



The Current

Spring 2023



Talkin' About an Evolution

By Ted Gostomski, Network Science Writer

The doorbell rang at the front door of the network office recently, and when I answered, an older man stood in the breezeway. He explained that he had been active in Lake Superior conservation efforts a number of years ago and that more recently, he had been a regular reader of our newsletter. He was wondering if it was still in print or if it had been discontinued because he had not seen a new issue in a while. I explained that we had moved the newsletter entirely online and offered to send him a link if he gave me an email address. He smiled and said, no, he doesn't use the computer. His wife has an email address, but he doesn't use it. He thanked me and left.

In March, the network's technical committee and board of directors were given a demonstration by Scientist-in-Parks intern Hallie Arno and aquatic ecologist Rick Damstra of the functionality of a data visualizer they are developing for the water quality monitoring program. After the presentation, a park resource manager said that a data visualizer is "the answer to the question, 'what are you learning?'" Someone else agreed, adding the visualizer is a more useful way of presenting the monitoring data than our standard data summary reports, though, they stipulated, the reports do provide context for the data.

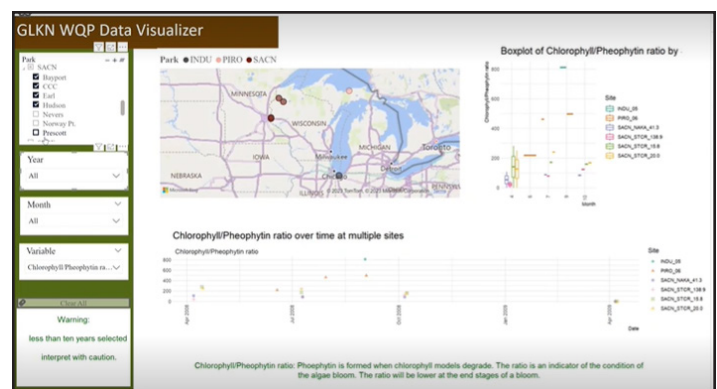
In preparing for a workshop in April, I was printing the agenda and a series of handouts and putting them into folders for each participant. My office mates smiled (my continued use of paper amuses them) and suggested that I could save paper—and

the weight of the folders in my luggage—by putting everything online, creating a QR code, and having everyone download the information to their phone or computer.

This series of moments started me to thinking about how, like everything else, the way we communicate science is changing in response to the ways most people now consume information. I say "most people" because that man at our front door does not consume online information, and I personally do not prefer to read workshop or conference documents on my phone or computer. Nevertheless, data visualizers and digital documents are how information is delivered these days.

In addition to the visualizer being created for water quality monitoring, we are trying a new way of presenting data from the landscape dynamics

"Evolution," continued on page 6



Screen capture showing a data visualizer being developed for the Great Lakes Network water quality monitoring program.

Arrivals and a Farewell

Hallie Arno

Scientist-in-Parks intern Hallie Arno (she/her) grew up on the east coast and earned her BA in Human Ecology with a focus in conservation biology from College of the Atlantic in Bar Harbor,



Maine. She is interested in fisheries science and management, specifically how data can better inform policy. She has a diverse range of experience in field ecology, marine biology, and data science. Her internship at MWR Inventory and Monitoring involves creating interactive data visualization tools for park managers, researchers, and the public to better understand water quality in MWR parks. After her internship, she is headed to Memorial University in Newfoundland, Canada, to work towards a master's degree studying the impacts of climate change on Atlantic Salmon.

Cyrus Hester

Cyrus Hester is the network's new Assistant Data Manager. Cyrus grew up in a small town on Chicago's south side, where he frequented the city's zoos, museums, and nature preserves. He earned his B.S.



and M.S. in Zoology from the Cooperative Wildlife Research Laboratory at Southern Illinois University

Carbondale, with a focus on landscape ecology. He earned his Ph.D. in Sustainability Science from Arizona State University, studying the history of industrialization and long-term trends in trace metal concentrations in the Sonoran Desert. After that, he worked for three years as a postdoctoral researcher on public health in the Population Program of the Institute of Behavioral Science at University of Colorado Boulder. He has published research on water security, natural hazards, nutrient ecology, and place-based determinants of health and wellbeing. Outside of academia, he has worked as an environmental scientist for the Bad River Band of Lake Superior Chippewa, an environmental ethnography intern with the Field Museum of Natural History in Chicago, and a Youth Conservation Crew Leader for the U.S. Fish and Wildlife Service. Cyrus is excited to begin his new role as an Assistant Data Manager with the Great Lakes Inventory and Monitoring Network, where he hopes to support the data-driven initiatives of the network.

