

Pennsylvania Academy of Science

PLAN TO ATTEND THE
Pennsylvania Academy of Science
82nd ANNUAL MEETING

Holliday Inn
Grantsville, PA

March 31-April 2, 2006

**DEADLINE FOR RECEIPT OF ABSTRACTS:
15 DECEMBER 2005**

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The Pennsylvania Academy of Science Newsletter

Richard L. Stewart Jr. and Pablo R. Delis, Editors
Shippensburg University, Shippensburg, PA 17257

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FROM THE DESK OF THE PRESIDENT



The 81st annual meeting was held on April 8-10th at the Radisson, Camp Hill, with attendance of 363 registrants.

There were approximately 180 presentations and posters of excellent quality. The faculty and student presentations were especially interesting in its wide range of experience and perspectives which generated lively discussions.

Our speaker on Friday evening, Secretary of Agriculture Dennis C. Wolff, gave a wonderful presentation on the genetics of modern agriculture. A special thanks to Dr. Leonard Rosenfeld for arranging the presentation. I want to also extend my thanks to Drs. Ricker and Thomulka who were the local event organizers, their diligent work made for a great meeting.

Thanks to all who have contributed to the research and journal fund. Congratulations to our new officers: Book Treasurer – Lew Lutton, Recording Secretary – Michael Campbell, Directors at Large- Fred Brenner and Sherman Hendrix.

I would like to invite the membership to comment on what workshops you think could be useful for PAS members and students, email me at jhuffman@po-box.esu.edu.

Again congratulations to all for a successful meeting. The famous vaccine researcher Jonas Salk once said, *our greatest responsibility is to be good ancestors*. We can fulfill that responsibility by spreading the word of research and education as investments in America's future. Pause to savor the rich reward of your accomplishment, and have an enjoyable and productive summer.

Jane E. Huffman, PhD
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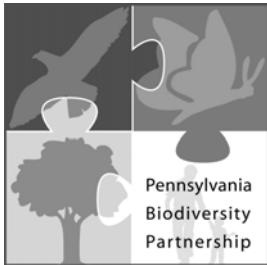
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PENNSYLVANIA BIODIVERSITY PARTNERSHIP SOLICITS INPUT ON PENNSYLVANIA BIODIVERSITY CONSERVATION PLAN



The Pennsylvania Biodiversity Partnership (PBP) is a broad-based public-private partnership formed in 2000 to promote the conservation of native species and their habitats. PBP members include conservation and environmental organizations; government agencies; business

and industry; scientists and academic organizations; sportsmen and women; and private landowners.

A consensus quickly emerged with the Partnership that a statewide plan, focusing on strategies and opportunities for protecting Pennsylvania's natural resources, while at the same time maintaining economic vigor and quality of life for all Pennsylvanians, must be developed and implemented.

The development of this comprehensive plan for biodiversity is a multi-year process with a projected completion date of 2005. *Biodiversity in Pennsylvania: Snapshot 2002*, released in December 2002, marked the end of the first phase. This 48-page document is a concise literature-based report that synthesizes the present status of Pennsylvania's biodiversity.

Building on *Biodiversity in Pennsylvania*, PBP is actively soliciting input from all stakeholders, including biologists and other scientists, in developing the first draft of the Pennsylvania Biodiversity Conservation Plan. Please tell us what issues are important to you and what you would like the plan to contain by visiting the PBP website (www.pabiodiversity.org) and completing a short comment form online.

Additional information about PBP and copies of *Biodiversity in Pennsylvania* and the executive summary, may be found on the PBP website. Free copies of the report or executive summary may be obtained by contacting PBP, 16 Terminal Way, Pittsburgh, PA 15219, telephone (412) 481-4100, pbpinfo@pabiodiversity.org



UPCOMING MEETINGS

The **82nd Annual PAS Meeting** will be held at the *Holiday Inn, Grantsville, PA, March 31-April 2, 2006.*

The joint meeting of **PAS and PJAS** will be held at the *Innovation Center, Sept. 23-24, 2005.*

The Ecological Society of America (ESA) 90th Annual Meeting will take place on **August 7-12, 2005 in Montreal, Canada.** Please visit the website for more information <http://www.esa.org/montreal/>

The *Entomological Society of America (ESA) Annual Meeting* will take place on **November 6-9, Fort Lauderdale, FL.** Please visit the website for more information <http://www.entsoc.org/>

The *National Conference on Undergraduate Research (NCUR)[®] 20th Annual Meeting* will take place on **April 6-9, 2006, UNC Asheville, NC.** Please visit the website for more information <http://www.ncur.org/>

The *American Society for Microbiology 106th General Meeting* will take place **May 21 - 25, 2006, Orlando, FL.** Please visit the website for more information <http://www.asmta.org/>

RECENT MEMBER PUBLICATIONS AND ACCOMPLISHMENTS

Toledo, Rafael and Fred, Benard. (2005). Echinostomes as experimental models for interactions between adult parasites and vertebrate hosts. Trends in Parasitology 21 (6): 251-254.

