

THE INA QUARTERLY

BRINGING HISTORY TO LIGHT THROUGH THE SCIENCE OF SHIPWRECKS

MARZAMEMI CHURCH WRECK

THE MARBLE CARGO OF A
6TH-CENTURY SHIP IN SICILY

**2016 ANNUAL
BOARD MEETING**
HIGHLIGHTS FROM
CALIFORNIA

**THE OTTOMAN
FRIGATE ERTUĞRUL**
A DECADE OF RESEARCH
AND ANALYSIS



FALL/WINTER 2016
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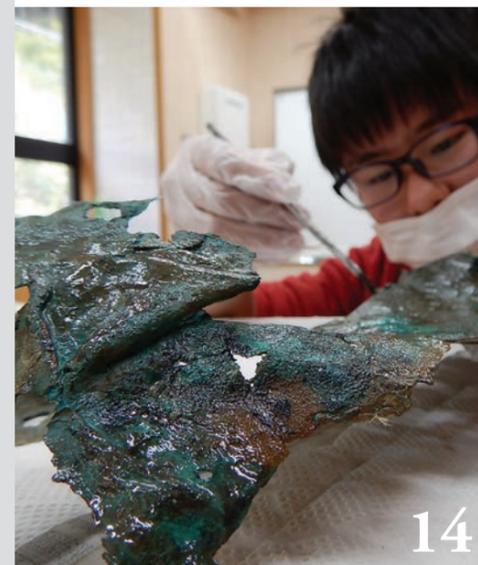
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ON THE COVER: Raffaele Amore removes a large rock from the Marzamemi "Church Wreck" during excavation. (L. McPhie)



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If you are interested in submitting an article for publication please contact the Editor at inaq@nauticalarch.org

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2017 FIELDWORK

INA's Archaeological Committee awarded \$65,000 in support of 2017 projects

NEW PROJECTS

Fourni Underwater Survey

Greece | Peter Campbell (University of Southampton) & George Koutsoflakis (Greek Ephorate)

Highbourne Cay Shipwreck Excavation

Bahamas | Nicholas Budsberg (Texas A&M University)

Kaukana Harbor Project

Italy | Massimo Capulli (University of Udine)

Ancient Side Harbor Research Project

Turkey | Hüseyin Sabri Alanyalı (Anadolu Üniversitesi) & Orkan Köyağasıoğlu (INA)

Sudjuradj Shipwreck Excavation

Croatia | José Casabán (Texas A&M University)

Turtles and Maritime Networks of Trade Project

Grand Cayman | Megan Hagseth (Texas A&M University)

Venetian Shipwrecks Archival Research

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ONGOING PROJECTS

Burgaz Harbors Research Project

Turkey | Elizabeth S. Greene (Brock University)

Cape Gelidonya Ceramic Study

Turkey | Nicolle Hirschfeld (Trinity University)

Civil War Blockade Runner *Denbigh*
USA | J. Barto Arnold (INA)

Kızılburun Late Hellenistic Shipwreck Research

Turkey | Deborah Carlson (INA/Texas A&M University)

Marzamemi Maritime Heritage Project

Italy | Justin Leidwanger (Stanford University)

Ottoman Frigate *Ertuğrul* Research

Japan | Berta Lledó (INA) & Tufan Turanlı (INA)

Sea Biscuit and Salted Beef

Bermuda | Grace Tsai (Texas A&M University)

Ships of the Theodosian Harbor at Yenikapı

Turkey | Cemal Pulak (INA/Texas A&M University), Rebecca Ingram (INA), & Michael Jones (INA)

Tektaş Burnu Classical Greek Shipwreck Research

Turkey | Deborah Carlson (INA/Texas A&M University)

Uluburun Late Bronze Age Shipwreck Research

Turkey | Cemal Pulak (INA/Texas A&M University)

Yassıada Byzantine Shipwreck Research

Turkey | Fred van Doorninck (INA)

Yukon Gold Rush Steamboat Survey

Canada | John Pollack (INA) & Robyn Woodward (INA)



— 2017 —
**CLAUDE DUTHUIT
ARCHAEOLOGY
GRANT RECIPIENT**

In 2014, INA established the **Claude Duthuit Archaeology Grant**, a \$25,000 award made annually to the underwater archaeological project that best captures the innovative, bold, and dedicated spirit of Claude Duthuit. An explorer, innovator, and pioneer of nautical archaeology, Claude was a loyal supporter of INA since its inception.

Nicholas Budsberg, now completing his Ph.D. in Texas A&M University's Nautical Archaeology Program, is the fourth recipient of this prestigious award. The funds will support the excavation of what may be the earliest known European shipwreck in the Americas, likely either an Iberian *caravel* or *nao* dated to the Age of Exploration (1492-1520).

I would like to sincerely thank the Institute of Nautical Archaeology (INA)'s Archaeology Committee and Mrs. Duthuit for supporting continued work at the Highbourne Cay Shipwreck site. INA's support will allow multiple students, scholars, professionals, and local Bahamian groups to be closely involved with the work and gain invaluable knowledge and experience.



-NICHOLAS BUDSBERG

www.nauticalarch.org/duthuit

NEWS & EVENTS

INA Additions, Support INA, Upcoming Lectures & Events

NEW FACES IN THE INA FAMILY

We are delighted to announce the election of **Krešimir Penavić** to INA's Board of Directors. Penavić graduated with honors from the University of Zagreb in Croatia with a B.S. in Mathematical Informatics and Statistics before going on to receive a Master's degree in Applied Mathematics with a focus in Computational Geometry from the State University of New York at Stony Brook. Penavić spent most of his career developing automated trading systems at Renaissance Technologies. In 2014, he joined Clai, one of Croatia's top producers of wine and olive oil. He currently directs Forexster, an online interactive platform for trading currencies.

We are also honored to welcome **Giulia Boetto** as an INA Affiliated Scholar. Boetto, who is Italian by birth, is a Senior Researcher in Maritime Archaeology at the National Centre for Scientific Research (CNRS) in France. A specialist in ancient ships, Boetto is involved in numerous different research programs in France (Toulon, Antibes, Fréjus), Italy (Fiumicino, Naples, Isola Sacra) and Croatia (Caska, Pula, Zabratajka and Kamensko). She is also interested in the interaction between ships and the harbor structures at Ostia/Portus, as it relates to her earlier work on the ships recovered during construction of Rome's Fiumicino airport.

NEW ONLINE WISH LIST
INA's new online Wish List makes it easier than ever to directly support INA researchers in the field by putting needed equipment or services directly into the hands of INA archaeologists, increasing their effectiveness in fieldwork, conservation, and post-excavation research. Since the Wish List debuted at the end of 2016, several generous donors have provided funds to purchase computer equipment, camera equipment, digitize archival film, and renovate bathrooms in the dormitory of INA's Bodrum Research Center! Interested donors may also choose to contribute a portion of an item's cost. Check out INA's online Wish List (www.nauticalarch.org/)

ina-wish-list) and help us bring history to light through the science of shipwrecks!

SHIPS THAT CHANGED HISTORY

Donny Hamilton, Professor of Nautical Archaeology at Texas A&M (TAMU), holder of the Abell Chair in Nautical Archaeology, the Yamini Family Chair in Nautical Archaeology, and former INA President, has organized a two-day symposium bringing together world-famous scholars to give public lectures on four of the most significant and celebrated shipwreck finds of the last half century: **The Uluburun ship** (1320 +/- 15 B.C.), **Mary Rose** (1545), **Vasa** (1628), and **La Belle** (1686).

The event, which is free and open to the public, will be held on April 5-6, 2017 in Texas A&M University's Reed Arena. It will be followed on April 8 by the annual Shipwreck Weekend event featuring student presentations, activities for kids, and an open house of the laboratories and facilities of the Nautical Archaeology Program, the Center for Maritime Archaeology and Conservation, and the Institute of Nautical Archaeology.



Vlady Illing, George Bass, and Claude Duthuit at Cape Gelidonya, 2010

Anna McCann Taggart was truly a giant in our field. I always regarded her book on Cosa as about the best archaeological site report, terrestrial or marine, that I ever read or taught from. - GEORGE F. BASS

For more information visit www.nauticalarch.org/ships-that-changed-history.

HIGH FIVES FOR FIVE BOATS

INA Affiliated Scholar and Nautical Archaeology Program alumnus **Justin Leidwanger** (Stanford University) is a recipient of the Whiting Foundation's 2017 Public Engagement Fellowship, awarded annually to eight humanities scholars to empower them to engage directly with the public and infuse the nuance and complexity of the humanities into our shared culture. Leidwanger's traveling multimedia exhibit, *Five Boats: Snapshots of Mediterranean Connections*, uses innovative technology to create visceral experiences of the maritime history of Sicily. *Five Boats* brings to life concise snapshots to illuminate the history of human mobility, communication, and cultural exchange, reminding us that each sea crossing – whether fortuitous or desperate – has and continues to remake cultural identities.

