

Bully Goats?



MOVE ALONG A bighorn sheep ram herds a lamb past a wary mountain goat during midwinter in the Absaroka Mountains. The sharp-horned goats, transplanted in the mid-1900s, are thriving in much of the Greater Yellowstone Area, while numbers of native wild sheep are declining. Researchers with Montana State University, Montana Fish, Wildlife & Parks, and other organizations are looking for a connection.

Researchers try to figure out if relative newcomers to the Greater Yellowstone Area are displacing native bighorn sheep.

By Jack Ballard

THE SUMMIT OF GRIZZLY PEAK rises some 200 yards above where I stand. At its 9,416-foot apex is a tiny grove of wind-battered pines and the upper terminal of a Red Lodge Mountain chairlift. A sudden gust stings my face with icy shards of snow as I sit down on the chair. Though I'm bundled in a down jacket and insulated ski pants, the lift-ride in single-digit temperatures sends me shivering and seems to take an hour, though it lasts only several minutes.

As the chair nears the top, I catch a glimpse of even higher peaks and a broad, frozen plateau some 4 miles south. Depressions on the flat alpine area lie flush with snow, but gales have cleared its flanks and

ridges to reveal tinges of cured grass and other vegetation in a sea of stone. The visible plateau is the first in a series of treeless tablelands extending to the Wyoming border and beyond.

Somewhere, huddled in a leeward pocket or holed up in the shelter of a snarl of gnarled evergreens, wildlife are enduring winter in that inhospitable environment. The Beartooth Range, of which these icy summits are a part, is home to many herds of bighorn sheep. Though some of the animals migrate downhill to spend the snowy season where food is more abundant, others are able to remain and survive on the small amount of exposed grasses.

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Mountain goats also live in that harsh environment. But while the sheep have been here for eons, the goats are transplants, gaining their foothold not from the evolutionary forces of time, but through human intervention.

Wildlife biologists, hunters, and others who helped move mountain goats there from similarly mountainous parts of western Montana suspected that the alpine animals would fare well. And they have. Yet while goats have been thriving in their new homes during the past several decades, bighorn sheep numbers in many of these same areas have been declining. Those who once thought the two species could coexist in the

region are now having second thoughts. Several new studies could help scientists learn whether mountain goats are causing wild sheep to disappear from the region, and, if so, why.

Never migrated

Bighorn sheep have roamed the Yellowstone Region for thousands of years. The earliest written account comes from Osborne Russell, a trapper who entered the Lamar Valley in today's Yellowstone National Park in 1835. In his *Journal of a Trapper*, he wrote of encountering Mountain Shoshone Indians, later dubbed Sheepeaters, who subsisted largely on bighorns.

Russell never set eyes on a mountain goat in the Yellowstone Region. The white-coated, dark-horned animals are native in Montana primarily west of the Continental Divide, 150 or more miles away. Almost no mountain goats lived in ranges east of the divide, even those containing abundant rocky alpine habitat that goats prefer. Biologists suspect that because the animals rarely cross valleys or other low areas—where they become vulnerable to predators—mountain goats never migrated to isolated mountain “islands” such as the Beartooths.

Most wild goat herds found today in mountain ranges east of the divide grew from animals transplanted more than half a century ago. From 1941 to 1958, Montana Fish and Game crews trapped and transplanted 310 mountain goats (mainly from the Bitterroot Mountains and the Sun River area) to a dozen release sites, including, in the Beartooth Range, the Rock Creek drainage west of Red Lodge and the Stillwater drainage south of Nye. In most cases, the transplants thrived. In the Greater Yellowstone Area (GYA) alone, mountain goats now number over 1,300.

Bob Garrott, professor of ecology at Montana State University (MSU), oversees an ambitious research initiative that studies the ecology and population dynamics of bighorn sheep and mountain goats throughout the GYA, of which the Beartooths are a northeasternmost part. The GYA Mountain Ungulate Project is a partnership of MSU, Montana Fish, Wildlife & Parks, state wildlife agencies in Idaho and Wyoming, the National Park Service, the U.S. Forest Service, and Canon USA. It grew out of concern by Yellowstone National Park officials that non-native goats were expanding into portions of the park's historical native bighorn



sheep range. “The Park Service had no knowledge of what effect goats might have on Yellowstone’s plant communities and bighorn sheep population,” says Garrott. “All three states then became involved, because they have a vested interest in understanding interactions between mountain goats and bighorn sheep.”

The project’s initial phase examined historical wild sheep population counts by Montana biologists in the region since 1971 and counts of mountain goats since 1966. Most of the goat populations have seen increased growth and wider distribution in recent decades. Wild sheep counts have been much more variable, with some going up and others declining. However, researchers found no difference in sheep declines between areas that contained mountain goats and those that didn’t. “There was no smoking gun on this first step suggesting a direct relationship,” says Garrott. “But it makes sense that when you have two big plant eaters occupying the same mountaintops that there’d be some interaction. So now we’re studying further, drilling down deeper to uncover more details.”

