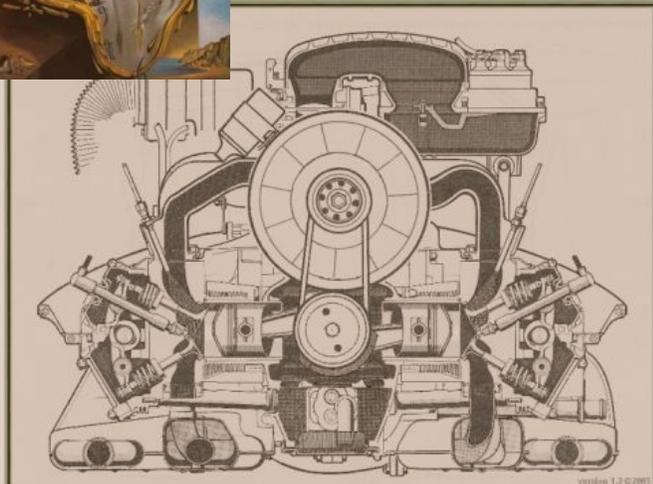




Fossils in the making



Fábrica de fósiles

Yolanda Fernández Jalvo  
Responsable Científica



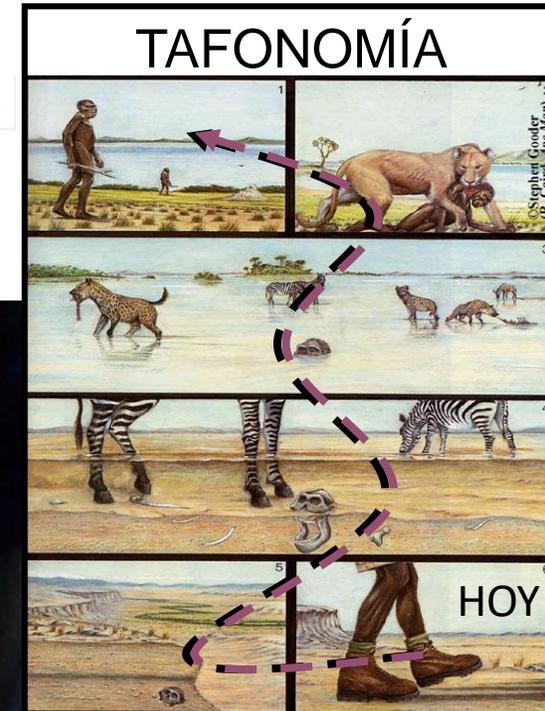
# EL LABORATORIO DE ENSAYOS AMBIENTALES Y TAFONÓMICOS

# EL ORIGEN



El laboratorio se originó para realizar ensayos tafonómicos.

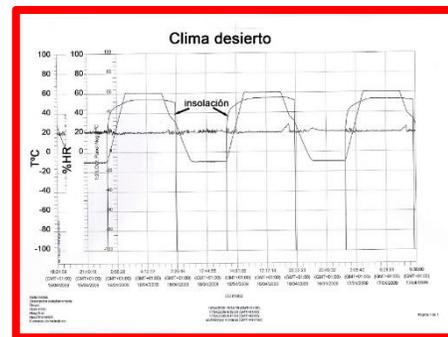
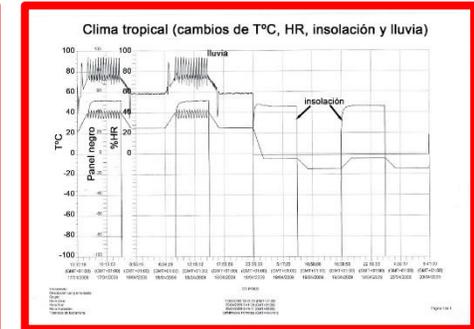
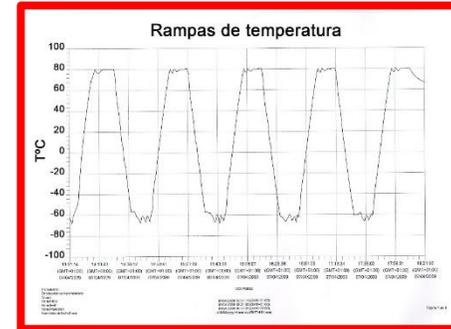
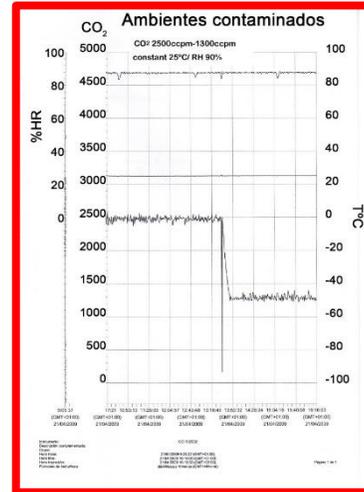
**Los fósiles son testigos directos de la vida en el pasado** que no sólo conservan la forma de los organismos del pasado, sino **también rastros de otros animales, plantas y agentes geológicos contemporáneos registrados en su superficie, histología y su composición.** Para interpretar estos rastros, las investigaciones tafonómicas realizan experimentación actualista para producir «**fossils in the making**», y observar a tiempo real cómo se modificaron.



Cuando el Laboratorio pasó a ser servicio científico-técnico se destacó su capacidad de



atender experimentos ambientales, especialmente la cámara climática que puede reproducir **parámetros ambientales individualmente o ciclos climáticos estándares y extremos.**



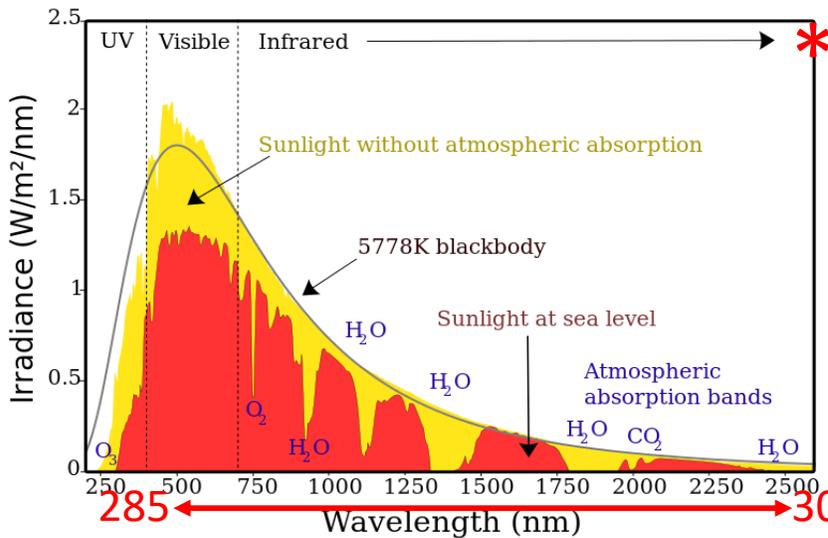
Bajo condiciones controlables y repetibles podemos detectar el efecto de esas condiciones estándares o extremas sobre la muestra expuesta.

