



**Connecticut Agricultural Experiment Station**



**Connecticut Coalition Against Bed Bugs**

From red-bugs and bed-bugs, from sand-flies and land-flies,  
Mosquitoes, gallinippers and fleas,  
From hog-ticks and dog-ticks, from hen-lice and men-lice,  
We pray thee, good Lord, give us ease.

(An Old Prayer: circa 1856)

# Connecticut bed bug forums





# Connecticut Coalition Against Bed Bugs

# CCA BB



The Board



## Connecticut Coalition Against Bed Bugs

- **Education:** Start a conversation  
eliminate stigma  
public outreach (schools)  
proactive behavior
- **Research**
- **Training:** Empowering action
- **Policies** (from buildings up to state level)
- **Information:** list serve, web site, publications etc.



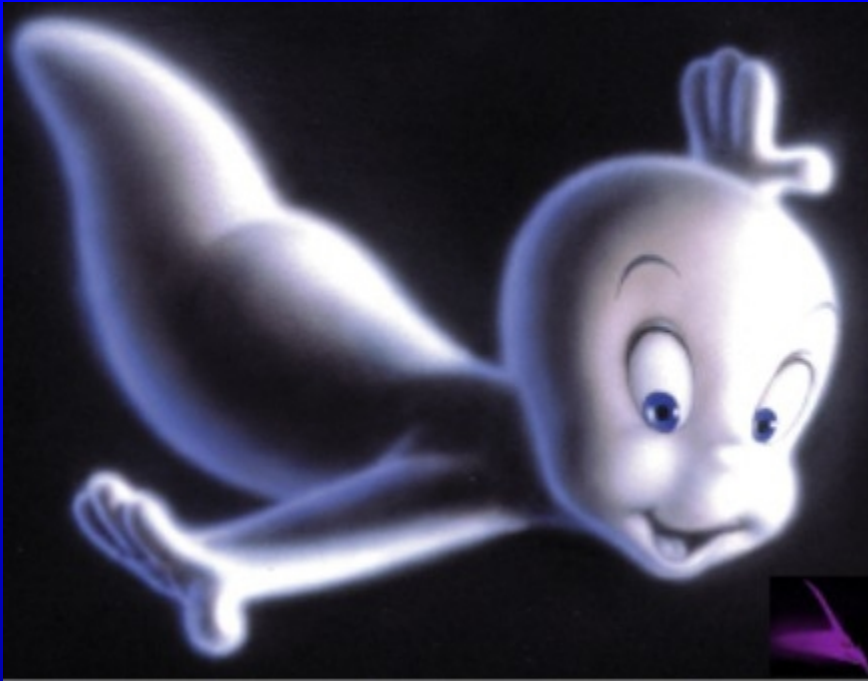
# The Return of the Bed Bug, A Pandemic.

