



# Medical Entomology

prepared  
by  
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# Bugs

## Order Hemiptera

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## Order Hemiptera

- About 48,000 species,
- Heteroptera (hemelytra fore wings)
- The Homoptera (membranous both wings).

Includes such important phytophagous families as the Aphididae (plant lice), Cicadidae (cicadas or harvest flies), Cicadellidae (leafhoppers, sharpshooters), Membracidae (tree hoppers) and many others of great agricultural importance, particularly many important vectors of plant diseases.

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# Heteroptera

- The true bugs.
- Characterized by a jointed suctorial proboscis attached anteriorly.
- Flexed under the head when not in use.

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# Heteroptera

- The true bugs are separated into two divisions:

## 1. Gymnocerata:

antennae are conspicuous and capable of being moved freely in front of the head, e.g., *Cimex lectularius*

## 2. Cryptocerata:

- Antennae are concealed in small concavities and are closely pressed to the under side of the head,
- e.g., *Lethocerus americanus* the giant water bug.
- Metamorphosis is simple.

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## THE BEDBUGS Family Cimicidae

- Includes the bedbugs, swallow bugs, and the poultry bug.
- characterized by:
  1. Very short, broad head, broadly attached to the prothorax.
  2. Oval body.
  3. well developed compound eyes, absence of ocelli.
  4. Four -jointed conspicuous antennae.
  5. Three jointed proboscis lying in a groove beneath the head and thorax.
  6. Very short pad-like hemelytra.

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## **THE BEDBUGS**

### **Family Cimicidae**

- The bodies are broad and flat enabling the bugs to creep into narrow crevices.
- A nasty pungent odor is attached to the group as a whole with few exceptions.
- They are night prowling and bloodsucking in habit, some feeding on birds and bats and others on human.

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## **THE BEDBUGS**

### **Family Cimicidae**

- Berlese organ is located in the IV or V abdominal segments.
- The presence or absence of this organ and its particular location when present provides a character useful in identification of species.

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## THE BEDBUGS

### Family Cimicidae

The three principal genera of this family are :

1. *Cimex* the cosmopolitan bedbug

e.g. *C. lectularius*

2. *Eciacus*

- e.g. *Eciacus hirundinus* (the European barn swallow bug).
- Filiform, third and fourth segments of the antennae only a little thinner than the first and second.

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*Eciacus*



*Cimex*

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## **THE BEDBUGS**

### **Family Cimicidae**

#### 3. *Haematosiphon*

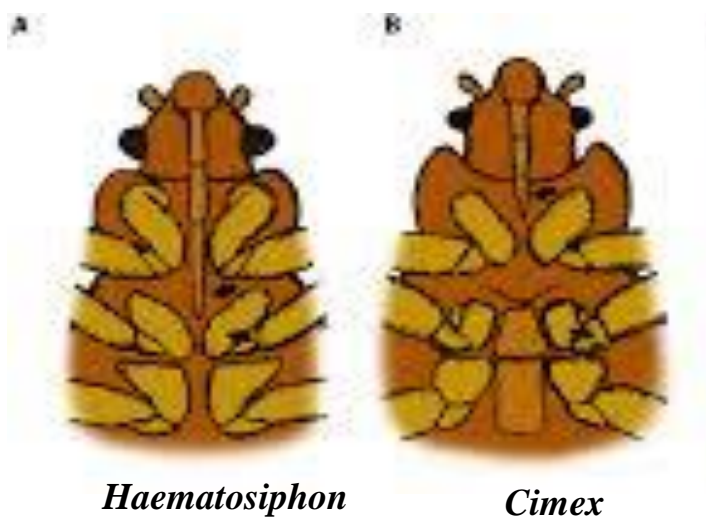
- In which the rostrum is long, reaching to the posterior coxae.

e.g. *Haematosiphon inodora*

- Infests poultry.

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## *Cimex lectularius*

- Size is 4 to 5 mm in length and 3 mm in breadth.
- It has flattened bodies.
- The adult is reddish brown in color.
- The young are yellowish white.
- Hiding in crevices during the day.
- They are nocturnal in their feeding habits.
- At night they are very active, crawling out of their hiding places

