The INA quarterly

MAGAZINE OF THE INSTITUTE OF NAUTICAL ARCHAEOLOGY

Where in the World?

INA PROJECTS AROUND THE GLOBE

Celebrating 50 Years

A RETURN TO CAPE GELIDONYA

Farewell to INA

PRESIDENT AND CEO JIM DELGADO BIDS ADIEU

SUMMER - FALL 2010 • Volume 37 • No. 2 & 3

A Letter from the President

The Summer of 2010 was a busy time as INA's partners, affiliated faculty, graduate students, staff, volunteers and research associates took to the field to survey, excavate, conserve, analyze and research. From the archives of Venice to the dark depths of the North Atlantic, from the subarctic wilderness of the Yukon to the sands of Egypt, from the Mediterranean coasts of Albania, Spain and Turkey to the rice paddies of Vietnam, at INA's Bodrum Research Center and in the vaults of the Bodrum Museum of Underwater Archaeology... discovery, science and learning took place on a global scale that also spanned a millennial view of human history.

In College Station, the staff worked behind the scenes to help make all of that happen, while at the offices of Texas A&M University Press, scholarship of projects past was edited, laid out and prepared for publication as part of the *Ed Rachal Series* in Nautical Archaeology, while new manuscripts arrived for scholarly peer review.

We ended our 2010 fiscal year on August 31 with a balanced budget and dramatic growth in fundraising, with support from INA's directors doubling that of 2009 with over a half-million dollars in contributions. Our endowment, battered by the economy of 2009, has been steadily recovering thanks to the astute management of G. Donald Geddes III. We cut administrative overhead and added more resources to the practice of archaeology and to project support in this past fiscal year, and so, to paraphrase Frank Sinatra, "it was a very good year."

This is my last letter to you as President of INA. When I was hired by the board to be an *agent of change* in 2006, I was handed a series of tasks that have now been completed. Despite the financial difficulties of 2009 that hit INA and many other non-profits as well as businesses and households, we are in sound financial shape. We have a strategic plan, a diverse and strong group of friends and partners, new alliances that build on strengths and augment our ability to achieve our mission, and outreach and the ability to share what we do with a larger audience than ever before. I am proud of what we as the INA family have been able to achieve, both administratively, but particularly in the field. INA's core mission is archaeology, and as the pages of this issue of *The INA Quarterly* and the just-released *INA Annual* demonstrate, a great deal of good archaeology is underway and has been accomplished.

At the INA Annual Meeting, which was held in Newport, Rhode Island this year, the Board elected Dr. Deborah Carlson INA's next President. Until Dr. Carlson can begin her new duties sometime in the Spring of 2011 as she transitions from a fulltime faculty member at Texas A&M to INA, Dr. Robert Walker of Texas A&M University will serve as Interim President. I want to thank Dr. Walker for agreeing to step in during the transition, and I offer my sincere congratulations to Dr. Carlson. Both Bob and Debbie believe in nautical archaeology, on doing it right, and in the need for a strong academic program in nautical archaeology and the need for an organization like INA. I joined INA because I also believe in those things, and I remain firmly committed to them and to seeing both A&M and INA remain strong and having a proud future. A call to public service has dictated a change in my employment after five years with INA, but I remain a firm friend and am ready to assist whenever and wherever if asked.

Thank you for being part of INA.

Jim Delgado
President & CEO

Ann and Jim, seen here at the 2009 INA Annual Meeting will now call Washington, DC 'home.'

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The Institute of Nautical Archaeology is a non-profit organization whose mission is to continue the search for the history of civilization by fostering excellence in underwater archaeology.

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Lectures

Mark your calendars as an AIA Lecture event may be coming to a venue near you...

The Uluburun Ship and Late Bronze Age Maritime Trade in the Eastern Mediterranean

April 14, 2011 in Houston, TX (venue TBA)
Lecturer: **Cemal Pulak**

Dr. Pulak is the the latest presenter in the *Bass Lecture Series*, honoring one of INA's founders, Dr. George Bass. Pulak is an Associate Professor with the Nautical Archaeology Program at Texas A&M University, and since 1994 has been the Vice President and Director of Research in Turkey of the Institute of Nautical Archaeology. He is Director of excavations of the Yenikapi Byzantine Shipwrecks at Istanbul, the Sultan's Galley (Kadirga) Project at the Istanbul Naval Museum, and the Uluburun Bronze Age Shipwreck Research and Conservation, Turkey.

Cemal Pulak

Building the Pharaoh's Ship: Sail Like an Egyptian

February 7, 2011 in Providence, RI at Brown University
March 24, 2011 in Houston TX
April 7, 2011 in Bozeman
Lecturer: **Cheryl Ward**

Based on the study of ancient Egyptian ship timbers found in pharonic harbors on the Red Sea coast, a 20-m long, 30-ton ship was built in 2008, and then sailed on the Red Sea the following year. Cheryl Ward will discuss the design, building, and rigging of the reconstruction *Min of the Desert* featured in a recent NOVA program. Though long questioned, ancient Egyptian seagoing technology proved to be superior, as the ship was a stable, swift and seaworthy vessel.
Ward is Director of the Center for Archaeology and Anthropology, and Associate Professor and Marine Archaeologist with Coastal Carolina University's Department of History.

Cheryl Ward

The Tektaş Burnu Shipwreck: Shedding New Light on Classical Ionia

February 10, 2011 in Los Angeles
February 11, 2011 in San Diego
February 13, 2011 in Denver
February 14, 2011 in Boulder
April 07, 2011 in Charleston
Lecturer: **Deborah Carlson**

As the Assistant Director of the Tektaş Burnu excavation, Carlson will explore what was revealed by the remains of a small Greek merchant ship–the only Classical shipwreck ever to be fully excavated in Aegean waters–that sank between 440 and 425 B.C. Finds include a pair of marble ophthalmoi (the only eyes ever found in association with an ancient vessel), and the earliest securely dated examples of lead-filled anchor stocks. Dr. Carlson is the first female appointed to Texas A & M's nautical archaeology faculty. She has served as the Archaeological Director of Institute of Nautical Archaeology's excavation of an early first century B.C. Roman shipwreck at Kızılburun, Turkey and was the 2003/2004 recipient of the AIA's Olivia James Traveling Fellowship. Professor Carlson is AIA Joukowsky Lecturer for 2010/2011.

Deborah Carlson

INAreview

REPORT FROM THE CHAIRMAN

As I write this, INA's 2010 Annual General Meeting will soon be underway, making it an opportune time to reflect on the organization's many accomplishments.

As many of you are aware Jim Delgado will be leaving INA to pursue a new opportunity as director of the National Oceanic and Atmospheric Administration's (NOAA) Maritime Heritage Program, and I would like to thank him for his guidance and contributions to our organization, and wish him all the very best in this new adventure.

As President of INA, Jim was charged by the Board with being an "agent of change" for the organization, and there have indeed been new directions and opportunities laid out before us. His contract responsibilities identified establishing strategic and operating goals, the development of projects, fundraising (including the task of raising $500,000 of additional funding resources), as well as marketing & communications, as the key aspects of his mandate.

Actions taken and goals achieved (2006 - 2010)
INA completed its first-ever strategic plan, thanks to the leadership of then Chairman Peter Way, the professional guidance of Andrew Sansom, and the participation of then President Donny Hamilton, as well as faculty, board, staff and our Founder, Dr. Bass. Through this process a "new direction" for INA was developed, and is in the process of implementation. It was adopted by the Board and reaffirmed by the full board at the 2009 annual meeting. This strategic plan, which will be monitored and adjusted with the board's approval in accord with market developments and emergent critical needs, ensures a viable future for INA.

