



Game-bird preserves increase landscape diversity, business opportunities in Iowa

By MELISSA LAMBERTON, Leopold Center graduate research assistant

For Iowa farmers who want to sample alternative enterprises, game-bird preserves offer a unique opportunity to benefit the land and local economy with a profitable business.

Dan Burden, program coordinator for Iowa State University's Value-Added Agriculture Program, received a special grant from the Leopold Center in 2012 to profile successful game-bird preserves in Iowa and Minnesota and study their economic impact.

Preserves provide "a quick way for a row-crop producer to transition from corn and soybean into seasonal grasses" with

the land still generating income, Burden said. Preserve operators sell memberships and collect fees from "walk-in" hunters, while retaining control over land access and its use.

The project fits with the Leopold Center's vision of fostering a diverse Iowa landscape that provides multiple benefits to landowners and the environment. The preserves studied in the project included acres of native prairie, riparian woodlands and wetlands, intermixed with food plots planted with grain. By creating a patchwork of ecosystems, preserves provide much-needed habitat

PRESERVES (cont. on page 7)

Fifteen new projects start work in 2013

Fifteen new competitive grant projects will begin work in 2013, conducted under all four of the Leopold Center's initiatives—Ecology, Marketing and Food Systems, Policy and Cross-Cutting.

"We are pleased to be able to offer grants for these projects, which will address many of the challenges in Iowa agriculture," said Director Mark Rasmussen. All projects were evaluated on their potential to improve Iowa's water and soil, create opportunities for farmers and rural communities, and encourage practices that conserve energy and adapt to climate change.

Three of the six new projects in the Ecology Initiative focus on cover crops and saturated buffers for corn-soybean cropping systems. In the Marketing Initiative, five new projects target local

food programs in community school districts and challenges faced by fruit and vegetable growers who want to scale-up their operations. Land tenure related to climate change will be explored in the Policy Initiative's single new project. Three grants in the Cross-cutting Initiative will extend rotations research at the ISU Marsden Farm, on-farm energy conservation and land-use scenarios in the Clear Creek watershed in southeast Iowa.

All new grants are for one year and funding totals \$374,623. Work will continue on more than 40 other multi-year projects, bringing the Leopold Center's investment in current agriculture research to more than \$1 million. The work is being conducted in 66 Iowa counties.

[See a list of our new grants on page 2.](#)

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LEOPOLD CENTER

LEOPOLD LETTER MISSION

The mission of the *Leopold Letter* is to inform diverse audiences about Leopold Center programs and activities; to encourage increased interest in and use of sustainable farming practices and market opportunities for sustainable products; and to stimulate public discussion about sustainable agriculture in Iowa and the nation.

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The Leopold Center for Sustainable Agriculture seeks to identify and reduce adverse socioeconomic and environmental impacts of farming practices, develop profitable farming systems that conserve natural resources, and create educational programs with the ISU Extension Service. It was founded by the 1987 Iowa Groundwater Protection Act. The *Leopold Letter* is available free from the Leopold Center at 209 Curtiss Hall, Iowa State University, Ames, Iowa 50011-1050; (515) 294-3711.



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Research Results

On the Web: www.leopold.iastate.edu/news/completed

Summaries

Easy-to-read summaries are available for these recently completed projects funded by Leopold Center competitive grants.

- Agronomic, ecological and economic performance of alternative biomass cropping systems
- Enhancing value and marketing options for pawpaw by developing pulp separation and preservation techniques
- Involving new immigrants and minority youth in local food systems
- Transplant production decision tool for vegetable producers
- Use of mob grazing to improve calf production, enhance legume establishment and increase carbon sequestration in Iowa pastures

2013 New Competitive Grants from the Leopold Center

Ecology Initiative

- Comparison of Biofuel Systems (COBS) project: Biomass energy conversion and energy return on investment analyses for 2012 growing season
- Evaluating perennial crop options for inclusion in agroforestry systems
- Predicting long-term cover crop impacts on soil quality using a cropping systems model
- Reconnecting riparian buffers with tile drainage: An emerging technology to reduce nitrate loss from croplands
- Integrating project knowledge and models: The next step in developing a Payment for Ecosystem Services scheme for the Big Creek Watershed
- Suitability of winter canola (*Brassica napus*) for enhancing summer annual crop rotations in Iowa

Marketing and Food Systems Initiative

- Development of an online food safety training for employees of university farms and school gardens
- Fostering healthy diets in children through vibrant school gardens
- Implementing a seasonal cycle menu for public schools featuring Iowa-grown and processed foods
- Innovative equipment solutions to reduce costs and improve productivity for small-scale fruit and vegetable growers
- Recordkeeping education and insurance benchmarking for Iowa fruit and vegetable producers

Policy Initiative

- Sustainable Agricultural Land Tenure and risk management for extreme climatic events

Cross-Cutting Initiative

- Cultivating conservation: Bringing ecology, economics and ethics together
- Impacts of conventional and diversified rotation systems on crop yields, profitability, soil functions and environmental quality, Stage II
- Increasing visibility of energy conservation and renewable energy on Iowa's small to mid-sized farms

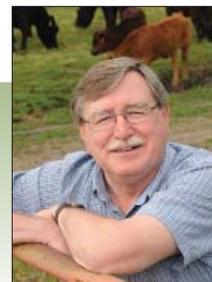
On the web: www.leopold.iastate.edu/grants/current

More about the new grants: www.leopold.iastate.edu/news/01-28-2013/15-new-competitive-grants-2013

Conversations

WITH DIRECTOR MARK RASMUSSEN

Farming — It's a matter of balance



I have often thought that farming and farmers are perfect examples of the contrast between mechanics and biologists; an agrarian analogy to the left brain/right brain theories discussed by psychologists or the concept of yin-yang in Chinese philosophy. This idea of contrasts offers a particularly useful model for analyzing the dynamics of agriculture and food production.

