



The Current

Issue 2, Fall 2009



In Memoriam: Meg Hahr, 1967-2009

Chief of Science and Natural Resources, Pictured Rocks National Lakeshore, Michigan

Editor's Note: The news of Meg Hahr's accident early this summer was heart-breaking. Most of the Network staff had just met her in March during the program review and research conference here in Ashland, but her enthusiasm for and quick engagement with the Inventory and Monitoring Program had us all looking forward to working with her. Carmen Thomson, Midwest Region Inventory and Monitoring Coordinator, said, "she was eager to learn about the I&M program in the [Midwest Region], and she was quickly making a name for herself [here] with resource management. She will definitely be missed." The following remembrance combines Meg's obituary, written by her friend, Wendy Doughty, with excerpts from Pictured Rocks Superintendent Jim Northup's remarks during a June memorial service in Munising.

Margaret (Meg) Hahr, age 41, of Munising, Michigan, died suddenly on June 21, 2009, following a mountain bike accident.

"Every once in a while, as we pass through this life, we meet someone who, within the first few moments of being with them, we know we are with someone very special. Meg Hahr was one of those people." Meg was born on November 19, 1967, in Plainfield, New Jersey. After graduating from Rutgers University, her loving and adventurous spirit took her to Niger, Africa, with the Peace Corps. Her passion for the outdoors led her to employment with the National Park Service in 1998, while completing her master's degree at the University of Montana. It was during this time that she met her husband, Sidney Shaw, and they began their life together.

Her work with the National Park Service allowed them to live in such beautiful places as Glacier National Park, Montana; Klondike Goldrush National Historical Park and Kenai Fjords National Park in Alaska; and most



Photo by Gregg Bruff

recently Pictured Rocks National Lakeshore, Michigan, where she had just begun her job as Chief of Science and Natural Resources this past March.

"However, to focus on Meg's academic and career accomplishments fails to adequately explain why all of us are so heartbroken by her loss. Meg was simply a wonderful person. ... She knew who she was, what her values were and what she stood for, yet quickly put others at ease and made them feel respected and valued. ... It is just amazing how quickly she and Sidney have become known and embraced by the park staff and the community. She obviously loved her life, loved a wide variety

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Recent Publications and Presentations

Custer, T.W., K. Kannan, L.Tao, A.R. Saxena, and **B. Route**. 2009.

Perfluorinated compounds and polybrominated diphenyl ethers in great blue heron eggs from Indiana Dunes National Lakeshore, Indiana. *Journal of Great Lakes Research* **35**:401-405.

Bowen, K.D., E.A. Beever, and **U.B. Gafvert**. 2009. Improving the design of amphibian surveys using soil data: A case study in two wilderness areas. *Natural Areas Journal* **29**:117-125.

Bailey, S., J. Wiener, M. Sandheinrich, and K. Rolfhus. Mercury in prey fish in national parks of the Great Lakes Inventory and Monitoring Network (USA). Poster presentation at 9th International Conference on Mercury as a Global Pollutant, Guiyang, China, May 2009.

Johnson, K., **D. VanderMeulen**, J. Harper, and R. Harper. Measuring eutrophication impacts on dissolved oxygen in Lake St. Croix. Paper to be presented at the St. Croix River Research Rendezvous, Marine on St. Croix,

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In Memoriam: Meg Hahr

(Continued from page 1)

of outdoor activities and had even recently completed a yoga instructor class in Costa Rica and had begun to teach classes [here] in [our] community." Meg was always one to fully engage in the act of living life, and to participate at all levels, at all times. Her kindness was infectious, and her energy and spirit inspirational. She was constantly exploring the outdoors and the world with her husband and friends. She was an amazingly balanced and centered individual who knew how to find and celebrate the joys in life, and who touched all our lives for the better.

Meg is survived by her husband, Sidney Shaw of Munising, MI; her parents, Arthur and Barbara Hahr of Plainfield, NJ; and her sister and brother-in-law, Nancy and Neil Weidner, and their family.

Memorial services were held in June at Pictured Rocks National Lakeshore and in Short Hills, NJ. Additional services will be held in Montana and Alaska at a later date. "In honor of Meg's service in the Peace Corps and with the National Park Service, arrangements were made to have a U.S. flag flown over the U.S. Capitol building on the day of her memorial service at Pictured Rocks. The flag will be presented to her husband Sidney in the coming weeks."

