

IOWATER

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

2009 River of Words (ROW) IOWA
Environmental Poetry & Art Exhibit Schedule
Cedar Rapids Museum of Art – Aug. 1-23
National Mississippi River Museum, Dubuque – Sept. 1-21
State Capitol Building, Des Moines – Fall 2009*

*Dates TBA on www.iowater.net (Click on River of Words,
then, Winning Iowa Entries for 2009.)

**ROW 2009 IOWA WINNERS
FOR POETRY & ART on pp. 4-5**

PROJECT AWARE WINS NATIONAL AWARD

2009 Take Pride in America

OUTSTANDING STATE VOLUNTEER PROGRAM



Shown left to right:
Deputy Secretary of the Interior, David Hayes.
Accepting the award:
David Williamson, Seth Zimmermann, Luke Wright, Mary Skopec, Lynette Seigley, Jackie Gautsch, Eric O'Brien, Brian Soenen, and joining them, Executive Director of Take Pride in America, Lisa Young.

DETAILS on p. 2

IOWATER

Volunteer Water Quality Monitoring

Quality Study of IOWATER Volunteer Data

by Pieter Beyer, excerpt from University of Iowa Master of Science Thesis, 2008

Volunteers have long been used to collect environmental data, for both educational and monitoring purposes. A concern which arises from such use of volunteer data is whether it is of high enough quality to be used for official government reporting and decision making, or whether it is sound enough to base scientific conclusions on. While work has been done regarding this concern, the majority of it focuses on the results of benthic macroinvertebrate monitoring and volunteer sample collection for lab analysis. Research involving the quality of water chemistry data produced through volunteer analysis however has been very limited. The purpose of this research is aimed at measuring the quality of IOWATER volunteer data. Three questions were researched:

1. What are the basic population demographics of Citizen Science volunteers?
2. What are the most frequently used methods for water chemistry analysis used by volunteer monitoring programs?
3. Is there any statistical bias in the data produced by IOWATER volunteers?



The volunteer characterization portion of this study (Question 1) aims at establishing the educational and scientific background of the participating IOWATER volunteers. The National Science Foundation's (NSF) Science and Engineering Indicators survey was chosen to accomplish this task

“Ninety-six percent of the IOWATER volunteers can be labeled as understanding scientific inquiry.”

as it represents an established method to determine the U.S. population's understanding of science. The survey is conducted over the telephone and includes information regarding educational degrees earned and how many science classes they have taken (National Science Board 2006).

The second question is not addressed in this excerpted article, but can be found in the original thesis. To determine the answers for Question 3, five samples were analyzed by volunteers over a 6-month period. The samples varied in nitrate and orthophosphate concentration according to a predetermined concentration schedule. Nitrate decreased from 20 to 2.5 mg/L as N, and Phosphate increased from 0 to 0.8 mg/L as PO_4^{3-} . The chosen concentrations varied according to the concen-

(continued on page 2)

**2009 Take pride in America
OUTSTANDING STATE VOLUNTEER PROGRAM
FOR IOWA PROJECT AWARE 2008
WINNEBAGO, SHELL ROCK, AND CEDAR RIVERS**



WASHINGTON, D.C. – White House and Department of the Interior officials have honored 16 groups and individuals as the top national winners of the 2009 *Take Pride in America*® awards for outstanding accomplishments by volunteers.

"These individuals and groups are outstanding representatives for the hundreds of thousands of Americans who volunteer with the land management agencies at the state, local, and national level and who participate in the *Take Pride in America* program," said Deputy Secretary of the Interior David Hayes.

