

Washington's MOUNTAIN GOAT MYSTERY

Article and Photography by Colin Shanley, D.O., Field Contributor



Mountain goat (Billy) on Mt. Adams, Washington, by Colin Shanley.

TRACKING GOATS

At 8,000 feet on the western slopes of volcanic Mount Adams there is a moonscape of reddish-brown talus. It appears incapable of supporting life — just above are hanging glaciers embedded with dirt and rocks. In the heat of the summer sun the ice melts and releases debris that ricochets down the slope.

We had started to lose inspiration when there he was, a ghostly symbol of the mountain's vitality. We had come around a cliff bank to meet his gaze. Within the white figure was a stoic face of black eyes and black horns on an efficient frame, strapping with muscles; a creature in its element. We'd finally found our animal. It wore the mark of our study, a GPS collar, which recorded his location every three hours. We had been tracking his radio frequency for three days. Now the challenge was to keep up with him for about an hour.

As soon as we signaled to each other to ready our equipment, the Mount Adams mountain goat was gone. To complete the job, we needed to keep him in sight long enough to download the location data off his collar and note

his locomotion patterns. The sun was starting to fade and we didn't have enough food for another night out, but we had come too far to give up now.

Amber Potter and I were field technicians from Western Washington University's Huxley College of the Environment. During the summer of 2004 we had been hired as members of a four-person team to locate and monitor approximately two dozen collared mountain goats scattered throughout Washington's Cascade Range. This goat on Mount Adams was the first goat on our list of nine that we hoped to find within nine days. No information on their location had been collected since the previous summer.

Our search had started six miles below. After following a branch of the Pacific Crest Trail to Mount Adams' base, we scrambled the rest of the way up and around the mountain. We carried approximately 30 pounds of gear/food at all times.

According to Cliff Rice, wildlife biologist with Washington's Department of Fish and Wildlife, when the goat was collared during the previous July his age was estimated from the annual growth rings on his horns to be three years old, and

he weighed 110 pounds. He had been captured by patient ground stalking while on Ives Peak in the Goat Rocks Wilderness, using a dart-gun sedative that enabled physical examination and collaring. "When it left the Goat Rocks, we lost track of it for several months although we got a faint signal from the south," says Rice. "When we tried to follow the signal disappeared. On one flight it came in strong, and we flew down to Mt. Adams, located it, and retrieved the missing data." The data later showed that this goat had traveled an exceptional distance of roughly 20 miles, most of which he did in one day.

A half an hour later we discovered that our Mount Adams goat wasn't alone. A herd of six was bedded in the shade of the mountain's ledges. Most of them had their heads up, quietly scanning the horizon while chewing. Chewing on what I couldn't imagine. I hadn't seen anything green in the last four thousand vertical feet.

Some glanced at us, appearing comfortably indifferent being out of our reach. One got up and stretched, paused a moment and then looked around. It pawed at its dust bed, aggressively showering itself with dirt before it relaxed again and folded its legs back down.

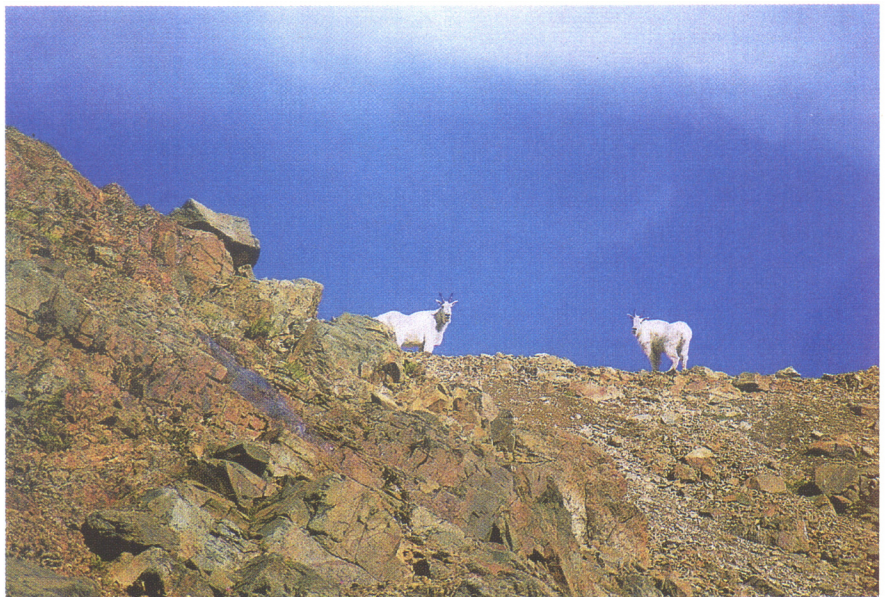
The nanny and kid with the collared male hoisted themselves up the ledges with ease. Their soft hooves with hard edges seemed to effortlessly balance on invisible holds. The kid looked back, appearing curious, bounding circles around its mother. Eventually they stopped and bedded close together on a ledge above a snowfield beyond our climbing ability. They could see us and we could see them.

