H99 Forensic Osteology Research Station (FOREST): The First Donation

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After attending this presentation, attendees will come away with an enhanced view of human decomposition in the Blue Ridge Physiographic Province of North Carolina based on a case study of the first donation to be placed in the Forensic Osteology Research Station in Cullowhee, North Carolina.

The expected impact of this presentation on the forensic community is to begin to fine tune our understanding of human decomposition via research focused on patterns of decomposition and their environmental specificity. Instead of waiting until sufficient data are generated to report large scale patterns in more than one physiographic zone (which could take decades), this presentation will benefit the forensic community by reporting observations as they are made in hopes that each individual donor can inform our audience in some way. An additional impact of this work is that collaborations will be sought with researchers at other institutions with outdoor decomposition laboratories and those planning future decomposition laboratories.

The purpose of this study is to document the decomposition of the body of an adult male in the Blue Ridge physiographic province of North Carolina during the summer of 2008. On June 24, 2008, the clothed body was placed directly on the soil in the supine position on a south facing slope with the head inclined above the feet. The donor was placed in an area that is partially shaded by the forest canopy much of the day. Observations of decomposition and the environment were made and photographs were taken daily or every other day for the first month and weekly thereafter. Average temperatures during late June and July ranged from highs in the mid eighties to lows in the upper fifties and just over five inches of rain fell.

After 48 hours, fly eggs began to hatch and exposed areas of skin were in the beginning stages of sloughing. There was little odor until the fifth day and the odor never became strong. By the third day the skin had begun to darken and two days later the lips had turned black and parted. First and second instar fly larvae and adult beetles were observed on day five. Bloating was noted after one week and at this point tissue reduction of the head and neck was well under way. Third instar fly larvae were present in large numbers by day eight. Portions of the facial skeleton, left clavicle and left first rib were exposed by the ninth day. Migration of fly larvae began on the twelfth day and bloating began to recede. Numerous beetle larvae were present early in the third week and fly activity slowed. By week four the soft tissues of the skull and left upper thorax were greatly reduced but much soft tissue remained on the right shoulder, abdomen and appendages and arthropod activity was minimal. During weeks five and six the tissue of the arms and legs reduced, but no bone was exposed.

Prior to placing the donation and in order to collect terrestrial arthropods six pitfall traps were installed in the area where the body was to be placed, three pitfall traps were installed in other areas of the facility, and six pitfall traps were installed well outside the facility. The pitfall traps were collected at various intervals before and during decomposition. Prior to placing the donation as well as during decomposition, leaf litter samples for the collection of leaf litter fauna were collected in the facility and surrounding area. Leaf litter samples were processed in the laboratory using a Berlese funnel. Additional collections were made using sweep nets and forceps during decomposition. Arthropods observed include members of the families Calliphoridae, Silphidae, Staphylinidae, Histeridae, and Vespidae, among others.

Decomposition, Environment, Arthropod

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