	caribou	1041	immature	
62081	Shainin Lake	02/08/86	pup	F	Gy	35.0	good	caribou & ptarmigan	1080	immature	
62084	Shainin Lake	02/08/86	pup	M	Gy	40.9	good	caribou	1110	-----	
62086	Shainin Lake	02/08/86	4	F	Gy	36.3	good	caribou	1470	active	6 placental scars from 1985, 6 scars from previous litters.
62087	Itkillik River	03/08/86	3	F	Gy	38.6	good	caribou	----	active	In estrus, no placental scars.
62090	John River	12/01/85	pup	M	Bk	38.6	good	empty	----	-----	
62085	John River	12/01/85	pup	F	Bk	35.0	good	empty	1160	immature	
62083	Cache Lake	01/28/86	2	F	Gy	36.3	good	empty	2180	inactive	No previous pregnancies.
62088	Upper Anaktuvuk River	11/85	pup	F	--	35.0	good	caribou & feathers	----	immature	
62089	Upper Anaktuvuk	11/85	pup	M	--	38.6	good	empty	----	-----	

¹ Gy = grey, Bk = black.

Table 9. Necropsy results for wolves harvested during winter 1986-1987 in and adjacent to Gates of the Arctic National Park and Preserve, Alaska.
1986-1987 Wolf Necropsy Data

Number	Location	Harvest Date	Age	Sex	Estimated Wt.(kilos)	Color ¹	Nutritional Condition	Stomach Contents	Radio Cesium Picocuries/kg.	Reproductive Condition	Comments
Collected at Anaktuvuk Pass											
61317	Agaak Ck./Killik R.	3/12/87	Pup	F	31.8	Gy	Poor	Empty (Moose Antler Bait)	1150	Immature	
61318	Upper Okomilat	11/09/86	Pup	M	34.0	Gy	Fair	Caribou	1192	-----	
61319	Sulugiak/Okomilat	?/87	Pup	M	--	Gy	Fair	Empty	1293	-----	
61320	Marker M./Okomilat	11/15/87	4	F	38.6	Bk	Good	Wolf	1977	Inactive	6 placental scars, 1986; 4, 1985 61321
61321	Okomilat	12/15/86	Pup	M	36.3	Gy	Fair	Caribou	1147	-----	
61322	Marker Mt./Okomilat	11/18/87	5-6	M	45.4	Gy	Fair	Wolf	2063	-----	with 61320
61323	Sulugiak/Okomilat	11/15/87	2	F	40.9	Gy	Fair	Moose?	995	Inactive	
61324	Chandler ?	11/09/87	Pup	M	35.4	--	Fair	Sheep	1166	-----	
61325	Chandler	4/13/87	Pup	F	36.3	Bk	Good	Caribou	4299	Immature	traveling alone
61300	Walkaround Creek,										
	Hunt Fork	12/06/86	Pup	F	36.3	Bk	Good	Caribou	3019	Immature	
61301	Hunt Fork	12/06/86	Pup	F	25.0	Bk	Fair	Empty	2130	Immature	
61302	Hunt Fork	12/06/86	Pup	F	31.8	--	Poor	Empty	1979	Immature	
61305	Hunt Fork	12/26/86	Pup	F	34.0	Gy	Good	Empty	1675	Immature	
61306	Hunt Fork	2/23/87	Pup	M	38.6	Gy	Good	Empty	3516	-----	
61294	Hunt Fork	3/11/87	2?	M	38.6	Gy	Fair	Caribou	3953	-----	
61299	Hunt Fork	3/11/87	Pup	M	38.6	Gy	Good	Empty	4152	-----	with 61294
61313	Loon Lake	12/22/86	Pup	M	20.4	Bk	Poor	Empty	2647	-----	
61316	Wolverine Creek at										
	John River	3/14/87	4	M	45.4	Gy	Fair	Empty	2335	-----	
61311	Inukpuk Creek	4/07/87	3	M	42.7	Bk	Poor	Caribou	2704	-----	Tinayguk Pack #315
61307	Chandler Lake	3/17/87	Pup	M	34.0	Bk	Poor	Caribou	1775	-----	
61308	Suluak	2/87	Pup	F	40.9	Gy	Fair	Empty	856	Immature	
61309	Okomilat	1/17/87	Pup	F	22.7	Gy	Poor	Empty	1724	Immature	
61297	Ernie Creek	2/87	Pup?	M	43.2	Gy	Good	Empty	2746	-----	
61312	Ernie Creek	2/15/87	2	M	40.9	Gy	Fair	Caribou	2698	-----	
61315	Ernie Creek	1/15/87	Pup	M	40.0	Gy	Good	Moose	1071	-----	
61303	Yenituk Creek	1/05/87	8	F	38.6	Gy	Poor	Empty	3071	Inactive	lone wolf
61314	Yenituk Creek	3/15/87	Pup	M	36.3	Bk	Poor	Empty	1459	-----	
61295	Publituk Creek on										
	John River	2/15/87	8	F	36.3	Bk	Good	Empty	2484	Inactive	
61296	Publituk Creek	12/10/86	Pup	F	29.5	Gy	Fair	Empty	1713	Immature	
61298	Allen River	2/15/87	Pup	F	27.2	Gy	Good	Empty	2655	Immature	
61304	Gunsight Mountain/ Chandler	3/12/87	2	M	45.4	Gy	Good	Caribou	1353	-----	
61310	Ahaliorak, Anaktuvuk Pass	3/25/87	3	M	47.7	Bk	Good	Empty	1650	-----	
Collected at Bettles											
61291	Timber Creek, John R.	1/87	Pup	F	55	Gy	----	-----	590	Immature	
61292	Timber Creek, John R.	1/87	Pup	M	50	Gy	Poor	-----	----		
61293	Dall Ck., Kobuk R.	3/87	Ad.	M	85	Gy	Fair		12769		

