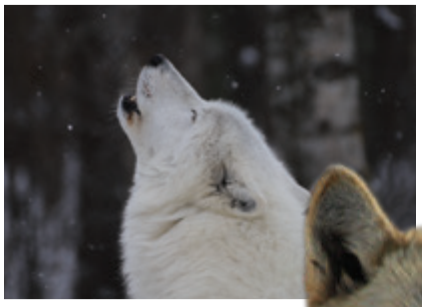
INTERNATIONAL WOLF

A PUBLICATION OF THE INTERNATIONAL WOLF CENTER
WINTER 2023

Give the Gift of Adventure



Our expert wolf educators have developed challenging and memorable programs for you to enjoy in Minnesota's northwoods. So grab your friends and family and make memories that will last a lifetime!

Art with the Pack | January 28

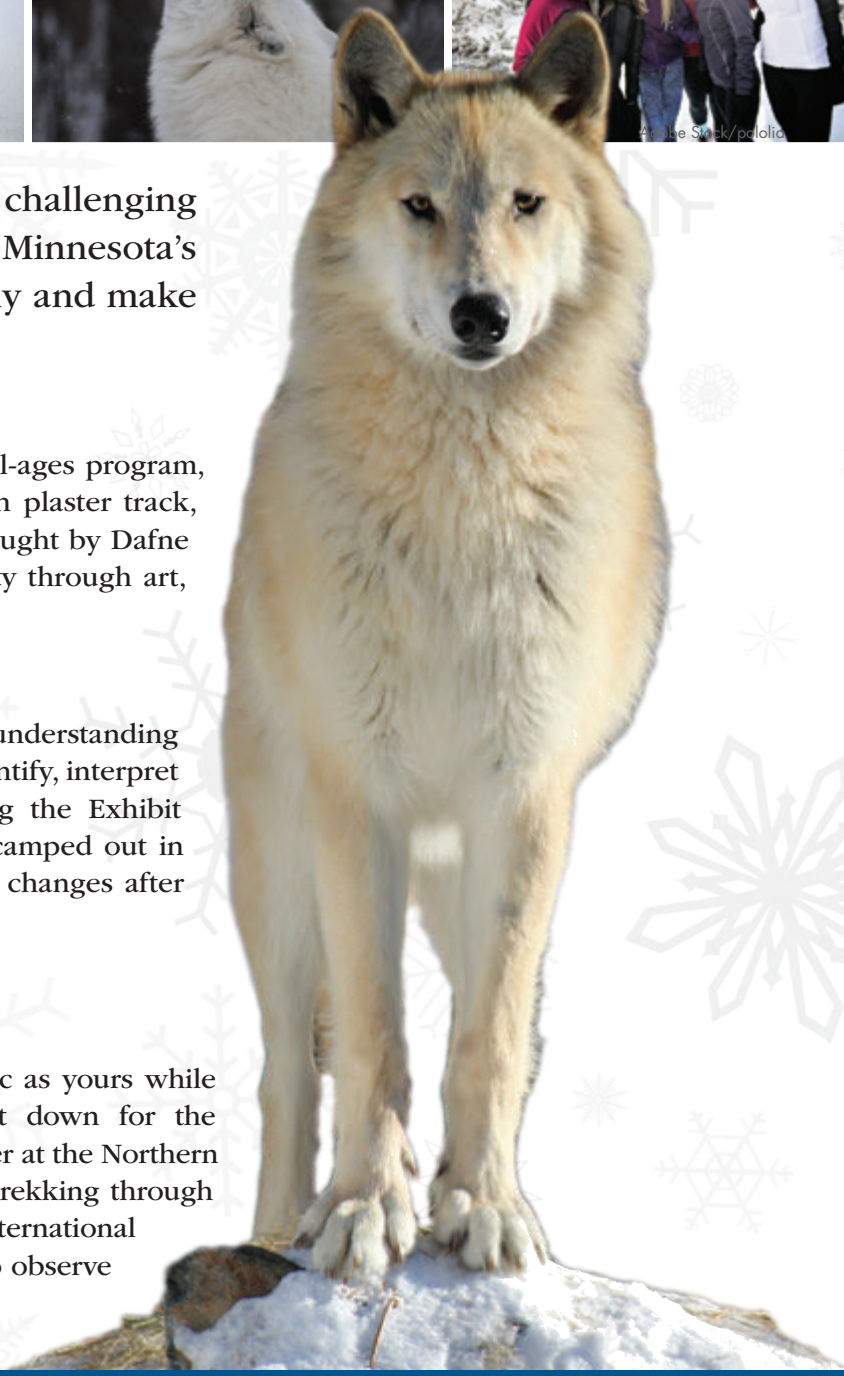
Come enjoy wolf-themed art activities galore! In this all-ages program, you will design your own wolf mask, create your own plaster track, build a mystery beast, and much more. Enjoy a class taught by Dafne Caruso, become a master at capturing the wolf's beauty through art, and learn more about these mysterious predators.

Wolves After Dark | February 3-4

Want to help the Center's wolf care team gain a better understanding of pack dynamics? Enjoy an evening learning how to identify, interpret and record different wolf behaviors before observing the Exhibit Pack's weekly carcass feeding. Then spend the night camped out in the Center's auditorium and see if the pack's behavior changes after nightfall!

Wolves and Women's Weekend: Northwoods Winter Adventure | March 8-10

Enjoy the company of women whose lives are as hectic as yours while learning about wolves and the northwoods. Slow it down for the weekend—relax with some wine and cheese as we gather at the Northern Tier High-Adventure Canoe Base for dogsledding and trekking through the beautiful, snowy northwoods. Then return to the International Wolf Center to attend our What's for Dinner? program to observe our ambassador wolves feeding on Saturday evening.



For more information, and to register, visit WOLF.ORG

INTERNATIONAL WOLF

International Wolf Center

VOLUME 33, NO. 4 THE QUARTERLY PUBLICATION OF THE INTERNATIONAL WOLF CENTER **WINTER 2023**

The Status of Gray Wolf Reintroduction to Colorado: A Tale of Conservation and Collaboration

In November 2022, Colorado voters said "Yes" to wolf reintroduction, and the *Colorado Wolf Restoration and Management Plan* was approved in May, 2023, setting the stage for reintroduction of gray wolves in Colorado by December 31, 2023. The plan developed by Colorado Parks and Wildlife provides a roadmap for the successful restoration while addressing potential challenges and concerns.

By Eric Odell

Discovering Maned Wolves: The Maned Wolf Project Introduces a Little-Known South American Canine

The maned wolf is South America's largest canine and shares many gray wolf traits despite being omnivorous. About 900 of them remain in Argentina, where this author traveled for adventure, research, and remarkable views of this elusive animal, whose favorite prey is small rodents, in the relatively new Ibera National Park. Here, she details her foray with field coordinator Augusto Distal, head of the Maned Wolf Project.

By Nancy Gibson

Remote Cameras Have Changed, Improved Biology Research for 100 Years

In 1906, *National Geographic* published wildlife photos for the first time—images made possible by George Shiras III, the first to use trip wires to trigger remote cameras and capture close-ups of animals in the wild. Since then, advancements in remote camera technology have improved biological research in fascinating ways and improved public understanding of both the beauty in nature and the challenges wild animals overcome.

By Joseph Bump

On the Cover

Photo Credit: Howell Nature Photography
https://www.howellnaturephotography.com/
IG howellnaturephotography

A young member of the Wapiti Lake Pack along the banks of the Madison River in Yellowstone National Park calling to its pack members who were not yet visible. "We were close enough that the sound reverberated through us," photographer Stacy Howell said. "The pack answered and a few minutes later they emerged from the treeline."

Departments

INTERNATIONAL
WOLF

Publications Director
Chad Richardson

Graphics Coordinator
Carissa L. Winter

Consulting Editor
Kristine Chapin

Technical Editor
Dr. L. David Mech

Graphic Designer
Tricia Austin

International Wolf (1089-683X) is published quarterly and copyrighted, 2023, by the International Wolf Center, 7100 Northland Circle N, Suite 205, Minneapolis, MN 55428, USA.
email: internationalwolf@wolf.org.

Publications agreement no. 1536338

Membership in the International Wolf Center includes a subscription to *International Wolf* magazine, discounts on programs and merchandise, and free admission based on the membership level you select. See wolf.org for complete details.

Membership levels (in U.S. dollars):

$50	$125	$500
$75	$250	$1000

For memberships outside the United States, please add an additional $15 for postage.

Please mail membership payment to:
International Wolf Center Administrative Office,
Attn: Membership, 7100 Northland Circle N,
Suite 205, Minneapolis, MN 55428, USA.
Contact the membership department with questions:
763-560-7374 ext. 2270 or membership@wolf.org.

International Wolf is a forum for airing perspectives, science-based information and personal experiences about wolves. Articles and materials printed in *International Wolf* do not necessarily reflect the viewpoint of the International Wolf Center or its board of directors.

International Wolf welcomes submissions of personal adventures with wolves and wolf photographs. Prior to submission of other types of manuscripts, address queries to Chad Richardson, publications director.

PHOTOS: Unless otherwise noted, or obvious from the caption or article text, photos are of captive wolves.

International Wolf is printed entirely with soy ink. We encourage you to recycle this magazine.

A Melancholy Journey

I recently read *Wanderer, An Alaskan Wolf's Final Journey* by Tom Walker, which follows the incredible journey of Wolf 258, a collared male, through Alaska and Canada. While the book is compelling and well written (see review later in this issue), I finished the story feeling vaguely sad. Unlike most fictional stories, this book (spoiler alert) does not close with a happy ending for Wolf 258. The journey this "wandering wolf" took was impressive at nearly 3,000 miles, but likely driven by hunger, and ultimately ended with him starving to death.

This story is not unique in the wolf world. Finding and hunting prey is challenging for wolves even under the best circumstances with a full pack working together. For a lone wolf with only one set of eyes, ears, teeth and claws, everything becomes exponentially more difficult. Starvation is a possibility.

It is not lost on me that when wolves are reintroduced into places like Wyoming, North Carolina and (soon) Colorado, we are not releasing them to "wolf adventure camp" but instead placing them directly in the path of a deadly obstacle course. Some challenges, like finding food, establishing territory and raising pups, have been faced by wild wolves for millennia. Other challenges, such as highways, cattle ranches, garbage dumps and barbed-wire fences are newer on the landscape and make the road to survival that much bumpier.

Understanding the struggle that wolves face every day increases my respect and awe as I consider their persistence and resilience. While I know that many wild animals face similar challenges, wolves seem to have a unique "spark" for survival that has spurred their remarkable population recovery and drives them to incredible feats—to hunt animals ten times larger than themselves; to live in varied and harsh conditions, from the deserts of Mexico to the frozen tundra of the Arctic; to protect their pups against threats such as grizzly bears. And sometimes a wolf will disperse for hundreds or even thousands of miles in search of a territory it can call its own.