MEDITERRANEAN SEAFARING SUMMER COURSE

INA Affiliated Scholars **Giulia Boetto**

(National Centre for Scientific Research) and **Irena Radić-Rossi** (University of Zadar) are co-directing a one-week course June 3-10 in Dubrovnik, Croatia. This course will unite nautical archaeologists and other related specialists to discuss the full spectrum of Mediterranean seafaring. The format – a short, intense course conducted in an accelerated summer school session – affords students direct contact with professionals working and studying in the fields of maritime and nautical archaeology. This workshop will establish a creative environment for discussing the archaeological, historical and ethnographic present and future of nautical heritage in the Mediterranean.

IN MEMORIAM

The INA Family is deeply saddened to report the passing of **Anna McCann Taggart** (1933-2017), a pioneer and leader in the field of maritime archaeology. During her prestigious career she excavated, researched, and published many sites both shallow and deep, though she is perhaps best known for her award-winning 1987 book *The Roman Port and Fishery of Cosa: A Center of Ancient Trade*. McCann dived, worked, or collaborated

with such iconic figures as Jacques Cousteau, George Bass, and Bob Ballard. In 1998 she was awarded the Gold Medal of the Archaeological Institute of America for her achievements in archaeology.

We are equally sad to relay news of the passing of **Waldemar "Vlady" Illing** (1937-2017), who was a team member of George Bass' pioneering excavations at Cape Gelidonya and Yassada, Turkey. Vlady also traveled from Germany to the U.S. to assist with research that led to the construction of the first commercially built American research submersible *Asherah*, launched in 1964. In 2010, Vlady reunited with George Bass and Claude Duthuit (1931-2011) for their last dive together, on the Cape Gelidonya shipwreck, where they had all dived together 50 years earlier. Vlady's love for diving persisted even as he grew older; on the day of his passing, having recently turned 80, Vlady had just surfaced from his favorite dive spot off Cat Island in the Bahamas, where he operated a dive resort for many years. "It is still very unreal for us that our father is gone," son Florian wrote to George Bass. "But it is a relief to think he passed like he always wanted to, right after a fantastic dive."



Suzanne and Krešimir Penavić



Giulia Boetto



Anna McCann Taggart

PHOTO: OPPOSITE PAGE ©2010 SUSANNAH H. SNOWDEN/OMNIPHOTO.COM FOR INA

THE MARZAMEMI SHIPWRECK EXCAVATION

A Late Antique Church Under The Sea

BY JUSTIN LEIDWANGER AND ELIZABETH S. GREENE

The 6th century AD was marked by the ambitious rule of Justinian (527-565) and his brief renaissance of the Roman Empire. More than two centuries of division and setbacks in the west had left half of the once Mediterranean-wide empire in the hands of Vandals, Ostrogoths, and others. Dedicated efforts by Justinian and his stalwart generals brought North Africa, Dalmatia, Sicily, Italy, and the Iberian peninsula back into the fold. Driven by the vision of an empire unified not only politically, but economically and religiously, Justinian launched prolific building projects that sought to restore the symbolic features of Roman life: civic spaces, fortifications, and religious structures. Military triumphs are often short lived, and Justinian's empire soon lost much of its reconquered territory, but the mark of this flourish survives today particularly in the many 6th-century churches constructed across the Mediterranean, including the Basilica of San Vitale in Ravenna, and the magnificent centerpiece of his program, Hagia Sophia in Constantinople. These buildings feature marble from the imperial quarries at Proconnesus in the Sea of Marmara paired with a lavish assortment of decorative stones drawn from all corners of the Mediterranean world, a symbol of the breadth and power of the imperial order.

DISCOVERY AND EARLY EXPLORATION

In 1959 a local fisherman spotted marble columns and carved stone blocks about a kilometer off the coast of Marzamemi in southeast Sicily; explorations throughout the early 1960s by Gerhard Kapitän identified these as elements of religious architecture and connected the submerged remains to a lost ship from the era of Justinian. Kapitän spearheaded the recovery

of hundreds of artifacts, surveyed the site remains, and published a moving narrative of the “church wreck,” with its cargo of prefabricated components destined for assembly somewhere in North Africa.

There is obvious appeal to such a system of standardized imperial construction in the late Roman world, particularly in association with Justinian's interest in religious architecture, but this narrative may tell only part of the story. To what degree does the assemblage stand as a symbol of imperial agency in rebuilding the Late Roman west, and how much influence did the emperor hold over economic connections between the quarrying and transport of marble on the one hand, and the financing, design, and construction of churches on the other? Was the emperor the primary instigator of luxury shipments, or did massive quantities of marble travel as standard commercial goods alongside the wine, oil, and grain that fed the empire? Who was charged with their transport, and what sort of ship was entrusted with this massive and expensive stone cargo weighing more than 100 tons?

NEW INVESTIGATIONS AT MARZAMEMI

With such questions in mind, a collaborative team from Stanford University and the Sicilian Soprintendenza del Mare began

investigating the “church wreck” at Marzamemi in 2013. Through survey, excavation, and analysis, the research program has begun to answer questions about the ship's place in the complex interconnections—political, economic, and religious—of the late antique Mediterranean. At a depth of only about 8 m (25 ft), the site is marked by its collection of marble elements in a sandy depression on a seabed of reef and rock. The shallow depth means that winter storms buffet the site, wedging small artifacts deep beneath boulders, and on occasion moving even larger elements. Multi-ton rocks and reef have collapsed onto the site and now sit atop columns. Such challenging topography in a dynamic marine environment has made careful mapping through traditional and innovative systems a priority in order both to contextualize Kapitän's earlier work and to keep track of objects that appear and disappear in shifting sands between seasons.

Excavation relies on an ever-growing international team. In 2016 the core group was comprised of more than 30 student and staff archaeologists, conservators, and specialists from six countries. The shallow depth facilitates the use of water dredges to remove sand. Because each dredge can be operated with a single water pump, surface support for dive operations is relatively minor: a single extra boat ferries pumps, fuel,



Opposite page: INA Director and veteran underwater archaeologist S. Matthews inspects a column fragment wedged under a boulder.



and additional scuba tanks out to the site each morning. The warm water and depth make long dives possible. The moving and lifting of heavy marble elements presents its own set of challenges, but support from professional divers in Marzamemi, the Guardia di Finanza's diving team and naval operations in Pozzallo and Siracusa has allowed us to move these boulders off the site safely and to raise the architectural finds to the surface.

Once recovered, artifacts are brought to the Palmento di Rudini, a restored 19th-century winery situated on a bluff overlooking Marzamemi. While the front of the facility has been transformed into a local museum, conservation takes place in the rear section where plastered wine vats now store ancient objects and outdoor tanks hold marble columns undergoing desalination. Office and conservation space allows artifacts to be processed, recorded, photographed, catalogued, and studied. The winery offers numerous options for museum displays and audience engagement. Cavernous underground tunnels that once stored wine raise an intriguing prospect for future display where visitors might "immerse" themselves in archaeology as if descending into the sea.

A JUMBLE OF BUILDING BLOCKS

By sheer mass, the most abundant objects recovered from the site are stone. Kapitän recorded 28 columns, capitals, and bases prefabricated in Proconnesian marble, which he believed represented a colonnade lining the central space of a church. His discovery of panels and other distinctive elements in a striking mottled green stone—the famous *verde antico* quarried in northern Greece—pointed to the inclusion in the cargo of an ambo, the elevated platform used by the clergy for liturgical reading and speeches. Panels of light grey marble decorated with Latin crosses, ivy, and christograms would have been assembled into a chancel screen that separated the clergy and congregation. Together with a likely altar and ciborium (altar canopy), these pieces reflect the focal points of the early Christian liturgy. Yet recent excavation has revealed small but significant diversity in the architectural finds, including a larger number of capitals and more stone sources than Kapitän had realized, suggesting that the narrative behind this "church set" might not be quite so straightforward.

The new elements raise questions about not only the size and scale of the religious

PHOTOS: THIS PAGE, FROM TOP: A. ORON; S. MATTHEWS; OPPOSITE PAGE: J. LEIDWANGER



Small finds discovered in association with the stone may suggest a shipment that included not only the major building blocks for a church, but elements for its adornment as well.

building program for which this cargo was destined, but the patronage and mechanisms behind such projects. Continued excavation will surely lead to additional finds. The dynamic marine environment has resulted in the breakage and erosion of objects, making reassembly and even accurate object counts rather difficult. Despite these challenges, it is clear that many pieces were transported in a rough "quarry state," designed for finishing locally, wherever local might have been. To facilitate research on these heavy elements, a program of 3D documentation uses high-precision structured light scanning to create models of each stone find, allowing for virtual reassembly of individual ele-

Opposite page, from top: Conservator R. Stark carefully cleans a well-preserved panel fragment from the chancel screen; INA Associate Director K. Trethewey investigates a large iron concretion attached to a rock in the sand. **This page:** Conservator A. Oron prepares to move a fragment of the ambo with INA Director S. Matthews.

ments and larger architectural features.

