

DOCILE

BUT

DEADLY

Midget faded rattlers dwell in the sandstone cliffs at Flaming Gorge. Though hard to rile, they are one of the country's most lethal rattlesnakes but science is just beginning to understand their story.

STORY BY CHRISTINA SHORMA / PHOTOS BY JOSHUA PARKER



Midget faded rattlesnakes only den in crevices and sandstone outcrops. That is why the Green River Formation in southwest Wyoming is the snake's only home in the state.

FIFTY MILLION years ago, three large basins spread across present-day southwest Wyoming, western Colorado and eastern Utah. As geological forces pushed the nearby land skyward to eventually create the Rocky Mountains, the basins filled with water. These ancient lakes were havens for many species of plants, fish, mammals, reptiles and birds. Over time, the lakes dried up and were covered in ice. Later wind, water and other agents of erosion began to wear away the ground to reveal a mosaic of rock formations.

Today, this area is known as the Green River Formation and it is renowned for its stunning variety and abundance of fossils from prehistoric inhabitants. Alongside these remnants of the past is a newer resident, the midget faded rattlesnake, which makes the Green River Formation its exclusive home in Wyoming.

"The only things they use are crevices and sandstone outcrops; they won't den anywhere else," Dr. Joshua Parker, professor of biology at Fresno City College in California, said about the midget faded rattlesnakes near Flaming Gorge. He studied this particular population for his doctorate at the University of Wyoming. "That is why the Green River Formation is so good for them. Even in Colorado, where you find them on the Western Slope, there are many other types of geological structures available to them but they are still using only sandstone."

Known for its diminutive size and pale pattern, midget faded rattlesnakes are the smallest of the Western rattlesnakes, growing to an average of just 24 inches. Their small size is matched by the small amount known about them, which is counteracted

by the fact they are one of the most potentially deadly rattlesnakes in the U.S.

In 2000, when Parker began his doctoral work, almost no research had been done on the snake. But that is slowly changing as more studies are being done by state and federal agencies and nonprofit organizations in recent years.

"It's not too often you find a species no one has worked on," he said. "But there is a really strange draw to them. They are a neat little snake. They are so unique in so many different ways."

Once thought to be a subspecies of the prairie rattler and, later, of the Pacific rattlesnake, substantial DNA evidence found in 2016 elevated the midget faded rattler to full species status with the scientific name *Crotalus concolor*.

Their range in Wyoming is limited to the Flaming Gorge area, the northernmost stretch of the Green River Formation. Though they do inhabit lower elevations, they are more successful living at higher elevations than other snake species; they thrive from 5,000 to 7,200 feet.

Because of their preference for altitude, the snakes





Top left and bottom left: Midget faded rattlesnakes have been documented preying on lizards, small mammals and birds. Middle: The midget faded rattlesnake has a pale pattern and is the smallest of the Western rattlesnakes, growing to an average of 24 inches.

have a shorter active season than most others. Parker found the snakes only move away from the den area in July and August and begin returning in September. The dens house only dozens rather than hundreds of snakes, as is the case with prairie rattler dens.

One of the most deadly

The juvenile midget faded rattlers share one unique feature with adults: their venom makeup is identical. In other rattlesnakes, the venom of juveniles changes as they mature, likely due to the different types and sizes of prey that juveniles and adults pursue.

“That is unique to *concolor*,” Parker said about venom continuity among different age groups. “That is not true for any other rattlesnake that we’ve studied.”

All venoms are a mix of proteins and enzymes, with different combinations of hemotoxic and neurotoxic properties. Hemotoxic venoms cause damage to tissue and reduce blood clotting as the venom circulates in the body. Neurotoxic venoms attack the nervous system and can cause difficulty breathing, speaking, swallowing and in some cases, paralysis of

the diaphragm.

Midget faded rattlesnake venom is particularly dangerous because it is primarily neurotoxic.

“They are tied for No. 1 for the most deadly rattlesnake in the U.S.” said Parker. “Their venom is almost entirely neurotoxin, which is the most dangerous type of toxin to have in a venom. That is very unique in North America. In South America the rattlesnakes all have it, but in North America there are only two rattlesnakes that have almost entirely neurotoxic venom and that is the Mojave (of the southwest U.S. and Mexico) and midget faded.”

Fortunately, this potent venom is coupled with a relatively docile nature. The midget faded is slower to defend itself than most other rattlesnakes including the prairie rattler which can become agitated quickly in a confrontation.

Parker has handled more than 800 midget faded rattlesnakes during his research, many on multiple occasions. He has never received a strike, though there have been close calls, including one that fell out of the plastic tube he uses for handling, into his lap.

“There are a few species of rattlesnakes that are just more defensive and more likely to strike,” said Parker. “*Concolor* are definitely not like that. I would

say the majority of them don’t even rattle and you rarely see them strike.”

Producing venom takes a lot of energy, for any venomous animal, including the midget faded rattlesnake. “They don’t want to waste it on defense,” added Wendy Estes-Zumpf, Game and Fish herpetological coordinator. “They want to conserve it to feed themselves. They don’t want to waste it on something they can’t eat.”

Species of concern

With their very specific and limited habitat, midget faded rattlers face a combination of pressures on their population and are recognized as a Species of Greatest Conservation Need under Wyoming’s wildlife management plan.

“What that classification means is that a species has been identified as one that warrants increased management attention and funding, as well as consideration in land use development planning,” explained Estes-Zumpf. “Midget faded warrant concern due to a variety of factors, both external influences and life history characteristics that make them vulnerable to population decline. Because they

are only found around Flaming Gorge, it is a very small, very restricted population in Wyoming. That means anything that happens in that area could potentially impact the species.”

One vulnerability is their slow reproductive rate. Females do not reach sexual maturity until they are 5 or even 10 years old. And due to the significant energy requirements of pregnancy, in times of drought or other pressures that reduce access to prey, females may give birth only every two years or even less frequently.

“After being pregnant and giving birth, it takes

Joshua Parker, professor of biology at Fresno City College in California, left, extracts venom from a midget faded rattlesnake assisted by Stephen Spear of the Orianne Society. The snake’s venom is one of the most deadly due to its nearly entirely neurotoxin makeup.

Photo by David Vardukyan

Orianne Society

The Orianne Society works to “conserve critical ecosystems for imperiled reptiles and amphibians using science-applied conservation and education.” The society believes: “Reptiles and amphibians are often the bellwethers of habitat health. To see these species in the wild is to see a healthy, functioning landscape.” Learn more at oriannesociety.org.



Unlike adults, juvenile midget faded rattlesnakes have strongly colored patterns, which can take at least 10 years to begin fading.

a long time to recover their weight and handle another pregnancy,” said Estes-Zumpf.

The snakes mate in July and August and females give birth in August or September of the following year. The snakes are ovoviviparous — incubating eggs internally and giving birth to live young. Corresponding with their small size, females give birth to two or three young in drought years and only five or six in non-drought years; half the average clutch size of other rattlesnakes.

In contrast to adults, juveniles have strongly colored patterns. The color begins to fade with age and each shedding of their skin. Parker said it takes at least 10 years for a snake’s pattern to begin fading and he encountered a few snakes during his research that were almost completely washed out. He estimated them at 20 to 25 years old.

Estes-Zumpf said it would be difficult and costly to get detailed numbers on midget faded rattlers in Wyoming, but that she plans to monitor trends in the population.

“What we would like to do is have a subset of den sites and return to those regularly to keep track of the number of males and females and size distribution over time so we can watch changes in population numbers at those dens,” she said.

