

## TRAPPING AND TRANSPLANTING MOUNTAIN

### GOATS IN WASHINGTON STATE

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#### ABSTRACT

A variety of techniques has been used to capture mountain goats in Washington State including use of Clover traps, rope snares and dropnets. In 1981, "Operation Goatlift" required a technique to capture and remove fifty or more goats from Klahhane Ridge, Olympic National Park. The technique selected was a 12 x 12 m dropnet. The net was manually triggered but designed for remote triggering if goats became too spooky. Between 29 June and 8 July, 52 goats were trapped and transported to 3 sites in-state and 2 sites out-of-state. Under the direction of a veterinarian, all goats were given a variety of medications to counter capture myopathy and infections. Mountain goats were captured and transported in groups of 10 or 11. They were loaded into wooden shipping crates (1.2 x 1.2 x 0.4 m) at the capture site and transferred by helicopter 4 km to trucks. Up to 4 m tons of crushed ice per truck were packed in and around shipping crates in transit. No mortalities were experienced during the operation.

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#### INTRODUCTION

Mountain goats are native to the Cascade and Selkirk Mountains of Washington and have been introduced to the Olympic Mountains. A variety of capture and transplant techniques has evolved over the past 30 years. In 1950, cowboys on horseback used lassos to capture goats on Mount Chopaka. Six goats captured at that time were transplanted to Oregon. During the early 1960's, mountain goats were captured in Clover traps as well as with a rope snare technique developed by L. Wadkins of the Washington Department of Game (pers. comm.). The rope snare technique worked quite well and over 50 goats were captured on Nason Ridge between 1960 and 1965. Some of these mountain goats were transplanted to Oregon, Nevada and Utah. Clover traps were used in the Selkirks to trap and relocate goats to adjacent ranges.

During recent years, rope snares as well as drug immobilization using M-99 have been used in Olympic National Park by park personnel and University of Washington scientists (Stevens 1980). Over 160 mountain goats were captured, marked, and released in Olympic National Park by Tory Stevens using rope snares. A dropnet technique has also been developed to more effectively trap mountain goats in several areas of the state as part of a statewide goat study (Johnson 1980).

In recent years, mountain goat populations in Olympic National Park have been increasing dramatically and causing serious habitat changes in some areas of the park. Olympic National Park (National Park Service 1981) considered several alternatives for solving the adverse habitat impact and decided to trap and transplant goats from Klahhane Ridge and other problem areas. Olympic National Park and Washington State Department of Game worked together to develop the latest trapping and transplanting procedures.

The team procedure to trap and transplant 50 mountain goats from Klahhane Ridge was dubbed "Operation Goatlift" by the press and received extensive media coverage. Over 50 newsmen from newspapers and television stations arrived to witness the trapping and transplanting operation.

#### TECHNIQUES

Large dropnet traps were developed in the 1960's in Texas for wild turkeys and deer (Glazener et al. 1964, Ramsey 1968) and used on Dall sheep in Alaska (Erickson 1970). In 1976, the deer net was modified by Larry Wadkins of the Washington Department of Game (Fig. 1). The dropnet used to capture mountain goats in Washington measures slightly over 12 x 12 m (40 x 40 ft.) Two different mesh sizes have been used for different situations. Nets with 25 cm (9 inch) mesh are used where gear must be back-packed to the capture site. This net weighs only 16 kg (35 pounds). A heavy, 90 kg (200 pounds) net with 10 cm (4 inch) mesh is used where helicopter service is available to transport equipment. The four corners of the net are erected tent-like atop 2 m (6 ft.) conduit poles held tightly in place by moored ropes. An aluminum center pole, 1-1/2 inches in diameter and 5 m (18 ft.) long, is used to hold the center of the net in position.

The net can be set up by 1 person but 2 or 3 crewmen make the job easier and quicker. Initial set-up requires driving corner stakes and fastening ropes to the net corners. The net can be erected for the first time at each site in 1 hour and re-set for each net drop within 10 minutes.

Two triggering procedures are used in Washington. In the Cascades, blasting caps are fastened with friction tape to ropes at 2 adjacent corners and rope holding the net up from the center pole. All 3 of the electric blasting caps are wired in series to a hand-held magneto. When the magneto is activated, all blasting caps are detonated simultaneously.

In Olympic National Park, semi-tame mountain goats can be captured with a manual release mechanism (Fig. 2). The release is a simple pull-pin device at each of the 3 severing sites described previously for blasting caps. Lightweight nylon cord (3/16 inch) is fastened to the release pins and drawn to a location about 7 m from the net. One or 2 persons trigger the net drop by pulling the 3 pins simultaneously.

