

Yellowstone National Park is a panorama alive with one of the greatest concentrations of large mammals in the lower 48 states—more than 30,000 elk, 3,000 bison, 2,000 mule deer, and hundreds of grizzlies, moose, bighorn sheep, and pronghorn antelope. But for decades this spectacle was missing a key participant: the wolf. This absence had both aesthetic and ecological significance. It was like an orchestra without a brass section; a library without a mystery shelf.

In March 1995, when 14 wolves from Canada were released in Yellowstone, they became the first wolf packs here since extermination more than 60 years ago. At that time, the wolf was regarded as an extraneous

villain in the Yellowstone drama; now the same animal is seen as an essential player in the cast of a complete ecosystem. This change in perspective has not come easily. The restoration program was implemented only after many years of public debate and careful planning, and it remains controversial.

Here you can find out why the decision was made, what issues and concerns surround reintroduction, how wolf restoration has been carried out, how wolf recovery is proceeding, and what wolf recovery means to Yellowstone—and to all who want to see the wilderness remain wild.

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**Above:**  
Wolf pup peers out of den,  
Yellowstone National Park, 1996

**Below right:**  
Adult wolf awaits release,  
Yellowstone National Park, 1995

## Why Were Wolves Restored?: ECOLOGY OF AN ENDANGERED SPECIES

For many years the only wolves in Yellowstone were two mounted in a display case at the Albright Visitor Center. These wolves were killed by a park ranger in 1922, near the end of an era when wolves, coyotes, and mountain lions were considered a menace to Yellowstone's other wildlife.

Although reports of wolves continued sporadically, most sightings were of lone wolves or large coyotes. The last solid

evidence of wolf pack activity in Yellowstone dates back to the 1930s. That's a long time for a large wilderness area to be without one of its major predators.

Federal agencies like the National Park Service are mandated by the Endangered Species Act to protect species listed as endangered or threatened with becoming endangered in the foreseeable future. As stewards of Yellowstone, the Park Service must safeguard both animals and habitats and, where

possible, restore viable populations of listed species like the gray wolf.

The recovery of the gray wolf in Yellowstone promotes ecosystem integrity and enhances the value of the park as one of America's premier natural areas. With resident wolves, Yellowstone is one of the largest and most intact ecosystems remaining in the earth's temperate zones.

The conservation of wolves and other large carnivores is truly

a global concern. These species do not survive easily in industrial societies; people have to *want* them to survive. Long-term conservation of the wolf is as much a social issue as it is a species or habitat issue.

There are many reasons for restoring gray wolves to Yellowstone National Park. But, ultimately, wolf restoration shows that we respect the existence of other life forms, even when that may not be easy.

### THE ENDANGERED SPECIES ACT

is a powerful tool for preventing the extinction of species and for preserving the diversity of life. The gray wolf is one of five species listed under Endangered Species Act protection in Yellowstone—along with the bald eagle, the peregrine falcon, the whooping crane, and the grizzly bear.

### THE WOLF RECOVERY PLAN

designated three northern Rocky Mountain recovery areas for the gray wolf: northwestern Montana, central Idaho, and the greater Yellowstone area. These places were chosen for their plentiful prey and low potential for conflict with human activities.

Since wolves from Canada had moved into northwestern Montana on their own, human-assisted relocation of wolves from Canada has taken place only in central Idaho and Yellowstone.





## GRAY WOLVES IN NORTH AMERICA

1872

1883

1914

1926

1931

1943

1973

1980

1994-96

Historic Range  
Present Range

Yellowstone National Park is established by Act of Congress. Market hunting threatens both predator and prey species throughout the U.S.

After slaughter of park wildlife by hunters selling skins and meat, hunting is made illegal in Yellowstone—but predator control continues.

Wolf control intensifies in Yellowstone. During the next 12 years, 136 wolves are killed in the park.

The last reported wolf killing occurs in Yellowstone National Park.

Responding to changing public attitudes, National Park Service policies shift away from predator control.

