

Family: HIPPOBOSCIDAE

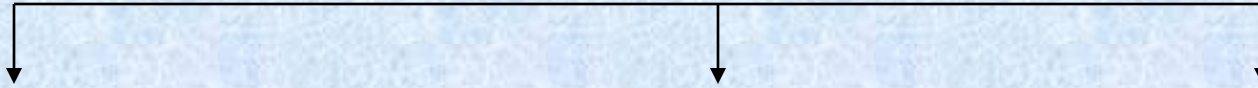
Common name: Pupipara, Forest flies



1. Females lay fully mature larvae one at a time which puped immediately.
2. Adults, both male and females live on blood of animals and birds.
3. They have broad, comparatively dorso-ventrally flattened, soft leather like abdomen.
4. Wings may or may not be present.
5. Legs provided with strong claw with which they remain attached to the body of the host.
6. They always have a preferential host but may attack the other host when preferential host is not available.

Family:

Hippoboscidae



Genus (s)

Hippobosca

H. equina

H. rufipes

H. maculata

Louse fly

Melophagus

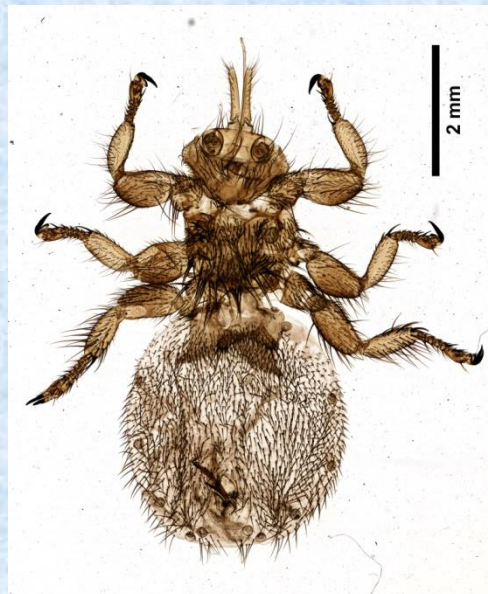
M. ovinus

sheep ked

Pseudolynchia

P. canariensis

Pigeon fly



Genus: *Hippobosca*

Species:

H. equina -

H. maculata -

H. rufipes -

Host

Equine

Horse louse fly

Cattle

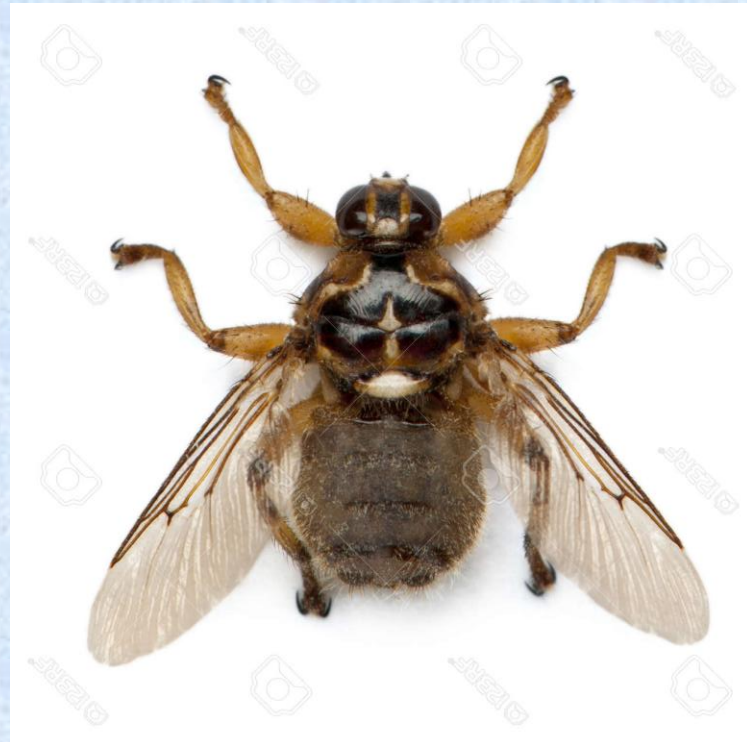
Cattle louse fly

Dog

Dog louse fly

Forest fly

Pupiparous fly



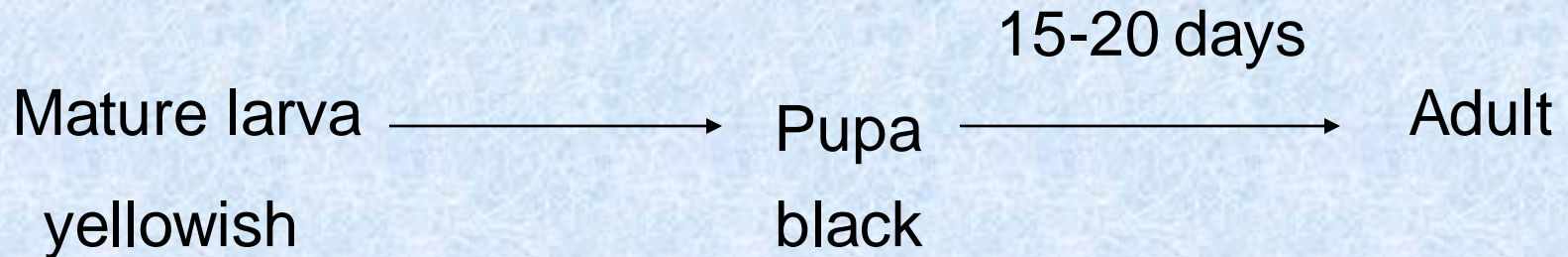
Morphology:

1. These are **dark brown** flies with yellowish spot and marking on the body both on thorax and abdomen.
2. Comparatively **rounded head and abdomen soft and leather like**.
3. **Wings** are overlapping at rest with venations towards the anterior margin only.
4. Strong piercing proboscis and legs with claws.
5. They are found all over the country.



Life cycle:

- Female laid fully mature larvae one at a time in a sheltered place near the roots of plant or soft hummus soil.
- The fully mature larvae become pupa almost immediately.
- Larvae are yellowish in colour and during the formation of pupa it turns to black.
- Larvae are about 4-5 mm in size with dark spot on its body.
- Pupal period is influenced by temperature and the adult emerges in about 15-20 days.



Habits:

1. Flies are most common in summer days and prefer sunny weather.
2. Mostly remains on the body of the host and generally leave the host either for laying larvae or when very strongly disturbed.
3. They remain on the inner side of the thigh, perineal and pubic region or on the head where they are least disturb by their host.

Pathogenesis:

1. **Bite** is very irritating and painful which disturb the animal in routine grazing and feeding.
2. They feed on a substantial amount of **blood** but are not potent carrier of any pathogenic organisms excepting *Trypanosoma theileri*, which is non-pathogenic.

Control:

It is not difficult since the flies mostly remain on the body of the host.

Regular spraying and dipping with insecticides can easily control this flies.

Genus: *Melophagus*

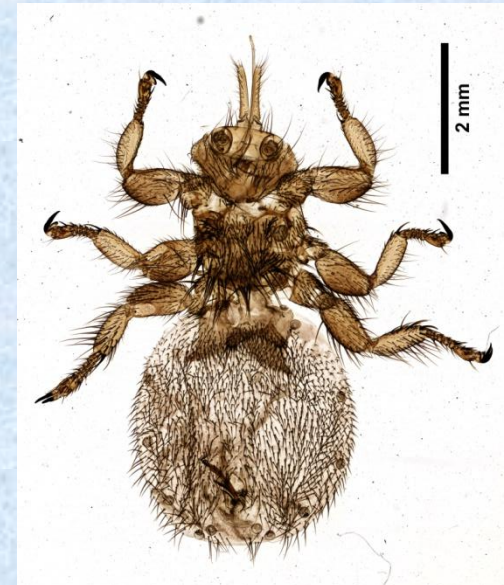
Species: *M. ovinus*

Common name: Sheep ked.