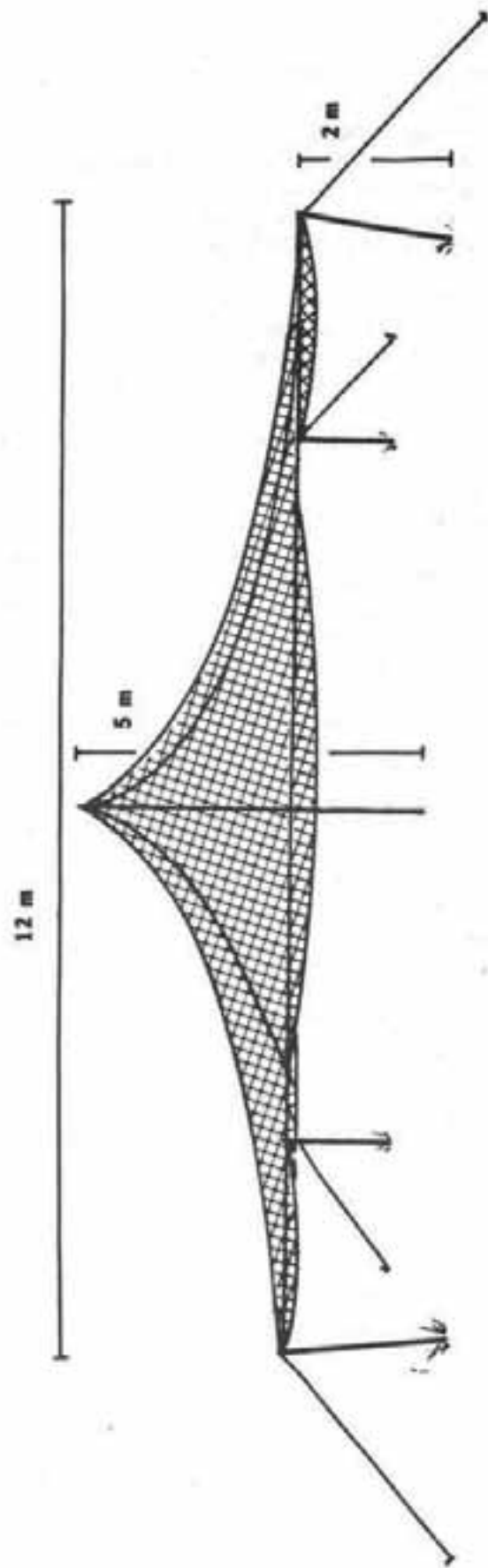


Figure 1. Nylon Dropnet Trap Used in Washington

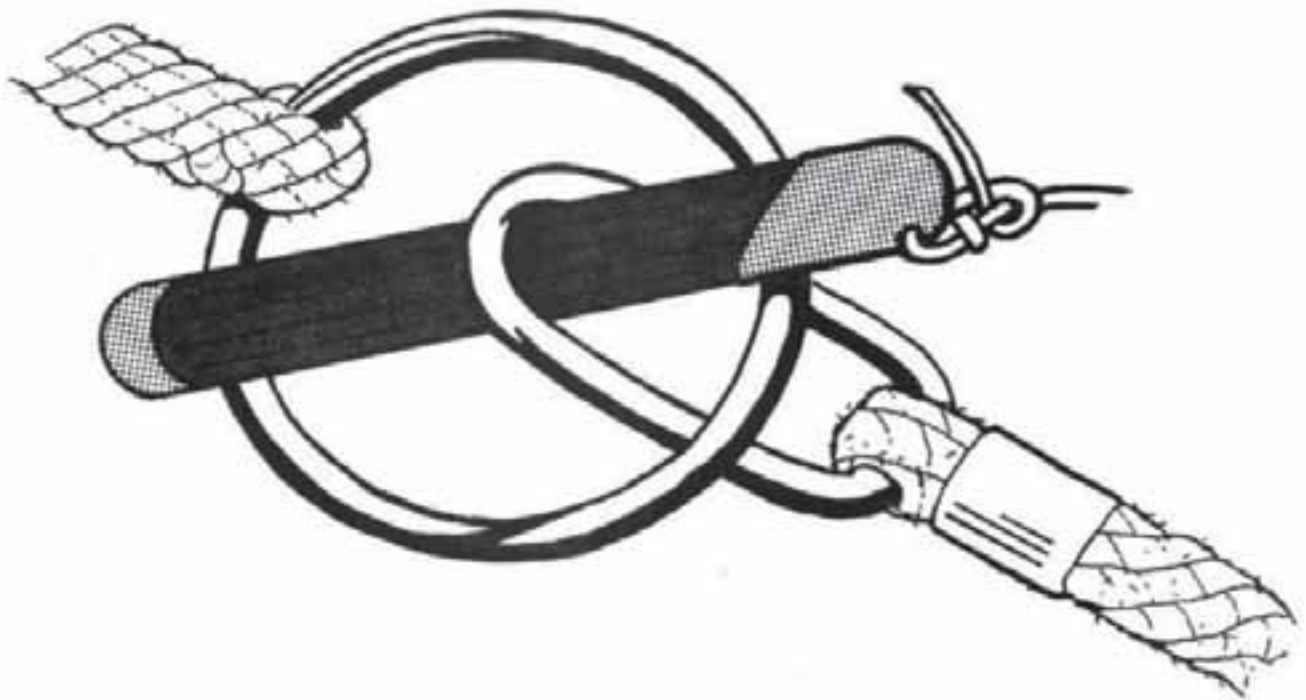


Figure 2. Manual release pull-pin mechanism for dropnet.

Trace mineral and plain salt blocks have been used for many years as bait for trapping mountain goats. In "Operation Goatlift", 50-pound-salt blocks were placed in large plastic tubs to prevent salt residues from leaching into the soil. Salt was placed at the capture site 3 weeks prior to initiation of trapping.

In the Cascades the capture crew was limited to 2 or 3 individuals, while in Olympic National Park, capture crews numbered 6 to 10. The processing procedure developed in Olympic National Park during "Operation Goatlift" was quite extensive because of the large scale transplant program. When the net was triggered, each goat was immediately immobilized by physical restraint, blindfolded, hobbled and removed from the netting. Horn guards (15-cm pieces of garden hose) were taped over each horn. Initial processing procedures included ear tagging for individual identification, weighing, and other standard measurements. Mountain goats were then given various medications in a protocol developed by Dr. James Foster, of Seattle's Woodland Park Zoo and Dr. William Foreyt of Washington State University. Each animal was given the following:

1. Valium--muscle relaxant and tranquilizer.
2. Sodium bicarbonate--intravenously and orally for immediate and prolonged effect to counter possible acidosis.
3. Clostridial vaccine--a precautionary measure to establish immunity to infectious Clostridium organisms.
4. Ripercol<sup>1</sup>--an injectable vermicide for intestinal parasites; known also to enhance immune responses.
