



Kentucky Academy of Science

NEWSLETTER

The Voice of Science
in Kentucky

<http://www.kyscience.org>

Susan Templeton, Editor

August 2009

KAS 95th Annual Meeting

Hosted by Northern Kentucky University
Tentative Program

Enhanced Affiliates

- Bellarmino University
- Berea College
- Brescia University
- Centre College
- Eastern Kentucky University
- Kentucky Community & Technical College System
- Kentucky Science and Technology Corporation
- Kentucky State University
- Morehead State University
- Murray State University
- Northern Kentucky University
- Spalding University
- Transylvania University
- University of Kentucky
- University of Louisville
- Western Kentucky University

Patron - \$5,000 level

Lumins Associates

Fellow - \$1,000 level

- KBRIN (Kentucky Biomedical Research Infrastructure Network)

Sustaining Member - \$500 level

- Campbellsville University
- Third Rock Consultants

Member - \$250 level

- Asbury College
- Kentucky American Water Company
- Kentucky Wesleyan College
- Lindsey Wilson College
- Pikeville College
- Thomas More College
- University of the Cumberlands
- Wood Hudson Research Laboratory

Associate Member - \$100 level

- Hoffman Environmental Research Institute

Editor's Note: When viewing the Newsletter in Acrobat Reader the Table of Contents (TOC) contains live links to each article; at the bottom of each page is a link back to the TOC!

The KAS Newsletter is published in January, May and August. Current and archived issues are available at <http://www.kyscience.org>. You may contact the Newsletter Editor at susan.templeton@kysu.edu.

FRIDAY, NOVEMBER 13, 2009

- 9:00 a.m. - 4:30 p.m. KBRIN National Institutes of Health Proposal Development Workshop
- 3:00 p.m. - 5:00 p.m. KAS Governing Board Meeting
- 5:30 p.m. - 7:00 p.m. Registration
- 5:45 p.m. - 6:15 p.m. PLANETARIUM SHOW
- 6:30 p.m. - 8:30 p.m. SYMPOSIUM
- 8:45 p.m. - 9:15 p.m. PLANETARIUM SHOW
- 8:30 p.m. - 9:00 p.m. KAS Sectional Officers Meeting
- 8:30 p.m. - 10:30 p.m. Social

SATURDAY, NOVEMBER 14, 2009

- 7:00 a.m. - 5:00 p.m. Registration
- 7:00 a.m. - 10:00 a.m. Refreshments
- 8:00 a.m. - 4:00 p.m. Vendor's Exhibits
- 8:00 a.m. - 9:30 a.m. Paper Sessions
- 9:30 a.m. - 10:00 a.m. Refreshment Break
- 10:00 a.m. - 11:30 a.m. Paper Sessions
- 8:00 a.m. - 11:30 a.m. Scientific Posters on Display (Session 1)
- 9:00 a.m. - completed. Judging of URC Posters
- 10:00 a.m. - 11:30 a.m. Kentucky Community Colleges Faculty Meeting
- 11:30 a.m. - 12:45 p.m. Lunch (on your own)
- 11:30 a.m. - 12:45 p.m. KAS Past President's Luncheon
- 1:00 p.m. - 2:15 p.m. Paper Sessions
- 2:15 p.m. - 2:45 p.m. Refreshment Break
- 2:45 p.m. - 4:00 p.m. Paper Sessions
- 1:00 p.m. - 4:00 p.m. Scientific Posters on Display (Session 2)
- 1:30 p.m. - completed. Judging of URC Posters
- 4:15 p.m. - 5:15 p.m. PLENARY SESSION
- 5:30 p.m. - 6:30 p.m. ANNUAL BUSINESS MEETING AND RECEPTION
- 5:30 p.m. - 6:30 p.m. Student Reception
- 6:30 p.m. - 8:50 p.m. ANNUAL AWARDS BANQUET

Details on the KBRIN Workshop, the Planetarium shows, the Symposium and Plenary topics, and all the speakers can be found on pages 2-3. **Note:** Two groups will meet in conjunction with KAS: The Kentucky Chapter of American Fisheries Society (contact Neal Jackson: neal.jackson@ky.gov, 270-753-3886) and the Kentucky Society of Professional Geologists (Dr. Ken Kuehn: kenneth.kuehn@wku.edu, 270-745-3082).



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KAS Meeting Speakers

SYMPOSIUM: *Massive Open Star Clusters in Our Galaxy: Studying the Known and Deducting the Unknown*. The speaker will be Margaret Hanson, Ph.D., Professor of Physics, University of Cincinnati. Dr. Hanson is presently in her fifth year serving as the Associate Editor-in-Chief of *The Astronomical Journal*, one of the leading international journals for astrophysics.



