

New Studies Initiated by the U.S. Geological Survey—Effects of Nutrient Enrichment on Stream Ecosystems

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In 2002, the U.S. Geological Survey's National Water-Quality Assessment (NAWQA) Program began an intensive study of nutrient enrichment in five agricultural areas across the Nation. The study has four objectives. Objective 1 is to determine the relations among nutrients, habitat, and algal/invertebrate communities. Objective 2 is to determine the relations among nutrients, biota, and stream metabolism. For these two objectives, each study area selected 30 independent, wadeable streams distributed along a gradient of nutrient conditions. Sites were selected using geodata, measured and predicted nutrient loads and concentrations, habitat, and stream size. Objective 3 is to address nutrient dynamics at the reach-scale. This study focuses on a single reach in each of three study areas and analyzes flow paths, nutrient transport and uptake, surface-water/ground-water interactions, stream metabolism, and sediment denitrification. Objective 4 is to determine the associations between nutrients and landscape variables in order to better understand biological responses among different geographic regions. This information will benefit agencies, which are developing nutrient criteria to protect the aquatic health of streams.