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BRINGING HISTORY TO LIGHT THROUGH THE SCIENCE OF SHIPWRECKS



RENEWED EXCAVATION AT EL SEC, MALLORCA

THE ARCHAEOMETALLURGY
OF CAPE GELIDONYA INGOTS

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WE BID FAREWELL TO
GIANTS IN THE FIELD

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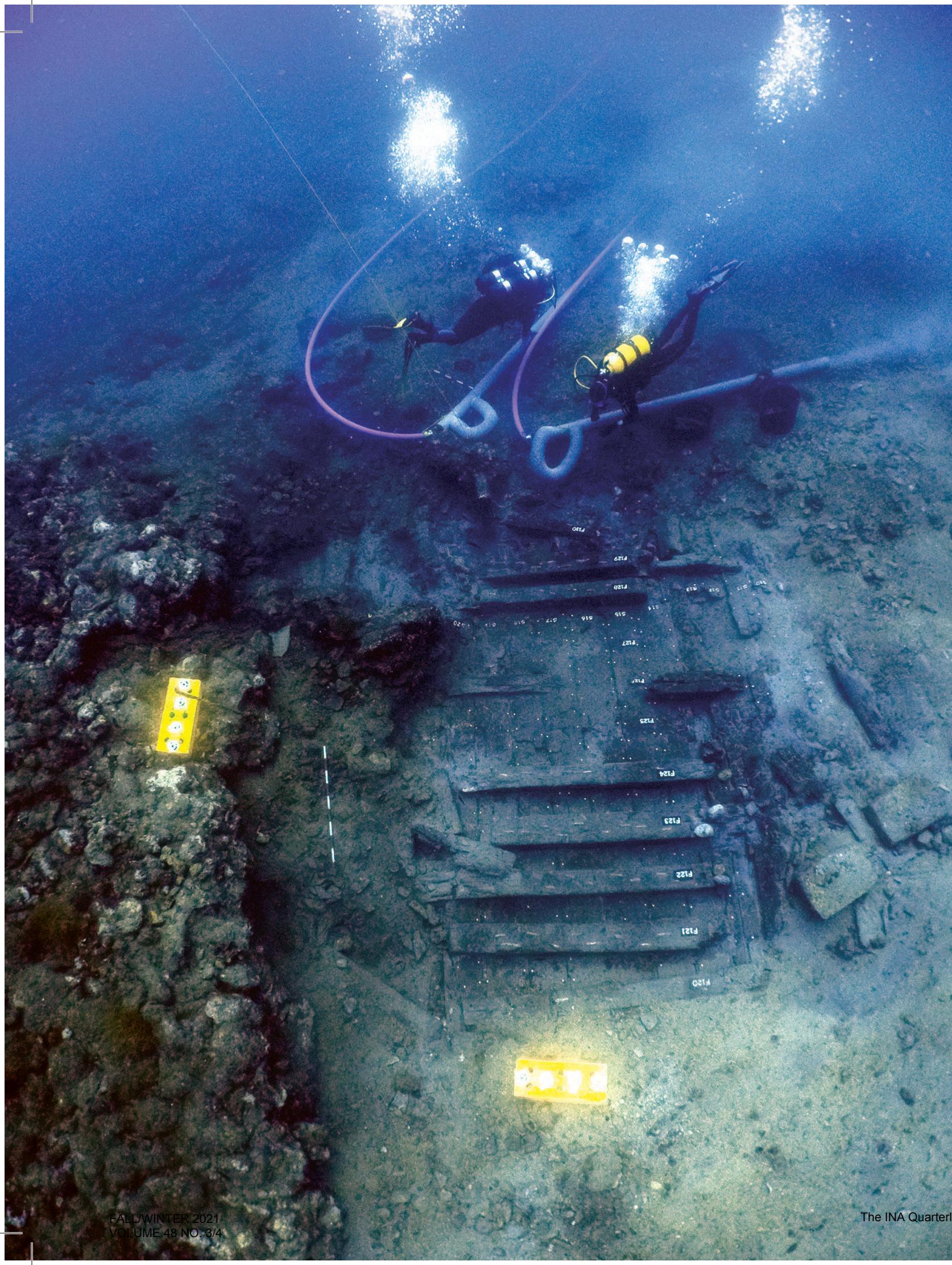


