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THE QUARTERLY PUBLICATION OF THE INTERNATIONAL WOLF CENTER
VOLUME 22, NO. 3 FALL 2012

Features

Isle Royale Wolves: Down but Not Out

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Rolf Peterson

Wolf Hunt Planned for Two Midwestern States

Minnesota and Wisconsin have both passed laws directing their respective departments of natural resources to implement wolf harvest seasons this fall. The following articles detail the proposed hunting and trapping seasons for each state.

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Things are looking up for the Mexican wolf. In the last three years, the population has grown by nearly 40 percent—from 42 to at least 58, with more pups born this past spring.

Sherry Barrett

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On the Cover

Image by Michael J. Perkins

Wildlife artist Michael J. Perkins, an avid outdoorsman and photographer, has won numerous awards. See more of his artwork at 10,000lakesart.com

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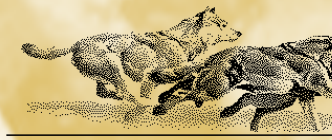

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Kelly Godfrey

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MARCH 2012 – MAY 2012

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International Wolf (1089-683X) is published quarterly and copyrighted, 2012, by the International Wolf Center, 3410 Winnetka Ave. N., Minneapolis, MN 55427, USA. email: internationalwolf@wolf.org.

Publications agreement no. 1536338

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From the Chair of the Board of Directors

Please Welcome Our New Executive Director

Andrew Engelhart

Rob Schultz

After a national search, directors of the International Wolf Center are thrilled to announce Rob Schultz as the Center's new executive director. Rob's leadership experience in nonprofit organizations, his fundraising expertise and his skill in working with boards and guiding staff brought him to the top of our list of 109 candidates.

Nancy jo Tubbs

A parks and recreation graduate of Mankato State University, Rob has worked in the nonprofit sector for the past 20 years. At the age of 27, he was appointed executive director of the International Peace Garden—a botanical garden straddling the border between the Canadian province of Manitoba and the U.S. state of North Dakota. During his tenure at the Peace Garden, Rob worked tirelessly to grow annual park visits to more than 250,000, making it North Dakota's second-largest tourism destination.

He has also held leadership roles in other nonprofits including: executive director of the YMCA's Camp St. Croix, Hudson, Wisconsin; director of the Humanities Center, Saint Paul, Minnesota; and capital campaign director of the Boy Scouts of America's Northern Star Council, Minneapolis. Its successful $25 million capital fundraising campaign reached goal nine months ahead of schedule.

Most recently, Rob served as executive director of the Saint Paul Police Foundation, a nonprofit organization that provides financial support to the Saint Paul Police Department. Since 2005, the Saint Paul Police Foundation has provided nearly $2 million in funding and grants for the department's special initiatives. In his former position, Rob worked with donors and the foundation board to secure funding and support from the community.

Rob is an active Rotarian and continues to volunteer with the Boy Scouts, serving as a member of the President's Cabinet and chairing a scholarship program that has provided nearly 150 college scholarships in the last five years. He is also an Eagle Scout.

Rob, who joined the Center May 16, said his first weeks have been "rewarding and exciting." His focus will be on guiding the Center during this "pup year" and preparing for the Center's international symposium in 2013.

Due to Rob's love of camping, photography, travel, and spending time in the outdoors with his golden retriever, Rusty, we know Rob will easily become a key member of the Center's family. Please join us in welcoming him. ■

Nancy jo Tubbs

Nancy jo Tubbs, Board Chair

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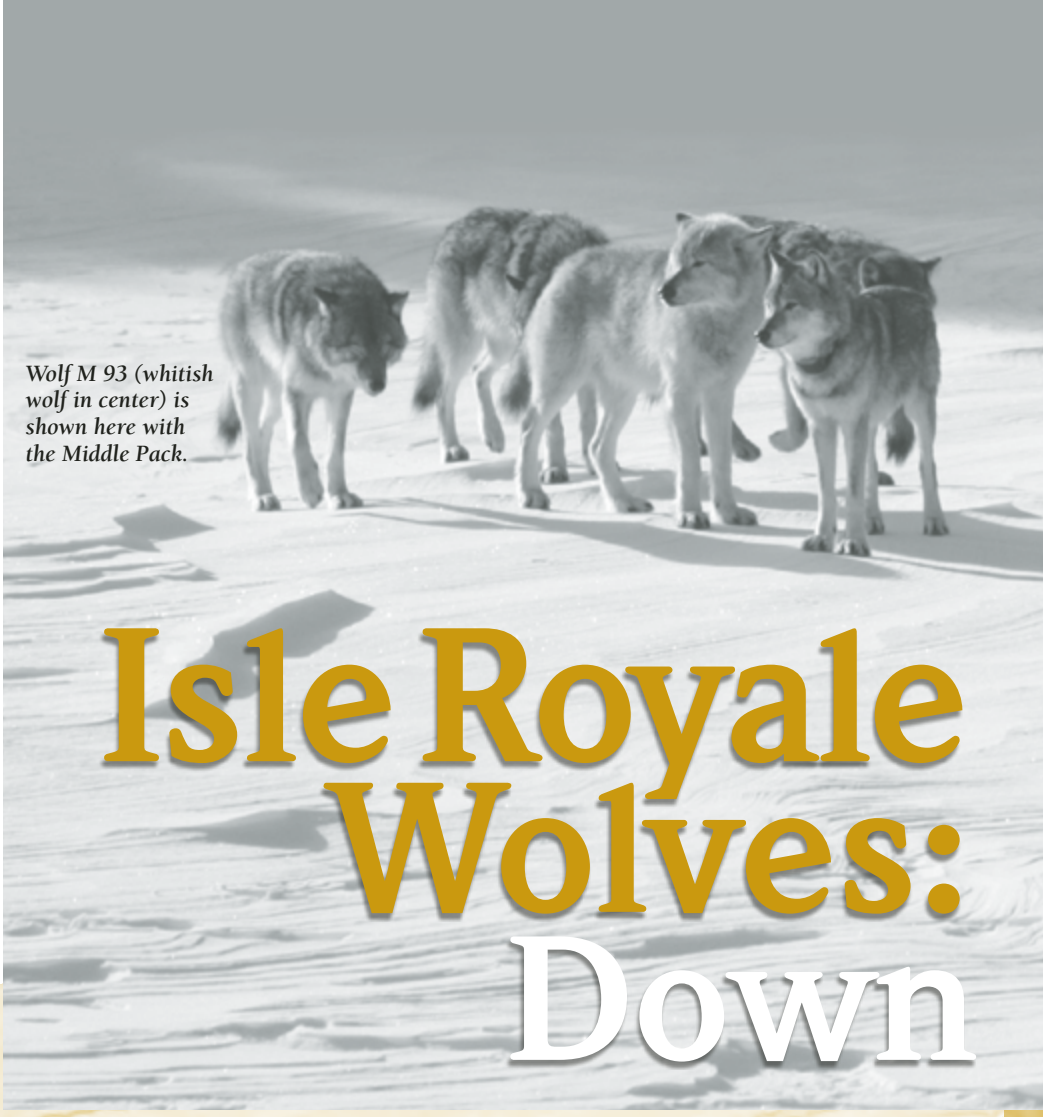


Wolf M 93 (whitish wolf in center) is shown here with the Middle Pack.

John A. Vucetich

Isle Royale Wolves: Down

by ROLF PETERSON

How long will wolves survive on Isle Royale? In 2012 there were only nine wolves in the isolated population on that wilderness island in Lake Superior some 20 miles (32 kilometers) from the Ontario mainland. That is the lowest level ever recorded for this population, which has been monitored annually every winter since 1959. The risk of extinction for these famous wolves is further compounded by a severely skewed sex ratio—no more than two adult females were present in 2010, the last year of genetic testing for gender identification, and few pups have survived since then.

Isle Royale is one of the few sites in the world where people have never killed wolves. When Durward Allen (left) of Purdue University launched what he thought would be a decade-long study of predator-prey ecology in 1958, wolves were feared and reviled almost everywhere else, and they were relentlessly persecuted, shot, trapped and poisoned. In the decades that followed, accurate information on wolves from Isle Royale helped turn the tide of public opinion, enough so that recovery of wolves was possible in many parts of their former range. When I began directing studies from Michigan Technological University in 1975, wolves had only recently been listed as an endangered species. By the time John Vucetich joined the project as co-leader in the late 1990s, a remarkable wolf recovery had occurred in many places in the Northern Hemisphere.

Courtesy of the U.S. Geological Survey

The wolf population in Isle Royale National Park has always been relatively small. Average population size in 1959-2011 has been 23. The maximum was 50 in 1980, and the previous minimum was 12 wolves in the early 1990s. Aware of the limited gene pool for this island population, some scientists expected the population to wink out decades ago. The fact that it has not is testimony to both the resilience of wolves and our lack of understanding of genetic risks for small isolated populations, usually living in habitats fragmented by human activity.

