



The Natural Resources Institute works **at the crossroads of communities, natural resources and agriculture**, helping individuals and communities make informed decisions that support the state's rich land, water and mineral resources. From water and forestry programming to conservation training and youth environmental education, our outreach specialists, educators, researchers, affiliates and support teams **navigate complex issues, facilitate challenging conversations and help prepare and guide the next generation of community leaders.**



Extension
UNIVERSITY OF WISCONSIN-MADISON

In 2019, we:



Reached over

67,000

direct program contacts

across
Wisconsin



Reached over

110,000

people indirectly

through broadcast media,
podcasts and community events



Partnered with

173

unique organizations

to deliver educational programming and
research across the state and region



THEME: Educating and engaging with youth and adult audiences

Our programs increase scientific and environmental literacy and lead to an increased sense of environmental stewardship.

UPHAM WOODS:

- 488 students from 10 different schools and one afterschool program used Digital Observation Technology Skills (DOTS) to conduct hands-on scientific observations and collect data through the STEM Outreach Research Accelerators Program. Representing 1,923 program contacts, participants learned field research techniques and presented their results to their communities at Science Strikes Back, an all-ages community science fair. Additionally, 39 educators around Wisconsin received training on how to integrate field technology and outdoor education into curriculum and programming using the DOTS approach.
- 12,441 youth and adults engaged in meaningful field experiences such as collecting field data, serving on conservation projects and presenting their discoveries to one another. This represents 205,825 contact hours of instruction and leadership of programming.

WEHR NATURE CENTER:

- The Pollinator Education Program reached 626 people of which 539 were students representing 12 schools from the Milwaukee area. Participants learned about the importance of local pollinators and steps they could take to improve pollinator habitats.

LAKE SUPERIOR RESERVE:

- The Rivers2Lake program reached 1,522 students and provided 938 hours of professional development for teachers in 2019. The program provides yearlong support to teachers in the Lake Superior watershed, helping them use outdoor and place-based learning to engage students across disciplines.
- 52 environmental educators in partnership with the Great Lakes Indian Fish and Wildlife Commission, Wisconsin Department of Public Instruction and the Wisconsin Historical Society took part in a workshop to integrate the history, culture and tribal sovereignty of Wisconsin's 11 federally recognized American Indian Nations and tribal communities into environmental education efforts in the state.

NORTHERN GREAT LAKES VISITOR CENTER:

- Over 1,200 students participated in Northern Great Lakes Visitor Center environmental education programs. These experiential programs provide students with an understanding of the importance of the region's natural resources and their role in supporting communities, culture and economies.

CENTER FOR LAND USE EDUCATION (CLUE) AT UW-STEVENS POINT:

- Staff reached over 780 students (6-18 years old) through 14 youth-centered outreach efforts focused on how land use affects shoreland health and actions that can be taken to improve lake health.



 **THEME:** Training and supporting community volunteers

Training and support increase the scientific knowledge and literacy of volunteers and empowers them to help preserve, conserve and restore Wisconsin's natural resources.

WATER ACTION VOLUNTEERS (WAV):

- **193 WAV volunteers from 17 different counties attended training sessions in 2019** where they learned how to recognize and respond to indicators of stream health, including monitoring invasive species and performing disinfection protocols. There are **over 500 volunteers** statewide who monitor **over 600 sites annually**.

WISCONSIN MASTER NATURALIST PROGRAM:

- **165 individuals took part in one of 11 trainings** to increase their knowledge about the sustainability of Wisconsin's natural resources. The program trains dedicated individuals to provide volunteer service across the state. **445 Master Naturalists reported 38,187 hours of volunteer service in 2019.**

UPHAM WOODS:

- **810 people logged 2,100 hours toward the Upham Woods 10K by 2020 Conservation Challenge.** In August 2019, Upham Woods pledged to invest 10,000 hours of conservation service in Wisconsin's landscape by the end of 2020.

EXTENSION LAKES AT UW-STEVENS POINT:

- **38 Lake Leaders participated in the Advanced Lake Leaders training,** where they explored possible partnerships with like-minded lake organizations, engaged with current research on organizational decision-making and learned about collaboration with local stakeholders.