Iowa Project AWARE was chosen as the **2009 Outstanding State Volunteer Program**. AWARE organizers and staff traveled to Washington D.C. to attend the awards ceremony on July 17, 2009. *Congratulations to all Project AWARE volunteers!*



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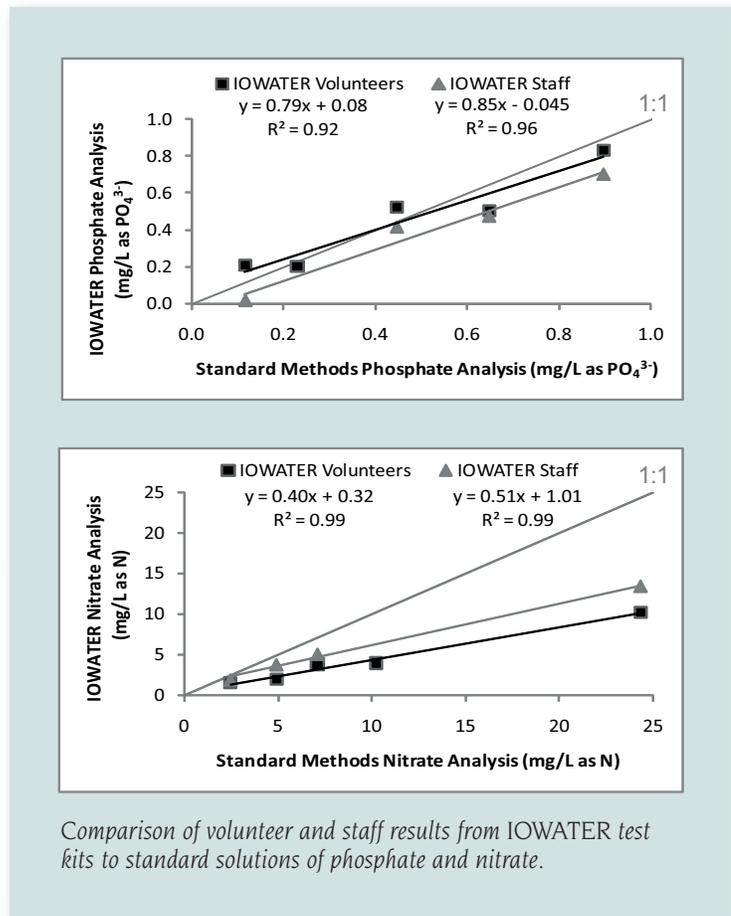
tration increments of the test kit. Intermediary concentrations of 7.5 and 2.5 mg/L as N for nitrate were also chosen in order to investigate whether volunteers reported the colors resulting from intermediary concentrations as the color increment above or below actual. The increasing and decreasing trends were opposed in order to eliminate bias caused by volunteers who may come to anticipate an overall decrease in concentration values based on prior decreases in sample concentrations. Since the IOWATER nitrate test method also measured any nitrite present in the sample, the nitrite concentration was held at zero throughout the study in order to eliminate interfering with the nitrate test, which also provided a check for false-positive reporting.

Along with the measured concentrations, volunteers were also asked to report their confidence in the results as either low, medium, high, or very high. The confidence scores were recorded to give further insight into possible reasons for errors or variance in the data. The confidence scores were recorded as 1, 2, 3, and 4 instead of low, medium, high, and very high in order to allow for numerical analysis. In total, 66 volunteers elected to participate in the study.

Telephone surveys with the volunteers were conducted in January and February of 2008, before any samples were mailed out. Based on the surveys, IOWATER volunteers exhibit a higher level of education than the U.S. population in general. The highest degree earned by IOWATER volunteers is shifted towards a baccalaureate or graduate degree in comparison to NSF data. A similar shift is also seen towards the higher range of science classes taken, with IOWATER volunteers reporting more. The IOWATER volunteers also did considerably better in the true/false question section of the survey. IOWATER volunteers consistently identified the correct answer more frequently than the NSF survey population, with an average success rate of 94% versus 63%, respectively. IOWATER volunteers also fared much better than the NSF survey participants in their responses to the descriptive questions. When these are combined into the previously described scientific inquiry index, 96% of the IOWATER volunteers can be labeled as understanding

scientific inquiry. In comparison, only 41% of the NSF survey respondents displayed this level of understanding.