Este es el principal objetivo del Laboratorio de Ensayos Ambientales y Tafonomía

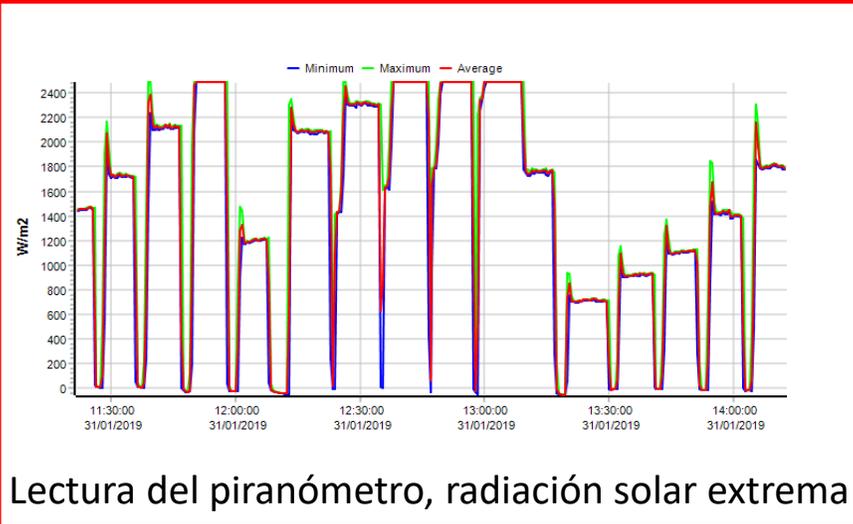
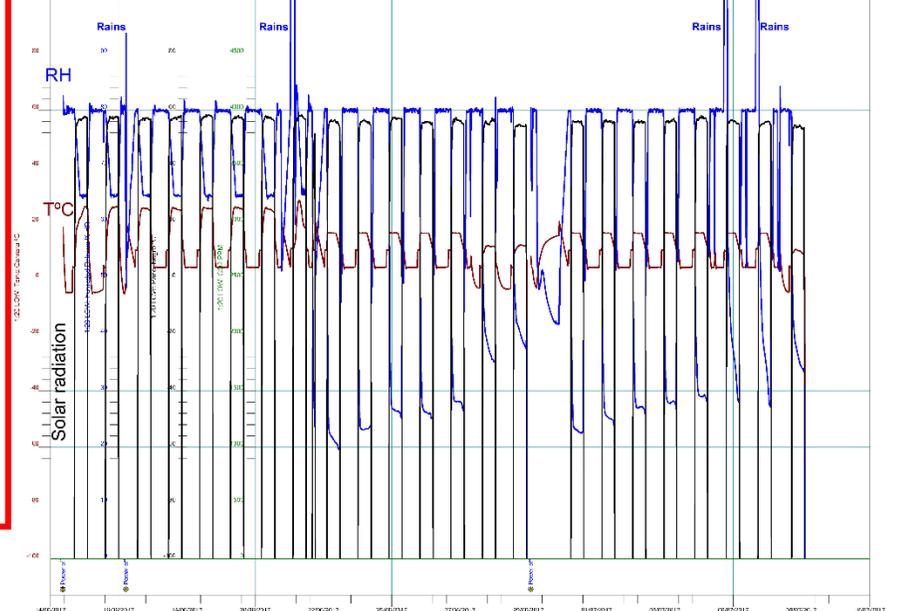
# RADIACIÓN SOLAR EXTREMA (2400W/m<sup>2</sup>)



Spectrum of Solar Radiation (Earth)



25 días Humid Pampa winter simulation 1200W/m<sup>2</sup>



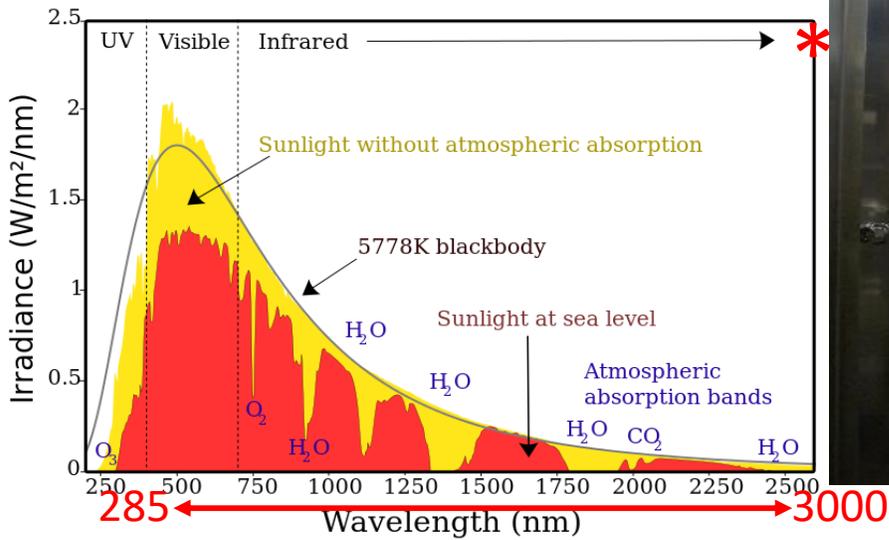
Lectura del piranómetro, radiación solar extrema



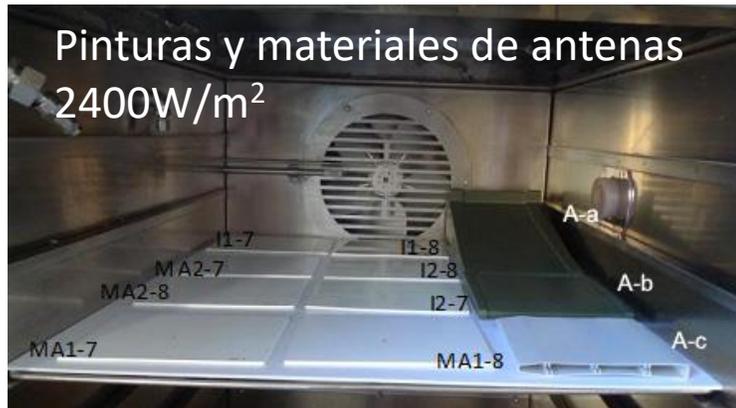
# RADIACIÓN SOLAR EXTREMA (2400W/m<sup>2</sup>)