The mechanic in each of us is about diesel fuel, power and sophisticated machinery. It centers on business growth and completing field work on an increasing number of acres, bringing in the harvest and viewing yield as the most important measure of productivity and efficiency. The drive to “feed the world” is the touchstone for this side of farming. Producers use highly developed technologies and expensive inputs as essential components of their operations. Management hinges on control, operational simplicity, predictable performance and most of all speed, because time is money.

In contrast, our biological side displays a distinctly different aspect of the farming psyche. It focuses on using biological processes as much as possible to raise livestock and crops. The producer relies on personal observations and intimate knowledge of the farm's animals and plants to help solve any problems that arise. This approach is more tolerant of the complex interactions among biological organisms, uses them to its advantage and accepts that it does not have complete control over those processes. This view has a greater tolerance for complexity, values biological variability and accepts the risks of variability as a cost of doing business. The biological side of farming uses measures beyond yield to determine success but frequently finds expansion and scale-up a challenge.

Those who lean towards the mechanical side of farming will grow continuous corn because technology allows them to do

so and will apply more technology when specific problems arise and yields are threatened. Biological farming adherents will rotate crops to maintain plant and soil health, accepting the performance risks and more complex management requirements of multiple crop/livestock enterprises.

Mechanics will pattern tile a field in order to maximize annual productivity, even if it means more nitrogen is lost downstream with drainage. Biologists will tile reluctantly and realize that the practice oxidizes the soil, depletes soil organic matter and contributes to greater stream flow and downstream flooding risks.



A mechanic will use livestock antibiotics for both therapeutic and preventative purposes, and doubts that these uses contribute significantly to the growing problem of antimicrobial resistance in disease-causing bacteria. A biologist will use antibiotics sparingly, fearing that resistance is easily transferred among bacteria and that short, direct paths exist for microbes to move from farm to table.

A mechanic will use pesticides to control weeds and pests, worries about the costs of application and extent of control, and assumes that science and government have adequate knowledge of the safety and side effects of these formulations. A biologist may ask if these formulations have been adequately evaluated for impact upon non-target species and larger effects upon soil biology and may completely avoid pesticide use preferring instead to use alternative control measures.

A biologist will tolerate the inconvenience of farming around terraces, waterways and buffer strips, recognizing the positive impact these practices have on water quality and soil erosion. A mechanic will minimize the use of these soil-conserving practices, use large machinery for the sake of time management and rapid field operations and accept the long-term impacts of erosion and soil degradation as part of the process.

Mechanics worry about balancing six- and seven-figure income and expense statements that accompany large scale production and use government programs to minimize risks and simplify management. Biologists worry about large scale row crop farming and its effects on habitat, hunting and wildlife, believing that the countryside is intended for multiple uses, not just for farming.

Farming is a complex human enterprise with its mechanical and biological aspects operating on a broad continuum. Each of us must decide where we fit on this continuum. As I drive through the countryside and look upon the fields and farms of Iowa, I try to imagine where a particular farm fits. Right now, I fear that we are farming most of our land too hard as we try to take the greatest possible advantage of current economic and market conditions. This leads me to ask if we are forsaking our responsibilities to future generations.

Ultimately, aspects of both the mechanical and biological sides of farming can contribute to a productive and sustainable system of food production. But, these contrasting characteristics must be properly balanced to produce food for today and sustain our natural resources for tomorrow. As a nation and an (agri)culture, we need to keep searching for that balance.

Mark Rasmussen

Researchers zoom in on best flower mix for beneficial insects

By MELISSA LAMBERTON, Leopold Center graduate research assistant

When it comes to attracting helpful insects, planting the right flower makes all the difference.

That's what entomologist Matt O'Neal discovered when he designed an experiment to test how beneficial insects—pollinators and natural enemies of pests—respond to different types of buffers. He received funding for the project from the Leopold Center Ecology Initiative in 2009.

The inspiration for the project came from a survey of the buffers separating organic and conventional farms, conducted by Rachael Cox, then an undergraduate student in agronomy. The U.S. Department of Agriculture requires these buffers for organic certification but offers no specific planting guidelines. Cox found that most farmers planted a single-species buffer or simply sold the crops bordering the farm without the organic label. Less than ten percent of the farmers planted prairie buffers.

O'Neal wanted to find out if the abundance and diversity of beneficial insects visiting a buffer varies based on the types of plants that organic farmers commonly use. Working with Kelly Gill, an entomology graduate student at ISU, he planted research plots at the Field Extension Education Laboratory near Boone to compare buffers comprised of single plant species (corn, alfalfa, switchgrass or willow) with buffers comprised of multiple species attractive to beneficial insects.

The multiple-species buffers included some plots planted with native species typically used in prairie reconstructions, and other plots planted with a mixture determined by entomologists to be a "best bet" for increasing the abundance of beneficial insects.