Delis, P. R. and H. R. Mushinsky. 2005. Human disturbance and Florida anurans. In Amphibians and Reptiles Status and Conservation in Florida. W. E. Meshaka and K. J. Babbitt Eds. Krieger, Florida USA. pp. 15-22.

PAYPAL

Dr. Ricker has established an account for the Academy with PayPal, an on-line payment service. Using this service, members can now pay membership dues, meeting expenses, and publication costs on line using a credit card. In addition, books and other academy publications can also be purchased on-line. This service is available at <http://pennsci.org>



The 2005 Pennsylvania Junior Academy of Science (PJAS) meeting was held on May 15-17 with the competition taking place on May 16 at Pennsylvania State University, University Park Campus. PJAS is sponsored by PAS, as an Affiliate of the American Association for the Advancement of Science. It is a statewide organization of Junior and Senior high school students designed to promote greater participation and improved achievement in mathematics and science through the development of research projects. The following are PAS sponsored awards given at the Special Awards Ceremony on May 16. The Oerlein awards were created from the Oerlein Endowment Fund and are used to provide awards to junior and senior high school students for outstanding papers presented at the PJAS annual meeting. Zappa Student Awards were created from the Donald Zappa Endowment Fund and are awarded to the top male and female students attending the PJAS annual meeting. PSTS are Pennsylvania Science Talent Search Awards created from the Sister Gabrielle Awards funds.

Monetary Awards:

<u>Amount</u>	<u>Award</u>	<u>Recipients</u>
\$125	Oerlein Sr.	Eric Brown, Zachary Powers, Omar Ayyash, Ashley Jones
\$50	Oerlein Jr.	Angelica Matta, Bjorn Wastvedt, Melissa Mautino, Pratyusha Banik, Noah Haibach, Thomas Rauch
\$125	Zappa	Erika Knox, Daniel Lang
\$125	PSTS Sr.	Mary LaBuz, Pranvera Mucaj, Boris Zinshteyn, Srujan Peddapaidi, Jarrod Schaeffer
\$100	PSTS Jr.	Michael Blaisse, Tao Zeng, Emily Becker, Benjamin Siegl

Certificate Awards:

Honors Award	Stephen Lock
First Award	Autumn Nelson, Ellen Pitman, Pranvera Mucaj, Michael Segal
Judges Award	Aaron Mehlmauer, Jyoti Bapat, Andrew Cheng, Srujan Peddapaidi, Yin He, My Le, My-Thao Le, Boris Zinshteyn, Nithya Chalikonda, Philip Wagner, Ashleigh Diehl, Shawnee Mallery, Mary LaBuz, Jarrod Schaeffer, Erika Roach, Roman R. Sandoval
Junior Awards	Michael Blaisse, Carrie Hargraves, Benjamin Frison, Jeremy LaMaster, Brittney Grimm, Eric Harvey, Christina Mowen, Shannon Grimes, Yonah Ringlestein, Rob Goldstein, Benjamin Siegl, Matthew Serota, Kimberly Bruce, Kyle Bruley, Jennia Rajaei, Lauren Berry, Alexander Hankin, Emily Becker, Aman Nalavade, Mamatha Chary, Julie Chan, Tao Zeng, Zhu Wang, Chase Kramer, Elias Quan, Solomon David, Sindhu John, Yuliana Dyak, Sanjana Bhatia, Benjamin Ou-Yang, Jesse Mitchell, Matthew Nonnemacher, Lauren Grant, Dominique Scutella, Nicola Shuttleworth.

NEWS AND COMMENTS SOLICITED

Please do not hesitate to submit to the editors of this newsletter, items that you feel may be of interest to PAS members. These can include publications, honors and awards (by you or colleagues), upcoming events, jobs, grants, and scholarship information. In addition, please feel free to send your comments and suggestions to the editor regarding the content of the Newsletter. Submission by e-mail is preferred, but submissions through the regular mail are also welcomed.

