Swine Ectoparasites: House Fly, Musca domestica, and Other Non-Biting Flies

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Description and Biology

The house fly is the most common nonbiting fly species encountered in swine facilities. Female flies deposit their eggs in manure, spilled feed, or other decaying organic matter found in and around the facility. These eggs typically hatch in 1 to 2 days. Larval development progresses through 3 phases called instars over the next 4 to 6 days. Late 3rd instars will abandon the moist habitat of the breeding site to seek a drier environment in which to pupate. Adults subsequently emerge from the puparium in about 3 to 5 days. The entire life cycle can be completed in as little as 10 to 14 days, depending on temperature. In northern climates house flies are usually present from May through October with multiple generations being produced during the fly season. In southern climates or in temperature controlled swine barns, conditions allow house flies to breed throughout the year.

Figure: House fly (Rutz, Cornell University), black dump fly (Greenberg), stable fly (Watson, NC State University) and moth fly (Ogg, Univ. of Nebraska, Lincoln)

Adult house flies have sponging mouthparts and feed on animal secretions, manure fluids, and other substances. House flies habitually regurgitate crop contents on surfaces increasing the potential spread of pathogens. Adult house flies tend to rest on the ceiling, walls, roof supports, or other exposed surfaces when not actively feeding. Fly specking, fecal and regurgitation spots are indicative of fly resting sites. Adult flies congregate at night inside open buildings or on the outside of buildings under the eaves.

House flies are recognized mechanical vectors of pathogenic protozoa, bacteria and viruses (Moon 2009, Graczyk et al. 1999). For an historical account of diseases associated with the house fly see West (1951). Of significance to the swine industry is the ability of house flies to transmit enteric viruses that cause gasteroenteritis virus and porcine reproductive and respiratory syndrome (Gough and Jorgenson 1983, Otake et al. 2004).

Lagoon based waste systems provide an environment that contributes to the development of other nonbiting fly species. These include little house flies (Fannia species), dump flies (Hydrotaea species) and moth flies (family Psychodidae). Like the house fly adult Fannia and Hydrotaea species deposit their eggs in decaying organic matter. The life cycle of Fannia

canicularis is nearly three times as long as the house fly. Developmental time of Hydrotaea aenescens is similar to that of a house fly. Moth flies are also known as filter flies are commonly place in swine barns that rely on flush systems to remove waste. Moth fly larvae live and breed in the residual biofilm in the pit. Eggs are deposited in masses of 20 to 200 and hatch in 1-2 days. The larvae develop in aquatic surface films and decaying organic matter. Development from egg to adult is about 18 days.

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