The last known wolf is killed in the greater Yellowstone ecosystem.

The gray wolf is listed as an endangered species in the lower 48 states.

A Northern Rocky Mountain Wolf Recovery Plan is developed; another decade of debate and delay ensues.

After 130 public hearings and 160,000 comments, the final reintroduction plan is approved. In 1995, 14 wolves are released in Yellowstone and 15 in central Idaho. In 1996, the Yellowstone wolves are joined by 17 more.

## Why the Controversy?: ISSUES AND CONCERNS

### CHANGING VIEWS

A century ago, bounties for killing wolves prevailed. Animals were perceived as "good" or "bad" in those days, and the wolf was clearly labeled a "bad" animal.

When the gray wolf was listed as an endangered species, it became illegal to harass or deliberately kill one unless it posed a threat to human life. The penalty for harming a wolf does more than just deter people from shooting one. It formally recognizes the high value people place on wolves, and how important it is to save the wolf, and all endangered animals.

Although the gray wolf was declared an endangered species in 1973, reaching a decision about what should be done to restore it to the Rocky Mountains took more than 20 years. This process involved lengthy public debate focusing on complex issues.

Opponents to wolf restoration hold that the program costs too much and that any livestock losses are unacceptable. But not everyone against reintroduction is opposed to sharing the land with wolves. Some object to paying for wolf recovery when national park budgets are tight; and some think we should allow natural dispersal from Canada to take its course, permitting wolves to return to the park in their own time. These concerns are summarized below:

**"Wolves will attack livestock that graze outside the park."** Many livestock owners regard the wolf as a threat to their livelihood. It's been demonstrated in Minnesota and Canada that wolves generally prefer wild game over livestock. Some wolves will kill domestic animals when given the opportunity. But with appropriate livestock and wolf management, livestock losses can be minimized.

The restoration plan estimated that 100 wolves in the Yellowstone area would kill about 19 cattle and 68 sheep annually.

During the first 16 months after wolves were released in Yellowstone, no cattle deaths and about a dozen sheep deaths had been attributed to wolf predation. As

provided by restoration guidelines, the implicated wolves were relocated or killed after subsequent depredations (see next page).

**"Wolf recovery will result in restrictions on the use of private land."** Some people have been concerned not about the wolves themselves, but that their release might result in the government dictating land use policy to local communities. With an experimental population (see next page), the only public land use restrictions permitted in the recovery area are around active den sites on public land in the spring. Once at least six packs are present, no closures around den sites will be made except in national parks and national wildlife refuges. There are no restrictions on private land use due to wolves.

**"Wolves will reduce other wildlife in Yellowstone."** Yellowstone's other wildlife species evolved in the presence of wolves. The wolf's return now is unlikely to alter either the well-being of other animal populations or opportunities for wildlife viewing. When a wild animal has sufficient suitable habitat, wolf predation alone should not cause a long-term decline.

**"Wolves will reduce big game hunting outside Yellowstone."** Hunting is illegal in Yellowstone itself; however, ungulates—elk, mule deer, moose, and bighorn sheep—support a multi-million dollar hunting and outfitting industry in the greater Yellowstone

area. Although many hunters prefer a complete wilderness that includes wolves, others view the wolf as a competitor for game.

A population of more than 95,000 ungulates thrives in greater Yellowstone—even with hunters taking about 14,300 animals per year. A recovered population of 10 wolf packs is expected to take about 1,300 ungulates per year. This may require a slight reduction in the number of female ungulates permitted to be hunted in the future, but the impact on hunting overall is projected to be small. Many human-caused and natural factors besides wolf predation affect the size of game populations.

**"It will be impossible to prevent wolves from spreading throughout the West."** An established wolf population will generate some wolves that will travel long distances and try to form new packs. But when the recovery goal of 10 breeding packs for three consecutive years is met simultaneously in the three Rocky Mountain recovery areas, each state will be encouraged and permitted to set up its own wolf management program, which may include regulated harvest and/or killing wolves that prey on livestock.