Spectrum of Solar Radiation (Earth)



## EMPRESA PRIVADA



Materiales de restauración y colecciones



Comportamiento de materiales reciclados y microplásticos

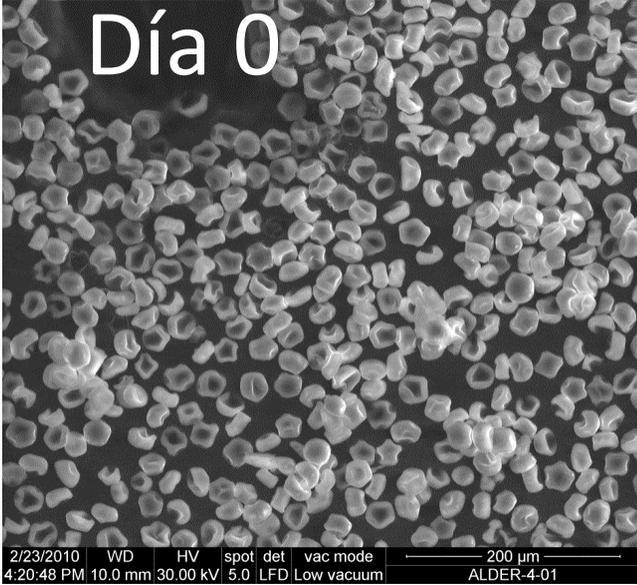
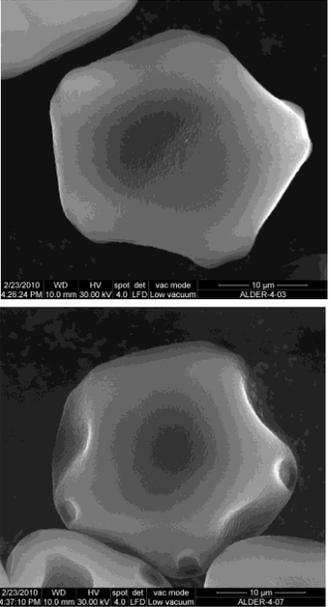




**POLEN**



10 de diciembre de 2024  
Salón de actos 'Emiliano Aguirre'

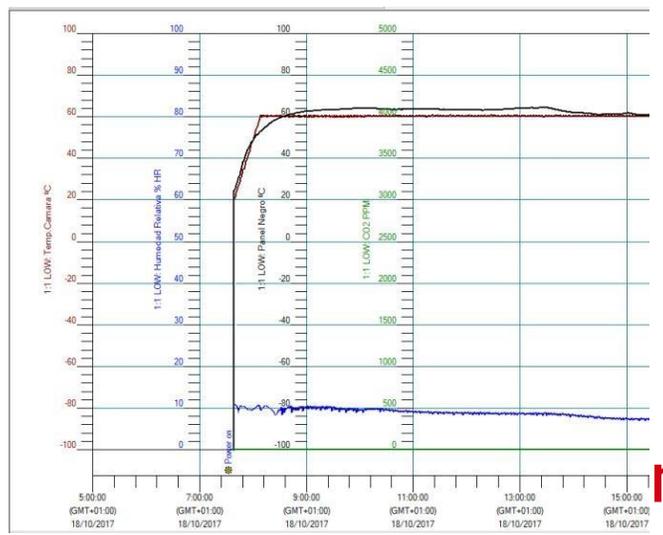
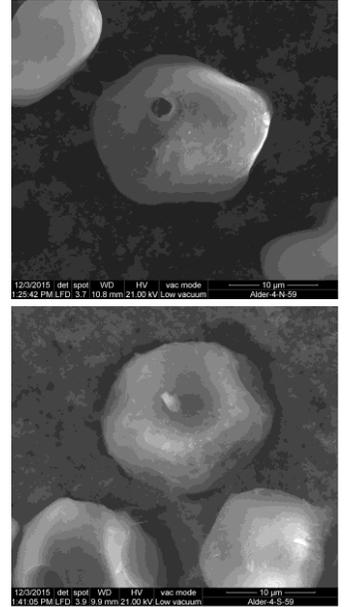
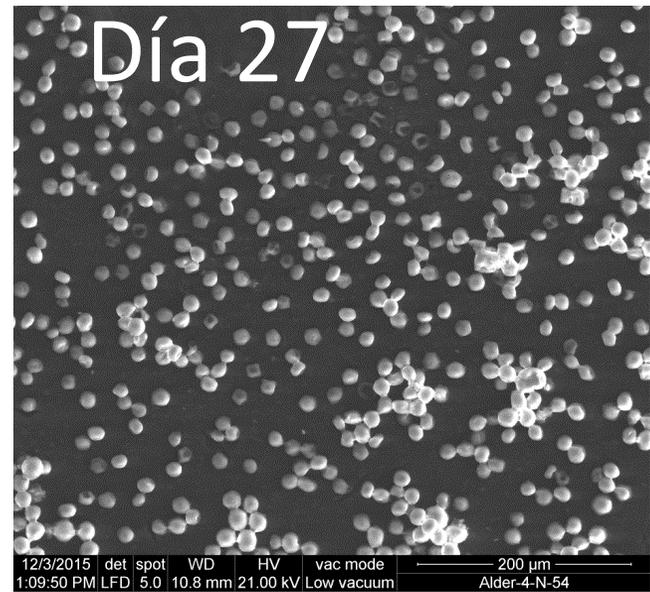
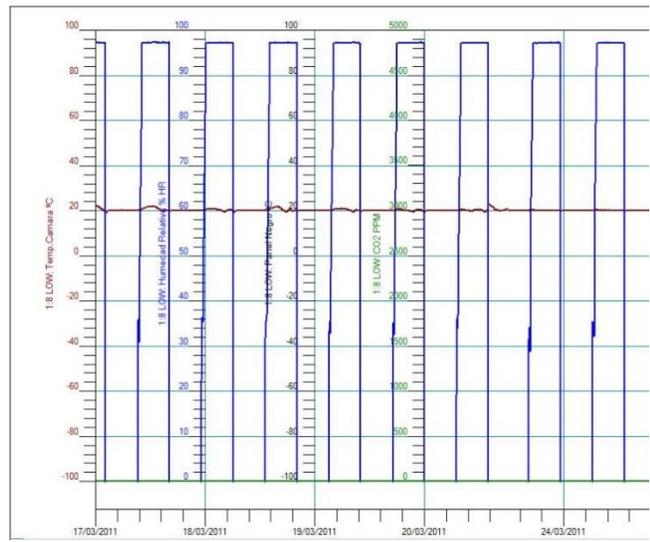


