

# EARTHWATCH INSTITUTE FIELD REPORT

**Project title:** Moose and Wolves of Isle Royale

**Report completed by:** Rolf and Carolyn Peterson

**Date report completed:** 31 December 2008

**Period covered by this report:** 1 May 2008 to 31 October 2008

The Isle Royale wolf-moose research project celebrated its 50<sup>th</sup> anniversary in July, and Earthwatch volunteers have participated in 21 of those years. In fact, as we calculate the field effort made during the summer, a significant “Earthwatch factor” has been detected as being unusually thorough and consistent. Thank you, Earthwatch volunteers!

Contributions made by Earthwatch volunteers are not limited to searching for moose bones. Through the Isle Royale and Keweenaw Natural History Association, three Earthwatchers (Ron Eckoff, Michael George and Mike Thomas) are giving their time and good ideas as board members of an organization that extends to the general public the knowledge gained through research projects on the island.

The 2008 season presented several challenges. Engine failure in the boat we rely on for transportation to the island in the spring forced us to cancel Team I. Undaunted and flexible, the second team came to the island on a tugboat from Thunder Bay, Ontario. Veteran leader Tim Pacey suffered an injury while climbing over a spruce windfall and had to leave the island early. Team III had to adapt to boat schedule changes at the east end of the island and rode the *Isle Royale Queen IV* from Copper Harbor instead of the *Ranger III* from Houghton. The challenge for Team IV came from rainforest-like vegetation, resulting from ample rain that made it very difficult to spot bones.

Not surprisingly, we set no records for the number of dead moose found in 2008. However, the 19 Earthwatch volunteers were aided by four “summer interns”, directed by John and Leah Vucetich, who helped search for moose bones while collecting wolf scats and measuring balsam fir growth in May and early June.

Summer fieldwork added 62 records to our autopsy file, and 26 of these were brought in by Earthwatch teams. Included in the above numbers are one deer and two foxes. Of the moose, 22 died in 2008, and 16 were either “probably” or “possibly” from 1996, the year of the big die-off. Rolf has aged some of the teeth from these moose, and it seems the wolves are killing the last of the old moose, born in the early 1990s. Most of the summer finds of dead moose could be dated to a specific year of death, so they will play a role in population reconstruction, which provides the best long-term data on moose population trends, as well as age structure and annual moose survival rates.

Only 13 live moose, including just three calves, were seen by project personnel between 1 June and 31 August, which is fewer than ever recorded in a summer. Our total summer mileage (228, of which 109, or 48%, were off-trail) was far below average, and this undoubtedly explains, in part, the low number of moose seen. However, the four packs of wolves on the island are closely scrutinizing all moose, especially calves, so we don't expect the moose population to increase.

Beaver are feeling the pressure of both wolves and a shortage of aspen and birch. Rolf is about to conduct a third survey of active beaver colonies, which declined by 10% from 2006 to 2007, when there were 110 active colonies.

Earthwatch volunteers in Team II saw at least one wolf, and Team III volunteers heard wolves. Park visitors saw wolves frequently in the summer of 2008, and we continue to be concerned about the lack of fear some wolves exhibit toward people.

In July, the Chippewa Harbor Pack killed a cow moose in the water just a few feet from a shelter in the Moskey Basin campground. In late August, the same pack attacked and killed another cow moose in a beaver pond near Lake John, and a visitor photographed the wolves swimming after and climbing upon the moose. We examined the carcass a week later and found that the cow had a severely arthritic left hip. In September, other visitors watched the same pack of wolves “corner” a cow in a bay of Wood Lake, swimming after her when she tried to reach deeper water. We checked out the site and found nothing, but we have just learned of a visitor report of wolves on Ryan Island in Siskiwit Lake, feeding on a moose carcass on shore. Water no longer seems to provide a safe haven for moose in the territory of the Chippewa Harbor Pack.

The summer of 2008 was not unusually warm or dry, in contrast to many of the summers since 1998. The water level in Lake Superior rose dramatically in June and is now back to normal. Tick damage to moose was less than it has been in recent years. Summer was slow in coming, and we noticed a drastic decline in the number of Woodland Deermice. Rolf checked with the Michigan expert in Ann Arbor and found that mice in the whole Upper Penninula were scarce. We found the carcass of a young great horned owl near Sargent Lake in late August. Mosquitoes and blackflies were fierce in June and July, and the latter may have helped pollinate a bountiful crop of blueberries. Snowshoe hare are on the increase side of their 10-year cycle.

