



ACE Preparation Course

GENERAL PEST KNOWLEDGE: FLIES

(PART OF INSPECTION AND IDENTIFICATION 45%)

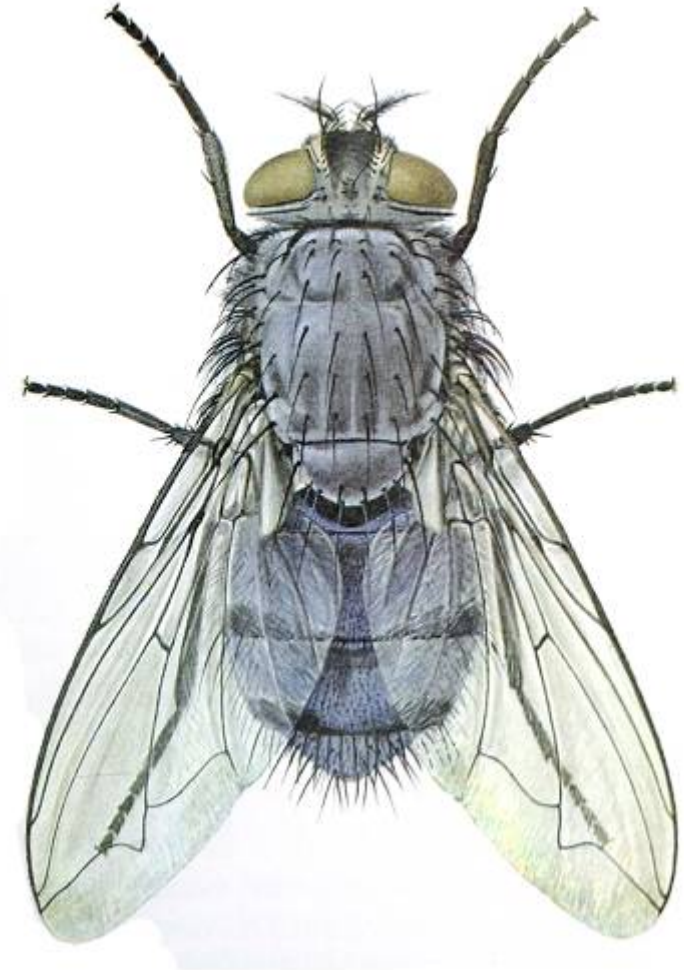


What is a fly?

Order Diptera
(name: two-winged)

Importance

- health pests
 - biting
 - disease transmission
 - unsanitary
- nuisance
- environmental “canaries”



blue blow fly. Artwork by F. Gregor. Princeton U. Press



Fly larvae

Origins of flies in structures

Drains, sewers

- moth fly, phorid fly

Rotting fruits, organic matter

- fruit fly, soldier fly

Potting soil

- fungus gnat

Carrion

- soldier fly, blow flies, flesh flies

Outdoors

- house fly, crane flies, mosquitoes, cluster fly



Moth and phorid flies

Moth flies (drain fly)

- family Psychodidae
- v-shaped wings with parallel veins
- drains, cracked tiles

Phorid flies (coffin fly)

- family Phoridae
- hump-backed profile, two heavily sclerotized veins at front of wing, enlarged femur on hind leg
- wet, organic sites (especially sewers, carrion, floor cracks)