For Wolf 258, the journey itself is inspiring, even if the ending is bittersweet. ■

Grant Spickelmier
Executive Director

The Status of Gray Wolf Reintroduction to Colorado

A Tale of Conservation and Collaboration

Colorado Parks and Wildlife

Adobe Stock / pavelpvsko

BY ERIC ODELL

Direct democracy has been used for the first time to initiate restoration of wolves. The citizens of Colorado voted, and the result is that Colorado Parks and Wildlife (CPW) has developed a plan to restore and manage wolves and will soon begin a multi-year process to reintroduce the species to the state.

Planning for the eventual reintroduction of wolves to Colorado has been a momentous endeavor. Led by CPW, various stakeholders and agencies have collaborated to make this conservation effort a reality over the past few years. This article delves into the intricate process, the role of different entities and the milestones achieved thus far.

The Vote Process and Stakeholder Engagement:

Beginning in the summer of 2019, a citizen group circulated petitions asking voters to place an initiative on the Colorado ballot for the November 2020 election. This petition asked whether the Colorado Parks and Wildlife Commission should develop and implement a plan to restore gray wolves west of the Continental Divide in Colorado by December 2023. More than 215,000 signatures were turned in to the Colorado Secretary of State for certification in January 2020, far surpassing the required minimum. After certification, this effort became known as Proposition 114, ensuring that the issue would appear on the November 2020 ballot.

Despite initial polls indicating that Proposition 114 had overwhelming support, it passed by just 50.91% of the voters, with 1,590,299 in favor of the proposition and 1,533,313 opposing it. The majority of votes came from the population-centric Front Range, many miles east of where wolves will be reintroduced. When the measure passed, it became state law and initiated a comprehensive planning process.

Colorado Parks and Wildlife staff has been working hard since Proposition 114 passed in November 2020 to develop a successful reintroduction plan that takes into consideration the benefits and challenges that come with sharing the landscape with wolves. As an initial step, CPW held public meetings throughout the state in 2021, collecting feedback from more than 3,400 Coloradans. They included regional open houses, geographic focus groups, tribal consultations, interest-based focus groups, statewide virtual town halls and an online comment form.

Following the initial public scoping, CPW established a Stakeholder Advisory Group (SAG) and a Technical Working Group (TWG). The SAG comprised individuals representing a wide array of interests and perspectives pertaining to wolves. This balanced group included ranchers, conservationists, wildlife biologists, hunters, landowners and county commissioners, among others. The advisory group's perspectives and expertise were instrumental in informing considerations and addressing potential concerns or conflicts as agency staff developed the reintroduction strategy. As all SAG members were based in Colorado, their monthly meetings were open to the public and occurred in person—except for a couple that were required to be virtual because of the COVID pandemic—throughout the state. Statements from the public were a regular agenda item each month.

Despite polling indicating that Proposition 114 had overwhelming support, it was passed by just 50.91% of the voters. As an initial planning step, CPW held public meetings throughout the state in 2021, collecting feedback from more than 3,400 Coloradans.

Whereas the SAG addressed more social and political aspects of wolf restoration and management, the TWG was a science-based consortium geared toward the technical aspects. Members included those with direct experience in wolf management, wolf reintroduction, conflict reduction, and policy pertaining to agriculture, wildlife management and outreach. This expert group included many members who were directly involved in wolf restoration in Yellowstone National Park and central Idaho in the mid-1990's.

Planning staff solicited input on wolf restoration logistics, conflict minimization, depredation compensation programs, recovery goals, wolf management, outreach, education and funding from TWG and the SAG. Following 18 months of sometimes difficult conversations and striving to reach consensus, CPW staff began developing a science-based plan that included components voiced by the public, the TWG and the SAG throughout the process.

The Colorado Parks and Wildlife Commission, a citizen board that sets policy and regulation, has also been involved in ensuring a balanced and scientifically sound approach to the wolf reintroduction planning process.

The Draft Wolf Restoration and Management Plan was presented to CPW on December 9, 2022. The commission then held a series of public meetings where Coloradans could express their values and concerns with the draft plan. Those aspects were discussed by commission members, who recommended edits. The *Final Colorado Wolf Restoration and Management Plan* was approved by the Colorado Parks and Wildlife Commission on May 3, 2023.

By balancing the needs of diverse stakeholders, fostering scientific research and promoting public awareness, this endeavor aims to create a harmonious coexistence between wolves and the people of Colorado, ensuring a thriving ecosystem for generations to come.

United States Fish and Wildlife Service (USFWS) 10(j) Process:

Another key aspect of the wolf reintroduction process in Colorado is the involvement of the United States Fish and Wildlife Service (USFWS). As wolves are federally protected under the Endangered Species Act (ESA), the USFWS has management authority for the species. Through a federal rule making process, the USFWS has been pursuing the designation of the Colorado wolf population as a nonessential, experimental population under Section 10(j) of the ESA. This tactic is similar to arrangements made for all other wolf restoration and other federally listed species reintroduction efforts throughout the country. Functionally, this designation allows a more pragmatic approach, providing additional management flexibility to benefit wolves, the agricultural community, and relations among agency staff and private landowners. CPW staffers believe that a 10(j) designation will increase the likelihood of the restoration program's success.

CPW paid for the process that the USFWS directed to develop an Environmental Impact Statement and Proposed Rule to designate the wolf population in Colorado as Nonessential, Experimental. This rule is expected to be final and effective in early December 2023, prior to any reintroduction.

Wolves Migrating to Colorado:

While these processes were underway, wolves began immigrating naturally to Colorado from Wyoming and Montana. These individuals traveled great distances to recolonize the species' historic range. First, a group of at least six animals turned up in northwest Colorado. Genetic analysis of scat collected from an elk-kill site indicated that there were siblings among the group, suggesting that reproduction had occurred somewhere near the Colorado, Utah and Wyoming borders. A den was never found. Later, a solitary female from the Snake River pack

Adobe Stock / htrnr

in Wyoming, with a functioning radio collar, was photographed in north central Colorado. After following her signal for several months, CPW staff later observed her traveling with a gray male that was subsequently captured and numbered 2101. These animals mated and produced the first litter of pups in Colorado in the spring of 2021.

The arrival of these naturally migrating wolves further emphasized the need for a structured and comprehensive reintroduction plan. Their presence demonstrated that Colorado's habitat is suitable and can support a thriving wolf population, reinvigorating the reintroduction efforts.

Wolf Reintroduction by December 31, 2023:

With the collective efforts of stakeholders, government bodies and agencies, the stage is set for the reintroduction of gray wolves in Colorado to begin by the statutorily required December 31, 2023 deadline. The adopted *Colorado Wolf Restoration and Management Plan* (the Plan) developed by CPW provides a roadmap for the successful restoration while addressing potential challenges and concerns.

The Plan includes identifying suitable reintroduction areas, establishing monitoring and management protocols, implementing proactive measures to minimize human-wildlife conflicts and conducting ongoing research to evaluate the impact of reintroduction on ecosystems and communities.

Additionally, extensive public outreach and education initiatives are being undertaken to ensure that communities remain well-informed and engaged in the process. The success of the reintroduction effort hinges on the collaborative efforts of all stakeholders to foster coexistence between humans and wolves.

Efforts are underway by CPW to identify sources of wolves for capture and translocation to Colorado. Logistics of transport, release-site identification and other details are being finalized with the intent of reintroducing wolves before December 31, 2023. 2023 will be the first of 3–5 years of translocation efforts with approximately 10–15 wolves released each year.

Conclusion:

The reintroduction of wolves to Colorado will be a remarkable conservation undertaking that showcases the power of the public's voice, scientific collaboration and dedication to restoring ecosystems. The democratic process, the involvement of the SAG and the TWG, public input, Parks and Wildlife Commission oversight, work toward completion of the USFWS 10(j) designation, and the natural migration of wolves have all contributed to progress made thus far.

As Colorado marches toward the December 31, 2023 deadline to restore gray wolves to the state, the collective efforts of the involved entities continue to shape the future of wolf conservation. By balancing the needs of diverse stakeholders, fostering scientific research, and promoting public awareness, this endeavor aims to create a coexistence between wolves and the people of Colorado, ensuring a thriving ecosystem for generations to come. ■

Colorado's Wolf Restoration and Management Plan is available here:

https://cpw.state.co.us/learn/Pages/CON-Wolf-Management.aspx

Eric Odell is the wolf conservation program manager at Colorado Parks and Wildlife. Email: eric.odell@state.co.us

Adobe Stock / Danita Delimont

Discovering Maned Wolves

The Maned Wolf Project Introduces a Little-Known South American Canine

BY NANCY GIBSON

Photos by Augusto Distel

Suddenly the tall tufts of grass bent with the wind, and with it came rare, deep barks to my left and then a reply from straight ahead. My heart pounding, I quickly climbed an ant hill, peered over the tall grass and got my first glimpse of a maned wolf bounding across the Pampas grassland region of Argentina. That view had eluded me for years. I had seen tracks and scats. I had traveled to Brazil and Argentina to trek through their territory. But the relatively new Ibera National Park in northeast Argentina rewarded me with this prize view.

Established in 1998, the park is now 1.5 million acres—one of the most ambitious rewilding projects in South America. I met researcher Augusto Distel there in 2022. He is a core member of the "Rewilding Argentina" team that supports maned wolves, among nine other species, in an intense effort to protect and reintroduce them in habitat from which they were extirpated 70 years ago.

After reading about maned wolf observations in Ibera National Park (and after considerable effort) I succeeded in contacting Distel, and we met in the southern portion of the park. Despite a language barrier, we were able to establish our shared passion for this wild canine.

Distel explained that he had become captivated by maned wolves at age 11 after reading a magazine feature about them. In Buenos Aires, he encountered a maned wolf at a rescue and rehab center; in 2016, he brought the animal to Ibera National Park and released it with other maned wolves. It was never seen again. But after that, the park saw a lot of Distel, who later became the head of the expanding Maned Wolf Project. I was already hooked on this rare canine; now I wanted to help sustain its future with new technology (the Maned Wolf Project still relied on observations and the older VHF radio collars that require active checking for locations) and my experience with North American wolf research. Distel led our adventure, and soon we were bouncing along dirt roads looking for tracks and listening to fading radio collar signals.

