



DISCOVERY

A QUARTERLY PUBLICATION OF THE YELLOWSTONE ASSOCIATION

CLIFF DWELLERS



A group of bighorn sheep grazes on the slopes of Mount Everts. Photo: Nick Derene

By Michael Leach
Yellowstone Association

It is the middle of May, and life is finally returning to Yellowstone's northern range. Burnt orange bison calves can be seen frolicking in the meadows and, with the exception of a few lingering snow drifts along the muddied rivers' north-facing banks, succulent green grass now dominates the landscape. After another brutally cold and harsh winter, Yellowstone's annual resuscitation has begun, and with the long-awaited return of the mountain bluebird, spring has announced its arrival.

Along with the countless natural indicators suggesting that a new season has arrived, the sudden influx of visitors passing through Yellowstone's North Entrance gate in Gardiner, Montana, only confirms

what the wild critters already know—that the doldrums of winter are now behind us. Many dedicated wildlife enthusiasts recognize this time of year as the most productive for wildlife watching, especially when it comes to elusive species such as the gray wolf and the grizzly bear. But for some

on this balmy, windy day in Yellowstone, all attention is focused upon a dazzling display of mountain prowess taking place in the sandstone cliffs high above the hurried waters of the Gardner River.

SUVs, sedans, a hybrid quietly idling, and a law-enforcement truck are parked in one of the large pullouts in the Gardner Canyon. To someone arriving at the scene it would appear that something tragic had occurred, especially in light of the 30-foot drop to the river below on the west side of the road and the sheer cliff lining on the east side. But large telephoto lenses, spotting scopes, and field glasses are not pointing down toward the raging rapids; instead, they are aimed skyward, toward the crumbling sandstone desert on the northwestern slopes of Mount Everts. Newcomers to the park might expect to see an osprey or a golden eagle perched upon a pillar in the cliffs, but to the

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surprise and delight of the two dozen spectators, one of the wildlife kingdom's great marvels is unfolding right before their eyes. The white rump and tan body of a female bighorn sheep tactfully leaps from one side of a crevasse to another, and to the astonishment of the onlookers, the tiny shape of a newly born lamb follows in pursuit.

Though this ancient lesson from ewe—a female bighorn—to lamb is always a highlight for any visitor lucky enough to witness it, the easily recognizable bighorn sheep can sometimes be overshadowed by other species associated with the world's first national park, such as the wolf, bison, or grizzly. Still, throughout the years, this magnificent creature has had little trouble maintaining its status as a symbol of ruggedness and survival—one that captures the imagination of wildlife enthusiasts from all over the globe.

Historically, bighorn sheep were never as plentiful as the massive bison and elk herds throughout the West, yet their numbers were such that they remained a fixture on the western landscape. It is



The Sheep Eater culture centered on the migratory patterns of the bighorn sheep. Throughout the park, they left behind their temporary shelters, called wickiups. Photo: Larry Loendorf

estimated that millions of bighorn sheep occupied the mountainous regions of the Rocky Mountain West in the 19th century. But an all-too-common story of wanton waste during this era, combined with heavy pressure—due largely to

market hunters—rapidly reduced these icons of the Rockies. Unlike bison and elk, whose precipitous population drops were attributed almost entirely to hunters armed with rifles, the bighorn sheep faced the additional challenge of unfettered grazing by domestic sheep. Across the West, domestic sheep—carrying diseases and parasites to which wild sheep were highly susceptible—wreaked havoc on the bighorn population.

The hunter and gatherer, who cherished bighorn sheep meat as a delicacy, also took its toll. Numerous historical accounts establish that Native American tribes of the West favored the tender meat of the bighorn—even over that of the revered bison.

One such group was the Sheep Eaters, or Tukudika, a band of the Shoshone tribe. Considered one of the most mysterious and elusive Indians of the Plains, this mountain-dwelling Shoshonean band, in fact, earned its name because much of its culture and movements were centered around the migratory patterns of the bighorn sheep.

