

## **A. Grant Data**

**September 23, 2008**

**Title:** “A Partnership for Developing IPM Protocols for Bed Bug Management”

**Project Type:** IPM WORKING GROUP PRIORITY

**PI:** Jody Gangloff-Kaufmann, Sr. Extension Associate, NY State IPM Program, Cornell University, 228 Thompson Hall, Farmingdale State College, Farmingdale, NY 11735. (631) 420-2022, Fax: (631) 420-2766, [jlg23@cornell.edu](mailto:jlg23@cornell.edu)

### **Cooperators:**

NY City DOHMH – Department of Environmental Surveillance: Daniel Kass, MPH, Assistant Commissioner, Caroline Bragdon, MPH Research Scientist, Sharon Heath, IPM Coordinator for NYC.

**States Involved:** Primarily New York State. (Applicable nationally and beyond).

**Funding Year:** 2007-2008

**Funding Amount:** \$33,870

## **B. Nontechnical Summary.**

The common bed bug, *Cimex lectularius*, is a blood-feeding parasite of humans that has reemerged as one of the most significant indoor pests of our time. Although it is well understood that integrated pest management is necessary for bed bug control, effective protocols and standardized IPM practices are lacking, particularly for multiple-unit dwellings, particularly homeless shelters and group homes. The integration of pesticides with physical controls is unsystematic and often ineffective. Sufferers of bed bug infestations are regularly taking matters into their own hands, by applying pesticides and discarding furniture and other possessions, or by doing nothing. The economic and health risks associated with bed bugs are presumably great. Bed bugs have reversed the benefits achieved in Urban IPM over the past fifteen years, by reintroducing frequent, unrestricted household pesticide use. A standardized bed bug management strategy that relies on IPM is desperately needed.

This project was focused on developing a program for the prevention and management of bed bugs in homeless shelters in New York City. The project was conducted with group homes (for ability-challenged and elderly people) in mind, since this is a population vulnerable to bed bug problems. The end product is a 40-page guidebook, a tri-fold flyer, and a poster specifically designed for prevention and management of bed bugs in group living situations. Guidelines are freely available in printed form and on the NY State IPM Program website. The flyer and poster are available from the project leader. The bed bug guidelines are applicable to a wide variety of multiple-unit housing types and are being used as training resources. Several training sessions will be held in October and November 2008 in New York City, the Hudson Valley, Albany, and Long Island, addressing city agencies, pest management professionals, medical and social service

providers, and cooperative extension staff. This project furthers the mission of the Northeast IPM Center by applying IPM to a critical emerging pest issue to reduce the impact of bed bugs and pesticides on human health and economic well-being.

### **C. Introduction.**

Over the past decade the United States has witnessed an overwhelming resurgence of bed bugs that has affected every part of the country, as well as many countries throughout the world. Bed bugs, *Cimex lectularius*, are obligate blood-feeding parasites of humans and some domestic animals. They hide in cracks and crevices close to where their hosts sleep and typically bite at night. Bed bugs are difficult to eliminate even when using conventional pest management approaches. The bites cause itchy welts on some, but not all victims. In some cases problems can become unmanageable before they are even discovered. Bed bugs also spread rapidly through multiple-unit buildings, particularly when hosts are no longer available. Bed bug resurgence has been documented to be fairly consistent throughout the United States (Gangloff-Kaufmann, et al. 2006) and may be especially problematic in urban areas.

The economic impact of bed bug resurgence has not been evaluated, although it is clear that there are significant economic impacts on people battling the bugs. Often sufferers spend hundreds or thousands of dollars to hire a pest control professional. They also frequently resort to discarding their belongings, including mattresses, beds and other furniture, and moving from infested homes, all at great expense. Landlords and property managers are usually responsible for costs of extermination in multiple-family buildings regardless of how the building was infested. Bed bugs are having a serious economic impact on the hospitality industry worldwide. Travelers report that hotels are commonly infested and many lawsuits against hotels have been publicized in the media.

Bed bugs are not known vectors of human disease, although more research is needed to evaluate their impact on human health. Bed bugs bites can cause anemia in severe cases, but health impacts are more likely incurred from skin irritation and emotional stress. There is also concern about the overuse and misuse of off-the-shelf pesticides, such as “bug bombs” by those who are reluctant to seek outside help. More research is needed to evaluate the health impacts of pesticide use (overuse) for bed bug control. Although pesticides have been deemed necessary for the management of bed bugs, physical controls, such as inspection and cleaning, must be prioritized for the program to be successful. A whole building approach is required for bed bug management in multiple-unit dwellings.