Morphology:

1. They are the parasite of **sheep** and spend the whole of their life on the body of the host.
2. They are **wing less** leathery parasite.
3. The **head fixed** on the thorax and is not moveable.
4. Strongly clawed legs are attached to the thorax.
5. Thorax is brown in colour and the abdomen is grayish in colour.
6. Proboscis projects anteriorly from the head.

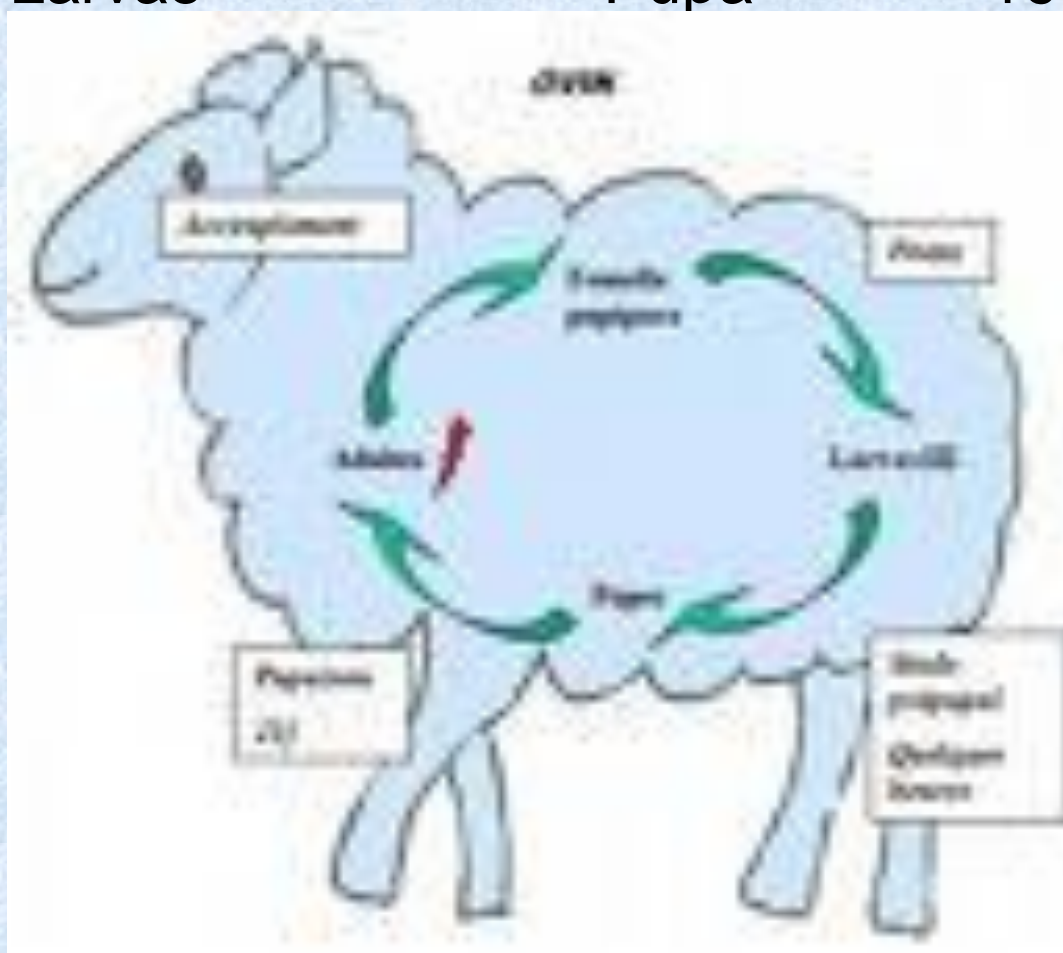


Distribution:

All over the world found in sheep only.