Roads to success

Despite their dangerous venom, midget faded rattlers are often on the receiving end of predation. Parker has found evidence of predation by skunks, coyotes and raptors, but badgers appear to have developed a particular fondness for the small snakes.

“Badgers would be their biggest predator in a desert situation,” said Parker. “You find badger diggings all over den areas. The pregnant females stay near the den, and I lost a lot of pregnant females with transmitters (implanted) to badgers.”

However, a recent study found encounters with four wheels can be as deadly as those with four feet.

Parker and other researchers, working through



Joshua Parker releases several midget faded rattlesnakes. Parker studied the Green River Formation population of the species to earn his doctorate from the University of Wyoming. Photo by Simone Brito

the nonprofit Orienne Society, published a paper on how adult males suffered high rates of mortality compared to other members of the population. One major source of mortality was road kill.

The researchers found that Interstate 80 in Wyoming serves as a genetically impermeable barrier with little to no breeding between populations on the north and south side of the road. It’s a barrier that could have a large impact on the population living north of the interstate.

“Genetics showed they had been cut off from the gene pool long enough for us to detect genetically,” Parker said about the northern population. “There won’t be any new gene flow between them and the other populations. That group is probably below their success rate and they may dwindle out and be gone.”

But the paper and some of other recent studies on the species also point out insight that could prove helpful to the plight of these docile sandstone dwellers in the future.

Despite their dangerous venom, midget faded rattlers are often on the receiving end of predation.

“The large males and nongravid females move farther from dens than gravid (pregnant) females or juveniles,” said Estes-Zumpf. “They are covering a lot more land than other snakes and are more likely to cross roads, so road mortality is often very high. That is one way that land managers could guide development, in a way that would minimize impacts. The recent study by the Orienne Society had models that predicted den sites and foraging and gene flow paths. Land managers can use those models to put roads in areas that are least likely to impact these snakes.”

—Christina Shorma is a freelance writer who resides in Dayton with her husband, two dogs, two cats and two horses.

In 1936, the Hindenburg was the fastest way for pronghorn fawns to travel from Wyoming to Germany, and so began one historic journey of two iconic Western animals

SPECIAL DELIVERY

By Christina Schmidt Shorma

Photos courtesy of Buffalo Bill Center of the West

BILL MONDAY

Serving as co-pilot for at least a moment, this pronghorn fawn starts its historic journey to New Jersey with pilot Bill Monday.

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n the early morning hours of Aug. 22, 1936, the German airship Hindenburg slowly descended into the Rhein-Main Airport in Frankfurt, Germany, after completing its seventh round-trip

flight to North America. As its 53 well-heeled passengers disembarked, crew members began offloading more than 250 pounds of mail and 300 pounds of cargo the ship had transported across the Atlantic in just less than 44 hours.

Among the letters and luggage unloaded from the belly of this well-known German zeppelin were two iconic animals from the American West, on a one-way journey from the Wyoming plains west of Meeteetse.

Pronghorn have inhabited the American West for at least one million years, with Eurasian ancestors being found in the fossil record beginning about 18 million years ago. Wyoming has long hosted half or more of the world's population of these unique animals.

Though pronghorn now number more than 400,000 in Wyoming, unregulated harvest and habitat loss in the late 1800s reduced a seemingly limitless population to just a few thousand by the turn of the century.

“Unless better protection is afforded, our antelope are doomed to destruction,” wrote Wyoming State Game Warden D. C. Nowlin in his annual report to the governor in 1902. “Too many of our citizens consider it a trivial offense to kill an antelope whenever the occasion offers, regardless of laws or season. The cultivation of local sentiment favorable to game protection and the increasing vigilance

Two pronghorn fawns from Meeteetse wait as the Hindenburg lands at Lakehurst, New Jersey, on Aug. 19, 1936. After a seven-hour refueling, the animals were loaded on the famous airship bound for Germany.

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The antelope belong to the state, but I got a permit to catch the fawns and sell them to zoos. The state allows me the money as compensation for the feed the animals eat on the place. Nobody has any desire to kill the antelope, since this would exterminate them. That's what happened to the buffalo. But by selling the fawns we can reduce the number.

”



of our officers are the only means which will prevent the utter extermination of these beautiful animals.”

To halt the decline, the hunting season was closed in 1908 and not reopened until 1927. This protection, combined with the animal’s tendency to often produce twin or triplet offspring, allowed the population to rebound.

A 1919 report estimated only 8,387 animals statewide, climbing to 13,895 in 1923. But by the time the Hindenburg was making regular transatlantic flights in 1936, the population was estimated at 34,450.

Pronghorn on the Pitchfork

In northwest Wyoming, the efforts of successive generations of owners at one ranch allowed the local herd to grow from an estimated low of 20 animals to 2,000 or more.

The Pitchfork Ranch west of Meeteetse spanned 250,000 acres in the 1930s. Owned and operated by members of the Phelps family, the ranch raised cattle and sheep. In the 1980s, black-footed ferrets once thought to be extinct were rediscovered in this area. In 2016, the ranch served as one of the release sites for reintroduced black-footed ferrets. But back around the turn of the 20th century was when the ranch first flirted with fame.

In 1912, California native Charles Belden married Frances Phelps. She was the sister of Belden’s close friend Eugene Phelps, whom Belden had met while attending the Massachusetts Institute of Technology. Ten years later, after the death of Frances and Eugene’s father Louis, Eugene and Charles began joint management of the ranch.

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Wrapped in burlap sacks with just their heads exposed to limit their movement, the fawns were loaded on the plane and flown at 10,000 feet or higher for a smooth ride.

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Antelope fawns on the Pitchfork Ranch were rounded up using nets and then placed in burlap sacks. They were fed cow’s milk and then transported to zoos around the country.

Over the next several years, Belden would make the Pitchfork Ranch world famous, not with his cattle, but with his camera. His tremendous photographic talent allowed him to capture scenes of spectacular landscapes, local wildlife and ranch life and share them with the world. His photos appeared in newspapers across the country as well as in *National Geographic*, the *Saturday Evening Post* and on the cover of *Life*.

“He really did put the ranch on the map, and the Western way of life,” said his granddaughter Lili Turnell. “I think he was quite a romantic. And he was very tough. Of all his travels, at least 60,000 miles were on horseback.”

In the early 1930s, Belden began a new venture on the ranch — capturing and raising pronghorn fawns and selling them to zoos and collectors across the country.

That the Pitchfork had any pronghorn can be partly credited to Belden’s father-in-law.

“One Meeteetse resident, who had a small grocery store, used to deplete the antelope herd, of which I understand there were not more than 20 at that time, by laying in a generous supply of winter meat,” wrote Frances, in “Brand of a Legend,” a history book about the Pitchfork Ranch. “Dad felt that they would soon be exterminated and forbade the shooting of antelope on his holdings. This did not daunt the man in question. He hunted just the same, so Dad bought the Meeteetse Mercantile from its original founders, enlarged and improved it and soon the transgressor found himself out of business.”

By the time Charles and Eugene took over management of the ranch in 1922, the pronghorn population was one of the largest in the state. Eventually Belden came to believe the animals were competing with his livestock for forage.

“I got into the antelope business just because they were there on the ranch,” said Belden in an interview with the *Detroit Free Press* in August 1936. “After all, I was trying to raise sheep and cattle, and the antelope were eating all the feed. The antelope belong to the state, but I got a permit to catch the fawns and sell them to zoos. The state allows me the money as compensation for the feed the animals eat on the place. Nobody has any desire to kill the antelope, since this would exterminate them. That’s what happened



to the buffalo. But by selling the fawns we can reduce the number.”