PLENARY SESSION: *Trace Analysis by Mass Spectrometry: Physics, Chemistry and Biology* will be presented by Graham Cooks, Ph.D., Distinguished Professor of Chemistry, Purdue University. Dr. Cooks' interest in minimizing sample work-up and avoiding chromatography contributed to the development of ambient



ionization methods including desorption electro-spray ionization. A Past President of the American Society for Mass Spectrometry and the International Mass Spectrometry Society, Dr. Cooks is also a Life Member of the British Mass Spectrometry Society.

AWARDS BANQUET: The speaker will be Len Peters, Ph.D., Secretary of Kentucky's Energy and Environment Cabinet. A prolific author and lecturer, Dr. Peters holds a doctorate in chemical engineering from the University of Pittsburgh.

He was previously Senior Vice President and Director of the Pacific Northwest National Laboratory, and has received the National Science Foundation Award and the Oak Ridge Associated Universities' Outstanding Leadership Award.



National Institutes of Health (NIH) Proposal Development Workshop

Tentative Agenda: Friday, November 13th, NKU, Room SU 109

9:00 a.m.	NIH Overview
9:30 a.m.	Anatomy of an NIH Proposal
10:15 a.m.	Break
10:30 a.m.	Ingredients of a successful NIH proposal
12:00 p.m.	Lunch
1:00 p.m.	NIH R15 AREA Grants
1:30 p.m.	Learning from experience - Common mistakes and errors - 30 minutes
2:15 p.m.	Break
2:30 p.m.	Try, try again...the art of revision and resubmission
3:00 p.m.	Introduction to NIH Commons and Grants.gov
3:30 p.m.	Panel discussion - Q & A
4:00 p.m.	KBRIN-INBRE Grants and Resources
4:30 p.m.	Adjourn

This workshop is sponsored by the Kentucky Biomedical Research Infrastructure Network (KBRIN), which is supported by grant #2P20RR16481-09 from the National Institutes of Health - National Center for Research Resources.

The workshop will be led by KBRIN faculty, who have successfully competed for NIH grants. The workshop is free and open to interested faculty at all Kentucky public and private institutions. As space is limited, please register by October 15th by contacting Ms. Stephanie Dearing, KBRIN Assistant Director (stephanie.dearing@louisville.edu). For additional workshop information, contact Dr. Nigel Cooper, KBRIN PI (nigel.cooper@louisville.edu) or Dr. Bruce Mattingly, KBRIN program coordinator (b.mattingly@moreheadstate.edu).

Guidelines for Submitting an Abstract

THE DEADLINE FOR SUBMITTING AN ABSTRACT IS OCTOBER 13, 2009.

To submit an abstract for presentation, either PowerPoint or poster, go to the KAS website at <http://www.kyscience.org>. On the left side of the page click on ANNUAL MEETING then select SUBMIT AN ABSTRACT. This page will allow you to log on as a member or non-member and then go to the form for submitting an abstract. YOU MUST PRE-REGISTER PRIOR TO SUBMITTING AN ABSTRACT. If you have not pre-registered, there will be a link to the pre-registration page after which you will return to the Abstract Submission Form to submit your abstract. Be sure your abstract is in one of the following formats: a Word 2003 or earlier (.doc), Rich Text Format (.rtf) or Acrobat PDF (.pdf) document. You will receive a notice via e-mail that your abstract has been received. The program, upon completion, will be placed on the website, at which time you will be able to determine the time and location of your presentation. All presentations will be on Saturday, November 14. If you have any questions, please contact Dr. Robert Creek, the Program Director, at robertcreek@bellsouth.net.

Guidelines for Presentations

All PowerPoint presentations should be compatible with PowerPoint version 2007 for Windows and brought on a USB drive as the computers will not have a CD drive. You must be in your assigned room at least 15 minutes before your session is scheduled to start in order to load your presentation. As was done last year, the poster presentations will be divided into a morning session and an afternoon session according to sections. The two sessions are:

Sections	Set-up	Judging(URC)	Removal
Agri. Science thru Ecology & Environ. Sci.	7:30-8:00 a.m.	9:00 a.m.	11:30 - noon
Engineering thru Zoology	12:00-1:00 p.m.	1:30 p.m.	4:30 p.m.

Messages from the Executive Director

Thank you Pikeville College for elevating your 2009 KAS affiliation to the Member level...and thank you to all of our KAS affiliates for your support throughout the year.

