



A21 Scavenging Patterns in Hawaii: An Archaeological and Skeletal Case Study

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After attending this presentation, attendees will better understand the taphonomic processes associated with specific scavenging behavior.

This presentation will impact the forensic science community by providing vital insights into the complexities of scavenging patterns to assist in executing a forensic recovery and analysis of skeletal material.

The current state of taphonomic research in Hawaii, specifically related to mammalian fauna, is minimal, at best. The remains of an unidentified decedent were discovered on the surface of a forensic site, necessitating archaeological recovery methods on the island of Kauai. This investigation and recovery operation provided an opportunity to examine a specific case of scavenging activities and reconstruct the depositional history within the context of a natural setting.

An archaeological recovery was performed by conducting a pedestrian survey of the adjacent areas surrounding the majority of the skeletal remains. Azimuth mapping techniques were used to record the recovered skeletal remains and non-osseous evidence. Visible pig trails transecting the recovery site were also documented using Global Positioning System (GPS) track recording. All materials were collected in accordance with crime scene protocols. In a laboratory setting, peri-mortem and postmortem alterations to skeletal elements were observed and recorded by gross examination in conjunction with microscopic magnification of bone surfaces.

Skeletal elements from the lower spine, left lower limb, and sternum were found to be dispersed in a broad, patterned distribution, extending as far as 24m from the primary concentration of skeletal material. Skeletal analyses revealed evidence of pits, punctures, furrows, crushing, and scoring over many of the bone surfaces. Multiple areas of bone reduction were also observed, in conjunction with previously mentioned trauma. Peri-mortem and postmortem alterations were primarily concentrated at proximal and/or distal ends of long bones, in addition to peripheral margins of flat and/or irregular bones. The majority of the unrecovered skeletal elements consisted of ribs, small bones of the hands and feet, and some vertebral segments.

Feral, domesticated pig (*Sus scrofa*) trails transecting various areas of the recovery site correspond with the distribution pattern of recovered material, including both the main concentration and more broadly disbursed skeletal elements. Elements of unrecovered/missing skeletal material are consistent with previously recorded observations found in literature on mammalian scavenging patterns. Much of the peri-mortem and postmortem bone deformations analyzed were characteristic of tooth marks associated with both canid and suid (pig) scavenging. Pit, puncture, and scoring marks located on the superior region of the right scapula and anterior surfaces of the right calcaneus and cuboid are consistent with marks left by the canine and carnassial teeth of a canid. Crushing marks made by opposing teeth found on rib fragments, in addition to broad linear punctures and deep furrows found on the epiphyseal ends of the left femur, are consistent with scavenging patterns of suid. Other trauma, while consistent with tooth marks left by scavengers, could not be specifically assigned to an animal family. Recovery of a nearly complete piglet skeleton further suggests this area was important ground for local suid sounders.

Knowledge of the local fauna is often vital to the success of a forensic recovery. Knowing and understanding faunal scavenging patterns that potentially and often contribute to the formation of a site can aid the investigator in predicting and recognizing distribution patterns of material. In addition, this knowledge can be key in assisting the investigator with the forensic analysis of peri-mortem and postmortem changes to the skeletal elements.

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