IOWATER
Iowa Dept. of Natural Resources
109 Trowbridge Hall
Iowa City, IA 52242-1319

10th Annual Water Monitoring Conference & IOWATER Conference

Monitoring for the Next Decade

April 9-10, 2010

Scheman Bldg.
Iowa State University
Ames, IA

For more information, visit
www.igsb.uiowa.edu/wqm

Fall/Winter 2009 Newsletter 2009-3

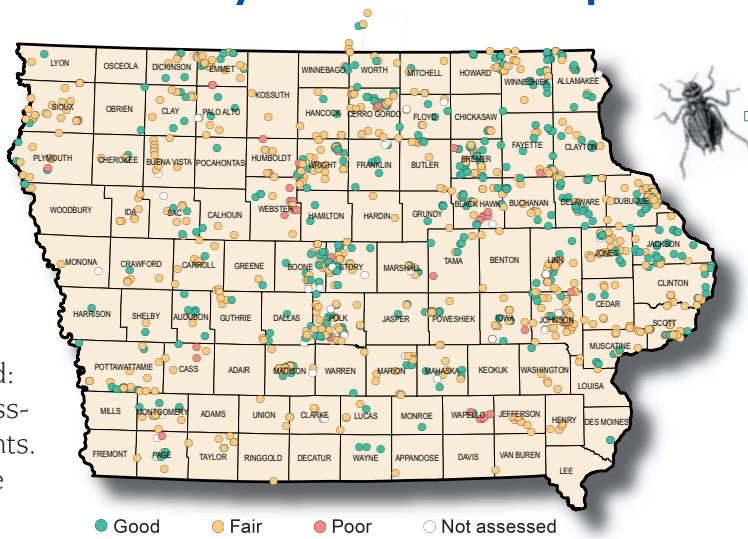
IOWATER

Volunteer Water Quality Monitoring

IOWATER Program: Summary of Recent Reports

IOWATER staff recently released reports on various aspects of the IOWATER program. These reports are intended to: provide feedback to volunteers, analyze what has been successful for the program, point out areas for improvement, supply a scientific analysis of volunteer water quality data, and assist in program development and restructuring. Currently three reports have been released: Biological Assessments, Bacteria Assessments, and Standing Waters Assessments. Below are brief summaries of some of the information that you can find in them.

Crawdad



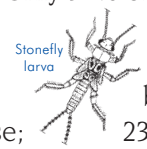
Dragonfly larva

Index of Biotic Integrity for IOWATER *sites.*

Biological Assessments

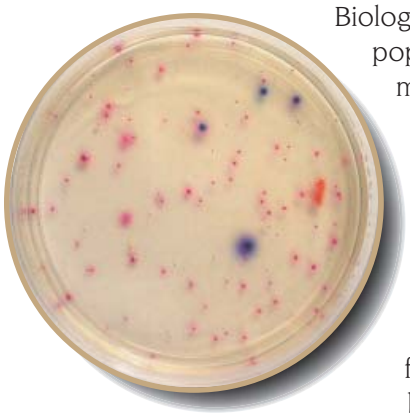
Leech

From 2000 through 2008 there were 3,675 biological assessments completed at 1,185 different sites. The maximum number of sites and individual assessments completed was in 2001. The fewest sites and individual assessments were completed in 2008. Only 32% of the IOWATER sites registered have biological data submitted for them.



Stonefly larva

Biological data indicate that the benthic macroinvertebrate population statewide is diverse; 23% were high quality, 53% were middle quality and 24% were low quality. However, 242 of the 3,675 datasets recorded no benthic macroinvertebrates from 2000-2008.



A *Petri dish growing* E. coli (*blue-violet*) *and coliform* (*pink*) *bacteria.*

A simplified Benthic Macroinvertebrate Index of Biotic Integrity (IBI) using the IOWATER tolerance groups of High, Middle, and Low Quality has been created. IBIs <1 would indicate a poor benthic macroinvertebrate population, IBIs ranging from 1.01 – 2 would indicate a fair benthic macroinvertebrate population, and IBIs ranging from 2.01 – 3 would indicate a good benthic macroinvertebrate population. The IBI was calculated for 1,185 sites that had at least one biological assessment (map on p.1). Sites without benthic macroinvertebrates are labeled as "Not

Water Scorpion

(continued on page 3)

Staff Comments...

Ten years later...