The pH data indicates that volunteers have a tendency to underestimate the actual pH of a sample. The analyses conducted by IOWATER staff yielded similar results to the volunteers. Phosphate analysis by volunteers was very successful. The volunteer and staff data falls very close to the one to one line when compared to the standard methods results (see figure, right). The staff and volunteer datasets were again very similar, with the staff analysis slightly underestimating the concentration. Along with this high variation within the dataset, volunteers also reported a rather low confidence in their results. The analysis of nitrate by volunteers and staff resulted in an obvious underestimation of the concentration established using standard methods (see figure, right). Since the volunteers have little variance and high confidence in their results, this means that the test kit itself may be causing the underreporting either due to incomplete reaction of the test strip or because the color scale on the comparator does not appropriately represent the nitrate concentration in the sample.



In conclusion, the data reflected the overall trends of the sample concentrations. This means that although the magnitude of concentrations may not be completely accurate, any relative changes or spikes in concentration of a monitored ecosystem should still be captured. (Editor’s note: based on Pieter’s research IOWATER staff will be evaluating ways to improve the test kit performance.)

“Water Quality Monitoring Volunteers deserve the title of ‘Citizen Scientists’.”

Finally, Water Quality Monitoring Volunteers deserve the title of “Citizen Scientists” since they have achieved a higher

level of education in terms of degree as well as scientific classroom experience than the U.S. population in general. The volunteers demonstrated the advantage of this by scoring considerably higher in all parts of the NSF survey, including understanding of scientific concepts and terms, probability, experimental design, and scientific inquiry.

Pieter Beyer extends a big “thank you” to all the volunteers who participated in the study. Without the generous gift of your time, the study could not have been completed. The IOWATER staff agree completely and want all volunteers to know that the results of the study will be used to keep improving the IOWATER program.

River of Words®

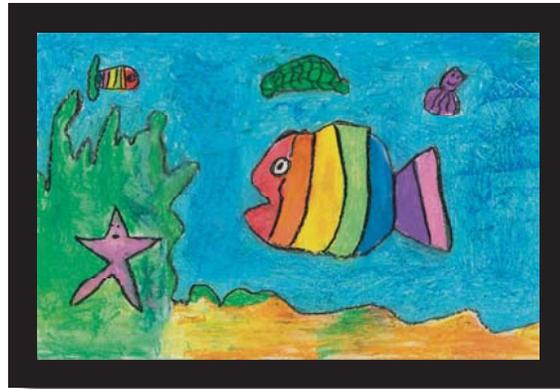
Every year, River of Words® (ROW) conducts an international environmental poetry and art competition for youth aged 5 to 19 in grades K-12, in affiliation with The Library of Congress Center for the Book. This free contest is designed to help youth explore the natural environment and cultural history of the place they live, and to express what they discover through poetry and art. Iowa entries not chosen as finalists or grand prize winners in the international contest are returned to IOWATER, where they are judged in a statewide IOWA River of Words® Environmental Poetry and Art competition.

The IOWATER Volunteer Water Monitoring Program of the Iowa Department of Natural Resources coordinates the IOWA River of Words® Environmental Poetry and Art competition. Over 530 students from Iowa entered the 2009 contest, either through their schools, community art centers, local libraries, or on their own. Because of the large number of quality Iowa entries, the Cedar Rapids Museum of Art generously offered to host a juried River of Words® IOWA Environmental Poetry and Art Exhibit for the second year in a row. Thirty-seven works of poetry and art were selected to be included in the ROW exhibit, held August 1 thru August 23, 2009. Both the National Mississippi River Museum & Aquarium in Dubuque and the State Capitol Building in Des Moines signed on to host this traveling exhibit following its run in Cedar Rapids.

Shown here are the winning entries for each category in the 2009 Iowa competition. We hope you enjoy these efforts by Iowa's youth to explore and understand our environment, and to express their experiences through art and poetry.

Here's how the contest works each year...

- Entries must be sent by **December 1** to:
River of Words, PO Box 4000-J
Berkeley, CA 94704 USA
Phone: 510-548-POEM (7636)
Fax: 510-548-2095
- ROW returns Iowa's entries to IOWATER in April for state competition.
- Iowa's state winners are chosen in May.



