H12 Analysis of Non-Human Skeletal Material Received in a Medical Examiner Setting

Katie N. Woods, BA, 1318 Commonwealth Ave, Unit 7, Allston, MA 02134; and James Pokines, PhD, Boston Univ School of Medicine, Dept Anatomy & Neurobiology, 72 E Concord St L1004, Boston, MA 02118*

After attending this presentation, attendees will gain new perspectives on the types of non-human skeletal material commonly received from law enforcement for forensic analysis in Massachusetts.

This presentation will impact the forensic science community by providing attendees with the species and taphonomic alterations common to this region and therefore the types of training which should be emphasized in these fields. Previously published documentation of types of non-human cases is sparse and is usually limited to general statements of what species are commonly examined. Forensic anthropologists have noted that commonly examined non-human remains throughout the U.S. are those related to food production such as deer, lamb, pig, cow, and chicken, as well as those from dog and horse. This study seeks to provide an organized and systematic analysis of a large sample of these cases.

Non-human skeletal elements were analyzed by the forensic anthropologist for Office of the Chief Medical Examiner. Cases were from the entire state of Massachusetts and the vast majority were found by members of the public and reported to law enforcement as potential human remains. Information was recorded on the different taxa present, the specific types of skeletal elements, and the different taphonomic processes affecting the bones (such as animal gnawing, weathering stage, and signs of peri-mortem butchery). Remains were analyzed through physical, macroscopic examination, and through photographs.

The most commonly analyzed non-human remains were those of white-tailed deer (*Odocoileus virginianus*), cattle (*Bos taurus*), and pig (*Sus scrofa*). Approximately 40% of the cases analyzed contained at least one skeletal element that showed signs of modern (machine) butchery. Most cases of machine butchery were skeletal elements from *O. virginianus*, *B. taurus*, and *S. scrofa*. This study validates the assessment of species related to food production being commonly presented by the public as potential forensic cases, while dog (*Canis familiaris*) remains were present in only 6% of cases and only one case involved definite horse (*Equus caballus*) remains. Only 5% of cases involved cranial elements, and most of these were fragmented. This most likely can be attributed to the general public's knowledge of the shape of the human skull as a popular symbol, making it difficult to confuse with a non-human cranium, and the active collection of non-human crania when encountered, leaving the more difficult to identify postcranial remains for later discovery. Gnaw marks were seen on 33% of the bones and were categorized as coming from large carnivore, small carnivore, undetermined carnivore, large rodent, or small rodent. Large rodent gnawing consisted of teeth marks left by North American porcupine (*Erethizon dorsatum*). Approximately half of the skeletal elements were at weathering stage 0, with some examples of weathering stage 1, but no cases were noted as being beyond that stage. Due to the state's extensive coastline, there also were cases involving skeletal elements from marine life including elements from dolphin (Delphinidae), seal (Phocidae), and unknown large fish species. Several of these elements had alterations typical of marine coastal environments, including rounding and bleaching.

The compilation of this information can help forensic anthropologists better understand what types of cases are being reported by the general public as potential forensic cases, and the skeletal recognition of which taxa in the North Atlantic region should be emphasized in forensic curricula.

Non-Human Remains, Forensic Anthropology, Taphonomy

 ** Presenting Author*