PHOTO: PEDRO RIERALLOMPART

RENEWED EXCAVATION AT EL SEC, MALLORCA

Preliminary results from the 2021 season

BY CARLOS DE JUAN, AGUSTÍN DÍEZ CASTILLO, AND SEBASTIÀ MUNAR

The fourth-century B.C. (375–350 B.C.) shipwreck at El Sec is located close to the islet of the same name in northwest Palma Bay on the island of Mallorca in Spain's Balearic Islands. Located at a depth of 33 m (108 ft), the wreck was first discovered in the 1940s. It was in the late 1960s when Spanish archaeologist and cartographer Josep Mascaró Pasarius published a study about an assemblage of Attic black-glazed pottery from the wreck, suggesting that this was the first ancient Greek ship found in Spain. The pottery was recovered by amateurs, fueling an interest in nautical archaeology and underwater heritage protection. In 1970, the foundation of the first Balearic institution sponsored the first archaeological mission at El Sec. Navy divers, who had no training in underwater archaeology, worked from the Spanish navy vessel *Poseidon* for three days with the aid of explosives to recover 530 artifacts without any record-keeping. The explosives were designed to 'recover' anything that was hidden beneath a layer of bronze *lebes* (cauldrons), which had formed a concreted mound over time. According to Francesca Pallarés (1972), those explosions damaged the archaeological remains and also facilitated looting of the site.

In the context of that urgent scenario, a deal was signed between Spanish

Dirección General de Bellas Artes and Italian Istituto di Studi Liguri with its Centro Sperimentale di Archeologia Sottomarina di Albenga. The archaeological mission directed by Nino Lamboglia started in September 1970, at the south edge of the cauldron mound, where a group of rectangular millstones were visible *in situ*. Lamboglia applied terrestrial archaeological methods at El Sec, never diving on the site himself but relying on Navy divers, and mapped the site and recorded the position of 751 pieces. Underneath the cargo in the southern sector, hull remains appeared, including 12 planks and ten frames. In those early days, divers briefly described

the pieces, took some measurements, and sketched a drawing.

In March and April of 1971, Spanish Navy divers recovered more artifacts from the seabed at El Sec, discovering a trench previously made by looters. That find led to another archaeological mission in August, directed from the surface by Cristobal Veny, using dredges and recovering 124 artifacts. The last mission at El Sec was in September 1972 when Catalina Enseñat, also from the surface, directed divers who recovered metallic concretions from the mound, using, in her words, 'blunt methods.' Between three and four tons of cauldron fragments, nails, necklace beads, almonds,



Opposite page: Two divers use dredges to clear around the hull of the wreck at El Sec.



PHOTOS: THIS PAGE AND OPPOSITE PAGE: PEDRO RIERA LLOMPART

Could the El Sec ship help to clarify the shipbuilding evolution of the fourth century B.C.? Did this evolution follow different paths like tree branches?

hazelnuts, pine nuts, wild olives, vines, and brambles were raised to the surface. Antonio Arribas' 1987 monograph is the best summary of the El Sec ship's cargo, most of which was recovered without proper archaeological recording and consideration of context (with the exception of Lamboglia's mission), some finds even being mixed with other artifacts of unknown provenance.

A PUNIC VESSEL OF THE CLASSICAL PERIOD

Most of the artifacts recovered were Aegean amphoras, Grecoitalic Will A2 amphoras, and Punic Central Mediterranean amphoras. Also, a small group of Punic amphoras from Ebusus (Ibiza Island) was identified (Ramon 1991). The Attic red figure and black-glazed ware showed graffiti, probably to

be understood as numerals. Punic ware, bronze *lebes*, and volcanic millstones were also identified.

