



INDIANA ACADEMY OF SCIENCE NEWSLETTER

Number 157

October 2014

Going Beyond BioBlitzes

by Tim Cordell and Scott Namestnik

As stresses and threats to Indiana's natural areas continue to increase in the form of invasive species encroachment coupled with staff and budget cuts in the agencies and organizations charged with protecting and managing them, it becomes more and more important to know what species are present in order to know how to protect our treasured resources. BioBlitzes have become popular in recent years as a means of documenting the species present at a given site. These BioBlitzes do a good job of identifying a majority of the species in a range of taxonomic groups inhabiting a site on one particular day as subject experts descend on the site and share their expertise to assist a particular park or natural area in documenting the various plants, animals, geology, etc. However, things change through the seasons. Perhaps it would be a more efficient use of the subject experts' time to train volunteers to conduct this inventory work on an ongoing basis throughout the year or over the course of several years. Almost every natural area has



Woodland studies at the Potato Creek State Park Biodiversity Workshop.

local residents that enjoy and value it; these people are frequently on the property, so why not train them to do the much needed inventory work?

Thanks to the Indiana Academy of Science (IAS) Biodiversity and Natural Areas Committee and the Friends of Potato Creek State Park (FOPC), Potato Creek State Park has joined the ranks of just a couple of parks in Indiana that are turning this idea into a reality. This summer, IAS and FOPC sponsored a two day training session in plant identification and inventory techniques attended by 12 volunteers. This training was conducted by IAS Biodiversity and Natural Areas Committee Member and Vice Chair of the Plant Systematics and Biodiversity Section **Scott Namestnik**, who works as a botanist at Orbis Environmental Consulting. The workshop was modeled after a similar workshop conducted at Brown County State Park by IAS Biodiversity and Natural Areas Committee Chair **Don Ruch** and IAS Biodiversity and Natural Areas Committee

continued on the next page



Scott Namestnik [right] leading field studies at Potato Creek State Park.

Member **Kem Badger**, both from Ball State University. The voucher specimens collected will supplement herbarium records currently present from previous studies and collections at the park. In addition to the value of documenting as many of the plant species as possible that are present at Potato Creek State Park, these “citizen scientists” will undoubtedly develop a deeper appreciation and

understanding of the natural world. This in turn will hopefully make them stronger advocates for natural area protection.

We invite you to go beyond the BioBlitz and offer your services to a natural area close to you in training volunteers to do ongoing inventory work throughout the year. For more information, contact **Don Ruch** at druch@bsu.edu.

Indiana Academy of Science Awards – Submission Deadline October 15, 2014

The Indiana Academy of Science recognizes individuals who have exhibited extraordinary loyalty and effort to the Academy and to Science. Currently, the Indiana Academy of Science bestows awards in three categories: **The Distinguished Scholar Award** is bestowed upon individuals who have been recognized by the Academy as having an exceptional record of scholarship. **The Distinguished Service Award** is bestowed upon individuals who have been recognized as having supported the Academy through service exceeding any normal expectation. A **Fellow** is a member of the Academy (minimum of 5 years) who has demonstrated service to the Academy and to the advancement of science in Indiana, service to education in science, and achievements in scientific research. Nature of service to the Academy includes attending Indiana Academy of Science meetings, presenting papers at meetings, publishing in the *Proceedings*, serving as an officer, as a section or committee chair, as a committee member, and/or playing a role in organizing Academy activities.

To be considered for awards at the next annual meeting the deadline for submission of nominations is quickly approaching. All nominations must be received no later than **October 15, 2014**. Nominations must be submitted online to the Deposit Box found on the Academy website at Member Center > Document Sharing > Deposit Box > Awards. You must be logged in with your membership login information to be able to do this.