Tammy Keniry

We knew it was going to happen some day, but no one is ever ready for the moment when an integral part of the team leaves. That moment arrived for us when Tammy Keniry retired at the end of April.



Tammy began working for the Great Lakes Network as a contractor, building the accounting database, then as a short-term "emergency hire" to actually implement use of that database. She was hired

"Farewell," continued on page 6

2023 Field Season Schedule

	Amphibians	Contaminants- Dragonflies	Landbirds	Vegetation	Water Quality
Apostle Islands	Mar–Aug	May–Aug	June	n/a	June–Oct ²
Grand Portage	Mar–Aug	May–Aug	June	n/a	n/a
Indiana Dunes	Mar–Aug	May–Aug	June	June–Aug	May, Jul, Sept
Isle Royale	Mar–Aug	May–Aug	June	n/a	May–Sept ³
Mississippi River	Mar–Aug	May–Aug	June	n/a	n/a
Pictured Rocks	Mar–Aug	May–Aug	June	n/a	June–Sept ⁴
St. Croix Riverway	Apr–Aug ¹	May–Aug	June	n/a	Apr–Nov ⁴
Sleeping Bear Dunes	Mar–Aug	May–Aug	June	n/a	June–Sept
Voyageurs	Apr–Aug ¹	May–Aug	June	n/a	June–Sept ⁵

Amphibians — Park and network staff along with volunteers will collect data recordings.

¹ Monitoring is being conducted using a U.S. Geological Survey protocol.

Contaminants-Dragonflies — Samples will be collected by a Northland College field crew at APIS, GRPO, ISRO, and SACN, and by park staff and volunteers at the other parks.

Landbirds — Surveys are conducted by park staff, volunteers, and contractors.

Vegetation — Conducted with a team of three cooperators led by Suzy Sanders and Jessica Kirschbaum.

Water Quality — Conducted by Josh Dickey (INDU), Alex Egan (ISRO), Leah Kainulainen (PIRO), Rick Damstra (SACN), Chris Otto (SLBE), and James Smith (VOYA).

² Includes assisting with nearshore water quality monitoring on Lake Superior.

³ Includes sampling for freshwater midges from a subset of lakes.

⁴ Includes sampling for benthic macroinvertebrates from a subset of sites.

⁵ Includes sampling for mercury in water from a subset of lakes.