Though evidence from historical herd counts was inconclusive, scientists suspect that goats are in fact displacing sheep. Shawn

Jack Ballard of Red Lodge is the author of several books on big game hunting and natural history.

Stewart, FWP biologist in Red Lodge, points as an example to the Rock Creek drainage. Records show that 100 wild sheep occupied alpine winter range there in the early 1970s. “Goats were in these same areas, but most were on the west side of Rock Creek and most of the sheep were on the east side,” he says. Mountain goat numbers began to increase markedly on the east side in the 1980s. Then, in 1991, a severe winter storm killed off 80 percent of the bighorns. “But the goats survived and continued to increase,” says Stewart. “And now, 20-plus years later, the bighorns have still not recovered but the goats are going strong. Why?”

Perhaps goats have nothing to do with the continued suppression of the Rock Creek sheep herd that winters in the alpine zone, says Stewart. But he and other biologists have witnessed similar population fluctuations between goats and sheep in other areas of the GYA and conjecture a connection.

Nose-to-nose transmission?

It appears that wild sheep and goats get along fine in summer range. Biologists have watched both species graze amicably on alpine plateaus. Stewart once observed bighorn ewes and mountain goat nannies sharing a single avalanche chute, all with recently born young. Researchers with the Mountain Ungulate Project have used bait stations with salt on alpine summer range to attract both bighorns and mountain goats.

The animals often share the salt, says Garrott.

Even so, mingling peacefully among a carpet of gentian in midsummer can cause problems. “That close contact could allow for transmission of disease from one species to another,” says Garrott. Bighorn sheep are highly susceptible to pneumonia, and die-offs of 10, 20, or more animals in herds are commonplace across the West. It’s well-known that wild sheep can contract pneumonia from domestic sheep. Could they catch it from mountain goats, which in some areas carry the same suite of pathogens—picked up from domestic sheep—suspected in bighorn die-offs? Garrott says that such transmissions are possible, but no studies to date have shown that they occur. “So far we don’t understand pneumonia in bighorn sheep very well,” he says. “There’s no consensus on what particular strain of bacteria causes it, and no evidence showing that pathogens are transmitted from goats to sheep.”

Garrott says new studies are under way to see if such a relationship exists. Scientists with the ungulate project are trying to identify what type of bacteria spawns pneumonia in wild sheep, whether it’s also carried by mountain goats, and if the pathogens are transmitted from one species to the other.

Garrott says another key factor in goat-sheep interactions may be competition for scarce resources on alpine winter range. “If we need to worry about competitive interactions, it’s probably among those segments of



FAIR-WEATHER FRIENDS Though goats and sheep appear to get along well in summer when food is abundant, relations might be less cordial in winter, when grass is scarce. “If goats want to be aggressive and start pointing those horns at sheep, the sheep will move,” says the MSU research scientist heading a study on relations between the species.

stone and Grand Teton National Parks have begun thinking about what, if anything, they might do if studies show that wild goats are driving out wild sheep in some areas.

Garrott notes that, so far, it’s not clear what it means to have non-native goats in the GYA with bighorn sheep. “Perhaps nothing,” he says. As I exit the chairlift atop Grizzly Peak and begin my descent, I take one last look at the frigid roof of the mountains, where hearty bands of bighorns have wintered for eons, and hope he is right. 🐐

Learn more about the GYA Mountain Ungulate Project at gyamountainungulateproject.com.

the bighorn sheep populations that don’t migrate to lower elevations in the fall but instead stay high and winter on wind-blown ridges,” he says. “The food source is extremely limited. If there’s antagonism between the species, it most likely will be there.” Garrott adds that the mountain goat’s sharp horns are far more formidable weapons than the sheep’s horns. “If goats want to be aggressive and start pointing those horns at sheep, the sheep will move,” he says.