Forms for Nominations for Distinguished Scholar and Distinguished Service Awards and the Recommendation Forms for Fellow may be found at <http://www.indianaacademyofscience.org/The-Academy/Awards-and-Fellows.aspx>, follow the link to obtain each form. Or, access the forms in the Document Library at <https://www.indianaacademyofscience.org/SpecialPages/DocumentSharing.aspx?FolderType=Library>

Distinguished Scholar and Distinguished Service Awards Nominations must include:

- The Nomination Form
- A narrative documenting the qualifications of the nominee
- A CV highlighting the extent and nature of scholarship or service

In addition, each nomination must include brief supporting letters from 5 Academy members stating their support of the individual for the award.

Fellow Recommendations must include:

- The Recommendation Form signed by two current Fellows of the Academy
- A Cover Letter describing the qualifications of the recommended nominee to become a Fellow
- A CV highlighting the nature of service to the Academy

Please submit all information as PDF files.

Please direct questions to **Marcia Moore**, Chair of Awards Committee at: awards@indianaacademyofscience.org



NOTE FROM THE PRESIDENT'S CORNER

Dear members of the Indiana Academy of Science,

I hope your summer was delightful and fulfilling. For me it ended much too soon but not before reflecting on “big issues” for the Academy. One such big issue is our membership, the Academy’s lifeblood. This is an opportune time to increase our membership, bring in our Academy younger members and those who have a passion for science, and to rebalance our sections to add intellectual strength in key fields where we are underrepresented.

Your Executive Director and I met with members of the Academy Council and others, as well as your Section leadership, to discuss these issues on September 22nd and September 27th, respectfully. They share the concern, and have expressed strong support for a multi-year campaign to build and rebalance our membership for the future. I find them great to know and work with.

I plan to announce the membership campaign publicly at the 130th Annual Academy Meeting in March; however, we are not waiting until then to get a start in developing the materials to support the campaign. I ask for your help in starting today in contacting your friends and associates, including students and those with a passion for science, to join the Academy. A significant number of new members before the Annual Meeting would provide energy for the campaign.

On a lighter note, I had the opportunity to visit student science scholars in our Science Talent Search Program, and



Arden Bement, 2014-2015 IAS President

discuss their posters with them at the site of our new host for that program, Marion University, on September 22nd. I met many such students in Washington D.C. competing in the Intel Talent Search during my tenure at NIST and NSF. I found the finalists I met in our Academy program to have equivalent winning potential in such national competitions. It gave me a sense of pride to represent your Academy in engaging these “budding” scientists.

-- Arden Bement
2014-2015 IAS President

Indiana Academy of Science Talent Search

Marian University hosted this Academy’s 2014 Talent Search on September 19th and 20th, with eleven of the twelve finalists in attendance. Pictured are: Front row: **Rita Cui**, Terre Haute South Vigo High School; **Chloe Sherry**, John Adams High School; **Gabriella Lucchese**, Marian High School; and **Elizabeth Bolyard**, Northwestern High School. Middle Row: **Iman Mahoui**, Eman Schools; **Kamna Gupta**, Carmel High School; **Heya Kaakeh**, West Lafayette Jr./Sr. High School, and **Anthea Weng**, Terre Haute South Vigo High School. Back Row: **Kevin Hunkler**, Marian High School; **Aiden Reilly**, John Adams High School; and **Adam Staszewski**, John Adams High School. Selected finalist **Rachel Johns** of Northwestern High School was unable to attend. The judges selected these finalists from a field of twenty-two papers submitted in May.



Participants of the 2014 Talent Search [see text]

From the Desk of the Executive Director, Fall 2014

By now you should have received the **1st Call for Papers for the 130th Annual Academy Meeting**, which will take place March 21, 2015 at the J.W. Marriott Hotel, in downtown Indianapolis. The 2015 Annual Academy Meeting is particularly special, as it marks 130 years the Academy has been furthering Indiana science: providing forums for the advancement of field and laboratory research as well as both constituent and interdisciplinary discourse; engaging scientists, science educators and science students in science education, and providing opportunities for professional growth and development. We want the 130th Annual Academy Meeting to be one of our best, and encourage you to plan now to attend that meeting, as well as to plan to share your science research or practice with your colleagues or students. Abstracts can be uploaded for your Section Chair's review beginning December 1, through February 17th. Registration for the 130th Annual Academy Meeting begins December 1 as well. The guidelines for submitting abstracts can be found on our Website with a FAQ that answers questions about the 130th Annual Academy Meeting, however you should also feel free to confer with your Section Chair or Vice Chair if you have questions about submitting an abstract. The names and contact information of Academy Section Leadership are on the Website.