INA has been "re-branded" with an outlook and partnerships that are now truly global in scope and which reach beyond Texas A&M University. INA has a formal memorandum of affiliation with Flinders University in Australia, and East Carolina University in the U.S., and has pending agreements under review by Dokuz Eylul University (Turkey), Coastal Carolina University (U.S.), Södertörns University (Sweden), and the Tokyo University of Marine Science and Technology (Japan). INA has a pending conveñio or agreement with the Republic of Panama for cooperation and authority to survey and excavate in that country awaiting final approval and signature with the Instituto Nacional de la Cultura, and a similar agreement is being completed for signature in December with the Republic of Vietnam's Institute of Archaeology for work on the Kublai Khan site in Quang Yen.

INA has a renewed and strengthened relationship with the National Geographic Society. Between 2007 and 2010 more than $200,000 has been granted to INA by the society. In the first feature to appear in its magazine in several years, NGS will be covering the Phoenician wreck found at Bajo de la Campana in an article to be published in 2011. The *A.J. Goddard* wreck project has also enjoyed NGS support with an article also planned. National Geographic News has covered this particular INA project in the Yukon with a strong online presence, receiving more than a million web "hits." The society also spent the summer capturing images for a feature on the Gelidonya 50th Anniversary Re-Excavation project that was written about by Fabio Esteban Amador last month.

Thanks to director Claude Duthuit's support, and with the Board's approval, INA completed an audit and legal review of its Turkish operations in 2008. Following that review, Bodrum Research Center operations were adjusted to adhere to Turkey's current legal and political structure. The new structure allows the BRC to operate more efficiently and at a reduced annual cost. At the same time, an action plan for resolving a multi-year backlog of conservation and publication at the BRC was prepared and implemented. This lengthy and essential process provided more than a clean bill of health for the BRC; it identified a number of deficiencies that were corrected, and focused the BRC on a core mission of conservation, analysis and publication until such time as those backlogs are eradicated. Work on this is going well and is ahead of schedule.

Our president has played an active role in raising more than $2.1 million for INA and for nautical archaeology at Texas A&M University through direct cash contributions, sponsorships, grants, and in-kind support. There are two pending planned giving pledges of $1,000,000 each to the Texas A&M University Foundation that will manage the funds for INA.

Several new directors have been recruited and play significant roles on the Board with governance, project support, and financial support.

The INA budget was reduced in response to the global economic downturn of 2009. Working with the executive committee, including Jim, and Treasurer Clyde Smith, a new system for tracking and following up on director pledges of support has been implemented resulting in Director contributions for this fiscal year totaling more than $600,000—double that of contributions in 2006.

The office in College Station was reorganized and refocused with staff and organizational independence from Texas A&M University's Department of Anthropology.

INA's long-serving and loyal Chasity Hedlund runs the office, and recent hire Tamara Hebert is the lead office associate. There is also a student worker who assists in clerical functions and as the receptionist.

Again working with Jim and Clyde, and with the approval of the executive committee, in 2010 INA has outsourced its accounting to our former auditors, Thompson, Derrig & Craig, a firm that has worked with INA for many years. With the funds freed up by this change, we are now able to focus more resources on archaeology, project support, development and fundraising, membership, and marketing. Frederick Hanselmann has been hired as INA's field archaeologist and dive safety officer, by just such a budget re-allocation of dollars.

A prioritized publication plan for INA research was prepared and adopted in cooperation with the Nautical Archaeology Program and Texas A&M University Press. All top priorities are in support of Texas A&M faculty projects and include Tektaş Burnu, Pabuç Burnu, Kızılburun, and Mombasa. Additional publications in the plan include past projects by INA members and research associates such as the Yorktown Shipwreck project and the Kyrenia wreck.

The *INA Quarterly* was successfully relaunched in a new format. It focuses on INA news and initiatives and is primarily used as a marketing, membership, and development tool. The new *INA Annual* was launched in 2008, with a second and improved volume published in 2009. The third volume is in production and will be available at the upcoming annual meeting. It is focused on scholarship, featuring academic content and expanded articles by INA scholars, both faculty and students.

Outreach and communication continue to be enhanced through: our new and substantial website, features in Archaeology Magazine (which in 2009 noted a number of INA projects as the year's top archaeological discoveries) and other publications, a new INA YouTube channel, and a Facebook page. These tools have allowed us to share our collective work, and our approach to nautical archaeology with both existing and new audiences and all have expanded INA's presence and reputation worldwide.

Our website has an extensive archive of past and present scholarship and academic content, and continues to be expanded and updated. The site received more than 50,000 visits in its first year and over the past month there were a record 5750 visits.

INA's public profile has increased through both new media, and ongoing initiatives and opportunities such as the Bajo de la Campana, Yukon, and other projects. Most recently Jim's participation in the 2010 *Titanic* mapping expedition has increased our profile internationally. INA's leading role in this multi-million dollar expedition comes at no cost to our organization beyond Jim's time and efforts on the project.

Our annual giving and endowment campaigns have been successfully refocused in response to economic conditions and lead to the afore mentioned planned giving pledges.

INA's relationships with the RPM Nautical Foundation and ProMare, two affiliated partners founded by INA directors, have been strengthened. INA is an active participant in RPM's work in Albania, Jim sits on the RPM Board of Directors, and both RPM and ProMare have provided financial and logistical support for selected INA projects.

Throughout his tenure, Jim has also taken an active role in the support and mentoring of students at Texas A&M. From reviewing grant applications and articles for publication, to editing M.A. theses and manuscripts, advising on employment possibilities, writing letters of recommendation and creating opportunities for students to be published in *The INA Quarterly*.

Ongoing communications with Texas A&M University officials have also been a priority including meetings with Presidents Gates and Murano, Vice President and INA director Dr. Robert Walker, Dean Charles Johnson, and acting Dean Ben Crouch. While in the field in the summer of 2010, Jim corresponded and sent a welcome letter and package of INA materials to the newly arrived Dean of Liberal Arts with a request for a meeting when school reconvenes next month. He also attended a number of meetings with Texas A&M University Press, a key and significant relationship for publishing INA scholarship.

Most recently Jim developed a succession plan for his own departure from the organization, suggesting four potential successors for the position of president to ensure a smooth transition to new leadership for this organization.

As INA continues to focus on the vision and mission to which we are all committed, it is the Board's engagement in the process and the work we undertake together that will ensure the ongoing success and development of this organization.

— Dr. Charles P. Garrison

Where in the World...

2010 was a busy year for INA project directors and their teams out in the field, in conservation and research labs, libraries and museums throughout 16 countries around the globe including the United States, Canada, Egypt, Bermuda, Turkey, Spain, Sweden, Italy, and Vietnam. Twenty-five projects were underway in conjunction with Texas A&M University's Nautical Archaeology Program, Flinders University's Maritime Archaeolgy Program, and East Carolina University.

These projects would not be possible without the generous support of donors, sponsors, partners, benefactors and friends who have supported the fieldwork, excavation and analysis represented here.