MANUSCRIPTS SOLICITED FOR *THE PENNSYLVANIA GEOGRAPHER*

The editors of *The Pennsylvania Geographer*, a peer reviewed, semi-annual journal of the Pennsylvania Geographical Society, are soliciting manuscripts for the Fall/Winter 2004 edition. The journal is in its 42nd consecutive year of publication. The general topic for this edition of the journal is: APPLIED GEOGRAPHY. Papers dealing with the above theme, or any other geographical topics, will be considered for publication. The deadline for submitting materials for the fall/winter 2004 issue is Aug. 14 2004. Please send manuscripts and/or inquiries to Dr. William B. Kory, Editor, or Dr. Gregory Faiers, Associate Editor, *The Pennsylvania Geographer*, Geography Department, University of Pittsburgh at Johnstown, Johnstown, PA 15904. Phone: (814) 269-2994; 2993 or 2990. E-mail: koryupj@pitt.edu

<u>Issue</u>	<u>Featured Topic</u>	<u>Submission Deadline</u>
Fall/ Winter 2005	Environmental Hazards	15 Aug. 2005
Spring/ Summer 2006	Ecotourism	15 Feb. 2006
Fall/ Winter 2006	Geography and Terrorism	15 Aug. 2006

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SCHOLARSHIP & AWARD OPPORTUNITIES

Spencer Foundation Major Research Grants Program

The grants program is intended for research projects requiring more than \$35,000 in grant support. Awards of up to \$35,000 are made. Inquiries and preliminary proposals are accepted at any time. The principal investigator must have an earned doctorate in an academic discipline or a professional field and must be affiliated with a college, university, research facility, or cultural institution. The foundation supports research that promises to contribute new knowledge to the improvement of education, broadly conceived, in the U.S. and abroad. A variety of disciplinary and interdisciplinary approaches are favored, though emphasis is given by charter to the behavioral sciences. The foundation is interested as well in the related research areas of cultural knowledge, socialization, and the production and distribution of knowledge. Research may range from medium-sized studies that can be completed in a year by an individual researcher to more extensive collaborative studies that last several years. Grants are not made to maintain organizations or infrastructures of educational research. Additional information can be found on the Web at <http://www.spencer.org/proginfo.htm>. For further information, contact: John B. Williams, Vice-President, Spencer Foundation, 900 North Michigan Avenue, Suite 2800, Chicago, IL 60611-1542.

LEARNED DISCOURSES

Timely Scientific Opinions

Intent. **Learned Discourses** provide a forum for open discussion by and for PAS members. These articles will reflect the professional opinions of the authors regarding scientific issues. They will not represent PAS positions or policies. And, although they are subject to editorial review for clarity, consistency, and brevity, these articles will not be peer reviewed. The success of the **Learned Discourses** depends on our contributors. We encourage submissions that are timely and will inform and stimulate discussion. If you disagree with an opinion expressed here, **submit a reply**.

Rules. All submissions must be succinct: no longer than 1,000 words, no more than 6 references, and at most one table or figure. Reference format must follow that of the Journal of the Pennsylvania Academy of Science. Topics may fall within any area of science.

Submissions. Send submissions as e-mail attachments (Word), to Richard Stewart (rlstew@ship.edu). Submissions will be printed on a first-received basis when space limitations apply.

Learned Discourses Editors

Richard Stewart and Pablo Delis
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PENNSYLVANIA SOCIETY FOR BIOMEDICAL RESEARCH

The Pennsylvania Society for Biomedical Research (PSBR) is a 501(c)(3) non-profit science education organization which was founded in 1990 and became operational in 1991.

The society was formed by universities, medical schools, pharmaceutical firms and professional societies in Pennsylvania. Current members and supporters include many of the Commonwealth's leading biomedical research and educational institutions, professional societies, and hospitals.

Our mission is to foster a better understanding of the benefits of biomedical research and the vital role it plays in improving the quality of human and animal health and expanding our economy.

The society is governed by a board of directors elected from its membership. The board meets three times a year, usually at a member organization. PSBR's annual meeting provides an opportunity for participants to be briefed of the status and activities of PSBR and to discuss important issues.

The PSBR strongly supports the continued role of animals in research when no reliable alternative exists.

Our goals include:

1. Develop PSBR as a resource for pertinent facts about the indispensable use of animals in biomedical research.
2. Serve as a credible resource for the general public, educators, students, legislators and member organizations.
3. Responsibly manage our resources to enhance an environment which supports biomedical endeavors to improve human and animal health.

PSBR seeks to meet its goals through the following programs in cooperation with our member organizations:

1. PSBR Information

Publish PSBR Bulletin, a newsletter which documents items of interest to the biomedical research community

Maintain a PSBR home page and web site on the Internet (<http://www.psbr.org>)

Maintain a database and resource library of biomedical research information.

