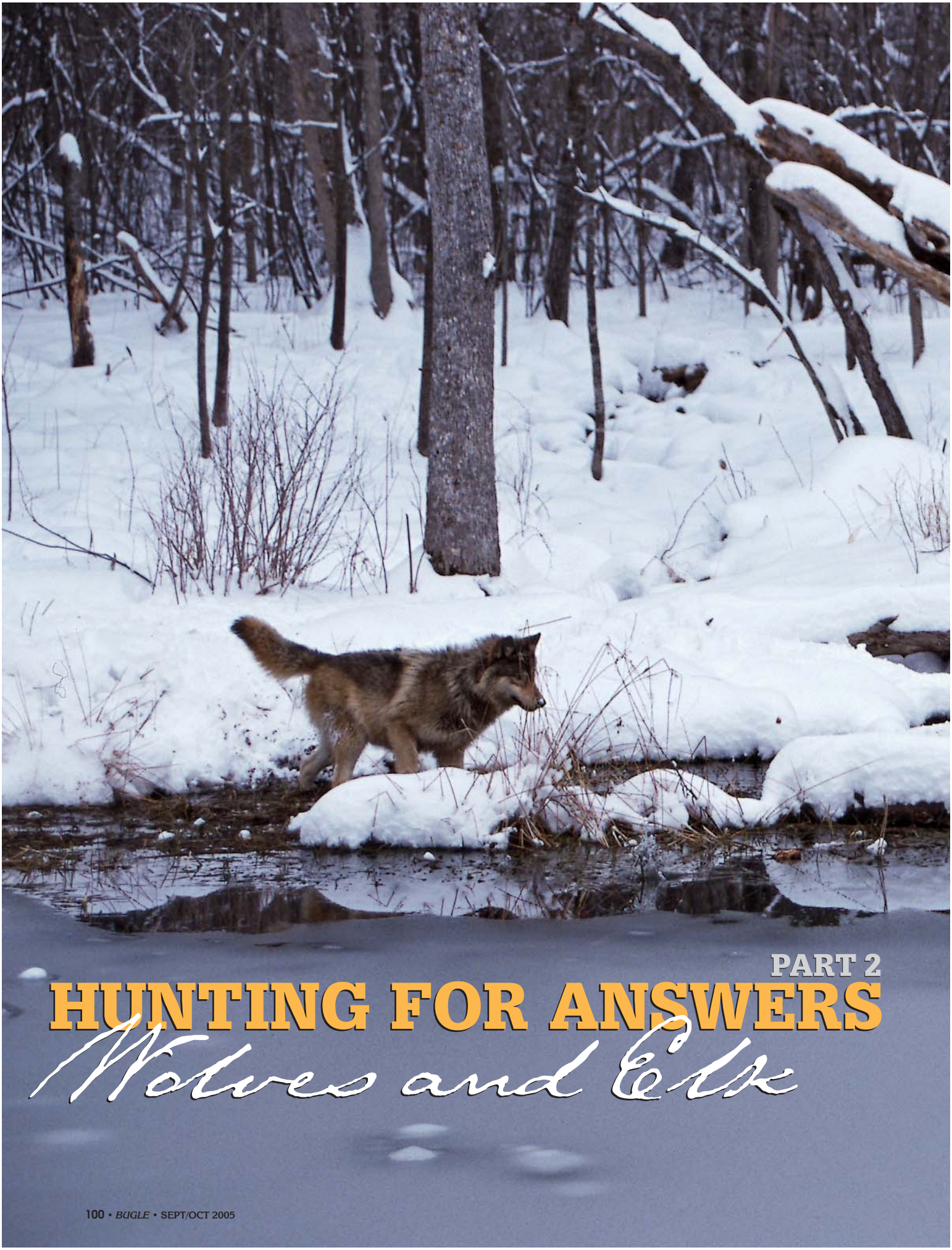


PART 2

HUNTING FOR ANSWERS

Wolves and Elk

Michael H. Francis

It's been five years since we last focused a major special section on wolves. Much has changed in that time. We have a better understanding of some things, yet countless questions remain. This concludes a two-part series that explores the many facets of the relationships between wolves, elk, people and the land. We hope this series, taken as a whole, offers a clear, accurate, even-handed appraisal of wolves in elk country.

Our Positions

These are the official position statements on wolves adopted by the Rocky Mountain Elk Foundation's board of directors.

Wolf Reintroduction (1995)

The Rocky Mountain Elk Foundation supports sound, science-based wildlife management that maintains a sustainable balance between predator and big-game prey species. We neither support nor oppose the federal wolf recovery program, but we do favor existing plans to remove wolves from the endangered species list so they can be managed locally by state wildlife agencies.

In keeping with that intention, the Elk Foundation has been fulfilling its appropriate role of providing funds for research, monitoring and fact-finding to be used by designated decision-makers and the public for management actions.

Even after states are given due management authority, debates over the relationship between wolves and elk will continue as a complex political, economic and social issue. These debates over appropriate management actions will be intense and divisive. There will be no inherently "right" answers, and intelligent, dedicated and well-informed Elk Foundation members will come down on different sides. We encourage our members to use the public process, making their voices heard for the action they favor by federal and state agencies and legislators. But for us as an organization to take a side cannot avoid promoting divisions in our membership. Any such division would weaken the Elk Foundation and divert attention from the longstanding, imperative focus on our mission—the protection and enhancement of critical wildlife habitat.

Habitat—food, water, shelter and space to roam—is the indisputable basis of healthy wildlife populations, and its loss to subdivision and development remains the most serious threat. Once gone, it cannot be replaced. Therefore, the Elk Foundation's focus will remain, as it always has, on protecting and enhancing places for elk and other wildlife to live.

Wolf Management (2003)

Rocky Mountain Elk Foundation policies have long supported removing wolves from the endangered species list as soon as possible and transferring responsibility for management to the states. Adequate federal funding should be provided to states to ensure that costs of these new management programs will not be borne by hunters. Wolf management should be science-based, compliant with federal regulations and fully sensitive to local economic and social impacts, ultimately achieving an appropriate balance between wildlife, habitat and

Mark Miller

Wolves & Elk in Three Very Different Montana Landscapes:

What We're Learning

by Hal Herring

Wolves eat elk, and their methods are not the subtle, hidden tactics of a mountain lion at ambush. Wolves test elk constantly, shadowing, feinting, sizing up. When they decide, the chase is a sudden brief fury, jaws seeking throat. If their target is an antlered bull, wolves aim high on the hindquarters, ripping into massive muscles, breaking them down. It's usually over in less than 400 yards, a few minutes' frenzy of white teeth and popping jaws. Wolf packs roam the early summer calving grounds, junior members sparring with the cows, harassing them while their elders rush in and grab newborn calves. In 1850, when the poet Alfred Lord Tennyson wrote of "nature, red in tooth and claw," he was talking about the lack of mercy, for men and animals, on this earth. When we read his words now, many in the West think of a more literal image—that of a wolf.

The return of the wolf has been controversial, symbolic and emotional to the point of violence. To some, wolf reintroduction, or laws made to protect wolves that have returned on their own, represent the federal government's latest and most arrogant meddling in the landscapes of the rural West. To others, the wolf is a symbol of nature out of control, a little too wild, violent and unpredictable. There are those who view wolves as alternately cuddly and noble. And for some, the wolf represents nothing: it is simply a large, intelligent predator, no more, no less.

Ranchers tallyup the losses of sheep and cattle, fearing that in tough economic times wolves could drive them out of business. Some hunters are convinced that they will kill off all the game. And of course, many Americans, hunters and nonhunters alike, are somewhere in the middle. They respect wolves not because they are regal or cute but because they believe strongly that the wild spaces left in this country ought to have as many of their original species in place as possible.

For those of us who love elk and elk hunting, and the many of us who have advocated for them all our lives, the first questions raised by a growing wolf population are: *What effects will wolf predation have on elk herds and the future of elk hunting? What can we expect if wolves are removed from federal protection and placed under the management authority of the states?*

Bob Garrott, a biologist in the Ecology Department of Montana State University in Bozeman, is conducting a seven-year study, entitled, "Monitoring and Assessment of Wolf-Ungulate Interactions and Trends Within the Greater Yellowstone Ecosystem," or more simply, "Wolf-Ungulate Dynamics." The study is partly funded by the Elk Foundation and is designed to answer four questions: What is the effect of wolf predation on local elk populations? How do elk shift their use of the available habitat under pressure from wolves, and what changes in their behavior can be observed? And finally, if elk do modify their behavior patterns due to predation risk from wolves, do these changes influence their ability to survive and reproduce?

Garrott is a serious hunter and longtime Elk Foundation member. He has been hunting elk for 30 years. For the last 16 seasons, he has packed into a camp deep in southwest Montana's Madison Range. His vacation last year was spent on a long trek through the Bob Marshall Wilderness, with only his dog for company. Garrott's white hair is cropped close to his head, and he is weathered from long years in harsh wind and sun, which, his conversation makes clear, is the place where he feels most at home. Those same long years afield have kept him lean and fit, and he has the kind of restless energy far more suited to the huge spaces of elk country than to a classroom or laboratory.