For more information check out our project pages at...
www.inadiscover.com

SRI LANKA

Excavation of an Ancient Ship at Godavaya

INA Research Associate: **Deborah Carlson**, PhD
(Assistant Professor, Sara W. and George O. Yamini Fellow, Texas A&M University)

Deborah Carlson, in collaboration with archaeologists Osmund Bopearachchi, Director of Research at the Centre National du Recherche Scientifique (CNRS) in Paris and Sanjyot Mehendale of the Department of Near Eastern Studies at the University of California at Berkeley, are seeking funding to pursue the excavation of a shipwrecked cargo off the southern coast of Sri Lanka near the ancient ruins at Godavaya. The wreck was identified when local fishermen discovered a stone bench inscribed with Hindu symbols; brief exploration of the site in 2008 by the Department of Archaeology's Maritime Research Unit in Galle revealed additional artifacts including cobalt glass ingots probably of Egyptian or Mesopotamian origin and ceramic vessels of locally-produced Black and Red ware. The finds suggest that the wreck may date as early as the 3rd or 2nd century B.C., which would make the Godavaya shipwreck the oldest ever found in the Indian Ocean, though only complete excavation of the site will make it possible to establish this with certainty.

Terrestrial excavations were initiated at Godavaya in 1994 under the auspices of the German Archaeological Institute and the University of Bonn. Those excavations succeeded in locating the remains of the ancient harbor, and revealed a customs office, quarry, temple, and monastery dating from the 2nd century A.D. Smaller finds such as imported Persian and Chinese pottery, Roman coins, beads, bangles and stamped bricks suggest that Godavaya served as an important transshipment point for eastern goods like silk, spices, and pottery destined for western markets. Numerous historical sources indicate that ancient merchants relied on the monsoon winds to travel between Egypt and India. The trade between Rome and India peaked in the early Roman Empire, although ancient seafarers had already been making the crossing for several centuries. Thus, excavation of the Godavaya shipwreck could yield the kind of direct archaeological evidence that will significantly enhance our understanding of Sri Lanka's role in the ancient maritime trade of the Indian Ocean.

ABOVE
Glass ingots discovered during a survey of the Godavaya site, in Sri Lanka

EGYPT

Harbors of the Delta: Ancient Thmuis

INA Research Associate: **Veronica Morriss**

Last year, when I finished excavation at Tell Timai I feared that construction would destroy our potential Greco-Roman harbor. In mid-May when I arrived from the busy streets of Cairo, I found a bulldozer ripping through the ancient city, but our site remained intact. Archaeology in Egypt is a constant race against time. I had six weeks to locate the harbor and track the former waterways that maintained ancient Thmuis before leaving it, once again, to the fate of development.

To search for ancient waterways, we took sediment cores along the narrow streets of the modern village, at the doorsteps of the local houses and in the nearby agricultural fields which stood barren for most of the season. The Egyptians were eager to aid us, providing access to their fields, bundles of fresh cucumbers and endless cups of steaming sugared tea. Our cores revealed the remains of an impressive canal below the modern village. It was more than 100 meters in breadth, a major waterway that once flowed along the western limits of Thmuis to join the nearby Mendesian branch of the Nile.

Meanwhile, geophysical surveyor Tomasz Herbich and his trusty magnetometer helped reveal an intricate network of buildings and streets beneath the hard salt-ridden soil of the Eastern Nile Delta. Working with the University of Hawaii, excavation revealed a westward expansion of settlement between the third and first centuries BC. Fineware, perfume bottles and half a dozen Bes and Tawaret fertility figurines were intermingled with crudely manufactured wares, perhaps suggesting that the area was later reused as a dump. The magnetometer also revealed a large rectangular basin abutting these mudbrick remains. Excavation unearthed a possible sloping shoreline reminiscent of harbor deposits, exposing a jumble of amphora fragments, pottery, exotic stone, oysters and Mediterranean shells, limestone chips, fish and animal bone, and even a decapitated human skull. Could this be our harbor?

Further excavation and magnetometer survey may explain these tantalizing clues. For now, we can only hope that our site will remain intact until our next field season.

ABOVE
Veronica and Khufti discuss mudbrick wall at the site.

Ongoing construction work on the Tell Tumai.

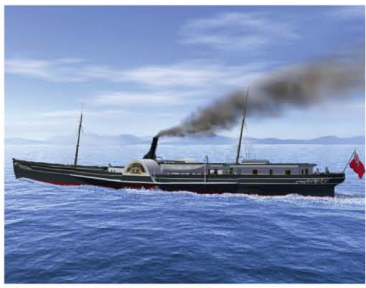
USA

Blockade Runner *Denbigh* Project

INA Research Associate: **J. Barto Arnold**

The *Denbigh* Project made progress in the research and write-up phase during 2009-2010. Two research trips to the SE Region of the National Archives yielded the exciting records regarding a salvage case the ship was involved in and hundreds of customs invoices concerning the merchandise private citizens shipped into Mobile from Havana during the Civil War. The government blockade runner cargoes are well known but the private cargoes are an untapped field. They have great interest for what they reveal about daily life. The admiralty suit includes the first and only document concerning doings aboard ship described in the officers' own words. Both of these sources are shipwreck treasure more precious than emeralds and gold. Texas A&M Press is reviewing the book on prize law and *Denbigh,* that includes the salvage case just mentioned.

BELOW
The British Paddle Steamer *Denbigh*
ILLUSTRATION **Andrew W. Hall**



INA projects

EGYPT

World's oldest seagoing ships: New Details from Ancient Timbers

INA Research Associate: **Cheryl Ward**, PhD (Director, Center for Archaeology and Anthropology, Coastal Carolina University)

The search for new information about ancient Egyptian seagoing ships and the administrative and logistical support for expeditions to Punt continued this year with INA's support at the pharaonic harbour at Mersa/Wadi Gawasis on Egypt's Red Sea coast. The excavation, directed by Kathryn Bard (Boston University) and Rodolfo Fattovich (University of Naples), includes a small team devoted to maritime material. This year, Howard Wellman (former INA-Egypt conservator at the Alexandria laboratory) joined Mohamed Abd el-Maguid of the Supreme Council of Antiquities, Chiara Zazzaro of the Institute of Arab and Islamic Studies at Exeter University, and Cheryl Ward (Coastal Carolina University). In addition to identifying new ship components, we documented a massive reworked section of a hull plank and investigated a deposit of ship timbers outside the entrance to Gallery 6, gathering data that substantially expand our understanding of ancient Egyptian seafaring capabilities and ship size.

State-sponsored expeditions brought thousands of men from Koptos (modern Quft) to Gawasis to stage voyages that sought out exotic materials and animals from Punt, or God's Land, for about 500 years, beginning in the late Old Kingdom (Bard and Fattovich 2007) and continuing into the 16th century BCE. Planning for such expeditions must have begun years in advance, as cedar of Lebanon is the primary timber used in the hulls and had to be imported from the northeastern Mediterranean. Shipwrights built the ships at yards on the Nile, then disassembled them and transported each plank 90 miles across the Eastern Desert to Gawasis, where crews re-assembled the ships for a round-trip voyage of at least 1500 miles to the southern Red Sea. At the end of the voyage, workers disassembled the ships once again, discarding thousands of scraps of cedar spongy with shipworm, along with ship timbers recycled into architectural elements and other maritime artefacts (Ward and Zazzaro 2010).

The seagoing ships relied on techniques documented for both ceremonial and working craft on the Nile (Ward 2000), and planks from smaller vessels provide the oldest example of construction techniques more frequently associated with the Indian Ocean and Persian Gulf (Ward and Zazzaro 2010). The ship planks at Gawasis share features that indicate tremendous standardization in dimension and proportion, with a few notable exceptions that we were able to explore this year in our intensive study of plank segment T64 and a deposit of steering equipment outside Gallery 6 (Ward et al 2010).

