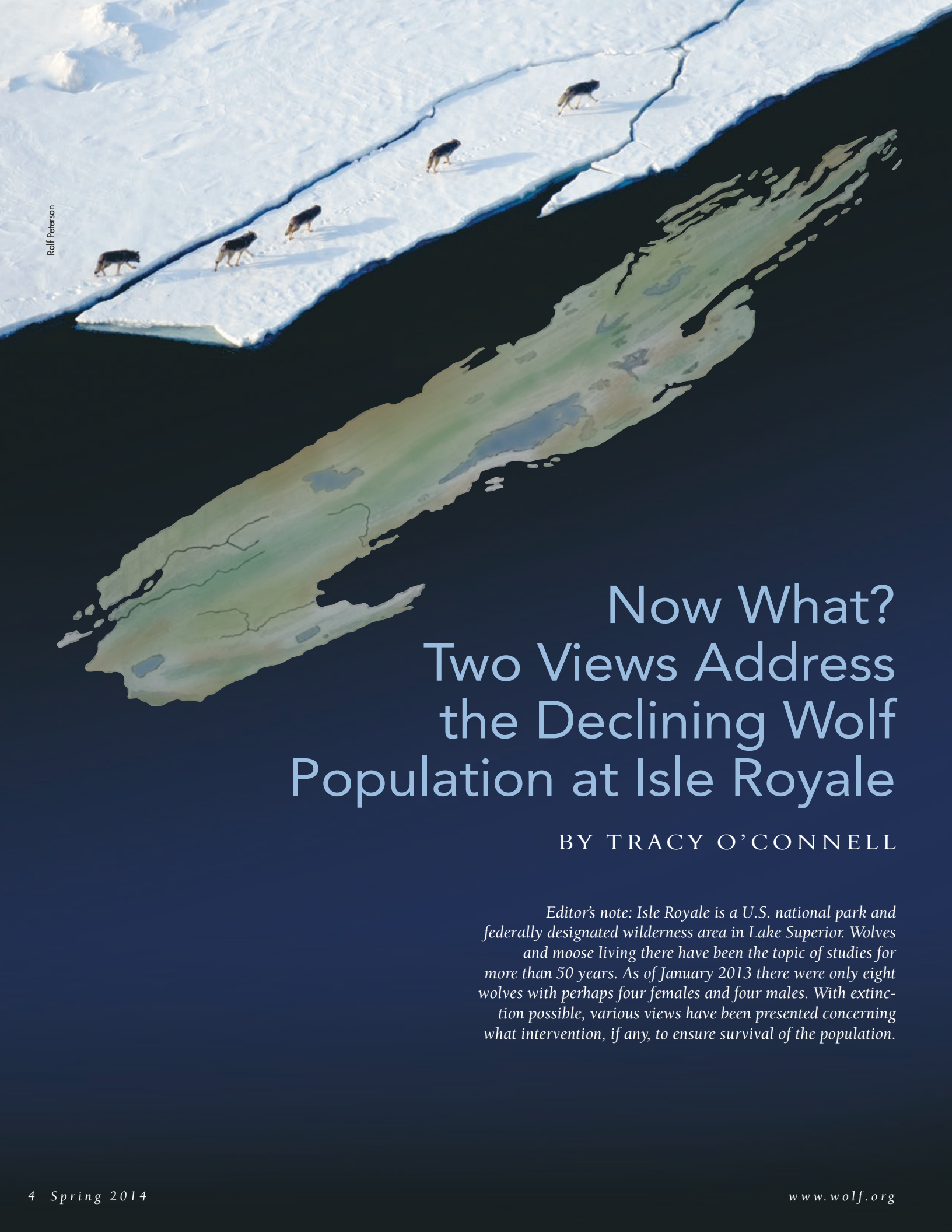




Now What? Two Views Address the Declining Wolf Population at Isle Royale

BY TRACY O'CONNELL

Editor's note: Isle Royale is a U.S. national park and federally designated wilderness area in Lake Superior. Wolves and moose living there have been the topic of studies for more than 50 years. As of January 2013 there were only eight wolves with perhaps four females and four males. With extinction possible, various views have been presented concerning what intervention, if any, to ensure survival of the population.

Intervention in the face of nature is usually discouraged by the U.S. National Park Service (NPS), John A. Vucetich, Michael P. Nelson and Rolf O. Peterson assert in a paper published in 2012¹. The authors state that wilderness policy is “not a simple, unquestioning, and inflexible dictate for nonintervention,” adding that “a large body of wilderness policy treats the conflict (as being one) between nonintervention and other wilderness values.”

