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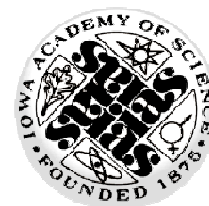
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Iowa Academy of Science

The New Bulletin

Volume 5 Number 2 Summer 2009



The Iowa Academy of Science is established to further scientific research and its dissemination, education in the sciences, public understanding of science, and recognition of excellence in these endeavors.

Message from the Executive Director

Dear Academy Members,

Summer has been moving by quickly and I hope the time has been both productive and enjoyable for you. This issue of the IAS Bulletin is available only online and will help you catch up on some Academy activities.

We have four public programs scheduled as part of the IAS Saylorville Speaker Series. The June program by David Brenzel and Holmes Semken on Iowa Giant Ground Sloths drew an audience of 25 including children. It is wonderful to see families at these events. Check the schedule in this issue for the remaining presentations.

The ISTS Leadership has once again put together an excellent program for the Fall Conference to be held October 27th & 28th in Des Moines. More information is found inside this issue and at <http://ists.pls.uni.edu/>.

The Academy was notified in June that the Iowa Science Foundation received full funding of \$50,000 this year. That was great news considering the economic situation. A total of 28 grant requests were received by the ISF Committee with 10 proposals receiving funding.

The next issue of the Journal of the Iowa Academy of Science will have a new look. Its cover will sport a full color photo related to an article inside. We plan to make the color cover a permanent addition to the Journal.

The Academy now has a new Corporate Membership category and we are seeking your help. How about asking a local business to join the Academy? Making face to face contact is the best way to recruit new members. A business may pick from 4 membership levels; \$250, \$500, \$700, and \$1,000. A successful corporate membership campaign would provide financial stability for the Academy. Call the Academy office for membership materials.

Thank you for your support of the Iowa Academy of Science. We are working to give you and your colleagues more reasons to belong to the Academy.

Craig Johnson
Executive Director



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IJAS Students Speak with NASA Scientists!

In early April, Central Lee sixth graders researched Saturn's moons: Dione, Prometheus, and the duo Janus and Epimetheus. Some students used their research to draw scientific illustrations on storyboards showing what they learned, some students worked alone or in teams to write essays about the moons. The essays were entered into the Cassini Scientist for a Day essay contest.

Because one or more of the sixth grade essays passed through the first round of the contest, all sixth grade students were invited to participate in a teleconference with Cassini science team members. Although the date for the teleconference was after school had released for the summer, eighteen students chose to return to school to have the opportunity to interact with the NASA scientists.

The team members from NASA in Pasadena included the mission planner, the lead propulsion engineer, the formal education planner, Cassini contest personnel, and the planner of the science on the Cassini mission. Some of the student questions were:

William Benson asked, "**What is the most rewarding part of being a NASA scientist?**"

Answers: Discovering new things. The people I work with are so interesting. I get to learn how to plan and fly a mission. I love my job! Every morning I say, 'I GET to go to work today.' It's exciting to see how many people like you students get fired up about our work.

Kelsey Bryant asked, "**How does Cassini work?**"

Answer: It is very complex with many systems. Probably the most important answer is TEAM-WORK! The systems involved are 1. the electrical system for power, 2. the propulsion system, 3. the telecommunications system, 4. the thermal control system, 5. the fault protection system (used to self diagnose since the spacecraft is about 80 light-minutes away), 6. the CDS, command data subsystem (computer controls), and the 7. memory system. In addition, there are systems (such as the giant 'ears on the ground') on Earth that need to be working for Cassini to be successful.

Johnny Galbreath asked, "**How long does it take to make a spacecraft?**"

Answer: Well, JPL holds the record for the fastest spacecraft made from conception to flight: 1 year! We used spare parts to make it. It really just depends on the mission and the complexity of the tools needed to collect data. The Cassini craft was

in the planning stage in the early 1980s and was launched on its mission in 1997! The Lunar Reconnaissance Orbiter took 18 months, but then it was only going to the moon.

Micaela Bryant asked, "**Why did you decide to study Saturn's moons?**"

Answer: We had early data from a quick flyby and saw some interesting things. We wanted to study it further. Saturn is sort of like a miniature solar system with so many moons orbiting it.

