

92-14

GRAY WOLF STUDY

SKAGIT VALLEY

Submitted to : Skagit Environmental Endowment Commission
Submitted from : Ministry of Environment, Lands and Parks
BC Parks, South Coast Region
Planning and Conservation Services

"The wolf is a complex, controversial, and colourful creature. The mere sight of one standing placidly in drab surroundings would greatly excite most people. But a wolf rarely stands placidly. The animal is usually bounding through the underbrush, trotting across a frozen lake, or frisking playfully on an open ridge. When it does stand still, it keeps its ears erect, its eyes alert, and its nose sifting every scent. A slight move on an observer's part and the wolf is gone."

L. David Mech, 1970, The Wolf

SUMMARY

In British Columbia, the Gray Wolf (*Canis lupus*) has been listed as "threatened" by the Wildlife Branch of the Ministry of Environment, Lands and Parks. This designation indicates the species is not at risk but must have a management emphasis to aid in population stability. To this end, proper management requires reliable information on gray wolf distribution and population dynamics within the Skagit River drainage. In addition, the gray wolf is listed as an Endangered Species by both the U.S. Fish and Wildlife Service (FWS) and the Washington Department of Wildlife (WDW). Information from the research project will be used to develop a long term, interagency management plan for the gray wolf in both Washington and British Columbia within the North Cascades Ecosystem.

In 1992, a cooperative project to research the population status of the gray wolf in the Skagit Valley was funded through the Skagit Environmental Endowment Commission. The National Park Service (NOCA), the Washington Department of Wildlife and the Ministry of Environment, Lands and Parks (B.C. Parks and B.C. Environment) were part of the proposal to collect this biological information. Once the administration coordination was complete the project focused on the attempt to capture and radio-collar one or two gray wolves. Several gray wolves had been sighted in the Ross Lake area during May and June of 1990-1992 (inclusive). There were no actual sightings or evidence of gray wolves in the Skagit Valley Study Area during the trapping period. It is unknown why but some suggestions include the unseasonably warm, dry winter and early spring; or the wolves may have met their demise; or there may have been different animals moving through the Upper Skagit River drainage each year.

This project has been approved for the 1993/1994 fiscal year and will be initiated in April, 1993. Assuming a successful capture and telemetry program, the tracking of the gray wolf in the Skagit Valley would continue for the life of the collar, generally three (3) years. It is hoped with the knowledge gained this past year working with four (4) agencies will greatly facilitate the project for 1993.

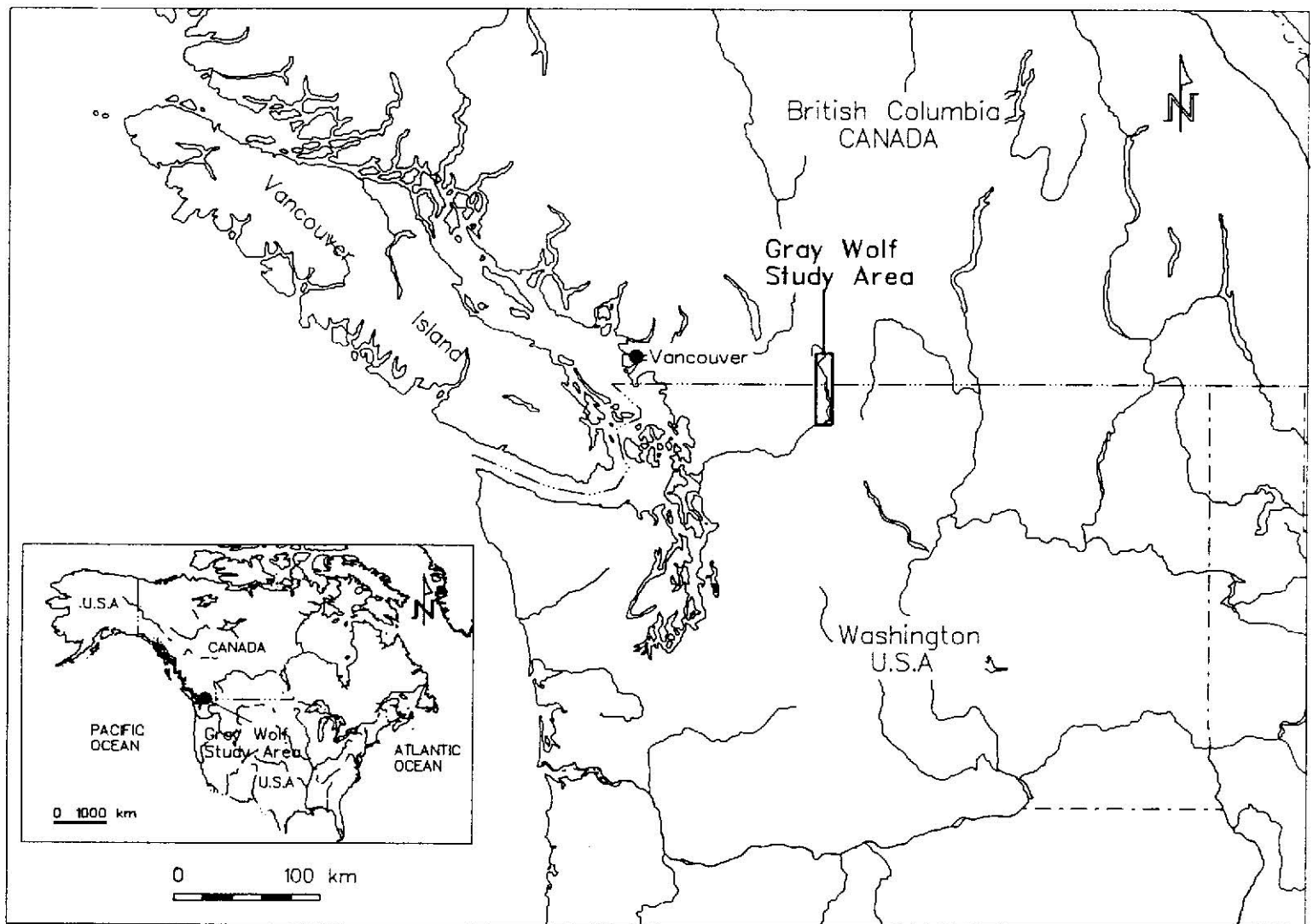
Judy Millar
Resource Officer
South Coast Region

