

# IOWA'S WATER

## Ambient Monitoring Program

### IOWATER – Sustaining the Wave



**Figure 1.** Collecting critters at Nahant Marsh in Scott County.

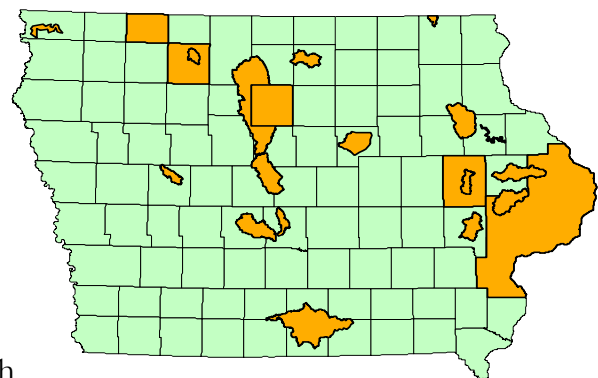
IOWATER is a vital component of Iowa's Ambient Water Monitoring Program. As most of Iowa's 72,000 miles of streams remain untested, citizen monitors often fill in the "gaps" left by professional monitors. Volunteer monitoring in the state is not a new concept; the state-wide framework that IOWATER provides is new.

Traditionally, water-quality programs have only focused on targeted sources of pollution, such as sewage discharges, or individual water resources, like a river segment or wetland.

While this approach may be successful in monitoring specific problems, it can fail to document the more subtle and chronic problems that contribute to a watershed's decline.

The structure of IOWATER allows volunteers to monitor not only for specific problems but also to track the many inputs of a larger water network. In 2001, IOWATER began tracking the organization of watershed groups within its ranks. A watershed directory was developed as groups submitted their data, methods and monitoring plans to IOWATER staff.

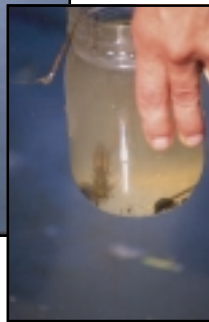
A comprehensive, organized monitoring approach offers a strong foundation for uncovering the many stressors that affect a watershed as a whole.



**Figure 2.** Twenty-two watershed or county groups use the IOWATER program in their water-quality projects (high-lighted areas).



**Figure 3.** Level 2 workshops were offered in 2001 for monitors interested in continuing their training.



This way, more complete data is collected which can be used to determine what actions are needed to protect or restore the resource. A watershed approach also saves time and money. IOWATER monitors working together within a watershed eliminate duplicate trips, reduce travel and equipment costs, and enhance the quality of data collected through the use of standardized procedures. As individuals become interested in their local watershed, they often become more involved in decision-making, protection and restoration efforts. Watershed monitoring builds a sense of community, increases commitment to meeting environmental goals, and ultimately, improves the likelihood of success for environmental programs.



**Integration.** Many existing groups have adopted IOWATER techniques for their monitoring programs. Because of IOWATER's flexibility, they choose the program resources that

best fit the group's needs. The Lake Delhi Restoration Project, Iowa Riverbend Streamkeepers and the Upper Iowa

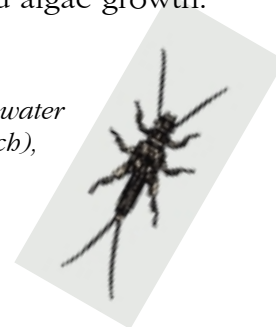
River Watershed Project all utilize IOWATER's procedures and online database to work with ongoing restoration and education efforts.

**Forming New Groups.** Residents who wish to form a watershed group may use IOWATER to provide a framework for their projects. By offering resources, equipment and support, IOWATER serves as a base for new groups. The First Presbyterian Church Water Monitoring Team of Mason City and the Kuemper Monitoring Team of Carroll began after members attended a Level 1 workshop. Today, both groups use IOWATER procedures to collect baseline data for watershed planning.

## IOWATER Workshops

**Level 1 Workshops.** To become certified as an IOWATER citizen monitor, you must attend one of the IOWATER training workshops. Level 1 sessions have a variety of activities, both in the classroom and the stream. Monitoring includes: **1) Biological Assessments.** "Benthic macroinvertebrates" (bottom-dwelling aquatic insects) are used as indicators of stream health. Volunteers also assess plant and algae growth.

