

Abstract

Calliphoridae is the most important family for forensic entomology studies. It has been used to help in the resolution of legal cases. This family has been studied in North America and parts of South America. However, the distribution of Calliphoridae in the Caribbean is unknown, and studies explaining their biological aspects are currently unavailable. We collected samples in Puerto Rico, Jamaica, Cuba, the Dominican Republic, and most of the Lesser Antilles to understand the distribution of these flies and their habitat preferences. Adult flies were collected by using raw chicken as bait. Trapped specimens fell in a container with 95% ethanol solution that preserved their DNA and morphological characteristics. We sorted these samples, extracted DNA, and used Polymerase Chain Reaction with three genes to make phylogenetic trees to study the relationship between these flies. 45,000 flies have been sorted. 70% are Calliphoridae, 20% Sarcophagidae, and the other 10% are other flies. We found three subfamilies of Calliphoridae, which constitute five genera and 16 species. *Calliphora maestrica*, *Chloroprocta idioidea*, *Chrysomya rufifacies*, *C. megacephala*, *C. albiceps*, *Cochliomyia macellaria*, *Co. aldrichi*, *Co. hominivorax*, *Co. minima*, *Lucilia cluvia*, *L. cuprina*, *L. eximia*, *L. fayeae*, *L. lucigerens*, *L. retroversa* and *L. rica* were identified. Six of them are endemic species. This information will be used to predict behavior, to anticipate feeding habits, and to ameliorate species identification, which is often difficult. In our case, immature states are unknown. DNA typing of forensic insect specimens offers a quick and reliable alternative. We used phylogenetic trees to identify insects in various developmental states (egg, larva, pupa, adult) using the relationships among them. It is important to understand the cadaveric stage preferences and feeding habits to make predictable successions within a corpse to indicate the place and the time of death.