We know that the essays that made it through the first round were written by these four groups of students:

1. Brianna Galvan, Johnny Galbreath, and Alicia Riffle
2. Maddie Miller, Joslyn Hawk, Chloe Berg, and Breanna Kramer
3. Weston Ensminger, Blake Pardall, and Chance Tennant
4. Seth Davis, Adryan St.Clair, Matt Kramer, and Steve Spalding

Submitted by Nadine Weirather,
IAS member & IJAS Mentor

Geological Society of Iowa Field Trips

The Geological Society of Iowa annually plans its spring field trip to coincide with the Iowa Academy of Science Annual meeting. The field trip provides an excellent opportunity for IAS Geology Section members and other interested Academy members to experience an afternoon learning first hand about the Geology of our state.

The Geological Society of Iowa also sponsors an annual Fall Field Trip which Geology Section and other IAS members may wish to participate in. For more information and to participate in future field trips visit the Geological Society of Iowa Website:

[http://
www.iowageology.org/](http://www.iowageology.org/)

Announcements, Events & Deadlines

- **Iowa REAP Assemblies**
September—October
Find your Assembly here:
http://www.iowadnr.gov/reap/files/09_rassemblies.pdf
- **Community College Biologists Fall Meeting**
October 2-3, 2009, Lakeside Laboratory
- **2009 ISTS Fall Conference**
Wednesday, October 28, 2009, Polk County Convention Complex, Des Moines
- **IAS Fellow Nominations**
Due January 8th, 2009
- **Iowa Science Foundation Proposals**
Due January 31st, 2010
- **Excellence in Science Teaching Award Applications**
Due January 31st, 2010
- **IAS Distinguished Awards Nominations**
Due February 5th, 2010
- **Abstracts Submissions**
Due for 123rd IAS Annual Meeting on or before February 8th, 2010
- **123rd IAS Annual Meeting**
April 16th-17th, 2010, Graceland University

2009 IJAS Annual Meeting Winners

Most Promising Young Scientists

Emma Schau, Central Lee Middle School
Alex Krehbiel, Central Lee Middle School
Brice Plein, James Madison Middle School
Molly Parrish, Williamsburg Middle School

Iowa Delegates to the 2010 AJAS/AAAS Meeting

Ralph Burne, Maharishi School
Pearl Sawhney, Maharishi School

Alternates

KcKenna Templeton, Central Lee High School
Lynnelly Parker & Bailie Bryant, Central Lee High School

2009 National Youth Science Camp Delegates

(IJAS membership is not required)

Katherine Tjeerdsma, Cherokee, Iowa
Adam Koch, Cedar Rapids, Iowa

2009 IAS Speaker Series at the Saylorville Visitor Center



The Academy began the speaker series in 2008 and is pleased to offer 4 presentations in 2009. These presentations are part of the Academy's mission to promote the public understanding of science. All presentations are free and open to the public. Presentation times have been moved to 2:00 p.m. this year. Please tell your friends and colleagues about these excellent presentations and attend if you are able.

2009 Saylorville Speaker Series Schedule

The Loess Hills - Iowa's Western "Mountains"

Saturday, September 5th, 2:00 p.m.

Thomas Rosburg

Associate Professor of Biology, Drake University,
Des Moines

Fossil Birds of Iowa

Saturday, September 19th, 2:00 p.m.

Katherine McCarville

Assistant Professor, Division of Science and
Mathematics, Upper Iowa University, Fayette

Scientific Discoveries of Lewis and Clark along the Western Iowa Border

Saturday, September 26th, 2:00 p.m.

Richard Wacha

Professor of Biology, Drake University, Des Moines

More information and maps are available at the
Saylorville Lake website:

<http://www2.mvr.usace.army.mil/Saylorville/>

*Please Note: Access to the lake is not available
from Beaver Drive until further notice.*

Co-sponsored by the Iowa Academy of Science
and the Army Corps of Engineers at Saylorville
Lake.



A Tradition of Scientific Leaders - Remembering Dr. Thomas Huston Macbride

In his book, *Last Child in the Woods*, Richard Louv has recalled the nations attention to a human's basic need to be connected to nature. However, it is thanks to the efforts of the great conservationists of the past that we have wild places to return to. In the year marking the 100th Anniversary of Iowa Lakeside Laboratory, it is fitting that we of the Academy take a few moments to remember the Laboratories founder and our former President Thomas Huston MacBride. Dr. Macbride is one of Iowa's great conservationists, indeed he was called the Father of Conservation in Iowa in his memorial published by the Academy in 1934.

