Lon J. Dale, Esq.
Milodragovich, Dale, Steinbrenner
& Nygren, P.C.
P.O. Box 4947
Missoula, MT 59806-4947
(406) 728-1455/fax (406) 549-7077
LON@bigskylawyers.com

Grant Parker, Esq.
Rocky Mountain Elk Foundation
5705 Grant Creek
Missoula, MT 59808
(406) 523-4524/fax (406) 523-0211
grant@rmef.org

Attorneys for *Amicus Curiae* Rocky Mountain Elk Foundation

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MONTANA
MISSOULA DIVISION

DEFENDERS OF WILDLIFE, et al. Plaintiffs, v. KEN SALAZAR, et al. Defendants.	Case No: CV-09-77-M-DWM Case No: CV-09-82-M-DWM (Consolidated) DECLARATION OF LON J. DALE; EXHIBITS TO ELK FOUNDATION'S AMICUS CURIAE BRIEF IN OPPOSITION TO PLAINTIFFS' MOTION FOR PRELIMINARY INJUNCTION
GREATER YELLOWSTONE COALITION, Plaintiff, v. KEN SALAZAR, et al. Defendants.	

I, Lon J. Dale, declare as follows:

1. I am a resident of Missoula, Montana.

2. I am employed as an attorney with the law firm Milodragovich, Dale, Steinbrenner & Nygren, P.C.

3. I am a life member of the Rocky Mountain Elk Foundation.

4. Attached hereto as Exhibit 1 is a true and correct copy of RMEF Comment.

5. Attached hereto as Exhibit 2 is a true and correct copy of Northern Rockies wolf report for 2008 available, U.S. Fish & Wildlife Service, March 18, 2009.

6. Attached hereto as Exhibit 3 is a true and correct copy of The Gray Wolf: Out of the Woods?, Scientific American, Harrison, Emily, January 15, 2009.

7. Attached hereto as Exhibit 4 is a true and correct copy of Wolves, Elk, Science And Human Values, Bugle, Bangs, Ed, Sept/Oct 2009.

8. Attached hereto as Exhibit 5 is a true and correct copy of excerpts from The Company of Wolves, Steinhart, Peter, 1995.

9. Attached hereto as Exhibit 6 is a true and correct copy of excerpts from Decade of the Wolf, Smith, Douglas, W. & Ferguson, Gary, 2006.

10. Attached hereto as Exhibit 7 is a true and correct copy of Wolf Recovery in North America, U.S. Fish & Wildlife Service, January 2007.

11. Attached hereto as Exhibit 8 is a true and correct copy of Greater Yellowstone elk suffer worse nutrition and lower birth rates due to wolves, Montana State University News Service, July 15, 2009.

12. Attached hereto as Exhibit 9, Another Mouth To Feed, Montana Outdoors, Dickson, Tom, Sept/Oct (2009).

13. Exhibit 10 is a true and correct copy of Real Solutions & Who Will Pay For Them, Bugle, Herring, Hal, Sept/Oct 2009.

14. Attached hereto as Exhibit 11 is a true and correct copy of Wolf Attacks On Humans: Myths vs. Fact, Bugle, Landers, Rich, Sept/Oct 2009.

15. Attached hereto as Exhibit 12 is a true and correct copy of Managing Wolves With A Sharp Ax, Bugle, Geist, Valerius, Sep/Oct 2009.

I declare, under penalty of perjury, that the foregoing is true and correct. Executed on August 28, 2009, in Missoula, Montana.

/s/ Lon J. Dale
Lon J. Dale

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EXHIBIT 1

Public Comments Processing
Attn: RIN 1018-Au53
Division of Policy and Directives Management
U.S. Fish and Wildlife Service
4401 N. Fairfax Drive, Suite 222
Arlington, VA 22203

November 28, 2008

The wildlife conservation organizations listed below represent the interests of millions of sportsmen and women from across America. We appreciate the complexities in delisting the Northern Rocky Mountain distinct population segment of gray wolves under the Endangered Species Act. We submit these comments in response to the Federal Register notice published on October 28, 2008 at 73 Fed. Reg. 63926.

We support delisting this population and offer the following six principles to guide the U. S. Fish and Wildlife Service and state wildlife agencies.

1. When wolf populations meet scientific viability criteria for recovery they no longer require federal protection under the Endangered Species Act (ESA). They should be de-listed if recovery plan goals are met and where regulatory mechanisms are in place to adequately manage the species.

2. After the wolf is de-listed, scientifically sound wolf management programs administered by state wildlife agencies should maintain sustainable wolf populations to preclude the need to re-list under the ESA.

3. Reflecting the success of other historic hunter/conservationist-led species recovery programs, wolves should be managed as big game animals in areas designated for wolf occupancy and wolf seasons should be regulated by the states.

4. Where and when hunting is deemed appropriate under state regulations, methods used by hunters must conform to Fair Chase principles.

5. When classified as game animals, wolf populations should be maintained in accordance with the biological and cultural carrying capacities of the habitats they occupy.

6. Management of individual wolves and wolf populations should also recognize the need to balance management objectives with respect for private property and human well-being.

Thank you for the opportunity to comment on this significant regulatory action. Please note that the organizations and individual members of the hunting and sustainable use conservation community may separately submit their own comments in response to the de-listing proposal.

Boone and Crockett Club
Congressional Sportsmen's Foundation
Dallas Safari Club
Houston Safari Club
National Shooting Sports Foundation
National Wild Turkey Federation
Quality Deer Management Association
Ruffed Grouse Society
Sand County Foundation
Wildlife Management Institute
Campfire Club of America
Conservation Force
Foundation for North American Wild Sheep
Mule Deer Foundation
National Trappers Association
Pope & Young Club
Rocky Mountain Elk Foundation
Safari Club International
Texas Wildlife Association

EXHIBIT 2

www.PinedaleOnline.com
www.Pinedale.com

Pinedale on the Web!
Pinedale, Wyoming

Northern Rockies wolf report for 2008 available

by U.S. Fish & Wildlife Service
March 18, 2009

The gray wolf population in the Northern Rocky Mountains continues to thrive. The U.S. Fish and Wildlife Service (Service) and its federal, state and tribal partners estimated at the end of 2008 there were 1,645 wolves in 217 packs in Montana, Idaho, and Wyoming. At least 95 of those packs contained at least 1 adult male, 1 adult female, and 2 pups on December 31, 2008, meeting the recovery goal description of a breeding pair.

The NRM wolf population is simply a 400 mile southern extension of a population of over 12,000 wolves in British Columbia and Alberta. There are essentially nearly contiguous wolf packs from Jackson, Wyoming and Boise, Idaho north through Canada and Alaska to the Arctic Ocean.

The Service's recovery goal for the NRM is a wolf population that never goes below 10 breeding pairs and 100 wolves each in Montana, Idaho and Wyoming. As Service-designated agents, Montana Fish Wildlife and Parks has managed wolves in Montana and Idaho Department of Fish and Game has managed Idaho's wolves since 2004. Those states have committed to manage the population safely above those minimum recovery targets by making sure it is above 15 breeding pairs and 150 wolves per state. Montana plans to manage for about 400 wolves and Idaho for over 500 wolves. Wyoming does not have a Service-approved state plan, but Wyoming, including Yellowstone National Park, will support over 300 wolves under continued Service management.

The NRM wolf population has exceeded its minimum recovery targets every year since 2002. Resident wolf packs currently occupy most of the suitable habitat within 110,000 square miles of western Montana, central and northern Idaho and northwestern Wyoming, so there appears to be little unoccupied suitable habitat left for many additional wolf packs.

More evidence that the current wolf population has saturated its suitable habitat in the NRM is evident by the record level of livestock conflicts and wolf control in 2008. Last year was a record for livestock damage with at least 214 cattle, 355 sheep, 28 goats, 21 llamas, 10 horses and 14 dogs being confirmed killed by wolves. Studies indicate only a fraction of depredations are verified. Perhaps, in the worst case scenarios, only 1 in 8 of actual wolf-caused losses of livestock can be confirmed by agency investigators. In 2008, nearly $500,000 was paid by private and state wolf compensation programs for wolf damage. In 2008 USDA Wildlife Services spent nearly $1,000,000 dealing with problem wolves. In 2008, management agencies killed 264 wolves because of livestock depredation but the NRM wolf population still increased 8% from 2007 levels.

To view or download the 2008 annual report or get more information on Northern Rocky Mountain gray wolves, click on the link below.

Related Links

- U.S. Fish and Wildlife Service wolf page - Read or download the entire report here.
- Wolf Watch - By Cat Urbigkit

Pinedale Online! PO Box 2250, Pinedale, WY 82941
Phone: (307) 360-7689 or (307) 276-5699, Fax: (307) 276-5414
Office Outlet in Pinedale, 43 S. Sublette
E-mail:support@pinedaleonline.com

EXHIBIT 3

January 15, 2008 | 0 comments

The Gray Wolf: Out of the Woods?

Moving the protected predator off the endangered species list

By Emily Hanson

More to Explore
Overview
Watching the Wolf

Editor's Note: We are posting this story from our April 2003 issue because of news that the gray wolf is being removed from the U.S. Endangered Species list.

Only six domestic animal species have ever earned their way off the U.S. Endangered Species List. The gray wolf is closing in on becoming the seventh. Although many wolf biologists back the decision, not all wildlife advocates are cheering the pending status change.

In 1974, after a century of aggressive extermination efforts had nearly extinguished gray wolves in the lower 48 states, the Endangered Species Act took effect, and the dwindling species was whisked onto the list. The U.S. Fish and Wildlife Service (FWS) subsequently initiated recovery programs for the gray wolf in three regions, setting population goals for the West, East and Southwest.

With federal protection and reintroduction programs to seed the West with ecologically appropriate wolves from Canada, gray wolf populations burgeoned. Today there are 44 breeding pairs (a total of 664 wolves) in the Western zone, exceeding the target of 30. In the Eastern area, over 3,800 wolves live in the Great Lakes region—almost triple the target number—and a new population of over 600 wolves teems in the states around Minnesota. (In the Southwest, recovery of the Mexican gray wolf is still in its infancy, and the animal's endangered status will remain intact.)

Because the wolf populations have now met their goals for the West and East, the FWS wants to reclassify the wolf from endangered to threatened and delist the species in all states outside its historical range. The FWS fully expects the reclassification proposal to pass this spring and hopes to delist the populations in the Northwest and Midwest in the next year.

Several wildlife groups, however, protest that the proposed status change is premature. The wolf has not returned to the Northeast, where it was formerly an important predator in that ecosystem. They also argue that out West the population is too thin for the wolves to set out from the recovery zones and into their former ranges in the southern Rockies and the Pacific Northwest.

FWS biologists respond that their job is to ensure that the wolf is no longer in danger of extinction, not to restore the species to every place it could live. "The Endangered Species List is not a tool for other agendas. The act mandates that if a species doesn't need protection anymore, you must remove it," insists Ed Bangs, wolf recovery coordinator for the West. L. David Mech, wolf expert and senior research scientist with the U.S. Geological Survey, agrees that the gray wolf is no longer at risk of extinction in the lower 48 states. "When recovery goals were planned, certain numbers were set that would signify recovery. I see no evidence that those numbers were too low." Mech believes the genetic diversity and population growth rate in these numbers are sufficient for maintaining viable populations.

Even so, opponents of the change contend that the wolf is unique among recovered species: it is the only one that was deliberately exterminated. Because deep-seated animosities against the wolf still exist, wolves face fiercer threats than other recovered species.

Despite some persisting hostility toward the gray wolf, experts assert that the situation is not the same as it was before 1974. Attitudes have grown more tempered with public education, which Mech expects will continue to serve the animal: "We started off 20 years ago saying, 'Save the wolf.' We've done that. Now the thing to say is, 'Manage the wolf.'"

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Orangutan Technology

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Natural-Born Liars

Human-Animal Chimeras

Discuss This Article

EXHIBIT 4

Wolves, Elk, Science and Human Values

by Ed Bangs

It's time for reason to replace rhetoric.

Two months ago I ate my last package of moose meat. After eating mainly wild game for 40 years, I am now reduced to buying beef. Hopefully not for long though, as bowhunting for elk opens September 5. I have been hunting with a recurve since the late 1960s, and for the past 30 years I have rarely used anything else. My favorite hunt is for deer on Kodiak Island, Alaska. A close second is bugling for elk in Montana. My last hunt in Montana in 2008 occurred after a fresh snow and in below-zero temperatures. I saw tracks from three mountain lions, two wolves and a few deer and elk. I decided not to shoot the only white-tailed doe I saw, because deer tracks seemed rare compared to past years. I hoped to get a nice buck, and it was darn cold. It was an excellent hunt.

Wildlife and wild areas have always been important to me. I have been fortunate to have had a career that I was passionate about. I worked on the Kenai National Wildlife Refuge in Alaska as a wildlife biologist for the U.S. Fish and Wildlife Service (USFWS) from 1975-88, and I hunted throughout the state. Since then I've been working on wolf conservation under the Endangered Species Act (ESA) in the northwestern U.S. I don't think that program will be a complete success until wolves are managed by the states and tribes in the same manner as they have successfully conserved mountain lions, elk and dozens of other species of wildlife. While wolves are just another wild animal to me, I find people and their different expectations about how wildlife contributes to the quality of their lives fascinating.

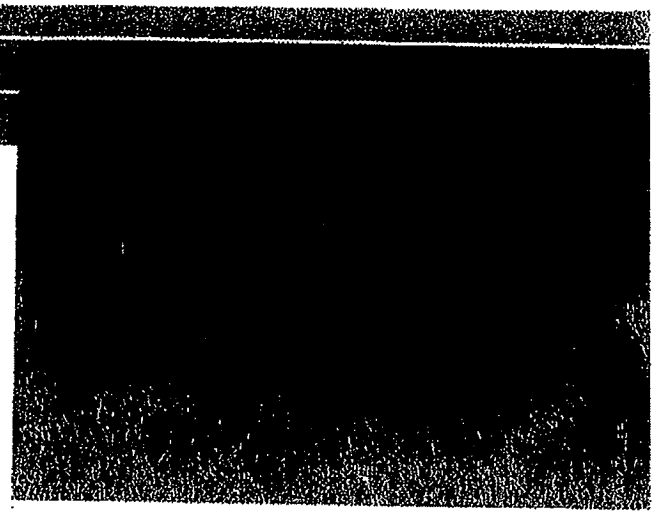
"May you live in interesting times" is supposedly an old Chinese curse. These are certainly interesting times, especially if you are a fellow elk hunter in the northern Rocky Mountains of Montana, Idaho and Wyoming. Since wolf packs often inhabit forested public land, travel together as many as 20 miles per day and like to walk on the same roads and trails as hunters, most northern Rockies elk hunters routinely see wolf sign. A 2006 survey of 250,000 Idaho big game rifle hunters indicated that 18 percent reported seeing a wolf, 80 percent of which (roughly 36,000 hunters) saw wolves for more than 15 seconds at under 300 yards. In addition to indicating how effective hunters will be in assisting with wolf management, abundant tracks, close sightings and their unmistakable howls give the perception that wolves are everywhere and in huge numbers. In reality, wolves are just very obvious compared to most other large carnivores.

Consider this: in December 2006, around 673 wolves roamed 21,000 square miles of central Idaho, one wolf every 31 square miles. At that same time an estimated 3,000 mountain lions and 10,000 black bears roamed the same area. Montana, which had 316 wolves then, claimed 2,200 lions, 22,000 black bears and 900 grizzly bears. As counterintuitive as it might seem to hunters, other large predators are many times more common than wolves.

In addition to encountering wolves or their sign in the northern Rockies, most elk hunters have been asked, "Are you for or against wolves?" Past surveys indicate hunters are about evenly divided over that question. Each side's response, except for the extremes on either end, are dependent on endless qualifiers, especially whether wolves themselves will someday be hunted or the extent that surplus big game will be shared. Even though most hunters only hunt things they can eat, a great majority believe there is no reason wolves can't be managed like other wildlife species, including public harvest if a surplus exists. Most Americans tend to prefer the government closest to them, and hunters tend to trust state management of wolves over federal.

