

## Optimizing Citizen Science at the Landscape Level - The Northern Highlands Project

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The Northern Highlands Ecological Landscape (NHEL) is a globally significant ecological region in North Central Wisconsin with over 3000 glacial lakes and extensive tracts of public forest. We conducted 2 workshops in 2017 and 2018 to bring together citizen scientists working in the region. Our goal was to develop a long-term sustaining Northern Highlands Citizen Science Community (NHCSC) by 1) providing information on various monitoring opportunities in the region and 2) developing peer-to-peer relationships by sharing experiences and developing objectives for the NHCSC.

We hosted the first NHCSC workshop on December 2, 2017 at Moon Beach Camp in St. Germain, WI. The first workshop was designed to educate citizen scientists within the landscape of ongoing activities and opportunities occurring within the landscape. A total of 90 invited project leaders and citizen scientists in the attended the meeting. Project leaders and/or participants presented information on their specific projects and citizen scientists in attendance asked questions and interacted with project leaders following the presentations. Overviews of the following projects were presented at the workshop – the goal was to inform workshop participants in the range of citizen science options in the Northern Highlands so as to increase participation:

<b>Project</b>	<b>Speaker</b>
• Citizen Lake Monitoring Network	S. Wickman
• LoonWatch	E. Lemoine/M. Meyer
• Iron County Citizen Science Projects	Z. Wilson
• Wisconsin Master Naturalist Program	L. Johnson
• North Lakeland Discovery Center Picture Posts	A. McDonnell
• North Lakeland Discovery Center Lake Levels/AIS	E. Heald
• UWEX and WDNR Healthy Lakes Program	P. Goggin
• WDNR Hunter Wildlife Survey/ARCGIS	B. Dhuey
• Wisconsin Frog and Toad Survey	A. Badji
• Wisconsin Turtle Survey	A. Badji
• Wisconsin Rare Plant Monitoring Program	E. Lewandowski
• Wisconsin Breeding Bird Atlas 2	S. Besadny/V. Haese-Lehman
• Snapshot Wisconsin	E. Lewandowski
• Volunteer Carnivore Tracking	D. and D. Anderson
• Water Action Volunteers	H. Palmquist
• Wisconsin Odonata Survey	E. Lewandowski
• Wisconsin Bat Monitoring Program	E. Lewandowski
• Wisconsin Mussel Monitoring Program	L. Kitchell
• Cooperative Invasive Species Management Areas	Q. Sheehan
• Oneida Co. Citizen Science 4th and 5th grades	S. Boismenu

A second workshop was held on April 7, 2018, building off the first workshop (all invited to the first workshop received an invite to the second) by providing citizen scientists a platform to share ideas

and suggestions. The over-arching goal of this workshop was to develop momentum to produce a long-term sustaining Northern Highland Citizen Science Community. The meeting was again held at Moon Beach Camp, and was attended by 41 citizen scientists and project leaders. An objective of this workshop was to explore the benefits of sustaining a community of Northern Highland Citizen Scientists. Different from the previous workshop (where project leaders described the various citizen science opportunities in the Northwoods), this workshop was one of participation where citizen scientists asked questions, directed conversations, and shared experiences.

To accomplish this task, the attendees divided into 4 facilitated discussion groups. Each group was tasked with discussing and providing answers to the following questions:

1. What motivated you to become involved in Citizen Science projects, and which projects do you currently participate in?
2. What aspects of Citizen Science projects do you enjoy most?
3. How do you currently stay connected with your project(s)?
4. Are there any barriers or obstacles that limit your enjoyment of Citizen Science projects – improvements you can recommend?
5. In the previous workshop we shared contact information regarding 22 Citizen Projects that are available for participation in the Northern Highlands. Have you joined any additional projects since the first workshop and if so, which projects?
6. A primary goal of this workshop is to gauge participant interest in forming a Northern Highlands Citizen Science Community. Do you feel there could be benefits to you in developing this community and if so, what would they be?
7. What Northern Highland Citizen Science Community activities would benefit you most and which would you participate in?
8. How could a Northern Highland Citizen Science Community be organized and structured?
9. How could a Northern Highland Citizen Science Community be funded and sustained?
10. Would you personally be interested in helping form this community, and what role could you play?

