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An 18th century merchantman from the Red Sea waters of Saudi Arabia

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Abstract:

The Umm Lajj shipwreck is the last of three shipwrecks identified in the Red Sea, all dating, according to the cargo, to the 18th century, and sailing on a course heading northwest. These three shipwrecks testify to an intense interaction across and along the Red Sea coasts.

None of those shipwrecks have yet been comprehensively investigated until now therefore, their historic and economic significance is still understudied, as is the ship architecture and the variety of cargo, which mainly includes water jars, chinese porcelain, clay pipes, spices, etc.

The Umm Lajj shipwreck was found the 2000s in the Saudi waters of the Red Sea and was initially surveyed in 2015 and 2016. In 2022 a team of Saudi, Italian and Egyptian underwater archaeologists started the first underwater excavation in Saudi Arabia on this shipwreck. This paper will present the methodology and the results of the 2022 field season on The Umm Lajj shipwreck and comparative analysis related to the ship architecture.

Red Sea 18th-century merchant ships played a pivotal role in providing Mecca with food provision and carrying products coming from three different continents and from vast distances acquired in the ports of Jeddah and Mocha. Among these vessels, the Umm Lajj shipwreck stands out as a remarkable relic from the past, offering valuable insights into maritime history and trade routes of the era.

Discovered in the 2000s by a group of sport divers approximately 16 miles offshore Umm Lajj, a town situated 426 km north of the port of Jeddah, the Umm Lajj shipwreck quickly became a focal point of underwater archaeological research in Saudi Arabia. Subsequent restrictions imposed by local authorities limited access to the site to researchers, emphasizing its significance.

In 2015, the Saudi Commission for Tourism and National Heritage, now known as the Heritage Commission under the Ministry of Culture, extended an invitation to a team from the Università di Napoli L'Orientale to conduct an underwater survey of the area. Over two field seasons in 2015 and 2016, the joint Saudi-Italian team meticulously examined the Umm Lajj shipwreck, uncovering a wealth of historical artifacts and clues.

Comparisons with other notable wrecks in the region, such as the Sharm al-Shaikh (Raban 1971) and Sadana (Ward 2000; 2001) wrecks in Egypt, revealed striking similarities in cargo composition, notably the presence of qulal jars and Chinese porcelain. These findings suggest a shared northbound route and a dating of these shipwrecks to the 18th century, a period marked by Ottoman dominance in the Red Sea region.

During this era, Ottoman authorities tightly controlled access to Red Sea ports, overseeing the operations of large sailing vessels owned by Egyptian merchants or religious institutions (awqaf). Historical records indicate a bustling trade network, with ships shuttling between Jeddah and Suez, laden with essential provisions for the Hijaz region. While the outbound cargoes of these vessels primarily consisted of grains and foodstuffs destined for the Hijaz, the nature of their return journeys remains somewhat enigmatic. However, evidence from wrecks like Sharm al-Shaikh, Sadana, and Umm Lajj suggests that they likely transported goods from Africa and the East to satisfy the demands of Alexandria's markets and be re-exported in the eastern Mediterranean (Ward 2001).

Recent archaeological endeavors at the Umm Lajj shipwreck, resumed in 2022, continue to unravel the details on the 18th-century maritime trade.

Situated at a depth of 20-22 meters below the surface, near an isolated reef between the Shaybārā (Sheibara) reef

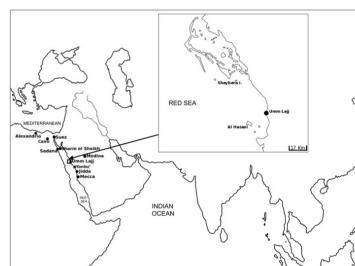


Figure 1: Location of the site

Navigating through this labyrinth of reefs demands expertise in understanding wind patterns and coral formations, underscoring the importance of skilled seamanship.

The positioning of the ship's bow facing the coral reef suggests a navigational mishap, possibly caused by adverse weather conditions or a strategic stopover for shelter. Subsequent collapse and wreckage on its port side is evidenced by the distribution of cargo and the encroachment of corals and sponges. (Figure 2).

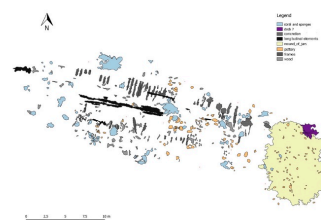


Figure 2: A topographic base map of the shipwreck.

Amidst the remnants of the vessel were fragments of large basins at midship (Figure 3) and a mound of 3000 jars for liquids towards the stern, sealed in the calcium carbonate (Figure 4). Other evidence bear witness to the daily life and cargo handling practices aboard the ship.