On March 15, 2009, new Secretary of the Interior Ken Salazar announced that wolves in Idaho and Montana and the 4,000 in Minnesota, Michigan and Wisconsin would be removed from the protections of the ESA. On May 2, 2009, those final rules went into effect, and in early June litigation began again. Like the 1994 litigation over wolf reintroduction in Yellowstone and central Idaho—and last year's lawsuit over delisting—the conflict involves groups with polar opposite viewpoints who, ironically, sit together in court. The state of Wyoming and a coalition of Wyoming livestock and hunting groups will argue wolves need less protection and there should be lots fewer of them, while an alliance of environmental and animal rights groups will argue the opposite. The latter may request the court to prevent fall wolf hunting seasons by Montana and Idaho.

Both weighed in with the usual flurry of polarizing sound bites: "If something isn't done soon, the wolves will kill all the wildlife in the forest!" and "Up to 1,000 wolves will be massacred in a bloodbath." Each is inaccurate, of course, but is endlessly repeated. Strangely, both sides take delight in tormenting each other. I jokingly refer to wolves as a 100-pound club that people use to beat each other over the head with.



Despite the passion, most of this "Crying Wolf" has little factual basis, which is exactly the moral of that fable. Unfounded rhetoric about wolves has flowed freely from both sides of the issue throughout efforts to both exterminate and restore them. People often give wolves supernatural powers for good or evil, but wolves are just another animal. Like all wildlife, their presence provides both costs and benefits to humans. Wolves won't eliminate the livestock industry or big game hunting, just as they won't "balance" the ecosystem or coexist with all human uses of the land. Wolves in the modern world require management to minimize conflicts. Management can include public hunting or not, but it *will* involve people killing wolves. So the key question is, what type of wildlife management program will be the most efficient, least expensive, most socially acceptable, and will build public acceptance and tolerance to further enhance wolf conservation?

The best science clearly shows that wolves in the northern Rockies are fully recovered and no longer need ESA protection if Montana and Idaho do as they have promised and manage wolves as a valued part of their states' natural wildlife heritage into the future. In December 2008, there were at least 1,645 wolves in the northern Rockies in about 217 packs. At least 95 packs had successfully raised two or more pups and were classified as breeding pairs. At least another 500 pups were born in April 2009.

Despite last year's U.S. District court ruling to the contrary, the population is highly genetically diverse because wolves from so many different Canadian packs were reintroduced. On top of that, wolves simply have phenomenal natural dispersal abilities, and suitable wolf habitat lies in relatively close proximity across southwestern Canada, northwestern Montana, central Idaho and northwestern Wyoming. Radio telemetry monitoring and genetic analysis prove that naturally dispersing wolves have bred with resident wolves amongst all three recovery areas and Canada.

Nothing short of excessive and prolonged levels of killing by people over a very large area could threaten the northern Rockies wolf population—and that clearly won't happen. They are a 400-mile southern extension of a vast Canadian wolf population of over 50,000 animals. Wolf populations have been hunted and trapped by people in Alaska and Canada for many years and remain healthy. Wolves are tremendously resilient and adaptable animals. Historically they had the greatest natural distribution of any land mammal on earth, except people.

Resident wolf packs occupy nearly all suitable habitat within 110,000 square miles of Montana, Idaho and Wyoming, so there really isn't much more room for additional wolf packs without lots more livestock damage. There were a record number of problems in 2008. At least 214 cattle, 355 sheep, 18 other large domestic animals and 14 dogs were confirmed killed by wolves. Studies show that may only account for a fraction of the real number. In the worst-case scenario, agency investigators only confirmed one in eight incidents as actual wolf depredations. In 2008, private and state wolf damage compensation programs paid out $467,000 and USDA Wildlife Services spent nearly $1 million investigating reports of damage and controlling problem wolves. In addition to using a host of nonlethal tools to reduce livestock damage, in 2008 management agencies killed 264 wolves. Wolves in the northern Rockies still increased 8 percent from 2007 levels. Wolf populations are amazingly robust and resilient to diseases, parasites, pack disruption, climate change, changes in habitat quality, prey availability and even fairly high levels of human-caused mortality. Research shows populations sustain losses of 30 to 50 percent annually in some areas.

The bottom line is wild wolves cause real problems that need real solutions. Problem wolf removal is an important tool for helping to build and maintain public tolerance of the presence of wolves and to foster long-term wolf conservation in the northern Rockies and other places.

The northern Rockies wolf population will probably contain over 1,000 wolves long-term. In 2009, Montana developed hunting strategies that would maintain over 400 wolves. Idaho will regulate hunting to maintain more than 520 wolves. Wolves in Wyoming were not delisted, so public hunting is prohibited there for the time being. Continued federal management in Wyoming will result in 300 or more wolves. Delisting will not affect the wolves in national parks, including Yellowstone. Harvest by hunters will be limited to highly regulated fair-chase hunting (i.e. no aircraft or snow machines). Hunting

for wolves during the fall big game hunting seasons in the northern Rockies will certainly not threaten the wolf population. But it will help reduce conflicts between wolves and humans. The boldest wolves in the most open and accessible areas are the ones most likely to be killed. Those are the same wolves that are most likely to attack livestock and be killed in agency control actions.

Montana and Idaho have been managing wolves in their states since 2005 under cooperative agreements with the USFWS. They make all the decisions and conduct all the fieldwork for wolf monitoring, research, control of problem wolves and public outreach. State wardens participate in federal law enforcement investigations. Montana and Idaho have the professional expertise, field staff and equipment, as well as a proven track record of success. They will continue to do a great job of wolf conservation without ESA protection. The states' success at managing and conserving mountain lions, black bears, elk, deer, moose, etc. is beyond question. USFWS cannot remove the ESA protections for wolves in Wyoming until the state develops a regulatory framework that can pass scientific and legal muster.

The USFWS's job as defined by Congress in the ESA is to have the best science and use it to make rational fact-based biological decisions. We currently have a situation in the northern Rockies where the best science and all the expert scientists we relied on as peer reviewers have clearly documented that these wolves are biologically recovered and will not be threatened in the future—but only if the states fulfill their promises to adequately regulate human-caused mortality. If the states don't follow through, wolves would become relisted under the ESA.

Currently, people are using wolves to debate human values. The strong emotions involved make sticking to facts almost impossible for many. Some will risk their credibility by "stretching" the truth or confusing science (observation-based knowledge) with human values and opinions. Science can't resolve the types of human moral issues that are often symbolized by wolves. There is no problem with folks saying: *I don't want wolves hunted because I think it is morally wrong*, or *I don't trust the states to manage wolves.* There's also nothing wrong with people saying: *I want fewer wolves so I can shoot more cow elk*, or *I think wolves in the northern Rockies should be exterminated again.* Every American has a right and duty to advocate passionately for their beliefs. But I believe that decisions based on good information tend to better serve the public good.

The legal issues and human values involved with wolf delisting are complex and legitimate for people to debate. People have every right to ask their courts or their politicians for clarification or to make laws that better address their individual concerns. But the science is clear: wolf populations are in outstanding condition and no longer warrant the protections of the ESA. I believe the brightest future for wolf conservation lies with professional state and tribal wildlife managers. Regulated public harvest can be one of the most important conservation tools for managing recovered wildlife populations. Hunting helps manage for healthy populations of wolves in Canada and Alaska. Hunting of black bears, mountain lions, elk and deer by the states has helped build public support and funding for strong conservation programs and has promoted thriving wildlife populations. The moderate level of wolf hunting that is planned by Montana and Idaho will not harm the overall wolf population or its future health.

I believe a professional wolf management program by the states and tribes will help build local public tolerance, raise funding, reduce conflicts and conserve a viable wolf population. The USFWS is working hard toward that goal. Whether you support or oppose the delisting of wolves, I hope you take the opportunity to learn more about wolves so you can make your decisions from a more informed perspective. For more fact-based information about wolves see *http://westerngraywolf.fws.gov.*

And best of luck hunting this fall.

Ed Bangs lives in Helena, Montana, and is Northern Rocky Mountains Wolf Recovery Coordinator for the U.S. Fish and Wildlife Service.

EXHIBIT 5

THE COMPANY OF WOLVES

PETER STEINHART

experience watching wolves in the field and arguing for them in committees, in state legislatures, and in the halls of the U.S. Congress. When reporters want to know about wolves, they call Mech—and they call often, for wolves are an enduring source of controversy. Mech's efforts to bring what he has learned about wolves into the discussion of what we should do about them has kept him at the center of that controversy for decades. Minnesota had a bounty on wolves until 1965. Mech testified in the legislature against continuing the bounty, arguing that only wolves known to have attacked livestock ought to be killed. When the legislature did not reauthorize the bounty, farmers and hunters alike were outraged. Though the wolf was declared an endangered species by the federal government in 1967, legal protections didn't start until 1974. Even then the Minnesota Department of Natural Resources continued to trap and kill wolves, and did so until the federal government warned that it was violating the Endangered Species Act. Minnesota has never liked having the federal government preempt its control over a species, and today still wishes to see the wolf delisted and a sport-hunting season opened on it. In 1978, the federal government downgraded Minnesota's wolves from endangered to threatened, to try to reduce conflict. But in 1983 and 1984, when the state tried to allow the sport hunting of wolves, conservationists sued and barred the hunt. There is still a lot of anger over wolves in Minnesota, and Mech, who has repeatedly come to their defense, has borne a lot of the anger.

He takes it from both sides. Defenders of wolves also criticize him for his willingness to permit wolves that prey on livestock to be killed. "In a pluralistic world," he says, "I believe we have to manage most of our wildlife. We can't have bison running through wheatfields. We have to manage bison when they're in areas where they cause damage. And we have to manage wolves."

He sees that the constituency for wildlife has changed. "Since Rachel Carson and Earth Day," says Mech, "there's a whole new breed of people who've become interested in wildlife, maybe more from reading or television. Many of these folks didn't grow up hunting and fishing and trapping. A lot of these folks turn more to animal welfare and animal rights and wildlife rehabilitation, which from a biological attitude makes very little sense. They think that every wild animal out there is like a pet. It's a very emotional approach to

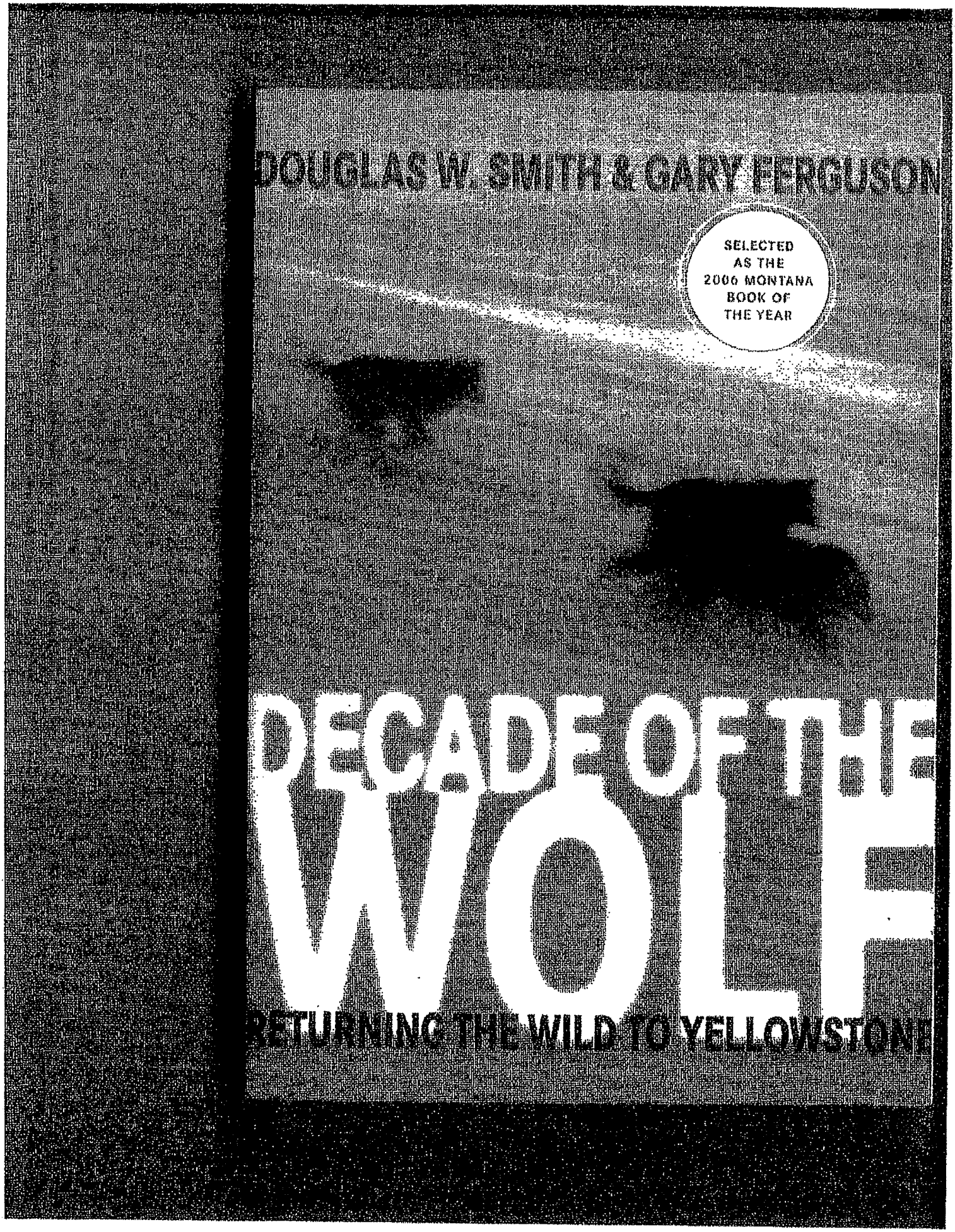
life, and it leads to such absurdities as two people independently asking me why the government doesn't go out and round up all the wild wolves in Minnesota and give them physical exams and euthanize the ones that aren't fit and feed the wolves so they won't have to go through the gruesome thing of killing. The people who get interested in that phenomenon are very important to conservation, but, alas, it's for the wrong reason. We have people worrying about every individual muskrat while people are out there draining the marsh. If we can save the marsh, we can have muskrats forever."

It is in part because Mech has stood between these conflicting forces that he is recognized by nonscientists as the leading authority on wolves. But if he is a leader, he does not—at first glance—seem very wolflike about it. He is not aggressive, and it is hardly in his nature to speak ill of someone else. Careful with his words, he is apt, when speculating about why wolves do something, to use two or three qualifiers in a sentence, to say "maybe" or "almost," or to apologize for suggesting a mere analogy. Perhaps this is all a reflection of his watchfulness: he does not speak for what he does not know. And when he is in a room full of biologists, he is likely to seek consensus. He chairs the International Union for the Conservation of Nature's Wolf Specialist Group, which advises the IUCN and comes up with action plans for wolf conservation all over the world. "Most governments will listen to us," he says. But the meetings of the group are strewn with controversy. Should the group oppose the use of poison? Should it condone aerial gunning of wolves as a method of research? If Italy's last three hundred wolves prove to have interbred with dogs, should the group support their protection on ecological grounds? Such questions may be argued heatedly. Mech is apt to end the discussion before it gets too contentious, trying to save tempers and working relationships until the issue develops a semblance of civility. Says Mech, "We try to work by consensus. I think it's a better way to go if you can do it. Why embroil yourself in controversy if you don't have to?"

As he says this, it is hard not to think about what some people say about alpha wolves being not the meanest and most aggressive, but the ones that are best able to bring harmony to the pack.

. . .

EXHIBIT 6


DOUGLAS W. SMITH & GARY FERGUSON
SELECTED AS THE 2006 MONTANA BOOK OF THE YEAR
DECADE OF THE
WOLF
RETURNING THE WILD TO YELLOWSTONE

With the end of this first phase of the wolf cycle, the time has come to remove these animals from the endangered species list. Delisting is, after all, an indication that there are enough wolves in the system to allow more flexible management options—which could potentially include recreational harvests outside the park—without endangering the population. From a biological standpoint, this is unquestionably the case. That said, the plan under which wolves were reintroduced calls for Montana, Idaho, and Wyoming to take over management of the species after federal managers achieve restoration, so long as each state has a solid plan for protecting the population in the years to come. Idaho and Montana have been sitting on approved plans for some time. Wyoming's strategy, however, is to basically treat wolves as predators outside a very limited area, thereby opening them to being shot on sight—a proposal the U.S. Fish and Wildlife Service (the agency responsible for managing endangered species) has found unacceptable. Rather than revise their management proposal so it passes muster the state has chosen to sue the government, thereby tying up the delisting process in the courts. It's interesting to note that the original plan for this reintroduction, seldom talked about, was to have the U.S. Fish and Wildlife Service actually reintroduce the wolves, with the states managing them from the very beginning. The states vetoed this idea, sensing that wolves were way too much of a political hot potato.

