

Ceratopogonidae (Biting  
Midges)

# Taxonomy

- The Ceratopogonidae are represented worldwide by approximately 110 genera and 6000 described species.
- Ceratopogonids are divided into four subfamilies
  - Leptoconopinae
  - Forcipomyiinae
  - Dasyheleinae
  - Ceratopogoninae

# Morphology

- Ceratopogonid larvae, as presented by *Culicoides* species, are typically long and slender, ranging from 2 to 5 mm in length when mature.
- Adult *Culicoides* midges are tiny, usually 1-2.5 mm in body length.

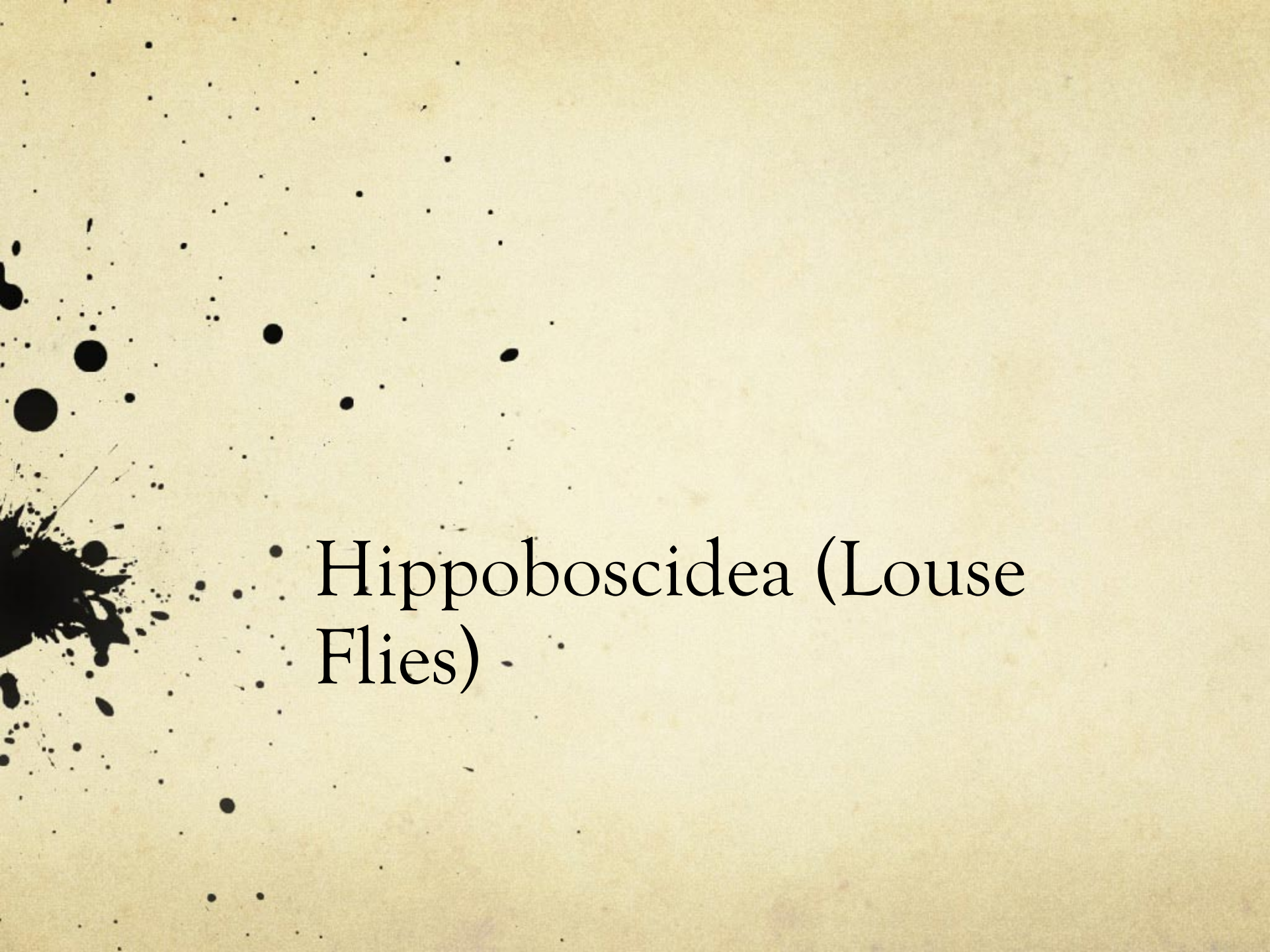
- Ceratopogonis larvae develop in a wide range of aquatic and semiaquatic habitats
- Both males and females feed on nectar of flowering plants.
- Adult females require a blood meal in order to develop their eggs.
- Many species of biting midges feed primarily on mammals, whereas others feed preferentially on birds, reptiles, or amphibians.

# Public Health and Veterinary Importance

- Viruses
  - Akabane
  - Bluetongue
  - Bovine Ephemeral Fever
  - Epizootic Hemorrhagic Disease
  - African Horsesickness
  - Oropouche Fever
  
- Nematode
  - *Mansonella* spp.
  - *Onchocerca* spp.
  
- Protozoa
  - *Haemoproteus* spp.

# Prevention and Control

- Larviciding generally has not been effective in reducing populations of biting midges.
- Often the breeding sites are difficult to locate and may be so dispersed that the application of insecticides to kill the immature stages is not practical.
- In some situations modifications of the habitat can help to reduce breeding sites
- Adulticides have been used with limited success in suppressing adults.