Hunters could ask for no better representative

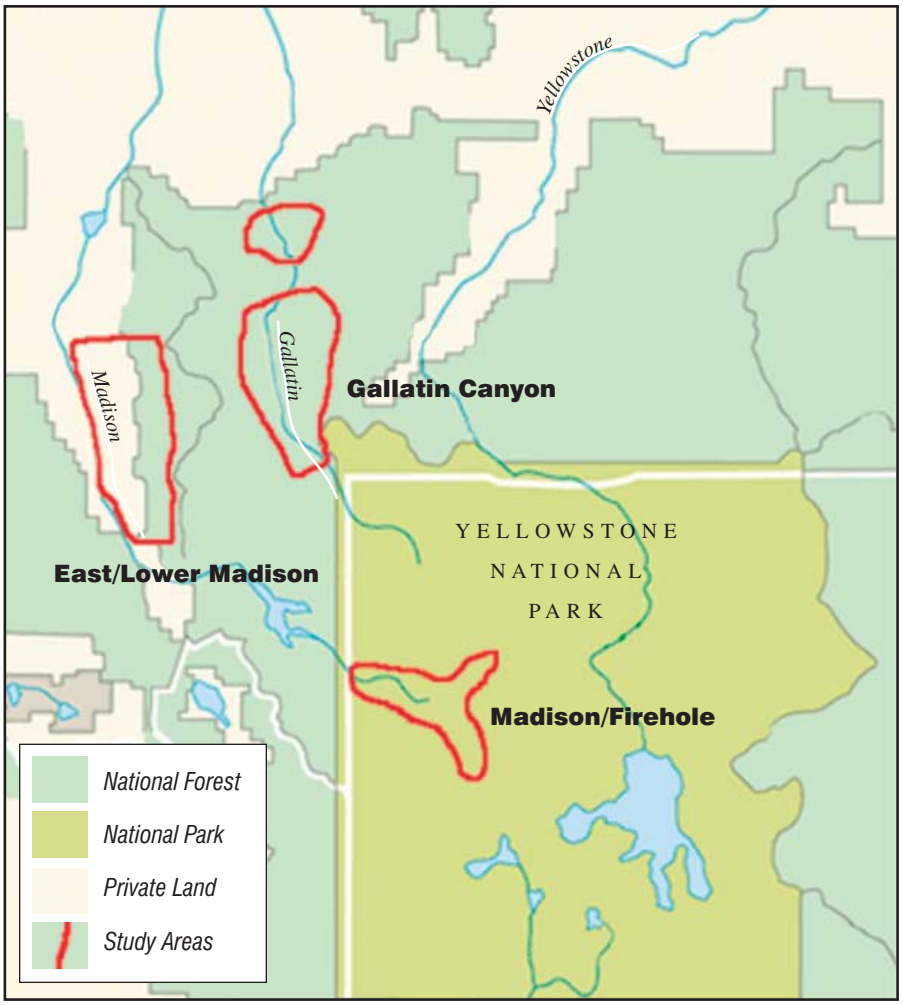
in the field of science. But be forewarned: Garrott and his students are scientists and are not at the service of politics, ideology or opinion. Their work is an exploration, and like any exploration it uncovers as many new questions as it answers. Some of those questions lie outside the realm of science and inside the heart of who we are as hunters.

"We picked three sites for this study," Garrott explains in a Bozeman coffee shop, a September sun blaring through the windows. "The lower Madison, the Madison-Firehole and the Gallatin Canyon area. While all three are geographically close to one another, they are very different with respect to land ownership, terrain, climate, the abundance of elk, and availability of other species of big game. The hope is that the data from three such different areas will have a broad enough application to be useful for developing policy and management programs. We purposefully designed our studies this way because we felt that the impacts of wolves on elk populations could be very different depending on the system. So if a simple 'one-size-fits-all' answer is what you want, you are going to be disappointed."

On a piece of scrap paper he sketches a rough map of the western section of Yellowstone Park and adjoining Gallatin and Madison Valleys, drawing in 10,000-foot Sphinx Mountain for a reference point. Then he fills the map with the names and locations of wolf packs, creeks and wildlife management areas, numbers of elk, numbers of wolves, landowners' names, elevations and normal winter conditions in various areas.

"In the Madison-Firehole area," he says, pointing to the headwaters of the Madison River, inside Yellowstone National Park, "we have a nonmigratory herd, living year-round in the park and wintering at a minimum elevation of 7,000 feet, in deep—sometimes 4 feet deep—snow. This herd has been stable at about 600 animals for the past three decades with the average size of a group of elk during winter at six individuals. Over the past seven years we have watched as wolves colonized and increased to one of the highest densities ever recorded. Predation pressure on this herd is intense, and the elk have changed how they do business as a consequence. We are starting to see a decline in elk numbers and expect it to continue until wolves begin to adjust their own numbers or switch to the much more abundant, but more difficult to kill, bison that winter alongside these elk. Remember, this is inside the park—protected elk, protected wolves, all the other predators in place."

He moves his pen northwest, down the



Madison River to the second study area only 40 miles away. Called the Lower Madison, it begins at Deadman Creek on the Elk Meadows Ranch and goes north all the way to the Bear Creek Wildlife Management Area near the community of Cameron. "Here you have winter range typical of much of southwestern Montana, where wind blows the snow away and exposes the grass. You've got huge blocks of relatively low-elevation grassland on private ranchlands, where 3,000 to 5,000 elk migrate every winter. These are outstanding low-elevation ranges, and it is routine to watch groups of 500 to 1,000 elk. This herd has been steadily increasing for decades. When wolves disperse from Yellowstone Park you can certainly see why they quickly find and settle in valleys like this."

Wolves are not deities, no matter what some people think. We have to be able to accommodate the ranchers, because these big open spaces support everything we want—the elk, the wolves, the wildlife.

—Bob Garrott, wildlife biologist, Montana State University

The lower Madison Valley study area currently holds one pack of three wolves, another elusive pair and an occasional loner—a total of perhaps half a dozen animals. Wolves in the lower Madison kill a lot of elk, in far higher concentrations than in the other two study areas, because they don't have to travel to find them. But their toll is not likely to rise any time soon, for two simple, interlocked reasons: biology and livestock conflict. The reason there are six wolves in the east Madison study area and not 25 or 50 is because wolves also kill cattle, and cattle ranching is the major use of the grasslands that support the enormous elk herds.

"The elk come down from the mountains onto these grassland benches, shifting between the wildlife management areas and private ranchland," says Garrott. "The small wolf packs that hunt these areas have a super-abundance of elk and have very high kill rates. If you talk to some of the ranchers who helped us with our studies, however, the wolves don't kill near enough of the elk. But in running them around, they may actually be helping reduce the impact of so many elk on any one place. But then comes spring. The wolves make their dens along the periphery of the grasslands and have their pups. And then most of the elk head to the high country as the snows recede."

While small numbers of elk remain in the foothills, and mule deer and pronghorn migrate into the area for the summer, the abundance of elk in the winter is replaced by large numbers of cattle that are moved onto the range for the summer. After losing a few calves or cows, the rancher calls the U.S. Fish and Wildlife Service (FWS), the fish and wildlife service calls in a shooter, and the cattle-killing wolves get taken down. In 2004 there were at least 14 wolves in three packs (Taylor Peak, Sentinel and Ennis Lake). Agency sharpshooters killed 11 to resolve livestock conflicts. After a mange outbreak and a number of illegal killings, only a few individuals remained going into the 2005 breeding season.

"One of the certainties here," says Garrott, "is that on these agricultural lands we are never going to have those big wolf packs numbering in the 20s or 30s that have been common in Yellowstone Park. The wintering elk herds could support such big packs, but it would be hard to see how they could make a living in summer without turning to livestock to support so many mouths to feed. So I think wolves can fit between the seams in places like the Madison Valley but packs will get into trouble periodically and will have to be controlled to protect livestock, just like we do now with lions and bears."

Garrott believes that wherever ranching is the primary use of land, as it is in the lower Madison study area, wolf numbers will be kept low enough that their impact on big game resources like elk will also be extremely limited. He adds that, no

matter what the people who unequivocally love wolves and would like to see them protected forever believe, there is no getting around this simple fact:

"Wolves are not deities, no matter what some people think of them," he says. "We have to be able to accommodate the ranchers, because these big open spaces support everything we want—the wolves, the elk, the wildlife. Without these low-elevation grasslands, wildlife populations ranging from songbirds and raptors to big game and big predators would all be sorely impoverished."


Mark and Sue Werner

In my time in the Madison Valley, and in my time with Bob Garrott, it became clear that his studies of wolf-ungulate dynamics cannot be separated from their context—the lower Madison study area is a spectacular crossroads of crucial hunting, wildlife management and private lands issues. The return of the wolf has added yet another powerful element that brings others into sharper focus—a focus so sharp, indeed, it will carve and shape at least part of the future of elk hunting and conservation.

"Let's look at the Gallatin Canyon study area for a contrast," Garrott says. This study is led by Scott Creel, one of Garrott's colleagues in Montana State's Ecology Department. There are 1,000 to 1,500 elk in this study area, and they move between four drainages—Porcupine Creek, Daly Creek, Tepee Creek and the Taylor Fork. This area is intermediate between the lower Madison and Madison-Firehole study areas. Elevations are moderate, topography rolling to steep, with relatively deep snowpack often accumulating. The majority of the animals move into this area late in the season, so human hunting success is mostly limited to a late season permit hunt, which biologists have curtailed because of a decline in the herd and recent years of poor calf survival, known as "recruitment." The low recruitment is probably due partly to wolves and other predators, but persistent drought and the subsequent shortage of forage may also have contributed.

There is less potential for conflict with livestock there, because the area is mostly forested, publicly owned and managed by the U.S. Forest Service. Wolf impacts to the Gallatin herd could be higher than in the lower Madison because elk densities are much lower and conditions are harder for wintering elk. However, another variable has entered the equation: the strange and dangerous lives of the wolves themselves. This area was the turf of the Chief Joseph pack. The pack was extraordinarily restless, wandering over hundreds of square miles, including the Yellowstone River Valley to the east as well as the Madison Valley to the west. Such restlessness comes with a price—in summer 2001 the alpha female was killed by a car. That fall, her mate was killed by a bull elk, and the pack split up. One of them was shot after killing 19 sheep on a ranch north of Helena, 160 miles away as the crow flies, across rivers and interstate highways. Six or seven members of the pack remained in the Gallatin Canyon study area, and researchers confirmed 24 elk killed by them during a three-month study period. In the 2001 study period, most documented kills were calves, the following year, the majority were adults, including a number of bulls.

Another hazard for wolves living around people is their dogs, which can spread diseases

This whole wolf re-intro would never have happened without hunters. Hunters restored the big game, created the prey base so that wolf recovery could happen. We don't forget that fact, ever.