Not that Wyoming's lawsuit will be the only legal action. At this point it seems certain that some in the environmental community will move to prevent delisting, either because they don't want to see wolves hunted, or in some cases because they don't believe the animal can withstand lower levels of protection. As Mike Phillips put it, though, "It's important to be reasonable. With a system like Yellowstone in place the gray wolf can withstand a great deal of human exploitation and still thrive. They'll continue to be wild. And they'll continue to inspire."

EXHIBIT 7

U.S. Fish & Wildlife Service

Wolf Recovery in North America

Before the arrival of European settlers, wolves ranged widely across the continent, from coast to coast and from Canada to Mexico. Two species are found in North America, the gray wolf, with its various subspecies, and the red wolf, found in the southeastern United States.

Wolves play an important role as predators in the ecosystems they inhabit. They feed primarily on large mammals, such as deer and elk, removing sick and injured animals from the populations. Wolves are highly social, living in packs and hunting and raising young cooperatively.

As the country was settled, native prey species declined and the number of domestic animals increased. As wolves increasingly turned to livestock for prey, government agencies and private citizens undertook large-scale predator control programs, with wolves hunted nearly to extinction.

By the middle of the 20th century, few wolves existed in the lower 48 States. Only several hundred gray wolves in Minnesota and an isolated population on Michigan's Isle Royale remained, along with an occasional Mexican wolf— and reports of a few red wolves.

Thanks to recovery programs and to the natural migration from Canada into Montana, more than 5000 gray wolves now live in the lower 48 States. Under the Endangered Species Act gray wolf populations in the northern Rocky Mountains are listed either as endangered or as "nonessential, experimental." Mexican gray wolves are also "nonessential, experimental," a designation that provides management flexibility.

Partners such as State wildlife agencies, universities, and conservation organizations have developed recovery plans in various parts of the country, with the goal of restoring the species to a secure status in the wild as a functioning member of its ecosystem. Recovery enables the U. S. Fish and Wildlife Service to "delist" species so that they are no longer endangered or threatened—and to return their management to States and Tribes.

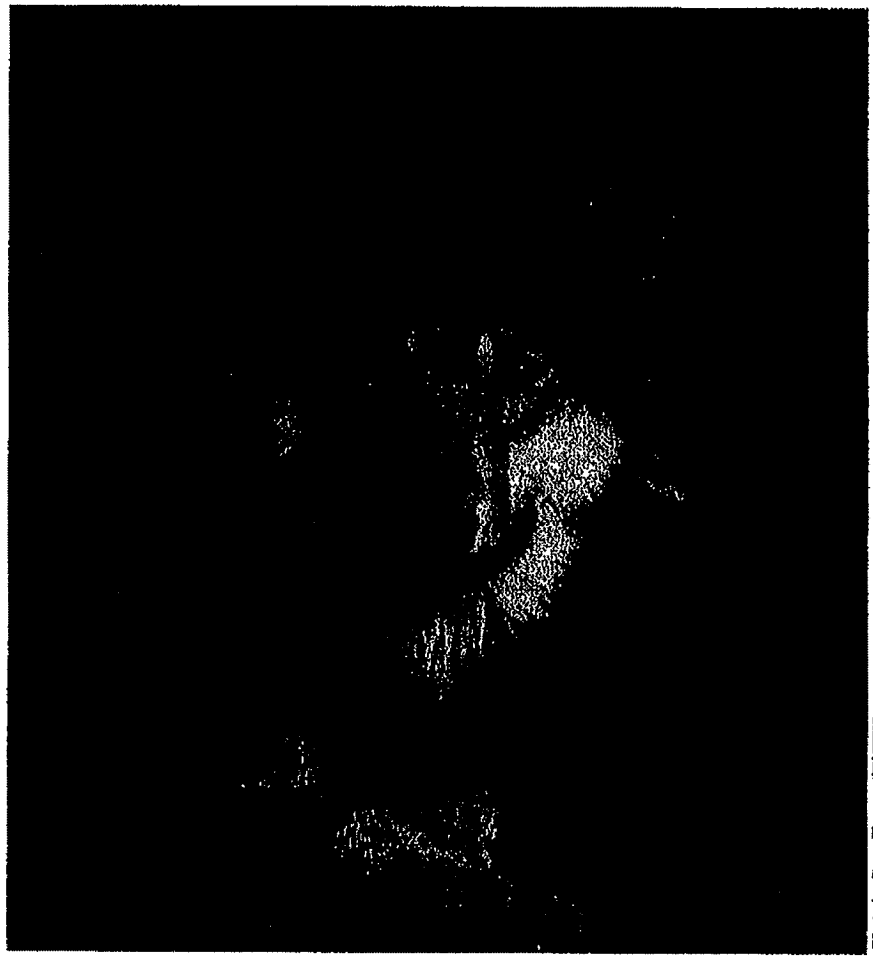


Photo by Gary Kramer/USFWS

Recovery plans identify the population levels and distribution necessary for a species to be considered recovered. When a species reaches recovery criteria, the U.S. Fish and Wildlife Service reviews the population status to determine whether reclassification or delisting is appropriate. Recovery criteria differ among populations depending on the threats to the species, the connectivity of the populations, and local ecological circumstances.

At the time of its listing under the Endangered Species Act of 1973, the gray wolf in the eastern part of the United States had been eliminated from the landscape, except in northern Minnesota and on Isle Royale, Michigan. Protection under the Act has allowed the Minnesota population to grow, and now about 3,000 wolves live there. In addition, wolves returned to Michigan's Upper Peninsula and Wisconsin. About 900 animals live there.

Because these States achieved recovery goals outlined in the Eastern Timber Wolf Recovery Plan, the U. S. Fish and Wildlife Service has removed the western Great Lakes population of gray wolves from the protection of the Endangered Species Act. States and Tribes now manage wolves in the region.

Wolves in the Rocky Mountains

Probably the best-known wolf recovery effort was the reintroduction of wolves into Yellowstone National Park and central Idaho in 1995 and 1996. After an absence of more than 50 years, the Service brought wild gray wolves from

Canada to the Park and to the Frank Church River of No Return Wilderness Area in Idaho. The goal was to speed up recovery in the Rocky Mountain region and restore a species to the historic range from which it had been eliminated in the late 1920s.

Recovery partners released wolves as family groups in Yellowstone and individually in central Idaho. The program has been extremely successful. Wolves in both areas have formed packs and reproduced. Now Yellowstone is home to about 371 wolves. About 713 wolves live in central Idaho. Coupled with natural recovery in northwestern Montana—where there are now about 159 wolves— the reintroduction program has boosted recovery progress in the Rocky Mountain region.

Mexican Gray Wolves

Mexican gray wolves, called Mexican wolves or lobos, were once common through western Texas, southern New Mexico, central Arizona, and northern Mexico. By the early 1900s, growing numbers, of livestock in the region and fewer natural prey species resulted in increasing numbers of livestock losses. Intensive control efforts were largely responsible for eradicating Mexican wolves by the middle of this century. The last confirmed wild Mexican wolf was reported in the United States in 1970 and in Mexico in 1980.

Mexican wolves were listed as endangered in 1976, and a joint recovery effort with Mexico began. Using animals captured in Mexico in 1977, recovery partners established a captive breeding population. These animals are the foundation of the recovery effort. Wolves that are candidates for reintroduction undergo a "pre-acclimation" period at Sevilleta National Wildlife Refuge in New Mexico and other remote facilities. This practice helps foster behavior and characteristics that enhance their ability to survive in the wild.

In 1998, the Fish and Wildlife Service released 13 captive-reared Mexican wolves in eastern Arizona. Two years later, the first Mexican wolf pup was conceived and born in the wild! Additional releases from progeny of the 300 wolves in captivity are planned to reach the goal of a wild population of 100 animals.

Wolves in Alaska and Canada

Gray wolves in Alaska and Canada have never reached the point that protection under the Endangered Species Act is necessary. In Alaska, the State manages wolves—about 6,000 to 7,000 animals. Similarly, provincial governments manage Canada's 50,000-60,000 wolves. The species is not considered endangered or threatened.

Red Wolves

Red wolves once ranged throughout the southeastern United States up the eastern seaboard towards New England. As with gray wolves, concern about conflict between red wolves and human activities resulted in eradication efforts. As red wolf numbers declined, the remaining animals in the wild were removed to zoos and other facilities to save the species. By 1980, the red wolf existed only in captivity, with a founder population of 14 animals!

Captive breeding efforts are proving to be successful. Reintroduction is continuing at Alligator River National Wildlife Refuge in North Carolina. Red wolves have returned to the wild.

In northeastern North Carolina about 100 red wolves comprise 20 packs the wild. Captive breeding efforts at nearly 40 facilities throughout the United States have about 170 wolves. The captive rearing program is vital to maximizing the genetic diversity of the species and provides animals for occasional release into the wild. Recovery goals are 550 red wolves, including at least 220 in the wild.

Number of Gray Wolves in the Continental United States in 2006

Western Great Lakes States

Michigan	434*
Minnesota	3,020
Wisconsin	465

*not including Isle Royale's 30 wolves

Western States

Yellowstone	371
Northwest Montana	159
Central Idaho	713
Arizona/New Mexico (Mexican Wolf)	59

For more information about the status of wolves, contact one of the U.S. Fish and Wildlife Service offices listed below or the Service's homepage at www.fws.gov.

Midwestern Region
U.S. Fish and Wildlife Service
1 Federal Drive
Ft. Snelling, Minnesota 55111

Rocky Mountain Region
U.S. Fish and Wildlife Service
585 Shepard Way,
Helena, Montana 59601

Mexican Wolves
U.S. Fish and Wildlife Service
P.O. Box 1306
Albuquerque, New Mexico 87103

Red Wolf Recovery Program
c/o Alligator River National Wildlife Refuge
U.S. Fish and Wildlife Service
708 North Highway 64
Manteo, North Carolina 27954

January 2007

U.S. Fish & Wildlife Service

Gray Wolf Populations in the United States, 2006

Western Great Lakes Population (late winter of 2005 - 2006)

Michigan - Upper Peninsula	434	
- Isle Royale	30	
Minnesota	3,020	(last survey was 2003 - 2004)
Wisconsin	465	
Total	**3,949**	

Rocky Mountain Population (December 2006)

Northern Rocky Mountain Gray Wolf - natural recovery		
Northwest Montana/Idaho Panhandle	159	(13 breeding pairs)
Northern Rocky Mountain Gray Wolf - Experimental Populations		
Central Idaho	713	(46 breeding pairs)
Yellowstone ecosystem (Idaho/Wyoming/Montana)	371	(31 breeding pairs)
Total	**1,243**	

Southwestern Gray Wolf Distinct Population Segment (December 2006)

Mexican Gray Wolf - Experimental Population
Arizona & New Mexico 59 (7 breeding pairs)
Both the total count and the number of breeding pairs are at an all-time high for this population.

Alaska (not protected by Endangered Species Act) 6,000-7,000

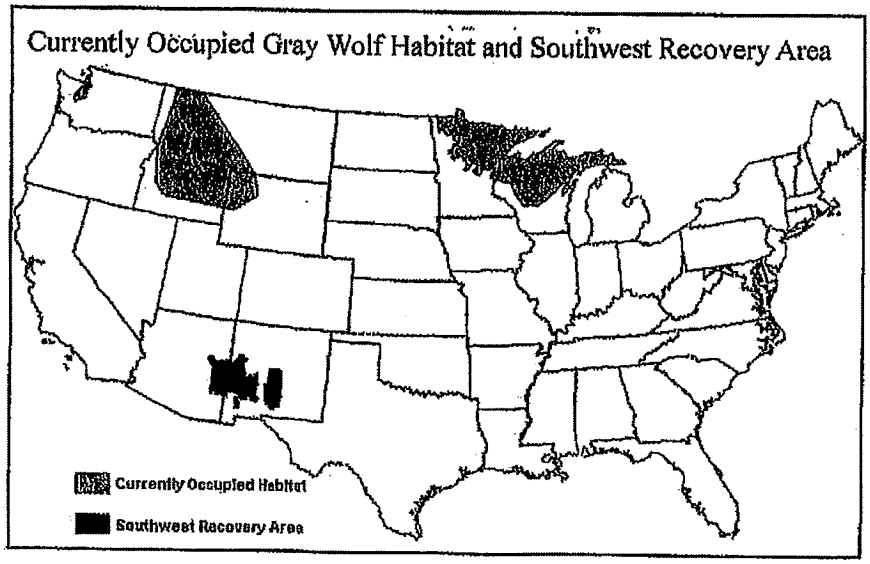


EXHIBIT 8

MONTANA STATE UNIVERSITY

MSU News Service

Greater Yellowstone elk suffer worse nutrition and lower birth rates due to wolves

July 15, 2009 -- By Tracy Ellig, MSU News Service

Bozeman -- Wolves have caused elk in the Greater Yellowstone Ecosystem to change their behavior and foraging habits so much so that herds are having fewer calves, mainly due to changes in their nutrition, according to a study published this week by Montana State University researchers.

During winter, nearly all elk in the Greater Yellowstone Ecosystem are losing weight, said Scott Creel, ecology professor at MSU, and lead author on the study which appears in the Proceedings of the National Academy of Sciences.

"Essentially, they are slowly starving," Creel said. "Despite grazing and browsing during the winter, elk suffer a net loss of weight. If winter continued, they would all die, because dormant plants provide limited protein and energy, and snow makes it more difficult to graze efficiently."

With the presence of wolves, elk browse more - eating woody shrubs or low tree branches in forested areas where they are safer - as opposed to grazing on grass in open meadows where they are more visible, and therefore more vulnerable to wolves.

Browsing provides food of good quality, but the change in foraging habits results in elk taking in 27 percent less food than their counterparts that live without wolves, the study estimates.

"Elk regularly hunted by wolves are essentially starving faster than those not hunted by wolves," said Creel, who shares authorship on the paper with his former doctoral students John Winnie, Jr., and David Christianson.

The decline in the Greater Yellowstone's elk population since the reintroduction of wolves in 1995 has been greater than was originally predicted. In the three winters prior to the reintroduction of wolves, elk on Yellowstone's northern range numbered roughly between 17,000 and 19,000. In the three winters prior to 2008, annual elk counts had declined to between 6,738 and 6,279.

Obviously, wolves kill elk, and direct predation is responsible for much of the decline in elk numbers, but the rate of direct killing is not great enough to account for the elk population declines observed since 1995 in the Northern Range, the Gallatin Canyon, and the Madison-Firehole herds, all well-colonized by Yellowstone wolves. In addition to direct predation, the decline is due to low calving rates, which are a subtle but important effect of the wolves' presence, Creel said.

Two studies following radio-collared elk calves found that during the calves' first six months of life, relatively few of them were killed by wolves, Creel said.

"We knew the presence of wolves caused lower calf-cow ratios, but we didn't know why," he said. "Radiocollaring calves revealed that calf numbers were low immediately after the birth pulse, suggesting that a decline in the birth rate was part of the population decline."

The birth pulse is that time in spring when most cow elk have their calves.

This suggestion was confirmed when the researchers found that elk facing high levels of predation risk had substantially decreased progesterone levels prior to the annual birth pulse. Progesterone is necessary to maintain pregnancy, but a question remained: what was responsible for the decrease in progesterone?

There were two competing theories: One suggested elk suffered from chronic stress due to the wolves' presence. In all mammals, stress causes the release of cortisol, a hormone that helps free up energy to either fight or flee. But too much cortisol from chronic stress can cause the immune and reproductive systems to shut down.

The other theory was that the elk weren't getting enough to eat because they were always on the run from the wolves and spending more time in the forest, where food is sparse compared to grassy meadows. For wintering elk that are already on the edge of starvation, anything compromising nutrition could also cause the reproductive system to shut down.

The MSU researchers did chemical analysis of 1,200 fecal samples collected over 4 years, as well as urine samples for the study. They did not find the elevated levels of cortisol that would support the chronic stress theory. However, they did find that those elk living in the presence of wolves had lower levels of progesterone, a hormone necessary to maintain pregnancy, than those elk that didn't live with wolves.

