

INTEGRATED PEST MANAGEMENT

# insights



July 2015

# Bed Bug Trend Heats Up

Bed bugs are now a top worry for property managers.

## Bed Bug Treatment Costs



Visual inspection	\$0-\$200
Canine inspection	\$300-\$600
Insecticide treatment	\$500 per apartment* \$200-\$400 per room*
Whole unit heat treatment	\$800-\$1,200 per unit
Mattress encasements	\$70-\$150 per set
Monitoring devices	\$20 for a set of 4
Containerized fumigation	\$1,000 per treatment

\*Three treatments are recommended at 2-week intervals

Sources: Molly Steadfast, Virginia Tech University and Northeastern IPM Center. Photo: Lihua Lu.

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Bed bugs are showing up in hotels and apartments, and require effective prevention and management strategies without scaring off potential guests and residents. The subject is so popular that a recent webinar attracted nearly 1,700 participants. Another 2,700 watched the recording on YouTube during a recent seven months.

Attendees of the sought-after online screenings have learned how to identify bed bugs, detect them early, prevent their spread, and educate staff and residents about them.

The webinar was hosted by the Northeastern IPM Center with funding from the US Department of Housing and Urban Development's Office of Healthy Homes and Lead Hazard Control, and the USDA National Institute of Food and Agriculture. Dini Miller and Molly Steadfast, scientists at Virginia Tech University, presented the session.

## Background

Adult bed bugs are about the size of an apple seed. They're wingless, dorsally and ventrally flattened, and have piercing and sucking mouthparts. They only consume blood--not skin or furniture. They leave bites on humans--and on furniture they drop molted skin and feces that look like black dots.

"The preventative steps needed to avoid bed bugs are going to be part of our lives," said Steadfast. "You're going to need to calmly and rationally cope with the possibility of bed bugs from this point forward."

### **Active early detection**

Managers of apartments, hotel rooms, single-family homes, hospitals, classrooms, and dormitories all can take active measures before bed bugs arrive. Proof that your property has been inspected for bed bugs will protect you from potential lawsuits and unwanted negative publicity, as well as control costs.

Residents who are elderly or mentally or physically disadvantaged may be unable to recognize the signs of an infestation.

### **Management**

Start with IPM: Inspect and monitor. Scale the treatment to the level of infestation.

Heat chambers will work. They're expensive, about \$6,000 to purchase, but worthwhile for multi-family housing units. Suppose you have a sofa that the public uses in a facility. Put a sofa in it, heat it, and it reliably kills bed bugs.

The clothes dryer is very effective. Apartment owners can have a couple of them on site reserved solely for bed bug duty.