Dr. Macbride was a naturalist in the original sense of the word. A man filled with curiosity about the natural world and driven to discover its mysteries through careful study. He came to the sciences late, having first studied literature and linguistics; the knowledge of these subjects undoubtedly aided him in becoming a beloved teacher, a leader in Iowa's scientific community and a voice for conservation among the general public.

In his paper *County Parks* (*Proceedings of the Iowa Academy of Science*, 03:91-95), Macbride predicted that we would still be dealing with issues regarding the ties between human health and access/use of natural areas when he wrote"

"We are as a people entrapped in our machines, and are by them ground to powder. The effect of it is apparent already in the public health and will be the most startling factor in tables studies by the man of science in generations following... There must be something done to remedy all this, to preserve for our people their physical and mental health, and to this end, as all experience shows, there is nothing so good as direct contact with nature, the contemplation of her processes, the enjoyment of her peaceful splendor."

The recommendations of this paper became the basis of Iowa's county and state park systems and several of the locations recommended by Macbride are now Iowa State Parks. Macbride's list included Iowa's first state park, Backbone, which was a popular place in Macbride's time even though it was difficult to get to and used as a cow pasture.

Macbride also wrote in the *Proceedings of the Iowa Academy of Science* (016:131-133) about the founding of Lakeside Laboratory. He praised the choice of location not only for it's scientific value

"illustrating to the student all the fascinating features of the latest page in the geological history of our state... the field of special floral display difficult to illustrate anywhere else within such narrow limits... we have all kinds of habitat conditions, from aquatic to xerophytic... the factors of ecology and distribution are all here, in large part so far, unexplored and certain to interest for centuries generation after generation of Iowa students."

but also for the opportunity that Lakeside Laboratory provides to Iowa's scientific community an opportunity to bring the natural science of our state to the people. He wrote that the placement of the Lakeside laboratory within the resort community was fortunate as it would allow 'unequaled opportunity for bringing scientific work to the attention of the people of every class and kind.'" Also through outreach to our colleges and schools, Macbride wrote that the Laboratory would "make real all natural science to the up-building and quickening of every school, college or academy within the borders of our state."

Today the need for connection to our natural roots is just as great if not greater than in Macbride's time. Thanks to Macbride and other men and woman like him we have the natural places—our parks and preserves, our native roadsides and perhaps the jewel of them all, Iowa Lakeside Laboratory to serve as classrooms and research sites. And as in Macbride's time, we have the Academy through which we, as Iowa's scientific community can communicate, organize and bring the wonder of these wild places to the people of Iowa. - *by Marcy Seavey*

"In biological science it is difficult to pick out the achievement of any defined period. All work is continuous. That is to-day includes that of yesterday, and forecasts what shall be told to-morrow... the progress of science is marked, not so much by any special discovery, as by the continued accumulation of data" - *Thomas H. Macbride, Presidential Address to the Academy*

**Please join the Iowa Science Teaching Section for a
Night at the Science Center of Iowa
Tuesday, October 27th, 2009
6:00 P.M. — 9:00 P.M.**



Explore the Star Theatre, Discovery Labs, IMAX, Robot Rumble, and interactive exhibits while networking with colleagues from across the state. Special presentations by Shannon Cde Baca, *Teaching Great Science: a journey to the Core* and William A. Gallus, *Tornadoes — The Strongest Winds on Earth*. Tickets are \$15 and include admission to the Science Center of Iowa, special evening presentations, admission to the IMAX theater, ISTS Fall Conference Opening Reception, a string concert and more! Visit the Iowa Science Teaching Section webpage for more information: <http://ists.pls.uni.edu>

Keynote Speakers

**For the 2009 Iowa Science Teaching Section Fall Conference
Wednesday, October 28th, 2009, Polk County Convention Complex**

How I Lost my Ego through Inquiry

Kari Pingel

5th Grade Teacher, Pella Community School District, Presidential Award for Excellence in Math/Science, 2004

This session will invite participants to share in one elementary teacher's attempt to understand how students learn; and what inquiry can actually look like in an elementary science classroom. The session will touch on topics of learning cycles, writing heuristics, formative assessment, student negotiation through writing and speaking, and 21st century skills for technological literacy.

