

1. Title:
Educational Outreach for the Prevention and Management of Bed Bugs

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4. Abstract:
In the past 15 years, bed bugs have made an astounding comeback all across the United States. Bed bugs are small blood-feeding insects that invade human habitats, specifically the home, and thrive in places where people sleep. Since bed bugs were nearly absent for 40 years in the US, very little was known about their biology and current level of pesticide tolerance. In 2010 the news media focused great attention on bed bugs, which increased the public's familiarity with this pest. However, educational needs for dealing with bed bugs are still overwhelming, and include outreach to cooperative extension educators, Master Gardeners, pest control professionals, facilities managers, social workers, medical professionals, travelers, college students and their families, landlords, tenants of rented properties, and just about everyone else. The people most vulnerable to bed bugs are those in multiple unit buildings, the elderly (often living alone), and those living in assisted or group homes. Elderly, disabled and disadvantaged individuals who have fewer resources and sometimes lack the capacity to recognize or deal with bed bugs are more commonly living with bed bugs.

The New York State IPM Program has approached the bed bug issue from a variety of angles. Staff members are frequently called upon to help individuals, organizations and agencies deal with bed bugs in homes, facilities, and schools. Through phone calls, presentations, sample identification, development of educational materials and other outreach, the NYS IPM Program is working hard on raising public awareness about this pest and means of controlling it.

In a broad effort to provide outreach to cooperative extension educators and other trainers we maintain a Frequently Asked Questions about bed bugs page on the NYS IPM program website and have reworked the Traveler's Cards for easy ID of bed bugs. Many training sessions were held in 2011, reaching trainers and audiences such as social workers and medical service providers.

5. Background and justification:

Bed bugs, *Cimex lectularius*, are blood-feeding parasites of humans and some animals. Bed bugs cannot fly or jump, but they run and they are excellent at remaining undetected in the human environment. These insects, once commonplace in homes and hotels, nearly

disappeared from developed countries by the 1950's due to the use of residual insecticides. A steady resurgence of bed bugs became evident in the late 1990's, and since this time research and outreach from various sources have expanded yearly. But so have the bed bug infestations.

Throughout the United States people are facing bed bug infestations in their homes, dormitories, hotels, and other types of housing and accommodations. According to a survey of the pest control industry conducted in 2005, the resurgence of bed bugs has been consistent across the US (Gangloff-Kaufmann et al. 2006). Although bed bugs are not vectors of disease, they do have significant health effects for sufferers. Bed bugs cause high levels of anxiety, stress, and loss of sleep when they infest the home. While reactions to bites vary among individuals, bites often result in itchy welts that may lead to secondary infections from scratching. Anemia has been reported for the elderly in heavy infestations. Bed bugs have also been identified as an asthma trigger. However, the overexposure to pesticides, especially from self-treatment, may be a greatly underestimated public health risk.

Extension programs in many states have responded with fact sheets, new research programs, and educational opportunities. In addition, health departments and municipal agencies in a few cities have taken steps to help their citizens with bed bug problems. Still the problem appears to have worsened over the past few years. Complaints to the New York City help line, 311, have increased from about 540 in 2004 to more than 8800 by the first half of 2008. Field collected bed bugs from various parts of the US are known to be resistant to commonly used pyrethroids (Romero et al. 2007). Although bed bugs are not currently known to vector disease, their public health impact can be seen in the numbers of bites victims suffer, the emotional stress of fighting them, the financial strain placed on families and people when money is tight, and the potential for pesticide overuse. Even with the improved level of communication among pest control professionals and university researchers, and increased awareness and skill level, bed bugs continue to be among the most frequent and challenging pests to deal with. This project addresses the needs of the pest control industry, municipal agencies, and the general public for help with bed bug problems. In particular, focusing on underserved audiences, such as shelters and group homes, may have a significant impact on the protection of human health while indirectly benefitting others.

