iNEAL workshop on

Integrative paleoecology: multiproxy analyses to reconstruct Neanderthal paleoecology, seasonality and mobility based on mammal assemblages

Organizer: Florent Rivals (IPHES, Tarragona)

Date: February 28th, 2023 (9:15 – 17:00)

Zoom link: https://us02web.zoom.us/j/83620084501

Diet of large mammals is one of the most essential aspects of their ecology and can help to reconstruct paleoenvironments, interactions, seasonality and mobility in the archaeological record. The use of palaeoecological proxies, including stable isotopes, dental wear patterns and cementum analyses have improved our knowledge of mammalian diets beyond the traditional analyses based on the morphology of the skull, dental, and skeletal elements, which reveals potential but not realized diets.

In 1826, the French lawyer Anthelme Brillat-Savarin wrote, in *Physiologie du goût, ou Méditations de Gastronomie Transcendante*: "Dis-moi ce que tu manges, je te dirai ce que tu es." [Tell me what you eat and I will tell you what you are]. In other words, what an animal eats and drinks is incorporated into their bones, teeth and other tissues (e.g., stable isotopes), can affect the microscopic and macroscopic wear on teeth (e.g., dental mesowear and microwear), and in the end can affect the skull and teeth i.e. morphological changes via evolutionary processes. While most paleontologists focus on morphological features, the temporal scale of the archaeological record obligate bioarcheologists to move beyond what an animal was adapted to eat (based on morphology) and to infer what an animal actually ate during its lifetime.

Dietary indicators combined with other proxies such as cementum analysis, oxygen or strontium isotopes, will provide relevant data to infer seasonality, mobility or local paleoenvironmental conditions.

All of the proxies cited previously can provide insights into the paleoecology of large mammals, however, when combined together on the same assemblages, these tools are becoming extremely powerful to provide results with a high temporal and spatial resolution. The objective of this workshop is to join together experts in these techniques to present the different proxies, their advantages and limitations, and their relevance in archaeological sciences, and to present case studies combining two or more proxies.

Preliminary program

9.15 – 9.30
Florent Rivals (IPHES) – Introduction to the workshop

9.30 – 10.00
Hervé Bocherens (Universität Tübingen) – Stable C and N isotopes and diet of large mammals

10.00 – 10.30
Kate Britton (University of Aberdeen) – Strontium isotope approaches to reconstructing faunal movements, and integration with sulphur isotopes and spatial assignment tools

Break

10.50 – 11.20
Klervia Jaouen (CNRS) – Zinc isotopes and diet of past populations

11.20 – 11.50
Antigone Uzunidis (IPHES) – Meso- and microwear analyses on large herbivores

11.50 – 12.20
William Rendu (CNRS) – Cementum analysis on herbivores and seasonality of human occupations

Lunch break

14.30 – 15.00
Mónica Fernández-García (Universidad de Cantabria) – Stable oxygen isotopes on small mammals: paleoclimatic and paleoenvironmental implications

15.30 – 16.00
Sarah Pederzani (Universidad de La Laguna) – Oxygen stable isotopes and paleoclimatic reconstructions

16.00 – 17.00
Discussion on the advantages and limits for the integration of different proxies on the same assemblages.