

https://dspace.org/

Patterns of tissue damage by insect activity using pig (Sus Scrofa) carcasses as human analogues

Kgokong, Ntebogeng

2024
https://hdl.handle.net/10539/37692

Downloaded from a DSpace repository. https://dspace.org/

PATTERNS OF TISSUE DAMAGE BY INSECT ACTIVITY USING PIG (SUS SCROFA) CARCASSES AS HUMAN ANALOGUES

Author: Ntebogeng Kgokong

ABSTRACT

Bite marks caused by insect activity on a decomposing body can cause misleading artefacts that can resemble peri-mortem injuries. The aim of this study was to perform a macroscopic and histological analysis on soft tissue exposed to insect activity for patterns of tissue damage using pig carcasses and to describe and measure the insect mouthparts by scanning electron microscopy in order to link bite marks noted to specific insect species.

Two pig carcasses were placed in galvanized steel cages to allow insect access and prevent scavenging. Tissue damage caused by insect activity was described, photographed, punch biopsied and histopathologically analysed. Sampling of insect damage was conducted every third day, and associated insects were collected and temperatures were recorded daily.

Six forensically important insect species were recorded namely, *Lucilia sericata, Calliphora vicina, Chrysomya albiceps, Chrysomya chloropyga, Dermeste*s *maculatus* and a species of ant (Family Formicidae).

Patterns caused by ants (Formicidae) were small, superficial lesions on the skin surface with skin parchmenting. Patterns of damage caused by dipteran larvae macroscopically were circular and irregular in shape and more pronounced on extremities. Patterns caused by coleopterans were circular in shape, and not as irregular in comparison to those by dipteran larvae and tended to tunnel deeper into the subcutaneous tissues. Epidermal-dermal separation and the complete removal of the epidermal layer were noted before decomposition could occur, which was attributable to insect activity. Mouthparts were described and measured but the differences in the mouthparts were such that the patterns, and not individual bite marks, were a better indicator of the order of insect causing the damage.