PAINT BY NUMBERS AND MORE

Small finds discovered in association with the stone may suggest a shipment that included not only the major building blocks for a church, but elements for its adornment as well. In a jarring contrast to the blue-green depths of the underwater environment, small lumps of golden orpiment and red-orange realgar—both compounds of arsenic—stand out. Such minerals have been found on ships before, including at Serçe Limanı, where they were interpreted as depilatory agents in a grooming kit. The Roman encyclopedist Pliny the Elder (35.31) noted that these bright minerals were used as pigments to color paints, which seems more likely in this context. Chunks of amber glass and small slabs of polished marble in shades of green and white or grey may have served other decorative purposes as well.

While the cargo of architectural and decorative elements speaks for a ship-

ment of goods destined for quite lavish construction, excavation has revealed other artifacts that tell a somewhat less lofty tale, reflecting the lives of sailors and perhaps their own private commercial initiatives. Kapitän's records include some number of transport amphoras, which most have assumed to reflect the crew's provisions, loaded at the ship's point of origin and restocked as necessary along the way. But dozens of amphora lids discovered in a discrete area of the site over the past three seasons raise the possibility that these jars reflect a secondary cargo of some processed agricultural commodity like wine or oil. The number cannot compare with the 900 jars on the 7th-century Yassiada vessel, but it raises questions about how such opportunistic ventures might be explained in the context of an imperial shipment. An assortment of fragmentary cooking and dining wares in a variety of forms and fabrics might also hint at a more diverse crew than the earlier model affords.





The new elements raise questions about not only the size and scale of the religious building program for which this cargo was destined, but the patronage and mechanisms behind such projects.

FIRST CLUES TO THE SHIP

What sort of ship was needed to carry this massive cargo of building stone, decorative elements, and amphoras? In a discussion of stone as a symbol of luxury, Pliny (36.1) noted the cutting of mountains to yield marbles of a thousand colors, and the ships that transport them across the seas, but offered no clues about the construction of the actual vessels. The sole hint at specialization comes from the satiric novel of Petronius (*Satyricon* 117.12), in which a complaining servant compares himself to a beast of burden or a stone-carrying ship (*lapidaria navis*). Scholars often imagine such vessels as heavily built with reinforced hulls to accommodate the dense loads.

While the shallow dynamic environment combined with the warm waters of southeast Sicily offer little hope of extensive wood preservation—even in the 1960s, Kapitän recorded only “splinters” of wood from the site—clues to the hull are preserved in the concreted shells of hundreds of iron nails and other fasten-

ers. Multiple sizes of bolts, clenched nails, and small tacks offer preliminary evidence for a hull that was perhaps not so different in construction from any other vessel sailing the late antique Mediterranean. The ever-present threat of shipworm (*teredo navalis*) damage to timbers is visible in preserved fragments of lead sheathing with small tack holes, while wooden fragments crushed beneath columns are riddled with worm casings. Was this ship purpose-built to carry columns from imperial quarries, or was its last voyage one of many opportunistic journeys by profit-minded sailors who stopped at Proconnesus and perhaps other quarries for their final consignment?

RETHINKING THE “CHURCH WRECK”

After four field seasons at Marzamemi, it is abundantly clear that no one object or class of objects should dominate the socioeconomic interpretation of the site. The stone architectural elements, ceramic cargo, galley wares, hull fasteners, and

small finds together offer glimpses into the varied models for late antique maritime connectivity that might be read into the shipwreck assemblage. Among the most critical questions at stake are the roles of different agents—the emperor himself at Constantinople, the provincial elite, and the hungry urban masses—in driving economic enterprise. Religious construction programs featured prominently in daily life during the 6th century, serving as symbols not only of faith and architectural ingenuity, but also of wealth, patronage, and imperialism. To understand the vessel’s final journey we must look at the columns and capitals, the ambo, chancel screen and other religious furnishings together with archaeological markers of the sailors and

This page: Undergraduate student L. Hafen checks off architectural pieces as they await transport back to shore for conservation. **Opposite page, from left:** 3D recording of a capital showing the surface erosion and pitting of the marble; Photo of fragmentary chancel screen panel showing part of a christogram.

PHOTOS: THIS PAGE: J. LEIDWANGER; OPPOSITE PAGE, LEFT: L. REPOLA

their ship. The reading of the whole assemblage hinges on the smallest of details. In this way, the wreck can provide a view of past connections alongside an important reminder of the Mediterranean’s role in linking communities. Rather than serving as a boundary between modern nations, the sea - then as now - promoted trade, cultural exchange, and the mingling of ideas and identities.

ACKNOWLEDGMENTS

The Marzamemi Maritime Heritage Project would not be possible without the collaboration of many institutions and individuals, especially Sebastiano Tusa and Nicolò Bruno of the Sicilian Soprintendenza del Mare, Matteo Azzaro and Raffaele Amore of El Cachalote Diving Center in Marzamemi, and Leopoldo Repola and his team from Suor Orsola Benincasa University in Naples.

Among the key staff in 2016 were several INA regulars: Director Sheila Matthews and Associate Director Ken Trethewey. Additional thanks are owed to the Guardia di Finanza, Subsalve Inc., and Houston Scuba Academy. For the 2016 season we are grateful for financial support from the INA Archaeological Committee as well as Stanford University, Brock University, and the Loeb Classical Library Foundation.



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FOR MORE INFORMATION about the “church wreck” excavation and the Marzamemi Maritime Heritage Project, visit the Facebook page (@MarzamemiProject) and website: marzamemi.stanford.edu.

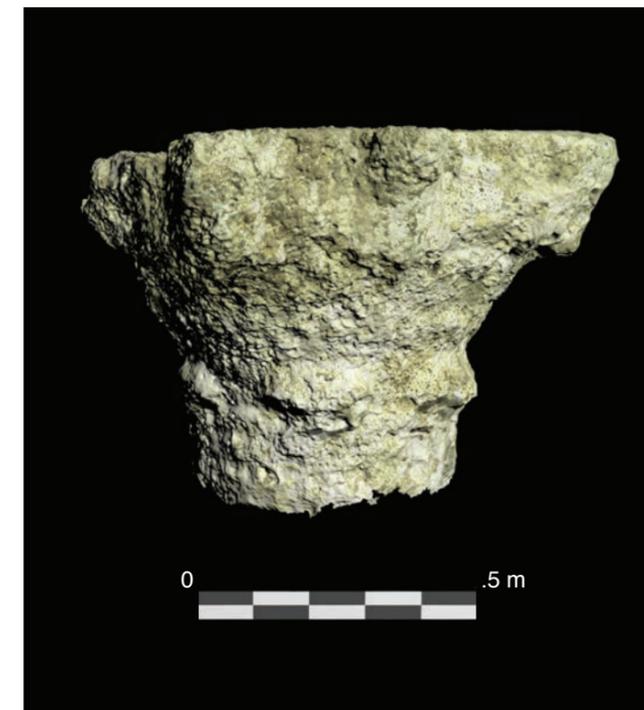
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THE FRIGATE ERTUĞRUL

An Ottoman shipwreck in Japan:
10 years of exploration and research

BY BERTA LLEDO

The loss of the Ottoman frigate *Ertuğrul* in Japan in 1890 was a disaster with lasting diplomatic consequences for Turkey. Sent out a year earlier on a goodwill mission by Sultan Abdulhamid under Admiral Osman Pasha, the frigate sank off Oshima Island, Wakayama. The tragedy remains a cornerstone of relations between the two countries, a symbol of friendship and

mutual support kept alive by the Turkish Memorial Museum and the *Ertuğrul* Monument on Oshima Island.

From the beginning, the *Ertuğrul* Project's team has been involved not only in excavation of the shipwreck but also in initiating public archaeology activities as a continuation of the voyage's mission of collaboration and cultural exchange between the two countries.

This page, clockwise from left: one of two existing photographs of *Ertuğrul* in Istanbul; The dramatic underwater landscape of the wreck site (2010); The dive boat over the wreck near the Funagora rocks (2010); Souvenirs from the wreck collected by fishermen (Oshima, 1890); Ship's copper cauldron, now in the Turkish Memorial Museum, Oshima.

Our knowledge of the voyage and crew, gathered from official documents and personal letters, is vividly illustrated by the excavated artifacts. We collaborate with private and civic organizations, in Turkey and Japan, to spread this knowledge using the archaeological materials. Since 2010, the team's archaeological research has been shared with thousands of people, thanks to the more than 600 newspaper articles and our traveling exhibits, hosted in prominent museums in both nations.