**"Wolves might attack people."** Like that of any wild animal, a wolf's behavior can never be fully predicted, but the risk to humans from wild wolves is practically nonexistent. Millions of people enjoy the outdoors in wolf territories in Canada, Alaska, Minnesota and Wisconsin without incident. There has never been a documented case of a healthy wild wolf seriously injuring a human in North America.

**"Wolf recovery costs too much."** The gray wolf restoration program has been funded through a combination of congressionally appropriated funds and donations from individuals, corporations, nonprofit organizations and foundations.

The original cost of restoring and recovering wolves in northwestern Montana, central Idaho and the Yellowstone area was estimated at about \$6 million. This includes costs over the period from 1994 through 2002, when the gray wolf is expected to be recovered in the western U.S.

Wolf recovery is ahead of schedule and, with the generous private support received so far, the public cost is less than original estimates.



### WHEN A WOLF BECOMES A PROBLEM

While in Yellowstone, wolves remain fully protected, regardless of how they got here or what they do. But when they leave the park, they are no longer free to do as they please:

- Landowners and livestock owners may harass a wolf found on their land or near livestock grazing on public rangelands.
- Livestock owners may kill a wolf caught preying on livestock on private land. If the livestock is legally grazing on public rangelands, the wolf will be relocated, or the owner may request permission from the U. S. Fish and Wildlife Service to kill the wolf. Such a permit will be granted if it is verified that livestock have been attacked by wolves, at least six packs of wolves are present in the recovery area, and other efforts to resolve the problem have been unsuccessful.
- State and tribal agencies may relocate wolves to reduce predation on local big game animals, if this action does not hinder wolf recovery.
- Any person may legally harass or kill a wolf to protect human life.

### THE GREATER YELLOWSTONE AREA

- 1995-96 Wolf Acclimation Pens and Release Sites
- Areas Used by Packs in 1995
- National Park & Forest
- Greater Yellowstone Ecosystem

Right: Radio collared wolf bolts from kennel, Yellowstone National Park, 1996



## How Are They Doing?: A STATUS REPORT

### An Experimental Population

Some wolves will travel across or inhabit private land. Their presence among humans is not necessarily a problem—wolves have coexisted peacefully with people in various parts of the world for centuries. But the introduction of wolf packs into Yellowstone does mean that some of the 412,000 livestock grazing in the greater Yellowstone area will become prey. Good animal husbandry can help minimize livestock predation, but wolf restoration inevitably entails controlling certain wolves when they interfere with human activities.

Because of controversy surrounding reintroduction, the gray wolf has been legally designated an "experimental" population in the three Rocky Mountain recovery areas. This designation allows for added flexibility in managing an endangered species, permitting government agencies more options in certain situations (see box at left).

### Testing the Plan

Sixteen months after the first wolves were released in Yellowstone, many are roaming occasionally or regularly outside the park as they begin to establish their territories. Few of these wolves have had close encounters with humans or domestic animals. In one case, a hunting dog on private land ran into a wolf pack and was killed immediately. As of July, 1996, only one wolf had been killed for preying on livestock; several others were relocated to avert conflicts on private land.

Although unfortunate, these livestock losses have so far been low in number and, however unacceptable to some, well within the limits considered manageable in the restoration plan.

Defenders of Wildlife, a private organization, has raised a \$100,000 fund to compensate ranchers for any livestock killed by wolves. They will also pay \$5,000 to any owner of land on which wolves raise pups.

### A Preliminary Progress Report

As of July, 1996, six wolf packs were establishing territories in the Yellowstone ecosystem. So far as is known, no wolves have traveled outside the recovery area. Wolves are predominantly killing elk, about one every two to six days.

**Deaths:** As of July, 1996, nine wolves had died in the Yellowstone recovery area. Three of the deaths were from nonhuman causes: a pregnant wolf died of thermal burns near Old Faithful, and two male wolves were killed by other packs in territorial disputes.