2. Educational Programs

Conduct contests for students on topics related to animals in research

Provide information for teachers through workshops and training programs

Provide educational materials and speakers to elementary, secondary and college classrooms

Provide reference materials on biomedical research to school and public libraries

Exhibit materials at scientific and educational conferences

Develop and maintain a hands-on exhibit about animals in research

Coordinate all PSBR programs with the Pennsylvania Department of Education

3. Membership support – Public Relations/media

Media/speaker training

Assistance in crisis management planning

Provide resources and information to members dealing with requests from the media and animal rights organizations

Contribute editorials and press releases on items of interest to biomedical research

Enlist the governor to proclaim October 21 as Biomedical Research Day, Pennsylvania

4. Staff Orientation and Information

Assist animal care staff in explaining their contribution to biomedical research

Enlist member personnel to participate in PSBR educational programs

5. National Cooperation

Network with other state biomedical research organizations, and with national organizations in order to maximize effectiveness through information exchange and development of cooperative projects and programs

6. Animal Rights Movement

Maintain a current knowledge of the animal rights movement by review of animal activist publications, web sites and information hotlines

Cooperate with national and other state biomedical research organizations

Seek opportunities to counter negative representations about biomedical research

7. Legislation and Government Relations

Monitor and review newly introduced legislation for impact on biomedical research

Provide information on key issues to legislators

Keep members informed of the status of important legislation

For further information contact:

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THE NORTHERN GARTER SNAKE (*THAMNOPHIS SIRTALIS SIRTALIS*) IN PENNSYLVANIA

Pablo R. Delis
Shippensburg University



The eastern garter snake is a ubiquitous medium-sized snake in Pennsylvania, measuring from 45 to 66 cm in length, with a record of 123.8 cm. This snake is extremely variable in coloration, but most have a general olive-brown to black background color, a longitudinal mid-dorsal stripe, and two lateral stripes, to either side, involving scale rows 2 and 3. The stripes are generally yellow but variants on greenish to bluish are also common. Some individuals display rows of spots instead of stripes. Alternating rows of dark spots in between the stripes give a blotched look to many individuals. Many eastern garter snakes have two very small white or yellow spots on the dorso-parietal region. The ventral scales are yellowish to pale greenish with two rows of inconspicuous black spots partially hidden under the hinges. Dorsal scales are keeled, the anal scale is entire, and the ventral caudal scales occur in two rows. Sexual dimorphism is strongly developed in the body length and body proportion of this species. Females are longer and larger-bodied than males, and males have proportionately longer tails than females. When captured, some individuals bite and many excrete a pungent mix of feces and musk, which is smeared all over themselves and their captor. In captivity, they often settled down, and make fine pets.

The eastern garter snake ranges west from central Canada to southeastern Texas, and east to southern Florida, and the Atlantic coast north to New England. This species is found throughout Pennsylvania. It has been collected, as museum vouchers, from every single county in the commonwealth. The eastern garter snake is cosmopolitan and ubiquitous, occurring in a wide range of habitats: meadows, marshes, deciduous closed canopy forest, hillsides, along streams, drainage ditches, lakes, cultivated fields, back yards, and even city lots. In Pennsylvania, individuals are active during almost any month of the year but generally, but most often from the second half of March to October or November when they retreat to hibernacula for the winter. Interestingly, hibernation remains to be described in Pennsylvania. Peak seasonal activity is mid-spring in association with mating.

Courtship in this species may involve large aggregations of twisting males (over 20 in some cases) around a few or just one female. Reproduction takes place mostly in spring and occasionally in the fall. Females are viviparous and the phenomenon of multiple paternities has been reported. Parturition takes place during late summer-fall. Eastern garter snakes will also congregate under cover with other species, such as banded water snakes, black racers, and milk snakes.

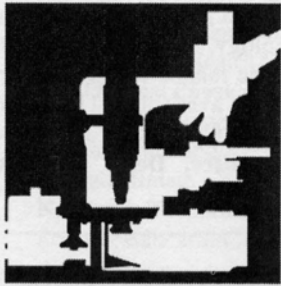
Rangewide, garter snakes are strictly carnivores and have a very diverse diet. They prey voraciously on both invertebrates and vertebrate prey: snails, grasshoppers, beetles, worms, grubs, lizards, small rodents, birds, fish, etc. However, diets vary locally with prey availability. For instance, whereas some populations fed predominantly on fish, others fed primarily on earthworms.

Amazingly, little is known about the specific status of garter snake populations in Pennsylvania. Based on museum specimens, some information is available on morphometrics and diet. For instance, males average 44.45 cm in total length, whereas females average 55.03 mm. Instances of tail loss in Pennsylvania are higher than in other states, with 12 % for males and 27 % for females, respectively, having lost their tails, most likely, to inefficient predators. The stomach contents of eastern garter snakes in the Commonwealth were dominated by worms (87 %), with frogs and salamanders accounting for the rest of their diet. Anecdotal observations of reproductive aggregations ("balling behavior") have been reported in Pennsylvania. Litter sizes, from Pennsylvania samples, ranged from 4 to 30 young and were correlated with body sizes. The smallest reproductively mature male in Pennsylvania was 27 mm in snout vent length.