The 2009 KAS Annual Meeting is fast approaching. Remember to take advantage of the discounted pre registration fees for KAS members. The KAS Member pre registration rates are \$30 for professionals/non student, \$5 for students and \$25 for Annual Award Banquet tickets. The Non Member professional pre registration rate is \$50 so make sure your colleagues at Enhanced KAS Affiliates sign up for their complimentary KAS membership and take advantage of the discounted pre registration fees.

Pre registration will be available online until October 15. After October 15 all registrations must be completed onsite at the meeting. The onsite Member Regular rate will be \$45 and \$10 for student KAS members so remember to pre register to take advantage of the discounted meeting fees. Additionally, banquet tickets are also first come first serve.

To pre register online, log in as a KAS member by visiting www.kyscience.org and selecting Register for a Meeting on your Profile page. Provide required information and either follow the link to PayPal or send payment via check to KAS to complete the pre registration process. All check payments and hard copies of the pre registration form (found on KAS website) must be received by October 15 to qualify for pre registration discounts. If your institutional affiliation is paying online for multiple registrations, please use the [Meeting Pre-Registration PAYMENT ONLY](#) link found on the Annual Meeting tab off the KAS Home page.

If you have any questions regarding the meeting registration process or your KAS membership contact Jeanne Harris at executivedirector@kyscience.org or 859-227-2837. If you have questions regarding the paper/poster presentations, please contact Dr. Bob Creek, KAS Annual Meeting Program Coordinator at robertcreek@bellsouth.net. Lastly, exhibitor space and sponsorship opportunities are still available for the 95th KAS Annual Meeting. If your organization is interested in exhibiting please contact Jeanne Harris.

I look forward to seeing everyone at NKU in November.

Jeanne Harris, KAS Executive Director
859-227-2837, executivedirector@kyscience.org

Annual Meeting Accommodations

Rooms for the 2009 Meeting have been reserved at the Drawbridge Inn Hotel. You must make your reservation by October 14; ask for the special KAS rate of \$78 when you make the request. The Drawbridge Inn is located at 2477 Royal Drive, in Fort Mitchell, KY 41017. Contact the hotel at:

(859) 341-2800 or (800) 354-9793
<http://www.drawbridgeinn.com>

This is the only hotel where a KAS rate has been established. You may find other options at <http://tinyurl.com/nxsk7d>.

Planetarium Shows

Celebrate 2009 as the International Year of Astronomy and the 400th Anniversary of Galileo's Telescope during this year's annual meeting. The Northern Kentucky University Haile Digital Planetarium will present two 30 minute shows for symposium attendees Friday night. The first show *Imagination, Art and Science* will begin at 5:45 PM prior to the lecture by Dr. Hansen. The second show, *Earth, Moon, and Sun* will begin at 8:45 pm following the symposium lecture. The planetarium, located on the fourth floor of the NKU Dorothy Westerman Herrmann Natural Science Center, is used by the Department of Physics and Geology for university classes and for visiting school groups. It seats 61 people under a 30-foot diameter dome. Information regarding the Haile Digital Planetarium and these shows is available at <http://pget.nku.edu/planetarium/>.

For information about activities related to the International Year of Astronomy visit <http://www.astronomy2009.org>. To learn how an amateur astronomer from Kentucky discovered the birth of the star now known as McNeil's Nebula with his backyard telescope, go to <http://apod.nasa.gov/apod/ap040219.html>.

Deadline Extended for KAS Governing Board Nominations

The Kentucky Academy of Science Nominations and Elections Committee is still seeking assistance from the KAS membership in our effort to identify a ballot of quality candidates to assume leadership roles within the Academy for next year. KAS members interested in nominating colleagues for these vacant positions, or individuals willing to volunteer to be placed on the ballot, should forward the name, e-mail address/ phone number for each candidate, and indicate the leadership position of interest. The Nominations and Elections Committee will contact each candidate to request the necessary information to be included on the ballot. This is an extremely important responsibility for the members of KAS and the committee needs your assistance in identifying candidates for these vacancies. The membership is being contacted at this time for nominations for the following offices:

- Vice President
- At-Large Representative
- Biological Sciences Representative

Any member may nominate another member for Vice President and/or the At-Large representative positions. However, for the Biological Sciences representative, the nominators must identify with that Division. Please send nominations by **October 1, 2009** to:

Sean Reilley, Chair
KAS Nominations and Elections Comm.
Department of Psychology
601 Ginger Hall
Morehead State University
Morehead, KY 40351
s.reilley@moreheadstate.edu

Research Funds Available

Special Research Program: The program of KAS special research awards is directed particularly to faculty in Kentucky higher education institutions, public or private, involved primarily in undergraduate education. Awards of up to \$5,000 will be available as funding allows.