The Isle Royale wolves squeezed through a previous extinction "crisis" in the early 1990s, when the population hovered around a dozen animals that were not reproducing well. The list of possible causes for low numbers then is the same as it is now—genetic losses from inbreeding, food shortage, random demography (birth and death rates and sex ratio) and disease. Canine parvovirus was implicated in the crash of the wolf population in 1981 and in its stagnation through the 1980s, but until recently we could not explain the poor reproduction that occurred in the early 1990s.

The arrival of a single immigrant male in 1997 revealed a lot. This wolf, dubbed M 93, had the good fortune to arrive over the ice from the mainland at a time when at least two of the three breeding males on the island had perished, and he immediately assumed that role for the Middle Pack. In 1998 seven pups were born to a native female and M 93, producing the largest pack we had seen on the island in two decades. In a process that took two years, the Middle Pack pushed aside the long-established West Pack, becoming sole possessor of more than half the island. Before he died in 2006, M 93 had sired 34 surviving pups, and since 2007 all the wolves living on Isle Royale have been his descendants. His spectacular success is attributable, in part, to the severely inbred condition of the native population.

One intriguing detail in the life of M 93 occurred in 2001. When his first mate died that year, M 93 took up with his daughter, born in 1998. They successfully reproduced until his death, and she continued to lead the pack through the first decade of the

21st century. Wild wolves usually avoid close inbreeding, but did M 93 evaluate the genetic viability of his potential mates and decide that his own daughter was a better bet than any of the native females?

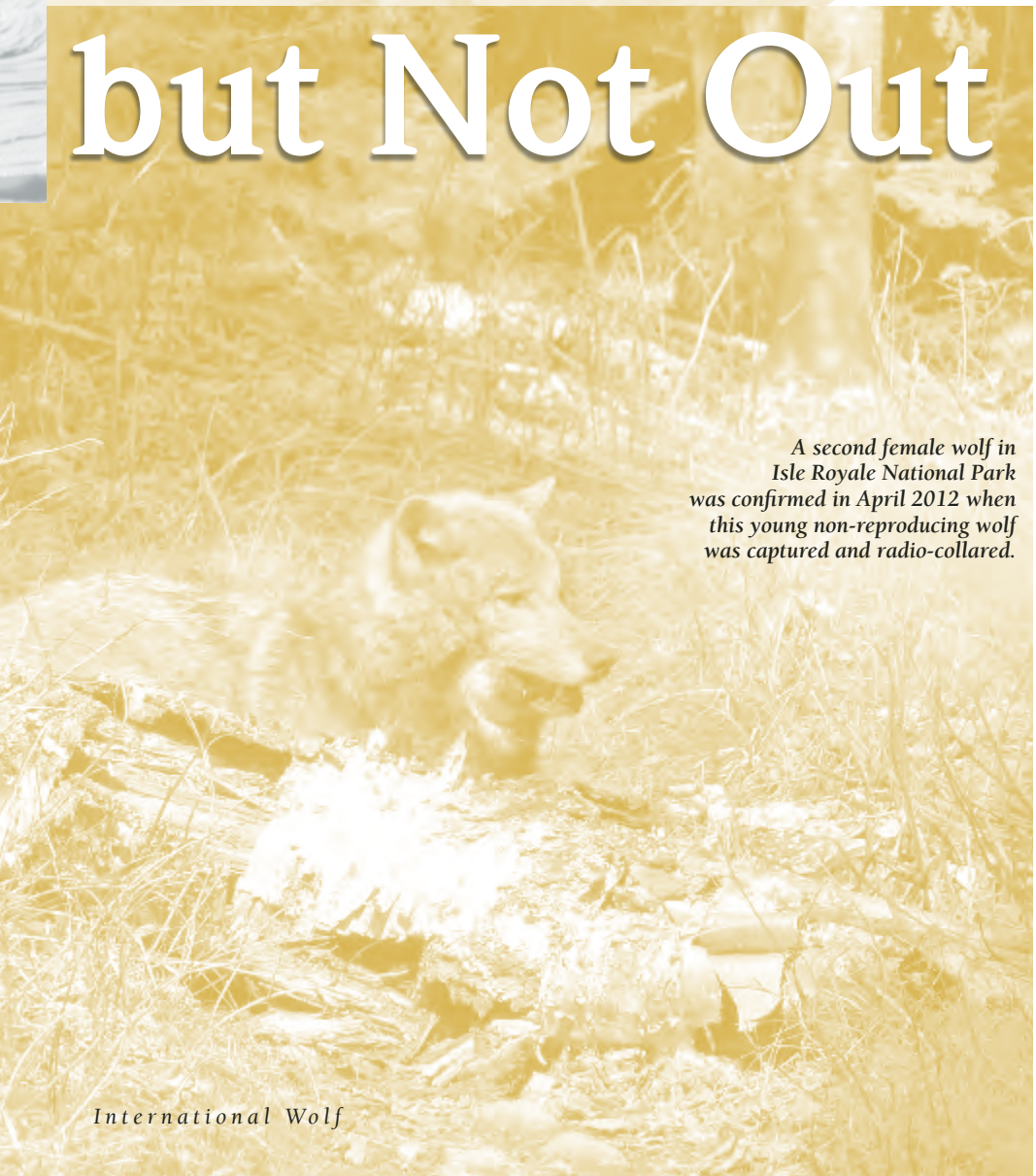
By 2010, scat analysis for DNA indicated that only two females were present in the population. Males predominated among the 101 individual wolves that lived on Isle Royale during 1999-2010, but sex ratio imbalance reached an extreme while the population was lowest. Funding limitations have meant that DNA samples from 2011 and 2012 remain unstudied, and in winter 2012 only one female was obvious. So it was a surprising and significant development in late April 2012 when a young adult female was captured and radio-collared. Even though this wolf has not yet bred, two females are much better than one.

What will happen next is anyone's guess. However, for this population the reality of extinction has never been closer. The U.S. National Park Service has begun a process for evaluating possible management responses, which might include intervening before extinction, restoring wolves after extinction or doing nothing to stave off extinction or respond to it, should that occur. Part of this deliberation includes the realization that wolves cannot get to Isle Royale over the ice very easily anymore, as the probability of an ice bridge in any given winter has been reduced from almost 80 percent to less than 10 percent since the 1960s. Isle Royale has been called the wildest of our national parks, but it is not so wild as to be isolated from the global human footprint. ■

Rolf Peterson is a research professor at Michigan Technological University in Houghton, Michigan. He has been involved with studies of wolves at Isle Royale and elsewhere since 1970 and is a member of the board of the International Wolf Center.

Michigan Technological University

but Not Out



A second female wolf in Isle Royale National Park was confirmed in April 2012 when this young non-reproducing wolf was captured and radio-collared.

Sally Irmiger

New Data Arrives, Explaining Higher Mortality

On June 7, 2012, acting on a tip from a biologist studying a nearby lake, my wife, Carolyn, and I went to investigate what appeared to be one or more floating animal carcasses deep in an abandoned 19th century mine shaft. We fished out decomposing remains of three wolves and salvaged their skeletons for cleaning, study and preservation. The dead wolves included an 8-month-old female pup, an old male and a radio-collared male that was about 6 years old, probably all from the Chippewa Harbor pack. We could only speculate about how this might have happened, but accumulating snow and ice (and possibly thin ice) probably played a role. During the 2012 winter study we had only heard a couple errant beeps from the collar, and we did not observe the collared male anywhere. This event helps explain the high mortality (about 45%) of 2011-12, reducing the unexplained mortality to near the usual level (about 25%). The wolf population has endured many unfortunate and unanticipated events. Readers are encouraged to follow this story to see how the Isle Royale wolves manage this time around (www.isleroyalewolf.org). —R.P.

EDITOR'S NOTE:

Minnesota's First Ever Wolf Season

by DAN STARK

Minnesota's first regulated wolf hunting and trapping season will be conducted this fall and winter. The Minnesota Department of Natural Resources (DNR) is proposing to split the season into two parts: an early wolf hunting season coinciding with firearms deer hunting and a late wolf hunting and trapping season following the firearms deer season for those with a specific interest in hunting and trapping wolves.

A total of 6,000 licenses will be offered, with 3,600 available in the early season and 2,400 in the late season. Licenses will cost $30 for residents and $250 for non-residents. Non-residents will not be eligible to purchase a trapping license in Minnesota, but will be eligible to apply and purchase a hunting license if selected through the lottery process. Late-season licenses will be further split between hunting and trapping, with a minimum of 600 reserved for trappers. Hunters and trappers will be selected through a lottery process in which they will need to submit an application as well as proof of a current or previous year's hunting license to be eligible. The target harvest quota will be 400 wolves for both seasons combined and will initially be allocated equally between the early and late seasons.

The early hunting season will be open only in the northern portions of Minnesota where rifles are allowed for deer hunting. It will start November 3, the opening day of firearms deer hunting. It will close either at the end of the respective firearms seasons in the two northern deer zones (November 18 in Zone 1 and November 11 in Zone 2), or when a registered quota of 200 is reached, whichever comes sooner.

