Chapter 19
Education and Outreach Efforts in Support of Wolf Conservation in the Great Lakes Region

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19.1 Introduction

A key component to the recovery of gray wolves (*Canis lupus*) in the Great Lakes region has been educational efforts about wolves done within the region. All four US Wolf Recovery Plans include recommendations to use public education to promote wolf conservation (Fritts et al. 2003). The importance of education also surfaced as a key component of the initial recovery plan for wolves in Wisconsin (Thiel and Valen 1995), and continued to be an important aspect of all wolf management plans in the Great Lakes region. The objective presentation of wolves is considered necessary by most wolf biologists for sustaining recovery (Fritts et al. 2003). Agencies responsible for wolf recovery have been involved in promoting wolf conservation, but have also relied heavily on nongovernmental organizations (NGOs), and volunteers.

In this chapter, we discuss the changing attitudes toward wolves in the Great Lakes region, and examine how education has responded and helped change those attitudes. There are many approaches that can be used to educate people about wolves (Fritts et al. 2003), and we examined the approaches used by the six organizations we represent, but we want to stress that there are other approaches and other organizations that have also been involved with educating people about wolves in this region. We conclude with suggestions of how education may continue to be used to promote conservation and living with wolves in the areas where wolf populations have recovered in the western Great Lakes states.

Our goals for education include (1) provide information about wolf biology, natural history, and ecology; (2) connect the public with scientific research on wolves as well as other species (using wolves as a focus because of the high level of interest in this species); (3) help people understand how scientists gather information about wolves, so they can better judge the credibility of popular sources of information; (4) help people to make informed decisions based on science, not emotions – whether those emotions are positive or negative; and (5) give people practical suggestions of strategies for coexisting with wolves to minimize conflicts. Those educating about wolves must be careful to inspire appreciation for

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the wolf and its important role in the ecosystem, without leading the public to have an unrealistic view of the species. Education about wolves needs to help people to wrestle with difficult and controversial questions – but should not try to provide them with the answers.

19.2 Education and the Changing Attitudes Toward Wolves

Early European settlers responded to the wolves inhabiting the New World with the same malevolence they embraced in their homeland. They carried with them centuries of fairy tales, myths, and legends of wolves as evil figures that devour children, devils that steal souls, and beasts that steal livestock. Along with the myths were fears of wolves attacking livestock and competing for limited resources in this wilderness, where survival was already tenuous. Because of concerns about wolves, the first bounty was enacted as law in 1630 by the Massachusetts Bay Colony, with the hunter receiving 1-cent per wolf (McIntyre 1995).

Wolves, along with snakes, rats, bats, coyotes, and other medium and large carnivores, were frequently viewed as intrinsically unworthy (Kellert et al. 1996). Lopez (1978, p. 139) wrote, "… the wolf is fundamentally different because the history of killing wolves shows far less restraint and far more perversity. A lot of people did not just kill wolves; they tortured them." Through intense control programs, humans rid the prairies, mountains, and forests of wolves until only handfuls survived in the most remote and wild reaches of the US. Wisconsin, Michigan, and Minnesota, like many other states, set bounties in the mid 1800s, and by the mid 1900s only a few hundred wolves remained in the lower 48 states along the border-lakes region of northeastern Minnesota.

Public attitudes toward wolves began to change as biologists and naturalists started conducting ecological research on wolves. Early conservationists and naturalists who became the pioneers of this change in attitude included Olson (1938), Murie (1944), Errington (1946), and Leopold (1949). These biologists began to paint a more realistic picture of the wolf – that wolves are highly intelligent, have a complex social structure, maintain healthy prey populations, and play important roles in ecosystems. While these researchers helped dispel myths about wolves, others also created positive images of wolves, but may have perpetuated new myths as well, such as wolves make interesting pets (Crisler 1958) or wolves are able to subsist on small mammals alone (Mowat 1963). It appeared that during the period of the 1930s and 1970s more positive attitudes toward wolves developed in the USA (Williams et al. 2002).

