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Testimony of
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On
Fiscal Year 2015: Driving Innovation through Federal Investments
Submitted to the
Committee on Appropriations
United States Senate

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The Entomological Society of America (ESA) respectfully submits this statement for the official record in support of federal investment in our nation's scientific and innovation enterprise. **ESA urges the Committee to provide the highest possible funding levels for science agencies in fiscal year (FY) 2015.**

As the Committee considers FY 2015 appropriations and the need to foster U.S. innovation, ESA urges you to ensure that funding allocations strongly support research, extension, and training activities at the Department of Agriculture's (USDA) National Institute of Food and Agriculture (NIFA), Agricultural Research Service (ARS), and Forest Service; the National Science Foundation (NSF); the National Institutes of Health (NIH); the Centers for Disease Control and Prevention (CDC); the Department of Defense (DOD); and the Environmental Protection Agency (EPA). While we appreciate the Committee's longstanding recognition of the importance of scientific research, ESA believes that increased investment is needed to ensure the U.S. remains the global leader in science and engineering. Robust federal support for research, extension, and training ensures that new knowledge and technologies will continue to grow our economy and improve the health and well-being of all Americans.

Advances in the sciences – including entomology – contribute to the development of innovative scientific solutions that help to address some of our most pressing societal needs related to food security, food safety, environmental stewardship, human health, and military readiness.

USDA's NIFA, ARS, and Forest Service support entomology research that expands our understanding of insect pests and contributes to the development of new biological approaches to pest management that protect agricultural crops as well as our nation's forests and grasslands from infestation and disease. In addition, entomology improves our knowledge of pollinator biology and factors affecting pollinator health and populations, helping to ensure safe, reliable crop production that meets the needs of a growing world population.

NSF-supported entomology research on insect anatomy, classification, and genetics better our understanding of evolution and biodiversity. Knowledge of insect behavior and the dynamics of insect populations is an important component to the study of ecosystems and the environment. Additionally, insects play a critical role in our ability to explore the underpinnings of biological

processes at the cellular and molecular level. Insects including *Drosophila* flies have long served as model systems for animals that scientists use to study biochemistry, microbiology, molecular biology, and toxicology, among other subjects. For example, a recent NSF-funded study on the behaviors of *Drosophila* vinegar flies¹ has advanced scientists' knowledge about neurobiology of insects, animals, and humans. The results of the research may also help inform the field of robotics; scientists believe that modeling the functions of the insect brain can help develop algorithms able to control robotic systems.

Entomology-related projects supported by the NIH and CDC are critical to understanding the biological relationship between insect vectors and the infectious diseases they carry – such as dengue, malaria, West Nile virus, and Lyme disease. The study of insect vector biology can significantly aid in the development of innovative strategies to monitor and predict outbreaks, prevent disease spread and transmission, and more reliably diagnose and treat infection.

In addition, DOD-supported entomology research and development activities ensure that U.S. military personnel are safe from insect-borne diseases. This work is necessary to protect our troops from the threat of infectious diseases – including malaria, typhus, yellow fever, and most recently leishmaniasis in Operation Iraqi Freedom – which have affected the health and readiness of U.S. soldiers in every major conflict since the Civil War.

EPA utilizes scientific expertise and data, including knowledge gained from entomological sciences, to set maximum tolerated residue levels and to register pesticide products as effective and safe. Entomology-related techniques are important components of Integrated Pest Management (IPM), which uses science-based, environmentally friendly, comprehensive methods to take preventative action against pests, often resulting in lower costs and a more targeted use of pesticides. EPA's activities in this area also include the development of educational information and outreach to encourage the use of IPM and other reduced-risk methods of controlling pests.

ESA, headquartered in Annapolis, Maryland, is the largest organization in the world serving the professional and scientific needs of entomologists and individuals in related disciplines. Founded in 1889, ESA has nearly 7,000 members affiliated with educational institutions, health agencies, private industry, and government. Members are researchers, teachers, extension service personnel, administrators, marketing representatives, research technicians, consultants, students, pest management professionals, and hobbyists.

Thank you for the opportunity to offer the Entomological Society of America's support for federal science agencies. Increased investment by the government in research and development is needed to foster the next innovative breakthroughs that will be critical to ensuring the prosperity of our society. For more information about the Entomological Society of America, please see <http://www.entsoc.org/>.

¹ van Breugel, F, et al. *Plume-tracking behavior of flying Drosophila emerges from a set of distinct sensory-motor reflexes*. Current Biology (2014).