

Cold water maceration of extant bovid mandibles: implications for elemental composition, stable isotopic analysis and timing of tooth eruptions

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Overview

- Background
- Objective
- Methods
- Analysis
- Conclusion



Background

- Both fossil and extant mammalian teeth are widely used for investigations into palaeoclimates, palaeoecology and evolution
- The durable enamel of these mammalian teeth contain signals of diet, development, geographical regions and nursing
- Signal teeth need to be properly identified for elemental concentrations and isotopic microsampling



Background

- Maceration
 - Removal of flesh
 - Removal of dentition
 - Prepares for sectioning and radiography
- Three types of maceration
 1. Hot water or “cooking”
 2. “Bug box” with *Dermestes* beetles and larvae
 3. Cold maceration



Objective

Establish a protocol for cold water maceration of extant bovid mandibles to be used for further analysis of elemental composition, stable isotopic microsampling and timing of tooth eruptions



Methods

- Fleshed mandibles
- Five gallon bucket with cover and thermometer
- Solution
- Tooth receptacles
- Fume hood
- Laboratory oven









Methods

- Fleshed mandibles were placed in a five gallon bucket
- Covered with solution
- Bucket covered with a plastic lid to prevent evaporation and for the reduction of foul odors.
- Temperature observed





Methods

- Three parameters
 1. Every two days with defleshing (mandible A)
 2. Daily with no defleshing during change (mandible B)
 3. No changing of solution and no defleshing until completion (mandible C)