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Location Map

1.0 INTRODUCTION

Wolves in British Columbia are listed as a threatened species and in the State of Washington, as an endangered species. It is for these reasons that agencies from both sides of the border have joined forces to research the status of the Gray Wolf (*Canis Lupus*) in the Skagit Valley.

In May and June of 1990, a number of wolf sightings were reported in the Skagit Valley from two kilometres south to six kilometres north of the United States/Canadian border. National Park staff and Washington Department of Wildlife biologists have positively identified the particular species as a gray wolf. Combined efforts by the Washington Department of Wildlife and British Columbia Ministry of Environment, Lands and Parks led to the formation of a field study aimed at trapping and radio-collaring gray wolves for observation.

This report deals with a recently completed field study of the Gray Wolf in the Skagit Valley Recreation Area. The report is presented in six sections. The following is a brief description of each section:

- information on general wolf biology
- information provided to the public during the field study
- methods for determining wolf presence
- trapping procedures performed
- liaison between American and Canadian field staff
- economics of the project

2.0 WOLF BIOLOGY

The gray wolf is a member of the Canidae, or dog family, which belongs to the Order Carnivor. While externally the gray wolf resembles a large domestic dog, such as the Husky or German Shepherd, there are several features by which it can be easily differentiated. Generally, wolves have relatively longer legs, larger feet and a narrower chest (Banfield, 1974). A wolf's tail is straight compared with the upward curve of a long-tailed domestic dog. Another distinction is the wide tufts of hair that project down and outward from below a wolf's ears (Mech, 1970). The wolf is also recognized by its distinctive pelage (or fur coat) consisting of long, coarse guard hair, and much shorter, softer underfur (Young and Goldman, 1944; Mech, 1974).

Wolves have been found in a broad range of habitat including taiga, plains, savannahs, arctic tundra and hardwood, softwood and mixed forests. Surviving best in remote areas away from human persecution, they live in low densities and have extensive home ranges [390 to 3100 km²] (Mech, 1970). The wolf's presence seems to have depended on the availability of suitable prey rather than on land form, climate or vegetation (Paradiso and Nowak, 1982).

The wolf is strictly carnivorous and typically preys upon deer (*Odocoileus* spp.), moose (*Alces alces*), caribou (*Rangifer tarandus*), beaver (*Castor canadensis*), Dall and bighorn sheep (*Ovis* spp.)

Wolves are highly social animals and almost always live in packs. The pack consists of individual wolves who hunt, feed, travel and rest together. Pack size ranges from less than eight to as many as 36 animals (Mech, 1966). Strong bonds of affection between pack members seem to hold the pack together. There is a strict, rigidly enforced social structure based on dominance. The alpha male and alpha female each dominate their own order: alpha male over other males, alpha females over other females. The alpha male is dominant over the alpha female except during the caring of newborn young when the female dominates the alpha male (Schoenberger, 1965).

Wolves gain sexual maturity in their second year, but often do not breed until their third year. It is commonly thought that wolves mate for life. Breeding can take place any time between January and April, depending on latitude. The gestation period is 63 days. Selecting a sheltered place, such as a hole, rock crevice, hollow log, or overturned stump, a females gives birth to an average of six (from one to eleven) young (Mech, 1974).