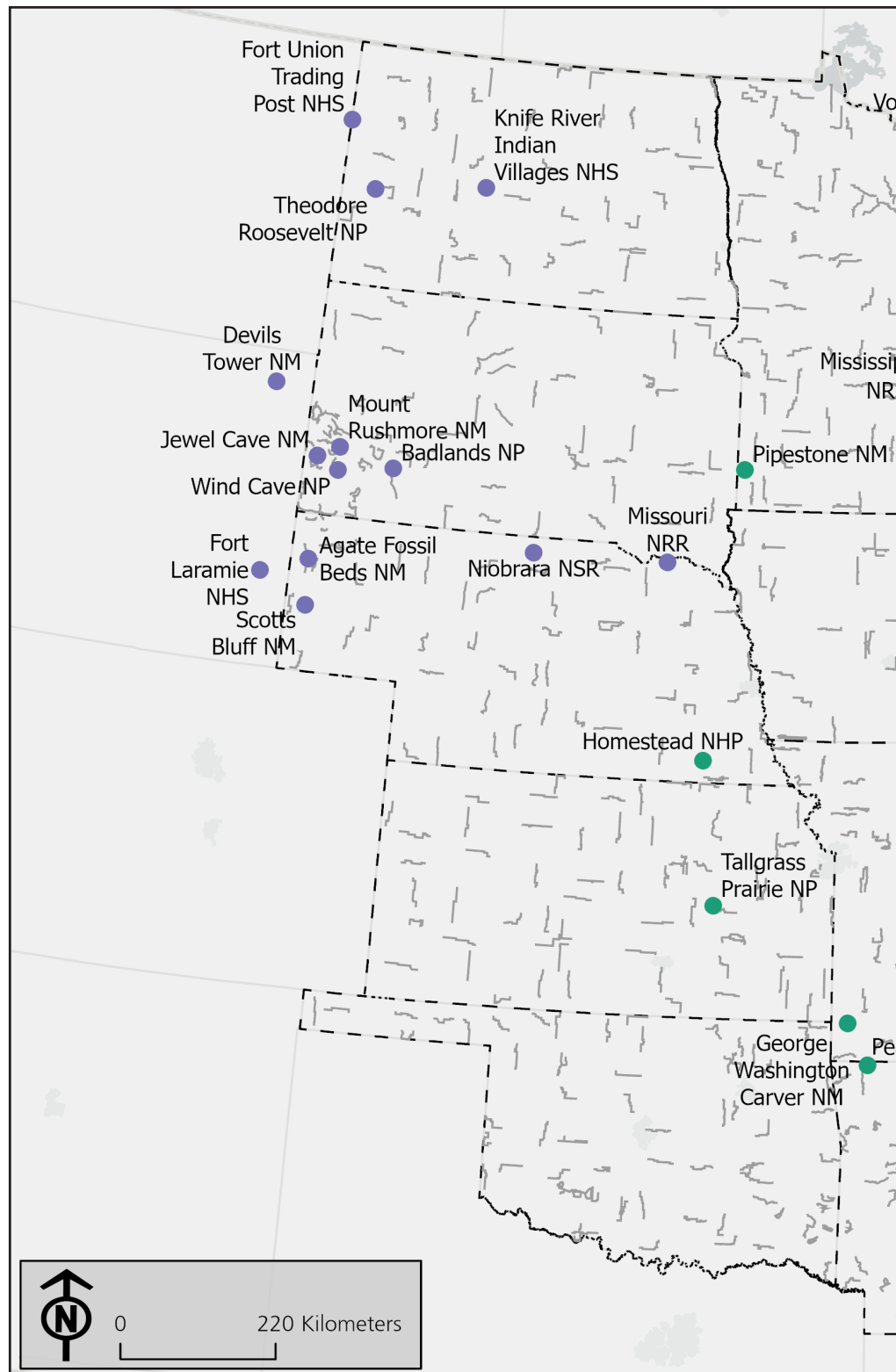
Graphical Interest

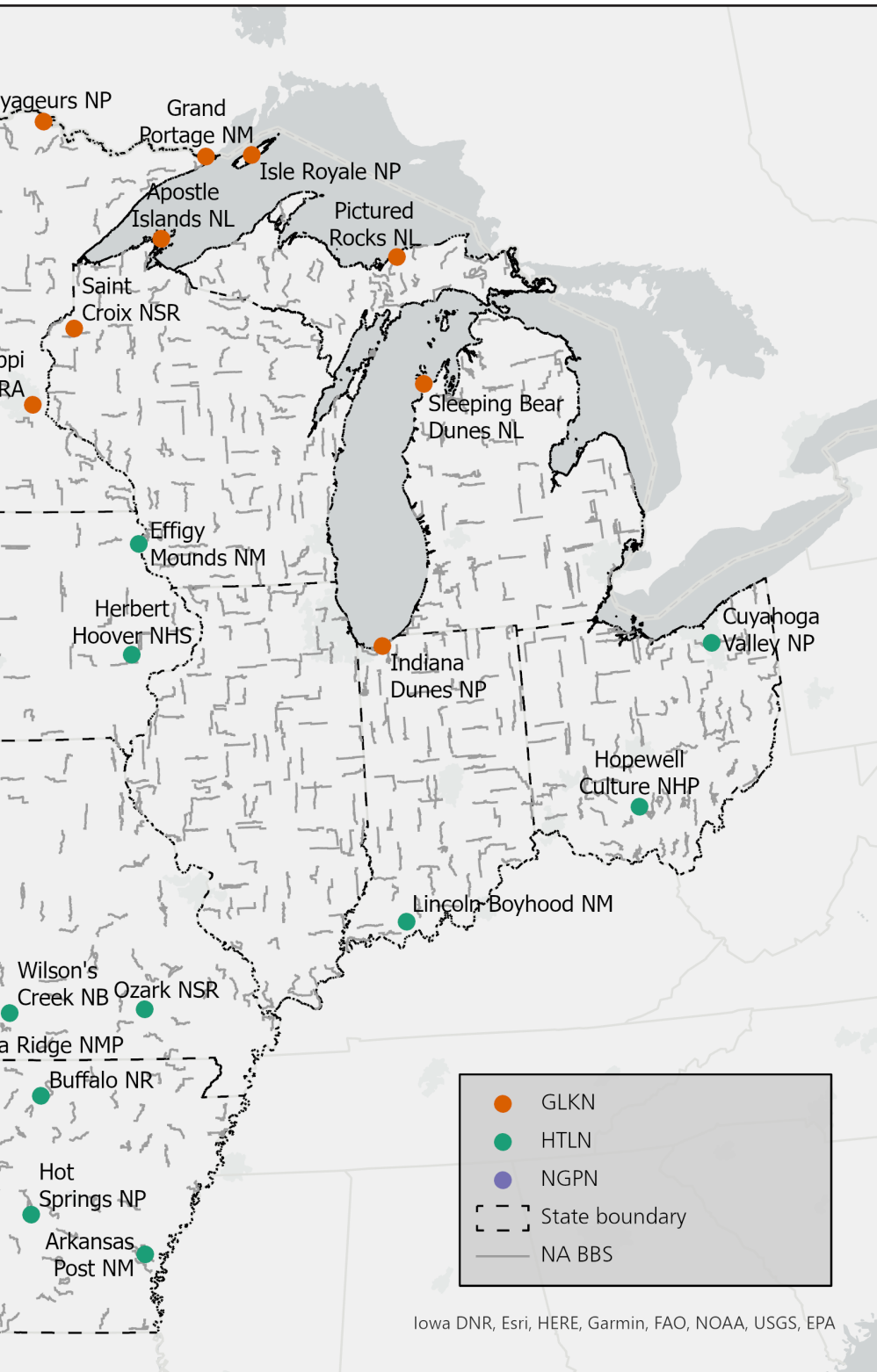
What are the mysterious scrawlings across the Midwest in this image? They are too short to be rivers, and they can't be major highways. Indeed, they are not rivers, but they are roads; probably not major ones, though.

The lines are sections of roads used as transects for the North American Breeding Bird Survey (NA BBS). It also shows parks in the Great Lakes, Heartland (HTLN), and Northern Great Plains (NGPN) Inventory and Monitoring Networks where annual songbird surveys are conducted.

The North American Breeding Bird Survey was established in 1966 by Chandler Robbins and his colleagues in the U.S. Fish and Wildlife Service in response to growing concerns about the health of bird populations and the effects of pesticides. Surveys are conducted annually by volunteer and professional birders along roadside transects consisting of 50 points spaced ½-mile apart. In the beginning, 600 routes were surveyed in the eastern United States and eastern Canada. By 1968, additional routes increased the coverage to all of the contiguous United States and the southern half of all Canadian provinces. Survey routes were established in northern Mexico in 2008, and as of 2020, there are about 3,300 routes in the United States, Canada, and portions of northern Mexico.

Indiana Dunes is the only network park that participates in the NA BBS, which they have done since 1993.





Iowa DNR, Esri, HERE, Garmin, FAO, NOAA, USGS, EPA

So What's the Map For?