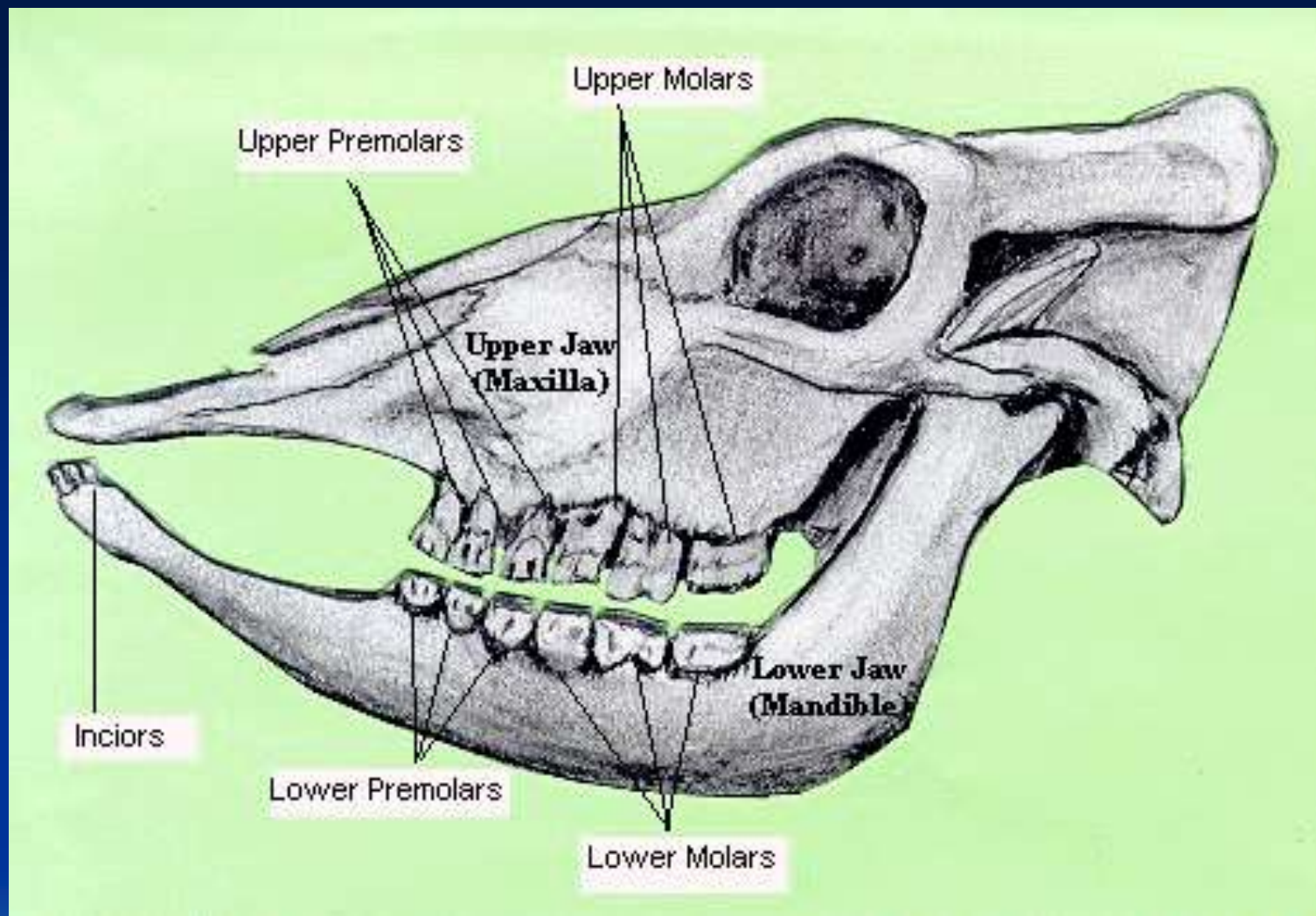


Methods

- Defleshing
 - Mandibular cavity
 - Incisor and premolar
 - Removal
 - Tagging







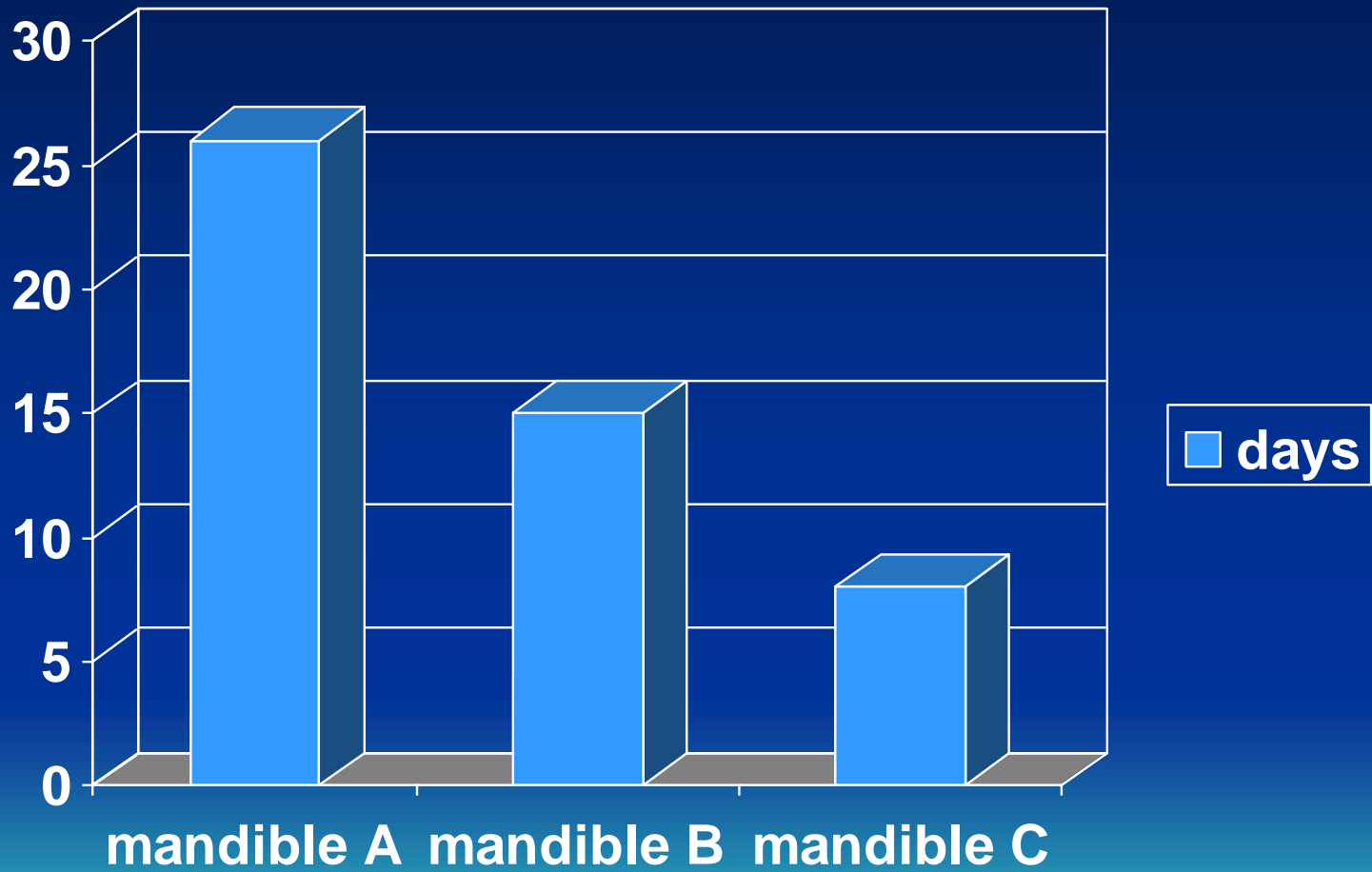
http://www.fsis.usda.gov/OFO/TSC/bse_information.htm

Methods

- Post-defleshing
 - Drying in fume hood
 - Drying in oven



Analysis





Conclusion

- A protocol was established for cold water maceration of extant bovid mandibles
- Optimal results were obtained with the second parameter (mandible B)
- Continuation with radiography and sectioning
- Analysis of elemental composition, stable isotopes and timing of tooth eruptions



