



# PARKSCIENCE

INTEGRATING RESEARCH AND RESOURCE MANAGEMENT

## WOLF HANDLING ON ISLE ROYALE

ECOLOGICAL SCALE REVIEWED

PROTECTING RESOURCES  
AND VISITOR OPPORTUNITIES

A CONVERSATION WITH POINT REYES  
SUPERINTENDENT  
DON NEUBACHER

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## ON THE COVER

***Wolves travel the icy shoreline of Siskiwit Bay at Isle Royale National Park, Michigan. After having successfully studied wolves and moose on this wilderness island for 30 years without handling, biologists began a live-trapping program in 1988 that provided important genetic information to managers. Last year the park investigated the possibility of returning to a hands-off monitoring approach.*** PHOTO BY ROLF O. PETERSON

# How long do we keep handling **wolves** in the **Isle Royale** wilderness?

By Jack G. Oelfke and R. Gerry Wright



Sometime during winter 1948/49, what is now Isle Royale National Park's most famous inhabitant, the gray wolf (*Canis lupus*), entered the Michigan island, crossing the ice-covered Lake Superior from mainland Ontario or Minnesota. Upon their arrival, they discovered what must have been to them, quite simply, *paradise*: an island with plenty of food (*Alces alces*, the moose) and no human harassment. No roads, no

hunting, and no serious competition for the ample prey base present. The wolves made quick work of their only true competitor, the coyote, by eliminating it from the island within a few years. More importantly, they asserted an influence over a moose population whose numbers had fluctuated considerably since its arrival to the island ecosystem in the early 1900s, including at least one massive population crash in the 1930s.

Ten years later another significant lake crossing occurred—the arrival of the first researchers into the park to begin a focused study of the wolf population. In 1958 Dr. Durward Allen and his associates began what has become the longest-running wildlife study in the world, the wolf and moose research and monitoring study in the park. By winter 2000 this study had reached its 42nd year, including the last 30 years of investigation under Dr. Rolf Peterson of Michigan Technological University. The research brought to the world a look at wolves and moose in an ecosystem largely free of the ills and influences of modern society. In doing so, these efforts made the wolf famous, the icon of Isle Royale itself. The park, and the stature of the gray wolf in America, has forever changed as a result of these two journeys.

## Background

The popular media began its role in creating a near mythical status for the island's wolves as early as 1963 in *National Geographic* (Allen and Mech 1963). A part of the mystique that

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surrounded the wolves of Isle Royale was that despite the years of intensive study, the wolves were never handled or touched by humans. Even prior to the park's wilderness designation in 1976, park management directed that no handling of wolves would occur through the research efforts. Adequate documentation of the status and trends of the wolf population could be gathered through aerial surveys in the winter (see the cover photograph), and for the first 30 years of the study, that was enough intrusion in their world. The policies and philosophy of designated wilderness,

which direct that the minimum requirement or tools be used when completing any action within wilderness (including approved research), influenced this decision, but so did the desire to perpetuate the aura of the untouched wolf population.

By 1980 the island's wolf population stood at 50, an incredible density of one wolf per four square miles. This density was not sustainable, and when the wolf population crashed to 14

**Figure 1. Three biologists carry a sedated wolf to an examination site at Isle Royale National Park. Looking for answers to a wolf population crash due, in part, to disease, biologists began live-trapping and handling wolves in the park in 1988. PHOTO BY ROLF O. PETERSON**





animals by 1982, no one was terribly surprised or worried. By 1988, however, when the wolf population remained in the low teens despite an apparently ample food base, it was clear that something was awry in the population. Park management sought advice from both within the National Park Service and the external research community, and a peer-reviewed proposal in 1988 recommended the need to handle wolves on the island to assess the persistent wolf population decline and the high mortality rate. The practice of handling wolves continued following a meeting of specialists that reviewed the first-year findings. During that period, no end-date for how long the handling was to continue was discussed; rather, most experts involved believed that answers to the questions of the wolf decline would be gained quickly and resolve the issue. Ultimately, disease as a major factor in the island's wolf decline was implicated in the persistent decline (Peterson et al. 1998).