The "best bet" mixtures were developed at Michigan State University and included 2 to 12 species of native plants, such as cup plant and pinnate coneflower, which entomologists rated as highly attractive to pollinators or natural enemies. O'Neal suggests that it's important to include species that flower at different times—for example, pairing early-blooming meadow zizias with late-blooming asters—to provide insects with pollen, nectar and habitat throughout the year.

"Our research suggests that planting

even just two species from the 'best bet' list increases bee abundances beyond what is observed in single-species buffers," O'Neal said.

Overall, Gill collected roughly 12,000 individual insects and found more than 30 species of bees in the research plots, mostly in the multiple-species buffers. As O'Neal expected, prairies of any kind attracted more beneficial insects than the single-species buffers. He also discovered that beneficial insects, particularly pollinators, generally preferred the "best bet" mixture over typical prairie buffers. "The shocking thing was that if you're conscientious and use just a few plants attractive to insects, that does a better job that using a lot of plants," O'Neal said. "It appears to be an issue of quality, not quantity."

The experiment's results suggest that thoughtfully designed buffers and gardens can make a meaningful difference in increasing the abundance of beneficial insects. "There is a global decline in pollinators, both honey bees and native, wild bees," O'Neal said. "A goal of this research is to help reverse this trend by offering recommendations for landowners to develop habitat specifically for bees."

The United States has lost roughly a third of its honey bee colonies every winter since 2006, which has important implications for crops that rely on insect pollination. The exact causes are still unknown, but may include pesticide exposure, pathogens (such as viruses), and a reduction in flowering resources found in the landscape.

Native pollinators are also declining. Although wild insects are not typically managed for crop production, research indicates that they provide a significant service. A recent study published in *Science* shows that wild insects may pollinate fruit crops more effectively than managed honey bee colonies.

Scientists estimate that the annual value of pollination services to U.S. agriculture is around \$20 billion. "Farmers are interested and want to know more," Gill said. "It's nice to know your work is needed."

The investigators created a fact sheet, *Conserving Beneficial Insects with Native Plants*, to help farmers, gardeners and homeowners design attractive native plantings.



Top: A bee pollinates goldenrod (photo by Jerry DeWitt).

Middle: An experimental prairie plot attracts beneficial insects.

Bottom: O'Neal speaks to field day attendees.



What's an Education For?

In this age so abstracted and bewildered by technological magnifications of power, people who stray beyond the limits of their mental competence typically find no guide except for the supposed authority of market price. "The market" thus assumes the standing of ultimate reality. But market value is an illusion, as is proven by its frequent changes; it is determined solely by the buyer's ability and willingness to pay. By now our immense destructiveness has made clear that the actual value of some things exceeds human ability to calculate or measure, and therefore must be considered absolute. For the destruction of these things there is never, under any circumstances, any justification. Their absolute value is recognized by the mortal need of those who do not have them, and by affection. — Wendell Berry, 2012 Jefferson Lecture

Back in the 1960s I was invited to give the Awards Day Program speech at the Milton, Massachusetts High School. The title I selected was "What's An Education For?" (Kirschenmann, 2010) A few weeks ago I noticed that Craig Holdrege, who had been invited to give the 4th International Refresher Week talk at the Kassel Teacher Training College in Germany in March of 2012, also had selected that title and published a brief essay based on his talk. (Holdrege, 2012)

Naturally I was immediately drawn to it. In his essay Holdrege points out that we tend to consider the purpose of education to be "short term," "narrow," and usually "framed solely in terms of economic success and national interests." Consequently, we generally make a case that the purpose of education is "preparation of the next stage of education," grade school education is to prepare students to be successful in high school, high school to be successful in college, college to prepare students to be successful in "a particular professional outcome, or for furthering national interests."

Holdrege goes on to say (as I did in a somewhat similar way in the 1960s) that such an education does not prepare students for their real future since "the future is something unknown, it is full of surprises." He then writes

The future is not an extension of the past; new things happen. So if we, as educators (and I include parents here as well), think mainly about preparing students for later life viewed as an extension of the status quo, then we are ignoring some of the most vital aspects of human life.

When I read Holdrege's words it occurred to me that they are particularly applicable to the next generation of farmers we are educating in our universities. We know now that the kind of agriculture faced by the next generation of farmers will be very different from the one that I and many in my generation practiced somewhat successfully. If we are educating the next generation to do more of the same, they will be faced with incredible challenges for which they will be unprepared.

Norman Uphoff, professor in the Department of Government at Cornell University, and the former director of the Cornell International Institute for Food, Agriculture and Development, has written a paper based on his 2005 keynote address in Hohenheim. He outlined some of the many challenges facing "modern

agriculture" in the decades ahead. (Uphoff, 2005)

1. Costs of production are increasing, with many farmers starting to experience diminishing returns to external inputs.
2. Government subsidies that have in recent decades sustained agricultural producers in the United States, Europe and Japan are now contracting.
3. Relying on inputs derived from petroleum – many fertilizers, insecticides, fungicides, etc. – is becoming more uncertain and costly.
4. Adverse environmental impacts from the application of agrochemical inputs are accumulating, becoming greater and more contested, with increasing government regulation.
5. Global climate change will force some fundamental reorientations in agricultural production strategies ... extreme events of rain, heat, cold and drought that take a heavy toll on crop and animal production.