Plank segment T64 is a classic example of a recycled ship timber. Embedded in mudplaster along the side of the gallery, T64 represents less than a third of the plank it came from, but by plotting out stains, shipworm damage, and fastening patterns, we reconstructed its original position at the waterline at one end of the hull. Even more

BELOW
Steering oar blades
4m in length

(Bottom)
Cheryl Ward examining ship plank in gallery entrance.

exciting to those of us who keep track of such things, the tenons that held planks together proved to be about 45 cm long, roughly an ancient cubit, and nearly twice as long as other tenons recorded at the site. The plank had to be at least 55 cm wide and it is half a cubit (22.5 cm) thick, making it the largest hull timber recorded to date.

As intriguing to us was discovering that a deposit of timbers aligned with the still-blocked entry to Gallery 6 consisted almost entirely of steering gear. Two steering oar blades carved from Faidherbia albida, a local Red Sea and Eastern Desert species, are about twice the size of the first pair discovered at the site in 2005. The new examples are 3.6 and 4 m long. The steering oar I designed for *Min of the Desert*, a reconstruction based on evidence from Gawasis (INAQ Fall 2009), replicates the first set of blades exactly and reproduces the proportions of steering oars from the Punt ship scene at Hatshepsut's funerary temple, and it is only 5 m long. The unavoidable conclusion is that the new pair of blades represents an oar at least 8.5 m long, a size appropriate to a ship 30 meters long, rather than the 20 m calculated for the reliefs and reflected in *Min*'s construction.

INA support for this project made it possible to identify super-sized Egyptian ship remains in some of the youngest deposits at Gawasis. The stratigraphic context indicates a very late Middle Kingdom date, but further work will refine the date. Where we work next will depend on the stability and coherence of the fossil coral reef, but meanwhile, research in the model shop and laboratory is providing new ideas about ancient ships, to date, the world's oldest remains of seafaring hulls.

LEFT
Mohamed Abd el-Maguid, Cheryl Ward and Chiara Zazzaro provide the scale for a 41-inch-long segment of an ancient ship's plank, 10" thick and about 22" wide.

BAHAMAS

Harbour Island Survey Project

INA Research Associate: **Heather Hatch**

This August, I had the opportunity to return to beautiful Harbour Island for my second season of INA assisted fieldwork. My dissertation centers around trying to understand the island, occupied by British colonists since the mid-to-late seventeenth century, as a maritime community. The people of the Bahamas have historically been described as a seafaring people, relying on the resources of the island and surrounding waters to support themselves. Maritime trade with other Atlantic British colonies has been an essential part of their survival since the colony was founded, along with fishing, turtling, and marine salvage (known locally as wrecking).

Although I am more broadly interested in questions of maritime life, the Harbour Island Archaeological Survey uses a traditional terrestrial approach to learn about the relationship of the islanders to their environment. In 2009, I was able to sample four properties, and the season 2010 brings the total sites investigated up to nine. Most of these are associated with houses dating to at least the mid 19th century. The goal of this research is to amass a sample of artifacts from around the island that represent the sorts of material goods the inhabitants had, and to use these samples to try and understand to what extent their maritime habits affected their lifestyle. The remains recovered this season were very typical of most British colonial sites, with an unsurprising concentration of fish remains. Amidst the hundreds of sherds of 18th and 19th century pottery, glass and bits of rusty nails, a few artifacts of note stood out, including a hot iron, a complete but fragmented pewter broach, and two pieces of an ornate bone handle.

ABOVE
Artifacts of interest from 2010 field season. From left to right, top to bottom: fragments of a bone handle, iron fork, bone object, pewter broach, bone or wood screw top.

The 2010 season team
Left: Heather Hatch (Project Director)
Right: Catherine Sincich (Crew member)

PHOTOS **Heather Hatch**

INA projects

ABOVE
Research group and crew of the 2010 expedition circle the 'Hoekman' onboard research vessel *Icebeam.* More team members pose on the dive vessel *Mamma Duck* in the background.
PHOTO **Sören Andersson**

SWEDEN

Ghost Wreck: The Ship That Changed the World

INA Research Associate: **Donovan Griffin**

It was one of those uniquely eerie days on the Baltic. A heavy fog rested upon a dark mirrored sea that rose and fell. Visibility from the research vessel *Icebeam* was limited to a few meters, but ship's deck was like a living creature with constant movement. R.O.V. drivers called from the technology packed control room, radios cracked with orders from the bridge, monitors flashed with images from deep below, and deck hands scrambled to make ready the ship's cranes. The moment the crew and archaeologists had worked so hard for was at hand. A quick signal from one of our divers, and the final lift began.

After four centuries of cold solitude on a lifeless sea floor the "Hoekman" was resurrected to the light of day. The wood carving of a 17th-century gentleman had once stood proudly on the stern of the wreck. Now the sculpture revealed his plumed hat, buckled shoes, and bloused pants, an outfit which must have placed him at the height of fashion for his day. The "Ghost Wreck" had given up a perfectly preserved artifact and provided archaeologists with a solid clue for its origin and possible purpose.

The "Ghost" is a 17th-century vessel, known as a "Flute" during this period, and designed in the Dutch tradition. This ship represents one of the most important commercial and economic technologies of its time. Resting in 130 meters of water and perfectly preserved, the ship reflects the emergence of global trade and efficient commerce, hallmarks of the Dutch Empire during the 1600s. Discovered in 2006, she lay in Swedish waters off the northern end of the Island of Gotland.

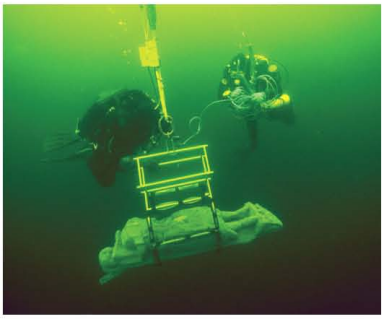
The expedition represents a shift in the paradigm that is maritime archaeology and the Institute of Nautical Archaeology is at the forefront of this development. The expedition is lead by Professor Johan Rönnby of the MARIS institute at Södertörn University in Stockholm, Sweden. Dr. Rönnby, Dr. Fred Hocker, Carl Douglas, and Donovan Griffin represented INA by lending valuable resources and decades of experience. Their participation promises to take Deep Submergence Archaeology to the next level, by utilizing state of the art technology and proven methods to solve the puzzle of doing research beyond normal diving depths. This expedition was an exercise in synergy, bringing together modern technology and archaeology. Used in combination ROVs, 3D scanning sonar, HD video, and technical diving methods all served to obtain valuable data and paint an accurate picture of the wreck.

Environmental, sediment, and wood samples were also taken allowing scientists to analyze the wreck's stability and predict future impacts of degrading agents on the ship. Such data in conjunction with the high definition video, will all contribute to a more accurate understanding of the "Ghost" and prepare archaeologists to better determine the best way in which to preserve this important and unique vessel.

ROV Images (Left to Right)
A knighthead with blocks for haliards used to raise the sails.

The expedition managed to recreate the transom, the upper part of the stern, which has fallen out over the centuries.

The Ghost Ship expedition managed to salvage a wooden sculpture. The sculpture was lifted with a claw and guarded by divers during the ascent to the surface.



Research Vessel *Icebeam* surrounnded by the fog.