6. Objectives:

- a. **To improve awareness of techniques for the prevention and management of bed bugs.**
- b. **To increase audience (and stakeholder) ability and confidence in managing bed bug outbreaks. Audiences include non-traditional extension audiences.**
- c. **To collaborate statewide, regionally and nationally, sharing bed bug resources, research, and educational opportunities.**

7. Procedures:

- a. **Improving awareness of bed bugs –**

Through collaboration with the New York City Dept of Health and Mental Hygiene and NYC Dept of Homeless Services, IPM staff developed the “Guidelines for Prevention and Management of Bed Bugs in Shelters and Group Living Facilities”. This guide provides the landlord or facilities manager with proper bed bug management steps. It instructs residents on how to prepare, do laundry and clean, and how to keep their family safe from bed bugs. It provides necessary information to social and medical service providers to help their clients who have bed bugs. The guide is applicable to a variety of multiple unit dwellings, such as college dormitories, SROs, and temporary housing. It is meant to compliment the IPM program of the professional pest manager. Along with the Guidelines, a separate flyer was developed specifically to be handed out to clients of shelters and group homes. This flyer titled “How to Protect You and Your Family from Bed Bugs” addresses the particular responsibility that each of us plays in bed bug prevention and management, from not picking up discarded items and furniture, to cleaning and organizing. As a final part of this project, a poster was developed to engage the target audience. The poster has been modified and will be used in a separate HUD/EPA/ Northeastern IPM Center project in Baltimore and Boston.

Anyone can pick up bed bugs in their daily lives and through traveling. For those who travel IPM staff revised the Bed Bug Traveler’s Cards, which summarize the most important points about bed bugs in hotels and accommodations and provide images for identification on the spot. These cards also have tips for the traveler to inspect their own hotel room. Accompanying the Traveler’s Card is a general ID card. They are colorful, wallet sized, attractive and simple.

Resources found on the NYS IPM program website continue to be popular with visitors to the site. The most popular is the Frequently Asked Questions document (with over 160,000 unique views in 2011) that seeks to provide answers to each and every question a bed bug sufferer might have. It is a comprehensive guide to provide answers and visual information about bed bug appearance and other physical evidence of them. It guides the reader on where to look for bed bugs and also how to manage them in belongings and in the home. The publication titled “Guidelines for Prevention and Management of Bed Bugs in Shelters and Group Homes” is our second most popular bed bug resource with nearly 20,000 unique views in 2011. The original fact sheet developed by IPM staff titled “Bed Bugs are Back! An IPM Answer” still remains popular. The fact sheet contains basic bed bug information and control tips, but needs to be updated. Traveler’s Cards are also popular. The development of both written and visual materials for bed bug education has been a primary activity of the IPM Program.

b. Increase audience ability and confidence to deal with bed bugs–

Bed bugs are notoriously difficult to control due to their insidious nature and ability to move and be transported. The use of integrated pest management is dictated by the nature of bed bugs, because no amount of pesticides, cleaning, or disposal of belongings, alone, will control them. Through the development of Power Point presentations, delivery of seminars and workshops, and the dissemination of educational materials, IPM staff members have reached out to share knowledge and experience with audiences. Seminars

and workshops have been delivered to audiences including staff of Columbia University, New York pest management professionals (PMPs), nurses and social workers who work with the disabled, the Coalition for the Homeless, and the NYC Department of Health and their affiliates. An in-service was offered in Putnam County to area extension educators and PMPs that included a lecture and two hands-on sessions to teach bed bug scouting and identification. Additionally, the Nassau County District Attorney's office and community activists in Nassau County organized a roundtable discussion of bed bug problems in low-income and public housing areas of Hempstead, NY, and what can be done to help.

The Nassau County BB Task Force planned, organized and held a Bed Bug Summit on January 10, 2011. There were 205 attendees representing a diverse audience of health care workers, social services providers, landlords and property managers, sanitation workers, local unions, public housing officials and more. Feedback from audience surveys indicates that the workshop was valuable and informative. The group continues to meet every three or four weeks, and two additional public workshops have been scheduled for the Village of Freeport (but open to all). In addition, through the County Executive's office and two interns, a Nassau County bed bug website was launched. Members of the committee (including me) met, reviewed content, and I supplied some images.

c. Collaborate statewide, regionally and nationally –

Bed bugs will only ever be brought under control through collaboration of those involved and those potentially affected. IPM staff members have been interested in raising the skill level of fellow extension agents in providing education and help for their stakeholders.