Because Meg felt most at home outdoors and believed in the preservation of wilderness areas, a fund has been established with the Nature Conservancy in her name. Donations to this fund, in Meg's name and honor, are preferred to flowers or other memorials. Please call this number or send money to the following address, and mention that the donation is in Meg's name: 1-800-628-6860, Nature Conservancy, P.O. Box 6020, Albert Lea, MN, 56007-9824, Account 12005888. ●

Know the Code

To simplify writing and other communications, the National Park Service uses four-letter codes to uniquely identify park units. Those codes are often used in this newsletter to identify Network parks.

APIS - Apostle Islands National Lakeshore (WI)

GRPO - Grand Portage National Monument (MN)

INDU - Indiana Dunes National Lakeshore (IN)

ISRO - Isle Royale National Park (MI)

MISS - Mississippi National River and Recreation Area (MN)

PIRO - Pictured Rocks National Lakeshore (MI)

SACN - St. Croix National Scenic Riverway (WI)

SLBE - Sleeping Bear Dunes National Lakeshore (MI)

VOYA - Voyageurs National Park (MN)

Connecting the Dots to Improve Park Management

During the Network's program review in March, there was a lot of discussion about "connecting the dots" – how to make science and management come together in the park planning process. In other words, how will we use the monitoring data as we said we would: to improve park management?

The "connect the dots effort" is a long-term strategic framework for summarizing monitoring data in a way that links those data to individual park management goals and shows if those goals are being met. Vital Signs monitoring data collected through the inventory and monitoring (I&M) program are only one "dot." Other dots are derived from park-funded monitoring and research relevant to assessing natural resource condition, individual park planning documents, data and information from the

"Connect the dots" is a framework for summarizing monitoring data in a way that shows if management goals are being met.

Watershed Condition Assessment Program, and other research and monitoring efforts conducted by other agencies.

The information from each "dot" is put into a Natural Resource Summary Table that begins with a list of the park's important resources and values and management goals associated with them, all of which are identified in the park's enabling legislation, General Management Plan, and other planning documents.

The I&M portion of the summary table will list the

Vital Sign(s) being monitored relative to a park's important resources and values, what measures are being monitored for each Vital Sign (e.g., water level/water flow, blood methylmercury level), the current condition of the resource/value, and what the reference, or baseline, condition is for that resource/value (if known). Based on these summaries, managers can see if existing research and monitoring programs are providing sufficient information to achieve management goals, or if adjustments need to be made. In addition, it will help assess whether we and the park are monitoring the right things.

This is a long-term effort, which means it will take some time to see the benefits of our work, but the effort is worthwhile because it means a better, healthier park for future generations. ●

Staff Insider: Mark Hart, Data Manager

Mark Hart has an undergraduate degree in Biology from Dartmouth College, and completed research on behavioral ecology of waterfowl in the Ecology and Behavioral Biology department at the University of Minnesota-Twin Cities Graduate School. His biological

experience is strongest in silviculture, sociobiology, and genetics. Mark's data management background started with extensive work on biological data sets in graduate school and moved to developing specialized databases as a private consultant in biological and horticultural fields.

Mark's career with the National Park Service began in 2003 when he became a Data Specialist in the Great Lakes Network Office. He assumed the Data Manager position in 2004. ●

Recent Publications and Presentations

(Continued from page 2)

Minnesota, 20 October 2009.

Wiener, J., **B. Route**, D. Engstrom, J. Glase, B.M. Lafrancois, and M. Sandheinrich. Trend monitoring of mercury in national park units of the western Great Lakes region. Paper to be presented at Mercury Science & Policy Conference with a Special Focus on the Great Lakes and Northeast Regions, Chicago, Illinois, 17-18 November 2009.

Wiener, J., **B. Route**, S. Bailey, R. Haro, K. Rolfhus, M. Sandheinrich, and N. Forseth. Mercury in national park units of the western Great Lakes region: Assessing bioaccumulation in aquatic food webs. Paper to be presented at Seventh National Monitoring Conference—Monitoring from the Summit to the Sea, Denver, Colorado, 25-29 April 2010.



