

External Features of Bedbugs:

(i) Shape, Size and Colour:

The body of bedbug is small, oval and dorsoventrally flattened. It measures about 5.00 mm in length and about 3.00 mm in width. The colour of bedbug is reddish- brown which changes to deep purple or red after feeding. The body is profusely covered with bristles and hairs. The body consists of three parts the head, the thorax, and the abdomen.

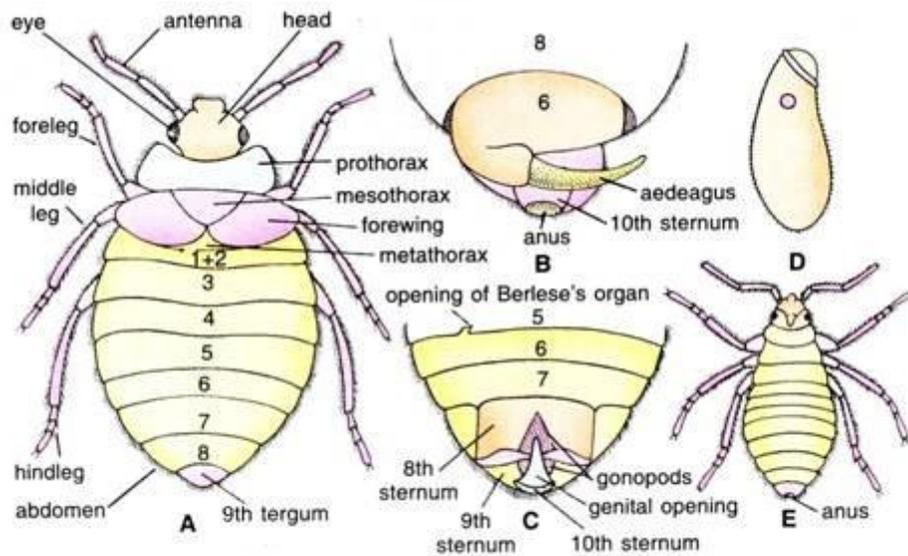


Fig. 79.1. *Cimex*. A—Adult male (Dorsal view); B—Genitalia of male; C—Posterior end of abdomen of adult female (Ventral view); D—Egg, E—Young nymph.

(ii) Head:

The short and broad head fits inside lateral extensions of pro-thorax. Head bears a pair of compound eyes and two short antennae. Compound eyes are well developed but ocelli are absent. The antennae are four jointed. The clypeus is distinct. On the ventral side of the head, the mouth parts form a sucking apparatus known as proboscis, beak or rostrum.

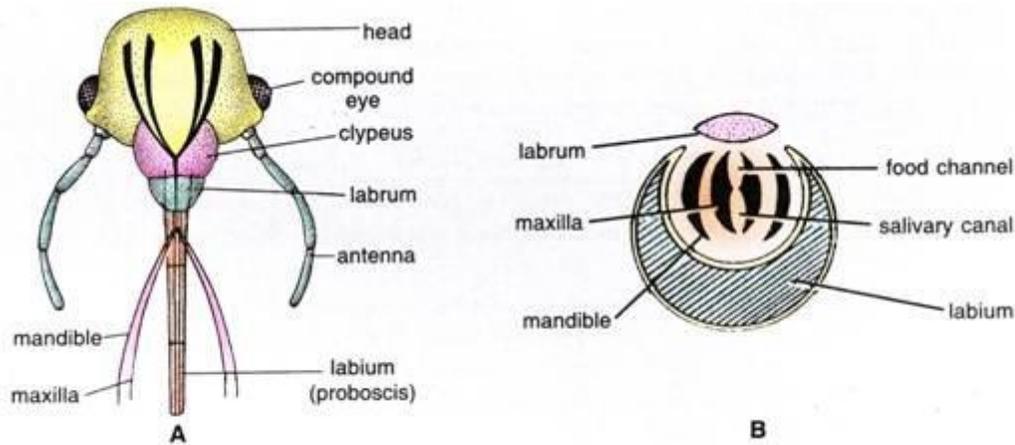


Fig. 79.2. *Cimex*. Mouth parts. A—Head and mouth parts in front view; B—T.S. of mouth parts.