Belden described his method for capturing newborn fawns for the *New York World-Telegram* in January 1936.

“The only way to lay hands on the young ones is to come up from behind them in the sagebrush and use a kind of glorified butterfly net,” he said. “The best way is to let a fox terrier do the actual catching. We train the dogs to go after the fawns and down them without hurting them. We come on from behind and pick them up. First thing, give them a nice dinner, cow’s milk through a nipple. Then tie different colored ribbons around their necks to show which ones have been fed and when.”

Belden’s methods were successful enough that he was able to capture at least 200 fawns and transport them to zoos in cities such as Detroit, Chicago, St. Louis, Milwaukee, Philadelphia and Los Angeles. His cross-country deliveries soon earned him the nickname “Antelope Charlie.”

“He gained a lot of notoriety from it,” said Turnell. “I think he must have been a great self-promoter. He was always sending articles and photographs off here and there.”

Pronghorn aren’t antelope

The pronghorn’s range extends across the Western U.S. and into southwestern Canada and northern Mexico. Although often referred to as antelope, they are not a true antelope like those found in Africa and Asia.

One distinct difference between the two is antelope horns are keratin over a bony core that do not shed. These animals are part of the *bovidae* taxonomic family. Pronghorn, on the other hand, grow hollow keratin horn sheaths over a bony core that slough off and regrow.

The pronghorn’s unusual biology makes them the only surviving member of their North American taxonomic family, *Antilocapridae*. Fossil records from the Pliocene and Pleistocene eras of other members of this family show the animals to be adorned with an array of multiple, bizarre horns.

Charles Belden hand-raised the pronghorn on the Pitchfork Ranch until they were 2 months old. Then he would sell them to reserves, private collectors or zoos, the most famous of which took the pronghorn on a journey across the Atlantic.

The fawns were hand-raised until they reached 2 months old, at which time Belden would sell them to zoos, reserves or private collectors for \$100 each. To expedite their delivery and minimize stress, Belden and his friend and pilot Bill Monday, flew the fawns in Monday’s Ryan Monoplane.

Wrapped in burlap sacks with just their heads exposed to limit their movement, the fawns were loaded on the plane and flown at 10,000 feet or higher for a smooth ride and to maintain cooler temperatures during the trip.

Long-distance request

Though Belden’s regular flights to zoos across the country had allowed him to develop a protocol for safe handling and expedient delivery, a request from the Hanover Zoo in Germany for two fawns in the fall of 1936 presented challenging logistics.

Rather than send the fawns on a multiple-day voyage by ship, he sought a faster method. The German airship called the Hindenburg was the fastest available transportation to Europe at the time. It was the lead ship in a fleet of hydrogen-fueled airships built by the *Luftschiffbau Zeppelin Company* of Germany, and it could cross the Atlantic from the Naval Air



Pilot Bill Monday's trips taking pronghorn to the skies ended not long after the 1936 Hindenburg meet-up. Charles Belden ended his pronghorn venture and in 1940 left the Pitchfork Ranch.



Station at Lakehurst, New Jersey, to Germany in 60 hours or less.

The little pronghorn were soon consigned as special cargo on the massive zeppelin. At dawn on Aug. 18, 1936, Belden and Monday departed the Pitchfork, headed for the East Coast with 23 fawns aboard Monday's plane.

"None of the fawns was air-sick," Belden told *Time Magazine* in an Aug. 31, 1936, article. "Whenever they seemed to mind the heat, we just flew a thousand feet higher. The trip was a cinch."

But not all 23 fawns had through-tickets to Germany. En route, two fawns were delivered to the Lincoln Park Zoo in Chicago, two to the Philadelphia Zoo, three to Washington D.C., six to the Bronx Zoo and eight to a private collector in New Jersey.

The two destined for Germany spent the night at the Newark, New Jersey, airport romping in the National Guard hangar before their journey the next day. The Hindenburg arrived at Lakehurst at 8:20 p.m. Aug. 19 and, after seven hours of refueling, re-provisioning and loading passengers and cargo, the airship departed at 2:33 a.m. Aug. 20.

Though the crew of the Hindenburg kept meticulous records of every flight, the flight log for the trip to Germany that day has been lost. However, the crossing was likely uneventful and the fawns arrived safely at the zoo.

According to the zoo's records, the fawns were two of 11 Gabelbocke, or "forked bucks," the zoo acquired in 1936.

"Even in American zoos they were rarely seen, especially since they are difficult caregivers," noted a 1990 Hanover Zoo book celebrating its 125th anniversary. "However, the Gabelbocke imported in 1936 gave only a short guest role in the Zoo Hanover before they were sold to other Tiergarten (zoos), Berlin and Frankfurt."

Tumbling empires

Belden's pronghorn venture ended a few years after the Hindenburg flight, as did his marriage to Frances. By the early 1940s, Belden had left the Pitchfork Ranch.

"Eugene and Charles tried to run the ranch together, but it was a constant battle between them," Frances wrote in "Brand of a Legend." "Eugene was an engineer who loved to invent things and had no real regard for money and Charles was more interested in



A flight attendant gives the pronghorn one last bit of nourishment before take off.

photography than actual ranch management."

The Hindenburg also met a famously tragic end not long after the pronghorn flight. The largest object ever to take to the skies, an explosion during a landing at the Lakehurst station on May 6, 1937, brought the Hindenburg down for good after only a little more than a year in service. Thirty-six people were killed and the incident helped put an end to the era of the rigid airships in favor of more modern aircraft.

Belden remarried and relocated to St. Petersburg, Florida, where his nickname switched from Antelope Charlie to Seahorse Charlie. His photography career continued, as did his love for pronghorn. A small pronghorn insignia appeared on many of his photos and embellished some of his belongings, including a plane.

In February 1966, at age 78, Belden committed suicide. His collection of photos is now housed at the American Heritage Center at the University of Wyoming in Laramie. And many of his photos, office furnishings and other personal memorabilia are on display in Meeteetse at the Charles Belden Western Photography Museum, run by the Meeteetse Museums.

"I think he always related to the antelope, I suppose through his work to try and restore them," said Turnell. "I think that was his first love."

—Christina Schmidt Shorma is a freelance writer who resides in Dayton with her husband, two dogs, two cats and two horses.

