



## Physical Anthropology Section – 2005

### H86 Raccoon (*Procyon lotor*) Foraging as a Taphonomic Agent of Soft Tissue Modification and Scene Alteration

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Attendees will acquire an appreciation for the remarkable strategies employed by an opportunistic carnivore to exploit the insect species attracted to carrion.

Human medicolegal investigations increasingly rely on entomology to estimate time-since-death based on species' presence or absence, and stages of development. Estimates, however, may deviate when carrion-seeking insects are subject to predation themselves. Ants, wasps, beetles, and birds have been documented to scavenge carrion for fly eggs, larvae, or both. The authors have observed brown rats (*Rattus norvegicus*) ingest developing larvae found on human remains. These predators alter the entomological evidence which can be collected from the scene, and record of their presence must be taken into account when estimating the postmortem interval. To the authors' knowledge, there has been no prior record of mammals directing as much, if not the majority, of their efforts towards locating, and recovering, insect fauna, as they do in scavenging carrion.

This paper examines the foraging strategies of the raccoon at the University of Tennessee's Anthropological Research Facility—a 2 ½ acre plot of land set aside for human decomposition research. Prompted by the paucity of literature on small mammal scavenging behavior, multiple cameras were stationed at the Facility to record the nocturnal behavior of animals inhabiting, or frequenting, the Facility. The cameras were maintained throughout most of the September 2003 through July 2004 calendar months, after which point they were sporadically operated. Ancillary visits in daylight enabled detailed photographic documentation of any previous night's activity.

Raccoons (*Procyon lotor*), in the order Carnivora, can be found throughout much of the United States. Although highly adaptable to diverse habitats, they prefer hardwood forests near streams, lakesides, or other bodies of water. They may establish dens in hollow trees, abandoned ground burrows, brush piles, caves or rock piles, drain pipes; and in, or under, buildings and structures. Urbanization has attracted many raccoons into metropolitan areas due to easily obtainable food, water, and shelter. Exceptionally inquisitive, their unique dexterity enables them to manipulate objects and probe crevices extracting contents within reach for examination.

Raccoons forage at night for a variety of foods including fruit, berries, nuts, fish, mollusks, snails, earthworms, insects, crayfish, clams, frogs, turtles, carrion, and small rodents and birds as well as their eggs. They may incorporate new foods into their diet – such as corn, grain, vegetables, pet food, melons, birdseed, and garbage – by watching the behavior of other raccoons. In temperate regions of the United States, they have been known to uproot lawns in urban areas while 'grubbing' for insects and their larvae. This behavior usually begins in the fall when many young raccoons are responsible for finding their own food, leading biologists to believe it may be preparation for winter when doubling their weight is required to survive into spring.

Bacteria, insects, and soil microbiota are the primary drivers of decomposition. Insects are attracted to carrion for sustenance for themselves or their offspring; whether via the corpse itself, or by other species frequenting the site. Post-feeding, the larvae of beetles and flies burrow beneath ground litter and into soil adjacent to, and underneath, the corpse, seeking protection from predators and other elements in preparation for pupation. While newly transformed beetles and flies emerge from the soil within several days, dead adult insects may remain in the soil; in some instances, many years after death. Blow fly larvae are normally found in the first three to five centimeters of soil, while larvae of some of the gnatlike flies can be found in buried remains up to depths of four feet. In temperate regions, the soil insect fauna beneath the skeletal remains at the ground surface will return to normal in approximately two years.

Recorded video and photographs visually demonstrate raccoon foraging to be an agent of soft tissue modification and scene alteration secondary to the quest for entomological nourishment. Indeed, a good deal of time and effort is spent probing for larvae feeding deep within the internal body cavities, snatching-up wriggling larvae from the body and ground, and unearthing larvae pupating within the soil.

**Forensic Entomology, Animal Activity, Postmortem Interval**