5. Flocillin--a long-acting penicillin to prevent secondary bacterial infections resulting from the trauma of trapping and confinement.
6. Selenium--Vitamin E--a precautionary treatment because deficiencies may predispose animals to capture myopathy.
7. Vitamin D--assists in stimulating appetite, also promotes a feeling of well-being.

After all medications were given, goats were unhobbled and placed in plywood transplant crates measuring 119 cm high, 121 cm long, and 41 cm wide (inside dimensions). The crates were ventilated with openings (5 x 15 cm) on all sides and further cooled as necessary with snow or crushed ice.

During "Operation Goatlift" goats were transplanted as social groups of 10 or 11 with nearly equal sex ratios. Transport crates were sling-loaded in cargo netting from a Bell 206 B-III Jet Ranger helicopter. Depending on

<sup>1</sup> The experimental drug albendazole has been given orally instead of ripercol in some areas of the state.

weight, 2 to 4 crates were airlifted at one time from capture to off-loading sites. Mountain goat transport crates were off-loaded into stock trucks and cooled with up to 4 m tons of crushed ice. Goats were transported as quickly as possible to release sites for earliest daylight release.

#### RESULTS AND DISCUSSION

In "Operation Goatlift", 52 goats were captured and transferred from Klahhane Ridge in Olympic National Park to five locations (Table 1). No mortalities were experienced. While similar procedures are used to trap goats in the Cascades of Washington, trapping is much less productive because goats are less tame and densities are low.

TABLE 1. MOUNTAIN GOAT RELEASE SITES FOR GOATS CAPTURED DURING OPERATION GOATLIFT 1981.

