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Pest Flies of Pastured Cattle and Horses

Phillip E. Kaufman, J. Keith Waldron, and Donald A. Rutz

Department of Entomology
College of Agriculture and Life Sciences, Cornell University

Introduction

Integrated pest management (IPM) of pest flies, midges, and mosquitoes of pastured cattle and horses incorporates several key components: correct arthropod pest identification, monitoring, management action (i.e., treatment), and evaluation of the action. This fact sheet is intended to help the livestock producer identify arthropod pests and not to be a how-to document. For information on the other steps to successful pest management please consult one or more of the suggested readings or web sites provided in the references section.

Flies often associated with pastured livestock include face flies, horn flies, stable flies, horse flies, deer flies, cattle grubs, horse bots, black flies, biting midges (no-see-ums), mosquitoes, small dung flies, and yellow dung flies. Although several of these flies are important pests, the latter two are not. In fact, yellow dung flies are known to be important fly predators.

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Common Pests

Common Name	Species Name	Photo Number(s)	Life Cycle (egg to adult)	Breeding Habitat	Adult Life Span	Adult Dispersal
Face fly	*Musca autumnalis*	1 (on front)	12 to 20 days	Fresh, undisturbed cattle dung	14 to 28 days	Several miles per day
Remarks: Transmit pink-eye; only females visit host; hibernate in homes.						
Horn fly	*Haematobia irritans*	2 (on front)	12 to 20 days	Fresh, undisturbed cattle dung	30 days	Generally < 5 miles
Remarks: Adults remain on host's back, side, or belly.						
Stable fly	*Stomoxys calcitrans*	3 (on front)	21 days	Wet straw and manure, spilled feed, silage, grass clippings, decaying vegetation	20 to 30 days	> 20 miles
Remarks: Blood feeding results in decreased performance production. Foot stomping is good indication of fly presence.						
Horse fly, several species	*Tabanus atratus*	4, 5 (on front)	1 to 3 years	Margins of ponds, marshes, or streams	Approximately 35 days	Strong flier
Remarks: Bites are very painful; can transmit anaplasmosis.						
Deer fly, several species	*Chrysops* spp.	6	1 to 3 years	Margins of ponds, marshes, or streams	Approximately 35 days	Strong flier
Remarks: Very painful and persistent biter.						
Cattle grub	*Hypoderma bovis, H. lineatum*	7	1 generation per year	Larvae develop within cattle	2 to 3 days	< 5 miles
Remarks: Attack only cattle.						
Horse bot flies	*Gasterophilus nasalis, G. intestinalis*	8	1 generation per year	Larvae develop within digestive tract of horse	<1 week	Strong flier
Remarks: Attack only horses.						
Black flies, several species	*Simulium vittatum*	9	Usually 1 year or more	Fast-moving streams	Approximately 2 weeks	Often downwind
Remarks: Large numbers of adult flies emerge at once, particularly in spring, and attack animals; daytime feeders.						
Biting midges,	*Culicoides* spp.	10	Several months	Margins of streams and lakes,	20 days	< 1 mile

no-see-ums, several species			to one year	water-filled holes, animal wastes, swamps			

Remarks: Transmit bluetongue and encephalitis; feed in evening and at night.

Mosquitoes, several species	*Culex* spp. *Aedes* spp.	11	7 to 30 days	Stagnant water containing organic matter	Approximately 2 weeks	Some species 10 to 20 miles

Remarks: Transmit disease, including encephalitis.


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Beneficial Species

Common Name	Species Name	Photo Number(s)	Life Cycle (egg to adult)	Pests Attacked	Habitat	Life Span	Dispersal
Parasitoids, several species	*Muscidifurax raptor** *Nasonia vitripennis** *Spalangia cameroni**	12	14 to 28 days	House fly, stable fly, blow fly pupae	Livestock and poultry facilities, compost piles	7 to 14 days	Probably < 500 ft.
	Aleochara tristis	13		Face fly pupae			
Remarks: *Available through commercial insectaries.							
Predators, several species	Beetles (*Carcinops pumilio*, rove, ground)	14, 15, 16	Generally 4 to 6 weeks	Egg, larval, and adult fly stages	Generally anywhere prey is available	1 to 3 months	Adult beetles capable of flight; immature beetle and other predator dispersal limited
	Mites (*Macrocheles muscaedomesticae*)	17					
	Spiders						
Remarks: Adult and immature often predaceous on pest species.							
Pathogens	*Beauveria bassiana* *Entomophthora muscae*	18	Influenced by physical and environmental conditions	Adult house flies	Infest immature and adult flies	Influenced by physical and environmental conditions	Several yards from cadaver


