Fly Control for Suburban or Small Acreage Horse Owners

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Introduction

Increased horse ownership in or near suburban areas can lead to difficult pest management decisions, especially when dealing with arthropod pests associated with horses. Arthropod pests of horses can range from on-host parasites (e.g., lice, ticks, mites) to flying pests (e.g., mosquitoes, stable flies, horse flies) that are a nuisance to neighbors. There are three basic issues to consider when assessing pest populations in or near horse barns: 1) Is this pest considered a vector of a detrimental disease to horses or humans (e.g., mosquitoes and West Nile Virus)?; 2) What potential areas exist that could serve as breeding habitats for pests?; and 3) What type of control strategy should be implemented to reduce the pest population? These issues are important, especially in areas where your nearest neighbor is just a few feet away instead of a mile or more.

IPM

Integrated Pest Management (IPM) is a "whole-concept" approach to pest management and incorporates several different control strategies to suppress the pest. While most IPM efforts are focused on crops, it is applicable to livestock systems as well. When used properly, a good IPM program can lead to a reduction in the use of pesticides. This is important in suburban areas where improper use of pesticides can lead to environmental contamination and poisoning. The main goal of an IPM program is prevention of pest outbreaks, especially when dealing with arthropods that can transmit diseases. However, prevention does not necessarily mean employing control strategies on a continual basis to discourage pest development. One of the major aspects of a successful IPM program is employing control strategies that are timed to be economically beneficial while maintaining environmental integrity.

Flies

Flies are considered the most important insect pest of horses. The fly complex includes mosquitoes that can carry West Nile Virus (WNV), blood feeders such as horse flies and stable flies, nuisance pests such as house flies, and gastrointestinal parasites such as bot flies.

All flies have the same life stages that include egg, larva, pupa, and the adult (Figure 1). The adult is the pest stage of the life cycle for most flies, but the horse bot fly is one of several exceptions where the larva is the primary pest stage. The specifics of the fly complex will be highlighted below.

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Tabanids (Fig. 2)

- More commonly known as deer flies and horse flies (1/2 to 1.5 inch).
- Blood sucking pest.
- Only females feed on horses, they need blood specifically as a nutrient requirement for egg development.
- Larvae develop in aquatic or semi-aquatic areas.
- Usually just one generation per year, but can vary between species.
- Bites are annoying and painful to horses.

Control:

- Frequent use of a pyrethroid insecticide formulated with a repellent.
- Locate animals away from wooded areas during peak tabanid activity (June through September).
- Most tabanid flies do not enter barns, so stabling your horses during peak activity (June through September) can be beneficial.

Biting Midges (Fig. 3)

- More commonly known as "no-see-ums."
- Blood-sucking pests.
- Very small (1/16 to 1/8 inch).
- Only females feed on horses, they need blood specifically as a nutrient requirement for egg development.
- Prefer to feed on calm, windless nights.
- Many different species with diverse larval habitats.
- Usually have multiple generations per year.
- Can cause hypersensitivity in horses.

Control:

- Stabling horses during peak activity (calm nights) provides protection.
- Biting midges are weak-flying insects, so fans can be helpful.
- Insecticide-treated screens can provide a protective barrier.

Stable Flies (Fig. 4)

- Resemble house flies, but have rigid piercing mouthpart, that protrude forward (1/4 to 3/8 inch)
- Blood feeder.
- Optimum habitat for larval development includes areas of hay/feed mixed with manure.
- Multiple generations per year.
- Both males and females feed on horses.

