



A Brief History of Wolves in the Huron Mountains

By Jill Riddell

In 1974, America's first-ever attempt at reintroducing wild wolves took place in the Huron Mountains. Small in scale and funded in part by the Huron Mountain Wildlife Foundation, this pioneering experiment provided valuable lessons for later larger-scaled projects that reintroduced wolves in North Carolina and in Yellowstone.

In the 1970s, wolves were almost entirely absent from Michigan and Wisconsin. Occasionally, evidence of a lone wolf passing through would be verified by the Department of Natural Resources, but no wolf packs lived anywhere in either state for many years, according to David Mech, a researcher who planned the Huron Mountain reintroduction. A well-known expert on wolves, currently Mech is senior research scientist for the U.S. Geological Survey in St. Paul, Minnesota. At the time of the reintroduction, Mech was a wildlife biologist at the U.S. Fish and Wildlife Service.

Prior to the Huron Mountain experiment, staff in conservation agencies had been conversing about how wolf populations might be restored to states from which they'd been extirpated. Mech says, "I was at a meeting in the early 1970s with Nathaniel Reed, who was then the Assistant Secretary of the Interior in the Nixon administration. Reed called us to Yellowstone to discuss the possibility of reintroducing wolves. This was an idea that many had mentioned but no one had attempted to carry out."

Around the same time, D.W. Douglass, the Chief of the Wildlife Division of the Michigan Department of Natural Resources suggested that restoration of wolves in Michigan would be desirable, particularly if private money could be obtained to help make it happen. From those seeds, the attempt to bring wolves back to the Huron Mountains was born.

"My dad became interested in wolves through Bill Todd [a former manager of the Huron Mountain Club] and from scientists and local people who used to come up to the Club as Dad's guests



Wolves in Isle Royale National Park. While the wolf population on Isle Royale has declined, the current wolf population in the Upper Peninsula has increased.

Photo by John Vucetich.

for the deer hunt in the fall," says Maddie Dugan, a member of the Huron Mountain Club and the daughter of Beckwith Bronson "Dad was fascinated by wolves and by the stories told about wolves from Isle Royale, and he always wondered why we didn't have any at the Club. He started talking to other board members."

That interest of Bronson's provided an opening. "You can't just go around putting wolves in places," says Mech. "There was plenty of good habitat throughout northern Michigan, but the main thing that made the Huron Mountains the ideal place to try was that people at the Club were interested in what we wanted to do. It was a place where the owners of the land were in accord with our goals."

The research project was approved by the Club board and carried out in March of 1974. "Huron Mountain Wildlife Foundation provided financing, along with the National Audubon Society," says Mech. "With Bill Robinson, a professor at Northern Michigan University and his graduate student, Michael Wiese,

continued on page 2



Photo by John Vucetich.

we acquired the necessary permits from both the Michigan and Minnesota Departments of Natural Resources, and from the U.S. Fish and Wildlife Service and we set to work.”

“We had been doing wolf research in Minnesota since 1965 and had been putting radio collars on wolves since 1968,” Mech recalls. “We were well-practiced with catching and collaring wolves. The Huron Mountain Club built us a holding pen, and once that was ready, we captured four wolves in an area south of International Falls. We chartered a private plane and flew the wolves to Michigan in early March, installed them in the pen, fed them road-killed deer, observed them every day for a week, and then opened the door.”

Upon release, the scientists recorded movements that indicated the wolves spent two days acting bewildered and indecisive. But soon, two male wolves and one female wolf had joined together and one week later, they were fourteen miles southwest of the release site.

A fourth wolf never joined the others. While in captivity, this fourth wolf had been the least social and was the first to leave the pen. Her pattern after release was to leave the Huron Mountains, travel about 20 miles southeast, and gradually loop back to forests near the release site. She did this several times over the first four months.

The other three wolves continued to travel west together, possibly trying to return home to Minnesota. During the months of May and June, the pack of three remained in the general area of Gibbs City, Michigan, located within the Ottawa National Forest. This is about 125 miles from the release site; it appeared the three might either be resting or perhaps were settling permanently in that area. In early July, the dominant male wolf was struck by a car and died. Later the same month, the other male was shot to death. (An autopsy showed three bullet wounds from a small caliber gun.)