 **THEME:** Providing innovative research and data for resource management

Extension-led research contributes critical content to our educational programs, helps inform sustainable land management choices and supports science-based policy decisions.

WISCONSIN GEOLOGICAL AND NATURAL HISTORY SURVEY (WGNHS):

- In partnership with local and state agencies, WGNHS oversaw multiple projects including a **groundwater and lake level evaluation** for three lakes in Waushara County; a **groundwater study that investigated the impacts of changing land use on high-capacity wells** in Chippewa County; and ongoing **oversight of well-based groundwater monitoring systems** across the state.

WATER ACTION VOLUNTEERS (WAV):

- **Over 500 WAV volunteers monitored local streams and entered data into WDNR's Surface Water Integrated Monitoring System (SWIMS) database.** SWIMS is the state's repository of monitoring data for Clean Water Act work and is the source of data sharing through the U.S. EPA Water Quality Exchange Network. SWIMS data can be viewed or downloaded by anyone with internet access, making it available for use by individuals and organizations who are involved in natural resource management decisions.

LAKE SUPERIOR RESERVE:

- The Reserve's System-Wide Monitoring Program (SWMP) provides standardized water quality and biological measures to assess short- and long-term changes in the St. Louis River estuary. In 2019, **130,000 data points were collected from water quality sondes, along with 1,000 nutrient, sediment and chlorophyll-a data points.** These and other historic data going back to 1953 are publicly available so that coastal managers, researchers, educators and others can assess long-term nutrient and sediment loading trends in the estuary.

UPHAM WOODS:

- The Status & Needs Assessment of Environmental Education provides data for Extension to address community professional development needs and gaps in programming. **793 environmental education organizations were surveyed** in 2019 and reported **over 1.1 million participant field days and an industry that contributes more than \$40 million to the state annually.**

INTEGRATED SPECIALIST:

- **Extension surveyed over 2,000 woodland owners in the Kickapoo Valley to discover best practices for giving advice that encourages reforestation behaviors.** The information was used to provide training to 48 foresters to help improve their outreach and communication with clients.

 **THEME:** Building resilient and productive landscapes

Working with farmers, private forest landowners, local decision makers and those using Wisconsin's lakes and rivers, Extension helps individuals understand how their actions impact our natural resources.

CONSERVATION PROFESSIONAL TRAINING PROGRAM:

- In partnership with the USDA's Natural Resource Conservation Service, **the Conservation Professional Training Program worked with subject matter experts to create 12 online trainings** that address various conservation topics, including wetland screening, environmental evaluation, land erosion and wetland conservation provisions and wildlife habitat conservation planning. **The online classes will be used by 6,000+ public and private sector Certified Conservation Planners.**

NATURAL RESOURCES EDUCATION PROGRAM:

- **266 woodland owners from across the state took part in Learn About Your Land classes to learn about practical, useful and actionable resources and advice to sustainably manage their forests.** Topics included learning about the people and programs available to help with woodland management, management planning, conducting timber sales, enhancing wildlife habitat, maintaining healthy forests, tree and invasive plant identification and estate and succession planning.

UW FOREST AND WILDLIFE ECOLOGY:

- In 2019, **34 private woodland owners, responsible for managing 3,502 acres, attended a three-day Coverts Cooperators training to learn how to enhance the abundance and diversity of wildlife on their land.** 97% of attendees reported that they could use what they learned. A follow-up evaluation of the prior year's participants found that **100% of respondents had implemented at least one habitat management activity since attending a workshop.**



CENTER FOR LAND USE EDUCATION (CLUE) AT UW-STEVENS POINT:

- CLUE-based staff delivered **13 workshops** reaching over **650 local officials, government staff and community members** in **43 counties** to help participants understand their roles and responsibilities related to critical land use decisions, standards for decision-making and procedural responsibilities.



THEME: Addressing climate change through education and outreach

Extension is well positioned to enhance the state's climate readiness through education and outreach efforts that will support informed land management and policy decisions and the development of strategies to help address current and future vulnerabilities.

