

# Wolf's Eye



Isle Royale & Keweenaw Parks Association

2013 No. 3

## Climate Change: Coming to a Park Near You

By Kristine Bradof



Butterworts inhabit cool microclimates along the Lake Superior shore at the southern limit of their current range. NPS photo: Paul Brown.

Change is nothing new to our national parks. Not long ago geologically, ice sheets were sculpting the rocks that underlie today's Isle Royale and Keweenaw Peninsula. Many natural processes and human interventions have shaped the landscape since then. Some of the results are the very natural and cultural features we cherish and seek to preserve in our national parks. By 2100—in less than one-percent of the time since the glaciers retreated—climate change will determine how closely those parks resemble the special places that originally captured our imaginations as landscapes too special to be left unprotected.

The National Park Service was created nearly a century ago to “conserve the scenery and the natural and historic objects and the wild life...by such means as will

leave them unimpaired for the enjoyment of future generations.” Climate change is taking shape as the greatest, most complex challenge to that mission. Minimizing and managing the impacts of climate change will depend on collective actions far beyond park boundaries. It has never been more important for citizens to become active partners in conserving our national park system.

The human impacts of climate change are predicted to include increased frequency and severity of droughts, wildfires, floods, storms, and urban heat emergencies; rising sea levels and changes in lake levels; and expanded ranges and populations of insect pests, invasive species, and disease organisms. The plight of the polar bear as the extent and duration of Arctic sea ice declines is widely known. Beyond human landscapes and high-profile animals, however, entire ecosystems must also adjust to change proceeding at a much faster pace than in recorded history. Some early signs are already well documented.

Phenology, which studies the timing of natural events like the first and last frost and the duration of ice cover on lakes, is part of the record of a chang-

ing climate. For example, the “ice road” connecting Madeline Island with the Bayfield Peninsula on Lake Superior's Wisconsin shore decreased 3.4 days/decade in duration from 1857-2007 but 14.7 days/decade since 1975. Less frequent formation of ice bridges from the mainland to Isle Royale reduces the chance for migrating wolves to reinvigorate the inbred population's gene pool.

Studies of more than 1,500 plant species globally show spring flowering occurring more than two days earlier each decade. Species adapted to cool climates are shifting, and often contracting, their ranges to higher latitudes and elevations. Each animal and plant is adapted to a particular range of environmental conditions dependent on soil, moisture, temperature, and other living things in a dynamic balance that is relatively stable over time. If the ecosystem is disturbed so that habitat conditions change over a short time, that balance breaks down.

For example, the timing of bird migrations must be in synch with availability of food sources, or the birds will not survive. Long-lived trees may not be able to “move” quickly enough to follow changes in temperature and precipitation, or their preferred climate may move to an area lacking favorable soils.

What will be the fate of boreal forest vegetation like balsam fir, the moose that depend on it, and the wolves that have engaged the moose in an intricate survival dance for more than a half century? Will the waters off Isle Royale

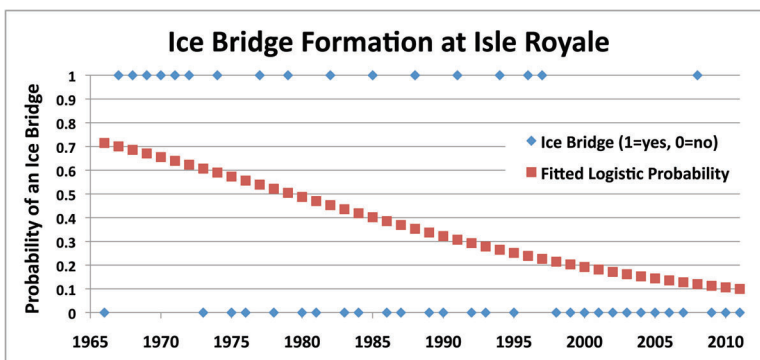


Chart: Rolf Peterson. Top line: Years ice bridge formed. Bottom: No ice bridge.

## Climate Change, from p. 1

continue to support the most productive native fishery and genetically diverse trout populations in Lake Superior? Scientists don't know with certainty the answers to such questions. Research continues to reveal surprising details about the complex interrelationships that have evolved over time within ecosystems. How resilient they will be under a rapidly changing climatic regime is unknown, but researchers and resource managers are piecing together likely scenarios based on what they do know. Here are a few examples.

A rapid warming trend for the upper Midwest in recent decades is projected to continue, with temperatures rising 5.5-8.8 °F by 2100, depending on total global greenhouse gas emissions. Cooler-climate trees like paper birch, spruce, and balsam fir are declining on Isle Royale and are expected to shift their ranges north of the Great Lakes, likely replaced by maples, oaks, and pines.

Warmer winters will likely increase insect pests for both plants and animals. Winter ticks that plague moose may be one such early example. Two species of ciscos believed endemic to Lakes Richie and Sargent on Isle Royale have probably gone extinct; summer water temperatures in the deepest part of the lakes now exceed the species' lethal limit.

