

Steps towards the creation of a Digital Library for Identifying Animal Remains from Archaeological Sites: The Case of Cyprus

Anna Spyrou

Science and Technology in Archaeology and Culture Research Center, The Cyprus Institute

Custom-made light booth for creating photogrammetry 3D models

Zooarchaeology in Cyprus: Why going Digital?

Zooarchaeological reference collections are fundamental tools for the successful identification of animal remains from archaeological sites. However, physical reference collections are not always accessible to researchers, especially because most of the time identifications and recording need to take place in the field. In Cyprus, the existing zooarchaeological reference collections are scattered among the different institutions and/or university departments. An innovative way of unifying the various physical reference collections on the island while making them visible to both researchers and the wider public is through the creation of 3D digital replicas of bones by using available digitization technology. This is particularly useful during the time of the Covid era when both resources and mobility are more restricted than ever.

Reference Collection at the Cyprus American Archaeological Research Institute

906K Polygons
116.1 MB of Data
File Format: OBJ



226K Polygons
28.6 MB of Data
File Format: OBJ



56K Polygons
7.4 MB of Data
File Format: OBJ



14K Polygons
1.8 MB of Data
File Format: OBJ



Optimization procedure of the 3D model of a goat skull, so that it can be used in interactive applications is the most optimal manner

Methods

After experimenting with various digitization techniques, photogrammetry (<https://bit.ly/3CJf8s5>) has been chosen as the most ideal method.

Strengths of Photogrammetry

- Its equipment is relatively cheap and easily transportable
- It provides precise texture and geometry as well as significant topological complexity
- Its software (RealityCapture) requires minimum supervision

Results

Digitization of 50 specimens from the main domestic mammals (sheep, goat, cattle, dog and cat)

Discussion- Future plans

Zooarchaeological 3D reference collections are essential tools for conducting zooarchaeology in the 21st century. Our future plans aim:

- To include more species, including fish, birds and wild mammals (e.g deer) as well as bones of the Cyprus' Pleistocene endemic fauna
- To include well-preserved archaeological specimens
- To include other organic remains, e.g seeds and create a digital library for environmental archaeology in Cyprus

Long-term plan: To create a virtual national history museum that will be Open Access



A male Persian Fallow Deer (Israel)
Photograph by: Eyal Bartov

Acknowledgements: I would like to thank the A.G Leventis Foundation and the Cyprus Institute for funding this project. I am grateful to Dr. Lindy Crewe for offering me access to the Cyprus American Archaeological Research Institute's reference collections. Special thanks goes to Nicolas Loucas for his precious help in all the steps of the digitization project.