The commonly called "maned wolf" (*Chrysocyon brachyurus*) is not actually a wolf; it's even in a separate genus. A Spanish explorer misnamed it because it reminded him of European wolves, and it now has 15 different names in separate languages. In Argentina, it is called Aguara Guazu. It weighs about 60 pounds (27 kg), stands close to 3.5 feet (106 cm) tall, and has long, thin, black legs and a dark red coat topped with a distinctive black mane. The appearance is unmistakable. It is South America's largest canine and shares many gray wolf traits.

Maned wolves now live in remnant areas of their original habitat in Brazil, Bolivia, Paraguay, Uruguay, Peru and Argentina. Approximately 900 maned wolves are thought to remain in Argentina. Like many global predators, these animals are victims of habitat loss and fragmentation, vehicle collisions and disease from domestic animals, but mostly human and livestock conflict. The maned wolf population, reduced to a fraction of its original range, has been declared an Argentine endangered species. And like most wild canines, it is steeped in myth and misunderstandings.

Large, widespread cattle ranches and agriculture still pose a significant challenge for maned wolves in Argentina. They are mistakenly thought to prey on livestock and even people, when in reality, they prefer large, native rodents. Those rodents are attracted to leftover animal feed, enticing the wolves to come close to the ranches. In addition, ranchers routinely burn grasslands to stimulate new grass growth for their cattle, but ill-timed fires destroy the maned wolves' dens, food sources and protective cover.

Yet, there is good news in a few Argentinian provinces. The maned wolf has a new status: "Natural Monument," which is a designation of unique value because of its rarity, aesthetic qualities, or cultural significance. Another bit of encouraging news is that some ranchers have aligned their prescriptive burns to avoid wolf-denning season.

Adventure, Research and Scientific Advancement

Recently, I purchased four GPS radio collars for the Maned Wolf Project with two more en route. Distel had live-trapped four maned wolves in a large,

hand-made wire cage in Ibera Park by placing a tempting chicken securely on a high shelf. (Researchers hoped a jaguar or cougar wouldn't get there first.) This contraption worked. Distel and his team replaced their old collars with these new tracking devices.

The field capture processing protocol resembles procedures used on wolves in the United States: blood draw, weight measurement, approximate age estimation and assessing general health.

GPS collars revealed the maned wolves' whereabouts each morning. Distel and I traveled in that general direction and kept updating the locations, eventually spotting the female Distel named Preta. (Researchers in Argentina name their animals, unlike the number-and-gender system used in the U.S.)

Preta was exploring the fire break that edges the tall pampas grass, with a large pup trailing close behind. This ad-hoc road minimizes annual fire damage and allows the wolves to travel faster and farther—but using it, they risk being exposed. Preta and her pup escaped into the tall grass, and we followed in hopes that they would rest during the heat of the day. I was hoping for more than a glimpse. According to Distel, Preta was tolerant of his presence, and he had been able to observe closely as Preta and her mate Malevo raised three pups a year earlier.

I thought the hike would be easy, but deep ruts and holes surrounded the large, thick, five-foot grass arranged in great tufts. It was onerous. We had to wear snake boots and zigzag through the terrain. Our best view was from the tops of the sturdy ant hills. Preta moved effortlessly, and soon other pups, almost full-sized, were following her lead. Once again, the viewing was brief.

Whereas GPS collars provided critical location data, this habitat made meaningful sightings difficult, so I brought two remote video cameras to enhance observations. We placed one camera at the crossroads of two known maned-wolf territories and the other camera near the collared pair that roam even more challenging terrain. Those cameras have allowed researchers to experience remarkable new views of dens, pup dispersals, pack behavior, movements and captured prey.

I saw Malevo for the next two days, but the final observation was the most memorable. Distel held the receiver high while he balanced precariously on a barbed wire fence. The receiver emitted a loud beep, and there was Malevo, trotting in our direction. He was unfazed by our presence; I was awestruck. I fumbled for my iPhone and recorded the event, basking in this experience. He crossed the road 30 feet in front of me, walked up a bank, and then to a small water hole, ignoring our obvious stares. His distinctive markings were in full view, with his black mane swaying atop his tall shoulder blades.

I took a sharp, deep breath and wondered why the maned wolf has been the subject of only 15 scientific papers. Most photographs come from zoos, and general knowledge remains scant and contradictory.

Their new collars revealed that maned wolves live in scent-marked territories, but interactions are possible with non-related maned wolves, sometimes as close as 325 yards away. These encounters may include territorial vocalizations, but seemingly no hostile consequences.

The collared wolves are known to travel up to 14 miles per day; distance may depend on food availability. Most of the time, the males travel alone, but sporadically visit their mates even after the pups are grown.

Females give birth to black pups with white-tipped tails in late May. The two collared females, Preta and Nancy (my namesake) had three and four pups,

I took a sharp, deep breath and wondered why the maned wolf has been the subject of only 15 scientific papers. Most photographs come from zoos, and general knowledge is scant and contradictory.

respectively. Distel and his crew found Preta's den nestled in very dense grass. He put a camera nearby and captured the first-ever photos of pups denning, nursing, eating regurgitated morsels and playing! Their father also brought food. Fortunately, the male was at the den when a powerful feral pig arrived, ready for battle. The parents successfully defeated the intruder, and all four pups survived.

These rare images captured previously unknown behavior, enhanced scientific knowledge and allowed Distel to apply his new knowledge to expand maned wolf territories in other South American countries.

The pups dispersed at 10 months of age; their whereabouts are known only by tracks, sounds and an occasional sighting. We expect to collar one yearling from each pack, allowing for more behavior research. Distel hopes, "...that each day of maned wolf revelations will get us a step closer to recolonizing new parts of Ibera National Park and Argentina. Their presence strengthens the ecological balance of controlling rodents, dispersal of fruit seeds and magnifies their unique role in nourishing wildlands."

None of this work could have been done without the personal gift and expertise of Kris and Doug Tompkins. Tompkins Conservation collaborates with public and private partners to acquire wide swaths of land in Argentina and Chile. These millions of acres provide opportunities for an ecological makeover for wildlife and plants.

This Rewilding Argentina effort conducts and supports the recolonization of the maned wolf in addition to reintroducing jaguars, ocelots, giant anteaters, giant river otters, pampas deer, collared peccaries, red and green macaws, bare-faced curassows and pumas. The Tompkins' generous and critical support allows wildlife to roam their ancestral homeland once again.

The human element in wildlife survival is more complex. Restoring and protecting wildlands comes with a burden. Food, security, community involvement, scientific knowledge, communication and human tolerance hold the key to sustained population of many animals, including maned wolves. ■

Nancy Gibson is a founding member of the International Wolf Center, an author, winner of two Emmys, and co-chair of the Legislative Citizen Commission on Minnesota Resources. For more information about maned wolves visit www.rewildingargentina.org.

Remote Cameras Have Changed, Improved Biology Research for 100 Years

BY JOSEPH BUMP

Photos courtesy of Voyageurs Wolf Project

More than 100 years ago, George Shiras III pioneered remote wildlife photography to capture night scenes of wildlife in Michigan's Upper Peninsula. His innovative, ethereal images brought national recognition, and 74 of his photos were featured in the July 1906 issue of *National Geographic*–the first-ever wildlife photographs in the magazine. These days, wildlife photos are a staple between the covers of *National Geographic*, and remote cameras are a common, essential tool for wildlife professionals.

Shiras was the first to deploy trip wires to trigger cameras and flashes. When a passing animal triggered one of Shiras' wires an explosion of magnesium powder flashed, and the shutter clicked on a camera set up on a

Remote camera technology has moved well beyond trip wires. There are various sensors that trigger modern cameras, and researchers can choose nearly any setting: black and white, full color, high definition video; multiple, rapid-fire pictures or timed delays between photos.

nearby tripod. He was also one of the first to operate cameras at a distance via a string running from a blind or hide. Shiras, an attorney, patented his inventions in the United States and other countries and then dedicated their free use to the public to avoid commercial exploitation. Now at least 18 companies make remote cameras for a range of uses, from recreation to research.

Remote camera technology has moved well beyond the use of trip wires. Various sensors can trigger modern cameras using motion or heat, and researchers can choose nearly any setting: black and white, full color, high-definition video; multiple, rapid-fire pictures or timed delays between photos. Cameras with cellular network connections can transmit images immediately to researchers. Onboard memory cards can store thousands of images and hours of video, and artificial intelligence is increasingly used to evaluate images.

While the basic aim for these uses is the same as that of Shiras—to photograph or 'camera trap' wildlife to observe species—the capacity to record immense numbers of photographic observations is changing important aspects of biological research. Deploying dozens of cameras to record the presence of rare and endangered species is more efficient and effective than direct detection efforts like trapping. But wildlife researchers are using remote cameras in increasingly varied and creative ways.

For example, the world's largest and most comprehensive camera-trap wildlife survey occurred in 2018-2019 when India's National Tiger Conservation Authority and the Wildlife Institute of India placed remote cameras in 26,838 locations across 141 sites in India and surveyed an effective area of almost 47 thousand square miles. The cameras recorded nearly 35 million photographs of wildlife (76,651 of which were tigers and 51,777 were leopards; the remainder were other native fauna). From these photographs, 2,461 individual adult tigers were identified using tiger stripe-pattern-recognition software. As a result of the survey, it was concluded that India's tiger population had increased by roughly one-third, from approximately 2,226 in 2014 to 2,927 in 2018. The increase may in part reflect more comprehensive surveying as opposed to purely population increase. Conclusions aside, the effort and data assessment would not have been possible without advances in remote camera technology and access.

Austin Homkes, foreground, and Tom Gable set up a remote camera in Voyageurs National Park.

Other notable examples of wide-scale camera surveys include Snapshot Safari, which aims to identify millions of wildlife caught on camera annually across sub-Saharan Africa. Closer to home, Snapshot Wisconsin uses more than 2000 cameras to monitor wildlife year-round using a statewide network of remote cameras. Both of these examples are projects that provide data needed for wildlife management decision making. They also offer opportunities for the public to participate in science through guided, online image classification and analysis. In this way, remote cameras are a tool that has significantly expanded opportunities for a diverse array of non-scientists to participate in wildlife monitoring.

In addition to increasing the extent of wildlife surveys and public participation in wildlife science, images from remote cameras are also leading to novel insights into animal behavior and species interactions. The peer-reviewed journal *Food Webs* recently launched a special collection of articles focused on the detection of novel species interactions directly from remote cameras. The reason for this special issue is that such natural history observations are helpful for generating new ideas and strengthening our understanding of food web ecology. Novel observations brought to light via remote cameras include scavenger interactions at elephant and marine mammal carcasses, acorn eating by owls, disease transmission risk across species at mineral licks, and how wolves hunt deer along linear features such as trails

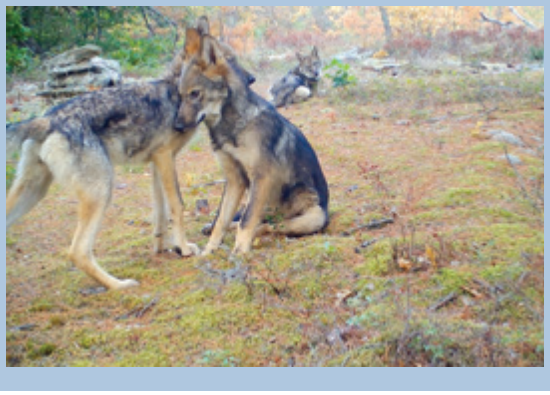
and paths. The insights presented in each of these papers would have been much harder to gain, if not impossible, without the use of remote cameras.