National Press Club and Legislative Staff policy briefing meeting on bed bugs and mosquitoes.

EPA Bed Bug Summit

Jody Gangloff-Kaufmann of NYS IPM attended the Second EPA Bed Bug Summit in Washington DC in February, 2011. On a panel titled "Consumer Education and Communications" she gave a presentation about the Nassau Task Force and the progress that has been made through a grassroots effort. More than 400 bed bug experts, policy makers, and public health officials gathered together for this summit to discuss the needs and possibilities for prevention and control of bed bugs. Breakout sessions helped participants focus on several key questions and issues. The outcome of this summit is that it started a national dialogue between scientists and federal agencies, and facilitated the networking needed for those concerned about and working with bed bugs.

Outreach events for health care providers for bed bug prevention and management:

8. Results and discussion:

Bed bugs are unique in the realm of pest management in that their control absolutely depends on using integrated strategies, and these strategies always involve work on the

part of the person or people whose homes are infested. Outreach and education for bed bug management has therefore allowed us to steer a lot of activity directly to the public, and organizations that provide social and medical help to the public, in addition to typical audiences, such as PMPs. While the technology for bed bug control is constantly evolving and improving, it seems that a majority of PMPs have become skilled in bed bug control.

The public, specifically individuals who are affected by bed bugs, usually need to research the topic to understand what to do. The outreach provided by NYSIPM in New York and beyond is significant. Educational messages about bed bugs include strong discouragement of the use of “bug bombs” and other over the counter pesticides, because such methods are usually ineffective. By teaching the individual about the importance of their role as home organizer and cleaner, and encouraging them to hire pest control services, it is expected that the use of pesticides will be reduced. By teaching the individual ways and reasons to cooperate with PMPs, such as home preparation for bed bug treatments, pest management becomes more effective, resulting in reduced economic and health risks. Also by informing agencies, organizations, and people about ways to clean belongings and furniture, bed bug management becomes more effective, financial burdens are reduced (from replacing items), and the spread of bed bugs is reduced by not allowing infested items to be scavenged. This work has the potential to affect any person who visits the NYS IPM website for bed bug information.

Specific outcomes of bed bug work

In 2011, the New York City Bed Bug website has expanded as per the suggestions generated from the Bed Bug Advisory Board Report of 2010. NYC continues to expand efforts, including requiring residents to bag discarded mattresses, training housing inspectors to better inspect for bed bug infestations, and training public housing pest managers to manage bed bugs more effectively. Housing violations, where landlords are cited for not making attempts to manage bed bugs, are actually going down in parts of New York City. This indicates that landlords are taking action more often than before.

A significant outcome from the EPA Summits in 2010 and 2011 is the joint statement from CDC and EPA declaring that bed bugs are a pest of public health significance and providing funding to support bed bug research initiatives and outreach projects. See http://www.cdc.gov/nceh/ehs/publications/bed_bugs_cdc-epa_statement.htm

In 2011 IPM staff reached nearly 2,000 directly with bed bug management education. These audiences included the general public, pest management professionals, health care professionals, school environmental safety staff, students, property managers, housing inspectors, the media, Congressional aides, school nurses, canine inspection teams, and municipal officials.