EXTENSION'S RESPONSE:

- Extension educators helped plan the **2019 Driftless Area Symposium** (led by Trout Unlimited). **Over 200 people** attended the **two-day event**, which addressed new conservation practices in response to climate change.
- In partnership with local tribal communities and stakeholders, Extension designed and implemented several workshops to explore how climate change has affected tribal communities and how to build climate resilience within them. Blending Indigenous, place-based perspectives and Western climate science, the workshops were tailored to meet the needs of a variety of audiences including middle school students, undergraduate natural resource majors and educators.
- The **North Central Climate Collaborative (NC3)**, composed of Extension professionals from across the region, **hosted six webinars** that reached over **620 Extension professionals, farm advisors, agency staff and tribal representatives**. Collectively, these individuals influence over **17,700 farmers, producers and ranchers** across the region annually. NC3 increases the flow and usability of climate information for Extension, farmers, natural resource managers, communities, families and youth.



THEME: Responding to other priority natural resources issues



CLEAN DRINKING WATER

Governor Tony Evers declared 2019 the "Year of Clean Drinking Water," and Extension responded through research and education efforts that provide information to impacted water users and key stakeholders.

- In partnership with the Water and Environmental Analysis Lab at UW-Stevens Point, the **Center for Watershed Science and Education** provides testing assistance and outreach education across the state. In 2019, the center assisted **5,968 households** in testing their well water, and **816 individuals** participated in educational events. Testing results were also added to the **WI Well Water Quality Viewer**, a web-based mapping platform that aggregates results for educational purposes.
- The Southwest Wisconsin Groundwater and Geology study (SWIGG), a collaboration between local counties, WGNHS, USGS and the USDA, is **working to assess the quality of drinking water sources** in

Grant, Lafayette and Green counties. The study hopes to identify correlations between water quality, geology and well construction and to determine the probable sources of any contamination found. Results through the first phases of the project **have identified contamination in a subset of wells randomly selected for sampling.** The study's final report is scheduled for completion in early 2021.

- **58 youth from across the state** participated in the three-day **Wisconsin Youth Water Stories Summit at Upham Woods**, with 17 collaborative stories presented on the final day of camp. Campers connected with a broad network of professionals including Lt. Governor Mandela Barnes and directly engaged in hands-on water and conservation learning projects to clear invasive plants and build trails to mitigate storm erosion on Blackhawk Island in the Wisconsin River.



SOIL HEALTH

Extension provides resources and training to help state and regional producers improve soil health and develop more productive and resilient cropping systems.

- In 2019, the **North Central Soil Health Nexus** developed a suite of **soil health resources for educators** and hosted a **soil health field day for 50 educators** across the North Central region.
- Extension, in coordination with tribal colleges, local NGOs and county land and water conservation departments, **hosted four soil health events for farmers, agronomists and agency staff in nine key element watersheds.** **More than 50 participants** received a **soil health kit and training** on how to implement best practices for improving soil health.



AQUATIC INVASIVE SPECIES (AIS)

Extension AIS outreach campaigns reach waterfowl hunters, recreational boaters and anglers on-site to raise awareness about aquatic invasive species and to help prevent their spread.

- Extension held a **three-day training for AIS professionals** at the Northern Great Lakes Visitor Center. **Fifty professionals increased their knowledge** about Wisconsin's AIS programs and visited locally relevant AIS sites.
- Extension led the **drafting and approval process for the statewide aquatic invasive species management plan** (approved May of 2019). The plan **outlines the current status of invasive species in Wisconsin** and will be used to **address invasion pathways that could lead to the spread of nuisance species.**



HUMAN-WILDLIFE INTERACTION

Extension provides education to help homeowners, landowners and municipalities coexist with and support the ongoing management of healthy wildlife populations.

- The **Urban Canid Program** increases the public's awareness of and tolerance for urban coyotes and red foxes through **public presentations, social media, educational videos and radio.** The program's popular "How to Haze a Coyote" video has been viewed nearly **41,000 times.**
- Extension is **leading an innovative project to develop a wildlife-friendly neighborhood in Madison.** Serving as a demonstration site for homeowners, builders, zoning officials and others, the project will focus on **enhancing individual yards and common areas to increase the amount of habitat available to urban wildlife species and to increase overall biodiversity** in the urban landscape.



ADDRESSING ISSUES AFFECTING LAKE MICHIGAN AND LAKE SUPERIOR

Extension is studying our two largest lakes and providing education to help stakeholders understand the impacts of climate change and how impairments can impact communities.