The three networks are working with the U.S. Geological Survey to determine bird habitat availability and the degree of habitat fragmentation in and around 37 national park units across the Midwest Region. The amount of forest and grassland habitat, and the degree of fragmentation in each, has never been quantified for national parks in the Midwest Region. We are using NA BBS data to create a model of how grassland and forest bird species of interest respond to habitat fragmentation. We will then test the model predictions using monitoring data from each of the parks, with a goal of identifying “tipping points,” beyond which local breeding bird populations dependent on these habitats could decline or disappear.

We know that parks provide grassland and forest habitats that are becoming increasingly fragmented outside of park boundaries. But there is concern that the effects of habitat fragmentation that are happening across the broader landscape may overwhelm the benefits provided by the protected habitats, causing parks to become less valuable for birds. Another goal of this study is to make predictions for each park and species under future scenarios of “stable,” “habitat decrease,” and “habitat increase,” and to develop a threat index for each park.

A report on this project will be available in September 2024. •

To learn more about the North American Breeding Bird Survey, www.usgs.gov/centers/eesc/science/north-american-breeding-bird-survey

“Evolution,” continued from page 1

monitoring program. Data summary reports, each with an associated resource brief, have been the standard forms of presenting landscape dynamics data. But for the latest analyses at Apostle Islands and Grand Portage, we put together a “video” showing the progression of landscape disturbance events at each park in a series of maps. Each of the disturbances are shown as color-coded polygons, just as they are in the report, and we show the change over time by year, then cumulatively (each year’s polygons added to the previous years’). What little interpretation is provided is contained in the audio description of the slides, so the videos act as a supplement to the context provided in the report. (Click on the park name to see the video: [Apostle Islands](#), [Grand Portage](#).)

Data visualizers and “video briefs” are two ways we are trying to make our monitoring data interactive and more accessible and engaging to park managers and the public. Our main goal is to provide scientific information that informs management, but that will not happen with data that cannot be used and understood. However, there are challenges to innovating in this way, and one of those challenges is ensuring accessibility.

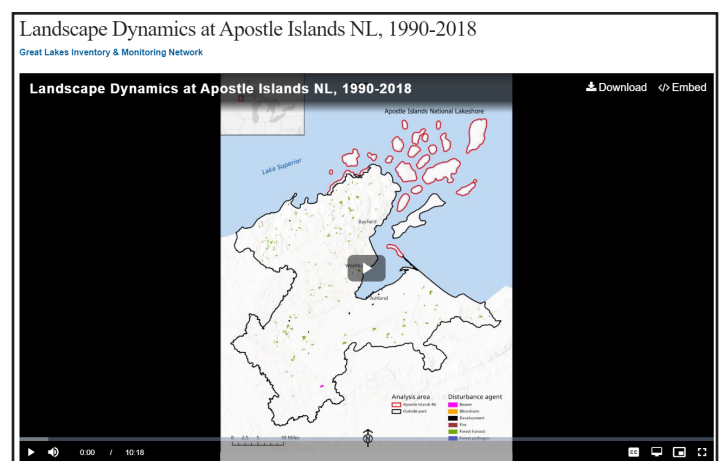
Section 508 of the Rehabilitation Act of 1973 requires any electronic or information technology produced by a federal agency—including but not limited to web content—be accessible for people with physical, sensory, or cognitive disabilities. This means our data visualizers and video briefs must include accommodations such as closed captioning and audio description. Our reports (if made available online) are subject to similar requirements, but making something interactive poses a particular challenge that we are learning to address.

Evolving with new technologies is part of remaining relevant and making sure we are not excluding any audience. The days of simply printing and distributing a written report are gone, but the

“Farewell,” continued from page 2

as the Administrative Technician in 2003. As the network grew, so did Tammy’s role in our operations, and in 2016 she assumed the position of Administrative Officer. In her 20 years with us, Tammy skillfully took care of all the inner workings that allow a program to run and a team to function, not just for the network, but also for the Great Lakes Invasive Plant Management Team. She kept a close eye on the budget, travel plans, timesheets, and purchasing, among other things. She kept us on track, always, and that is a source of reassurance we will miss. Thank you for your service, Tammy! •

evolution of communication brings exciting new ways of sharing what we are learning and creating tools that park managers can and will use. In the end, that is a good thing for all of us. •



Landscape dynamics “video brief.”