At that point, the female member of the trio abandoned that region. She spent her time on the move, criss-crossing and meandering in patterns typical of lone wolves. Two months later, she was spending the majority of her time in the vicinity of Witch Lake off of M-95, about 70 miles from the release site. On September 19, this wolf was caught in a coyote trap. The trapper came upon her the next morning. Later, he reported that the wolf lunged and growled at him, and fearing for his safety, he shot her.

The lone female was the last to survive. After an initial phase of returning frequently to the Huron Mountains, she gradually extended her range westward and in November, she was shot



“...Wolves, are of positive value for aesthetic enjoyment and scientific study, and are not to be lightly sacrificed. The wolves make the Huron Mountain property... unique and valuable,” Aldo Leopold wrote in 1938. In the land use plan for the Huron Mountain Club, Leopold reported the last confirmed breeding den found on the property was in 1923 by Mountain Lake. *Courtesy of the Aldo Leopold Foundation, www.aldoleopold.org*

Annual Meeting Keynote Speaker: John Vucetich

and killed by someone near Van Riper Lake, about 60 miles southwest of the Huron Mountains.

Within seven months of their release, all four wolves were dead, all from human causes. This shocking result was unfortunate. Yet, valuable information was gleaned from the project that was later applied to reintroduction projects carried out by the same scientists and their students. "It was the first study to demonstrate that wolves relocated hundreds of miles from their home territory would still attempt to head toward home, but that they would eventually settle down in a new area," Mech says. "It also showed us that pack members would find each other after separation upon release, which was good to know. We learned that the translocated wolves were vulnerable to the same causes of mortality as wolves everywhere at that time. But the most important lesson was that we needed to hold the wolves longer than one week in a pen if we wanted them to remain near the release area. Later, we applied this lesson to the red wolf release project in North Carolina and to the Yellowstone release, where we held them up to eight weeks. It worked. Those wolves remained in the area and established territories there."

In the Upper Peninsula of Michigan, wolf populations have increased since those depauperate decades of the mid-twentieth century. After coming close to extinction, estimates of the current wolf population in the U.P. is in the range of 600 to 650 individuals.

This increase resulted not from deliberate reintroductions, but from conservation measures that eventually started showing results. Natural immigration from Minnesota expanded the range of wolves into Wisconsin, and then into the western and central Upper Peninsula. *The Wolf Recovery Plan* updated in 2015 by the Michigan Department of Natural Resources says that wolves from Ontario may also have moved into the Upper Peninsula by crossing the ice at Whitefish Bay. It was in 1989 that biologists confirmed for the first time in many decades that a pair of wolves had established a territory in the central Upper Peninsula.

For more details on the first reintroduction project and on Michigan wolves:

An Experimental Translocation of the Eastern Timber Wolf by Michael Wiese, William Robinson, Bill Hook, and L. David Mech. Published by the U.S. Fish and Wildlife Service, this academic paper is available as a free download on Amazon. *The Michigan Wolf Management Plan* is available online on the Michigan Department of Natural Resources website.

This year's speaker is an expert on the relationship between wolves and moose. In the early 1990s, John Vucetich began working as an undergraduate on the long-term study of predators and prey at Isle Royale National Park, under the guidance of Rolf Peterson, a research professor at Michigan Tech. Vucetich has continued his involvement throughout his career, and now leads the study along with Peterson. He is a professor of wildlife ecology at Michigan Tech.

Begun in 1958, the Isle Royale research project is the longest running large mammal predator-prey study on earth. The project is entirely unique among biological field studies, both for its duration, its focus on the relationship between two species, and because of the geography of Isle Royale—a large island isolated in Lake Superior, four and a half miles from shore.

Vucetich delivers this address at a key time in the history of the study. "The wolf population is the lowest it's ever been during the life of the study," Vucetich says. "We're down to two parents and one offspring, living together in one group. This is the last gasp of the population on the island. We expect now that wolves will go extinct."

Wolves from the mainland used to be able to enter Isle Royale by crossing frozen ice. But warmer winters have reduced that potential. With no new wolves in the genetic mix, inbreeding has destroyed Isle Royale's population. This is a disturbing development for the island, since wolves provide a necessary service of removing the weakest ten percent of the moose population each year. With no wolves, the moose population has boomed, putting tremendous pressure on plant life and on the integrity of the forests on the island. Moose have doubled their numbers in four years, and likely will double again in the next five years.

