JONAS AURRETIK

BALEAK ETA GIZAKIAK HISTORIAURREAN

Pieter Lastman,
(1583-1633)

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KOSTAN

aranzadi zientzia elkartea

SOCIEDAD DE CIENCIAS
SCIENCE SOCIETY
SOCIÉTÉ DE SCIENCES

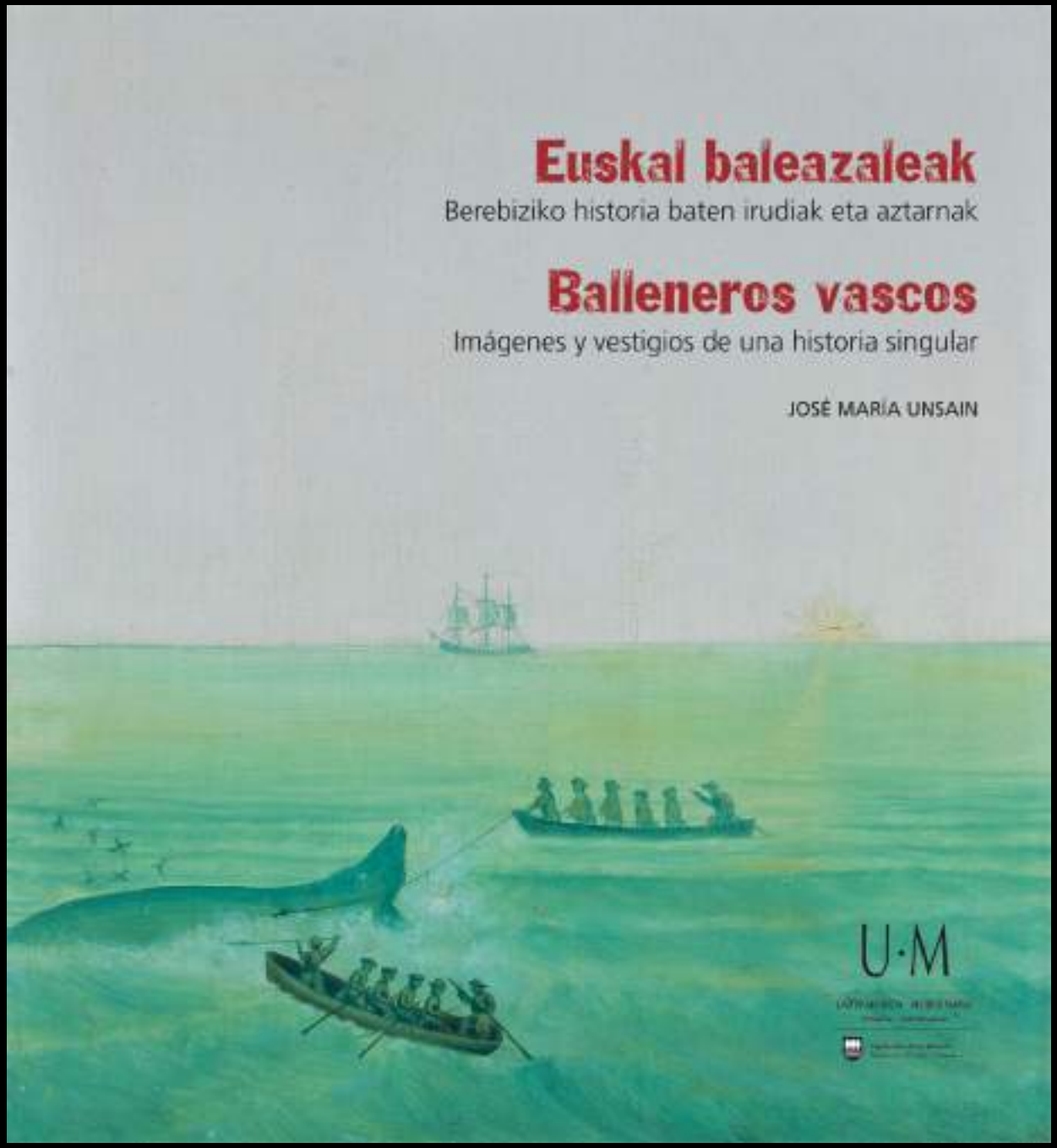
Euskal baleazaleak

Berebiziko historia baten irudiak eta aztarnak

Balleneros vascos

Imágenes y vestigios de una historia singular

JOSÉ MARÍA UNSAIN



U·M

JONAS AURRETIK
BALEAK ETA GIZAKIAK HISTORIAURREAN

1.- Baleen ustiapena Prehistorian
- Azken ikerketak
- Zer ustiatu? Ehiza ala sarraskia?