Undergraduate Research Program: KAS makes available funds for research planned and conducted by undergraduate students of Kentucky colleges and universities under the supervision of a faculty member who is a member of the Kentucky Academy of Science. Currently, two undergraduate research grant programs are available: Undergraduate Research Supply Grants with awards of up to \$500, and Summer Undergraduate Research Grants up to \$2,500.

Marcia Athey and Botany Fund: The KAS Foundation makes available through the Marcia Athey Fund and the Botany Fund monies for research planned and conducted by students of Kentucky secondary schools, colleges, and universities under the supervision of a faculty member, and if funds permit, faculty research projects. Faculty sponsors/researchers must be KAS members. Awards normally are in the several hundred dollars range, though in extraordinary circumstances some higher awards may be possible.

Funding request deadline for all programs: November 15, 2009. Detailed instructions for preparing proposals can be found on our web site at www.kyscience.org. For more information contact:

George F. Antonious, Ph.D.
Kentucky State University
Dept. of Plant and Soil Science
218 Atwood Research Center
Frankfort, KY 40601
Office: 502-597-6005
Fax: 502-597-6381
E-mail: george.antonious@kysu.edu

New! While applicants still need to submit 7 copies of their proposal, the submission format has changed. Each copy of the proposal should be submitted in Acrobat (PDF) format on a CD. Hard copy submissions will not be accepted.



REMINDER: All KAS affiliates may advertise job openings free of charge on the Employment Opportunities link below. Please forward new position listings to KAS Executive Director Jeanne Harris at Executivedirector@kyscience.org.

<http://www.kyscience.org/members/employment.php>

GOT DATA?

The JOURNAL of the KENTUCKY ACADEMY of SCIENCE (J-KAS), now in its 70th year of publication, provides an excellent venue for Research Articles, Scientific Notes, and the results of Symposiums and special Workshops in all areas supported by the Academy.

Why J-KAS? The Kentucky Academy of Science has nearly 1500 members, The Journal itself is available in a wide number of libraries, is published by Allen Press, and is a member of BioOne; thus all articles are easily searchable in national databases. Page charges are very competitive.

Research Articles are generally in the range of 8-15 printed pages; Scientific Notes are ~1-2 printed pages. For styles and formats, please see any recent issue of the Journal or visit <http://www.kyscience.org>. Manuscripts should be sent to the Editor as e-mail attachments. MS Word is preferred. In the cover e-mail, please give the names, addresses, and e-mail addresses of three potential reviewers, preferably not from your home institution nor people with whom you have recently published.

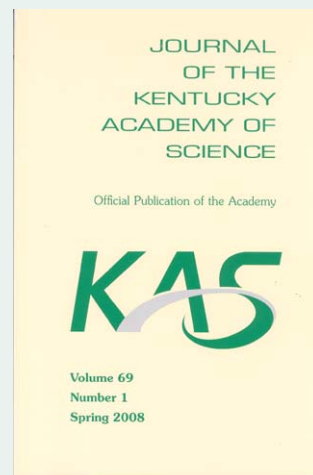
J-KAS is a venue for the results of special Symposiums and Workshops that may be part of a regular issue or considered for a special issue. It is up to the organizer(s) to compile manuscripts, insure correct format, as well as conduct peer reviews. The Editor of J-KAS will make final determination on all manuscripts and may seek additional peer review.

Symposium organizers should

- 1) Contact the J-KAS Editor about the appropriateness and timing of a particular symposium for J-KAS,
- 2) If at all possible, build this into the symposium organization, and have sponsor approval if needed,
- 3) Let participants know that their manuscripts will (can) be published as in the Journal of the Kentucky Academy of Science as a special section or edition,
- 4) Have manuscripts DUE at the time of the symposium (saves a lot of headaches later), and
- 5) Direct authors to the KAS website for proper style and format.

All manuscripts and inquiries should be directed to the Editor at david.white@murraystate.edu or

David S. White, Editor
Hancock Biological Station
561 Emma Drive
Murray, Kentucky 42071
(270) 474-2272



Science Across the Commonwealth

The View from CPE: Senate Bill 1 Update!

Submitted by Sue Cain, Ed.D., College Readiness Consultant, Kentucky Council on Postsecondary Education

Senate Bill 1, signed by Governor Beshear on March 26, 2009, is a significant piece of education legislation that revises the assessment and accountability system for P-12 education in Kentucky. It requires a revision of standards to be based on national and international benchmarks in order to increase the rigor and focus the content of P-12 education, increasing the number of students that are college ready.

