

Dear Friends of the Leopold Center,



It is my pleasure to share with you the 2021 annual report of activities with the Leopold Center for Sustainable Agriculture. The past couple of years have been especially difficult because of the on-going pandemic as well as important leadership changes in the Center.

The most important change in 2021 was the retirement of Dr. Mark Rasmussen as Center director. Mark served ably in this role for nine years and did an outstanding job advancing our mission. Upon Mark's retirement, I stepped in as interim director and will continue to fill that role until a permanent director takes leadership. I do want to thank Mark for his gracious willingness to help during this transition period and for all the great advice he has offered me on the operations and history of the Center. I am truly grateful to follow in his footsteps. I also thank Ann Robinson and Kim Vo at Iowa State University for their assistance in the day-to-day operations of the center.

I'm grateful for the opportunity to serve the Leopold Center as interim director. I have a broad background in ecology, especially avian ecology and population biology and strive to use a science-based approach to solve contemporary ecological problems. This is consistent with the mission of the Leopold Center, and I will continue to work to move the center forward during this transition period.

This annual report includes key updates on the Center's activities. Our financial report shows that we remain in good standing and continue to support activities consistent with our mission. We also include a message from outgoing director Mark Rasmussen plus short updates on activities including support of the Iowa Master Conservationist Program and research on saturated buffers.

I'll close by reiterating that the Leopold Center continues to work towards its mission to identify and develop new ways to farm profitably while conserving natural resources and reducing negative environmental and social impacts. We don't have a lot of funding but are always interested in ways we can partner to help support valuable outreach and research that is consistent with our goals. We look forward to working with you, our many partners, to have real impacts that benefit Iowa.

Stephen Dinsmore, Interim Director



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FOR SUSTAINABLE AGRICULTURE

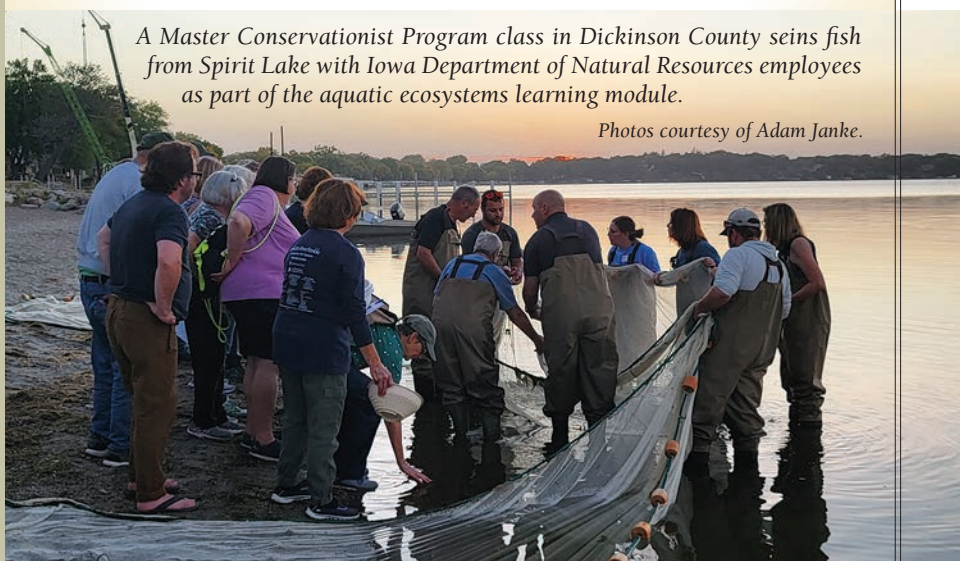
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A report on the Iowa Master Conservationist Program

by Adam Janke, assistant professor, Department of Natural Resource Ecology and Management, Iowa State University, and ISU Extension and Outreach Wildlife Specialist

The Master Conservationist Program is an intensive, adult peer-to-peer learning curriculum offered in partnership between Iowa State University Extension and Outreach and local conservation educators and leaders across Iowa. The goal of the Master Conservationist Program is to create a community of passionate conservationists who are engaged in local communities advocating for conservation practices and policies to ensure a sustainable future for Iowa's landscape.