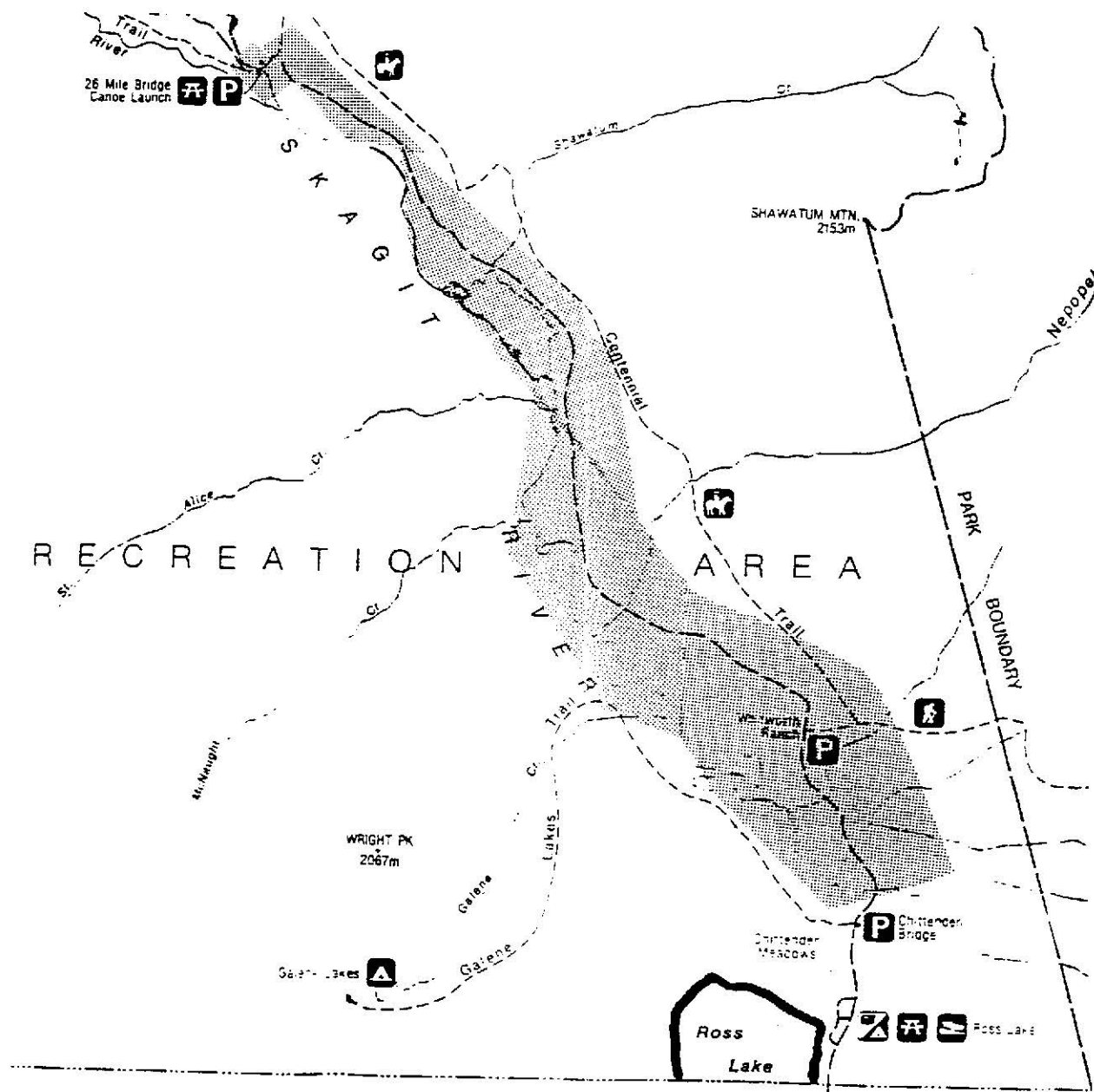
The wolf communicates in a variety of ways. They may use posture, whimpering, howling or positioning themselves to indicate mood and commands. Of particular interest is the wolf's howl. This is a low, mournful moan which may be heard throughout the year at any time of day. An important function of howling seems to be as an aid in assembling the pack (Mech, 1970). Howling may also be used to advertise and maintain territories (Harrington and Mech, 1979), identify individuals and even indicate specific activities the wolf may be engaged in, [i.e., lying, pacing, or walking

slowly] (Mech, 1970). One researcher even attributed a pack's howling to a happy social occasion (Crisler, 1956).

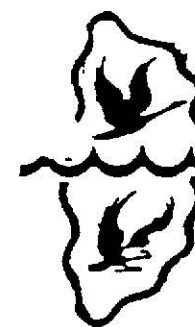
3.0 PUBLIC INFORMATION

An important component of the project was keeping the public aware of the restricted access areas and the reasons for these closures. Ways in which this was achieved included distributing a brochure indicating the purpose and methods of the project (see Figure 2) and talking to the visitors on a regular basis. In talking to campers, specific details and concerns could be addressed that the brochure did not necessarily cover. People were always more receptive to the closures once the project was fully explained.

CLOSURE FOR RADIO-COLLARING WOLVES



PLEASE DO NOT STOP ALONG OR VENTURE
OFF THE MAIN SKAGIT VALLEY ROAD.



