

Processing a whale skeleton: a big challenge

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An optimal preservation of skeletal parts for museological or research purposes implies an adequate processing of bones. Currently an optimal protocol to process voluminous cetacean bones is lacking. More in particular the degreasing step poses a big challenge. Recently, the Museum of Morphology (MuMo, Ghent University) has taken part in the dissection of two stranded whales. The department of Morphology, as a research institution and home to the museological collection, is actively exploring alternative options for a practical and valid degreasing method.

Deboning

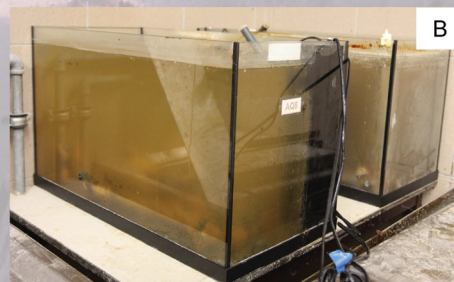
To avoid damage to the whalebones necessary precautions need to be taken during the salvage and initial deboning. This involves manual work where possible.



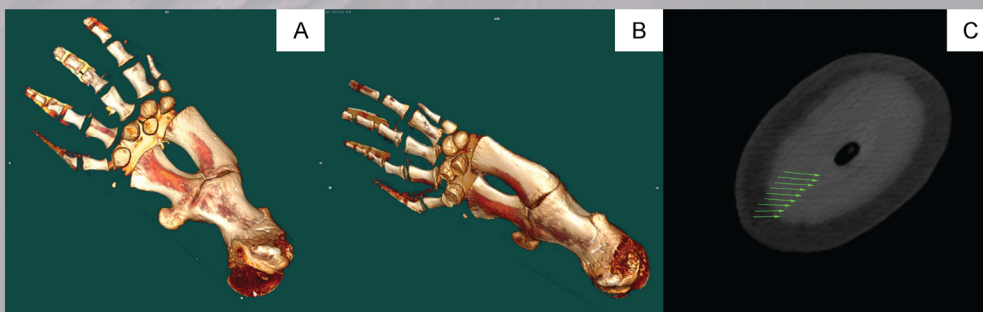
Maceration, bleaching and degreasing

A first prerequisite for the further chemical processing of cetacean bones is the availability of suitable equipment. This implies gear that can handle the size of these bones (A) and adaptations to maintain adequate temperatures for the chemical processes. Further maceration, by means of enzymes that degrade organic material, and bleaching with H₂O₂ can proceed according to standard protocols. Next, a thorough degreasing is mandatory to allow a long-term preservation, since without it adverse erosions caused by fatty acids occur. For safety and environmental reasons solvents (e.g. methylene chloride) as applied for smaller specimens are not an option for voluminous whalebones.

Currently microbial degreasing, in collaboration with an UGent spin-off that focuses on research and development of microbial degreasers (Avecom) (B) and the dispersion of industrial degreasing solvents (C) are being tested with promising results.



Assembling the skeleton



Medical imaging techniques are extremely useful to assemble the skeleton correctly and to perform research without damaging the specimens. (A, B): 3D reconstruction of a sperm whale flipper based on CT images of the non processed forelimb, C: CT image of a cross-section of a sperm whale tooth clearly showing concentric dentine rings that can be counted in order to estimate the age of the animal.