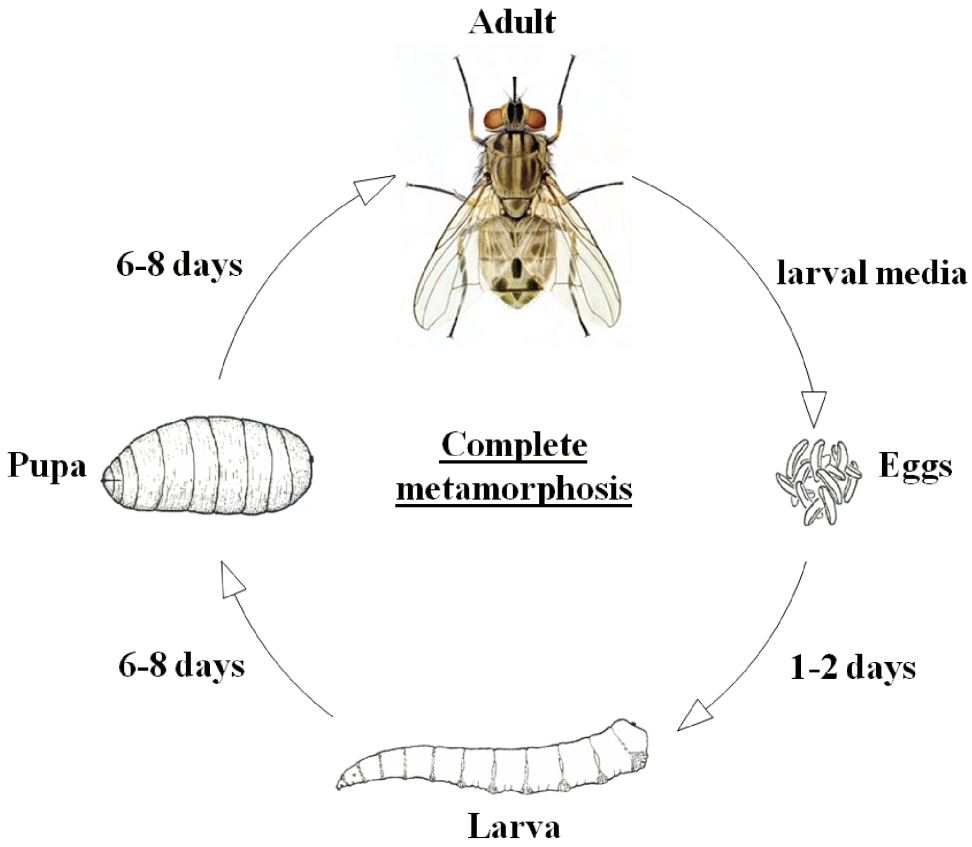

Figure 1: Genral life cycle of flies.
Credit: R. Grantham, Oklahoma State University

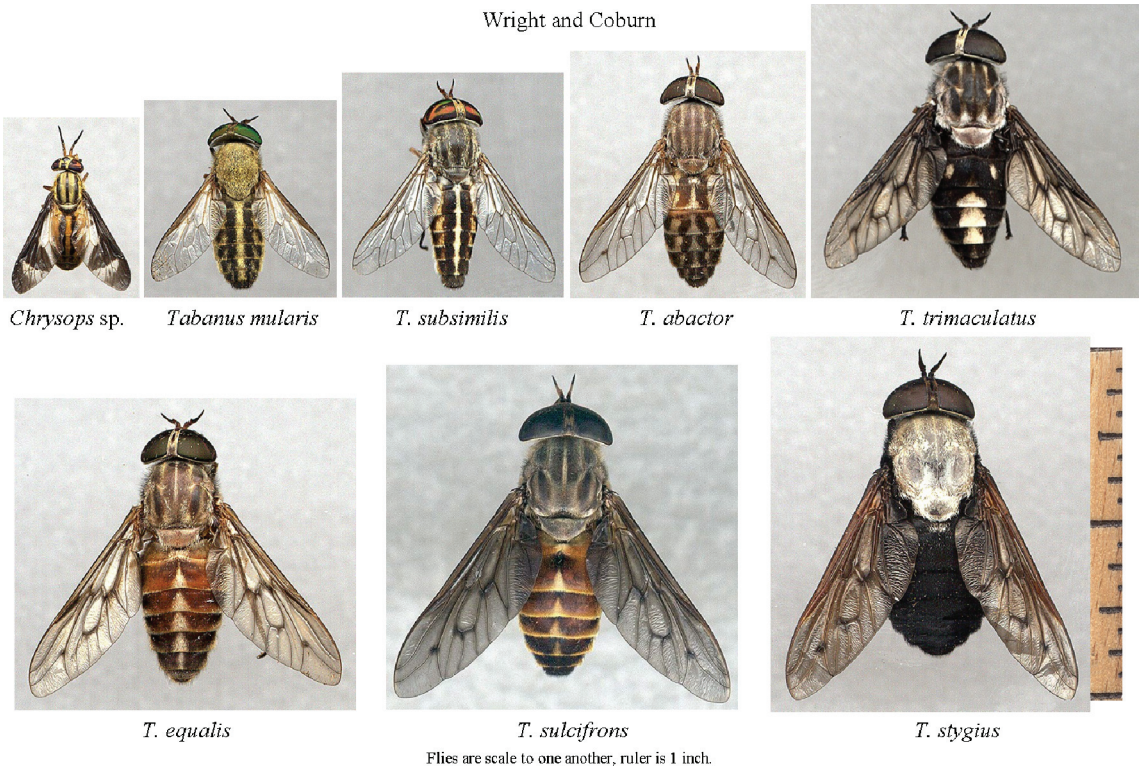

Figure 2: Common horse and deer flies in Oklahoma.
Credit: Wright, Coburn, and Grantham; Oklahoma State University.