In their recent book, *The Empires of Food*, Evan Fraser and Andrew Rimas suggest that such challenges could put agriculture in the decades ahead in a situation similar to that of Ireland during the famines of the 1840s. (Fraser and Rimas, 2010)

Given these anticipated changes, and many more that we cannot even yet imagine, what should an education in agriculture be for? Surely preparing students in agriculture for such an uncertain future cannot be focused simply on mastering an extension of the status quo.

Two examples from recent publications suggest what education today may or may not be for.

One is an article by Rick Fitzgerald (2013) that praised the massive digital education programs offered by some universities. He especially lauded a popular Introduction to Finance class in which 133,000 students had registered. He cites this as an example of the "adoption of learning technologies" in which students are taught how to be successful in the extension of the status quo. Given the new challenges that students will face during their lifetime, it is extremely difficult to conclude that this is what an education is for.

A second example is from an essay by Scott Peters and Timothy Eastman (2013), which features some of the education objectives

FUTURE (cont. on page 6)

Fish and fresh veggies make dynamic duo

By MELISSA LAMBERTON, Leopold Center graduate research assistant

Basil, lettuce and Nile tilapia – that’s a recipe you probably won’t see in a cookbook, but you can find all three in an Iowa State greenhouse, where researchers are exploring the benefits of producing crops and fish together.

Allen Pattillo, a fisheries specialist for ISU Extension and Outreach, received a one-year special grant from the Leopold Center Cross-Cutting Initiative to study the potential of aquaponics as an efficient and economically viable form of agriculture.

Aquaponics combines two unique types of food production: growing crops without soil (hydroponics) by using nutrient-rich waste from seafood production (aquaculture).

Aquaculture supplies nearly half the total seafood consumed worldwide, creating significant potential for Pattillo’s research to have an impact. However, aquaponics is a relatively new form of agriculture, and much research still needs to be done on aspects like food safety.

Pattillo planted lettuce and basil in three types of media: rockwool, an insulation-like material; pea gravel, which allows water to ebb and flow; and floating rafts. Above the hydroponic system, three 40-gallon tanks each contain 33 fish. Excess food, waste and water circulate from the tanks through a biofilter system, where bacteria convert the material into useful nutrients to sustain the plants.

By coupling the two production systems, farmers can avoid the expense of disposing of fish waste and save money on water and fertilizer for the crops. The system is more sustainable, too, requiring much less land and water than traditional methods of producing food.

In Pattillo’s experiment, about 200 gallons of water continually recirculates. The only external inputs required are vegetable protein pellets for the fish and calcium and iron supplements.

Pattillo expects to harvest two vegetable crops for every fish crop. Thus far, aquaponically-grown crops have had similar production levels to crops grown by traditional methods. The tilapia will be harvested at around four months of age when they reach 1.5 to 2 pounds.

“Right now we’re just trying to get a feel for the system and how to manage it,” Pattillo said.

Currently Pattillo sources his fish from Hassevoort Farms near Leon, Iowa. In the

future he plans to use native yellow perch and blue gill rather than the exotic Nile tilapia. He also plans to test the system within a high tunnel.



Top: Allen Pattillo describes the hydroponic system. Pipes from the fish tanks bring water and nutrients to the crops.



Bottom: Pattillo displays a Nile tilapia, which will be harvested in about two months.

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On the web:
Photo gallery
www.leopold.iastate.edu/news/photos/aquaponics-grows-high-value-crops

KIRSCHENMANN: EDUCATION

FUTURE (continued from page 5)

of nearly 100 colleges and universities that are part of the Imagining America: Artists and Scholars in Public Life national network. These colleges and universities have decided that among higher education’s most important roles is “to function as a civic as well as an economic engine, a force for bringing people from all walks of life together in collaborative work ... The importance of a democratic revival in troubled times reaches beyond the embrace of a cultural or political ideal ... [it calls for] a revival that engages people in productive work in their communities ... that’s motivated as much by a love of place and a concern for commonwealth as it is by individual ambition.”

The second example recognizes that the “absolute value” embedded in “affection” is a critical component of what an education is for. Moreover, students are not likely to learn these values and skills in massive, impersonal, online courses focused on an extension of the status quo.

A handwritten signature in cursive script, appearing to read "J. Kirschenmann".

References online at www.leopold.iastate.edu/news/leopold-letter/2013/spring/future

GAME-BIRD PRESERVES CAN HAVE RIPPLE EFFECTS IN COMMUNITY ECONOMIES

PRESERVES (continued from page 1)

for game birds such as pheasants, quail and partridges, as well as havens for wild creatures and native plants. Native habitat can improve soil and water quality, offer refuges for pollinators and provide other unanticipated benefits.

Preserves also foster appreciation for wildlife. Game-bird conservation groups donate millions of dollars annually to purchase land for wilderness protection and habitat restoration. "A situation that began with habitat loss can come full circle to habitat preservation," Burden said.

Burden emphasized that the success of a game-bird preserve, like any business, depends on the operator. "It's not for everyone," he said. "You've got to be passionate about the outdoors, and like dogs and birds, and be comfortable around shotguns."

"It's a lot of fun," he added. "I've never met an unhappy preserve operator."

An avid hunter and dog owner, Burden knows from experience the advantages of hunting on a preserve. Preserves provide much longer seasons than public hunting areas and offer controlled environments for a dog handler to work with his or her dog. Burden notes that training a young dog requires giving it early experience with birds, "and there's no

better way to do that than take him to a preserve."

Preserves can also be centers for networking, getting tips from more experienced hunters, or participating in programs and events.