2009 Field Season Summary

WATER QUALITY—Large Rivers

Water quality improvement plans (also called Total Maximum Daily Load, or TMDL, Plans) that will affect both the Mississippi National River and Recreation Area and the St. Croix National Scenic Riverway will be completed in 2010. For MISS, the Lake Pepin TMDL Plan will identify sources of excessive nutrients and sediment in the Upper Mississippi River Basin, and for SACN the Lake St. Croix TMDL Plan will identify sources of excessive nutrients in the St. Croix River watershed. It is hoped that these plans and subsequent resource management decisions will lead to improved water quality in the Mississippi and St. Croix Rivers through nutrient and sediment reductions.

Mississippi National River and Recreation Area

As a member of the St. Croix National Scenic Riverway's Dive Team, Network Aquatic Ecologist David VanderMeulen participated in a multi-agency effort to survey native and non-native mussel populations in the Mississippi River adjacent to the historic Rock Island Swing Bridge at Newport, Minnesota. The preliminary survey provided park managers with an understanding of the potential environmental compliance requirements that may arise if bridge restoration work is initiated. Routine, biannual water quality monitoring resumes on the Mississippi River and tributaries in 2010.

St. Croix National Scenic Riverway

Routine monthly water quality monitoring was conducted from April through November. Like at MISS, this monitoring occurs every other year. Two water quality monitoring probes were installed in Lake St. Croix at Stillwater, Minnesota, and Prescott, Wisconsin. These probes record water temperature, pH, specific conductivity, and dissolved oxygen every 30 minutes as the river enters and leaves Lake St. Croix. This information will allow Network scientists to better understand the daily and seasonal patterns of these parameters. We plan to deploy similar probes elsewhere as we begin to implement the wadeable streams protocol. David VanderMeulen and the SACN Dive Team participated in a multi-agency effort to survey native and non-native mussel populations in the lower St. Croix River. Native mussels respond to changing water quality conditions, so these surveys complement our water quality monitoring efforts.



WATER QUALITY—Inland Lakes

Our protocol calls for sampling 33 lakes in six parks three times each during the open water season, preferably when the lakes are thermally stratified. In 2009, we met our goal at APIS (4 lagoons), VOYA (8 lakes), INDU (1 lake), SLBE (6 lakes), and PIRO (5 lakes). Nine lakes at ISRO were each sampled twice. We were able to sample additional lakes at three parks this year – 14 lakes at Voyageurs, one at Indiana Dunes, and four at Sleeping Bear Dunes. These “extra lakes” are sampled when time and money allow, and they serve to increase the sample size for a given park.

Due to contracting rules, we were not able to contract with the same analytical lab we have used for nutrients and chlorophyll samples since 2005. Part way through the 2009 season, we realized we were receiving questionable results for these parameters, but fortunately, we collected back-up samples. We will get these analyzed in FY2010.

Apostle Islands National Lakeshore

We noticed purple loosestrife at the Little Sand Bay lagoon again (the park followed-up with treatment) and we are documenting the extent of an aggressive patch of cattail (either the exotic narrow-leaf or the hybrid or both) around the Michigan Island lagoon. Huckleberries were plentiful near the Stockton Island lagoon – no wonder there are so many bears on that island!



Indiana Dunes National Lakeshore

Routine water quality monitoring was conducted at the park in late April, early July, and early September. Middle Lagoon continues to be hyper-eutrophic and has high pH levels, as well as high concentrations of chloride and sodium. Field reconnaissance of the Little Calumet River at the Heron Rookery was conducted to identify potential new monitoring locations for implementation of the wadeable streams protocol. At the request of park administrators, aquatic ecologist David VanderMeulen drafted a memorandum summarizing the Network’s findings with respect to water levels at Long Lake over the past three years.

Isle Royale National Park

Unfortunately, we sampled the nine index lakes at ISRO only twice this year, as our new aquatic ecologist position was not filled in time. Sampling in August was accomplished through an amazing patchwork effort involving park staff, staff from Midwest Region and the Network office, volunteers, and a research team from the University of Maine. Sargent Lake had a late-season algae bloom in September – something we’ll keep an eye on in the future. Our new aquatic ecologist, Rick Damstra, visited the island in September and conducted the final sampling on each of the island’s nine index lakes. He will be stationed on Mott Island next year.