With these attitude changes, bounties were eliminated in the late 1950s and 1960s in the Great Lakes region. Scientists beginning research at the time, including Douglas Pimlott, Durward Allen, and L. David Mech, investigated further the ecology of wolves, and began long-term research projects in Algonquin Provincial Park, Isle Royale, and northeastern Minnesota, respectively. People like Marlin Perkins, zoologist and TV show host, and his wife Carol Perkins, formed the Wild Canid Survival and Research Center and organized and hosted the first wolf

conference in 1971, with the intent to preserve the last remaining wild wolf populations. The outcome from this and other early conferences on wolves was the realization that if wild wolf populations were to be recovered, attitudes needed to be changed and education would be critical. In 1973, the federal government passed the Endangered Species Act (ESA) as part of an ecological revolution. Interest in and more positive attitudes about wolves were part of a growing environmental consciousness and realization that species such as top carnivores play an important role in ecosystems. By 1974, the remaining population of wolves in Minnesota was legally protected. Although laws granted the wolf protection, long-held fears and hostile beliefs persisted.

The message during the early years of wolf recovery was, "that 'wolves are cool!'" (Grooms 2004, p. 5). The arguments were more black and white: wolves on the landscape versus no wolves on the landscape, save them or kill them. As wolves returned and delisting was imminent, how would humans and wolves coexist? Educators found themselves in a quagmire of diverse and conflicting values. While wanting to include a biological understanding of the wolf, education was broadened to include moral and ethical considerations concerning wolves as well. Education may be able to change attitudes and specific environmental beliefs, but if it promotes attitudes that clash with people's basic ethics or values, it will not likely succeed (Gardner and Stern 2002).

In some cases, human attitudes have gone beyond appreciation and acceptance to idealization of the wolf. One example of this trend is that ownership of wolf–dog hybrids has grown in popularity, and many have caused nuisance problems (Hope 1994; Wisconsin DNR 1999). Urban residents may favor wolf protection, but not be able to understand the plight of a rancher who has lost calves to wolf depredation, and less willing to accept the need to occasionally use lethal control to remove problem wolves Educators face the dilemma of how to teach people to see wolves as wolves.

19.3 Approaches to Education About Wolves

Each program described here has its own set of goals, audiences, and methods. Educators do not agree on all the goals, appropriate methods, or the appropriateness of advocacy along with education. Our goal in this chapter is not to advocate for any particular program or philosophy of wolf education, but to illuminate programs and methods that have reached people and have thus made a difference in society's perception of the wolf.

19.3.1 An Individual Approach: Karlyn Berg

In 1968, when wolves were unprotected, Karlyn Berg began her wolf programs to expose the plight of wolves and to motivate people to take action to preserve

wolves. With ambassador wolves, Karlyn was perhaps the first to travel throughout North America to schools, universities, clubs, museums, nature centers, and environmental events. In 1973, she and a team of people embarked on a wolf education effort in Minnesota, the state with the last remaining wolf population in the lower 48 states. They found that hostility against wolves was driven more by old beliefs and resentment, than by actual wolf conflicts. Berg became a resident of northern Minnesota and moved into the heart of the wolf country, where she focused her educational efforts, but continued to teach about wolves across the Midwest and in other portions of the country.

Karlyn expanded her ecological and biological programs to include history and discussions that she hoped might transform the negative attitudes and promote coexistence with the wolf. She discontinued bringing live wolves to programs when it became apparent this action was conveying wolves could make good pets, inspiring people to own one. In its place, Karlyn gathered historic, cultural, and biological artifacts creating a large traveling wolf display, a tool that would be exciting and tactile for any audience to experience.

Karlyn produced educational materials, curricula, and school programs. She created a Natural Science Museum and collaborated on numerous wolf projects and films, and in 1981, she was asked to be the exhibit consultant for The Science Museum of Minnesota's *Wolves and Humans* Exhibit. She wrote the accompanying educational materials for the exhibit using the format from her own wolf programs. These materials later served as the basis for the Wolf Education Learning Stations Box to teach about wolf ecology and biology which she designed so educators would not only have written curricula but also hands-on materials as well. Karlyn produced more than 85 boxes for state and federal agencies, and private education facilities.