The findings indicated that a well-run preserve can create positive ripple effects in rural economies by encouraging nature-oriented tourism and bringing business to gas stations, restaurants, hotels, bed-and-breakfast lodges and outdoors supply stores. Burden hopes to quantify those effects in future research.

One preserve that he profiled, for example, includes a retreat area in a beautiful natural setting with picnic tables, grills and restrooms. This addition to the business is so popular that clients have begun to request the site for weddings.

Burden developed a *Game-Bird Preserve Business Development Guide* that offers detailed information on good business practices, habitat, game birds, weather considerations and more. The guide includes five profiles of successful preserves, sample enterprise budgets and a list of additional resources.

 www.leopold.iastate.edu

On the web:
*Game-Bird Preserve Business
Development Guide*
www.leopold.iastate.edu/pubs



Top: A chukar partridge.
Middle: Dan Burden with Archie, a German Wirehaired Pointer.
Left: A hunter takes aim in the Bensink Farms Hunting Preserve in Pleasantville, Iowa. Photos courtesy Dan Burden.

Center contributes to *Solutions from the Land* report

A new Pathways Report has been developed by Solutions From the Land (SFL), an initiative sponsored by the Farm Foundation and The Nature Conservancy to develop sustainable practices. The report is the result of a three-year conversation among thought leaders in agriculture, forestry and conservation to identify the land challenges we face today and tomorrow, and propose non-prescriptive pathways to address those challenges. Leopold Center Ecology

Initiative program leader Jeri Neal served on a Research Development and Knowledge Sharing team that helped draft recommendations for the paper. The report explores integrated solutions to address food and energy production, economic development, biological diversity and climate change challenges.

Download the Pathways Report at:
http://sfldialogue.net/pathways_report.html

Agroforestry working group moves into high gear

Walnuts were one of the crops on Ann Robinson's family farm in northeast Missouri, where she was taught that wildlife and soil – along with cash crops and livestock – were part of a farm's balance sheet. What she learned while walking the fields with her dad inspired her to turn an eroding farm above northeast Iowa's Upper Iowa River into a tree farm. These experiences inform her involvement in a new project that promotes agroforestry practices in the Midwest.



Ann Robinson

Robinson, a communications consultant from Des Moines, has been working with Ecology Initiative Leader Jeri Neal to plan and coordinate activities of the MidAmerican Agroforestry Working Group (MAAWG). Formed about three years ago, the working group recently hosted a two-day meeting in Ames to plan MAAWG's next steps, develop a new web portal and refine curriculum for an Agroforestry Training Academy.

Robinson says people are familiar with many specific agroforestry practices, such as planting windbreaks, riparian forest buffers, grazing livestock in woodlands

(called silvopasture), and growing trees and nuts alternatively with agricultural crops (called alley cropping). However, the systematic integration of these practices into working farms is only beginning.

Agroforestry practices provide further opportunities to promote continuous living cover as part of healthy, functional landscapes. Agroforestry's goals include balance among increasing societal demand for forest products and benefits, opportunities for income generation, and enhancement of landscape resilience and diversity.

These systems emphasize a mix of trees or shrubs selected in conjunction with agricultural or non-timber production.

Group members are working with the University of Missouri Center for Agroforestry to offer week-long training sessions for agroforestry professionals and educators. The first will be August 5-9 in Columbia, Missouri; a second academy will be offered in 2014 in Minnesota.

"The purpose of the web portal is to help people easily find resources, newsletters, research and other information about conferences and workshops unique to agroforestry in our region,"

www.leopold.iastate.edu

On the web:
<http://midamericanagroforestry.net>

Robinson said. "We also will be adding practical case studies of farmers who are doing agroforestry, along with an image gallery to help people visualize what this looks like on a landscape."

Robinson has worked in natural resource communications and planning the past 20 years for nonprofits and government. She has a master's degree in agricultural journalism from the University of Wisconsin-Madison.



MAAWG partner Tom Wahl of Red Fern Farm shows paw paw trees at a field day.

Leopold Center 2012 annual report trumpets 'A New Day'

The Leopold Center has issued its latest annual report covering the fiscal year 2012. The 36-page, full-color publication chronicles ongoing research initiative work as well as various special events that occurred during the past year.

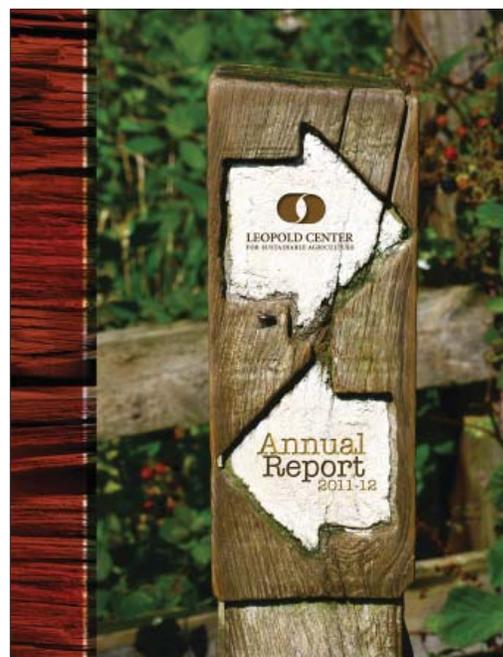
A major milestone for the Center was the arrival of a permanent director, Mark Rasmussen, after several years under interim administrators. Both the advisory board and staff welcomed the opportunity for stability and new direction in the Center's operations.