Pictured Rocks National Lakeshore

Lora Loope acquired a long cable for her multi-probe, which will enable data collection all the way to the bottom of Chapel Lake — about 45 meters (148 feet) deep!

Sleeping Bear Dunes National Lakeshore

We collected the second set of sediment samples for diatom analysis from SLBE lakes (the first set was collected in 2005). Collaborators at the St. Croix Watershed Research Station will analyze the diatom communities for change and then attempt to relate any changes to inferred changes in water chemistry.

Chris Otto was marooned on North Manitou Island for three days – what won’t the water quality staff endure for good data!?

Voyageurs National Park

The Network continued our collaborative effort with the U.S. Geological Survey to sample mercury at five inland lakes.

The lakes at VOYA claimed more than the usual amount of equipment. An anchor bag, anchor line, and Secchi disk now lie somewhere on the bottoms.

BIOACCUMULATIVE CONTAMINANTS—Bald Eagles



Table 1. A summary of sampling effort and productivity of bald eagle nests at MISS and SACN, 2009.

	MISS	Pools 3 & 4	SACN	Total
Territories visited	21	17	10	48
Nestlings encountered	44	30	19	93
Young/occupied nest	2.2	1.7	2.0	2.0
Samples for analysis	35	22	16	73

Fieldwork to collect bald eagle blood and feather samples was completed in May. This was scheduled as an off-year for monitoring, but funding became available under a reimbursable work agreement from the Minnesota Pollution Control Agency to sample on the lower St. Croix and the Mississippi rivers, including a stretch of the Mississippi below the confluence of the two rivers (pools 3&4).

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A summary of work completed by the I&M staff, our

Voyageurs

Fish and aquatic insects were collected in May from four lakes for contaminants analysis. VOYA biologist Lee Grim (right) conducted landbird surveys in June. The land cover/land use staff visited in July to ground-truth some of their aerial and satellite imagery. Water quality sampling was conducted in June, July, and September. Network staff made public presentations in June and July as part of the park's Special Speaker Series.



Apostle Islands

Network staff assisted APIS biologist, Peggy Burkman, with landbird surveys in June. Water quality sampling was conducted in June, July, and September. Network staff made a public presentation as part of the lakeshore's guest lecture series in July. Bathymetric mapping of the islands' Lake Superior shoreline was completed by the Army Corps of Engineers.