Historically, no formal studies have been done on populations of the eastern garter snake in Pennsylvania. Currently, however, Walter Meshaka, Jr., of the State Museum of Pennsylvania, is conducting demographic research with the species at various sites across the Commonwealth and is collaborating with me at Letterkenny Army Depot (along the Southern Kittatinny Ridge in South Central Pennsylvania). I request information that might have been collected but not yet published on this species.

Bibliography:

- Conant, R. and J. Collins. 1998. *Reptiles and Amphibians*. Eastern/Central North America. Peterson Field Guides. Houghton Mifflin Company, Boston, Massachusetts, USA. 450 pp.
- Hulse, A. C., C. J. McCoy, and E. J. Censky. 2001. *Amphibians and Reptiles of Pennsylvania*. Cornell University Press. Ithaca, New York, USA. 419 pp.
- Shaffer L. L. 1999. *Pennsylvania Amphibians and Reptiles*. Pennsylvania Fish and Boat Commission. Harrisburg, Pennsylvania, USA. 161 pp.



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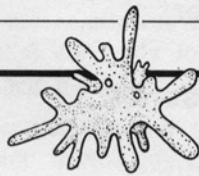
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DEPARTMENT OF BIOLOGY, GRADUATE PROGRAM, SHIPPENSBURG UNIVERSITY

The Department of Biology at Shippensburg University is accepting applications for enrollment in our graduate (M.S.) program. Shippensburg University is a member of the Pennsylvania State System of Higher Education and is located in south-central Pennsylvania. The graduate program has an emphasis in ecology and environmental biology. Several graduate assistantships will be available annually. Possible areas of interest include, but are not limited to:

- Population Ecology – Demography and conservation of key species of amphibians and reptiles with emphasis on morphology and life history traits in relation to population trends.
- Community Ecology – Conservation biology and evolution of amphibian assemblages, ecology of vernal pools, roles of competition and predation in regulating populations.
- Ecosystem Ecology – Nitrogen fixation studies of local plant species, biogeochemistry and hydrology of riparian wetlands, plant community and ecosystem effects of elemental and acid deposition, sources of effects of nutrient loading in area streams.
- Behavioral Ecology/Applied Ecology – Behavioral interactions of ants, integrated pest management of insect pests of tree fruits.
- Disease Ecology – Enzootic maintenance of tick and flea borne bacterial and viral pathogens, evaluation of helminth communities in local fauna, ectoparasite load on vertebrates.
- Microbial Ecology – Formation, composition and structure of biofilm communities, environmental microbiology, freshwater/marine molecular microbial ecology.

The Master of Science in Biology is directed primarily to those who seek advancement in their positions in post-secondary education, health service institutions, government agencies, and certain industries. For others, this degree may be an important step toward a program of doctoral studies.

The growing need to understand the natural world and manage our impact on it has resulted in a growth in demand and job opportunities for people with ecological/environmental backgrounds. Numerous job opportunities now exist in research, resource management, and education. Shippensburg University graduates have been successful at finding employment with state and federal agencies, non-profit organizations, private consulting firms, and secondary schools. Many go on to graduate schools to receive advanced degrees. Potential opportunities for students with an interest in ecology Naturalist, Outdoor Educator, Wildlife Biologist, Forester, Environmental Consultant, College Professor, Entomologist, Water Quality Control Technician, Environmental Planner, Researcher, Environmental Impact Analyst, Toxicologist, Museum or Zoo Curators, Conservation Biologist, Fisheries Biologist etc.

For more information on our graduate program, visit <http://www.ship.edu/~biology/GradPage/>

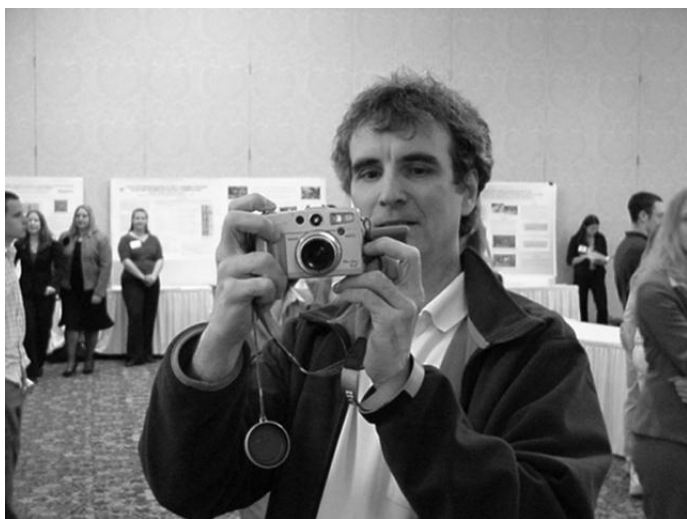
Application information and an on-line application are available at <http://www.ship.edu/admiss/grad.html>. Drs. Greg Paulson, gspaul@ship.edu, and Ruthanne Pitkin, rbpitk@ship.edu, would be glad to answer any questions.