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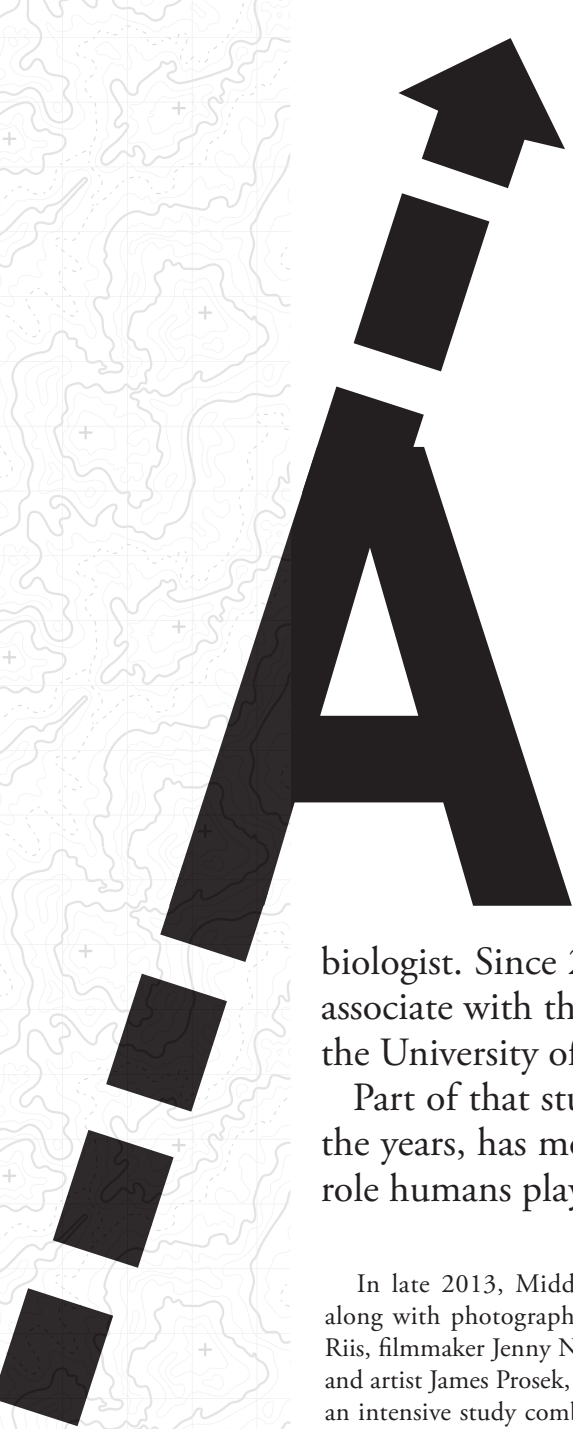
TAKING THE HIGH ROAD

Part of the Cody elk herd takes migration to new heights, trekking over high-mountain passes on their way from summer to winter ranges. Understanding these marathon movements helps humans appreciate the role we play to ensure animals can get to where they want to go — no matter where they travel.

STORY BY CHRISTINA SHORMA SCHMIDT
PHOTOGRAPHS BY JOE RIIS

Elk migrate over a ridge near the south fork of the Shoshone River in July. The journey includes 3- to 4-week-old calves that follow their mothers up an 11,000-foot slope as they migrate for the first time during the spring. The elevation gain is one of several challenges the elk face before they arrive in their summering grounds in the Thorofare Valley near southeastern Yellowstone National Park.





After years of reading studies, scrutinizing maps and following on foot and horseback the trails of migrating elk, Doug McWhirter has come to a conclusion.

“There is almost nothing that will prevent an elk from migrating where it wants to go,” he said. “Until you actually go to places where those elk go, it is really hard to get an appreciation for what they do.”

McWhirter, the Wyoming Game and Fish Department’s Jackson wildlife coordinator spent 15 years as the Cody biologist. Since 2007, he has collaborated with Arthur Middleton, a research associate with the Wyoming Migration Initiative and an assistant professor at the University of California-Berkeley, to study elk in the Cody area.

Part of that study focuses on an extraordinary migration journey that, over the years, has more clearly defined elk movement, herd management and the role humans play along the route.

In late 2013, Middleton, along with photographer Joe Riis, filmmaker Jenny Nichols and artist James Prosek, began an intensive study combining GPS tracking with trail cameras, filmmaking and artwork to capture and share with the public remarkable details about the epic twice-annual treks Cody elk take between their summer and winter ranges.

Middleton and his team radio-collared 30 elk from the Cody herd between late 2013 and 2015, with the GPS collars recording each animal’s movements every two hours. They looked specifically at the route of the Greybull River/Carter Mountain elk, a sub-group of the Cody elk herd. While some are residents that stay in the area year round, the migrating portion of the herd travels

As these elk make their annual migrations, they provide sustenance for predators and scavengers, quarry for hunters, support the businesses of guides and outfitters and are photo subjects for hundreds of thousands of tourists and travelers.

60 to 75 miles between its winter range near the Greybull River and southern Carter Mountain area to its summer range near the headwaters of the Yellowstone and Snake rivers in the southeast portion of Yellowstone National Park and the Teton Wilderness in the Bridger-Teton National Forest.

The migration is exhausting and dangerous, requiring the animals at one point to ascend a 12,000-foot peak in the Washakie Wilderness of the

Shoshone National Forest, which is often still covered in snow. Then they must tread carefully 5,000 feet down the other side to cross a river swollen with snowmelt, only to immediately climb over an 11,000-foot peak. And these are just some of the obstacles. During their migration, the elk will climb, descend, swim and repeat several times,



A elk cow and young calf climb the steep, rough terrain near the Upper Greybull River during their spring migration.



all while running a gauntlet of grizzly bears, wolves and other predators, with many cows trailing new calves at their heels.

“For some of the longest migrations, they are going through at least two or three major passes then crossing two major rivers. They are going through places that you just don’t usually associate with elk,” McWhirter said. “There are a number of places that are mind-blowing — places you’d be more likely to see a bighorn sheep.”

The Cody elk herd numbers more than 6,000 and consists of both migratory and non-migratory groups of animals. It is a compilation of several smaller bands of elk, each of which takes a distinct route to summer ranges in or near Yellowstone National Park.

“There are half a dozen relatively major migration routes for the Cody elk herd,” McWhirter said. “They all go to the same place as the Greybull River elk. They do it several different ways, but they end up in the same places.”

Two other sub-populations of elk in the herd winter on the north and south fork drainages of the Shoshone River. While the North Fork elk have a more restrictive

Left: A grizzly bear trails a herd of migrating elk near the south fork of the Shoshone River during the spring migration in July. This photo was taken at the same location as the photo on the opening pages of this story.

Arthur Middleton, a research associate with the Wyoming Migration Initiative, tracks elk in the Thorofare Valley using radio collar technology.



range, the South Fork elk are distributed over thousands of acres of private land.

“The existence of these very large private cattle ranches basically enables these elk herds to persist,” McWhirter said. “The private lands are a key component for the herds. These private lands and ranches are supporting elk through a large portion of the year.”

TREK TIMED WITH WEATHER

The routes the Greybull River elk take tend to be followed loyally from year to year, but the timing of migration varies, depending on weather factors.

As spring arrives, winter snow recedes and lush, green vegetation takes its place. This fresh, new growth is more abundant, nutritious and digestible than it will be at any other time of year. The green-up both lures and fuels the animals’ movements towards their summer ranges.

“We don’t have good estimates from Yellowstone elk, but one classic study of Alaskan caribou showed that a 14 percent increase in grass digestibility brought a 270 percent increase in weight gain,” Middleton wrote, in the book “Invisible Boundaries.”

McWhirter noted that some years, his trail cameras showed elk had already migrated 20 to 30 miles by mid- or late April. But in other years, if snow persisted later into the spring, movement was not in full swing until June. And in some cases, elk were migrating later



Elk trek up a ridge during their spring migration near the Upper Greybull River. The herd will climb more than 11,000 feet to the peak as the snow melts. This particular elk migration can take months to complete.

Migration studies pre-dated technology

Biologists and researchers have been gathering evidence of elk migration paths for decades.

One of the first large scientific studies of Yellowstone elk migration began in the 1960s, led by John Craighead, Gerry Atwell and Bart O’Gara who published their findings in 1972. Their focus was the Northern Yellowstone herd, but they also tracked individuals in five other herds including Sunlight and North Fork Shoshone elk.

Because it was prior to radio-collar technology, hundreds of hours of work went into putting neck bands on thousands of elk. To accomplish this, elk were herded by helicopter into corrals set up

in various locations. Neck bands were placed on the elk, with a different colored band for each trap site. Later, the research team, Yellowstone National Park and Game and Fish personnel and others would look for the elk on summer ranges by foot, horseback or from the air, comparing the neck band color of an observed elk to where it was originally trapped.