"The elk are trading reproduction for longevity," Creel said. "Elk are potentially long-lived, and many prior studies have shown that, in species like this, natural selection favors individuals who do not compromise their own survival for the sake of a single reproductive opportunity."

If predators commonly affect the reproduction of their prey, it will change the thinking about predator-prey dynamics, and might change how wildlife managers plan for the reintroduction of predators, Creel said.

"This research shows that the total effect of a predator on prey numbers can be larger than one would determine simply by looking at the number that are killed," he said.

Until now, it would have seemed obvious to conclude that a herd losing many of its number to predators would decline faster than a herd where predators were less successful, Creel said.

"However, now it is conceivable that the herd with the lower direct predation rate could decline faster, if it spends more of its time and energy avoiding being eaten and less on reproduction," Creel said.

Creel and his current doctoral student Paul Schuette are seeing if the theory holds up with other prey-predator populations, with a study of lions, spotted hyenas and a diverse array of prey animals on a Maasai Community Conservation Area in the South Rift of Kenya.

The study of Montana elk ruled out weather as the cause of poor calf production, because elk populations that were exposed to little or no wolf predation had good calf production during the study period, which was typified by winters with little snow accumulation -- ideal for elk.

The study also considered grizzly bears.

"It is true that grizzlies prey on elk calves, and grizzly numbers have increased in the region," Creel said. "However, the increase in total grizzly numbers has mainly been due to geographical expansion, rather than increases in the number of bears in places where they were already well-established at the time of wolf reintroduction."

The work by Creel, Winnie and Christianson was funded by the National Science Foundation.

Related stories:
Elk, wolf researchers probe wildlife battlefield, April 19, 2006.

MSU researcher builds better radio collar, July 28, 2004

MSU research: Bull elk oblivious to danger at dinner time, July 28, 2004

Contact: Scott Creel, MSU ecology professor, (406) 994-7033 or screel@montana.edu

EXHIBIT 9

INSIDE: LEARNING TO LOVE MY BIGHORN EWE TAG

Montana Outdoors

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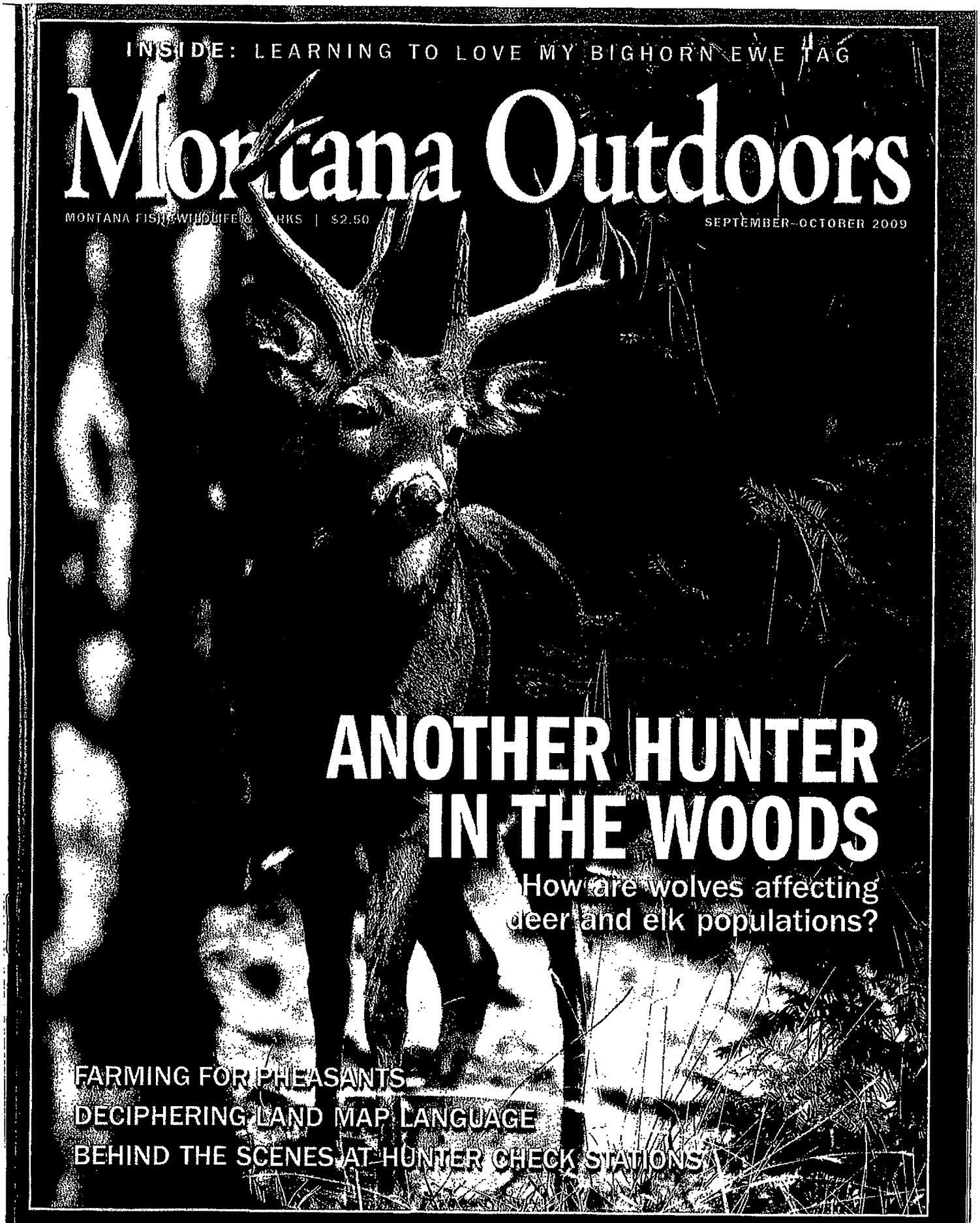


ANOTHER HUNTER IN THE WOODS

How are wolves affecting deer and elk populations?

FARMING FOR PHEASANTS

DECIPHERING LAND MAP LANGUAGE

BEHIND THE SCENES AT HUNTER CHECK STATIONS

ANOTHER MOUTH TO FEED

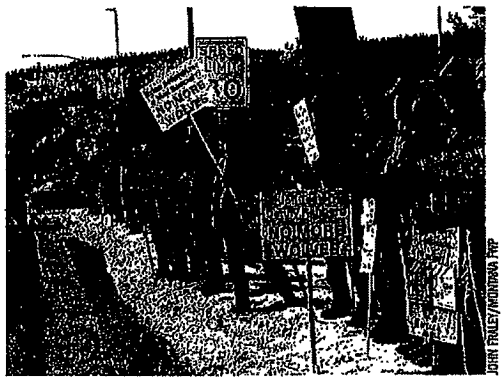
Hunters in western Montana are feeling the pinch as the growing wolf population takes a bite into deer and elk numbers. **BY TOM DICKSON**

Last hunting season was Damon Almond's worst in the 13 years he has lived in western Montana. The Missoula-area firefighter hunted 21 days during the bow and rifle seasons and failed to see, much less kill, a single elk. "A lot of times I get an elk with my bow, and if not, then usually during the rifle season," he says. "Last year I tried all my areas"—up and down the Bitterroot and Sapphire ranges, south of Missoula, and in the Seeley Lake area—"and never even saw an elk. But I saw wolves or wolf sign every place I hunted. I'm not a biologist, and I know I don't have all the answers, but what I experienced proves to me the issue is wolves."

Almond isn't the only one concerned that western Montana's growing wolf population may be reducing deer and elk numbers. In February, dozens of hunters gathered in front of the Montana Fish, Wildlife & Parks regional office in Kalispell to protest the prolonged delay of Montana assuming management over gray wolves. "Feds and Wolves, out of control," read one placard. "Wolves are now the top concern I hear about from

hunters around here," says Craig Jourdonnais, FWP wildlife biologist in the Bitterroot Valley. In the Gardiner area, hunters have for years denounced the federal reintroduction of wolves to Yellowstone National Park, predicting lower elk populations and fewer hunting opportunities throughout the area.

Are wolves killing elk and deer and affecting hunting opportunities in parts of Montana? Definitely, say FWP biologists. But wolves are by no means the only factor driving prey populations and hunting success. What's more, FWP is committed to maintaining wolves on the landscape. That puts the department in the challenging position of trying to work out a fair and sustainable balance for both wild ungulate and large carnivore populations.


JOHN FINLEY/MONTANA FWP

HOWLING MAD Hunters from across northwestern Montana gathered in Kalispell last winter to protest continued federal control over wolves that they fear are wiping out deer populations.

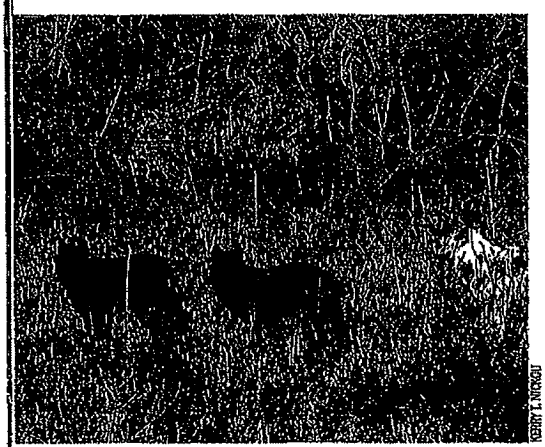
RAPID RECOVERY

Wolves are native to Montana and were commonly seen by early explorers. Market hunting nearly eliminated wolves' natural foods—bison, deer, and elk—in the late 19th century, so the carnivores began preying on sheep and cattle. In response, homesteaders and government agencies poisoned, trapped, and shot wolves under a bounty system. By the 1930s, wolves had been eliminated from Montana. Under protection of the 1973 Endangered Species Act, the carnivores began naturally recolonizing Glacier National Park from British Columbia. By the 1980s, two packs lived in the North Fork of the Flathead River drainage. In the mid-1990s, the U.S. Fish & Wildlife Service (USFWS) released 66 wolves into Yellowstone National Park and central Idaho to hasten the pace of wolf recovery. Wolves have since spread south from Glacier, north and northwest from Yellowstone, and east from Idaho, filling in available habitat. Wolf restoration has succeeded faster than anyone expected. Montana's population has been growing at what FWP biologists call a "robust" rate, increasing in size from 70 individual wolves in 1996 to a minimum estimate of 497 at the end of 2008. In March 2009, the USFWS delisted the Rocky Mountain gray wolf in Montana and Idaho, giving those states full management authority.

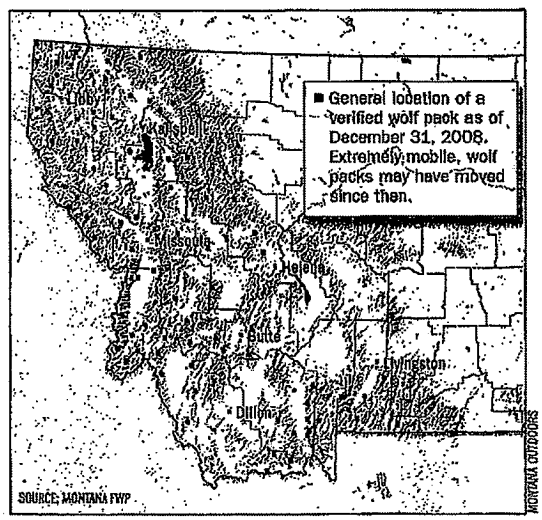
No one argues that wolves hunt, kill, and eat deer and elk to survive. Studies in northern Minnesota and southeastern Alaska estimate a wolf kills 19 to 24 deer per year. One Minnesota study found wolves kill roughly 6 percent of the whitetail population where the two species coexist. "Combined with severe winters, habitat degradation, and hunter harvest, wolves definitely can contribute to locally declining whitetail populations, especially in areas that already have low deer densities," says Dan Stark, wolf coordinator for the Minnesota Department of Natural Resources, which keeps tabs on that state's 3,000 wolves. Ken Hamlin, recently retired FWP wildlife research biologist in Bozeman, estimates each wolf in the Greater Yellowstone Ecosystem (GYE) kills from 11 to 35 elk annually, depending on winter conditions and pack size. Studies conducted in the GYE over the past decade by FWP, Montana State University (MSU), and federal agencies found that in areas containing high densities of wolves—such as the upper Gallatin Canyon, Madison River headwaters in Yellowstone National Park, and the park's northern winter range—the carnivores made significant inroads into elk populations, killing up to 20 percent in some areas. "Where you had a high ratio of wolves per 1,000 elk, we found decreased elk calf recruitment and population declines," says

Tom Dickson is editor of Montana Outdoors.

Montana's statewide wolf pack distribution


ROBIN T. KOSKI

By the 1930s, wolves had been eliminated from all of Montana. Packs from Canada moved into the Glacier National Park area in the 1980s, grew, and spread south. Packs from federal reintroductions in the mid-1990s have spread north and northwest from Yellowstone National Park and east from Idaho. The latest minimum count (December 2008) is 497 wolves in 84 verified packs scattered across Montana's western third. Run-ins with livestock have slowed eastward expansion.



> We're hearing loud and clear the concerns of hunters seeing more wolves and tracks."

Hamlin, who led the FWP studies. (Recruitment is the percentage of young elk that survive their first year and add to the population, usually measured as the number of calves per 100 cows counted at winter's end.) The most well known example is the large elk herd in northern Yellowstone National Park, which has dropped from a record high of 19,000 in the mid-1990s to 7,000 today. (High hunter cow elk harvest throughout the late 1990s and early 2000s contributed to that decrease).

Wolves also may contribute to localized ungulate declines elsewhere in Montana. In northwestern Montana, where regional wildlife manager Jim Williams says the number of wolf packs has more than doubled in recent years, whitetail harvest this past fall dropped 18 percent. "We're hearing loud and clear the concerns of hunters seeing more wolves and tracks," he says. Mike Thompson, FWP regional wildlife manager in Missoula, says that in the Bitterroot, calf recruitment this past spring dropped sharply to a record low. He is concerned that some isolated elk populations, such as those in portions of Mineral and Ravalli counties, may not rebound to historic averages. "We have to be open to the possibility that wolves could prevent recovery in some areas—even if we end antlerless elk harvest, which we've had to do in some hunting districts," he says.

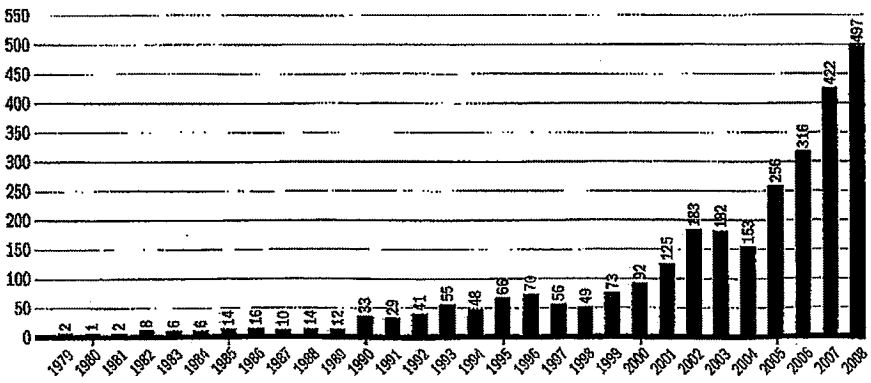
Though the effects vary widely, wolves can indeed make it harder for hunters. Research in the GYE found that elk grow more vigilant with wolves nearby and in some areas spend less time in the open. Biologists also know that wolves move deer and elk short distances and keep prey moving more often. "Elk are smart, and in places they've learned to timber up more than they were and not come out as much in early morning and late evening," says Hamlin. "Hunters may have to learn how wolves affect elk behavior where they hunt and use that to their advantage." What's more, the addition of wolves to other factors affecting deer and elk numbers—such as weather,

KRISTI DUBOIS/MONTANA FWP

LICKED? Studies in the Greater Yellowstone Ecosystem show that a wolf will kill 11 to 35 elk each year, depending on winter conditions and pack size. In isolated areas, that has equaled up to 20 percent of the elk population in some years.

Statewide wolf population 1979–2008

Wolf numbers in Montana began a rapid increase following the reintroduction of 66 wolves in the mid-1990s by the USFWS in Idaho and Yellowstone National Park.



