

# A Bronze Age-style ship just sailed through the Persian Gulf 4,000 years after it was designed

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The reconstructed Bronze Age-style Magan boat went through sea trials and sailed for the first time in March in the Persian Gulf, also known regionally as the Arabian Gulf. Emily Harris/Zayed National Museum

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**(CNN)** — Writings on an ancient clay tablet have allowed experts to reconstruct a Bronze Age ship made of reeds and sail it on a maiden voyage off the coast of Abu Dhabi, United Arab Emirates.

The vessel, known as a Magan boat, spans 59 feet (18 meters) in length and was assembled by a team of 20 specialists using techniques that date back to 2100 BC, when the Persian Gulf became part of global maritime trade across the ancient world.

Magan was once the name for a region that now encompasses the UAE and Oman. Magan boats were large and strong enough to enable the exchange of goods such as copper, textiles and semiprecious stones 4,000 years ago between societies living in Mesopotamia and the Indus Valley in what is now Iran, Pakistan and India, respectively.

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And now, archaeologists, anthropologists, engineers, scientists and digital humanities experts have proven that ancient shipbuilding techniques can result in a seaworthy vessel. It is the world's largest reconstruction of a Bronze Age Magan boat, according to the team.

"We gained a much deeper knowledge of the materials used to build such boats to better understand the strengths and weaknesses of these revolutionary craft," said Eric Staples, associate professor within the college of humanities and social sciences at Zayed University in Abu Dhabi, in a statement.

"We also gained a much deeper appreciation for the ingenuity and courage of the ancient shipbuilders and seafarers of the Bronze Age that built and sailed these vessels in the Bronze Age, connecting the first civilizations of the world in the process."

The project to design, construct and sail the ship began in 2021 as a collaboration between the Zayed National Museum, New York University Abu Dhabi and Zayed University. The research project's goals were to uncover ancient craftsmanship techniques, determine the connections between Bronze Age societies and better understand the role Abu Dhabi once played in Bronze Age trade.

## **Assembling an ancient vessel**

Recent archaeological discoveries have shown that the island of Umm an-Nar, located off the coast of Abu Dhabi and once the largest ancient port in the region, played a key role in trade thousands of years ago.

Finds such as stone axes, copper fish hooks, grinding stones and pierced stone disks to weigh fishing nets, along with imported pottery vessels from Mesopotamia and South Asia, point to trade that occurred over long distances.

Researchers were also intrigued by a tablet on display at the British Museum, which came from the ancient Sumerian city of Girsu in what's now Iraq. The tablet is essentially an invoice or dockyard order, written in Sumerian language, requesting large quantities of supplies needed to build the "boats of Magan."

The list included palm fiber, goat hair, reeds, four types of wood, leather, palm leaf matting and palm rib decking, linseed oil, sesame oil and an animal fat called bitumen. The team behind the reconstruction used ancient illustrations of boats for reference and assembled a boat with the capacity to carry 36 tons (32,659 kilograms).





A team member helps to coat the boat with animal fat for waterproofing. Emily Harris/Zayed National Museum

Like decoding an old recipe, the team put all the information from the list and their reference materials together to draw up a plan.

Shinwrights well-versed in historical replicas helped build the boat using hand tools

Shipwrights well-versed in historical replicas helped build the boat using hand tools without relying on modern advances or techniques. They constructed the ship's outer hull using 15 tons (13,607 kilograms) of locally sourced reeds, which were soaked and stripped of their leaves before being crushed and tied in long bundles with rope made from palm fiber.

The shipbuilders then lashed dozens of bundles to wood frames, coating them in animal fat to help with waterproofing. Samples of animal fat also had been found on Umm an-Nar. Researchers came up with over 100 animal fat recipes to get the waterproofing technique just right.

The team also tested the strength of the ropes and reed bundles to determine how large they should be and carried out water immersion experiments to see how heavy the hull would become once it absorbed water.

The team was overjoyed by how well the ship fared when it finally took to the sea on March 2, said Robert B. Jackson, photographer and health and safety officer.

"For the first time in 4,000 years, a reed, wood, and bitumen merchant ship was sailing the waters of the Gulf," Jackson said in a statement.



The boat, made of reed bundles, was assembled using only ancient traditional techniques. Emily Harris/Zayed National Museum

## A historic crossing

The ship's sail is made of goat hair and weighs 280 pounds (127 kilograms), which required more than 20 people to lift the sail and rigging to make up for the fact that pulleys didn't exist during the Bronze Age.

"It has been a long and exciting journey from discovering ancient fragments of Magan boats on the island of Umm an-Nar to the iconic moment the boat's goat hair sail was raised and she set sail from the coast of Abu Dhabi, traversing the same route these monumental vessels would have travelled 4,000 years ago towards the open sea and the coastline of India," said Dr. Peter Magee, director of Zayed National Museum, in a statement.

Sea trials are designed to test the strength and limits of vessels. After passing five days of trials, the ship sailed toward Saadiyat Island off the coast of Abu Dhabi and the open sea on March 2 and 3. The boat covered 50 nautical miles (92.6 kilometers) and reached speeds of up to 6.4 miles per hour (5.6 knots).

Champion Emirati sailor Marwan Abdullah Al-Marzouqi was one of the ship's captains during its sea trials. His family has been connected with the UAE's maritime heritage for generations.





A crew of more than 20 was required to hoist the heavy goat hair sail and rigging since the ship has no pulley systems aboard and it was built only with technology available during the Bronze Age. Emily Harris/Zayed National Museum

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“When we first towed the boat out from the jetty, we were very careful,” Marzouqi said in a statement. “I was very aware it was made from only reeds, ropes and wood — there are no nails, no screws, no metal at all — and I was afraid of damaging her. But as we got under way, I soon realised that this was a strong boat. I was surprised by how this big boat, weighed down with a heavy ballast, moved so smoothly on the sea.”

## The next voyage

Capt. Abdallah Alremaithi called the experience of sailing and navigating aboard the Magan boat “a journey through time” that made the challenges of ancient seafaring a reality, including how much effort it would have taken to sail such ships across the ocean.

Researcher Ayesha Almansoori, one of five women who sailed on the ship, called the final docking a “poignant moment” as the unique experience came to an end after years of bringing the vessel to life.



A team of experts helped design and test every aspect of the ship during construction. Emily Harris/  
Zayed National Museum

The project, which the pandemic initially delayed, faced multiple hurdles, said project manager Tayla Clelland, including the hunt for authentic materials and efforts to assemble them without any modern advancements.

Now that the ship has completed its sea trials and maiden voyage, it will be displayed at the Zayed National Museum, the UAE's new national museum being constructed on

the Zayed National Museum, the UAE's new national museum being constructed on Saadiyat Island.

The museum will include insights into the Persian Gulf's maritime history and the cultural connections it enabled, and the ship and its journey "represents thousands of years of Emirati invention and exploration," said Mohamed Khalifa Al Mubarak, chairman of the Department of Culture and Tourism in Abu Dhabi.

"I felt as though we were breathing life into history, bridging the gap between the distant past and the present," Clelland said in a statement. "Seeing the Magan Boat sail on the water for the first time actually took my breath away and brought tears to my eyes."

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