Ertuğrul was built in Istanbul between 1854 and 1864 as a three-masted, 76 meter-long wooden frigate, which sailed immediately to Portsmouth, England to have a steam engine installed. She was part of the Ottoman imperial fleet. Unfortunately, during the reign of Abdulh-

amid II (1876-1909), due to his fear of rebellion, most Ottoman naval vessels, including *Ertuğrul*, sat unused at anchor along Istanbul's famous Golden Horn. Once chosen for the diplomatic trip to Japan, *Ertuğrul* had to endure extensive repairs that many doubted were executed properly. Against all odds, the frigate left Istanbul in the summer of 1889 to visit Emperor Meiji to formalize trade treaties and other issues of mutual interest.

Ertuğrul was also a floating school on which newly graduated officers were trained in international sailing by visiting India, China and, ultimately, Japan. Sultan Abdulhamid II, religious leader of the Muslim world, wanted to show the Muslim populations in European territories that the Ottoman Empire remained

a powerful protector; *Ertuğrul's* voyage became a public relations trip for the Sultan's pan-Islamic politics.

During the voyage, the frigate and her 609 crew endured complications that forced them to spend time in the Suez Canal and Singapore, either undergoing repairs or awaiting better weather. *Ertuğrul* finally reached the harbor of Yokohama, Japan, 11 months after her departure. Presents were exchanged between Rear Admiral Ali Osman Pasha and the Japanese Emperor Meiji, along with intentions of further communication, although no formal treaty was signed. In short, the diplomatic goals of the mission had not yet achieved solid results when the frigate had to return, but before they could depart the crew were struck by



cholera and had to be quarantined in the harbor.

Finally, on September 15, 1890, *Ertuğrul* left Yokohama heading south. Although warned about bad weather, the officers and crew were eager to offset the delay. Orders from Istanbul were clear: sails should be used as much as possible to save the cost of coal, the ship should avoid danger, and make several politically strategic stops on the return voyage. Unfortunately, the crew never had the chance to fulfill these orders because *Ertuğrul* sank during a tremendous typhoon the very next day off the coast of Oshima Island, near the town of Kushimoto. Of the 609 crew members, only 69 reached a nearby lighthouse, after climbing up the steep cliffs, mostly thanks to the help of islanders.

Ertuğrul's last hours are described in several letters and official reports sent to Istanbul by the 69 survivors. The following is an extract of one sent on September 30th from Kobe, Japan, where the writer was recovering from his injuries:

"... In very short time the storm was stronger, the speed of the ship fell and she hit the rocks called Kii, one mile from the

lighthouse, and the steam engine and boiler of the ship exploded.

After the ship hit the rocks, everybody was in panic and it was impossible to order the crew who were climbing the shrouds, getting into life boats, praying, and crying. At the time I was fearlessly standing on the quarter deck and was only staring at the masts in order to save my life while they were breaking off. The strong waves were pulling the ship against the rocks again and again. At first the mainmast fell while the foremast was lying on the port side of the ship. About 180 to 200 people were killed by these masts. At last, the mizzen mast fell. This caused

more casualties than the previous two masts. Life boats with davits were pulled under the vessel by the rushing waves. At that time nobody on board could bear the cries of the men. I was then on deck near Osman Pasha, who was crying. In five minutes, the ship was completely shattered and her parts dispersed on the sea. Osman Pasha and I climbed onto a broken mast.

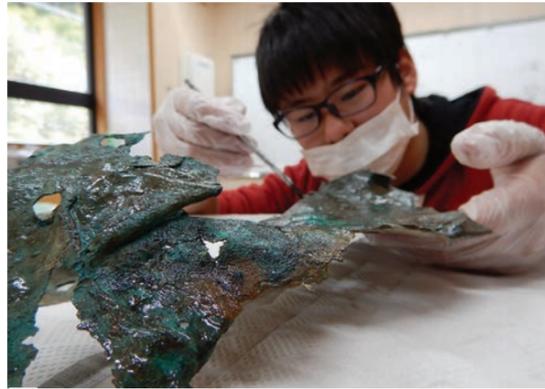
While we were trying to approach the coast, Pasha was killed by a piece of timber in a blow to the head. In order to go forward I struggled with the waves but they dragged me under. I was praying hopelessly. After I sank in the sea three or four times, I managed to climb onto a piece of wood again. Then, thank God, I reached land safely after a struggle of 4 or 5 hours with the sea. There was no way to reach the lighthouse and there were steep rocks everywhere. It was all too difficult. I spent that night wearing only shorts and a shirt. On the one hand it was so rainy and cold that it seemed impossible not to be frozen to death, and on the other hand, it was very hard to hear the painful cries of the injured.

Following daybreak, all of us survivors walked around with the hope of finding a way to the lighthouse. At last we found a goat path and reached it. The keepers tried to cure the wounded as much as possible and served us food. We explained how the vessel sank and how we saved our lives. However,

Sultan Abdulhamid II, religious leader of the Muslim world, wanted to show the Muslim populations in European territories that the Ottoman Empire remained a powerful protector; *Ertuğrul's* voyage became a public relations trip for the Sultan's pan-Islamic politics.



Opposite page: Divers raise a concretion using a lift bag (2010). This page: The author B. Lledo with a glass paperweight, made by Baccarat in Paris, and a decorative Japanese lead tray.



there was nobody that knew English. So, we could not understand each other.

When the Japanese Imperial House received news of the accident, they took immediate action to help the survivors and inform the Ottoman Empire. Under a common agreement, a professional salvage operation took place during the months that followed. Organized teams, including divers, recovered everything worth salvaging from the ship. According to Japanese records, most of the cannons, machine guns, rifles, and even swords and bayonets were returned to Istanbul. The inventory of returned objects includes money, documents, arms, binoculars, and personal items such as a ring, a decorative silver elephant, and a flower pot. The cost of the salvage and shipment was offset by the sale of anything from the ship not worth sending back. The location was cleaned of everything of value, especially metal. The hull had been destroyed, and anything that was left must have been subsequently lost during salvage operations.

Today, *Ertuğrul's* final resting place is called Funagora Rocks, about 200 meters from Oshima Island at a depth of 13 to 15 meters. On a short visit to the site at the end of 2004, Tufan Turanlı, at that time director of INA's Bodrum Research Center, was overwhelmed by the presence of a memorial dedicated to the *Ertuğrul* victims and a museum commemorating the tragedy in Japan.

In 2007, a sidescan sonar and magnetometer survey yielded very few results. Nevertheless, a visual survey by local Japanese and INA divers revealed that narrow channels on the seabed between the Funagora rocks contained large concentrations of ammunition, small copper objects, some wood, and a large copper cauldron. Identification of what appeared to be part of the hull by researchers from Tel Aviv University was reassuring: Turkish Oak (*Quercus cerris*), confirming that this was the location of a Turkish shipwreck.

During the initial 2007 season in Kushimoto, we had the privilege of being joined by INA Founders George and Ann

Bass, INA Directors Claude and Barbara Duthuit, INA President Donny Hamilton, INA Vice President Cemal Pulak, as well as Selcuk Kolay, an expert in steam engines and then member of TINA.

Despite the discouraging results of the survey, with no large parts of the ship visible anywhere, when we started excavating in 2008, we discovered a rich layer of artifacts beneath the gravel. In four excavation campaigns, although we uncovered only a small part of the archaeological site, which spreads along a narrow area more than 70 m long, we have registered over 8,000 objects.

A good example of our approach is provided by the ship's copper sheathing. During the excavation we recovered only one, fairly complete, measuring 60 cm x 35 cm (and another 265 fragments). A rough estimate based on this example indicates that the 76 meter-long ship would have required more than 3700 plates like the one we excavated, but most of them are missing, reflecting the extent of the 1890 salvage. The copper, which does not appear on any of the shipping lists, was presumably sold for scrap.

When she left Yokohama for a long trip back to Turkey, *Ertuğrul* carried about 450 tons of coal (its maximum capacity), funds for the trip (at least 5000 Turkish Liras in cash), and the presents received from the Japanese Emperor.

Some of the coal may have been salvaged, if not for its market value, perhaps for use by local families. Still, coal is everywhere on the site, making some areas all black.

The cash carried by the commander was obtained in Japan, as documented in a bank transfer from Istanbul. 2,067 coins were recovered in the salvage of 1890, and sent back to the Ottoman government.

This page: A Tokai University student volunteers in the *Ertuğrul* Research Center, Kushimoto (2016); Porcelain cup from Yokohama; Objects from the exhibit include a buckle and several coins. **Opposite page:** The *Ertuğrul* exhibit at the Istanbul Naval Museum in 2015.



Each of the many finds from the *Ertuğrul* shipwreck opens a window... a poignant reminder that no matter how fragmentary the material remains of an archaeological site, they all bring history to life.

These were mostly Japanese mints of different types (gold, silver, copper), found in boxes, purses, or loose on the seabed. Our excavation between 2007 and 2012 recovered 13 coins, including a Gold British Sovereign, three silver Crown Yen, a Hong Kong silver 10-cent piece, three Japanese 5 sen coins, and 5 unidentified coins.