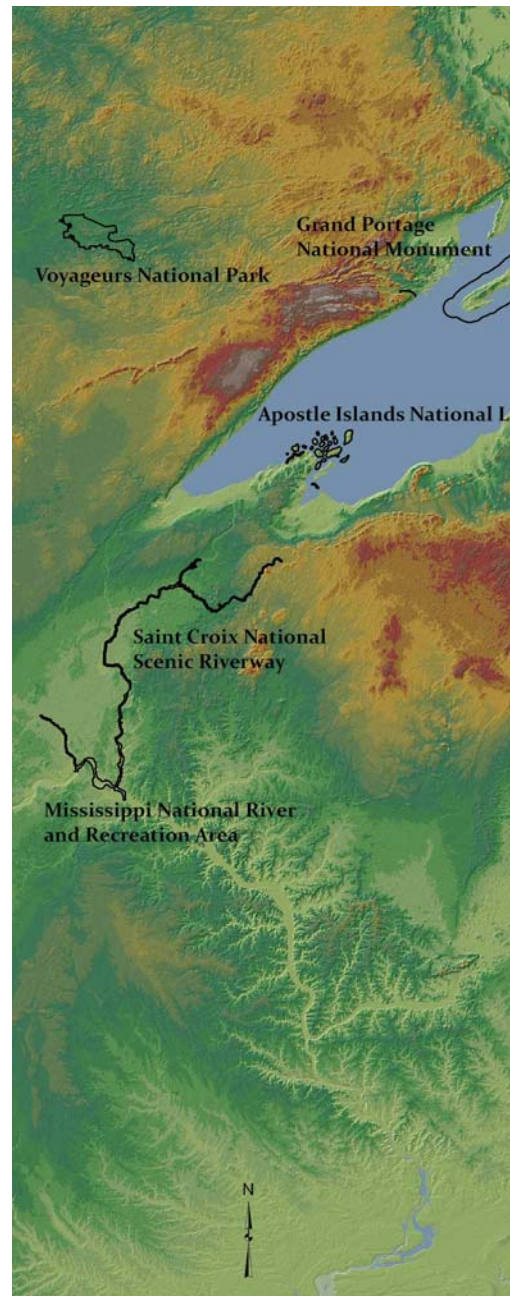
St. Croix

Young bald eagles were banded and blood and feather samples taken for contaminants analysis in May on the lower St. Croix. SACN biologist Robin Maercklein conducted landbird surveys in June. Water quality sampling was conducted monthly from April through November, with assistance from Michelle Prosser (right, center). Accuracy assessment of vegetation mapping data was completed on the Namekagon and upper St. Croix rivers.



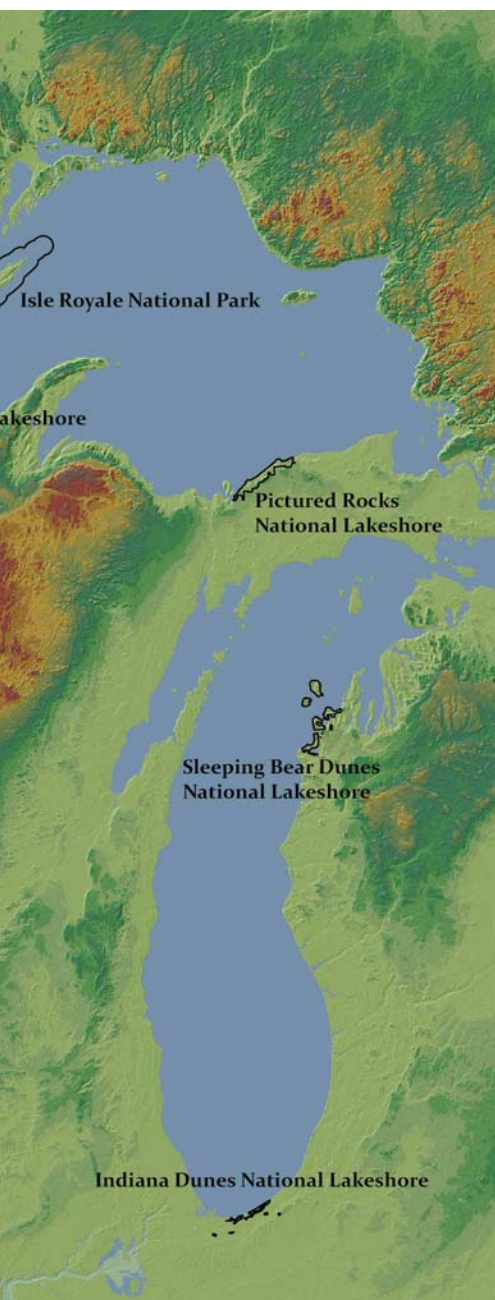
Mississippi River

Young bald eagles were banded and blood and feather samples taken for contaminants analysis in May. The Network's information booth was on display during the park's BioBlitz weekend in June. Network staff assisted with a mussel survey at the Rock Island Swing Bridge site.



Field Season

partners, and park staff in support of I&M programs



Grand Portage

Fish and aquatic insects were collected in May from five sites for contaminants analysis. Landbird surveys were conducted by contractor Debbie Waters. Sample sites along Grand Portage Creek were identified for the water quality-wadeable streams program, and initial measurements were made. Regular stream flow monitoring begins in 2010.



Isle Royale

The Network contributed an article to the park's 2009 newspaper. Network staff assisted Jim Wiener (left, in the bow) and others from the University of Wisconsin-La Crosse with collecting fish and aquatic insects from four lakes in May for contaminants analysis. ISRO biological technician Alex Egan and others conducted landbird surveys in June. Water quality sampling was done in August and September only. Aerial photography was acquired in the spring in preparation for land cover analysis in 2010, and bathymetric mapping of the island's Lake Superior shoreline was completed.



Pictured Rocks

Forest vegetation monitoring was done at 59 sites in May and June. Water quality monitoring was done in June, July, and September.

