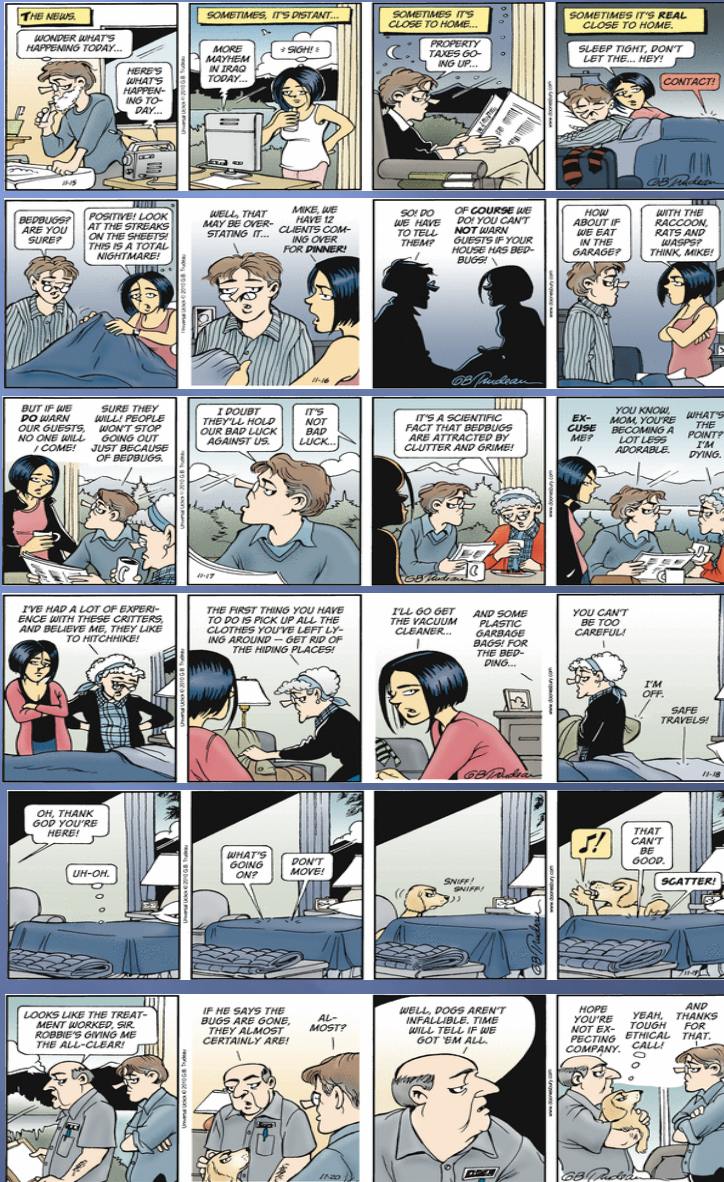


G.B. Trudeau's Doonesbury - Bed Bug Strips

11/15-10 - 11/20/10



News

Bedbug nightmare on 20th St.

By Andrew Park

It's enough to tug anyone out since September, Jeanette Wind and her two sisters — all seniors — have had life in their 624 East 20th Street Stuy Town apartment turned upside down by tiny visitors: a vampire; the nocturnal blood-sucking insects that have become a pest in motion.

Wind said, "We aged 20 and stilled before they attacked the couch and mattresses. Wind said she found a helping hand from Councilman Dan Garout, who's office, which is now with the handful of call it was monthly regarding the extermination process. Wind said, "The quarters is your subject. Now they are in the apartment for that long. Currently, Wind and her sisters are subjected to navigating an apartment cluttered with bags and stacked furniture. This has cut-off use of the kitchen, requiring the women to eat each meal on top and to sleep with lights on to keep fleas away. They clean the bed as often as possible. Wind said, "The only places where the bedbugs could be found were in the bathroom and kitchen. Wind said she was surprised when she tried to clean the room of the bedbugs. She called the pest control company and they came out on 11/15/10.

Wind said noting the bills were still adding up. Stuy Town management covered the treatments and inspections but not the movers' destruction. Then came the extermination — another one during Thanksgiving week and not stop. "We think it's fleas," Wind said but the fleas are not the main issue. The ongoing ordeal forced Wind to surface publicly at the Dec. 5 "Centennial" association meeting where she spoke out about the infestation. She

Continued on Page 7





Connecticut Bed Bug Forum IV

December 7, 2010

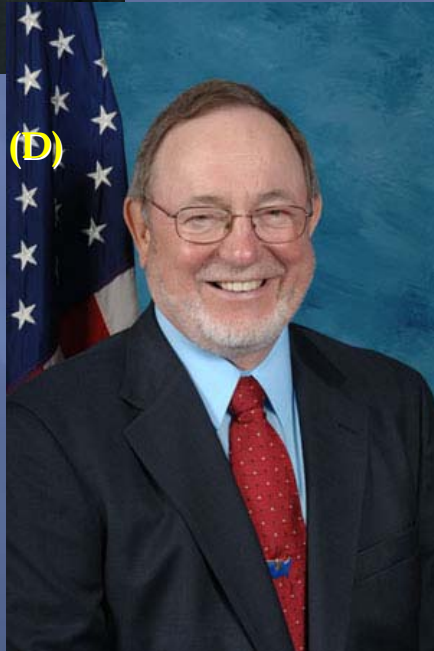
1:00 to 4:30 PM

Jones Auditorium
Connecticut Agricultural Experiment Station
New Haven, Connecticut