— Ed Bangs, FWS wolf recovery coordinator

such as distemper and parvo along with parasites like mange mites. Mange swept through the pack last year. It's uncertain whether any of them survived. If so, they produced no pups this spring. Even so, wolf numbers in the Gallatin are expected to grow again. Like other blocks of largely public land where wolves have been restored, the Gallatin will likely see more wolves and fewer elk.

"What we see in the Gallatin is a place where there are fewer limiting factors on the wolves," Garrott says, "because there are few livestock conflicts. And, like in the park, you have a full complement of predators—lions and both kinds of bears. The elements are definitely in place for big predators to have a bigger impact on elk numbers."

Research so far indicates that bears are far and away the primary predators on calf elk and moose, but it is the combination of multiple predators, including people, that is most likely to have a significant effect. Wolves are certainly part of that equation. Garrott says it is still too early to blame the decline in calf recruitment on wolves or any other predators.

"We know that the majority of wolf kills are calves—elk up to 1 year old," he explains. "But we also know that if 80 calves hit the ground per 100 cows, even before wolves showed up, only 40 to 45 of those normally survived to enter their first winter. We have weather, both summer and winter, four big predators, land-use changes and ever-increasing human activity all influencing the elk herd in differing ways, and some of these factors are almost certainly interacting. So while we know that wolves eat elk calves, determining how many of those calves would survive to adulthood in the absence of wolves is an extremely difficult question."

As Garrott discusses these findings, he is still making adjustments to his hand-drawn map, adding a creek here, the name of a peak there. He writes the names of the graduate students and research assistants in each part of the map where they are working. There is a refreshing absence of abstraction in his map and in the language he uses to describe his work. In the hurricane of controversy over wolves, I recognize the eye of the storm, that calm place where the work gets done.

The rhetoric of barstool biologists is replaced by the ground-pounding, day to day, applauseless effort of people like grad-student Rosemary Jaffe, who post-holed miles through the wind-packed snow of the Madison-Firehole to sift blood and hair and pack out biological samples of wolf-killed elk. There is doctoral candidate John Winnie, on snowshoes, picking up steaming elk pellets in Gallatin Canyon on a February dawn when the sun is just a frozen lead-colored disk suspended in the ice fog. ("And that's the most glamorous part of the job!" Winnie told a reporter who accompanied him one day.) There is elk hunter and graduate-student Justin Gude, dressed in everything he's got, digging elk urine samples out of the snow to assess nutrition in the Madison herd, holding a radio telemetry antenna above his head with the wind threatening to take it away from him, surreal waves of driven spindrift coiling and sweeping around his boots.

The study is about frozen blood and guts, urine and dung, meat and death, and the struggles of big wild animals in some of the biggest and stormiest wild country left in America. It's about boot leather and outdoor scientists equal to the country and hard enough to do the job. It is also about landowners and ranchers who provided support for the researchers and access to their private lands, even when, for many of them, both wolves and elk were a sore subject and growing more so by the year.

And what has all this effort produced so far? Well, maybe Montana Department of Fish Wildlife and Parks biologist Ken Hamlin, also a key player in the study, says it best. "Predators eat elk. If you've got to have a one-sentence answer, that's the one I'll give you." But a one-sentence answer is useless, he says, when trying to determine when and if they will eat enough elk to affect hunting opportunities, especially given the fact that 2004 saw record numbers of big game animals in many areas across Montana.

"In the lower Madison, the answer is no, there's no way that small pack can hurt that herd under the conditions we've got now." Hamlin says. One of the things learned by the Madison study, though, is that a small wolf pack kills a lot of game per wolf. "A little pack like that loses a lot of their meat to scavengers—a big pack has more members to protect the kill, and they get more of it in the long run."

Hamlin says that the real concern for reduced elk numbers is in wilderness areas and on public land with high numbers of all large predators combined with intense human hunting pressure.

"We have a lower recruitment of calves in the Gallatin study area, and that is occurring to a lesser extent even in places where there are no griz or wolves, because of drought and forage concerns," says Hamlin. "In areas where predators are taking calves, too, there is a chance you'll fall below replacement levels, and you could see a population decline. "

A longtime elk hunter and local resident, Hamlin also understands why the issue of wolf reintroduction has been, and remains, so hot.

"I think it was the wolves coming in on top of all the other predators—the bears, the lions— whose populations have been growing in recent history. You've got potential for reduced hunting opportunities in some places," he says, "and people don't want to see that happen. We are seeing a changing distribution of elk across the landscape—in places where the wolves are hunting them, elk move around constantly and that affects hunters who have tags only for those places. It really affects outfitters who have specific areas where they can take clients. They can't count on the elk being there like they could before, and that is a legitimate concern. "

Every biologist working on Garrott's study believes the interests of elk hunters and livestock producers, and the long-term interests of both elk and wolves, will be best served by completing the transfer of wolf management from the federal to the state level. To those familiar with the conflict over wolves, it will come as no surprise that the federal biologists at the U.S. Fish and Wildlife Service are eager to pass on the torch of wolf restoration to their state counterparts.

"This whole wolf re-intro has been like a hot horseshoe for us," says Ed Bangs, FWS wolf recovery coordinator. "We were told to grab ahold of it, and we did, but we want to let go of it as quickly as we can. The Endangered Species Act did its job and is the only reason there are wolves in central Idaho and the greater Yellowstone ecosystem today. But we all know the professional management of a recovered wolf population is best conducted by the state fish and game agencies."

Bangs, an avid bowhunter for the past 40 years and former firearm and Master Bowhunter Education instructor, says from the beginning the goal was to reestablish the wolf as outlined in the Endangered Species Act, get the numbers up to where they were in no danger of extinction, and then turn over control to the states as soon as acceptable management plans were in place.

"Our recovery goals have been met," Bangs says. "We have the minimum 10 pairs of breeding wolves in Montana, 10 in Idaho and 10 in Wyoming, and we've had those numbers now for three consecutive years. We've got about 66 pairs now, about 835 animals total—324 in the greater Yellowstone area. When the Wyoming state plan can be approved, we are ready to let go."

Wyoming's present state law allows wolves to be killed without limit, by any means, at any time throughout most of the state. Without a guarantee of professional management by the Wyoming Game and Fish Department, FWS cannot approve their plan, so a proposal to delist wolves can't move forward.

Bangs says FWS would have no objection to hunting wolves, if that is the way the states want to manage them. "We strongly support hunting wolves, just like we support hunting mountain lions and black bear. I mean, just look at the success we've had with hunting lions and maintaining strong lion populations. There is no reason that wolf management cannot be just as successful." He pauses, "You know, it is best to

We strongly support hunting wolves. Look at the success we've had with hunting lions and maintaining strong lion populations. There is no reason wolf management cannot be just as successful.

—Ed Bangs, FWS wolf recovery coordinator

remember that this whole wolf re-intro would never have happened without hunters. Hunters restored the big game, created the prey base so that wolf recovery could happen. We don't forget that fact, ever."

Bob Garrott recognizes that the federal wildlife officials have been placed in a tough, almost impossible, position with wolf recovery.

"They have taken the heat long enough," he says, "just for doing the job the American public and Congress gave them. Now we need to get the wolves distributed well, get them delisted, and let the states manage them. Our study shows three representative areas, where three distinctly different things are happening. Remember, no one answer! What is required are flexible, on-the-ground management decisions that the states are perfectly equipped to make."

Garrott continues, "I can envision a scenario where we get hit by a couple of tough winters in a row, big game numbers are falling, you turn the elk harvest down and reduce your wolf numbers at the same time. You liberalize harvest here, reduce it there. That is why we have all those hunting districts in the first place. We've been doing this with lions for a long time, making fast flexible decisions based on biologists' recommendations and the special situations in each hunting district. It is called Adaptive Harvest Management, and I think Montana Fish, Wildlife and Parks is in the forefront of implementing effective conservation and management plans for big game and predators alike."

Like Bangs, Garrott points out it is hunters who made wolf recovery possible by paying for and supporting the recovery of big game herds and protecting winter ranges, a fact he regards with real pride. But he recognizes that the return of the wolf, combined with a growing human population and shrinking wildlands, forces hunters to ask themselves some new and uncomfortable questions.

"If you think we can delist the wolf and then just let the states poison or shoot them out, you are wrong," he says. "The recovery has cost too much money, and it has the support of too many people. What are you going to tell them? That you are a hunter and that all elk are reserved for human hunters? That is just too narrow a view, and people who do not hunt, but love wildlife, will recognize that immediately."

Garrott sits back, takes a drink from his coffee. He is a little bit away from the hard science where he feels most comfortable, and I can see he wants to make sure I do not misunderstand what he's saying. "There are places in the West where wolves will reduce human hunting opportunities, yes. There are other places where hunting elk will be a shell game, far more challenging than it is now, as wolves move them around. But hunting—and conservation—is not solely about stockpiling game to shoot. We need to ask ourselves what we believe, because as hunters, we will lose the battle if the public sees that all we care about is what we can shoot."

He adds, "Ten years ago, we would occasionally see black bear tracks near our hunting camp in the Madisons. Last year, we saw griz, lion and wolf tracks. For me, to hunt in a place where all that is going on is the essence of a wilderness experience."

As for returning the wolf to Yellowstone National Park and killing them off whenever they cross the boundaries, Garrott believes a much larger and defining principle is at stake.

"We have to be able to manage wolves to accommodate hunters and ranchers because hunters continue to provide the vast majority of the money state agencies require to manage all wildlife and ranchers are the stewards of lands that are critical to the continued success of wildlife conservation in the West. If the parks and wilderness areas are the only places where westerners will tolerate wolves, then in my view the wolf recovery program is a failure. Success, however, is completely within our grasp. We can recover this species and manage it so livestock conflicts are kept to a minimum, hunting opportunities stay healthy, and the general public can relish another in a long line of wildlife recovery success stories that has made the North American model of wildlife management the envy of the world."

