

Stable Fly

(Stomoxys calcitrans)

A fly that can inflict very painful bites

David Lilly



The stable fly (*Stomoxys calcitrans* L.) is a serious nuisance pest that affects both humans and animals but which is primarily a major cause for productivity and economic losses in the livestock industry. The genus *Stomoxys* contains 18 different species and is distributed worldwide, with *S. calcitrans* being the dominant pest species across most temperate regions. Adult stable flies appear superficially similar to *Musca domestica* but can be easily distinguished through the presence of their protruding proboscis and through possessing a shorter and broader abdomen. They are parasitic blood-feeders and possess specialised mouthparts that are elongated, sclerotized, and with the labellum containing several rows of minute teeth that aid with rasping and penetration of skin. Female flies lay their eggs in organic and vegetatively rich substrates, including areas like compost heaps, decaying hay or straw piles, and silage. High levels of moisture and fermentation of the vegetation matter adds to the attraction for stable flies and promotes larval development. As with many large flies, development from egg to adult takes between 10-30 days and is temperature dependent.

As noted above, stable flies are a major

nuisance pest for animals and commonly cause serious issues with cattle, horses, dogs and zoo animals. It has been estimated that over US\$2 billion is lost annually from the US cattle market due to stable flies, with them presenting as a particular challenge around stable yards and feedlots. The bite from stable flies is known to be intensely painful and can cause a range of effects with cattle including: reduced milk production, weight loss, and injury or heat stress due to 'bunching'. Significant efforts are focussed on stable fly prevention and keeping the population below a known threshold of 6 flies per animal before the flies cause major economic impacts. Additionally, stable flies can injure and irritate horses, and have been known to cause serious injuries to the ears of dog. Fortunately, though, stable flies are not a major vector of animal or human pathogens, except for being an intermediate host of *Habronema microstoma*, a nematode which causes granular dermatitis in horses. Research is ongoing to determine if the flies may play some part in the mechanical transmission of other pathogens if rapid interval feeding has occurred between multiple hosts.

Management of stable flies in the urban

environment is largely similar to that of most other large pest flies, with a keen focus on harbourage and breeding site reduction or treatment, and exclusion with physical barriers and screens. Insecticidal treatment, including with insect growth regulators, may be beneficial if breeding sites cannot be eliminated, as with targeted treatments to walls and ceilings where the flies harbour before attacking a host. Sugar-based baits can be useful, as with trapping or electrocution devices at or near building entry points. Once inside, glue board-based UV traps can be especially effective, particularly if combined with the use of an attractant. Management in agricultural settings may involve a range of other methods including animal dips, insecticide-impregnated ear tags, and various spot treatments, in addition to the same management approaches noted above but implemented on a larger scale.

Suggested reading:

Taylor, D. B., Moon, R. D. & Mark, D. R. (2012). Economic impact of stable flies (Diptera: Muscidae) on dairy and beef cattle production. *Journal of Medical Entomology*, 49(1), pp 198–209, <https://doi.org/10.1603/ME10050>

Gulmahamad, H. (2011). Flies, gnats & midges. In A. Mallis, S. A. Hedges, & D. Moreland (Eds.), *Mallis Handbook of Pest Control. The Behavior, Life History, and Control of Household Pests* (pp. 969-1045). The Mallis Handbook Company: Richfield, Ohio. ■

Dr David Lilly is a Lead Entomologist for Ecolab's Global Pest Elimination – RD&E Division, and Associate Editor of the FAOPMA Magazine.
Email: david.lilly@ecolab.com