With their paper subtitled “A Case Study on Wilderness Management in a Changing World,” Vucetich, Nelson and Peterson cite an evolution in human response to wilderness over the past 150 years, arguing that ethical challenges often come from conflicting values. They note, “The appropriate approach is to acknowledge and understand all of the values at stake and then develop a perspective or position that would least infringe upon that set of values. We adopt this approach here.”

The paper was written following 2012 reports that the Isle Royale population was comprised of nine wolves, with possibly only two breeding females, forming one pack. The authors report that in 40 years, the wolf count had never fallen that low.

Tracing the history of Isle Royale moose and wolves for much of the past century, the study points to human inter-

action in the form of the introduction of parvovirus and the impact of climate change, which has reduced the ice on Lake Superior, eliminating the only access wolves have to the island and increasing stressors for the moose population. Therefore, the authors argue that some type of intervention is warranted.

Vucetich and his co-authors address values including wilderness character, ecological health, science and education, and they find in each case that the argument for supporting the wolf population on Isle Royale, in one of several proposed formulae, outweighs the argument for nonintervention. Pointing to the character of Isle Royale as being enhanced by having wolves, the authors suggest a diminishing of the sense of place should the carnivores disappear. They assert that the health of an ecosystem, such as the wolves help to maintain on the island, should outweigh the concern for nonintervention and cite the value of the research conducted there as well as a survey of Michigan residents that shows they want the wolves rather than allowing them to vanish from the island.

Vucetich and his co-authors weigh where to draw the line, if intervening might open the door to other species, such as caribou, lynx and black bear. Both lynx and caribou inhabited Isle Royale within the past century. The authors urge a robust discussion of these

options, offering a framework for decision making: While introducing caribou might add equally to the character of the place, the ungulates would not offer the educational or scientific value that wolves do.

Using that same framework, these authors balance competing values, such as whether science is better served studying inbred populations, of which there have been many studies, or genetic rescue, of which there have been few. They address animal suffering induced when inbreeding results in potentially painful spinal deformities, noting that, “The unresolved relationship between conservation ethics and animal welfare ethics, in general, is evidence that this value should not be dismissed without consideration.”

Vucetich, Nelson and Peterson conclude, “Wilderness areas have been reduced ... and human impacts on those areas have become pervasive. Anthropogenic (human-caused) climate change and exotic species have altered the course of nature in nearly every protected area. Consequently, the principle of managing for naturalness is becoming less coherent, and the value of nonintervention as a means of preserving naturalness is becoming less useful.”

Responding in an article published in December 2013,² David Mech draws on 2013 data, showing that while the



Ann Mayo-Kelly

wolf population overall has been halved from the 2011 numbers, the number of breeding females had doubled by early 2013, and the young population seemed ripe for a comeback, making it “the latest in a long series of recoveries from perceived crises.”

Mech takes issue with the previous paper’s assertion that population declines were caused by humans. Tracking the population size over the years in question, he concludes that dips in wolf numbers were caused by strife within the packs—seven wolves killed by other wolves in one year—and malnutrition. Pointing to a variety of studies indicating parvovirus was not a cause of population diminishment, he concludes, “Lack of pup production and/or survival during those years would not be surprising in any wolf population.”

Mech points to larger moose populations elsewhere on the latitude at which Isle Royale is situated, disproving the assertion that warming temperatures are playing a role in smaller moose herds. While warmer climate could make ice on Lake Superior unlikely, reducing the chances of mainland wolves dispersing to the island and expanding the genetic pool, another factor of climate change is increased likelihood of extreme weather, which could cause lake icing and the

“This wealth of information about the most inbred, wild population of wolves ever is unique and invaluable not only to understanding basic wolf genetics and behavior but also to the entire field of conservation genetics.”

opportunity for wolf migration to the island.

Looking to the scientific advantages to be gained from various courses of action regarding the wolf population, Mech asserts one of the key research findings in the decades of studies at Isle Royale is how well a small population can maintain itself, in spite

of high levels of inbreeding. Arguing that skeletal abnormalities found in the Isle Royale population exist also in outbred wolves on the mainland, he notes, “This wealth of information about the most inbred, wild population of wolves ever is unique and invaluable not only to understanding basic wolf genetics and behavior but also to the entire field of conservation genetics.”

