Observations on the Oriental Latrine Fly, *Chrysomya megacephala*[1], in the McFaddin National Wildlife Refuge, Sabine Pass, Texas

Michelle Sanford[2], Micah Flores[2], Leslie Holmes[3], Longyu Zheng[4], Christina Fellows[2], and Jeffery Tomberlin[2]

The oriental latrine fly, *Chrysomya megacephala* (Fabricius), is one of four recently introduced *Chrysomya* species from the Australasian region with the potential for significant public health impacts and is spreading in North America (Greenberg 1988) and the continental U.S. (Wells 1991). The oriental latrine fly was first observed in Texas when a single male was collected in a trap near Kerrville. Whitworth (2006) described the species as rarely collected in the southern U.S., and Tenorio et al. (2003) noted adults are rarely observed in central Texas. Adults of the oriental latrine fly have been found in other parts of the Gulf Coast region of the U.S. (Tomberlin et al. 2001, Nelder et al. 2009), and this species is known to be established in Florida and Hawaii (Baumgartner 1993).

Introductions of the oriental latrine fly and the hairy maggot blow fly, *Chrysomya rufifacies* (Macquart), were predicted to significantly reduce abundance of the native secondary screwworm, *Cochliomyia macellaria* (Fabricius), because of their long-standing evolutionary relationship (Wells and Kurahashi 1997) and apparent occupation of the same ecological niche (Baumgartner and Greenberg 1984, Wells and Greenberg 1992). While the hairy maggot blow fly has become well established in the continental U.S. (Baumgartner and Greenberg 1984) and continues to expand its distribution northward (Rosati and VanLaerhoven 2007), the oriental latrine fly seems to have been less successful and is restricted to the southern U.S.

We observed the arrival and colonization of blow flies on a decaying domestic hog, *Sus scrofa* L.*,* carcass (approximately 20 kg, frozen and defrosted) and two processed domestic chickens, *Gallus gallus* L. (approximately 2.2 kg each), in the McFaddin National Wildlife Refuge (Special Use Permit # 21521-09-011). The refuge is approximately 24 km south of Port Arthur in southeastern Texas, near the Louisiana border, and consists of 22,258 ha of coastal freshwater and brackish wetlands (Bossert 2009). The collection site was approximately 475 m inland from McFaddin Beach in an area recently burned by lightning-induced fire (<1 week prior) and in the path of Hurricane Ike (on 13 September 2008). During the afternoon (approximately 1500 hours) of 10 July 2009, we deployed the bait materials and made observations at deployment, approximately 1 hour before sunset (1900 hours) and from 0900 until 1300 hours on 11 July 2009 (mean temperature during the observation period = 29.5°C based on nearest National Weather Service from the Southeast Texas Regional Airport in Port Arthur, TX).

[1]Diptera: Calliphoridae.
[2]Department of Entomology, Texas A&M University, College Station, TX 77843.
[3]Department of Biology, University of Windsor, Windsor, Ontario, Canada N9B3P4.
[4]College of Life Science and Technology, Huazhong Agricultural University, Wuhan, China.

Data were collected on the species arriving at each bait type and when oriental latrine fly first arrived at the bait. Adult flies, larvae, and eggs deposited in, around, and on the hog carcass were collected.

Six species in three Diptera families [Calliphoridae, Sarcophagidae, and Tabanidae (n = 1)] were observed or collected at the refuge (Table 1). The first flies attracted to the hog carcass were the secondary screwworm, considered to be among the first to colonize decomposing remains in the U.S. (Byrd and Butler 1996). The first flies attracted to the chickens were flesh flies in the family Sarcophagidae and the secondary screwworm blow fly. A male oriental latrine fly was first observed at the hog carcass at 1617 hours. By 1900 hours, adults of the secondary screwworm, oriental latrine fly, and hairy maggot blow fly were observed at the carcass and in the surrounding vegetation and an egg mass was observed in the ear of the hog. On the morning of 11 July 2009, we observed multiple egg masses and collected samples as well as larvae and adults to rear and identify from each location of the hog carcass. Eggs collected from the carcass were only the secondary screwworm, while larvae were either the secondary screwworm or from the family Sarcophagidae. Gravid adult females of the oriental latrine fly (n §10) were acquired by sampling with a sweep net in the vegetation surrounding the hog carcass. The females were maintained with water and taken to a laboratory for egg collection and establishment of a colony for future experiments.

The oriental latrine fly seems to be established in coastal Texas. The co-occurrence of adults of the secondary screwworm, oriental latrine fly, and hairy maggot blow fly suggests that partitioning of the habitat and of carrion resources may be occurring among the species. These observations provide not only interesting information on the current status of the three species and their ecology, but also bring forward the question of what the co-occurrence of all three species will have on public health. During our observation period, only colonization by the secondary screwworm was observed on the hog carcass but it is possible that colonization by gravid oriental latrine fly and hairy maggot blow fly that were abundant in the surrounding vegetation may have occurred if the hog carcass had been deployed for a longer time. It is also interesting to note that the presence and rapid colonization by blow flies did not seem impacted by recent disturbances in the environment. However, the close associations between these species and human-associated waste may provide developmental refuges in the vicinity because dumpsters and waste piles were observed on the beach adjacent to the collection site. The close association of all three species with humans and human-generated waste (Wells 1991) increases the potential for mechanical transmission of filth-associated pathogens.

Table 1. Adult Fly Species Observed, Collected Adults, and Reared Immatures at Decaying Hog and Chicken Carcasses from 10-11 July 2009 at the McFaddin National Wildlife Refuge Near Sabine Pass, TX

Species	Observed	Collected	Reared
Cochliomyia macellaria	X	X	X
Chrysomya megacephala	X	X	X
Chrysomya rufifacies	X	X	
Lucilia cuprina	X		
Sarcophagidae	X	X	X
Tabanidae	X		

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