To achieve this goal, the course combines learning materials delivered online and in person through a series of four learning modules designed to build a foundational understanding of natural resource stewardship opportunities and challenges in Iowa. Online materials for each module are developed and curated by Iowa State University educators and accessed by participants to prepare for paired in-person sessions. Each participant in the Master Conservation Program gets a copy of the Leopold Center for Sustainable Agriculture's namesake's signature book, "*A Sand County Almanac*," which is integrated into instruction in the program's first module. In-person sessions are led by local conservation leaders and educators and build on lessons from the online materials for each module. The course has a standard of 31 educational contact hours per offering between in-person and online instruction. The combined outcome of the educational and networking opportunities afforded by the curriculum aspire to create conditions for improved learning, and ultimately, ➔



A Master Conservationist Program class in Dickinson County seins fish from Spirit Lake with Iowa Department of Natural Resources employees as part of the aquatic ecosystems learning module.

Photos courtesy of Adam Janke.

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A report on the Iowa Master Conservationist Program

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natural resource stewardship in Iowa and beyond. Each participant pledges to use some aspect of knowledge gained during the program in a related service project, individually or as a team.

In 2021, 161 people completed the Master Conservationist Program curriculum in 11 offerings organized by 21 extension districts and 14 partner organizations. Post-course evaluations revealed widespread satisfaction with the curricula and self-assessed changes in knowledge in key conservation topics. Ninety-nine respondents to the post-course survey indicated an intent to impact 42,698 acres of land with lessons they learned in the program.

Ongoing support from the Leopold Center for Sustainable Agriculture to offset program expenses is facilitating continued growth of the program in Iowa and will allow targeted engagement efforts for nearly 400 program participants as well as travel by statewide program administrators to offer course instruction.

Master Conservationist Program participants from Henry and Des Moines counties learn about woodlands from natural resources professionals.

Project: “Nuisance” to Asset: Promoting Adoption of Saturated Riparian Forest Buffers

By Billy Beck, assistant professor, Natural Resource Ecology and Management, Iowa State University



PHOTO 1: Tiling machine installing 875 feet of lateral distribution tile at 30-inch depth in spring 2021.

Photos by Billy Beck, Iowa State University.



A 3.5-acre saturated riparian forest buffer was installed on the Iowa State University West Dairy Farm in the Walnut Creek watershed in Story County in spring 2021 for the project “Nuisance’ to Asset: Promoting Adoption of Saturated Riparian Forest Buffers,” led by William (Billy) Beck, assistant professor in the Department of Natural Resource Ecology and Management, with support from the Leopold Center. Others involved included NREM undergraduate students and Troy Heeren, agricultural specialist with NREM.

The primary goals for the project were to study best practices for implementation of saturated riparian forest buffers and to document their potential to reduce nutrients that enter the buffers through field tiles.

In spring 2021, a single-box, single-lateral system was installed with six cleanout structures to facilitate tile-scoping and quantification of in-tile rooting (Photo 1). This aspect of a forested buffer was investigated due to concerns that tree roots may potentially infiltrate tile lines, undermining the stability and longevity of the buffer.

Buffer vegetation in the treatment plot was installed based upon NRCS practice standards. Tree species recommended for saturated zones include replicates of American sycamore, shellbark hickory/pecan and swamp white oak—species with moderate flood tolerance (Photo 2). A variety of wildlife-beneficial (i.e., soft mast) shrubs were installed along the non-saturated margin. A series of 12 groundwater monitoring wells were installed, and bi-weekly monitoring for nitrate and dissolved reactive phosphorus is ongoing.

The site is intended to act as a research, extension and teaching facility close to the main ISU campus. Extension activities planned for 2022 include a virtual field day hosted by Iowa Learning Farms.

PHOTO 2: NREM undergraduate students Emma Kerns and Everett Johnson, and Troy Heeren, Iowa State agricultural specialist, using tree planting machine to install hardwood and shrub bare-root seedlings, spring 2021.

2021 FINANCIALS ISU Foundation Accounts

2020 BALANCE CARRY FORWARD\$111,060

INCOME/ENDOWMENT EARNINGS

Restricted*\$3,471

Unrestricted.....\$220,365

Subtotal Current Income\$223,836

EXPENSES

Operations.....\$6,559

Restricted Expenses*\$0

Unrestricted Expenses.....\$98

Obligated Support—ISU\$66,178

Research Projects.....\$140,067

Organizational Support\$1,381

Subtotal Expenses\$214,283

2021 BALANCE.....\$120,613

** Restricted accounts are funded by the Shivers and the Spencer Family Endowment funds.*

'Lessons learned' from former Leopold Center Director

Mark Rasmussen

Dr. Mark Rasmussen retired from his position as director of the Leopold Center for Sustainable Agriculture in June 2021, after serving in that role since 2012. Rasmussen, a tenured faculty member in the Department of Animal Science, is now a professor emeritus with continuing research interests in microbiology and climate change.