In addition to the wolf killed by government agents after it preyed on livestock, two were fatally hit by vehicles, and three wolves were killed illegally outside the park. In one case, a ranch employee apparently killed a wolf inadvertently while shooting coyotes in a calving pasture. He reported the death, cooperated with the investigation, and was fined \$500. In a second case where the wolf's death was deliberate and concealed, the perpetrator was sentenced to six months and ordered to pay \$10,000. The third case is under investigation.

**Births:** More wolf pups than expected have been born. As of July, 1996, the wolf population included seven surviving pups born in 1995 and at least 13 born in 1996.

### Keeping Track of Yellowstone's Wolves

Keeping up with wolves is not easy. They travel considerable distances in short periods of time, and it may take up to 20 years for Yellowstone's new packs to settle into stable territories.

Most wolves will probably live in the north central part of the park, because that is where prey animals are most abundant. Some parts of the park will have no wolves, or just nomads, because too few prey animals live there, or because deep snow limits winter habitat. Some wolf packs may establish territories that lie partly or completely outside the park.

There is thought to be sufficient prey to support about 10 packs within the park's boundaries, and up to 15 packs in or near the park. But because population size and distribution depend on many factors, they are impossible to predict with precision. When the recovery goal of 10 breeding pairs is reached, the surrounding states could permit hunting or other means to control wolves outside the park.

Within the park, behavior, weather, disease, social stresses, territory limitations, and the availability of prey will combine to control wolf numbers in complicated ways. How many wolves ultimately reside in the Yellowstone area will vary over time.

### What Remains To Be Done

Wolf restoration entails more than just transporting wolves from Canada and releasing them in the park. Much work remains to ensure that the wolves of Yellowstone become a fully restored and self-sustaining population.

The wolves must be closely monitored to learn about their effects on other ecosystem inhabitants, to respond to any problems that may arise, and to determine if and when the goal of a self-sustaining population of wolves has been attained. Monitoring and research will continue well into the future.

## Restoration: A COOPERATIVE EFFORT

### Capture and Transport

The U.S. Fish and Wildlife Service worked with Canadian counterparts to capture wolves with prey and habitat similar to Yellowstone—from east of Jasper National Park, Alberta in 1995 and from north-eastern British Columbia in 1996. These wolves were darted from a helicopter, immobilized and live-trapped. The wolves were then flown to Montana.

Some were taken to central Idaho for immediate release. The rest were brought to Yellowstone, where sleds hitched to mule teams hauled the wolves to acclimation pens.

Veterinarians monitored the wolves during capture, transport, and confinement. Each wolf was given a thorough physical exam, then

radio-collared and vaccinated against diseases and parasites before leaving Canada. Kennels and acclimation pens were designed to minimize stress and human contact.

### Acclimation and Release

**Penning:** To decrease the likelihood of wide travel after release and to forge pack bonds, Yellowstone's wolves were held in one-acre enclosures for about 10 weeks before release. Where possible, related wolves were placed together. In other cases, unrelated wolves were penned together to encourage bonding and the formation of new packs.

**Feeding:** Twice weekly, the wolves were fed road-killed carcasses—about 10 pounds of

meat per day per wolf (more than they would typically consume in the wild)—to ensure their good health when released.

**Monitoring:** The pens were guarded by rangers, who observed from a distance. Biologists visited only during feeding. Radio collars made it possible to check on the wolves without seeing or handling them.

**Release:** The acclimation pens were opened in late March to early April, after mating but before potential denning. In a clear demonstration of their unpredictable behavior, the wolves' response to the open pens varied considerably. Some wolves left almost immediately, while others remained in open pens for more than a week.