Voyageurs Wolf Project researchers use remote cameras to address a number of research and broader impact objectives. Remote cameras are critical to our goal of understanding changes in wolf population dynamics. The project currently maintains a year-round array of about 200 remote cameras in the Voyageurs region of northern Minnesota. Through painstaking viewing and sorting of high-definition video, we can estimate key parameters including pack size, pack composition and "recruitment" of wolf pups—the point in their development at which pups are deemed ready to run with the pack. Our goal during each annual survey is to record repeated independent observations of the same wolf pack. (We consider observations to be independent if they occur on different days.) Multiple independent observations of the same size for each pack provides reliable minimum pack-size estimates. A trained eye can also often distinguish between wolf age classes and track the number of pups present with packs across seasons. In doing so, analyses of pack composition, pup survival and recruitment are possible.

Audio visual footage captured with our remote camera array is also the primary content for our broader impacts campaign, generating critical content for our various social media platforms, with millions of viewers worldwide. Not everyone can experience Minnesota's Northwoods, much less learn wolves' natural history even if they do visit. The forests of northern Minnesota rarely allow for long sight lines, and wildlife viewing is a challenge, especially for most mammals. Remote cameras allow us to go "mammaling" in a way akin to the way binoculars enhance one's ability to go birding. Indeed, camera trapping as a recreational pastime has grown exponentially over the past decade, increasing both individual connection to nature and insights valuable to wildlife science.

Even with the incredible gains that remote camera technology has made, fundamental and significant challenges remain and have emerged. Camera operation is still limited by battery life in most scenarios. Remote cameras are not yet efficient when it comes to energy consumption. We still need to spend thousands of dollars on increasingly expensive lithium batteries that operate well in frigid temperatures. In some environments solar power is an option, but such options remain peripheral to the camera unit and rarely employed.

Remote cameras can lead to too much of a good thing—massive amounts of imagery that requires special data storage and processing. Researchers working with camera-derived data quickly encountered data management and analysis challenges. Crowd-sourcing some image classification efforts has been hugely successful and is supported by outstanding platforms such as Zooniverse and CitSci. Still, tremendous progress is needed, and the cutting-edge work is exploring algorithms and arti-



Novel observations brought to light via remote cameras include scavenger interactions at elephant and marine mammal carcasses, acorn eating by owls, disease transmission risk across species at mineral licks, and how wolves hunt deer along linear features such as trails and paths. The insights presented in each of these papers would have been much harder to gain, if not impossible, without the use of remote cameras.

ficial intelligence methods to identify and count animals recorded in remote camera images. These methods are also needed as they apply to video images.

On the Voyageurs Wolf Project we use remote cameras almost exclusively to record video. The data storage and video quality specifications of cameras continually improve; many can record in 4K high resolution now, and the need to efficiently process and analyze such data is tremendous.

Remote cameras create an exciting opportunity for researchers, community members, artists, computer scientists and others to work together—and we need creative teams to tackle and maximize the value of remote camera data. ■

Learn more at:

https://www.guinnessworldrecords.com/world-records/601784-largest-camera-trap-wildlife-survey

https://www.zooniverse.org/organizations/meredithspalmer/snapshot-safari

https://dnr.wisconsin.gov/topic/research/projects/snapshot

https://www.sciencedirect.com/journal/food-webs/special-issue/10N7X718592

Joseph Bump is a professor and he Director of Graduate Studies in Conservation Sciences at the University of Minnesota. He also teaches courses including Principles of Wildlife Management, Conservation Biology, Stable Isotope Ecology and Field Mammalogy.

Acknowledgment:
The Voyageurs Wolf Project is especially grateful for the substantial funding and support provided by Minnesota Environment and Natural Resources Trust Fund as recommended by the Legislative-Citizen Commission on Minnesota Resources (LCCMR).

Wolf Gifts & Gear

from the Wolf Den Store

HOLIDAY 2023

Your purchases help support the mission of the International Wolf Center.

TO ORDER:
ONLINE shop.wolf.org
PHONE (218) 365-4695

MEMBERS SAVE 10%
coupon code: MEMBER

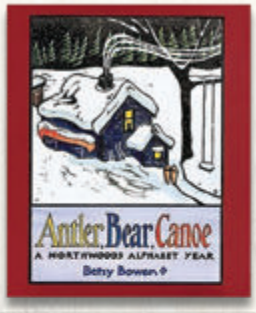
Lighted Ornament
1.75" thick, 3" diameter
$28.00

Smoke
18"
$40.00

Dancer
10"
$14.00

Lil' Handful
6"
$10.00

Antler, Bear, Canoe
Paperback
$7.99



The True Story of the 3 Little Pigs
$7.99
Paperback

Wild Wolf Pup
$15.99
Hardcover

Wolf Paw Earrings
$10.00

Wolf Claw Leather Bracelet
$50.00

Etched Leather Cuff
$29.00

2024 Ambassador Calendar
$19.95

Silipint
16 oz.
Assorted colors
$12.95

Beanies
Assorted Styles
$33.95

Carhartt Beanie
$35.00

Rieka Eyes Tee
Adult sizes
S-3XL
$25.00

Tall Trees Long Sleeve Tee
Adult Sizes S-3XL
$30.00

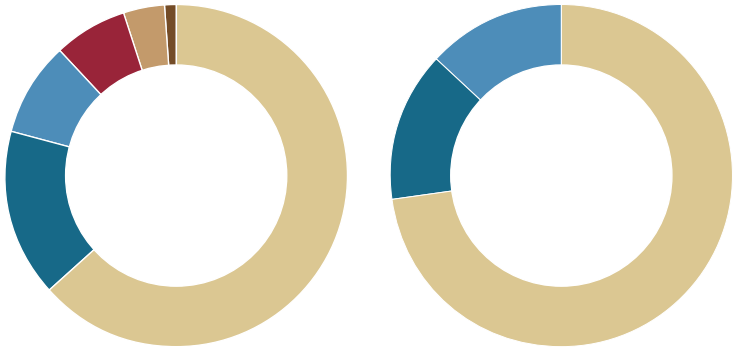
Wood Block Print Hoodie
Adult Sizes S-2XL
$45.00

Youth Two Piece Pajamas
$29.99

Kid's Footed Pajamas
$24.99

Learn more on these products, and many others at shop.wolf.org

Annual Report 2022



Revenue

- Contributions/ Memberships. . . . **64%**
- Admissions. **16%**
- Symposium **9%**
- Retail **7%**
- Program Fees **4%**
- Other . . . . . **<1%**

Expenses

- Program . . . . . **73%** (Wolf Care, Education, Visitor Services)
- Fundraising **14%**
- Administrative . . . **13%**

From the Executive Director

It is well accepted at the International Wolf Center that the two most stressful and time-intensive things we do in our work are integrating new pups into our pack and hosting the International Wolf Symposium. This is why we work hard to never schedule them to take place in the same calendar year. Except when they do.

In May 2022, our newest ambassador wolves Blackstone and Caz were successfully introduced to Rieka, Axel and Grayson thanks to the thousands of hours of staff and volunteer time spent helping the "pirates" adjust to their new surroundings. A few months later, we hosted nearly 450 wildlife managers, biologists, students and wolf enthusiasts from around the world for an incredible four days of learning and sharing in Minneapolis as part of the seventh International Wolf Symposium.

These two incredible achievements were just the highlights of a year full of accomplishments including the announcement of the first two winners of the Dr. L. David Mech fellowship program, offering free virtual wolf programs to over 10,000 students and reaching hundreds of thousands more with our educational YouTube videos, Instagram posts, webcams and webinars. Check out the rest of this report on our website for full details.

View the full report online at: wolf.org/support/annual-report/

4,638
MEMBERS
from **31** countries and and all **50** states, DC and military

1,955,364
WOLF.ORG
pageviews

Adobe Stock / hkuchera

37,561
VISITORS
to the Center

SOCIAL MEDIA
188,768
total followers

GROUP VISITS

Adobe Stock / stan

10,416
WOLFLINK PROGRAM
participants including K-12th grade students and lifelong learners from 22 states and Canada

www.wolf.org

Wolf Care Department Highlights

- On May 10, 2022, the wolf care team met our newest Exhibit Pack members, nicknamed Blackbeard, and Captain Kid, affectionally known as the "Pirates".
- Completed the Boltz Byway medical pen—In honor of Boltz, who was reluctant to come to the front of the exhibit during his challenging diagnosis of Degenerative Myopathy.
- Upgraded surveillance cameras to monitor pack activity 24-7.
- Finalized outdoor public viewing of pups with upgraded fences and protective panels.
- Improved enclosure habitat and winter access with a new ATV and plow.
- Implemented Working for Wolves enrichment programs to stimulate pack activity.
- Developed the curator transition plan to ensure adequate training and social bonding for the next generation of wolves.

The Working for Wolves crew helped complete stage 2 of the Boltz Byway in the fall of 2022 and the wolf care team and the Center's maintenance department completed the project before winter.

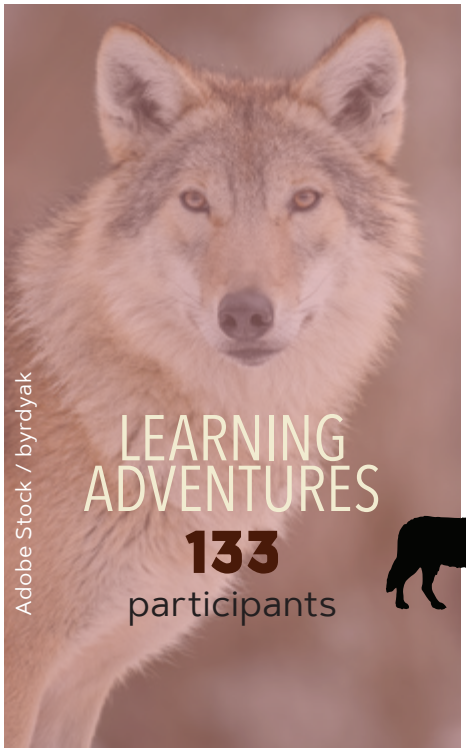
The International Wolf Symposium

The 2022 International Wolf Symposium brought together nearly 450 biologists, researchers and wolf enthusiasts from across the world to learn the latest science about wolves. The event, organized by the International Wolf Center, was held Oct. 13-16 in Minneapolis.