humedad

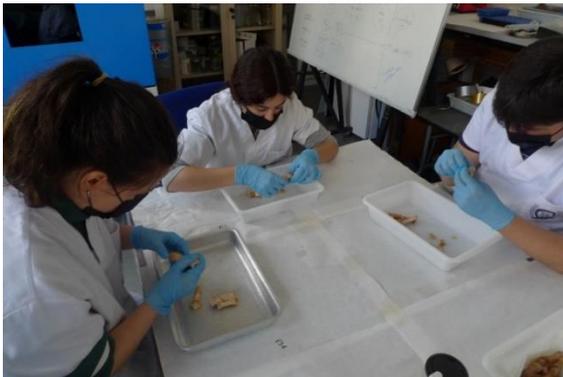
15 días



+  
sol  
(1200W)  
12 días



**PRÁCTICAS TÉCNICAS FORENSES**



	envueltos en textil de algodón	sumergidos en agua	
	envueltos en bolsa de plástico	enterrados en sedimento seco	
	sin envolver	enterrados en sedimento húmedo	



**I Jornadas de Servicios CIENTÍFICO-TÉCNICOS**  
 del Museo Nacional de Ciencias Naturales  
 10 de diciembre de 2024  
 Salón de actos 'Emiliano Aguirre'



CLAUSTRO  
**GALENO**  
 FORMACIÓN PROFESIONAL EN SALUD  
**TRABAJO FINAL DE GRADO**  
**UNA DE CAL Y OTRA DE ARENA**

PROYECTO DE ANATOMÍA PATOLÓGICA Y CITODIAGNÓSTICO  
 CICLO FORMATIVO DE GRADO SUPERIOR DE ANATOMÍA PATOLÓGICA Y CITODIAGNÓSTICO

**LUCÍA HUIDOBRO PASERO**  
**JAVIER SANTOS GONZÁLEZ**

ALBA DE LA TORRE  
 Curso 2022-2023

Forensic Science International 367 (2025) 112313



Contents lists available at [ScienceDirect](https://www.sciencedirect.com)  
**Forensic Science International**

journal homepage: [www.elsevier.com/locate/forensiint](http://www.elsevier.com/locate/forensiint)



**“Body farm time machine”: Results from taphonomic study of burial and underwater contexts**

A. Macho-Callejo <sup>a,b,c,d</sup>, L. Huidobro-Pasero <sup>a</sup>, E. Honrubia-Clemente <sup>a</sup>, J. Santos-González <sup>a</sup>, Y. Fernández-Jalvo <sup>a</sup>, A. Gutiérrez <sup>a,d,e,\*</sup>

<sup>a</sup> Departamento de Paleobiología, Museo Nacional de Ciencias Naturales (MNCN-CSIC), Madrid, Spain  
<sup>b</sup> Departamento de Biodiversidad, Ecología y Evolución. Facultad de Biológicas, Universidad Complutense (UCM), Madrid, Spain  
<sup>c</sup> Departamento de Medicina, Universidad Europea de Madrid, Spain  
<sup>d</sup> Red Iberoamericana de Investigadores Forenses (RIIF). CYTED, Programa Iberoamericano de Ciencias para el Desarrollo (2021), Spain  
<sup>e</sup> Unitat d'Antropologia Biologica, Departament de Biologia Animal, Biologia Vegetal i Ecologia, Universitat Autònoma de Barcelona (UAB), Barcelona, Spain

**TFG/congreso/publicación**

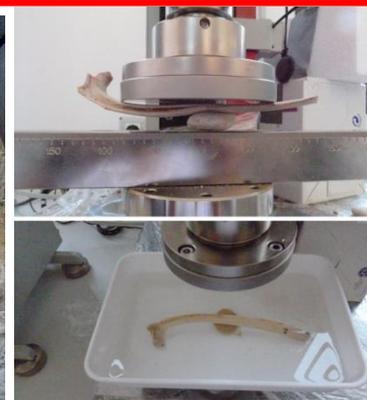
**BODY FARM TIME MACHINE: PRELIMINARY RESULTS FROM EXPERIMENTAL BURIALS ON EARTH AND UNDERWATER.**

EMFA MADRID 2023  
 @ g b u p Justice

# SIMULACIÓN de COMPRESIÓN



Equipo de compresión  
computerizado (desde  
500 gramos to ~500 Kg  
fuerza)



**EMPRESA PRIVADA:  
IMPLANTOLOGÍA**



# Publicaciones comprensión



## Compressive marks from gravel substrate on vertebrate remains: a preliminary experimental study



M.D. Marín-Monfort <sup>a,\*</sup>, M.D. Pesquero <sup>a,b</sup>, Y. Fernández-Jalvo <sup>a</sup>

<sup>a</sup> Museo Nacional de Ciencias Naturales-CSIC, Paleobiología, C/ José Gutiérrez Abascal 2, 28006 Madrid, Spain  
<sup>b</sup> Fundación Conjunto Paleontológico de Teruel-Dinópolis, Avda. Sagunto s/n, 44002 Teruel, Spain



Published: 21 May 2021

## Compression and digestion as agents of vertebral deformation in Sciaenidae, Merlucidae and Gadidae remains: an experimental study to interpret archaeological assemblages

Romina Frontini , Eufrasia Roselló-Izquierdo, Arturo Morales-Muñiz, Christiane Denys, Émilie Guillaud, Yolanda Fernández-Jalvo & María Dolores Pesquero-Fernández

*Journal of Archaeological Method and Theory* (2021) | [Cite this article](#)

Archaeological and Anthropological Sciences (2021) 13: 215  
<https://doi.org/10.1007/s12520-021-01466-2>

ORIGINAL PAPER



## Evaluation of size-related salmonid fish vertebrae deformation due to compression: an experimental approach

Arturo Morales Muñiz <sup>1</sup>, Romina Frontini <sup>2</sup>, Yolanda Fernández-Jalvo <sup>3</sup>, Eufrasia Roselló-Izquierdo <sup>1</sup>, María Dolores Pesquero-Fernández <sup>2</sup>, Alicia B. Hernández <sup>4</sup>, Liliana A. García <sup>5</sup>

Received: 20 August 2021 / Accepted: 20 October 2021 / Published online: 10 November 2021  
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Article