2.- Lilura? Naturalismoa?.
- Nola ikusi, hala margotu

3.- Baleen Biologia
- Espezieak eta ingurumena

1.- Baleen ustiapena Prehistorian

- Azken ikerketak
- Zer ustiatu? Ehiza ala sarraskia?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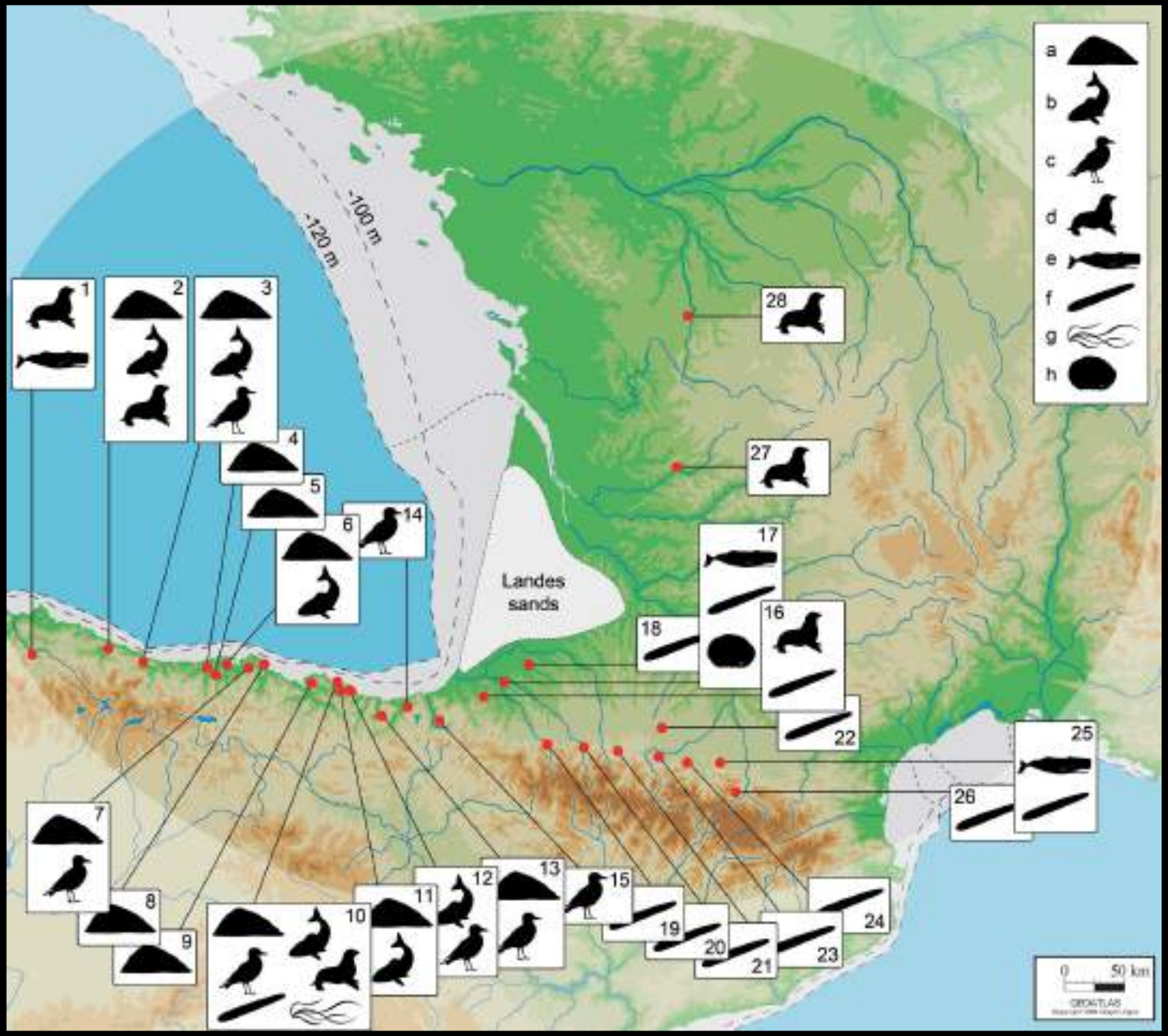
-100 m
-120 m
Landes sands
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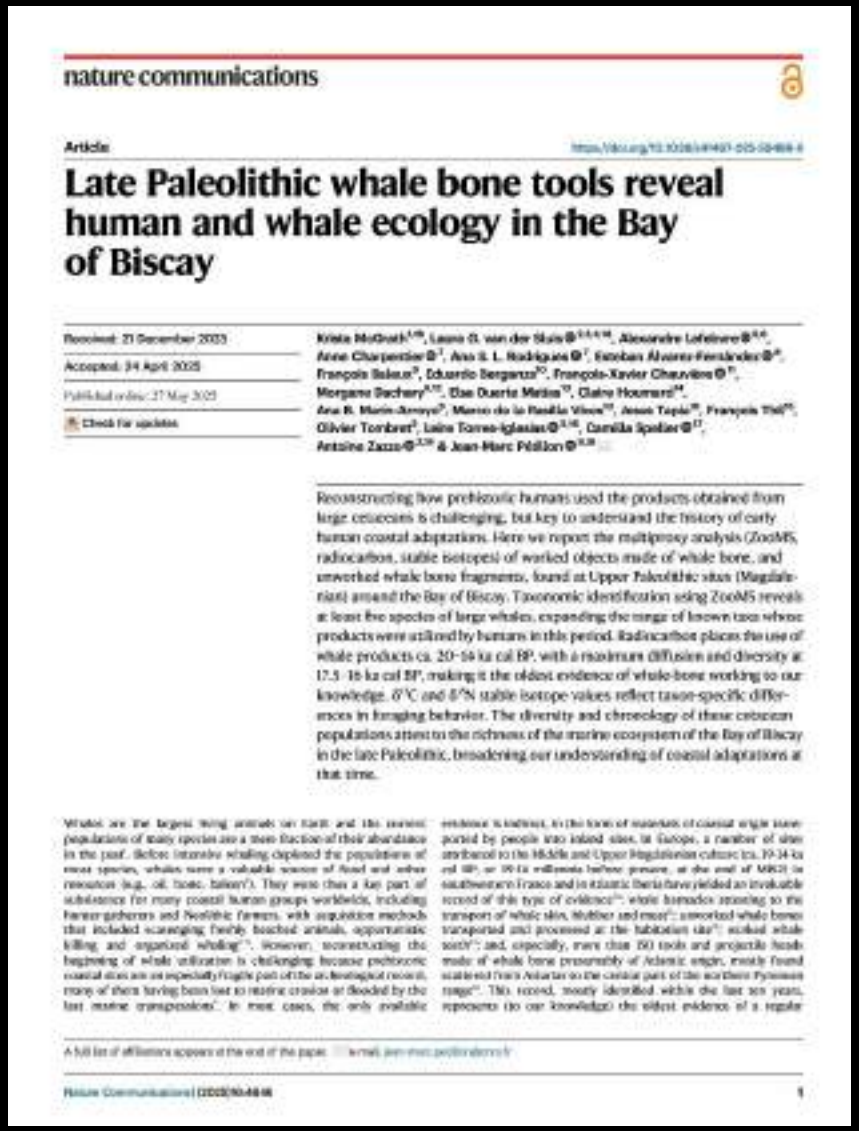

nature communications

Article

Late Paleolithic whale bone tools reveal human and whale ecology in the Bay of Biscay

Received: 21 December 2023
Accepted: 24 April 2025
Published online: 27 May 2025
Check for updates

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Reconstructing how prehistoric humans used the products obtained from large cetaceans is challenging, but key to understand the history of early human coastal adaptations. Here we report the multiproxy analysis (ZooMS, radiocarbon, stable isotopes) of worked objects made of whale bone, and unworked whale bone fragments, found at Upper Paleolithic sites (Magdalenian) around the Bay of Biscay. Taxonomic identification using ZooMS reveals at least five species of large whales, expanding the range of known taxa whose products were utilized by humans in this period. Radiocarbon places the use of whale products ca. 20–16 ka cal BP, with a maximum diffusion and diversity at 17.5–16 ka cal BP, making it the oldest evidence of whale-bone working to our knowledge. $\delta^{13}C$ and $\delta^{15}N$ stable isotope values reflect taxon-specific differences in foraging behavior. The diversity and chronology of these cetacean populations attest to the richness of the marine ecosystem of the Bay of Biscay in the late Paleolithic, broadening our understanding of coastal adaptations at that time.