Sleeping Bear Dunes

Forest vegetation monitoring was done at 50 sites in July and August. Diatom samples were collected in the spring, and water quality monitoring was done in June, July, and September. Benthic habitat mapping along the Lake Michigan shoreline of South Manitou Island was completed by the U.S. Geological Survey.



Indiana Dunes

Water quality sampling was done in April, June, and September. Park staff conducted landbird surveys in June. The Network was an exhibitor during the lakeshore's BioBlitz weekend in May. Vegetation mapping was completed, and the finished map is coming this fall.



2009 Field Season Summary

(Continued from page 5) *BIOACCUMULATIVE CONTAMINANTS—Bald Eagles*

Other highlights include:

- Numerous media outlets (TV, newspapers, radio) ran stories on our 2009 sampling efforts and presented some of our findings from past years.
- All 2009 samples have been submitted to the Wisconsin State Laboratory of Hygiene for analysis. Results are expected this winter.
- A manuscript on DDE, PCBs, and mercury with 2006 - 2008 data is near completion and will be submitted to the Journal of Great Lakes Research later this fall. Our findings, when compared to historical monitoring on the Great Lakes, shows a continued decline of DDE and PCBs in Lake Superior eagles (3 to 4% annually) since the late 1980s. Detection of trends in the other two parks is not possible due to lack of historical data, but both MISS and SACN eagles currently show significantly lower concentrations of these two contaminants than APIS eagles. The upper portion of SACN shows significantly higher concentrations of mercury in eagles than the other two parks, likely due to the high proportion of wetlands, which are known to convert elemental mercury to the lethal methylmercury form.
- All three parks (APIS, MISS, and SACN) will be fully sampled in 2010 and 2011.

BIOACCUMULATIVE CONTAMINANTS—Fish

Fish and dragonfly larvae were collected by staff from the University of Wisconsin, La Crosse, at Isle Royale, Voyageurs, and Grand Portage in late May and early June 2009. Investigators very nearly met all sampling goals for predatory and prey fish and dragonfly larvae at the three parks; exact tallies of samples are not yet available.

Data on the results of mercury analyses in prey fish (yellow perch, Iowa darter, Johnny darter, bluegill, green sunfish, central mudminnow, and mottled sculpin) and predator fish (northern pike, largemouth bass, smallmouth bass, grass pickerel, and walleye) were presented at a conference in China this summer. Highlights: mercury concentrations in the axial muscle of 18 of the 48 predatory fish analyzed exceeded the USEPA criterion for protection of human health. Concentrations were generally highest in predatory fish from Grand Sable Lake (Pictured Rocks), where the USEPA criterion was exceeded in both northern pike and smallmouth bass. Mercury concentrations in central mudminnows from Legion Lake (a clear-water, low-pH lake at Pictured Rocks) exceeded those in fish from the Great Marsh at Indiana Dunes, the site of a wetland-restoration project. Mercury in mudminnows from Legion Lake may be high enough to adversely affect production of nesting common loons that forage in the lake.

Two important presentations will be made on the fish/dragonfly monitoring—one this fall and a second in spring 2010. A proposal for \$800,000 in additional funding to provide annual sampling of fish and dragonfly larvae at all six parks under this protocol has been accepted by the EPA and is almost certain to be funded under the Great Lakes Restoration Initiative in 2010.

VEGETATION

Permanent plots were established and sampled at Sleeping Bear Dunes (50 plots) and Pictured Rocks (59) this season. There are eight different characteristics measured at each plot, including assessments of forest pests and pathogens and of deer browse. A small population of ginseng (*Panax quinquefolius*), a state-threatened species in Michigan, was found at Sleeping Bear Dunes. Network staff visited Isle Royale in September to become familiar with vegetation and terrain of the island and to talk with park staff about logistics and other considerations for sampling there in 2010.



LANDBIRDS

Seven of the eight parks with an existing landbird monitoring program conducted their surveys this year using the methods outlined in our new draft protocol. The methods include practicing distance estimates with a range finder and recording data by the minute rather than in three-, five-, or 10-minute aggregates. Almost everyone made slight adjustments to accommodate these standardized methods, but no one experienced any difficulties as a result. In fact, a post-season conference call found everyone in agreement that the methods will work for park purposes as well as the Network's. Network staff will finalize the draft protocol and distribute it for review this fall.