"Don't Let the Bed Bug Bite Act"



**Congressman Butterfield (D)
(North Carolina)**



Congressman Young (R) (Alaska)

111TH CONGRESS 1ST SESSION H. R. 2248

To establish a grant program to assist States in inspecting hotel rooms for bed bugs, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

MAY 5, 2009

Mr. BUTTERFIELD (for himself, Mr. YOUNG of Alaska, Mr. CHANDLER, Mr. RUSH, Ms. MCCOLLUM, Ms. CORRINE BROWN of Florida, Mr. COHEN, Mr. MILLER of North Carolina, and Ms. EDDIE BERNICE JOHNSON of Texas) introduced the following bill; which was referred to the Committee on Energy and Commerce, and in addition to the Committee on Financial Services, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

A BILL

To establish a grant program to assist States in inspecting hotel rooms for bed bugs, and for other purposes.

1 Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

3 SECTION 1. SHORT TITLE.

**4 This Act may be cited as the "Don't Let the Bed
5 Bugs Bite Act of 2009".**



Congressional Bed Bug Forum Thursday, November 18, 2010

- **Panel 1: Scientific Panel**
 - Dr. Dini Miller (Virginia Polytechnic)
 - Dr. Michael Potter (Uni. Kentucky)
- **Panel 2: Industry Panel**
 - Ms. Missy Henriksen (VP. NPMA)
 - Mr. Brian Hendy (VP Wallick-Hendy Dev.)
 - Mr. Joe McInerney (Chief Oper. Officer AHILA)
- **Panel 3: Residential Victim**
 - Ms. Silvia Salazar
- **Panel 4: Government Panel-Fed.- Interagency Bed Bug Taskforce**
 - Mr. William Diamond (Deputy Dir. Pesticide Prog. EPA)
 - Dr. Mark Feldlaufer (Research entomologist USDA)
 - Dr. Peter J. Ashley (Director HUD)
 - Mike Potter (Armed Forces Pest Management Board)

• Note: Titles truncated to save space



Projects

- Listserv
- Public outreach
- Health department video
- Best Practices for Bed Bug Management
Mattress, bedding and upholstered furniture.
Guidance document for the reuse/resale and
recycling industries in Connecticut
- Document reviewing
- Protocols: including schools, visiting nurses, health agencies etc.
- Future forums
- EPA grant
- CT Bed Bug Pest Management Professionals service list (NPMA)



CCABB at Bridgeport Health Fair

Bugs without Borders

Dr. Gale E. Ridge

Connecticut Agricultural Experiment Station

World distribution of bed bugs



Red: Bed bug distribution
White: Not there yet!

Connecticut Bed Bug Forum IV: December 7th, 2010

A long human history with bed bugs resulted in a unique name for the insect in most world languages

English	Bed Bug
Germany	Wandlaus (wall louse)
Slavic	Pluskwa (flat louse)
Czech	Stenice (wall)
Africa	Tihuani
India	Uddamas (biter)
Hindu	Mak hun
Greek	Coris (to bite)
Latin	Cimex
French	Punaise (stink)
Russian	Klop
Arabic	Buk
Chinese	Piq-seq (wall louse)
Japanese	Tokourami (bed louse)
Spanish	Chinche de Cama