Discounting the third argument, that intervention is justified because of wolves’ roles in natural ecosystems, Mech sees the concern as premature, pointing out the island “still harbors a functioning wolf population that could well persist for many years with or without human intervention.” He concludes, “In the medical field, when a threatening condition is detected that is not immediately causing distress, physicians often counsel ‘watchful waiting.’ We have been watchfully waiting for (this) wolf population’s demise for almost 25 years. The precautionary principle

would weigh heavily in favor of nonintervention because once intervention is imposed, that condition can never be undone, whereas nonintervention can always be countered.”

Vucetich, Peterson and Nelson in a later article³ respond to writings by Cochrane⁴ who suggests the Isle Royale wolves are an invasive species whose demise should be celebrated. The authors rebut, “Such an attitude is deeply misanthropic. It would be stunning to think that NPS policy would favor an absence of wolf predation on Isle Royale on the wild speculation that they are an exotic species or blighted because humans have influenced them.”

In that article, they further address issues raised by Mech, noting lack of access to the findings that he asserts prove structural abnormalities are no more prevalent in inbred than outbred wolves. They cite studies supporting their view that Isle Royale wolves have high rates of inbreeding depression. (Adams, et al.)⁵

Vucetich, Peterson and Nelson further note that mapping the path of wolf extinction or recovery for scientific purposes would be like charting the decline of a patient in the last moments of life—of little use to understanding the whole issue. By comparison, they assert, relatively little is known about how to implement genetic rescue, a potentially valuable tool for conserving populations across the planet.

1. “Should Isle Royale Wolves be Reintroduced? A Case Study on Wilderness Management in a Changing World,” *The George Wright Forum* 29(1): 126–147, 2012. *The George Wright Forum* is a thrice-annual journal of the George Wright Society, which is comprised of professionals working in or on behalf of parks and protected places.

2. “The Case for Watchful Waiting with Isle Royale’s Wolf Population,” *The George Wright Forum* 30(3): 326–332, 2013.

3. “Discernment and precaution: a response to Cochrane (2013) and Mech (2013),” *The George Wright Forum* 30(3): 333–340, 2013.

4. “Island Complications: Should We Retain Wolves on Isle Royale?” *The George Wright Forum* 30(3): 313–325, 2013.

5. Adams, J.R., L.M. Vucetich, P.W. Hedrick, R.O. Peterson, and J.A. Vucetich. 2011. “Genomic sweep and potential genetic rescue during limiting environmental conditions in an isolated wolf population.” *Proceedings of the Royal Society, London B* (doi:10.1098/rspb.2011.0261).

“To say that considerable evidence exists for believing that inbreeding depression places Isle Royale wolves at great risk of extinction is not to say that we alone are impressed by the weight of evidence. We have also solicited the views of others with expertise in conservation genetics (e.g., L. Boitani, University of Rome; R. Frederickson, University of Montana; P. Hedrick, Arizona State University; R. Lacy, Chicago Zoological Society; O. Liberg, Swedish University of Agricultural Sciences; L. Waits, University of Idaho; R. Wayne, University of California Los Angeles). It also appears to be the collec-

tive judgment of experts in conservation genetics who are familiar with the Isle Royale case that inbreeding depression places Isle Royale wolves at considerable risk of extinction. In scientific discourse, when two sets of scholars (e.g., Mech, 2013; and us) disagree about the significance or interpretation of scientific evidence, the solicitation of expert opinion in a robust manner from a number of experts is an important basis for better understanding (Sutherland 2006; Martin, et al. 2012)”

Sutherland, W. J. “Predicting the ecological consequences of environmental change: a review of the methods.” 2006. *Journal of Applied Ecology* 43: 599–616

Martin, T.G., M.A. Burgman, F. Fidler, P.M. Kuhnert, S. Low-Choy, M. McBride, and K. Mengersen. 2012. “Eliciting Expert Knowledge in Conservation Science.” *Conservation Biology* 26: 29–38.

They quote naturalist Aldo Leopold, who said, “To keep every cog and wheel is the first precaution of intelligent tinkering,” and “A thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends otherwise.” If an aspect of nature is valued, the authors conclude, it seems more appropriate to conserve it than to let it be lost with the hope that it can later be restored. For these reasons, genetic rescue appears to be the most appropriate response.