Among the presents or souvenirs of Japanese origin, the most common are various types of Japanese porcelain. Although now fragmentary, some are unique. They remind us that Yokohama was one of few Japanese ports then open to international trade. At the end of the 19th century, modernist Europe welcomed Japanese *orientalia*, and the Japanese embraced the opportunity to enter into a market dominated by chinaware, which was cheaper because it was mass produced. Where Japanese porcelain exports could be counted in the thousands, Chinese examples were

counted in the millions.

The porcelain finds from *Ertuğrul* belong to a type ornamented exclusively for export to the West, and not sold in Japan at all. In fact, the Yokohama porcelain found in association with *Ertuğrul* is the first of its kind found in Japanese territory. One example of this westward trade in *orientalia* is the mustache cup in the *Ertuğrul* assemblage: fragments of a specially-designed tea cup and saucer developed in England and decorated with Mount Fuji. Mustache cups were used by society gentlemen to protect their waxed mustaches from the tea's hot steam.

Each of the many finds from the *Ertuğrul* shipwreck opens a window onto fascinating facts. Our team recovered fragments of musical instruments played on board by the 20-member band, illustrating accounts that indicate the band played for visitors in harbors. We

also recovered decorated Japanese lead trays, flower pots in green glaze, blue decorated Imari ware, glass, personal items such as belt buckles, buttons, shoes, perfume bottles, and a glass paper weight. They serve as a poignant reminder that no matter how fragmentary the material remains of an archaeological site, they all bring history to life.

ACKNOWLEDGMENTS

The Ertuğrul project has been funded by generous donations and support from YapiKredi Emeklilik, David Koch, Kushimoto Municipality, Wakayama prefectural government, Osaka Maritime Museum, Wakayama Prefectural Museum and Kushimoto Marine Park. We also thank INA for logistic support and the use of its multifaceted research center in Bodrum, where we were able to use the portable XRF scanner for analyzing artifacts.



FOLLOW INA ONLINE: For more information about the excavation of this site, visit the *Ertuğrul* Ottoman Frigate Excavation project page on our website!



BERTA LLEDO
Archaeological Director,
Ertuğrul Project
INA Research Associate

INTRUSIVE ROMAN AND BYZANTINE CERAMICS FROM KIZILBURUN

How extraneous artifacts
spanning five centuries
provide evidence of
Mediterranean trade

BY PHIL L. WATSON

PHOTO: ©INA D. FREY

A 1993 survey conducted by INA revealed five shipwrecks off the Turkish Aegean coast, near Kızılburun (“Crimson Cape”). Two of the wrecks date approximately to the 6th century A.D.; two are medieval; and the fifth, the “column wreck,” dates from the first century B.C. This fifth wreck, excavated between 2005 and 2011 by an INA team directed by Deborah Carlson and Donny Hamilton, was transporting a cargo of eight monumental marble column drums and a Doric capital, architectural blocks, and various ceramics.

During five seasons of excavation on the column wreck, a number of intrusive ceramics were recovered that clearly postdate the column wreck. This report is a short summary of my 2017 Master’s thesis at Texas A&M University, in which I place the intrusive ceramics in broader contexts—of trade networks, historical events, and settlement patterns. By contextualizing the intrusive ceramics recovered at Kızılburun, this otherwise non-diagnostic material can regain some informative power, providing evidence for early Byzantine trade mechanisms.

Transport amphorae, finewares, and coarsewares comprise the intrusive material. Many of the transport amphorae, particularly those located on or near the wreck itself, belong to a type known as Late Roman 1 (LR 1). Early LR 1 styles appear in the 3rd century A.D., but the style seen at Kızılburun dates to the 6th century, the pinnacle of this amphora type’s production. This type is found across the Mediterranean, as well as in the Black Sea, the Levant, and North Africa. Production centers have been identified in southern Turkey, Cyprus, and possibly Roman Syria.

Other intrusive transport amphorae from Kızılburun include the globular Late Roman 2 (LR 2) type, also seen in large quantities on the 7th-century shipwreck at Yassıada; the Late Roman 5 or “bag-shaped” type, produced in the Levant; and the small, tapering spatheion (meaning “sword”) type. All transport amphorae recovered appear to date to the early Byzantine period, ranging from the late 5th through the 7th century A.D. These ceramics—particularly the transport amphorae—tell of agriculturally rich regions taxed to support activ-

ity, primarily of a military nature, along unstable frontiers as what was once a unified Mediterranean fell to external and internal pressures.

Only a small number of coarseware ceramics other than amphorae were found. These consist of diverse forms, ranging from a Roman baking pan with a parallel in the Athenian Agora dating to ca. 250 A.D., to a mostly intact amphoriskos from the early Byzantine period. The most intriguing fineware object is a small intact moldmade Knidian reliefware amphoriskos, a form popular from A.D. 70 to 250, featuring two Dionysian scenes.

Being intrusive material, it is difficult to connect these ceramics to any one shipwreck, and the possibility that they were jettisoned or otherwise discarded from a passing ship further complicates contextualization. However, the two 6th-

Opposite (and left): Murat Tilev illuminates a miniature reliefware amphora, likely made at Knidos and found 90 feet from the Kızılburun column wreck in 2006.



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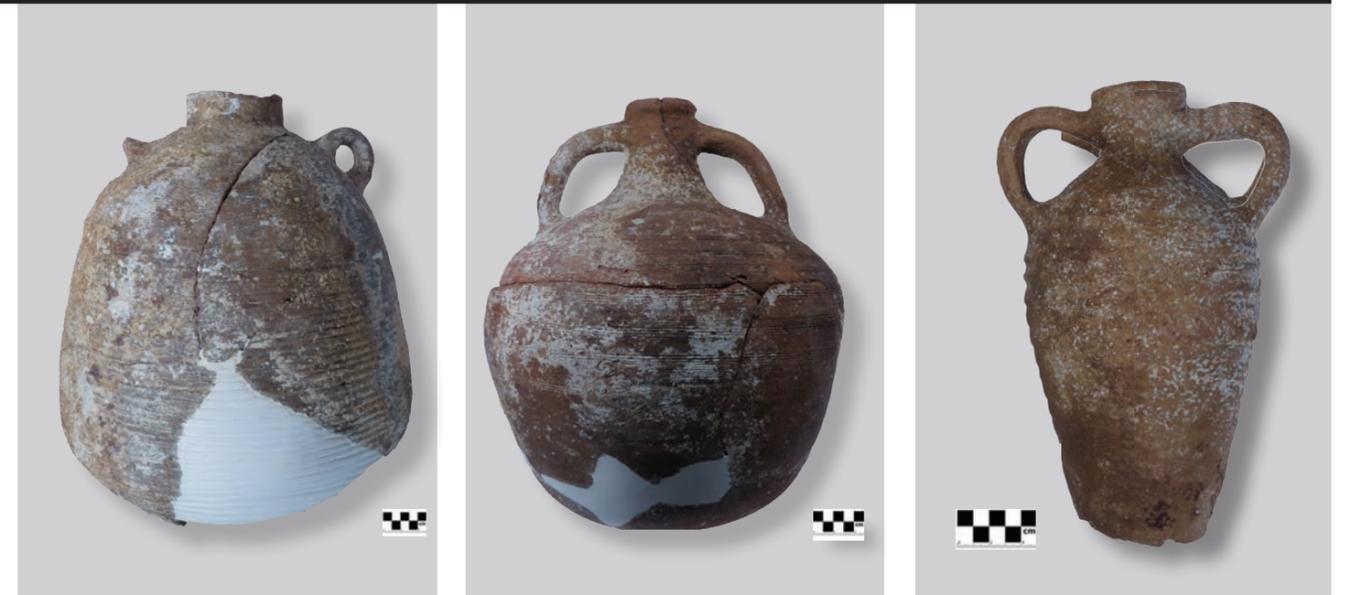
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century wrecks in the area may be helpful. These two wrecks lie on the southern slope of Kızılburun, upslope and east of the column wreck. One is evidenced only by a wide scatter of LR 2 amphorae along the slope; the other, roughly 100 m east of the column wreck, carried a cargo of 6th-century stone architectural elements, perhaps for a church. The latter wreck is a possible parallel for the well-known Marzamemi "church wreck" in Sicily (pages 8-13 in this issue). At Kızılburun, movement of early Byzantine material downslope and to the west, due either to the wrecking events or to disturbance by modern fishing nets, likely accounts for the relocation of at least some of these 6th-century ceramics.

Recent archaeological scholarship suggests LR 1 and LR 2 amphorae were used for Byzantine military supply. In A.D. 536, the Byzantine emperor Justinian mandated that Aegean provinces supply necessities to Danubian settlements and forts. The high number of Aegean (especially LR 2) amphorae in Bulgaria

and Romania points to the importance of these amphorae within Byzantine redistributive networks. Perhaps the ships that were carrying the material recovered during excavation of the column wreck were heading northward, toward Constantinople and then the Black Sea.