Trying to coexist with wolves presents a complex challenge, and exploring this challenge remains a critical part of Berg's educational efforts. While Karlyn strongly prefers use of nonlethal methods to manage wolf–human conflicts, she accepts the necessity to sometimes use lethal controls to deal with depredating wolves, and includes this message in her talks and educational materials.

19.3.2 Wolf Park

In the early 1970s, a handful of scientists and environmentalists began to take steps to study and inform the public about wolf behavior. This included behaviorist Dr. Erich Klinghammer from Purdue University in Indiana. Klinghammer received two wolves from the Brookfield Zoo in Chicago and founded Wolf Park in Battle Ground, Indiana, a nonprofit organization dedicated to wolf conservation in 1972. Klinghammer knew the many misconceptions about wolves, so he invited curious and interested people to come and see his wolves up close and learn what a wolf is really like. Wolf Park is a 30-ha park that is home to socialized wolves, coyotes (*Canis latrans*), and red foxes (*Vulpes vulpes)* that serve as ambassadors for these

animals that are difficult to observe in the wild. Klinghammer and his volunteer staff use behavioral concepts borrowed from Konrad Lorenz to socialize the captive animals so they are relaxed and not stressed around people. Through the years, students have taken advantage of the opportunity to study the captive wolves, allowing a more intimate view of the animal than is possible in the wild. Two prominent wolf ecologists, Dr. Rolf Peterson and Dr. Doug Smith, had early training at Wolf Park.

Incorporating behavioral research with public education, Klinghammer encouraged visitors to simply watch the wolves to get a sense of what this species is about. He believed that once a person could see a wolf just being a wolf, eating, howling, and socializing with members of its pack, they would see these beautiful and interesting animals as deserving respect. Each behavior a wolf displayed, whether scent marking, vocalizing, or showing pack dynamics, became an educational opportunity.

Wolf Park provides walking tours with trained guides almost daily during the park's open season. Seminars on topics including wolf behavior, ecology, and the relationship of wolves to dogs, are offered year round. Education has been geared more toward adult learners, but the Park has also expanded its education reach to include K-12 audiences. The children's program ranged from 2-h visits for busloads of students to day and overnight camps, drawing young people from the local area and adjacent states. In 10 years, Wolf Park hosted over 200,000 people. It is hoped that Wolf Park's combination of providing scientific information and the emotional impact of "getting to know" a wolf, improves people's perceptions of wolves, other wild species, and about nature, in general.

Wolf Park has modified its use of captive wolves. At one time wolves were taken off-site to do educational programs at schools, but this program was discontinued when staff discovered that the sight of a wolf on a leash led many audience members to the conclusion that wolves could make good pets. Therefore, wolves are now kept at the park in large, naturalistic enclosures. The Park now educates about the problems of raising wolf–dog hybrids and discourages their ownership.

Although a large portion of visitors are already fans of wolves, visitors' support for wolves increased after a visit to the Park (Black 2006) The Park provides wolf supporters with factual information so they themselves can speak in support of wolves and vote responsibly on regulations and policies affecting wolf conservation. Wolf Park also educates about wolf–human conflict issues, and how to manage wolf depredation of livestock. In seminars, Dr. Klinghammer expresses supports for the killing of wolves that are known to have killed livestock, and that it is in the species' best interest to do so.

Wolf Park is sometimes criticized for keeping captive wolves, but Park staffs believe that an ambassador wolf serves a worthy purpose of providing a chance for people to see this usually elusive animal up close. The Park has learned that such experience of seeing an actual wolf helps create greater respect for this animal. Wolf Park expects that education about wolves will continue to be important after delisting as more people have to learn how to live with wolves.

19.3.3 International Wolf Center

The International Wolf Center's (IWC) objective is simply to teach the world about wolves. Founded in 1985 by wolf biologist Dr. L. David Mech, the Center attempts to improve the survival of wolf populations by teaching about wolves, their relationship to wildlands, and the human role in their future. By fostering a citizenry that understands the biological and social dimensions of wolf issues, the IWC hopes people will make informed decisions about the wolf's future.