Lifelong hunter and frequent Bugle *contributor Hal Herring makes his home in Augusta, Montana, where he shares his elk hunting with wolves, grizzlies,*

Keeping the Ranch . . . and the Elk and the Wolves

by Hal Herring

Wolf recovery is based on the success of hunters in restoring the game. Wolves now depend on the elk that hunters helped restore, and in many places, wolves, elk and hunters all depend on private landowners like those in the Madison Valley. The Beaverhead National Forest and the Lee Metcalf Wilderness hold pristine streams and parks of ancient whitebark pine and Douglas fir, and vast stands of quaking aspen. But anyone who has traveled in the Madison Range can tell you that it is a high and unforgiving fortress. When the autumn snows pour in, the game must come down, with up to 7,000 elk streaming into the valley and onto the rich grasslands of ranches like Elk Meadows, the Sun, the Carroll Brothers, the Bar K or any of a dozen others. The grass here is powerful stuff. When biologist Justin Gude was studying urine samples to determine the stress levels of elk being pressured by wolves, the protein content of the urine turned out to be higher than that of elk being fed alfalfa pellets at the National Elk Refuge in Jackson Hole. The Madison Valley has supported huge herds of game since mankind was chasing them off cliffs, waving crude spears, and falling prey to the 180-pound Dire Wolf.

Now the valley supports cattle and ranchers, which is the only reason it has remained undeveloped enough to support wolves and elk.

Mixtures and Elk

Patricia Aboussie

Nowhere has the partnership between wildlife biologists, hunters and landowners produced such a bounty of wildlife and big game, or such a wealth of low-elevation habitat. But the return of the wolf, in combination with such tremendous numbers of elk, is straining that partnership, calling old alliances into question.

"In this country," says Bob Garrott, longtime big game biologist at Montana State University, Elk Foundation member and a lifelong elk hunter, "we have an elevational gradient that demands compromises with private landowners. No winter range, no elk. No elk, no wolves. Our partnerships have been carefully forged, so far with great success."

Now, those partnerships must evolve again, in part because of the wolf recovery, but more because the elk recovery has been so successful.

"My main problems are not with wolves; they are with elk," says rancher Mark Jasmine, who runs cattle just south of the Bear Creek Wildlife Management Area (WMA), an area frequented by the Sentinel Pack of wolves. "I used to lease range on Corral Creek, but the elk ate everything down to nothing there. They drove me out. Now I'm at Indian Creek, and I'm seeing the wolves moving the elk there, breaking them up into smaller groups so they can't do as much damage to the range. I'm no fan of wolves, and I'm skeptical about the whole recovery plan, but so far the wolves have done more good than harm."

Jasmine is among an increasingly rare breed of cattlemen who make their entire income from ranching, and he leases most of the land where he grazes his stock from the Forest Service. He also has a background in wildlife biology, but left his studies because he, "felt like they were kind of teaching wildlife as religion, and I was interested in wildlife management."

But that background shows up in his observations of the place where he spends his days. "We don't see those wounded elk or those three-legged animals staggering around after hunting season anymore," he says, "and even though it is true that the smaller wolf packs [like those found in the Madison Valley] kill more elk, the fact that they lose so much of their kills to scavengers really pumps up the system around here. We see all kinds of hawks, eagles, you name it, feeding out there. It helps a lot of different animals."

Near Jasmine's lease is the Bar K Ranch, owned by Andy Kelly, who has ranched the area for almost 40 years. Kelly is tired of the subject of wolves and tired of elk. I met Mr. Kelly on the side of the road, while he and his crew were in the midst of haying, and he patiently stopped what he was working on to offer his thoughts.

"When I came into this country, on Wall Creek, there was 150 head of elk wintering there. Now there's 2,500. I've got wolves, too, and I don't see them moving those elk or helping in any way. All I see is too many elk, and I'm doing something about it."

Kelly has so far built five miles of elk-proof fence to protect his range and plans to build more this spring. According to Ken Hamlin at Montana Department of Fish, Wildlife and Parks (FWP), the fence won't block the elk migration path to the winter range on the Wall Creek Wildlife Management (WMA), but it is an obstacle that will likely create more problems than it solves. But Kelly says he has had enough. "You ask me about wolves, I'll tell you. I don't need them. I don't need elk, either. I just want to

run my cows on my ranch."

Hamlin believes that building elk-proof fence is a sign of partnerships stressing to the point of failure. "It costs an average of $10,000 per mile to build an elk-proof fence. There are other options to explore here," Hamlin says, "including varying spring and fall grazing by cattle and allowing hunting. Since Kelly borders the Wall Creek WMA, and does not allow hunting, herds of elk take refuge on his property when hunting season starts.

"We see this all through the Madison Valley," Hamlin says, "Some landowners do not want people hunting, or they will allow just a few people on to take cows, while reserving the big bulls for paying clients. So the elk have a refuge there, and they know it. And in the places where the landowners are having the most problems with too many elk, they also do not tolerate wolves. So what is the solution? I don't want to overemphasize the negative. We are searching for solutions. We're trying, and we've got a lot of landowners trying with us."

One of the people trying hardest to find a way to deal with high elk numbers and wolves on private lands is Lane Adamson, the head of the Madison Valley Ranchlands Group. Adamson is a retired rancher who leads the group with a clear goal—to preserve ranching in the Madison Valley, because he believes what is most valuable about the valley and about Montana is closely tied to the wide open spaces and way of life that a ranching economy can preserve. "We are trying to work together here to find a way to accommodate the wildlife and still keep our lands," he says during an interview in his office in the town of Ennis. "We have the wealthier amenity ranchers who own big places and want all the elk they can get, and will tolerate as many wolves as want to live there, right next to people who are one paycheck away from losing their places to subdivision. And when all those elk cross that fence, it can drive them out of business."

Now that wolves are in the valley, the pressure can be even higher.

"We have some ranchers who simply will not tolerate wolves on their lands—zero," Adamson says. "And they have a right to say that. But one of our goals is to educate and move toward a place where people are more tolerant."

Adamson cannot imagine the wolves ruining the elk populations. "When the wolves show up, the elk knot up quick. They work them hard, pushing them against fences, running them. But they'll never impact this elk herd. It's too big, and people will never tolerate a wolf pack big enough to make a dent in it."

What the wolves could do, though, Adamson says, is make cattle ranching difficult enough to encourage some ranchers to cash out and quit.

"If I'm in business, say I have a little shop in town, and we decide that a local family of shoplifters is going to take 10 percent of my stock every year—because they are an endangered group of folks and everybody across the U.S. likes them—I'm going out of business. And when the ranchers go out of business, you lose the open spaces, you lose the quality of living in a rural place, you lose the wildlife."

Still, Adamson watched development take over Montana's Gallatin Valley and is horrified at the fate of places like the sprawl-splattered Bitterroot Valley to the west of the Madison. He strongly believes the tide of development in the Madison can be held at bay. He is experimenting with ways to reimburse landowners for lost livestock and for forage or land values lost to wildlife. The object in all of the experiments is to hold on to the ranch.

"We have a high profile here in the Madison, as part of the Greater Yellowstone Ecosystem, and rightly so," he says. "We are the winter range, we are the habitat. And we have, in the south, a series of ranches that are owned by people who are not hardscrabble ranchers. They all have the financial room to work on these ideas, and they are people who are interested in the overall health of our valley, the wildlife, the people, the rangelands, all of it." Adamson pauses and adds, "In the Madison Valley we are not wasting a lot of time getting hysterical over the wolf questions. We have too much work to do to get caught up in that."

On the Sun Ranch, Todd Graham is moving cattle on horseback, one weather eye always out for wolves. The 25,000-acre ranch belongs to software entrepreneur Roger Lang, who bought

it from Hollywood martial arts star Steven Seagal.

The Sun Ranch lies at an elevation of about 6,700 feet and provides almost ideal winter range for elk and mule deer. This is one of the core areas of Bob Garrott's study in the Madison, where Justin Gude stopped each day to coffee up for the frozen grasslands where the elk and the wolves were playing out the oldest of games. Graham is from Wyoming, has a degree in rangeland management and specializes in managing ranches that mix conservation values with cattle production. He has been at the Sun Ranch for the past two years, working the cattle, the biologists, the range, the elk, and the wolves.

"Three rules here," he told me. "No wolves close to people. Somebody has to stay with the livestock at night if the wolves are here. No wolf games in the horse pasture."

Graham once spent time in a Wyoming outdoor program with a young man from the Maasai tribe of Kenya who had protected his family's cattle from lions using only a spear and constant vigilance, and considered it no big deal. Graham has skewed those methods a bit, changing the spear to a shotgun with cracker shells or rubber bullets. Every night before he goes to bed, he runs a quick telemetry check to see where the wolves might be and whether they are breaking any of the three rules. Many nights, the telemetry shows them to be right in among the horses or the cattle, and he packs a bivvy sack and sleeping bag and heads out. He has become very familiar with the night sky of the Madison.

The northern 8,000 acres of the ranch are reserved solely as elk winter range. Elk Foundation volunteers removed 20 miles of barbed-wire fence here from 2001 to 2004, clearing lands used by as many as 3,000 head of elk. The wolves run elk here, and Graham is studying the possibility that the running of elk might break up the tough layer of dense club moss—the enemy of native grasses—that weakens this part of the range. As Lane Adamson says, the Sun Ranch is a place where there is room for exploration, and Graham is taking advantage of that space, seeking practical ways to keep the ranch healthy and make it work for people and wildlife, trying to find some set of keys regarding the next move. What happens here is important, because there are not many places like the Sun Ranch left in this world.

In the late morning, we drive north, along a ridgeline, out in the open. The Hilgard Peaks stand like a wall to the east. On the other side of the draw, a hot spring gushes out of the stone into a manmade rock pool. The draw falls away toward the Madison River, thick with red willow. A nice whitetail buck bursts from the thicket and, clattering in the rocks, disappears.

"We worked with an archeologist here," Graham says, "and apparently there has been a continuous habitation of this place for the past 9,500 years."

Standing on the ridge, the day is clear enough to see the immense grasslands far to the north, maybe as far away as Ennis. "On these ridgecrests, hunters built little lookouts," he says, "and there are parts of ancient stone walls that the archeologist thought were meant to direct game as it was being pushed down this way. We held up pieces of cardboard, and you could send a message two miles in 16 seconds, just using the lookout points."

