



Muscidae (Muscid Flies)

Taxonomy

- The Muscidae include approximately 4200 species in 190 genera.
- Only a few of these genera contain important medical or veterinary pests.
- Important muscid flies occur in two subfamilies,
 - the Muscinae
 - the Fanniinae
- Important nonbiting Muscinae are the house fly, etc.
- The important biting Muscinae are the stable fly and horn fly.
- The second subfamily, the Fanniinae, are represented by the nonbiting little house fly and its relatives (*Fannia* spp.)

Morphology

- The life stages of a typical muscid fly of egg, larva, pupa, and adult.
- Larvae of muscid flies and related families are known as maggots, and there are three instars in all species.
- Adult muscid flies are 4 to 12 mm long, with wings longer than the abdomen.

House Fly (*Musca domestica*)

- This nonbiting filth fly occurs on all continents except Antarctica.

Stable Fly (*Stomoxys calcitrans*)


- This biting filth fly is native to Africa, Europe, Asia, and the Orient, and was probably introduced into the Americas and Australia during colonial times.

- Horn Fly (*Haematobia irritans irritans*) and Buffalo Fly (*Haematobia irritans exigua*)
 - Biting flies

- Little House Fly (*Fannia canicularis*)
 - Nonbiting filth flies

Prevention and Control

- Three general approaches are used to avoid or reduce problems caused by muscid flies:
 - (1) prevention of breeding
 - (2) killing adults before they cause harm or produce offspring
 - (3) exclusion of adults with screens and other barriers.



Tabanidae (Horse Flies and
Deer Flies)

Taxonomy

- The family Tabanidae includes approximately 4300 species and subspecies in 133 genera worldwide.
- The family Tabanidae is divided into three subfamilies.
 - Pangoniinae
 - Chrysopsinae (deer flies)
 - **Tabaninae (horse flies)**
 - *Tabanus*
 - *Haematopota*
 - *Hybomitra*

Morphology

- Tabanid larvae are spindle-shaped and generally whitish in color, although some are shades of brown or green.
- Mature larvae of common species typically measure 15 to 30 mm in length, but some larger tabanid larvae may be as long as 60 mm.

Life History

- Tabanid larvae are found in a wide variety of aquatic and semiaquatic habitats.
- Many tabanids are anautogenous and require a single large blood meal in order to develop a batch of eggs.
- Blood meal size varies from 20 to 25 mg for many *Chrysops* species to almost 700 mg for *Tabanus atratus*.

Public Health Importance

- Loiasis (African eyeworm, *Loa loa*)
- Tularemia
- *Bacillus anthracis* ?
- *Borrelia* spp. ?

Veterinary Importance

- Owing to their painful, persistent biting behavior, tabanids are significant pests of livestock, particularly cattle and horses.
- Heavy attack by tabanids can cause direct reductions in weight gains of beef cattle, reduced milk yield etc.
- Vector
 - Surra and related Trypanosomiasis
 - Equine Infectious Anemia
 - Anaplasmosis

Prevention and Control

- Tabanid control is difficult to achieve.
- Typical host contact is only about four minutes per fly during blood feeding, which may occur only once every three to four days.
- Short-term control on livestock for several days may be achieved through use of insecticides, but insecticide sprays often are not particularly effective.
- Use of insecticides for control of larvae or pupae, which are typically inaccessible in soil, is generally ineffective and can result in environmental damage.