Each year 45,000 people visit the Center's interpretive facility in Ely, Minnesota and view the 550-m^2 exhibit, *Wolves and Humans: Coexistence and Conflict*, and a resident pack of ambassador wolves. The IWC provides classroom curricula, a quarterly magazine, high-tech distance learning outreach programs, symposia, an extensive Website, electronic newsletters, traveling exhibits, teacher workshops, and other educational activities.

The IWC strives to help populations of wolves to survive and help facilitate coexistence between wolves and humans. It emphasizes "populations" of wolves out of the belief that the needs of the population as a whole supersede the needs of individual animals. The Center focuses on "targeted areas," that is, states or recovery areas where there is a need for educational services that can be provided efficiently by the Center. Currently targeted areas of focus include Minnesota and southwestern USA.

The IWC focuses on providing science-based, accurate, objective information on wolves and attempts especially to share such information with teachers, the media, and natural resource professionals, who in turn are in contact with a much larger audience. The IWC estimates that a 1-day workshop that instruct, inspires, and provides resources to 30 teachers will eventually touch 1,000 students over the next 10 years. Further services for educators include several types of curriculum resources, wolf loan boxes, books, and videos suitable for the K-12 classroom, distance learning programs, a teacher newsletter, and special programs for school groups at the Center in Ely, related to the state's learning standards. Workshops include field sessions in which participants become involved in actually howling for wild wolves, tracking them in the snow, or observing them in places such as Yellowstone or the High Arctic. It is hoped that by giving teachers tools and confidence to include wolves in their curriculum, more youth will grow up with a science-based, objective view of wolves that will help them make informed decisions about wolves in the future, and support conservation of wolves.

To facilitate coexistence between wolves and humans, the IWC runs a Wolf Helpline that assists residents in northeast Minnesota to prevent and mitigate conflicts with wolves. Recently, area residents and tourists reported an increase in the number of wolves coming in close proximity to people. To encourage wolves to keep their distance from humans, Center staff members teach area residents strategies to avoid habituating wolves. These strategies include simple precautions, such as securing garbage and feeding pets indoors. Educational flyers, presentations, and radio public service announcements spread the word about ways to avoid conflicts with wolves.

The IWC works to balance its mission of advancing the survival of wolf populations with a commitment to objectivity toward wolves and wolf management issues. By respecting diverse perspectives, the Center encourages well-informed dialogue and discussion about the often volatile and value-laden topics of wolf–human conflict and coexistence. The Center promotes the message that people, both as individuals and collectively, are responsible for ensuring the long-term survival of wolves and the wildlands habitats where they best thrive.

19.3.4 National Wildlife Federation

The National Wildlife Federation (NWF) in Washington, DC worked at national levels for the passage of the Endangered Species in the late 1960s, when the gray wolf was disappearing across the lower 48 states. NWF's education efforts are geared at the national level through publications such as *National Wildlife Magazine*, *Ranger Rick*, and *Your Big Back Yard* and its Website reaching out to more than 4 million members annually. NWF's National Wildlife Week is celebrated at the end of April, and features endangered species, including the wolf. NWF's efforts keep people informed about wolf population health and viability, and encourage people to become proactive in issues that will affect the future of the wolf.

NWF works with a wide variety of special interest groups, and with state Wildlife Federation (WF) affiliates to secure a place for wolves in a healthy environment. Changing attitudes about wolves has been a very difficult process and is not always possible through education alone (Meadow et al. 2005), but attempts to improve attitudes toward wolves require a wide variety of educational tools.

To make learning come alive, NWF developed Wolf Trunks. Filled with pelts, skulls, scat, tracks, and more, these trunks are treasure chests of hands-on, real world learning for youth and adults. The trunks have been used as stand-alone resources or as tools to enhance classroom lesson plans on wolf biology, behavior and conservation, habitats, endangered species, predator–prey relationships, and more.

The NWF produced an Imax Production film, *Wolves*, for a large audience and it was shown at Imax and other giant-screen venues throughout the country for 2 years. The "Wolves Action Pack" a companion classroom activity guide to the movie was also produced. The movie *Wolves* is available for purchase on DVD.