More than 2,000 elk were neck-banded during the study, 132 of those from the North Fork group. There were 73 summer sightings of North Fork elk, with 56 seen south of Yellowstone Lake on Two Ocean Plateau, two near the northeast tip of

Yellowstone Lake in Pelican Valley and 15 in the northeast corner of the park where they intermingled with elk banded in Sunlight Basin.

McWhirter said newborn elk calves were also caught and marked with ear tags to help understand movements.

“It took a lot of effort to tag the calves, but sometimes hunters found their elk had been ear-tagged and would return the tag,” he explained. “You could then see where it was tagged and where it was killed. It is cool to look back and see people were figuring this stuff out before we had all this detailed technology.”

Research continued and technology advanced. In the early 1980s, Bill Rudd, a graduate student at the University of Wyoming who later became

a biologist, wildlife coordinator and assistant wildlife division chief for Game and Fish, did a study with radio collars and neck bands. His research focused on the North Fork Shoshone and Sunlight Basin elk.

Rudd used VHF (very high frequency) radio collars on 41 elk in those two locations and, though the collars weren’t as sophisticated as today’s versions, they yielded valuable information about animal movements.

“We were able to document movement patterns and the timing of migration in more detail than could be done by just observations of neck bands,” Rudd said. “Mine was a management-related project. We were documenting movements and timing of movements in relation to harvest

and working with Game and Fish, the public and outfitters to understand what proportions of the population were resident or migrant and when they were moving relative to hunting seasons.”

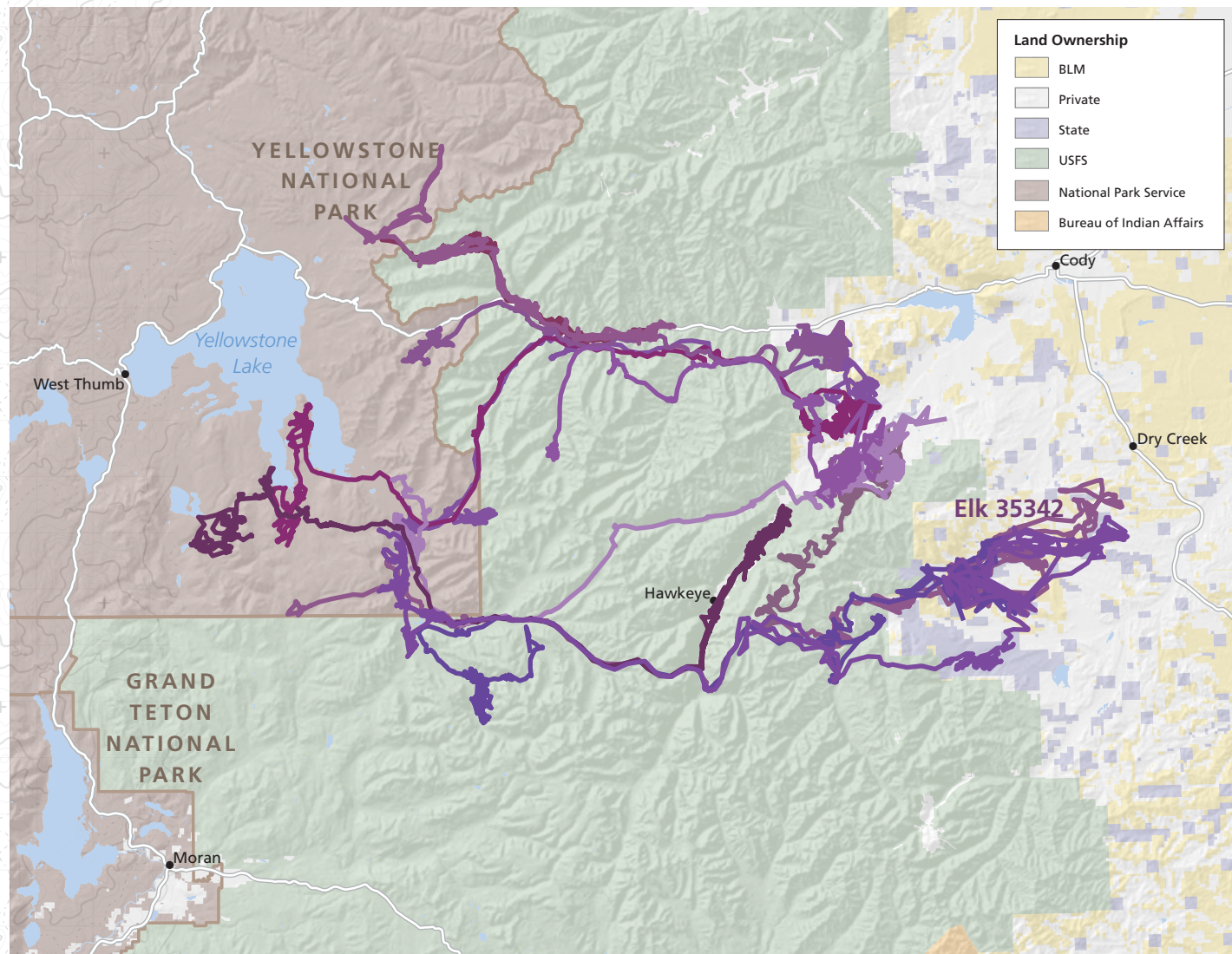
This study was followed by another in the early 1990s by Thermopolis biologist Kevin Hurley.

“It was Kevin’s work that put a collar on Greybull River elk for the first time,” McWhirter said. “His study defined the movement patterns we know today, but since they too were VHF collars — which have to be searched for by frequency to obtain a location — there were still gaps in our understanding.”

In addition to these formal studies, elk movements were documented over the years by many Game and Fish personnel including Jim Oudin,

Dave Bragonier, Bill Morris, Rex Corsi, Tim Fagan and Jim Yorgason as well as local hunters and outfitters.

“The people who hunt, guide and recreate in these places have known about these movements for a long time,” McWhirter said. “And Native Americans probably understood those movements as well. But with new tools we learn a little more and add another piece to the puzzle. Folks who see those things on the ground might only know in detail about one segment of it, but they might not know where they go past that. So where GPS collars are really handy is they fill in those data gaps throughout the length of that entire migration and add the timing element and how much it varies from year to year.”



The Wyoming Migration Initiative combines radio-collar tracking data to create a map that shows what routes elk take from their summer and winter ranges.

Map from the Atlas of Wildlife Migration: Wyoming's Ungulates, (in production) Oregon State University Press. ©2018 University of Wyoming and University of Oregon

into the summer as well.

“One thing that amazed me is when we started looking at our cameras, we had years where elk started migrating in April and there were still groups of elk making that migration all the way through August,” he said. “My previous concept was migration was relatively brief. Even if it took a week or two, you just go from point A to point B, you stay there and then you go back. But if the forage is so good where they are going it is absolutely worth it to them, even if it is August, to keep going, to keep moving.”

He said bulls tend to migrate first, followed by cows who are either not pregnant or have not yet calved. The lone cows are then followed by mixed groups of cows with calves.

Fall migration towards winter ranges seems to rely even more heavily on weather.

“Fall migrations were triggered by snowfall,” said Bill Rudd, former Game and Fish wildlife division chief whose radio collar elk study in the 1980s analyzed two years of data. “The main migration occurred when snow

climbed from 2.5 inches to 8 inches at Lake Yellowstone. Spring migrations were more relaxed and variable.”