Predicted higher spring runoff and lower summer precipitation and lake levels will negatively impact wild rice and biologically important wetlands, as well as shoreline plants adapted to the cooling effect of Lake Superior.

Cultural landscapes are not immune to climate change either. The predicted shift to greater winter precipitation could mean higher snow loads on buildings and other structures. Increased frequency and severity of storms, fueled by higher temperature and humidity, may also take a toll both directly on structures and indirectly on park funding as more money is diverted to disaster relief efforts.

Even if our parks could reduce their greenhouse gas emissions to zero, their actions alone would have little impact on climate change. Just as global problems are the result of collective individual actions (or inactions), global solutions benefit from the same multiplier effect. Recognizing that fact, the National Park Service created Climate Friendly Parks ([www.nps.gov/climatefriendlyparks/](http://www.nps.gov/climatefriendlyparks/)), a program to encourage parks and those who care about them to make changes.

The first step is learning to measure and reduce your own household carbon footprint with calculators such as <http://coolclimate.berkeley.edu/carboncalculator> or [www.epa.gov/climatechange/ghgemissions/ind-calculator.html](http://www.epa.gov/climatechange/ghgemissions/ind-calculator.html). Some actions to reduce climate impacts are driving less, air-sealing and insulating our homes, buying EnergyStar products and green power, reducing waste, and “greenscaping” our yards. Most of these actions also save money in the long run.

Climate change will produce relative winners and losers among all living things. Where human populations fall on that continuum will be determined by actions taken now to both adapt to and slow the pace of change. Many steps don't involve true sacrifice, merely rethinking ingrained habits and being less wasteful. Don't be discouraged! Getting past that first-step barrier to changing how we do things is often the hardest part.

We can all learn how to live more sustainably—meeting the needs of the present without compromising the ability of future generations to meet their own needs. Doing so will help conserve valued natural and cultural resources and landscapes. It will also benefit quality of life through improved health and greater long-term financial security, elements of the environmental, social, and economic “triple bottom line” of sustainability. Today is the best day to start.

## Donation Funds Alternative Energy at Isle Royale National Park

This summer, Isle Royale National Park announced a \$1.8 million donation from the board of National Parks Concession, Inc. (NPCI) to install a photovoltaic system at Rock Harbor, which is the major portal on the northeast end of Isle Royale. Forever Resorts operates lodge rooms, cottages, a camp store, gift shop, restaurant, and marina there.

Isle Royale is known for its remoteness, wild beauty, pristine waters, fisheries, rich history, and hiking trails. But behind the scenes is a supply chain of fuels to run boats and the generators that create electricity and pump water for visitors and employees on the island. Fossil fuels create both a large carbon footprint and potential environmental hazards.

“We can't completely get off of diesel,

but it is going to reduce our consumption significantly, probably 75 percent,” Assistant Superintendent (and IRKPA life member) Betsy Rossini said. The park made some smaller energy efficiency upgrades this summer, including buying more efficient appliances and light bulbs.

An innovative Department of Energy Program allows the park to combine donations and payments over time to finance alternative energy programs. This second donation from NPCI brings their total funding for energy-saving projects to \$2.246 million. Conversion to alternative energy sources at Rock Harbor, Windigo, and Mott Island will cost more than \$7 million. The Park is investing over a million dollars, bringing the project halfway to completion.

The NPCI board oversees a trust that was formed when the non-profit concessionaire, which operated from the 1930s until 2002, ceased operations and sold their assets to Forever Resorts, LLC. The trust uses assets left from the sale to benefit the following national parks: Isle Royale, Big Bend, Olympic, Mammoth Cave, and Blue Ridge Parkway. NPCI's contributions have improved visitor services and employee housing at all of these parks.

The National Parks of Lake Superior Foundation, headquartered in Marquette, Michigan, is working with Isle Royale National Park to find matching funds and material donations to complete the projects at the remaining two sites, Windigo and Mott Island.

# The Calumet Visitor Center: Greening an Old Building

Rehabilitating the Union Building for use as the Calumet Visitor Center was a sustainable decision. Reusing this historic structure recaptured the energy and resources used in the original building construction, surrounding streets, sidewalks, and utilities. Located at the entrance to Calumet's civic and commercial district, close to schools, and near residential areas, the project reinvested in Calumet's existing infrastructure and represents growth that is convenient, efficient, and walkable for the community.



Photo: Kristine Bradof

Retaining existing building features and adding green features enhanced sustainability:

- Large historic windows provide natural daylighting.
- South-facing windows allow passive solar heat.
- Window shades, UV window filters, and retractable awnings reduce summer heat gain.
- Low-flush toilets reduce water use
- On-demand hot water reduces energy use.
- Energy-saving sensors turn off the lights when no one is in the room.
- An energy recovery ventilator (ERV) uses heat exchangers to warm incoming air and conserve heat.
- Outdoor air delivery monitoring assures clean, fresh air in the building.