### WHO MANAGES WOLF RESTORATION?

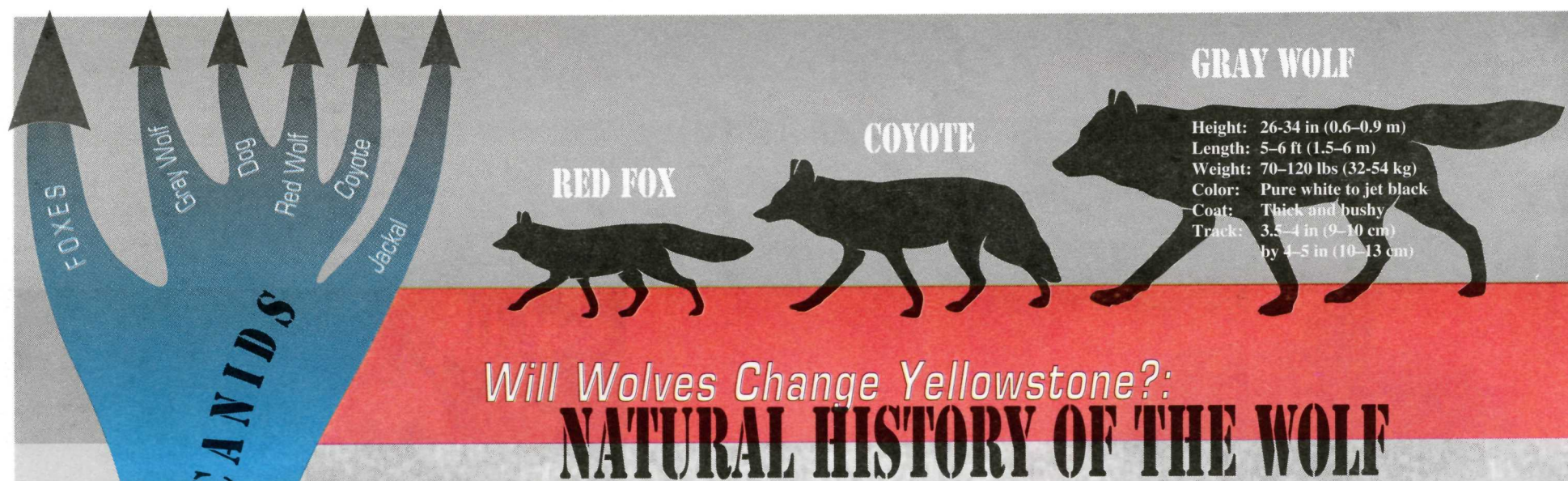
As the agency charged with carrying out the Endangered Species Act, the U.S. Fish and Wildlife Service led the effort to bring the gray wolf back to Yellowstone. When the wolves reached the park, primary responsibility shifted to the National Park Service; park staff consult with other agencies when concerns arise about wolves outside the park. A variety of federal, state, and tribal agencies, nonprofit organizations, private contractors and volunteers have contributed to the recovery effort.



Top left: Wolves arrive in horse trailer, Yellowstone National Park, 1995

Left: Department of Interior staff carry kennel to acclimation pens, Yellowstone National Park, 1995





Canidae family tree

## FIRST FRIEND

When prehistoric people removed pups from wolf dens to help them hunt and guard possessions, these pups became the ancestors of today's domestic dog. Poodles and Pekinese, Great Danes and dachshunds can all be traced back a dozen millennia or so to the wolf.

While dog breeding selects for traits such as obedience, friendliness, and appearance, the gray wolf's evolution has favored characteristics that support survival in the wild: long legs and a deep narrow chest for long-distance running; keen eyesight, smell and hearing; powerful jaws and teeth to attack and pull down large animals.

## FOR MORE INFORMATION

Yellowstone visitor center bookstores sell numerous books and other items to help you learn more about wolves.

If you wish to comment or obtain information about the restoration program, write the National Park Service, Yellowstone Center for Resources, P.O. Box 168, Yellowstone National Park, WY 82190.

The wolves brought to Yellowstone from Canada are the same species that roamed what is now the United States hundreds of years ago, and that, given enough time and protection as an endangered species, would eventually arrive in Yellowstone on their own. Their natural history is both fascinating and complex.

## Pack Hierarchy

Wolves are social, hierarchical, competitive, territorial, and predatory. They evolved as effective predators in part through pack formation.