SKAGIT ENVIRONMENTAL
ENDOWMENT COMMISSION

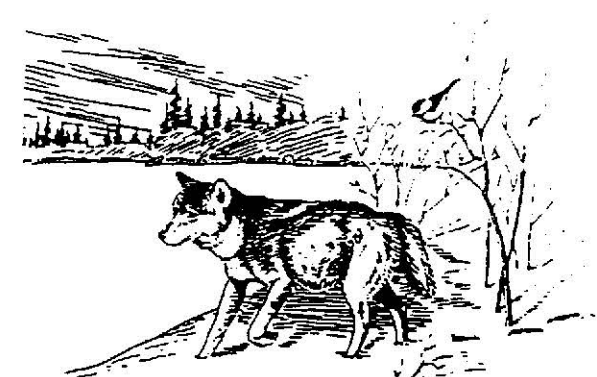


SKAGIT VALLEY

RECREATION AREA

CLOSURE FOR RADIO-COLLARING WOLVES

MAY 19 - JUNE 26, 1992



The Skagit Valley Recreation area will be partially closed through June 26, 1992, to allow researchers from the Ministry of Environment, Lands and Parks in association with Washington Department of Wildlife and U.S National Park Service to trap and radio collar up to two gray wolves. Designated areas will be closed to enhance the success of the project and to ensure public safety during the time the traps are in place.

Closed Area: (see map) The closure includes all access roads off the main Skagit Valley road between 26 Mile Bridge and a portion of Ross Lake campground. **For your safety and the safety of your pets please stay out of this area.**

The Research Project: The goal during the closure is to capture and radio collar a maximum of two wolves. These collared animals will be periodically tracked via airplane for three years to acquire information related to: numbers and ages of wolves, social organization, territory location and size, food habits, dispersal, birth and death rates, and location of dens and rendezvous sites in the Skagit River drainage. **This information will enhance wolf protection and contribute to better management decisions affecting the recovery of these threatened animals.**

Wolves in the Skagit Valley Recreation Area:
Tracks and sign of wolves, which were once more

numerous in the North Cascades ecosystem, have been seen in or near Ross Lake since 1984. In 1990 and 1991, there were confirmed sightings of gray wolves at Ross Lake campground during the spring.

Capture Methods: Adult gray wolves will be captured, examined, marked and radio-collared. In selecting the method of capture the goal is to maximize the opportunity for success while minimizing stress and the possibility of injury to the wolves and researchers. Experience in Minnesota has shown that the method best suited to achieving these goals is a modified jaw trap which has been altered to maximize safety and minimize injury to the animals.

This type of trap catches the wolf above the foot while avoiding injury to the animal's toes. The trap's jaws are set to avoid complete closure. Small, widely-spaced, conical studs with blunt tips hold the leg firmly with minimal injury to the animal. The trap design permits blood circulation without leg twisting which can lead to injury.

Researchers will then anesthetize the wolf using a dart gun or a syringe on the end of a pole. After collecting data, marking an ear and fitting the radio collar, the researchers will administer a reversal drug so that the animal rapidly regains consciousness.

This project has been funded by the Skagit Environmental Endowment Commission and is supported and is supported by the Ministry of Environment, Lands and Parks (B.C. Environment and B.C. Parks), Washington Department of Wildlife and U.S. National Park Service.

Please note: If during your visit to the Skagit Valley Recreation Area you sight a wolf or discover signs of a wolf (ie. tracks or scat), please notify any member of the B.C. Parks immediately or leave a phone message at Hope (869-5853), Cultus Lake (858-7161) or Hozomeen (206) 856-7161.

For further information contact: Judy Millar, Resource Officer, 1610 Mount Seymour Road, North Vancouver, B.C. V7G 1L3. Phone: (604) 929-1291.

