

Cyclorrhapha

Blood sucking group

1-Muscidae

2-Glossinidae

3-Hippoboscidae

Myiasis producing group

1-Calliphoridae

2-Sarcophagidae

3-Oestridae

General characters

- 1- adult emerge from pupa through circular opening
- 2- both male and female are pool blood feeder
- 3- larvae pass with three larval instars in 2 weeks
- 4- size of adults ranged from 3-8 mm of gray colour
- 5- they overwinter as larvae and pupa and adult start activity in spring and summer
- 6- in myiasis group; adult have ill developed mouth parts feed on body secretion and excretions, but all hazard come from larvae inside their host

I-Muscidae

A- biting flies

1- *Stomoxys calcitrans* (stable fly)

2- *Haematobia irritans* (horn fly)

B-Non biting flies

3- *Musca autumnalis* (face fly)

4- *Musca domestica* (house fly)

5- *Fannia scalaris* (laterine fly)

1- *Stomoxys calcitrans* (stable fly)

1-very annoying pest for domestic animals in summer feeding on lower abdomen and legs of domestic animals, feed to 5 min.

2- cause blood loss and animal disturbance make the animals kick and bunch together to avoid biting result in reduced feed intake and low milk production, also secondary injuries and fractures

3- transmit *Trypanosoma evansi*, *equinum*

Habronema microstoma

Equine infectiosus anaemia virus

bovine leucosis

Eperythrozoon suis

4- Adult fly; 5-8 mm; gray colour; with four dark longitudinal dark strips on thorax, and checkerboard on ventral abdomen, proboscis is hard and citizenized project out from head for suck blood by male and female.

5- eggs batch (25-50) deposited in straw,litter, manure, compost, and bedding that hatch 1-3 days, white creamy larvae pass in 3 stages in 2-3 weeks give pupa depend on moisture and temperature, pupa take 4 weeks to give adult that begin activity in summer.

2- Haematobia irritans (horn fly)

- 1- small gray small fly 3-5mm. Has piercing and sucking proboscis in both male and female to suck blood.
- 2- considered continuous obligatory ectoparasite on pastured cattle.
- 3- eggs larvae pupa are reddish brown colour
- 4- adult usually congregate on back withers and around head, and aggregated at the base of the horn.
- 5- while feeding it is usually in a head downward position.
- 6- lay eggs in fresh manure in pasture, single female put 400 eggs in batches of 20-30 eggs hatch 1-2 days; larvae hatch 3-10 days in dung pass with 3 instar, pupation take 6-8 days under dung; entire life cycle 10-14 days; and still in pupa overwinter and adult emerge with beginning of spring and summer.
- 7- transmit *stephanofilaria stilesi* that cause granular dermatitis in cattle.

3- *Musca autumnalis* (face fly)

1- one of non biting flies that have soft sponging mouth parts used for ingest liquid foods from surface of face and head of horse and cattle causing direct annoyance, size 6-10 mm gray to black in colour resemble house fly with 4 black srips on thorax

2- have small rough spines on mouth parts that can irritate eye tissue of host causing excessive eye secretion and redness, and they are a mechanical vector of *A-Moraxella bovis*, which is the causative agent of infectious bovine keratoconjunctivits (IBK) in cattle.

B- *Thelazia lacrymalis* (eye worm of cattle, horses)

C- *Parafilaria bovicola*

3- lar eggs singly in manure hatch in 1 day, white to yellow larvae develop in 4 days, pupa 4-7 days to develop adult that feed on plant and dung , animal fascial secretions(tears, nasal mucous, saliva) blood from wound, milk on calves faeces, vaginal discharge, placental fluids.

4-*Musca domestica* (house fly)

1- one of non biting flies that have soft sponging mouth parts associated with human animals poultry association.

2-feed on secretion and excretion of host

3- as a mechanical vector of

- *Habronema muscae*, *Habronema megastoma* that cause cutaneous habronemiasis in horses.

