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Policy News from NSC Alliance

Through the NSC Alliance partnership with the American Institute of Biological Sciences, we are pleased to provide NSC Alliance members with the following public policy update. With proper attribution to NSC Alliance, all material from these reports may be reproduced or forwarded. We encourage you to share this report with colleagues at your institution. Anyone interested in receiving copies of the NSC Alliance Washington Report may subscribe at www.NSCAlliance.org -- it's free!

If you have any questions or require additional information regarding any of the following items, please contact NSC Alliance director of public policy Dr. Robert Gropp at 202-628-1500 x 250 or at rgropp@aibs.org.

\$1 Million Available for Digital Innovation

The U.S. National Science Foundation (NSF) and the American Institute of Biological Sciences (AIBS) have launched the [Beyond the Box National Digitization Innovation Competition](#). The initiative will award \$1 million to the individual or team who develops a novel way to accurately and efficiently capture digital images of insect specimens and their associated data from a standard museum drawer of insects.

“The Beyond the Box Digitization Competition is designed to inspire the ingenuity of the American public, and to engage scientists, engineers, and everyday inventors, in an effort to solve a problem that has been slowing the rate of scientific discovery,” said Dr. James L. Olds, Assistant Director for the Directorate for Biological Sciences at NSF.

Whether through the beauty of a butterfly, agricultural significance of a honeybee, or the public health implications of a mosquito, insects influence the quality of human life every day.

“Insects are an amazingly diverse group of organisms that represent an overwhelming amount of living biological diversity on Earth,” said AIBS President Dr. Joseph Travis. “Very few insect species are pests and most play important roles in our ecosystems. They pollinate many of our crops, recycle nutrients and energy, and are sources of food for the other animals in the food chain. Unfortunately, despite all we know about insects, we have yet to describe all of the species of insects and, in fact, we are still discovering new species at a surprisingly high rate.”

There are believed to be more than 1.5 million identified species of insects on Earth. This is hypothesized to be three times the number of all other animal species combined. Amazingly, it is estimated that there are 10 quintillion (10,000,000,000,000,000,000) insects alive in the world. That’s more than one billion times the number of people.

“We share the planet with so many insects, wouldn’t it be wonderful if when we find a new one in our backyard we could take a picture of it and have that matched to an image in a museum somewhere. We could learn the name, understand what its role in the ecosystem is, or understand if it is an invasive species that might devastate our garden or nearby crop fields,” said Dr. Norman Johnson, Director of the Triplehorn Insect Collection at The Ohio State University, and the Chairman of the Planning Committee that established the rules for the competition.

For more than 250 years, scientists have collected millions of insects from around the world. These specimens are now held in more than 1,000 natural science collections in universities and museums across the United States alone. Unfortunately, many of these specimens remain unknown to science, education, natural resource and public health managers, and the general public. Quite simply, they have been locked away in cabinets.

“With technological advances in robotics, imaging, data capture and management, among other areas, it is now possible to develop new tools to digitally capture images of insect specimens and their associated data,” said Johnson.

“This is important work that is going to solve some persistent challenges, advance science and engineering, and is also likely to generate new tools that may have secondary commercial applications,” said Olds.

Through the Advancing Digitization of Biological Collections program, NSF has pledged \$100 million over ten years to support biodiversity collections research.

Other fields of biology have made progress digitizing specimens and sharing the data with research, education, and other user communities. Plant scientists, for example, have been developing innovative ways to image herbarium sheets. Despite these developments, insects have remained a challenge.

Johnson states, “we need to find a way to move from two dimensional to three dimensional images.”

Insects are delicate and have small labels associated with them that have information about the

specimen, such as its name and where it was collected. “These specimens and their associated data provide irreplaceable information about the history and nature of life on Earth, but it is not easy to capture this data in a cost-effective way that does not damage the specimen or label. We need a creative solution that will solve this problem,” said Johnson.

“AIBS is pleased to partner with NSF on this endeavor,” said Travis. “This is a unique opportunity to move science and technology forward with a leap instead of a small step.”

Official contest rules and guidance are available at beyondthebox.aibs.org. Inquires related to the contest must be submitted on the website, where the questions and answers will be posted.