<u>Release Location</u>	<u>Number Goats</u>
Hooknose Mountain, Colville National Forest, Northeastern Washington	11
Lime Mountain, Mt. Baker-Snoqualmie National Forest, Northwestern Washington	10
Higgins Mountain, Mt. Baker-Snoqualmie National Forest, Northwestern Washington	10
Humboldt Range, Northwestern Nevada	11
Mt. Timpanogos, Wasatch Range, Utah	<u>10</u>
TOTAL	52

The rope snare technique is effective in capturing mountain goats especially where they are fairly tame and densities are high, as in Olympic National Park. The disadvantage of the snare technique is that only 1 goat can be captured at a time, and it is nearly impossible to capture both a female and her offspring together. The dropnet trapping technique developed in Washington has been very effective and has several advantages over other capture methods. A dropnet enables capture of intact social units including females with kids. This is an important consideration when establishing a new population. A net also enables capture of large males which may be dangerous if captured in a snare. Large billies (113 kg+) are very powerful and can be aggressive. The dagger-like horns of a mountain goat should be treated with a great deal of respect. Mountain goats are much more dangerous than mountain sheep, although once immobilized and hobbled they are easily handled.



Another advantage of the dropnet is that one can be selective about how many and which animals to capture. In Olympic National Park, one person occasionally had to "herd" some goats away from the net to prevent excessive capture of unwanted individuals. An even mix of males and females was desired and attempts were made to avoid trapping old animals which would not adapt to transplant. The dropnet was not dropped until the desired number and spatial distribution of goats occurred under the net. Usually no more than 6 goats were taken at one time, but occasionally a good mix of younger goats enabled more animals to be captured with each net drop.

Mountain goats in the Cascade Mountains appeared to be disturbed by the presence of the net overhead and approached trap sites cautiously. Frequently, a goat walked around the perimeter of the net for 10 or 15 minutes before going under to the salt. At other times goats have been spooked away from the trap site by the presence of the net. In 1979 a female with 5 kids approached the trap site on Chopaka Mountain. She became alarmed at the presence of the net when only 3 to 4 m away, and deliberately herded all 5 kids down the mountain away from the net. In Olympic National Park, goats are quite tame and, while curious about the overhead net, showed little reluctance to go under it for the salt bait. Most goats hesitated briefly and then proceeded directly to the salt.

Trapping goats with 10 cm mesh net is preferred over a 25 cm mesh size. Goat kids are small enough to escape through the larger mesh, but cannot escape through a 10 cm mesh. The weight and bulk of transporting a net to capture sites rules out the smaller mesh where backpacking is required. The bulky 90 kg (10 cm mesh) net is nearly impossible to transport to capture sites without helicopter support.

#### CONCLUSIONS

The dropnet technique is very effective in capturing mountain goats and especially recommended where transplant of entire social units is desired. Medication was given to prevent capture myopathy and other stress-related disorders. Plans are underway to trap and transplant similar numbers of goats for the next 2 years using this technique.

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## CONFERENCE DISCUSSION

Q. When using the drop net, how do you determine which goats to trap?

Ans. It isn't easy. If you took one with the rope-noose technique, the rest would run away for a while. We had one person watching each goat, hopefully. The scientist for the National Park Service wanted us to know which nanny had a kid at heel and which yearlings were associated with adult females. We also wanted the sex - and age-ratios right so it sometimes took us 15-20 minutes to figure which goats we were going to take. It was organized well and the operation went well.

Q. Do you have places to transplant surplus goats from Olympic National Park?

Ans. Yes. The state of Idaho requested 100 goats and other states have additional requests. There is more demand than there are goats available.

Q. What will the long-range plan be for goats in Olympic National Park?

Ans. I really don't know. The Park Service will make a decision after this 3-year removal program. The Park figured it cost them about \$350 per animal, to get them to the Park boundary, and that's only Park costs, mostly helicopter expense. It doesn't count State costs.

Q. How do you decide where goats will be relocated?

Ans. The state is responsible for determining release locations. We have a prioritized list of locations. We like to see them go to native ranges where goat populations have been depleted. I guess you can say we are considering zoos, but we have a large demand for releases on native ranges first.

Q. How many goats reside outside Olympic National Park on the Olympic Peninsula?

Ans. Its about 150.

Q. What effect will removal of 50 goats per year from Klahhane Ridge have on the population? Will you decrease the number of goats and the habitat degradation?

Ans. I think we are going to stimulate production. It's going to take removal of at least 50 goats per year because there are goats in adjacent areas that are going to move in. And we're going to get better productivity than we have up there now; and that is as high as 80-100 kids per 100 nannies.

Q. How many sets of twins do you find on Klahhane Ridge?

Ans. It's highly variable, but quite low on the average. Some years there are no twins, and other years I think I have detected up to 8 sets of twins.