Off came the packs and Amber assembled the antenna while I prepared the data sheets. Finally, my first entry: 5:21 — goat bedded with head up. The equipment failed. Repeated attempts to download the collar's data showed nothing but error messages. There was no way for us to tell what was wrong. We could only depart and retrace our steps back down the mountain and through the forest before dark. There were more goats to check tomorrow.

That fall a climber found this male goat's collar high on Mount Adams and dropped it off at the nearest Forest Service ranger station. The location data that wouldn't transmit for Amber and me was successfully retrieved for analysis. It showed a story of his movements for the last year. It also showed a mysterious death high on Mount Adams.

I wonder what killed him? Maybe he was caught in an avalanche. Or could it have been a poacher? Any number of circumstances could have happened. The mountain goat could be stressed by less habitat, low quality food, or it could even have foreign parasites.

The mountain goats are doing what they've done for millennia, trying to survive in Washington's high crags where



Above images: Mountain goats, Washington, by Colin Shanley.

nothing else can. But they might be facing an environment that's changing faster than they can adapt.

HISTORIC INFORMATION AND CURRENT DATA

The largest numbers of native mountain goats within the contiguous United States live in the high crags of Washington's Cascade Range. But they're in trouble.

For approximately the past 50 years there has been a steady population decline and no one has a definitive answer as to why. Management agencies have largely overlooked mountain goats due to the challenge of monitoring in their remote locations, and because of a higher priority on popular game animals. However, with the necessary funding and a lot of hard work the latest scientific techniques might allow the mountain goat to maintain its place in the state's wild legacy.

"There was a common concern about a long-standing depression in mountain goat population left unaddressed in the North Cascades, and more specifically around Darrington," says Cliff Rice.



Adam Wells on Mt. Baker, Washington, with pack and radio antenna, by Colin Shanley.

The mountain goat has recently been distinguished as an indicator species by the Northwest Forest Plan. This management technique recognizes mountain goats' diverse environmental requirements and tolerances as sensitive indicators of overall ecosystem health, as the canary is to a coal mine. The North Cascades are host to approximately 300 species of mammals and birds, making it difficult to monitor all the species simultaneously. If an indicator species is threatened, theory would predict the integrity of the entire ecosystem has been degraded.

In 2002, an interagency study was initiated by the Washington Department of Fish and Wildlife, U.S. Forest Service, the National Park Service, the Sauk-Suiattle Tribe, the Stillaguamish Tribe, and Western Washington University to assess mountain goat conservation. They now have funding for four years, with costs totaling about \$200,000 a year.

Members of the Sauk-Suiattle Tribe of the Darrington area consider themselves brothers of the mountain goat. They have archeological ties showing their reliance upon them, dating back at least 8,000 years. "The mountain goat was a significant cultural animal because it was hunted for food, hides, horns and ceremonial purposes," says Chris Danilson, wildlife biologist for the Sauk-Suiattle Tribe. "It's important to the people to know that they're there and that there's a vibrant and healthy population."

From the 1940s through the 1980s, Art Ryals, a resident in Darrington, recorded careful observations of mountain goat decline as development increased in the region. In 1949 roads and bridges were built and in 1952 the Forest Service began extensive logging. By the end of the 1950s many of the forested areas that acted as wintering range for goats were impacted by timber harvests, along with a coinciding network of roads, increased hunting, poaching and tourist traffic.

Before the 1980s the Department of Fish and Wildlife issued more than 800 goat hunting permits a year. Currently they have an annual lottery for 19 permits for use in areas where mountain goats appear to be thriving. Game biologists

had managed mountain goats in the same manner that they managed other ungulates, such as deer, but deer reproduce faster. "Preliminary modeling suggests that our department issued too many hunting permits," says Rice.

Additional research is beginning to indicate that mountain goats also have a delicate social structure that can be upset by hunting. Goats tend to form bands of three to eight, led by an older, dominant nanny. Winter survival of the kids is dependent on the nannies. The nannies have to break trail through the deep mountain snow, paw for buried forage, and keep them warm at night. Older billies tend to roam solo except during the fall mating season.