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Common Nonpest Flies

Common Name	Species Name	Photo Number(s)	Life Cycle (egg to adult)	Breeding Habitat for Immatures
Small dung fly, several species	*Sphaerocerid* spp.	19	Generally < 21 days	Dung pats
Remarks: Important dung decomposer.				
Yellow dung fly	*Scatophaga stercoraria*	20	About 20 days in the summer	Cattle dung pats
Remarks: Adults feed on adult pest flies.				

Biological control is an extremely important component in a successful livestock IPM program. In pasture and grazing situations, we are currently limited to conserving the beneficial organisms that occur there naturally—parasitoids, predators, and pathogens.

Parasitoids

Parasitoids are tiny wasps or beetles that attack only fly pupae. The wasp parasitoid adult stings and paralyzes the fly pupa and lays an egg inside the pupal case. After hatching, the larval parasitoid kills and consumes the fly pupa before emerging as an adult. The immature beetle parasitoid locates a face fly pupa, drills a hole, and enters the pupal case. The immature beetle begins feeding on the fly pupa, eventually killing it. Neither of these parasitoids bother humans or livestock and generally go unnoticed. Currently, releases of commercially reared parasitoids are not available or appropriate for pasture situations.

Predators

Predators attack and kill several fly stages, including the egg, larva, and adult. The fly stage attacked depends on the predator. Spiders, beetles, and mites are the most important predators. At present, predators are not available from commercial insectaries for release into pastures.

Pathogens

Although pathogens that attack flies occur naturally on all farms, they are probably the least understood beneficial organisms. Pathogens usually kill adult flies but have also been recovered from dead fly pupae. These organisms are most effective under moist, dark, and warm conditions.

Using the photographs and information provided in this document in combination with the pest management recommendations in the readings listed below, pest flies of pastured cattle and horses can be effectively managed.

Suggested Publications, Videos, and Web Sites

Kaufman, P. E., D. A. Rutz, and C. W. Pitts. 2000. *Pest Management Recommendations for Horses*. University Park, Pa.: Cornell and Penn State Cooperative Extension Publication. 8 pp.

Lyon, W. F. 1995. *Livestock and Livestock Building Pest Management*. Ohio State University Extension Bulletin 473.

New York State Integrated Pest Management Livestock and Field Crops web site: www.nysim.cornell.edu/lfc.html

Rutz, D. A., and C. W. Pitts. 1999. *Pest Management Principles for the Pesticide Applicator*. Cornell University and Penn State University. Ithaca, N.Y.: Cornell University. 132 pp.

Rutz, D. A., C. J. Geden, and C. W. Pitts. 1994. *Pest Management Recommendations for Dairy Cattle*. Cornell and Penn State Cooperative Extension Publication. University Park, Pa.: Penn State University.

Rutz, D. A., C. J. Geden, D. Steinkraus, and J. K. Waldron. 1991. *Winter Active External Parasites of Dairy Cattle*. Ithaca, N.Y.: Cornell Cooperative Extension. 28-min. video.

Watson, D. W., J. K. Waldron, and D. A. Rutz. 1994. *Integrated Management of Flies in and around Dairy and Livestock Barns*. Cornell University Fact Sheet 450.00. Ithaca, N.Y.: Cornell Cooperative Extension.

Additional copies of this publication may be purchased from Cornell University, Media and Technology Services Resource Center, 7 Cornell Business & Technology Park, Ithaca, NY 14850. Phone: 607-255-2080. Fax: 607-255-9946. E-mail: resctr@cce.cornell.edu.

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