JODY WADDILOW

VENISON EATERS Wolves aren't the only carnivores pursuing wild ungulates. Cougars kill more deer, and bears more elk fawns, than wolves do in some areas. Human hunters also take their share.


JESSE VERNOOD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DENVER BRYAN

hunter harvest, and other natural predators—means that FWP must be more conservative in some cases when allocating antlerless deer and elk permits.

Adding to the frustration of hunters and state wildlife officials are the years of federal protection that limited Montana's ability to manage the carnivores. "What really irritates so many hunters is that the wolf has been singled out for protection, no matter what happens to elk and deer," says Thompson. "We manage elk, deer, lions, bears, and hunting for a balance, but so far we haven't been able to do that with wolves because we've had one hand tied behind our back."

OTHER FACTORS AT PLAY

All this doesn't mean the presence of wolves automatically sends deer and elk populations tumbling. Hamlin says it's unlikely the presence of wolves will completely wipe out deer and elk anywhere. "Wolves have no ecological incentive to eliminate their food source," he explains. Kelly Proffitt, who filled Hamlin's position and continues to work on elk distribution studies, says that the predators appeared to have little effect (killing just 1 to 4 percent) on elk numbers in some study areas with low ratios of wolves to prey (less than 3 per 1,000 elk), such as the lower Madison, Gravelly-Snowcrest Mountains, and Paradise Valley. Areas have different wolf:elk ratios in large part due to the presence or absence of livestock. Some wolves learn to prey on sheep and cattle and have to be killed to prevent further depredation, which keeps wolf densities low in many agricultural areas.

More significant than predators to most prey populations is winter severity. "In our region, winter conditions and the availability of thermal cover drive deer populations more than anything," says Williams. He notes that an abnormally warm and snow-deprived hunting season, poor fawn recruitment following the harsh 2007-08 winter, and a high doe harvest the previous two years contributed greatly to the recent white-tailed deer harvest decline.

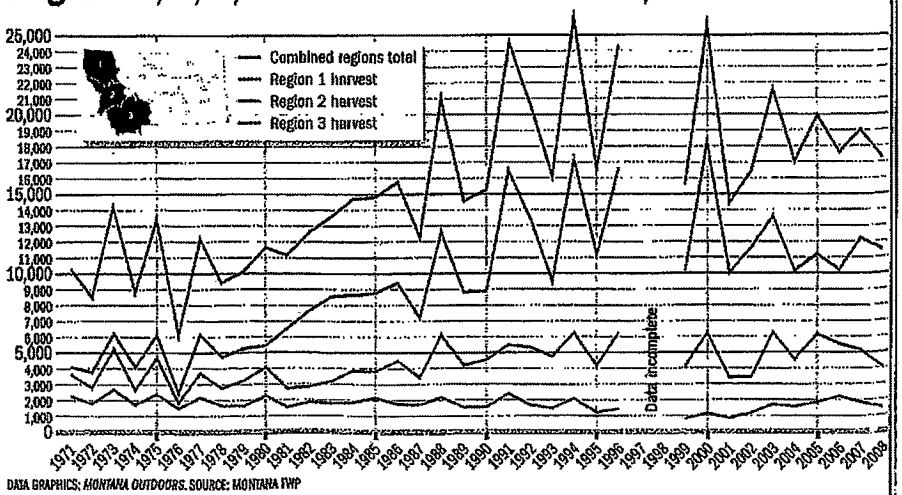
Growing numbers of other predators also dine on deer and elk. One Yellowstone study showed that black and grizzly bears kill more newborn elk calves each spring than wolves do. In the northwest, more whitetails die from cougars than from hunters or wolves.

And while wolves are killing thousands of deer and elk in Montana each year, many of those animals would not necessarily have shown up in hunters' rifle sights. Hamlin explains that some deer and elk would have died anyway of other natural causes before hunters had a shot at them. Others are killed by wolves in areas that many hunters can't reach, such as leased private land or remote mountain ranges. "Just because an elk dies from predation or starvation or even falling off a cliff doesn't mean it otherwise would have been available to a hunter," says Hamlin.

Even with wolves present, many factors


DENVER BRYAN

Regions 1, 2, 3, and combined elk harvest, 1971–2008



DATA GRAPHICS: *MONTANA OUTDOORS*. SOURCE: MONTANA FWP

JUDY WANTUSOK

SPOTTED FWP wildlife officials say reports of previously unknown packs by hunters have been essential in helping the department make the case for federal delisting.

determine whether hunters fill their tags each fall. Opportunity, weather during the season—particularly the presence or lack of snow—a hunter's individual skill and effort, and plain old luck all contribute to hunter success. "We've always had years when hunters and biologists were left scratching their heads, even before wolves arrived on the scene," says Thompson.

Though certainly a loss for hunters, there can be ecological benefits to having wolves and other predators reduce overabundant prey populations. Harvest by hunters and predators prevents deer and elk populations from overgrazing natural forage. For instance, though the northern Yellowstone elk herd is down more than 60 percent from its historic peak, biologists say the herd size is now in better balance with the landscape. One study in the park showed that as elk numbers declined, willows and other streamside vegetation that had been browsed to the dirt are now thriving.

Then there's the fact that for some hunters, like Michael Lukas of Missoula, the return of another predator enhances their hunting experience. "The presence of wolves makes the areas where I hunt seem wilder, and that wildness is a large part of what I crave when I go hunting," Lukas says.

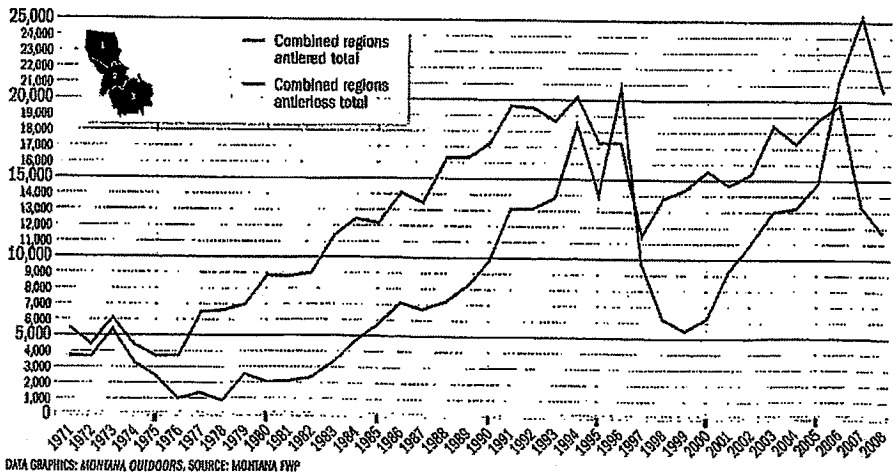
WORKING TO REGAIN STATE CONTROL

What has FWP done in response to growing wolf numbers? "Along with landowners, hunters, and others, the department has repeatedly fought hard for federal delisting," says Quentin Kujala, head of the FWP Wildlife Management Section. He adds that the department's five wolf specialists in western Montana investigate reports of wolf sightings and conduct aerial surveys of radio-collared wolves every four to six weeks. Carolyn Sime, FWP statewide wolf coordinator, notes that the department asks hunters to help monitor wolf numbers and distribution by reporting sightings or tracks at hunter check stations and the FWP website. "Hunters are very aware of their surroundings, and they've helped discover many packs previously unknown to us," she says. "That's been essential information for making the case that wolves are fully recovered and should be delisted."

> We have to be open to the possibility that wolves might prevent recovery in some areas, even if we end antlerless elk harvest."

With the wolf now under full state control and management, FWP has initiated a regulated wolf hunting season (see sidebar on page 14) similar to those for lions, black bears, bighorn sheep, and other game

Regions 1, 2, 3 combined whitetail harvest, 1971–2008



DATA GRAPHICS: *MONTANA OUTDOORS*, SOURCE: MONTANA FWP

LONG-TERM INCREASE, BUT FOR HOW LONG? Both elk and white-tailed deer harvest in all three western Montana FWP regions increased over the past several decades. The total annual elk harvest in Regions 1, 2, and 3 combined averaged 12,500 in the 1970s and around 19,000 during the past decade. The annual whitetail harvest in the three regions combined grew from an average of 8,500 in the 1970s to 30,000 in the past decade. No one can be certain how the presence of wolves will affect harvest in the future. "We've managed deer and elk without wolves for 80 years," says one FWP biologist. "Now we're learning how to manage them with wolves. It's a whole different ball game."

species. State wildlife officials believe the hunting season could help reduce animosity toward the wild canids. "I think hunters will feel a lot different about wolves if they have a wolf tag in their pocket," says Williams.

WOLVES ARE HERE TO STAY

Though FWP advocates a wolf harvest, as well as abundant deer and elk numbers, FWP Wildlife Bureau chief Ken McDonald makes it clear that the department will also work hard to maintain a healthy and viable wolf population. "We intend to make sure wolves continue moving among the subpopulations in the three recovery zones [the Greater Yellowstone Ecosystem, northwestern Montana, and central Idaho] to maintain genetic connectivity," McDonald says. He explains that allowing animals from the three zones to intermix enables wolves to function as a single large population rather than three smaller, isolated populations, resulting in more diversity and resilience. McDonald adds that the state will continue to move conservatively when it comes to anything that could endanger the long-term health of the state's wolf population. "Wolves just got off the endangered species list. We need to move slowly and prove that Montana won't do anything that would cause them

COMMISSION SETS MONTANA'S FIRST MODERN WOLF HUNTING SEASON

On July 9, the FWP Commission approved a quota of 75 wolves for the fall 2009 hunting season. Biologists had said as many as 207 wolves could be harvested without dropping below the state's current-but-growing population. The commissioners opted for a smaller quota the first year so the department can learn how the hunting season affects the wolf population as well as to maintain genetic connectivity. "This is all real new, and we want to proceed conservatively," says Ken McDonald, FWP Wildlife Bureau chief. "We don't know how many hunters will apply for licenses or how effective they'll be." The commission also decided that no more than 25 percent of the harvest can come during December when wolves are dispersing, which is important for maintaining genetic mixing and overall long-term population health.

Wolves in Montana, Idaho, and Wyoming were removed from federal authority in March 2008, but four months later a federal judge reinstated endangered species protection, citing a lack of evidence demonstrating genetic exchange among wolf subpopulations. In March 2009, the U.S. Fish & Wildlife Service (USFWS) again delisted the Rocky Mountain gray wolf, this time in Montana and Idaho only, allowing the two states to proceed with state management plans that include carefully regulated hunting seasons.

Montana currently has three times as many wolf packs as the federal recovery goal originally called for. FWP officials say hunter harvest will help manage wolf numbers in areas where livestock depredation has been high or predation on ungulate populations is especially severe.

Many state and national hunting and conservation groups, including the Montana Wildlife Federation, support the hunt. But Lisa Upson of the Natural Resources Defense Council says her organization and other wildlife protection groups believe a hunt in 2009 is premature. "We're close to recovery overall in the region, but we're not there yet," she says.

McDonald says he's not surprised by the diverse opinions. "We listened to a range of viewpoints and came up with what we believe is a well-reasoned, conservative quota for this first wolf season," he says. "Wolves are fully recovered, and they are here to stay. Montanans have worked hard to integrate them into the state's wildlife management programs, which has always been the promise of the Endangered Species Act. This department has been sorely disappointed by the delisting delays over the past few years. We're real pleased that, as promised under the ESA when an endangered species finally recovers, the wolf is again under state management."

McDonald adds that skeptics of Montana's wolf management proposals need only review the state's track record of managing other large carnivores. "Look at mountain lions and black bears. Both continue to have strong and healthy populations, and we see that happening with wolves, too," he says.

A Montana wolf hunt proposed in 2008 was blocked after several wildlife protection groups successfully filed for an injunction. A similar injunction could postpone this year's hunt. McDonald says FWP would again join the USFWS in opposing the injunction and defending the delisting decision in court, as it did last year.

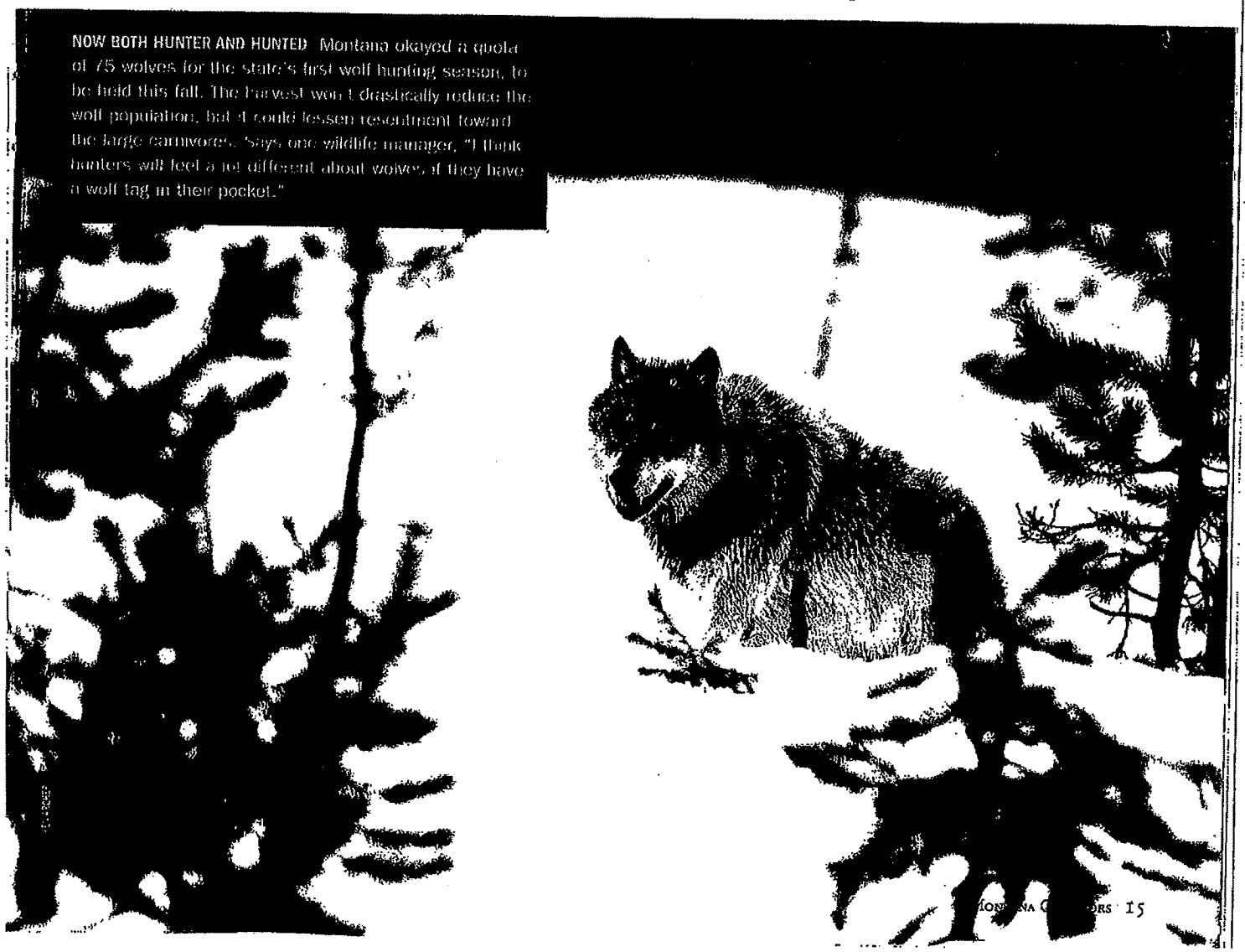
> We need to prove that Montana won't do anything that would cause wolves to slip back to where they could be federally listed again."

to slip back to where they could be listed again under the Endangered Species Act," he says. "Then we'd be right back to where we were, with wolf management under federal control.".

How many wolves will Montana eventually hold? McDonald says no one knows for certain. "But given the current knowledge of wolf population dynamics, along with our commitment to maintaining genetic connectivity, statewide wolf numbers likely won't be all that different from what we're seeing today," he says. "At the same time, we'll have the flexibility and tools to deal with local situations when conditions warrant. That may mean increasing wolf hunting season quotas in certain areas. But the hard truth is that elk and deer numbers in some areas could end up lower than they were before wolves returned."