Rotting organic matter

Fruit flies

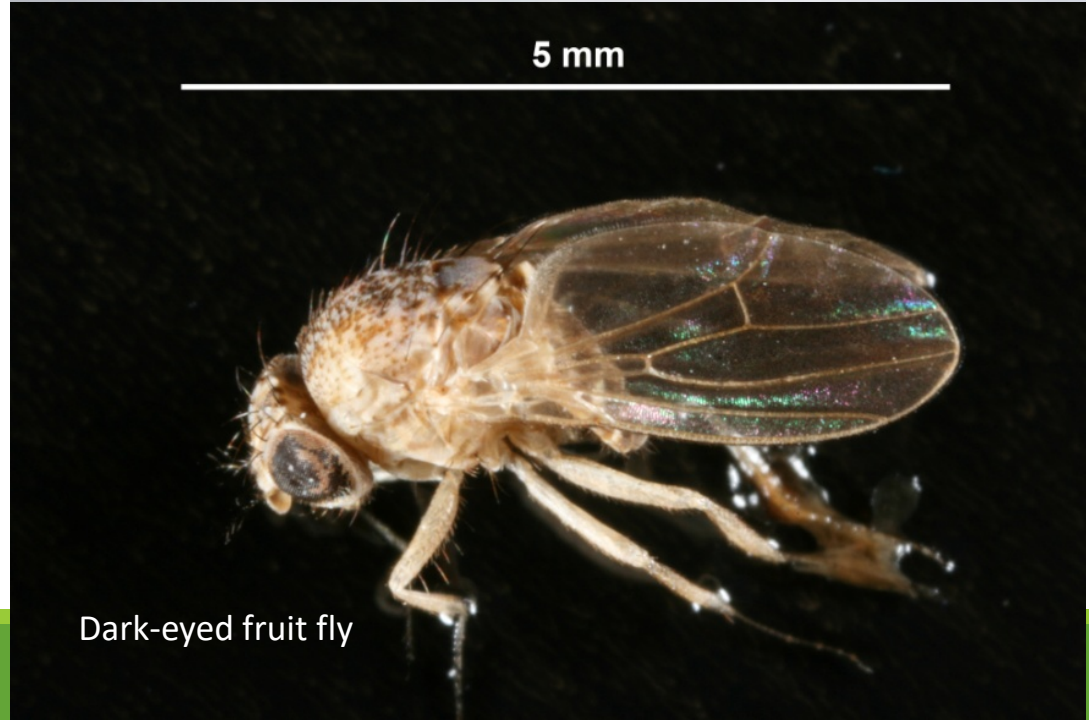
- *Drosophila melanogaster* and *D. simulans*
- 2-3 mm stocky bodied flies with red eyes
- fermenting fruits, vinegar, grains, vegetables. Especially bananas, pineapples, tomatoes, potatoes, syrups, beer

Dark-eyed fruit flies

- *Drosophila repleta*, *D. hydei*, and *D. robusta*
- Less attracted by fruits. More likely to associate with floor drains, trash cans and dishwashers/kitchen equipment.