Life Cycle:

Larvae → Pupa → 19-23 days → Adult



Life cycle:

- Female laid one larvae at a time on the body of the host and the larvae attached to the wool of the host with a sticky substances, which covers the larvae when laid.
- Larvae are totally immotile sub-globular in shape dark yellow when laid and transform into a chestnut brown pupa almost immediately.
- Adult emerges in about 19-23 days depending on atmospheric temperature.
- In very cold climate pupa stage is extended up to 36 days.
- A female can lay 10-15 larvae during its lifetime of 4-5 months.

Habits:

1. They are very common in autumn and winter months and spread from one sheep to another by direct body contact.
2. Sheep with long and heavy coat, which generally get clayed, are more commonly affected.

Pathogenesis:

1. The flies suck huge amount of **blood** and heavy infection may cause **anaemia** in animals.
2. **Bite** is very painful and irritating and the animal scratch and cause loss of wool as well as injuries.
3. The **faeces** of the flies cause **dark stain of the wool**, which are not easily removable and are permanently causing loss of value of the wool.
4. Poorly kept animals, which are more commonly affected than animals keep properly.
5. They also transmitted non-pathogenic *Trypanosoma melophagium* in sheep.

Control:

1. Regular and timely **shearing** of sheep reduces the population to a great extent.
2. Animal protected against cold weather and sheared and **dipped** with insecticide may lead to control of this flies to a great extent.

Genus: *Pseudolynchia*

Species: *P. canariensis*

Common name: Pigeon flies



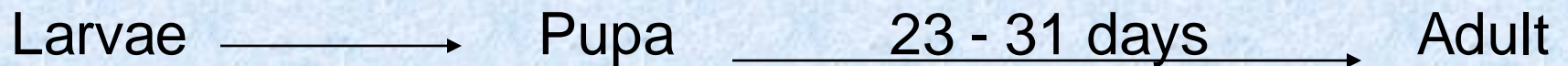
Morphology:

1. Morphologically they resemble *Melophagus* but have a pair of transparent wings with venation on the anterior margin only.
2. They are dark brown in colour.
3. Legs are provided with strong claws.
4. They are very common in warm countries and are found in **pigeons** and other birds mostly in the nest.



Life cycle:

- Fully mature larvae are laid in the nest of the bird one at a time which puped almost immediately.
- In case of captive birds, they are laid in the dark corner of the cages.
- Larvae are yellow when freshly laid but turns to dark brown pupa very quickly.
- Adult emerges in about 23-31 days.



Habits:

1. Flies go below the feather of the birds and may not be visible from outside.
2. If disturbed, they very swiftly leave the host and may even attack the handlers of the birds.
3. They can move through the feather also very quickly.

Pathogenesis:

1. They suck substantial amount of **blood** and cause painful wounds on the body of the host.
2. Young birds with fewer feathers are more affected than older birds with thick feather.
3. They transmit the protozoa *Haemoproteus columbae* in pigeon.

Control:

Non-irritating non-toxic insecticides in dry form diluted with some powder may be dusted over the bird as well as on their nest.

Liquid spraying and dipping should preferably be avoided in birds.

MOUTH PARTS OF INSECT

Month parts of insects vary greatly, depending on the feeding habits of the species.

The upper lips (labrum) - not actual month part

Pair mandibles - lie directly behind the labrum

Hypo-pharynx - unsegmented out growth of the
body wall.

Epi-pharynx

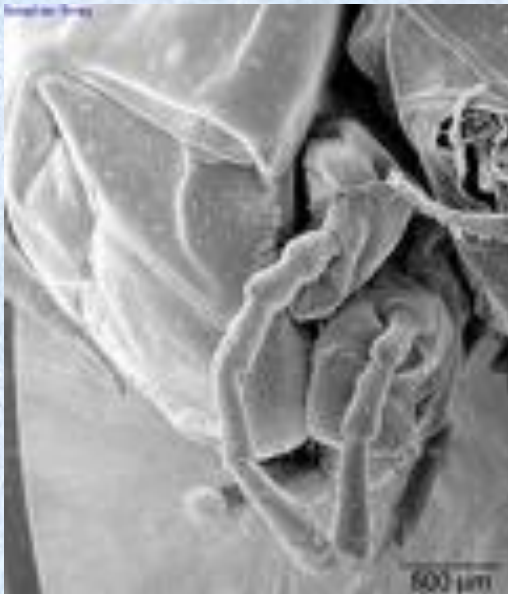
Paired maxillae

Lower lips (labium)