The "Ghost Wreck" is truly an important expedition for INA to be a part of and owes its success to an unprecedented collaboration with Maris, Swedish Maritime researchers, MMTAB survey group, and Deep Sea Productions. Once again INA is at the vanguard of underwater archaeological exploration, breaking new ground in research techniques and data gathering. INA's experience and high standards of research helped ensure a successful and historically significant expedition. Look for exciting developments regarding the wreck that include a documentary for National Geographic about our little *Ship That Changed The World.*

Fred Hocker points out paint remnants on the carved "Hoekman."

USA

Missouri Shipwreck Legislation

INA Research Associate: **Laura Gongaware**

Shipwreck protection laws are essential in the fight against treasure hunting, but for these laws to be effective they must be enforced. This enforcement requires manpower, funding and a continued public interest in shipwreck protection.

Missouri passed its first shipwreck protection statute in 1991, with a recent revision in 2008. The state's interest in shipwreck protection was sparked when treasure hunters destroyed the 1820s steamboat *Missouri Packet*. As one of the first western river steamboats, *Packet* would have made a priceless addition to a state museum. Unfortunately, the treasure hunters were only interested in monetarily valued cargo and used a backhoe to rip apart the ship's almost perfectly preserved hull.

Since then at least ten other Missouri shipwrecks have been located by treasure hunters, including the Civil War-Era *Twilight*. When plans for their private museum fell through, the treasure hunters moved *Twilight* to a cornfield where it remains today unconserved and exposed to the elements.

Missouri's Historic Preservation Office is overextended and poorly funded. Its officials are unaware of the damage being caused by these treasure hunters, and as a result, enforcement of the state's shipwreck protection statute is a low priority. Permitted projects are not being properly monitored and treasure hunting groups operate publicly without obtaining permits.

Through my continued research into Missouri shipwreck legislation, I hope to further expose treasure hunting in the state and to prove that the enactment and enforcement of shipwreck protection laws should be a greater priority throughout the United States.

ABOVE
Laura Gongaware was thrilled to also be diving at the Cape Gelidonya site this summer.
PHOTO **Ryan C. Lee**

INA projects

CANADA

War of 1812 Shipwrecks

INA Research Associate: **Ben Ford**, PhD
(Assistant Professor, Indiana University of Pennsylvania)

During June 2011, an interdisciplinary team of archaeologists, geologists, and students from Indiana University of Pennsylvania (IUP), the Great Lakes Historical Society, and the College of Charleston will survey portions of the Black River and Lake Ontario to locate and identify two War of 1812 shipwrecks: the frigate *Mohawk* and an unnamed 75-foot gunboat. In addition to providing information on this important period in U.S. maritime history, the wrecks are expected to yield valuable site-specific data. The hull of *Mohawk* will likely provide significant details regarding the adaptation of oceangoing ships to the shallow waters of the Great Lakes, while the gunboat has the potential to shed light on the adoption of industrial shipbuilding techniques into the U.S. Navy.

The survey will utilize side-scan sonar, magnetometer, and sub-bottom profiler data to identify targets, and archaeological divers will then explore potential sites to date them and hopefully relate them to the War of 1812 shipwrecks. Additionally, sediment cores will be taken from around the sites and the sediments will be chemically dated to determine how and when the sites became buried. These data will not only elucidate the processes that formed these sites, but also the larger human-generated changes to the environment brought on by deforestation and agriculture that led to increased erosion. In many ways, these processes are as much a legacy of the War of 1812 as the formalization of the U.S. Navy, as the end of the war brought many new settlers to the shores of Lake Ontario.

While the goal of this survey is to identify *Mohawk* and the gunboat, it is possible that the remains of General Wilkinson's fleet (lost near the mouth of the Black River in an October 1813 storm) will also be encountered. This research is funded by the National Geographic Society/Waitt Grants Program and IUP, with additional support from the College of Charleston and INA, and constitutes the first phase of an ongoing project. Based on the results of this survey, more focused excavations will be planned.

ABOVE
(top) Depiction of the running battle 11 September 1813.

INA Research Associate, Ben Ford preparing to dive in Lake Ontario.

BELOW
Amphora at Bodrum Castle in Turkey.

TURKEY

News from the English Tower Cistern in Bodrum

Fred van Doorninck, PhD
(Emeritus Faculty, Texas A&M University)
Peter Van Alfen, PhD

A restudy continues of the cylindrical and globular cargo amphoras from the Yassıada 7th-century Byzantine ship that sank while carrying a military cargo of wine and some oil to Cilicia or northern Syria in the late 620s just before or at the end of a protracted war between the Byzantine and Persian empires.

This summer, Fred van Doorninck and Peter van Alfen, assisted by Lana Radloff (a Classics graduate student at Brock University) focused attention on comparing the linear dimensions and volumetric capacities of the two numerically best represented types of globular amphoras.

Although differing in fabric and body decoration, the two types have an identical series of dimensional and capacity sizes, indicating centralized control over their fabrication: five jar sizes range from 105 to 125 Byzantine pounds of wine, the 110 and 125 pound sizes also accommodating 100 and 110 pounds of oil, while the jars of any particular size have very much the same body dimensions. Mouths were made so that standard-sized stoppers seated in them flush with the rim. For both types, a majority of the stoppers had had a maximum diameter of precisely 7/32 of a Byzantine foot; some, 8/32 of an Ionic foot; and a few, 7/32 of an Ionic foot: possibly reflecting a recent transition from earlier standard sizes to just one standard size (many of the jars were reused and had not all been made at the same time).

Justin Leidwanger, who is trying to determine the geographical origins of the many different types of cylindrical and globular cargo amphoras through petrographic analysis, reports that similar fabrics of the most numerous globular amphora type and of some of the cylindrical amphoras point to the Aegean region, and perhaps more specifically the southeast Aegean.

VIETNAM

Evidence of Resistance Against the Mongolian Empire

INA Research Associates: **Randall Sasaki**, MA, and **Jun Kimura**, MA

Discovering remains of the Mongolian Empire fleet is our goal. In 2009, INA made inroads into a new expedition in Southeast Asia. This new international cooperative project with the Maritime Archaeology Program (MAP) at Flinders University in Australia and the Vietnam Institute of Archaeology (IA), commenced at the naval battle site related to the 13th-century Mongolian invasion. In 1288, the Yuan Dynasty, which was a direct descendent from the Mongolian Empire that had occupied China and reigned over by Kublai Khan, who was a grandson of Genghis Khan, delegated a fleet to attack Vietnam. The massive fleet and army overran the capital Da Yue (now Hanoi). The Vietnamese had already abandoned the capital for their strategy was intended to fight a decisive naval battle with the invaders. The Vietnamese made a decision never to allow them back into the country by thoroughly defeating the Mongolian fleet. Vietnamese forces lay in wait for the fleet that would try to get back to China through an estuary of the Bach Dang River. According to historical records, the tactic was to prevent the fleet from reaching the mouth of the river and trap them using hidden stakes that were driven into the riverbed. After about 700 years, the battle site has been relocated in the reclaimed lands along Bach Dang River in which a large number wooden stakes have been found since the 1950s.