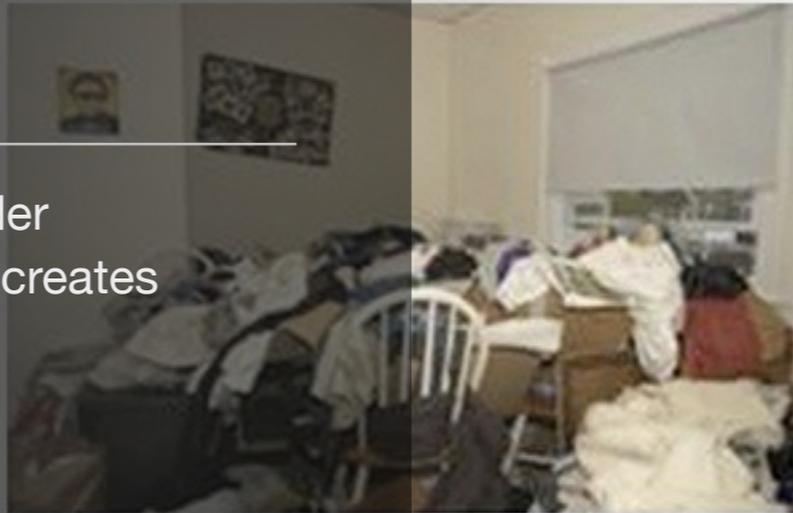
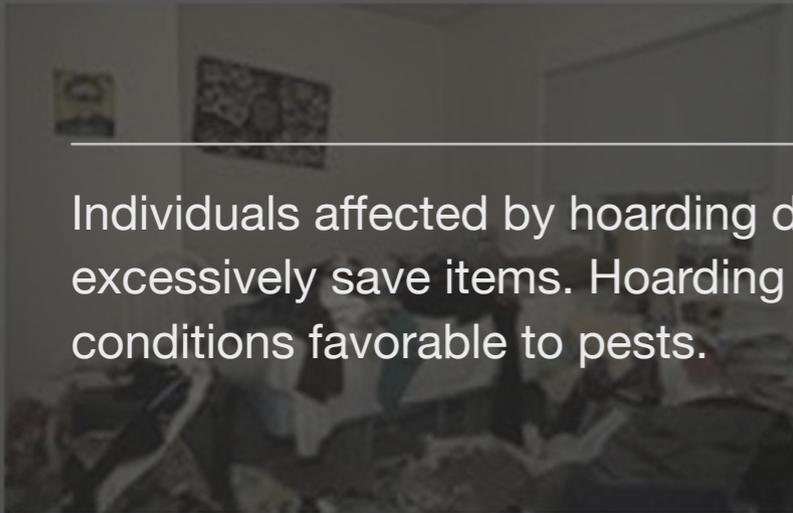
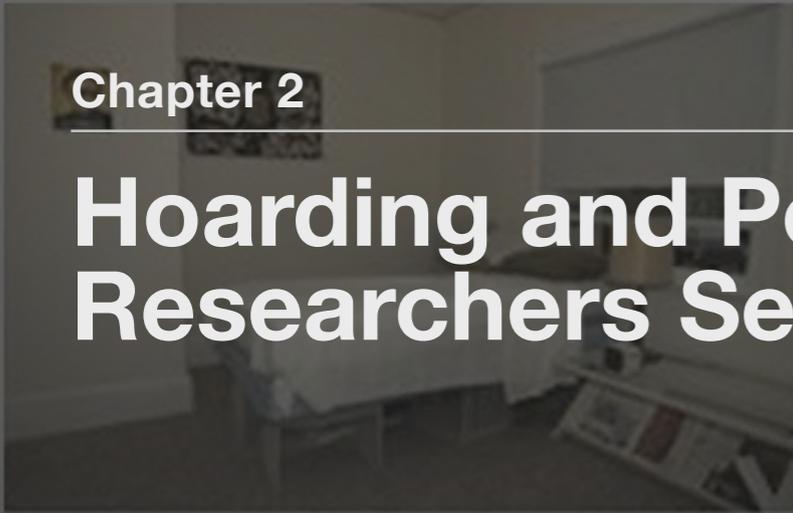
Miller recommends trying a desiccant dust for a safe and long-lasting alternative to harsher chemical sprays and dusts. Some desiccant dusts can irritate people and animals, so only an experienced technician should apply them.

A good rule of thumb for bed bug treatment: If it sounds too good to be true, it probably is. If any product was as great as it sounds we would all be using it.

## Chapter 2

# Hoarding and Pests: Researchers See Link

Individuals affected by hoarding disorder excessively save items. Hoarding also creates conditions favorable to pests.



# Hoarding and Pests: Researchers See Link

Hoarding disorder occurs in an estimated two to five percent of the population, according to the American Psychiatric Association. Affected individuals excessively save items and have persistent difficulty parting with possessions. Resulting clutter disrupts work and living spaces and creates health and fire hazards. Hoarding also creates environments favorable to pest infestations.

Nearly one in twenty residents of the Boston Housing Authority (BHA) have excessive clutter or hoarding issues, according to program coordinator John Kane. This number is consistent with the psychiatric association's national statistics.

"Property Managers were seeing hoarding but had no great way to respond," said Kane.

With funding from the Northeastern IPM Center, BHA led a team of researchers to look closer at levels of clutter and incidences of pest infestations. After reviewing nearly 9,000 inspection forms and control reports and surveying 1,619 units, they found that among the five percent of residents with hoarding issues, pest visits were more than doubled.

Kane trained his staff to use a "clutter image rating scale" (CIR) during housekeeping inspections and identified clutter issues, including improvements.

The team developed a plan to help residents assess situations, set goals, enhance motivation, reduce harm, plan safety measures, organize, solve problems, and to sort and make decisions. Staff also provided resources and referrals. Residents with hoarding behaviors who participated in weekly intervention training reduced their CIR scores by one point or more.