Whales are the largest living animals on Earth and the marine populations of many species are a mere fraction of their abundance in the past. Before intensive whaling depleted the populations of most species, whales were a valuable source of food and other resources (e.g., oil, bone, baleen[1]). They were thus a key part of subsistence for many coastal human groups worldwide, including hunter-gatherers and Neolithic farmers, with acquisition methods that included scavenging freshly beached animals, opportunistic killing, and organized whaling[2–5]. However, reconstructing the beginning of whale utilization is challenging because prehistoric coastal sites are an especially fragile part of the archeological record, many of them having been lost to marine erosion or flooded by the last marine transgression[6]. In most cases, the only available evidence is indirect, in the form of materials of coastal origin transported by people into inland sites. In Europe, a number of sites attributed to the Middle and Upper Magdalenian culture (ca. 19–14 ka cal BP, or 19–14 millennia before present, at the end of MIS2) in southwestern France and in Atlantic Iberia have yielded an invaluable record of this type of evidence[7–9]: whale barnacles attesting to the transport of whale skin, blubber and meat[7]; unworked whale bones transported and processed at the habitation site[10]; worked whale teeth[11]; and, especially, more than 150 tools and projectile heads made of whale bone presumably of Atlantic origin, mostly found scattered from Asturias to the central part of the northern Pyrenean range[12]. This record, mostly identified within the last ten years, represents (to our knowledge) the oldest evidence of a regular

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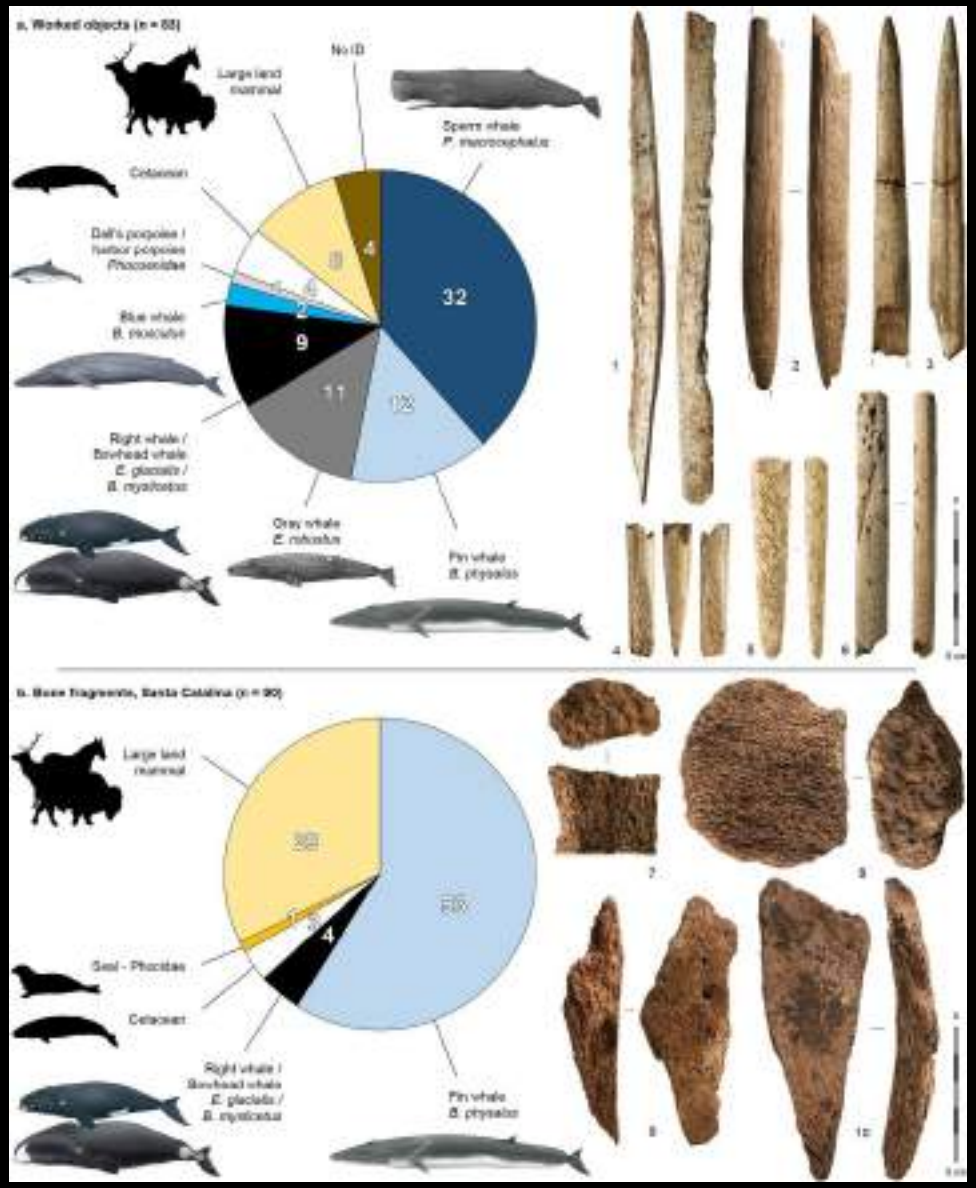
83 tresna (armak), 26 kobatik: Kantauri itsasaldea eta Frantzia

90 hezur zati (lan hondakinak) Santa Katalina (Lekeitio)

-Espezieak zehaztea (ZooMS)

-Ekologia eta ingurumena (δ)

-Datazio zehatzak (C14)