We are delighted to announce some of our **initial sponsors of the 130th Annual Academy Meeting**. Both W.K. Kellogg and Eli Lilly and Company have made financial commitments to sponsor again. The 2015 Meeting will mark the 4th Academy Meeting they've sponsored. We are particularly thankful to Kellogg and Lilly for their continued commitment to the work of the Academy. Purdue is coming on this year from both Purdue University College of Arts and Science and the Department of Engineering at Purdue University, in support of our President, **Dr. Arden Bement** and the work of the Academy. As you may recall Purdue University College of Arts and Science sponsored us a couple of years ago when we held the Annual Meeting at the Stewart Center at Purdue. Subaru of America is back on board as well. This will be the 3rd Annual Academy Meeting Subaru has sponsored, and this year they are increasing their contribution. We are extremely happy with that relationship. And last but certainly not least is the continuing support we receive from White River Park; providing invaluable in-kind support. We are still looking to hear from others but for now that is the list. If



IAS Executive Director Delores Brown

any of you have interest in becoming a sponsor of this milestone Annual Meeting, the 130th Annual Academy Meeting, please call me at 317.974.0827 or email execdir@indianaacademyofscience.org.

Lastly, this year the Academy Council has approved **complementary exhibit tables at the 130th Annual Academy Meeting**, in celebration of our 130 years. If any of you have an interest in securing an exhibit table for your organization, institution, department, etc., the deadline date to make that interest known is October 31. Please email your interest and any questions to linda.buff@indianaacademyofscience.org. Tables are of course limited, so they will be assigned on a first come, first served basis.

Delores

Delores Brown, M.S, M.Ed,
Executive Director



**CALL
FOR
PAPERS**

Science at the *INDIANA ACADEMY OF SCIENCE*

130th Annual Academy Meeting

The Indiana Academy of Science has been an important voice of Indiana science since its inception in 1885. It continues to enjoy a rich tradition of science excellence, as well as a high professional stature with membership that includes many of the state of Indiana's premier scientists and science educators, and graduate and undergraduate

students. **The 130th Annual Academy Meeting will take place at the J.W. Marriott Hotel in downtown Indianapolis, Indiana on March 21, 2015, (8:00 a.m.- 6:00 p.m.).** It will bring together noted national scientists, and hundreds of Indiana scientists, science educators and science students; to share some of this country's latest developments in scientific research, and practice.

130TH ANNUAL ACADEMY MEETING REGISTRATION and ABSTRACT SUBMISSION are quick and convenient, and is available On-line beginning December 1, 2014 through February 17, 2015 at <http://www.indianaacademyofscience.org>

Prepare now to share your research and insight—The Indiana Academy of Science encourages abstracts from Indiana field scientists, academic scientists, industry scientists, science educators, graduate science students, undergraduate science students, whose work could be of interest to Indiana scientists, science educators and science students. **Abstracts will be published in the *Program Book for the 130th Annual Academy Meeting*.** Abstracts are approved by the Section before being presented. The Section Chair is the point of contact for Academy members who would like to discuss their abstract before submitting it for review, or have other questions pertaining to their intended presentation. The name and contact information for Section Chairs/Vice Chairs can be found at the Academy Website at <http://www.indianaacademyofscience.org>

Criteria

- The research must be of sufficient scientific importance.
- Science presenters must register for the 130th Annual Academy Meeting and pay the Annual Meeting registration fee before an abstract can be uploaded. Academy members receive a discount Annual Meeting registration. Please go to <http://www.indianaacademyofscience.org> to register a new membership in the Indiana Academy of Science, or to renew your membership.
- **Oral and Poster Presentations will take place on Saturday March 21, 2015. See on-line guidelines for preparing abstracts for Oral, Poster, Workshop, and Hot Topic presentations.** <http://www.indianaacademyofscience.org>.
- A single individual may submit only one abstract as the first author (per Section). It is assumed that this individual will make the presentation.