Otters were seen frequently in many parts of the island in 2008. We had seven at one time in the “basement” of Bangsund Cabin. On one day in late September, we saw eight otters in three different groups in Lake Richie and Moskey Basin.

We hope to see all of you again!  
Rolf and Candy Peterson

## **Non-technical summary of results**

The most significant discovery in 2008 was the finding that all of the wolf skeletons examined in the past 13 years (nine of them) had abnormal vertebrae, a result of congenital problems (involving defects or damage to a developing fetus) that are ultimately attributable to inbreeding in this small and isolated population. These findings are now accepted for publication in 2009.

### **How do these data contribute to achieving conservation impacts?**

The discovery of increasingly abnormal skeletons in wolves from Isle Royale confirms the suspicions of conservation biologists that inbreeding in small and isolated populations leads to deleterious effects. The Isle Royale case history is often cited by those who argue that genetic losses in small populations are a theoretical rather than real concern for wolf populations.

## What is/ are the significance/ benefits of your research at the following levels?

- Local (to the area of the research site)

Provides natural history and population information desired by park visitors.

- National / Regional

Provides added understanding of predator-prey dynamics involving wolves and moose in the context of a world-famous long-term study.

- International

Same as National; please see above.

## Communication of results

**Printed:** peer reviewed scientific publications; books / book sections; reports, management plans or policies; fact sheets, brochures, leaflets, pamphlets, posters, academic dissertations, annual reports, proceedings of conferences or workshops; letters; newsletters.

- Bump, JK, K. Fox-Dobbs, JL. Bada, PL. Koch, RO Peterson & J.A. Vucetich. 2007. Stable isotopes, ecological integration & environmental change, wolves record atmospheric carbon isotope trend better than tree rings. Proc R. Soc, Lond B, 274, 2471–2480.
- Nelson, MP, RO Peterson, & JA Vucetich. 2008. The Isle Royale Wolf-Moose Project, 50 Years of Challenge & Insight. George Wright Society 25, 98-113. [Invited Essay]
- Bump, JK, K Tischler, A Schrank, R Peterson, & JA Vucetich. 2009. Large herbivores & aquatic-terrestrial links in southern boreal forests. J Anim Ecol., in press.

**Visual:** artwork; visitor centre, poster or display, slides, photographs

Exhibit, Omphale Art Gallery, Calumet MI 10-08

Exhibit, Houghton Carnegie Museum, Houghton, MI 5-8/08

Release of documentary film, *Fortunate Wilderness* about the research

**Digital:** database; internet - websites, email group/ blog/forum; CD Rom, e-newsletter

[www.isleroyalewolf.org](http://www.isleroyalewolf.org)

**Mass media:** broadcast production; film; TV, radio, print (newspaper/ magazine coverage); Press releases; press conference; interview, article creation; press trip

Extensive coverage by regional and national newspapers

“The Long View”, Audubon magazine– feature article by Les Line

(<http://www.audubonmagazine.org/features0803/wildlife.html>)

“Wolves, Moose, Researchers, and Me“, National Parks magazine – article by best selling author Nevada Barr (<http://www.npca.org/magazine/2009/winter/wolves-moose-researchers.html>)

**Meetings and conferences:** presentations/ lectures; conferences; workshops; training sessions; discussions; local community meetings and events.

About a dozen venues with cumulative audience of about 5,000

**Educational resources:** lesson plans; resource packs

See links through [www.isleroyalewolf.org](http://www.isleroyalewolf.org)

## **Educational Opportunities**

**During the course of your project, have you directly or indirectly involved the following groups in your research topic?**

- **Local communities**
- **Students**
- **Early career scientists**

All of these groups have been directly involved in field and laboratory work

**How does your research help these groups better understand and act towards the conservation of a sustainable environment? (Please provide specific examples of any activities you are aware of.)**

Comments from visitors often highlight their insights into living more simple lives.

**Has your project contributed to the completion of Masters' or PhD theses or degrees, or other educational research findings?**

Joseph Bump, Michigan Technological University, Ph.D. in Forest Science, 2008

## **Acknowledgements**

National Science Foundation  
Isle Royale National Park  
Earthwatch, Inc  
Robert Bateman endowment, Michigan Tech Fund