Right whale / Bowhead whale
Euskal/Groenlandiako Balea

Sperm whale
Kaxalotea

Blue whale
Bale urdina

Fin whale
Zerea

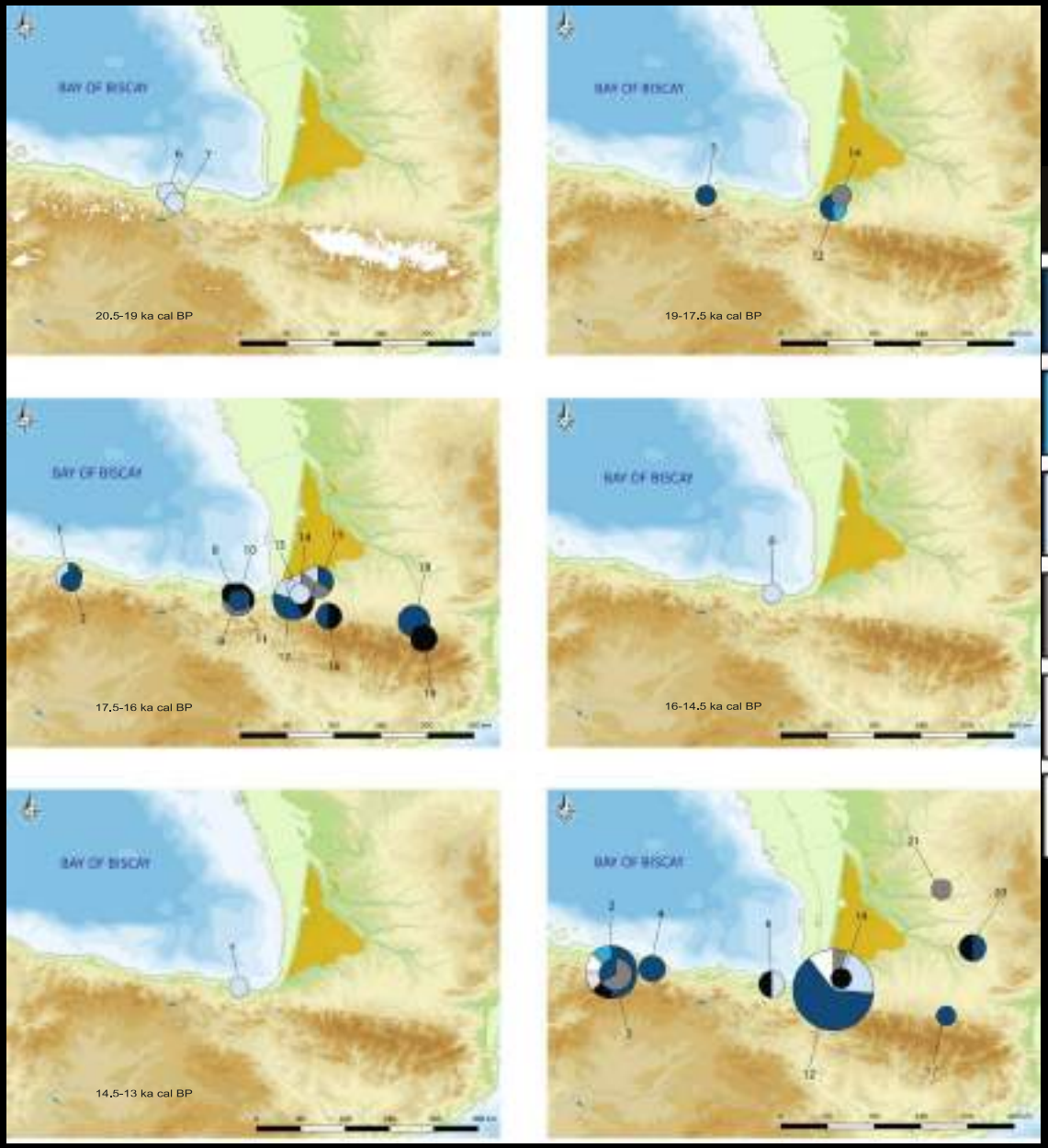
Gray whale
Bale grisa

Dall's / Harbour Porpoise
Mazopa

Cetacean Zetazeoak z.g.

83 tresna (armak):
71 Bai, 8 Ez, 4?

90 hondakin:
60 Bai, 29 Ez, Itsas txakur 1



Right whale / Bowhead whale
Euskal/Groenlandiako Balea

Sperm whale
Kaxalotea

Blue whale
Bale urdina

Fin whale
Zerea

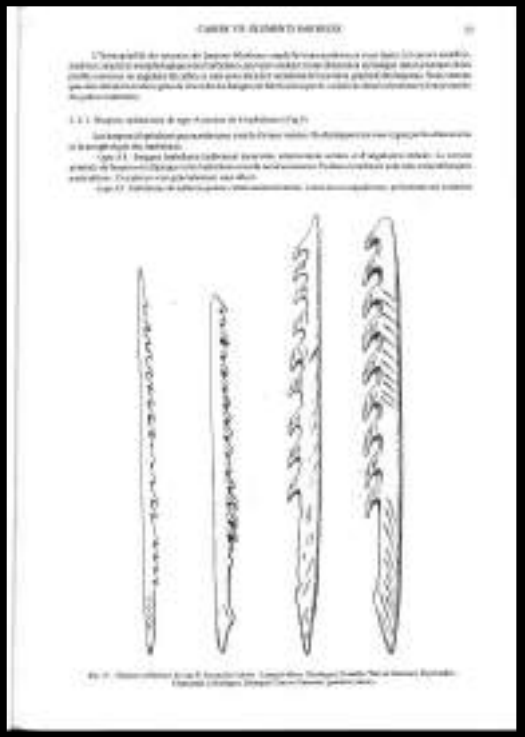
Gray whale
Bale grisa

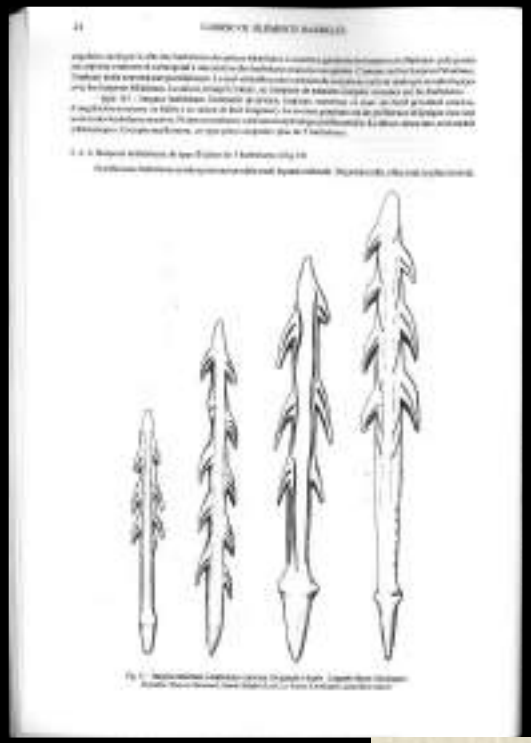
Dall's / Harbour Porpoise
Mazopa

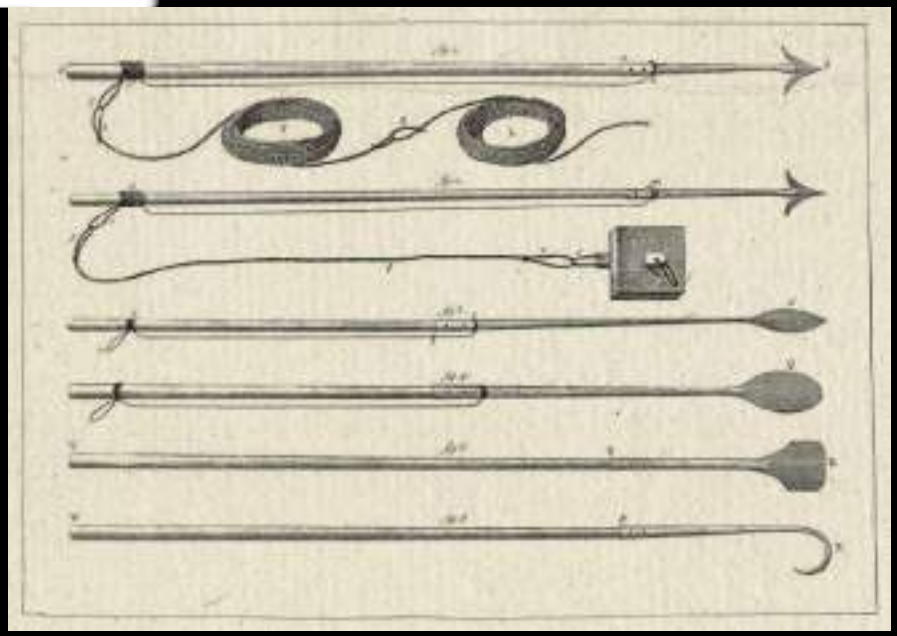
Cetacean Zetazeoak z.g.