Technical Requirements

- Abstracts must be submitted on the on-line submission form found at (<http://www.indianaacademyofscience.org>) which includes title, first author's name, address, and email address, as well as co-author names, addresses, and email addresses, and brought to the Annual Meeting on a flash drive, ready to upload between 7 a.m. and 7:55 a.m. **Abstracts are limited to 300 words (not including the title or author names).**

Revised Instructions for Authors Submitting Manuscript to the *Proceedings of the Indiana Academy of Science*

Below are the revised guidelines for submitting a manuscript for consideration for publication in the *Proceedings of the Indiana Academy of Science*. These guidelines will take effect on January 1, 2015 [but please use them before that date!]. The instructions include many examples. If an example for what you need is not included, please examine current issues of the *Proceedings* or contact either co-editor, **Don Ruch**, druch@bsu.edu, or **Paul Rothrock**, plrothroc@tayloru.edu. These instruction can also be found on the Indiana Academy of Science webpage at <https://www.indianaacademyofscience.org> under Publications, Proceedings, Instructions to Authors.

INSTRUCTIONS TO AUTHORS

(revised October 2014)

Submission instructions.—Please submit manuscripts in MSWord format in 12-point Times New Roman font and all figures at 300-dpi in JPEG format. Please size the figures as they should appear in the published article in the *Proceedings*. See Illustrations section below for additional information concerning figures.

General information.—Manuscripts and all correspondence should be sent to the Editor. To be eligible for publication in the *Proceedings* at least one author must be a member of the Academy. Submission of a manuscript to the Editor implies that it has not been sent to another publication, nor has it been published elsewhere. If it is accepted for publication in the *Proceedings*, it may not be republished without the written consent of the Academy.

All manuscripts are evaluated by referees. Manuscripts may be submitted as a .doc file [MSWord format] by e-mail or by mail on a CD or USB Flash Drive. Figures should be saved in 300-dpi JPEG format in the size they should appear in the published article. Galley proofs will be e-mailed to the primary author for approval and correction. Galley proofs must be returned to the editor within one week.

Voucher specimens and permits.—Voucher specimens of species used in scientific research should be deposited in a recognized scientific institution. Authors must indicate that the collection of specimens, especially threatened or endangered species, was authorized by the appropriate governmental organization. Those making identification of specimens should be identified.

Cover sheet:—To include Title of Manuscript, Corresponding author's name and E-mail address, Principal area of relevance [based on Academy Sections], and Secondary area of relevance. The corresponding author should also include the names and email addresses of three potential reviewers on the cover sheet.

Follow guidelines on the Allen Press web site.—At allenpress.com under Resources, go to Education Library and use information in Guide to Manuscript Preparation.

Running head.—The author's surname(s) and an abbreviated title should be typed all in capital letters and must not exceed 60 characters and spaces. The running head should be placed near the top center of every page, including the title page.

Title page.—The title page should include (1) the title in capital letters, (2) each author's name and address [note: combine all authors from one address together], (3) the running head, and (4) the complete name, address, and telephone number, fax number, and e-mail address of the author with whom proofs and correspondence should be exchanged, i.e., the corresponding author. Use single space when providing the corresponding author's information.

Abstract.—All manuscripts have an abstract that should summarize the significant facts in the manuscript. The "ABSTRACT" heading in capital letters [in bold type] should be placed at the beginning of the first paragraph set off by a period and

continued next page

continued from page 3

followed by three spaces [e.g., ABSTRACT. The main concepts. . . .]. Use complete sentences, and limit the abstract to one paragraph and no more than 250 words. The abstract should be doubled-spaced.

Keywords.—Give 3–5 appropriate keywords separated by commas.