All photos top section: International Wolf Center

1,280 from **11** states
CO, CT, FL, IL, KY, MN, NC, ND, TX, VA, WI

Wolf Care and Biologist
WEBINARS
1,642 participants
from **41** states and **13** countries



Adobe Stock / byrdyak

LEARNING ADVENTURES
133
participants

Virtual and in-person
OUTREACH VISITS
476
Schools and libraries
MN, IA, WI

WHAT'S FOR DINNER?
2,258
participants

His Summer Research Project Complete, Mech Fellowship Winner Returns to Graduate Studies in Conservation Science

By Chad Richardson

Earlier this year, Hamline University biology student Lucas Paschal received a phone call he'd been dreaming about. Representatives from the International Wolf Center were on the line, telling Paschal he'd been selected as the 2023 winner of the Dr. L. David Mech Fellowship!

His close friends joined in his celebration when the call concluded—and since that phone call, the year has been a blur, full of even more impressive achievements and exciting opportunities.

His research project had Paschal working closely with the team from Voyageurs Wolf Project (VWP) in northern Minnesota.

"The only way to describe this experience is as a dream come true," he said. "I have been fascinated with wolves and other large predators since I was a child and have been following the project for some years now, so being able to work alongside a pioneering research group has not only been exhilarating but has made me incredibly grateful for the opportunity and all those who have supported my journey here."

As part of the field crew with the VWP, Paschal was able to get his hands dirty. Literally.

When several wolf locations on a map are clustered, they show that the wolf spent much time there. "Lucas spent many days searching clusters of actual locations from GPS-collared wolves for prey remains and evidence of a kill or hiking miles to numerous remote cameras to change batteries and swap memory cards, all while trying to keep the bugs at bay, keep his feet dry, and keep his vehicle unstuck," said Joseph Bump, the co-leader of the VWP. "Searching thousands of clusters and maintaining a remote array of about 200 cameras each field season are critical to our long-term data collection, and Lucas was an important part of this year's effort."

Paschal's work was made possible by the $10,000 fellowship awarded by the Center.

"I wouldn't have been able to complete this work without funding from the fellowship," he said. "Without the financial and genuine support from the International Wolf Center, it would have been impossible to even attempt my research project."

With the summer work behind him, Paschal has turned his focus back to his studies. In September he joined the Conservation Science Graduate Program at the University of Minnesota to study African-American interest in nature and wildlife in Minnesota, and obstacles to accessing nature and wildlife.

"That graduate focus coupled with the field experience Paschal gained this summer will provide a strong combination for a successful career as a wildlife professional," Bump said. ■

Photos courtesy of Lucas Paschal

2023 Dr. L. David Mech Fellowship winner Lucas Paschal spent his summer working closely with the team at Voyageurs Wolf Project. He is a biology student at Hamline University in St. Paul, Minnesota.

Chad Richardson is the publications manager at the International Wolf Center.

Nearing the End of Our Wolf Care Transition Plan

By Lori Schmidt, Outgoing Wolf Curator

In January of 2024, Giselle Narvaez Rivera will become the manager of our wolf care department and become responsible for decisions that will impact the lives of the ambassador wolves. This achievement is the result of cooperative effort, training events and lots of hands-on interaction with wolves achieved through the "Curator Succession Plan."

The "Tracking the Pack" feature in the fall edition of *International Wolf* showcased some of these milestones, but the most significant knowledge exchange comes from reviewing past wolf-behavior events.

Throughout the winter of 2023–24, the wolf lab will host collegial discussions concerning every major management decision made in the past 30-plus years of ambassador wolf management. The team will review documents, videos, imagery and first-hand accounts to analyze events and reveal the thought process behind each decision. Both wolves and humans will benefit in the next generation of wolf care from lessons learned by studying our "Gone but not Forgotten Wolves." Past practices such as spaying and neutering procedures, meeting retirement needs and handling cancer diagnoses have tested the team's awareness and attention to detail.

Facility design and maintenance are other crucial elements that protect wolves from the elements and enrich their lives while allowing the wolf care team to work smarter, not harder.

Historically, the Center's older wolves have retired between nine and 10 years of age. Younger retirements occurred for health reasons, and some wolves stayed in the exhibit longer, but only if pack dynamics allowed it. Denali was our oldest Exhibit Pack member at the age of 12½ before he retired in October 2020. With Grayson and Axel reaching their eighth birthdays in May 2024, we know the wolf care team will be discussing their retirement plans, followed closely by a pup introduction anticipated in spring 2025, on our regular four-year rotation. The Exhibit Pack dynamics will be fascinating to watch for years to come. ■

Lori Schmidt has served as curator or as a consultant to the International Wolf Center since 1989 and will officially retire in May 2024. She will continue to offer her assistance as needed in future management situations, as have many former employees who are considered critical members of the wolf care team.

Above: As a yearling, Rieka was a bit overwhelmed by the excitement of the 2022 pups, but in 2025, she will welcome pups as a 4-year-old adult.

Right: Denali had the longest run as an Exhibit Pack member, staying in the Exhibit for 12½ years before an October 16, 2020 snowstorm increased the younger packmates dominance, and the management team decided that retirement was the best decision for Denali.

Photos: International Wolf Center

INTERNATIONAL WOLF CENTER

Quarterly Donations

Gifts between June 1 and August 31, 2023

We make every effort to ensure the accuracy of our donor list each quarter. If we have omitted your name in error, please accept our apologies and contact Manisha Nordine at 763-233-7137 or membership@wolf.org.

Major Donors

$10,000+

Estate of Carla D. Farrar-Proebstl
Hamblin 1988 Trust
Randall Kenyon
Klungness Family Foundation
Elizabeth Leonard Rould
The Dorothy D. and Joseph A. Moller Foundation

$5,000–9,999

Nancy Ventresco
John Virr

$2,500–$4,999

Bruce Bryant
Murray and Jeanie Kilgour
Alida Messinger
Joanne Spurlino

$1,000–$2,499

Sharon Campbell
Brett Clementz and Jennifer McDowell
Mary Crawmer
Tricia Gardinier Vos
Betsy Greenlee
Hachette Book Group
Kristin and Kaisa Ireland
Sarah Landre
Seamus and Eileen Metress
Sally Paustian and Scott Caulpetzer
Tobin Sobaski and Kari Koehler
Pam Spaccarotella
Linda Wark
Renee Zintgraff

$500–$999

Tammy and Mark Beran
Ann Beyer
Paris Block
Shirley Erstad
Jim Freeman
Philip and Kathy George
Jean-Jacques Gilet
Ann Marie Hayes-Hawkinson
Mary Kust
Genevieve Laukkonen
Donna Mack Iwanski
Lisa McGinn
Andi Nelsen
David Otterness
Kathy Rerko-Smith and Steven Smith
Vickie Rosskam
Keith and Lou Tomes

$250–$499

Howard Abrams
William Atkins
Leesa and Mike Augustine
Ingrid and Eric Beyer
John Blankley and Maureen Foley
Michael Briselli and Jeannee Sacken
Joan and Hane Carlson
Barbara Chandler
Michael Cole
Ramona Davis
Sybil Dunlop
Todd Duyvejonck
John Ely and Erin Fernandez-Ely
Maureen Foley and John Blankley
Signe and Rick Garnitz
Joy M. Hess
Debbie Hinchcliffe
Heather Hoff
Marian and Hank Hofmann
Susanna Hugelshofer
Judy Hunter
Pat Hurd and Bruce Weeks
Steven Longbotham
Tim Lunsford
Jason and Carol McAlister
Nona Meyer
Karen and Gilbert Munoz
Lisa Nivens
Patricia and Richard Pace-D'Antoni
Dana Pond
David and Karen Risku
Russell and Nina Rothman
Matthew Scott
Cindy Slomski
Larry Soppeck
Brandi Sullivan
Jared Toone
Ann Torkelson
Linda Vance
Ronald Wasem
Wells Fargo
Kim Wheeler
Dale and Jane Wierman
Audrey Wolf
Dale and Rosemary Zimmerman

Honorariums

In honor of new board member Brett Clementz,
Peggy Galis

In honor of Abdel,
Michelle Youngblood

In honor of Celia,
Gene Cherry

In honor of Cristina Calderon,
Mekka Smith

In honor of Greg Reid,
Raymond Siminski

In honor of Joe Whatley,
Lisa Whatley

In honor of Keith Johansen,
Scott Meyers

In honor of Lisa Radtke's birthday,
Mark Radtke

In honor of Marty Mauser,
Tovah Domenick

In honor of Wally Lauria,
Amy Lauria

In honor of Lori Schmidt,
Joyce Wells

In Memoriam

In memory of Cindy (Krueger) Proehl,
Christa Miller
Rick and Bunny Sommers
Abigail Lane
Ann Torkelson
Susie Adcox

In memory of David Yaxley,
Carole Laprade

In memory of Diantha Baker Brown,
Matthew McNerney

In memory of Jana Graham,
Niles Graham

In memory of Jason Hallas,
Elizabeth and Mike Lewis

In memory of Jerry Williams,
Kim Wheeler

In memory of Kathleen Ganzel,
Barbara Antonik

In memory of Ken Geobel,
David Pauly

In memory of Kenneth Douglas Goebel,
Kristine Mohwinkel

In memory of Lorraine Fanning,
Nancy Romslow

In memory of Mary Kenyon,
Randall Kenyon

In memory of Myrna G. Dorrance,
Barbara Woolsey

In memory of Ray,
Linda and John Jungwirth

In memory of Ron Bilodeau on what would have been their 47th anniversary,
Diane Bilodeau

In memory of J.S.,
Anonymous

In memory of Michelle Brown,
Denise Hughett

In memory of Michelle Brown,
Richard and Deborah Thiel

In memory of Gene Ortiz,
Richard and Deborah Thiel

In memory of Max Badger,
Melinda Gleaton

In memory of Malik, Shadow, Luna, Aidan, Boltz, Grizzer & Denali,
Connie Di Bratto

Donations in Kind

Google Inc.
Ann Beyer
Trevor Brooks
Beth Champenoy
Robert and Linda Depew
Kim Drehmel
Andi Nelsen
Kaitlin A. Peterson
Lori Schmidt
Kristian Swanson
Keira Thrasher
Theresa Williams and Darin Groeneveld

Recurring Donations

Melissa Aaron
Robert and Kathleen Adie
Mark Albini
Michael Alden
Donald and Sharon Amorosi
Carla Anderson
Taylor Arbour
Ryan Bachman
Richard Bair