INA Research Associates, Randall Sasaki and Jun Kimura who both have experience in researching the Mongolian Empire invasion site in Japan, are currently involved in the newly commenced exploration. In 2010, Jun Kimura and Dr. Mark Staniforth, who is a representative of MAP, joined fieldwork organized by the IA at the site that had been discovered during the previous year's fieldwork. Over fifty wooden stakes measuring 1-3m in length with a diameter of 6-20cm were revealed during the excavation. Patterns of these stakes show that they have been diagonally driven to face or cross each other. How large area that the naval battle has extended is debatable, and has been previously interpreted in different ways. The discovery of the new stake site brought a new insight about the area of the battle that ranged at least over 2 square kilometres. A number of stakes must still be buried in the area where small channels of Bach Dang River used to flow. The area, however, has been reclaimed and we can hardly see those ancient river channels on the current map. Our approach for locating unidentified ship remains is to identify the concentration of the wooden stakes and their distribution patterns and clarify the location of higher ground (ancient river banks and islands). We believe that these areas trapped the Mongolian ships. At the end of the 2010 work, local people reported to us about an area of higher ground called "Shipwreck place". We will conduct remote sensing survey in the next season and hopefully achieve a new discovery. In the end, our project is expected to contribute to a better understanding of the naval battle between the Yuan/Mongolian invaders and the Dai Viet.

BELOW

(left) Identified stake yards along Back Dang River. Their distribution indicates the area of the naval battle between the Yuan Dynasty and Dai Viet in 1288.

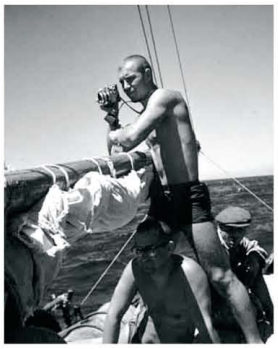
(right) Excavation at the Dong Ma Ngua where over fifty wooden stakes were found.

PHOTO **Nguyen Mai Huong** (Vietnam Institute of Archaeology)

A 50th Anniversary Reunion at Cape Gelidonya

by George F. Bass

BELOW
"The way they were..."
George and Ann Bass (top),
Claude Duthuit (mid)
and Waldemar Illing
(bottom - standing)
at Cape Gelidonya in the
summer of 1960.
PHOTOS **INA ARCHIVES**



When Peter Throckmorton and I arrived in Turkey in the spring of 1960, hoping to excavate the Bronze Age shipwreck Bodrum sponge-diver Kemal Aras had told Peter about two years earlier, I had never dived in the sea. In fact, my only prior experience with a scuba tank was for a few minutes in a Philadelphia YMCA swimming pool. Peter's French colleague Claude Duthuit soon took me for my first open-water dive, in the Bosporus, the first of his many kindnesses that have made us life-long friends. Indeed, it was through Claude's personal contacts that we obtained permission to import equipment and excavate the shipwreck, which lay a hundred feet deep off Cape Gelidonya on Turkey's southern coast. Although French and Italian divers had partly excavated ancient wrecks, in no case had an excavation been carried to completion, and in no case was there an archaeologist among the divers. What Peter, Claude, and I, with a small international team of divers, would accomplish over three summer months that year changed everything. The 3,200-year-old wreck was the first ancient wreck excavated in its entirety on the seabed, and its excavation was the first directed by a diving archaeologist — even though I was only a University of Pennsylvania doctoral candidate.

I sailed from Bodrum to Finike, near the Cape, on Captain Kemal's 30-foot sponge-diving boat *Mandalinçi*, others followed on Nazif Goymen's slightly larger sponge-dragger *Lutfi Celil*, Peter drove an old U.S. military Jeep station wagon we had scrounged from the surplus yard of an American base near Istanbul, and Claude arrived in the truck that carried our equipment.

The wreck lay near one of five islands that extend from the cape, but camping there was impossible because of our need for fresh water; an hour's sail away on a narrow strip of beach we found two tiny springs we dammed up. Funds were so limited that our camp was simply sheltered by canvas and old parachutes from the military surplus yard, and our furniture consisted of the crates in which our equipment had been shipped. The beach, completely surrounded by cliffs, faced south. It was an oven, usually 110° F by 10:00 a.m.

Although we had also scrounged a portable electric generator, for our "darkroom," we had no refrigeration, so lived on a diet of beans, rice, and tomatoes, with occasional fruit.

Ann Singletary and I had married in March, just before Peter and I crossed the Atlantic on the S.S. *America*. After our few days together, she returned to the Eastman School of Music to complete her master's degree. Never having been outside the United States before, she now joined me by sailing to Greece, flying to Izmir, taking a bus to Antalya over then unpaved roads, and reaching the beach by sleeping overnight on the deck of *Lutfi Celil*. She assumed that wherever her husband took her, she would at least find a spinet, if not a baby grand, so she had two suitcases: one of clothes and one of piano music. Claude gallantly insisted we take his pup tent, the only tent in camp, for our three-month honeymoon.

I have described the excavation in *Cape Gelidonya: A Bronze Age Shipwreck*, published by the American Philosophical Society in 1967; the more popular *Archaeology Beneath the Sea* (1975); and briefly in *Beneath the Seven Seas* (2005). It dramatically changed our picture of the Bronze Age in the eastern Mediterranean by being the catalyst for research that showed Semites were active in the Aegean centuries before the famed Phoenician seafarers of antiquity.

During the summer, however, every time our little high-pressure compressor for filling air tanks sprang a leak, we had to send it to Antalya, an overnight trip away, and wait a day or two for repairs. By chance a young German diver, Waldemar (Wlady) Illing, passed our beach with two friends as they dived along the coast with a small high-pressure compressor! We invited them to join us, which they did.

Claude and Wlady later became members of the team that throughout the 1960s standardized shipwreck excavation. Indeed, it was they who convinced me to stay in underwater archaeology rather than return to terrestrial work.

This latest expedition to Cape Gelidonya was both a nostalgic celebration and a new beginning...

In 2010 it seemed fitting that we celebrate our milestone excavation of half a century earlier by returning to Cape Gelidonya. Sadly, of the original dive team, only Claude, Wlady, and I survived. Ann had dived in 1960, but mostly baked on the beach, cleaning and cataloging artifacts, and keeping financial accounts.

I had seen Claude and his wife Barbara regularly over the years, since he is an INA Director, but I had not seen Wlady since 1969 when he arrived this past summer with his Anne at Adrasan, a town near the dive site. Then, by exquisite timing, another INA Director, Danielle Feeney, arrived at Adrasan on her splendid motor yacht *Andrea*, making the reunion so much nicer. Instead of bouncing around on a rubber Zodiac for hours at a time between Adrasan, the Cape, and the beach, we six traveled in style – and of course toasted the occasion with French champagne!

Claude (now 78 years old), Wlady (the *kid*, at only 73), and I (77) joined the 2010 excavation and dived together to the wreck site. Then Danielle took us to the beach where we had once camped. Although none of the charter-boat captains who brought swimmers while we were there knew why, the place is now advertised as *the American beach*!

Wlady said, on looking up at boulders seemingly ready to topple down, that if anyone told him he had to live on that narrow strip of sand and gravel for three months, he would tell them they were crazy, that no amount of money would tempt him! Claude soon after wrote that it was the worst experience of his life, more so even than combat in Algeria, for at least soldiers were relieved from time to time from the front, and occasionally a helicopter brought cold beer, but for three months at Cape Gelidonya he never tasted anything even remotely cool on the beach...

in 1960, however, we were young and... crazy?