Text.—Double-space text, tables, legends, etc. throughout, printing on only one side of the page. Three categories of headings are used. The first category (METHODS, RESULTS, etc.) is typed in capitals, centered, and on a separate line. The second (lower) category of heading, in bold type, begins a paragraph with an indent and is separated from the text by a period and a dash. (This paragraph begins with an example of this heading.) The third heading category may or may not begin a paragraph, is italicized, and is followed by a colon. (The paragraph below is an example.) The metric system must be used unless quoting text or referencing collection data. Hectare [ha] is acceptable.

Citation of references in the text: Cite only papers already published or in press. Include within parentheses the surname of the author followed by the date of publication. A comma separates multiple citations by the same author(s) and a semicolon separates citations by different authors, e.g., (Smith 1990), (Jones 1988; Smith 1993), (Smith 1986, 1987; Smith & Jones 1989; Jones et al. 1990). List citations within a set of parentheses in chronological order, not alphabetical order (see above). Note, in citations with two authors, use “&”, not the word “and” (see above).

Conclusions.—Do not have a conclusions section. This information should be in either the abstract or the end of the discussion.

Literature cited.—Use the following style, and include the full unabbreviated journal title. Repeat the name for multiple references by the same author. Note that book titles have the first letter of each word capitalized. Unless citing a section of a book, include the number of pages in the book.

Journal Articles:

- Kinley, T.A. 1997. Relationship of riparian reserve width zone to bird density and diversity in southwest British Columbia. *Northwest Science* 71:75-86.
- Naiman, R.J. & H. Decamps. 1997. The ecology of interfaces: Riparian zones. *Annual Review of Ecology and Systematics* 28:621-658.
- Ruch, D.G., B.G. Torke, B.R. Hess, K.S. Badger & R.E. Rothrock. 2008. The vascular flora and vegetational communities of the wetland complex on the IMI property in Henry County near Luray, Indiana. *Proceedings of the Indiana Academy of Science* 117:142-158.

Books:

- Cowardin, L.M., V. Carter, F.C. Golet & E.T. LaRoe. 1979. *Classification of Wetlands and Deep Water Habitats of the United States*. FWS/OBS 79/31, U.S. Fish and Wildlife Service, Washington, D.C. 103 pp.
- Deam, C. 1940. *Flora of Indiana*. Department of Conservation, Wm. B. Burford Printing Co., Indianapolis, Indiana. 1236 pp.
- Swink, F. & G. Wilhelm. 1994. *Plants of the Chicago Region*, 4th edition. Indiana Academy of Science, Indianapolis, Indiana. 921 pp.

Chapter/section of a Book:

- Walter, J. 1992. The significance and complexity of communication in moths. Pp. 25–66. *In Insect Communications: Mechanisms and Ecological Significance*. (P.N. Work & J.S. Rivers, eds.). Princeton University Press, Princeton, New Jersey.

continued from page 4

Hedge, R.L. 1997. Forested swell and swale: the Central Till Plain natural region. Pp. 195-199. *In* The Natural Heritage of Indiana. (M.T. Jackson, ed.). Indiana University Press, Bloomington, Indiana.

Websites:

USDA, NRCS. 2013. The plants national database. Baton Rouge, Louisiana. At: <http://plants.usda.gov> (Accessed 28 August 2013).

EPA (U.S. Environmental Protection Agency). 2011. Surf your watershed. Washington, D.C. At: <http://cfpub.epa.gov/surf/locate/index.cfm> (Accessed 14 January 2014).

Division of Nature Preserves, Indiana Department of Natural Resources. 2007. Endangered, threatened, and rare vascular plants of Indiana. Indianapolis, Indiana. At: <http://www.in.gov/dnr/naturepr/> (Accessed 8 September 2012).

Rothrock, P.E. 2004. Floristic quality assessment in Indiana: The concept, use and development of coefficients of conservatism. Final Report for ARN A305 4 53, EPA Wetland Program Development Grant CD975586 01. 96 p. Indianapolis, Indiana. At: <http://www.in.gov/idem/water/planbr/401/publications.html> (Accessed on 24 June 2011).

Check recent editions of the *Proceedings* for additional examples.

Footnotes.—Footnotes are permitted only on the first printed page to indicate current address or other information concerning the author. These are placed together on a separate page at the end of the manuscript. Tables and figures may not have footnotes.