Handling the island's wolves also led to greater insights of issues related to wild canid populations. Genetics testing of these wolves led to the understanding that virtually every island wolf had descended from the single maternal founder, and that the population was thus highly inbred (Wayne et al. 1991; Lehman et al. 1991; Peterson et al. 1998). As such, we now recognize that the wolves of Isle Royale provide an unprecedented opportunity to determine the significance of genetic losses for long-term viability in small, isolated populations, one of the major tenets of conservation biology.

Wolf handling continued throughout the 1990s (figures 1, previous page, and 2). The population remained low until a significant upturn started in 1994, and by 1999 the population was near the long-term average since the study had begun (25 animals). Handling continued primarily to assess the health of the population and to obtain genetic information from individual wolves.

## Values associated with the wolf research program

The National Park Service recognizes several positive outcomes of the long-term wolf research program. Park management has made several substantive decisions based on the research findings and needs, including (1) a complete park closure to visitor use from November 1 to April 14 each year, largely to facilitate the research program and prevent harassment of the wildlife through winter recreational activity; (2) prohibition of overnight camping in approximately 50% of the park to protect wolf denning sites and to keep visitors from coming into close contact with wolf pups, thus preventing habituation to humans; and (3) a prohibition of mammalian pets on the island to reduce the potential for disease introductions.

Other recognized values of the research program have included the wide dissemination of natural history information on the wolf and moose populations of the park, particularly as it has described these populations in an environment free of human harassment and interference. An adoring global public now awaits the annual updates of these populations.

Finally, 30 years of population data provided a compelling argument that significant change had occurred, and when wolf numbers dropped so low in the late 1980s more intensive investigation was warranted. This database enabled park management and the research community to assess the need for intensive handling of the wolf population.



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## Wilderness values in the park

The remote location and difficulty in accessing the island has protected Isle Royale from excessive development and recreational use. Many of the recognized values of wilderness—opportunities for solitude, unconfined recreation, a landscape largely devoid of the human imprint—are found at Isle Royale. Recreational activities commonly associated with wilderness, including backpacking, kayaking, and canoeing, represent the largest user groups of the park.

Isle Royale represents a wilderness landscape unique in North America. It is a landscape with no adjacent terrestrial land boundaries (figure 3) and thus avoids the conflicts of neighboring land management practices, political



**Figure 2. Biologists draw blood from a female wolf before outfitting her with a radio collar and returning her to the wild. From 12 years of handling like this biologists have learned that the wolves of Isle Royale are descended from the same founding female and are highly inbred.**

PHOTOS THIS PAGE BY ROLF O. PETERSON

considerations, or the immigration/emigration of wildlife, which often heightens the need for management of the wildlife resources. This isolation is a critically important distinction for this park and its wildlife populations. It allows a hands-off approach to wildlife management to be employed, wherein manipulation or intervention—even to the point of strictly nonintrusive research and observation—are minimized to the greatest extent possible, and justified because of a concern for wilderness values. It also allows for consideration of keeping wildlife populations completely untouched by humans, as a baseline of *wilderness* wildlife management at one end of the wildlife management spectrum.

### Assessing the issue

With the wolf population resurgence on Isle Royale has come the need to ask if we need to continue to handle wolves. For 30 years the park obtained the necessary research information it needed without handling wolves; given wilderness concerns and concerns for the health of those wolves that are live-trapped, could the research program return to a hands-off monitoring approach? Or does the research information now being collected as a result of wolf handling, particularly genetics information, outweigh the live-trapping risks and potential conflicts with wilderness values?

To resolve this dilemma, the park and principal investigator agreed to convene an independent scientific panel to assess the issue and recommend a course of action to the National Park Service. This panel could provide an objective and scientifically valid opinion on the merits of continued handling. The scientific review followed the suggestions outlined by Meffe and others (1998). The panel convened in April 1999, and consisted of three experts (two from the USGS Biological Resources Division, one from the Aldo Leopold Wilderness Research Institute), with participation from NPS employees and the project's principal investigator, Dr. Rolf Peterson. Panel members were selected based on expertise in wolf research and wildlife management and familiarity with wilderness and wildlife management in the national park system.