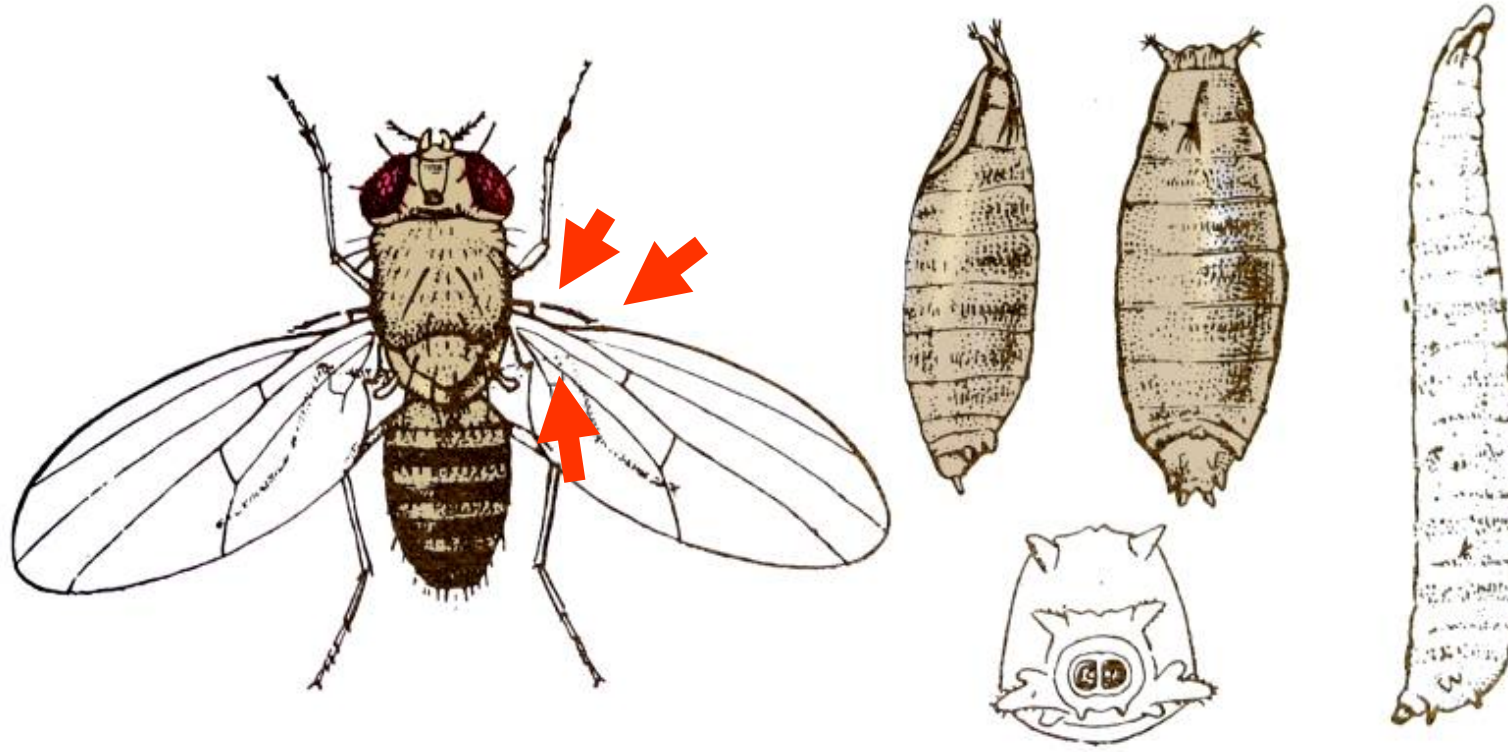
Common fruit fly



Dark-eyed fruit fly

Fruit flies (vinegar flies)

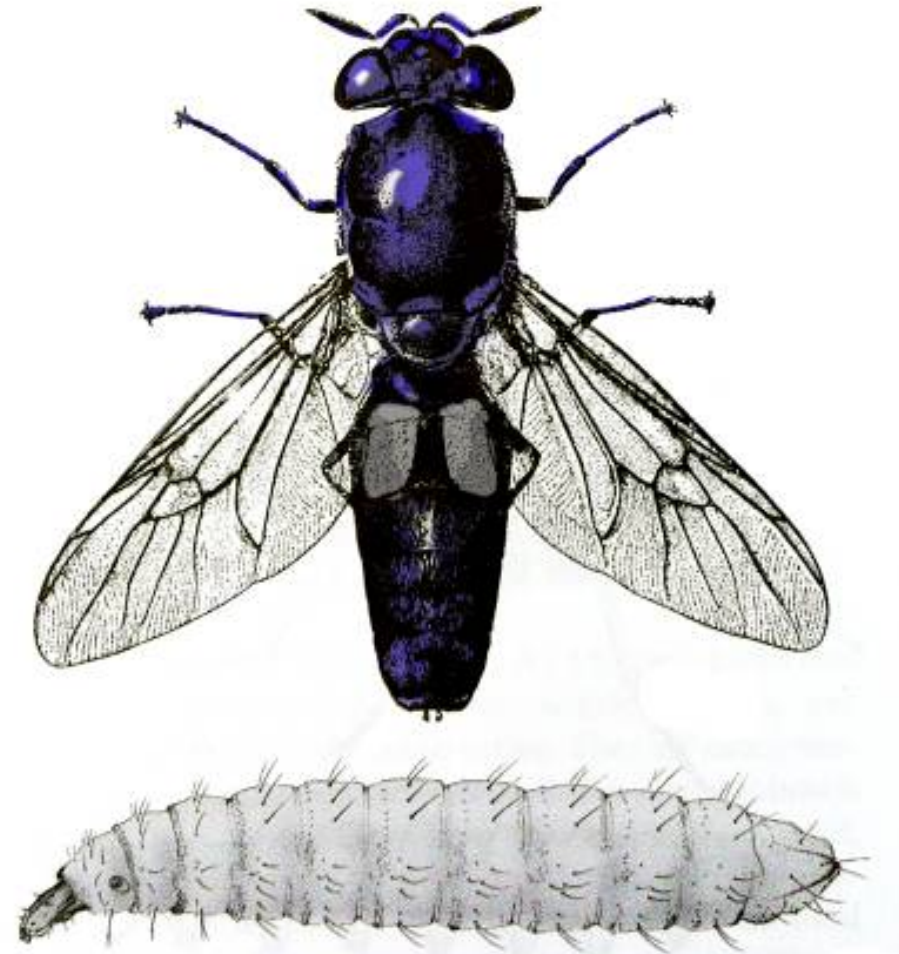
life cycle as short as eight days



Rotting organic matter

Soldier fly

- adults rarely a pest
- larvae breed in fruits, vegetables, human and animal waste, compost, carrion
- occasional household pest



