LIB Leibniz Institute for the Analysis of Biodiversity Change

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Museum of Nature Hamburg

# Historical specimens show human influence on the feeding behaviour of harbour seals

Tooth samples from historical specimens in natural history collections show how strongly humans can influence the feeding behaviour of seals. The wear marks on the teeth reveal clear differences in food consumption between different regions and periods. The study was conducted by the Leibniz Institute for the Analysis of Biodiversity Change (LIB) in collaboration with the University of Veterinary Medicine Hannover and the University of Leipzig and was recently published in the journal *Frontiers in Marine Science*.

The study focused on historical harbour seal specimens from scientific collections. Using dental microwear texture analysis (DMTA), the researchers analysed the finest traces of wear on the tooth surfaces caused by eating. These traces allow conclusions to be drawn about how the animals used their food.

Seals from the German Wadden Sea in the late 1980s were compared with animals from the Danish Kattegat in the 1960s and 1970s. This revealed clear differences: the Kattegat seals showed stronger and more complex signs of wear on their teeth than their counterparts from the Wadden Sea. This suggests that both their diet and the way they fed differed from each other.

## Living conditions shape eating habits

The researchers attribute these differences to the very different living conditions of the animals in the respective decades and regions. In the 1960s and 1970s, seals in the Kattegat were under intense hunting and exploitation pressure, and fish stocks were also changing due to intensive fishing. In the Wadden Sea, on the other hand, protective measures became increasingly effective from the 1980s onwards, stabilising populations and habitats. The seals apparently responded flexibly to these conditions and adapted their diet to the resources available.

## Collections as archives of past ways of life

The study highlights the high scientific value of historical zoological collections. Not only do

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they show what animals looked like in the past, but when combined with modern analytical methods, they also provide important insights into how environmental conditions and human intervention affect marine ecosystems in the long term.

**Publication**

Lehnert K, Bethune E, Schulz-Kornas E, Siebert U, Kaiser TM (2025). Intra-specific foraging dynamics reveal anthropogenic impact on harbour seals (Phoca vitulina) in the Danish Kattegat and the German Wadden Sea. Front. Mar. Sci. 12:1589549.
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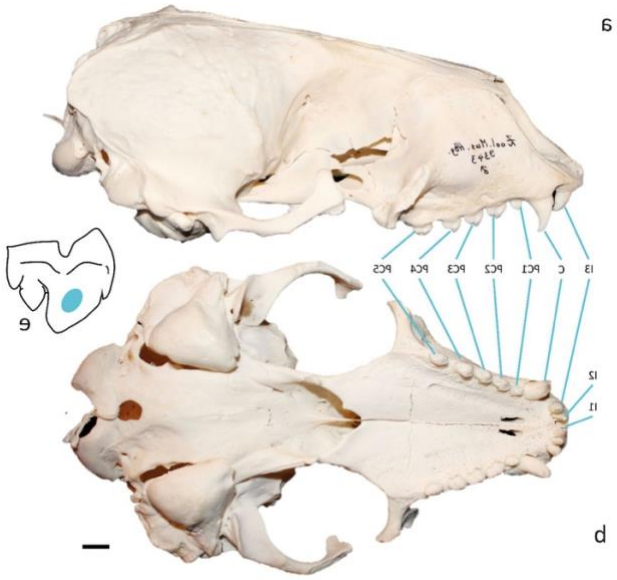
**About the LIB**

The LIB is dedicated to researching biodiversity and its changes, the results of which are disseminated to the wider society in an educational manner. In order to better understand the current mass extinction of flora and fauna, researchers are looking for connections and causes of – often – man-made changes. The goal is to develop solutions for the preservation of ecosystems and species in order to maintain the basis of current life.

**About the Leibniz-Association**

The Leibniz Association combines 96 independent research institutes. Their focus ranges from the natural, engineering, and environmental sciences to the humanities and the business, space, and social sciences. The Leibniz institutes focus on relevant social, economic, and ecological issues. They perform knowledge-oriented and applied research (also among the cross-disciplinary Leibniz research alliances), are or support scientific infrastructures, and offer research-based services.



Caption: (a) Seal skull in ventral and (b) lateral view showing the upper jaw teeth.



Caption: Close-up of a seal jawbone.