Brochures have been developed by the NWF to teach people how to live with wolves, and to teach hunters how to minimize encounters between hunting dogs and wolves. NWF works with grassroots organizations, special interest groups, and key players to encourage conservation of wolves. Although wolves continue to be burdened with negative perceptions, NWF is developing new educational approaches to address how wolves can live with people and how this species will be managed without federal protection.

19.3.5 Timber Wolf Alliance

The Timber Wolf Alliance (TWA) was a program of the Sigurd Olson Environmental Institute at Northland College in Ashland, Wisconsin along the south shore of Lake Superior through spring 2008, when it transferred to the North Lakeland Discovery Center in Manitowish Waters, Wisconsin in the heart of the northwoods lake country. TWA focuses on educating citizens of the western Great Lakes region, especially in Wisconsin and Michigan, about wolves of the region.

In 1986, the Wisconsin Department of Natural Resources (WDNR) drafted a white paper stating facts about gray wolves and their potential recovery in the state, and responses by the general public (Thiel and Valen 1995). A majority of those who responded were antagonistic toward wolves. It was apparent that if the state was ever to see a viable wolf population, education was needed. In winter 1987, a group of people representing 11 environmental and educational organizations, as well as agency biologists, met to address this need. Over the course of several meetings, this group decided to create an organization that would disseminate information about wolves to the public, which became TWA.

TWA quickly grew, and by 1990 the Sigurd Olson Environmental Institute provided staff support and a home. TWA's mission has remained similar for the past 21 years to provide education programming based on strong science to promote sustainable populations of wolves in the region. TWA worked toward addressing all sides of controversial wolf issues, without taking specific sides except supporting use of science to address wolf management issues. TWA provided education to all age levels, and from various urban and rural backgrounds across the region. By meeting, working, teaching, and supporting people in their own communities within and outside of wolf range, TWA believes that a change in attitudes can take place.

TWA maintains a volunteer Speakers' Bureau, trained by staff, agency biologists, and volunteer coordinators with a goal to give wolf presentations in their own communities where they know and understand the particular interests and needs of the audience. The broad geographic distance across the Great Lakes region and diffused population makes community-based programming an effective tool for teaching local citizens about wolves. Currently, TWA volunteers provide programs to ~10,000 people annually in large and small communities around Wisconsin, Michigan, and northern Illinois. In partnership with federal and state agencies and private organizations (US Forest Service – Ottawa National Forest, Wisconsin DNR, and Wisconsin Trappers Association), TWA developed educational displays that travel to schools or are stationed at state parks where thousands of visitors can view them. TWA volunteers also use these displays at events tailored to specific groups such as hunters, loggers, and farmers.

In the late 1990s, Michigan DNR wildlife biologist Jim Hammill began a "hunter outreach" program during the fall firearm deer season, visiting remote hunting camps to inform hunters about wolves in their area (McLeer and Warren 2004). It has since become a program of TWA, relying on volunteers and wildlife agency personnel to share information on status and biology of wolves with deer hunters. The fall hunting season typically is the time when illegal killing of wolves

is greatest. Volunteers traverse the back roads during the opening weekend of the hunting season. The intent is to greet hunters on their own turf, provide packets of factual information about wolves, answer questions, and ask if hunters are seeing wolf sign. By providing information and listening to concerns, volunteers try to respond to hostile attitudes, and hopefully discourage illegal shooting of wolves. Generally, each year's hunter outreach focuses on different areas and especially focuses in areas where illegal kills have occurred recently. A dozen or more volunteers reach nearly 1,000 hunters annually in Michigan and Wisconsin.

Training people to help survey wolves encourages stewardship toward wolves and the northern forest. In 1995, Wisconsin DNR biologists developed a volunteer tracking program for large and medium carnivores using citizens to augment data collected by wildlife professionals. TWA has contributed to this effort by hosting several training workshops around Wisconsin and Michigan for novice and advanced trackers, bringing in Jim Halfpenny to provide expert training in track identification and interpretation (Halfpenny 1986). These workshops encourage young students and retired professionals to spend time in winter searching for tracks of wolves and other forest carnivores. TWA also conducts summer workshops in which people are involved in howl surveys and searching for wolf sign in known wolf territories. As budgets tighten, using citizen volunteers as helpers in data collection not only benefits the state's pocketbook but also creates stewards for the wolf program, builds local support, and uses place-based knowledge (Nie 2003).