"Knowing this situation makes us ask new questions," says Vucetich. "What do we think wilderness is or should be in the face of climate change? Same as always, or do we need to think about it differently?"



"As in many relationships, my attraction to wolves and moose began after I got to know them a little bit, so I could see them as the interesting creatures that they are. The most important things in life seem to be relationships, with family and friends, with nature and the world around us. My life has been a journey of learning how best to relate to nature—and to share those insights with other people." John Vucetich, professor at Michigan Tech. Photo by Rolf Peterson.

**ALL ARE INVITED TO THE
ANNUAL MEETING**

**Tuesday, August 4, 2015
4:00 p.m.**

**At the Playhouse at the
Huron Mountain Club**

Report from the Director

By Kerry Woods

In June, we hosted a group of researchers from the National Science Foundation (NSF) funded PaleON project at the Ives Lake Research Center. PaleON is a network of several dozen researchers integrating paleoecological perspectives, computer modeling, and “big-data” statistical analysis to understand forest dynamics at continental and millennial scales. The name is a compression of “Paleoecological Observatory Network,” a play on NSF’s massive National Ecological Observatory Network – NEON – initiative.

PaleON’s lead scientist, Dr. Jason McLachlan (Notre Dame University), is a former HMWF researcher; with Dr. Stephen Jackson (then University of Wyoming, now directing the USGS Climate Change lab in Tucson), he used sediment samples from Trout and Canyon Lakes in a successful attempt to recover DNA from ancient plant fragments. When PaleON researchers recognized that long-term data-sets from old-growth forests would be invaluable in supporting and assessing their model-building, Jason suggested a “field seminar” visit to get acquainted with ongoing, long-term forest studies.

Ten PaleON researchers spent a day visiting several HMWF study-sites and an evening at the Stone House brainstorming possibilities for integrating Huron Mountain data-sets with their efforts. Some exciting possibilities emerged. These are anchored in the potential for using multi-decade records from permanent study plots at the Hurons to bridge a troublesome “blind-spot” between the time-scales of dynamics studied by paleoecologists and the perspective afforded by most field-based forest ecology research. Linking these perspectives is critical for understanding how ecosystems might change with climate or in response to long-term management, but multi-decade data-sets are extremely rare. Several existing dendrochronological (tree-ring) data-sets from HMWF projects enhance the potential for integration with PaleON efforts.

This is a powerful example and illustration of the far-reaching value of HMWF’s research program, and the potential for magnifying its contributions many-fold through integrative efforts. I hope to have updates, over the coming year or so, on this particular story.

2015 Research Program

This year’s research program is a healthy and diverse collection of new and continuing studies. The Ives Lake Research Center will host a wide variety of researchers from more than twenty institutions and at least ten states. The mix ranges from experimental research on complex ecosystem processes, to ecological monitoring, to studies of geophysical and geochemical systems, to documentation of biological diversity in a variety of taxonomic groups. Most of these projects have been enabled by donations to HMWF, and it is particularly pleasing to note that HMWF’s initial funding has, in several cases, helped researchers develop preliminary studies leading to larger grants from other funders. Here’s the list:

EARTH SCIENCE

In a new project, **Chad Wittkop** (Minnesota State University – Mankato) and colleagues from other Minnesota universities explore the chemistry of Canyon Lake’s isolated deep waters; since Canyon never mixes completely, these deep waters have been isolated from chemical exchange with surface waters and the atmosphere for long periods (potentially centuries or millennia), and may have chemical properties known from only a few “ferruginous” lakes. **Jim Bockheim** (University of Wisconsin – Madison)

continues the final stages of mapping soils and glacial geomorphology; sometime in the near future, we’ll be publishing his reports and maps as a Foundation “Occasional Paper.” **Harry Jol** (University of Wisconsin – Eau Claire) and **Walter Loope** (USGS) will be studying the ancient Lake Superior beach ridges and sand-dunes using ground-penetrating radar. **Fritz Nelson** (Northern Michigan University) and **Ken Hinkel** (University of Cincinnati) will maintain long-term monitoring of microclimate patterns across the Huron Mts., supplementing their network of weather stations with measurement of heat-budgets of selected lakes.

