



Physical Anthropology Section – 2006

H25 Estimating the Postmortem Interval in Freshwater Environments

Billie L. Seet, MA*, 16 Arcola Street #2, Jamaica Plain, MA, 02130

After attending this presentation, attendees will understand the difficulty with which an estimation of the postmortem interval is in freshwater environments.

This presentation will impact the forensic community and/or humanity by attempting to gather and share more data on the process of decomposition in freshwater environments. This data is important because it is under-represented in the literature.

Forensic investigators often deal with human remains recovered from water. Estimating the time since death for bodies that have been submerged in water, however, can be quite difficult due to the lack of data on the subject and the vast number of different variables possible in watery environments. This preliminary study is intended to provide additional data concerning the estimation of time since death of submerged bodies through the use of record research. Seventy autopsy reports containing cases in which human remains were recovered from bodies of freshwater were used. Thirty-one variables were collected from each report in a present/absent context. Nine of the variables were then used in logistic regression analyses in order to measure their relationship to time in water. Some of the other variables that were collected, but not used in the analyses were body temperature, water temperature, ambient temperature, and invertebrate scavengers. These variables, although important, were omitted due to the inconsistency with which they were recorded in the police and autopsy reports.

The variables used were the postmortem interval, collected in hours, which ranged from two hours to 2,880 hours, or four months, and the presence or absence of the following: Clothing, cutis anserina, washerwoman skin, discoloration, marbling, skin slippage, hair slippage, and sub-cutaneous gas. Through the use of logistic analyses it was shown that clothing did not effect the postmortem changes collected for this analysis. This led to more statistical analyses using 70 cases total as one group rather than two smaller groups defined by the presence or absence of clothing. Two backward stepwise logistic regression analyses were then performed, splitting the postmortem time interval into two categories: (1) less than or equal to 24 hours and greater than 24 hours and (2) less than or equal to 48 hours and greater than 48 hours. These analyses aimed to predict the presence or absence of the postmortem changes based on the postmortem interval.

Results indicate that only three of the nine variables used in logistic regression analysis were significant. The time since death estimate can only be made in large time intervals. Purge can be used to predict a time since death of less than 48 hours while marbling and sub-cutaneous gas can be used to predict a time since death of greater than 48 hours. When estimating the postmortem interval as less than or equal to 24 hours and greater than 24 hours, purge was the only significant variable. This can be used to predict a time since death of less than 24 hours.

These preliminary results suggest that through the use of logistic regression and the presence and absence of these postmortem changes, a time since death can be estimated in large time intervals only, i.e. less than or equal to 48 hours or greater than 48 hours.

Postmortem Interval, Freshwater, Decomposition