Jody Gangloff-Kaufmann
Urban entomologist
Senior Extension Associate, New York State Integrated Pest Management Program

Dr. Gangloff-Kaufmann earned her Ph.D. at Cornell University and went on to specialize in IPM for urban and public health pests such as wasps, ticks and bed bugs. Based on Long Island, she has spent the past decade working closely with government and non-profit agencies in the City of New York to advance the awareness about bed bugs and develop protocols, guidelines and recommendations for their treatment. Dr. Gangloff-Kaufmann served on the New York City Bed Bug Advisory Board and currently serves on the Nassau County Bed Bug Task Force.

Bed Bugs

Issue:
It's conceivable that one day everyone you know will have dealt with bed bugs in one way or another. Bed bugs have made a worldwide comeback, infesting homes, hotels, hospitals, dorms, labs and airports. They cause a variety of physical health, mental health and economic consequences. Bed bugs are not known to transmit any diseases to humans, although their bites could present opportunities for antibiotic resistant infections like MRSA to take hold. Heavy infestations of bed bugs often lead to stress and sleeplessness, and have been shown to cause anemia in children and the elderly. Bed bugs also feed on rats, bats, rabbits, guinea pigs and birds, especially swallows and chickens, and have become an emerging problem among organic chicken farmers. Although not quantified, economic losses from health care, reduced productivity, lost wages, lost revenue and extermination can be substantial.

Solutions:
The best strategy to deal with bed bugs is prevention and integrated pest management (IPM), which combines a variety of practical techniques and products that pose the lowest risk to our health and the environment. Extreme heat can kill bed bugs, as can pesticide products such as silica gel dusts.

Status:
More research is needed into the basic biology of bed bugs. There are only a handful of scientists studying bed bugs, and nearly every one works in the land grant system. Bed bug research is not supported by either the National Institutes of Health nor the National Science Foundation, so USDA funding is absolutely critical. The EPA recently awarded $550,000 of grants to support five bed bug education and outreach projects.

Resources:
Cornell University Pesticide Management Education Program: 607-255-1866
Integrated Pest Management for Multifamily Housing: www.stoppests.org

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Mosquitoes

Issue:

The mosquito-transmitted diseases malaria and dengue impact more than 530 million lives each year, causing more than 3 million deaths and immeasurable suffering in over 200 countries worldwide. These and other emerging vector-borne diseases - in which pathogenic microorganisms are transmitted from person to person via insects or animals - are increasing in number and impact as world travel increases, public health and control programs fail, and climate change alters mosquito ecology and habitats. Their threats in the United States are also on the rise with the introduction of Asian tiger and Asian bush mosquitoes, which are transmitters of at least 22 different viruses that impact human and animal health, including West Nile and dengue viruses, encephalitis and dog heartworm.

Solutions:

Cornell entomologists are studying several new strategies to control disease transmission. This includes researching the reproductive biology of mosquitoes to develop innovative control methods, such as reducing egg production and curbing the female’s appetite for blood. They are also developing forecasting models for comparative study of the impacts of climate change on vector-borne diseases, and are tracking the potential introduction and impact of a new and potentially deadly mosquito-transmitted virus, Chikungunya, to the United States.

Status:

There is a critical need to develop new and novel approaches to understanding, managing and eliminating these deadly vector-borne diseases. USDA funding is crucial for surveillance and control of anthropod disease vectors.

Resources:

Ecology and Evolution of Infections and Disease: www.eeid.cornell.edu
American Mosquito Control Association: www.mosquito.org

Laura Harrington
Associate Professor of Entomology, Cornell University

Dr. Harrington became interested in vector-borne diseases after contracting both dengue and malaria while living in rural Thailand. Her research focuses on the biology, ecology and behavior of mosquitoes that transmit human diseases. She is currently studying the feeding behavior of mosquito vectors of dengue fever and West Nile virus, human and animal-mosquito interactions, mosquito reproductive biology and behavior. A faculty fellow with the David R. Atkinson Center for a Sustainable Future, she recently began a cross-disciplinary project on climate change and West Nile virus risk to human health in the United States. In addition to research and outreach, she teaches the courses Medical and Veterinary Entomology, and Plagues and People, as well as seminars with international service elements, Malaria Interventions in Ghana, and Health Care in Honduras.

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There is currently no vaccine for dengue and no cure.
There are four dengue virus serotypes, which cause more illness than any other insect-borne viral disease.
More than 2.5 billion people are at risk each year, and recent epidemics have affected millions.
Dengue outbreaks have already occurred in Hawaii and Florida.
Chikungunya causes similar symptoms to dengue, such as fever, nausea, rash, joint ache and extreme fatigue.