Adult and Nymphs



Size of adults

Ice age: 20,000 – 10,000 years ago



Caves of Afghanistan: believed point of crossover from bats to humans



**Man moves out of caves, builds homes, and
bed bugs move in and get comfortable**



The Fertile Crescent in the middle east

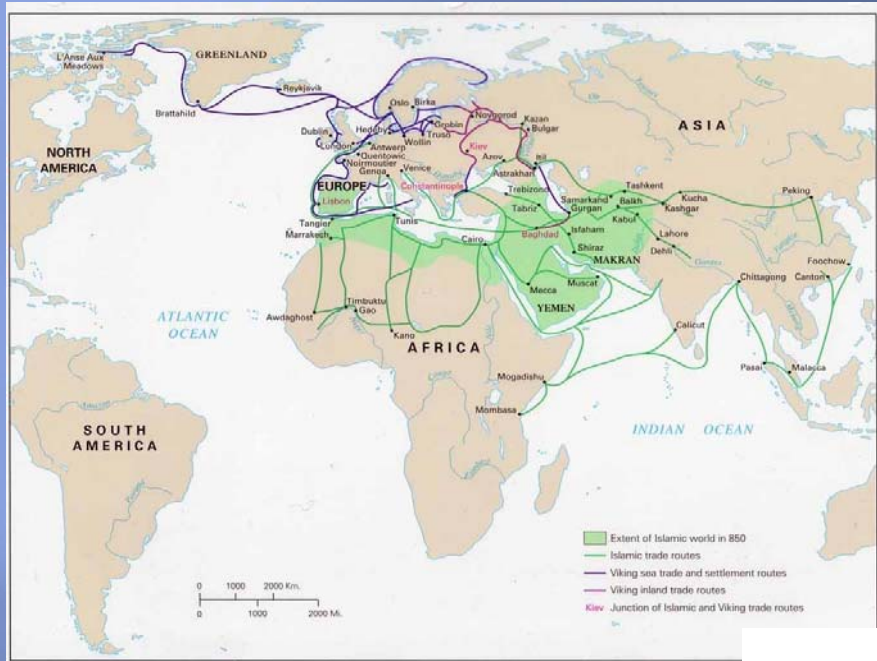


Caves



Stone architecture mimicking caves

World Trade Routes and bed bug world distribution

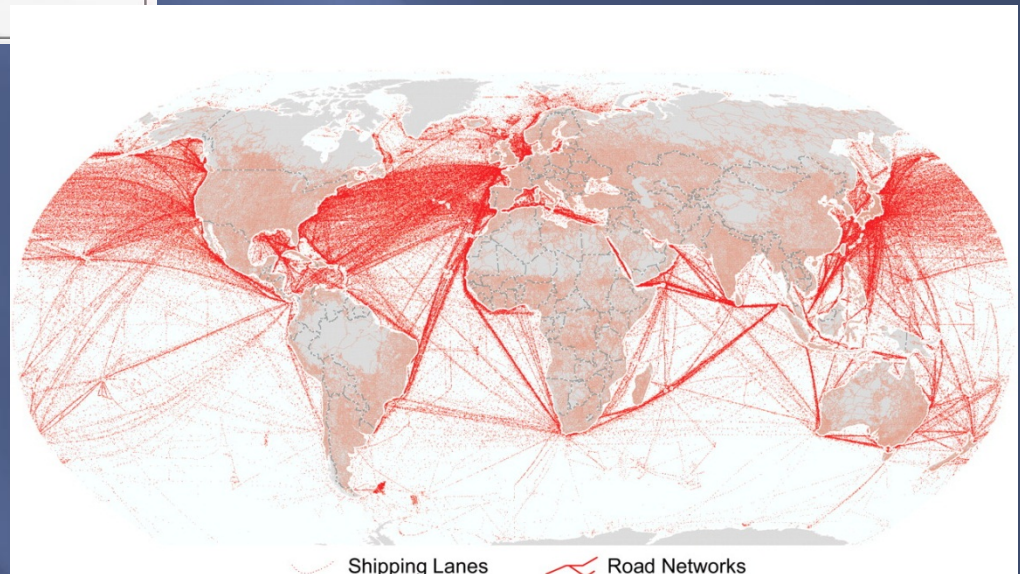


Pre-medieval trade routes



Spice routes

Current trade routes



Family portrait



Adult and nymph



Adult female



Adult male



Newly hatched nymphs and egg cases

Life Cycle

Under good conditions:

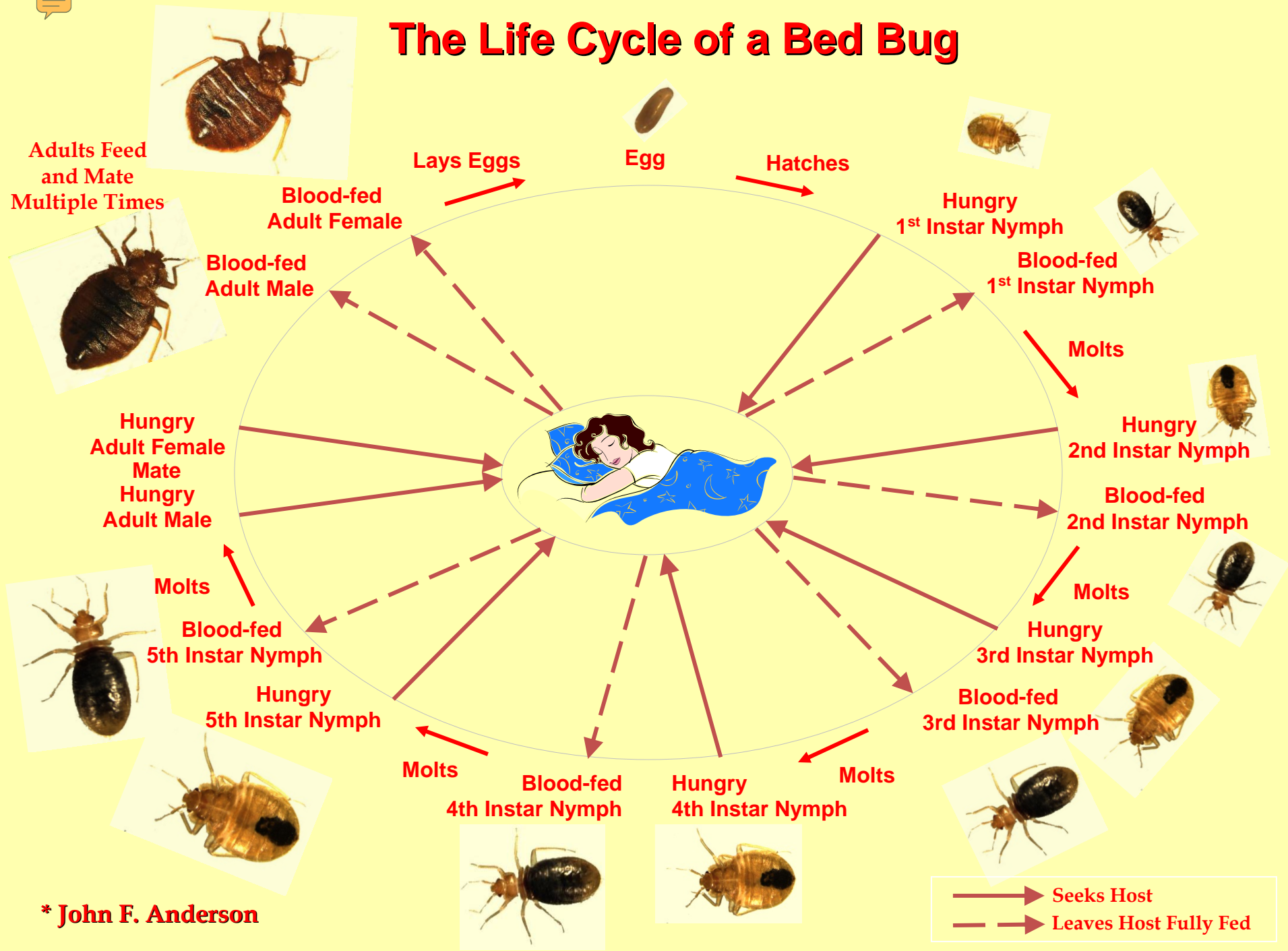
At 83-90°F and 75-80% relative humidity
4-5 weeks (egg to egg)
(this can vary depending on temperatures)