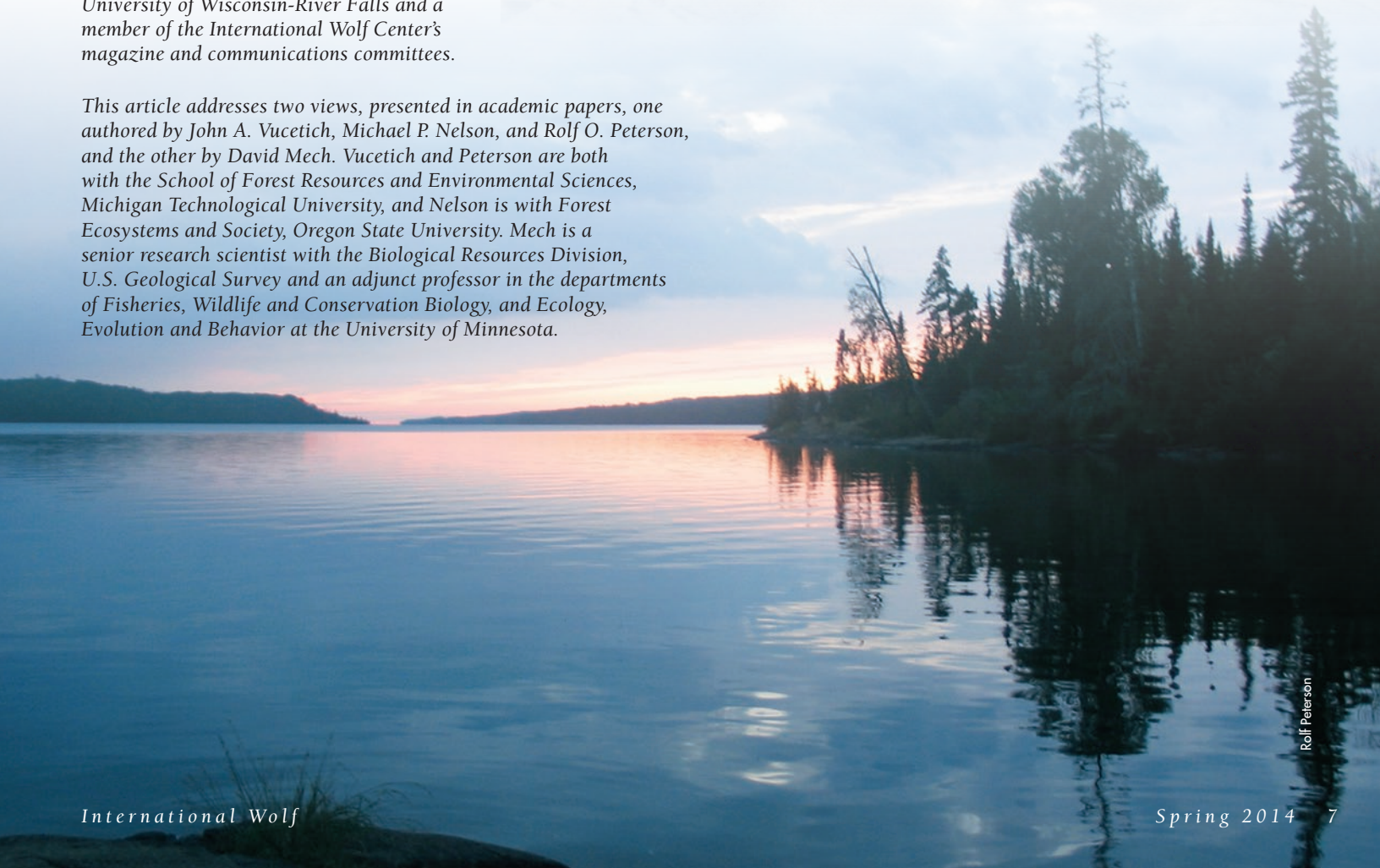
One can see in this discussion that there are no easy answers, and that views will differ in the world of research, no matter how experienced the participants to the discussion or how broadly they agree on basic principles. Whichever path is followed, these colleagues who have studied the Isle Royale wolf population for decades will continue to have a rich source of discovery. ■

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

This article addresses two views, presented in academic papers, one authored by John A. Vucetich, Michael P. Nelson, and Rolf O. Peterson, and the other by David Mech. Vucetich and Peterson are both with the School of Forest Resources and Environmental Sciences, Michigan Technological University, and Nelson is with Forest Ecosystems and Society, Oregon State University. Mech is a senior research scientist with the Biological Resources Division, U.S. Geological Survey and an adjunct professor in the departments of Fisheries, Wildlife and Conservation Biology, and Ecology, Evolution and Behavior at the University of Minnesota.



Rolf Peterson



Rolf Peterson