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## *Cimex lectularius*



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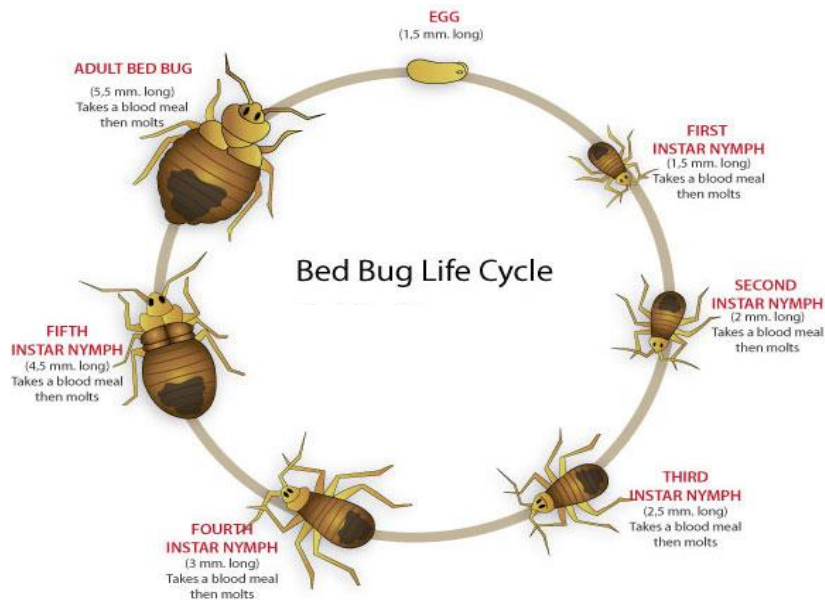


## *Cimex lectularius*

- Traveling considerable distances to attack their victims.
- They hide in the wooden beds and mattresses.
- Bedbugs are gregarious.
- The females deposit eggs in batches from 10 to 50, totaling from 200 to 500 eggs.
- spread out in a yellowish patch.

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## *Cimex lectularius*

- The eggs are large and yellowish white in color.
- Oviposition occurs during a period of two to three months, apparently limited to the spring and summer months.
- Commonly favored by warm rooms during the winter.
- The young hatch from 7 to 30 days(usually about ten days), according to temperature.

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## *Cimex lectularius*

- The time required for development from egg to maturity is given as from 45 days to 11 months.
- Normally fed individuals may survive from 54 to 316 days under ordinary room-temperature.
- Without food adults may survive from 17 to 42 days.

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## *Cimex lectularius*

- Bedbugs molt five times.
- The minute wing pads characteristic of the adult insect.
- One meal is taken between each molt and one before egg deposition.
- An average period of 8 days is required between moltings.
- Metamorphosis is simple.

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## *Cimex lectularius*

### **Methods of distribution:**

- The introduction of one impregnated female might furnish the nucleus for a well developed colony in a few months.
- Public conveyances are commonly means for the dissemination of bedbugs.
- Migration from house to house by way of water pipes, walls.
- Easily carried in clothing, travelling bags, suit cases, etc.

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## **Bedbug bites**

- The bite produces marked swellings and considerable irritation.
- The bite is produced by piercing organs, it is probable that puncture by these stylets.
- Produce little pain.
- The welts and local inflammation are caused by a specific poison secreted by the salivary glands of the insect and introduced in the act of feeding.

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## Bedbug bites

- The bedbug is able to engorge itself completely with blood in 3 to 5 minutes.
- The fact that bedbugs are obliged to feed at least five times either upon the same or a different host in order to reach maturity.

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## Disease transmission

Bed bug are capable of transmitting plague and other septicemic infections.

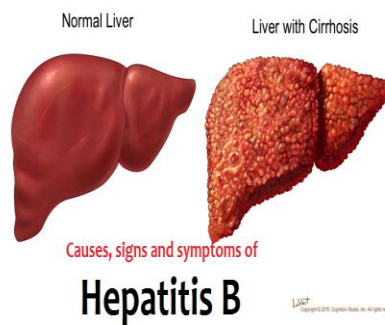
- Anthrax.
- Hepatitis B virus.
- Causing iron deficiency in infants.

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**Anthrax**



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## Bed bug control

### How to kill bed bugs ?????

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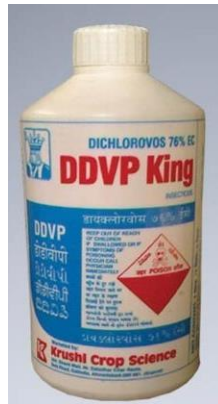
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## Bed bug control

- Keep home clean
- Floors, walls and furniture of infested houses should be sprayed or fumigated with:
  1. 5% DDT.
  2. Lindane ( HCH. Hexachlorocyclohexane)
  3. 1-2% Malathion.
  4. 0.5% Diazinon.
  5. 0.5% Dichlorvos (DDVP)
  6. 0.1-0.2 % pyrethrins.
  7. Diatomaceous earth powder

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