- Feed only on blood, usually mammal or bird with piercing sucking mouthparts
- The 5 nymph stages need a blood meal to molt up the next stage
- Adults need blood meals for reproduction

Mating : “Traumatic Insemination”,



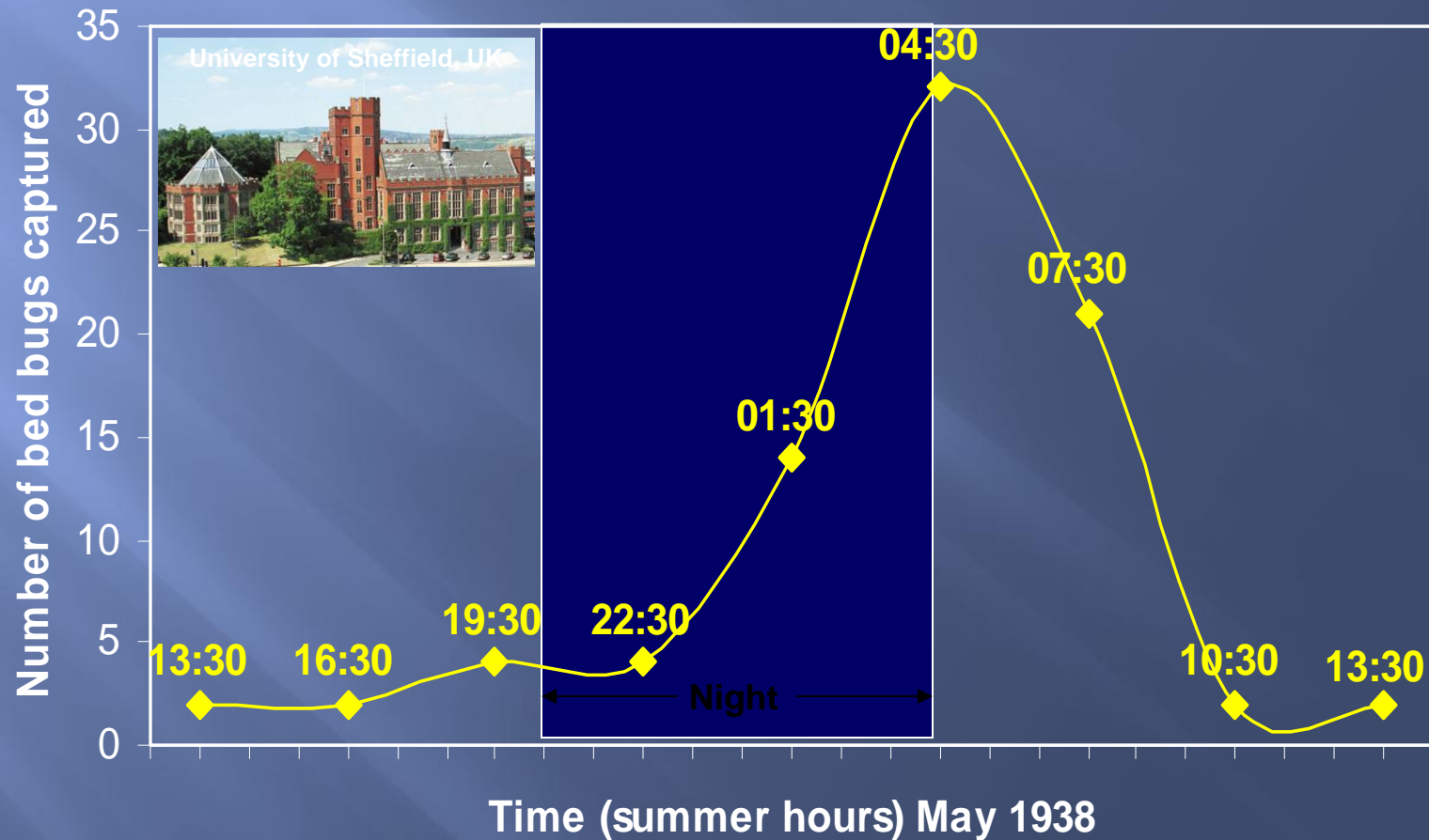
The Life Cycle of a Bed Bug



* John F. Anderson



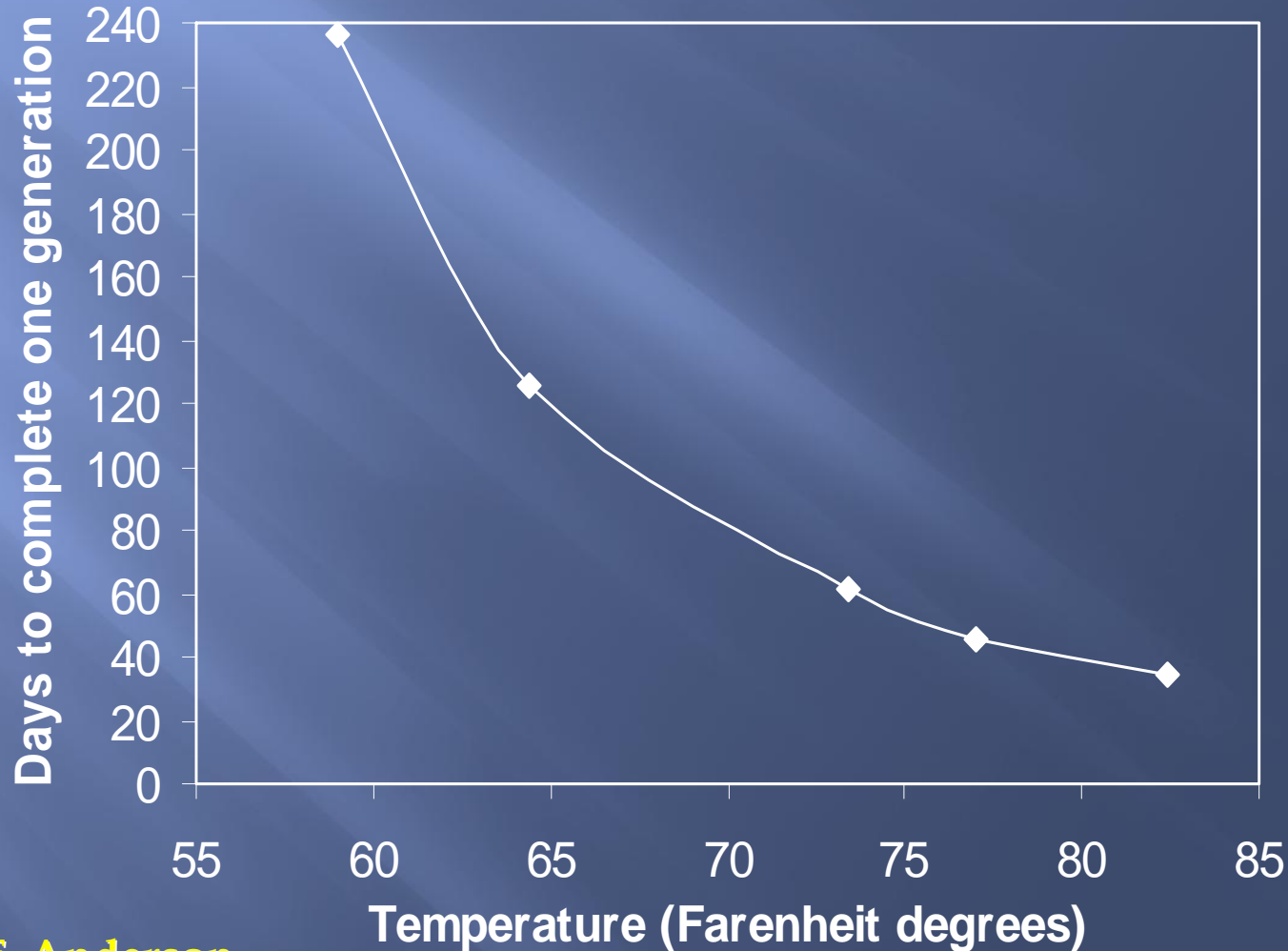
Activity of bed bugs captured in traps during 3 hr intervals (Mellanby 1939)



* John F. Anderson



Average number of days needed by a bed bug to complete one generation at specific temperatures (Johnson 1942)



* John F. Anderson

Bed bug sign



Cluttered apartment



Two types of fecal spots



Detritus

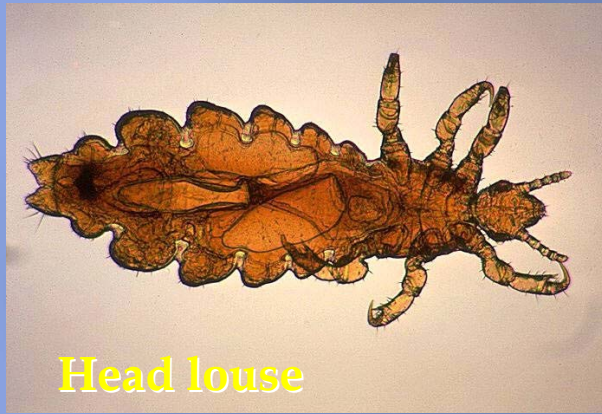


Fecal spotting, in this case, on walls

What is this?



Look-a-likes: illustrating importance of identification



Head louse



Black legged tick



Cat flea



Bed bug & varied carpet beetle larva



Bed bug & varied carpet beetle abdomen



Lint



Shiny spider beetle

Steve Jacobs
PSU Entomology

Similarities Among Complaints and Samples From Clients With Suspected Delusory Parasitosis: The OSU Plant Pest Diagnostic Clinic Experience

Barbara Bloetscher, Susan C. Jones, David J. Shetlar, and Celeste Welty
The Ohio State University

Abstract

Delusory parasitosis has been described as a condition in which a person suffers from the illusion that his/her body is infested with an insect or mite. Individuals become overwhelmed with the sensation of a tiny creature biting or burrowing into their skin and scalp.

Clients have either been referred to the Ohio State University's C. Wayne Ellett Plant and Pest Diagnostic Clinic (PPDC) to identify these pest(s), or they have found the Clinic by searching the internet. Convinced that they are not crazy, clients send a wide variety of items thought to contain the pest.