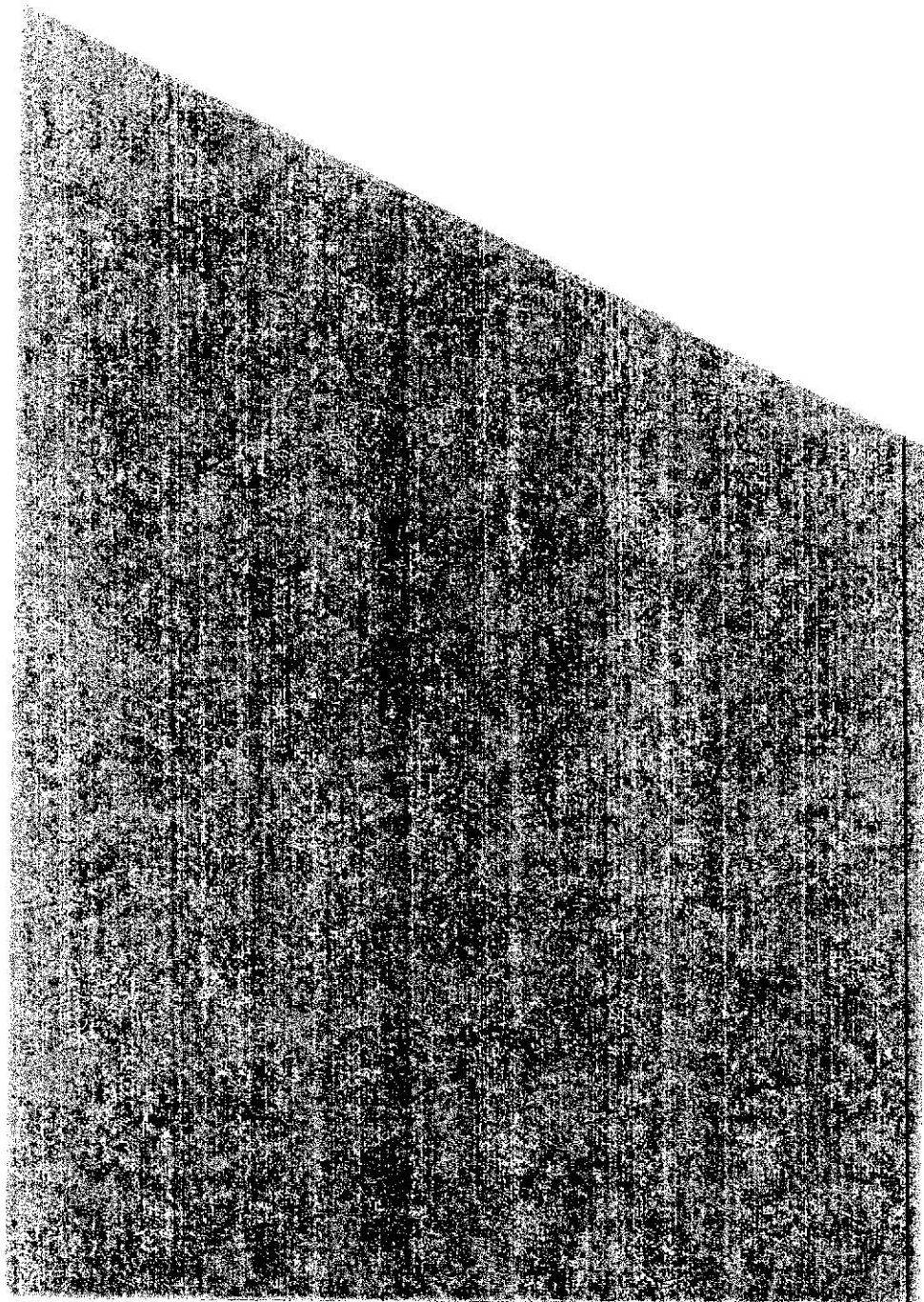


Figure 2 Brochure on Gray Wolf Project

4.0 METHODS FOR DETERMINING WOLF PRESENCE

Wolf presence was determined using four different methods: line transects (tracking), hiking, howling and visual.

Track transects were done in the draw-down area of Ross Lake on May 24, 1992. Jon Almack, a Research Biologist with the Washington Department of Wildlife, performed a transect along a pre-determined compass bearing. Along this course, a two metre swath from the east to west side of the draw-down was examined for tracks and scat. No wolf tracks or scat were found.

Weekly, hikes were taken along the Hozomeen Lake and the Chittenden Meadow trails. These were performed by different members of the field crew throughout the project. While recent cougar, black bear and coyote scat was found, the only wolf scat discovered was collected and determined to be from the previous winter or summer.

Howling was done on three separate outings. Once at the 54 kilometres mark of the Silver-Skagit road and twice by boat along Ross Lake. On the lake, the howling was performed along the west side of Ross Lake from Little Beaver to Big Beaver and along the east side from Lightning Creek to East Landing (see Figure 3). In all cases, there was no audible response to the howling.

Visual observations for signs of wolves were made through the field study. Each day, all project members were involved in looking for wolves in the draw-down, along roads and in both border campsites.