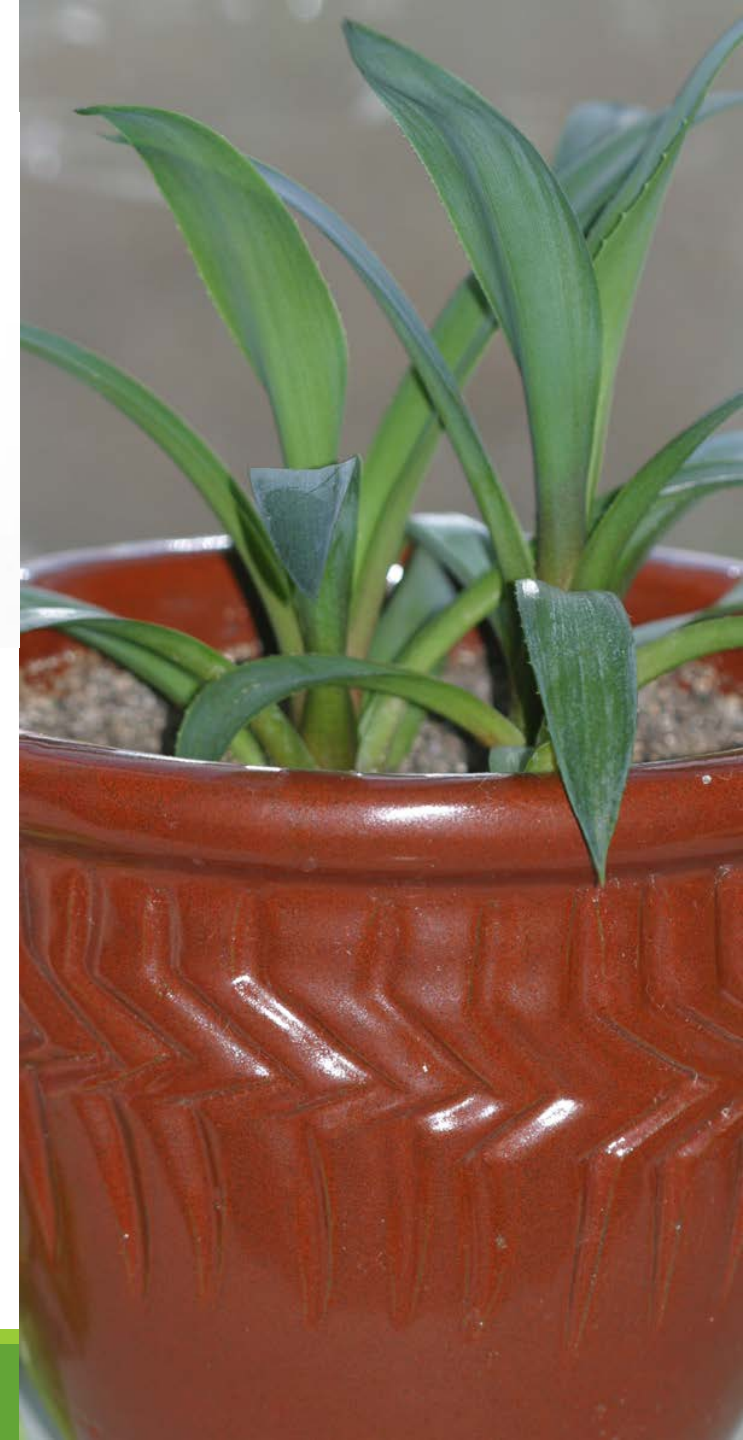
Potting soil

dark-winged fungus gnat

- family Sciaridae
- 2 mm gnat-like adult
- larvae feed on roots of potted plants
- may appear after repotting plants