A counterpoint: individual amphorae move relatively quickly and easily, especially compared to cargoes of marble. The Marzamemi "church wreck" carried LR 1 and LR 2 amphorae on its way south, possibly toward North Africa, where a number of such ceramics have been found. The possible parallel wreck at Kızılburun may have been similarly engaged. The Kızılburun column wreck also carried a number of southeastern Aegean ceramics, though its final voyage took it from Proconnesus Island in the Sea of Marmara south toward the Temple of Apollo at Claros, on the Turkish Aegean coast. Therefore, though some of the material recovered was produced to the south of the wreck site, this does not necessarily indicate that the ship was



...two regions - the Balkans and North Africa - can be tentatively proposed as possible long-distance destinations for the two early Byzantine ships that came to grief at Kızılburun.

traveling northward.

Prevailing northerly winds (e.g., meltemis) from landmasses in the Aegean and Asia Minor favor southbound travel, while currents running in a counter-clockwise direction facilitate travel in a northerly direction. To travel north, ship captains could hug the coast, frequently engaging in "port-hopping," or cabotage. The reasons for this relate as much to finance as to navigation, as the Roman state provided subsidies for state business travel, but ship owners could carry (and sell) private cargoes simultaneously. In the 6th century A.D., fortunes could be made by taking advantage of state subsidies to engage in long-distance trade while trading additional cargo at various

ports en route to the final destination.

Ports in Asia Minor, such as Phaselis, Myra, Ephesus, and Smyrna, would have been lucrative ports near Kızılburun in the early Byzantine period, along with the island of Chios.

At this point, two regions - the Balkans and North Africa - can be tentatively proposed as possible long-distance destinations for the two early Byzantine ships that came to grief at Kızılburun. Both of these regions were vital to the early Byzantine Empire, the first as a military frontier, the second as an agricultural supplier. Excavations in both regions have revealed large quantities of the same ceramics recovered at Kızılburun. Ships with similar cargoes plied the seas in both directions in the 6th century A.D.

Roughly 600 years of trade are encapsulated in this impromptu ceramic assemblage. The catalyst of the trade represented may be that of Byzantine imperial military supply to the Balkans. The assemblage may represent, along with the shipwreck of architectural elements, a 6th-century building program, possibly in North Africa. My forthcoming thesis focuses on the historical developments that may have prompted this trade, the trade routes involved, and further contextualization of these ceramics.



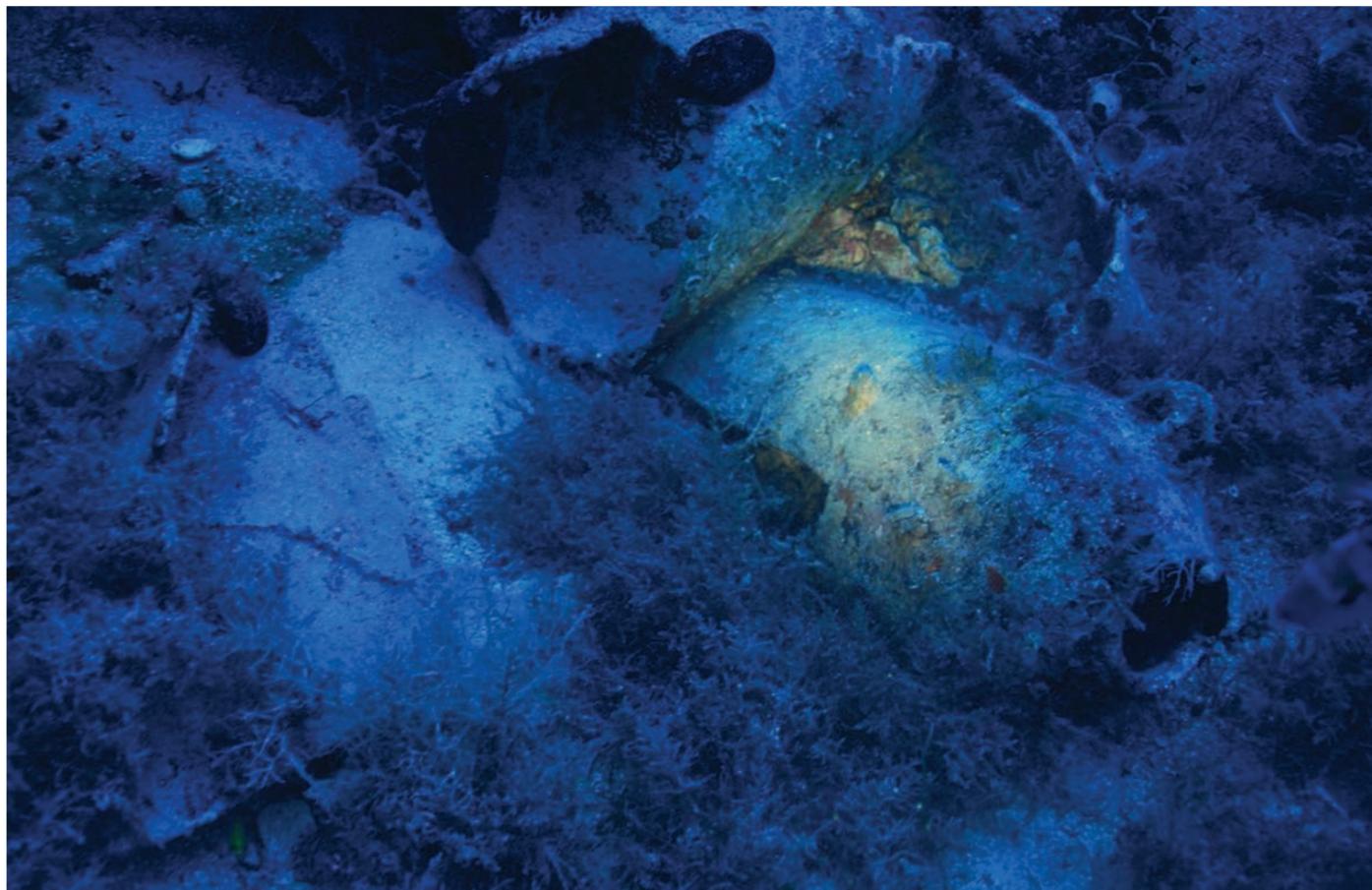
PHIL L. WATSON
M.S. Graduate
Texas A&M University

PHOTO: OPPOSITE PAGE: D. CARLSON

This page, from left: LR5 amphora; LR2 amphora recovered near the column wreck; Early Byzantine amphoriskos recovered from an area roughly 20 m west of the wreck. **Opposite page:** LR4 amphorae *in situ* not far from the column wreck (2011).



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2016 INA BOARD MEETING

Directors and Officers gather in Santa Monica, CA to celebrate another outstanding year

Every autumn, INA's Board of Directors comes together to learn about the results of ongoing INA surveys, excavations, research, and publications. The 2016 meeting took place in Santa Monica, California, and the warm weather brought near record attendance. Highlights of our three-day meeting included a guided tour of the J. Paul Getty Villa in Malibu, a White House luncheon under the

wings of Air Force One at the stunning Ronald Reagan Presidential Library, a keynote lecture by John Papadopoulos of the Cotsen Institute at UCLA, and six fantastic speakers delivering illustrated project presentations at the lovely Ocean Institute in Dana Point. Our sincere thanks to all those who attended and continue to make INA a vibrant and influential leader in the field of nautical archaeology!



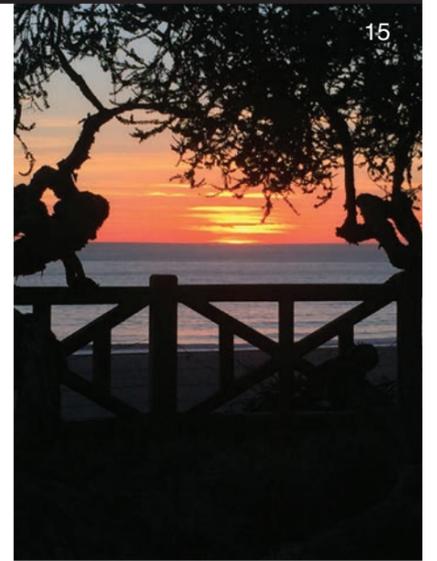
Meeting attendees gather under the glorious 80-foot-tall Moreton Bay fig tree at the Fairmont Miramar in Santa Monica



1. Raynette Boshell and Debbie Carlson
2. J Paul Getty Museum in Malibu 3. Lunch at the Salt Creek Grille in Dana Point
4. Sheila Matthews and Orkan Köyağasıoğlu
5. Sea lions of Dana Point 6. Suzanne Penavic, Tuba Ekmeççi, Sheila Matthews, Barbara Duthuit, Juliette Timsit