The expert review panel was asked to review pertinent information on the Isle Royale wolf population and the wilderness values associated with the park and provide a recommendation to park management on the following issues:

*“Given the past and current wolf population status in the park, anticipated future research needs, and the wilderness designation of the park, is it necessary to continue to livetrapped and handle wolves on the Island? Or can the research and monitoring program return to a non-handling monitoring approach? Have we answered the important questions through the handling of wolves over the past 10 years?”*

### Results and summary



Could the  
wolf research  
program  
return to a  
hands-off  
monitoring  
approach?

The panel reviewed the relevant issue information and identified the advantages of handling and not handling wolves as a means to determine a recommendation. That information, with a recommendation, was submitted to park management in a summary report (Oelfke 1999).

Although there are numerous advantages of handling wolves in terms of the quality and quantity of information that can be obtained, the most important advantage identified was that handling permitted the ongoing assessment of genetic change within a small population. This assessment is considered to have broad regional or global application and significance for isolated populations. The key advantage to not handling wolves, aside from the obvious removal of possible trapping injury or mortality to the wolves, was the value of minimizing human influence on the population. The return to a policy of not handling wolves would maintain the park as a baseline of wilderness wildlife management.

Five possible strategies were considered by the expert panel for wolf handling in the park, ranging from no handling to increasing the amount of handling to enhance the research program. As discussion of the strategies continued a consensus was reached that the value of tracking the loss of genetic diversity of this population warranted the continued handling of the population; it then became a matter of selecting a strategy that best addressed the wilderness concerns and research information needs.

**Figure 3 (above).** With no adjacent terrestrial neighbor, Isle Royale National Park requires management that considers its pronounced wilderness value, including the appropriateness of handling wildlife for research purposes. In the near future, genetics information from wolves may be obtained from their droppings, potentially making further handling of the species unnecessary. PHOTO BY ROLF O. PETERSON



## Recommendation

The expert panel recommended:

1. Continue handling wolves for the next five years (2000–2004). Up to four wolves per year should be handled, not to exceed two collared wolves per pack, and no more than 12 wolves total over the five-year period (this is close to the capture rate from 1988–93, but allows more flexibility each year). These numbers reflect the desire to maximize handling opportunities during live-trapping efforts, given the logistical difficulties of trapping operations in the park, while still handling only the minimum number of animals necessary for information purposes.
2. Over the five years, aggressively look for data gathering techniques that would not require handling, by challenging the National Park Service and the scientific community to develop and study these new techniques.
3. If, within the five years, new techniques are found for acquiring genetic data without handling the wolves (e.g., such as scat and hair analyses), convene a panel to evaluate whether disease and population counting benefits are worth the continued handling of wolves.
4. If no new techniques are found within the five years, convene a panel to reevaluate the handling issue.
5. If a sudden population crash occurs, explore different strategies that may be needed to respond to the situation.

## The park's response

The use of an expert review panel provided the two parties closest to the issue—the Park Service and the principal investigator—an opportunity to step away from the debate and obtain guidance relevant to the issue. Although, ultimately, the final decision on whether to continue wolf-handling practices rests with park management, the independent scientific review provided an unbiased recommendation for consideration.

Park management has largely adopted the panel's recommendations, with the exception of being unwilling to permit the live-capture of more than two wolves per year, reflecting a very conservative attitude intended to minimize possible injury to individual animals (Barnard 1999). The key information needs critical to the research program will remain obtainable.

The park is also aggressively seeking funding for research that will test whether wolf hair and fecal material can be used for tracking the genetic information needs of this population. Recent projects involving simi-

lar techniques for grizzly bears and lynx hold promise that these techniques may apply to wolves, ultimately diminishing the need to handle wolves.

For the near term at least, wolf handling will remain an important element of the wolf research program. Meanwhile, the challenge of balancing the wilderness values of a wild wolf population at Isle Royale with the agency and research needs will continue to provide a fascinating case history for review. 

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