There are 26 tribes associated with Yellowstone National Park, but the Sheep Eater people were the only year-round residents. Occupying habitat considered inhospitable by other tribes, they utilized their highly developed ability to stalk prey among the precarious slopes and crags that served as home to the bighorn sheep. The most difficult part of hunting wild sheep in the rugged terrain found throughout the Yellowstone ecosystem is the laborious

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YELLOWSTONE ASSOCIATION

THE MISSION OF THE YELLOWSTONE ASSOCIATION

The Yellowstone Association, in partnership with the National Park Service, fosters the public's understanding, appreciation and enjoyment of Yellowstone National Park and its surrounding ecosystem by funding and providing educational products and services.

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and often dangerous effort of getting into the high country the animal inhabits. But once the dreaded journey has been completed, wild sheep are considered by many a much easier quarry than the ungulates wintering in the lowlands. The highly treasured bow—shaped and developed from the horns of the bighorn—also enhanced the Sheep Eaters' ability to sustain themselves through the harsh winters of the region.

While the Sheep Eaters may have been the only humans to call the area home, they were not the only ones to venture into the depths of wild country in search of the elusive bighorn. Trappers, mountain men, and sportsmen like Theodore Roosevelt celebrated the opportunity to journey into the bighorn's mountainous terrain. As told in the recent Ken Burns film *The National Parks: America's Best Idea*, on his legendary journey to Yellowstone in 1903, a hatless and coatless President Roosevelt—covered in shaving lather, with a towel still wrapped around his neck—hurried out of the comfort of his tent to observe a band of bighorns leaping acrobatically from foothold to foothold. The following day, while the rest of his crew went fishing, the President ventured off on his own to pursue the same band of bighorns, armed only with field glasses in hand and lunch in pocket.

Five years earlier, naturalist Ernest Thompson Seton spent several months traversing the park's northern range without seeing a single bighorn sheep, even though the population at the time was estimated to be 100–150 animals. By 1927, population estimates in Yellowstone National Park grew to more than 300 and within two years swelled to 346 wild sheep. After the 1920s, Yellowstone's bighorn population fluctuated in the face of disease, but remained relatively stable—never exceeding 500 sheep.

The word “stable,” however, did not apply to the winter of 1981–82—a dark period in the history of Yellowstone's bighorn sheep population. After hitting a high mark of 487 sheep, an epidemic of *Chlamydia* (pink eye) decimated 60 percent of the park's sheep population. It has never fully rebounded.

Over the last decade Yellowstone's sheep population has ranged between 150 and 225 animals on average, but the overall trend in recent years has been up. The 2008 Superintendent's Report on Natural



It takes six to seven years for rams to develop the full curl that almost forms a circle and affords him the status as a king on the mountain. Photo: NPS

Resource Vital Signs projects that the park is now home to approximately 353 bighorns.

In 1912, Seton reported that visitors to Yellowstone could anticipate observing bighorns with a fair level of certainty if they dedicated a few days searching the slopes of Mount Everts, Mount Washburn, and other locations, such as the Tower Fall area, where the sheep are known to inhabit. The same advice applies today. Though the bighorn's tan coloring offers camouflage, every onlooker who succeeds in catching sight of the male (ram), which weighs up to 300 pounds, can't help but feel awe. Smaller in size, but still reaching up to 200 pounds, the females are just as impressive and graceful as the males when navigating the treacherous and sketchy terrain where they dwell.

One wonders how it is possible for such a stout critter to find its way through such tricky topography without missteps. Hooves that have evolved to suit the habitat provide one answer. The bottoms of the bighorn's feet are concave, enabling it to run and walk over the smallest of rocks and other textured surfaces. Still—whether slipping on ice, losing balance due to loose footing, getting caught up in an avalanche, or simply falling off a steep cliff—accidents do happen.

Dressed for Battle

As sophisticated as their feet are, it is the size of a ram's horns that draws the most attention. The horns of both males and females grow from the base for the duration of the animal's life. If damaged,

they will remain splintered. While for the first two years it is difficult to tell the horns of the males and females apart, by the time a male is three years old, his horns are thicker and longer, making him easily distinguishable from a ewe. It is typically during a ram's sixth or seventh year that he will begin to develop the full curl that almost forms a circle and affords him the status as a king on the mountain—at a time when it matters most.

Just as the most abundant ungulate in the park—the elk—winds down the highly celebrated rut that draws thousands of visitors to Yellowstone each year, the bighorn begins one of the most impressive mating rituals in the animal kingdom. With 40 pounds of curled horn attached to its massive skull, when a ram finds a challenger vying for his harem there follows a staggering collision of heads and horns that sends shock waves crashing throughout the canyons. Witnessing this ancient ritual, one cannot help but be amazed—perhaps even horrified—by the brutality and force of each collision.

