H24 High Velocity Fluvial Transport: A Case Study From Tennessee

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After attending this presentation, attendees will have a better understand variations in skeletal transport in fluvial systems.

This presentation will impact the forensic community and/or humanity by providing insight into the varied patterns of skeletal transport in different fluvial transport systems and will aid crime scene investigators and forensic anthropologists in future case work and research.

Fluvial transport of human remains and the osteological evidence of such transport has been documented both anecdotally and systematically by various researchers during the past several decades. Historically, fluvial taphonomic studies have been applied to the interpretation of paleoanthropological contexts. The classic study by Boaz and Behrensmeyer (1976) documents the transportability of individual elements in flumes to simulate fluvial transport systems and provides an interpretive base for examining bone deposits recovered from fluvial systems.

Researchers attempting to address current issues of fluvial transport in forensic anthropology have provided information on various riverine environments. The research by Dilen (1984) examines remains location and identification through the use of human-like mannequins. The mannequins were used to simulate the riverine transport of a human body and predict the behavior of partially decomposed human remains in such circumstances. Another study by Bassett and Manhein (2002), involves the documentation and evaluation of known Mississippi River cases to aid with the prediction of location of remains lost in a river environment. Still other studies address skeletal disarticulation sequences (Haglund, 1993), osteological indications of fluvial transport and taphonomy (Nawrocki et al., 1997), and isolated cases of fluvial transport (Brooks and Brooks, 1997). While these studies provide valuable information for investigations of deaths involving riverine environments, none of them specifically address evidence of submersion and transport in more seasonal bodies of water.

In this study the effects of a restricted high velocity periodic transport system are examined through a case example from East Tennessee. In the spring of 2003, the University of Tennessee Forensic Anthropology Center participated in the recovery of human skeletal material from a small, unnamed creek in Alcoa, Tennessee. The remains were completely skeletonized. Periodic high flow episodes had occurred in the creek due to heavy rain in the past 12 months and the skeletal material was scattered as a result of fluvial transport. Skeletal elements were recovered along a one-kilometer section of the creek bed.

Topics addressed in this study include a discussion of the pattern of elemental transport relative to past research, illustrations of bone surface evidence of fluvial transport in the form of scratches and scrapes, and a discussion of the depositional context of the elements recovered. Insight into the varied patterns of skeletal transport in different fluvial transport systems will aid crime scene investigators and forensic anthropologists in future case work and research.

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Physical Anthropology, Taphonomy, Fluvial Transport

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