Since 1990, TWA has sponsored Wolf Awareness Week in the fall, highlighted by distributing engaging educational posters. Started as Wisconsin Wolf Awareness Week in October 1990, the program expanded to become a regional wolf awareness week in 1992, and expanded again in 1998 to both a regional and national Wolf Awareness Week. The regional Wolf Awareness Week focused on wolf issues in the Great Lakes region, while the national Wolf Awareness Week covered wolf issues from across the country. In recent years during Wolf Awareness Week, TWA has distributed 35,000 national educational posters around North America, and 35,000 regional posters within the Great Lakes region. The posters were supported by over 40 sponsors. Also during Wolf Awareness Week, special lectures by wolf experts were sponsored and special children's newsletters on wolves were distributed across the Great Lakes region.

TWA's work remains focused on the issues and needs of wolves in the upper Great Lakes region. Although wolves are no longer endangered in the region, teaching how to live with wolves, helping to resolve human–wolf conflicts, and teaching about the role of wolves in the ecosystem will continue to be important for maintaining long-term viability of wolf populations in the region.

19.3.6 Wildlife Science Center

The Wildlife Science Center (WSC), a private, nonprofit organization, was established in 1991 in Forest Lake, Minnesota after funding ceased for the Wolf Project, a federal program dedicated to physiological and behavioral research of wolves. Wildlife biologist Peggy Callahan, a specialist in chemical and nonchemical

capture and immobilization techniques, had managed a colony of captive gray wolves at the facility. Without federal funds, Callahan and fellow biologists faced a choice of euthanizing the wolves or adopting them out to zoos.

Instead, Callahan decided to create the WSC. In 1994, after 3 years of intensive preparation and program development, the center opened to the public. In addition to hosting tours and special events, the facility offers educational outreach programs based upon the National Science Standards for K-12, research opportunities for scientists, and hands-on training for wildlife professionals.

The WSC is best known for its population of gray, red (*Canis rufus)*, Mexican gray (*Canis lupus baileyi*), and hybrid wolves (*C. lupus* × *C. familiaris)*. Its resident wildlife also includes other native carnivores, porcupines (*Erethizon dorsatum*), New Guinea Highland dogs (*Canis familiaris hallsrtomi*), and raptors such as hawks, owls, and falcons. Teaching ranges from elementary school students learning about scientific methods to wildlife biologists studying wolf genetics. Research opportunities are available for amateur naturalists and professional scientists alike. The center also participates in the Species Survival Plan (a program of the Association of Zoos and Aquariums) for the red wolf and Mexican gray wolf. Both species were considered extinct in the wild and relied on captive facilities such as the WSC for their survival.

In addition, the facility provides training in wildlife handling for animal control officers, zoo professionals, veterinary students, and others. They receive instruction in chemical immobilization, veterinary emergency response, and animal handling techniques.

As wolf management shifts from issues of recovery to population management, wildlife biologists and managers face new challenges and research needs. Wolf biologists and managers have an obligation to share their findings with the educators who interface with the public, and educators have an obligation to seek out the latest available scientific information. The WSC provides a facility where researchers and managers can interface with educators to make sure that findings on wolf management and research are broadly disseminated.

The WSC believes education centers are obligated to disseminate the best possible information available. Education about wolves is considered a conduit to other subjects such as ecology, literature, politics, math, and geography. The educational staff, made up of licensed educators, develops and conducts programs with a systems approach.

The wolf program at the WSC incorporates the biological, historical, and cultural role of the wolf in the environment. The student-driven curriculum involves inquiry-based learning and hands-on activities, with a focus on real-world issues. In a time where students are lacking interest in science and spending less time outdoors (Louv 2006), the WSC teaches people about their role in nature and encourages them to take part in the conservation of wolves on the landscape.

