

15.5 BOOK LOUSE

Scientific Name: a. *Liposcells transvaalensis* Enderlein
b. *Psocus lineatus*

Family: Liposcelidae
Order: Psocoptera

Status: Minor household pest.

Distribution: Scarcely distributed world-wide.

Food: Found in the collection of old books and papers where they remain hidden and feed on the paste and paper.

DESCRIPTION OF STAGES

Egg: The eggs are round at one end, laid singly or in groups, and covered with silken web.

Adult: Psocids are minute light coloured winged or wingless soft-bodied insects with chewing mouthparts and long antennae and legs. Wingless are called book lice. Winged forms have two pairs of wings. The fore wings are larger than hind wings. Wings in resting posture are held roof like over the abdomen.

Nymph: It resembles adult but differs in having less number of antennal segments, fewer ommatidia, and two tarsal segments. Wing pads and genitalia are developed gradually.

LIFE HISTORY

They over winter in egg stage, but in warm, damp and dark places breeding may continue throughout the year. Female lays 2 to 100 eggs in groups at various places. Eggs may be covered with a silken web or a coating. Usually there are six nymphal instars. Nymph differing from adult as possessing smaller antennal segments, two tarsal segments, fewer ommatidia and gradually developing wing pads and genitalia. Parthenogenesis is common. There is one or two generations in a year but domestic species breed continuously.



Psocus lineatus
(Liposcelidae: Psocoptera)



Liposcelis transvaalensis Enderlein
(Liposcelidae: Psocoptera)

DAMAGE

1. They damage the books by feeding on the paste and binding of books.
2. Species occurring in buildings rarely cause much damage but are frequently a nuisance.
4. If present in large numbers they may destroy old rare books and record.
5. They also cause damage by feeding on the flour and cereal products in the kitchen and store houses.

NON-CHEMICAL CONTROL

1. Provision of ventilation and drying of the houses can reduce its population.
2. Its infestation can be reduced by regular brushing and cleaning of old books and paper files.
3. Rare books and articles may be kept in the tight containers.

CHEMICAL CONTROL

1. The paste used for binding of the books should be mixed with chlorpyrifos 5 %.
2. The shelves and almirahs containing old books and paper files should be treated with carbaryl 5 % dust.

3. Heavily infested libraries should be fumigated with phosphine gas after making them airtight.
4. The application of dichlorvos 0.5 % or pyrethroids (such as permethrin and cypermethrin) in 0.1 to 0.5% concentrations as dust, mats/coils and aerosol sprays is effective for its control on small scale.

15.6 BIRD LOUSE

Scientific Name: *Columbicola columbae*
 Family: Philoptenidae
 Order: Mallophaga

Status: Minor pest.
 Distribution: Scarcely distributed.

DESCRIPTION OF STAGES

The order Mallophaga includes the so-called biting or bird lice. Common name, bird lice is not preferred because certain members are primarily ectoparasites of mammals. There are about 3000 spp. of bird lice. Two characters make it easy to identify Mallophaga. (a) The head as broad as is the thorax. (b) Pair of strongly chitinized pincers like mandibles on the ventral side of head.

In most species 2-7 abdominal segments bear spiracles. Legs are short and much alike. Sub-order Ischnocera has legs modified for clasping purpose.

Egg: The female lays as many as 60 whitish, opaque eggs which are attached to the host feathers. Incubation period is 3 to 5 days at 37°C.

Nymph: There are 3 nymphal instars each lasting for less than 7 days.

Adult: Third nymphal instar metamorphoses into adult. The adult is very slender and 2 mm in length. Temperature is critical for the survival of adult. It can survive few days off the host. *C. columbae* adults can live for 30 to 40 days if maintained at 37°C.

LIFE HISTORY

Entire life cycle occurs on the host. Eggs are laid by female attached to the feathers. Up to 60 eggs are laid which undergo incubation period of 3 to 5 days at environmental temperature of 37°C. There are 3 nymphal instars each lasting for slightly less than 7 days. *C. columbae* adults live for 30 to 40 days.

DAMAGE

1. They cause irritation and restlessness.
2. Their infestation in young ones is fatal.

CONTROL

1. For control of lice on poultry, malathion 2-5% is recommended.
2. The application of dichlorvos (Vapona/Thunder) in lower concentration is effective for the control of this pest.
3. Pyrethroids (such as permethrin and cypermethrin) in 0.1 to 0.5% concentrations as dust, mats/coils and aerosol sprays are also effective.

15.7 HUMAN LOUSE

Its allied race is also known as **Body louse**.

Scientific Name: *Pediculus humanus* Linnaeus
Family: Pediculidae
Order: Phthiraptera

Status: Most common pest.

Distribution: Most widely distributed in congested places of unhygienic and populated livings throughout the world.

DESCRIPTION OF STAGES

Adult: The adults are small i.e. 1.5 to 4 mm in length and greyish brown to almost lead in colour. They are flattened and wingless with 5-segmented antennae. They possess heavy legs which terminate in a single, sharp curved claw for grasping. The body louse is typically larger than the head louse and lighter in colour.

Egg: The eggs are oval and whitish with distinct pebbled lid at one end and less than 1 mm long. Female of head louse lays eggs glued with cement like secretion to the hairs on the head while body louse lays eggs on the seams of clothes.

Nymph: The nymphs are a miniature of adults with 3-segmented antennae and tiny slender body. There are three nymphal instars.



Pediculus humanus Linnaeus
 (Pediculidae: Phthiraptera)

LIFE HISTORY

Louse passes its whole life cycle on the host. Breeding takes place throughout the year in overcrowded, poorly ventilated and comparatively warm places. The male and female copulate on their host. The male crawls underneath to unite and the female rises to a vertical position lifting the male. The two lice then return to the horizontal position and remain united for 30 minutes or more. A female of head louse lays 50-100 eggs @ 8-10 eggs/ day while body louse lays 200-300 eggs. The incubation period lasts for one week. After emergence, tiny slender nymphs start feeding immediately and pass through 3 moultings over a period of 1-4 weeks for conversion into adult. Development is rapid and egg to egg cycle takes 3 weeks generally. Temperature is critically important during developmental process. Embryonic development ceases if temperature is below 23°C.

After hatching, nymphs require immediate feed and if it is not possible, they perish within 24 hours. A mature female lives for 33 to 40 days while male for a shorter period.

DAMAGE

The pest causes the following three types of damages:

1. The louse punctures the skin and sucks up blood directly in liquid state which produces extreme irritation causing rub and scratch and it becomes an allergic reaction.
2. Human skin subjected to louse bites over long periods often becomes deeply pigmented i.e. a condition known as vagabond disease and the victim becomes immune.
3. Louse is also a major vector for three important human diseases namely relapsing fever, typhus and trench fever.

NON-CHEMICAL CONTROL

1. Personal cleanliness is very helpful to control this pest.

CHEMICAL CONTROL

1. Application of dichlorvos (Vapona/Thunder) or malathion solution prepared in very low concentration with the help of comb dipped in this solution and then drawing it through the hair is helpful for a very effective control of this pest. Every caution should be taken that the poisonous solution may not enter into the eyes or wounds of the affected person.
2. Treatment may be repeated in the case of severe infestation after the interval of about 10 days.

15.8 BED BUG

Scientific Name: *Cimex lectularius* Linnaeus
 Family: Cimicidae
 Order: Hemiptera