Mouth Parts:

Mouth parts form a pointed beak or rostrum that lies bent under the head in a ventral groove up to the first pair of legs. The mouth parts are modified for piercing the skin and sucking the blood. They consist of a labrum, labium, a pair of mandibles and a pair of maxillae.

The labrum is short and it covers the mid-dorsal groove of the rostrum. The labium forms an elongated incomplete hollow tube or sheath called the rostrum. It is three-jointed and mid-dorsally grooved to enclose the four needle-shaped stylets, two mandibles and two maxillae.

The mandibles are flattened and sharply pointed. The maxillae are slightly shorter and possess serrated edges. The mandibles, worked by muscles in the head, slide independently on either side of the two maxillae which do not move independently of each other.

The inner maxillary surfaces are grooved so as to form two exceedingly fine channels running along their entire length. One of these is the feeding channel and is connected to the pharynx. Blood is sucked through it. Feeding channel is bigger and dorsal in position.

The other is the salivary channel joined by its ducts to the salivary glands, and is connected to a small pump beneath the pharynx. The salivary channel is smaller and ventral in position, it is used for injecting saliva into the puncture. All these are enclosed in the trough-like beak.

The beak is grooved in such a way that the sides of the groove are almost close together, thus, forming a protective sheath for the stylets inside. The maxillary and labial palps are absent.

At rest, the rostrum is bent beneath the thorax. For feeding, the rostrum is directed downwards or forwards, the blade-like mandibular stylets make a puncture in the skin of the host. The jointed rostrum bends and the maxillary stylets enter the wound. The saliva runs down into the puncture and prevents the clotting of the blood which is subsequently sucked up.

(iii) Thorax:

The thorax is divisible into a large pro-thorax, a very small mesothorax and metathorax. The pro-notum of pro-thorax is notched anteriorly to receive the head. The mesothorax is very small. The metathorax is generally covered by a pair of stub-like vestigial forewings or hemelytra that arise from the mesothorax.

The hind wings are completely absent so that flight is impossible. Each thoracic segment bears ventrally a pair of short, stout legs. The legs have three-jointed tarsi with two strong claws each. Stink glands open on the ventral side of metathorax.

(iv) Abdomen:

The abdomen is flat and consists of ten segments, tenth segment is tiny with an anus. In the male, the abdomen is narrower and pointed than in the female and terminates into a curved hook-like clasper, which serves as a sheath for the aedeagus or penis for transferring spermatozoa to female.

In the female, the abdomen is broad, rounded apically and possesses a prominent notch or cleft ventrally on the posterior margin of the fourth segment, slightly to the right of the middle line. This notch or cleft is the opening of a particular blind copulatory pouch known as the organ of Berlese, from which there is no opening to any other organ of the body.

In the female, the eighth and ninth sternae are cleft into two parts. There are no cerci. The spermatozoa are introduced into organ of Berlese by the aedeagus or penis of the male. The spermatozoa bore through the organ of Berlese and reach the ovary.

Life History of Bedbugs:

Before laying eggs, the female bug feeds on blood-meal and mates with the male bug. Life history of bedbug exhibits gradual metamorphosis and comprises three stages: egg, nymph and adult.

(i) Mating:

In bedbugs, the mating or copulation is quite interesting. While mating or copulating, the male bug takes up a position diagonally across the body of female bug and introduces its penis into the notch or cleft of the organ of Berlese to transfer the spermatophores. The spermatozoa bore through the wall of organ of Berlese and reach the ovary to fertilize the eggs. Thus, fertilisation is internal.

(ii) Eggs:

The female lays about 200 to 500 eggs, singly or in batches, 2 or 3 eggs per day, in cracks and crevices of cots and furniture, in holes, under mattresses and similar other places. The eggs of bedbugs are pearly white oval or cylindrical objects, furnished with a little cap-like lid at one end which is slightly curved to one side.