The bill calls upon the Kentucky Department of Education (KDE), in collaboration with the Kentucky Council on Postsecondary Education (CPE), to plan and implement a comprehensive process for revising the academic content standards. Part of this process includes the development of a unified strategy to reduce college remediation rates and increase graduation rates of postsecondary students with developmental education needs. An outline for that process, including timelines for all activities, has been completed and is being implemented.

The next step, already underway, is the reviewing of the current system-wide public postsecondary placement policy in English and mathematics, and, working with institutional representatives and KDE, determining whether revisions are needed in those content standards. A statewide reading group, partnering with the Collaborative Center for Literacy Development, is reviewing strategies for reading in academic content areas and reading assessments with the goal of identifying those reading skills needed for success in postsecondary introductory reading intensive courses. A mathematics group, partnering with the Kentucky Center for

Mathematics, is doing the same. Reading and mathematics are widely acknowledged as the gateways for success in all of a student's future educational endeavors. This is particularly the case for mathematics and science. The science standards will be reviewed in the very near future as part of the next stage of the process.

A catalog of college readiness strategies already in use within the state and nation is also being developed. This catalog of strategies can be used by educational cooperatives and P-16 Councils in their efforts to limit the number of students in postsecondary education and the workforce underprepared in the essential skill areas. KDE and many other state and national partners will be a part of the process to align course content and assessments between P-12 and postsecondary institutions.

A Steering Committee has also been established and met on August 12. This committee will provide guidance and oversight in the implementation of the process to create one set of standards from P-12 to college entry-level courses and will provide insight into the development of strategic plans to reduce the remediation rates of high school graduates and increase the graduation rates of underprepared students.

KDE Commissioner Terry Holliday and CPE President Bob King are working together to ensure that the revised standards that are recommended to the Kentucky Board of Education (KBE) for approval are aligned with postsecondary education course and assessment standards for reading and mathematics. They are guiding a process whose ultimate goal is improved education at all levels for all of the Commonwealth's students.

Legislative Committee Update on Legislation Recently Passed

The legislature considered several bills that might have a significant impact on mathematics and science education in elementary, middle, and high schools. Senate Bill 1, an act relating to student assessment, was enacted into law and will have an impact on P-12 education in mathematics and science. Some of the key provisions of the law without going into a lot of detail follow. The Kentucky Accountability Testing System (KATS) will be replaced, including the open response questions that are now required. The purposes and components of a balanced assessment program, including formative and summative assessments will be restated. Norm-referenced assessment exams are being developed for the purpose of measuring the depth and breadth of Kentucky's academic content standards. The standards are currently being revised in the academic areas of reading, language arts, mathematics, science, and social studies. The Council on Postsecondary Education will have to sign a written agreement that the academic content standards in reading and mathematics are aligned with the postsecondary education course standards for these subjects.

Students will continue to maintain a writing portfolio, but this portfolio will not be assessed as before. This assessment was a

tremendous burden in time and effort for teachers with hard to define benefit. The assessment for writing will be an on demand writing assignment once each in elementary, middle, and high school. Assessment scores for this and assessments for other subjects indicating skill deficiencies will be reported to the student and parents, and accelerated learning will be provided to correct deficiencies identified. Teachers and administrators in P-12 will be required to participate in professional development.

The act called on the Council on Postsecondary Education and the Kentucky Board of Education to develop and implement a 5-year strategy to reduce college remediation rates by at least 50% from what they are in 2010 and increase college completion rates of students enrolled in one or more remedial courses. This strategy has been drafted and is already being implemented at universities across the state. Therefore, alignment between P-12 and higher education must be carefully considered and content standards carefully drafted. Current revisions of the content standards are underway and have not been released for public consumption at this time. I would urge members of the Kentucky Academy of Sciences to follow these revisions carefully.

Submitted by Blaine Ferrell, Chair, KAS Legislative Committee

2009 Team Kentucky International Science and Engineering Fair Winners

Kentucky was well represented at the 2009 Intel International Science and Engineering Fair held May 10-16, 2009, in Reno, Nevada. This event showcased the work of more than 1,500 exceptional high-school science students from more than 50 countries who came to compete for nearly \$4 million in scholarships and prizes. Congratulations to the winners listed below.