The late hunting and trapping season will begin Saturday, November 24,

Ray Laible

	Minnesota	Wisconsin
Number of Licenses to be Sold	6000: 3,600 during early season; 3,400 during late season; minimum of 600 of the total reserved for trappers	500*
Revenue Allocations	All revenue from application and license sales will go into a wolf management and monitoring fund to be used only for wolf management, research, damage control, enforcement and education.	All revenue from application and license sales will go toward depredation compensation first and then all other costs associated with wolf management.
Methods Allowed	Firearms Bows and crossbows Foothold traps Cable restraints (snares)	Firearms Bows and crossbows Predator calls Up to six dogs to track/trail wolves (after deer season) Foothold traps Cable restraints (snares)
Hours of Hunt	One-half hour before sunrise until one-half hour after sunset (the same as firearm deer hunting)	Day and night hunting allowed with the use of a light at time of kill
Use of Bait	No	Yes*

** Denotes elements of the wolf hunting and trapping plan that were not finalized as of this writing.*

Juan Carlos Blanco

Minnesota

The following is an excerpt from a statement released by Minnesota Reps. Tom Hackbarth, R-Cedar, Dan Fabian, R-Roseau, and David Dill, D-Crane Lake.

Wolves are a menace to farm animals in the northern part of Minnesota, one of the main reasons we need to control the wolf population in our state…The legislature's intent was to allow wolves to be taken through the end of February to include a greater portion of prime wolf season and help us reach a wolf quota. The way it is set up now, the season will end January 6, regardless of how many wolves are taken. It is doubtful many wolves will be taken during the firearms deer hunting season, leaving a narrow late-season window to manage the population…
If the goal is to take 400 wolves a season to manage the population and reach the quota this first season, then let's take 400 wolves.

Wisconsin

The following excerpt was taken from testimony submitted by Corey White, a Wisconsin citizen, to the Wisconsin Department of Natural Resources during the public comment period on the state's proposed wolf hunt.

[T]he law passed by our legislature to establish a hunt is an embarrassing disaster…I suggest that the hunt be much more closely targeted to areas where wolves have entered people's property and caused problems. In zones where wolves live remote from humans, they ought to be left alone completely. I mean that wolf sanctuary areas ought to be established. Wolves ought to be in jeopardy from this barbaric hunt if and only if they wander into areas where they are in danger of encountering human habitations…I completely support that wolves now live near my cabin where they had been eradicated when I was young. Where they cause no problems for the people who live closest to them they need to be left alone; where they threaten property they can be controlled.

and close January 31, 2013, or when a registered total target harvest quota of 400 in both seasons combined is reached, whichever comes sooner. The late season will be open statewide.

The quota is a conservative estimate of the number of wolves that can be harvested without resulting in a reduced wolf population. It takes into account that wolves in Minnesota die from a number of human-related causes including depredation control, vehicle collisions and illegal shooting in addition to what will be harvested during this fall's season.

Total proposed licenses and quotas are consistent with DNR testimony during the 2012 legislative session. While Minnesota's wolf population of approximately 3,000 animals could likely sustain a higher level of hunting and trapping mortality, this first season is designed to provide information on wolf hunting and trapping interest and success rates, which will help inform the design and implementation of future seasons.

In addition to passing hunting and trapping regulations for wolves in Minnesota, the 2012 legislation establishes a wolf-management account into which all wolf application and license fees will be deposited. This account will fund wolf management, research, education and enforcement.

continued on page 8

Wisconsin to Open Wolf Hunt October 15

by JESS EDBERG

On April 2, Wisconsin Gov. Scott Walker signed Act 169 into law, which included House Bill 502 and Senate Bill 411, both of which detailed wolf hunting and trapping provisions for the state.

The Wisconsin Department of Natural Resources (WDNR) hosted 10 public meetings to inform residents on which parts of the authorizing legislation are statutory provisions (already passed into law) and which draft rule ideas are open for public feedback.

At the first meeting, held June 6 in Spooner, Wisconsin, 53 attendees listened to Bill Vander Zouwen, WDNR wildlife and landscape ecology chief, Adrian Wydeven, WDNR mammalian ecologist, and Brad Koele of Wisconsin's Wildlife Damage Program share a history of wolves in the state, current wolf management and depredation actions and details of the fall wolf hunt.

What was very clear from the beginning was that the provisions in Act 169 are nonnegotiable. Barring a lawsuit or an injunction preventing this fall's wolf harvest, the public has no options for changing the statutory provisions.

"[The provisions] were decided for us by the legislature," stated Vander Zouwen when opening the forum for comments and questions.

It was also evident that the provision allowing night hunting raised safety concerns with WDNR officials.

Comments from the audience were fairly well balanced, reflecting both support and criticism of the provisions. However, it was apparent that most attendees supported a wolf harvest season in Wisconsin.

WDNR was tasked with developing recommendations on the draft rule ideas (negotiable elements) by the end of June and submitting them to the state's Natural Resources Board in early July. The board then met July 17 to determine the final rules.

The lottery application process for a wolf hunting or trapping license began August 1 and will run through August 31. Drawn applicants will be notified in early September, with the actual season opening to hunters and trappers October 15, 2012.

continued on page 8

Wisconsin Hunt

continued from page 7

The WDNR's objectives for its first wolf hunt are to begin to reduce the statewide wolf population, provide hunting and trapping opportunities and monitor, learn and adapt for future seasons.

The state's population goal as set in its 1999 wolf management plan is 350 wolves outside of tribal reservation lands. The current Wisconsin wolf population is estimated at 815-880. ■

Jess Edberg is the International Wolf Center's information services director. She coordinates and leads Adventure Learning Vacations and oversees the Center's exhibits and library.

Minnesota Hunt

continued from page 7

The establishment of this account allows the DNR to continue to monitor and manage wolves in the state with funds generated directly from wolf hunting and trapping licenses.

Wolves were returned to state management in January 2012 when they were delisted from the federal Endangered Species Act. Prior to their complete protection under federal law in 1974, wolves were unprotected under state law, and the DNR had no wolf management authority. This proposal marks the first regulated harvest season for wolves in state history.

Wolf numbers and their distribution have remained relatively stable for more than a decade and have been well above the federal wolf recovery population goal since the late 1980s. Recent wolf population indices indicate that the population has stabilized or increased since the last survey estimate in 2008. In recent years, verified wolf depredation complaints have been above the 10-year average and continue to be an important management issue in Minnesota.

Typically, about 80 farms have verified wolf depredation complaints each year. Over the past several years, an average of 170 wolves have been captured or killed annually by federal trappers in response to verified livestock depredation. More than 100 wolves have been trapped and killed so far this spring following verified livestock damage complaints, primarily on calves.

Although hunting and trapping is a new paradigm for wolf management and conservation in Minnesota, there is a strong tradition of hunting and trapping in the state. It is likely that in a few years the wolf season framework will look much different than it does now as the DNR evaluates the first wolf seasons, the wolf population and the management objectives. One of these objectives could be a more directed take of wolves in areas of the state that experience high rates of livestock depredation conflict. This could provide more opportunities for hunters and trappers to harvest a wolf while reducing wolf management costs.

After taking public comments, as required by law, the DNR will publish a final rule for the 2012 wolf seasons. While decisions about whether to have a wolf season and when to start it have already been made through the lawmaking process, the DNR public-comment process is intended to seek input on the wolf season proposal. The complete proposal is available at www.dnr.state.mn.us/mammals/wolves/mgmt.html. ■

Dan Stark is a large carnivore specialist in the Division of Fish and Wildlife for the Minnesota Department of Natural Resources.

Eileen Jurkovich

Managing by the Numbers in Minnesota

When wildlife managers create hunting and trapping policy for wolves, they take into consideration three key numbers: the total estimated wolf population, the number of pups likely to be born in the following spring and the numbers of wolves likely to be taken by each method in the following fall and winter. For Minnesota, here are a few key statistics:

The estimated number of wolves each year over the last 10 years, always counted in winter	3,000
The average number of wolves in a Minnesota pack	6
The average number of pups produced by a pack each spring, doubling the number of wolves in the pack	6
The general mortality rate of pups in their first year	20-80 %
The average number of years that most wild wolves live	2-6
The annual mortality rate for wolves more than 5-months old. Major causes of death include starvation, killing by other wolves, diseases such as mange and canine parvovirus, injuries from prey and other wolves and human causes.	10-40 %
The rate by which wolf population can increase in a year	15-50 %
The number that Minnesota's plan estimates is needed for long-term survival of the state's wolf population	1,600
The proposed total limit of wolves to be taken by hunters and trappers in the first year	400

Peter Thody (www.thody.net)

Mexican Wolf Recovery:

Moving Forward Through Collaboration

by SHERRY BARRETT

THINGS ARE LOOKING UP FOR THE MEXICAN WOLF. In the last three years, the population has grown by nearly 40 percent—from 42 to at least 58, with more pups born this past spring. The number of breeding pairs, seven, is now at its highest level. The Mexican wolf (*Canis lupus baileyi*) is the smallest, rarest and most genetically distinct subspecies of gray wolf in North America. Conflicts with livestock led to the eventual extirpation of the Mexican wolf in the United States in the mid-1900s. Mexican wolves were listed as an endangered species in 1976, following passage of the 1973 Endangered Species Act. This prompted recovery efforts to save the species from extinction.