*Benthic macroinvertebrates are used as indicators of stream health by water monitors. Pictured, from top: water strider, riffle beetle, snail (not pouch), stonefly and predaceous diving beetle.*





**2) Chemical Assessments.** Field kits are used to measure nitrate and nitrite, phosphate, pH and dissolved oxygen. **3) Physical Surroundings.** Stream measurements include water temperature, width, depth, velocity and water clarity. **4) Stream Habitat.** Volunteers observe and record conditions of the streambed, stream banks, canopy cover, adjacent land use and the riparian (water's edge) ecosystem.

**Level 2 Workshops.** Level 2 workshops were introduced in 2001, for those trained at Level 1 with the interest and commitment to expand their involvement. This 8-hour workshop consists of classroom sessions that provide specific help on designing a monitoring program and methods for interpreting collected data. Stream sessions include chloride monitoring as well as testing for general coliform and *E. coli* bacteria (types of fecal bacteria present in the intestinal tract of warm-blooded animals). Participants are certified as Level 2 citizen monitors upon completion of Level 2 training and at least one Level 2 "module."



**Level 2 Modules.** In addition to Level 2 training, three advanced, 4-hour training modules were offered in 2001: **1) Benthic Macroinvertebrate Indexing.** Monitors are trained to identify a wider variety of organisms, as well as the number of organisms present. With this information, data summaries ("metrics") can be calculated to better assess the condition of the stream. **2) Standing Waters.** This module provides training to monitor lakes, ponds and wetlands. Many tests used in Level 1 stream monitoring have been adapted for standing waters and monitoring of aquatic plants and algae has been added. **3) Soil Monitoring.** This module focuses on the ecological health of our soils. Volunteers are taught to examine soil infiltration, soil chemistry, and the biological activities in soil.

Two new modules will be added in 2002: **4) Secondary Education.** Specifically created to address the incorporation of IOWATER into middle-school, high-school and college classrooms, this module tailors course materials from programs such as Project WET and Project WILD Aquatic for use within the IOWATER framework. Educators will soon earn continuing education units (CEUs) or graduate credit for their participation. **5) Water Ecology.** Volunteers collect plenty of data, but sometimes it's beneficial to gain an understanding of the complete world around you. This interpretive module will explain basic ecological principals of water in Iowa, including stream hydrology, water food webs, and watershed stressors.



**Figure 4.** IOWATER volunteer tests for phosphate in a stream.



## IOWATER by the Numbers

- 568** – Citizens trained at IOWATER Level 1 workshops in 2001
- 1,058** – Total citizens trained at IOWATER Level 1 workshops
- 117** – Level 2 IOWATER Basic Training participants
  - 77** – Benthic Macroinvertebrate Indexing Module participants
  - 54** – Soils Module participants
- 103** – Standing Water Module participants
- 95** – Citizens certified as IOWATER Level 2 monitors
- 777** – IOWATER sites registered
  - 86** – Counties with IOWATER monitoring sites registered
- 3,433** – Data assessments submitted to IOWATER database
- 15,680\*** – Volunteer hours logged (2001 only)
- \$224,224\*** – Dollar value of volunteer hours (2001 only)

\*Excludes student hours

Note: Above numbers calculated through 12/31/01

As IOWATER trains new volunteers, the program also grows and changes to meet the needs of its members. These new modules have been added as a result of this underlying philosophy. Volunteers will play an increasingly important role in water monitoring for years to come and IOWATER will continue “to protect and improve Iowa’s water quality.”

IOWATER is an expanding statewide partnership including volunteer monitors, Area Education Agencies, Community Colleges of Iowa, Iowa Association of Naturalists, Iowa Conservation Education Council, Iowa Department of Agriculture and Land Stewardship, Iowa Department of Natural Resources, Iowa Environmental Council, Iowa Farm Bureau, Iowa Resource and Conservation Development, Iowa State University Extension, Iowa Student Environmental Coalition, Izaak Walton League, Natural Resources Conservation Service, Trees Forever and the University of Iowa Hygienic Laboratory.

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Water Monitoring Program Web Site – [www.igsb.uiowa.edu/water](http://www.igsb.uiowa.edu/water)



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