Below us in the draw, a short rocky step was believed to be a killing zone where early bison, maybe elk, were driven over so that legs could be broken, hips dislocated, anything to blunt the edge of vast heart and lung power, muscle and hooves, teeth and horns. The hot spring steamed, the wind poured from the south. Here was a place where proud men with spears and power of their own drew blood, pulled fresh meat to feed women and children, a celebration of life and death that was still going on. In their dreams were great horned creatures, magpies, lions and wolves, eagles and hummingbirds, storms over wild country, just as are in our dreams. Just as, we hope, will be in the dreams of our children.

Hal Herring's last article for Bugle *was "Elk Country and the Price of Energy," in the January-*

The Nature of Wolves

The Basics

- Biologists generally recognize two species of wolves in North America: gray and red.
- Despite their name, gray wolves exhibit all shades of white, black and brown.
- Wolves once roamed all of North America but now are found mostly in Alaska and Canada. In the continental United States, gray wolves exist in Wisconsin, Minnesota, Michigan, Wyoming, Montana, Idaho, Arizona and New Mexico.
- Like bull elk, few wolves ever see 10 winters in the wild. In Yellowstone National Park, wolves live four years on average.

Life in the Pack

- Wolf packs tend to comprise six to nine animals but can be as small as two. A pack of 37 was once reported in Yellowstone.
- Pack territories range from 25 square miles, where prey is abundant, to more than 1,000 square miles, where prey is scarce or on the move, as with migrating caribou. Wolves commonly kill other wolves that trespass into their territory, which is the leading cause of natural death in areas with high wolf populations. However, humans are the leading cause of wolf deaths overall.
- Just like dogs, wolves urinate on trees, rocks and brush to communicate with each other. Both the alpha male and female lift their legs to urinate, while all the subordinate males and females squat.
- Howling appears to play many roles, including motivating a pack for a hunt, warning other wolves to stay out of its territory and reuniting a pack after it split up.
- Competition for food and breeding is often intense, and sometimes wolves leave the pack and strike out on their own. They have been known to travel as far as 500 miles in search of another pack, a mate or to establish their own territory. Such a move is risky though, for without the safety of the pack, they become more vulnerable to being killed by other wolves or humans.

Breeding

- Wolves in the United States and southern Canada mate in late February and early March. After a 63-day gestation, pups are born weighing less than a pound. Litters average six pups.
- Wolves often mate for life but will bond with another if their mate dies or leaves the pack. In most packs, only the alpha male and female breed. In packs where two or more females bear young, the pups from the subordinate litter may not survive because the pack focuses its care on the dominant pair's litter. Wolves generally breed when 2 or 3 years old. The opportunity hinges on their social status within the pack or finding a mate and staking out their own territory.

Hunting

- With long legs and large paws, wolves can stay on top of the snow while moving at high speeds. They can run up to 35 miles per hour for short bursts and can lope at five or six miles per hour for several hours almost tirelessly. Their powerful jaws easily crack a 3-inch diameter femur.
- Wolves have an extraordinary sense of smell and can detect a whiff of elk or deer from as far away as 1.5 miles.
- Wolves wander widely, searching for weakness in their prey so they can kill it without being injured.
- Wolves kill smaller prey like deer by latching onto the throat and pulling the animal down. But they prefer to catch larger prey like elk, caribou and moose on the run, so they can

sink their teeth into a hind leg or rump without being kicked by dangerous front legs. Large animals that stand their ground usually keep wolves at bay and successfully defend themselves with their hooves, horns or antlers.

- Wolves, like most predators, sometimes kill more than they can eat at that moment, when given the opportunity, perhaps in response to a long period of hunger. Elk or deer struggling in deep snow provide the opportunity for such "surplus" killing. Most of the time, however, wolves must struggle to find enough to eat, as prey are well-adapted to evade predators. Researchers in Minnesota report that conditions allowing wolves to kill more than they can eat occur only about 5 percent of the time. Most wolves return to carcasses days and even weeks after the initial feeding.
- On average, wolves have only a 7 to 10 percent success rate when hunting. It is not uncommon for wolves of all ages to starve to death.

Feast or Famine

- Wolves mostly eat deer, moose, elk and caribou, but also hunt pronghorn, musk ox, bison, mountain goats and bighorn sheep. Beavers are the smallest prey of any real importance to wolves. They can't survive without meat but will occasionally eat grasses, herbs, fruit, mushrooms and the bark of saplings.
- On average, throughout the year, wolves need 9 pounds of meat per day to survive. That's about 18 adult deer or 12 cow elk per year per wolf.
- Wolves live a feast-and-famine existence, often going a week or more without food from late spring through early fall, when prey is less vulnerable, and eating plenty when ungulates are weakest and hampered by snow, cold and lack of forage.
- A wolf can eat up to 20 pounds of meat in one sitting. Such bouts usually come immediately after a kill and after days without food. With full stomachs and exhausted from the hunt, wolves have been known to sleep as long as 18 hours.
- Bears, wolverines, lynx, bobcats, mink, weasels, hares, porcupines, squirrels, mice, voles, shrews, ravens and eagles frequently scavenge at wolves' kills, benefiting from the leftovers.

This information was gleaned from the following books: Wolves, *by Nancy Gibson, 1996;* Trails of the Wolf *by R.D. Lawrence, 1997;* The Way of the Wolf, *by L. David Mech, 1991;* Wolf: Wild Hunter of North America, *by Bruce Obee, 1997; and* Wolves, *by Daniel Wood, 1997.*

Special thanks to Ed Bangs, wolf recovery coordinator, U.S. Fish and Wildlife Service; Doug Smith, Yellowstone Wolf Project leader; the National Park Service; and Carolyn Sime, gray wolf coordinator, Montana Department of Fish, Wildlife and Parks, for their review and input.

Pete and Alice Bengeyfield

Wolves in the North Woods

by Daniel di Stefano

As European settlers pushed westward across the United States, they converted wilderness into farmland, overhunted native game populations and shot, trapped and poisoned gray wolves. When deer, beaver, elk and bison populations plummeted, wolves turned to preying on livestock, setting the stage for conflicts between ranchers and wolves that exist to this day. As big game continued to dwindle in the late 1800s, the government instituted bounties on dead wolves. Wolf populations crashed throughout the lower 48.

Wisconsin ended its bounty on wolves and gave them full protection in 1957, and Michigan granted the wolf endangered species protection in 1965. But it was too late. Despite total protection granted in 1957, wolves were considered extirpated from Wisconsin by 1960 and from Michigan, with the exception of Isle Royale, shortly after.

Northeastern Minnesota, with its dense forests, sparsely roaded areas and proximity to thriving wolf populations in Ontario, was the only remaining place in the contiguous U.S. with a viable wolf population. Minnesota continued its bounty on wolves until 1965, when biologists estimated 350 to 700 wolves remained.

After 1965, a state-managed predator control program and wolf hunting season killed about 250 animals a year for nine years. This ended when wolves in the lower 48 became federally protected under the Endangered Species Act (ESA) of 1973. The ESA prohibited killing or harming gray wolves for any reason other than self-defense. It also required the U.S. Fish and Wildlife Service to formulate a recovery plan for wolves.

Almost immediately, wolves started to rebound in Minnesota. By the late 1970s, the Minnesota Department of Natural Resources estimated the state's wolf population at 1,000 to 1,200 animals. In 1978, the Fish and Wildlife Service reclassified wolves in Minnesota from endangered to threatened, giving state and federal agencies more flexibility in dealing with wolves that attacked domestic animals. In the 1980s the state identified new areas wolves had colonized, suggesting populations were still on the rise.

Shortly after receiving federal protection in 1973, wolves from Minnesota began dispersing into neighboring Wisconsin. In 1975 Wisconsin formally acknowledged their presence by declaring them a state endangered species, which meant the Wisconsin Department of Natural Resources would help restore and maintain a viable population in the state. By 1979 biologists documented 25 wolves in Wisconsin.

The domino effect followed in Michigan. As more wolves colonized Wisconsin, biologists began reporting sightings of solitary wolves in the Upper Peninsula. It wasn't until the late 1980s that biologists documented seeing a pair of wolves together. In 1991, the first confirmed wolf pup was born in Michigan.

The 1980s also saw a resurgence in deer populations in the Midwest. Ample prey, combined with the wolves' protected status, led to a steady increase in wolves in the three states. Recovery goals set by the Fish and Wildlife Service were soon met and exceeded. Minnesota hit its goal of 1,250 to 1,400 wolves in the 1970s. Wisconsin and Michigan's combined goal was set at 100 or more wolves for more than five consecutive years. They have had at least that number since the winter of 1993-94. Results from winter surveys conducted in 2004-05 estimate Minnesota's wolf population at 3,020 animals, Michigan's at 405 (excluding Isle Royale) and Wisconsin's at 425.

As numbers increased and wolves began roaming into more of their historic range, age old conflicts between wolves and humans began to rise. States started holding public meetings, trying to determine a social carrying capacity for wolves. They also looked for ways to manage problem wolves, such as those that prey on livestock. In Minnesota, where wolves were

listed as threatened, state and federal officials could legally kill problem animals. Michigan and Wisconsin had to rely on the more time-consuming and expensive process of relocation.

Meanwhile, wolves wandering south from Canada had recolonized northwest Montana, and the Fish and Wildlife Service had reintroduced experimental populations of wolves into Yellowstone National Park and central Idaho and along the Arizona-New Mexico border. Although the Southwest program had gotten off to a rocky start, wolf populations in Yellowstone, Montana, Idaho and Wyoming were booming. The Fish and Wildlife Service recognized that wolf recovery was moving at different paces in different areas and couldn't be governed by one overarching plan.

