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Post-mortem interval estimation and insect succession patterns in the tropical climate of nigeria

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ABSTRACT

Post-mortem interval (PMI) estimation is the first step in the identification of badly decomposed remains. Apart from identifying the victim, obtaining the PMI is an important aspect in investigation into the cause and manner of death, and helps to narrow down the number of suspects. The ongoing armed conflict in Nigeria which has lingered over a decade has left a large burden of human remains. These remains are mostly left in the fields where the attacks occurred for fear of further attacks, especially in cases of terrorism. They are, therefore, badly decomposed at the time they are recovered, and identification becomes more difficult in a country that has very few forensic scientists. Law enforcement agencies usually resort to mass burials without identification. The aim of this study was to assess decomposition rates in southern Nigeria and to derive formulae for PMI estimation using the quantitative variables Accumulated Degree Days (ADD) and total body score (TBS), and to obtain the arthropod succession pattern during decomposition using a pig model. To achieve this aim, a longitudinal examination of quantitative variables, TBS and ADD, was conducted over a period of 14 months. This period included both the dry and wet seasons. Scatter plots between TBS and PMI, and TBS and ADD were used to show decomposition patterns. Arthropod succession patterns were also observed during the study for each carcass. Decomposition was found to progress rapidly, and desiccation was a frequent occurrence during decomposition. There were marked differences in decomposition patterns between the seasons, with the wet season exhibiting a more rapid decomposition. Linear regression formulae for ADD and PMI, and 95% confidence interval charts for TBS for ADD were derived. The arthropods arrived very early on the pig cadavers. There was more arthropod abundance and species richness in the wet season than in the dry season. There were also some arthropods that were observed only in the wet season. A combination of these formulae and insect activity will lead to a more precise PMI estimation in Nigeria and regions with similar climate. The data on insect succession developed from this study will serve as a reference for forensic researchers.