Hippoboscidea (Louse  
Flies)

# Taxonomy

- There are approximately 19 genera and 150 described species in the family Hippoboscidae.
- Three subfamily
  - Ornithomyinae (birds)
  - Lipopteninae (mammals)
  - Hippoboscinae (mammals, ostriches)



# Morphology

- Adults of this family vary in size from 1.5 to 12 mm.
- The body is dorso-ventrally flattened.
- The mouthparts are directed forward rather than downward.
- The legs of hippoboscids are generally robust with enlarged femora, flattened tibiae, and short, compact tarsi with one or more basal teeth.
- Both birds and mammals harbor a few species of Hippoboscidae with reduced wings that are not used for flight.

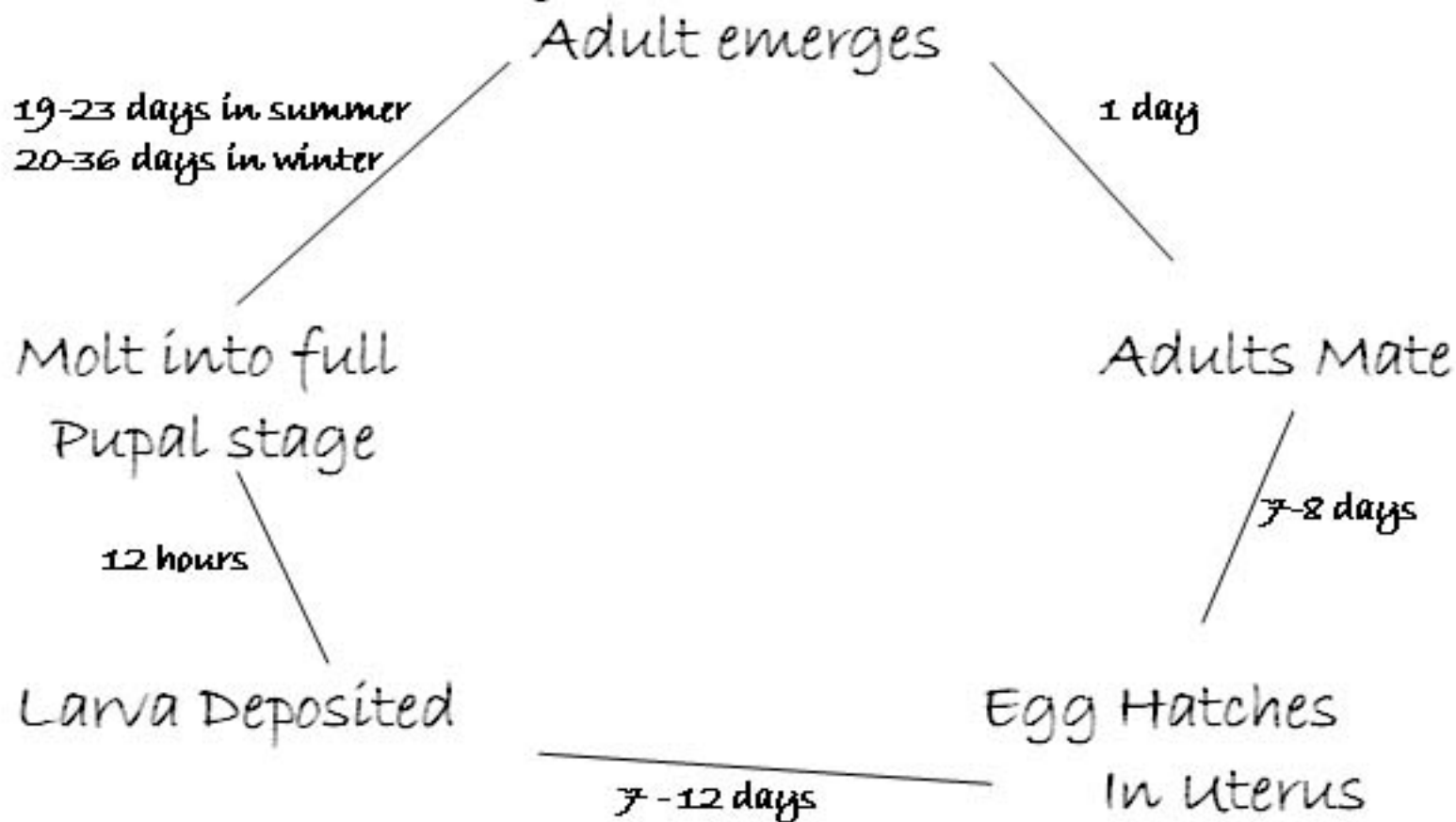
# Life History

- Members of the Hippoboscidae are larviparous.
- A single egg is passed to the uterus where it embryonates and hatches.

# Sheep Ked (*Melophagus ovinus*)

- The sheep ked is a wingless ectoparasite that spends its entire life on domestic sheep.
- It is worldwide in distribution except in tropical regions where it occurs only in the cooler highlands.
- Sheep keds generally live for only a few days if removed from the host.

# Life Cycle of Sheep Ked



# Public Health Importance

- Humans are not normal hosts of any hippoboscoid species.
- Occasionally, however, species such as the sheep ked and the pigeon fly bite humans and can be annoying to those routinely handling sheep or domestic pigeons, respectively.

# Veterinary Importance

- Louse fly directly affect their hosts by feeding on blood.
- Louse flies also serve as vectors of pathogens and parasites and as disseminators of certain ectoparasitic arthropods.
- These include
  - mammalian typanosomes
  - filarial worms,
  - avian trypanosomes,
  - haemosporina blood protozoans (*Haemoproteus* spp.),
  - lice,
  - and mites.

# Prevention and Control

- Control technology has not been developed for the vast majority of the Hippoboscoidea
- The few species that affect domestic animals and birds may be controlled through treatment of the hosts with insecticide formulations.
- The pigeon fly, for example, is controlled by periodic cleaning of the pigeon loft and, as necessary, dusting squabs with an insecticidal dust.