



Leibniz-Zentrum für Archäologie
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Press release

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Sustainable oyster harvesting in the Stone Age: lessons for modern nature conservation

Mainz/York. Oysters play a crucial role in the marine ecosystem as they filter water, create habitats and support the nutrient cycle. Today, they are considered endangered in many parts of the world. A new interdisciplinary study by the Leibniz Centre for Archaeology (LEIZA) and the University of York shows that prehistoric communities in southern Scandinavia practised sustainable methods of harvesting the European oyster over three millennia. The research results provide valuable insights for the protection and restoration of modern oyster stocks.

The research team, led by Dr Niklas Hausmann and Dr Harry Robson from the University of York from LEIZA, analysed 2,107 shells of European oysters from 19 archaeological sites on the Danish coast. The results show that oyster populations were not overexploited during the Mesolithic and Neolithic periods, despite population growth. The prehistoric communities in southern Scandinavia practised sustainable harvesting methods that enabled long-term ecological stability.

The extensive dataset provides a comprehensive overview of European oyster populations between 5660 and 2600 BC. 'The oyster shells examined allow us to trace growth rates and age structures of mollusc populations in detail,' explains Dr Niklas Hausmann, research group leader at LEIZA and co-author of the study. 'While oysters tended to be older and larger in the Mesolithic, we tend to see smaller and younger specimens in the Neolithic. Despite more intensive utilisation, however, the oyster reefs never collapsed, which shows that these communities managed their resources sustainably.'

The study differentiates between the effects of human activities and environmental changes on the oyster populations. The researchers conclude that both factors were decisive. 'Our research shows that while environmental factors are important, they were not the only cause of changes in oyster populations,' explains co-author Dr Harry K. Robson from the University of York. 'Human-driven resource management played a crucial role in maintaining the economic and ecological balance that ensured long-term sustainability. Using the data we have

collected, we can investigate how environmental change and human activity have interacted to shape marine life.'

The combination of archaeological and palaeoecological data enables a comprehensive understanding of historical marine ecosystems. 'This interdisciplinary approach is crucial to overcoming modern ecological challenges,' emphasises Dr Hausmann.

The findings of the study are not only of archaeological interest, but also provide valuable guidelines for modern nature conservation. In view of the global decline in oyster populations, research into prehistoric harvesting methods provides important impetus for today's protection and restoration measures. 'Our results show that long-term ecological resilience can be achieved through careful resource management,' concludes Hausmann.

Original publication:

Harry K. Robson, Niklas Hausmann et al: The effects of Mid-Holocene foragers on the European oyster in Denmark, PNAS, <https://doi.org/10.1073/pnas.2410335121>

More Information:

- Website SEAFRONT:
<https://www.leiza.de/forschung/projekt/emmy-noether-nachwuchsgruppe-seafront-1>

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Leibniz-Zentrum für Archäologie (LEIZA)

As a Leibniz Research Institute and Museum for Archaeology, LEIZA studies humans and their development based on material remains that span three million years across time and space. The fundamental insights we gain improve our understanding of human behaviour, actions and the development of societies. In this way, LEIZA enriches our knowledge of humans from an archaeological perspective and creates essential foundations for reflecting on the present and shaping the future. With archaeology, LEIZA views human beings in context and shares the knowledge gained in international dialogue. LEIZA is active worldwide and has successfully and comprehensively conducted research in various regions of Africa, Asia and Europe. The unique concentration of archaeological, scientific, restoration and information technology expertise, combined with important workshops, laboratories and archives, makes it possible to conduct object-oriented research into the archaeology of the ancient world (Asia, Africa, Europe) from the beginnings of human history to modern times. As one of eight research museums in the

Leibniz Association, LEIZA combines excellent science with exhibitions and, with its educational mission, is also a place for dialogue with the public.

Until its renaming on 1 January 2023, LEIZA was known internationally as the Römisch-Germanisches Zentralmuseum (RGZM), which was founded in Mainz in 1852 by resolution of the German Historical and Antiquities Societies. Since 2024, LEIZA is represented at four locations in Germany: Mainz, Neuwied, Mayen, and Schleswig. www.leiza.de

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