¹ Gy = grey, Bk = black.

137) in prey species and the subsequent transfer to wolves to determine prey utilization. The level of radiocesium in caribou during winter is elevated to varying degrees, compared with moose, for example, because they consume more lichens. Because of their long life span and slow growth rate, lichens retain higher levels of radiocesium than other plants. Although radiocesium values measured in caribou, and wolves that prey on them, vary among regions, the level observed in wolves which prey on caribou is consistently higher than in wolves preying on moose. Even though wolves in and around GAAR probably rely heavily on caribou in winter, the levels of radiocesium observed in wolves during this study are low compared with most other areas, but are elevated compared with wolves which prey largely on moose. This may be caused by the relatively low use of lichens by caribou in this area compared with some other parts of the Western Arctic Caribou Herd's range (Boertje et. al. 1985), resulting in a lower radiocesium load in these caribou.

As summarized in Table 10, 68.6% of the wolves represented in the carcass collection were pups. The high proportion of pups in the harvested sample may reflect the productivity of wolves in this area, but also the higher vulnerability of pups to most trapping and hunting methods. Based on our observations of radio-marked packs in GAAR during the past year, the proportion of pups in the winter population is approximately 41%. Thus, the occurrence of pups in the harvest is higher than in the population, largely because of their greater vulnerability to harvest than that of adults.

Table 10. Sex and age composition of wolves taken in 1985-86 and 1986-87 in and near Gates of the Arctic National Park and Preserve (GAAR), Alaska, based on carcass examination.

Year	Number of carcasses	Pups			Adults			Percent pups in sample
				Total			Total	
		Male	Female	pups	Male	Female	adults	
1985-86	16	5	7	12	1	3	4	75.0
1986-87	35	12	11	23	8	4	12	65.7
Total	51	17	18	35	9	7	16	68.6

Food Habits and Prey Analyses

Scats were collected from 14 dens or rendezvous sites in late August. To date analysis of those scats has not been completed.

Since instrumenting the wolves, we have located them on 59 kills where the prey species could be determined, including 36 caribou kills, 14 moose kills, and 9 sheep kills. Since it requires more time for wolves to consume a moose, there is a greater chance of finding them on a given moose kill. Therefore, it is likely that sheep and caribou are even more important to wolves in GAAR than these results indicate.