Despite the initial interpretation of the ship as a Greek vessel, the El Sec ship is now considered a Punic vessel with a heterogeneous cargo that sank while heading to the emporion of Ebusus (Asensio 2010).

In the intervening half-century, the study of ancient shipbuilding and its evolution in the Classical period has brought renewed scientific interest in the El Sec ship. The absence of evidence between the Ma'agan Mikhael shipwreck (ca. 400 B.C.) and the Kyrenia shipwreck (310 B.C.) brought about research of the hull at Mazotos, Cyprus (375 B.C.) that is still ongoing. In February 2019, after academic discussions with Cemal Pulak and Deborah Carlson at Texas A&M

University in College Station, a new plan to revisit the El Sec shipwreck was put into place.

The El Sec ship's framing pattern, recorded in Lamboglia's excavation, did not seem to fit Patrice Pomey's family of transitional Greek framing characterized by floor timbers and futtocks joined by Z-scarves alternating with top timbers. The strong differences between the Hellenistic shipbuilding standard which the Kyrenia ship represents at the end of the fourth century B.C. and the aforementioned wrecks associated with the Greek tradition of ship construction raised the possibility of Punic influence in the Kyrenia ship's construction. Could the El Sec ship help

This page: Two divers excavate around frames F129 and F130. **Opposite page:** A mass of broken pottery resting on the frames.

to clarify the shipbuilding evolution of the fourth century B.C.? Did this evolution follow different paths like tree branches?

THE 21st-CENTURY MISSION

Looking for answers, a survey was done in spring 2019 by Munar and de Juan, thanks to the support of the regional government of Mallorca (Consell Insular de Mallorca-Departament de Cultura, Patrimoni i Política Lingüística) and the Spanish Navy. The wreck was relocated, and the team recorded some hull remains and two rectangular millstones in the area south of the concreted mound, which suggested that renewed excavation may provide new data about the framing pattern and fastening technique. These elements could help corroborate the hypothesis that shipbuilding techniques of Phoenician origin were transferred to Greeks between the end of the sixth century B.C. and the beginning of the

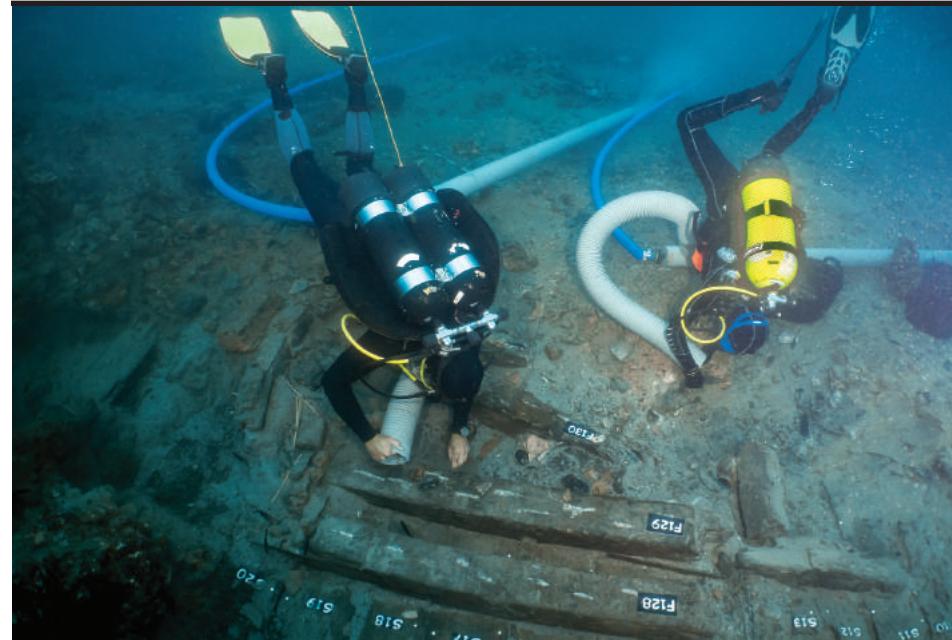
third century B.C. In 2021, after some delay due to the global COVID-19 pandemic, the first archaeological excavation of the 21st century was undertaken at El Sec. This research was conducted by the University of Valencia (Department de Prehistòria, Arqueologia i Història Antiga) through a three-year (2020–2022) Mallorca Regional Government program to promote the maritime heritage research along with invaluable financial assistance and scientific advice from the Institute of Nautical Archaeology (INA). The 2021 team was made up of university professor Agustín Diez Castillo, researchers Sebastià Munar, Miguel San Claudio, Franca Cibecchini, Professor José Antonio Moya, and INA Research Associate Carlos de Juan.