IOWA WINNER Grades K-3 Art

Julia Jones age 8
Manson Northwest Webster School
Barnum, Iowa
Rainbow Fish

IOWA WINNER Grades 7-9 Poetry

Cody Ritner
age 12
Decorah, Iowa
Ocean of Clouds

The Mississippi

rivers
wet, winding
flowing, swerving, darting
fun, clean, soft, gentle
water

Ocean of Clouds

An ocean of clouds
Hovers over the city
Like a soft and gushy
Pillow for the gods.
It shimmers in the light
Like a blanket of snow
Protecting its people.



Black

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IOWA W Grades 4

Nicholas M
age 9
Resurrecti
Dubuque,
The Missis

Black-eyed Susan

Flowing, rushing in
 am the protector
 the barrier between
 Absorbing water
 g it from streaming past
 will not back down
 will not let through
 e and bright yellow blossom
 ized from horizons away
 the black-eyed Susan
 eventing the flood
 Halting disaster

IOWA WINNER
Grades 10-12 Poetry

Patie Oxendine
 age 18
 avenport Central High School
 avenport, Iowa
Black-eyed Susan

IOWA WINNER
Grades 4-6 Poetry

Leah Moran
 on School
 Iowa
Mississippi



IOWA WINNER
Grades 7-9 Art

Ali Biggar
 age 12
 Clay Central/Everly Schools
 Royal, Iowa
A Country Sunrise

The Turtle

Swish
 swash.
 The water
 is
 slowly
 trickling
 down
 the
 rocks.
 The color
 of the turtle's
 shell
 is
 red and black.

IOWA WINNER
Grades K-3 Poetry

Lejla Cardenas
 age 9
 McKinley Elementary School
 Des Moines, Iowa
The Turtle



IOWA WINNER
Grades 10-12 Art

Phoebe Jones
 age 16
 Fairfield, Iowa
Contrast in the Fog

IOWA WINNER
Grades 4-6 Art

Sam Fletcher
 age 11
 Ballard East
 Elementary School
 Cambridge, Iowa
Birch Trees



Important guidelines to keep in mind...

New Deadline for entries – December 1, 2009

Each entry must be original and have the appropriate entry form securely attached to it, facing out (no paperclips). Do not mat, mount, laminate, frame, or fold entries.

Poems must not exceed 32 lines and should be typed or written in ink.

Original artwork should be on paper, and not exceed 11" x 17" in size. Photo entries must be at least 8" x 10".

For more information and entry forms, contact:

Pat Lohmann, Iowa Dept. of Natural Resources
 109 Trowbridge Hall, Iowa City, IA 52242-1319
 Email: Pat.Lohmann@dnr.iowa.gov
 Phone: 319-335-1575

or go to www.iowater.net and click on River of Words



All artwork & poetry
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What do you know
about

Stormwater Runoff in Urban Areas?



1. Runoff entering urban streams can come from:
 - a. Rainfall
 - b. Snowmelt
 - c. Storm and sanitary sewer systems
 - d. All of the above



2. Stormwater runoff is treated to improve water quality before it reaches lakes, rivers, and streams. **True or False**



3. Stormwater pollution generated from my own property can be reduced by:
 - a. Using lawn weed killer/fertilizer according to instructions and as little as possible.
 - b. Diverting my drainage directly to storm drain inlets.
 - c. Dumping pet waste at the curb.
 - d. All of the above



4. The highest concentration of pollutants in runoff is generated from:
 - a. Rooftop runoff
 - b. Residential lawns
 - c. Parking lots
 - d. Pastures



5. Every item that enters a storm drain, whether it is water, soil, or debris is likely to end up in a lake, river, or stream. **True or False**
6. Which of the following can be impacts from stormwater pollution?
 - a. Algae blooms
 - b. Fish kills
 - c. Odors in surface water
 - d. All of the above



7. According to the U.S. Environmental Protection Agency, which land use activity has the highest potential for erosion during a storm event?
 - a. Agriculture/farming
 - b. Active construction site
 - c. Pasture grazing
 - d. City park
8. A construction site is required by federal, state, and local law to prevent erosion from a ½ inch rainfall. **True or False**

Answers at the bottom of page 7.