**Dr. Gale E. Ridge**

**Connecticut Agricultural Experiment Station  
New Haven, CT**



# Bed bugs and human culture



**“BUG”**

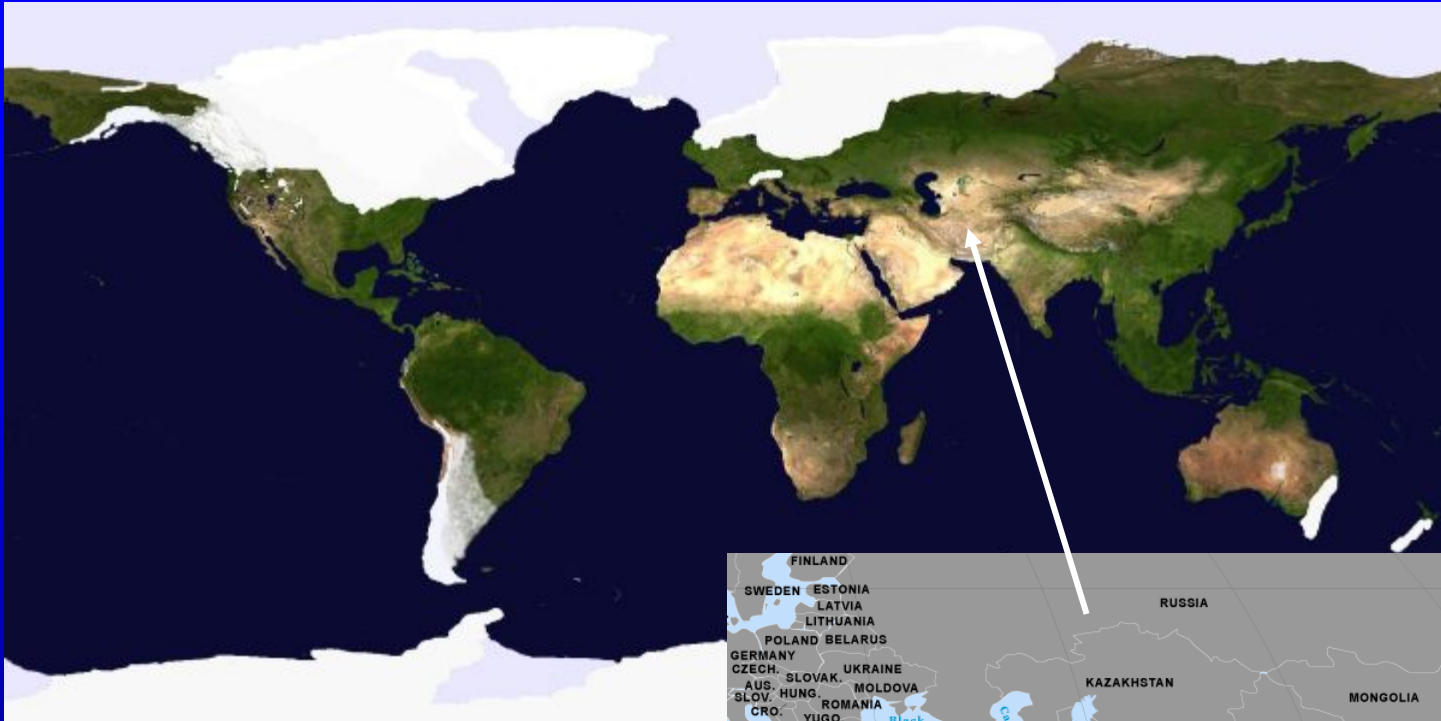
**The word “bug” means wraith or ghost and stems from visits at night by bed bugs**