treat soil or discard infested plants

reduce watering



Fungus gnats in drain



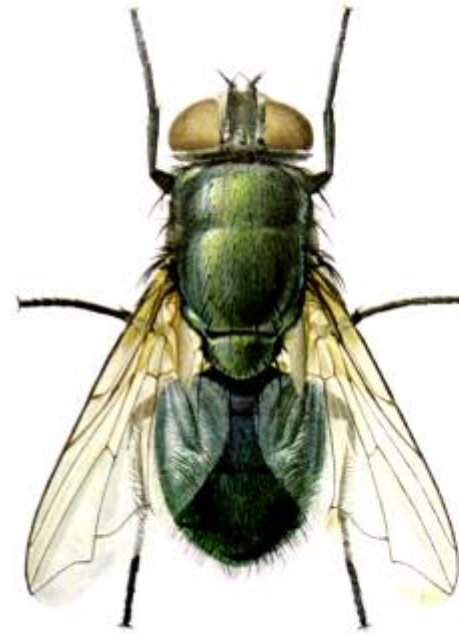
Carrion breeders

Blow flies

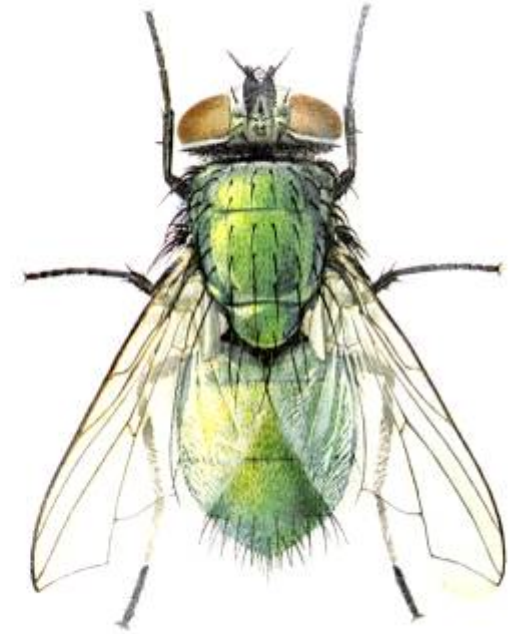
flesh flies

soldier flies

phorid flies



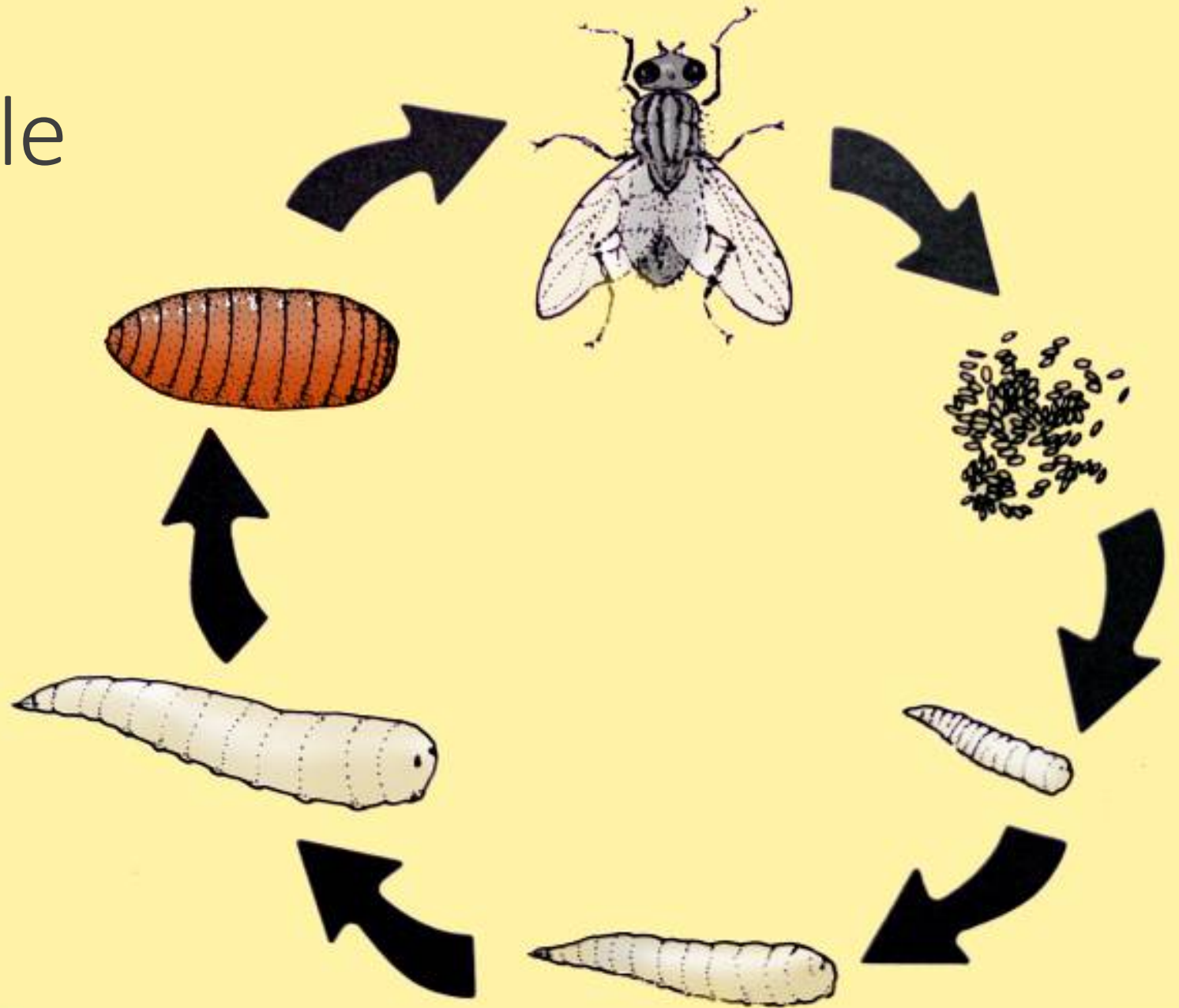
Phormia regina, black blow fly