Work continued on all major research fronts – policy, ecology, marketing and food systems, and cross-cutting (multidisciplinary) studies – and is described in detail. Research, demonstration, outreach and education projects are part of the Center's competitive grants portfolio, all are documented in the annual report.

The Center's annual report also devotes coverage to:

- The Spencer Award for Sustainable Agriculture given jointly to a farmer and a researcher
- Ames debut of a new documentary on dirt, *Symphony of the Soil*
- Educational (and fun) jaunts across the state by the Iowa Learning Farms' Conservation Stations
- Revamp of the Center's website
- Graduate students who studied bugs, algae and small-scale farming in ISU's Sustainable Agriculture Program with Center support
- Fred Kirschenmann's nationally recognized efforts to promote sustainable agriculture

Copies of the Leopold Center's FY2012 annual report are available by calling (515) 294-3911. Or you can view the report at www.leopold.iastate.edu/news/annual-reports.



More 'superheroes' tell their stories on Center's Facebook page

A continuing feature on our Facebook page spotlights the graduate students who crunch numbers, collect data and work in all weathers for the sake of research that just might someday change the world. Here you'll find excerpts from interviews with these "superheroes in training." Look for the complete interviews on our Facebook page, www.facebook.com/LeopoldCenter/notes.

Gina Nichols, Crop Production and Physiology and Sustainable Agriculture



What is your research?

I am very lucky to be part of a collaborative project titled 'Comparison of Biofuel Systems', which very cleverly shortens to 'COBS.' We

have people looking at six potential Midwestern biofuel cropping systems (both corn- and prairie-based). They are looking at everything. Greenhouse gas emissions, nitrate leaching, soil carbon, microbes, plant and root masses, life-cycle analyses, climate-response modeling, economic returns, water cycles... these crops aren't getting away with anything. This type of research is important (and really special) because it paints a more complete picture of a system, rather than relying on a single metric like yield to measure the success of a crop.

What got you excited about this research?

Studying the prairie through the eyes of an agronomist is really cool. The prairie laughs at all your agronomic methods – something like determining the Leaf Area Index is a piece of cake for corn, but the prairie makes you think.

Who is your favorite superhero?

Thor Heyerdahl. Why: in 1950 Thor Heyerdahl wanted to prove that ocean currents carried Peruvians to inhabit Easter Island (people thought he was nuts). So he built a raft out of balsa wood, put in on the coast of Peru, and waited. After 101 days at sea, his crew crashed into a tiny island not that far from Easter. I love this story because it's the epitome of ornery, stubborn scientists.

Michaeleen Gerken, Forest Biology

What is your research?

I'm studying how plant communities on the forest floor are linked to water quality. I work with Dr. Jan Thompson's lab and we have been exploring questions that build on each other: Does human land use (agricultural and urban) affect the composition of the forest understory? If you change the composition of the plant community, do you change its role in nutrient uptake? If you change the plants and their role in the system, does that affect water quality in the forest streams? If we restore the plants that play a big role in nutrient capture, can we restore water quality?

It's no surprise that Iowa is a big contributor to pollution downstream. We also know that there is no simple way to solve this problem. Rather, every piece of land is critical, especially the areas between crop fields and waterways. These areas are often our remnant forests and woodlots. We can't just be concerned with preserving diversity in these forests as the landscape around them continues to change. We need to be learning more about conserving and restoring function and ecosystem services in what little we have left of natural areas.



Describe a favorite moment.

One of the coolest moments for me is a true 'nerd' moment. I had this idea one day while I was out hiking with my dogs. It was related to my work, but focused on what is happening in the forest in the fall. I did some reading and found that no one had published any information on the idea. I persuaded Dr. Thompson to let me study it as part of my project. About a year later, the data was in and I realized that I had proven my theory! I felt like a true scientist ... forming a brand new theory on my own, testing my hypothesis, collecting my data. I wanted to raise my hand and shout "Science!!"

Andrea Basche, Crop Production and Physiology and Sustainable Agriculture

What is your research?

The Agroecosystem Modeling Lab Group is focused on evaluating the long-term tradeoffs associated with winter cover crop incorporation in Midwest cropping systems. We know that cover crops provide many benefits to soil quality, such as preventing



erosion losses, reducing nutrient runoff and building soil organic matter. As a result, we believe that they will provide more resilience

into the future... We cannot put the climate system in a laboratory or field experiment and control for simple effects. But we can recreate some of those complex interactions with a model, and this is the basis of much climate change research.

Describe a surprising lesson learned.

I've had the opportunity to spend time with farmers in Southeast Asia and Latin America as well as in the United States. In these moments, I am always struck by how similar many of the stories are, much of which revolve around a desire to work hard and provide a better life for their children. People can be pretty simple and similar at their core. As scientists studying natural resources, we must recognize these needs in balance with what we understand is needed for the good of future generations.

Who is your favorite superhero?

Rachel Carson was a visionary in alerting a broader audience to the dangerous links between human health and environmental pollution. Her words are just as important (if not more) today as they were 50 years ago. A superhero should be unafraid to challenge the norm, and she certainly was.

Advisory Board gets two new members

The two newest members of the Leopold Center Advisory Board offer a wealth of agricultural administrative and business experience. They are Jay Johnson, representing the Iowa Department of Agriculture and Land Stewardship, and Dale Farnham, who is one of two board members from the State Soil Conservation Committee.