The work started with photogrammetric coverage of the mound's south sector; a few tests with water dredges were

performed in order to relocate the hull explored by Lamboglia in the 1970s. Despite some confusion from old mapping positions, some frames appeared underneath a layer of sand 30 cm thick. The presence of loose sand, small pebbles and shells, and the absence of any pottery sherds, suggested that this area had been previously excavated. In other words, this was the spot for which we were looking.

The excavation limits of the 2021 mission were an area 6 x 4 m (20 x 13 ft), and during those days some dives were allocated to checking the mound (ca. 12 x 9 x 2.5 m, or 39 x 29.5 x 8 ft) which, according to Pallarés' reports, had an upper layer of bronze cauldrons. Today there is nothing left of that layer. It looked like there was either a large rock or group of stones inhabited by marine flora and fauna, but rocks of that kind were rare in that environment. The proposal that these unexpected stones were ballast seemed





Today there is nothing left of that [bronze cauldron] layer. It looked like there was either a large rock or group of stones inhabited by marine flora and fauna, but rocks of that kind were rare in that environment.

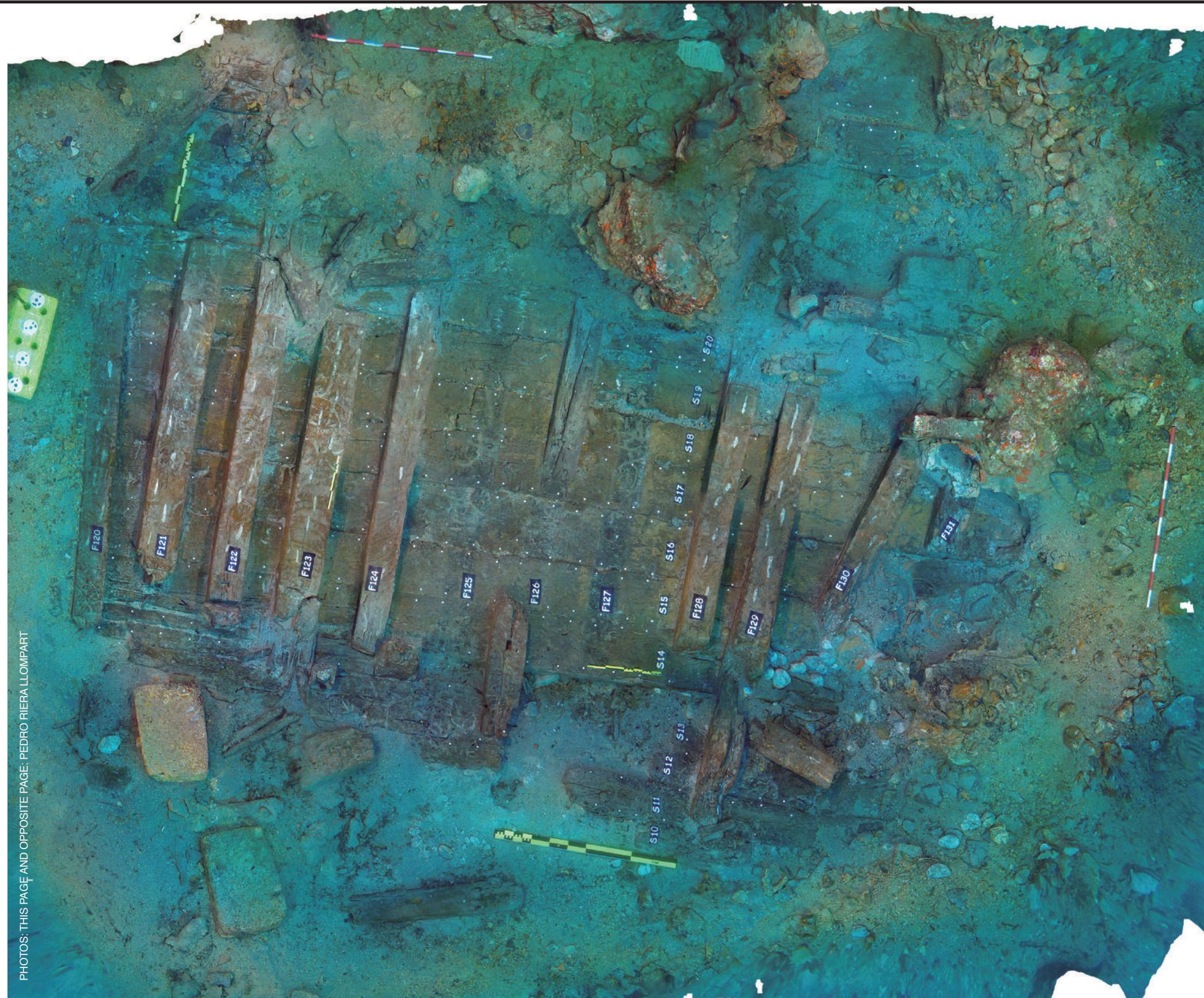
to be correct, but a more in-depth study allowed us to identify within the mound other rectangular millstones, cauldron fragments, unclassified lithic artifacts, and pottery sherds (all of which were part of the original large concretion). There appeared, furthermore, what looked like more raw minerals, still unknown, that could be the main cargo of the El Sec ship, placed in the lower part of the hold.