Packs average eight members or fewer, and consist of the "alpha" or dominant pair, their most recent litter of pups, the pups' older siblings, and occasionally other unrelated wolves. Usually only the alpha pair mate, beginning at about two years of age.

## Raising Pups

Wolf litters, averaging six pups, are born in the spring. Pack ranking begins at birth, when the strongest pups push for position at their mother's teats. Since only about half may make it through the first year, the pups' survival is a top priority for each pack member. Adults feed young pups with meat regurgitated from kills.

**Above under text:**  
 Wolf preys on elk,  
 Yellowstone National Park, 1996  
**Below:**  
 Wolf pack follows tracks in snow,  
 Yellowstone National Park, 1996

## More About Packs

Depending on how much territory is needed to find prey, a pack may range over an area 40-1,500 square miles in size (average size in the Rockies is 30-300 square miles), defending its territory from "strange canids", including coyotes and dogs. During territorial disputes, wolves may fight or even kill each other. In most cases, they simply avoid one another.

A pack announces its presence by scent marking and howling. These behaviors are used to warn away strange wolves, to help pack members locate each other, and to express the relationships of dominance and dependence in the pack.

Wolves disperse from packs for many reasons. For example, young adults may leave to seek their own mates. These lone animals often seek out a living between pack territories. Wolves which leave the pack have been known to travel up to 550 miles looking for a mate and a territory, but more often they settle close to their original territory. A dispersing wolf that does not find a mate may remain alone for life.

## To Hunt Is to Survive

Unlike some species, which are endangered because they require specific habitat being eliminated by human activity, wolves can live anywhere they find adequate supplies of prey and human tolerance. Their principal foods

include elk, deer, and moose. Small mammals, such as beaver and hares, may be seasonally important when ungulates are not available, or for pups learning to hunt.

Wolves typically rest during midday and hunt early in the morning and in the evening when their keen eyesight gives them an advantage and prey animals are active. Wolves generally seek out the most vulnerable animals: the young, the old, the lame, or those caught in crusted snow which a wolf can walk across.

Wolves risk getting injured or killed in the effort to bring down a strong animal, and may make many unsuccessful attempts before obtaining a meal. Only by skillfully working the herd can a wolf pack bring down an elk or bison. As with the human species, the wolf's predatory success depends as much on cunning and cooperation as on brawn.

Wolves rarely live more than 10 years in the wild, being killed by other wolves, disease, starvation, or injuries sustained while attacking prey.

## Will Wolves Change Yellowstone?

The impact of wolves upon Yellowstone will be far more profound than the consumption of some wildlife each year. Predation shapes the wolf and

its prey; both species grow stronger as they are pitted against each other on psychological and physical levels. And species other than prey will surely be affected by the presence of wolves.

Coyote numbers are likely to decline; while those scavenging wolf-kill carcasses will enjoy the leftovers, some coyotes have been killed by wolves. On rare occasions, wolves may kill some bears, especially cubs. But their presence may also be advantageous to bears, which can often displace wolves from a carcass.

Prey animals brought down by wolves help fill many other stomachs. Ravens, magpies, and eagles have been seen on wolf kills in Yellowstone. Other scavengers—red foxes, wolverines, weasels, martens, hawks, western tanners, bluebirds, and insects such as carrion beetles—may also benefit. In this respect, wolf restoration will likely support park biodiversity well beyond the addition of a single species.