Despite the voluminous samples submitted however, most samples contained no arthropod. Instead, samples contained mostly skin, fabric fibers and inorganic debris. Clinic cases showed that females and people over 50 years of age submitted more samples. It was also noted that more samples were received in May (11%) and September (14%) and in the first two quarters of the moon phase.

Introduction

The C. Wayne Ellett Plant and Pest Diagnostic Clinic is a diagnostic laboratory at The Ohio State University, available to industry and residents for plant disease and insect identification. Clients find information about the Clinic through extension offices, OSU websites and fact sheets published at OSU, particularly the HYG FactSheet "Mystery Bugs".

This study is based upon for-fee samples submitted to the Clinic from 2002-2005 that contained unknown or unseen insects that bit and/or burrowed under the inquirers' skin, or were suspected to be caused by invisible mites, lice, spiders, chiggers, or biting midges. The purpose of the study was to classify the types of items submitted. The clients' demographics (age and sex) were then characterized. The timing of sample submission also was investigated.



Materials and Methods

70 cases involving one or more samples, which clients characterized as containing unknown and unseen insects were submitted to the Clinic from 2002-2005. Clients referred to these pests as no see-ums, invisible mites, lice, spiders, chiggers, or biting midges. Records were also kept of personal communication (letters, telephone calls) from each client.

Samples included:

- \$ Human skin, scab fragments, body secretions and hair
- \$ Cotton swabs, gauze and tape wiped on skin and scalp
- \$ Dander, droppings, fur and feathers (from pets and livestock)
- \$ Fabric, fuzz, lint, and similar debris/fragments
- \$ Personal clothing items, bedding, carpet fragments
- \$ Debris taped on cardboard, stuck on glueboards,
- \$ Glass slides, vials of alcohol

Each sample was examined for Ohio State Extension by phone or by mail. The scope of the study was limited to Ohio State Extension by phone or by mail. The study was conducted in collaboration with the Ohio State University, Department of Entomology and Plant Pathology, and the National Plant Diagnostic Network.

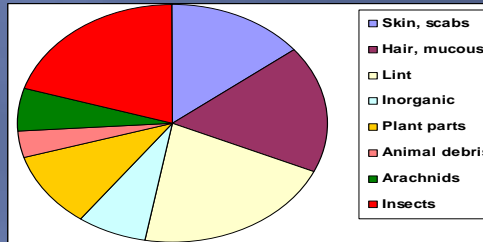


Figure 1. Items Identified in Samples

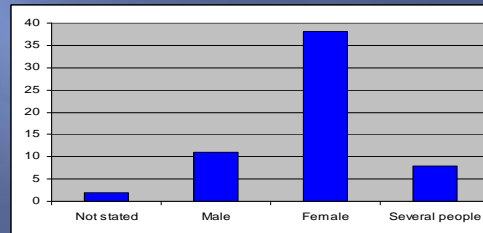


Figure 2. Number of Cases Submitted by Male vs. Female

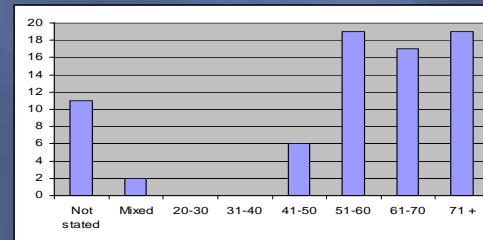


Figure 3. Number of Cases Submitted by Age Group

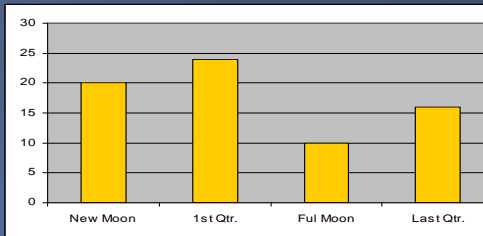


Figure 4. Number of Samples per Moon Phase

Results

Despite the numerous samples submitted, only 8% contained biting arthropods (Fig. 1). Furthermore, the clients' symptoms of excessive bites and rashes over extended periods of time were not consistent with arthropod-related injury. Mites occasionally invade homes and offices causing rashes and bites, however they cannot survive off their host for months to years. Other arthropods were also discounted.

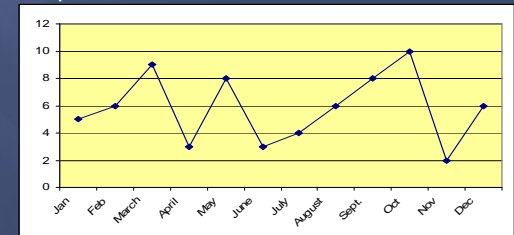
Females (Fig 2), and people more than 50 years old (Fig 3) submitted a significant proportion of samples. It was also noted that more samples were received in May (11%) and September (14%) (Fig 5). Although it is rumored that people are more likely to suffer delusional problems during the new and full moon, the greatest number of samples were submitted during the first quarter (Fig. 4).

Items identified included (% of total samples):

- Lint 20.97
- Indoor insects 12.91
- Plant parts 10.37
- Hair 11.29
- Skin 7.83
- Outdoor insects 6.91
- Scab 6.69
- Mucous 6.0
- Animal debris 3.46
- Bed bug 2.3
- Arachnids 2.07
- Inorganic Matter 7.37

Many of the samples from residences contained insects and arthropods commonly found indoors included springtails, drain flies, fungus gnats, millipedes and fungus beetles. Insects normally found outdoors included ground beetles and parasitic wasps. Arachnids identified included spiders and mites (4 dust mites). It is possible that skin sensitivity may be exacerbated when the moisture level is above normal, however the relative humidity was not tested and not all cases contained these insects.