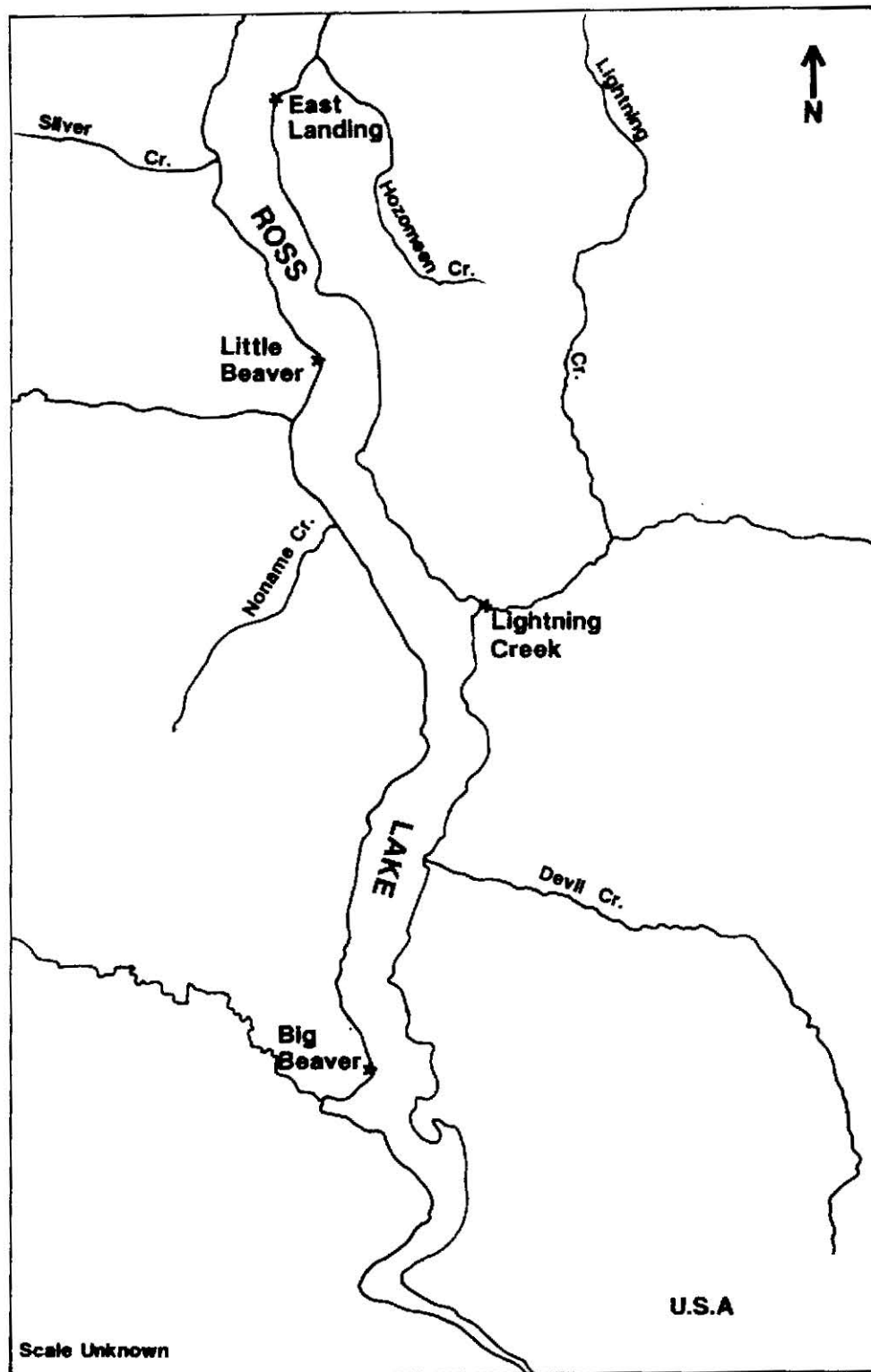


Figure 3 Points along Ross Lake where howling was performed from the boat

5.0 TRAPPING PROCEDURES

Trapping for wolves occurred on both the Canadian and U.S. sides of the border. In the U.S., 12 traps were set in the Hozomeen camping area. On the Canadian side, 20 traps were set along selected roadside sites.

5.1 Setting Traps

Traps were set using the following equipment: gloves, sifter, garden tools, tarp, kneeling pad and whisk broom (see Figure 4). The human scent is removed from these items by boiling them for two to three hours in a mixture of twigs, needles and leaves (see Figure 5).



Figure 4 Equipment used for setting traps



**Figure 5 Mixture of twigs, needles and leaves for
descending trap setting equipment.**



**Figure 6 Scent post located at edge of spur road
(trap is set between the 3 small rocks in the centre).**

Two styles of trap site were utilized: the scent post and small mammal set. In the first, a trap is placed at a location, known as a scent post, that the wolf is likely to mark by urination (see Figures 6 and 7). In the second, a trap is placed at what is made to appear as the entrance to a small animal's home (see Figures 8, 9, 10 and 11).



**Figure 7 Scent post located at a road junction
(trap is set between three smaller
rocks in front of bushes).**



Figure 8 Small mammal set located at the end of a spur road (trap is set under the mound of dirt in front of the hole).



Figure 9 Selecting a site for a small mammal set.



Figure 10 Setting a small mammal set.



Figure 11 A small mammal set.

Wolves are known to prefer travel along routes which present the least resistance. Examples would include trails, roads and open areas such as meadows (see Figure 12). For this reason, traps were set beside roads and at selected junctions.



Figure 12 Whitworth Meadows, the site of three scent posts and two small mammal sets.

All of the traps were baited. The baits used included the liver and brains of Elk and Deer, urine and scent of coyote, as well as a special preparation of sterilized petrolatum containing wolf urine (see Figures 13 and 14).



Figure 13 Application of coyote urine to a scent post set.



Figure 14 Baiting a small mammal set with deer liver.

5.2 Trap Locations

Traps were placed on 14 spur roads off the main Silver-Skagit road (see Figure 15). Spur roads having traps were marked by blue flagging at their entrance (see Figure 16). Yellow flagging was used to indicate roads without traps. Each of the spur roads was barricaded and signed to restrict public access and identify project sites (see figures). To further protect the trapping sites and increase public awareness, a single sign describing the study was placed at the park entrance (see figure 16).