## Understanding the Impact of Trampling on Rodent Bones

Yolanda Fernández-Jalvo <sup>1,\*</sup>, Lucía Rueda <sup>1,2</sup>, Fernando Julian Fernández <sup>3</sup>, Sara García-Morato <sup>1,4</sup>, María Dolores Marín-Monfort <sup>1,5,6</sup>, Claudia Ines Montalvo <sup>7</sup>, Rodrigo Tomassini <sup>8</sup>, Michael Chazan <sup>8,9</sup>, Liora K. Horwitz <sup>10</sup> and Peter Andrews <sup>11</sup>

- <sup>1</sup> Museo Nacional de Ciencias Naturales (CSIC), José Gutiérrez Abascal, 2, 28006 Madrid, Spain; lucia.rueda.dominguez@gmail.com (L.R.); sagarc16@ucm.es (S.G.-M.); dores@mnen.csic.es (M.D.M.-M.)
- <sup>2</sup> Sciences de la Vie et de l'Environnement Université de Rennes 1, 35000 Rennes, France
- <sup>3</sup> CONICET-Grupo de Estudios en Arqueometría, Facultad de Ingeniería, Universidad de Buenos Aires (UBA), Av. Paseo Colon 850 (CP C1063ACV), Ciudad Autónoma de Buenos Aires 1063, Argentina; fernandez177@yahoo.com.ar
- <sup>4</sup> Facultad de Ciencias Geológicas, Departamento de Geodinámica, Estratigrafía y Paleontología, Universidad Complutense de Madrid, José Antonio Novais 12, 28040 Madrid, Spain
- <sup>5</sup> Departamento de Botánica y Geología, Universidad de Valencia, Burjassot, Valencia, 28006 Madrid, Spain

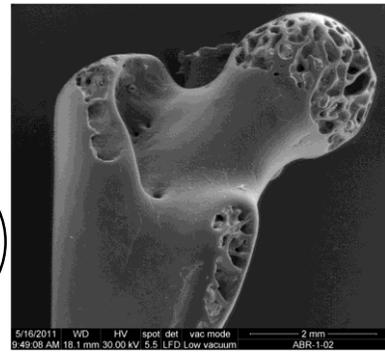
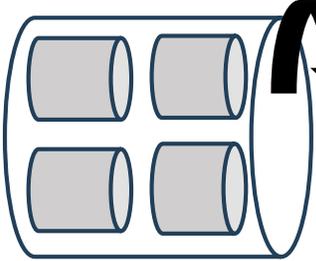
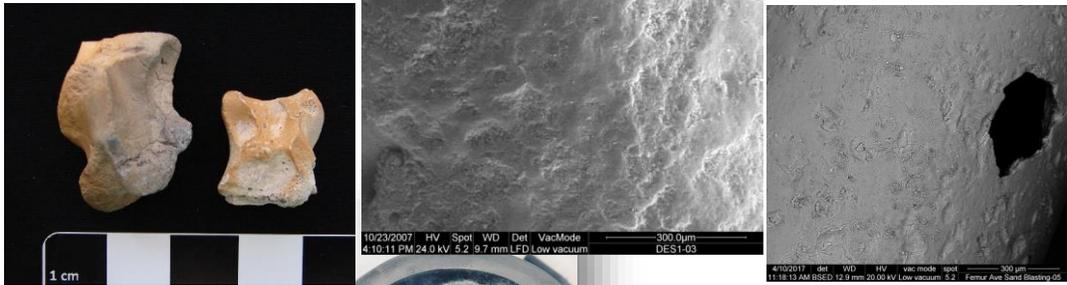


## Very human bears: Wild brown bear neo-taphonomic signature and its equifinality problems in archaeological contexts

Jordi Rosell <sup>a,b,\*</sup>, Ruth Blasco <sup>c</sup>, Maite Arilla <sup>a,b</sup>, Yolanda Fernández-Jalvo <sup>d</sup>



# ABRASIÓN (semanas/minutos)



# Publicaciones abrasión



Lethaia

AN INTERNATIONAL JOURNAL OF PALAEOLOGY AND STRATIGRAPHY

## Digestion versus abrasion features in rodent bones

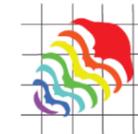
YOLANDA FERNÁNDEZ-JALVO, PETER ANDREWS, PALOMA SEVILLA AND VIRGINIA REQUEJO

LETHAIA



Fernández-Jalvo, Y., Andrews, P., Sevilla, P. & Requejo, V. 2014: Digestion vs. abrasion features in rodent bones. *Lethaia*, Vol. 47, pp. 323–336.

The origin of most fossil small mammal assemblages is predation by avian or mammalian predators. Bone corrosion by gastric juices observed in these fossils is direct evidence of digestion, and traits of digestion indicate the type of predator involved. However, certain features observed in digested bones, such as rounding and polishing, are similar to the rounding and polishing produced by other processes, particularly



Palaeontologia Electronica  
palaeo-electronica.org

## Rolling bones: A preliminary study of micromammal abrasion on different initial taphonomic stages

Sara García-Morato, María Dolores Marin-Monfort, and Yolanda Fernández-Jalvo

ABSTRACT

The identification of transport process is key to interpret the palaeoecology, the dating and the site formation. Apart from dispersal and size/shape selection, bone

Quaternary International 481 (2018) 3–13

Contents lists available at ScienceDirect

Quaternary International

journal homepage: [www.elsevier.com/locate/quaint](http://www.elsevier.com/locate/quaint)



ELSEVIER



PROMETHEUS PRESS/PALAEONTOLOGICAL NETWORK FOUNDATION

(TERUEL)

Journal of Taphonomy

2003

Available online at [www.journaloftaphonomy.com](http://www.journaloftaphonomy.com)

VOLUME 1 (ISSUE 3)

## Experimental Effects of Water Abrasion on Bone Fragments

Yolanda Fernández-Jalvo\*

Museo Nacional de Ciencias Naturales (CSIC), Departamento de Paleobiología,  
José Gutiérrez Abascal 2, 28006-Madrid Spain

Peter Andrews

The Natural History Museum, Department of Palaeontology, Cromwell Road,  
London SW7-5BD, U.K.