The higher number of submissions from females may be due to the fact that they are more sensitive to bites, or more likely to seek help. We also suspect that older people may be more susceptible to symptoms due to changes in lifestyle, health problems and an increased likeliness of taking multiple medications. Although it is rational that symptoms increase in the fall, as humidity in the home drops and activity outside of the home declines, reasons for the upswing in complaints in the spring is not entirely understood. More research will be conducted in these areas, as well as the phases of the moon.



Conclusion Figure 5. Number of Samples per Month

The Clinic did not find insects or mites as the source of the problem in almost all cases. Instead the samples contained inorganic, inanimate objects commonly found in residences or offices, yet complaints of these symptoms and visible rashes, sores, and bloody scabs plagued the inquirers. It is more likely that stress, contraindications of medication, and health problems contribute to the symptoms. Other causes may exist and should be considered by physicians and psychologists.

Other types of skin lesions not caused from bed bug feeding



Drug reaction



**Cat Horse Sheep wool
Feathers**

Pimple



Mold



Ant stings



Thyroid



Self inflicted injury

Bed bug feeding sign



Usually feeding patterns are either linear or clustered



Self inflicted lesions made by Ekbom Syndrome sufferer attempting to remove bugs from in the skin

Entomopathogenic fungal research

Stage 1: Initial efficacy tests



Results



1. Immobilized



2. Early stage of fungal development



3. Green fungal spore mats



4. White stage with green spores

Table 2. Percent mortality of *C. lectularius* L. adults exposed to EC formulation of *Metarhizium anisopliae* strain F52 through dip, surface and spray applications at various concentrations (n = 20 adults/concentration/exposure time)

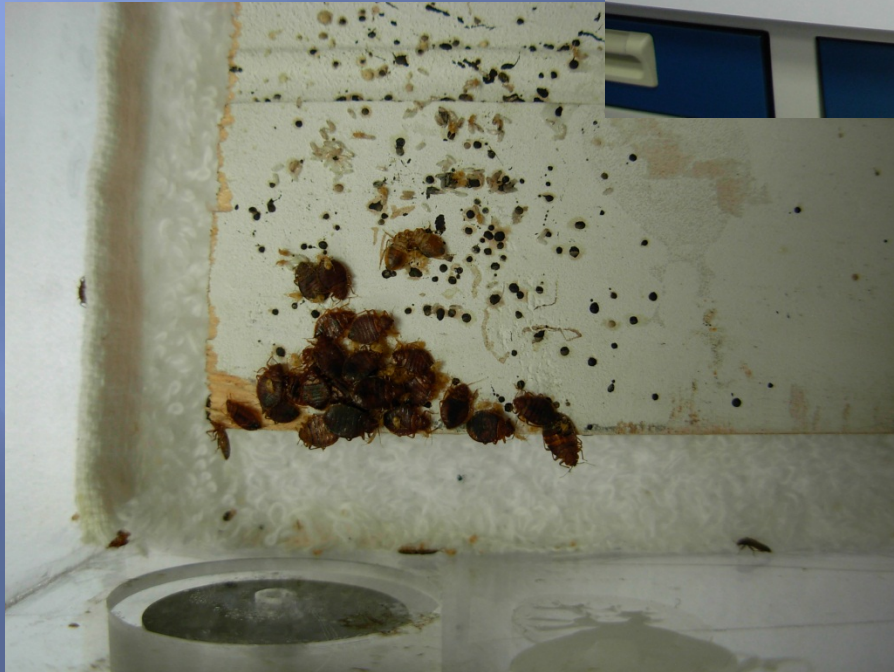
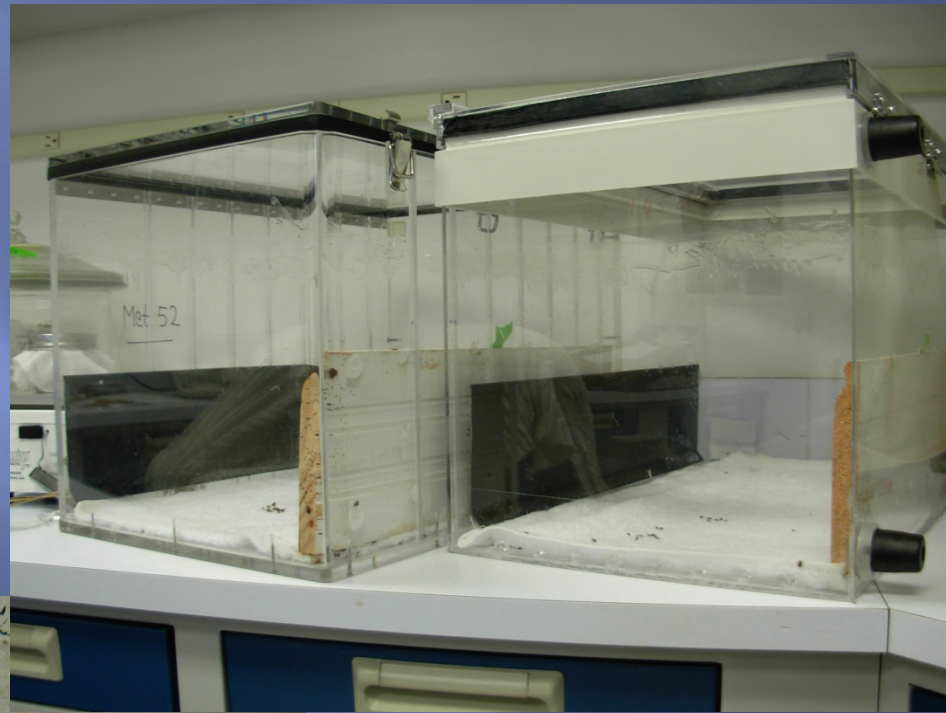
Concentration (spores/ml)	Rate of application (spores/cm ²)	Dip ^a		Surface				Spray-Surface					
		Week post treatment											
		1	2	1	2	3	4	1	2	3	4		
1.0 x 10 ⁵	1.1 x 10 ³	80.0	100	15.0	15.8	16.7	25.0	10.0	25.0	36.8	68.4		
1.0 x 10 ⁶	1.1 x 10 ⁴	100	100	15.0	15.8	22.2	62.5	10.0	30.0	57.9	89.5		
1.0 x 10 ⁷	1.1 x 10 ⁵	100	100	25.0	28.9	48.6	51.4	32.5	71.1	89.2	97.3		
1.0 x 10 ⁸	1.1 x 10 ⁶	100	100	15.0	73.7	94.7	100	91.7	100	100	100		
1.0 x 10 ⁹	1.1 x 10 ⁷	100	100	30.0	78.9	94.7	94.7	100	100	100	100		