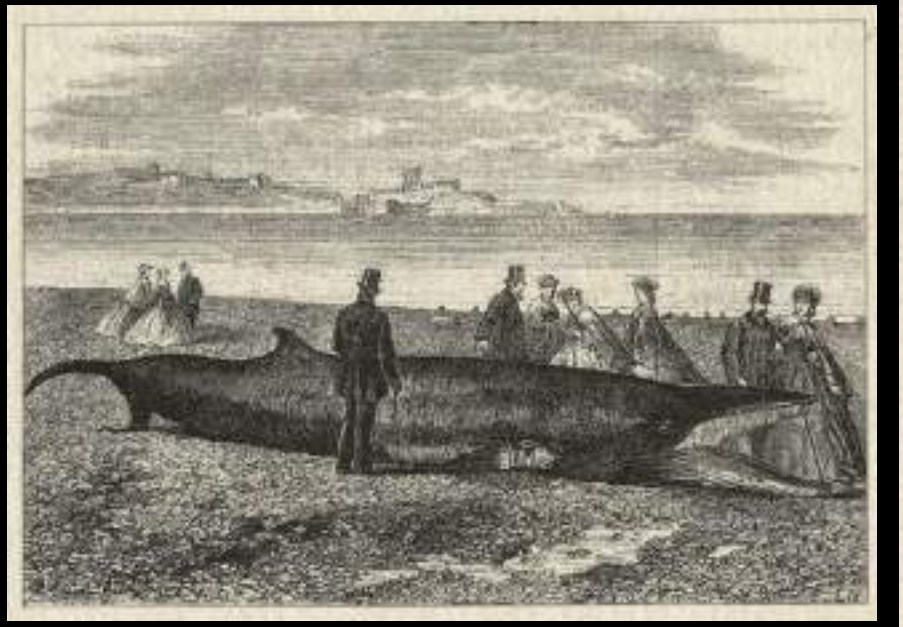
20.000-14.000 urte BP

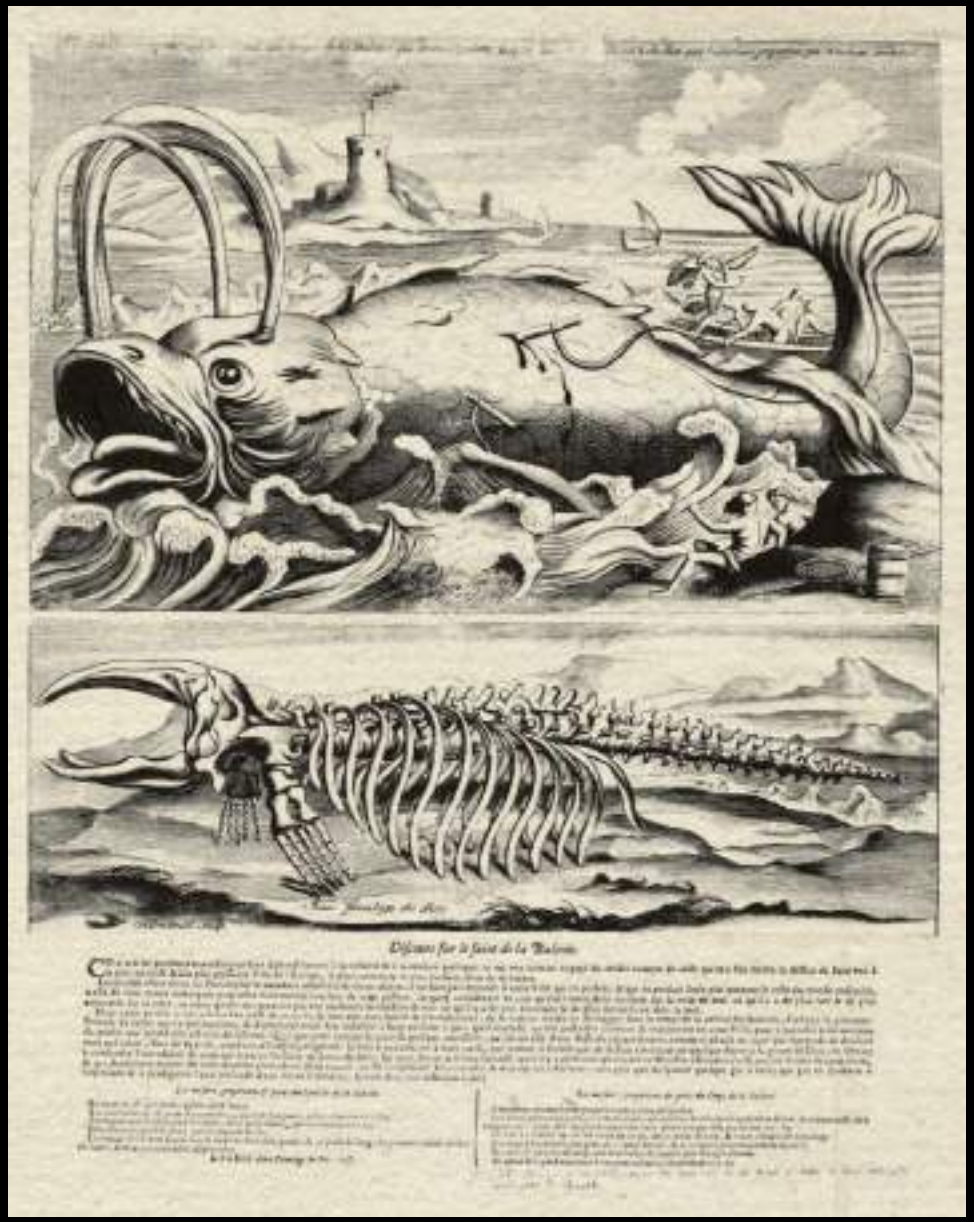
17.500-16.000 urte BP

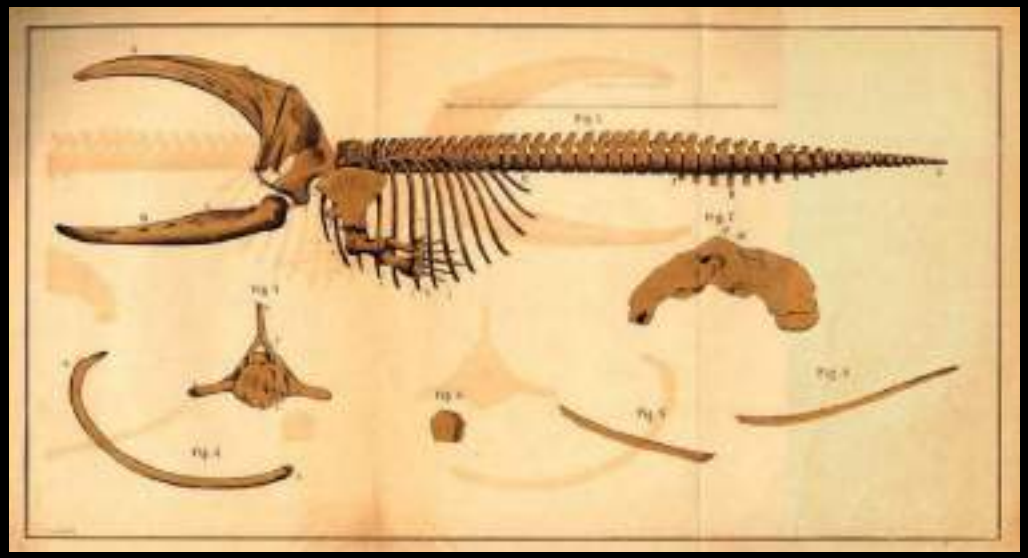




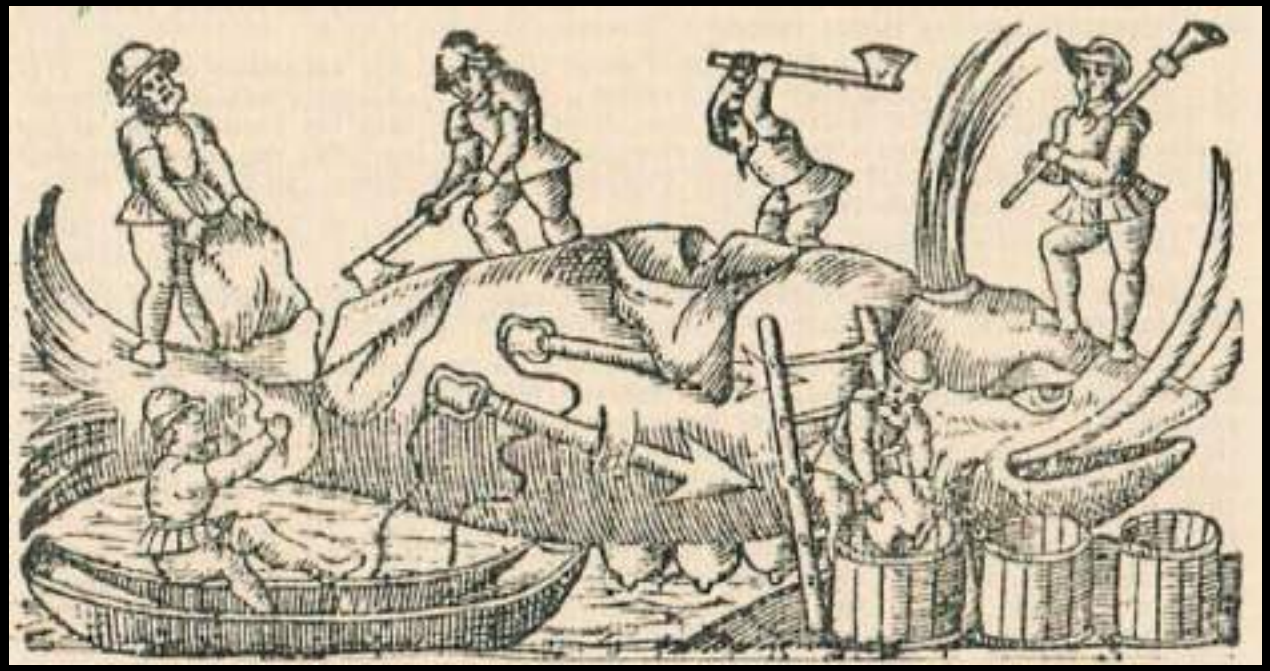









a
b
5 cm
a
b



2.- Lilura? Naturalismoa?.

- Nola ikusi, hala margotu

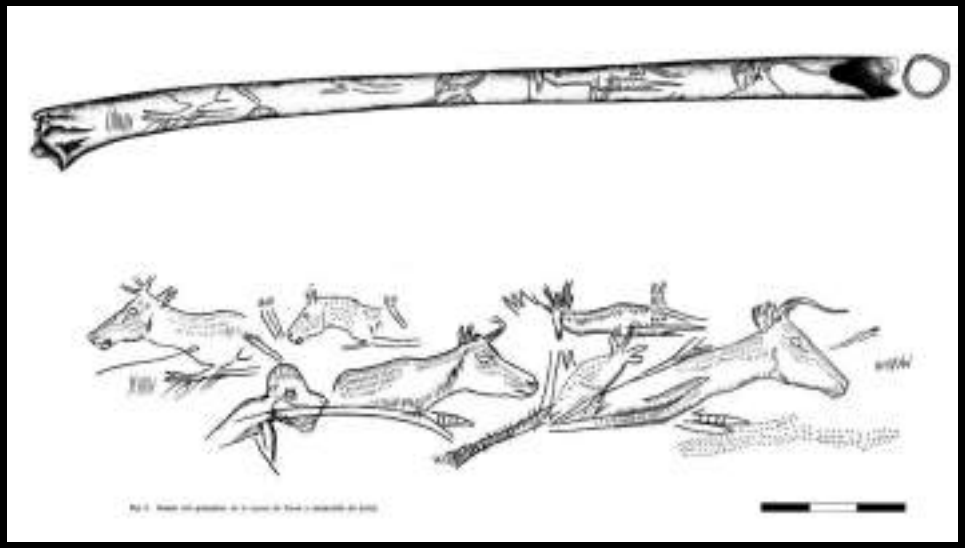


Foto 6. Ekain. Salmón pintado (Fot. J. Altuna).

Fig. 8. Ekain. Salmón pintado.

Fig. 9. Salmón (Salmo salar). Según Lozano, 1964.

Fig. 10. Trucha (Salmo trutta). Según Lozano, 1964.

Foto 1. Altxerri. Peces planos grabados (Fot. J. Altuna).

Foto 2. Altxerri. Pez plano superior (Fot. J. Altuna).

Fig. 1. Altxerri. Peces planos grabados.

Fig. 2. Platija (Platichtys flesus). Según Lozano, 1964.

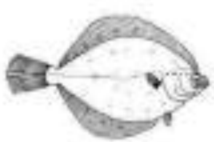


Fig. 3. Platija (Pleuronectes platessa). Según Lozano, 1960.

Fig. 4. Lenguado (Solea solea) Según Lozano, 1964.