A summary of the group discussions was presented at the end of the meeting – recommendations and findings relevant to the workshop goal of developing a sustaining Northern Highlands Citizen Science Community (NHCSC) including:

**Potential Benefits** - Provide a clearinghouse of citizen science project information relevant to the Northern Highlands; provide support, mentoring, and motivation for NH Citizen Scientists; consolidate NH citizen science information for sharing with the public; translate awareness of policy and management issues into action by providing citizens with reliable, accurate scientific information.

**Potential Products** – Communication of Northern Highland science findings via a trained speakers bureau (target audiences = Science on Tap, libraries, farmers markets, media, campgrounds, schools, civic groups, chambers of commerce); Meet-ups (for peer support and information sharing), training and appreciation events; real-time data entry APPs or blogs; calendar of regional nature/outdoor events; geocache nature tours; participation with regional science open houses and natural resource festivals, student led (high school/Nicolet College) website and social media.

**Organization and Structure** – This would be a citizen-led workgroup encouraged to “think big” to raise funding for a paid coordinator, and to recruit a volunteer Board of Directors. Membership would consist of citizen scientists participating in ongoing citizen science research and monitoring projects in the Northern Highlands. Local members of statewide and national

citizen science projects will be encouraged to join. The group will develop a Mission Statement and Specific Objectives/Priorities. Work of this group will be transparent and available to the public via an internet presence and affiliation with the Wisconsin Citizen Based Monitoring Program.

**Potential Funding Sources** – Partnerships with conservation/outdoor equipment groups (REI, Patagonia, etc.), Wisconsin Valley Improvement Corporation, WE, WPS, and Xcel Energy Corporations, Natural Resource Foundation, Boating Industry, National Science Foundation, membership dues and internal fundraising, small scale planning grants as well as larger grant proposals, Wisconsin Lakes Partnership, Wisconsin DNR CBMP 2019, National Geographic project – Democratizing Science.

**Long-term Objectives** – Develop a citizen science data matrix (multiple data sets) for regional lakes, rivers, and watersheds; expand monitoring opportunities as DNR surveys are limited by filled survey routes; develop citizen science “champions” for non-charismatic species; develop a phenology calendar/webproduct; establish academic partnerships; identify missing factors in watershed indicator protocols and develop new surveys; recruit, train, and mentor the next generation of Northern Highland citizen scientists.

**Potential Partners** – Vilas/Iron/Oneida Land and Water Conservation Departments, educators (grade school, high school, technical colleges), UW Kemp, UW Trout Lake, UWSP Treehaven, North Lakeland Discovery Center, Northland College/LoonWatch, Wisconsin DNR, US Forest Service, Lac du Flambeau Natural Resource Agency, UW Extension, Wisconsin Lakes Partnership.

**Workshop Action Item** - Establish an Ad Hoc committee to begin to implement workshop recommendations.

A decision was made at the end of the second workshop to form an Ad Hoc Advisory Committee to guide the group towards development of the Northern Highlands Citizen Science Community. Twelve workshop participants have volunteered to serve on the Ad Hoc committee. The first meeting occurred at UW Trout Lake Station, Boulder Junction, on June 26. The objectives of the first meeting are to adopt the group name and vision statement, and to develop 3 action items designed to move the group forward towards a sustainable, stand-alone citizen science community. The Ad Hoc committee voted to retain the name ***Northern Highland Citizen Science Community***. The vision statement adopted by the Ad Hoc Committee is ***The vision of the Northern Highland Citizen Science Community is to encourage and support community involvement in citizen science in the Northern Highland region leading to better understanding and stewardship of our natural resources.*** To initiate NHCSC activities it was decided to 1) prepare an electronic newsletter to all workshop attendees, 2) develop a web presence, and 3) hold periodic social and learning workshops for NHCSC members. We will develop volunteer committees to move these items forward.