Guidelines are needed to standardize the quality and efficacy of bed bug management in multiple-unit dwellings. In particular, facilities managers need to understand the process of bed bug management (housekeeping, laundry, awareness, how to hire a PMP) and ways to help their residents in preventing bed bugs. Training the facilities managers and their pest control professionals and raising public awareness will help to reduce all the risks that bed bugs present.

The project was designed to develop and evaluate bed bug inspection, management, and training protocols using homeless shelters in New York City as a model. The resulting bed bug prevention and management guidelines developed for NYC Department of Homeless Services, along with the NYC Department of Health and Mental Hygiene are applicable to other types of homes and multiple-unit housing throughout the Northeast and the United States.

#### **D. Objectives.**

##### **a) Objectives and Anticipated Impacts:**

The overall objective of this project was to develop, demonstrate, and test protocols for bed bug management in urban homeless shelters and extend this information to pest control professionals, municipal agencies, and the public.

- i) Objective 1. Create a stakeholder advisory group for bed bug management to develop protocols. This regional group will gather for a one-day meeting.
- ii) Objective 2. A team will implement the protocols developed by the Advisory Group and set up resources for training shelter staff. The pest control technicians will be given specific instructions on how to manage bed bugs, shelter residents will be given instructions on how to cooperate, and shelter managers will be given resources to make the program work. Mattress covers will be provided to shelter managers for evaluation and use.
- iii) Objective 3. Evaluate the protocols for bed bug management, and the training materials, and conduct a basic economic analysis of the cost of bed bug management. Follow-up evaluations to each shelter involved will also be useful to determine the relative long-term efficacy of bed bug management protocols.

#### **E. Approach.**

The first step in this project was to hire an assistant. I then assembled an advisory group of stakeholders and arranged a planning meeting and a meeting to develop protocols for bed bug management and prevention. Once the group met, my assistant and I requested site visits to city shelters and contact information for shelter directors. We offered help with bed bugs and other pests. We tried to understand the complexity of the DHS system. Our site visits allowed us to visualize the rooms and sparse amenities provided. This enabled us to plan bed bug management more realistically.

Although we wanted to conduct a baseline survey of shelters to see the numbers that had or have bed bug issues, DHS never allowed us to have contact information for each shelter director. No bed bugs were encountered in any of the five site visits. However, we met with medical service providers (vendors) and received their feedback on bed bugs and the need for information. The demonstration of bed bug management and prevention, such as bed bug questions during the intake procedure, offering information to families, to a lack of cooperation from DHS. They never allowed our team to see a shelter with bed

bugs. Our plans of working with housekeeping, training shelter staff, meeting with pest management, and trying new techniques where bed bugs were found, were never accomplished, due to the lack of access to information and facilities.

The guidelines were developed after seeing five example homeless family shelters, that were relatively clean, meeting with a few shelter directors and medical staff, and researching intake procedures from other cities' shelter systems. A take-home pamphlet and a poster suitable for the lobby or halls of any multi-unit living facility were produced alongside the guidelines.

## **F. Progress.**

Objective 1 Achievement: A stakeholder group was gathered. Members are listed in the appendix materials. The group met for a very successful day long meeting to discuss guidelines and challenges for bed bug (and other pest) management in city agency housing. From the discussions and site visits that followed a 40-page guideline was developed for prevention, mitigation and management of bed bugs. The guide includes individual fact sheets for residents, medical and social service providers, intake staff, housekeeping staff, and a checklist for residents to prepare their living area for treatment.

Objective 2 Achievement: The planned field implementation of IPM practices for bed bug management was not accomplished. Training of shelter staff and pest management vendors, demonstration of techniques, and the purchase of mattress covers were all not desired by DHS. In one early instance, we asked to present a bed bug awareness talk at a shelter director meeting. I prepared a 15 minute slide show and talk, but when I arrived I was not provided a screen or wall to present slides and I was given 5 minutes to speak.

Objective 3 Achievement: We were not able to demonstrate the use of the protocols due to a lack of cooperation with DHS and therefore could not evaluate them or conduct an economic analysis. However the guidelines were published with the input from pest management professionals and public health experts and have already been widely distributed among non-for-profit group homes and agencies that serve at-risk populations. DHS requested only 10 copies of the bed bug guidelines. There are about 133 homeless family shelters, 65 single adult shelters, and 66 single resident occupancy (SRO) shelters in NYC according to the NYC DHS website as of Sept 2004.