SPECIAL AWARDS

1. Lindsey Hastings, duPont Manual High School	\$8,000	US Navy/Office of Naval Research Tuition Scholarship
2. Ilya Vanogradov, Paul Laurence Dunbar High School	\$3,000	US Air Force Research Laboratory Award
3. Vedant Kumar, duPont Manual High School	\$200	Association for Computer Machinery Award
4. Leah Wilson, duPont Manual High School	\$50,000	Florida Institute of Technology Scholarship
5. Zach Branson, duPont Manual H.S	\$92,000	Sierra Nevada Coll. Genius Scholarship.

GRAND AWARDS

1. Shelly Xu, Paul Laurence Dunbar High School	\$1,000	Animal Science - Third Place
2. Ilya Vanogradov, Paul Laurence Dunbar High School	\$500	Chemistry - Fourth Place
3. Vedant Kumar, duPont Manual High School	\$1,500	Computer Science - Second Place
4. Kim Mai Le, duPont Manual High School	\$500	Environmental Sciences - Fourth Place
5. Lindsey Hastings, duPont Manual High School	\$500	Microbiology- Fourth Place
6. Ben Nosarzewski, Paul Laurence Dunbar High School	\$1,500	Physics & Astronomy - Second Place
7. Vishnu Kadiyala and Shilpa Mokshagundam, duPont Manual High School	\$1,500	Team Projects - Second Place

KAS Member Recognized

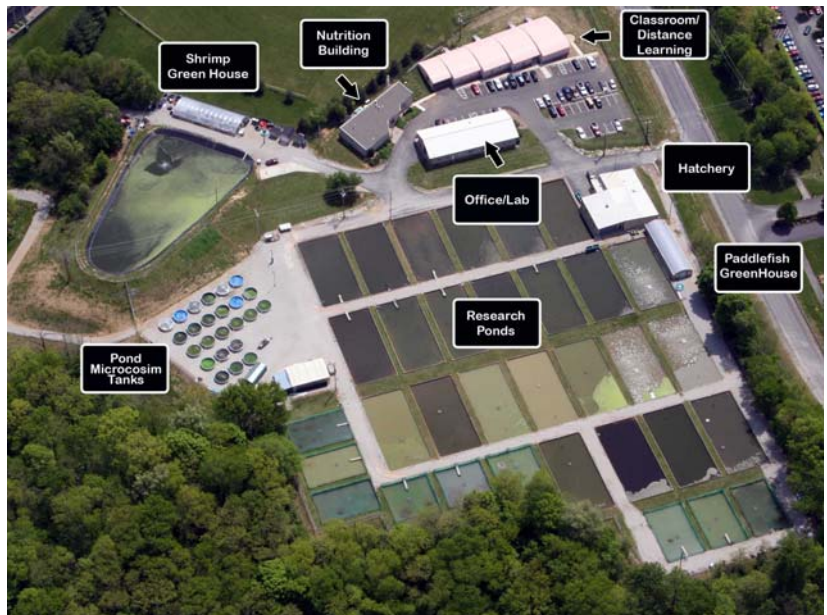
KAS member Frank R. Ettensohn received the 2009 Lifetime Achievement Award from the Kentucky Section of the American Institute of Professional Geologists (KY-AIPG).

Ettensohn, a Kentucky native, developed an interest in geology when he was 5. He arrived at the University of Kentucky in 1975. Since then he has served in a variety of teaching and administrative positions in the departments of Earth & Environmental Sciences and Geological Science. Among other honors, he has received three teaching-research Fulbright fellowships.

He currently serves as Vice President of the KY-AIPG and is a volunteer in the KY-AIPG Outreach Program. Ettensohn has previously served twice as Secretary and twice as Chair of the KAS Geology Section.



KY-AIPG President Faith Fiene presented the Lifetime Achievement Award to Frank R. Ettensohn.



The Kentucky State University Aquaculture Research Center (above) is located about 1/8 of a mile from the main campus and consists of 33 research ponds, a modern hatchery, a nutrition laboratory, a histology laboratory, and two greenhouses with temperature control. The most recent addition is the Multipurpose Building, which houses a Distance Learning Lab, student study carels, a library for student use, a conference room that seats about 60 persons, a processing room that allows fish, prawns, and crayfish to go from the pond to the freezer in a matter of minutes, and the Disease Diagnostic Lab. KAS Governing Board members enjoyed a tour of this facility during the August Board meeting. A virtual tour is available at <http://www.ksuquaculture.org/FAC.Facilities.htm>. You may contact Dr. Jim Tidwell, Chair of the Division of Aquaculture, at 502-597-8104 or james.tidwell@kysu.edu for more information or to arrange a visit to this facility.

Aquaculture Taking Center Stage in World Economy

Around the globe, consumers' appetite for seafood is increasing at a time that aquaculture/fisheries experts agree that our oceans can no longer sustain the demand. In fact, it is estimated that in 2010 the production of seafood will eclipse that of beef.