In April 2003 the Fish and Wildlife Service instituted the Final Rule to Reclassify and Delist the Gray Wolf. The Final Rule divided the U.S. into three separate management areas: eastern, western and southwestern. It downgraded wolves in the western (northwest Montana only) and eastern regions to threatened, while keeping wolves in the southwestern area listed as endangered. (Wolves in Yellowstone and central Idaho kept their "nonessential, experimental" status.) Changing the wolves' status to threatened allowed states and tribes within those regions more control over wolf management and gave them the option of killing problem wolves. Some biologists believe this actually helps wolves in the long term by quelling the public's frustrations with wolves that prey on livestock or pets.

"This is a tool we need now more than ever," said Todd Hogrefe, endangered species coordinator for the Michigan Department of Natural Resources. "Without the ability to deal with a small number of problem wolves, public support will erode."

Not everyone favors the rule, however. The eastern region stretches from the Great Plains to the East Coast. Michigan, Minnesota and Wisconsin are the only states out of 21 in that region with wolf populations. If wolves spread out into neighboring states, they could be managed the same way as wolves in states with viable populations. Fearing wolves wouldn't get a fair chance to reestablish themselves in other states, the nonprofit Defenders of Wildlife sued the Secretary of the U.S. Department of Interior. Defenders alleged that the change in status "violated the ESA, the ESA's implementing regulations and the Administrative Procedure Act."

On January 31, 2005, the U.S. District Court in Oregon ruled that the 2003 Final Rule was "arbitrary and capricious" and violated the Endangered Species Act. The decision nullified the Final Rule, reverting wolf management back to how it was before 2003.

In Michigan and Wisconsin, wolves were classified once again as endangered. State wolf biologists feared that losing the ability to kill problem wolves would only increase conflicts between humans and wolves. The states applied for and were granted, in April 2005, special permits from the Fish and Wildlife Service allowing them to kill a limited number of wolves that had attacked domestic animals.

During the short life of the Final Rule, Michigan used its right to kill wolves 10 times, and Wisconsin 24 times. During that same time period state wolf populations grew 25 percent. In Wisconsin, biologists argue that it makes more financial sense to kill a wolf than to sedate, immobilize and relocate it, and they are running out of places in the state to release them.

"The places we were taking wolves are full," says Randy Jurewicz, Wisconsin Department of Natural Resources wolf biologist. "It's inhumane to dump wolves into another wolf pack's territory, because wolves are now killing other wolves."

While paying restitution for wolf-killed livestock and removing problem wolves has kept many farmers accepting of the predators, some big game hunters are not thrilled about having to compete with wolves. Despite rising deer populations in all three states since wolves gained protected status, some hunters believe if left unchecked wolves will decimate deer herds. Biologists say this is unlikely. Research suggests each wolf eats less than 20 deer per year on average. In Michigan that translates to roughly 8,000 deer a year lost to wolves, or less than 2 percent of the state's deer—far less than the 450,000 deer killed by hunters and the 67,000 deer killed by automobiles in the state

Mark and Sue Werner

each year. In Wisconsin wolves are believed to kill fewer than 8,500 deer a year, compared to the 350,000 killed by hunters.

In all three Midwestern states, biologists have documented little impact by wolves on elk populations. In Minnesota and Michigan, elk populations are small, and their range doesn't overlap with the wolves' range. In Wisconsin, wolves are known to have killed only four elk since they were restored to the state in 1995. Studies indicate wolves there so far prefer deer and beaver, both of which are plentiful and easier to hunt than elk.

Michigan's Hogrefe says despite data showing little impact by wolves on deer and elk populations, allaying hunters' concerns about wolves is difficult. "People just don't believe our estimates of the wolf population or the number of deer they eat in a year," he says.

One way to get hunters to support wolf recovery might be making the wolf a game animal, says Jason Dinsmore, resource policy specialist for the Michigan United Conservation Clubs.

"Hunters are really the best conservationists on the planet," Dinsmore says. "The best mindset in the way of management comes with those species that are actually hunted, such as deer and elk . . . then hunters have a vested interest."

In light of the 2005 U.S. District Court ruling, the possibility of a wolf hunting season in the Midwest seems a long way off. Even the extent of individual state management is in limbo. At the time of this writing, the federal government hasn't decided whether to appeal to the Oregon ruling.

Until then, wolves will retain endangered status under the ESA everywhere other than Minnesota. Michigan and Wisconsin will have to apply annually for their special permits to kill problem wolves, and biologists hope this won't fuel a future backlash against wolves among hunters and farmers.

"They both have accepted them to the point of not destroying them," Wisconsin's Jurewicz says. "But they aren't happy about the situation. The difference will be if they are allowed to flip the safety off their rifles."

Daniel di Stefano is a recent graduate of the University of Montana with a degree in print journalism and Spanish. He plans to travel Spanish-speaking countries and do some freelance writing, when he's not busy mountain climbing, learning to surf and studying martial arts.

"A Fierce Green Fire" Flares Back to Life in the American Southwest

by Lee Lamb

Mexican gray wolves roamed much of Arizona, New Mexico and parts of Texas and Mexico, hunting elk and deer for thousands of years. That changed quickly when settlers brought livestock to the region. In the late 1800s and early 1900s, the U.S. government sponsored a program to eradicate wolves. Government agents, ranchers and hunters disposed of wolves with guns, poison, traps and clubs. By 1925, wolves were mostly a memory in the American Southwest. A few stragglers—probably roaming over the border from the Sierra Madre in Mexico—made occasional forays into the region. Even as late as 1960, ranchers in the Southwest could still claim a bounty of $50 for a dead wolf.

Aldo Leopold, a conservationist and the father of modern game management, took part in wolf eradication as a young forest ranger. In his 1949 book, *A Sand County Almanac*, he tells of shooting a wolf and her pups in Arizona. He reached the female in time "to watch a fierce green fire dying in her eyes." Leopold later regretted killing wolves, writing, "I thought that because fewer wolves meant more deer, that no wolves would mean hunters' paradise. But after seeing the green fire die, I sensed that neither the wolf nor the mountain agreed with such a view."

When it comes to wolves, people often feel strongly one way or the other. Some believe that wolves no longer have a place on the land—that livestock and big game populations hold precedence over predators. Others feel that the Southwest's wild places aren't truly wild without wolves.

In 1976, by then declared extinct from its native range in the U.S., the Mexican gray wolf was listed as "endangered" on the federal list of Threatened and Endangered Species. Mexico reported its last wild wolf sighting in 1980. The animal was not completely lost, however. In the late 1970s, biologists from the United States and Mexico captured five wolves in the Mexican mountains in hopes of establishing a captive breeding program. By the mid-1990s, about 200 Mexican gray wolves lived in more than 45 zoos and wildlife sanctuaries in the U.S. and Mexico. The U.S. Fish and Wildlife Service (FWS) hoped to use these animals to bring wild wolves back to the Southwest.

In March 1998, following years of scientific research, public input and compromise, the FWS, along with the Arizona Game and Fish Department, New Mexico Department of Game and Fish, USDA Wildlife Services, Forest Service and White Mountain Apache Tribe, released 11 Mexican gray wolves into a 7,000-square-mile recovery zone. This zone includes the wolf's historic range in the Apache-Sitgreaves and Gila national forests, located in eastern Arizona and western New Mexico, respectively. The wolf plan calls for establishing 100 wolves in the recovery area by 2008. These animals are considered "nonessential, experimental" under the Endangered Species Act, giving the FWS more flexibility in dealing with public concerns over wolves and mitigating their impacts on livestock.

Subsequent releases from 1999 through 2005 have turned loose another 84 wolves into the recovery zone and adjacent Fort Apache Indian Reservation. Now, wolves are producing enough pups in the wild that releases of captive-bred wolves are being scaled back. The FWS is halfway toward meeting its recovery goal. About 50 wolves now roam the recovery area in nine packs. Nearly as many have died since the effort began. At least 21 wolves have been illegally killed by people since 1998. As many have died from vehicle collisions or were shot for preying on livestock.

Under the "nonessential, experimental" designation, wolves can be legally killed by

ranchers on private or tribal lands if they are caught in the act of killing livestock. On public grazing lands, if certain conditions are met, livestock owners can receive special permission from the FWS to kill wolves preying on livestock, although in most cases government officials dispose of problem wolves. Ranchers do not receive government compensation for livestock lost to wolves. However, the nonprofit Defenders of Wildlife has paid ranchers nearly $35,000 for livestock losses to wolves in the region since 1998.

So far the research suggests that when natural prey is plentiful, wolves primarily choose wildlife over livestock. The Mexican gray wolf recovery area was selected partly for its abundance of elk and deer. And since wolves have returned, biologists have not seen a significant decline in the area's 18,000 to 22,000 elk or in calf recruitment, as compared to non-wolf areas. Steven Kolmann, elk biologist for New Mexico Game and Fish, says since Mexican gray wolves are around half the size those brought down from Canada, they aren't likely to have the same impact on elk. No studies have been conducted to indicate how many elk Mexican wolves consume in an average year, but they have been documented eating a wide range of food, including javelina, carrion and road kill. Still, some hunters are concerned wolves will impact big game populations and hunting opportunities, especially as wolf numbers grow.

Despite the ups and downs of the Mexican gray wolf recovery program, biologists stress that the wolves are now a thriving population. Right now, any wolf found venturing outside the recovery zone is automatically trapped and relocated to the zone. Some people suggest wolves should be allowed to expand their range beyond this recovery area. Others, primarily ranchers and hunters, strongly disagree, believing it will only bring more headaches they didn't ask for in the first place. How this controversy will affect the fate of the program remains to be seen. But for now, Leopold's fierce green fire has been rekindled in the American Southwest.

Thirty Years Tracking Wolves

by Diane K. Boyd

As a scientist, I search for ecological answers, but what I inevitably find is that the sociological world overrules the biological. Humans are a powerful force that has a tremendous impact on the environment.

Huge, wet snowflakes blanketed the alder and red osier dogwood as I ambled into my favorite elk rutting place west of Glacier National Park. The wet September snow stuck to my face, my bow and my hands and silenced the soggy leaf litter underfoot. I bugled and two bulls responded to my calls from about a half-mile up the ridge. I walked slowly for an hour or so, pausing often to take in the delicious fall smells of leaf decay, wet spruce, battered saplings and the scent of elk.