MANAGEMENT GOALS

As these elk make their annual migrations, they provide sustenance for predators and scavengers, quarry for hunters, support the businesses of guides and outfitters and are photo subjects for hundreds of thousands of tourists and travelers.

Beyond that, detailed documentation of these elk migration routes has several wildlife management implications.

For McWhirter, an important one is the possibility of using trail cameras in identified migration bottlenecks to count and classify gender and age of elk as they move between ranges. Results of these classifications reveal information on population dynamics and calf survival rates. The surveys are currently done from a plane or helicopter, which is dangerous and expensive in rugged, high-elevation backcountry.

“During winter, the migratory elk mix with



Wes Livingston, a contracted wildlife capture specialist, leans out of an R44 helicopter and fires a net on a cow elk that will be fitted with a GPS collar and released. No tranquilizers are used, making it a quick collaring process. Tracking elk gives wildlife managers information about their annual movements, which have an impact on predators, scavengers and hunters.

non-migratory elk and when you go look at them, you may get a skewed picture of what is going on,” he said. “You have to survey them when they are separated. If we can find ways to use cameras, it can be easier, safer and even yield better data.

“Whether they migrate or not can have a huge impact on their exposure to predators and their ability to find great habitat,” he continued. “Different population segments can perform differently; they can have higher or lower levels of calf recruitment for different reasons. It is important for us to see how they are performing so we can apply management appropriately.”

The photos, videos and data gathered by Middleton, McWhirter, Rudd and others over the decades have increased not just understanding of and appreciation for the annual movements of elk, but also highlighted the

“For some of the longest migrations, they are going through at least two or three major passes then crossing two major rivers,”

Doug McWhirter, the Wyoming Game and Fish Department’s Jackson wildlife coordinator

importance of partnerships in managing and conserving the herds.

“I think there’s a lot of pride in the fact that these migrations are still intact and that these animals do what they do,” McWhirter said. “The big message from my perspective is that this just demonstrates that everybody has

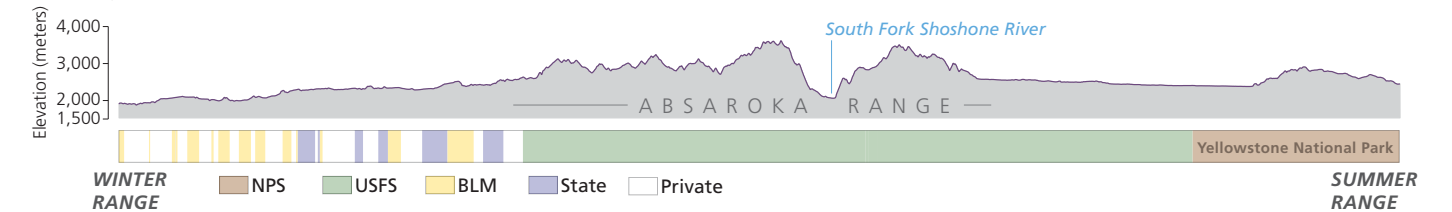
a role to play in maintaining these migrations. Private landowners, state lands, Bureau of Land Management, Forest Service lands, the park service — we are all in that mix. I see it as a cause for celebration that those migrations are what they are. They are fantastic and every single one of those collaborators makes that possible.”

— Christina Schmidt Shorma is an Oklahoma transplant who came to Wyoming in 1999. She has a degree in wildlife management and a minor in journalism from Oklahoma State University. She lives with her husband Dustin in Dayton.

The graph below shows the elevation changes one elk faced during its migration, which takes the herd across land owned by various entities.

Graphic from the Atlas of Wildlife Migration: Wyoming's Ungulates, (in production) Oregon State University Press. ©2018 University of Wyoming and University of Oregon

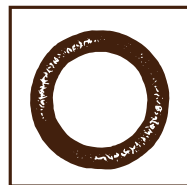
Journey of Elk 35342: Elevation and Land Ownership



THINK INSIDE THE BOX

Bear-resistant containers have come a long way since the 1970s. The massive animals that put food canisters to the test are helping revolutionize human and bear interactions.

By Christina Schmidt Shorma



ONE EARLY MORNING IN 1983, Harold Werner and Mike Coffey watched patiently as a Kodiak bear brutalized a small container. The bear had not eaten the day before, so this strange, cylindrical object smeared with fish oil and filled with kipper snacks was a welcome find. The bear chewed, swatted and bashed the container, trying to get to the food within.

“What I remember vividly is this humongous Kodiak bear holding this little canister in its mouth,” said Werner. “That was quite impressive.”

As the minutes passed, the bear grew more frustrated and the two wildlife biologists from Sequoia National Park grew more excited. Finally, despite the good smells, the bear gave up and focused its attention elsewhere. The container had just passed

its most rigorous test to date and would soon become the first mass-produced, bear-resistant food canister.

“It was pure elation,” said Werner. “We had enough failures; we could hardly believe we finally had one that worked.”

This small container that made an appearance in the bear enclosure at the Fresno Zoo that morning was the culmination of years of designing and testing. What the two created was a new product that would keep bears from accessing human food in backcountry situations and revolutionize human-bear interactions.

Today, the bear-resistant canister is a contraption familiar to most backcountry users who recreate in bear country. Their cylindrical shape and special construction make them tough to conquer for animals without thumbs. And in places like Grand Teton National Park, canister use is required for all park visitors seeking overnight backcountry permits.



This bear tries to break into a container at the nonprofit Grizzly and Wolf Discovery Center in West Yellowstone, which tests the mettle of at least 50 bear-proof products each year looking to earn Interagency Grizzly Bear Committee certification. Photo courtesy of Grizzly & Wolf Discovery Center in West Yellowstone, MT

“Someone at Yosemite put together an early prototype, which was basically an 8-inch PVC pipe with a cap on two ends and a big, long bolt through it. That is where it sat when I was first introduced to the canister.”

“When backpacking in Yellowstone, pretty much every site has an established food-hanging pole or bear box,” said Andrew White, assistant public affairs officer at Grand Teton National Park. “We are different because most of our ecosystem tends to be higher elevation with fewer trees, and where there are trees in subalpine areas it is difficult to hang food without doing damage to them.”

White said there were more than 36,000 overnight backcountry stays in the park in 2016. There, campers who do not own a canister are able to borrow one from the park at no cost.

“The canisters, when used properly in conjunction with other backcountry bear safety practices, are a very effective deterrent for bears,” he said.

TESTS WITH TEETH

The road to certifying a food container as bear-proof is one wrought, as Werner and Coffey found out, with hundreds of trials and gallons of slobber.

“We’d go early in the morning, usually before the zoo opened,” Werner explained. “We would put the canister out there in the yard ... they’d release the bears and usually for about an hour these bears would be beating and pounding on these canisters and swatting them around trying to open them. We’d bring home a bag full of broken plastic and start working on another design until we got a good one that worked consistently.”

But it wasn’t until 1989 that the Interagency Grizzly Bear Committee developed protocols for testing bear-resistant containers. The organization is now the recognized authority for certifying dumpsters, food lockers,



This bear tests out the durability of a food canister at the Grizzly and Wolf Discovery Center in West Yellowstone. Bear-resistant canisters like this one began their life as an 8-inch PVC pipe with a cap on two ends and a large bolt through it. Photo courtesy of Grizzly & Wolf Discovery Center in West Yellowstone, MT



canisters, coolers, panniers and other items as bear-resistant.

The tests are conducted in much the same way as Werner’s first zoo tests. And for the past 14 years, the nonprofit Grizzly and Wolf Discovery Center in West Yellowstone, Montana, has been the testing grounds for products seeking IGBC certification.