Johnson is Deputy Secretary of Agriculture in Iowa under Bill Northey. He was appointed to that position in January 2012, following a 28-year career with the USDA Packers and Stockyards Administration. Johnson said he offers a unique perspective because of his travels throughout the state to visit all types of farmers and farming operations.

"I do a lot of public speaking and meet literally hundreds of farmers," he said. "Agriculture in Iowa includes everything from small, organic gardening-type farms to 5,000-acre corn-soybean operations and all are important aspects of the economy. They co-exist and enhance the diversity of our agriculture."

Johnson sees potential for more collaboration between the Leopold Center and IDALS, especially as the state works through details of the Iowa Nutrient Reduction Strategy. More than 1,700 public comments recently were posted on the plan's website, <http://www.nutrientstrategy.iastate.edu>

[nutrientstrategy.iastate.edu](http://www.nutrientstrategy.iastate.edu)

"We believe this relationship is very important in many aspects, certainly with respect to water quality," he said. "Our two organizations can work together to increase the sustainability of Iowa agriculture."

Johnson grew up in rural Illinois and received his agricultural business degree from Western Illinois University. At the USDA he managed all packer-stockyard activities in a 12-state Upper Midwest region and all hog issues on a national basis. He lives in rural Warren County with his wife and three children. They raise and show club lambs and performance Quarter horses.

Farnham is Vice President and head of the R&D Department at Farmers Mutual Hail Insurance in West Des Moines. He represents the State Soil Conservation Committee and is a "cities and towns" member of that group.

"My experience on the state committee has been eye-opening," he said. "We've been focusing so much over the years on the bottom line that we haven't really looked at the long-term residual effects on our land and water. You have to tie all these systems together – both urban and rural."



Dale Farnham (left) and Jay Johnson (right), join the Leopold Center Advisory Board

Farnham says his views are influenced by his training as an agronomist, and that the Leopold Center needs to continue its research to improve groundwater quality by identifying alternative agricultural practices.

"The Leopold Center is nationally recognized and as such can be an advocate for stewardship of the land by providing money for research and opportunities for education," he said.

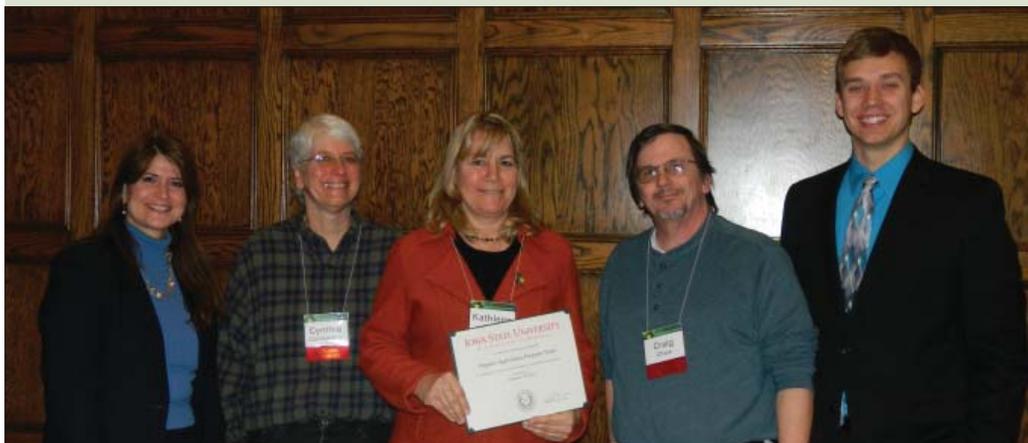
Farnham grew up on a corn, soybean and livestock farm in Webster County, where he farmed with his family for five years after getting a bachelor's degree in agribusiness from Arizona State University. He has master's and Ph.D. degrees in crop

production and physiology from Iowa State University. He has worked in a number of positions as agronomist and agribusiness manager, including Iowa State University Extension, the ISU Agronomy Department, Monsanto and Cenex Land o' Lakes.

Johnson succeeds Maury Wills as IDALS rep on the advisory board; Wills leads the state's Ag Diversification and Market Development Bureau. Farnham follows long-time board member John Sellers, Jr., who grazes cattle in southern Iowa, as one of two representatives from the State Soil Conservation Committee.

Organic Ag receives leadership award

The ISU Organic Agriculture Program Team received a "Noteworthy Leadership in Sustainability" certificate during Iowa State's 4th Annual Symposium on Sustainability in February. Presenting the certificate are ISU sustainability director Merry Rankin (at left) and ISU student body sustainability director Neil Wiebers (at right). Team members are (from left): Cynthia Cambardella, National Laboratory for Ag and the Environment; Kathleen Delate, ISU Horticulture and Agronomy; and Craig Chase, ISU Extension and Outreach and the Leopold Center's Marketing and Food Systems Initiative leader. The Leopold Center has supported research in the program since it began at ISU in 1998.