Mex Wolf Interagency Field Team

Elizabeth Murray

Allan Claybon

In 1977 and 1978, the last known five wild Mexican wolves were captured in Durango and Chihuahua, Mexico, to establish a captive breeding population. In 1995, two additional lineages of pure Mexican wolves, held in captivity in the United States, were integrated into the captive breeding program, increasing the founder population to seven.

Due to the perilous status of the Mexican wolf and the uncertainty over whether captive-reared wolves could successfully be returned to the wild, the 1982 Mexican Wolf Recovery Plan stated that delisting might never be possible. The primary goal of the plan was to ensure the survival of the species by maintaining a captive breeding program and reestablishing a population of at least 100 Mexican wolves in the wild.

From those first 7 wolves, we now have a captive breeding program consisting of a motivated and supportive group of wolf caretakers who manage approximately 300 Mexican wolves in 50 facilities in the United States and Mexico. Because this captive population is derived from such a small number of wolves and is the sole source of Mexican wolves available to reestablish the species, managing for the genetic diversity of both wild and captive populations is one of our greatest challenges.

The first 11 captive-reared Mexican wolves were released into the Blue Range Wolf Recovery Area (BRWRA) in 1998. The Blue Range wolves have now adapted to hunting and living in the wild and are successfully moving from a largely captive-released population to a wild one. More than 95 percent of the 58-plus Mexican wolves living in the wild in Arizona and New Mexico today were conceived and born in the wild. We now have fourth-

Jim Clark, UVFWS

Sayuri Mori

generation pups whose great grandparents were also born in the wild.

Recovery of the Mexican wolf should be easier than the recovery of many other species because the Mexican wolf is not a habitat specialist. It basically just needs large protected landscapes with low densities of humans and roads and sufficient prey (elk and deer). However, recovery of a top predator in a working landscape, where it has been virtually absent for a century, is by no means uncomplicated. To take a fresh look at these and other issues, the U.S. Fish and Wildlife Service (USFWS) appointed a diverse and energetic Mexican Wolf Recovery Team to update the 1982 Recovery Plan. This team is focusing on developing criteria that would lead to recovery and delisting of the Mexican wolf.

The team consists of a subgroup of highly qualified scientists with a wide range of expertise in wolf management, genetics, conservation biology, biogeography, ungulate biology, predator-prey dynamics, trophic cascades, southwestern landscapes and social sciences. The team also incorporates a diverse array of recovery partners from the United States and Mexico, including representatives from tribes, federal, state and county governments, hunting and fishing organizations, environmental groups and the livestock industry. To be successful, the team's plan will have to be biologically defensible and provide innovative ways of restoring the wolf to a working landscape occupied by people with different and sometimes conflicting expectations of the land and the use of its resources.

Based on the final Recovery Plan, USFWS will determine if any changes to the experimental population rule are needed to accomplish recovery. If changes are needed, we'll continue to engage the public openly through the development of an environmental impact statement.

We are continuing to work with partners to resolve conflicts that arise with the reestablishment of a predator on a working landscape. The 11-

Mex Wolf Interagency Field Team

Stephanie Bidwell

member Mexican Wolf Interdiction Stakeholder Council represents county coalitions, tribes, the ranching community and environmental organizations in New Mexico and Arizona. This collaborative approach has led to significant progress toward resolving longstanding conflict related to livestock production and wolf conservation. The goals of the council are to maintain healthy western landscapes and communities while supporting ranching operations and viable wolf populations. Healthy landscapes are less likely to be fragmented and more likely to provide areas for livestock production to coexist with wolf conservation.

With our renewed goals, the growing strength of our partnerships and the recent increase in the population of wild Mexican wolves, we have great optimism for the future of the Mexican wolf. As Dave Mech stated recently at a lecture in Tucson, Arizona, "Getting a population of wild wolves started with only captive wolves to release is a very tough proposition. However, the hardest part is now over, and the current, robust population of several wild-raised generations is now in an excellent position to really move this effort forward." ■

Sherry Barrett is the Mexican wolf recovery coordinator for the U.S. Fish and Wildlife Service.

There's No Manual When It Comes to Pup Care

by Lori Schmidt, wolf curator, International Wolf Center

In our 23 years of wolf management, we've had a variety of experiences managing pups. This edition of Tracking the Pack highlights each of our pup litters including the successes and challenges we faced with each.

Jedadiah.

1989 Litter:

The Center began operations with a part-time wolf exhibit in May 1989. Four pups were born at another facility April 24 and acquired when they were 12 days old to socialize them to the Wolf Care staff and familiarize them to life on display at a public facility. At 12 days of age, pups are still in their neonate phase, and it is necessary to introduce pups to human activities during this period. This litter included two females, Raissa and Bausha, and two males, Ballazar and Jedadiah. By selecting four pups from the same litter, we managed them using the "even aged" management style. Theoretically, pups that mature together are more cohesive when managed using this style, and there isn't as much strife with younger wolves testing older wolves. We quickly learned, however, that environmental stresses influence pack dynamics.

The Center's Exhibit Pack enclosure at that time was relatively small compared to its current habitat. The facility was still in its development stage, and all viewing by the public was outdoors directly adjacent to the wolf enclosure. The current enclosure only allows for observation through windows. With the 1989 litter, we experienced some anxiety from the pups and redirected aggression within the litter during public viewing. The aggression was primarily between females, and both females postured for dominance. By the time they were 5 months old, the females were in conflict for the role of dominant female, and the added stress of high-intensity viewing led to the decision to place one of the females at another facility. The other significant issue with this litter of pups was that the Center's operations were seasonal. The pups were on site from Memorial Day through Labor Day. After Labor Day, they were housed at the home of the curator, who had a large enclosure subjected to minimal human traffic. Each season the pups returned to the Center, but it was apparent that their winter isolation made them less compatible with a public display. They had become accustomed to a limited amount of outside distraction, and began showing anxiety with each subsequent season. At the same time, the Center had raised enough funds for a new wolf enclosure and educational facility. Construction began in the summer of 1992 with a grand opening scheduled for June 1993. The decision was made to find alternative placement for the 1989 pups and start a permanent Exhibit Pack with new pups in 1993.

In 1989, the Center's pen was small and too close to viewers.

The 1993 litter had an active female rank order starting as young pups.

1993 Litter:

Our second litter of pups was born at another facility on April 28, 1993. The 1993 pups were also acquired as neonates (newborns). We selected three females, Mackenzie, Lakota and Kiana, and one male, Lucas. We managed these pups using the "even aged' management style and experienced some active female rank-order issues with MacKenzie as dominant, Kiana as second ranking, and Lakota as the omega female. Interaction for Lucas, the sole male on the Exhibit, was limited. We learned that it was probably best to balance the number of males and females within the Exhibit Pack, and possibly reduce the number of females, as female dominance seems to be inherently more aggressive than male dominance. We also discovered that by the time the wolves reached 6 years of age, they didn't have as much stimulus to remain active. They became rather sedate in their daily lives, and this drove our decision to change to a "multi-age" management style.

Shadow and Malik as early packmates prior to their arrival at the Center.

2000 Litter:

Our third litter of pups was born at another facility on May 8, 2000. We acquired two neonate male pups, Shadow and Malik, but the pups were socialized off site and didn't arrive at the Center until they were 6 weeks of age. While the pups were socialized to humans, they had limited exposure to the sights, sounds and intensity that accompanies public viewing. It took some time to transition the pups, and as adults they seemed to retain some issues with strangers. These are the only adult wolves we have on site that regularly bark-howl during behind-the-scenes programs or at work crews in the wolf yard. We also noticed that these pups already showed some threat displays toward their adult packmates when they made their initial introduction at the fence. We learned that it is critical to expose the pups to the human aspects of a public facility through programming, and they must meet their future adult packmates while they are still neonates to stimulate strong social bonds.

Staff created an increased dominance attitude by always protecting Nyssa (right).

2004 Litter:

Our fourth litter of pups consisted of representatives from two different litters. Two pups were born May 5, 2004: a female named Maya and a male named Grizzer. On May 12, a second female, Nyssa, was born, and all were acquired as neonates, with Nyssa being managed prior to her eyes opening. These pups flourished and met Shadow and Malik through the fence on their first day at the Center. This stimulated Shadow, the dominant male in the Exhibit Pack, to regurgitate for the pups. This is an important feeding behavior, and the pups clearly stimulated nurturing behavior and hormones in the adults. We also learned that the Wolf Care staff's handling techniques can influence social behavior. Due to Nyssa's younger age, staff members tended to protect her from rough interactions with the other pups. This intervention, while well intentioned, created a situation where Nyssa became extremely dominant, and somewhat socially awkward when interacting with the pack. If pups are going to be socially compatible, they need to work out their rank orders without human interference.

