

Isle Royale Moose-Wolf Research May Come to an End

Posted on September 2, 2014 22 Comments



Isle Royale's wolf population has dwindled in recent years. (Photo credit: AP Images/Michigan Technological University/John Vucetich)

While the moose population on Isle Royale has consistently grown in number over the past few years, the wolf population is dwindling to record low levels. Do these observations signify the end of the famous long-running Isle Royale moose-wolf population study? Isle Royale is an isolated island located in Lake Superior between the Canadian province of Ontario and the Upper Peninsula of Michigan. The U.S. government acquired the island in the early 1940s, and it was declared a national park in 1946. It is the least-visited national park in the lower 48 states. Isle Royale can only be reached by floatplane or boat. After arrival, the 544-square-kilometer island can only be explored by foot or boat.

Moose first arrived on Isle Royale in the early 1900s. Researchers think the moose likely arrived by swimming the 24 km to the island from the Ontario shore. Moose did incredibly well on the predator-free island and their population quickly increased. In 1949, a breeding pair of wolves crossed an ice bridge, connecting the island to mainland Ontario, that had formed during the winter. The now-classic moose-wolf study began 10 years later in 1959 by

Durward Allen, then a professor at Purdue University in West Lafayette, Indiana. Allen had actually first proposed the research study in the early 1950s while a researcher with the U.S. Fish and Wildlife Service, but couldn't get funding for the project. Since its inception, the Isle Royale moose-wolf study has become the longest-running predator-prey study in the world and makes up one of the most famous datasets in science. Today, the project is led by John Vucetich and Rolf Peterson, both of Michigan Technological University in Houghton, Michigan.

Due to the isolated nature of the island, Isle Royale is an ideal location to study the moose and wolf population dynamics, as wolves are the only predators of the moose and moose are a vital food source for the wolves. While the original purpose of the Isle Royale study was to better understand the effects of wolves on the island's moose population, Durward Allen was also interested in helping to change the public perception of wolves. At the time the study began, many of the Lake Superior states still paid bounties on wolves, even when their populations were on the verge of local extinction. Allen hoped to put to rest many of the myths that surrounded wolves, such as that they kill for pleasure and specifically choose the healthiest prey in a herd to kill. Results from this long-term project provide clear evidence that these myths are pure fiction. Wolves are selective in their predation and when hunting moose focus their energies on catching the young or old and infirm as food sources.

When the observational study first started, researchers counted 20 wolves and about 500 moose. As is to be expected, population numbers have fluctuated over time. In the 2013 count, researchers counted 8 wolves and 975 moose. The wolf population is the lowest it has ever been, while the moose population is near its long-term average value. The wolf population numbers have researchers worried. What they find most concerning is that the 2012-2013 season marked the first time since 1971 that the researchers detected no sign of wolf pups.

A lack of female wolves is not a problem research indicates that there are between 3 and 5 females in the population. However, genetic analysis of the wolf population indicates that the wolves are highly inbred. One female and two males initially founded the population, meaning that there wasn't much genetic variety in the population to start. In the 1980s, the wolf population declined by 80 percent after canine parvovirus was introduced into the population by a pet dog that was illegally brought onto the island during the summer season. The wolf population did not rebound from this event until the late 1990s.

In 1997, a new alpha male wolf emigrated from Ontario to Isle Royale via an ice bridge that formed during the winter. This wolf was a very successful breeder, and within 2.5 generations, he was related to every wolf in the population. Though without the introduction of this new male into the population, the wolf population would have likely continued to decline, his prolific breeding has led to severe inbreeding problems within the population. Today, any possible mating combination represents a parent-offspring or brother-sister pair. Though such pairings have occurred in the past on the island, most mammals avoid mating with such close relatives. The lack of pups and courtship or mating behavior among adults is likely a result of this inbreeding avoidance.

In 2013, the wolf population again began to decline significantly. Analysis showed that several wolves had antibodies indicating exposure to parvovirus and adenovirus. Neither of these diseases is to be expected in healthy populations. Scientists speculate that severe inbreeding makes the wolves more susceptible to such diseases. Analysis of the skeletal remains of wolves indicates that congenital deformities in the vertebral column are also becoming more prevalent.

With only eight closely-related wolves left on the island, scientists think it is unlikely that the population will be able to rebound on its own. While ice bridges commonly formed between Ontario and the island during the winter in the 1960s, today such ice bridges are no longer as common. This situation leaves scientists with an interesting scenario: what should be done about the declining wolf population on Isle Royale? The researchers see three potential scenarios: (1) the population is left alone and goes extinct, (2) new wolves are added to the population to increase genetic variation, or (3) the current population is left alone and after it goes extinct, after a certain period of time, a new population of wolves is introduced onto the island. Since Isle Royale is government property, the National Park Service has the final say as to what will be done. The NPS is expected to make a decision this fall about the fate of wolves on Isle Royale.