News & Notes

Leopold Center Ecology Initiative coordinator Jeri Neal will co-chair the Green Lands, Blue Waters (GLBW) Steering Committee that leads the GLBW Partnership, a consortium of scientists, policy experts, farmers and community organizers working to integrate perennial plants and other continuous living cover into the agricultural landscape. Serving with Neal is agronomist Nick Jordan at the University of Minnesota where GLBW regional offices are located. Neal helped coordinate the group's annual conference, at Iowa State in October 2012. More information is available on the GLBW website: www.greenlandsbluwaters.net

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A new online tool will help Iowa farmers select the right cover crop for their operations. It is the Cover Crop Decision Tool, developed by the Midwest Cover Crops Council. The tool is specific

to region and soil drainage class, and includes information about a variety of cover crop species. The tool suggests cover crop species and potential planting date windows that usually provide good establishment and growth, based on 30-year average frost dates in the user's county. Find the tool at www.mccc.msu.edu/selectorINTRO.html.

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The Leopold Center has published a new guide that outlines a shared measurement system for collecting economic data to better tell the story of a local food system's impact in its region. Leopold Center evaluator Corry Bregendahl and Teresa Wiemerslage, who has worked with the Northeast Iowa Food and Farm Coalition, developed the tool for use by the Regional Food Systems Working Group (RFSWG). The RFSWG Data Collection Guide includes sample surveys to collect



Iowa State Senior Vice President and Provost Jonathan Wickert presents a Cytation Award to Leopold Center communications specialist Laura Miller for her work on the Center's website launched September 2011. She was nominated for the ISU Professional & Scientific Council award by her colleagues, former Leopold Center administrative specialist Karen Jacobson and marketing program manager Craig Chase.

information from farmers and institutions. Find it on our Pubs & Papers page at: www.leopold.iastate.edu/pubs

Ecologist honored as Leopold Leadership Fellow

Lisa Schulte Moore, a long-time collaborator on Leopold Center projects, was recently awarded a Leopold Leadership Fellowship, joining 19 other researchers across North America who will receive training to help them translate scientific knowledge into action.

Schulte Moore has long felt a kinship with Aldo Leopold, namesake of the leadership program. She grew up in Wisconsin, where Leopold penned his famous thoughts on the land ethic, and moved to Iowa, Leopold's birthplace, 10 years ago. She teaches a seminar on Leopold's writing at Iowa State University, and her research in the natural resource ecology and management department seeks to balance human and environmental needs in agricultural and forest ecosystems.

"I don't want science to sit on a shelf," Schulte Moore said. "I want people to use it."



Lisa Schulte Moore

That commitment to outreach and education made her a perfect fit for the Leopold Leadership Fellowship program, coordinated by the Woods Institute for the Environment at Stanford University. The fellows will meet in June for a weeklong training session where they will learn how to give good interviews on camera, write opinion articles for national newspapers, address Congress, and other high-impact communication skills.

"I'm really excited," Schulte Moore said. "I've been looking at the program for a long time."

Each fellow will develop a communications plan outlining how to bring his or her research to policymakers and the public. They will gather again in the summer of 2014 to share their progress and receive suggestions for improvement.

Schulte Moore works with interdisciplinary research teams on several long-running Leopold Center projects,

including the STRIPs project at the Neal Smith National Wildlife Refuge, which considers the benefits of adding prairie strips to crop fields, and the Landscape Biomass Project, which studies different biofuel alternatives.

"I'm both worried and hopeful about the future," Schulte Moore said. "These projects provide avenues to give voice to that hope and overcome some of those worries."

Her newest project, funded by the Leopold Center Ecology Initiative, explores the possibilities of a payment for ecosystem services framework. The framework will help Iowans make decisions about the environment by putting a dollar value on the benefits that ecosystems provide, such as fertile soil, clean water and wildlife habitat. Schulte Moore hopes the research will help close the gap between short-term and long-term decision-making.

Schulte Moore cites her students and two children as an inspiration for her work. "I care deeply about humans and the planet," she said. "If you want to assure a vibrant future for both you could go live your life minimalistically in a cabin in the woods or you could try to engage. I chose the pathway of trying to engage."



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Highlight Events

More details, events

Check Leopold Center Web calendar:
www.leopold.iastate.edu/news/calendar

Learn about how to get support for events: www.leopold.iastate.edu/grants/education

Shivers Lecture

World Food Prize laureate Hans Herren will present this year's memorial lecture, "Changing Course in Global Agriculture," at 7 p.m. on Sunday, April 7 in the Sun Room of the ISU Memorial Union in Ames. Herren developed a successful biological control program that saved Africa's cassava crop and averted its worst-ever food crisis.

Webinar guest

Director Mark Rasmussen was a guest in February for the Iowa Learning Farms' monthly webinar. His presentation about the challenges facing today's agriculture and areas of special interest for the Leopold Center is available on the webinar archive on the ILF website: www.extension.iastate.edu/ilf/page/webinars

Roadmap for Resilience

Look for articles from the Iowa Local Food Conference in our summer issue! The March 19-20 program included a full lineup of national speakers as well as 12 Iowans who are changing the face of the local food scene. The event was hosted by the Leopold Center and the Iowa Food System Working Group within ISU Extension.

Spencer Award

"Make and take time to pay attention to your passion, your center – it's a critical tool in the sustainability of our farms." That was the advice from Jan Libbey and partner Tim Landgraf, who found themselves growing food for others after finding a perfect spot for wildlife habitat. They shared their thoughts after receiving the Spencer Award for Sustainable Agriculture in January. Read the rest of their comments on our Spencer Award page:

www.leopold.iastate.edu/spencer-award/past-recipients

With Jan Libbey and Tim Landgraf (center) are Director Mark Rasmussen and UNI advisory board member Laura Jackson, who has studied the prairie life at Libbey and Landgraf's farm in Hancock County.

