Graduate Assistantship Opportunities with the Agroecology Issue Team at Iowa State University

Come and study with a leading interdisciplinary riparian research team (Agroecology Issue Team, Iowa State University) dedicated to understanding the function of riparian ecosystems and the design of re-established buffer communities that can process the NPS pollutants from intensively cropped uplands in the Midwest.

**PhD Opportunity (1 available)** – Refine newly developed terrain analysis techniques to identify stream-side areas where conservation buffers can be used to intercept and treat runoff water from adjacent crop and over-grazed pastures. Use topographic, hydrographic, land use and tile location data to generate maps using ARCINFO and ARCVIEW (ESRI) software to identify sensitive areas where there is a high potential to establish conservation buffers or other best management practices to intercept and treat runoff waters. Work will be done in the Bear Creek Watershed in Central Iowa and the Mark Twain Reservoir Watershed in northeastern Missouri. A background in natural resources and/or watershed management, soils, Geographical Information Systems, ARCVIEW and other computer mapping software is encouraged.

**PhD or MS Opportunities (2 available)** – Evaluate the mechanistic linkages between the composition and age of riparian vegetation, soil quality and nitrate loss processes. We hypothesize that re-established riparian buffers will reduce nutrient movement to surface and groundwater but that such benefit is dependent on the composition of the vegetation and the age of the buffer ecosystems and the relative amounts of labile carbon leached from the surface soils. Soil quality parameters will be mechanistically linked to the ability of riparian soils to denitrify or immobilize nitrate. One study site is in the 1-13 year old chronosequence of buffers in the Bear Creek Watershed in central Iowa. The other will be conducted in the Mark Twain Reservoir watershed in northeastern Missouri where 1-3 year old native grass/forb and cool-season grass filters will be compared to riparian crop, pasture and forest sites that have been monitored for the past 3 years. A background in soils, natural resource and/or watershed management is suggested.

**Research Assistantships in Hydrogeology/Water Resources**

Research assistantships leading to M.S. and Ph.D. degrees in Hydrogeology and/or Water Resources will be available in summer and fall 2003. The Agroecology Issue Team ([www.buffer.forestry.iastate.edu/ HTML/issueteam.html](http://www.buffer.forestry.iastate.edu/ HTML/issueteam.html)) at ISU is investigating the effect of multi-species riparian buffers on nutrient flux in groundwater in the Bear Creek watershed in Iowa and the Mark Twain Reservoir watershed in northeastern Missouri. The research will involve a combination of field work and computer modeling of groundwater flow and solute transport. Preference will be given to students with excellent quantitative skills, willingness to do field work, and a background in hydrogeology, geology, hydrology, soil science, environmental science or in cognate sciences (chemistry, biology, and physics). Funding is available for two to three years and may be renewed. If interested in graduate study for summer or fall 2003, please apply as soon as possible to the ISU Graduate College ([www.grad-college.iastate.edu/](http://www.grad-college.iastate.edu/)). If you are interested specifically in Hydrogeology, apply to the Graduate College and contact the Department of Geological and Atmospheric Sciences for additional
information (dfrisk@iastate.edu). GRE scores are required for application to the department. In addition, send a resume summarizing your academic, employment, and publication record to Dr. William Simpkins (bsimp@iastate.edu), Department of Geological and Atmospheric Sciences, 253 Science I, Iowa State University, Ames, IA 50011; phone: (515) 294-7814; FAX: (515) 294-6049. Visit our buffer web site at www.buffer.forestry.iastate.edu/ for further information on the project.