Taking the High Road: Inquiry Strategies that Help Build Conceptual Understanding.

Sara B. Coleman

Chemistry Teacher, Norwalk High School

This session will focus not only on Modeling, the use of discourse and inquiry, but we will also discuss strategies to assist conceptual development and understanding for all science students. Norwalk High School has put into place the Modeling Instruction Program in 9th grade, chemistry and physics. The program, based at Arizona State University, asserts that the "The Modeling Method has been developed to correct many weaknesses of the traditional lecture-demonstration method, including the fragmentation of knowledge, student passivity, and the persistence of naive beliefs about the physical world."
(<http://modeling.asu.edu/modeling/synopsis..html>)

The Manson Impact Structure; Evidence of Iowa's Greatest Catastrophe

Dr. Ray Anderson, Geologist, Iowa Geological Survey

About 71.4 million years ago an asteroid about 1¼ mile in diameter struck Iowa at about 60,000 miles per hour producing what was probably the greatest catastrophe in the history of the Midwest. One of the largest meteor impacts in Earth's history, the largely uneroded Manson crater lies just beneath the Iowa till and covers an area of 415 square miles of Calhoun, Pocahontas, Webster, and Humboldt counties in north-central Iowa. This giant impact occurred near the end of the Cretaceous; was it a factor in the extinction of the dinosaurs and so many other species 65 million years ago? Can this happen again, and what would be the effect of such an impact today? Dr. Anderson will discuss how this giant feature formed, how it was discovered, and what scientists have learned about the Manson Impact Structure and how it affected central North America.

(continued on next page)

Keynote Speakers For the 2009 Iowa Science Teaching Section Fall Conference (continued)

Lessons Learned from Ape Language Research

Mr. William Fields, Great Ape Trust of Iowa

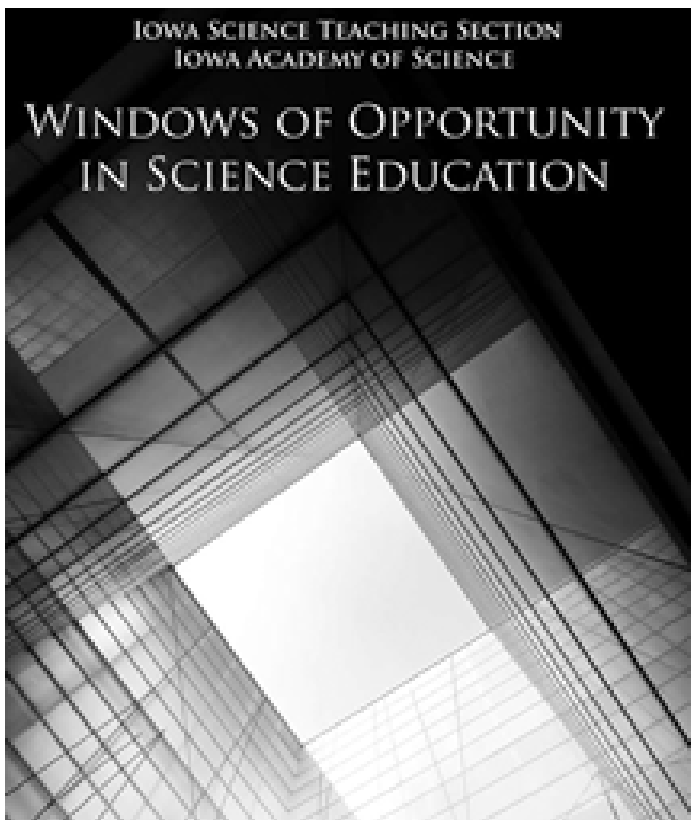
Mr. William Fields, one of only two scientists in the world conducting language research with bonobos, joined Great Ape Trust of Iowa in 2005. Formerly with the Language Research Center at Georgia State University in Atlanta, Fields serves as director of scientific research at Great Ape Trust. Fields, a native of Atlanta, began his scientific research with bonobos in 1998 at Georgia State University, collaborating with Dr. Sue Savage-Rumbaugh and Dr. Duane Rumbaugh. Savage-Rumbaugh is director of bonobo field research at Great Ape Trust while Rumbaugh is lead scientist emeritus.