Beyond the hazards of the mountain environment, such as avalanches, the Cascade goats must protect themselves from their natural predator, the cougar.

The mountain goat is not actually a goat such as those found on farms. The fossil record traces its ancestors to Asia, and shows them having made a migration to North America 2.5 million years ago, with their closest living relative the chamois of the Alps. The musk-ox of the Arctic and the Tibetan yak are the only other members of the bovid family to rival the mountain goat's winter coat. It grows with a thick mat of densely woven wool two- to three-inches long under hollowed outer guard hairs up to eight-inches long.

COLLECTING DATA WITH GPS COLLARS

David Wallin, a Western Washington University professor says, "GPS collars have unique capabilities that provide information that was previously impossible to obtain. These are operating 24 hours a day, seven days a week. Before their development we had an incomplete picture of mountain goats' habitat use." From the 50 animals that have been captured to date, approximately 30 still have active collars, producing a phenomenal amount of data previously unknown about Washington's mountain goats.

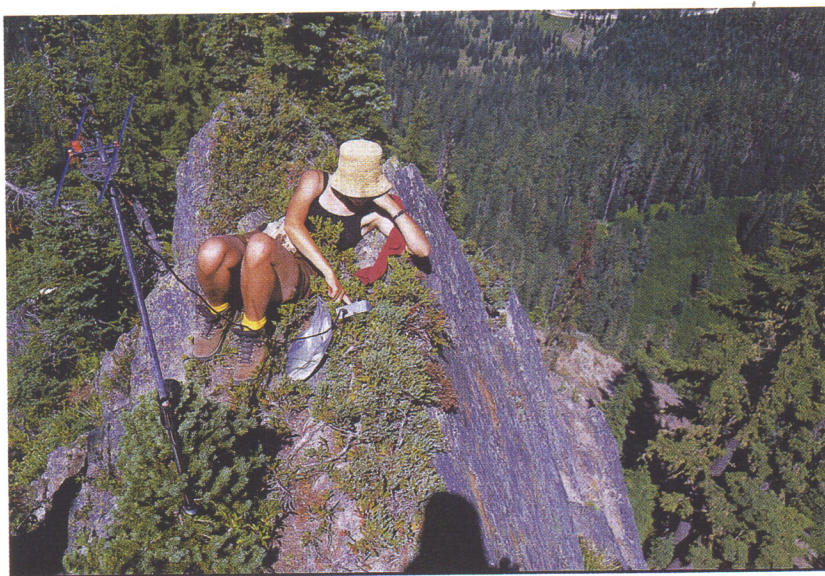
"Continued monitoring of their populations is critical to their conservation," says Danilson. "Everyone has their own

interests and priorities and it's great when we put that all aside and work towards a common goal."

Wallin and his graduate student, Adam Wells, are testing the collars' biases and developing a mapping model of mountain goat habitat in the Cascades that uniquely distinguishes between their winter and summer ranges. "Their summer habitat is probably good while their winter range is more vulnerable to disturbances," says Wallin.

The GPS collars are showing many goats migrating to the safety of lower elevation cliffs in the forest when winter snows start to accumulate high on the mountains, according to Rice. Goats have a better chance of survival if their traditional wintering grounds haven't been logged. Old growth forests have more food available and the closed canopy reduces the snow depth for easier access to foraging.

Blood tests provide information as to whether they are getting all their essential nutrients. There is a theory that air pollution from coastal cities could be inhibiting plant nutrient uptake. Nitrogen oxides produced in car exhaust can fall with the rain, reducing the plants capacity to absorb, limiting nutrients



Amber Potter on Council Bluff, Washington, with radio antenna gathering data on mountain goats, by Colin Shanley.

like selenium. Mountain goats require selenium for muscle development and immune system functions. Fecal samples are showing whether mountain goats carry heavy parasite loads, possibly transmitted from pack animals.

CURRENT DISTRIBUTION OF MOUNTAIN GOATS

The current distribution of mountain goats is in the Coast Range, from southeast Alaska to southern Washington, and in the Rockies from central Alberta and British Columbia to southern Idaho. Rough survey records of their historical populations in Washington have ranged widely from 4,500 to 10,000. Currently it's thought that there might be as few as 3,000 in the area.

"When we started working, we didn't even know how many there were. So in a sense this is a preliminary study," said Rice. "We're developing a (helicopter) sightability model to get an accurate population estimate in the future."

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*"I would not have...every part of a man cultivated,
any more than I would have every acre of earth."
Henry David Thoreau*

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