2008 Litter:

Our fifth litter of pups brought a unique change to our operations. This was the first litter of pups that had a direct link to a wild population of wolves. All of the other litters we acquired came from captive facilities and represented varying numbers of captive generations. For most captive facilities, lineages were probably removed from the wild sometime prior to the 1973 Endangered Species Act, with the exception of some arctic subspecies, which had known wild lineage when they entered into captivity in the 1980s. This doesn't mean these wolves have been domesticated or are tamer due to a history of multiple years of captive breeding, but there are probably some selective genetic influences that succeed in a captive environment. For instance, if an individual is too aggressive or if a management problem develops, the wolf might not be retained on exhibit, while calmer, more compatible wolves are more likely to be kept.

On April 27, 2008, Aidan and Denali were born at a facility that placed their father into captivity when he was captured as a pup in Yellowstone. This Yellowstone pup was part of a pack that depredated on livestock, and while the law allowed for the adults to be dispatched, it was not legal to euthanize the pups. We acquired two male neonate pups from this litter, Aidan and Denali. This litter was also the first time we managed three age structures within the Exhibit. We learned that predatory behavior in these pups was easily triggered. This inappropriate behavior was also directed toward staff and included circling and biting from behind when the pups expressed anxiety. This pup behavior continued into adulthood and requires rigorous protocol for staff interactions. On the positive side, after years of working with pups, we seem to have mastered the necessary handling techniques to condition pups to the physical care they need as adults. Aidan and Denali are the most accepting of veterinary and other physical care including application of fly ointment, brushing, tick removal, tooth inspection, ear cleaning and vaccinations.

The 2008 litter seemed to have a stronger predatory drive, possibly related to their close lineage to wild populations.

The early whelping period resulted in large pups by summer and in the pup introduction being moved up by a week.

When Luna (far left) was on restricted activity, she had to be isolated, but staff slowly transitioned her back into interactions with Boltz.

2012 Litter:

Our sixth litter also brought a unique change to our operations. While all other pups were born between April 24 and May 12, the 2012 litter arrived a month early. Luna, a female pup, was born March 25 and Boltz, a male pup, was born March 17. We also didn't acquire these two pups as neonates; we picked them up on April 13, making them the oldest pups transitioning to our bottle-feeding regimen. We also had some health challenges with this set of pups, specifically with Luna, who has low bone density and a fragile bone structure, making her susceptible to injuries. She suffered a femoral fracture May 11 and required surgery that involved the insertion of a plate to repair the fracture. Her post-surgical recovery required that she spend some time isolated from Boltz until the fracture healed and nutritional supplements improved her bone density. At press time, Luna's fracture was healing well, and we were transitioning her to spend time with Boltz and discussing plans for her future introduction into the Exhibit Pack. The next issue of Tracking the Pack will detail the pups' introduction into the wolf enclosure with Aidan and Denali. We are reminding staff of the lessons learned with Nyssa when she was overly protected and are using our experience to shape our day-to-day operations in 2012.

The only certainty about raising pups is that every pup has its own unique personality, and every litter is different depending on gender, the source facility, the current dynamics of the Center's Exhibit Pack and the handling techniques used. While we learn from our experiences and apply that knowledge to current situations, there is no manual when it comes to pup care. ■

Wolves of the World

Updates From Around the Globe

by Tracy O'Connell

The constant battle for and against wolves continues globally. A brief summary of some of what is happening around the world—both to conserve and eradicate wolves—is presented below.

CHINA:

Armed police are escorting sheep to protect them from wolf attacks in Inner Mongolia, according to the Indo-Asian News Service, which said wolves there killed more than 1,000 livestock in 2011, equaling nearly one million yuan (about $158,000 U.S.) in value.

A local herder said the wolves' move to densely populated areas was new. One attack saw four to five wolves killing more than 230 sheep in a pen belonging to several families. Owning a gun is illegal in Inner Mongolia.

In eastern China's Shandong province, attacks on seven people (two fatal) over six days led police to shoot a wolf in mid-March. But it is unknown whether this was the wolf responsible and if it was rabid. "The wolf is a protected animal, but shooting is justified when it threatens local people and their property," the forestry department stated. Police are patrolling in case the culprit is still alive.

NORWAY:

Two political parties in Norway's coalition government, the Center Party and the environmentally minded Socialist Left party (SV), are at odds. The Center Party supports farmers and ranchers who feel threatened by wolves, while SV champions protection of wolves, which were nearly extinct in Norway until 20 years ago.

Possibly three wolves have been spotted in residential areas around Oslo, but no one is panicking. A jogger saw a wolf in the middle of the trail, staring at him from a distance of 30 meters (90 feet). "The wolf stood for a few seconds…then disappeared. It was an exotic experience," the jogger said.

Another resident spotted a wolf being chased by a deer. Researchers following the wolf, marked with an electronic tracking device, said it's a year old, citing lack of experience for why the wolf was scared by a deer instead of the other way around.

FINLAND:

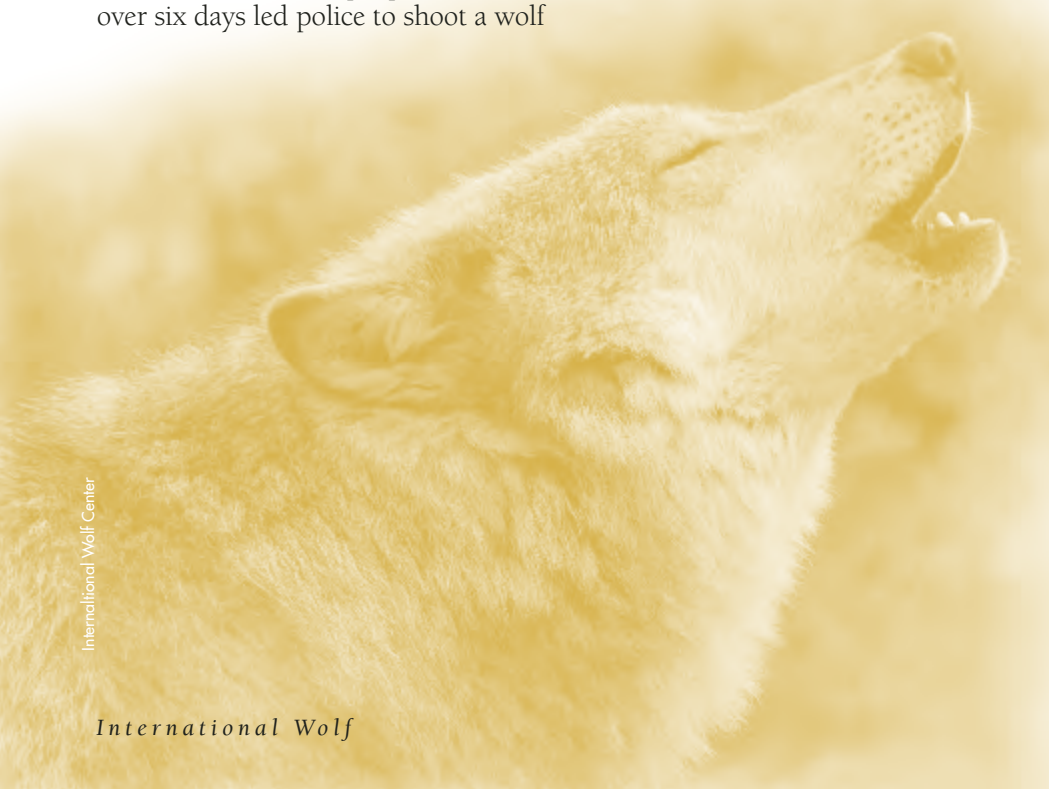
A deeply rooted hatred of wolves is blamed for poaching, which has halved the nation's wolf population since 2005, the Ministry of Forestry and Agriculture concluded after ruling out alternative theories. With licensed culling, only nine wolves would have been killed. Under scrutiny by the European Commission, Finnish police have ramped up investigations, including monitoring phone traffic, but cite an underlying conflict that needs to be worked out.

SWEDEN:

At least 450 wolves are necessary to achieve favorable conservation status in Sweden, according to predator investigator Lars-Erik Liljelund, former director general of the Environmental Protection Agency. Today there are an estimated 250 wolves.

Sweden continues to strengthen genetic quality through a captive-breeding program and planned to transplant pups from parks to wild dens this year. Discussions with Russian wolf management officials seek to introduce Russian wolves to the Swedish genetic program.

Meanwhile, the Nature Democrats, a new political party, has just one issue:



International Wolf Center

International Wolf Center

Martin Harvey

the elimination of wolves. The party seeks to influence predator policies, and according to one member: "We don't want to eradicate wolves. We just don't want them in Sweden."

GERMANY:

Scientists of the Senckenberg Research Institute in Görlitz have investigated the feeding habits of wolves for eight years, finding livestock comprises less than one percent of the diet. In 3,000 samples of wolf scat, wild ungulates accounted for more than 96 percent of the prey.

The United Kingdom's online *Telegraph* reported in January that while 11 years ago there was a single pack, there are now 12 packs in Germany, with an estimated total population of 100 wolves. The return of the wolf to all of Germany is now "unstoppable," according to the head of the Federal Agency for Nature Conservation, Beate Jessel, who added, "Wolves can fit into the most varied habitats." Two packs, comprising 18 animals, are said to live 65 kilometers (40.4 miles) from Berlin.

