Daily and seasonal prevalence of the blow fly *Chrysomya rufifacies* (Diptera: Calliphoridae) as revealed by semi-automatic trap collections in suburban Chiang Mai Province, northern Thailand

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Abstract

Effective control of *Chrysomya rufifacies* (Macquart) (Diptera: Calliphoridae), a blow fly species of medical and forensic importance, requires information on seasonal prevalence and bionomics. Therefore, daily and seasonal activity patterns of *C. rufifacies* were studied in 3 locations representing different microhabitats (palm plantation, forested area, longan orchard) in a suburban area of Chiang Mai Province, northern Thailand. Investigations were conducted hourly for 24 h using a semi-automatic trap baited with 1-d-old beef offal (300 g). Collections were carried out twice per mo from Jul 2013 to Jun 2014. A total of 55,966 adult *C. rufifacies* were collected, with 52.4% of individuals trapped in the forested area. *Chrysomya rufifacie*s was present in collections throughout the yr with peak abundance in summer. This species was active during the d with peak activity in late afternoon (3:00 to 6:00 PM). Fly abundance in traps was positively correlated with temperature (r = 0.391; $P < 0.001$) but negatively correlated with relative humidity (r = −0.388; $P < 0.001$). Female flies were more abundant in collections (0.26 male per female sex ratio), with 80% of individuals being non-gravid. The baseline information provided by our study suggests that *C. rufifacies* is well-adapted to variable climatic conditions present in northern Thailand, specifically suburban Chiang Mai Province.

Key Words: daily activity; seasonal activity; hairy maggot blow fly; fly abundance

Resumen

El control efectivo de *Chrysomya rufifacies* (Macquart) (Diptera: Calliphoridae), una especie de mosca califórida de importancia médica y forense, requiere información sobre la prevalencia estacional y bionómica. Por lo tanto, se estudiaron los patrones de actividad diaria y estacional de *C. rufifacies* en tres lugares que representan diferentes microhábitats (plantaciones de palma, área boscosa, huerto de ojo de dragón) en un área suburbana de la provincia de Chiang Mai, al norte de Tailandia. Se realizaron las investigaciones cada hora durante 24 h utilizando una trampa semiautomática cebada con despojos de carne de 1 día de edad (300 g). Se hicieron las recolecciones dos veces al mes entre jul del 2013 y jun del 2014. Se recolectó un total de 55,966 adultos de *C. rufifacies*, con el 52,4% de los individuos atrapados en el área boscosa. *Chrysomya rufifacies* estuvo presente en colecciones a lo largo del año con una abundancia máxima en el verano. Esta especie estuvo activa durante el día con una actividad máxima al final de la tarde (3:00 to 6:00 PM). La abundancia de moscas en las trampas se correlacionó positivamente con la temperatura (r = 0.391, $P < 0.001$) pero se correlacionó negativamente con la humedad relativa (r = -0.388, $P < 0.001$). Las moscas hembra fueron más abundantes en las colecciones (proporción sexual machos/hembras de 0,26) con un 80% de individuos no grávidos. La información de referencia proporcionada por nuestro estudio sugiere que *C. rufifacies* está bien adaptada a las condiciones climáticas variables presentes en el norte de Tailandia, específicamente en la provincia suburbana de Chiang Mai.

Palabras Clave: actividad diaria; actividad estacional; mosca peluda; abundancia de moscas

The hairy maggot blow fly, *Chrysomya rufifacies* (Macquart) (Diptera: Calliphoridae), is a medically and forensically important species worldwide. This fly is well-adapted to variable environments, ranging from urban regions to the high mountainous zone (Moophayak et al. 2014). In urban areas of Malaysia, adults of this species can be mechanical carriers of various pathogens such as bacteria, viruses, protozoan cysts, and helminth eggs (e.g., *Ascaris lumbricoides* [Ascarididae], *Trichuris trichiura* [Trichuridae]) (Sulaiman et al. 1988). Also, larvae of *C. rufifacies* have been reported as myiasis-producing agents in humans and animals. In Thailand, *C. rufifacies* human myiasis cases sometimes

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