



Physical Anthropology Section – 2003

H31 Peculiar Marine Taphonomy Findings: Preservation of Human Remains as a Result of Submersion in Sequestered Environments

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The purpose of this presentation is to present, by means of text and photographs, the taphonomic model of decomposition observed in 52 human remains after 7 months at 800 meters underwater.

Due to a growing need for information the taphonomic study of human remains recovered from the sea in order to interpret perimortem and postmortem modifications and to estimate time since death has emerged. Forensic goals that may be advanced by determining individual identity, place of death, and cause of death, need a model of compositional changes or of preservation and a theoretical understanding of marine ecology specific to the environmental context where the remains were found. A search for marine death data including human remains and their recovery yielded very few studies or case reports in literature. This presentation reports the findings of medical examinations of 52 human bodies recovered in October 1997, after seven months spent 800 meters underwater in the Adriatic Sea. Victims of the Kater I. Radez, the boatpeople sank following a collision with an Italian Navy warship that was patrolling the Italian sea-frontiers (March 1997). In 1999, during the AAFS annual meeting (abstract G78), the authors discussed the model for the organization and operations that were used by the medical examiner's team to recover the bodies and establish personal ID of all the victims. The environmental conditions were: temperature 4°C, a sandy and muddy seabed, high pressure (81 ata), salinity 35‰, oxygen 0.5 ml/l, darkness, current running from north-east to south-west (velocity: 10-15 cm/second). The bodies were found in each of four holds of the wreck: 8 in the steering-compartment, 24 in the bow, 9 in the stern, 10 in the middle hold, 1 in the engine room. In addition, 1 completely skeletonized cadaver was recovered outside the wreck, on the sea-bottom. All the victims were wearing winter clothing when the ship was engulfed but their heads and hands were uncovered. The human remains were scored for regional presence of soft tissue, exposure of bone, and disarticulation to determine the general decomposition pattern. The regions scored were the head, neck, hands, forearms, upper arms, feet, legs, pelvic girdle, and trunk. Initial adipocere formation (soft with a greasy consistency) appeared on covered areas of all the bodies. The head and hands were skeletonized in 57% of the cases, the hand-bones being disarticulated in 30% of these. The internal organs were in place and showed nearly normal coloration but demonstrated extensive softening and autolysis. The mechanism of soft tissue destruction in the skeletonized areas was the result of the feeding activity of marine scavengers such as small size fish and molluscs: clusters of *Xylophaga dorsalis* and *Adula Simpsoni* used the clothing and wooden supports of the wreck as a substrate for attachment. Some very unusual findings featured square or snowflake shaped crystals attached on the skin surface in covered areas. In conclusion, the pattern and sequence of decomposition observed have to be considered unusual for human remains lying in a marine context for several months: they appear to be related to submersion of the bodies inside a sequestered environments like the holds of a wreck.

Marine Taphonomy, Human Remains, Decomposition