Finding ways of providing safe, affordable seafood is a primary goal of Kentucky State University's Division of Aquaculture. Created over 20 years ago by Dr. Harold Benson, KSU Land Grant Director, the Aquaculture program has evolved into an entity that is recognized as one of the top five Aquaculture schools in the U.S. Its master's degree attracts students worldwide.

KSU's academic offerings are only one part of its mission. Faculty members are engaged in research --- reproductive physiology, nutrition, genetics, and economics and marketing -- that has repercussions around the globe. Their books, journal and magazine articles serve internationally as guides for fisheries and aquaculture professionals. Much of their research is conducted at the KSU Aquaculture Research Center show on page 6.

Additionally, KSU takes its research directly into the field (ponds, lakes and rivers) in Kentucky. Three KSU Extension Agents respond to the needs of farmers throughout the commonwealth. From checking the clay content of pond soil to determining the source of fish diseases, the Extension Agents go directly to where the farmers' needs exist.



Aquaculture Extension agents work directly with farmers from pond preparation to feeding to final harvest. This Graves Co. harvest produced channel catfish weighing one to five pounds.

The KSU Aquaculture Web site, www.ksuaquaculture.org, lists 15 species of fish on which research is ongoing. KSU advises and directly assists farmers who are growing fish or freshwater prawns as a supplementary crop. Currently, there are about 30 farms growing prawns, and there has been a spike in interest in the paddlefish because of its roe which is sold as caviar. Largemouth bass are sold live and trucked to Canada and northern cities, and catfish are raised in larger ponds, mostly in western Kentucky.

In 1999, the Council on Post Secondary Education named Aquaculture as KSU's Program of Distinction. Such chosen

programs are encouraged to be "Early Adopters of Technology." Although KSU is the smallest state university in Kentucky, it is the only school that offers an Aquaculture program.

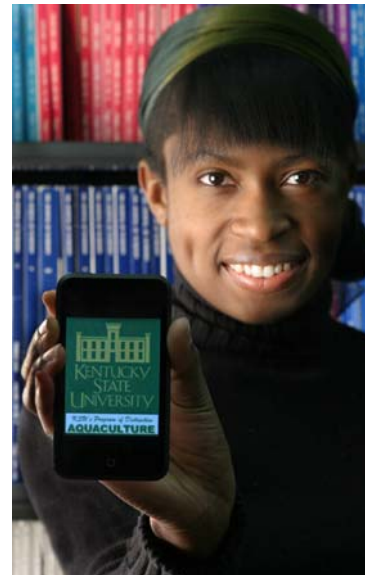
Aquaculture online courses have drawn students from 35 states and 16 foreign countries.

The courses themselves are video-based. Rather than just using a keyboard to look-up sources, KSU students see the teacher as he teaches, view PowerPoint presentations and see video clips of lab, field, and underwater activities. The Blackboard platform serves as a link to a KSU Dell streaming server where the video files reside. Also, students may download the courses from iTunes University servers directly to their iPods or other handheld devices.

Why use these technologies? While the demographics and learning styles of the students have changed, for the most part, the teaching styles and delivery technologies of the faculty have not. Podcasts have particular appeal to non-traditional students. Teaching materials are now completely portable in space and time, and students have the increased flexibility of being able to review the content wherever and whenever they want, as many times as needed, and at one's own pace. This technology holds appeal to groups such as minority students and urban youth, who are very comfortable with these devices but not lecture format. These technologies also allow persons with disabilities, such as the visually impaired, ready access to this information.

Kentucky has a need for agricultural diversity because of the loss of tobacco revenue. As aquaculture develops in Kentucky, an educated workforce will be needed to sustain production within the different segments. That is why KSU's Aquaculture program is so important, but as with other rapidly growing areas, graduating students, many times, accept jobs in other states and countries. Kentucky must move ahead quickly in developing green, technological, well-paying positions that will keep our students in the commonwealth.

*Submitted by Tod Porter, MultiMedia Producer,
KSU Aquaculture Program*



KSU graduate student Tiffany Ogunsanya examines aquaculture content on an iPod Classic. The Division of Aquaculture produces video-based online courses that run through a Blackboard platform with links to a KSU Dell streaming server. Students may download the courses directly from iTunes University servers onto iPods and other handheld devices.

