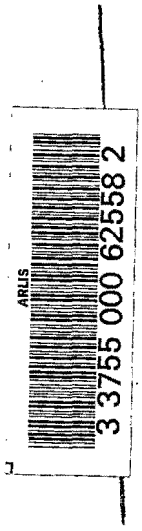
0980

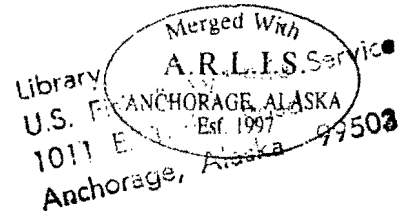


1987 Wolf Survey, Nowitna National Wildlife Refuge

by

Andy Loranger

Key Words: Nowitna National Wildlife Refuge, wolf, wolf tracks, aerial survey, population estimate, pack territories



Nowitna National Wildlife Refuge
P.O. Box 287
Galena, AK 99741
1 April, 1987

ARLIS
Alaska Resources
Library & Information Services
Anchorage, Alaska

Title: 1987 Wolf Survey, Nowitna National Wildlife Refuge
Dates: 18-20 March 1987
Author: Andy Loranger, USFWS, Nowitna NWR
Data Supplied By: Jim Fisher, USFWS, Nowitna NWR
Tim Patton, USFWS, Nowitna NWR
Colin Brown, USFWS, Nowitna NWR
Andy Loranger, USFWS, Nowitna NWR

Introduction

The Nowitna National Wildlife Refuge (NWR) consists of slightly over 2 million acres (3000 sq. mi.) in central Alaska (Fig. 1). An aerial survey of the entire refuge was conducted on 18-20 March 1987 using track counts to obtain a wolf population estimate. The importance of quantifying the Nowitna wolf population has been heightened recently by a documented decline in the area's moose population (Loranger 1986). A similar survey was conducted in March 1985 and comparisons are presented below.

Methods

A total of 14 north-south transects at approximately 5-mile intervals (10 min. compass headings) were flown with a Cessna 185 aircraft at above-ground altitudes of 200-400 feet and at airspeeds of approximately 90 mph. Deviations from flightlines to examine drainages and ridges were taken when deemed appropriate. The southern portion or "tail" of the refuge was surveyed by flying over the Nowitna River and some of its tributaries, including the Sulukna River, Mastodon Creek, California Creek and the Titna River. The survey crew consisted of a pilot and front and rear seat observers.

3 3755 000 62558 2

Fresh wolf tracks were followed in attempts to locate packs for direct enumeration. When direct counts were not possible, packs were enumerated by counting individual tracks. All locations of packs and/or tracks were recorded on a USGS 1:250,000 map (Ruby, Alaska).

Results and Discussion

A total of 60 observations of wolf track(s) were recorded and 12 wolves were observed (groups of 3, 3, 4 and 2) (Figure 2). Tracks were observed along all of the transects flown. As expected, wolf activity was most concentrated in drainages, i.e. along the Yukon and Nowitna rivers and their tributaries.

Nineteen separate sightings of wolf tracks were made during the 1985 survey. These tracks were judged to be representative of 6 packs ranging from 6-23 individuals, and totalling 74 wolves (USFWS 1985). The survey was conducted under ideal snow (immediately following a snowfall) and light (clear) conditions.

Although light conditions during the 1987 survey were excellent, snow conditions were poor and complicated interpretation of track observations. Snow depths ranged from 24 to 55 inches, and as a

result wolves were following existing game trails and when breaking trail, remained in single file. In addition, the most recent snowfall had occurred in late February, 21 days before the survey. Tracking of wolves was therefore largely precluded and track accumulation decreased our ability to differentiate pack territories and reduced sightability of tracks in areas of concentration of other species, especially moose. The greater number of track observations made during this survey can be attributed to track accumulation.

For these reasons, accurate enumeration of the Nowitna wolf population is not possible at this time. Some general inferences can be drawn, however. Wolf sightings and track counts from this survey and information provided by local trappers were used to obtain the estimates of pack size and delineation of territories presented in Table 1. We emphasize that pack sizes and the overall total of 65 wolves are most likely minimum estimates, and that territories have not been definitively determined. Some packs represented separately may in fact be parts of larger packs.