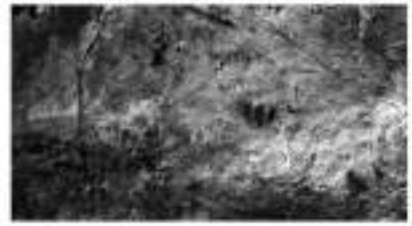


Foto 9. El Pindal (Fot. S. Ríos).

Fig. 13. Pez del Pindal (Pimiango, Asturias). Según Fortea, 2000.

Fig. 14. Atún. Según Lozano, 1964.

Fig. 16. Pez del Pindal. Según González-Pumariega, 2011.

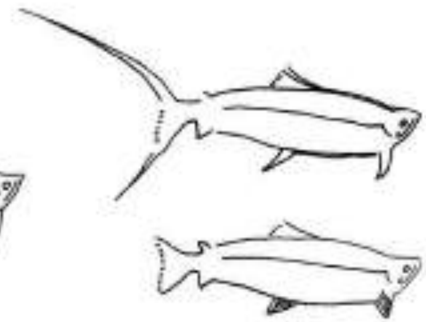


Fig. 15. Pez de El Pindal. A. Según Breuil 1911. B. Según Leroi-Gourhan, 1997.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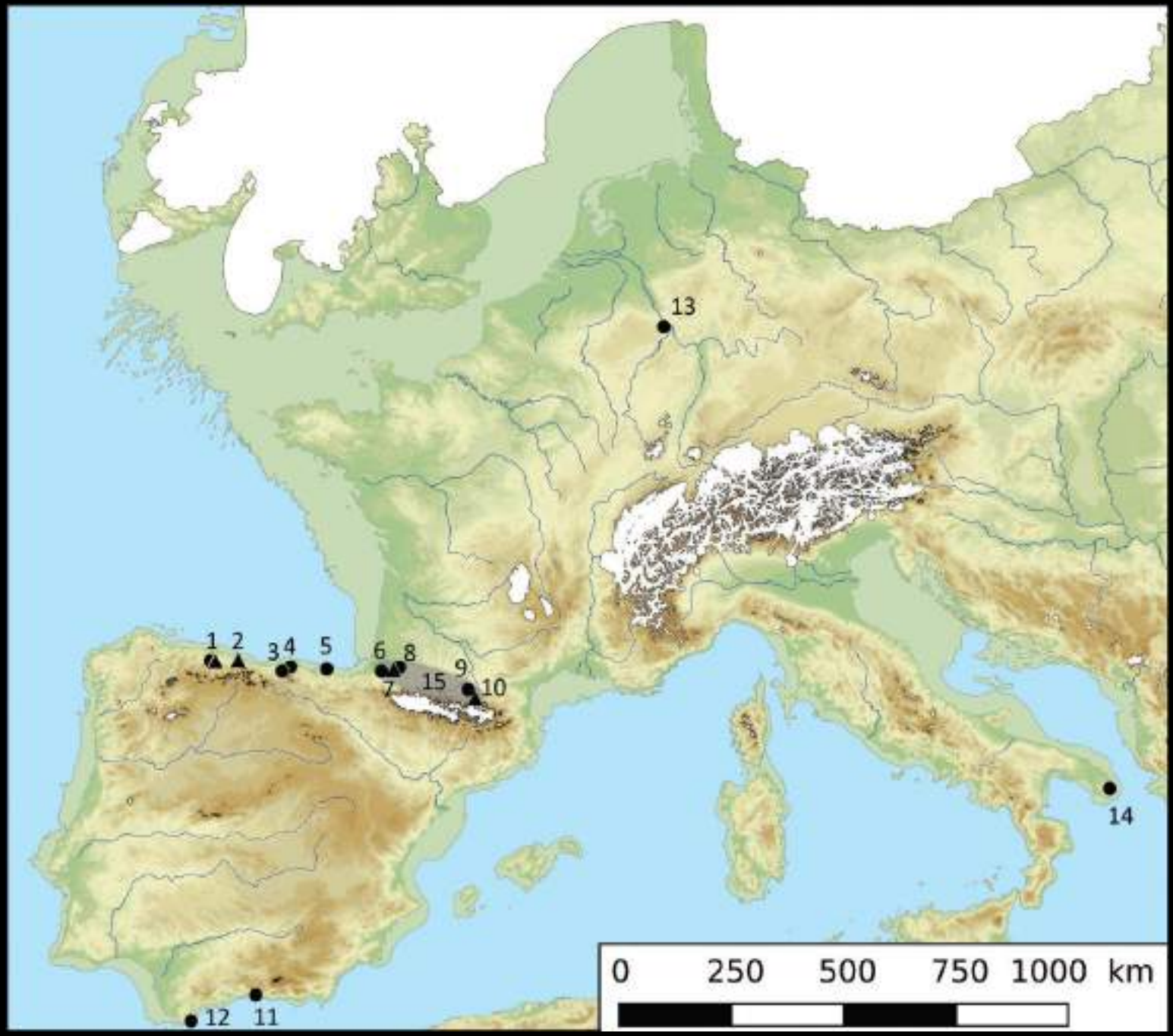
3.- Baleen Biologia