But problems have emerged, with wolves killing sheep in Mecklenburg and western Pomerania as well as Bavaria. Wolves are also being killed, at least 17 died on roads since 2001, while hunters have illegally shot at least 13 since 1990.

TAJIKISTAN:

Radio Free Europe reports wolf attacks on people in the southeastern part of this country, one an 89-year-old woman (her attacker was chased off by a neighbor's cries). Blamed are heavy snows and the 2006 end of a local government program to reduce wolf numbers. Environmental Protection is coordinating an armed operation to "neutralize" wolves in the region.

RUSSIA:

The growing population of gray wolves in the northern republic of Yakutia has killed more than 1,700 domestic reindeer, more than 100 horses and 5 cows since the beginning of 2012, it was reported in April. The wolf population, currently about 4,000, exceeds the target level by at least threefold and is increasing by about 500 new wolves each year. The annual damage to livestock is approximately 147 million rubles ($4.7 million U.S.). Local authorities have allocated 17.75 million rubles ($568,000 U.S.) this year to control the wolf population.

ETHIOPIA:

Wolves here are threatened by frequent rabies outbreaks, spread in part by dogs. Researchers are looking for ways to preserve the wolves' numbers (it is believed there are 400 left) and diversity by ramping up a vaccination and semen-collecting effort, according to *Cosmos*, a literary science magazine based in Australia. Cryopreservation and an in-country captive breeding program, it is hoped, will keep this national symbol from becoming "the next dodo."

CHERNOBYL:

The name speaks to nuclear devastation, but since the area was evacuated following the 1986 disaster that bears its name, wildlife, including rare and endangered species, has rebounded. A PBS (Public Broadcasting Service) *Nature* documentary aired in October 2011 called "Radioactive Wolves" documents life in the 1,100-square-mile (2,849-square-kilometer) "exclusion zone" that straddles the border of Ukraine and Belarus in the former Soviet Union. The show can be seen (in the United States) and the DVD can be purchased at http://www.pbs.org/wnet/nature/episodes/radioactive-wolves.

Image of Arabian wolf captured by trail camera in Eastern Yemen on February 27, 2012.

Foundation for Endangered Wildlife (Yemen)/Foundation for the Protection of the Arabian Leopard in Yemen

THE MIDDLE EAST:

Green Prophet, an online resource described as a sustainable voice for green news from the Middle East, notes the Iranian wolf (*Canis lupus pallipes*) can be found in dwindling numbers throughout Iran, Israel, Turkey and Saudi Arabia.

Turkey is home to 1,500 or so wolves, and the government has collaborated with the environmental group KuzeyDoga to monitor a pair to better understand habitat needs and minimize human-wolf conflicts.

Meanwhile, the Arabian wolf (*Canis lupus arabs*) can be found in Israel, Iraq, Jordan, Oman, Saudi Arabia, Yemen and possibly in some of Egypt's Sinai Peninsula. But only Oman and Israel give them legal protection.

Arab News reported that farmers shoot, poison or trap Saudi Arabia's Arab wolves, and hunters kill wolves they come across in remote desert areas. As a symbol of their "heroic act," they exhibit the bodies of wolves at public places or hang them from electric posts or signboards.

This view holds also in Jordan, despite the wolf's role in controlling the wild boar population, which threatens to destroy farm crops if not checked. Jordan's wolves, despite being listed by the Convention on International Trade in Endangered Species (CITES) and listed as needing protection by the Royal Society for the Conservation of Nature (RSCN), are hunted, poisoned and run over, and therefore, they are shrinking in number.

In Oman rising wolf numbers are attributed to a hunting ban. In Israel, although wolves prey on livestock—particularly near the Golan Heights—extraordinary measures protect them. In addition to paying for electric fencing and guard dogs, the government offers partial compensation for depredation damages.

INDIA:

The *Times of India* reports that a four-month research expedition in the Banas region of Greater Ranthambhore in Rajasthan has confirmed the presence of the Indian wolf, a Schedule 1 species, meaning it receives the greatest protection. Facing immediate threats of mining, construction and cultivation, a 30-square-kilometer (11.6-square-mile) tract there is now "protected community land."

Pooja Rathod, a research volunteer student from Fergusson College, notes the Indian grey wolf primarily inhabits human-dominated agro-pastoral landscapes, suggesting large populations of the wolves are outside protected areas, making their conservation a challenge that needs to be holistic.

There is evidence the Indian wolf belongs to an ancient group that has not mixed with other wolves, making it genetically different from all other wolves, which is all the more reason to prioritize conservation efforts, Rathod said.

ARMENIA:

In the Caucasus, a cold snap last winter saw wolves targeting livestock. Reports put the number of wolves in the country between 500 and 700. The Armenia Ministry of Nature Protection further claims wolves are a threat to endangered species. The government in February announced it would pay hunters 100,000 drams ($250 U.S.) for each wolf hide—a hefty sum for rural Armenians. About 170 wolves have been killed as a result.

Some environmentalists disagree with the approach, questioning the government's numbers and calling for culling only as a last resort. "Instead of rewarding hunters, the government should give money to villagers to fortify their barns and purchase fences and dogs," one suggested. Poaching, deforestation and mining are seen as contributing to the disruption of the wolves' natural food chain.

CANADA:

Genetic testing confirmed an animal killed in April by a hunter in northern New Brunswick was a wolf, the first confirmed sighting in the province in 150 years. The 90-pound (41-kilogram) canine had both gray and eastern wolf DNA. The carcass will be examined to determine whether it was a wild or a captive-raised animal. An 82-pound (37-kilogram) canine shot in March in Newfoundland was also found to be a wolf. ■

Tracy O'Connell is an associate professor of marketing communications at the University of Wisconsin-River Falls and a member of the International Wolf Center's magazine and communications committees.

Personal Encounter

Protecting Our Cache From Wolves

by Paul Shurke

Since we have a kennel of Inuit sled dogs here in northern Minnesota wolf country, I was more than a little curious about the video clip a friend sent titled "Wolves Attack Inuit Dogs" (www.youtube.com/watch?v=nVU02fVEKzM&feature=related). The clip, filmed by French mushers on Ellesmere Island, shows wolves romping around the mushers' dog teams and, with dramatic music, seems to build toward a pending attack. But that never happens. Instead the wolves appear to be simply curious about their canine cousins new to the neighborhood.

That's the same phenomenon we've experienced on our Ellesmere dogsled treks. On a few trips, a wolf pack would show up almost like clockwork wherever the ski plane dropped our dog teams and us. The pack would then shadow us throughout our journey—an immense source of intrigue and entertainment for our team members and dogs alike. They never showed aggression. In fact, on one trek, a male wolf attempted to mount a female sled dog.

But they did get into mischief—once.

In January 1986, Will Steger, Ann Bancroft, myself and other members of our North Pole team trained in northern Ellesmere before departing across the Arctic Ocean. There on a frozen fiord, we practiced threading our 1,000-pound (455 kilograms) sleds through the torturous rubble piles of shattered pack ice. Nearby, seven lovely white wolves, the resident pack, sat on their haunches watching our efforts.

Occasionally they'd engage in antics of their own by attempting to race up the steep walls of a massive iceberg locked in the center of the fiord. The towering spire of blue-green ice looked like a mini-Matterhorn. After a running start, the wolves would scramble up its near-vertical walls until they'd lose purchase and slide back, only to try again. It reminded me of the legend of Warrior Hill in the Boundary Waters Canoe Area Wilderness, where young braves were said to test their prowess by seeing how far they could race up the smooth granite slope before sliding back into the waters of Lac La Croix.

Courtesy of Paul Schurke

Courtesy of Paul Schurke

Above: From left to right: Ann Bancroft, Brent Boddy, Will Steger, Paul Schurke, Geoff Carroll, Richard Weber. Not pictured: Bob McKerrow

Left: Day one–launching the expedition from Ellesmere Island.

Jim Brandenburg

One wolf succeeded in its quest and reached a small notch high up on the iceberg. Photographer Jim Brandenburg, who was with us to cover the launch of our expedition for *National Geographic* magazine, snapped a picture that caught the precious moment: a wolf bathed in a shaft of sunlight in a regal "king of the mountain" pose. We cheered the wolf's success, pleased to have shared this arctic realm with it and its packmates.

But the next day the tide turned. We were awakened abruptly by scuffling and growling on the hillside above our tents. I looked out the door and saw the wolf pack thrashing through our cache of expedition supplies stowed along a gravel airstrip. Bolting from my sleeping bag, I raced out of our tent and yelled for my tent mates to follow. That three-ton cache was our lifeline—every unit of food and fuel had been rationed to the ounce to sustain our eight team members and five teams of sled dogs for our 60-day shot at reaching the pole. A resupply wasn't an option, especially since the nearest village was 500 miles (805 kilometers) away.