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If you would like the newsletter to feature your graduate program please send a description to the editor at rlstew@ship.edu for consideration.

PENNSYLVANIA ACADEMY OF SCIENCES

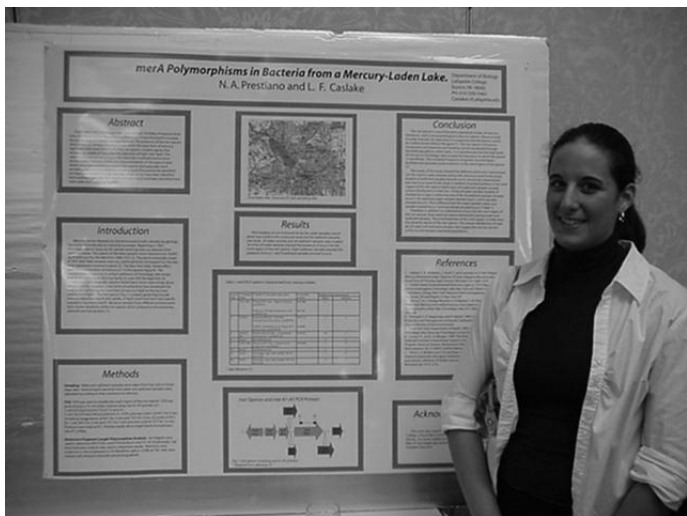
2005 MEETINGS IN PICTURES



Dr. Greg Paulson, Shippensburg University, Chairman of the Biology Department, kindly recorded for posterity some of the events at the PAS Annual Meeting Celebrated in the Radisson Inn, at Camp Hill.



A photography contest attracted over two dozen participants. Some of the pictures offer outstanding artistic quality over an array of subjects from the microscopic world to the organismal and landscape level.



N. A. Prestiano* and **L. F. Caslake** from Lafayette College, Department of Biology, Easton, PA, giving a poster entitled *merA* Polymorphisms in Bacteria from a Mercury-Laden Lake, during Poster Session III, Sunday April 10, 2005.



L. A. Guertin* from Penn State Delaware County, Earth Science, giving a paper When Local Geology is Not Accessible – Using the Storefronts in King of Prussia Mall, PA, to Teach Tock Identification, presented during Session III, (Geology, Meteorology, Physics, and Math) Saturday April 9, 2005.

PENNSYLVANIA ACADEMY OF SCIENCES

2005 MEETINGS IN PICTURES



Tina M. George, from the Biology Department at the University of Scranton, presented Effects of Acid Mine Drainage (AMD) on Diatom Species Richness and Seasonal Succession in the Lackawanna River, during the first poster session on Saturday, April 9, 2005.



Around 70 oral presentations were delivered during the two-day span of the PAS meetings. Ranging from structural engineering to snake physiology, the scope of the talks were impressive.



A live display of hissing cockroaches created a healthy hands-on display during the exhibition of the posters in Session III on Sunday, April 10, 2005. The poster was authored by Stephen Niedzwiecki and Matthew Wallace, from East Stroudsburg University, titled Maintenance and Creation of a Cockroach Colony.



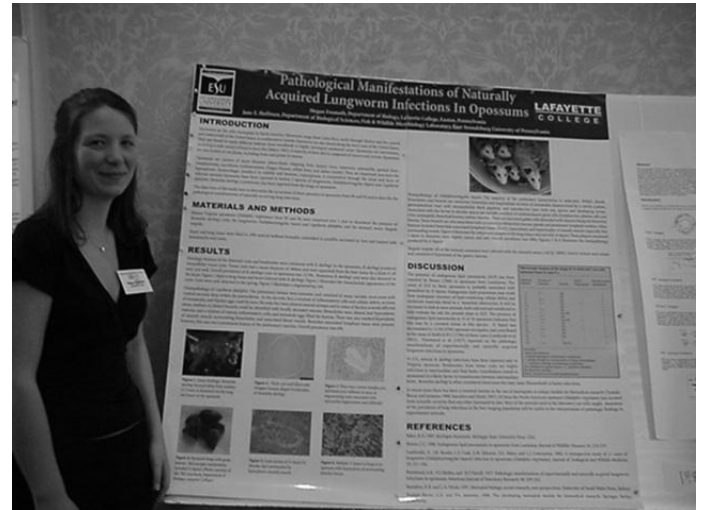
Throughout the three days of meetings, numerous Pennsylvania science professionals, students, and vendors registered and attended, at least, one of the days. Over two hundred registrations were claimed by full members of the PAS. This meeting had the largest attendance in the history of the organization. Congratulations to the organizers for an exceptional meeting.