CENTER IMAGES (from top)

George and Ann Bass, Claude Duthuit, and Waldemar Illing aboard Danielle Feeney's yacht, *Andrea*.
PHOTO **Dr. Roger Williamson**

George, Wlady, and Claude dive the wreck site.
PHOTO **Harun Özdas**

Enjoying a moment together.
PHOTO **Susannah H. Snowden**

BELOW

(top) Ann Bass puts the dive gear to good use in 1960.
PHOTO **George Bass**

(mid) Peter Throckmorton
PHOTO **INA ARCHIVES**

(bottom) *Lufti Celil* at anchor over the wreck site.
PHOTO **INA ARCHIVES**

INA projects

CANADA

Steaming Through Great Lakes History: *Anthony Wayne* Shipwreck Survey

INA Research Associate: **Bradley A. Krueger**

ABOVE

(Top) 'S'-shaped crank on the steam engine.

Globe-shaped lubrication reservoir.

PHOTOS **D. Van Zandt** CLUE

Over the past two years, the Great Lakes Historical Society, the Cleveland Underwater Explorers, Texas A&M University, and the Institute of Nautical Archaeology partnered together to closely examine the remains of *Anthony Wayne*, a mid-19th century side-wheel passenger and cargo steamer. Discovered in 2006 by diver Tom Kowalczk, the wreck of *Anthony Wayne* rests approximately six miles north of Vermilion, OH, and is thought to be the oldest surviving example of a steamboat shipwreck in Lake Erie. As a result, the *Anthony Wayne* Shipwreck Survey was initiated to thoroughly investigate and document the present-day conditions of this significant archaeological site.

Anthony Wayne was built in 1837 by Samuel Hubbell for the Perrysburg & Miami Steamboat Company in Perrysburg, OH. With its cargo of passengers and packet freight, *Anthony Wayne* plied the waters of the upper lakes, making frequent stops at prominent port towns until 1847. Battered by time, the vessel was deemed too decrepit to continue on as a steamer and plans were enacted to convert it to a sailing barge. The hollowed-out hulk was then sold to Charles B. Howard & Company of Detroit, who extensively rebuilt the hull and added new machinery. The refurbished steamboat was put back to work a year later and spent the rest of its career on Lake Erie servicing the shipping route from Toledo, OH to Buffalo, NY.

On the night of April 27, 1850, *Anthony Wayne* was making its usual westerly run carrying passengers and a cargo of whiskey, wine, and livestock. As the side-wheeler was passing Vermilion, OH shortly after midnight, the starboard-side boilers suddenly exploded. The ill-fated steamer was immediately engulfed in flames and quickly sank to the bottom of Lake Erie. Crew and passengers struggled for survival, but out of the nearly 100 people on-board, 38 people were reported as killed or missing. The vessel was deemed a total loss, and despite a thorough investigation in the days following, the cause of the accident could not be determined. The dead were buried, the survivors moved on, and *Anthony Wayne* slowly faded from memory, a forgotten testament to the strong maritime heritage of the Great Lakes.

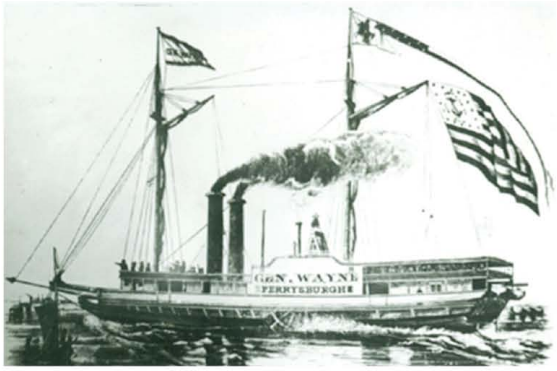
Our 2008 season consisted of recording all structural and mechanical components protruding up from the lake bottom. This included the port- and starboard-side paddlewheels, connecting drive shaft, pitman arm, engine linkages, feed-water heater, remnants of the wooden hogging-truss, and the steamer's bow. Sub-surface probing between the bow and midship sections determined that there is substantial architecture present on site, but buried beneath ten to fifteen feet of mud!

In an effort to answer questions pertaining to the steamer's construction and propulsion system, underwater excavations were carried out during the 2009 field season, the first of their kind in Ohio's waters. While hull remains proved to be elusive, the crew was successful in locating *Anthony Wayne*'s horizontal direct-acting steam engine, possibly the earliest extant example of a marine engine on the Great Lakes. The engine and associated machinery were carefully drawn, measured, and photographed before being re-buried to ensure preservation of this unique maritime artifact.

RIGHT

The only known contemporary image of *Anthony Wayne*, from an 1838 lithograph.

Courtesy of the Clarence S. Metcalf Great Lakes Maritime Research Library of the Great Lakes Historical Society, Vermilion, OH



ITALY

Renaissance Venetian Naval Manuscript Study

INA Research Associate: **Lilia Campana**

"Sailing is a noble thing, useful beyond all others to mankind. It exports what is superfluous, it provides what is lacking, it makes the impossible possible, it joins together men from different lands, and makes every inhospitable island a part of the mainland, it brings fresh knowledge to those who sail, it refines manners, it brings concord and civilization to men, it consolidates their nature by bringing together all that is most human in them."

— Georgius Pachymeres, *Progymnasmata*, 585.29-586.4

Lilia Campana

Few phenomena shaped mankind as significantly as seafaring. The praise of sailing in the words of the 13th-century Byzantine scholar Georgius Pachymeres encloses and signifies all the reasons that motivated me to join the Nautical Archaeology Program at Texas A&M University in 2006. With this spirit, I conducted research in several Italian and European archives and libraries over five years that resulted in my M.A. thesis titled "Vettor Fausto (1490-1546): Naval Architect and Professor of Greek. A New Light on the 16th-century Venetian Manusctipt *Misure di vascelli etc. di…proto dell'Arsenale di Venetia*."

The 2010 research season revealed new information about the life of Vettor Fausto and his extraordinary achievements, both as a scholar and as a naval architect. The discovery of unpublished Greek epigrams written by Fausto and the study of Fausto's Latin editions of Cicero and Terence (1511) uncovered new details concerning Fausto's cultural background and the period of his life before the construction of the quinquereme in 1529, hitherto poorly documented.

The most significant discovery was, however, a manuscript dated to the early 17th century that includes two incredibly detailed drawings (sheer plane and top view) of a Venetian galleass with its measurements. The study of the measurements recorded in this newly surfaced manuscript and those contained in the manuscript *Misure di vascelli di etc…proto dell'Arsenale di Venetia* established with certainty that the drawings represent Fausto's quinquereme. To date, the only known drawing of a "galleass built in Fausto's way" (*galeazza alla Faustina*) was that published in 1686 by Steffano de Zuanne in his *Architettura navale*.

PUERTO RICO

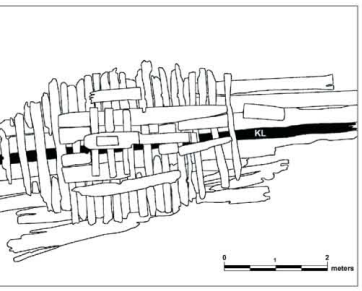
Puerto Rico Survey

INA Research Associate: **Filipe Castro,** PhD (Assistant Professor, Frederick R. Mayer Faculty Fellow of Nautical Archaeology, Texas A&M University)

This project, to survey of a four square mile section of the coast of Puerto Rico to locate and assess a number of potential shipwrecks in the area, proceeded through the 2010 season and a detailed analysis of the data gathered is now underway.