Presentations for 2011:

Presentations for 2011:			audience	number
1/10	“Bed Bugs: From Basics to Boardrooms”	Uniondale, Nassau County, NY	Various public, landlords, health care, social services	205
1/28	“Embracing IPM in 2011-	Atlantic City, NJ	Pest management	300

	Political and Practical Aspects”		professionals	
3/4	“Bed Bugs – What You Need to Know”	Brentwood, Suffolk County NY	Mental health nurses and professionals	100
3/8	“Bed Bugs: What You Need to Know”	Bethpage, Nassau Co. , NY	Domestic violence shelter staff	12
3/16	“Bed Bugs Go to School”	Canandaigua, Tioga co. NY	BOCES health and safety staff	30
3/21	“Bed Bugs Go to School”	Garden City, Nassau Co., NY	School nurses	55
3/29	“”Bed Bugs”	Polycom to Ithaca	Students of Applied Entomology	12
3/31	“The Bed Bug Battlefield – What Property Managers Need to Know”	Green Buildings show, Javits Center, New York City	Unknown but variable	6
4/4	Bed Bugs: What you Need to Know	Portland, Maine	PMP’s and property managers	50
4/7	Bed Bugs: From Basics to Boardrooms	Freeport, Nassau County, NY	Property managers	75
4/7	Bed Bugs: What you Need to Know	Freeport, Nassau County, NY	General public	12
4-14	The Return of Bed Bugs	Queens, NYC, NY	VNSNY nurses and caretakers	45
5/11	Bed Bug Management	Queens, NYC, NY	Housing inspectors	35
5/12	Bed Bug Management	Manhattan, NYC, NY	Housing inspectors	30
6/1	Bed Bug Management	Manhattan, NY	Pest managers	28
7/12	Bed bugs basics	Washington DC	Media	15
7/12	Bed bug basics	Washington DC	Congressional staffers	30
7/14	Bed Bugs for Health Care Professionals	Nassau County, NY	Winthrop University hospital nurses	45
7/15	Bed Bugs in Second Hand Stores	Westchester County, NY	Staff of a non-profit second hand store, movers and CCE staff	25
8/30	Bedbugs Go To School (Monroe #1 BOCES/RCSD School Health Services Back to School Orientation)	Rochester/Monroe	School nurses and health aides	120
9/15	Bed Bugs – How to Approach the Problem	Nassau County, NY	The public, landlords, nurses, social workers, everyone	130
9/26	Bed Bugs without Beds	Chicago, IL Bed Bug University Summit	Pest managers, facilities managers	200
10/12	“Bed Bug Biology”	Ocean City, MD	NESDCA K-9 bed bug search teams	50
11/5	Bedbugs Go To School (NYS Assoc School Nurses Fall Conference)	Syracuse/Onondaga)	School nurses	90
11/9	“Guidelines for Prevention and Management of Indoor Pests”	New York, NY	NYC DOHMH and the pest management committee	32
11/30	“Bed Bug Basics for the Health Care Provider”	Bayshore, NY Suffolk county	Home health care nurses – Good Samaritan Hospital	38
12/8	“Using IPM to Manage Building Pests”	New York, NY	Depository Trust and Clearing Corp. employees	43

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9. References:

Gangloff-Kaufmann, J.L., C. Hollingsworth, J. Hahn, L. Hansen, B. Kard, M. Waldvogel. Bed Bugs in America: A Pest Management Industry Survey. PCT Magazine, Nov. 2006.

Romero, A., M.F. Potter, D.A. Potter and K.F. Haynes. 2007. Insecticide Resistance in the Bed Bug: A Factor in the Pest's Sudden Resurgence? J. Med. Entomol. 44(2): 175-178 (2007)

10. Project locations:

Several presentations about bed bugs have been given in Suffolk County and Nassau County, and New York City. One presentation was given in Albany, NY for the New York State Association of MR DD Nurses (statewide group). All written materials apply nationally and have been accessed by people around the United States.

11. Samples of resources developed:

Publications:

Bed Bug Travelers Cards:

http://www.nysipm.cornell.edu/publications/bed_bugs/files/bb_travelers_online.pdf

Bed Bug Frequently Asked Questions:

http://www.nysipm.cornell.edu/bug_bytes/bed_bugs/bedbugs_faqs.asp

“Guidelines for Prevention and Management of Bed Bugs in Shelters and Group Living Facilities” http://www.nysipm.cornell.edu/publications/bb_guidelines/default.asp

Bed Bug Caller Guidance:

http://www.nysipm.cornell.edu/publications/bed_bugs/files/caller_guidance.pdf