



## WATER RESOURCES RESEARCH GRANT PROPOSAL

**Project ID:** 2003IA40B

**Title:** Water Quality, Nutrient Loading and Mosquito Production in Northeastern Iowa

**Project Type:** Research

**Focus Categories:** Surface Water, Water Quality, Nutrients

**Keywords:** nutrients, bacteria, water quality, agricultural

**Start Date:** 03/01/2003

**End Date:** 02/29/2004

**Federal Funds:** \$5982.00

**Matching Funds:** \$11679.00

**Congressional District:** IA 4

**Principal Investigators:** MERCER, DAVID RANDY

**Abstract:** Impaired surface water and West Nile Virus (WNV), two issues that are critically important to Iowans, may be interrelated. High levels of nutrients and other agricultural chemicals that contaminate surface water may increase production of mosquitoes and their potential for carrying disease. Because mosquito numbers and vector efficiencies are determined by food quality during larval development, higher levels of nutrients may increase mosquito numbers. Likewise, pesticides applied to crops and gardens may have unexpected consequences upon mosquito production. Biology students at the University of Northern Iowa and I will evaluate various bodies of surface water in northeastern Iowa for their potential as mosquito developmental sites. We will estimate the risk of mosquito production for each site through on-the-ground surveys of biological, physical, and chemical attributes. We will identify sources of nutrients through land-use surveys and through remote sensing imagery based upon predictive characteristics from our on-the-ground survey. We will generate a Geographic Information System model for high-nutrient water bodies that will estimate risk of mosquito production and disease transmission. This study will provide valuable information concerning environmental impacts on impaired water quality, will provide educational opportunities for student researchers, and should result in a publication in a refereed journal.

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