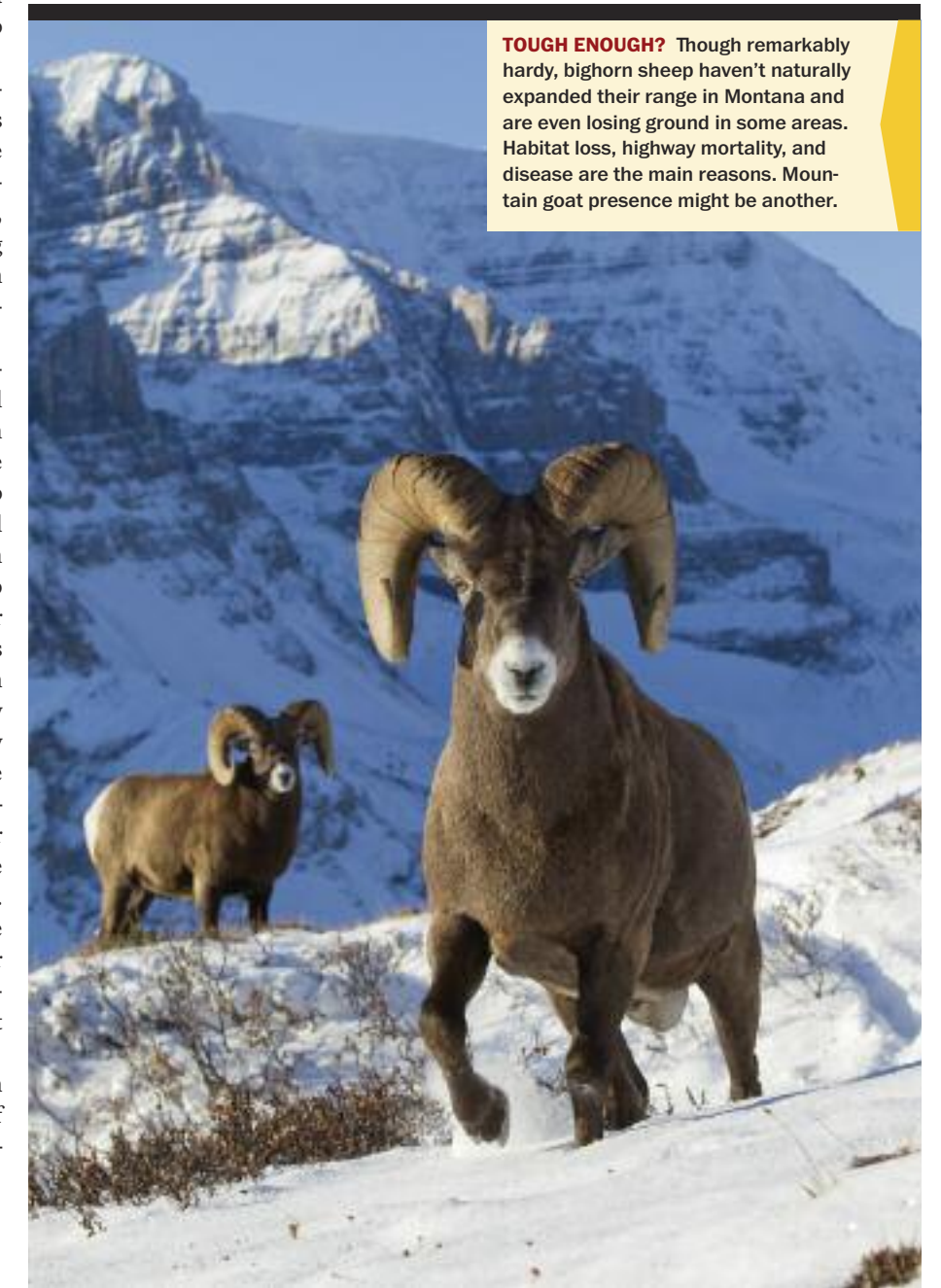
Researchers with the GYA Mountain Ungulate Project are now studying interactions between the two species in midwinter. The work is challenging if not, at times, impossible. Flying conditions are often dangerous, the weather is unpredictable, and locating scattered bands of light-colored bighorns on the snowy heights is like searching for katydid on a golf course.

Garrott and other researchers are capturing mountain goats and sheep from several areas of the Yellowstone Region where both species interact and other areas where the ranges don’t overlap. The goats and sheep are fitted with collars containing Global Positioning System devices that record each animal’s position every six hours for two years. The goal, says Garrott, is to better understand habitat use to see what factors may contribute to sheep declines. “Mountain goats and bighorn sheep have successfully coexisted in western Montana, where they are both native, suggesting that they have evolved to occupy somewhat different ecological niches,” says Garrott. “But in other places, like parts of the Greater Yellowstone Area, the two species don’t seem to coexist. We’re trying to figure out what drives the differences. Is it habitat use? The particular vegetation in different areas? Disease transmission? Or something we haven’t even yet identified as a factor?”

If studies show that some GYA bighorn herds are indeed affected by the presence of mountain goats, wildlife managers may pro-

pose reducing goat numbers through public hunting. “If you decide to manage for sheep, you can ramp up the number of goat tags in an area,” says Stewart. “It may come down to the wishes of the public.” Management is more difficult in national parks, where hunting is banned. Garrott says officials in Yellow-

TOUGH ENOUGH? Though remarkably hardy, bighorn sheep haven’t naturally expanded their range in Montana and are even losing ground in some areas. Habitat loss, highway mortality, and disease are the main reasons. Mountain goat presence might be another.



OLD AND NEW Bighorn sheep have lived in the Greater Yellowstone Area for thousands of years, while mountain goats are relative newcomers. Below: An 1870 photo of Mountain Shoshone (Sheep-eater) Indians, who hunted bighorns by herding the animals into rock pens and killing them using powerful sinew-backed bows. Right: A Fish and Game employee in the 1940s with mountain goats to be released into what is now the Absaroka-Beartooth Wilderness.



LEFT TO RIGHT: WILLIAM HENRY JACKSON/JACKSON HOLE HISTORICAL SOCIETY; JIM MCLUGAS COLLECTION/MONTANA'S WILDLIFE LEGACY PROJECT; ROBERT GARROTT/MONTANA STATE UNIVERSITY; DONALD M. JONES