PENNSYLVANIA ACADEMY OF SCIENCES

2005 MEETINGS IN PICTURES



A lively group of students and professors gathered at a poster session. They are all from the Department of Biology, Wilkes University, Wilkes-Barre, PA.



M. Fromuth from Lafayette College and **J. E. Huffman** from East Stroudsburg University, Fish and Wildlife Microbiology Laboratory, Department of Biological Science, presented Pathological Manifestations of Naturally Acquired Lungworm Infections in Opossums, in poster session III on Sunday, April 10, 2005.



Monique Delisser, Chelsea Burket, Leocadia Mosquera, and Edward P. Levri, from the Biology Department at Penn State-Altoona, presented Trematode Parasite Infection Influences Photokinetic Response of a Freshwater Snail, in poster session III on Sunday, April 10, 2005.



Melanie L. Williams and Audrey J. Ettinger from the Biology Department at Cedar Crest College, presented Are Behavioral Genes Conserved, in poster session II on Saturday, April 9, 2005.

DARBAKER PRIZE - \$1,000

The Darbaker Prize is a Pennsylvania Academy of Science (PAS) award given for outstanding scholarly contributions which use microscopic techniques and present microscopic illustrations in the reporting of biological research. The award is competitive amongst qualified papers submitted in association with the Academy's annual meeting.

The Pennsylvania Academy of Science established the Darbaker Prize in 1952. Funds for the award are made available through a bequest of the late L.K. Darbaker, 1939 PAS President. Referring to the award, Dr. Darbaker stated: "Any sum applicable to the Pennsylvania Academy of Science shall be for grant or grants in Microscopical Biology."

To qualify for the Darbaker Prize, a scientist or scientists must: (1) have used microscopy (light, SEM, TEM or other technologies) in the research they report, (2) submit in proper format a manuscript reporting the results of the completed study for consideration to be published in the *Journal*, (3) specifically state a request to the Editor of the *Journal* to have their manuscript considered for the Darbaker Prize for the current calendar year, and (4) be a member of the Pennsylvania Academy of Science. Darbaker Prize competition manuscripts are expected to be presented and submitted at the PAS annual meeting, but if not, manuscripts will be accepted for consideration within four weeks (28 calendar days) following the last day of the annual meeting. Only manuscripts that have successfully completed the review process and have been accepted for publication in the *Journal* will be eligible for the award.

The Editor of the *Journal* will examine all manuscripts submitted for award consideration to determine the fulfillment of requirements. The editor will then forward the eligible manuscripts with his/her and reviewers' recommendations to the PAS President for final decision. The Darbaker Prize will be made in the *Journal* at an appropriate time.

For further information contact:

Shyamal K. Majumdar, Ph.D,
Editor of the Journal
Professor of Biology
Lafayette College
Easton PA 18042
Ph: (610) 330 5464; Fax: (610) 330 5705
E-Mail: majumdas@lafayette.edu

PAS HIGH SCHOOL STUDENT RESEARCH GRANTS

The PAS has funds to provide modest financial support, not in excess of \$100, for student research projects. Students working on projects in the Natural or Physical Sciences under the direction of PAS member scientists at high schools, colleges, or in industry may submit an application for support.

Proposal Guidelines:

1. Funds are to be used primarily for supplies; secondarily, for small pieces of equipment if essential.
2. Funds are not to be used for major pieces of equipment, student stipends, travel, etc.
3. Proposals are encouraged that involve groups of students working together on a project.
4. Students are encouraged to present their findings at the next meeting of the Pennsylvania Junior Academy of Science (PJAS).

Proposal Requirements:

1. A title page with project title, name and grade of the student; sponsor name (PAS member); school name, address and phone number; characterization of school location (urban, suburban, or rural). The title page should also include the total amount requested (not to exceed \$100) and the signatures of student and sponsor.
2. A short summary of the project, including pertinent background information, a statement of the hypothesis, a description of the planned experiments, and a statement of the expected results.
3. Budget, including a statement of how the money will be used and a statement of the time frame during which the project will be performed.

Proposal Deadlines:

March 30 and November 15. Proposals received after a deadline will be reviewed during the following period. Send completed proposals or requests for further information to:

Dr. Jane F. Cavender
Chairperson, PAS Research Grant Committee
Department of Biology
Elizabethtown College
Elizabethtown, PA 17022-2298.