Seven wolves in a feeding frenzy were tugging and tearing at our flats of pemmican, butter and cheese. In a blind rage, we lunged into the mayhem kicking and swinging. Amazingly, the wolves simply backed off, stunned. They could have shredded us in an instant. Instead they stared at us with heads cocked and an expression that said, "Are you some kind of idiots?"

The wolves sauntered away as we took inventory of the damage. Fortunately, the loss was light. The packaging was punctured and much of the frozen food had been clawed and chewed. But we'd caught them in time—they'd eaten only a few pounds (less than 2 kilograms). We congratulated ourselves at dodging a bullet and pondered our foolhardiness at challenging them.

But that evening the incident became worrisome again. During our nightly radio chat, we reported the mishap to our base camp on Baffin Island 1,000 miles (1,609 kilometers) away. A Royal Canadian Mounted Police officer who was listening responded with concern. He said some arctic fox on Ellesmere were known to be rabid and wondered if it was possible some wolves were as well. What would we do, he asked, about our precious rations that might now be contaminated with rabid wolf saliva?

Fortunately a solution presented itself. Our team member Brent Boddy announced that he'd recently had the rabies antidote series following an incident with a feral dog in his arctic village. He volunteered to eat the contaminated rations. So we set about painstakingly gouging from the frozen blocks every tooth-punctured piece of food and placed them in a bag as Brent's rations for the trek. Brent was our hero and his leering comments about "shape-shifting into a werewolf" during our polar trek probably gained him and his sleeping bag a little extra room in our tent. ■

Paul Shurke is a member of the International Wolf Center's board of directors. He is co-owner of Wintergreen Northwoods Apparel and Wintergreen Dogsledding Lodge, based in Ely, Minnesota. He is an author, arctic adventurer and leading authority on cold-weather safety, winter wilderness travel and camping. Paul joined the board in 1989 and has since sponsored many wilderness adventure trips to benefit the International Wolf Center.

Wild Kids


International Wolf Center

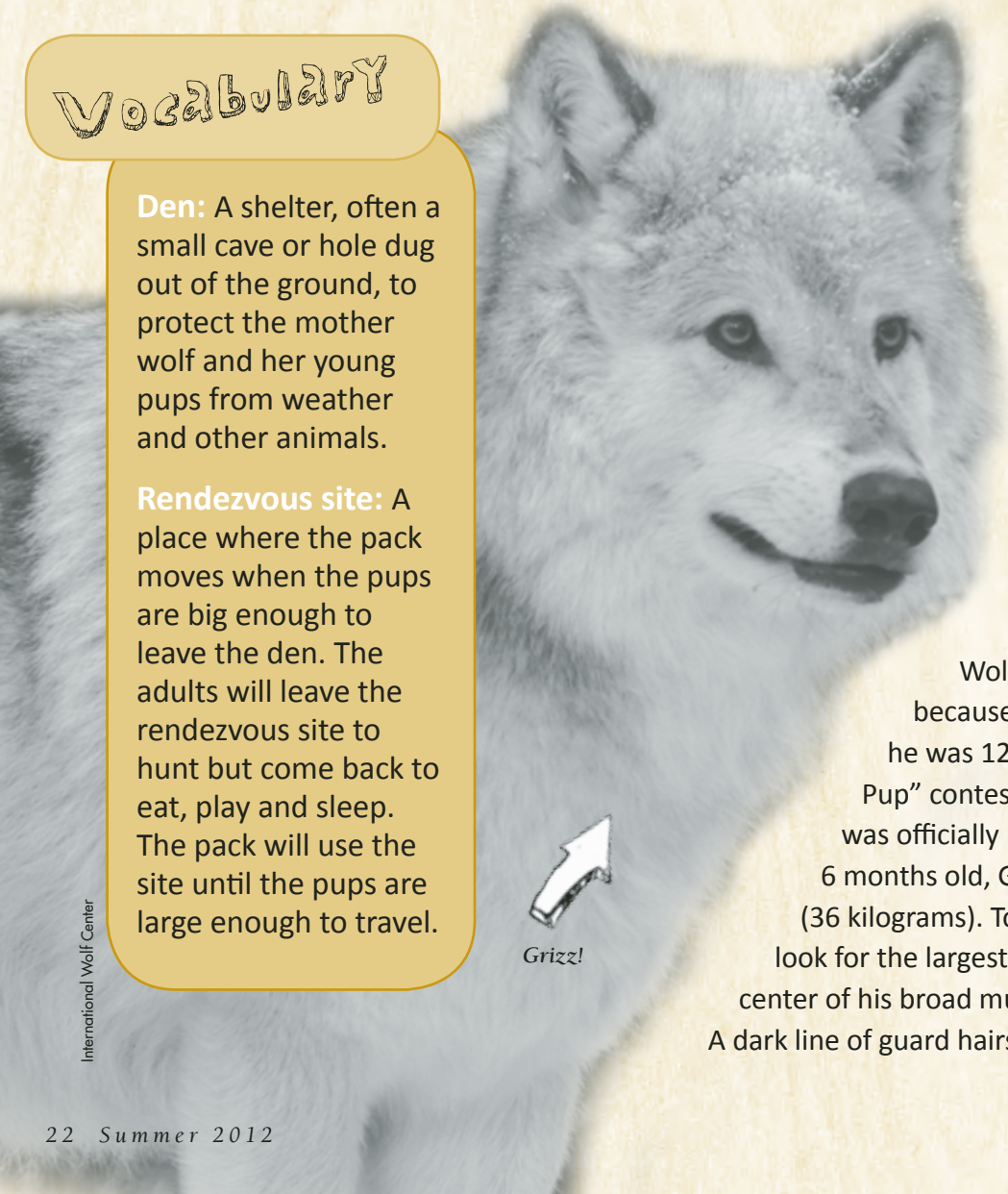
Notes from the Field

Wolf pups born in the wild are growing fast this time of year. They can weigh anywhere between 28 and 70 pounds (13 and 32 kilograms). That is a big difference! Wolf pups are born in late April or early May, so they are 5 to 6 months old by October. They are also very active and are no longer at their den. They have spent the summer at a rendezvous site with the adult wolves and are starting to join the pack on short hunts, often returning to the rendezvous site by themselves. Soon they will be nearly fully grown, and it will be tough to tell a pup from the pack's adult wolves. ■

Vocabulary

Den: A shelter, often a small cave or hole dug out of the ground, to protect the mother wolf and her young pups from weather and other animals.

Rendezvous site: A place where the pack moves when the pups are big enough to leave the den. The adults will leave the rendezvous site to hunt but come back to eat, play and sleep. The pack will use the site until the pups are large enough to travel.


Grizz!

International Wolf Center

Meet the Pack

Grizzer

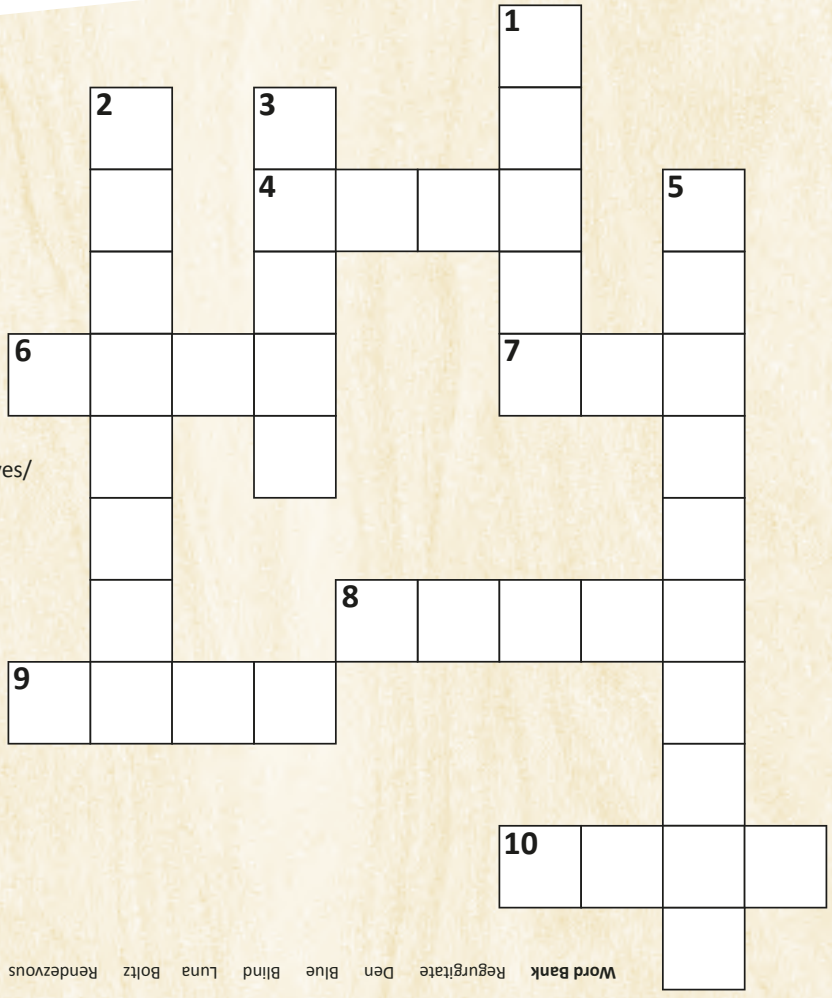
Grizzer was born May 5, 2004, and has since been one of the International Wolf Center's ambassador wolves.