Tables.—Tables should be double-spaced, one table to a page, and numbered consecutively. Most tables contain only three horizontal lines (see recent issues for examples). Do not use vertical lines, boxes, or shading. Include all pertinent information in the table legend at the top of the table (no footnotes).

Illustrations.—Figures submitted electronically should be at least 300 dpi and in JPEG format. You may pre-submit illustrations to Allen Press to be certain that they meet publication standards. Go to <http://verifig.allenpress.com>. The password is allenpresscmyk. Figures should be arranged so that they fit (vertically and horizontally, including the legend) the printed journal page, either one column or two columns, with a minimum of wasted space. When reductions are to be made by the printer, pay particular attention to width of lines and size of lettering in line drawings. Multiple photos assembled into a single plate should be mounted with only a minimum of space separating them. In the case of multiple illustrations mounted together, each illustration must be numbered (1, 2, etc.) rather than given letter (a, b, etc.) designations. In paper manuscripts for review, photocopies are acceptable, and should be reduced to the size that the author prefers in the final publication. Color plates can be printed, but the author must assume the full cost, currently about \$600 per color plate. Legends for illustrations should be placed together on the same page(s) and separate from the illustrations. Each plate must have only one legend, as indicated below: Figures 1–4.—Right chelicerae of species of *Centruroides* from Timbuktu. 1. Dorsal view; 2. Prolateral view of moveable finger; 3. *Centruroides* holotype male; 4. *Centruroides* female. Scale = 1.0 mm.

Page charges and reprints.—There are no page charges, but at least one of the authors must be a member of the Academy. Corrections in proof pages must be restricted to printer's errors only; all other alterations will be charged to the author (currently \$3 per line). Reprints are available only through the Allen Press and should be ordered (with payment) when the author receives the proof pages.

End of Instructions to Authors

Seeking Young Scientists

The Junior Grants Subcommittee is seeking applications for research proposals. If you know of high school students or teachers, please encourage them to apply for funding.

Junior Research Grant Proposals are being accepted until October 24, 2014 from high school students in grades 9-12. Grants are available for up to \$300 to fund

research projects. Complete instructions and forms are found on the IAS website [<http://www.indianaacademyofscience.org>] under Grants. Please direct questions to **Alice Heikens** (aheikens@franklincollege.edu or 317.738.8302).

Indiana College Biology Teachers Association

The Indiana College Biology Teachers Association will hold its annual Fall Meeting at Indiana University Southeast, in New Albany, IN, on October 17-18, 2014. The topic for this year is "Not Just The Facts: Incorporating Writing, Research, and Service Learning into a Biology Curriculum." Join us for dinner and a keynote speaker on Friday evening, and a morning of presentations and discussion on Saturday! For more information, please

contact **Sarah Mordan-McCombs** at smordan-mccombs@franklincollege.edu.

Dr. Sarah Mordan-McCombs
Assistant Professor of Biology
Chair, Department of Biology
Franklin College
(317) 738-8304

Indiana Junior Academy of Science

The Indiana Junior Academy of Science (IJAS) meeting and competition will be on **Friday, November 7, 2014 at Indiana University Bloomington**. Sponsored by the Indiana Academy of Science, IJAS is designed to encourage high school students to pursue an interest in science study and careers. The deadline to register is Wednesday, October 1. We encourage Indiana high schools to register and science teachers should accompany their students to the competition. October 1st is also the deadline for submitting abstracts for the two research based competitions. For complete information, please visit our website at <http://college.indiana.edu/science/academy/>. If you have questions please contact **Tina Gilliland**, Director at mgillila@indiana.edu or 812-855-5397.

Science learning and fun for all ages.

Hands-on activities galore and lab demos, talks, tours and more.

Learn with faculty and students from 9 participating IU science departments and special guests WonderLab and the Indiana Geological Survey!

For more information visit our website at <http://college.indiana.edu/science/sciencefest.shtml>. If you have questions please contact **Tina Gilliland**, IU Outreach Liaison at mgillila@indiana.edu or 812-855-5397.