Information on various research grants can be found on the PAS web site at <http://www.pitt.edu/~aap/pas.htm>

COLLEGE STUDENT RESEARCH FUNDS AVAILABLE

The Pennsylvania Academy of Science has funds available to support UNDERGRADUATE AND GRADUATE COLLEGE STUDENT research in the natural, physical, or social sciences. Proposals should be written and submitted by the student under faculty guidance. Proposals will be accepted until May 1 at which time they will undergo review by professional referees, and evaluation by the PAS Research Grant Committee. Authors of proposals selected for funding will be notified by October 15. Unsuccessful applicants will be notified by November 15. Grants are normally made in the amount of \$500 or less, as requested in the proposal and, therefore, proposal budgets should take this limit to consideration.

General Guidelines for proposal:

- (1) Projects should be of such nature that they can be initiated and completed within one year.
- (2) The PAS funds are to be used primarily for expendable supplies, small pieces of equipment, and travel, living and/or housing expenses, if essential for the project.
- (3) Funds are not to be used for major pieces of equipment.
- (4) Results of the project are normally communicated at the next meeting of the PAS following completion of the research. The student is encouraged to submit a manuscript for consideration of publication in the *Journal of the Pennsylvania Academy of Science*.

Proposal Format should include the following Sections:

(1) A titled INTRODUCTION describing the nature of the project and discussing the novelty or significance of the research. A general summary of the pertinent literature must be provided to demonstrate to the reviewers that the author has adequate knowledge of the research area.

(2) A titled METHODS & MATERIALS describing how the research will be carried out; the kinds of materials and equipment used; the procedures to be employed regarding the care, use and disposition of research animals; the approximate starting and finishing dates of the research for which PAS funding is requested.

(3) A titled STUDY PARTICIPANTS identifying the student(s) and supervising PAS member, their affiliation (e.g., academic institution or employer), and position or section status. The role of the student(s) must be CLEARLY identified. The previous relevant experience of the PAS member in supervising research must be discussed. A statement is required that the research supervisor is a current PAS member. A statement should be made regarding primary responsibility for writing the proposal, if not the author(s) given.

- (4) A titled BUDGET will include an ITEMIZED budget showing how PAS funds are to be used, and identifying the piece of equipment and facilities currently available to do the research. If funding is to be supplied by other sources, this should be identified. Additional guidance regarding format can be found in the "Guidelines for Authors" in *Journal of the Pennsylvania Academy of Science*.

Submit an original and FIVE (5) copies of the proposal and clearly list on the cover page, the area to which the grant most closely applies: Biochemistry, Chemistry, Cell Biology, Ecology, Environmental Science, Genetics, Geology, Microbiology or other. All proposal reviews will be evaluated by the PAS Research Grant Committee, and the proposals will be ranked for preference for funding. Only those proposal judged worthy of funding will receive funding to the extent funding is available. Unsuccessful proposals may be reconsidered after revision in accordance with suggestions by the PAS Research Grant Committee and proposal referees.

Send all materials to:

**Dr. Jane Cavender,
Chairman PAS Research Grant Committee
Department of Biology
Elizabethtown College
Elizabethtown, PA 17022**

ABOUT THE EDITORS

Dr. Richard L. Stewart Jr. is a parasitologist/entomologist working with ecto and endoparasites in mammals. www.ship.edu/~rlstew

Dr. Pablo R. Delis is a vertebrate zoologists specially interested in populations of amphibians and reptiles. www.ship.edu/~prdeli

PENNSYLVANIA ACADEMY OF SCIENCE-APPLICATION FOR MEMBERSHIP

Date: ____ / ____ / ____
 Last Name: _____ First Name: _____ Middle Initial or Name: _____
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(Biology, Zoology, Botany, Physiology, Chemistry, Physics, Engineering, Spectroscopy, Biochemistry, Psychology, Medicine, Mathematics, Geology, Geography, etc.)
 Degrees: _____ Title: _____

Where did you learn about PAS? _____

Member of AAAS? Yes **PSTA** Yes **PASA** Yes **PA Chapter Wildlife Society** Yes
Society of College Science Teachers Yes **PA Biological Survey** Yes **PA Assoc of Environmental Professionals** Yes
Comm of PA Univ Biologists Yes **MidAtlantic Assoc College Biologists** Yes

Active Member - \$ 35.00 per year Student Member - \$17.50 per year Sustaining Member - \$35.00 or more per year
 Life Member - \$525.00 (*can pay in installments*) Non-profit Institution/Library Member - \$45.00 per year
 For-profit Institution/Library Member - \$150.00 per year
 Back Issue of *Journal* - \$15.00 each (List desired issue) _____ Contribution to PAS _____

Please return this application and first year's membership dues, made payable to the **Pennsylvania Academy of Science**, to:
Dr. Valerie G. Kalter, Membership Chairperson, Biology Department, Wilkes University, Wilkes-Barre, PA 18766.
(570) 408-4752 or e-mail: vkalter@wilkes.edu

Book Order Form

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