Jim Barnes
Josh Becker
Jaki Becker
Rebecca Becker
Bill Bell
Dan Benscoter
Shelly Bentley
Keith Best
Scott Biggar
Samantha Bjerke
Patricia Bjorklund
William Bode
Maria Boss
Pam and Judith Branham
Joshua Brown
Michael Byrnes
Cristina Calderon
Debie Campbell
Jane Campbell
Mary Beth Campbell
MaryAnn Canning
Susan Cardwell
Carla Carlson
Gail Carroll
Susan Carver
Glenn Chapman
Paula Clark
Brett Clementz and Jennifer McDowell
Dennis Cole
Chris Coletta
David R. Cook
Ed Cooper and Mitra Mehta-Cooper
Lynn Corrie
Holly and Chris Cox
Stephen Cramer
Amy Cunningham
Andrea Cwynar
Duncan Davidson
Ramona Davis
Raymond Decker
Anne Deleage
Doreen and Gary Deutsch
Barbara and Rob Dillon
Anna Doyle
Hazel Drackett
Rusty and Dena Dramm
Melissa Dunbar
Sybil Dunlop
William and Susan Dustin
Todd Duyvejonck
Andrew Eckroth
Debbie and Kim Elmer
Shirley Erstad
John Ewing
Barb and Marc Farley
Kevin Fawcett
Patrick and Joann Fay
Carolyn Felden
Tom Fitzgerald
Erin Fitzpatrick
Lisa Ford
Jennifer and John Frisch
Yvonne and Victor Gagliano
Michele Gaida and Roberrt Mattson
Sue Gallagher
Akhila Ganapathy
Lina Garcia
Signe and Rick Garnitz
Marceline Gearry
Jeanne Gehrman
Michele Gillman
Garvan Giltinan
Michelle Gobely
Alicia Gobert
Don and Loretta Gossett
Sharon Griffen
Marsha Guerette
Erik Hall
William Halstead
Eva Hanks
Jennifer Hart
Kevin Harter
Randy Hartwig
Elizabeth and Randy Hebron
Jessica Hellmann
Sue Henderson
Chris and Audrey Henningson
Jennifer Herstein
Jordan Hill
Linda Hiltner
Karen Hodsdon
Marian and Hank Hofmann
Gary Hoshiyama and Patricia Wood
Sharon Howard
Kyle and Elizabeth Hudick
Judy Hunter
Matthew Hyle
Sharon Jackson
Gary Janusz
Amanda Jenkins
Brenda Johnson
Barbara Jones
Duncan Jones
Beverly Jones-Hanson
Rolf Jostad
Dennis and Elaine Jowaisas
Kara Kahle
Kim Kang
Isaac Karolczak
Cate Kautz
Kelly Keller
Lisbeth Kelly
Mark Kern
Brian Kiernan
Carolyn Klehr
Jan and Stewart Klink
Bill and Christine Klugh
Daria Koshkina
Wanda Kothlow
Christine Kozlowski
Arleigh Krzmarzick
Janice Kucera
Maria Kurtz
Elizabeth Lambert
Granville Lawrence
Barbara Legler
Patricia Lehmbecker
Janice Lescher
Thomas Lesley
John and Christina Leverenzzi
Mary and Michael Lewandowski
Wendy Lien
Carolee Lindsey
Joan Longwell
Kimberly Loomis and Lori Laliberte
Louise Lopes
Tim Lunsford
Amelia Lynch
Lida MacGrory
Grace Madsen
Amber Marx
Michelle Mattei
Jason and Carol McAlister
Jane McBride
Nanette McCann
Daniel McDonough
Lisa McGinn
Andy and Corie McKibben
Brenda Meier
Peggy Meisch and Jack Anderson
Penny Mieth
Helene Milner
Joseph and Ricki Mitchell
Patricia Miu
Edgar Molina
Philip and Katherine Mongrain
Karen and Gilbert Munoz
Akiho Muramatsu
Susan Myers
Narumi Nambu
Gerald Nelson
Ken and Mary Neubauer
Candace Nile
Lisa Nivens
Allison Nix
Trinity Cristin Noesen
Kerry O'Donnell
Tom O'Dowd
Blaine OGorman
Sophia OKane
Donna Okroy
Ben Oswald
Kunihiko Otsuki
Patricia and Richard Pace-D'Antoni
Lavonne Painter
Sylvana and Jeff Pappas
Karen and B. Aaron Parker
Steve Parker
Mulji Patel
Frederick and
Sharon Patterson
Maeva Picard
Dana Pond
Steven Pope
Denise Pride
Timothy Prohofsky
Cathy Purchis
Jose Quinones
John Rasch
Kathy Rerko-Smith and Steven Smith
Cindy and Richard Rettig
Kathleen and Todd Robinson
Thomas Rodehaver
Marcel Rodriguez
Tanya and Jim Roerick
Harrison Roisen
Henry and Carol Rompage
Sue and Dag Roppe
Kara Rosenfield
Missy Rowlyn
John Roxbury, Jr.
Bonnie Russ
Tiffany Sappington
Linda Schave
Jana Schweitzer
Nancy Semanko
C. A. Sharp
Chuck Shingledecker
Louise and Ray Short
Roger Sievers
Joan Silver
Dale Simonson
Theresa and David Simpson
Robin Sines
Cindy Slomski
Alva Smallwood
Amber Smigiel
Carole and Ronald Sokoloff
Larry Soppeck
Pam Spaccarotella
Paul Stageberg
David Stoll
Dana Stordalen
Mark Sugino
Susan Sullivan
Alfonso Surroca
Nanticha Suyoteetanarat
Scott Sway
Susan Sweeney and Dale McCullough
Joy Szondy
Nathan Tefft
David Templeman
Ann Terry
Leslye Teuber and David Albert
Tory Thelen
Nancy Thompson
Susan Todd
Raymond Toney
Brady and Teresa Turner
Alexander Vaeth
Stephanie VanNess
Peter VanScoy
Travis Vaught
Stephanie Voigt
Cathy Walker
Judith and John Walsh
Debbie Wankel
Tim Warfield
Eric Waser
Ron Weber
Barbara Weirich
Joyce Wells
Rachel Welt
Sara Whitehouse
James and Gloria Wiener
Sherry Winterson
Audrey Wolf
Sharon Wood
Mariellyn and John Zeock
Vicki Zierden

Thank You!

Wolves Seen Positively in Canada, Inconsistently in Mongolia, Absent in Andalusia. Iconic "Traveling Wolf" Shot in Hungary

By Tracy O'Connell

CANADA

Seven in 10 Canadians surveyed have a "very" (29%) or "moderately" (41%) positive view of the wolf, according to *Tri City News*, a British Columbia-based media outlet reporting on research conducted last March for the wildlife non-profit Fur Bearers. Headquartered in Vancouver, the Fur Bearers sees itself as "a non-partisan organization that protects fur-bearing animals through conservation, advocacy, research and education."

The survey results uncover more than a few anomalies compared to surveys done elsewhere. For one, more positive views were found to be held by rural, rather than urban, populations. Typically, positive feelings toward wolves are more likely held by city dwellers who are insulated from conflicts with wolves. Surprisingly, these positive rural views were held despite 60% of respondents agreeing with the statement that "wolves are a primary threat to Canadian livestock."

The 1,000 Canadians surveyed for this report were not unfamiliar with wolves. More than a quarter had seen or heard a wolf in a wilderness area, and a third had encountered one in a zoo or sanctuary. Only one in five had never seen nor heard a wolf.

Sixty-eight percent said the killing of wolves is wrong, even to save another species. These results were more strongly voiced in the western provinces, where wolf culling is taking place to boost the caribou population.

Respondents were divided about how willing they were to live in areas populated by wolves; 24% did not want wolves at any distance from their homes; 26% would be comfortable with them within 50 km (31 miles); 22% would accept wolves within 20 km (nearly 12.5 miles) and 16% would accept them within 5 km (just over 3 miles) of where they lived.

Carried out by the Canadian opinion firm Research Co., the study has a margin of error of 3.1%.

Adobe Stock / surangaw

In more news from Canada, International Wolf Center member and wolf educator Suzanne Charron highlights an educational exhibit that has run since last spring:

Located in the nation's capital of Ottawa, Ontario, the Canadian Museum of Nature (CMN) views its mission as saving the world for future generations through evidence, knowledge and inspiration. To accomplish this goal, the staff occasionally lets inspiration guide them, as when, in June 2022, award-winning wildlife photographer Michelle Valberg approached the museum.

As CMN project manager Caroline Lanthier relates, Valberg offered to display her photographs of wolves taken on Vancouver Island and in Yellowstone National Park. That was the spark staff needed to put together the exhibition, which will run until March 2024.

Targeting families with children, *Wolves: Shapeshifters in a Changing World* is designed to educate, dispel myths and provide insights about the predator. "Wolves fascinate us, largely because they are elusive. They are also often misunderstood. We hope that this exhibition, created by our museum, will inspire visitors to reflect on their relationship with these amazing animals and the importance of conservation," CMN President and CEO Dr. Danika Goosney reflected in a press release last spring.

The exhibit, in English and French, introduces the domestication of wolves by humans, intended to ease young visitors into the wolf world. To compare dogs to their wild relatives, visitors can share photos of their pets through the museum's social media campaign, #Wolf to Woof.

Elsewhere in the hall, a display of a mounted gray wolf and a *Canis lupus* skeleton leads visitors to learn why wolves are "shapeshifters." Research done by museum paleontologist Dr.

Danielle Fraser shows that the wolf survived the last Ice Age by changing its diet. Her work is depicted alongside the partial skull of a 40,000-year-old wolf. The museum holds one of the largest collections of wolf specimens in North America; the 2,500 objects, consisting mostly of skeletal elements, help researchers follow the wolf's evolution through time.

Wolves are perceived as shapeshifters not only in the scientific world but in the cultural milieu, as well. The exposition features several pieces of wolf memorabilia, among which are a vintage French copy of *Little Red Riding Hood,* a record cover of David Bowie's narration of Prokofiev's *Peter and the Wolf,* and a movie poster of *Teen Wolf.*

The Indigenous view of wolves is also showcased. Wolves as symbols of courage, strength and loyalty are represented in objects such as a paddle painted by Dean Ottawa (Kitigan Zibi Anishinabeg First Nation), a silkscreen print by Art Thompson (Ditidaht First Nation) and a stonecut print by Quvianaqtuk Pudlat (Kinngait Inuit). Wilfrid Buck, a Cree elder and an expert on Indigenous astronomy, narrates a video telling the story of the "dog stars."