19.4 Summary and Conclusions

Attitudes toward wolves began to improve by the 1970s, probably due to education about the scientific research on wolves in the 1930s–1960s, and the environmental movement beginning in the 1960s (Williams et al. 2002). Despite better acceptance

of wolves, human attitudes still seemed to be a major impediment to recovery in the Midwest in the 1980s (Thiel and Valen 1995). The 1980s–1990s, when wolf educational organizations developed and grew in the Great Lakes region, was also the period of most rapid growth of wolf populations in the region (Erb and DosCarlos, this volume; Beyer et al., this volume; Wydeven et al., this volume). While it is not possible to attribute all this population growth to educational efforts, it is reasonable to assume that educational programs were one of the factors that allowed growth and spread of the wolf populations. There appeared to be growing respect for wolves and intolerance for past management practices such as systematic removal of wolves (Jickling 1996). It appears that some of the hostile convictions about the wolf have been replaced by greater ecological understanding and acceptance of carnivores.

A challenge that educators continue to face is that despite overall improvement in attitudes toward wolves, people living close to wolves in rural are still less likely to be supportive of wolf conservation (Williams et al. 2002). If this pattern continues, this means as wolves spread out across the landscape and occupy more areas where people live, negative attitudes could spread in localized areas. Knowledge by itself does not guarantee improved attitude toward wolves and often people with diametrically opposed attitudes score highest on species knowledge; generally, personal experiences and peers have more impact on attitudes (Meadows et al. 2005). As people experience depredations or associate with people who have experienced wolf depredations, they are more likely to develop negative attitudes toward wolves (Naughton-Treves et al. 2003). Wolf educators such as Karlyn Berg and Wolf Park in the past have provided positive personal experiences by bringing wolves to people. While this may have improved attitudes for some, it also had the unexpected consequence of encouraging use of wolves or wolf–dog hybrids as pets. Facilities such as Wolf Park, the International Wolf Center, and the Wildlife Science Center continue to use ambassador wolves to encourage positive attitudes about wolves, but within highly controlled captive situations. Karlyn Berg, the National Wildlife Federation, and the International Wolf Center have produced wolf educational boxes that also try to create positive personal experiences associated with wolves. The Timber Wolf Alliance and International Wolf Center take people into wolf habitat and attempt to create such positive connections by encountering wolves through their howls, tracks, and occasional observations. While more highly educated people tend to be more positive toward wolves (Naughton-Treves et al. 2003), providing positive experiences that connect people with wolves is also critical to maintaining a public willing to tolerate wolves on the landscape.

In general, wolf education messages are likely to become more nuanced and complex (Grooms 2004). Education in support of wolf conservation will need to continue to include information on wolf biology, but people should also be taught about the need of wolf controls, options available, and other aspects of wolf management. While educators have been successful in creating more respect for and acceptance of wolves, it is critical to also strive for respect for those who have suffered depredation losses to wolves, and those who hold different attitudes and opinions about wolf management. Wolf educators may also need to learn more and share information on ethics and values (Williams 2004).

The success of wolf recovery can serve as a good example to educate people about endangered species recovery, and wildlife restoration in general. As a top predator, the wolf lends itself well to discussion of prey populations and the health of plant communities. Worldwide, wildlife is being affected by factors such as habitat destruction, global warming, and mass extinctions. The successful recovery of wolves in the north woods of the Great Lakes region can provide hope and inspiration for wildlife restorations in other locations. As a large, magnificent predator, wolves can connect people more closely to nature and create greater ecological consciousness. Creating stronger connections to nature is especially important for children that often have minimum opportunities to learn about nature in modern society (Louv 2006). As stated by Louv (2006)

> "Healing the broken bond between our young and nature is in our self interest, not only because aesthetics or justice demand it, but also because our mental, physical, and spiritual health depends on it. The health of the Earth is at stake."

As we look to the future, education will need to be less of a lesson plan on wolf ecology and more about how we value the wolf and the environment. Education will be necessary for coexistence between wolves and humans to occur. As stated by Peggy Callahan of the Wildlife Science Center, "The survival of the wolf and other organisms relies on three factors: political, social, and biological. Biologically, the wolf can survive, but politics and social perspectives revolve around knowledge. Education is the key to the wolf's future."

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