While wolf packs may spread into eastern Montana, their numbers likely will be limited as the animals venture into agricultural areas. "Based on what we've seen so far, many will encounter livestock on private land and run into trouble," says McDonald. Last year a record 110 wolves were killed in Montana under permits authorized by FWP to reduce livestock conflicts, and an additional 45 wolf deaths were documented from other causes. Even with these fatalities, Montana's wolf population grew by 18 percent from the previous year.

One thing for certain, says Kujala, is that wherever wolves occur, they become a factor in how Montana manages big game species. "They're again part of the natural mix of the state's wildlife," he says. In some areas, that can create significant changes, with wolves taking big bites out of deer and elk populations. In others, wolves hardly make a dent in prey numbers or human hunting opportunities. But in all cases, the return of wolves means one more element—along with weather, habitat, social concerns, and others—that must be taken into account when the state manages wildlife. "What Montana will do now that wolves are back is the same as it did before," says Kujala, "which is to find a fair and ecologically sustainable balance among all the state's large carnivore and wild ungulate species."



NOW BOTH HUNTER AND HUNTED Montana okayed a quota of 75 wolves for the state's first wolf hunting season, to be held this fall. The harvest won't drastically reduce the wolf population, but it could lessen resentment toward the large carnivores. "I think hunters will feel a lot different about wolves if they have a wolf tag in their pocket."

EXHIBIT 10

Real Solutions & Who Will Pay for Them?

by Hal Herring

Hunters have shouldered the lion's share of funding for wolf recovery. When will the millions of nonhunters who also love wildlife step up to help carry the load?

The millions of urban nature-lovers who supported the idea of wolf reintroduction did so based heavily on the expectation that other people would bear the costs and difficulties of living with them and providing habitat for them on their lands—whether they wanted to or not. It is a deal that almost no one would accept. When the deal is questioned, the same nature-lovers threaten lawsuits. The many hunters who are glad to see wolves back in the ecosystem have no trouble understanding why the anger is growing among many other hunters and ranchers.

Last year in Idaho, Montana and Wyoming, wolves killed at least 214 cattle, 355 sheep and 18 other large domestic animals (horses, llamas and goats). Those were only the kills confirmed by federal investigators, no easy task. Those same investigators say the actual number of wolf-killed livestock could well be double that figure or higher. Only confirmed kills are eligible for compensation. And, of course, there is no compensation for all the nights ranchers sit up keeping watch, or drag themselves out of bed to see why their animals are panicked—wondering if one is bleeding from wolf teeth or being run through a barbed-wire fence. Nor is any money forthcoming to offset lower conception rates, higher abortion rates and reduced weight gain among livestock stressed by wolves.

Wildlife advocates from environmental and animal rights groups number in the tens of millions if membership claims for organizations like the Humane Society of the United States are to be believed. With one exception, they have failed to bring so much as a penny to the table to support the wildlife they claim to revere. An employee for Montana's Department of Livestock who asked not to be named summed up a widely held view of the current situation: "These people have money to spend on lawsuits to prevent anybody from managing wolves, but they never offer a dollar to pay for the damage that they cause."

Managing wolves isn't cheap. It costs millions to investigate livestock depredations, compensate ranchers for wolf kills, do the field work necessary to trap and collar wolves, put in the flight time and boot leather required to arrive at accurate population counts. Then there are the expenses that hold the greatest hope for finding a way to live with wolves: building solid relationships with ranchers and implementing preventive measures to safeguard livestock.

Yet year after year, hunters have had to listen to attacks from anti-hunting groups who describe themselves as fierce advocates for wildlife, but have provided little money to manage them and no money to preserve their habitat. Some of these groups loudly bemoan the domination of hunting interests in wildlife management—actively working for and celebrating the ongoing decline in hunter numbers—yet offer nothing to replace the lost revenues for wildlife and habitat.

Hunters, on the other hand, have done plenty. For more than 80 years, the money from the 1937 Pittman-Robertson Act taxes on firearms and ammunition has paid for the restoration of the big game herds of the United States after their near-extinction in the late 19th century. Without those herds to serve as prey, there could never have been a wolf reintroduction. It is hunting license money that now pays for the state wildlife biologists to study wolves, and for the habitat and winter range purchases that support them and their prey. It was the sale of Duck Stamps that bought 5.2 million acres of the federal wildlife refuge system that now is estimated to shelter one out of three of every species on the Threatened or Endangered Species lists. Taken together, the Pittman-Robertson taxes, the sale of state and federal waterfowl stamps, and the revenue from hunting and fishing license sales contribute an estimated $4.7 million dollars every *day* to conservation.

Defenders of Wildlife is justifiably proud of the $1.2 million it has paid over the past 22 years to compensate ranchers for livestock lost to wild predators. But the money is only a small part of what is needed now and will be needed in the future. With costs likely to escalate, hunters and ranchers cannot be expected to bear the burden, nor will they be able to.

"We need to bring all the ideas to the table now," says Suzanne Stone of the Idaho office of Defenders of

Wildlife. "Right now we are stalled, jammed into two groups, and the Idaho Department of Fish and Game is focused on the hunting community exclusively."

Stone says she suspects that many state game managers like the situation the way it is. "They don't want to consider the desires of constituents other than hunters. But there is a much broader issue here, and that is whether the hunting community will remain the only support system for wildlife, and I think we can all agree that it can't be that way."

Where will the money come from?

The history is not promising. The collapse of the 1998 Conservation and Reinvestment Act—which would have provided $2.8 billion per year for conservation from royalties on offshore oil and gas—was a colossal failure, with plenty of blame to go around. Its predecessor, the Teaming for Wildlife tax, sought to levy an excise tax on all outdoor-related gear apart from fishing and hunting gear that have long been taxed. But Teaming for Wildlife crashed into the Republican "no-new taxes" Congress of the mid-1990s. It was lambasted by the likes of California's anti-conservation Representative Richard Pombo, in large part because it would have provided money to purchase more public lands. The collusion of outdoor gear producers in defeating the bill for fear of increased costs and lost sales only raised the level of cynicism.

Jodi Stemler, who has worked on wildlife funding issues for the Congressional Sportsman's Foundation and many other conservation groups, explains, "There was opposition from some of the outdoor industry who said, 'No. We have a lot of people who buy hiking boots or outdoor gear as a fashion statement and never go outdoors. And not everybody who spends time outdoors cares about wildlife.' We always answered that by saying, 'But *shouldn't* they care?' But it didn't work, obviously."

Stemler notes that funding sources for non-game wildlife conservation have always been scarce. "We have looked at this on the state level for years. How do we fund this? In Colorado we had the 'Go Wild for Wildlife' tax check off, a great idea, great intentions. But pretty soon everybody wanted in on it, from domestic violence on out. License plate sales faced the same problem. The competing interest groups caused the money to be spread too thin."

Another idea that has been around for a long time is the creation of a "carnivore stamp" based on the state and federal migratory bird stamps that waterfowl hunters purchase as part of their hunting license. Since 1995, wildlife biologist Timm Kaminsky has tirelessly promoted such a stamp. Founder of Wyoming's Mountain Livestock Cooperative, a nonprofit dedicated to resolving conflicts between predators and private landowners, Kaminsky's goal is to create a way to allow some of the 60 million people who enjoy watching wildlife across the nation—nonhunters in particular—to put up $20 for a carnivore stamp.

"You would have 10 million sales, contributing $200 million dollars. Take that to Congress and get a simple 1-1 matching fund, and you have $400 million dollars," Kaminsky says. "With that amount, we could dramatically shrink carnivore conflicts all over the country."

The result could be dramatic in other ways, too, as the burden of paying for predator studies and conflicts was lifted from state game and fish agencies. But the first shift would be with the landowners and ranchers. "We must be long past the notion now that public lands are large enough to support large populations of wildlife," Kaminsky says. "Our most important, healthiest landscapes are in private hands, and most of them are working landscapes, where people have to make a living. A carnivore stamp represents a public-private partnership where we recognize that, yes, we have a moral imperative to preserve wildlife, and that imperative extends to the people, too."

As Kaminsky points out, "There is no need to re-invent the wheel. The idea is to mimic the Duck Stamp program, respecting the footsteps of those who came before us. It can be a competition for artists in the same way the duck stamp is, and it would not be limited to wolves or to the West. From Canada to Mexico you have these same conflicts, and down into Florida with the panther. Polar bears, black bears, jaguars, every part of North America could benefit from this idea. And it will be a sunset deal. If we can get the help to

get it started, I am confident that it will be more than self-sustaining."

Critics say that such an idea is far-fetched, even as they acknowledge how desperate the situation is becoming. One of the least encouraging people when asked about the potential of a carnivore stamp is one of the most knowledgeable about wildlife funding through the sales of stamps. Laurie Shaffer, of the U.S. Fish and Wildlife Service's Federal Duck Stamp Office, says that, in her experience, people just don't pay for what they don't have to.

"Ninety-five percent of our wolf population lives outside of national parks. We live with them. On a national level, I'm not sure that fact is understood."

—Carolyn Sime
Montana Statewide Wolf Coordinator

"What you are talking about is a goodwill stamp, or what we would call a 'Cinderella Stamp' which has no other use than as a collector's piece," Shaffer says. "The Duck Stamp is successful because if you want to be out there hunting migratory waterfowl, you better have this stamp *or else*. In the beginning, it was a voluntary tax that hunters put on themselves, but it has always been mandatory to have it."

Wyoming already has a version of such a stamp, called the Wildlife Damage Management Stamp. The 2009 edition has a black and white drawing, not of a wolf or a grizzly bear, but of a raccoon raiding a chicken nest.

"It hasn't been a great success at all," says Kent Drake, Wyoming Department of Agriculture's predator management coordinator. "Like other voluntary stamps, it hasn't brought in a lot of funding." However, Drake notes the stamp is only sold through the outlets that also sell fishing and hunting licenses. "The non-hunting public probably doesn't even know it's out there."

There was also an effort to sell a mandatory "wolf stamp" as part of the entry fee for visitors to Yellowstone National Park, but the idea was abandoned.

Increasingly the state of Missouri is being seen as a model. In 1976, the Missouri legislature passed a "Design for Conservation Tax" that committed one-eighth of one cent of the state's sales tax to conservation. The tax provides one penny for conservation from every $8 of taxable sales. According to the Missouri Department of Fish and Game, in fiscal year 2007, the tax raised $103,332,575—60 percent of the budget for the department. More importantly, as described in a newsletter from the Cameron (Missouri) Hunting and Fishing Club, "... the 'Design for Conservation' sales tax was a landmark achievement that made Missouri the national model for the progressive management of fish, forest and wildlife resources. In short, it made every Missouri resident a stakeholder in those resources." Arkansas enacted a similar tax in 1996 and its wildlife has reaped great rewards as well.

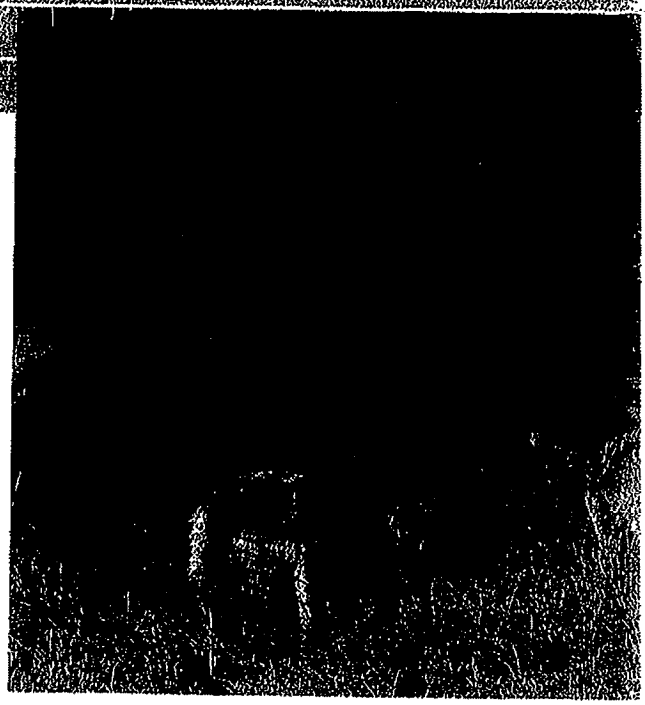
It will be quickly noted that Montana, like Alaska, has no sales tax. Neither does Oregon, which will probably face wolf management issues soon. But the model—a small percentage of general tax revenue dedicated to solving wildlife issues—still holds real promise at both the state and federal level.

Dollars for Depredation

George Edwards is a pragmatic, easygoing man with a hotseat task: paying out money to compensate ranchers who have lost livestock to the growing population of wolves. Edwards, originally from the defunct town of Gilman on Montana's Rocky Mountain Front, is running a new agency called the Montana Livestock Loss Reduction and Mitigation Board, a part of the state's Department of Livestock. The plan was for a new way of looking at wolf predation problems, reducing conflicts and livestock kills, trying to learn to live with a new big predator that cannot survive without the roaming room provided by millions of acres of private land that also must provide a living for its owners, who mostly depend on running cattle.

Until recently, Edwards' new agency devoted every penny to paying for confirmed wolf kills on livestock. After a rash of wolf predation last year, Edwards found his coffers empty. With the passage of the so-called "wolf kill bill" (see "Fresh Tracks," July-August 2009) to help compensate landowners, and the arrival of $50,000 from Defenders of Wildlife, Edwards is hoping to shift the focus to proactive conflict avoidance. The new sources of money are welcome. But there is still nowhere near enough to actually start resolving, rather than reacting to, conflicts between big predators and livestock producers.

Mike Leahy, Montana's representative of Defenders of Wildlife, has been appointed to the



mitigation board, and Edwards is encouraged that, while Leahy is not a cattleman, he represents an organization that understands that big predators sometimes come with a cost to private landowners.

"It's time to figure out our priorities," he says. "What works? We don't know yet. Is it helping people in wolf country to rent safer pastures? Predator fencing? Range riders? Buying hay so that you can consolidate your calving operations?"

Edwards explains a new idea: use a nonprofit foundation to seek grants to help livestock producers and other landowners deal with the impacts of predation on their lands and grazing leases. The first group to step up? The Montana Cattleman's Association, which already has a nonprofit foundation in place.

"The Cattlemen immediately offered to help us," says Edwards, "and so did the Montana Woolgrowers Association. I told them both that we don't expect to need help forever, that we'll be doing the research into funding all of this ourselves. I guess the sad part about all of this is that livestock producers will be contributing to something that takes away their livelihoods, but that's the way it is right now."

The way it is seems pretty ironic to Edwards, to livestock producers, and to a growing number of people in the rural west. Thousands of pickups wear bumper stickers that say, "Wolves: Government Sponsored Terrorists." On the other side, the Natural Resources Defense Council sends out email blasts for "The Big Howl!" encouraging members to tell the Secretary of the Interior to put wolves back on the endangered species list. This despite the fact that wolf numbers are far above the criteria set long ago for delisting, and rising.

The Costs of Conflict

Carolyn Sime, Montana's Statewide Wolf Coordinator, points out how destructive these campaigns by environmental groups can be.

"A lot of those statements are fear-based or intentionally misleading," Sime says. "When somebody reads that wolf puppies will be killed in Yellowstone, well, I guess they'll kick out that $20. But it really cuts both ways. It undermines the credibility of the organization, and it further polarizes the issue. And it makes it very hard for us to do the real work."

Many hunters and ranchers may not care that the credibility of an environmental group is ruined by outrageous claims about wolf killing. But that, too, would be short-sighted. The best of these groups have won crucial court battles that benefited sportsmen by protecting wildlife habitat in riparian areas, wetlands and rangelands, as well as controlling water and air pollution. With the environmental challenges that America faces right now, it is a bad time for effective groups to lose credibility or members. It's a terrible time for laws like the Endangered Species Act, which have made the U.S. a world leader in wildlife protection and restoration, to be hijacked and used in a way that turns people away from them.

Sime puts it this way, "The sad part about the litigation (against delisting the wolf) is that these groups have just opted out—gone to court—even as landowners were coming forth with their best faces on, ready to try and work it out.

"Ninety-five percent of our wolf population lives outside of national parks. We live with them. On a national level, I'm not sure that fact is understood."