Also highlighted is the ongoing eastern wolf conservation project led by the Ontario's University of Guelph and Manitoulin Island First Nations. As explained by Canadian Broadcasting Corporation (CBC) reporter Warren Schlote last year, the study combines western science and Indigenous knowledge, a collaborative approach commonly known as "two-eyed seeing."

Anchoring the 3,500 square-foot exhibition are 11 large-scale ChromaLuxe (a process embedding images in metal) photographs of wolves by Michelle Valberg. With each comes a story about the wolf the photographer captured through her lens.

The main goal of the exhibit is to change the public's perception of wolves. Lanthier admits there is so much to say about wolves that it was challenging to choose exhibit content and make it concise and accessible to the general public. The visitors' votes, cast at the end of their visit, will shed light on the success. Let's hope it will have been promising for wolves!

Above: CMN Project Manager Caroline Lanthier examines the wolf diorama at the entrance of the exhibition.

Left: The exhibition includes an area on the evolution of wolves and their connection to domestic dogs.

Photos: Martin Lipman, Canadian Museum of Nature

Adobe Stock / ADwo

MONGOLIA

Wolves here have held a complex and nuanced place in this culture from earliest times. Environmental historian Kenneth Linden notes, "Their existence has been lamented and romanticized for centuries." He traced some of the complexities over the centuries in a May article in *History Today*, a London-based monthly that says it is "the world's leading serious history magazine."

Famed Mongol warrior and leader Genghis Khan descended from a wolf, according to a book written nearly 800 years ago in the imperial Mongol language—an animal seen as rapacious and blood-thirsty, to whom Khan and his generals are at various times compared. More recently, the nation's pastoral people prayed for protection from wolves or for skill in killing them, while some stories and poetry depicted the animals begging for mercy, and followers of Buddhism urged compassion toward them.

One hundred years ago, revolutionaries overthrew foreign occupying forces and established the Mongolian Peoples' Republic, the world's second socialist country after Russia.

In time, the nomadic herding lifestyle was replaced by collectivism, and the destruction of wolves became a government-managed operation with established bounties; hunting was seen as a professional occupation. Linden explained that handbooks for hunters supported the idea that this labor was a valid form of Marxist production, and in the early 1960s, while historians were being criticized by the government for their positive evaluations of Khan and the Mongol Empire, handbooks continued to celebrate hunting. The Soviet Union was commended for its success in wolf extermination; so too were rival capitalist countries such as the U.S.

During this period, Mongolians saw wolves as the enemy of conservation efforts because of their predation, and as a result they were viewed in the same way as the wealthy and the Buddhist clergy (who were said to escape persecution by living in caves with wolves)—two examples of class enemies. Censors banned literature that was sympathetic to wolves.

While socialism here died 30 years ago, wolf-hunting remains a hold-over, with some lamenting the fervor of the state-ordered hunting of old. But mining and climate change threaten herders as well, Linder notes, and "there are an increasing number of pro-wolf voices" that call for conservation and combat prejudice against wolves—though those voices remain in the minority.

Adobe Stock / jimcumming88

Adobe Stock / katiekk2

SPAIN

The Iberian wolf is officially extinct in the Andalucia mountain range here, *The Guardian* reported in July. Monitored for 20 years by the regional government in an attempt to reduce conflict with the local population, the canid's numbers have been declining. And despite the wolf's status as a protected species, there has been no sign of the animal's presence since 2020, a situation called "shameful" and "incomprehensible" by conservationists who decry the lack of a legally required recovery plan.

Disagreement exists about the number of wolves living in this physically and genetically isolated area, with some claiming six or more packs existed in 2010, and others saying there hasn't been a breeding pack in two decades.

Spain's most recent census two years ago counted between 2,000 and 2,500 wolves in nearly 300 packs. Most were found in the northwest, where they are protected, primarily in Castilla y León, Galicia and Asturias. Andalusia is in the nation's south, a diverse region of farmland, hills and rivers that includes the city of Seville and Gibraltar, a British-controlled outpost that separates the Atlantic Ocean, to the west, from the Mediterranean Ocean to the east.

HUNGARY

A two-year-old wolf that traveled a record-breaking 1,000 miles across four countries was shot by poachers. Three months later, police have two suspects in custody on suspicion of harming nature and abusing firearms, according to *Newsweek*. Known as M237, the wolf was born in Graubünden, Switzerland and fitted with a GPS collar by the local wildlife agency. In June 2022 he began his "mammoth migration," the longest recorded in Europe, the article states. The conservation nonprofit Wolf Switzerland narrated the journey in a Facebook post: the young wolf "crossed the border into Italy and then into Austria, hiked up to the Danube, changed his mind and moved away to the southeast. In mid-February he crossed the Hungarian border and headed toward Budapest." ■

Tracy O'Connell is professor emeritus at the University of Wisconsin-River Falls in marketing communications and serves on the Center's magazine committee.

Adobe Stock / michal

An Afternoon with British Columbian Sea Wolves

Elusive nature and unique habits of these packs make them hard to find, fascinating to observe

Text and photos by Tom McPherson

Technical Editor's Note: "Sea Wolves" are gray wolves (*Canis lupus*) that layfolk have so named because they sometimes live along the seacoast.

We departed at first light on a misty spring morning. A low, westerly swell was slapping my boat broadside as my good friend Quinn Barabash and I crossed a nasty span of open water.

We were trying to get back to a beach where we had found significant levels of sea wolf activity the day before. There were tracks and scat all over the place, and some of the trails into the forest were recently torn up—evidence of a lot of activity.

I specialize in locating sea wolves. My work involves tracking this elusive subspecies of the gray wolf and documenting their lives in an effort to dispel the myths people associate with wolves. I've helped many talented film crews and photographers share similar stories over the years. It's incredibly challenging work.

Sea wolves camouflage perfectly amidst the rugged shore and walls of old growth forests fringing British Columbia's coastline. On this job a local wildlife film company had hired me to try to find the location of the wolves' den. Given the challenge of finding a needle in a haystack of evergreen trees, the expectations of success were less than 1%.

The mist slowly cleared as we approached our destination and revealed a procession of seven sea wolves loping along the volcanic shoreline. We were thrilled, yet the wolves were moving swiftly, and they had seen us. It was essential not to spook them with the boat, but we needed to catch up and get ashore.

I saw an opportunity to use an island to obscure us from their sight, muffle the sound of the motor and, I hoped, allow us to find them on the opposite side. Still hidden by the island, I silently ran the boat aground into the sand beach. We quickly and quietly gathered our gear and played out the anchor. The tide would be rising soon, so the boat would be floating again when we returned to it.

I quickly assessed our surroundings and decided we would hike to some rocky little islands 150 yards away that had been laid bare by the low tide. From there we could find a 360-degree view of the area and keep tabs on where the wolves were going.

We needed to respect their space so they'd have as much freedom as possible to move naturally, undistracted by

us. We walked as quickly as we dared, giving the forest's edge a wide berth, and tucked into our rocky oasis. Then we waited.

They eventually cruised down the shoreline, sniffing, exploring and playing as they went. The shoreline bent in a sharp corner with a prominent rocky outcrop. As we watched, Leo—the powerful, dominant male—strode up onto the craggy rock outcrop and began his deep, confident howl. Then they all howled.

Quinn and I were beaming at each other! It was incredible. Over my years working with wolves, I have experienced many such epic moments, but this was Quinn's first time searching for sea wolves with me, and I was thrilled to share it with him. Their howls overwhelmed the foggy silence, stopped our breath and slowed our hearts, which were pounding with excitement.

The howling continued for a long time, but slowly the wolves became restless.

I was lost in the bustle of sound and activity, losing track of events around me.

Suddenly a couple of animals dispersed, heading south; others had disappeared. I became transfixed with a young wolf approaching us. We locked eyes as it approached, and suddenly I realized that it was Wink, whom I had named last summer when he was a pup. He'd survived the winter! I could always identify him by his one slightly droopy eye, his unique facial structure, dark coat and his curious personality. I was shocked to find him here, running with Leo and the pack.

True to his nature, he approached cautiously and curiously, and then squatted for a long casual pee, giving Quinn and me a good chuckle.

As Wink distracted us with his curiosity, he in turn was distracted by the tide pool sculpins (little fish) flitting around at his feet. He seemed to be watching twenty of them at once. He was overwhelmed by deciding which ones to chase! After a few unsuccessful attempts, he gave up and dug a butter clam out of the sand. This little treat he cracked and slurped up, leaving just the shell behind.

The final surprise of the day was seeing Cedar emerge. Cedar is Wink's mother. I noticed her gentle approach in my periphery. She lay down, overseeing her juvenile son's behavior and observing his hunting skills. Cedar has always had a strong and confident demeanor about her. I could see that her temperament hadn't changed in the months since I was last in her presence.

In the end, that day's wild adventures didn't help us find the den. But after more adventures and an incredible amount of dedication and hard work, we affirmed that we were on the right track and found what we were looking for.

Many more stories unfolded after that, and I share them on my Instagram page, Seaforth Expeditions. You can also watch the series, *Island of the Sea Wolves* on Netflix to experience what our work supported and learn more of these sea wolves' stories. ■

Tom McPherson is the director of Seaforth Expeditions in Sechelt, British Columbia, where he shares wildlife encounters with photographers and filmmakers, and guides thousands of people throughout coastal British Columbia and Alaska. At Capilano University he studied Outdoor Recreation Management and later obtained his Canadian Coast Guard Master Certificate from the British Colombia Institute of Technology Pacific Marine Training Center.

Long-time Debate Over North American Gray Wolf Subspecies

by Giselle Narváez Rivera and Lori Schmidt

How many species and subspecies of wolves reside in North America?

The answer to this question will depend upon whom you ask. Some scientists may say there are three species of wolves, while others claim there are only two. Others will say at least four or five subspecies of gray wolves inhabit North America; still others might insist that there are more or fewer than that.

Scientific consensus on North American gray wolf subspecific (subdivision of a species) designations does not exist. For this reason, earlier this year, the International Wolf Center decided to refrain from designating our ambassador wolves by subspecies or using wolf subspecific classifications in its literature, except to discuss questions about the subject itself. But what *is* a subspecies—and why is it debated?