Landbird monitoring at Mississippi River has been supervised and conducted by volunteers from Minnesota Audubon since 2007. Minnesota Audubon in cooperation with MISS staff has submitted a grant to the National Park Foundation, asking for financial support to continue the citizen surveys in spring 2010, train citizen volunteers in using a website which is in development, and organizing past data and creating public outreach materials based on it. A draft report is expected near the end of 2010.

LAND COVER/LAND USE

We visited Voyageurs in July to determine if some apparent disturbances identified from remote sensing (aerial and satellite photos) were in fact real. A notable observation was made on the trail to Cruiser Lake from Lost Bay, where we found a beaver pond that had drained since last year. This "change" was detected by our satellite imagery analysis, and our

verification process — cross-checking with aerial photos, then visiting the site if necessary — confirmed that our analysis of satellite imagery was correct. Below (left) is a photo of the pond taken from an airplane in 2008, and another (right) from the ground in 2009.



We spent much of the summer analyzing aerial and satellite imagery to categorize and quantify change that is occurring within VOYA's forests. We found multiple change agents are at work in the park, with the dominant processes being blow-down from strong wind events, fire, beaver, and insects/disease. When we summarize the amount of land area affected by each of the change agents in the last six years (2002-2007), we see that fire affected the largest percentage of land inside the park (0.33%), followed by beaver (0.17%) and blowdown (0.15%). However, the entirety of fire disturbance in this time period was one event: the Shoepack Lake fire in 2004. Even though the area disturbed by fire was nearly twice as much as that disturbed by beaver, it is still impressive that such a small mammal could impact over 95 hectares (234 acres) in the past six years.

WEATHER AND CLIMATE

The weather and climate monitoring protocol is still in draft form, but monitoring by the remote access weather stations (RAWS) continues. RAWS data are automatically transmitted to a server in Utah, which is jointly administered by the Bureau of Land Management and the U.S. Forest Service.

The Network is evaluating potential locations for two new remote access weather stations. Parks with no current capacity for collecting weather/climate data are first in line for these stations, which are expected to be installed next season. ●

Things We're Learning

From *NPLichen: A Database of Lichens in the U. S. National Parks, 2005 Final Report* by James P. Bennett and Clifford M. Wetmore. Great Lakes Network Report GLKN/2005/06.

The first version of NPLichen (NPL) was made available in 1992 and listed lichens from 93 park units. The updated database contains 25,995 records from 144 National Park units. These records account for 2,435 taxa (species and infra-species), which represents roughly 68% of the North American flora.

All nine Great Lakes Network parks (plus Keweenaw National Historical Park in Michigan) are represented in the database. Isle Royale (ISRO) supports the greatest number of lichen species, while Indiana Dunes (INDU) has the fewest (table). A total of 453 references are cited in the database, with Isle Royale National Park having more (66) than any other park in the country. (The average number of citations per park is 8.5.)

The authors estimate that 91-99% of the lichen species expected to be in the Great Lakes parks have been identified and documented, though they concede the data indicate only that the taxa are present as determined by the original sources. (The database only contains secondary source material, and not original presence/absence specimen data.) Related to this, the authors warn that "in some parks, where most or all of the records are not verified [locations, not identities], the estimate of completeness may be misleading because we are not sure if the species are actually in the parks. In addition, some park boundaries are unclear in some areas or are ambiguous because of partnership units, making it difficult to determine if localities are in parks or not." Mississippi National River and Recreation Area is one of the parks where this issue applies.

A second caveat by the authors is that the counts of species from the lists retrieved from this database may not be entirely correct because, in some cases, one report listed a specimen that was later re-identified as a different species. Therefore, both names may be in the retrieved lists and only one is correct. Bennett and Wetmore estimate about 5% of the records in the database have this problem of redundancy. Isle Royale and Voyageurs National Park are two of the parks with the potential for this problem.