Grizzer has always been big. The Wolf Care staff nicknamed him "Grizz" because he looked like a grizzly bear cub when he was 12 days old. Voters in the "Name the Pup" contest voted to keep his nickname. He was officially named Grizzer. By the time he was 6 months old, Grizzer weighed more than 80 pounds (36 kilograms). To identify Grizzer in videos or photos, look for the largest wolf, not in height but in width. The center of his broad muzzle shows some white guard hairs. A dark line of guard hairs extends up his forehead.

"When I first visited the International Wolf Center, Maya, Grizzer, Malik and Shadow still made up the Exhibit Pack. I have followed the pack for a long time now—when it's getting pups, who's retiring and the social hierarchy within it as well. When Maya passed away in March 2011—over a year ago now—I was very sad about what had happened. I drew a picture of her a few weeks later and sent it to the International Wolf Center. I enjoy spending time with my dogs, musking, drawing, drumming and being outdoors. I will be entering ninth grade this year at Minnetonka High School, in Minnetonka, Minnesota."
—Alika Rutter

Cris Cross

Fill in the squares with the answers or definitions using the clues below. Use the word bank at bottom, or visit www.wolf.org/wolves/learn/basic/biology/pupdevelopment.asp if you need help!



Across

4. Our female ambassador pup's name.
6. When pups no longer drink milk from their mother and begin eating meat.
7. Where the pups are born.
8. Our male ambassador pup's name.
9. When pups are born, they can't hear.
10. The color of a pup's eyes when it is born.

Down

1. The kind of hair that becomes apparent on wolf pups at 8-10 weeks of age.
2. The developmental stage right before a wolf pup becomes an adult.
3. When pups are born, they can't see.
5. The site pups are taken to after the den.

Word Bank Regurgitate Den Blue Blind Luna Boltz Rendezvous Deaf Juvenile Guard Wean

A Look Beyond

Noninvasive Sampling Informs Today's Wildlife Research

(This is not your grandparents' wildlife biology–Part II)

by Nancy jo Tubbs, chair of the International Wolf Center

At one time, scientists killed and took the entire animal to study it. As noninvasive sampling techniques evolved, biologists could minimize harm to the animal being studied and survey animal populations in ways never before possible. The work became safer for researchers and reduced the need to trap animals. Noninvasive sampling techniques include DNA analysis, camera trapping and remote sensing.

MOLECULAR GENETICS

(First made practical in the 1980s)

The television crime show CSI has nothing on the world of wolf biology when it comes to DNA analysis. In genetic sampling, a small sample of tissue is taken to obtain DNA for study. Noninvasive methods involve studying hair, urine, shed skin and intestinal cells in feces. It's not necessary to catch, handle or even see the wild animal to estimate the survival rate of a population or determine genetic diversity. Forensics studies can be used, for example, to determine whether wild wolves have hybridized with coyotes or dogs.

POPULATION VIABILITY ANALYSIS (PVA)

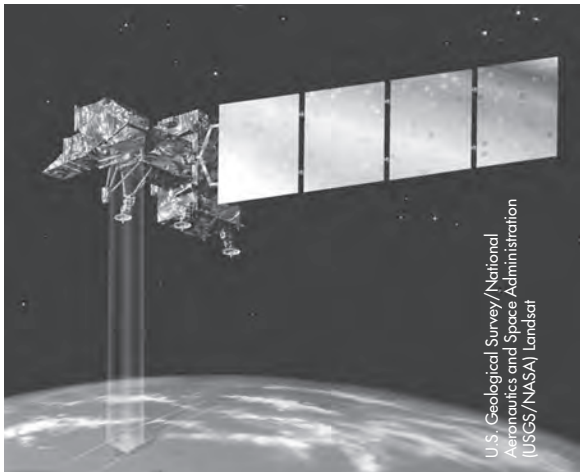
(First used in the 1970s to predict grizzly populations in Yellowstone)

Want to know the probability of an animal's extinction within a number of years? PVA input data includes variables such as population trends, prey species, habitat change and diseases. The results of these studies are used in endangered species recovery plans and help wildlife managers assess the potential of various management scenarios.

AUTOMATIC TRAIL CAMERAS

(Early trail cameras were used in 1877)

Stationary cameras are automatically triggered by an animal's motion to take time-logged photographs. Using "camera trapping," biologists can estimate the number and density of animals in an area.

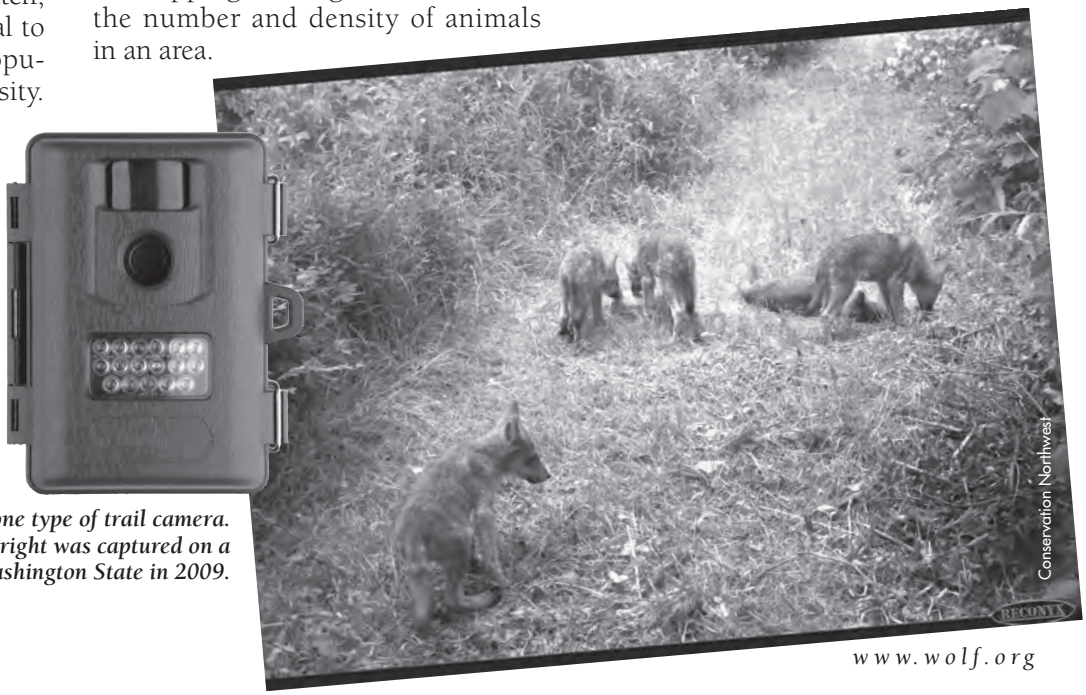


U.S. Geological Survey/National Aeronautics and Space Administration (USGS/NASA) Landsat

REMOTE SENSING

(Wilbur Wright first took an aerial photo in 1909)

To view and measure the changing characteristics of ecosystems, scientists use aerial and satellite-based photos of large areas taken over time. Images captured from these flights are fed into computer programs that analyze variations, which might have been caused by climate change, floods and even indirectly by wolves that have been reintroduced, such as those in Yellowstone National Park. Research teams on the ground can investigate more closely to analyze the cause of the changes shown in the remote sensing data. ■



Conservation Northwest

Shown is one type of trail camera. The image to the right was captured on a trail cam in Washington State in 2009.

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Minneapolis, MN 55427

UNFORGETTABLE *Group Visits*

Experience the thrill of tracking radio-collared wolves, snowshoe to a wolf-kill site, howl to a nearby pack, but don't be surprised if they howl back!

These are just some of the unforgettable activities your group can experience at the International Wolf Center in Ely, Minnesota. Packages include:

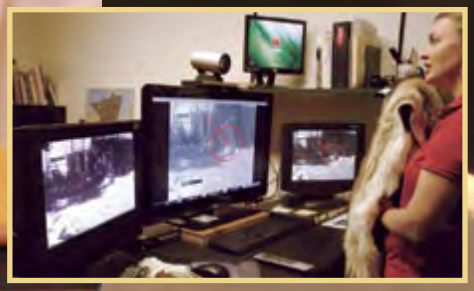
- Day Trips
- On-Site Programs
- Overnight Trips
- Field Trips
- Specialty Activities

Perfect for scouts of all ages, seniors groups, schools, clubs, corporations and organizations and birthday parties.

Make your group visit reservations today at www.wolf.org or call Jess at 218-365-4695 ext. 28.

"It was the coolest thing ever!"

WolfLink is a global educational program designed to bring the latest scientific facts about wolves to schools via two-way videoconferencing technology.



WolfLink curriculum can be customized to meet your classroom age range and lesson plan focus.

REGISTER TODAY
www.wolf.org/wolves/learn/wolflink.asp 800-359-9653