Archaeological and Anthropological Sciences (2019) 11:4891–4907  
<https://doi.org/10.1007/s12520-019-00834-3>

ORIGINAL PAPER



## Abrasion in archaeological fish bones from sand dunes. An experimental approach

Romina Frontini<sup>1</sup> · Yolanda Fernández-Jalvo<sup>2</sup> · María Dolores Pesquero Fernández<sup>2</sup> · Rodrigo J. Vecchi<sup>1</sup> · Cristina Bayón<sup>3</sup>

Received: 10 December 2018 / Accepted: 25 March 2019 / Published online: 8 April 2019  
© Springer-Verlag GmbH Germany, part of Springer Nature 2019



ELSEVIER

Disponible en ligne sur [www.sciencedirect.com](http://www.sciencedirect.com)

ScienceDirect

Geobios 41 (2008) 157–181

GEOBIOS

<http://france.elsevier.com/direct/GEOBIO>

Original article

Experimental taphonomy in museums: Preparation protocols for skeletons and fossil vertebrates under the scanning electron microscopy

Yolanda Fernández-Jalvo<sup>a,\*</sup>, María Dolores Marín Monfort<sup>b,c</sup>

Characterization of recent marks produced on fossil bone surface during sullegic and trephic processes and their influence on taphonomic studies

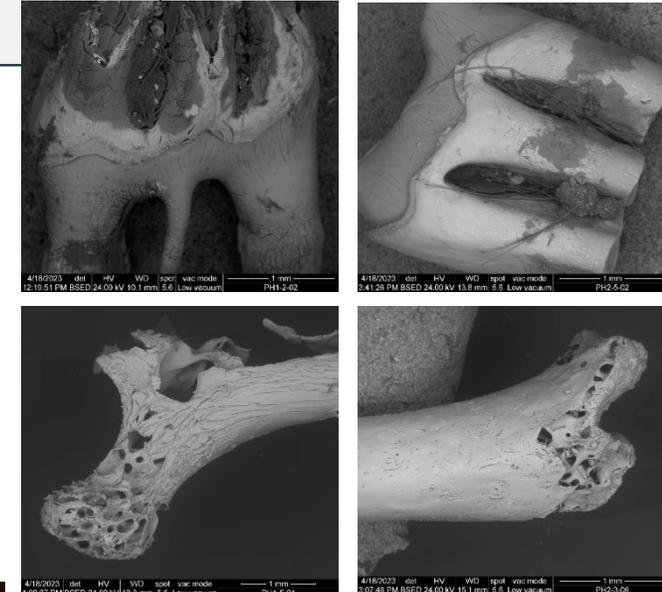
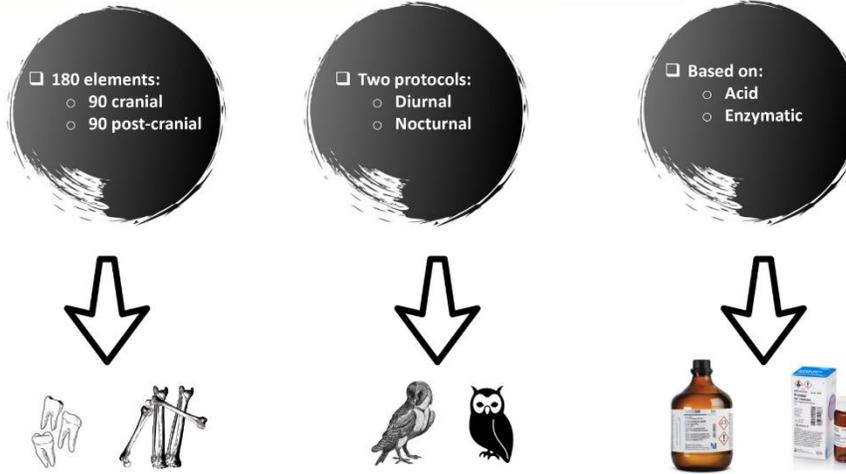
M.D. Marín-Monfort<sup>a,b,\*</sup>, M. Suñer<sup>b,c</sup>, Y. Fernández-Jalvo<sup>a</sup>



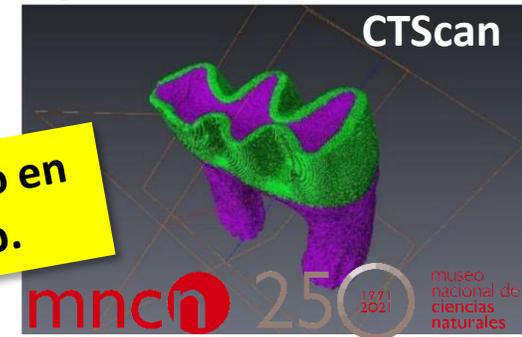
# SIMULACIÓN de CORROSIÓN: digestión



Reproducción de jugos gástricos para observar los efectos de digestión en dientes y post-cranial de algunos roedores que, afectados por digestión de sus depredadores, pierden rasgos taxonómicos



SEM images

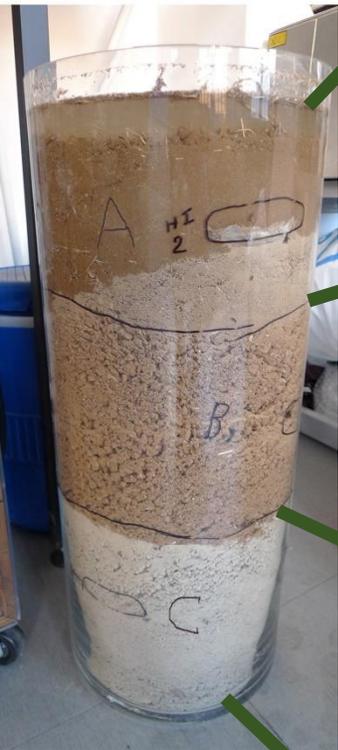


Artículo en prep.

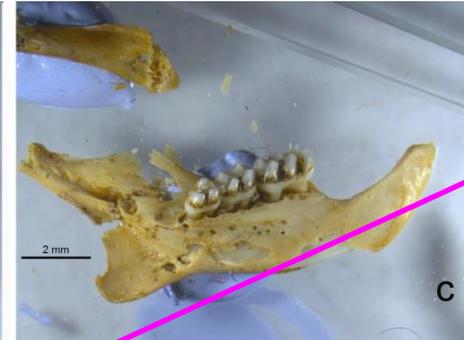
# SIMULACIÓN de CORROSIÓN: suelos



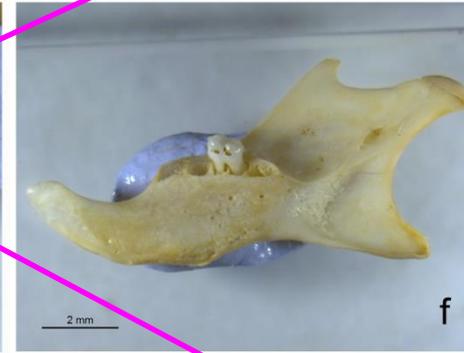
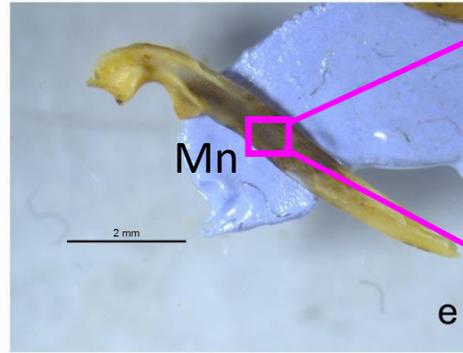
14 meses



