



G75 Attraction and Repellence of Blow Flies to Intra- and Interspecific Fecal Bacteria

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After attending this presentation, attendees will have a greater understanding of the conspecific and interspecific interactions of blow flies: specifically, the role of fly feces and related bacteria on the attraction and repellence of forensically significant blow flies (Diptera: Calliphoridae).

This presentation will impact the forensic community by improving understanding of factors that can affect attraction and oviposition of two of the most common blow flies in the summer in the southern United States, *Cochliomyia macellaria* (Fabricius) and *Chrysomya rufifacies* (Macquart).

The most important duty of the forensic entomologist in a death investigation is to provide an estimate of the time of colonization, or period of insect activity (PIA) which translates into a minimum postmortem interval (mPMI). Blow flies are the most significant insects in death investigations because known patterns of larval development allow entomologists to determine how long a corpse has been colonized. As blow flies generally only oviposit on a body after death occurs, the amount of time that has passed since eggs were laid is the minimum length of time for which the victim has been dead. However, flies may not oviposit immediately at the instant of death. Rather, there are elements that delay oviposition, especially in *C. rufifacies*, which has been observed to arrive at the scene of death first, but only oviposit after other species such as *C. macellaria*. These elements may include quality or decomposition of the resource, the presence or lack of certain bacteria, or conspecific and interspecific signals left in the secretions of flies.

In this study, fly specks were gathered from recently emerged *C. macellaria* adults. A saline solution of the fecal matter was grown on nutrient agar, and the resulting bacteria were cultured and used in preference testing via Y-tube olfactometry. Based on odor alone, fecal bacteria do not produce volatiles strong enough to attract or repel adult flies of either species. However, certain signals must be present to trigger the beginning of oviposition of these two species on their respective timetables.

C. macellaria are typically one of the first species to colonize a resource in the southern United States. However, a few days after death, the majority of maggots on a body may be *C. rufifacies*. Although this species is often one of the first to arrive at a scene of death, adult females will wait to oviposit until after other fly species have begun to colonize the resource. It is possible that the presence of maggots of primary colonizers such as *C. macellaria* somehow prepares or alters the resource, improving the viability of the later-colonizing *C. rufifacies*. The adult *C. rufifacies* may be waiting for some signal that the resource has been colonized by other species before beginning oviposition, and this study investigates the role that *C. macellaria* feces and related bacteria may play in that signaling process.

By increasing understanding of what delays and triggers oviposition on a body, improved estimates of pre-colonization intervals will lead to more accurate estimates of the PMI.

Blow Fly, Postmortem Interval, Oviposition