The contest opened on 5 December 2014 and will close at 11:59 p.m. on 4 September 2015. A winner will be selected following a competitive judging process and on-site demonstration by the finalists.

Congress Releases Final Funding Plan for FY 2015

With only days left before a stopgap funding measure expires, Congress finally found agreement on federal funding levels for fiscal year (FY) 2015. The deal was reached more than two months after the fiscal year began.

The lead negotiators on the deal released a joint statement about the legislation: “As we close in on our December 11 deadline, we now ask that the House and Senate take up and pass this bill as soon as possible, and that the President sign it when it reaches his desk,” wrote Senator Barbara Mikulski (D-MD) and Representative Harold Rogers (R-KY). “The American people deserve the certainty of a continuously functioning and responsible government, and the knowledge that both parties in Congress have heard their demands and have worked cooperatively on their behalf.”

Notably, the National Science Foundation would receive a 2.4 percent increase over the current level, for a total of \$7.34 billion. This is higher than President Obama requested, but less than the amount passed by the House of Representatives. Research funding would grow by \$125 million and education programs would be boosted by nearly \$20 million. This would enable the agency to award 350 new competitive grants in 2015.

The bill has yet to be voted on by either chamber of Congress, but is expected to be considered soon.

Results of NSC Alliance Board Elections

Three new board members and two incumbent board members have been elected to the NSC Alliance Board of Directors.

- Dr. Robert J. Baker was re-elected to the Board of Directors. Dr. Baker is Director and Curator of Mammals and Genetic Resources in the Natural Sciences Research Laboratory at the Museum of Texas Tech University. His research centers on genome organization and evolution biology of mammals.
- Dr. Joseph A. Cook was re-elected to the Board of Directors. Dr. Cook is Director of the Museum of Southwest Biology at the University of New Mexico. His research interests include biotic conservation, historical biogeography, and systematics, speciation, and natural history of subterranean mammals.
- Dr. Shelley James is an Associate Botanist at the Pacific Center for Molecular Biodiversity at the Bishop Museum. Her research interests include the flora of New Guinea, herbarium curation and digitization, and conservation genetics.
- Dr. Gil Nelson is a Faculty Researcher at the Institute for Digital Information and Scientific Communication at Florida State University. He is also a writer who specializes in botany, natural history, and ecology in Florida.
- Dr. Rebecca Rundell is an Assistant Professor at the State University of New York College of Environmental Science and Forestry. Her research focuses on the patterns of biological diversification and the factors underlying those patterns.

NSC Alliance would also like to thank outgoing board members Dr. Warren Allmon, Dr. Hank Bart, Dr. James Hanken, Dr. Leonard Krishtalka, Dr. David Mindell, Dr. Bonnie Styles, and Dr. Quentin Wheeler for their service for the past six years. Per the organization's bylaws, representatives at large are limited to serving two consecutive three-year terms.

Help NSC Alliance Help You: Share Your Thoughts

Next week, the NSC Alliance Board of Directors will meet in Washington, DC for its winter meeting. Among the items on the agenda is a discussion of how the organization can work more effectively with its member institutions to advance our common interests. The Board is also interested in ideas for growing the membership. If you have any suggestions, please share them with NSC Alliance President Larry Page at lp@flmnh.ufl.edu or Robert Gropp at rgropp@aibs.org.

NPS Releases Draft Rule Regarding Curation of Archaeological Collections

The National Park Service is proposing changes to the regulations regarding curation of federally owned and administered archeological collections. The rule, if adopted, would establish definitions, standards, and procedures to dispose of particular material remains that are determined to be of insufficient archaeological interest. There is not currently a defined process for disposition of such materials.

The draft rule would apply to artifacts, objects, specimens, and other physical evidence, including human remains, of a historic or prehistoric resource and of historic or prehistoric cultures. It would not impact any material remains regulated by the Native American Graves Protection and Repatriation Act.

Public comment on the draft rule will be accepted until 17 February 2015. For more information, visit <http://www.gpo.gov/fdsys/pkg/FR-2014-11-18/html/2014-26839.htm>.