- Eggs of *Toxocara vittolourum*, *Ascaridia galli*, *oxyuris equi*,

- Cyst and trophozoites of *Entamoeba spp*, *Giardia spp*, *Balantidium coli*

- Chicken tapeworm ; *Choanotaenia infandibulum*

- Typhoid, paratyphoid, salmonellosis

- Accidental myiasis

4- Adult is dull gray 6-12 mm, have 4 dark strip on thorax, abdomen have chekerboard apearence dorsally and creamy white ventrally and onsides

5- eggs are elongated 1 mm whitish deposited in batches 50-150, 3 larval stages 10-15mm long; differentiated by posterior spiracles of larvae, pupa is barrel shape red brown clour.

5- *Fannia scalaris* (laterine fly)

F. Canicularis and F.scalaris

1- called little house flies or laterine flies

Attracted to animal sweat, mucous, fecal material adhering to skin

Cause annoyance to people, dairy animals

Size of 2- 4-8mm long; have dark thorax and abdomen with yellow marking, larvae and pupa have lateral and dorsal projection

- *Fannia* breed in decomposing organic matter from animals human and chicken wastes
- Eggs and larvae develop in wet matter and laterine with characteristic rat tail shape larvae but pupa in surrounding dry area within 15-30 days in winter.
- Adult activated at spring that is characteristic by hovering behaviour in flight.
- Causing accidental urogenital myiasis

II-Glossinidae

- Glossina (palpalis-moristanis)..... Tse tse fly
- One of the blood sucking insects in which male and female feed on host blood
- Restricted to western and central Africa
- Vector and biologically transmit several types of Trypanosoma in both human (Tr.gambiense, Tr. rhodesiensi) and animals such as (Tr.conglense-brucei-vivax-simiae-caprae-uniformae) in domestic cattle, buffaloes, sheep, goats and type of transmission is cyclopropagative.
- Adult is narrow bodied flies 14 mm long yellow to dark brown colour, at rest the wings are overlapping over the abdomen with long forward directed proboscis.
- Adults have uterine accessory milk gland and they are larviparous. Larvae hatch inside female oviduct , emerged female mate directly within a day and once mated it remain fertile for life, after 9 days larvae deposited on ground to pupa then adult emerge after one month through circular opening.

III-Hippoboscidae

-*Hippobosca (bovis-equi-cameli)*

-*Pseudolynchiya canariensis (pigeon fly)*

-*Melophagus ovinus (sheep keds= sheep louse fly)..... wingless*

4-They are permanent continuous obligatory ectoparasites Lack wing in case of ***Melophagus ovinus of sheep and goats*** so it persist entire life on host not flying 5-8 mm. leathery in texture. Transfer in warmer months leave host only when it die

5- Both male and female suck blood cause irritation to sheep causing it to scrub and scratch so damage their wool coat produce pitting and ridging appearance as a result of allergic response to ked bites. So it decrease the value of wool and hide due to fecal staining of wool

6-*Pseudolynchiya canariensis (pigeon fly)* transmit *Haemoproteus columbae*

7- *-Hippobosca spp and Pseudolynchiya spp have very weak wing venation so it not fly it slightly move and hopping over the skin*

Myiasis producing group

1-Calliphoridae(blow colored flies)

Calliphora spp

Chrysomya spp

Cochlyomyia hominivorax

Lucilia spp

2-Sarcophagidae(flesh flies)

Sarcophaga spp

wholfhartia spp

3-Oestridae

Oestrus ovis

hyboderma bovis

Gastrophilus spp

Cephalopina titlator

Rhinoestrous cameli

4- Muscidae

Musca domestica

Fannia spp

Myiasis

Definition

the infestation of live vertebrate animals with dipterous larvae for a certain period, feed on the host's dead or living tissue, liquid body substances, or ingested food, and there are two main systems for categorizing myiasis:

A- Bishop's classification: anatomically acc. to the location on the host

- Cutaneous or traumatic (hypoderma - *Cochlyomyia hominivorax*)
- Gastro-intestinal (*Gastrophilus* spp-*Musca domestica*)
- Urogenital (*Fannia* spp)
- Ocular or ophthalmic (*cuterebra* spp)
- Nasopharyngeal(*oestrus* spp – *Rhinoestrous* spp)
- Auricular (*Chrysomya bezziana*)
- Fruncular (*Dermatobia* spp-*cuterebra* spp-*cordylobia* spp)

B- Patton's classification acc. to the host parasite's relationship

- Specific (*Oestridae*)
- Semi specific (*caliphoridae*)
- Accidental (*Muscidae*)