The excavation of the hull portion, known from the 1970s, went quickly and well, discovering some planks and attached frames. Unfortunately, we witnessed the damage brought about by looters who had dug a hole in the hull, displacing and damaging some of the strakes (numbers 11, 12, and 13) and also frames that had disappeared completely (numbers 125, 126, and 127).

The excavation of the hull followed the strakes heading west to east. Also, the southern edge of the hull revealed some

carpentry marks which deserve further study. To the north, we were able to determine that the timbers continued beneath the mound. The frames were tagged with a corresponding number, and planks and all pegs from the mortise-and-tenon joints were marked with white pins. In this sector, nine frames were excavated but, as previously mentioned, three of them became eroded and disappeared in the seabed close to the mound. Some were square in section, 16 cm sided and 16 cm molded, while others were slightly rectangular, 20 cm sided and 16 cm molded, with average frame-to-frame spacing of 20 cm. The joining technique was clenched nails without treenails, made probably in copper, but further analysis will be needed because some of the

This page: Two divers work to clear under the frames of the wreck. **Opposite page:** An orthographic image of the hull remains.



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Could we establish a clear relationship between the ship, the heterogeneous cargo, and the sailors on board? Was the El Sec ship built according to a Punic tradition? Ultimately, could the answers to these questions provide a better understanding of the Kyrenia vessel's shipbuilding tradition?

isolated nails found on the seabed looked like iron. Associated with the frames, two heads of a beam were recorded *in situ*, which allow us to propose that the portion of the hull under excavation corresponded to the side, including the deck and the bulwark; this suggests that the vessel's keel may be under the mound, which would comprise the main cargo.