Still, NPLichen is an important step forward in documenting an abundant, but relatively ignored group of organisms. ●

You can visit NPLichen online at www.ies.wisc.edu/nplichen

Park	No. of Lichen Species
APIS	323
GRPO	199
INDU	69
ISRO	613
MISS	128
PIRO	263
SACN	308
SLBE	193
VOYA	498

Data from NPLichen, www.ies.wisc.edu/nplichen. Accessed 10 July 2009

Why do we care about lichens?

1. They are the dominant vegetation over about 8% of the earth's terrestrial surface, influencing the growth and development of other plants and animals in the area.
2. They are colonizers of newly exposed habitats, especially on rocky surfaces where they are the most abundant and diverse group of "pioneers."
3. They "fix" nitrogen from the air, producing the compounds needed for plant growth. In some places, lichens are believed to contribute up to 50% of a landscape's total nitrogen input.
4. They are an important food item for caribou, deer, and moose.
5. They serve as nesting material for many bird species.
6. They are well-known as extremely sensitive indicators of air pollution, providing an inexpensive and widely-distributed method of monitoring air quality.

From *Lichens of North America* by I.M. Brodo, S.D. Sharnoff, and S. Sharnoff (2001, Yale University Press).

Great Lakes Network Welcomes Two New Staff Members

The prospect of spending five months away from one's family made filling the aquatic ecologist job at Isle Royale a challenge. Fortunately for us, **Rick Damstra's** wife, Val, had been to the island as a field assistant on a project 10 years ago and loved it. That and securing family housing at the park so Val and the couple's one-year-old daughter, Violet, could stay with Rick sealed the deal.

Damstra grew up on Beaver Island in Lake Michigan and earned a Master's degree from Central Michigan University, where he studied the habitat use and population dynamics of lake sturgeon on the Manistee River in Michigan. Before coming to the Network, he worked in aquatic and fisheries-related jobs for the Illinois Natural History Survey and the Bay Mills Indian Community (Michigan). Most recently, he was a nongame wildlife technician for the Little Traverse Bay Bands of Odawa Indians in northern lower Michigan.

"It was Rick's all-around practical experience and especially his ability to improvise and think on his feet that impressed me," says Joan Elias. "When I asked him to give an example of having to improvise, he told me a story about fixing an Ekman dredge sampler with a zip-tie, a Spaghettios® can, and some duct tape."

Ingenuity and prior experience living on an island will serve Rick well in the monthly water quality sampling on nine of Isle Royale's inland lakes. He traveled to the island in September to conduct the final sampling for the year.

"I'm looking forward to it," Rick says. "Most people dream of coming to Isle Royale just to visit and do some backpacking. I get to *work* here!"



Rick Damstra, Aquatic Ecologist

Finding a picture that truly identifies **Jessica Grochowski** is challenging because most everything in the Network archives shows her enveloped in mosquito netting. Such is the life of a field botanist.

Jess has been with the Network's vegetation monitoring crew from the beginning, working as a seasonal technician in 2007 and 2008. She was hired into a permanent position as the lead botanist/crew leader in Spring 2009. Her previous experience no doubt helps her anticipate and deal with the challenges inherent to overseeing five other people and still getting work done in a new park each season.

"Jess is extremely dependable and a great team player," says Suzy Sanders. "But the most important thing, and I know this sounds trite, but her attention to detail is wonderful. It's something I really appreciate when we're preparing for the field season."

Jess grew up in Alpena, Michigan, and studied environmental science at Northland College before earning a Master's degree from the University of Minnesota - Duluth. Such integrated, broad-spectrum studies prepared her well for the kind of work she does now.

"Besides being the sort of job I hoped to have when I graduated, working for the Network is great because I get to see so many places in the parks that very few others will ever visit."

Now if we could just do something about those mosquitoes. ●



Jessica Grochowski, Botanist/Crew Leader

National Park Service
Great Lakes Inventory and Monitoring Program
2800 Lakeshore Drive East, Suite D
Ashland, Wisconsin 54806
Phone: (715) 682-0631
<http://science.nature.nps.gov/im/units/glkn/>

**Improving park management through
greater reliance on scientific knowledge**



The Current is published twice a year for Great Lakes Network park staff, our partners, and others interested in resource management in national parks of the Great Lakes region.

Editor

Ted Gostomski

Network Coordinator

Bill Route

Webmaster

Mark Hart

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Gregg Bruff
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Wendy Doughty
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