It is not only what was done to the Union Building that makes it sustainable, but also how the work was executed:

- Recycling and salvaging construction waste diverted 53 percent of nonhazardous construction and demolition debris from the landfill
- Hiring a local general contractor and subcontractors minimized shipping and travel
- Using low-VOC adhesives and coatings, along with wood and ceramic floors, reduced toxic emissions

- New building materials had a minimum of 20 percent recycled content, and 67 percent of the wood used was certified sustainable.
- Existing wood floors, plaster surfaces, wood trim, and pressed metal ceilings were reused.
- Seating and tables, with recycled content, came from a Michigan plant that maintains zero land-fill, zero hazardous waste generation, zero air emissions (VOC), zero process water use, and 100 percent green electrical energy use.

A 4.8 kW photovoltaic (solar) power array installed next summer on the roof will generate about 5 percent of the building's power. The project's goal is to decrease the park's dependence on coal-generated power and to share this advancement with the visiting public. Funding comes from a Wisconsin Public Service Corporation settlement for emissions exceeding allowable limits.

Keweenaw National Historical Park is committed to maintaining and operating the Calumet Visitor Center at the Union Building for the enjoyment of future generations. Long-term use by the National Park Service ensures that the investment in repurposing the building retains value for the local community and visitors alike.

## Gift Idea: Give an Isle Royale Workshop This Year!

Looking for a special gift for someone (or yourself)? Consider a spot in IRKPA's popular Isle Royale botany or photography workshops next June or Keweenaw photography workshop in October!

The **Isle Royale Botany Workshop** takes place June 9-14. Taught by botanist and IRKPA member Janet Marr, the workshop will introduce those with beginning/intermediate plant identification skills to the island's spring flora.

Want to improve your photographic skills with inspiration from Isle Royale or the autumn splendor of the Keweenaw? Then the June 13-18 **Isle Royale Pho-**

**tography Workshop** or the October 3-5 **Keweenaw Colors Photography Workshop**, both led by professional photographer and IRKPA life member Bob Guiliani, is for you.

Register for either Isle Royale workshop with a \$200 deposit by March 31 to get the early \$674 rate, including the \$25 IRKPA member discount, which covers instruction, transport to and from the island, meals, and camping.

The deadline to register for the Keweenaw workshop (\$325 for instruction only) is July 31.

For more details as they become available, see [www.irkpa.org](http://www.irkpa.org) or email [kbradof@irkpa.org](mailto:kbradof@irkpa.org).



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## 2014 Bob Linn Scholarship

This spring IRKPA awarded \$250 Bob Linn Scholarships to two local students, thanks to a matching donation from the George Wright Society (GWS). Jessalyn Taylor from Houghton High School and Greg Fedie from L'Anse High School are now attending Michigan Tech, Jessie for geophysics with a minor in applied ecology, and Greg for ecology and wildlife management. Their science teachers praised them as promising problem solvers and "big picture" thinkers.

To encourage competition for the scholarship in memory of Bob Linn, the GWS board approved co-sponsoring \$500 scholarships in the future. Linn co-founded IRKPA as the Isle Royale Natural History Association in 1957. After retiring from the National Park Service, where he had been chief scientist, Linn co-founded the George Wright Society in 1980 to promote excellence in resource management, research, protection, and interpretation in parks and reserves.

Graduating high school seniors in the Copper Country Intermediate School District who are accepted to college with plans to major in a natural, earth, or environmental science field are eligible, as are children of IRKPA members. Email [kbradof@irkpa.org](mailto:kbradof@irkpa.org) or call 906-482-7860 for an application.

## ISRO Public Meetings

The latest newsletter about Isle Royale National Park's Cultural Resources Management Plan (CRMP) and scheduled public meetings is posted at <http://parkplanning.nps.gov/document.cfm?parkID=140&projectID=33691&documentID=55915>. The meetings are in Houghton Nov. 12; Chelsea, MI, Nov. 14; St. Paul, MN, Nov. 19; and Duluth, MN, Nov. 20 (all 6-8 PM). There MAY be information sessions on natural resources management, including wolf management, earlier on those days if venues are available. More information: [Liz\\_Valencia@nps.gov](mailto:Liz_Valencia@nps.gov). 906-487-7153.

## Annual Meeting Round-up

Despite challenges from the weather and the government shutdown, 66 hardy souls cruised the Keweenaw Waterway, learning about its geologic and human history along the way, thanks to Larry Lankton, Bill Rose, and Capt. Don Kilpela and crew of the *Isle Royale Queen IV*. Turnout for the annual membership meeting, pasty dinner, and Bill Rose's geology talk was also good. All in all, it was a successful meeting and fundraiser for IRKPA. Thanks to the planning committee and everyone who joined us!

## ***Isle Royale & Keweenaw Parks Assn.***

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Facebook.com/IRKPA

IRKPA is a nonprofit membership organization that assists Isle Royale National Park and Keweenaw National Historical Park by publishing and selling educational materials for park visitors. Gifts, bequests, memorials, and memberships are U.S. tax deductible.

## **Membership Categories**

|                 |                  |
|-----------------|------------------|
| Individual \$25 | Household \$35   |
| Supporting \$50 | Sustaining \$100 |
| Patron \$250    | Life \$1,200*    |

\*may be paid in four annual installments

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