The bighorn rut takes place in October and November each autumn. Seemingly innocent snorting and grunting quickly lead to something much more magnificent. Typically there will be three or four adult males in a group challenging one another for the opportunity to mate with one of the ewes now in estrus. Once the posturing has served its point, the battle begins. Suddenly the taunting reaches a climax, and the chiseled,

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There is growing concern that mountain goats pose a threat to native bighorn sheep. Photo: Bill Mahoney

muscular bodies of the regal rams lurch back, with front feet grasping in the air, while arching their necks and turning their heads to the side to build additional momentum for the thundering blows that will now come.

Often two rams rev up against one. The biggest of the three will quickly roll from one blow to the next, while one of the two working in tandem receives a short respite between brutal head butts. Though it seems the force of these blows might cause irreparable damage, the bighorn ram's double-layered skull is actually designed to withstand the impact.

This is just one of the ways in which the bighorn sheep has adapted to thrive in an environment inhospitable to most mammal species. In addition to the structure of their feet and skull, bighorns have developed keen eyesight, a great sense of smell, and acute hearing, all of which enable them to detect imminent danger. These characteristics allow bighorns to venture into more open terrain, such as the sagebrush and forest habitat near the Yellowstone River Picnic Area, as well as open meadows and alpine slopes like those found atop McMinn Bench just outside of Gardiner, Montana. During their winter migration the bighorn will often venture to lower elevations near river bottoms, where the safety offered by steep and rocky terrain is nearby.

Challenges to Survival

As impressive as these adaptations may be, one area in which bighorns have not fared as well as other ungulate species is their susceptibility to disease and parasites. Historically, many wild sheep populations have been devastated by diseases and

parasites carried and transmitted by domestic sheep. In 1981–82, a pink eye epidemic claimed 60 percent of the bighorn population of Yellowstone National Park. Mange, lungworm, and *Pasteurella* (most often a bacterial pneumonia of the lungs) have plagued bighorn sheep populations across the West for more than a century. For this reason, the separation of wild and domestic sheep grazing in the national forest outside of the park remains a priority in protecting these migratory animals.

Perhaps the single most important factor in maintaining a healthy bighorn population, however, is habitat. Good habitat leads to less stress for a creature already facing great challenge simply because of the ecological niche it occupies. Yellowstone's northern range continues to provide this critically needed bighorn habitat. Still, bighorn management remains a daunting challenge for Yellowstone's wildlife biologists. Habitat loss outside the park, forest encroachment due to fire suppression, disrupted migratory routes, predation, and other human activities all pose threats to the bighorn population.

The presence of habituated sheep—such as at the Yellowstone River Picnic Area, where on many a May and June day, bighorns bask in the sun with visitors nearby, or the band of ewes and lambs frequently seen each summer by hikers venturing up the slopes of Mount Washburn—provides park visitors the opportunity to help protect the bighorn simply by maintaining a 25-yard or more distance and never allowing them to acquire human food.

Interestingly, fire suppression poses a

problem for bighorns across the Rocky Mountain West. Our nation's obsession with putting out fires has had a disastrous impact on bighorn populations in many areas. Gary Butler, the terrestrial habitat program manager for Wyoming Game and Fish Department, states, "Fire is perceived as a bad thing to a lot of people. So we try to keep fires from starting, and we put them out quickly when they do start. But some habitats must have fire to remain productive." This is especially true of bighorn habitat. Grasses provide more than 60 percent of the diet of the bighorn sheep in Yellowstone National Park. When fire is suppressed, grassland is lost to forest habitat. Fire encourages earlier spring green up and recycling of nutrients into the soil, providing richer forage. It also opens up habitat, allowing bighorns improved vision to detect the presence of predators. Thus, Yellowstone's policy of letting most natural fires burn may have contributed to the relative stability of the park's wild sheep numbers.