The BHA researchers plan to assess this case management model and intervention plan. They also will conduct staff training and offer a webinar in collaboration with the Center's StopPests in Housing Program to train a wider audience on reducing hoarding in affordable housing.

One of the basic premises of integrated pest management is preventing a pest infestation before it starts. Kane and his team hope to provide guidance on helping individuals navigate a social and psychological condition, like hoarding, something not often thought of as a barrier to integrated pest management.

## Chapter 3

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# IPM with a Focus on People

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When you think IPM, you might first picture agriculture, crops, and turf. Or perhaps insect biology and behavior. However, there's an important human component.



# IPM with a Focus on People

When you think IPM, you might first picture agriculture, crops, and turf. Or perhaps insect biology and behavior. However, there's an important human component: the social and cultural factors in the relationship between people and pests.

Pests often disproportionately affect minority populations and underserved communities. Poor housing conditions lead to chronic pest problems, compounded by (sometimes) unresponsive landlords, financial constraints, low levels of education and, in many cases, language barriers. This leaves these groups at high risk for poor pest management outcomes and increased pesticide exposures.

The IPM Program at Penn State University (PSU) is paying attention. They work extensively with the Hispanic or Latino population, the largest and fastest growing minority in the U.S. Since 2013, the Northeastern IPM Center has funded their work with over \$140,000 in grants for a number of related projects.

This group's previous work on IPM in schools made them realize that to keep children—and families—healthy and pest-free, institutions needed to work on a community-wide approach.

"You can't separate what happens at school from the home, the work place, and other environments. You need to address all of them if you really want to

succeed," said Lyn Garling, program manager. "This is especially true in the case of bed bugs."

They soon learned that urban IPM must deal with very complex social systems, with different situations and needs.

The PSU group had to understand how the Hispanic community is organized, and address critical cultural and trust issues—not only the language. Much of their work is focused on developing and promoting culturally-effective IPM outreach and education. Creating partnerships across the community and with other institutions such as Rutgers University has been a key part of this process.

In addition to providing written materials in Spanish, they realized that people need a personal contact — someone they can trust, ask questions to, and who can show them how to access the right information.

"We learned to go into communities and develop personal relationships," said Maria Gorgo-Gourovitch, the former Latino coordinator of the Philadelphia School and Community IPM Partnership. "It was a great process of mutual learning. We took this as a train-the-trainer opportunity. This way, we could increase the program's impact and empower people."

Such a proactive approach is one of the important lessons that this program has to offer.

"We have consciously developed programs, looked for funding, and gone out to do work and reach these communities," said Ed Rajotte, IPM coordinator for Penn State Cooperative Extension. "It is not by mistake. You have to be intentional."

# Experts Gather Science of Pest Exclusion

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Excluding pests from structures is vital to IPM and even though obvious to many, this basic component is often overlooked.

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# Experts Gather Science of Pest Exclusion

Excluding pests from structures is vital to IPM and even though obvious to many, this basic component is often overlooked. If you do not address the defects that allowed a pest entry, it will severely limit successful control.

“Little is known about how pests disperse and establish infestations, especially in aging structures,” said Jody Gangloff-Kaufman, program coordinator at the New York State Integrated Pest Management Program. “Our group is going to examine the science of excluding pests from buildings.”

In April, the Northeastern IPM Center awarded a grant to their team, the Scientific Coalition for Pest Exclusion (SCOPE) working group.

“Decaying doors, broken or missing door sweeps and large openings around utility lines are often cited as pest access points and are the target of pest exclusion,” Gangloff-Kaufman said. “The SCOPE group will network with and gather existing data from academia, pest management, and building maintenance and assess what really works.”

Their first priority is to develop an interior and perimeter pest exclusion checklist for property managers. A second and related priority is to examine the ways that weatherization and pest exclusion overlap or conflict. The group plans to release the results of their work on their website, through extension materials, and in social media.

# New Research Entangles Bed Bugs

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Scientists are learning new secrets of bed bug biology that could help us lure and trap them.

As bed bugs have become more prevalent, so have studies to find out what attracts them. Research has shown that a type of dry-ice lure is effective, but the lack of availability of dry ice is a problem. In the laboratory of Changlu Wang, an entomologist at Rutgers University, a group has investigated other potential substances and found yeast and sugar to be equally attractive. Their widespread availability gives them an advantage for homemade traps. Unfortunately, given the choice, bed bugs will still prefer live humans over this lure.