Phaenicia serricata, green blow fly

blow flies. Artwork by F. Gregor. Princeton U. Press

filth fly life cycle



Outdoor invaders

house flies

crane flies

mosquitoes

cluster flies



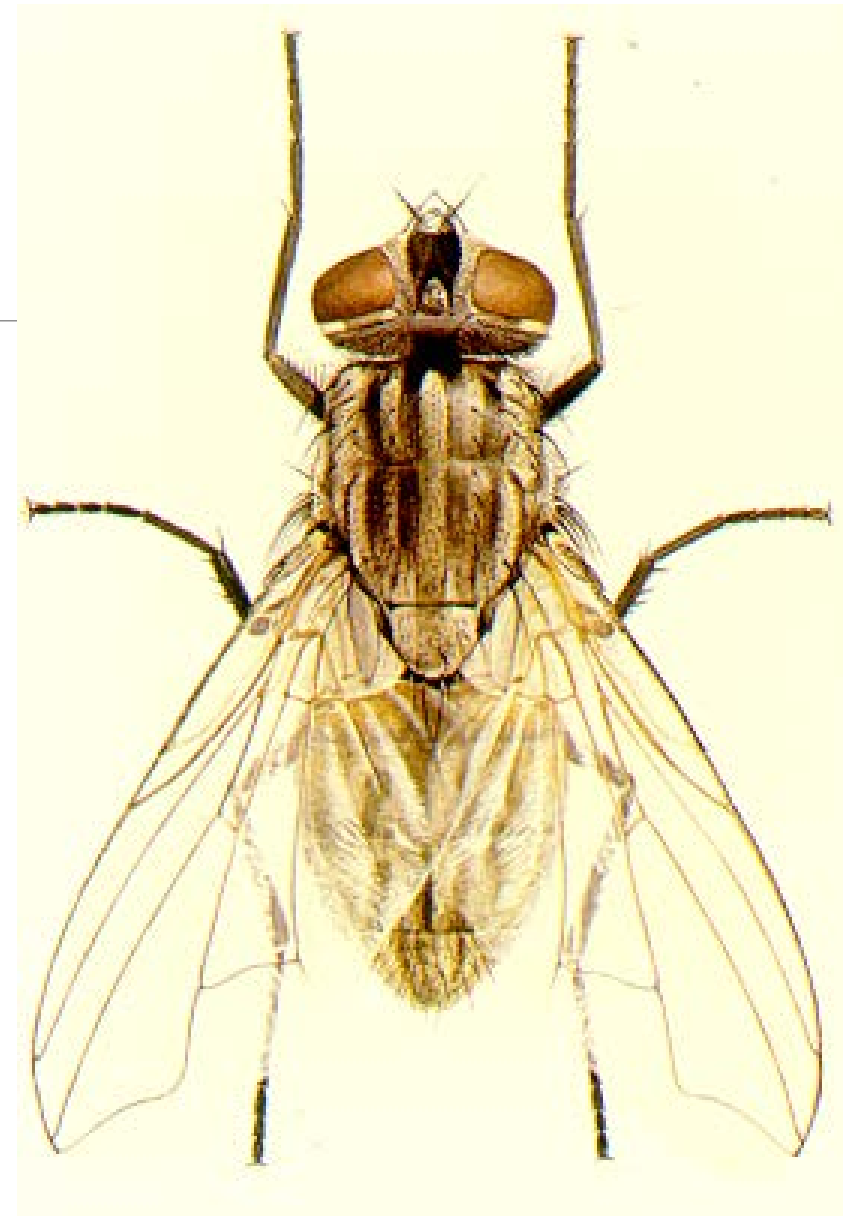
the crane fly is a harmless, seasonal insect (no control necessary)

