

A-34: Estimation of time elapsed since death using entomological methods 1

Seetha Liyanage¹, Ravindra Fernando¹, Nandadasa Kodagoda¹, Willie Samarawickrema²

(¹Dept. of Forensic Medicine and Toxicology, Faculty of Medicine, Univ. of Colombo, Colombo 8 ²Formerly, World Health Organization)

The time elapsed since death may be estimated by the age of the immature stage of sarcosaprophagous fly species recovered from it at, post-mortem examination or earlier. It is important to identify all sarcosaprophagous flies attracted to corpses/carcasses and to gain some knowledge on the times of their appearance and peak infestation on the carcass.

The objectives of this study were to: (a) identify the sarcosaprophagous fly species attracted to carcasses in different areas and elevations of the country; (b) observe the succession of their arrival at a carcass and oviposition, their seasonality and abundance.

Two rabbit carcasses with the same time and manner of death were set up outdoors in the premises of the Faculty of Medicine, Colombo 10 m apart, each protected by an iron-framed cage covered by mesh size 2 cm. Temperature and humidity were recorded hourly.

Adult flies landing on one carcass were collected for 10 min, 2 hourly, from the commencement to cessation of fly activity. Hourly catches were identified separately. All eggs/larvae deposited on the other carcass were collected every hour. Hourly collections were separated into genera. These were reared separately on beef/human flesh medium for species identification. Of the 16 monthly collections made in Colombo during 1992 - 1993, 9, 3 and 4 were in dry, moderate rainy and heavy rainy weather respectively. The study was extended to 3 low country sites, Anuradhapura, Kataragama and Hambantota; 2 mid country sites, Ratnapura and Kandy and 2 hill country sites Hatton and Nuwara Eliya. Meanwhile 39 samples of immature stages recovered from post-mortem examinations from different areas were reared to the adult stage to compare the species with those from carcasses. Geometric means of fly counts, egg/larvae counts hourly or daily were transformed into $\log(n+1)$ and plotted against hours/days.

Six fly species attracted to carcasses were identified in Colombo. They were *Chrysomya rufifacies* (Macquart), *Ch.megacephala* (Fabricius), *Hemipyrellia ligurriens* (Wiedemann), *Sarcophaga ruficornis* (Fabricius), *Hydrotaea chalcogaster* (Wiedemann), and *Synthesiomyia nudiseta* (Wulp). All except *Sy.nudiseta* were found in Anuradhapura, Kataragama and Hambantota. In addition to the first 5 species *Chrysomya pinguis* (Walker) was found in mid country. In the hill country *He.ligurriens* was absent. In addition to the other species and *Ch.pinguis*, *Lucilia porphyrina* (Walker) was encountered there.

Ch.rufifacies and *Ch.megacephala* were the 2 commonest species in Colombo and low country. *He.ligurriens* was the most abundant in mid country while *Ch.rufifacies* and *Ch.megacephala* were moderate.

Fly abundance was low in hill country. Among the species, the highest was *Lu.porphyrina* and *Ch.pinguis*. *Ch. rufifacies* and *Ch.megacephala* were lowest here. Species taken from corpses were the same as those described from rabbit carcasses.

Identification of the species was confirmed by the Natural History Museum, U.K.

Nine species of sarcosaprophagous flies were identified in this study, 8 from carcasses and one, *Ch.nigripes* from a post-mortem from Bibile. *Ch.pinguis* was identified from mid country and hill country and *Lu.porphyrina* only from the hill country. Species distribution also provide clues to possible displacement of a corpse. The time of arrival of each species at a carcass and its peak activity as this period is added to the age of the oldest immature stage found on the corpse to estimate the time of death.

Fly succession on human cadavers is not possible. Therefore information nearest to the true situation was obtained from carcass studies.

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