Kentucky Conservation Committee's Land Conservation Recommendations

Kentucky is rapidly losing its green spaces and ecologically productive land. Every day the Commonwealth of Kentucky loses an average of 136 acres of forest land and 100 acres of forest to development uses. This extremely rapid pace is considered by many to be a hidden crisis of enormous consequences: as the land is "lost" to development and large land blocks are parceled, the ecological functions, including primary productivity, nutrient cycling, water filtration, species habitat, succession and regeneration, cannot be sustained. Kentucky is considered "public land poor" ranking approximately 42nd in the nation in terms of its publicly-owned land. A state with a high percentage of public land might be able to approach land conservation at a technical level, identifying critical areas and at risk species, developing migration corridors, actively managing lands for multiple uses and users. But in Kentucky, the vast majority of land (93-95%) is privately-owned and in relatively small parcel sizes averaging 30-40 acres. Therefore, Kentucky must work innovatively with landowners to understand their needs and the financial incentives that would help them choose conservation and sustainable land management. Government could also purchase land blocks outright, especially if the land has some unique value, ecologically or otherwise.

The Annual Meeting of the Kentucky Conservation Committee

In September 2008, The Kentucky Conservation Committee (KCC) had the opportunity to bring together over one hundred members and guests for a dialogue on biodiversity and land conservation at its Annual Meeting at Blackacre State Nature Preserve. Cognizant of the important work of the Kentucky Legislative Research Commission (LRC), the KCC dedicated this meeting to a discussion of priority directions and research gaps, especially in biodiversity inventory. Each participant was asked to submit specific written recommendations in order to contribute to the development of a policy document.

Expert panels discussed the urgent timeframe for land conservation in Kentucky, and above all the need to protect large forest blocks; land parcels need to be approximately 1000-5000 acres, depending on shape, condition, and desired ecological functions or services. One thousand acres is the minimum to support some ecological functions, such as the protection of an individual species. However, five thousand acres is a better estimate to create a fully functioning forest ecosystem. Concomitantly, water needs to be managed at the level of the watershed. Land use changes affect Kentucky's 89,000 miles of rivers and streams, impacting temperature, rates of flow, sediment load, and levels of chemicals or heavy metals. Invasive species also pose a significant threat to biological diversity in Kentucky, harming individual species and entire landscapes.

From a policy perspective, participants discussed the need for permanent and sustained funding sources, and for an effective coordination mechanism at the state level. Because working with landowners is such high priority, there is a need to look at current disincentives in place for maintaining ecologically productive land, including tax burdens and the lack of adequate protection from theft or trespass. The key issue for landowners is recognition of the

benefits, ecological and esthetic, their lands provide to society in an undeveloped state. Many opportunities exist in the context of education to provide information on the sustainable uses of land, on available funds or tax benefits, and, above all, to institutionalize environmental education in schools and universities.

Recommended Next Steps for Successful Land Conservation

Make land conservation an urgent priority in Kentucky. To be successful this conservation program must encompass riparian zone land and migratory corridors, green space, farmland, forest blocks, buffers to existing public lands, and trails.

Focus on identifying high priority ecosystems. Critically endangered ecosystems need a statewide approach, assessment and prioritization. Institutions of higher education and government would ideally work together to develop a comprehensive map of Kentucky's ecosystems, focusing on their potential conservation and connectivity.

Increase fiscal mechanisms for land conservation. Kentucky can vastly increase the use of fiscal mechanisms such as transfer taxes, conservation easements, land trusts, and forest certification programs.

Help current landowners. State and local governments can provide financial incentives and remove disincentives to landowners. Trespass laws and effective enforcement can relieve some of the burdens associated with keeping land in an undeveloped condition. Landowners may deserve compensation for the ecological services they provide to offset development and pollution.

Source: KCC Blackacre Summary Report 2009

Next Steps for the LRC Task Force

The Land Stewardship and Conservation Task Force had a follow-up meeting in July 2009 and now aims to construct a comprehensive, state-wide land appraisal and acquisition bill for the 2010 legislative session, which will include strategies for long-term funding. Its next meeting on August 13, 2009 will involve presentations on best aspects from other state programs. There is ample opportunity for anyone with an interest to become involved in this process. Individuals can attend sessions of the Task Force, contact legislators, or join with a group such as the KCC. Land conservation and biodiversity protection, backed by the best science available, remains an absolute priority for the KCC, as the organization strives to effectively present these perspectives to lawmakers who are making critical decisions for the future.

The LRC Task Force and the KCC Blackacre reports can be downloaded at the sites below.

<http://www.lrc.ky.gov/lrcpubs/RM502.pdf>

<http://www.kyconservation.org/2008-KCC-Blackacre-Report.pdf>

Submitted by Dr. Vicki Holmberg, President, KCC