Then I heard it—the muffled crunch of a footfall on wood, 50 yards ahead of me. I instinctively froze, my body at full attention, my ears and eyes sifting through the softly falling snow. Silent minutes passed. There it was again, unmistakable; a large animal upwind moved twice more. I searched the snow-covered ground for tracks. Nothing. I inched my way toward the sounds, thankful for the soft breeze concealing my scent. Suddenly I saw the willows move 40 yards ahead of me, the snow dropping from bowed branches. I froze again, appraising my options. It was then the howling began downwind from me, perhaps a quarter of a mile away. The wolves scented me and broadcast this knowledge with hollow wails, rising and falling, rolling through the snow-filled air for a couple of minutes, and then silence. Neither my quarry nor I moved as we listened to the chorus of these adept hunters. I was exhilarated by their wild territorial proclamation.

My mystery animal moved first and seemed to be focused on something, rustling around in the wet brush in one area, oblivious to my presence. I approached as stealthily as I could until I was 20 yards from the thicket of moving branches. I caught sight of brown fur through the willows, not the tan I'd expected but dark brown. That's when I noticed the 12-inch grizzly track I was standing in. The outline of foot and claws were crisp and clean and had no snow in them. Six magpies erupted out of the brush near the bear, and I glimpsed a profile of his dish-shaped face.

I felt the hot surge of fear shoot from my belly to my brain but made myself stand still. I was way too close to a grizzly on a kill. But the bear still didn't know I was there, and I made the most silent and stealthy stalk of my life *away* from my quarry, who had suddenly transformed from potential prey to perilous predator.

Rutting elk, a hungry grizzly, a human hunter and howling wolves were all interwoven in that moment: some as predator, some as prey and some as both, but all vulnerable to chance encounters. Like the childhood game of Rock/Scissors/Paper, your dominance is determined by outguessing the moves of your competitor and the whims of fate. The electrifying experience touched primal senses within me. That evening I reflected on the nature of predator-prey relationships and how emotions determine the way humans perceive predators. I have studied wolves and other large carnivores for

nearly 30 years and have heard a thousand different perspectives on the value of wolves. One thing I'm sure of, nobody is neutral.

When I first began working with wolves in Minnesota, they were extremely rare, and the scientific community had little interest in them. Before 1980 few biologists had studied wild wolves, and none of the early studies had been conducted by women. I wanted to research wolves because these controversial cousins to our beloved dogs fascinated me, and because I grew up in Minnesota where a few biologists had been studying wolf behavior. I began my apprenticeship in 1977 at a captive wolf facility near the Twin Cities. In 1978 I worked as an intern on Dave Mech's wild wolf project near Ely, Minnesota, capturing, collaring and studying wolves in the northern boreal forest. I worked with researchers investigating the ecological aspects of this predator and was totally absorbed by it.

But my real introduction into the world of wolf-human coexistence began in 1979, when I was hired as a federal trapper working on the U.S. Fish and Wildlife Service wolf depredation control program. I spent much of my time responding to farmers' complaints about wolves attacking their livestock, and I subsequently trapped and euthanized problem wolves. When there were no depredations, I radio-collared wolves for a long-term research project.

I never considered how I would be perceived in a rural community of 300 farmers in northern Minnesota. Word quickly spread that their new government trapper was "a girl." The local newspaper columnist, Bill, was an old-timer and keystone of community opinion. In his weekly column, Bill mentioned that he'd heard that "the new government trapper was an attractive blond lady, and did anybody have a wolf he could borrow?" The next week Bill's column

Matters and Etc

featured a photo of Bill standing with a 6-foot-tall, cardboard cartoon wolf that strongly resembled Wile E. Coyote. Bill reported in his column that he now had a wolf problem and wished the lady wolf trapper would come pay him a visit.

I couldn't let this go, so the next day I drove to Bill's house and introduced myself to him as the new government trapper. We stood on his porch talking, and he began to smile as I acknowledged his request of my services for his problem wolf. Then I walked back to the pickup and pulled out a cardboard replica I'd built the night before of a Number 4 Newhouse wolf trap. Bill's grin faded. I explained to him that this was the best tool to capture his problem wolf. Then I offered up my special corrugated wolf bait, guaranteed irresistible to cardboard wolves. Bill stared at me for a moment, broke into a huge grin and invited me in for a piece of the best blueberry pie I've ever eaten. Much to his credit, the next week Bill printed a photo of my cardboard trap, mentioned my visit and declared his wolf problem resolved. And so I began my work within this conservative community, addressing the challenges—real and perceived—that we faced living in wolf country.

In late September 1979, I headed west and landed at the northwest corner of Glacier National Park, the most spectacular place I'd ever been. I gaped at the snow-covered peaks, golden aspen, lemon-green larch just beginning to turn and mergansers bobbing in the rushing river. An elk bugled at dusk, the first I'd ever heard. I was thrilled.

I moved into a remote, turn-of-the-century cabin within a stone's throw of the North Fork of the Flathead River, 50 miles from pavement, power or phone. I came for a two-year master's degree project and have never left Montana. I fell in love with the mountains, deep winter snows, special friends, bountiful wildlife, wolves and hunting. I began big game hunting my first fall there and have

hunted every fall since. The elk, whitetails, mule deer, upland birds and waterfowl I killed sustained me throughout my research efforts.

For 15 years, the focus of my life was wolves: trapping and radiocollaring them in summer, following wolf tracks on skis in winter, and radiotracking them from a small Cessna and from the ground. Several of these wolves became long-time colleagues. In October 1987, I trapped a 5-month-old, female wolf pup, wolf #8756, near the Canadian border. I loaded my jab stick with immobilizing drugs to tranquilize her for radiocollaring and confidently walked up to her as she crouched fearfully at the far end of the trap and chain. Wolves are timid and submissive when trapped, and I had never seen a wolf act aggressively when approached. When I was five feet away from this coal-black, yellow-eyed beauty, she suddenly charged. I ran backwards. But like in a bad dream, I tripped and fell. She didn't bite me. I sensed she had the heart of a survivor and would become a key player in wolf recovery. Thus began our 12-year relationship in the wilds of Glacier National Park.

When #8756 was 2 years old, she left her natal pack and became the alpha female of the South Camas Pack. She whelped pups nearly every year and with the help of her packmates contributed at least 50 pups to the Rocky Mountain wolf population. We recaptured her four more times over her 12-year lifespan and, through intensive monitoring, were able to track the dynamics of her entire pack. As she matured, her fur color changed from a pure black pup, to a black and silver-tipped adult, to the rare pure white of an elderly Rocky Mountain wolf. When we captured her for the last time in June 1999, she was gaunt. Her toenails were excessively long due to lack of use. Her eyes looked old and most of her teeth were worn-out or gone. Yet she persisted, tending the pups of the new breeding female and being cared for by her packmates. She died of old age about a month later, leaving behind her strong lineage.

During #8756's reign as leader, she lost

In Memory and Honor...

The Rocky Mountain Elk Foundation creates memorials and honoraria at the request of families and friends who wish to remember others through a permanent gift of wildlife habitat. All donations are used to conserve and protect habitat for elk and other wildlife. In addition, the recipients' names will be permanently displayed on the recognition wall in the RMEF's Wildlife Visitor Center in Missoula, Montana.

The RMEF would like to thank the family members and friends who made donations for the following people during April and May 2005.

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Matters and Etc

mates, skirted the 1988 fires, witnessed the powerful 1995 flood, wallowed through the record deep snows of 1996-97, led hunts where the pack gorged when successful and went hungry when not, dodged humans, battled grizzly bears and passed on valuable knowledge to her packmates. My life paralleled hers: during this same time, I learned to hunt, lost close friends, passed through flaming forests, and lost a cabin and truck to the flooding North Fork River when it swallowed up my homestead. In deep snows I skied along what I dubbed "wolf highways," where the wolves traveled single file, creating a packed trough. During these winter tracking sessions, I could read every movement the wolves made in the snow: where they paused to scan a meadow from the cover of the lodgepole forest, where they romped, bedded or marked their territory, and how they stalked and killed deer, elk and occasionally moose.

At every wolf kill my research cohorts and I collected information on species, age, sex, hunt scenario, habitat, number of wolves involved and the number and species of scavengers present that benefited from the wolves' success. White-tailed deer comprised the majority of prey, with elk second and moose a distant third. During average or light snow winters, the wolves had more difficulty capturing their prey, which could easily escape their pursuers. These were lean times, when the wolves would consume carcasses down to the hooves, leaving very little for scavengers.

But cold winters and deep snow made things easier for the wolves. They could catch prey more easily, and more deer and elk died from starvation, which meant plentiful carcasses, and more meat left for other predators and scavengers. After the particularly severe winter of 1996-97, the white-tailed deer population plunged in the Glacier National Park area. A researcher studying whitetails in the Whitefish Range west of Glacier documented a 40 percent winterkill due to the severe weather. Although that winter was fat city for wolves, by springtime the whitetail population had crashed, which proved disastrous for denning wolves who needed large quantities of protein to feed growing pups. As a result, fewer pups survived, and the wolf population declined overall.

Winters were milder the next two years, and summer rains caused lush growth of vegetation and high reproductive rates in ungulates. Within three years, whitetail populations had recovered, as did wolves soon after. This cycle has repeated itself for tens of thousands of years. Nature is dynamic and constantly adjusts predator and prey populations to accommodate changes in the environment. The phrase "balance of nature" is a poor label for this give-and-take process, because it implies a balancing point that could be perceived as a static point in time when the best and most appropriate population level of deer, wolves and elk was reached. But nature works on much larger-scale timeframes than a human lifetime.

We learned about wolf ecology through studying their backtracks, remaining a day or two behind them so as to not disturb their natural movements and behavior. We rarely saw the wolves, except aerially from the super cub during telemetry tracking flights. As the wolf population grew, interpack strife occurred, as evidenced by the remains of wolves killed by other packs. We documented wolves challenging and sometimes killing competitors, including coyotes, mountain lions, black bears and grizzly bears, in defense of their territory.