ECOLOGICAL STUDIES

The diverse, pristine ecosystems of the Huron Mountain Club lands are the strongest draw for researchers applying to HMWF, so it’s not surprising that ecological studies are the core of the Foundation’s 2015 research program.

Several projects focus on the old-growth forests. In a new project, **Steven Voelker** (Oregon State University) will be using tools of dendrochronology (tree-ring analysis) to understand how growth rates of trees of different geographic affinity respond to climate gradients near Lake Superior and, by extension, to climate change. **Dennis Riege** (University of Maryland) continues a long-term study of seedling establishment and growth of white pine and hemlocks. In a separate study, he is taking advantage of a “natural experiment” initiated by beaver activity near his study sites to assess the effects of beaver cutting and flooding on forest processes. **Jalene LaMontagne** (DePaul University) continues her studies of seed production patterns in white spruce in its southern range; these studies will ultimately allow assessment of effects of climate on an important food source for birds and small mammals. **Oliver Gailing** (Michigan Technological University) has been studying oak population genetics in the area for several years; this year, he initiates a project using genetic techniques to analyze patterns of seed dispersal in red oaks. **Evelyn Williams** (Chicago Botanic Garden) maintains the monitoring of populations of the small, forest-floor ferns of the genus *Botrychium* (“rattlesnake ferns”). These odd little plants appear to be semi-parasitic on soil fungi, and do not appear above-ground some years; scientists don’t understand them very well!

Wildlife studies include two projects examining the consequences of intensive deer-browse. **Don Waller** (University of Wisconsin – Madison) and colleagues are in the fifth year of analysis of their ‘deer enclosure’ near Fisher Creek. This year, they conduct the first exhaustive remeasurements of study areas within and outside the fence; comparisons with measurements made at the outset of the study will provide the first major chapter of their story. Taking a different perspective on effects of deer, **Walter Carson** (University

DONATIONS WELCOME

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of Pittsburgh) and **Rose-Marie Muzika** (University of Missouri) have already shown that forest wildflowers vulnerable to deer browsing persist in natural “refuges” like the tops of large boulders; this year they begin an experiment protecting areas near such boulders with very small deer fences to see if these plants can recolonize the forest floor. Another wildlife study, by **Greg Corace** (Seney National Wildlife Refuge) examines bird community dynamics in jack/red pine forests near the lake; continuing work this year will focus on assessing changes in bird communities in areas of active management.

Other experiments focus on aquatic ecosystems. **David Costello** worked in the Huron Mountains during his dissertation research several years ago; now a faculty member at Kent State University, he returns with a study using modern microsensors to assess how “biofilms” of microorganisms on sediment surfaces affect stream ecosystem production in the Salmon Trout River. After his long-term studies of the coaster brook trout population in the Salmon Trout, **Casey Huckins** (Michigan Technological University) is in the third year of a study comparing fish communities in several streams in the Huron Mountain region. **Donna Kashian** (Wayne State University) will continue multi-year monitoring of macroinvertebrate communities and water quality for a network of streams in the Huron Mountain area. **Mario Muscarella** and **Jay Lennon** (Indiana University), in a follow-up to studies of lake biochemistry several years ago, will be experimentally examining contributions of microorganisms to ecosystem process in area lakes.

BIODIVERSITY INVENTORY

The majority of biodiversity inventory projects focus on insects – but that is appropriate, as insects constitute the vast majority of animal biodiversity, and many groups remain poorly documented. Two projects, together, added over 250 species of moths in 2014, and both continue this year; **Thomas Werner** (Michigan Technological University) continues surveys of moths and butterflies as well as fruit-flies. **Jim Bess** (an independent researcher) is inventorying moths and leaf-hopper insects, with a focus on barrens and granite-bald habitats where unusual species are more likely. **Patrick Gorrington** (Harvard University) will continue studies of beetles, the most diverse group of macroorganisms, expanding his focus to include the very large (and largely undocumented at Huron Mt.) weevil family. Caddisflies, an important part of stream ecosystems, are being studied by **David Houghton** (Hillsdale College) who has documented caddisfly diversity across Michigan. Finally **Ron Priest** (Michigan State University) will continue sampling leaf-mining insects. Beyond insects, **Dana Richter** (Michigan Technological University) continues his twenty-plus-year monitoring of fungus communities in red pine stand, along with broader explorations of fungal diversity, and **Mark Wetzel** (Illinois Natural History Survey) will be winding up several years of documentation of annelid worms.