Areas of concentrated activity noted during this survey suggest similar pack territories to those observed in 1985 (Figures 3 & 4). Observations of wolves near the mouth of the Nowitna River (3 individuals), along the upper Sulatna River (3), at the confluence of the Big Mud and Nowitna rivers (2), and along the upper Nowitna River (4) also substantiate these earlier findings. All wolf group sightings were associated with moose kills, and the distribution of wolf packs on the refuge is closely associated with areas of winter moose concentrations. The estimated number of packs and approximate territories are consistent with other investigations in Interior Alaska. Stephenson (1978) notes pack territories of 300-2000 sq. mi., with most falling in the lower end of this range. Preliminary results of wolf telemetry studies on the middle Yukon River drainage indicate that some packs occupy substantially smaller territories (40-150 sq. mi.) (T. Osborne, ADF&G, pers. comm.).

Although no definitive conclusions can be drawn from the number of wolves seen, it is highly unlikely that this type of survey would result in nearly 20% of the total wolf population being observed. This lends further credence to our belief that the wolf numbers derived are minimum estimates. Known harvest levels for wolves have been relatively low in recent years (3 in 1985, 3 in 1986), although refuge trappers have reported an increase in wolf numbers. Land and shoot wolf trapping activity has apparently increased on the refuge in 1987, and at least 12 wolves have been harvested this spring.

A moose census conducted in November 1986 over 1500 sq. mi. of the lower Nowitna drainage documented a substantial decline since 1980 in the area's moose population (Loranger 1986). Population estimates at the 90% confidence level were 1390$\pm$ 373 in 1980 and 793$\pm$ 191 in 1986. The censused area includes most of the refuge's best winter moose habitat. Doubling the upper and lower values of the confidence interval around the 1986 estimate (to estimate the entire refuge's moose population) and dividing by our minimum estimate of 65 wolves gives moose:wolf ratios ranging from 9:1 to 30:1. Since ratios of 20

moose per wolf and less can result in wolf predation alone causing declines in moose populations (Gasaway et al. 1983), predation by wolves is strongly implicated as a contributing factor in the lower Nowitna moose population decline.

Management Recommendations

An accurate determination of the Nowitna NWR wolf population has become necessary in light of the recent decline in the area's moose population. Since ideal snow and light conditions are required to maximize the accuracy and efficiency of aerial track/direct count surveys, total flexibility in terms of preparedness is needed to take advantage of the often limited opportunities during which these conditions prevail. Opportunities to conduct the survey in early winter should also be taken advantage of. Strong consideration should also be given to a telemetry-facilitated inventory. Given the current knowledge of pack distribution on the refuge, radio-collaring would efficiently provide an accurate estimate of the Nowitna wolf population. A telemetry study would concurrently contribute information as needed to understand the dynamics of wolf-moose interelationships on the refuge.

Literature Cited

Gasaway, W.C., Stephenson, R., Davis, J., Sheperd, P. and O. Burris. 1983. Interralationships of prey, man, and wolves in interior Alaska. Wildl. Monogr. No. 84. 50 p.

Loranger, A. 1986. 1986 moose census, lower Nowitna River drainage. Unpublished report. U.S. Fish & Wildlife Service, Nowitna National Wildlife Refuge. Galena, Alaska. 10 p.

Stephenson, R.O. 1978. Characteristics of exploited wolf population. Alaska Department of Fish and Game. Final Report. Fed. Aid in Wildl. Rest. Proj. W-17-3 through W-17-8, Job 14.3R.

U.S. Fish and Wildlife Service. 1985. Wolf survey - 1985. Unpublished report. Nowitna National Wildlife Refuge. Galena, Alaska.

Table 1. Wolf pack territories and sizes on the Nowitna NWR, March 1987.