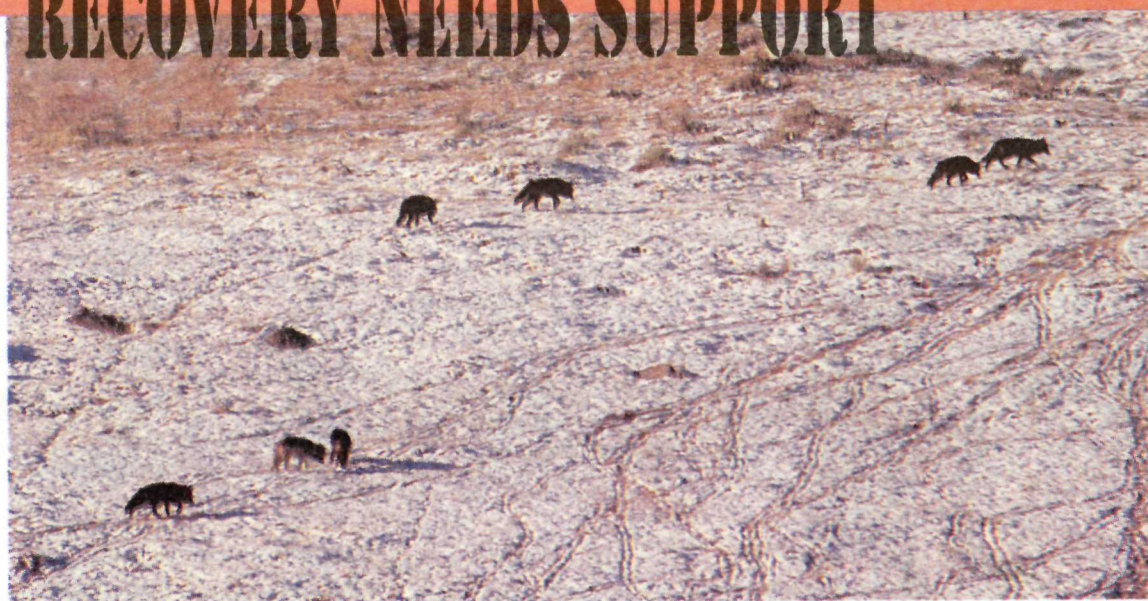
There is much to be learned about how wolves will change Yellowstone. Through long-term research, the effects of wolf restoration on the ecosystem will be evaluated. You are invited to share the excitement of learning about Yellowstone after the return of the wolf.

## How Can You Help?:

# WOLF RECOVERY NEEDS SUPPORT

The fate of the wolf has always been in your hands. Early in this century, the public feared and even hated predators, so state and federal agencies dutifully exterminated wolves in and around Yellowstone. More recently, the public has shown an overwhelming enthusiasm for restoring wolves to a few western wilderness regions, so the National Park Service and other agencies have begun to bring this spectacular animal back.

Because of its tremendous ecological, scientific, and public benefits, and because of its far-reaching symbolic power, Yellowstone wolf recovery is one of the greatest wildlife conservation initiatives in modern American history. It is also one of the most controversial, partly because it is too easily portrayed as somehow unnecessary. Those familiar with the values of



Yellowstone National Park will agree that wolves are anything but unnecessary; thousands of visitors who have seen wolves ranging free here, or have heard their howls on bitter winter nights, would argue that Yellowstone simply is not complete without the wolf.

Wolf recovery to date has been achieved through a combination of carefully managed federal funding and the generous support of numerous foundations, organizations, and individuals who have volunteered great quantities of funds, time, and energy. This is

truly a public program, supported by the people who believe in it. Managers have created the Yellowstone Wolf Restoration Fund, administered by the non-profit Yellowstone Foundation, to provide an efficient, professional mechanism for the raising and

expenditure of funds needed for wolf recovery. If you have seen or heard the wolves of Yellowstone, if you dream of some day doing so, or if you find enrichment simply in knowing that Yellowstone's wildlife community is a robust expression of the American wilderness, please consider a donation to the Yellowstone Wolf Restoration Fund. Send your gift to: The Yellowstone Wolf Restoration Fund, Dept. M, P.O. Box 566, Yellowstone NP, WY 82190, (307) 344-2203.

• 100% of your gift will be spent on wolf restoration.

• Gifts over \$35 receive an exclusive "WOLFSTOCK '96" ball cap.

• Gifts over \$100 receive hat plus a one-of-a-kind paw print from one of Yellowstone's first native-born pups (ready for framing).