^aAdults were dipped for 15 seconds in 1 ml of each concentration level from 1.0 x 10⁵ to 1.0 x 10⁹ spores/ml.

Stage 2: Terrariums

Terrariums mimicking
field settings

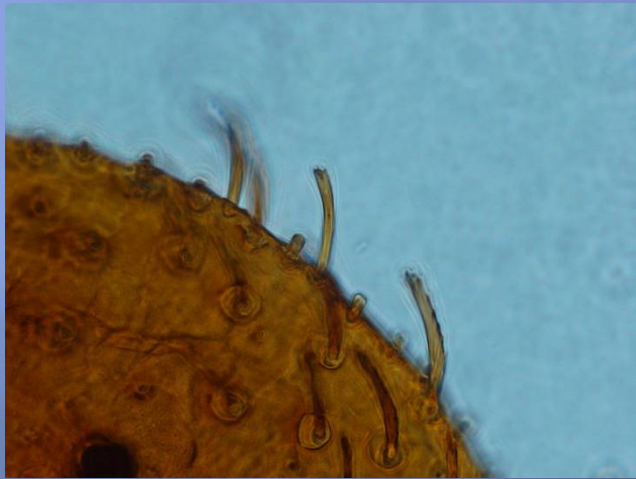
Refuge clustering



Stressed bed bugs

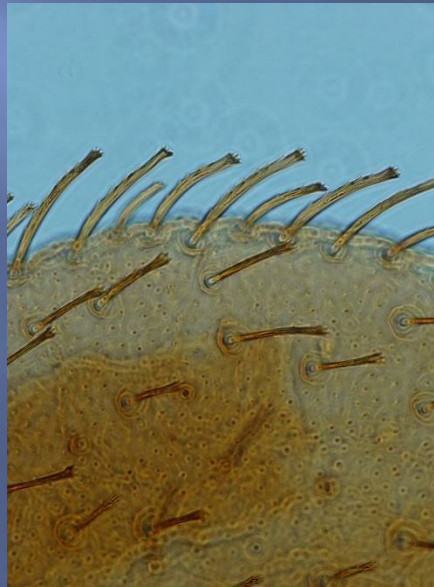
Another human feeding bed bug species?

1.



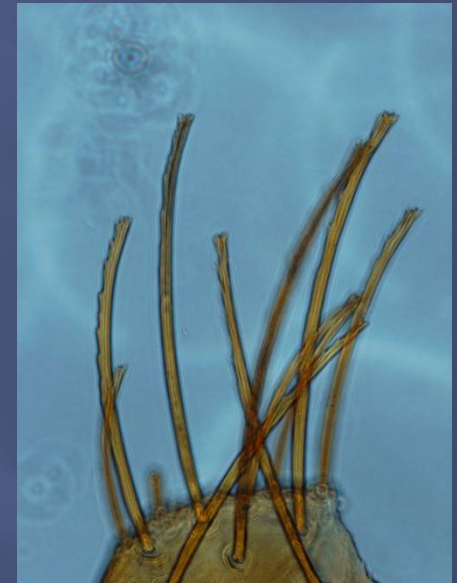
The common bed bug
Cimex lectularius L.

2.?



The ?
Cimex sp.

3.



The bat bug
Cimex adjunctus Barber

Identification

Arthropods found or "bites" reported

Inspect sleeping area for signs of arthropod activity

Live arthropods present

No

- Do not treat premises
- Resample
- Examine other possibilities?

Yes

Get professional identification

- No bed bugs
- Actions dependant on ID.

Bed bugs Confirmed

Reaction

Homeowner

Tenant

Landlord or property manager, hotel, etc.

1. PCO

2. Health Dept.

Attorney

Thank you

Please note: All power point presentations will be posted on our webpage

WWW.CT.GOV/CAES

{On opening page, go to the icon “bed bugs” at the bottom of subject list in blue banner}

If you wish to join the CCABB Listserv please
Call **(203) 974-8600** or email **gale.ridge@ct.gov**