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Terrestrial and Marine Decomposition and Scavenging in Temperate and Tropical
Environments
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Process:

There are five general stages of decomposition: fresh, putrefaction, active decomposition, advanced decomposition, and skeletonization.¹ The progression of these stages is fluid and can be affected by scavenging, insect activity, temperature, humidity, and others. Knowing how these factors influence taphonomic processes is key in determining time since death and time since deposition estimates.

Decomposition on small islands can vary because of the differences in environmental factors and scavengers present. Small islands typically have smaller animals and fewer species, so scavenging guilds are often limited in these locations. Like small island taphonomy, marine taphonomy is not well-studied. Decomposition progresses more slowly than with terrestrial carcasses due to cooler temperatures and inhibited insect activity.² As the species of scavengers present varies by location, as does scavenging activity. This feeding activity affects decomposition rates and can leave artefacts on remains.

This study focused on investigating the differences in scavenging and decomposition in two lesser-studied environments. Small island taphonomy was studied in Piscadera, Curaçao with the CARMABI research center. To study terrestrial taphonomy, two pig necks were deployed on land close to shore. Trail cameras were set up to monitor scavenging and stage of decomposition. To study marine taphonomy, two pig necks were deployed offshore and monitored with underwater cameras.

Temperate taphonomy was studied on Horse Island, Connecticut. To study terrestrial taphonomy, two pig legs were placed on the island and monitored with trail cameras. To study marine taphonomy, two pig legs were deployed in lobster traps offshore of Horse Island: one in the channel and one in the cove. The lobster traps were pulled up twice a week to monitor the stage of decomposition and scavengers.

Results:

Several differences in taphonomic processes were found between the two environments and between the terrestrial and marine experiments. The results are summarized in Table 1.

Table 1. Overview of Tropical vs. Temperate Small Islands and Terrestrial vs. Marine Decomposition and Scavenging

Environment	Tropical Small Island (Curaçao)	Temperate Small Island (Horse Island, CT)
Terrestrial	<ul style="list-style-type: none"> • 5 species of scavengers • Putrefaction: Days 1-4; ended when dogs took the neck 	<ul style="list-style-type: none"> • No scavengers • Putrefaction: Days 1-3 • Active decomposition: Days 4-5 • Advanced decomposition: Days 6-12
Marine	<ul style="list-style-type: none"> • 13 species of scavengers* • Fresh: Days 0-1 • Putrefaction: Day 2-7; ended when the experiment was stopped 	<ul style="list-style-type: none"> • 1 species of scavengers • Cove leg: no scavengers. Skeletonized by day 20. • Channel leg: scavenged by common spider crabs (<i>Libinia emarginata</i>). Skeletonized by day 12.

*Only species identified to their family were considered.

Increased decomposition rates of terrestrial remains on Horse Island compared to those on Curaçao can be attributed to more abundant insect activity. Although Horse Island had fewer scavengers, the crabs consumed more flesh than the fish in Curacao, and this accelerated the decomposition of the temperate marine legs. Scavenging and decomposition were found to vary between terrestrial and marine environment, and marine decomposition proceeded more slowly than terrestrial decomposition. This research is planned to continue in the future by studying small island taphonomy in Western Australia in January 2020.

References:

¹ Payne, J. A. (1965). A summer carrion study of the baby pig *Sus scrofa* Linnaeus. *Ecology* 46:592-602.

² Rodriguez, W.C. (1997). Decomposition of Buried and Submerged Bodies. In *Introduction to Forensic Sciences*.