In addition to luring bed bugs, Wang and his team are also studying bed bug vision and mechanoreception. Subtle differences in texture and color can change the efficacy of bed bug monitors. They find bed bugs prefer red and black colored harborages. Bed bugs also have a preference for rough surfaces, like paper surgical tape, but will avoid fuzzy textures, like felt, which are too coarse for the bed bugs to move through easily.

Wang's team incorporated their findings about bed bug biology into an IPM approach. They have documented the success of the IPM program they developed for bed bugs in an apartment complex. Their method involved monitoring and then bi-weekly chemical and non-chemical treatments based on

bed bug counts. They reduced bed bug numbers by 98 percent and brought the number of infested apartments down from 15 percent to 2 percent after 12 months.

Wang and his team are going full circle in understanding pest biology, testing their findings, and measuring results. That's called practicing IPM.

Chapter 6

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# Neonics Correction

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The article "IPM and Pollinators" in the April 2015 issue of *IPM Insights* incorrectly stated that neonicotinoid pesticides are not soluble in water.



# Neonics Correction

The article “IPM and Pollinators” in the April 2015 issue of IPM Insights incorrectly stated that neonicotinoid pesticides are not soluble in water. In fact, the solubility of imidacloprid in water is 610 milligrams per liter at 20 degrees Celsius. See <http://npic.orst.edu/factsheets/imidacloprid.pdf> and Hladik, M.L., D.W. Kolpin and K.M. Kuivila. 2014. Widespread occurrence of neonicotinoids in streams in a high corn and soybean producing region, USA. Environ. Pollution 193:189-196. Our thanks to readers who spotted this error.

*Got a question? Want to comment? Send us feedback! We're listening!*

# Resources

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Resources from the July 2015 issue of *IPM Insights* on pest inspection, exclusion, hoarding, and keeping pests out of buildings by design.



# Resources

This pest inspection checklist, designed for schools, can be applied to any structure.

<http://neipmc.org/go/kxsk>

A free PDF e-book for architects and builders on ways to keep pests out of buildings by design

<http://neipmc.org/go/LXLQ>

Hoarding disorder fact sheets, interventions, treatment information, and forms

<http://neipmc.org/go/GJMj>

Scientific Coalition for Pest Exclusion on Facebook, or updates via e-mail

<http://neipmc.org/go/WgpD>

# Asthma Meets Its Match

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A new partnership could bring healthier outcomes at urban sites with high levels of asthma.

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A new partnership could bring healthier outcomes at urban sites with high levels of asthma.

It's long been established that cockroach allergens have the greatest impact on childhood asthma in urban settings. A 2005 National Institutes of Health study found that cockroach allergens can worsen allergy symptoms more than dust mite or pet allergens.

The Northeastern IPM Center's StopPests in Housing Program has worked with John Dowling at the Michigan Department of Community Health to train health educators at sites in Lansing and Flint identified with high levels of asthma.

The program delivers the same, high-quality pest prevention training offered nationwide, with participation from community health workers who already have built relationships at those sites. Any group that receives **StopPests trainings** can request coordination between trainers and community health workers.

# Credits

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## Photo Credits

Cover: Center for Sustainable Landscapes at Phipps Conservatory and Botanical Gardens, Pittsburgh, PA / Kevin Judd

Bed Bug Trend: Bed Bug Treatment Costs table, Kevin Judd / Sources: Molly Steadfast, Virginia Tech University and Northeastern IPM Center / Photo: Lihua Lu

Hoarding and Pests: The Clutter Image Rating (CIR) scale was created by the Hoarding Center of the International Obsessive Compulsive Disorder Foundation to better diagnose and classify symptoms of hoarding.

IPM with a Focus on People: Extension educators in Pennsylvania reached out to the Latino community with bilingual English-Spanish training about IPM. / Lyn Garling, IPM Program at Penn State University

New Research Entangles Bed Bugs: Bed bug illustration, Chris Gonzales

Neonics Correction: A scientist samples water for testing. Source: iStock

## Article Credits

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“IPM with a Focus on People” by Dennise Belmaker

“Experts Gather Science of Pest Exclusion” by Susannah Reese

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## Northeastern IPM Center

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