	Pack Territory	Number of Wolves
1)	Yukon River/Nowitna River mouth	14
2)	Sulatna River	3
3)	Lower Nowitna River	20
4)	Little Mud River	4
5)	Big Mud River	Unknown
6)	Upper Nowitna River	9
7)	Upper Nowitna River	4
8)	Titna River	4
9)	Blind River	7
	Total	65

NOWITNA
NATIONAL WILDLIFE REFUGE

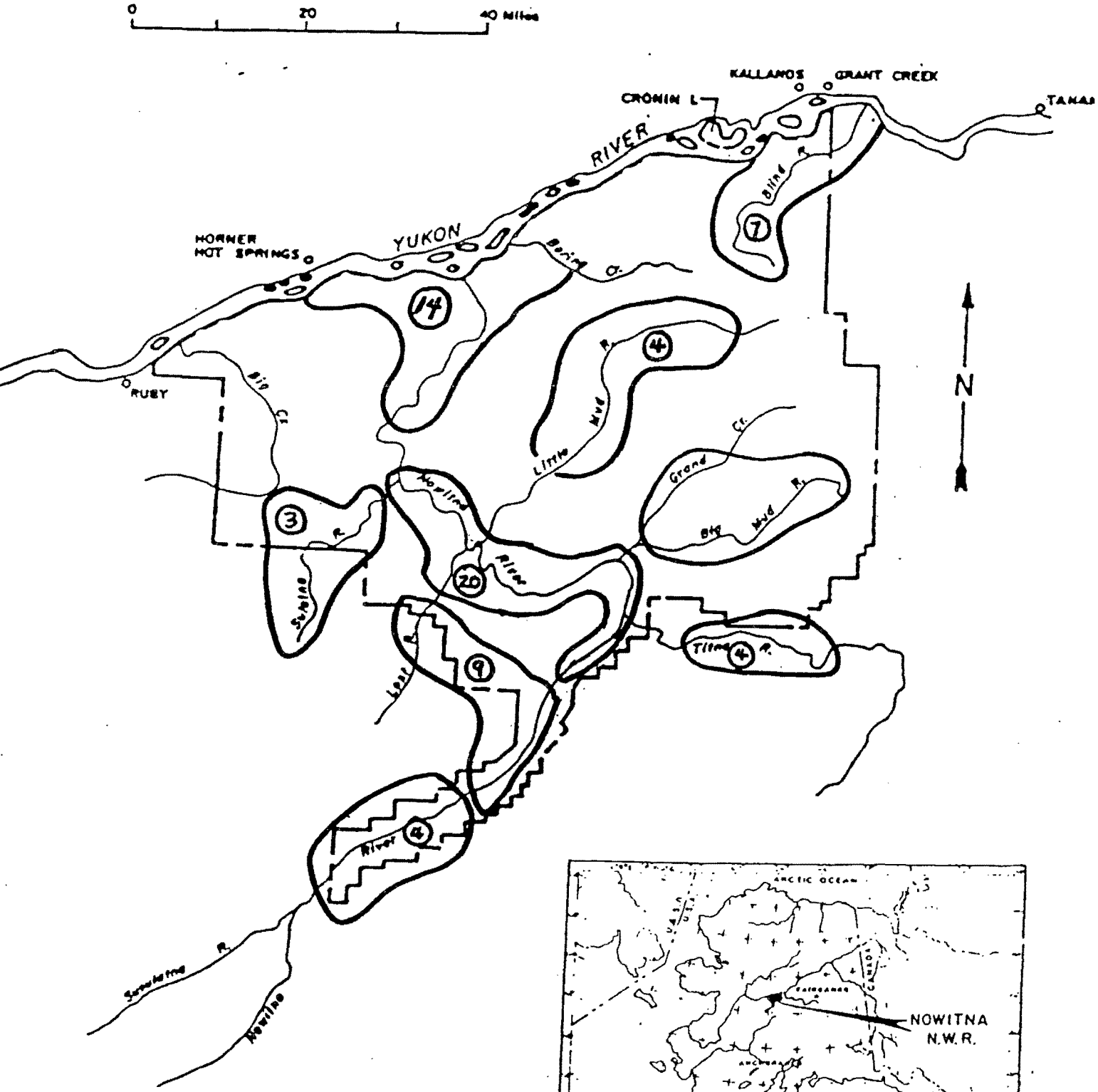


Figure 4. Wolf pack territories and pack sizes, Nowitna NWR, 1987.