The end possessing the cap-like lid bears a micropyle. The eggs are about 1.00 mm in length and are laid singly or in small batches. The eggs are laid throughout the year in warm countries.

(iii) Nymph:

The eggs hatch in from 6 to 10 days during warm weather but take a longer period during cold weather as their development is retarded by cold. The young bugs or nymphs come out by pushing off the lids of the eggs. The nymphs are very small, about 1.00 to 1.50 mm long, flat, active, delicate, semitransparent creatures and are pale in colour.

They resemble the parents in general appearance except being smaller and paler and possessing comparatively thicker antennae and stouter legs. After a few hours, the nymphs are able to pierce the skin of man and suck the blood, and if undisturbed they feed to repletion in about 3 or 4 minutes.

They may take a meal three or four times of their body weight and become globular and bright red. They need shelter but no more food till they moult into the second stage. After their first hearty meal they have a much more robust appearance, and grow rapidly. They feed on human blood and moult five times to become the adult.

After each moult, the nymphs become slightly larger and darker. If man is not available for feeding, they feed on blood from the older bugs. The nymphs can survive without feeding for 3 or 4 months during which period they do not moult. After five moults they become adult taking about 7 to 24 weeks in all. The entire life history takes about 2 months in warm weather and about 6 months during winter in cold regions.

Economic Importance of Bedbugs:

The bedbugs are the most annoying and disgusting household pests. They feed on human blood by piercing the skin, causing in some cases only, pain and inflammation.

The economic importance of bed bug can be better studied under the following heads:

1. Nuisance:

The bedbugs emit foul and stinking smell due to the secretion of the stinking glands. This peculiar odour is unbearable to the human beings. When their number increases sufficiently, the sleep becomes almost impossible. Their bite causes inflammation, irritation and disturbance in sleep.

Sleepless nights with constant irritation due to the introduction of saliva of bedbug in the human blood during feeding are likely responsible to contribute greatly to the ill- health of children and even of certain adult persons.

2. Diseases:

The bedbugs have been suspected of transmitting many diseases from man to man. They are supposed to transfer the micro-organisms or germs of kala-azar, bubonic plague, relapsing fever, typhoid and even tuberculosis.

It is doubtful, however, if they are active or chief vectors of any major disease, but they appear to possess the micro-organism of kala-azar, plague, typhoid, relapsing fever and tuberculosis and under exceptional circumstances they may become means of their dissemination and transmission. It is generally accepted now that bed bugs are not responsible for large outbreaks of epidemic diseases.

Control of Bedbugs:

The following measures are suggested to control the bedbugs:

1. The houses should be well-ventilated, damp-free, and clean. This can be done by cleaning the rooms, beds, mattresses and furniture, etc.
2. Necessary precautions to prevent entrance of bedbugs from infested beddings or luggage brought after journey, should be taken.
3. Badly infested rooms and furniture may be made bug-free by washing with insecticides which will penetrate the cracks and crevices in the walls of rooms and the furniture.
4. Sprinkling of boiling water, spraying of petrol or an emulsion of kerosene, benzene and petrol and fumigation with sulphur are generally used to exterminate the bedbugs.
5. Bedbugs can be killed by the fumigation of rooms and furniture with HCN gas but this should be done with extreme precaution as the HCN gas is poisonous to man also.
6. The best method to exterminate the bedbugs is the spray of DDT (dichloro-diphenyl-trichloroethane). It can be sprayed on the indoor surface and on the furniture so as to leave residue which is lethal to bedbugs which crawl over it for many months.

For small infested bed rooms all that is required is about 1.5 litres of 5 per cent DDT in kerosene. This can be sprayed on all the walls and furniture where bugs may crawl or rest. In case of irritation and inflammation of skin by bed bug bite, a little of hydrogen peroxide or ammonia may be rubbed on the skin. This acts almost as an immediate cure.