## Some international names:

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

approx. 20,000 to 10,000 years ago was the last ice age





**Man moves out of caves, builds homes, and  
bed bugs follow**



**The Fertile Crescent in the middle east**

# Two species of human bed bugs

Common bed bug *Cimex lectularius*  
cold hardy

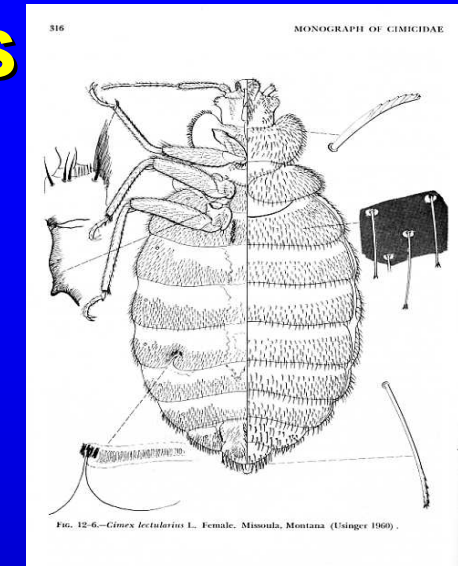
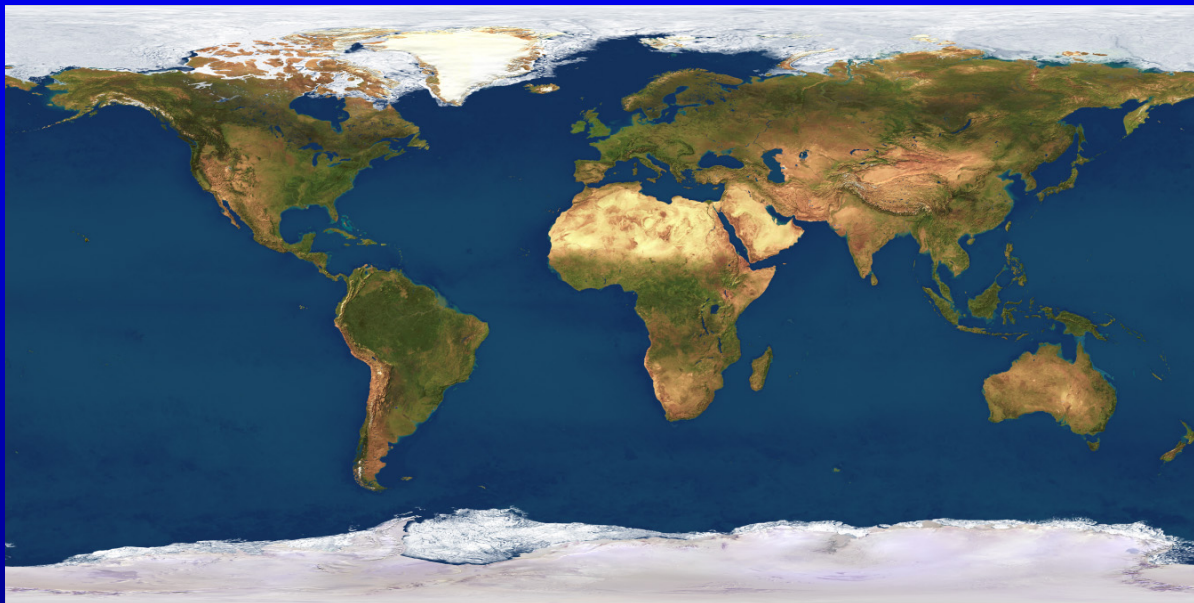


FIG. 12-6.—*Cimex lectularius* L. Female, Missoula, Montana (Usinger 1969).

Tropical bed bug *Cimex hemipterus*  
not cold hardy

*Cimex hemipterus*

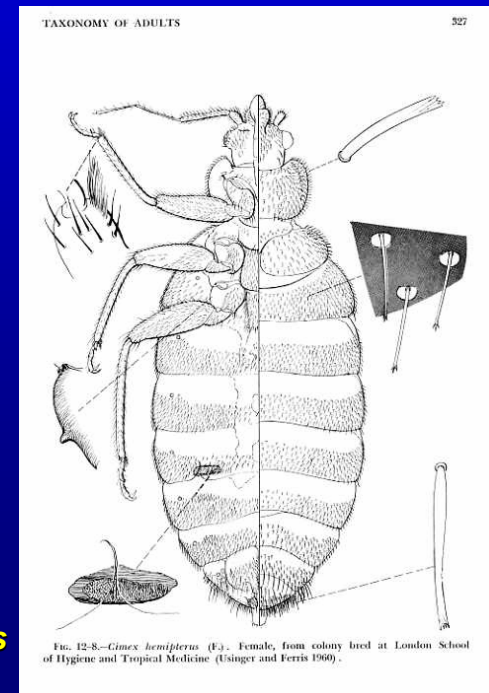


FIG. 12-8.—*Cimex hemipterus* (F.). Female, from colony bred at London School of Hygiene and Tropical Medicine (Usinger and Ferris 1960).