2016 BOARD MEETING HIGHLIGHTS



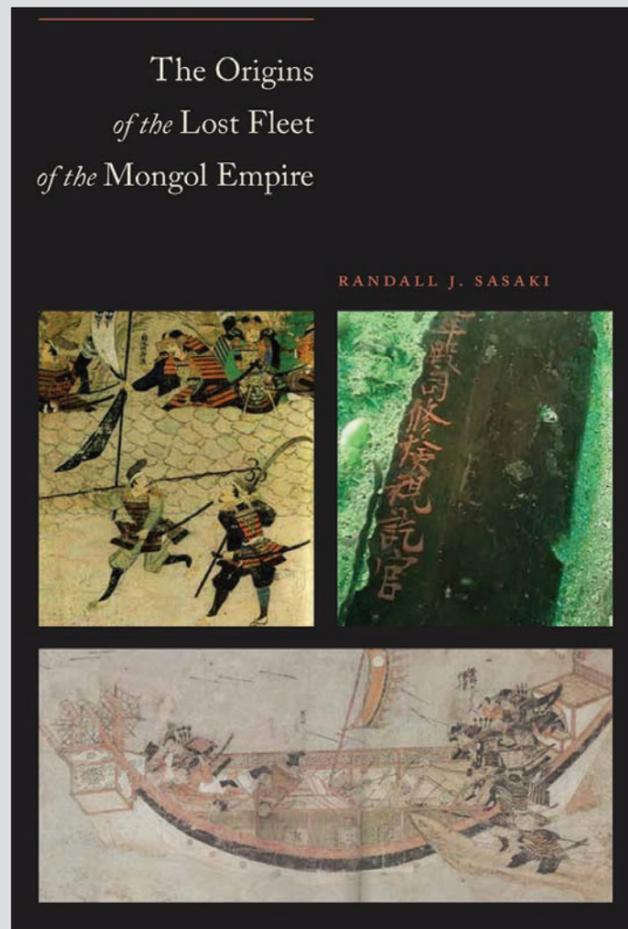
7. John De Lapa and Raynette Boshell 8. Mibs Matthews, Betsey Boshell Todd, and Tuba Ekmekçi 9. Lucy Darden and Oğuz Aydemir 10. Danielle Feeney (center) with daughters Juliette Timsit (left) and Caroleen Feeney (right) 11. Debbie Carlson next to a section of the Berlin Wall at the Reagan Library 12. Allan Campbell takes the helm of *Spirit of Dana Point*

13. Robyn Woodward practices her Nancy Reagan impersonation 14. Charlie Steinmetz celebrates his own historic election 15. Santa Monica sunset 16. Lucija Aydemir, Suzanne Penavić, Krešimir Penavić, Tuba Ekmekçi, and Oğuz Aydemir 17. Seppi Lehner and Judy Sturgis 18. INA Chairman Bob Walker welcomes the board

REVIEW

THE ORIGINS OF THE LOST FLEET OF THE MONGOL EMPIRE

By Randall J. Sasaki



TEXAS A&M UNIVERSITY PRESS.

ISBN 978-1-62349-194-9.

REVIEWED BY KELSEY ROONEY

Randall Sasaki tackles a difficult task in *The Origins of the Lost Fleet of the Mongol Empire*: supplementing a critical moment of history, mythologized in Japanese society, with archaeological evidence. He

marries the events of the failed Mongol invasion of Japan in 1281 CE with finds from underwater excavations at Takashima Island, which yielded numerous fragments of ships' timbers. Using these disarticulated hull remains, Sasaki investigates the types of ships utilized during the second Mongol invasion of Japan and their origins. He questions and assesses what historical documents have told us about Mongol naval organization to understand the Mongols' broader military strategy. Focusing on this, he asks larger historical questions – namely, why did this invasion fail?

The retreat of the Mongols has been a contested topic in East Asian scholarship. The Mongol empire was among the largest, and its soldiers were equipped with advanced weaponry and innovative wartime strategies. The Mongol navy was organized to defeat the navy of the Southern Song Dynasty, which was then incorporated into the Empire in 1279 CE. After a brief incursion into Japanese territory, the Mongols retreated to the ships for reasons that are still unclear. Scholars disagree, variously maintaining that a storm was approaching; that the Japanese army pushed back the invaders; that they were out of ammunition; or that it was a successful raid rather than a repelled invasion.

Using a combined naval force from the recently conquered Southern Song Empire and allied Korea, Khubilai Khan, the Mongol emperor, launched another invasion into Japan in 1281 CE. Coordination failure left the Eastern Army from Korea waiting for a month with insufficient supplies and deteriorating ships. After the fleets reunited, they advanced to Takashi-

ma Island in Imari Bay and conquered the island. They were then promptly struck by a typhoon.

After providing the reader with an overview of the archaeology and history of the Mongol empire, Sasaki turns his attention to the metal, ceramic, stone, and organic artifacts found at Takashima Island, focusing heavily on what he has identified as hull remains. These hull remains are fragmentary, and out of the 502 timbers analyzed, 90% are smaller than a meter and almost 50% are smaller than 25 cm in length. The crux of his analysis, the timber catalogue, is an overview of the challenges of defining disarticulated timbers as ship components. Sasaki explains how the timbers were classified and separated into hull planking, thin planks, railings, etc. He gives statistical information for each group and describes irregularities or oddities.

Due to the differences in ship construction in the Korean and Chinese cultures, Sasaki also draws from archaeological and

ethnographic evidence of shipbuilding traditions. He pays great attention to the hull shapes developed by each culture, and the role those shapes may have played in implementing a large-scale invasion. He supports this with species analysis of the timbers, sourcing the wood types to the regions where they were commonly used in shipbuilding. Chapter 8 is a detailed chapter on joinery analysis, which further draws on archaeological and ethnographic evidence. He sorts the hull timbers that have evidence of iron nails, common in the Chinese dynasties, from those that have wood-fashioned joints in the Korean tradition. While very few timbers were found with intact joins, this chapter demonstrates the information that can be revealed by nuanced examination.

Sasaki faces numerous logistical prob-

lems in his analysis, including the fragmentary nature of the wooden remains, the disturbed nature of the site, and the uncertain number of ships sunk within the area. Despite this challenge, or perhaps due to it, he provides descriptive and thorough explanations for the creation of each timber category. The clarity of Sasaki's methodology is a strength, especially since further work on these artifacts is currently ongoing.

[The author] uses the preliminary analysis of the numerous timber remains from Takashima Island to provide an important contribution to East Asian nautical archaeology.

may shed light on or provide contradictory evidence to some aspects of this research. The fragility of the wooden elements has another unfortunate downside; the archaeological photos are inconsistent in that they are often not taken on a uniform background, have varying means of showing scale, and are hard to interpret without consulting the text. In contrast, the artifact and timber drawings are highly detailed and useful tools to show archaeological examples of joinery methods.

Throughout the narrative, Sasaki forms a cohesive story of his interaction with these artifacts. The author's concern with where and how these ships were constructed persists throughout the book, drawing the reader's attention to the importance of this excavation. He broadens these themes in the penultimate chapter, Chapter 9, where

he asks a few specific questions for further research. Panning back from the hull remains analysis, Sasaki poses questions regarding Japanese defenses and the integrity of their ships' construction. While providing historical sources to demonstrate how Japanese defenses were constructed, he uses archaeological evidence to suggest scenarios in which the Japanese may have utilized fire to repel the oncoming forces. Citing evidence of possible hull repairs and other excavated artifacts, including a lacquered wooden tag bearing an inscription regarding repairs, he counters the notion that the invading Mongol ships were poorly and quickly built. While these theories inform critical moments in East Asian history, the answers are hypothetical and based on a preliminary study of artifacts undergoing conservation.

In the concluding chapter, Sasaki reiterates the chapters as they occurred, rather than crosslinking the evidence to provide more substantive answers. While the last pages review the information that his research yielded, a more complex synthesis of the information from historical research and the hull analysis would have left readers with a more complete picture.

These minor critiques aside, *The Lost Fleet of the Mongol Empire* uses the preliminary analysis of the numerous timber remains from Takashima Island to provide an important contribution to East Asian nautical archaeology. The author is cognizant of the limitations the pre-conservation status of the timbers places on his analysis, reminding the reader that the research is still currently underway. Building on a strong first chapter, Sasaki is clear about his methodology and the decisions he made. His historical analysis is well-referenced and thorough, as are his comparisons to archaeological examples of shipbuilding. While the photographs are not ideal, the drawings are a great resource to understanding the nuances in joinery. This book can be used both as a reference for maritime scholars and an entry-point for those curious about medieval East Asian seafaring.