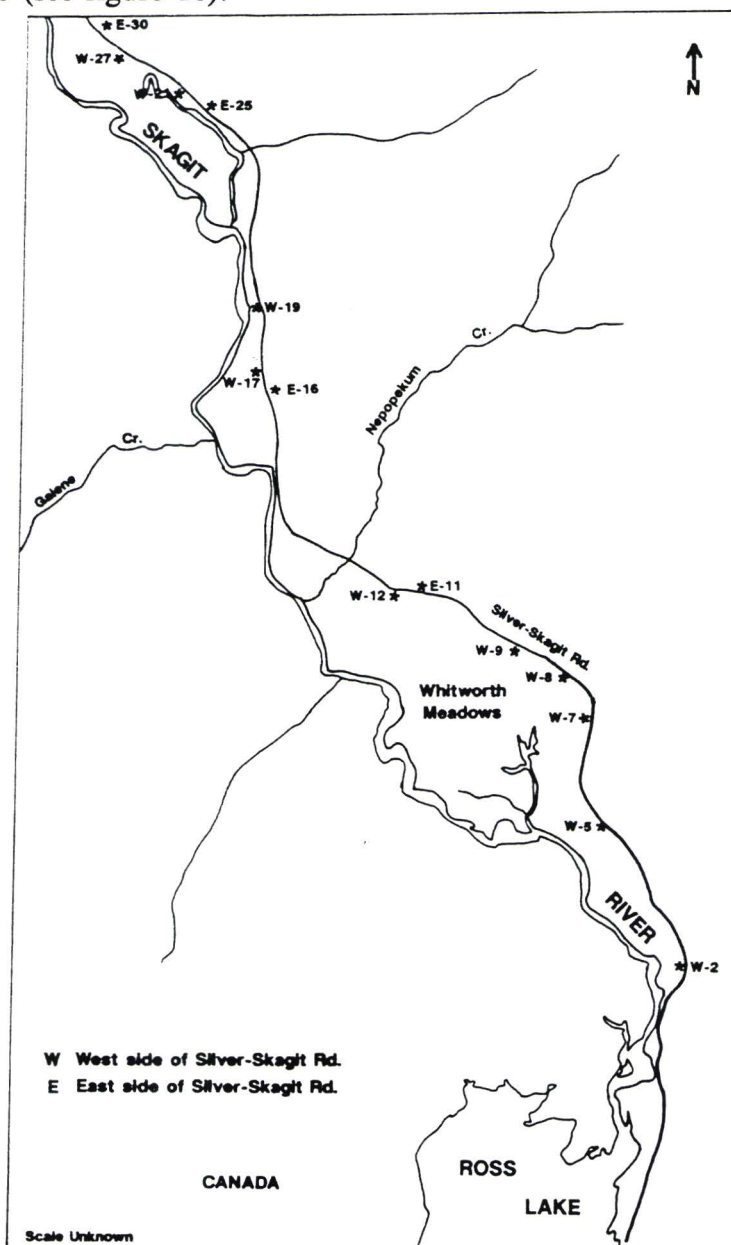


Figure 15 Trap locations indicated by W or E (west or east side of Silver-Skagit road) and numbered accordingly.



Figure 16 Barricades and signs located at entrance to a spur road.



Figure 17
Blue flagging placed
at entrance to spur
road with trap.



Figure 18 Sign placed at entrance to spur roads.



Figure 19
Sign located at
Park entrance.

5.3 Monitoring Traps

All traps were examined twice daily, once in the early morning and again late in the evening. Thirteen of the trap roads were drive-in sites and one was accessed on foot. The isolation of the walk-in site presented a number of hazards without the protection and security of a vehicle. For example, one might find an injured and enraged bear caught in the trap and restrained by only the drag hook. Special procedures and contingency plans were developed for this and other possible emergencies. Additionally, project personnel accessing this site were required to carry firearms and wear brightly coloured vests. All other traps were inspected from within the safety of the vehicle.

Monitoring involved looking closely at the set and the immediate area for trapped animals or signs of any disturbance, i.e., animal tracks, strewn twigs, leaves or rocks. The evening tour of May 31 revealed a female black-tailed deer caught by the leg in one of the Hozameen campsite traps. She was anaesthetized, treated for a superficial wound and safely released. On June 9th, evidence of a black bear having sprung trap E-16 was discovered during the evening tour. At no other time during this study were any animals trapped.

5.4 Trap Choice

The major concern when trapping for research purposes is to ensure the safety of the animal. It is for this reason the Number 4 McBride trap (Figure 20) was selected for use on this project. This particular trap is a modified leghold trap consisting of offset jaws, blunted studs and a drag hook. It was selected because it caused fewer cuts and fewer injuries to phalanges than other smooth jawed and non-offset traps (Kuehn et. al. 1985).

The offset jaws allow circulation to flow to the wolf's foot, thereby discouraging "foot chewing". The blunted studs, placed at two inch intervals along the jaw, hold the animal's foot "still" in the trap, eliminating the "shearing" action that can cause injury to the phalanges. The drag hook attached to the trap by a five foot chain, allowed the trapped animal some movement. The hook would entangle on shrub allowing some "give" when the animal pulled, thus decreasing the chance of a broken leg.