Figure 3: Culicoides midge.
Credit: USDA

Figure 4: Stable fly.
Credit: A. Broce. Kansas State University.

Figure 5: Adult mosquito.
Credit: R. Wright. Oklahoma State University.

Figure 6: Adult house fly.
Credit: R. Brown. Kansas State University

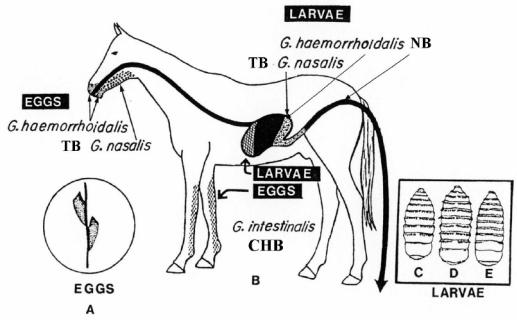

Figure 7: Adult common horse bot fly (left) and a generalized life cycle (TB= throat bot; CHB= common horse bot; NB: nose bot) (right).
Credit: A. Broce. Kansas State University.

- Preferred feeding sites are the legs or underside of the animal.
- Bite is painful and results in leg stomping behavior in horses.

Control:

- Most effective measure is the removal of larval habitats such as spilled feed or hay.
- Residual insecticide applications should be directed toward the legs and underside.
- Stable flies rest on vertical surfaces such as barn walls, so residual insecticide should be directed in those areas.

Mosquitoes (Fig. 5)

- Usually go unnoticed.
- Most active feeding period is two hours after sunset
- Blood feeder (<1/16 to 1/8 inch)
- Only the female feeds, they need blood specifically as a nutrient requirement for egg development.
- Larvae develop in permanent water sources or areas with fluctuating water such as low lying areas, tree holes, old tires, or containers.
- Multiple generations per year.
- Horses located near urban areas are more likely to experience higher mosquito pressures due to artificial habitats that retain water.
- Primary concern is disease transmission (e.g., West Nile Virus, Eastern Equine Encephalitis, Western Equine Encephalitis).

Control:

- Reducing larval habitats is a key component to a successful control program (eliminate standing water).
- Direct insecticide application to the horse can be beneficial, but may not be adequate during heavy mosquito outbreaks.

House Flies (Fig. 6)

- Non-biting fly.
- Medium-sized fly (3/8 inch).
- Larvae develop in many sources, but are most commonly found in decaying organic matter and prefer manure.
- Cause stress to horses by feeding on eye secretions.
- Large populations can create problems with non-agricultural neighbors.

Control:

- Sanitation is a key component to reducing house fly populations.
- Chemical control strategies are helpful, but should always be combined with routine sanitation practices.
- Residual sprays applied to barn walls can also limit house fly populations.
- Fly baits, strips, sticky traps, and electric grids can be helpful in enclosed spaces.
- Fly masks will limit irritation to horses.

Bot Flies (Fig. 7)

- Large flies that are bee-like in appearance (1/2 inch).

- Three main species throat bot, common horse bot, and nose bot.
- Larval stage causes injury in horses.
- Life cycle approximately one year.
- Adult flies attach their eggs to the horse's hair.
- Larvae (bots) burrow into the lips and tongue causing temporary irritation.
- Larvae then migrate to the stomach and remain there for up to 10 months.
- Larvae travel through gut and are excreted with manure.
- Larvae pupate in the ground for one to two months.

Control:

- Many of the currently available endectocides that contain avermectin for the treatment of internal parasites will control horse bots when routinely applied.

Special points should be considered for horse owners in suburban areas:

1. While flies may be perceived as an everyday issue for horse owners, non-agricultural residents around you may perceive flies as an indication of unsanitary conditions.
2. Sanitation is a good overall management technique and reduces the amount of larval habitats where flies can lay eggs.
3. If insecticide applications are warranted, they should be applied when human activity is low, and when environmental conditions are favorable, such as when winds are low and temperatures are moderate.
4. Using property barriers, such as trees to limit dispersal of fly populations onto your neighbor's property.
5. Sometimes flies can originate from non-agricultural settings, but the horse owner unfortunately, is the one who is blamed. For this reason it is important to retain detailed records of your pest control activities.

Source:

Baldwin, J., L. Foil, and C. Foil. 2005. Fly control for horses. Pub. 2913. Louisiana State University Agricultural Center, Baton Rouge, LA.

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