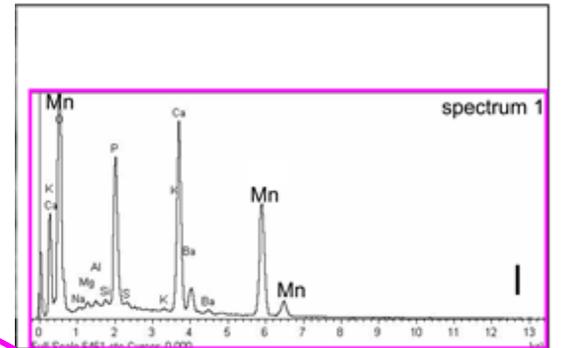
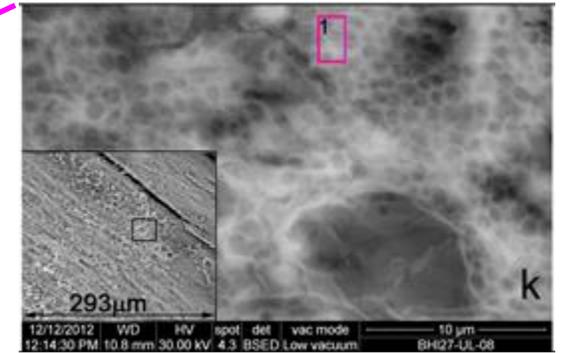
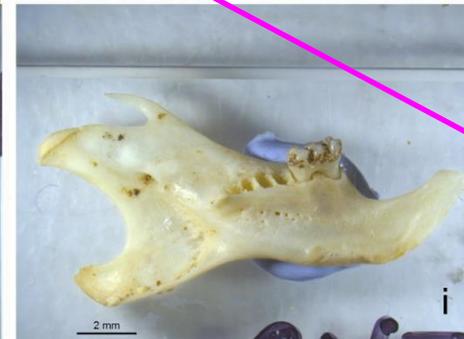
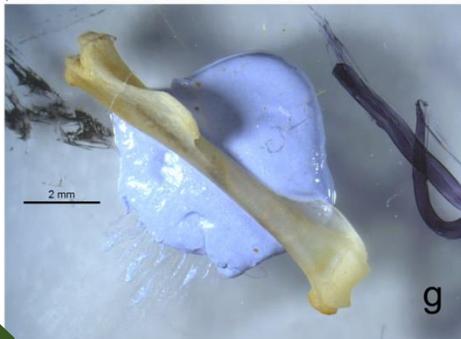
Horizon A



Horizon B



Horizon C

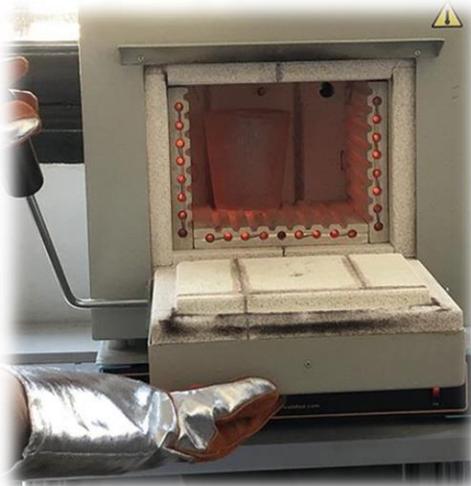


Artículo en  
prep.

# MUFLA DE ALTA TEMPERATURA (1200°C)



Tafonomía forense: **dientes humanos**  
Sandra López-Lázaro (Univ.Chile)  
Pat Smith (Univ. Jerusalem)



**Invitación publicación**

<https://www.nature.com/collections/hjifjiajig/guest-editors>

Historical Biology  
An International Journal of Paleobiology  
ISSN: (Print) (Online) Journal homepage: <https://www.tandfonline.com/loi/ghbi20>

**Let's play with fire! Preliminary results of new experiments on animal bone of thermo-alterations**

Penélope I. Martínez de Los Reyes, Aida Gutiérrez, Alba Macho-Callejo, Sara García-Morato, Marta Moreno-García & Yolanda Fernández-Jalvo

ArchaeologyHub CSIC-Jae-Intro'2022/ Paleontología-IPHES } **hueso diente**

Quaternary Science Advances 14 (2024) 100195

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journal homepage: [www.sciencedirect.com/journal/quaternary-science-advances](http://www.sciencedirect.com/journal/quaternary-science-advances)

**Simulating taphonomic processes on teeth: The impact of sediment pressure and thermal alteration on dental microwear**

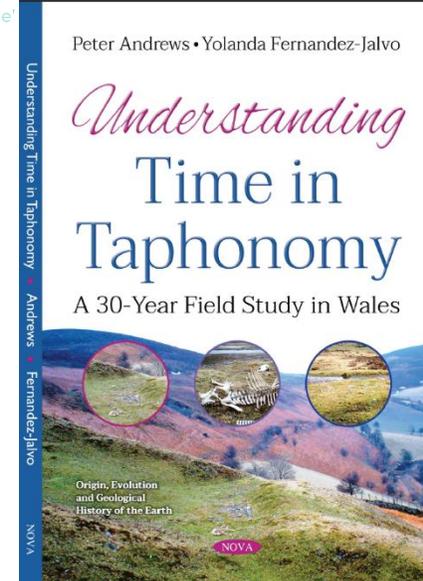
Cristian Micó<sup>a,b,\*</sup>, Ruth Blasco<sup>a,b</sup>, Florent Rivals<sup>a,b,c</sup>

<sup>a</sup> Institut Català de Palaeoecologia Humana i Evolució Social (IPHES CERCA), Zona Educacional 4, Campus Sescelades URV (Edifici W3), 43007, Tarragona, Spain  
<sup>b</sup> Universitat Rovira i Virgili (URV), Departament d'Història i Història de l'Art, Avinguda de Catalunya 35, 43002, Tarragona, Spain  
<sup>c</sup> ICREA, Pg. Lluís Companys 23, 08010, Barcelona, Spain

# VALIDACIÓN EN LA NATURALEZA



10 de diciembre de 2024  
Salón de actos 'Emiliano Aguirre'



**Jae-Intro'2024**  
Archaeology-Hub:  
Mailín Campos

Artículo en  
prep.