As the excavation continued, we observed a change in the sediment while digging to the east. The sand was not as loose, and sherds of black-glazed pottery

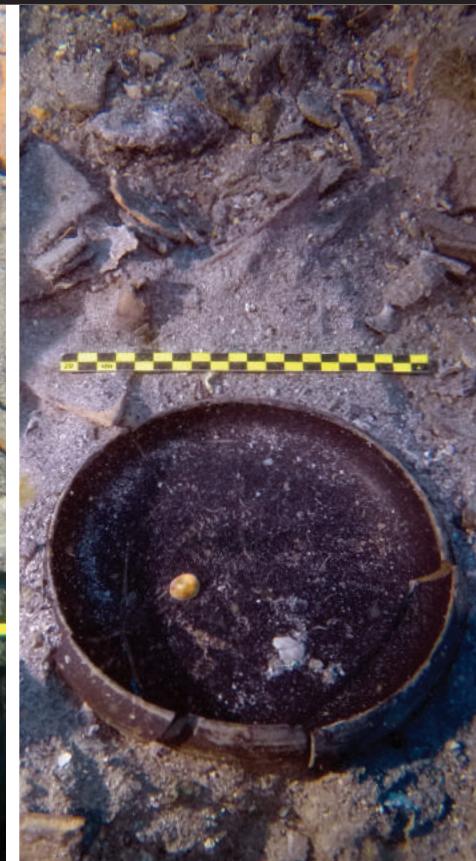
This page: Miscellaneous small finds from the wreck including a hinge, seeds, and carnelian beads. **Opposite page, from left:** A Punic pot; a Greek black-glazed dish.

started to appear in this sector (near Frame 128), some with graffiti; more relevant, the sediment was compact with little branches. A (silver?) ring and a few beads (of carnelian and glass paste?) appeared. A large sediment sample was collected. The analysis already done by Dr. Pérez Jordá (University of Valencia) showed a representative quantity of *Vitis vinifera*, *Ficus carica*, and mostly coriander within the sample. Also, there appeared some branches of vines, not just wine shoots as dunnage, but real branches which are currently under DNA study. Are we faced with archaeological evidence for the trade in plants, which were conspicuously absent from the Iberian Peninsula?

After the authorities were informed about this unexpected discovery, the project directors had a slight change in plans: this mission was no longer only a shipbuilding study without artifact recovery. When the excavation continued towards Frame 129, the suspicions of a never-excavated lower level proved correct. A group of small river stones appeared, likely all rolled together in that spot after the wrecking. More necklace beads, one of gold with a flower motif, appeared in the area, but many in different forms and sizes and quantities that suggest a trade in raw materials.

The excavation of the eastern sector between Frames 129, 130, and 131

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revealed in the upper layers many heavy small bowls and fragments of an Attic black-glazed pot with joining sherds, suggesting that these could have been stored in a now-lost wooden crate. A collection of small finds appeared, bone and other materials, a few with engraved motifs which deserve more study, and Punic pottery of sufficient quantity to exceed galley or sailors' wares, perhaps representing trade goods. Also, more millstones of different sizes, parts of bronze cauldrons, the base of an Attic krater, lamps, unknown concreted pieces, and more elements of the ship including a possible wale, a kind of stringer, and more planks.

With this incredible scenario we concluded the 2021 mission by sampling the hull for wood species identification and burying the site with sand.

FUTURE RESEARCH

The goal of the 2021 season was to record

the remains of a previously excavated, looted, and dynamited wreck while trying to get answers about the evolution of shipbuilding in the Classical period. At this time, we hope to accomplish that goal in 2022, but there are more hull remains than Lamboglia's excavation showed, and these deserve future archaeological excavation. Will we be able to reach the keel and garboard strakes underneath the mound? Could we establish a clear relationship between the ship, the heterogeneous cargo, and the sailors on board? Was the El Sec ship built according to a Punic tradition? Ultimately, could the answers to these questions provide a better understanding of the Kyrenia vessel's shipbuilding tradition?

This research is expected to continue in 2022 under the auspices of the University of Valencia; Consell Insular de Mallorca Departament de Cultura, Patrimoni i Politica Lingüística; and INA.