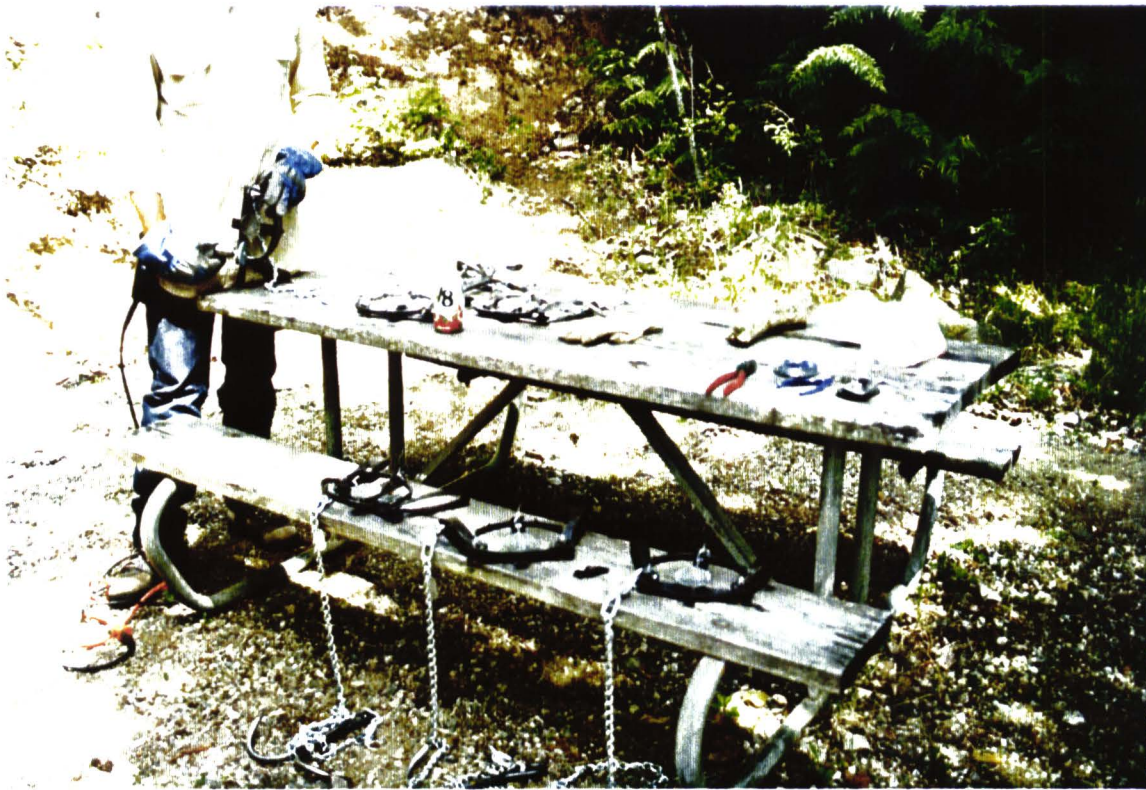


Figure 20 Number 4 McBride leg-hold trap

6.0 LIAISON WITH U.S. FIELD STAFF

Field staff represented both Canadian and American interests. Research Officer Caroline Neat, representing BC Parks, together with U.S. Research Biologists, Jon Almack and Scott Fitkin from the State of Washington Department of Wildlife. Robert Kuntz, a Wildlife Biologist with North Cascades National Park, monitored and aided field work throughout.

The researchers formed a team who worked together to set and monitor traps, install signs and barricades, perform howl surveys and hike trails. With both U.S. and Canadian researchers living in the study area, communication became much easier and concerns could be dealt with quickly and efficiently.

7.0 ECONOMICS

Field research was carried out from May 16 until June 24. The BC Parks field researcher was hired until July 10. The following is a breakdown of the costs incurred for these periods.

Personnel

Staff Title	Worker Months	Cost/Worker Month	Total Cost
Research Officer 1	2	2286	4572

Transportation

Type	Months	Cost/Month	Total Cost
Vehicle	1.3	676	855

Miscellaneous

Type	No. Units	Cost/Unit	Total Cost
Vehicle gas	N/A	N/A	222
Barricades	20	21.75	435
Signs	40	N/A	337
Film and Developing	N/A	N/A	92
Miscellaneous	N/A	N/A	300

Total expenditures amounted to approximately \$7,000.00 in Canadian funds.

8.0 RECOMMENDATIONS

There are two recommendations for the Skagit Wolf Study: key activities of the existing project to contain and the proposal of additional activities for subsequent studies.

The overall scope of the project and available resources were good. Had there been wolves in the area, these resources would have served well to generate the information the project sought. Perhaps of paramount importance was the international approach to the study. As wolves are migratory and may be found on either side of the border, it is critical that both U.S. and Canadian teams continue to work together for the continued success of the study.

In addition, there are ways of enhancing the project to gain more valuable information while in the field. Subsequent studies should have the flexibility to adapt to the migratory nature of the wolf.

In order to accurately predict the wolves' location, evidence, demonstrating wolf presence must be gathered prior to establishing the exact project site. If this fails to place the researchers in an appropriate area, the season's efforts could still be saved if the team had the flexibility to move, on short notice, to where the wolves are.

A necessary addition should be the study of prey species abundance and habitat. These factors play a major role in determining the health, abundance and the location of wolves. To compile this data would require minimal time and very little, if any, addition to cost. These studies would also be invaluable in terms of obtaining baseline data for future wolf studies.

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