A subspecies is a subgroup below the species level. In Western science, all living and extinct organisms are classified into groups and subgroups based on shared characteristics. Historically, scientists relied on morphology (the animal's form), behavior and ecology. Advancements in the field of molecular biology have allowed geneticists to investigate genomic evidence. Sounds simple enough; those that share the same look, behavior, ecological roles and genetic ancestry will fall into the same groups. But the task is more complex than it sounds. For example, while morphological, ecological and behavioral evidence tell us one story, genetic data might tell another, contradicting one. The evidence is interconnected, and interpretation depends on who is reading the evidence. This taxonomic

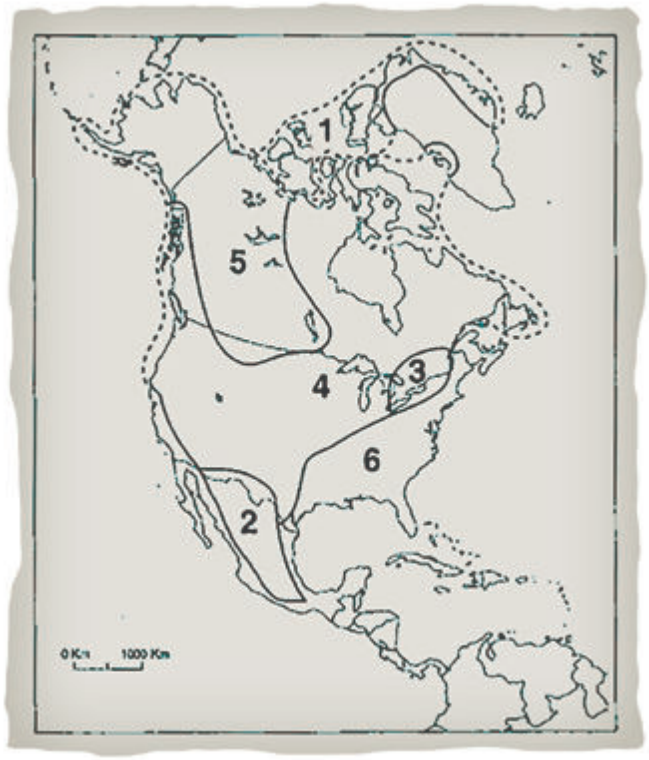
International Wolf Center

debate dates to at least the 1950's, and its significance has been argued continuously since then.

It has always been difficult to draw a boundary and determine exactly when or where a population is sufficiently different to become a subspecies. Drawing that boundary is particularly challenging in the case of *Canis lupus*—the gray wolf. Wolves very frequently leave their packs, or "disperse," and can travel hundreds of miles to find resources (i.e., a mate or unoccupied territory). In doing so, they will often cross those lines biologists have drawn on maps to distinguish wolf populations.

Earlier this year, a study published in the *Journal of Mammalogy* (Khidas, 2023), argued for a single morphological pool of North American gray wolf populations. Evidence was based on cranial and dental morphological patterns of the authors' sample sourced from specimens originating from across Canada and the United States. Their sample excluded the southern region of North America, which includes both the Mexican wolf (*Canis lupus baileyi*) and the red wolf (*Canis rufus*). In this particular study, no single population in the northern regions was characterized as unique, and no evidence was found to support geographic isolation of populations. The data collected did not support the previously reported subspecies of North American gray wolves *(C.l. arctos, C.l. nubilus, C.l. occidentalis)*, or the eastern wolf as a separate species (*Canis lycaon*) or subspecies (*Canis lupus lycaon*). Yet, the Society of Mammalogists, which owns the *Journal of Mammalogy*, has listed the eastern wolf as a separate species in its database since 2018.

Despite the lack of morphological evidence to support various North American gray wolf subspecies and the eastern wolf as a different species, another recent study published in the *Molecular Biology and Evolution* scientific journal (Vilaça et al., 2023) proposed a different theory. In their genetic study, researchers found molecular evidence that suggested there are three wolf species in North America: the red wolf, the gray wolf and the eastern wolf.



Original geographic distribution of wolves in North America, showing the two species and five subspecies of* Canis lupus *recognized by Nowak (1995):

***1- C.l. arctos* (arctic wolf);**

***2- C.l. baileyi* (Mexican wolf);**

***3- C.l. lycaon* (eastern wolf);**

***4- C.l. nubuilus* (plains wolf);**

***5- C.l. occidentalis* (northwestern wolf);**

***6- C.rufus* (red wolf).**

Gathering scientific evidence is always a work in progress. Previously accepted North American subspecies nomenclature settled on 24 subspecies of the gray wolf as of 1981. As scientific studies were peer reviewed and published, five subspecies were identified in 1995 by Nowak. Today, we are still debating subspecies designations.

The Canid Specialist Group (CSG) of the International Union for the Conservation of Nature (IUCN), composed of the world's experts in canid research, also seems to be careful about language around wolf subspecies, stating that in North America, "five subspecies are often recognized," with the eastern wolf still referred to as a debated species. Clearly, there is a lack of scientific consensus, and wolf taxonomy and scientific nomenclature continues to be highly subjective and unclear.

When Dr. L. David Mech wrote *Canis lupus soupus* in the Spring 2011 issue of *International Wolf*, he referred to the aphorism "a wolf is a wolf is a wolf." Whether we are looking at wolves found in Yellowstone, the Arctic region, or in the Great Lakes, they are all North American gray wolves. When we look beyond the subtle differences, they share the same basic behaviors, ecology and biology. ■

Additional Reading

Of What Use Are Subspecies?
Ernst Mayr 1982

Khidas, K. 2023. Morphological relationships among populations support a single taxonomic unit for the North American Gray Wolf. Journal of Mammalogy.

Vilaça ST et al. 2023. Tracing Eastern Wolf Origins from Whole-Genome Data in Context of Extensive Hybridization. Molecular Biology and Evolution, 40(4). https://doi.org/10.1093/molbev/msad055

Nowak, R. (1995). Another Look at Wolf Taxonomy. In L. Carbyn, S. Fritts, & D. Seip (Eds.), *Ecology and conservation of wolves in a changing world.* (pp. 375–398). Canadian Circumpolar Institute, Occasional Publication No. 35.

Lori Schmidt is the wolf curator at the International Wolf Center and will continue to be involved as an advisor upon her retirement in 2024.

Giselle Narváez Rivera is the incoming wolf curator; she has been in training since January 2023.

The Wanderer – An Alaskan Wolf's Final Journey

by Tom Walker

Book Review by Denise Hughett

Tom Walker is an award-winning professional photographer and writer who specializes in Alaskan natural history and wildlife. His experience is reflected in this book, making it both informative and easy to read. The narrative follows male Wolf 258, who traveled nearly 3,000 miles over the course of a year. (For reference, the driving distance from New York City to Los Angeles is almost 2,800 miles.)

The book takes its readers along on his journey through the rugged Alaskan frontier by providing vivid descriptions of the landscape, wildlife and challenges faced by Wolf 258.

The book's narrative begins with the darting and collaring of 258 by John Burch, a wildlife biologist for the National Park Service. (Note: An article by John Burch about Wolf 258 appeared in the Spring 2012 issue of *International Wolf*.) Burch had previously collared 258's mate, Wolf 227. Shortly thereafter, 227 died, and while Burch was able to retrieve her collar, he was unable to determine the cause of death. Wolf 227's passing seems to have triggered the start of her mate's travels.

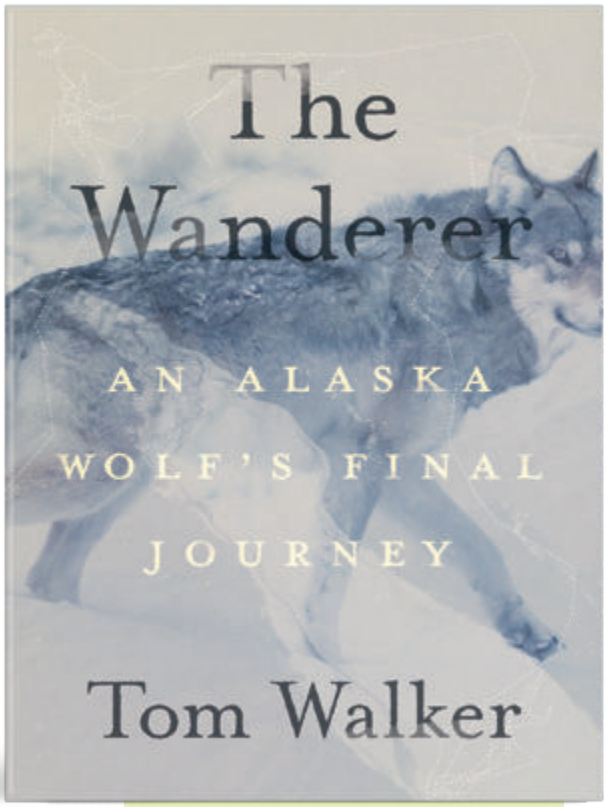
Walker writes that Wolf 258's travels could be monitored because of his GPS collar—but a collar can tell only so much. It appeared clear, sometimes, that 258 was following the migratory path of the caribou herds. But other times, the reason for his route was not apparent. Was he also looking for a mate? Did he send lonesome howls into the night and follow the replies? What did he eat besides caribou? These questions go unanswered.

For a wolf to have a chance of surviving, it needs: 1) an adequate population and density of prey food; 2) a habitat large enough to support both a pack and a food source; and 3) tolerance from humans. Wolf 258's almost constant traveling suggested to researchers that he had not found a mate, a pack or a suitable habitat. Additionally, finding and killing prey is difficult for a pack of wolves, and more so for a solitary wolf, so the fact he survived on his own for as long as he did is remarkable.

The book also describes the human-wolf conflict encountered by wolves in most locations, and apparently avoided by Wolf 258. Wolf control programs that included aerial hunting, trapping and shooting of wolves were supported by the Alaskan government and resulted in a 64% drop in the wolf population during the winter of 2012-2013, Walker writes. Fast forward to 2021, and the wolf population appears to be recovering after two decades of control programs—an indication of how resilient the wolf is as a species.

Wolf 258's journey was a notable one, and illustrative of wolves' incredible survival skills—even though, about a mile from the Dalton Highway in Alaska, 258's collar stopped reporting movement entirely, which indicates to researchers a wolf mortality.

Despite its inevitable ending, his fascinating story gives us a realistic glimpse into the odyssey of a wild wolf. ■



The Wanderer – An Alaskan Wolf's Final Journey

By Tom Walker

Publisher: Mountaineers Books

176 pages

Denise Hughett lives in Colorado and is a member of the International Wolf Center's Board of Directors.

International Wolf Center
7100 Northland Circle N, Ste. 205, Minneapolis, MN 55428

International Wolf Center

Give a Gift Membership!

Your gift recipient will receive:

- A one-year subscription to our member magazine, *International Wolf*
- Free admission* to the International Wolf Center in Ely, Minnesota
- Discounts on adventure programs, webinars and special events
- Discounts at the Wolf Den Store

**Visit wolf.org/support/membership for details on free admission.*

Orders must be received by December 8, 2023 to ensure holiday delivery in the United States.
Holiday delivery is not guaranteed for international orders.

Adobe Stock/Anastasiia Malinich