- Many consecutive years of high water conditions in the Great Lakes have led to concerns about threatened infrastructure and landscapes, eroding shorelines, elevated storm hazards and anxious residents. Extension responded by organizing a **one-day water levels conference where 87 western Lake Superior coastal leaders and managers**

discussed lake level trends, impacts and unmet needs. Additionally, WGNHS and UW–Madison researchers have partnered to **monitor bluff stability on Lake Michigan to identify the conditions that are likely to lead to slope failure.** This information is useful to county park managers, coastal managers and people who live in areas with bluff erosion.

- A one-day workshop at the Northern Great Lakes Visitor Center **brought 40 western Lake Superior water science, public health and local management professionals together** to engage around the topics of **algal bloom science, communication and preparedness.**

TOPIC SPOTLIGHT: Water Quality in Agriculture Landscapes

Wisconsin and the surrounding region continue to face water quality challenges related to excess nutrients in surface water and groundwater. Issues like algal blooms and sedimentation in surface water and elevated nitrate and contaminant levels in groundwater can be attributed to these surpluses and directly impact public health, local economies and natural environments. Extension has responded by leading timely research and education initiatives that support federal, state and county partners and help farmers make water-informed management decisions.

RECENT FEDERAL, STATE AGENCY AND COUNTY PARTNER-FOCUSED EFFORTS:

- Produced webinars that helped 91 professionals understand how to successfully apply for state runoff and stormwater grants. Participants indicated that attending improved their understanding of the Targeted Runoff Management grant program and helped build better relationships with WDNR staff.
- Conducted a study to gain insights on the success of county and WDNR water partnerships. Topics covered included (1) barriers preventing counties from using grant programs, (2) ways to improve the programs to utilize funding more effectively and (3) methods to improve communication and build relationships between county staff and WDNR.
- Organized a workshop that addressed current research on agricultural losses of nitrates to groundwater. A majority of the 31 attendees reported their knowledge increased relative to quantifying a nitrogen budget and relative to understanding year-round nitrogen leaching losses.

RECENT WORK TARGETING AGRICULTURAL PRODUCERS AND THEIR ADVISORS:

- Conducted soil health workshops for producers across the Red Cedar, Eau Claire, Lower Fox and Rock River basins to encourage adoption of conservation practices that build soil health.
- Facilitated two sessions for the Dodge County Alliance for Healthy Soil & Healthy Water to understand the group's internal and external environment and assist with setting strategic goals.
- Helped plan and implement the Eighth Annual Red Cedar River Watershed Conference at UW-Stout. The one-day watershed conference focused on water quality issues in the Red Cedar River Watershed and hosted 350 participants including federal, state and local government agencies, producers, lakefront property owners, educators, students, consultants and other stakeholders.

- Facilitated a meeting of seven producer-led watershed groups in the southern region of the state to promote networking, build relationships between groups, improve communication and coordination of events and help groups share resources.
- Provided training to over 100 fish farmers at the Wisconsin Aquaculture Association's annual conference that focused on building demand for their products and using social media to expand interest in their products.
- Served on the planning committee for the Wisconsin Cover Crop Conference, which brought together 400+ producers, agronomists and agricultural professionals to share ideas and lessons learned relative to implementing conservation practices.
- Hosted a technology field demonstration and field day for farmers, manure applicators and agency staff to share the latest precision manure technology. Demonstrated technologies will help producers more efficiently use manure and apply it in greater compliance with their nutrient management plans, reducing the potential for ground and surface water contamination. Participants indicated a willingness to try at least one of the demonstrated practices on their own farms/operations as a result of the field day.

REGIONAL WATER PROJECT HIGHLIGHT:

- The North Central Region Water Network led the Building Capacity for Watershed Leadership in the Mississippi Atchafalaya River Basin project, a collaboration between five land-grant universities. The project has laid essential groundwork for building leadership capacity, particularly among farmers, through a needs assessment, curriculum development and two summits designed to strengthen networks and share knowledge and strategies for increasing farmer engagement in watershed management and adoption of conservation practices. Evaluation from the 2019 summit showed that 94% of respondents strengthened their learning networks and 94% developed a greater appreciation of the impact that upstream actions have on the Gulf Coast.

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