H76 The Decomposition of Human Remains Recovered From the River Clyde, Scotland: A Comparative Study of UK Fluvial Systems

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The goal of this presentation is to aid investigators when faced with a case that involves human remains recovered from a river system. Postmortem timetables and equations could be used in cases to estimate the post-mortem submersion interval more accurately and investigator will enhance their understanding of the factors that most affect decomposition in fluvial environments.

This presentation will impact the forensic community and/or humanity by enabling the investigating authorities to more accurately predict the postmortem submersion interval. By looking at drift trajectories and the timing of resurfacing events, parties involved in search and recovery may be able to narrow down their search area. The factors that have the greatest influence on decomposition will also be highlighted so that members of the forensic community can consider the unique effects each specific river may have on the rate and sequence of decomposition and its effects on the investigation.

Each year thousands of bodies are deposited in aquatic environments for a variety of reasons, yet, despite widespread acceptance that the process differs from that of terrestrial processes, there is a distinct lack of systematic research timetabling decomposition in water environments. In a lotic system, a body can be transported great distances from its point of entry and this, combined with the effects of decomposition, makes identification of the individual and the circumstances surrounding their death hard to determine. The aim of this study is to increase the accuracy in estimating the post-mortem submersion interval for bodies recovered from river systems in the UK.

Data was collected through the examination of autopsy reports carried out at the University of Glasgow on bodies recovered from the Clyde, Scotland, over a 15 year period (1991-2006). The study sample was composed of 135 cases (104 males and 31 females) and covered an age range of 5-84 years. For each case, the body was divided into two areas, the head and the torso (including the limbs) and each area was scored using a modification of the Megyesi, et al. (2005) scale. The decomposition score is dependent on the advancement of progressive post-mortem modifications, including bloating, marbling, skin slippage and adipocere formation. These scores make it possible to produce a post-mortem timetable identifying the various stages of decomposition, the sequence in which they occur and their duration. Post-mortem timetables can be established by using the post- mortem submersion interval (PMSI) and accumulative degree days (ADD). It can also be determined which environmental or human variables affect the rate and sequence of decomposition.

Statistical analyses indicate that certain variables affect the decomposition process more than others. The scoring systems developed using data from the Clyde will be compared to similar scoring systems developed for the Thames (Brewer 2005). The results should not only allow the authors to more accurately estimate PMSI for bodies recovered from rivers, but also provide an indication as to whether the process varies between individual river systems which differ in physical, chemical and biological properties, or whether a single decompositional timetable can be applied to all UK Rivers.

Decomposition, Rivers, PMSI

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