As I sit here writing the *Staff Comments* column, eagerly waiting for the next Iowa blizzard to descend upon the state and gift us with an inch of ice, a foot of snow, or perhaps just a little rain, I am reminded of the power of nature and the awe our natural world can instill in our hearts and minds.

For the past ten years, dedicated IOWATER volunteers have been braving the elements (and Iowa has it all – rain, scorching heat, snow, sleet, wind, and voracious mosquitoes) to collect data on our state's water resources. After all this time, you may be asking yourself, "So what have we learned?" To answer that question, IOWATER staff have been digging through your data, asking questions, and writing reports to share what we have learned with you. You'll find a snippet of those reports in this newsletter and more will be available in future issues of the IOWATER newsletter.

We are also happy to announce that the annual Water Monitoring Conference will be back in 2010. Come join us in Ames on April 9-10, 2010, to learn the very latest about Iowa's water quality and help us celebrate our 10th birthday. Registration information can be found on our web site at www.igsb.uiowa.edu/wqm.

Mary Skopec
IOWATER Coordinator

2010 IOWATER Awards – NOMINATE

your projects, groups, peers, & yourselves.

This is your opportunity to recognize those working to improve Iowa's water quality.

Award Categories:

- **Volunteer of the Year**
- **Professional of the Year**
- **Classroom of the Year**
- **Watershed Group of the Year**
- **Event of the Year**

Deadline: February 19, 2010.
Visit www.iowater.net for a nomination form.

Award recipients will be recognized at the Water Monitoring and IOWATER Conference, which will be held April 9-10, 2010, at the Scheman Building in Ames.

If you submitted an IOWATER Award Nomination form in 2009, it will automatically be considered for the 2010 IOWATER Awards.

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Volunteer Water Quality Monitoring

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IOWATER Web Site: www.iowater.net

sessed." IBIs were averaged for sites with multiple biological assessments. Forty-three sites were poor (3.63 %), 677 sites were fair (57.13 %), 420 sites were good (35.44%), and 45 sites were not assessed (3.80%).

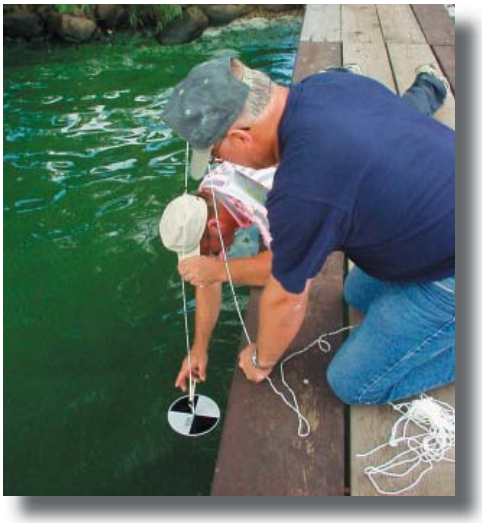
Bacteria Assessments

In 2001 IOWATER began offering bacteria monitoring training using the Coliscan Easygel method. To date, a total of 15% of IOWATER volunteers have completed the bacteria monitoring training. Of those trained, 27% (129) have submitted bacteria data to the IOWATER database for 344 sites. For 70% of the sites, less than 5 bacteria data records have been submitted. Approximately 19% of the sites have more than 10 bacteria data records. Fourteen of the 129 volunteers each submitted 30+ records, which accounts for 59% of available data.

A total of 22 IOWATER sites have 15 or more bacteria data sets. These sites have generally been monitored on a monthly basis by 10 IOWATER volunteers. These 22 sites are located in Boone County (6 sites), Cerro Gordo (1), Dubuque (3), Plymouth (5), Muscatine (2), Story (4), and Wright (1). Ten of the 22 sites are in the Squaw Creek watershed in Boone and Story counties. For these 22 sites, 55% of the samples exceeded 235 CFU/100 ml (water quality standard for Class A1 and A3, primary contact and children's recreational contact, respectively) while 12% exceeded 2,880 CFU/100 ml (Class A2 standard, secondary contact recreational contact).

Standing Waters Assessment

Standing waters assessments have provided a good start towards gathering additional information at Iowa's lakes and wetlands, especially since volunteers monitor many lakes and ponds that are not otherwise monitored through DNR programs. From 2001 through 2008 there were 1,254 Standing Waters Assessments completed at 222 different sites. Over 50% of the monitored sites had less than 5 assessments completed for them. Additional data are needed to accurately characterize lake water quality and assess trends in lakes.



