

Bifurcation of animal remains impact on the colonization of necrophagous arthropods.

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Abstract

Oviposition by necrophagous insects on carrion typically takes place in orifices and natural bodily openings. Observations of increased colonization in wounds created at the time of death or by scavengers have been documented, but quantitative results not yet obtained. To determine if, and quantify the degree to which wounding of remains increases insect colonization and emergence from remains, eight small (3-45 g), medium (85-175g), and extra-large (275-375g) feeder rats (*Rattus norvegicus*) were obtained frozen. Four rats from each size class were bisected along the transverse plane. The biomass, diameter, and circumference of the torso were measured from all rats and placed under a vertebrate exclusion cage with at least 30 m from the next set of remains on the Curry College Campus in Milton, Massachusetts. Remains were left in the field for five days before being placed in individual rearing chambers to rear larvae to adulthood where insects were identified to lowest taxonomic resolution and counted. Data collected were used to determine successful emergence, pupation, and generate a mathematical model to predict the production of flies from a single carcass based on surface area to volume ratios of remains. Data suggested that generally, wounding increased the production of flies from remains, but this interacted with carrion biomass. Secondly, the presence of omnivorous and predatory beetles had influenced the production of insects from remains beetles and flies co-existed. Implications of this research in medicolegal and urban forensic entomology will be discussed.