While the BioZine gears up for the new school year, we hope you enjoyed this post from the archives. This article was originally published in September 2013.

Filed Under: [Feature](#) Tagged With: [Isle Royale](#), [moose](#), [research](#), [wolf](#)

Comments

Bill says
September 15, 2013 at 1:45 am

Fascinating article.

I was struck by the comment that the first moose came to the island by swimming. Swimming? 24 km?? That seems incredible to me.

Why would the moose do that? Wouldn't it make more sense that they came over on an ice bridge, as the wolves did?

Reply

Emily Holder says
September 20, 2013 at 9:09 pm

I know! Its cool to find out how moose can survive that long of a swim through the water! That just shows us how strong they really are!

Reply

Emily Holder says
September 20, 2013 at 9:07 pm

Its sad to see the wolves are getting closer and closer to being extinct and yet we're going to stop researching the problem? That's a shame. If we have yet to find the exact reason then we should keep researching till we can help the problem.

Reply

Kynzi DePriest says
September 28, 2013 at 6:59 pm

but we might not have the time to do proper research. if we introduce new wolves, it's practically destroyed the previous decades of research. but if we don't introduce new wolves, then the population will likely die out. we need to keep researching, but we might not have the amount of time necessary to get proper research done without destroying decades of research already gathered.

Reply

Allison Parker says
September 28, 2013 at 10:09 pm

i agree, i think they should go in depth into this research and help the wolf from being extinct.

Reply

McKinzie Lilly says
September 29, 2013 at 12:10 am

I completely agree!

Reply

Steven Goodpaster says
September 29, 2013 at 9:49 pm

I totally agree. I believe that if they keep researching the problem, then they can find the right solution to fix the problem.

Reply

Mary Newton says
September 27, 2013 at 1:58 am

I hope the scientists select a good final decision for this study of the wolf and moose population on Isle Royale. Since this population comparison is the longest running predator-prey study in the world, it would be important to continue the study.

The Researcher's decision will be a tough one though, since the island is isolated the likelihood of new wolves coming to the island by themselves is not high, but without new wolves the population on the island is likely to go extinct. The only other option the article stated was for the researchers themselves to introduce new wolves, which I believe would interfere with the natural study.

Reply

Camden Tammen says
September 28, 2013 at 7:09 pm

i think they should keep the study going even if they have to add new wolves to Isle Royale

Reply

Dylan Calvo says
September 29, 2013 at 4:37 pm

I agree, why stop now with the research? There is still hope.

Reply

Kynzi DePriest says
September 28, 2013 at 6:56 pm

it's a really hard decision because the only reliable way to save the population is to introduce new wolves into the island, but that will interfere with decades of research and could potentially make all the results gathered so far invalid. if they introduce new wolves, they may have to start over on the research. they might just let the population become extinct, but that seems almost inhumane. they've definitely got some serious things to think about.

Reply

Camden Tammen says
September 28, 2013 at 7:08 pm

theres no way they should end the study its the LONGEST study of predator vs prey.

Reply

Mary Newton says
October 1, 2013 at 12:11 am

I agree, if it really is the longest predator vs. prey study then continuing i t should be a must!

Reply

Allison Parker says
September 28, 2013 at 10:08 pm

I would have never guessed that a wolf would ever even have a chance of going extinct, and i find it disappointing that the longest predator-prey research in the world. I hope they continue research and help keep the wolf going.

Reply

Kiana Mills says
September 30, 2013 at 11:03 pm

I feel the same way! Its hard to believe the predator is the one going extinct.

Reply

McKinzie Lilly says
September 29, 2013 at 12:09 am

Wow! I would of never guessed that the moose swam over. I would of figured that they came by an ice bridge!

Reply

Dylan Calvo says
September 29, 2013 at 4:35 pm

I think we should help the wolves by breeding with other wolves, because there is still a chance of survival with them. Like it said in the article, they introduced a wolf and the population started thriving until a disease arrived. Just have better security checks if you really care about them.

Reply

Cullen Dickerson says
October 2, 2013 at 4:35 am

You never know if we would watch more and make sure there is no disease, maybe breeding might be a good idea.

Reply

Steven Goodpaster says
September 29, 2013 at 9:46 pm

It is really sad to see that the Isle Royal wolves' population is decreasing. I personally think they should move the wolves to a different location to populate again. Although in the end, the NPS will decide what happens.

Reply

sean oldroyd says
September 30, 2013 at 3:26 am

I didn't know that when it came legal to have a pet dog that the wolf population went down 80 percent. I think they should start making preserve so the wolf can live without the danger of being hunted and killed.

Reply

sean oldroyd says
September 30, 2013 at 3:30 am

I agree with you I think they should research wolf so we can make sure they dont go existed

Reply

Kiana Mills says
September 30, 2013 at 11:05 pm

I think they should put more wolves on the island. It'd be crazy just to give up on the research like that and letting a population die out when you have the chance to make it repopulate is discomforting to think about.

Reply

What Do You Think?