**Shell middens rewrite history of submerged coastal landscapes in North America & Europe**

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The excavation of shell middens off two sites in the Gulf of Mexico and Northern Europe dating back to when the seabed was dry land thousands of years ago, reveal how they can offer new ground-breaking insights into the hidden history of submerged landscapes.

An international team of archaeologists from Moesgaard Museum (Denmark), the University Of Georgia (USA), the University of York (UK) [Flinders University](https://www.flinders.edu.au/) and James Cook University partnered to excavate two sites containing shell middens in the Gulf of Mexico and Eastern Jutland in Denmark in 2018, showing that middens can be clearly differentiated from natural shells on the seabed to reveal a coastline’s inhabitation past.

The research, published in two companion papers in *Quaternary Science Reviews,* shows they are culturally significant underwater sites which challenge the current understanding of coastal life in the Gulf of Mexico and Northern Europe, by pushing back the inhabitation timeframe by hundreds of years.

The shell middens also represent deep connections with the underwater environments and seascapes to many First Nations people, and the new evidence will support policy changes towards the adequate management and cultural heritage of their ancestral land.

“Shell middens are a classic, world-wide marker for the intensive use of marine resources, but archaeologist have always assumed that these sites would have been destroyed by sea-level rise”, says Professor Geoff Bailey of the University of York and Visiting Professor at Flinders University.

In Denmark, the discovery of these shell middens, which are rare in the south, hints that this type of site was more common than previously thought, shifting understandings of how intensive coastal use was 5000-7300 years ago.

“Importantly, both studies show that as more of these sites are found, our histories of past coastal use may have to be rewritten. The underwater archaeological aspect to shell midden studies is extremely important moving forward,” says Dr Peter Moe Astrup, Lead Author and Curator of the Maritime Archaeology division at the Moesgaard Museum in Denmark.

“The team of archaeologists used cutting-edge techniques, including microscopy, geological and geophysical techniques, 3D reconstructions, and biological and ecological studies to tease out evidence that offers new insights into midden sites, particularly on how to locate other sites in watery depths around the globe.”

“For a large portion of humanity’sexistence, sea levels have been significantly lower, up to 130 metres than what they are today, exposing millions of square kilometres of land. And the archaeological record clearly demonstrates that people in the past lived on these coastal plains before they were drowned by past sea-level rise” says Associate Professor Jonathan Benjamin who is the Director of the Deep History of Sea Country Project and Maritime Archaeology Program Coordinator at Flinders University's College of Humanities, Arts and Social Sciences.

"Within archaeological shell middens, we can find old food remains, discarded tools and ornaments, old living surfaces, and in some cultures, human burials,” says Dr Katherine Woo at the Australian Research Council Centre of Excellence for Australian Biodiversity and Heritage, James Cook University in Australia.

“These in turn provide us with fundamental information about past food choices, tool technology, and trade practices. More importantly, these different types of information allow us to understand how people adapted their cultures over time, and how they interacted with their surrounding environments including during times of sea level rise and climate change.”

The excavation of these sites emphasises the need for stronger recognition and rights to protect and manage the cultural heritage of underwater ancestral lands around the globe, which hold significant insights into human history and deep connections to marine environments.

“The discovery of these underwater sites, and the promise of more to be found, means that industry, developers, archaeologists, and government bodies must reassess how we classify and handle Indigenous heritage on the continental shelf,” says Dr Jessica Cook Hale from the University of Georgia. “This is especially critical because offshore development is accelerating; here in North America the big push for offshore windfarms is underway, but Indigenous voices must remain foremost. These new findings support ongoing work to ensure that Indigenous and First Nations have a critical seat at the table, so to speak, in managing the offshore cultural heritage of their ancestral lands by documenting these relationships into the deep past.”

“They are real, they are important, and we must all engage with them in a rigorous and serious fashion.

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[Deep History of Sea Country Project in Denmark and North Europe.](https://deephistoryofseacountry.com/page/3/)

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