## **G. Results.**

The results of this project were of disappointment and success. The NYS IPM Program and others in the field of IPM have an excellent relationship with the NYC DOHMH, which is in charge of implementation of Local Law 37 to reduce pesticide use on city properties. DOHMH requested that I submit this project proposal to further IPM in the city, particularly in the Department of Homeless Services (DHS). DOHMH was a major collaborator, made many promises of time and efforts, and were to serve as our liaison with DHS. Within three months of the project start DOHMH informed us that they would

be taking a “back seat” role in the project. They stopped arranging meetings for us and failed to provide necessary support needed to make anything happen with DHS.

With DOHMH as a liaison, we were promised to have access to shelters with bed bugs and full cooperation from DHS staff was guaranteed by DOHMH. Although we learned late in the project that several DHS shelters were infested with bed bugs, we were told by DHS staff that there were no infestations. We could not get a list of shelter directors to assess the levels of infestation. We could not arrange a training session for shelter staff. DHS did not want the mattress covers we proposed to use. During the preparation of the guidelines (formerly referred to as protocols, but changed to guidelines because of the resistance of agencies to new “protocols”) DHS staff took photographs of our inspections and shared them with me. I was later told I could not use those photos. DHS was asked for input for the guidelines and offered a chance to review them at every stage of development. They gave no feedback. So although this guide was written “for” NYC, the material is broader than New York City or homeless shelters.

## **H. Impacts.**

The impact from this project, although it did not go as planned, will be significant and far-reaching. As of October 2, 2008 over 100 copies of the guidelines have been distributed to pest professionals, municipal agencies, and the great majority to non-profit help organizations (see appendix), a press release was issued from Penn State and Pest Management Professional (a pest management trade journal) highlighted the release of the guide. It has been featured on two popular bed bug websites, [www.bedbugger.com](http://www.bedbugger.com), and <http://newyorkvsbedbugs.org/>, including a short interview by the leader of [www.NewYorkvsbedbugs.org](http://www.NewYorkvsbedbugs.org). As of 10/3/2011 the publication “Guidelines for Prevention and Management of Bed Bugs in Shelters and Group Homes” has been reprinted by the Nassau County Department of Health (700 copies). Also a second printing was conducted by the Northeast IPM Center (1250 copies). Nearly all have been handed out.

We anticipate that the guidelines will fill a gap in knowledge among facilities managers and those who help others. They are applicable to apartment buildings, shelters, group homes, nursing homes, dormitories, and other similar living situations. I will continue to track the distribution of the paper hard-copies and the web hits of the electronic version of this guide. I would like to see the poster used in college dormitory settings, in educational campaigns, and any other outreach efforts available. I will continue to promote it.

This guide, along with other materials, will be used as training materials for new audiences. I am presenting to the NY State Mental Retardation/Developmental Disabilities Nurses Association meeting in Albany, NY. I am also presenting to the Nassau-Suffolk Coalition for the Homeless, Nassau County Department of Health, New York City Pest Management Committee (led by the NYC DOHMH), a New York City part of the National Institute for People with Disabilities, and Hudson Valley Cooperative Extension groups as a train-the-trainer for agents.

This project does something unique in bringing new audiences to the IPM table. Those who care for the disadvantaged would no doubt agree that pests and pesticides pose risks to the health of their clients. They may not know the term IPM or be aware that there are better ways to solve pest problems. This project helps us to begin to reach such new audiences, and as they care for their clients, they may also become IPM advocates. The hard copies of the Guidebook are quickly disappearing, and requests to date have been logged into a spread sheet that is attached to this report.

## **I. Appendices.**

“Guidelines for Prevention and Management of Bed Bugs in Shelters and Group Living Facilities” J.L. Gangloff-Kaufmann and C. Pichler. 2008. NYSIPM Pub # 618)

Fact Sheet: “How to Protect You and Your Family from Bed Bugs”, J.L. Gangloff-Kaufmann, 2008.

Poster “Stop Bed Bugs Safely” J.L. Gangloff-Kaufmann, 2008.

Website url’s. The “Guidelines online:  
[http://www.nysipm.cornell.edu/publications/bb\\_guidelines](http://www.nysipm.cornell.edu/publications/bb_guidelines)

Spreadsheet of the Guidelines distribution as of October 9, 2008.