Merged With
A.R.L.I.S.
ANCHORAGE, ALASKA
Est. 1997
Anchorage, Alaska

NOWITNA
NATIONAL WILDLIFE REFUGE

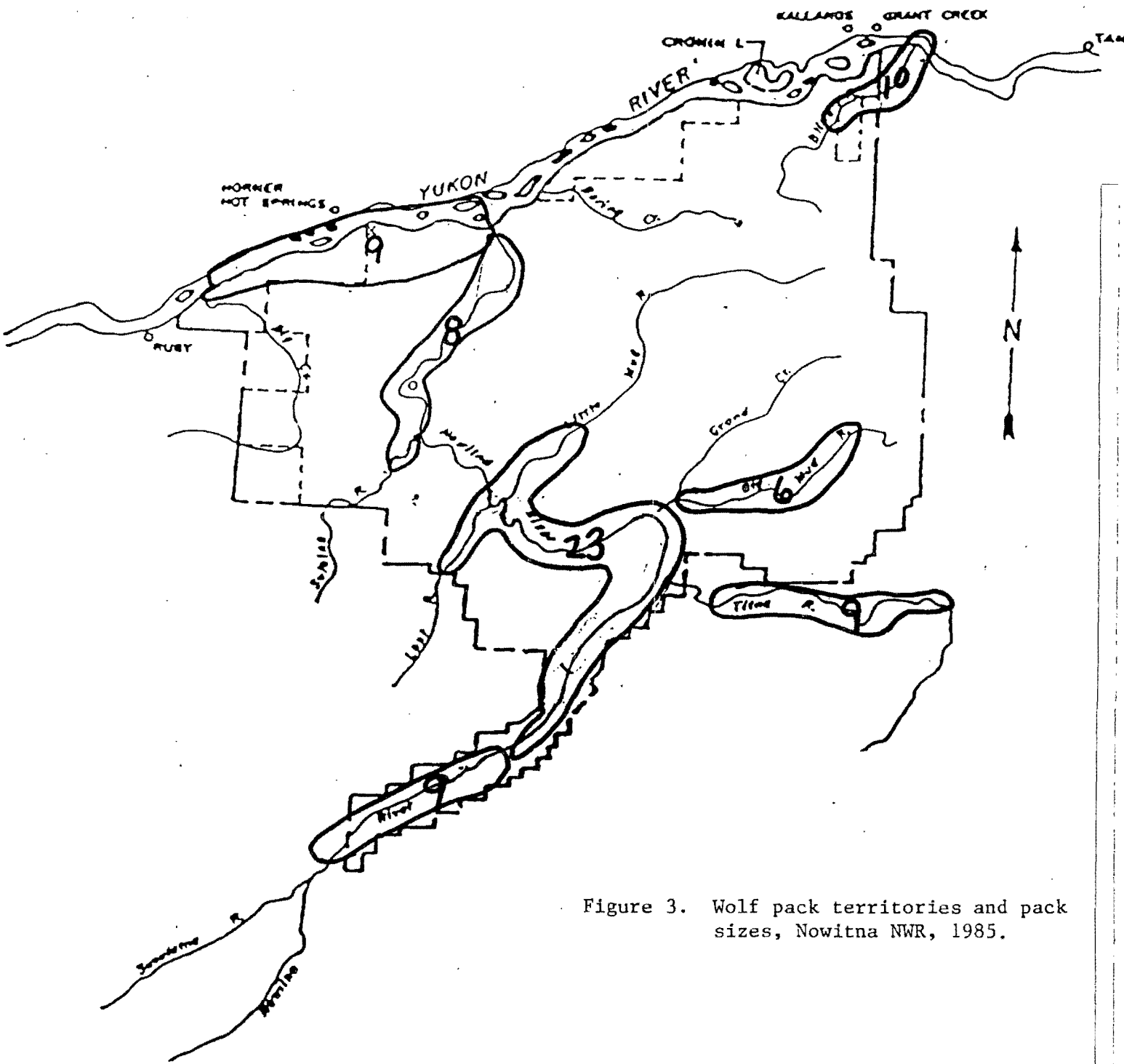


Figure 3. Wolf pack territories and pack sizes, Nowitna NWR, 1985.