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



September 12 (Sat) Turkey River Clean-up (Fayette Co.)
Contact: Katherine McCarville at (563) 425-5233
mccarvillek@uiu.edu

September 19 (Sat) Dragoon River Romp (Des Moines River)
Contact: Lois Powers at (515) 433-0591
loisp@boonelandfill.org

September 19 (Sat) Wapsipinicon River Cleanup (Buchanan Co)
Contact: Tony Bengston at (319) 415-1175
tonybengston@yahoo.com

September 27 (Sat) Upper Iowa River Clean-up
Contact: Deb Keefe at (563) 735-5786
keefe@earthlink.net

October 10 (Sat) IOWATER Spring Statewide Snapshot
Contact: Lynette Seigley (319) 335-1598
Lynette.Seigley@dnr.iowa.gov

IOWATER 2009 Level I Workshop Schedule

Date & Time	Location	Contact	Phone	E-mail
Sept 11, (5-9 PM) Sept 12, (9 AM- 3 PM) @ Central Park Nature Center	Jones Co.	Michele Olson	(563) 487-3541 12515 Central Park Rd. Center Junction, IA 52212	naturalist@co.jones.ia.us
October 9, (5-9 PM) October 10, (9 AM- 3 PM) @ Swan Lake Education Center	Carroll County	Sonia Skidmore	(515) 282-0484 2001 Forest Avenue Des Moines, Iowa 50311	sonia@iowacci.org

To register for a workshop, contact the appropriate person listed above.

IOWATER action!

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

- **Carroll County** – Kuemper Catholic Middle School Science Club and teacher Mary Koester conducted water quality monitoring of a Middle Raccoon River tributary, then helped with a litter pickup.
- **Johnson County** – Regina eighth graders tested the water quality of Willow Creek.
- **Jones County** – Monticello High School environmental science teacher Molly Crock received an \$8,000 grant from the Qwest Foundation and the Iowa School Boards Foundation to go toward the purchase of Global Positioning System units for students to use in mapping projects, including mapping of their IOWATER monitoring sites.
- **Polk County** – Nominated by Des Moines Parks & Recreation, Project AWARE and IOWATER Volunteer Robin Fortney was presented with the *Claude Ahrens Community Service Award* by the Iowa Parks and Recreation Association on April 7. The award recognizes a lay person outside of the parks & recreation profession who has provided support and contributed to the strengthening of programs and resources within their communities, area, and state. Robin says "I received the award on behalf of my co-chair John Wenck, Izaak Walton League, and literally hundreds of others who have planned, supported, and participated in the annual *River Run Garbage Grab*."
- **Polk County** – Bondurant-Farrar students conducted Mud Creek water-quality tests with the help of Bondurant city administrators.
- **Poweshiek County** – The Holiday Lake Water Quality Committee received a *Governor's Environmental Excellence Award* for its work to inform lake residents of water quality issues. Members monitor the lake and surrounding sites monthly.
- **Winneshiek County** – Longtime IOWATER Volunteers George and Alliene Schrimper were honored at the State Capitol during *Gifts to Iowa Day* this past spring. The honor was in recognition for work they've done to protect natural resources on their land in Winneshiek County. The Schrimpers also monitor North and South Bear creeks.
- **Wright County** – Project AWARE and IOWATER Volunteer Greg Soenen was nominated by the Wright County Soil & Water Conservation District as the *Wright County Earth Team Volunteer of the Year*. Greg has monitored Buttermilk Creek and other Wright County streams and has been instrumental in increasing community awareness about water quality issues and in improving conditions in Buttermilk Creek. He has also volunteered on all seven AWARE cleanup events!