Each year, between 50 and 80 different products are tested in the facility’s one-and-a-half acre bear enclosure. It’s where eight bears, ranging from 5 to 35 years old and weighing up to 1,100 pounds, do their best to break into the various objects placed before them.

“We do a little bit of everything,” said Randy Gravatt, the center’s container testing coordinator. “We definitely do food storage lockers and we do dumpsters, but without a doubt, coolers are No. 1 and then polycart trash cans and then the backpack canisters.”

Here, a successful test is also a tantalizing one. A small smorgasbord of attractants is smeared on and loaded into the test container — including meat, fish, peanut butter, honey, dry dog kibble and strawberry jam.

“All their favorites,” said Gravatt. “And a pretty good amount of it, too, to entice them.”

The tests at the Grizzly and Wolf Discovery Center in West Yellowstone are just a modern version of the testing Harold Werner and Mike Coffey, who pioneered bear-proof containers, did at the Fresno Zoo. Photo courtesy of Grizzly & Wolf Discovery Center in West Yellowstone, MT

The bears are allowed one hour with each item before it is retrieved and inspected.

“There is definitely a difference in techniques bears use to try and get in the products,” he said. “A lot of the bears do what we call the CPR maneuver. They are jumping up and down on it with their front paws.”

Whatever technique chosen, it is usually harmless to the bears. Gravatt said only twice in the last 15 years have bears broken claws when testing metal containers, but those grew back.

The IGBC certification is the gold standard of the container industry, and places like Grand Teton National Park require that backcountry backpackers use IGBC-approved canisters. It’s a good idea to check the IGBC website for a list of approved containers. Manufacturers can market their products as bear-resistant or bear-proof, and can claim they’ve been “tested” by IGBC, even if the product failed that test. Those that have passed are listed on the

website at igbconline.org.

Testing criteria for trash cans includes if a bear creates a hole an-inch-and-a-half or larger in the container, it is considered a fail. For food storage containers, the limit is one-quarter of an inch. All of the latches or clasps must also still work properly when the bear has finished with it in order to pass.

“The pass rate is 60 percent whereas, when we first started 14 years ago, it was 10 percent,” Gravatt said. “A lot of the companies and manufacturers underestimated the strength of a bear, how smart they were and how food-driven they were. It was not so good in the early days.”

Gravatt said the demand for container testing has remained steady as companies pursue a never-ending quest for new materials, designs, smaller size and weight and lower price-points for consumers — all of which make it easier and cheaper for recreationists in bear country to keep food away from bears.



1

Adobe Stock photo / Tomas Hulik



2

Adobe Stock photo / Mat Hayward



3

Photo courtesy of Grizzly & Wolf Discovery Center in West Yellowstone, MT



WGFD photo

1 and 2) It doesn't take bears long to track down food that isn't in a bear-resistant container. 4) Hikers should take heed of backcountry signs advising proper food storage. 3 and 6) As part of the testing at the Grizzly and Wolf Discovery Center, various tasty morsels including peanut butter and dog food are smeared on and in the container being tested. 5) Anytime a wild bear gains access to food they can become food-conditioned, which can lead to them being killed.



5

Adobe Stock photo / Mat Hayward



6

Photo courtesy of Grizzly & Wolf Discovery Center in West Yellowstone, MT

wgfd.wyo.gov

FOOD CREATES CONFLICT

The need for a bear-resistant container was evident to Werner from his years working at Sequoia National Park, dealing with property damage and human injuries caused by the park's food-conditioned black bears. It was his unpleasant job to euthanize healthy bears that had come to expect food from humans.

"It was awful," he said. "I was at Sequoia for over 30 years, and I did it all myself because I didn't want to put that on my employees. I killed a lot of them and I just hated it."

Sequoia was not the only national park dealing with food-conditioned bears. Yellowstone, Glacier, Kings Canyon and Denali all had large numbers of problem bears. Until the 1960s and 1970s, in many parks — particularly Yellowstone — bears had come to associate humans with food through free access to garbage dumps and regular handfeeding.

"The first national parks existed before the science of ecology. At the time Yellowstone was created in 1872, nobody had the slightest idea how to preserve natural systems, especially with people visiting them," said Jordan Fisher Smith, former park and wilderness ranger and author of "Engineering Eden: The True Story of a Violent Death, a Trial, and the Fight over Controlling Nature." "So, part of the development of national parks is the art of human beings learning how to cooperate with and preserve natural ecosystems. And a great many mistakes were made."

One mistake — allowing bears and humans to freely interact with food as the link between them — resulted in a staggering amount of property damage, hundreds of injuries, occasional human deaths and the destruction of hundreds of bears.

"Bears were constantly given a food reward for losing their natural fear and shyness around humans," said Smith.

However, in the 1970s and '80s, after garbage dumps in Yellowstone were closed and food storage regulations were enacted and enforced, conflicts decreased.

As Smith notes in his book, "By 2015, Yellowstone had over 4 million visitors, yet food-conditioned bears were so rare as to be nearly unknown."

The first national parks existed before the science of ecology. At the time Yellowstone was created in 1872, nobody had the slightest idea how to preserve natural systems, especially with people visiting them.



Volunteers from the Yellowstone Country Bear Hunters Association work with the Game and Fish to install bear boxes near Dubois. Twelve of these bear-resistant boxes for food storage can be found on Game and Fish land.

Photo by Dusty Lasseter/WGFD

Working for bears and people

If there was ever a time to think inside of the box, it's with bears.

For the second year in a row, members of the Yellowstone Country Bear Hunters Association teamed up with the Wyoming Game and Fish Department to install bear boxes on two Game and Fish properties. Bear boxes are large, steel bear-resistant receptacles that latch shut to keep bears out. This year's bear boxes were placed on the Spence and Moriarty Wildlife Management Area and Whiskey Basin Wildlife Habitat Management Area outside Dubois.

"These boxes can be used by campers, hunters, and anyone else visiting these areas to store any kind of attractants safely away from bears," said Dusty Lasseter, Game and Fish Bear Wise coordinator. "This is a great example of hunters working hard to ensure bear conservation throughout Wyoming."

Keeping things that attract bears, like human food or even sunscreen, secure can greatly reduce human-bear conflicts. Bears can easily become food-conditioned and search out more food, putting both humans and bears at risk.

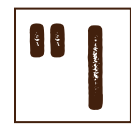
"Our goal is to never let a bear get that first easy food reward from people," said Brian DeBolt, the Game and Fish large carnivore conflict coordinator. "To a bear, human food, livestock feed and pet food is very desirable. If we allow that food source to be attainable, bears will equate that to an easy, protein-rich meal. Bears learn quickly, so if they equate people to that effort-free food source, it can quickly lead to a pattern of bold and potentially dangerous behavior. Once a bear becomes food-conditioned, those situations can escalate, with negative ramifications for people and bears."

Over the past two years, Game and Fish and YCBHA have placed 12 boxes on Game and Fish lands. Funding for this project was provided through grants obtained by YCBHA to help reduce conflicts between bears and people.

"Preventing conflicts between humans and bears is a proactive way to support grizzly bear conservation, and installing and using bear boxes is one way the public can help," said Lasseter.

— Sara DiRienzo, WGFD

EVOLUTION OVER DECADES



It took a while,” Smith said about the effect bear-resistant canisters and other storage containers had as they arrived on the wilderness scene in the ’80s and ’90s. “The problem was bears are long-lived animals. They are very good learners and very smart. Those bears that were food-conditioned persisted and stayed around even as food storage was controlled and improved. There were bear fatalities in Yellowstone and Glacier in the ’80s and ’90s, but I would say that after the year 2000, the results of all these efforts began to take effect.”

