

# CEAP RELEVANT RESEARCH WATERSHED STUDY

<b>Name of Project</b> Water Resource Degradation in the Boone Watershed: Integrating Stakeholder Knowledge and Preferences with Economic and Watershed Models	<b>Location (State, River, HUC)</b> Boone River Watershed, Iowa
<b>Principal Investigator (Name, contact info)</b> Cathy Kling, Iowa State University (515) 294-4544 <a href="mailto:ckling@iastate.edu">ckling@iastate.edu</a>	<b>Website</b> <a href="#">CRIS project progress report</a>
<b>Purpose of Project (Goals and Objectives)</b> Researchers and extension specialists from Iowa State University (ISU) will partner with the Prairie Rivers of Iowa RC&D, the Leopold Center for Sustainable Agriculture, and various farmer and community stakeholders to solve water quality problems at a watershed scale through an integrated framework of research, education, and extension.	
<b>Description of Project (Landscape, Models, Practices)</b> <ol style="list-style-type: none"><li>1. In conjunction with stakeholders, identify the cause of water resource degradation in the Boone River Watershed.</li><li>2. Examine the degree to which the adoption of conservation practices can be fostered or impeded by the availability of information, technical assistance, and socio-economic factors such as profitability, risk and tenure system.</li><li>3. Employ and combine Geographical Information System (GIS) data and tools with survey information and a watershed model to create an integrated economic/water quality modeling framework that can assess the costs and water quality benefits of sets of conservation practices.</li><li>4. With stakeholder input, identify and assess alternative configurations of land use and conservation practices that can achieve significant improvements in water quality.</li><li>5. Develop a locality-specific, environmentally beneficial watershed management plan that will lead to measurable change in the Boone River Watershed community.</li><li>6. Provide experiential learning for graduate and undergraduate students by developing web-based interactive watershed management tools and focused workshops for graduate students that systematically address research and implementation issues in watershed management plans.</li></ol> <p><b>APPROACH:</b> We will organize an initial meeting with stakeholders in the watershed where the results of several ongoing projects will be presented to help identify hypotheses about sources of problems and solution options.</p> <p>The SWAT model analysis of the watershed will be used to identify spatially explicit links between areas of the watershed and/or agricultural activities and water quality impacts.</p>	

To identify and examine the factors fostering or impeding conservation practices adoption, we first develop and econometrically estimate a conservation practices adoption model and then econometrically test a series of hypotheses on the impact of various factors on adoption.

We use the economic models in conjunction with the SWAT model to integrate the economic and water quality analysis.

The field level GIS land use information for the watershed will be used as common unit of analysis, augmented with soil information.

Finally, ISU researchers will estimate the costs and the water quality benefits of the scenarios developed with stakeholders, using the economic model developed and the integrated economic/water quality modeling system.

The educational component of this project is composed of two complementary parts. The first is the development of experiential learning web-based curriculum to be used for undergraduate education, and the second is the creation of a multidisciplinary workshops series for graduate students to disseminate the results and methods of the project.

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