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TRIBUTE

LLEWELLEN “LEW” O. WARD III (1930-2016)

A legendary oil man, INA director Lew Ward was founder and chairman of Ward Petroleum Corporation in Enid, Oklahoma. He was not only a highly

successful entrepreneur and committed INA director, but a delight to be with. I was thrilled when he and his wife Myra visited INA's Uluburun excavation in

Turkey. My visits with them in Enid were as memorable. Once, when Lew had me speak to the local Rotary Club, he also took me a short distance away to a drilling rig, where we were met by his son, Bill, who had also visited our projects in Turkey. Now they gave me the opportunity to experience actual drilling. Although for four decades I've seen myriad working pumps nodding slowly in Texas oilfields, being on a rig, close to the roughnecks, was as fascinating to me as I hope was their experience of the diving operation 165 feet below *Virazon* at Uluburun. That evening Lew and I talked about everything from the controversial search for oil below Siljan Crater in Sweden to his offer to arrange for me to meet Enid's operatic soprano Leona Mitchell, who sang for almost twenty years at the Metropolitan Opera. On another evening in Enid Lew asked me to show slides of INA projects to a number of out-of-town colleagues, hoping to encourage some to share his interest in INA. It was the most unusual ending for any after-dinner talk I've ever given when an announcement of approaching severe weather led to an aborted lecture and instant mad dashes by Lew's guests to their nearby private jets to beat the imminent storm!

Lew hoped that his daughter, California vintner Casidy, might follow him on the INA board of directors. I had met Casidy when she, too, came to experience our work in Turkey and am delighted to learn that she was elected to the board at last year's annual meeting. Bill is now CEO of Ward Petroleum. We are glad that Ward family traditions continue, as we greatly miss Lew's friendship, wisdom, and modesty.

-GEORGE F. BASS



Lew Ward and I met for the first time in the late '60s when I was working at Pepperdine University in Los Angeles, California. Lew received his B.S. Degree in Petroleum Engineering from the University of Oklahoma and served in many programs in his state and through the nation in the oil and gas industry. He was serving on the President's Council and very interested in "The Freedom Forum," which brought speakers from across the nation to the campus.

In 1968 I began working at Texas A&M University and our friendship was renewed when I started helping Dr. Bass with INA fundraising. Lew was introduced to Dr. Bass by Jack Kelley, one of INA's founding members from Tulsa, Oklahoma. Lew made at least three trips to Turkey and was a very generous supporter. It is an honor to have his daughter Casidy now serving on the INA Board to carry on the legacy of her father.

He was a wonderfully positive man to be around and always seemed to bring out the best in all he met. I will always remember his sense of humor. Lew Ward always made a difference in anything he was involved in.

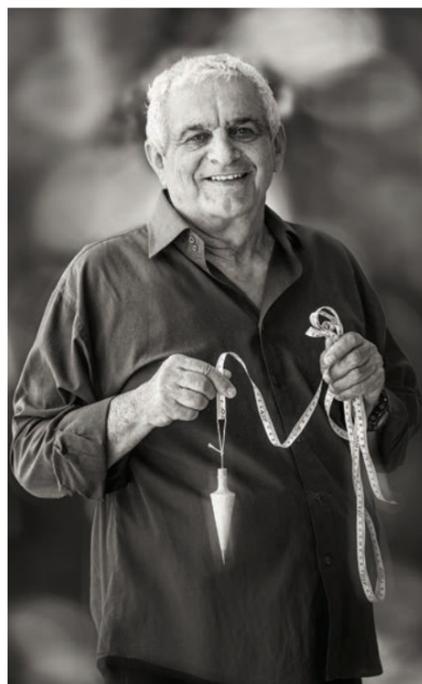
-ROBERT WALKER



From left: Lew at the joint meeting of the INA Board and TAMU Board of Regents in 1986; (L to R) Lew, John Baird, and Myra Ward at 1998 INA Board Meeting at the Mansion on Turtle Creek; Garry Weber and Lew in 1998.

TRIBUTE

YAAKOV "YAK" KAHANOV (1947-2016)



Yaakov "Yak" Kahanov died on December 12th, 2016, at the age of 70.

A consummate scholar, Yak came to the academic world late in life, becoming Israel's first 'home-grown' ship reconstructor. An avid sailor, he began his nautical archaeological career in 1986 at the University of Haifa's Department of Maritime Civilizations, which served as his academic home for the remainder of his life, eventually going on to serve as its Head (2010-2011). Yak earned his Ph.D., *summa cum laude*, in 1999, becoming a Full Professor there in 2014.

Yak is perhaps best known to the archaeological community for his numerous and diverse contributions to our understanding of Mediterranean hull construction in ancient and me-

dieval times. He 'cut his teeth' during the excavation of the fifth-century BC Ma'agan Mikhael shipwreck, arriving as a participant in the second season of excavation, in 1989. Yak went on to conserve and reconstruct the hull, which remains to date the only ancient vessel from the Israeli Mediterranean coast to have been completely excavated, conserved and reconstructed. The hull is on permanent exhibition in an annex of the Hecht Museum on the Haifa University campus. With the late Dr. Elisha Linder, Yak co-edited the shipwreck's two volume final excavation report, entitled *The Ma'agan Mikhael Ship: The Recovery of a 2400-Year-Old Merchantman* (published in 2003 and 2004), much of which Yak also authored. The conservation, research and rapid publication of the meticulous final report were exemplary.

It was my pleasure to collaborate with Yak in the field during our work at Tantura Lagoon (1994-1996), a joint INA-University of Haifa survey in which he served as co-director. Our work revealed seven wrecks (Tantura A-G), all but one dating from late antiquity to the medieval period. Yak took on the responsibility of recording the ships' hulls. During that project we studied two shipwrecks in situ and examined small sections of the others: following the survey, Yak returned with his students and excavated several of the Tantura shipwrecks, using them as Ph.D. dissertation topics for his students, thus producing a new generation of Israeli hull reconstructors. Yak had a special relationship with the late Richard 'Dick' Steffy, a TAMU Professor, whom Yak considered a mentor.

During the final years of his life, beginning in 2014, Yak's research focused on

the construction of a 1:1 replica of the Ma'agan Mikhael shipwreck built with pegged mortise-and-tenon construction. The replica saw water under its hull in the last months prior to Yak's passing.

If I had to describe Yak in one word it would be *tachles*, a Yiddish term that has entered the Israeli slang lexicon with the meaning of 'getting to the essence,' or 'getting to the point.' Yak always focused on the result and moving forward. He also had a wry sense of humor: one of our last discussions revolved around the tongue-in-cheek question of whether to christen the Ma'agan Mikhael replica with an amphora.

Yak is survived by his wife, a sister, three children and nine grandchildren. We will miss him.

-SHELLEY WACHSMANN



Yak shows Dick Steffy a frame from the Tantura A shipwreck

PHOTOS: THIS PAGE, FROM LEFT, A. EFREMOV; S. WACHSMANN; OPPOSITE PAGE: A. EFREMOV



Yak Kahanov sails the Ma'agan Mikhael replica, launched in December 2016

I first heard of Yak in 1986 from Richard "Dick" Steffy upon his return from Israel after studying the newly excavated 1st century B.C./A.D. Kinneret Boat at the invitation of Shelley Wachsmann. I was a student in the Nautical Archaeology Program at Texas A&M University and very keen on ancient ship construction. Dick divulged the unusual construction details he had observed on the boat along with several excellent volunteer students he had met there. Yak had stood out for Dick as being curious, sharp, and asking many questions on ship building.

Circumstances, however, made it possible for us to meet in 1993 during the 5th TROPIS Conference. We discussed ancient ship construction, a rather lonely subject with only a few followers back then, but one both of us were passionate about. That was the beginning of our long friendship spanning more than two decades, faring tenaciously on the

waters of distance and time. Henceforth, I looked forward to seeing Yak at international meetings to catch up with his shipwreck excavations in Israel and to discuss his research on ship construction. I was most touched when he showed up in Bodrum, just to find out how I was doing after a traffic accident I had had several months earlier; a true friend he was indeed!

Yak joined the excavation team of the Ma'agan Mikhael shipwreck in 1989, and thereafter spent a good portion of his nautical life reconstructing this remarkably well-preserved 2400-year-old ship. His doctoral dissertation investigated the ship's unusual method of hull assembly, and the exemplary two-volume final publication of the shipwreck he co-authored with Elisha Linder is one of the most detailed, thorough, and extensive ancient shipwreck reports ever written. Now fully assembled and on public display for all to

see, the Ma'agan Mikhael ship stands as a monument to Yak's passion, dedication, knowledge, and love for this vessel.

The final stage of any ship reconstructor's dream is recreating a full-scale replica of the ship. Yak and one of his students had already embarked on this final stage of hull study. I very much looked forward to its completion in order to examine specific construction details but much more so to sail on it with Yak to observe its handling and performance. Sadly, Yak passed away before we could sail the wine dark sea on his beloved ship, but not before witnessing its successful launching to great fanfare.

The ever so curious, enthusiastic, and passionate researcher, Yak Kahanov was the quintessential student of ancient ship construction. My eyes will continue to scour conference halls in search of Yak; I shall miss him dearly.

-CEMAL PULAK



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