PUBLICATIONS AND PRESENTATIONS

By Kerry Woods

It's difficult to estimate a meaningful return on investment for basic research. Nonetheless, several analyses have attempted to estimate peer-reviewed publication rate as a function of funding for NSF-funded research. Results range from \$20,000 to \$100,000 per publication depending on field, program, and assumptions. Over the last three years, HMWF-sponsored research has produced between 30 and 35 publications. That puts us somewhere around \$4,000 per publication; about an order of magnitude better than NSF! That's a little unfair, of course; HMWF support typically catalyzes work that draws on other significant funding sources. Our field-based program is inherently less costly than lab-based work. Even so, it's safe to say that we offer an extremely good “bang for the buck.” Here are a few more publications and conference presentations (preludes to publication) that have been reported since the last newsletter. You can find hard-copy of all publications of HMWF-sponsored research in binders on the library shelves at the Stone House.

PEER-REVIEWED JOURNAL ARTICLES

- Lind-Riehl, Jennifer and Gailing, Oliver. 2015. Fine-scale spatial genetic structure of two red oak species, *Quercus rubra* and *Quercus ellipsoidalis*. *Plant Systematics and Evolution* (online, prepublication: DOI 10.1007/s00606-014-1173-y)
- Riege, Dennis. 2013. Ground vegetation of old-growth white pine stands at the Huron Mountain Club Reserve and Estivant Pines in Upper Michigan. *The Michigan Botanist* 52:80-92.
- Williams, Evelyn and Waller, Donald. 2015. Tracking morphological change and demographic dynamics in ephemeral *Botrychium* s.s. (Ophioglossaceae) populations. *Journal of the Torrey Botanical Society*. 142:152-165.

CONFERENCE PRESENTATIONS

- Adams, H.R., Olmstead, A.C., Morrison, S.M., Jol, H.M., Loope, W.L., 2015. High frequency (225, 450, 900 MHz) GPR investigation of the Nippissing beach ridge, Huron Mountains, MI. Presentation Abstract, Geological Society of America North-Central Section.
- Burtner, A. M., Krabbenhoft, C.A., Kashian, D.R. 2014. Land cover influence on macroinvertebrate assemblages in Marquette County, MI. Presentation Abstract, Society for Freshwater Biology.
- Hilgendorf, A., Jol, H.M., Loope, W.L., Morrison, S.M., 2015. Low frequency (50, 100, 200 MHz) ground penetrating radar analysis of the Nippissing beach ridge, Huron Mountains, MI. Presentation Abstract, Geological Society of America North-Central Section.
- Krabbenhoft, C.A., Burtner, A. M., Kashian, D.R. 2014. Aquatic invertebrate community changes over two decades in relatively undisturbed streams in northern Michigan. Meeting Abstract, Society for Freshwater Biology.
- Wysocki, A.D., Aken, T.J., Olmstead, A.C., Adams, H.R., Morrison, S.M., Loope, W.L., and Jol, H.M., 2015. GPR imaging of a strandplain along Lake Superior: Huron Mountains, Michigan, USA. Presentation Abstract, Geological Society of America North-Central Section.



Foundation Celebrates 5,000th Species Found in the Huron Mountains

This is the summer that the number of different species known to exist on Huron Mountain Club Lands will surpass 5,000. And this counts only the species that have names and have been formally described by scientists. Some species discovered at the Club and known to be new to science are still awaiting description.

Who knows which species the 5,000th will be? Will it be caught at night in the net of a scientist researching moths? Will it be a leafhopper feeding on the sap of a plant atop Ives Mountain, or a new type of caddisfly emerging from the Salmon Trout River? If you're curious to know what lives in the Huron Mountains, consult the list. The All-Taxa Biodiversity Inventory can be reviewed anytime at <http://www.hmwf.org/atbi>.

Photo by Phil Myers.

Above: The *Trigonarthris minnesotana* is one species of long-horn beetle. This family of beetles (Cerambycidae) has been studied intensively in the Huron Mountains.

About the Huron Mountain Wildlife Foundation:

Since 1955, the Huron Mountain Wildlife Foundation has supported original research in a wide variety of scientific fields. The research takes place in the Upper Peninsula of Michigan. More information on the Foundation can be found at: www.hmwf.org

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