Paper Assesses the Value of Natural History Collections

An article in the December 2014 issue of *BioScience* considers the benefits of natural history collections and offers advice for the financial support of such collections. “Assessing the Value of Natural History Collections and Addressing Issues Regarding Long-Term Growth and Care” was written by several research staff at the Natural Science Research Laboratory at the Museum of Texas Tech University. Access the article at <http://bioscience.oxfordjournals.org/content/64/12/1150.abstract>.

Article Proposes Changes to Italian Collections

A new paper in *ZooKeys* looks at the future of Italian natural history collections. According to the paper’s authors, “Italian natural history museums are facing a critical situation, due to the progressive loss of scientific relevance, decreasing economic investments, and scarcity of personnel.” The proposed solution is to create a network of museums that function as a “metamuseum.” Read the article for free at <http://zookeys.pensoft.net/articles.php?id=4280>.

Bee Specimens Provide Insights on Pollinator Declines

An article in the New York Times highlights the role of entomological collections in understanding the decline of bee species. Although the plight of honeybee species has garnered much attention in recent years, many species of wild bees are also in trouble.

To understand why, a group of researchers looked at bee specimens from the American Museum of Natural History, the New York State Museum, and several collections housed at universities. The scientists documented that the diversity of bees in New England declined by 15 percent over the last 140 years.

By identifying the types of pollen stuck to the specimens’ legs, the researchers were able to document changes in the availability of native plant that are food sources for pollinators.

Read the article at <http://www.nytimes.com/2014/11/25/science/clues-to-bees-history-tucked-away-in-drawers.html?ref=science>.

Crowd Funding Campaign for Collections Digitization

Florida State University's Robert K. Godfrey Herbarium has launched a crowd funding campaign until 15 December in order to raise \$2,000 to support citizen science programs. The donations

will enable the herbarium to convene more than one hundred people from the Tallahassee region to learn about local biodiversity and the role of biodiversity specimens in research and education. Visit <http://spark.fsu.edu/Projects/121/Blazing-a-New-Trail-for-Sustainability-with-Citizen-Science> to donate and for more information.

Graduate Student Leaders Sought to Shape Science Policy

Applications are being accepted for the 2015 AIBS Emerging Public Policy Leadership Award. This award recognizes graduate students in the biological sciences who have demonstrated initiative and leadership in science policy. Recipients receive first-hand experience at the interface of science and public policy.

Winners receive:

- A trip to Washington, DC, to participate in the Biological and Ecological Sciences Coalition Congressional Visits Day, an annual event that brings scientists to the nation's capital to advocate for federal investment in the biological sciences, with a primary focus on the National Science Foundation. The event will be held in late spring 2015. Domestic travel and hotel expenses will be paid for the winners.
- Policy and communications training, including information on the legislative process and trends in federal science funding.
- Meetings with congressional policymakers to discuss the importance of federal investments in the biological sciences.
- A one-year AIBS membership, including a subscription to the journal *BioScience* and a copy of "Communicating Science: A Primer for Working with the Media."
- An award certificate and membership in the EPPLA alumni network.

The 2015 award is open to U.S. citizens enrolled in a graduate degree program in the biological sciences, science education, or a closely allied field. Applicants should have a demonstrated interest in and commitment to science policy and/or science education policy. Prior EPPLA winners and AIBS science policy interns/fellows are not eligible.

Applications are due by 11:59 PM Eastern Time on Sunday, 18 January 2015. The application can be downloaded at <http://www.aibs.org/public-policy/eppla.html>.

The Natural Science Collections Alliance is a Washington, D.C.-based nonprofit association that serves as an advocate for natural science collections, the institutions that preserve them, and the research and education that extend from them for the benefit of science, society, and stewardship of the environment. NSC Alliance members are part of an international community of museums, botanical gardens, herbariums, universities, and other institutions that house natural science collections and utilize them in research, exhibitions, academic and informal science education, and outreach activities. Website: www.NSCAlliance.org.

The NSC Alliance Washington Report is a publication of the NSC Alliance. For information

about membership in the NSC Alliance, please contact spotter@aibs.org.