Because the mouth parts of insects are greatly modified in many species the principal types are given below: -

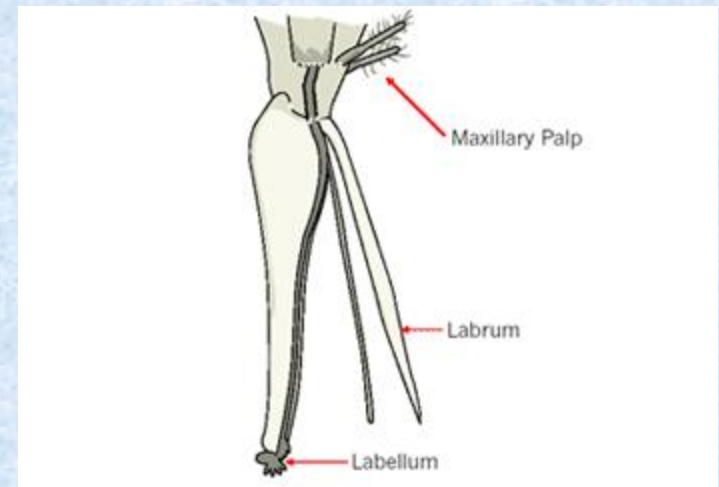
1. Chewing type: -

The mandibles masticate the food and the maxillae and labium serve to push the particles into the mouth. e.g. grass hopper, beetles and ants.



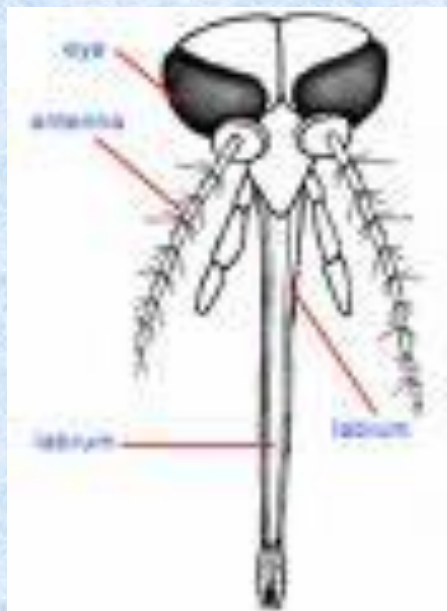
Cutting and sponging type: -

The mandibles are in the form of sharp blades and the maxillae are long and stylet like. The mandibles and maxillae cut and tear the skin of host. A sponge like labium connected to a tube formed by hypo and epi-pharynx collects blood. e.g. tabanids / horse fly (Haematophagus fly).



Piercing and sucking type: -

The labrum, mandible, hypo pharynx and maxillae are long and slender and fit together, forming a hollow tube. The labium is also elongated and warps around the other parts like a rigid sheath. During feeding the tube pierces the host's skin like a hypodermic needle and blood is drawn through it. e.g. mosquito, flies, bee and bed bugs (Haematophagus fly).



Chewing and lapping type: -

The labrum and mandibles are similar with grasshopper (chewing type). However, maxillae and labium are modified as elongated structures by which the food is drawn up. e.g. bee and wasps.



Sponging type: -

Similar to cutting and sponging type but mandibles and maxillae are non-functional. Remaining parts form a proboscis with a sponge like apex called labella. Liquid foods sucked, solid food ingested only after dissolving or suspending in deposited saliva. *e.g.* Non-biting dipterans.

