Funding Impact Brief #5: Bear Creek Riparian Buffer Project

Leopold Center for Sustainable Agriculture

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Funding Impact Brief #5: Bear Creek Riparian Buffer Project

Abstract
This publication looks at what’s been learned from the Bear Creek Watershed Demonstration Project in Story County, and other opportunities created by the Leopold Center’s major investment in this work. More about this work, conducted by the Agroecology Research Team.

Disciplines
Agriculture | Water Resource Management

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What did we learn?

Riparian buffers:
1. Cut sediment in surface runoff as much as 90 percent
2. Cut nitrogen and phosphorus in runoff by 80 percent
3. Entice and support 5 times as many bird species as row cropped or heavily grazed land
4. Allow water to infiltrate 5 times faster than row cropped or heavily grazed land
5. Remove up to 90 percent of groundwater nitrate
6. Cut stream bank erosion by as much as 80 percent from row cropped or heavily grazed land
7. Reach maximum efficiency for sediment removal in as little as 5 years
8. Reach maximum nutrient removal efficiency in 10-15 years
9. Increase soil organic carbon up to 66 percent
10. Are most effective at upper reaches of a watershed

By the Numbers

- $900,000 awarded by the Leopold Center (1990-2012)
- $6,100,000 externally leveraged funds
- 27 key organizational, agency and institutional partners
- 22,500+ acres of riparian buffers have been installed in Iowa

Why does it matter?

The work played an important role in developing the Natural Resources Conservation Services/Farm Service Agency Riparian Forest Buffer Conservation Practice which is being used by landowners nationwide. From October 1999 through April 2001, more than 22,500 acres of riparian forest buffer were installed under the Conservation Reserve Program in Iowa.

Personnel supported
- More than 26 ISU faculty members
- 8 international visiting professors
- 35 graduate students
- More than 100 undergraduate students

About Bear Creek

Principal investigators: Richard Schultz and Thomas Isenhart, Professors of Natural Resource Ecology and Management, ISU

The Agroecology Research Team set up the Bear Creek Watershed Demonstration Project near Ames in Story County to study riparian buffer systems. The highly successful, award-winning program worked with landowners in the watershed to install riparian buffers to mitigate erosion, reduce nitrate runoff and improve wildlife habitat. The group operated as a Leopold Center research team from 1990 to 2002. Research continues on projects with additional funding from the Leopold Center’s competitive grant program and other sources.
Products
- 50+ popular and scientific publications
- 38 workshops
- 30 theses and dissertations
- 4 Extension bulletins and pamphlets
- Hosted at least 230 field days, tours, and workshops with 4,000 participants from 30 countries
- 5 ISU classes use the riparian buffers at Bear Creek for demonstrations, involving at least 200 students every year

Bear Creek research partners
Iowa Department of Agriculture and Land Stewardship, Iowa Department of Natural Resources (Forestry, Wildlife, Geologic Survey Bureau and Section 319 Nonpoint Source Management Program), Iowa Soil & Water Conservation Districts, Story County Conservation Board, USDA Natural Resources Conservation Service, USDA Forest Service/IDNR Stewardship Incentive Program, Iowa Agriculture and Home Economics Experiment Station, USDA Agriculture Research Service’s Laboratory for Agriculture and the Environment, USDA National Research Initiative Competitive Grants Program and Agriculture in Concert with the Environment Program, US Environmental Protection Agency, USDA/USEPA Agriculture in Concert with the Environment Program, USGS Water Resources Research Program, ISU Extension, University of Iowa, University of Missouri, University of Nebraska

Leverage
Bear Creek funded by the Leopold Center leveraged substantial amounts of additional funds totaling $6,100,000. Some of the funders include:
- USDA-National Research Initiative
- USDA-Agricultural Research Services
- US Environmental Protection Agency
- Iowa Department of Natural Resources

Future opportunities
Current and future riparian buffer projects include the following research topics:
- Developing demonstrations for biofuels plantings to increase understory cover, rewetted buffers and bioreactors
- Developing long-term maintenance strategies for riparian buffers
- Resampling research sites for bird species, soil quality and carbon sequestration/biomass data
- Understanding water usage of plant communities adjacent to riparian buffers

About this series
Purpose: To communicate the impacts of long-term Leopold Center investments made in sustainable agriculture research, education and outreach on Iowa’s communities, economies and landscapes. This brief is the fifth in a series of six featuring:

1. Low-Input High-Diversity Systems ($357,479; 2004-2012)
2. Long-Term Agroecological Research ($900,000; 1998-2012)
3. Hoop Houses for Alternative Hog Production ($526,451; 1997-2012)
4. Regional Food Systems Working Group ($922,837; 2003-2012)
5. Bear Creek Riparian Buffer Project ($900,000; 1990-2012)
6. Practical Farmers of Iowa ($100,000; 2011-2012)

Each brief was prepared based on data gathered from project publications, and 2012-13 interviews with principal investigators and/or key partners. The analysis showed that for every dollar invested in these six projects, an additional $4.60 was leveraged complement or expand the work. Get all briefs: www.leopold.iastate.edu/change

Leopold Center for Sustainable Agriculture
209 Curtiss Hall - ISU
Ames, Iowa 50011-1050
(515) 294-3711
www.leopold.iastate.edu
Prepared by Laura Kleiman and Corry Bregendahl
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