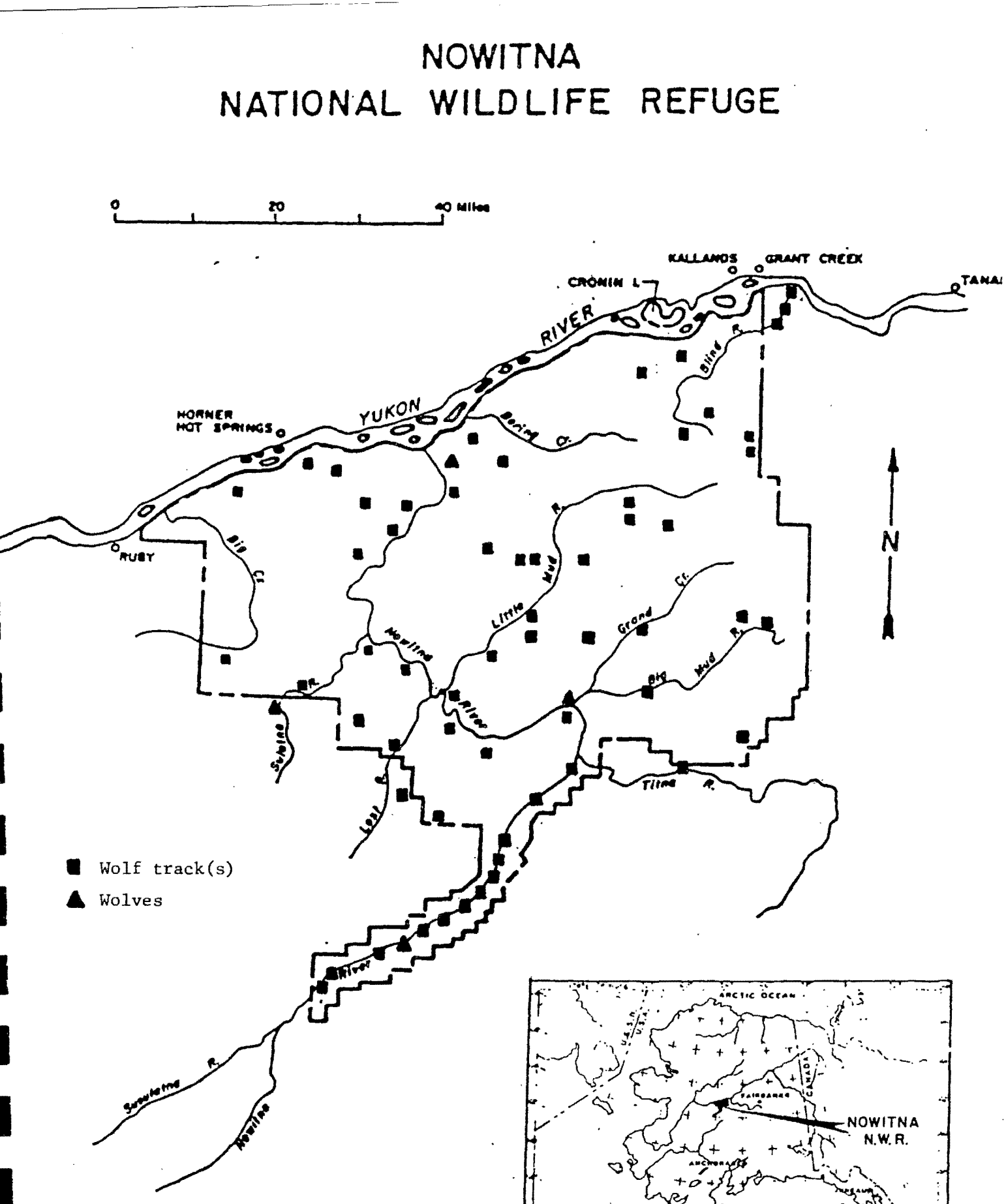


Figure 2. Observations of wolf track(s) and wolves, Nowitna NWR, 18-20 March, 1987.

Figure 1. Nowitna National Wildlife Refuge, Alaska.