Fields is coauthor of more than a dozen peer-reviewed scientific publications including Kanzi's Primal Language: The Cultural Initiation of Primates into Language with Dr. Par Segerdahl of Uppsala University of Sweden and Savage-Rumbaugh. The book was published in 2005 by Palgrave Macmillan. Among his credits, Fields is the first scientist to write an ethnography of non-human primates that features personal interviews with apes and he is the theoretical author of the notions of the Pan/Homo cultural continuum which guides much of the collaboration with Savage-Rumbaugh and Segerdahl.

Formative Assessment and the Iowa Core Curriculum

Colleen Anderson, Student Assessment Consultant with the Iowa Department of Education's Bureau of Teaching and Learning Services

This session, will show the connections between formative assessment and the science instruction component of the Iowa Core Curriculum. Look closer at the attributes of assessment *for* learning, and explore how formative assessments enhances student learning of science essential concepts and skills.



Iowa Science Teaching Section Fall Conference

October 27th & 28th, 2009

Learn more and register:

<http://www.iacad.org/>

Project WET ...a science based resource for all subjects.

Can past preservice workshop participants identify Project WET as an interdisciplinary program? This is the evaluation question investigated by Iowa Project WET in 2008-2009. The Project WET Curriculum & Activity Guide is an interdisciplinary resource with 92 science based activities for science, social studies, mathematics, language arts, and many other subject areas. Survey results from a follow-up study conducted in 2007 indicated that more past preservice participants who go on to teach science implement Project WET activities at the routine & refinement and integration levels* during their 1st-3rd year of teaching than their non-science teaching counterparts. The results also indicated that a portion of the non-science teaching past participants had not attempted to implement Project WET activities in their classrooms because they view it as a science only resource.

Reversing this misconception seemed like an easy way to ensure that Project WET activities are implemented in more classrooms. The Iowa Project WET preservice workshop model was changed to include resources and a discussion of the interdisciplinary nature of Project WET. This year's evaluation efforts were designed to see if participants who have taken the Project WET workshop since the changes can identify Project WET as an interdisciplinary resource.

Participants from Fall, Spring and Summer 2008 were surveyed about their Project WET experiences during and after the workshop. Eighty-eight percent of respondents were able to identify at least 3 subject areas in which they would be able to use Project WET activities. The changes made to the Iowa Project WET workshop seem to be working with regard to participants understanding WET as an interdisciplinary resource.

The respondents to this survey were all still in school and in preservice education programs. Their responses and comments indicated that more of them had already used one or more Project WET activities with a group of students (during a field experience, with a non-formal group of students, in a parent's classroom) than respondents from past surveys, suggesting that they may implement Project WET into their own first-third year classrooms at higher rates as well. Visit the Project WET section of the Academy's website to learn more about this and other Iowa Project WET evaluation projects (<http://www.iacad.org/projectwet.html>).

REAP-CEP, the Resource Enhancement And Protection—Conservation Education Program sponsored workshops for 345 preservice educators in 2008-2009. REAP-CEP has awarded the Academy \$25,151 to support workshops for 360 preservice educators and Iowa Wetlands workshops for 50 Elementary & Middle School teachers in 2009-2010. The Iowa Academy of Science has sponsored Project WET since 1999. Contact Iowa Project WET Coordinator, Marcy Seavey to schedule a preservice, Iowa Wetlands or other Project WET workshop (seavey@uni.edu, 319-273-7486).

**Iowa Project WET Defines "use" using the Concerns-Based Adoption Model, an adaptation of the Halls Levels of Use of an Innovation (Hord, S. M., Rutherford, W. L., Huling-Austin, L. Hall, G.E. (1987).*



Now on Facebook The Iowa Academy of Science

Facebook members can now show their support for science in Iowa by becoming a fan of the Iowa Academy of Science or joining the Academy's Facebook Group. IAS Facebook Members will receive updates about the IAS Annual Meeting and the ISTS Fall Conference plus other IAS events and programs appropriate for the general public. Facebook members can also become a fan of specific IAS programs like the Iowa Academy of Science National Wildlife Refuge Audio Series. Simply search for Iowa Academy of Science to become a fan or join!

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Article Submission: The deadline for submission of articles for Vol. 5 #3 is September 1, 2009. Articles must be pre-approved. For more information contact Craig Johnson, IAS Executive Director, at craig.johnson@uni.edu

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