IOWATER *volunteers measure water clarity using a Secchi disk.*

Secchi depth is one of the IOWATER tools that provides valuable information on lake water quality. In lakes and ponds, Secchi depths can be used to assess overall water quality and determine trophic state. Using the median Secchi depth for the 104 IOWATER sites with readings, 12 sites were in the *mesotrophic* category, 60 sites were in the *eutrophic* category, and 32 sites were in the *hypereutrophic* category based on Carlson's TSI values. These results suggest many lakes have poor water transparency, which according to Carlson's TSI relationships, is associated with high levels of nutrients and algae blooms. Increased Secchi depth measurements collected through the IOWATER program could provide a better characterization of lake water quality in Iowa.

To see the full Biological, Bacteria, and Standing Waters Reports which include more in-depth data analysis and figures please visit: www.iowater.net/Publications/StatusReports.htm

Volunteer viewpoints
. . . in their own words.

Monitoring the Impact of the Ames High School Area
on the Water Quality of Squaw Creek

article by Mike Todd

Ames High School students Brooke Dalgliesh, Ellie Bryant, Kyle Rich, and Charlotte Quant search for benthic macroinvertebrates in a tributary of Squaw Creek near Ames High School during a biological sampling activity. (photo by Sheleena Mayberry)

Ames High School students started a water quality monitoring project in 2008 with the goal of monitoring the impact of the area near the high school on the water quality of Squaw Creek and one of its tributaries. The students monitored levels of several chemicals and fecal coliform bacteria along with benthic macroinvertebrates. During the 2008-2009 school year they collected measurements during the fall and the spring, including the first biological assessment of the sites; this biological assessment would not have been possible without the IOWATER mini-grant which paid for boots, waders, and nets that were used during the biological sampling.

After analyzing the data that was collected, Squaw Creek was determined to be a fairly high quality stream, although on-going monitoring and more technical methods are being employed to study trends over a longer period of time. The tributaries from the high school were deemed to be low quality streams, with an absence of most macroinvertebrates (except blood worms), high levels of fecal coliform bacteria at times, and higher levels of several chemicals.

These monitoring efforts are collecting valuable baseline data that students in future years will be able to use to help assess the impact of any changes in the watershed.

For more details on the environmental monitoring activities going on near Ames High School, please visit: http://ameshighprairie.wikispaces.com

Ames High School students Morgan Nesbit, Hayley Crum, Matt Winkleblack, and Justin Masteller along with Ames High School science teacher Mike Todd, try to identify a benthic macroinvertebrate during a biological sampling activity at Squaw Creek in Ames. (photo by Mary Martin)

Monitoring the Impact of Des Moines
on the Water Quality of the Raccoon River and Grays Lake

by Mike Todd

AIB *College of Business students performing chemical and physical tests on the Raccoon River near Principal Park in Des Moines.*

American Institute of Business (AIB) students started a water quality monitoring project in 2006 with the goal of monitoring the impact the city of Des Moines has on the water quality of the Raccoon River and Grays Lake. The students monitored levels of several chemicals and fecal coliform bacteria along with benthic macroinvertebrates. During the Spring Quarter, the first biological assessment of the sites was completed; this biological assessment would not have been possible without the IOWATER mini-grant which paid for boots, waders, and nets that were used during the biological sampling.

Monitoring sites were selected upstream of Des Moines on the Raccoon River (before Water Works Park) and just before the Raccoon River meets the Des Moines River. Chemical, physical, and bacteria monitoring activities resulted in nearly the same results at both sites every time we collected data, suggesting that the impact of Des Moines on the Raccoon River was minimal. However, when biological sampling was conducted, a clear difference was noticed upstream and downstream from Des Moines. While our Waterworks boat ramp site yielded many high quality benthic macroinvertebrates with every rock that was overturned, our boat ramp site at Principal Park yielded almost nothing (two floating macroinvertebrates). These data suggest that Des Moines has a negative impact on living things in the Raccoon River, although we will continue to monitor these sites on the Raccoon River and hopefully employ more technical methods in the future.

For more details on the environmental monitoring activities going on in the Raccoon River Watershed near AIB College of Business, please visit:
http://aibwatershed.wikispaces.com

AIB *College of Business students performing chemical and physical tests at Grays Lake in Des Moines.*

Thank you IOWATER

for making these opportunities possible!