# Description



**Flat**

**Vestigial wings; they run and can not jump, hop or fly**

**Broadly oval:** Adult males are a little narrower than females

**Color:** Brown to reddish brown

**Size:** Small melon seed or apple seed

**Feeding:** Piercing sucking mouthparts, bed bugs do not “bite”



# Family portraits

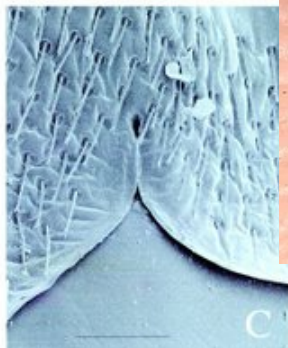
7 stages of development



Adult and nymph



Adult female



Reproduction



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**
- **The 5 nymph stages need a blood meal to molt up the next stage**
- **Adults need blood meals for reproduction**

**Mate by “Traumatic Insemination”,  
a peculiar form of mating**



# Development

Bed bugs develop by gradual metamorphosis

Three stages of development are:



# Eggs

- are sticky and attach to various hiding places
- laid in loose groups or clusters
- female may lay up to 200 eggs



Empty egg  
case

# Nymphs

Immature bed bugs are called nymphs, they look like the adults but smaller

- Nymphs develop through 5 stages (molts) called instars
- At least 1 blood meal is required to develop up to the next instar (stage)
- Unfed nymphs can live up to 3 months





# Adults

Unfed adults can live on average for several months

Take a blood meal in 3-8 min. often just before dawn when host is in the deepest stage of sleep

Human bed bugs prefer humans, but can “host switch” and feed on birds, rabbits, guinea pigs, hamsters, chinchillas, ferrets, rodents, and other mammals if they have to



# Bed bug sign.....

In severe infestations there is a distinct “musty, sweetish” odor

In hiding places or sheets bed bugs usually deposit undigested parts of blood meal as tarry or “rusty” residue or creamy white plasma droplets



Eggs and droppings





# Medical importance

Bed bugs can be infected by >20 human diseases

**NEVER** been proven to transmit human disease

Repeated bites can cause a progressive sensitivity to bed bug saliva, and in severe cases anemia and skin leatherning



# Behavior

Often feed in “rows” at the edge of clothing and bedding



Male



First instar larva





# Survival skills

Nocturnal; hiding during daytime, except in apartments with closed curtains



Habit of clustering to reduce water loss, but are not social insects

Aggregate in locations away from bed in cracks and crevices

Usually commute 20 feet, but can go up to 100 feet

Starved individuals and females fleeing from mating activities do not like to aggregate

Have > 14 alarm and assembling pheromones

# Some sources for bed bugs

- ❖ Universities, colleges, and schools
- ❖ Halfway homes
- ❖ Correctional facilities
- ❖ Hospitals
- ❖ Homeless shelters
- ❖ Churches
- ❖ Airports
- ❖ Taxis
- ❖ Discarded furniture and mattresses
- ❖ Hotel, motels, inns etc.....



# First encounter...what is it?

Unexplained appearance of “bite sites” (red spots or welts) and initial questions

## Medical conditions?

- Dry skin
- Menopause
- Autoimmune diseases
- Thyroid
- Anemia
- Diabetes
- Rheumatoid arthritis
- Aging
- Doctor mistakes

## Arthropods?

- Bed Bugs
- Bird Mites
- Scabies
- Fur mites

## Drugs?

- Prescription
- Over the counter
- Illegal
- Self medication

## Environmental

- Man made fibers & fabrics
- Dust
- New mattress
- Humidity
- static electricity

## Allergies?

- Plants inc. hairs  
pollens, seeds
- Foods
- Mold
- Cleaners etc.

## Psychological?

- Ekbom syndrome
- Delusory parasitosis
- Stress
- Depression
- Paranoia
- Internet
- Following trauma

# 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.

# Reaction

Bed bugs Confirmed

Homeowner

Tenant

Landlord or property manager, hotel, etc.

1. PCO

2. Health Dept.

Attorney



**HELP!!!**

**WWW.CT.GOV/CAES**

**TEL: (203) 974-8600**



**Connecticut Coalition Against Bed Bugs**



**Mike Vasil and delegate studying live bed bugs**