Unlike the situation with fire suppression, historically, predation has not been a topic of debate when discussing the causes of declining bighorn populations. But the reintroduction of *Canis lupus*, the gray wolf, in 1995 changed that. Wild sheep advocates voiced grave concern about the reintroduction. And while today bighorn numbers remain down from the high count of 487 before the *Chlamydia* outbreak in the early '80s, their numbers actually increased by 7 percent annually in the period from 1998 to 2005. Thus, during the first decade of their reintroduction, the presence of wolves has not prevented a gradual growth in the bighorn population.

It is another species that calls the park home that perhaps presents the most pressing concern for wildlife managers in regard to bighorn sheep in Yellowstone National Park. Yellowstone's non-native mountain goat population is growing and expanding. Infamous for their rock hopping aerials with kids (newborn goats) in tow, mountain goats have long been revered for their athletic ability and handsome appearance. More often associated with the magnificent rocky outcrops of the Garden Wall in Glacier National Park, the stark white coat of the mountain goat is one of the most beautiful in North America. Mountain goats are native to Montana west of the Continental Divide. Prized as a trophy for their pelts, they were introduced to several mountain ranges east of the Divide—including the Absaroka and Gallatin mountains just north of the park—to increase hunting opportunities.

Beginning in 1990, Yellowstone biologists reported the successful colonization of mountain goats in Yellowstone National Park. Though estimates suggest that YNP could support between 200 and 300 mountain goats, the current number of 175 to 225 presents a dilemma for park officials. There is a growing concern that mountain goats pose a threat to native bighorn sheep. Recent studies of alpine communities suggest that vegetation and cover are lower where mountain goats are present, which raises fears that the mountain goat may be altering important bighorn sheep habitat. While non-native ungulates are typically not welcome by policy in Yellowstone National Park, the mountain goats' presence poses a difficult situation as these impressive animals have long been admired as a charismatic and

popular species amongst wildlife watchers and photographers.

Park officials continue to evaluate and monitor the abundance of breeding mountain goats in the northwestern and northeastern corners of Yellowstone National Park to further determine the ecological impacts that this exotic species has in Yellowstone's alpine communities. While evaluating the impacts on bighorn sheep and rare plants, park biologists will also seek alternatives for managing mountain goats in a delicate alpine environment.

The importance of nurturing a wild bighorn sheep population in Yellowstone National Park goes beyond their physical magnificence and strength and our fascination with their ability to survive in the unpredictable terrain that they call home. Because of the unique habitat niche that they fill, bighorns also act as an indicator of health for the rugged alpine habitat in which they dwell. Thus their importance extends far beyond our innate desire to experience something primitive and wild while journeying through Yellowstone. By watching the bighorn population in the park, biologists can better assess and understand the health of Yellowstone's hard-to-reach alpine and sub-alpine communities.

Masters of Their Domain

Back on the road between Gardiner and Mammoth the sun has made its descent behind the monarch that is Electric Peak to the west, and a small group of onlookers again gaze high above the surging waters of the Gardner River. The excitement of the afternoon's festivities—which included an orchestra of gasps from the bystanders far below witnessing several

near misses by one of the young lambs—has passed.

Though smaller in number and less equipped than the earlier crowds with spotting scopes and telephoto lenses, a few hurriedly parked vehicles still occupy what has on this day been the busiest parking lot on the park's northern range. As darkness fights to take hold, ending another memorable day in Yellowstone, a father points high into the mountainside, fidgety daughter in arms. Of the half dozen visitors yearning for one last glimpse of something wild before heading out of the park, there is only one set of binoculars within the group.

As is so often the case when sharing a memorable moment with perfect strangers at any number of pullouts along the park's roads, a gentleman with a worn and battered pair of Leupold's extends his arm and offers his field glasses to the father. Pressed tightly against the young girl's face with the aid of her dad, the binoculars wave wildly at the cliffs above in search of a treasure. Finally, the 6-year-old newly awarded Junior Ranger finds the prize. After exclaiming, "This is the greatest thing I have ever seen, Dad," she drops down to the asphalt to express her thanks to a man she had never met.

Yellowstone has a funny way of creating these magic moments that bring us together in search of something real and tangible, both in the wilderness and within ourselves. And on this fine spring day a band of four-legged cliff dwellers gave hundreds of visitors an opportunity to witness a perfection that we all dream of attaining. A symbol of ruggedness, grace, and survival, Yellowstone's bighorns are the masters of their domain.

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