- Espezieak eta ingurumena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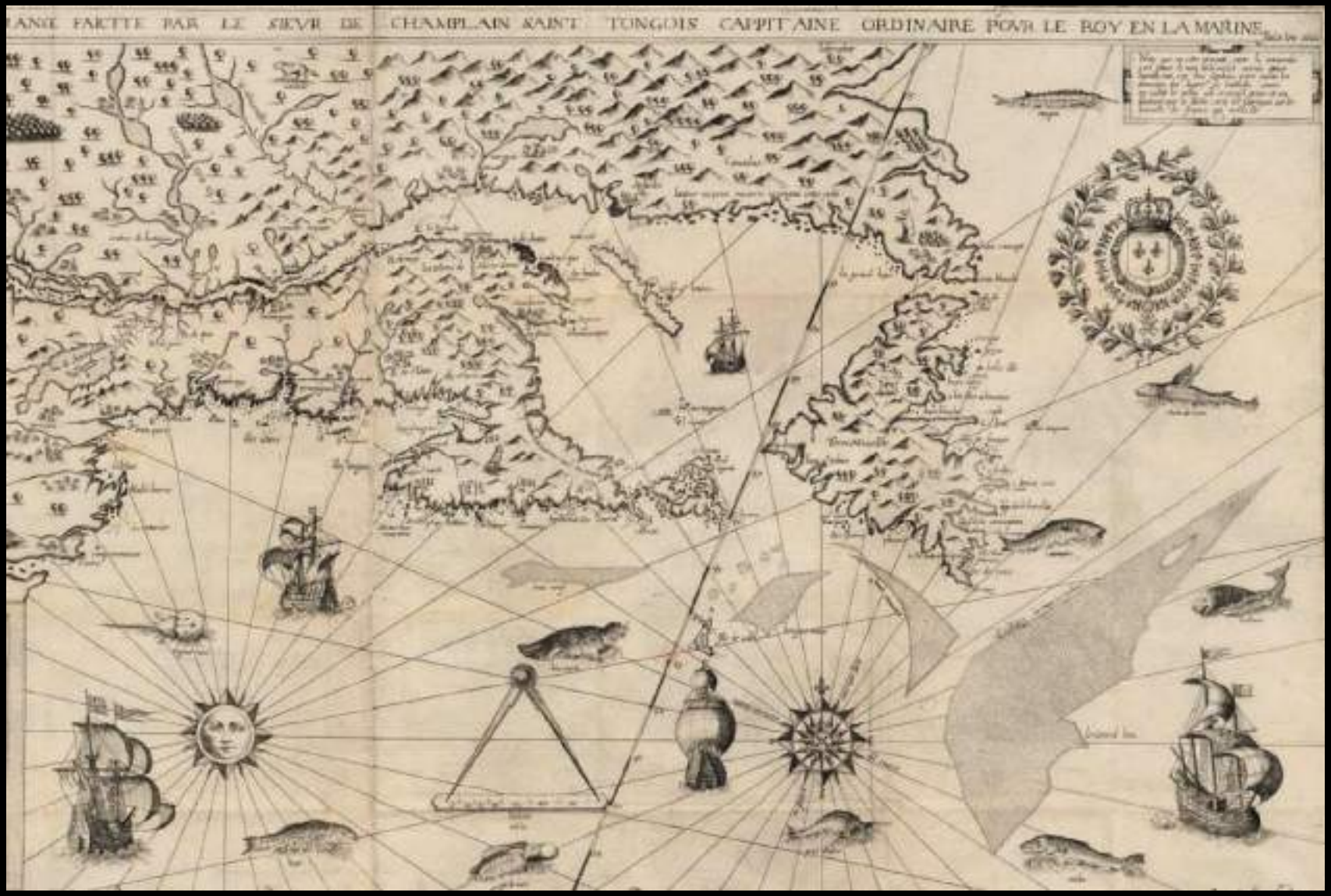
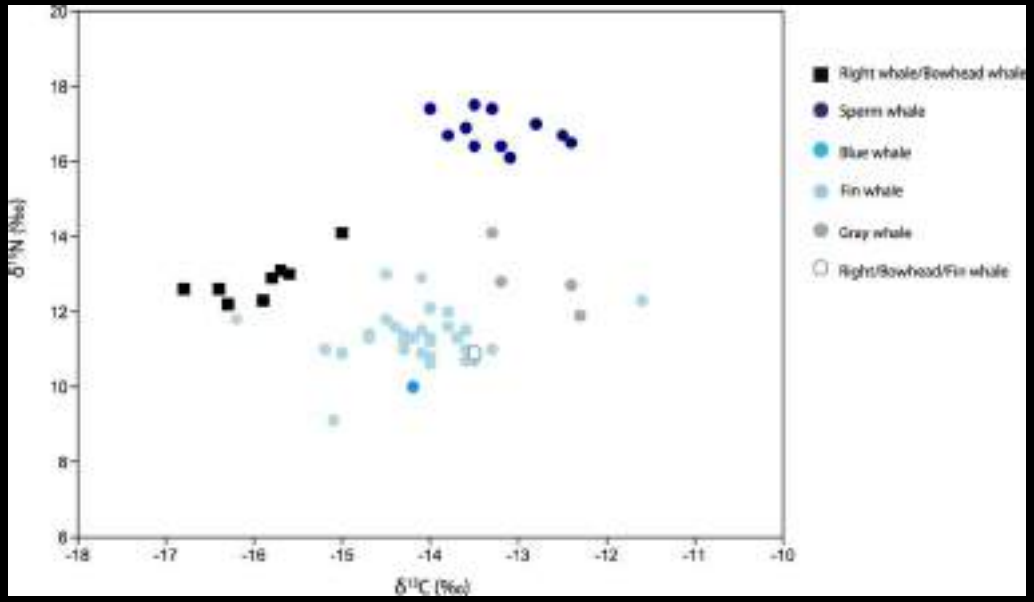

ANIE FAICTTE PAR LE SIEVR DE CHAMPLAIN SAINT TONGOIS CAPPITAINE ORDINAIRE POVR LE ROY EN LA MARINE



	δ13C (‰)	δ15N (‰)
Fin whales		
average	−14.1	11.3
stdev.	0.76	0.72
min	−16.2	9.1
max	−11.6	13.0
Gray whales		
average	−12.8	12.9
stdev.	0.51	0.93
min	−13.3	11.9
max	−12.3	14.1
Right/bowhead whales		
average	−16.0	12.9
stdev.	0.55	0.60
min	−16.8	12.2
max	−15.0	14.1
Sperm whales		
average	−13.2	16.8
stdev.	0.51	0.47
min	−14.0	16.1
max	−12.4	17.5

Right whale / Bowhead whale
Euskal/Groenlandiako Balea

Sperm whale
Kaxalotea

Blue whale
Bale urdina

Fin whale
Zerea

Gray whale
Bale grisa

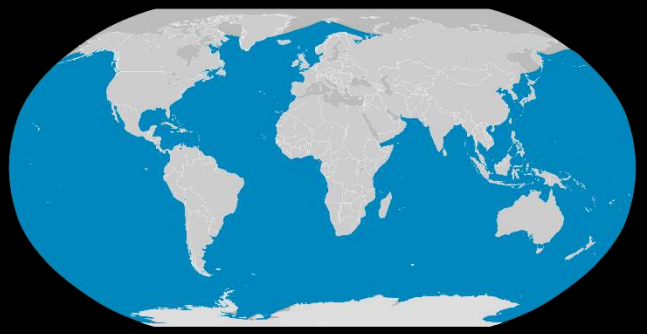
Dall's / Harbour Porpoise
Mazopa

Cetacean Zetazeoak z.g.

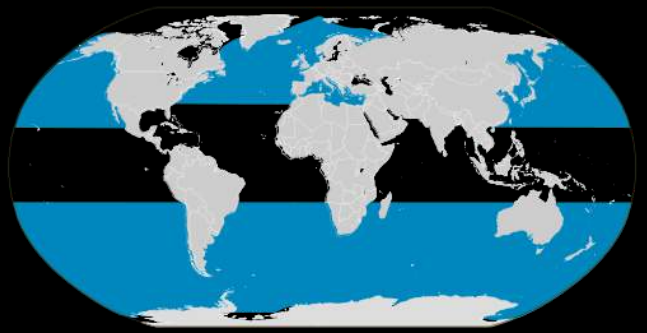
Mazopa

Groenlandiar balea

Kaxalotea



Bale urdina



Zerea

Euskal balea

Bale grisa

Eskerrik asko!

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ELKARTEA

aranzadi
zientzia elkartea

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