The deepest tragedy of the situation is this: The globally unique biodiversity of the American West, with so many of its big game species and their attendant predators still intact and free, is becoming, rather than a treasured asset, a source of endless conflict. The protection of non-game and endangered wildlife depends upon increasingly unpopular (and imperiled) laws rather than a sense of shared pride in accomplishing what the citizens of almost every other nation on earth have failed to do: coexist with big wild animals over enormous swaths of public and private land. It should not be this way.

There may be a way to ease the polarization and bring some civility back into the conversation. As is so often the case, it will take money. When Defenders of Wildlife writes about new strategies to reduce wolf kills on cattle, they use their work on the Sun Ranch in Montana's Madison Valley as an example. The work there is indeed cutting edge, effective and perhaps

a blueprint for a better future. But the Sun Ranch is owned by entrepreneur Roger Lang, a former software executive who has turned his considerable energy and fortune to exploring new ways to coexist with wildlife. The Sun Ranch does not operate with the same economic margins as most livestock operations, and its goals are different.

The innovations, the trained dogs, the special fencing, the range riders, the cracker shells, all of them cost money that most ranch owners do not have. Recognizing this, and under severe budget limitations of their own, state and federal wildlife agencies are constructing policies that are much more simple. These policies are mostly about killing. The most expedient approach—as applied to the 27-member Hog Heaven Pack near Kalispell, Montana, in late 2008 after they killed several cattle—is to kill them all, usually from the air. Wyoming animal damage officials told me that the policy of eradicating entire packs after a livestock incident would be the most effective approach in their state as well.

This should not come as a surprise, because the policies for dealing with wolf predation must speak to the concerns of the only two constituencies that have brought real money to the table and have real skin in the game: livestock producers and the big game hunting community. For nonhunters happy to see wolves return to their native habitats, the concerns of the hunting community, just like the outrage of many members of the ranching community, are dismissed as a non-issue.

But the millions of Americans who love wildlife but do not hunt or fish will have to bring something other than the threat of lawsuits to the meeting. Wolf reintroduction, with all its anger and controversy, may be the very tipping point that the nation needs to wake nonhunting wildlife advocates out of their slumber—a slumber made too peaceful by the vast efforts of hunting conservationists and the willingness of so many landowners to share their lands with wild animals large and small. That wake-up call cannot come soon enough.

Longtime Bugle *contributor Hal Herring makes his home in Augusta, Montana.*

EXHIBIT 11

Wolf Attacks On Humans: Myths vs. Fact

by Rich Landers

Since wolves were reintroduced in Idaho, Montana and Wyoming in 1995, no wolf has attacked a person in the Lower 48. What is the real risk and how can we minimize it?

Former U.S. Senator Conrad Burns of Montana made a stern prediction during the years of passionate debates preceding the reintroduction of gray wolves to the northern Rocky Mountains: "Mark my words, if they put wolves in Yellowstone, there'll be a dead child within a year."

That never happened.

Many of the forecasts came true over the past 15 years. Wolves prospered as the new star attraction in the country's oldest national park. Coyotes got their butts kicked out of territories they'd hunted and scavenged with little competition for 60 years. Elk populations declined sharply in some areas.

The 1995-1996 releases of 66 Canadian gray wolves into Yellowstone and central Idaho wilderness proliferated rapidly to at least 1,650 wolves in Idaho, Montana and Wyoming going into the 2009 denning season. This growth continues even though 20 to 25 percent of the wolves are being killed each year by federal Wildlife Services agents, poachers and vehicle collisions.

As the wolves continue to spread across their former range, trickling into Colorado, Oregon and Utah, and establishing at least one breeding pack in Washington, they have killed livestock and dogs, as predicted. But no children have been devoured. Only one person has been attacked by wolves in America in the past 15 years, a 6-year-old in Alaska in 2000. In a decade and a half, no tourists have been bitten by a wolf in the Lower 48, nor have any hunters or hikers been mauled.

In Yellowstone, at least, it's no accident. A plan formalized in 2003 gives biologists the tools and latitude they need to keep wolves on good "wild" behavior. Wolves that show an interest in developed areas of the park get a rude reception.

"We hit them with rubber bullets, bean bags or cracker shells," says Doug Smith, the park's wolf project leader. "We're working against photographers who love it when wolves come close. They pursue them and habituate them. Meanwhile, we're pounding the wolves to keep a distance."

In May 2009, for the first time, Yellowstone officials reached for their last resort. They shot and killed a troublesome young wolf near Old Faithful.

"It crossed the line and became a threat to human safety," says Smith. "We had to take it out."

The incident was regrettable, he said, because a human was likely the first to cross the line of acceptable behavior by making food available to the wolf, either purposely or through carelessness.

The young wolf had lost its natural wariness of humans and became bold enough to chase at least one motorcyclist and two people riding bicycles. As she was being followed by the wolf, a woman bicyclist stopped a truck and asked for a ride. "An empty oil can rolled out when they opened the tailgate, and the wolf picked it up and ran away," Smith says. "That's a food-conditioned response."

Smith has 30 years of experience with wolves, starting on Michigan's Isle Royale and in Minnesota. He debuted in Yellowstone 15 years ago along with the imported wolves.

"It's hard for wolves to stay wild in Yellowstone, where every year about 325,000 of the park's 3 million visitors actually see wolves," he says. "Outside the park, you can find truly wild wolves that flee as soon as they see people. Yellowstone wolves aren't wild. They're tolerant. They're aware of all the people, but they carry on with their business. That's the way we want to keep them."

Could this approach be of use at hunting camps? Most likely. Cattle ranches? Probably not. Livestock fit the profile of a wolf's natural prey. Humans do not.

Wolves are legendary for their social structure and their aptitude for observational learning. Mostly they learn "correct" behavior from their parents and anything unfamiliar to them is scary or at least suspect, says Ed Bangs, who's spent the past 15 years in the hot seat as the U.S. Fish and Wildlife Service wolf recovery coordinator for the Northern Rockies. "But they can learn to be bold around people, and even eventually attack people."

Could elk hunters—who wear camouflage and sneak around smelling and sounding like a wolf's favorite prey—be the appetizer that whets a wolf's appetite for human flesh?

"Even if you were dressed in an elk costume, I seriously doubt wolves would ever attack you," Bangs says. "Wolf attack behaviors go through many filters, from search out, recognize, observe, smell, test, chase, attack, bite, to go for killing bite. I can't imagine a

person being attacked because wolves mistook him for something else."

In 1982, a 19-year-old hunter was stalking hares in thick cover near Duluth, Minnesota, when a wolf sprang out and knocked him down.

"He rolled on the ground with the animal, holding it away by grabbing its throat," reported David Mech, an eminent U.S. Geological Survey wildlife biologist and founder of the Minnesota-based International Wolf Center. "The young man discharged his .22 rifle, and the noise of the shot apparently frightened the wolf away. The wolf did not bite, but scratched the man's thigh with its claws."

Wolf experts study these cases with the intensity of SWAT teams reviewing mission tactics. "He got scratched because the wolf was scrambling madly to get out of there," Bangs concluded. "Obviously the wolf was chasing deer." (Mech had reported the hunter was moving slowly and the odor of deer lure could be detected on his brown coat.) "But the minute they made contact, the wolf knew it wasn't a deer or he'd have bit the man. The wolf was terrified and ran off. Wolves don't accidentally bite things."

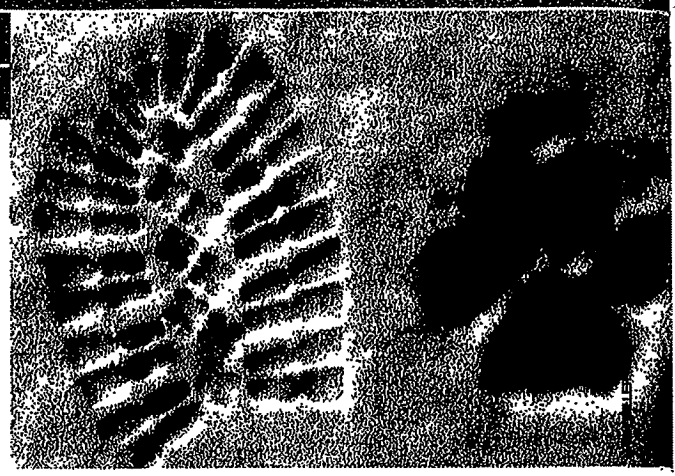
Smith warns against equating wolves with the increase in grizzly bear attacks on hunters as bear numbers have increased. About 70 percent of grizzly attacks on humans involve a sow with cubs, Smith says. "That's what grizzlies do to protect their young. But it's not what wolves do. Wolves leave."

Food, however, is one temptation that almost surely lures wolves over the edge. "The Old Faithful wolf was a yearling, the most typical scenario for a problem wolf," Smith says. "Yearlings are the teenage delinquents ... If we can get them through that critical phase, they won't be a problem. Should they associate people with food, it's pretty much over."

If that people-equals-source-of-food scenario unfolds too often and unchecked, former Sen. Burns could become a prophet, albeit a few decades off on his timing. Predictions that wild Rocky Mountain wolves eventually will hurt or kill a human have been underwritten by some wildlife biologists, including Valerius Geist, a respected professor emeritus of environmental science from the University of Calgary.

Geist ramped up the scientific discussion of the risk after Saskatchewan investigators concluded that four wolves had killed a 22-year-old man in 2005. The case was a benchmark: Kenton Joel Carnegie was the first person in North American to be confirmed as killed by healthy, wild wolves.

"Mr. Carnegie's death is a terrible tragedy, but one fatal wolf attack in the recorded history of North America does not warrant widespread alarm," wrote Mech after looking into the incident.



Geist, however, contends that wolves slowly and steadily have been becoming more familiar with humans, and cites Carnegie's killing to support his stance that future attacks are inevitable.

"Wolves will explore humans as alternative prey, even if there is no food shortage, if they continually come in close contact with humans and habituate," Geist says. "Habituated wolves will eventually attack, as the next step in exploration, in making the unknown known. This is a principle of exploratory behavior applicable to all animals, not only to wolves."

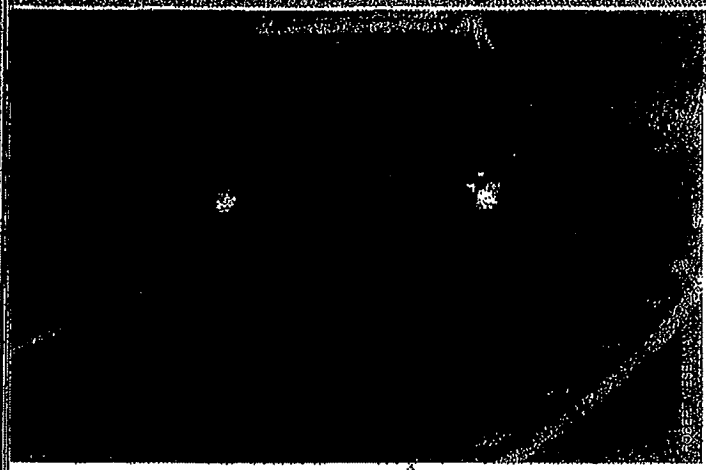
Smith says the only surely bad wolves are human-fed wolves. He says evidence from the mining village dump at Points North Landing, where Carnegie was killed, indicates the wolves had become food-conditioned at the dump and by human handouts. Upon review, Smith and other wolf experts agree the food source, the people and the wolves should have been managed long before the attack. He points out that national parks that have a long history with wolves haven't encountered problems.

"Some people think wolves are going to learn to hunt people in Yellowstone," Smith says. "I disagree. Why haven't they done that in other national parks where they've existed for decades? Why not all over Canada or Alaska? How about Minnesota, or Isle Royale, where wolves have roamed for 60 years and 10,000 hikers a year go through?"

Researchers have documented about 30 non-fatal wolf attacks in North America; only seven of them were considered severe. The common factor in at least 23 of those attacks, as well as Carnegie's death, is that the wolves had equated humans as sources of food they could beg, steal or scavenge. Pet dogs also were a factor in at least six cases.

"When we teach wolves to lose their fear of humans or associate humans with food, the chances of conflict greatly increase," Mech says. "The results can include dead pets, dead wolves and, very rarely, attacks on people."

Jon Rachael, Idaho Fish and Game Department's lead man on wolves, says one thing has become



clear as wolves reclaim their former range: "You have to manage stock closer, and unrestrained dogs and wolf country don't mix."

Lu Carbyn, one of Canada's leading wolf authorities now retired in Edmonton, credits Canada's vast expanses of sparsely populated wild lands for the low ratio of wolf-human encounters among one of the world's largest wolf populations. But Luigi Boitani, Europe's leading wolf scientist based at the University of Rome, says the reason is more complex. According to Boitani's telemetry studies, *Canis lupus* is making a living as close as 20 miles from 3 million people, the Roman Colosseum and Piazza Campidoglio, where the bronze wolf-mother of Rome suckles Romulus and Remus through the centuries.

Consider this:

• Canada has about 55,000 wolves that are actively hunted living among 33 million people scattered over 3.5 million square miles—and no wolf attacks in the past four years.

• About 13,000 wolves roam from Spain to Finland in 27 states of the European Union where 500 million people are packed into 1.7 million square miles—and Boitani says no wolf attacks on humans have occurred there in recent years, either.

Europeans haven't always had such a benign relationship with wolves. "Big, bad wolf" stories originated from the carnivore's grim, folklore-amplified reputation for harvesting people almost as readily as sheep in the forest. In contrast, North America's early white explorers, trappers and settlers rarely mentioned being threatened by wolves. The wolf's appetite for livestock and game was the driving issue leading to its demise in the United States, not attacks on people.

Researchers suspect disease among wolves contributed to the dark days of the predator's relationship with Europeans. Most of the reported fatalities were pre-20th century. A comprehensive study published in 2002 documented 273 attacks by wolves in Europe since 1900, resulting in 27 deaths. More than 80 percent of those cases involved rabid wolves. The report points out that attacks have tapered almost to zero coinciding with the decreased instance of rabies and the trend away from having children tend livestock.

"It's just speculation," Boitani says, elaborating on other reasons for the decline in wolf attacks, "but perhaps it's because wolves have learned that humans can be dangerous. Firearms have changed the relationship."

Indeed, researchers point out many cases of European shepherds injured or killed while trying to beat wolves away from their flocks using sticks. That's not going to be an issue with the typically well-armed North American cowboy or the modern sportsman.

Even though their careers have been dedicated

WOLF ATTACK BENCHMARKS

Wolf attacks on humans are extremely rare. Significant attacks in North America in recent years include:

1996: Zachary Delventhal, 11, was attacked while in his sleeping bag in Algonquin Provincial Park, Ontario, by a habituated wolf that tried to drag him off before rescuers intervened. Wounds required 80 stitches.

2000: John Stenglein, 6, was attacked when he ran and fell after spotting a wolf while playing outside a logging camp near Yakutat, Alaska. A neighbor's dog helped hold the wolf off until rescuers arrived. Injuries required a dozen stitches and staples.

2000: Sea-kayaker Scott Langevin, 23, was attacked while in his sleeping bag by one of a pair of wolves that frequented campsites for food on Vargas Island, apparently the first injury attack recorded in British Columbia. Head injuries required about 50 stitches.

2005: Geology student Kenton Joel Carnegie, 22, was attacked and killed, apparently by four food-conditioned wolves, near a Points North Landing mining facility dump in Saskatchewan in the first recorded human death caused by wolves in North America.

to studying wolves—taking pups from dens, running packs off fresh kills, trapping, darting and handling adult wolves—none of the world's leading wolf authorities interviewed for this story said they'd ever felt threatened by wolves. Yet all of them agreed wolves need to be killed to keep the balance. They're talking about a measured response from officials, livestock owners and sportsmen. A controlled hunting season, for example, would eliminate most wolves that get too comfortable around people, Bangs says.

Cougar attacks on humans were extremely rare in North America until the mid-1980s. Cougar attack statistics spiked as their population peak coincided with more people building homes, getting sloppy with garbage and pet food and recreating in formerly wild lands. Deer populations grew in these areas where deer hunting was curtailed out of concern for safety. Cougars came to the new buffet. Once lions felt there was no perceived threat from humans, in some cases they attacked and occasionally killed people. (Areas that have outlawed mountain lion hunting such as California may also be a factor in the increase of attacks, although some counter that hunters who target the oldest toms leave territorial chaos as young males move in and vie for dominance, and more readily view humans as prey.) Wolves are different in many ways, yet they are the same as all animals in that they require respect, Smith says.

