

# Isle Royale

## Wolf Relocation Project

National Park Service  
U.S. Department of the Interior



Isle Royale National Park

NPLSF / DREW RUSH



A howl under a starlit sky. A track in the mud. Wolves are remnants of a wild once widely known across North America and now difficult to find. Wolves became a part of Isle Royale's ecosystem shortly after it became a national park and quickly filled the role as island predator.

### Wolves of Isle Royale

Wolves arrived in the late 1940s by crossing an ice bridge between the mainland and Isle Royale. From that time, they have been the single island predator of moose and beaver.

When the wolf population declined in the early 2000s, concern for their extinction and the impacts on the ecosystem prompted more drastic conservation efforts.

A wolf relocation effort was made by the National Park Service (NPS) and partnering organizations between fall 2018 and fall 2019. Nineteen wolves have been relocated to Isle Royale in attempt to restore the predator population.

### Lone Predator

Besides wolves, large predators are absent from Isle Royale National Park. Scientists have found that this lone predator influences many aspects of this isolated ecosystem.

#### Predator-Prey Relationships

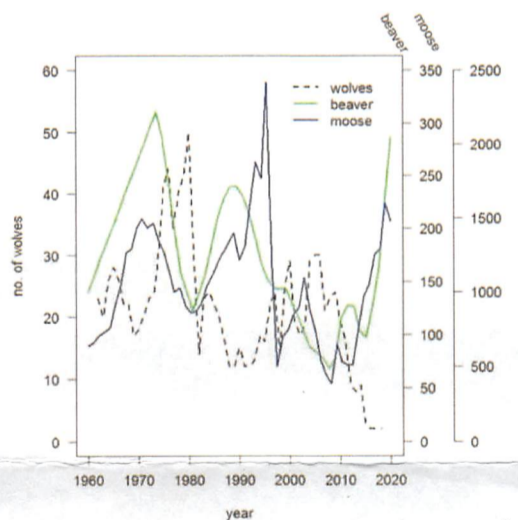
Predators play a major role in ecosystems by controlling prey populations. Isle Royale wolves indirectly benefit plant and scavenger species – like balsam fir and red fox – by preying on moose and beaver. When herbivore prey are abundant, plant species are overbrowsed. The relationship between predators, prey, and plant species is like a balanced dance.

Examine the graph and investigate how Isle Royale predator and prey populations varied through time. The NPS, Michigan Technological University, and the State University of New York Environmental Science and Forestry collaborate to conduct the longest consecutive predator-prey study focusing on relationships between wolves, moose, beaver, and vegetation.

Relationships among wolves, their prey, and the environment have been affected by:

- Fluctuating population numbers
- Moose and beaver impacts on vegetation
- Inbred wolf population
- Loss of genetic diversity in wolf population
- Disease
- Changing forest structure
- Climate change

The populations of wolf, moose, and beaver have fluctuated over time. One thing has stayed constant, their survival on the island is interconnected.



Estimated abundance of wolves, moose (NPS and MTU, unpublished data) and beaver (NPS, unpublished data), Isle Royale National Park, Michigan, USA, 1958-2018. Graph retrieved from Wolves and the Isle Royale Environment 2018-2020, NPS and SUNY ESF.

NPS / SUNY ESF / MTU



## Waning Wolves

The Isle Royale wolf population has changed over time. The population declined drastically in 1980 and again in 2012 due to a combination of factors including loss of genetic diversity, random events, climate change, and disease.

**Loss of Genetic Diversity:** Two to three mainland wolves established the original island population. The population genetics narrowed again in 1997 when male wolf M93 migrated to the island. Dominant M93 quickly overtook the genetic bloodline. By 2008, more than 50% of the wolf population were descendants of M93.

**Random Events:** In 2012, carcasses of three wolves were found in a historic mine shaft near Todd Harbor. This happened when there was already a shortage of female wolves. This loss caused one of the largest extinction risks for the population.

**Climate Change:** Isle Royale is isolated, but not from climate change, which describes a change in average conditions, such as temperature and rainfall in a region, over a long period of time. The cause of modern climate change is largely human activity—burning fossil fuels such as natural gas, oil, and coal. Climate change ultimately influences the chance wolves have to cross an ice bridge across Lake Superior (warmer winters, less ice), impacting the flow of wolf genetics from the mainland to Isle Royale.

**Disease:** A worldwide Canine Parvovirus (CPV2) outbreak occurred in 1978. By 1980, CPV2 infected island wolves and contributed to a major population decline.

By the summer of 2018, the wolf population reached a low of two island-born wolves. These wolves, severely inbred, were father and daughter as well as half-siblings. With only two wolves left, it seemed unlikely that the population would make a comeback without some assistance.

## Wolf Relocation

Nineteen wolves were relocated from Minnesota, Ontario, and Michigan between fall 2018 and fall 2019. After capture, wolves were inspected by veterinarians to check for disease. Foothold traps were used to capture wolves in Minnesota and Michigan and net guns from helicopters were used to capture wolves in Ontario.

Before each relocation, a GPS collar, ear tags, and a passive integrated transponder were attached to healthy wolves to assist in identification and tracking. Wolves were transported to Isle Royale National Park by boat, helicopter, or plane.

Researchers continue to monitor the wolf population and its impact on Isle Royale's ecosystem by utilizing data from GPS collars, passive integrated transponders, trail cameras, and scat collections. Using trail camera monitoring, evidence was found of two wolf pups likely born to wolf 014F in spring 2019 (photographed below). This is welcoming news for the relocation project and genetic restoration of the Isle Royale wolf population.

Listen carefully and walk lightly—howls of Isle Royale wolves have grown louder.



NPS / JACOB FRANK

### Wolf Relocation Project Timeline

- **Spring 2018:** NPS decides to relocate wolves
- **Fall 2018:** MN Grand Portage Band relocation—4 wolves
- **Winter 2019:** Ontario relocation—11 wolves
- **Summer 2019:** Predation, pack formation, and space use research
- **Fall 2019:** MI relocation—4 wolves
- **Summer 2020, 2021:** Diet and recruitment (wolf pup) research
- **Winter Study:** Yearly monitoring of predator-prey relationships