Work on a bear-resistant food container began in the late 1970s at Utah State University with Professor Barrie Gilbert and his graduate student Bruce Hastings. Several biologists at Yosemite National Park also worked on the design. But as these employees moved, the project fizzled until Werner and Coffey rekindled interest in 1981.

“Someone at Yosemite put together an early prototype, which was basically an 8-inch PVC pipe with a cap on two ends and a big, long bolt through it,” explained Werner. “That is where it sat when I was first introduced to the canister.”

Working with Richard Garcia, a machinist in Visalia, California, they found in the local phone book, Werner and Coffey designed, tested and redesigned canisters in an effort to develop a strong, easy-to-use model.

Though bear-proof food lockers were widely available in the Sequoia backcountry even back then, campers had to seek them out to use them. And if several people were using one locker it quickly overflowed, creating a situation where food was readily available to bears.

Werner and Coffey started out believing a portable, lightweight canister might improve compliance. They knew the containers had to hold up to both black bears and grizzly bears in order to be effective and earn widespread use. Therefore, each new design was put through the rigors of zoo tests and field trials with both species. Black bears, with their smaller, curved claws and nimble paws were often able to exploit latches or small openings in containers, while larger, stronger grizzlies exerted brute force on the canisters.

After years of testing, the one given to the Kodiak bear at the Fresno Zoo ultimately held up.

“We finally got a canister we really liked and it really worked,”



A grizzly tries to break into a trash can as part of testing at the Grizzly and Wolf Discovery Center in West Yellowstone.

Photo courtesy of Grizzly & Wolf Discovery Center in West Yellowstone, MT

With food storage rules, human, bear deaths drop

Yellowstone National Park statistics show how establishing food storage rules contributed to fewer human injuries and bear deaths. In the late 1970s and early ’80s, education and food-storage enforcement became more common and conflicts notably began declining. According to a 1994 research paper by park bear biologist Kerry Gunther:

1931-1959: Each year there was an average of: 98 property damage reports; 1 human injury by a grizzly and 48 by black bears; 3 grizzlies and 22 black bears were removed from the population

1960-1967: Property damage more than doubled. Each year there was an average of: 262 property damage incidents; 4 human injuries by grizzlies and 47 by black bears; 3 grizzlies and 35 black bears were removed from the population

1983-1993: Property damage and injury reports sunk. Each year there was an average of: 14 property damage reports; 1 human injury by grizzlies and less than one (0.1) black bear injury; 1 grizzly and less than one black bear (0.4 yearly average) were removed from the population

Werner said. “It was heavy, but it was pretty bulletproof. Pretty much at the same time as what we were doing, in Denali National Park they had a big problem with brown bears. They wanted to loan canisters out to backpackers. Richard made a bunch that we loaned to people on a voluntary basis. They would use it and bring it back and give feedback.”

Werner continued to tweak the design. Soon a plastics company purchased the patent, but it was never put into production. Instead, Garcia began receiving requests to purchase the containers he had loaned to Denali backpackers, and he rapidly built a business filling orders for the original design.

“I’ve always felt very indebted to Richard Garcia for his part in this whole thing,” Werner said. “He is the one who pushed forward when we were stumbling. I think he is really the father of the commercial bear canister. Richard was never a backpacker, he was a businessman, but over the years he became an avid conservationist.”

The initial creation of a bear-resistant canister took years of dedicated tinkering and testing by Garcia, Werner, Coffey and others. And today, bears at the Grizzly and Wolf Discovery Center spend just hours proving, or disproving, new designs.

“We are super happy to be able to do it,” said Gravatt. “The idea is to benefit the bears still out there in the wild. It is so very important that, as we keep encroaching into bear habitat, we don’t allow them into food.”

The bears on duty at the center are helping wild bears live longer by avoiding conflicts with humans.

“Once they are food-conditioned, there are very few bears that die of old age,” said Werner. “There just isn’t any room for leniency in this. You have to have people doing the right thing all the time. If not, people get hurt, property gets damaged and bears get destroyed. Bear canisters made a huge difference. Once we got the canisters out there, it got better and better. It really is a tool that works, when used properly.”

—Christina Schmidt Shorma is an Oklahoma transplant who came to Wyoming in 1999. She has a degree in wildlife management and a minor in journalism from Oklahoma State University. She lives with her husband Dustin in Dayton.

White lightnin’ mojo

By Amy Bulger, editor

It was only 9 a.m. but the mid-July day was already bleeding squiggly heat waves that weld water to sky on the horizon. It was getting warm for fish, but they were breaking the surface. There was still a chance.

Despite all the good intentions brewing since I wrote about this place in April, my idea of a summer packed with fishing has turned into mere opportunistic outings. Finally hiking up my chest waders to forge waist-deep into this particular little plains lake has been a journey to test patience, as are so many of the good life-lessons.

I’ve been here three times, rod in hand, but today is the first time I’ve broken the surface. So I try it all, as hungry as the waiting fish. Flies. Lures. Spinners. Spoons. I know they have an appetite, if I can just find the right flash.

Cast. Nibble. Bite. Pull. Reel. A Snake River cutthroat pulses at my feet.

Though only 90 minutes from the edge of my garage in Cheyenne to the tip of these banks, the first time I came here was by way of Pinedale. After six pent-up hours on the road, we pulled up to a shoreline so ripped by wind that opening the truck door was challenge enough. Once outside, I contemplated a cast or two. Timed between the 50 mph gusts, might it have been possible? The wind tore my hope away faster than a midwestern tornado. We hightailed it back into the truck, vowing to return another time.

Cast. Nibble. Bite. Pull. Reel. A Bonneville cut shakes the line.

The second outing was planned — an afternoon off work. We met in the parking lot and I transferred gear from my truck into the other. Eighty-nine minutes into our journey I realized there was one thing I hadn’t transferred: my fishing license.

We pulled up to the lake and I watched my buddy don waders and set off with a chuckle. It was a perfectly windless day, so I picked out a nice clod of dirt for a nap while my friend landed fish after fish.

Cast. Nibble. Bite. Pull. Reel. A small brookie fights big all the way in.

Today, I’ve got license in pocket. Double-checked. Triple-checked.

Cast. Nibble. Bite. Pull. Reel. A healthy rainbow tops off more than a dozen fights with four of the five trout subspecies in the lake.

My husband stands waist-deep in the water near me, the 1970s vintage lure from his dad’s tackle is paying off in strikes on every cast. He’s landing fish with the flashy red spoon faded to pink over the years. White lightnin’, I call it — a thick, diagonal white line through its center. When he has to change out the treble hook because the fish bend it beyond function, I slyly search for something similar in my vest. I find one that’s newer, deeper red, shinier spoon, a vertical white line.

Cast. Nothing. Cast. Nothing. Really?

Today he’s got all the white lightnin’ mojo. You can never be sure who will be graced with it on any particular fishing trip, but someone will. And I can’t rightly complain about my own catches while the water was still morning-cool. And so we cast. Reel. Cast. Reel. The plan to head home by 10:30 quickly becomes moot.

By 11:30, we reason with ourselves that there’s plenty of time to make it to our next adventure looming on the schedule. We bargain repeatedly with ourselves over “one more cast.”

This place has been worth the wait. Once an amazing fishery, it will no doubt be back to that status eventually. Patience grows fish. But I’m not so keen on doing much more waiting.

Twenty bargains later, we finally call it a day.



Photo by Jessica U. Grant/Wyoming Wildlife