New Reports and Publications

All of these reports can be found on the Great Lakes Network website: www.nps.gov/im/glkn/reports-publications.htm or by using the DOI (digital object identifier). Great Lakes Network staff are indicated in **bold blue** text.

Casper, G.S., S.M. Nadeau, and **T.B. Parr**. 2022. Acoustic amphibian monitoring, 2019 data summary: Apostle Islands National Lakeshore. Natural Resource Data Series. NPS/GLKN/NRDS—2022/1380. National Park Service. Fort Collins, Colorado. Available at: <https://doi.org/10.36967/2295171>.

Casper, G.S., S.M. Nadeau, and **T.B. Parr**. 2022. Acoustic amphibian monitoring, 2019 data summary: Grand Portage National Monument. Natural Resource Data Series. NPS/GLKN/NRDS—2022/1381. National Park Service. Fort Collins, Colorado. Available at: <https://doi.org/10.36967/2295459>.

Casper, G.S., S.M. Nadeau, and **T.B. Parr**. 2022. Acoustic amphibian monitoring, 2019 data summary: Indiana Dunes National Park. Natural Resource Data Series. NPS/GLKN/NRDS—2022/1384. National Park Service. Fort Collins, Colorado. Available at: <https://doi.org/10.36967/2295493>.

Casper, G.S., S.M. Nadeau, and **T.B. Parr**. Acoustic amphibian monitoring, 2019 data summary: Isle Royale National Park. Natural Resource Data Series. NPS/GLKN/NRDS—2022/1377. National Park Service. Fort Collins, Colorado. Available at: <https://doi.org/10.36967/2295506>.

Casper, G.S., S.M. Nadeau, and **T.B. Parr**. 2022. Acoustic amphibian monitoring, 2019 data summary: Mississippi National River and Recreation Area. Natural Resource Data Series. NPS/GLKN/NRDS—2022/1378. National Park Service. Fort Collins, Colorado. Available at: <https://doi.org/10.36967/2295507>.

Casper, G.S., S.M. Nadeau, and **T.B. Parr**. 2022. Acoustic amphibian monitoring, 2019 data summary: Pictured Rocks National Lakeshore. Natural Resource Data Series. NPS/GLKN/NRDS—2022/1376. National Park Service. Fort Collins, Colorado. Available at: <https://doi.org/10.36967/2295509>.

Casper, G.S., S.M. Nadeau, and **T.B. Parr**. 2022. Acoustic amphibian monitoring, 2019 data summary: Sleeping Bear Dunes National Lakeshore. Natural Resource Data Series. NPS/GLKN/NRDS—2022/1379. National Park Service. Fort Collins, Colorado. Available at: <https://doi.org/10.36967/2295512>.

Kirschbaum, A.A. 2022. Landsat-based monitoring of landscape dynamics at Mississippi National River and Recreation Area: 1990–2019. Natural Resource Data Series. NPS/GLKN/NRDS—2022/1383. National Park Service. Fort Collins, Colorado. Available at: <https://doi.org/10.36967/2296636>.

Sanders, S., and J. Kirschbaum. 2022. Forest health monitoring at Apostle Islands National Lakeshore: 2021 field season. Natural Resource Report. NPS/GLKN/NRR—2022/2488. National Park Service. Fort Collins, Colorado. Available at: <https://doi.org/10.36967/2296650>.

Sanders, S., J. Kirschbaum, and S.E. Johnson. 2022. Arctic and alpine rare plant population dynamics at Isle Royale National Park: Response to changing lake levels. Natural Resource Report. NPS/GLKN/NRR—2022/2350. National Park Service. Fort Collins, Colorado. Available at: <https://doi.org/10.36967/nrr-2291496>.



Apostle Islands National Lakeshore
Grand Portage National Monument
Indiana Dunes National Park
Isle Royale National Park
Mississippi National River and Recreation Area
Pictured Rocks National Lakeshore
Sleeping Bear Dunes National Lakeshore
St. Croix National Scenic Riverway
Voyageurs National Park

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

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