



Myiasis

- Myiasis is the invasion of a living vertebrate animal by fly larvae.
- This invasion may or may not be associated with feeding on tissues of host.
- Myiasis causing flies are represented by a diversity of species.
- Some are rarely involved in myiasis, whereas for others it is the only way of life.

- Myiasis is classified based on the degree to which a fly species is dependent on a host.
- Three types of myiasis generally are recognized:
 - **In accidental myiasis,**
 - *Drosophila* spp.
 - **Facultative myiasis**
 - *Wohlfahrtia* spp., *Cochliomyia* spp.
 - **In obligatory myiasis**
 - *Oestrus ovis*

Taxonomy

- The vast majority of species involved in myiasis are members of two superfamilies and six families of calypterate flies: Muscoidea (Anthomyiidae, Fannidae, and Muscidae) and Oestroidea (Caliphoridae, Sarcophagidae, and Oestridae).
- Members of the Calliphoridae are called blow flies. This large family includes over 1000 species worldwide.
- Sarcophagidae are the flesh flies, with some 2000 species distributed worldwide.
- The Oestridae are the bot flies, with fewer than 150 species worldwide.
 - Cuterebrinae
 - Hypodermatinae
 - Oestrinae
 - Gasterophilinae

Calliphoridae

- The most generalized of the six families of Oestroidea is the Calliphoridae with over 1000 species.
- The larvae typically feed on wet, living, or death flesh.
- Desiccation is detrimental to both egg and larval survival.
 - *Calliphora* spp.
 - *Lucilia* spp.
 - *Cochliomyia* spp.

Sarcophagidae

- Adults are typically medium to large, black and gray flies with longitudinal thoracic stripes and a checkered, or tessellated, abdominal pattern.
- All sarcophagid species are larviparous.
- Females produce 30 to 200 larvae, depending on the species involved.
- *Sarcophaga* species usually are associated with carrion or feces, but can cause facultative wounds and accidental gastrointestinal myiasis.
 - *Sarcophaga* spp.
 - *Wohlfahrtia* spp.

Oestridae (Bot Flies)

- Bot flies are the most highly evolved group of obligate myiasis-causing parasites of mammals.
- They are treated as four distinct subfamilies in the Oestridae.
 - Cuterebrinae
 - Hypodermatinae
 - Oestrinae
 - Gasterophilinae

Hypodermatinae

(Old World Skin Bot Flies)

- These flies are the Eurasian counterpart of the New World skin bots.
- There are nine genera and 31 species occurring in rodents, deer, goats, and **cattle**.
- The most widespread and important species are in the genus *Hypoderma*.

Cattle Grubs (*Hypoderma* spp.)

- *Hypoderma bovis*
- *Hypoderma lineatum*
- They are major economic pests of domestic cattle.
- Losses include damage to hides and self injury by hosts during headlong flights of panic, or gadding, in futile attempts to escape ovipositing flies.

Oestrinae

(Nose Bot Flies)

- *Oestrus ovis*
- *Rhinoestrus pupureus*
- Nose bot flies differ from other bots in that their eggs develop in utero.
- The first-instar larvae are ejected by the hovering female directly into the muzzle or eye of the host.

Gasterophilinae

(Stomach Bot Flies)

- Adult flies of this group, represented by 17 species in five genera, resemble honey bees in their general size and color.
- The largest genus is *Gastrophilus*, the horse stomach bot flies, with nine species, three of which have worldwide distribution (*G. intestinalis*, *G. nasalis* and *G. haemorrhoidalis*)
- These parasites are common companions of horses and donkeys wherever these hosts occur.

Prevention and Control

- There are three major approaches for controlling myiasis
 - Avoiding contact between potential hosts and myiasis-causing flies
 - Early treatment of wounds to prevent myiasis
 - Reduction or elimination of myiasis-fly population.
- The most common approach is the use of insecticides, especially systemic compounds that target the parasitic larvae, administered to the host.