As he left his leadership position for the Leopold Center, Rasmussen shared his career-long perspectives in an Iowa Learning Farms webinar and associated blog that highlighted the center's history and impact. His main themes covered the importance of preserving Iowa's agricultural and natural resources, particularly its soils; the evolution of agricultural markets and how they affect Iowa farmers and rural communities; and biological resistance and potential practices to address this growing threat in the years ahead.

"History illustrates that many of the issues and challenges in agriculture that were points of contention when the Leopold Center was created are still with us today," said Rasmussen. "Progress at times has been slow and demonstrates that sustainability is a continual journey rather than a set endpoint... New approaches to old problems are needed to keep Iowa agriculture vibrant."

Find the Iowa Learning Farms recording of Rasmussen's June 23, 2021, webinar presentation, "Looking Back to Look Ahead," at: <https://vimeo.com/569086229>.



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Leopold Center 2021 News Highlights

Leopold Center recognizes legacy of national conservation leader, Iowa farmer Paul Johnson, one of those responsible for LCSA

Paul W. Johnson, who passed away in February 2021, was one of the Iowans responsible for creation of the Leopold Center for Sustainable Agriculture. The northeastern Iowa Christmas tree and dairy farmer played important state and national conservation leadership roles as an Iowa legislator, director of the Iowa Department of Natural Resources, and as Chief of the Natural Resource Conservation Service.

LCSA was one of the co-sponsors and organizers of an event honoring Johnson's memory and impactful legacy, held in December 2021. Presenters included Senator Tom Harkin, along with family, friends and many colleagues who remembered Paul and his work to advance a private land ethic, building upon the work of conservationist Aldo Leopold.

Iowa drinking water users survey released in 2021

Results from the Iowa State Rural Drinking Water Survey, released in 2021, provide new insights on the behavior, perceptions and uses of water reported by 8,200 Iowa households that depend on private wells. The Leopold Center was one of the supporters of the survey, which was conducted from 2018-2020 by Iowa State University's Center for Agricultural and Rural Development.

"Some 230,000 Iowans rely on private wells for drinking water," said researcher Gabriel Lade, with Macalester College in Minnesota, formerly with CARD. "We hope the study results will help influence state and local officials to work together with these households to increase regular water testing and treatment."

Conservation trailer 'Marsh Madness' launches

A new conservation education trailer, dubbed "Marsh Madness," launched in June 2021 as the fourth addition to a fleet of Conservation Stations developed and operated by Iowa Learning Farms and Water Rocks! conservation education programs at Iowa State University. The trailer features interactive models of three wetland types typical in the state: a prairie pothole, an oxbow wetland and a water treatment wetland designed to remove nitrates from agricultural tile drainage.

Marsh Madness was developed with support from the Leopold Center, Iowa State University Extension and Outreach, the Iowa Department of Agriculture and Land Stewardship and the Iowa Department of Natural Resources (through a U.S. Environmental Protection Agency 319 Program grant).

Innovative technology tracks cattle feed intake to support research farm studies

A state-of-the-art automated C-Lock Super SmartFeed System is being used to monitor cattle and calves' feed intake in research trials at the McNay Memorial Research Farm near Chariton in Lucas County. Support to purchase the feeder came from the Iowa Beef Council, the Illinois Beef Association Checkoff Division and the Leopold Center for Sustainable Agriculture.

Other

Other projects and grants the Leopold Center for Sustainable Agriculture helped sponsor supported work that began or culminated in 2021, including:

- Sustainability in corn production research—matching support for Foundation for Food and Agricultural Research (FFAR) grant
- Manure study—Department of Agricultural and Biosystems Engineering, Iowa State University
- Graduate Program in Sustainable Agriculture (GPSA) support for three students
- Water Rocks—Iowa Learning Farms
- Story County Water Quality and Interpretation Plan—2021-2030

Find out more at <https://www.leopold.iastate.edu/>.



Paul Johnson (center) receiving the 2018 Spencer Award at the Iowa Water Conference from LCSA Director Mark Rasmussen and Elaine Spencer, daughter of Norman and Margaretha Spencer.



The Marsh Madness conservation education trailer launched in 2021 travels across Iowa to schools, county fairs and other events.

Photo by Whitney Baxter.



Cattle using the C-Lock Super SmartFeed System at Iowa State's McNay Memorial Research Farm.

Photo by Chris Clark.