The activities of the wolves directed my life, becoming a self-perpetuating passion to learn more about them. Along the way, I inescapably learned more about myself. The wolves taught me many things, including tangibles like safe places to wade the river in winter, and where I would most likely encounter elk or whitetails. But their behavior also taught me some intangibles, like how to work cooperatively with my own kind and how to survive when the going got tough.

Bob Ream, the Wolf Ecology Project's founder, recently told me that in those early years I was "fiercely independent," but he observed I had come a long way in learning to be a thoughtful collaborator. Who would've

thought a bunch of wild wolves in the remote North Fork would be good teachers of social skills? But wolves have evolved as masters of cooperation as hunters, group parents and defenders of their home. They taught me much scientifically, philosophically and spiritually.

As a scientist, I search for ecological answers, but what I inevitably find is that the sociological world overrules the biological. Humans are a powerful force that has a tremendous impact on the environment—both good and bad—based on the current social viewpoint. If the question about the appropriate place for wolves was simply an ecological issue, wolves would not have been feverishly persecuted to near extinction, nor would they have been heralded as heroes and reintroduced with presidential fanfare. Instead, they would simply be another predator out there on the landscape, like a coyote or a mountain lion.

I have spent the majority of my career pursuing my professional wolf endeavors, seeking objective answers to sometimes subjective questions. My emphasis has slowly shifted from stimulating fieldwork to the less exciting—but perhaps ultimately more important—resolution of wolf-human conflicts. People and wolves now coexist in eight states in the U.S., but this coexistence is conditional. Wolf recovery has been so successful that managers have shifted from wolf protection to lethal control of problem wolves.

I have witnessed the growth of the western wolf population from the first recolonizing female wolf in 1979 to the 800-plus wolves now living in Montana, Idaho and Wyoming. The rare and solitary wolves of the 1970s have grown into a stable, multi-pack population, extending from Yellowstone National Park to the much larger Canadian source population. Local stores and tourist shops are filled with wolf t-shirts, wolf mugs, wolf earrings and magazines that routinely vilify or glorify the wolf. The world of wolf researchers and managers has grown, too, and it is now common to see women wolf biologists out in the field following the packs and leading conservation efforts. I've also noticed increasing interest in hunting by women and am pleased to now have some female hunting friends to spice up my predominantly male group of hunting companions. We've shared some good laughs and special moments afield. I rejoice that rewarding opportunities have opened up for other women. Human dimensions, like Mother Nature, are dynamic and flow to accommodate our changing perspectives. Like the Rock/Scissors/Paper game, our roles shift as the situation dictates, whether you are elk, bear, wolf or human.

Diane Boyd received her doctorate in fisheries and wildlife biology from the University of Montana in 1997. Besides 15 years of wolf research near Glacier National Park, Boyd has studied wolves in Minnesota; Isle Royale, Michigan; Alberta; British Columbia; Ellesmere Island, Romania; and Italy. Favorite activities include hunting birds and big game, telemark skiing and hiking with her German wire-haired pointer.

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Light on Wolves

by David Regela

In a single shaft of sunlight, a truth is revealed.

Around the embers of dying campfires from Arizona to Alaska, my heartbeat has quickened to the howling of wolves. At a distance, I've observed them at play, at rest and on the hunt. But not until I was dogged by a pair of Mexican wolves was I really able to separate the icon from the demon.

On assignment for a national wildlife magazine in 2001, I haunted the highland border between Arizona and New Mexico in an attempt to sort myth from reality regarding wolves. I scoured the Mexican wolf reintroduction area for the better part of a month and covered terrain that would have made an Apache weep, feeling that I needed to at least glimpse the beast to write about him. That quest went unfulfilled, but I wrote the article anyway.

One evening during this indentured odyssey, however, a breath of wind carried a deep, melancholy, soulful calling. It was my only direct link to a Mexican wolf. A watershed moment. Still, it provided no clue in my efforts to divorce myth and legend from flesh and blood.

A genetically distinct subspecies of gray wolf, the Mexican wolf has virtually returned from the dead. From five wolves live-trapped in Mexico in the late '70s, the U.S. Fish and Wildlife Service has spearheaded a captive-breeding and release effort to restore this carnivore to part of its historic range. (See related story, "A Fierce Green Fire," page 119.) It's been a game of political compromises in a climate of anger sometimes bordering on hysteria. Passion, on both sides of the equation, burns with a fine, fierce intensity.

And so I was hiking, one windless June afternoon, high in that Arizona rim country that routinely produces those big, coveted trophy elk. What happened next was unplanned, unexpected, far outside the references of my outdoor experience.

Just a few miles, I thought. My two

retrievers were anxious for the exercise, and I was hours early for a rendezvous at a friend's cabin. Bushwhacking a fairly level ponderosa bench, I felt fortunate to glimpse a couple of cow elk hovering at the edges of an aspen thicket.

A mile beyond, my dogs alerted me to the presence of the biggest coyote that ever lived. At least, that was my first impression. The animal ducked into a tangle of scrub oak, and I maneuvered for a vantage that would allow me another look at this outsized specimen. I have excellent voice control of my retrievers—a fact that would soon prove critical.

I saw it again, not nearly as far away as I'd expected, then caught movement to my immediate right. Another one. And all doubt evaporated. It was a pair of wolves, the male half-again as large as the female that initiated the sighting.

But something was askew here. They weren't running away, they were circling us. Orbiting nearer. Darting close. Then closer. The wolves would pause, taunting the dogs, feinting, threatening to make physical contact.

This is serious. This is intentional. *Houston, we have a problem*, I said to myself. I kept talking to my dogs, urging them to stay with me, fighting the wolves' effort to draw them away and isolate them.

Our position amid the scrub oak was

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untenable. I rotated full-circle a dozen times, trying to keep both wolves in view. The game became more frenzied. I yelled at the wolves. Looked for something to throw. Fought a rear-guard action as we attempted to backtrack into an open glade. With sudden insight, I understood how George Armstrong Custer must have felt when things began to unravel at the valley of the Greasy Grass.

Anchored in a clearing now, I felt slightly more in control. Each of my dogs weighs about 75 pounds. Each had been within a foot of one or both wolves. The female wolf was only slightly smaller, the male easily 25 pounds heavier than either dog. They were long-legged, full-muzzled, chesty, arrogant.

I discovered that yelling and levitating like a banshee on fire while frantically waving my arms had no discernible effect on the wolves' demeanor. Only by making pointed eye contact and stepping directly towards a wolf could I force them to momentarily give ground.

Even though besieged, beleaguered and harassed, I had to admire how well the wolves cooperated. Each wolf's action was in complete concert with the other's. The female would goad one of the dogs into lunging out of our defensive perimeter, then withdraw just enough to elude the dog and afford the male wolf an opportunity for a lunge of his own.

Incredibly, one or both wolves would sit or even lie down from time to time to calmly study our defenses. I understood, in those moments, why we love and hate these animals. They mirror us. They are the absolute top of the food chain. Like us, a super predator.

Fully 20 minutes had elapsed since this waltz had first begun. Repeated attempts to retreat along our original path were deftly rebuffed by both wolves, with the female becoming the more assertive of the two. I doubted my ability to indefinitely control the dogs, and it was definitely the dogs that held the wolves' attention. I seemed nothing but a highly stressed footnote.

It did not escape my notice that these wolves were consciously pacing themselves. Frenetic action one minute was replaced by almost casual "display" behavior of profiling and stretching. But their icy stares remained riveted.

With sudden insight, I understood how George Armstrong Custer must have felt when things began to unravel at the valley of the Greasy Grass.

During one of these brief respites came the classic, campy denouement. My gaze was drawn to a single shaft of slanted sunlight that reached the ground just inside the forest margin. The two heads revealed by the shaft of light, peering from ground level in passable imitation of a couple of amused prairie dogs, were indeed, wolf pups. Taking turns, they'd pop up and down, a veritable wildlife peanut gallery. Maybe it was three pups, swapping positions. I couldn't be sure.

I looked back at the parents in a fresh context. From the outset, they had been attempting to haze us away from the den site—which now lay in the very direction from which we had entered this combat zone. And it was alongside the same route by which we'd been futilely trying to escape.

Ushering the dogs 180 degrees away from the den site proved effortless. The female wolf never moved. Her consort granted us some breathing room then became our escort,

paralleling our progress from 40 or 50 yards. The big male ghosted between the trees for 20 minutes, intermittently invisible, all the way back to my jeep.

Over my shoulder I could still see him, partially screened by an aspen, as I locked the dogs into the vehicle and grabbed my camera with telephoto lens. He had vanished by the time I got the camera to eye level.

What had appeared as naked, unprovoked aggression was actually calculated restraint. The wolves' spirited performance was intelligent; it was splendid.

Fear and anger still dominate much of the current public discourse about wolves. But if that day should come when people exercise the kind of intelligence and restraint I witnessed in those two wolves, a form of coexistence is certainly possible, and we might finally find our way out of the combat zone.

Many of us wonder if we can afford the wolf in the Southwest. The big question among elk hunters is how wolves will affect their hunting opportunities. Ranchers want to know how wolves will affect their livelihoods.

I have spoken with big game management specialists in both New Mexico and Arizona, and they say there is certainly no shortage of elk; populations are currently at or slightly above the ideal carrying capacity of the available habitat. Mortality from winterkill is a scant 2 percent. Even with liberal hunting limits, the elk herds are increasing. And at this time, Mexican wolf depredations of livestock are reimbursable by the nonprofit Defenders of Wildlife.

Even so, hunters, ranchers, environmentalists and a host of other interest groups will likely never reach agreement about wolves and their place in the world. Tolerance and compromise might be the only solutions in a conundrum far beyond the scope of my understanding.

After two decades as a special agent for the U.S. Treasury Department, Dave Regela guides whitewater raft trips, freelances for numerous outdoor magazines and spends each hunting season pursuing elk in the high country of New Mexico and Arizona.

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