A88 The Faunal Succession of Forensically Important Arthropods and Large Vertebrate Scavengers in Rural Northwest Florida

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After attending this presentation, attendees will better understand the biodiversity of forensically important arthropods and large vertebrate scavengers in rural northwest Florida where little is known about these taxa.

This presentation will impact the forensic science community by providing a survey of arthropods that are associated with decomposing pig carrion and large vertebrate animals that scavenge remains. Even though decomposition stages are the primary component to making Postmortem Interval (PMI) estimations, entomological evidence can provide more precise assessments.[1] Nevertheless, insect activity is dependent on factors such as temperature and habitat, which in turn will affect decomposition rates.[2] Since climactic conditions and insect assemblages vary around the country, and within different habitats, it is important to conduct research in a variety of ecological niches. While Florida is home to one of the most unique and diverse ecosystems, flatwoods and seepage bogs can be found along the Lower Gulf Coastal Plain of Florida and Alabama. Thus, the information garnered from this study may be used to understand arthropod succession and forensically important insect assemblages within Escambia County, FL, and surrounding areas with similar subtropical climates.

This study was conducted using pig carrion (*Sus scrofa* Linnaeus) as models representing human cadavers. One pig carcass was placed in dry flatwoods, while the other was placed in a seepage bog. Adult Calliphorid flies and beetles were collected and some blow fly larvae were reared to the adult stage and identified. Although the pig carcasses were enclosed in cages so large vertebrate animals would not disturb insect activity, game cameras provided evidence for local large vertebrate scavengers that presented themselves in the areas of the pig carcasses.

Based on previous research, it was hypothesized that insect assemblages would be similar but slightly different than those from northcentral Florida.[3] It was also hypothesized that habitat would result in varying insect assemblages, and that large vertebrate animals would be interested in pursuing decomposing remains.

Seven species of Calliphoridae were collected and identified from the carrion, including *Calliphora vicina* (Robineau-Desvoidy), *Chrysomya megacephela* (Fabricius), *Chrysomya rufifacies* (Macquart), *Cochliomyia macellaria* (Fabricius), *Lucilia coeruleiviridis* (Macquart), *Lucilia cuprina* (Wiedemann), and *Phormia regina* (Meigen).

P. regina was the predominant species collected and reared from both pig carcasses. There were also six Coleoptera species collected from the carrion, including *Saprinus pennsylvanicus* (Paykull), *Aphodius rufipes* (Linnaeus), *Trox suberosus* (Fabricius) *Oiceoptoma rugulosum* (Portevin), *Necrodes surinamensis* (Fabricius) *and Creophilus maxillosus* (Linnaeus). *O. rugulosum* and *S. pennsylvanicus* were the most common species collected. These observations reveal that species assemblages in northwest Florida are similar, but slightly different than those in northcentral Florida.[3] Many large vertebrate animals, including vultures (*Cathartes aura and Coragyps atratus),* opossums (*Didelphis virginiana*), and feral dogs (*Canis familiaris*), showed interest in the carrion. The opossums and feral dogs accessed the carrion and scavenged the remains.

In conclusion, this project provides relevant information to the database of forensic literature regarding medicolegal entomology, decomposition, and postmortem interval. The results can be used to identify potentially forensically important fly and beetle species within Northwest Florida, as well as surrounding areas.

Reference(s):

1. Byrd J.H. and J.L. Castner. Forensic Entomology: The Utility of Arthropods in Legal Investigations. Boca Raton: CRC Press, Inc. 2009.
2. Richards E.N. and M.L. Goff. Arthropod Succession on Exposed Carrion in Three Contrasting Tropical Habitats on Hawaii Island, Hawaii. *Journal of Medical Entomology.* 34 (1997): 328- 338.
3. Gruner S.V., D.H. Slone, J.L. Capinera. Fornesically Important Calliphoridae (Diptera) Associated with Pig Carrion in Rural North-Central Florida. *Journal of Medical Entomology.* 44 (2007): 509-515.

Decomposition, Arthropods, Seepage Bog

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