**Tesis doctoral**

Historical Biology  
An International Journal of Paleobiology

ISSN: (Print) (Online) Journal homepage: <https://www.tandfonline.com/loi/ghbi20>

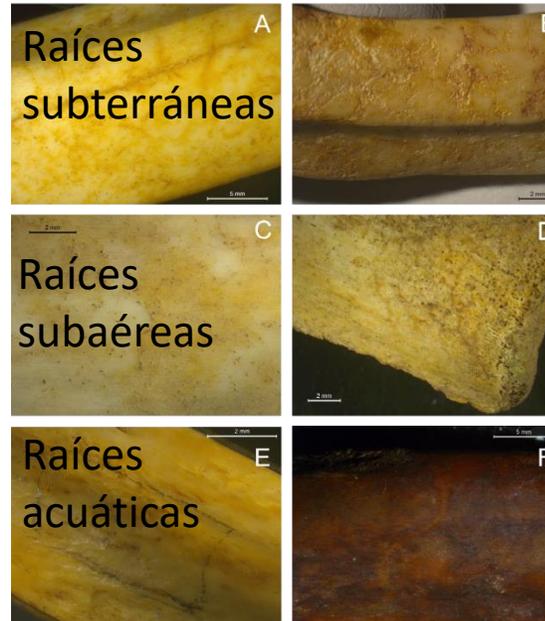
**Put down roots and find the plant!: preliminary results of root etching and its implications**

**Alba Macho-Callejo**, Sara García-Morato, Aida Gutiérrez, Dores Marin-Monfort & Yolanda Fernández-Jalvo

To cite this article: Alba Macho-Callejo, Sara García-Morato, Aida Gutiérrez, Dores Marin-Monfort & Yolanda Fernández-Jalvo (06 Oct 2023): Put down roots and find the plant!: preliminary results of root etching and its implications, Historical Biology, DOI: 10.1080/08912963.2023.2263865

To link to this article: <https://doi.org/10.1080/08912963.2023.2263865>

## Finca Experimental La Higuera-CSIC



## GLOBAL WEATHERING



Estación tafonómica



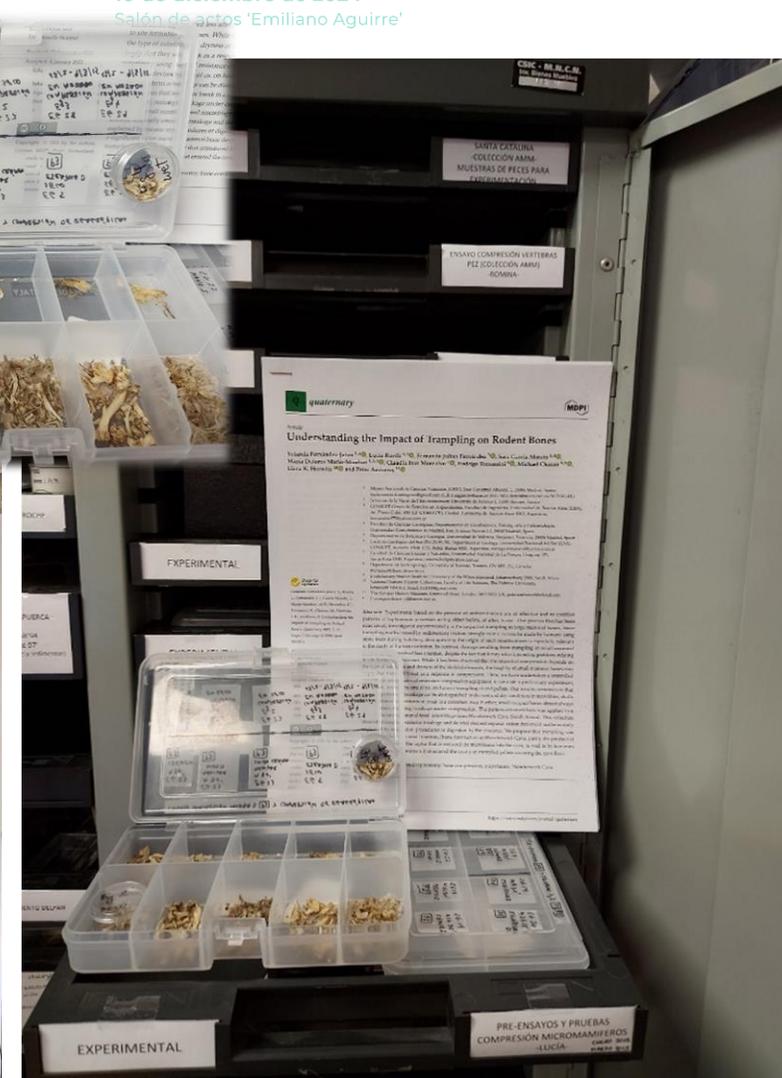
# COLECCIÓN NEOTAFONÓMICA



10 de diciembre de 2024  
Salón de actos 'Emiliano Aguirre'

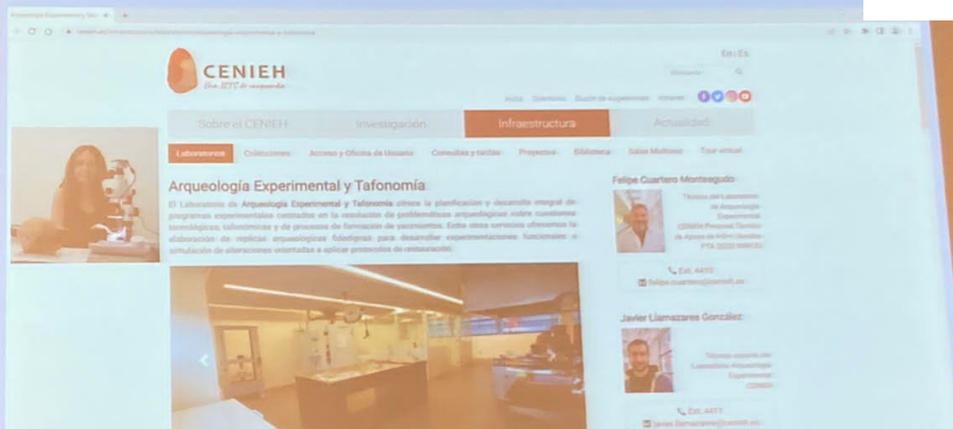


LeaT ha re-adaptado el espacio para análisis y consulta de las colecciones experimentales del laboratorio.





IT SEEMS TO BE A GOOD IDEA, AS OTHER COLLEAGUES HAVE ALSO CREATED VERY SIMILAR EXPERIMENTAL LABORATORY



# !!!GRACIAS!!!

# A todos vosotros y a los colaboradores del LeaT