WINTER WATER QUALITY QUIZ

1. Water quality monitoring can only occur during "seasonal flow" months of May through October in a given calendar year. **True** or **False**

2. During the winter weather construction season, between October 15 and May 15, there is no need for erosion control practices to be in place on active construction sites. **True** or **False**

3. How can road salt enter surface or groundwater systems?

- **a.** It is absorbed by mineral-deficient clay soils.
- **b.** It is transported with stormwater runoff or stockpiled snow that melts and drains into unlined channels and ditches.
- **c.** When fish eat food that's too salty
- **d.** All of the above

4. Compared to the "warm weather" sampling season, winter monitoring data may generate higher values for which parameter?

- **a.** Temperature
- **b.** Nutrients
- **c.** Flow
- **d.** Dissolved Oxygen

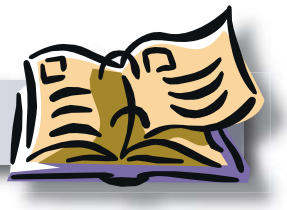
5. Where are you more likely to find fish in a pond with a frozen surface?

- **a.** Just beneath the surface of the ice
- **b.** Half-way between the ice and the bottom of the pond
- **c.** At the deeper/deepest parts of the pond
- **d.** There will be no fish in such a pond.

6. Water quality can be impacted during the winter months. **True** or **False**

Answers at the bottom of page 7.

Upcoming events . . . cleanups, snapshots, & more.



April 9-10 (Fri-Sat); 10th Annual Water Monitoring Conference and IOWATER Conference
Scheman Bldg, Iowa State Univ., Ames
Contact: Mary Pat Heitman at (319)335-1576
MaryPat.Heitman@dnr.iowa.gov

May 12 (Wed); Polk County Snapshot
Contact: Susan Heathcote (515)244-1194 ext. 205
heathcote@iaenvironment.org

July 10-17; Project AWARE – East & West Nishnabotna Rivers
Contact: Brian Soenen at (515)205-8587
Brian.Soenen@dnr.iowa.gov
www.iowaprojectaware.com

May 15 (Sat); **July 17** (Sat); **Oct 16** (Sat):
IOWATER Statewide Snapshots – Spring, Summer, & Fall
Contact: Lynette Seigley (319)335-1598
Lynette.Seigley@dnr.iowa.gov

Updated Resupply Policy *for* IOWATER *Volunteers*

IOWATER has updated its Resupply Policy to better meet the needs of active IOWATER volunteers. The new policy's requirements align monitoring activities conducted by volunteers to the equipment supplied. The policy states: "To receive additional IOWATER monitoring supplies, you must submit a minimum of three chemical/physical assessments within the past 12 months from the date of your request." H*owever*, it is the policy of the IOWATER program to encourage volunteers to monitor. If you wish to receive additional supplies or replace expired materials and do not meet the above policy, please complete and submit a resupply form so we can determine your eligibility. To view the full updated policy download the resupply form at: www.iowater.net/CurrentVolunteers/EquipmentResupply.htm

How active are IOWATER volunteers?

A total of 24% of trained volunteers have participated by registering a site and submitting at least one data record. **24%**

Another 5% of trained volunteers have only participated in a snapshot event, while an additional 3% of trained volunteers have only participated in Project AWARE. **5%** **3%**

Based on our definition of an active volunteer, 32% of trained volunteers have been active in the IOWATER program since its inception. **32%**

IOWATER *action!*

Press releases, events, & news articles involving* IOWATER *monitors – Many thanks to all of you for your continued efforts.

- **Polk County** – Seventh-grade students from the Discovery program at Sacred Heart went to two streams in West Des Moines to test water.
- **Polk County** – Johnston Middle School biology students monitored Beaver Creek this fall.

- **Wright County** – *Congratulations to Bruce Voights* (shown at left in photo), who was chosen as the 2009 State Conservation *Teacher of the Year* by the Conservation Districts of Iowa. Bruce has a total of 35 years of experience as a teacher and environmental educator. He has taught at Clarion-Goldfield High School for the past seven years and was previously the Wright County Naturalist for 12 years. Bruce has been an IOWATER volunteer since 2000. Photo by Gary Weber.

If we missed your happenings, please call or email Jackie Gautsch with an update.

Answers to WINTER WATER QUALITY QUIZ on page 6.
1. false; 2. false; 3. b; 4. d; 5. c; 6. true