House fly, *Musca domestica*

4-7 mm, gray fly with 4 stripes

Filth breeder

Common pest of kitchens and
restaurants where doors open
frequently



house fly. Artwork by F. Gregor. Princeton U. Press

House fly, *Musca domestica*

Commonly breeds in manure, garbage

Minimum development time 7-10 days

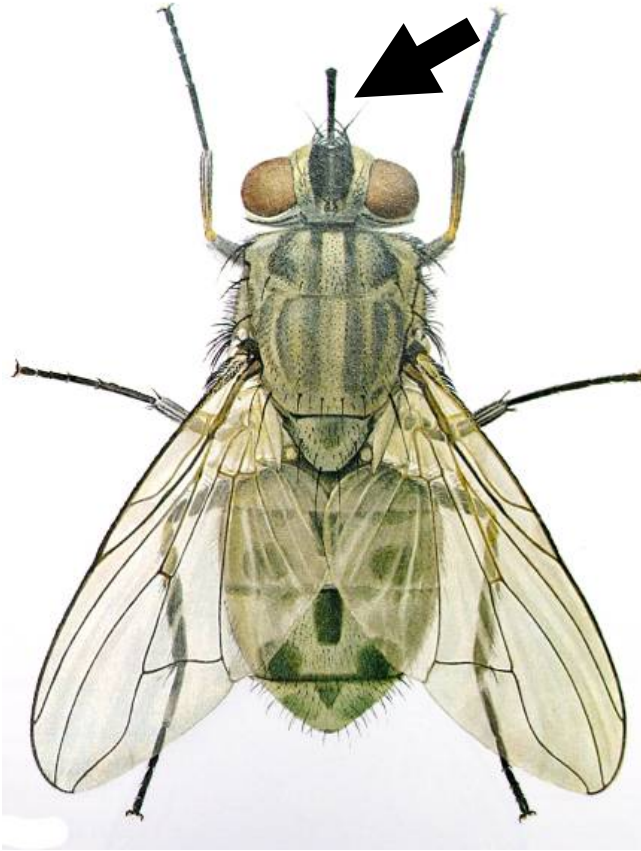
Harbors over 100 different pathogens



House fly compared to stable fly



house fly



stable fly

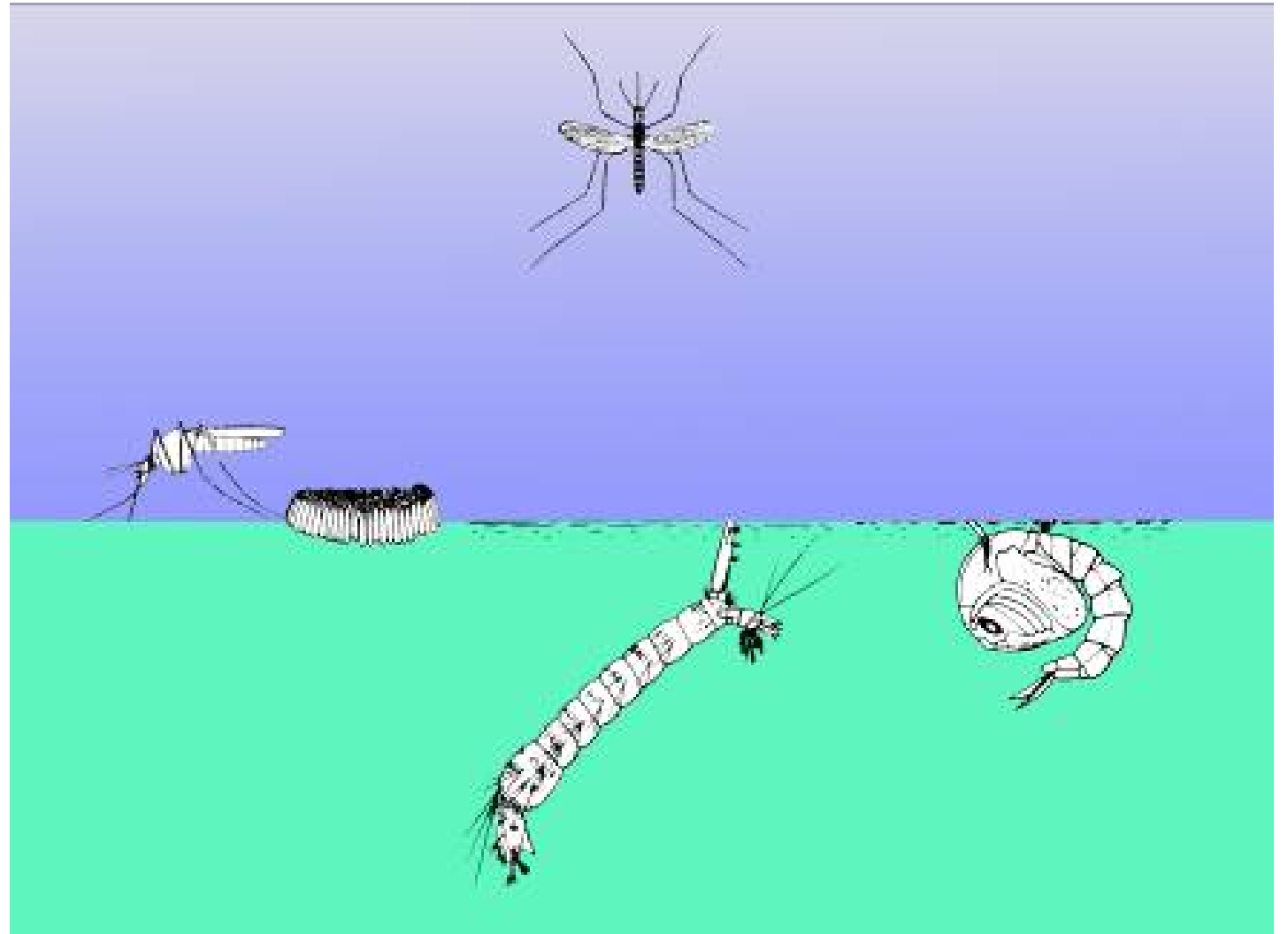
Artwork by F. Gregor. Princeton U. Press

mosquitoes

Aquatic-breeders

Most important urban species
breed in polluted, stagnant
water

Active mostly in evenings and at
night, adults rest in shady areas
during the day



Mosquitoes as public health pests

Southern and northern house mosquitoes

- West Nile virus
- St. Louis encephalitis

Western encephalitis mosquito

- West Nile virus
- Western equine encephalitis

Yellow fever and Asian tiger mosquitoes

- Dengue fever
- Zika virus
- Chikungunya virus



Culex quinquefasciatus

Yellow fever mosquito
(*Aedes aegypti*) and
Asian tiger mosquito
(*Aedes albopictus*)

Source of most daytime biting
complaints, especially in southern
half of U.S.

Rarely a vector of disease in the
U.S.



Common mosquito breeding sites

ditches

bird baths

buckets, cans

swimming pools (un-maintained)

tires

clogged gutters

potted plant drainage dishes

hollow trees

drainage catch basins



Mosquito control options

- breeding site elimination/treatment
- Areawide treatments (ULV, truck mounted)
- Mister systems
- Residual treatment of resting sites (mistblower, power sprayer, compressed air sprayer)
- Mosquito suppression before special events (thermal foggers, ULV)



Cluster fly

Pollenia rudis

An occasional fall structure invader in much of U.S. (except the south)



Common outdoor fly is a parasite of earthworms

Slightly larger and darker than housefly, with golden hairs covering thorax

May form overwintering clusters in attics and walls with face fly

Exclusion, wall-void treatment, vacuuming





Which of the life stages of a carrion-feeding fly is most likely to be seen by a client"?



early larva

late larva

pupa

Adult

B and D



Which of the following flies is most likely to be the culprit in an office environment where workers are being bothered by pesky little "gnats"?

fruit fly

phorid fly

soldier fly

fungus gnat

Flies have _____

one pair
of wings

two pair
of wings

three pair
of wings

UNLESS OTHERWISE INDICATED,
PHOTOS BY MIKE MERCHANT

Questions