"A squirrel will bite you if it's been food conditioned and you don't deliver," he says. "The food storage rules that have worked so well in grizzly country may need to be expanded to wolf country if people aren't responsible."

Feeding or failing to provide any negative conditioning essentially transforms wolves into large dogs, and "that's not where we want to go," Bangs says. "In North America, dogs kill 10 to 20 people a year and result in about 300,000 bites a year that require medical treatment."

As long as wolves maintain a healthy respect for people—and people for wolves—most wolf biologists believe that the threat will remain minimal.

"We've learned a lot about wolves in the last 40 years. As with any large carnivore, including domestic dogs, it is always wise to be careful with children around them," Mech says. "But it is still safe to say that except for a few rare situations such as children in India or wolves that have been fed or habituated, people have very little to fear from non-rabid, totally wild wolves."

Rich Landers, a native Montanan and lifelong hunter and angler, is a contributing writer to Field & Stream *and the outdoors editor for* The Spokesman Review *in Spokane, Washington.*

THE CASE FOR KEEPING WOLVES WILD

[illegible]

EXHIBIT 12

MANAGING *Wolves* WITH A SHARP AX

by Valerius Geist

Wolves mustn't be coddled if we hope to balance them with modern ecosystems—and to avoid becoming prey

Nothing convinces like personal experience! And I too am slave to it. As an academic I confess to this with some distress, because by training, experience and attitude I should be above it. That I am not alone in this habit is of little comfort. And so it was with wolves.

In my field research on mountain sheep, goats, moose, etc. I also observed wolves, and my experience with North American wolves matches that of colleagues. Consequently, during my academic career and four years into retirement I thought of wolves as harmless, echoing the words of more experienced colleagues while considering the reports to the contrary from Russia as interesting, but not relevant to an understanding of North American wolves. I trusted my wolf-studying colleagues to have done their homework and I dismissed light-heartedly the experiences of others to the contrary. I was wrong!

I saw my first wolf in the wild early one morning in May 1959, on Pyramid Mountain in Wells Gray Provincial Park, British Columbia. I spotted an ash-gray wolf, with a motley coat, sitting and watching me from a quarter-mile away with an eager, attentive look about his dark face. His red tongue was protruding, while golden morning light played on his fur. In the spotting scope his image was crisp and clear. I do not know if my heart skipped a beat, but it well might have. Whose wouldn't?

Five months prior, in early January, I had had an informative brush with a wolf pack just a few miles from that spot. A friend and I were observing moose. We were in the midst of a migration and some two dozen, mostly bulls who had shed antlers, were dispersed over a huge burn. A few were feeding on the tall willows, but most were resting in the knee-deep snow. Suddenly we heard a low, drawn-out moan. When I glanced at the moose I saw that all were standing alert, facing down the valley. We were green then and perplexed about this unearthly sound.

As if to answer us, a high-pitched voice broke in, and then another and another. We realized we were hearing wolves. Within minutes a chorus was underway—and so were the moose. All were hastily moving up the valley and 10 minutes later the moose had vanished. I opted to stay at our lookout while my friend borrowed my rifle and went to search for the wolves. He saw them at dusk as they walked across a small lake, a pack of seven. Try as he may, the rifle would not fire; it had frozen in the great cold. This may have been a kind of fortune, for the first wolf I shot with that rifle instantly attacked me, but collapsed before reaching me. Had the pack attacked, I would have been minus a friend in minutes. While a large man can subdue an attacking wolf, even strangle it, there is no defense against an attacking pack.

Two years later during my study of Stone's sheep in northern British Columbia, I had exceptional opportunities to observe wolves in pristine wilderness. My closest neighbors, a trapper family, lived some 40 miles to the west, and the closest settlement of Telegraph Creek was about 80 miles to the north. Timberlines were low, and the wolves spent much time in the open, plainly visible. I watched them for hours on end. These were large, painfully shy wolves that on occasion even panicked over my scent. Though they killed a few sheep, their hunts were largely unsuccessful. However, I began to appreciate their strategies and tenacity as hunters. In traversing the valley I crossed a wolf track about every 50 paces. They were that thorough in scouring the valley for moose.

On rare occasions a wolf would follow my tracks and sit and listen to what I was doing in my cabin at night. (Grizzly bears did that, too.) One evening three wolves began to surround me on a frozen lake. One raced towards me, but scrambled madly to get away once he got downwind of me. Another cut my fresh track, then jumped straight up and raced back. Thus my early experiences with mainland wolves indicated they were shy and cautious. Moreover, they were few compared to the huge number of Osborn's caribou. I then thought that this was normal. Years later a first doubt arose when a student of mine could hardly find a caribou where I had seen hundreds, and a wolf pack of 43 individuals was recorded where I had observed for years a pack of seven.

Evidently, my experiences with wolves were anomalous, for a decade earlier there had been massive broadcast poisonings of wolves to control rabies. The "pristine wilderness" had been tampered with; I had experienced a "rebound" of ungulate populations after they had been freed from severe predation. When my wife and I tell of forests of antlers as caribou bulls gathered on the Spaziei Plateau for the rut, colleagues look at us as if we came from another age. Maybe we do.

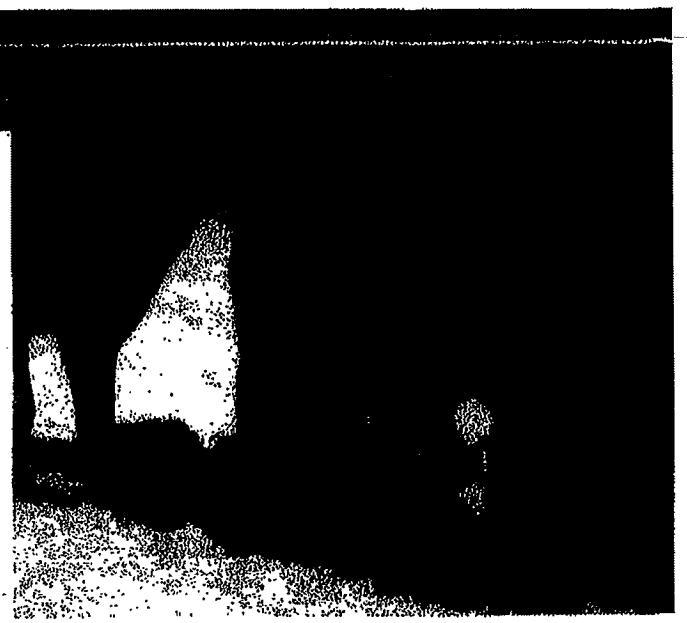
Nothing in my previous studies had prepared me for what I was to experience with wolves on Vancouver Island beginning in 1999. In my student days, in the late 1950s, wolves on Vancouver Island were so scarce that some thought they were extinct. In the early 1970s they reappeared and swept the island. The annual hunter-harvest of black-tailed deer dropped swiftly from about 25,000 to less than 3,000 today. There were incidents of wolves threatening people, and a colleague, treed by a pack, clammed up as nobody believed it. Wolves threatening people? Ridiculous!

According to my colleagues, massive clear-cutting of old-growth forests and the rapid spread and growth of the wolf population caused the carnage. Those who witnessed it tell of deer carcasses everywhere—and then no more deer. The loggers left small patches of mature timber as deer winter range. However, wolves, cougars and black bears discovered those patches and cleared out the remaining deer. The clearcuts also led to a population explosion of black bears; some became experts in killing elk calves and deer fawns. Deer are still so few and far between in

There is a French saying that he who desires a beautiful park must have a very sharp ax, and a heart of stone. We should heed it.

the mountains that I see about three dozen bears for every deer. However, deer are common in towns, suburbs and about farms, where they are somewhat safe, at least from wolves. The elk population is holding its own, but at a low level compared to the vast amounts of food on the clearcuts. The bulls are huge, with massive antlers,
but with a predator-induced silence during the rut. Enough calves perish so that there is little recruitment and we hunters are held to one permit per 40-150 applicants.

I retired to an agricultural area on Vancouver Island in 1995. During walks near our home I explored at all seasons a meadow system associated with dairy, beef and sheep farming. These meadows and adjacent forests contained, year-round, about 120 black-tailed deer and half a dozen large male black bears. In winter came some 60-80 trumpeter swans, as well as large flocks of Canada geese, widgeons, mallards and green-winged teals. Pheasants and ruffed grouse were not uncommon. In the fall of 1995 I saw one track of a



lone wolf. I cannot recall seeing any wolf tracks in the four years following. Then in January 1999 my oldest son Karl and I tracked a pair of wolves in the snow, suggesting a breeding pair and thus pack-formation. A pack did indeed arrive that summer. Within three months not a deer was to be seen, or tracked, in these meadows—even during the rut. Using powerful lights we saw deer at night huddling against barns and houses where deer had not been seen previously. For the first time deer moved into our garden and around our house, and the damage to our fruit trees and roses skyrocketed. The trumpeter swans left not to return for four years, until the last of the pack was killed. The geese and ducks avoided the outer meadows and lived only close to the barns. Pheasants and ruffed grouse vanished. The landscape looked empty, as if vacuumed of wildlife.

Wolves attacked and killed or injured dogs, at times right beside their shouting, gesticulating owners. Wolves began following our neighbors when they rode out on horseback. A duck hunter shot one wolf and fatally wounded another as three attacked his dog. They ventured into gardens and under verandas trying to get at dogs, and ran after quads, tractors and motorcycles to attack the accompanying farm dogs. My neighbor warded off three such attacks on his dogs with his boots, and his hired man ran back to a tractor in panic after the wolves chased two dogs under it. One wolf approached within about 15 paces of my wife and a group of 11 visitors that were taking an evening stroll about half a mile from our house. The wolf howled and barked at the people. Our neighbor then went out armed with his dogs, and the wolf, a small female, promptly attacked the dogs and was shot at 50 feet. Nine days later my neighbor killed a second wolf that was following and barking at him. This wolf may have been defending a sheep it had dragged half a mile. These weighed between 60 and

70 lbs, small for wolves, a sign of poor nutrition.

A neighbor raising sheep lost many to wolves, so he acquired five large, sheep-guarding dogs. These dogs and the wolf pack had frequent, night-long barking and howling duels at the forest edge. I observed subsequently, on the evening of October 19th 2002, the last of the pack, a male, fraternize successfully with the sheep dogs. He kept it up and was eventually shot March 12th 2003 while sitting among these dogs. However, before that he visited us when our female German longhair pointer, Susu, was in heat, and barked at my wife in our doorway. That is, he acted like other male dogs that were attracted to Susu in heat, only bolder.

Wolves had been seen in the neighborhood sitting and observing people; we know from captivity studies that wolves are observation learners. One male approached my wife, my brother-in-law and myself across a quarter-mile of open meadow and stood looking us over for a very long minute about 10 paces away before moving on into the forest. Along with my neighbors, I repeatedly saw wolves showing interest in humans.

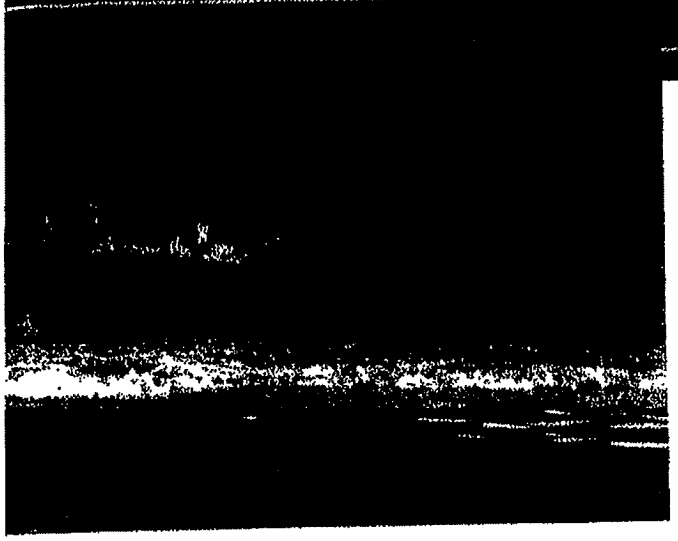
However, the worst incident happened about 350 yards from our house when the second misbehaving pack formed. On March 27th, 2007, our neighbors went in the morning to inspect their dairy cattle and pastures. Their old dog ran ahead of them. Just as they entered the forest five wolves attacked the dog. My neighbor grabbed a cedar branch and advanced on the wolves, which turned towards him snarling. His wife jumped into the caboose of their excavator that happened to be nearby. My neighbor's energetic counter-attack freed the dog, and intimidated all but one wolf that advanced on him snarling. However, he too withdrew, even if reluctantly. While my neighbor ran home to get a gun, his wife ran to us, shouting for me to get a rifle. We did not see the wolves, though they were sighted briefly in the evening, and a neighbor walking his dog had an encounter with two wolves about a mile away. He was able to chase them away. The following morning our neighbors took a rifle along during their inspection trip of their property. The wolf pack promptly went for them again and my neighbor shot the most aggressive one, a male weighing 74 lbs. I saw the neighbors' cattle, spooked by a wolf, crash through fences while fleeing for the security of their barn. I found two of the three cattle killed and eaten by wolves; the third was severely injured about the genitals, udder and haunches and had to be put down. I saw the docked tails, slit ears and wounded hocks on the dairy cows. Our neighbor's hired man saw from a barn a wolf attacking a heifer with a newborn calf. He raced out and put the calf on his quad. As he ran to the barn the

wolf ran alongside, lunging at the calf – and right into the barn! A predator control officer was called and 13 wolves were removed within a mile of our house from the first, and four from the second misbehaving pack.

That "tameness," that "hanging around," that increasing boldness and inquisitiveness, is the wolf's way of exploring its potential prey, and the strength of its potential enemies. Coyotes targeting children in urban parks act in virtually the same manner. Two wolves in June 2000 severely injured a camper on Vargas Island just off the coast of Vancouver Island. These wolves became even tamer before the attack, as they nipped at the clothing of campers, licked their exposed skin and ate hotdogs from their hands. Our observations here suggested that wolves, attracted to habitations by the scarcity of prey, shift to dogs and livestock, but also increasingly, though cautiously, explore humans, before mounting a first, clumsy attack.

I reported such at a Wildlife Society conference on Sept. 27th 2005 in Madison, Wisconsin, in an invited paper on habituation of wildlife. That was about six weeks before wolves killed Kenton Carnegie on November 8th in northern Saskatchewan. I subsequently became involved along with Marc McNay from Alaska and Brent Patterson from Ontario, investigating this incident for Kenton's parents. Also, a book manuscript on wolves in Russia came across my desk, written by an American linguist stationed in Moscow, Will Graves. It had integrity, and I proposed to edit it and find a publisher. Detselig in Calgary published *Wolves in Russia: Anxiety through the Ages*, in April 2007. We included into Will's book as appendix A the English translation of Mikhail P. Pavlov's chapter 12 of *The Wolf in Game Management*. This work had caused howls of outrage by environmentalists when translated into Norwegian.

Then a review of the Russian wolf experiences by Professor Christian Stubbe in Germany vindicated



Will Graves' writing. In the meantime Italian and French historians published papers and books detailing how thousands of people had died in earlier centuries from wolf attacks. Some historians rightly asked the question, how did North American scientists ever conclude that wolves were harmless and no threat to people? We now know the answer: In the absence of personal experience or sound language competence, they chose to disregard, even ridicule, the accumulated experience of others from Russia, France, Italy, Germany, Finland, Greenland, Sweden, Iran, Kazakhstan, India, Afghanistan, Korea, and Japan.

Is it not time we paid attention in order to discover how to manage wolves so as to have both security and abundant wildlife?

The absolutely precious lesson from our North American experience with wolves in the 20th century is that at low wolf-to-prey ratios wolves grow into very large, shy specimens that shun humans, while greatly enriching our landscape and quality of life. Control will be seen as essential to maintain wolves and robust big game populations and minimize intrusions by wolves into human settlements.

There is a French saying that he who desires a beautiful park must have a very sharp ax, and a heart of stone. We should heed it—for the sake of elk, elk hunters, the wolves themselves, and for the future of wildlife conservation in North America.

Widely renowned authority on the world's deer, Valerius Geist is professor emeritus of environmental science at the University of Calgary, an award winning author and, among others, a recipient of the Elk Foundation's Olaus Murie Award in 2003.