We investigated 11 caribou kills in conjunction with the March-April capture effort. Although the sample size is too small for any definitive analyses at this point, it is interesting to note that 3 of the 11 caribou had necrotic mandibles and/or infected, swollen hooves (Table 11) which may have made them more vulnerable to predation.

Year End Status

At the end of 1987, 25 of the original 30 radiocollared wolves were still within the study area (Table 12). Including the instrumented wolves and their associates, we can account for 114 wolves (86 greys, 28 blacks) including four lone adults, three pairs, and thirteen packs that average eight wolves/pack.

Three of the radiocollared wolves have apparently dispersed from the study area. Wolves 321 and 328 are known to be in northern

11. Characteristics of caribou kills investigated during 29 March - 9 April, 1987, in Gates of the Arctic National Park and Preserve, Alaska.

No.	Date Collected	Sex	Age	Marrow Fat		Physical Abnormalities	Hindfoot Length (cm)	% Consumed
				Femur (%)	Other (%)			
7002	03/29/87	F	Y	33.1		infected rear hoof	53	25%
7003	04/09/87	Unk	Ad					95%
7006	04/09/87	F?	Ad		66.3 ^{1,2}			100%
7016	04/01/87	Unk	Ad	77.8				98%
7021	04/02/87	M	Ad	41.0				90%
7027	04/09/87	F	Ad	8.5	6.0 ³		60.5	99%
7032	04/09/87	F	Ad	12.4		severe lumpy jaw		99%
7033	04/09/87	F	Ad		22.8 ^{1,2}			98%
7035	04/07/87	M	Ad	82.2		infected rear hoof severe lumpy jaw	58.0	5%
7039	04/09/87	M?	Ad	18.1	17.3 ²		56.3	98%
7045	04/09/87	M	Ad	50.8				70%

¹ marrow probably dehydrated

² mandible

³ tibiofibula

yukon Territories, Canada. Wolf 319 has not been located since 23 August and is assumed to have dispersed, although it is possible that its collar has malfunctioned.

Two instrumented wolves have been harvested. Wolf 315 was shot by an Anaktuvuk Pass resident, on 7 April in Inukpasugruk Creek, a few days after being radiocollared. Wolf 329 was snared in late December by a trapper in the vicinity of Wiseman.

1988 Project Plans

This year will be the second of three years planned for this investigation of wolf population ecology. We plan to continue a similar effort in 1988 to that described for 1987. Radiotracking will continue at approximately a one week/month schedule in order to refine our pack territory estimates and monitor the population dynamics of the study packs for an additional year.

We hope to radiocollar an additional 20 wolves in early April. The major objective of this capture effort will be to ensure that we have 2 radiocollars in each of the present study packs. Once that goal is met, we will attempt to search for new packs in particular areas of interest, such as the Anaktuvuk Pass area and the Wiseman-Haul Road area. We do not plan to expand our efforts into the Nigu, Noatak, or Kobuk drainages.

We will continue to collect wolf harvest information and purchase carcasses in Anaktuvuk Pass. We have also made arrangements to purchase wolf carcasses from most trappers known to be trapping

along the southern edge of GAAR.

In order to gain some insights into wolf-caribou relationships, we plan to investigate caribou kills located during the spring capture effort to determine characteristics such as sex, age, and condition of caribou killed by wolves. For comparison, we have been collecting jaws and hind feet from caribou harvested by Anaktuvuk Pass hunters.

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remote locations in GAAR and by radiotracking instrumented wolves during the capture effort.

Pilots Sandy Hamilton, Bill Lentsch, and Don Glaser have conducted the bulk of the radiotracking flights. Bruce Dale, Wildlife Biotechnician, has assisted with radiotracking and has done the majority of the data management and analyses.

Bob Ahgook, Wildlife Biotechnician, accumulated harvest information in Anaktuvuk Pass and, with the assistance of Grant Spearman, conducted the carcass collection effort there. Grant has graciously provided us with a place to stay on our periodic visits to Anaktuvuk Pass. We certainly appreciate both of their efforts. Finally, we wish to thank the people of Anaktuvuk Pass for their hospitality and assistance with this research.

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