Figure 3: The central part of the shipwreck occupied by fragments of basins and large storage jars



Figure 4: The mound of water jars

Preliminary analyses of the hull structure reveal the craftsmanship of its construction, with massive timbers, frames, and planks providing insights into shipbuilding techniques of the era. The remains of the hull extend over 40 m in length and 10 m in width. Three large keelsons run along the wreck in its central part, above the framing, and measure ca. 16 cm in thickness. The remains of stringers running along the inner face of the framing are visible on either side. The frames are massive, measuring 18-20 cm wide and 20-30 cm thick. Hull planks measure ca. 22–23 cm in width and 5 cm in thickness. They have seams that are bevelled, suggesting the hull might originally have been sealed with some sort of caulking. Hull planks are nailed to the frames with square iron nails 1.5 cm x 1.5 cm on average (Figure 5). The estimated length of the Umm Lajj ship is possibly 40–45 meters long (Zazzaro et al., 2017).

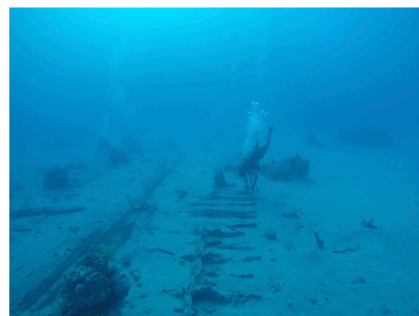


Figure 5: The shipwreck

Wood analysis further enhances our understanding of the ship's composition, with pine (*Pinus sp.*) and oak (*Quercus sp., deciduous*) identified as primary materials used in its construction.

The excavation of the shipwreck unveiled a wide variety of traded goods, most likely acquired in the ports of Jiddah or Mocha after delivering food provisions, personal items, and remnants of food consumed by the crew. The visible cargo mainly comprises water jars classified as qulal, doraq, and jars (Figure 6). Ceramic production centers for these water jars were located in Egypt and other regions of the Red Sea and the Middle East, raising questions about why such common vessels were marketed by sea. However, due to their daily use and perishable nature, there was a high demand for them, making them profitable as mass-marketed products (Terminiello, 2018). Additionally, these jars may have contributed to stability in ship stowage calculations, potentially replacing the need for appropriate ballast.

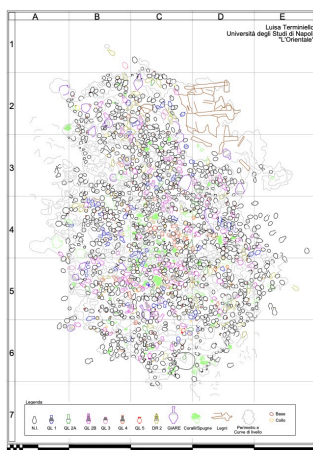


Figure 6: The different types of waterjars.

Chinese porcelain was also abundantly found, especially in the aft port side of the shipwreck (the side on which the ship collapsed). The porcelain cargo consists almost entirely of blue and white, featuring a lime-alkaline glaze

decorative motifs exhibit a variety of floral, figurative, and symbolic representations. Among the cup fragments with floral motifs are some externally decorated with tendrils forming roundels, and a significant number of bowls decorated with sprays of leafy peony. Other fragments appear to represent bamboo trees (Figure 7 and 8) (Visconti, 2018). Some cups are decorated on the exterior with motifs of pine trees and on the interior with diaper-pattern bands running around the rim and base. This decorative scheme, known as the "Blue Pine" pattern, is depicted on tens of thousands of cups from the porcelain cargo of the Geldermalsen, a Dutch East India Company shipwrecked in 1752 off the coast of the Lingga archipelago (Indonesia) and rediscovered by Captain Michael Hatcher in 1985 (Visconti, 2018). Therefore, it is likely that the Umm Lajj shipwreck sunk in the mid-eighteenth century.

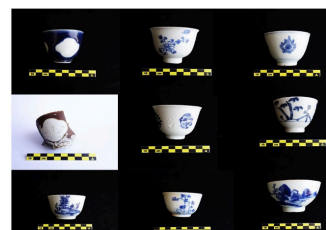


Figure 7: The Chinese blue and white porcelain cargo



Other traded artifacts found onboard included tobacco pipes, which, like the water jars, were goods for daily use intended for a wide range of ordinary people, as well as other containers such as basins, barrels, and glass bottles. Exotic consumable products such as coconuts, nutmegs, coffee beans, and incense resin were also part of the traded cargo, being competitive on the market, just like porcelain. Remnants of food consumption for the crew included hazelnuts, raisin seeds, sheep or goat bones, and fish bones (Zazzaro et al., in press). Archival documents only mention trade from Egypt to Arabia, providing cereals, barley, beans, and oil for the population of the Hejaz. However, archaeological evidence suggests that on the return journey, these shipwrecks carried a wide variety of products, indicating an indirect trade involving three continents and including both mass-produced items (water jars and tobacco pipes) and high-profit goods such as porcelain and spices. Despite this, Ottoman activities in the Red Sea deteriorated rapidly due to the failure of these ships and their frequent wreckages. Maintaining a transport capacity sufficient to meet the supply obligations of the Hejaz was rarely achieved. Ottoman documents indicate that these ships were subsequently replaced by Indian ships acquired in the Red Sea (Wick, 2012). The cargo and the ship hold important historical value as they represent the last pieces of evidence for the Egyptian-Arabian trade circuit before the European expansion in the Red Sea, with the opening of the Suez Canal, a period in the history of this sea that is still insufficiently investigated.

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