FYI the IU Science Fest website will be updated within the next week with more detailed information. We're still working on promotional pieces, etc.

1ST ANNUAL IU SCIENCE FEST

Get ready for a day of educational fun with science!

IU's popular annual fall science open houses have morphed into one big science **EXTRAVAGANZA!**

Saturday, October 25, 2014

9 am – 3 pm

Indiana University Bloomington

Free and open to the public

Teachers and student groups welcome



-- **Tina Gilliland**
OUTREACH LIAISON
INDIANA UNIVERSITY
COLLEGE OF ARTS & SCIENCES
1600 East Third Street
BLOOMINGTON, IN 47401
PHONE: 812-855-5397
FAX: 812-855-2060
www.indiana.edu/~college/science/



**The Acoustical Society of America
Presents as part of the 168th Meeting in Indianapolis, IN**

**The New World Youth Symphony Orchestra
Susan Kitterman, Music Director; Adam Bodony, Music Director Designate
and Dr. Uwe J. Hansen FASA, Professor Emeritus of Physics, ISU**

Tutorial Lecture on Musical Acoustics, and Concert

MONDAY EVENING, 27 OCTOBER 2014 HILBERT CIRCLE THEATRE, 7:00 PM TO 9:00 PM

The Physics of Musical Instruments with Performance Illustrations and a Concert.

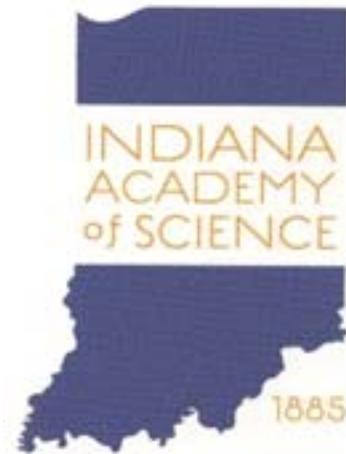
Uwe J. Hansen, Professor Emeritus of Physics, Indiana State University.
New World Youth Symphony Orchestra, Susan Kitterman, Music director

Musical Instruments generally rely on the following elements for tone production: a power supply, an oscillator, a resonator, an amplifier, and a pitch control mechanism. The physical basis of these elements will be discussed for each instrument family with performance illustrations by the orchestra. Wave shapes and spectra will be shown for representative instruments. A pamphlet illustrating important elements for each instrument group will be distributed to the audience. The Science presentation with orchestral performance illustrations will be followed by a concert of the New World Youth Symphony Orchestra. This orchestra is the most proficient of three performing groups of the New World Youth Orchestras, an organization founded by Susan Kitterman in 1982. Members of the Symphony are chosen from the greater Indianapolis and Central Indiana area by audition.

Tickets for Students (K through Grad School): No charge.

Tickets for general Public: \$ 15.00

Co-Sponsored by:



**Deadline for submission of copy for the January issue of the IAS Newsletter is
December 15, 2014**

Send copy to Donald G. Ruch at druch@bsu.edu

For IAS information, go to: www.indianaacademyofscience.org

Talent Search from page 3

Iman Mahoui was selected as the Female First Place winner for her project entitled “Targeting Brain Tumor Stem Cells Through Natural Antioxidants”, while **Adam Staszewski**’s “Identifying Pollen Cells Using Computer Analysis: An aid for Allergists, Immunologists, and Other Health Care Specialists” earned him selection as the Male First Place winner. They will receive a trip to the AAAS meeting in February and a one-year membership in the AAAS as part of their prize award. The judges also selected as winners: **Heya Kaakeh**, “Investigating the Culturing Environment of Glioblastoma Multiforme”; **Rita Cui**, “Factors that Influence Energies of Simple Hydrocarbons”; and **Chloe Sherry**, “A Study of the Effects of Transplantation

of Tissue from Planarian Flatworms Conditioned with Light-Shock Therapy into Naïve Planarian Flatworms”.

Next year’s finals will again take place in September, with papers due to the Director, **Lynn Thomas**, by May 1st.

-- Lynn Thomas , M.S.
Director
IAS Talent Search