Filipe Castro

INA projects



ABOVE (from top)
Site plan section for the Western Ledge Reef Wreck displaying the central section of the wreck.
Modified by **P. Bojakowski**

Forward cut of the starboard garboard displaying the tree-rings.
PHOTO **Katie Custer-Bojakowski**

Portside first futtock of the third frame forward of the midship frame.
PHOTO **Piotr Bojakowski**

BERMUDA

Reconstructing the Western Ledge Reef Wreck

INA Research Associates: **Piotr Bojakowski, Katie Custer-Bojakowski**

The late 16th-century Western Ledge Reef Wreck, discovered and excavated in Bermuda, is one of the most important Iberian shipwrecks of Atlantic provenience. As the research continues, the 2010 field season brought new and exciting discoveries. Based on collected tree-ring data the ship was made entirely of white oak (*Quercus sp.*) with trees felled between 35 and 45 years of age. These appear to be of consistently high quality and must have come from well-organized and managed Northern Spanish forests.

As for the structural characteristics of the ship, significant progress was made in devising the length of the keel (13.5m), the maximum breadth (5.7m), and the depth of hold to the height of the main deck (4m), which subsequently were used to calculate the total length of the ship (20m) and the tonnage (175 tonelada). Due to the fact that the midship frame had a curved floor, a characteristic known only from a handful of the 16th- and 17th-century sources, its closest parallels were the so-called Portuguese "oval" mould illustrated by Fernandes or the "Greek" mould described by Baker.[1] Although modest in size, the fine lines of the ship indicated that it was built for speed and maneuverability rather than cargo space. Based on the assemblage of artifacts, it was also hypothesized that the Western Ledge Reef Wreck could function as the patache or *navio de aviso* within the system of transatlantic fleets.

[1] M. Fernandes, Livro de Traças de Carpintaria, Ajuda Palace Library, Lisbon, MS 52 XIV 21, (Facsimile edition, Academia de Marinha, Lisbon 1989), fol. 83.; M. Baker, Fragments of Ancient English Shipwrightry (ca. 1580), Pepys Library, Cambridge, MS 2820, fol. 12.

SPAIN

Bajo de la Campana Phoenician Shipwreck Excavation

INA Research Associate: **Mark Polzer and Juan Piñedo-Reyes**

The third season of this excavation on a 7th-century BC Phoenician shipwreck took place this summer off the Cartagena coast. The first full field season of excavation at this shipwreck site began in July, 2008 thanks to a generous grant from the National Geographic Society's Expeditions Council and matching support from INA directors and friends, and the Center for Maritime Archaeology and Conservation (CMAC) at Texas A&M University. As with last year's preliminary survey, the project could not have happened without the strong support of the Murcia regional government and collaboration with the National Museum of Maritime Archaeology in Cartagena, an agency of the Ministry of Culture of Spain. Initial dives on the site in 2008 yielded well-preserved elephant tusks with Phoenician inscriptions, amber and ceramics. Watch for details about the project and this field season's disocveries through National Geographic, online and in print, in the future.

TURKEY

Unlocking the Secrets of Constantinople's Medieval Shipwrecks

INA Research Associates: **Rebecca Ingram, Michael Jones**

The Theodosian Harbor excavation at Yenikapı in Istanbul, Turkey is currently the largest ancient harbor excavation in the Mediterranean, yielding countless artifacts and more than 35 Byzantine-period shipwrecks (see *INA Quarterly* 34.3 (2007), pp. 8-10). In cooperation with the Istanbul Archaeology Museums, INA Vice President and Texas A&M University Professor Cemal Pulak directed the recovery and study of eight shipwrecks from Yenikapı since 2005, four of which are being documented and conserved at INA's Bodrum Research Center. After conservation, the vessels will be reconstructed and displayed in Istanbul.

This year, Texas A&M Nautical Archaeology Program doctoral candidates Rebecca Ingram and Michael Jones, members of INA's Yenikapı team since 2005, continued their studies of shipwrecks YK 11, dating to the seventh century AD, and YK 14, dating to the late-ninth century AD. Having exchanged the muddy excavation pits at Yenikapı for the more agreeable freshwater storage tanks of INA Bodrum, Ingram and Jones are documenting each ship timber in order to produce accurate reconstructions of the vessels. In doing so, they are following the methodologies developed by INA pioneers Richard Steffy, Fred van Doorninck, Sheila Matthews and Robin Piercy, over decades of research on Mediterranean shipwrecks, most notably the Yassıada and Serçe Limanı vessels.

Because the Yenikapı ships were buried quickly in oxygen-poor harbor sediments, they were spared destruction from marine organisms and are therefore exceptionally well preserved, allowing the study of design details which only rarely survive on Mediterranean shipwrecks of any period. These shipwrecks offer a unique opportunity to expand our knowledge of how Byzantine ships were built and used in a period of major technological change as well as illuminate the Byzantine capital's links to the sea during the so-called 'Dark Ages.'

AUSTRALIA

Health and Disease on the Dutch High Seas

INA Research Associate: **Coral Eginton**

The 17th century ushered in a truly global age in which the last few undiscovered lands and people were unveiled from their shrouds of mystery. I entered into the field of nautical archaeology with the desire to contribute to our understanding of those who manned the ships that sought out these final frontiers. I wanted to know what their days were like sequestered in a crowded ship, so far from home and became fascinated with the shipboard conditions in which they lived and particularly the role of the ship's surgeon in treating the various afflictions and injuries suffered at sea.

So now I find myself at the end of the world, working in one of the last lands discovered by maritime ventures... Australia. At the Western Australia Maritime Museum Shipwrecks Gallery, I am sorting through hundreds of artifacts from the Dutch East India Company wrecks of *Batavia*, *Vergulde Draak* and *Zeewijk*. Each new day here brings with it the discovery of another medical tool or apothecary jar that was used by the surgeon to treat the maladies of the crew. These artifacts draw a picture of the surgeon's status among the crew and reveal which remedies he employed to improve the quality of life for his floating patient population. Whether or not those remedies were actually successful is another story all together.

ABOVE

Michael Jones (L) and Rebecca Ingram examining the keel of a ninth-century Byzantine shipwreck housed at INA's Bodrum Research Center.
PHOTO **Kim Rash**

Michael and Rebecca in a muddy excavation pit at Yenikapı in Istanbul, recording construction details of YK 11, a seventh-century Byzantine shipwreck.
PHOTO **Sheila Matthews**

BELOW

Coral Eginton in the Western Australia Maritime Museum Shipwrecks Gallery.

ABOVE
(from top)
Berta Lledo
Dilek Atac
Idil Kasap Resa

JAPAN - TURKEY

The Remains of the Frigate Ertuğrul Exhibited in Mersin, Turkey

INA Research Associate: **Berta Lledo**

Work continued this year on the *Ertuğrul* project. Only a small portion of the artifacts recovered from the wreck have been fully conserved, and those are now on display. The rest of the conservation and research work will be carried out for some time to come at the Bodrum Research Center in Turkey, as well as in Kushimoto, Japan.

The Imperial frigate *Ertuğrul* was constructed in Istanbul and sank during a diplomatic visit to the Japanese Emperor in southeastern Japan in 1890. All but 69 of her 609-person crew and their commander were lost during a typhoon that destroyed the frigate. The human and social part of its story has captivated the Turkish public as much as the archaeological remains that have been recovered. The highly touching human stories have been the center of attention of the first exhibit showing the project accomplishments in Mersin, Turkey.

An exhibit was opened this fall, as the centerpiece to a series of international events organized by the Turkish-Japanese cultural association, Mersin Municipality and Kushimoto Municipality to mark the 120th anniversary of the shipwreck. Turkish and Japanese dignitaries attended the ceremonies as well as three Japanese naval training ships that arrived for the occasion, and whose higher rank officers, along with their Turkish counterparts formed part of the honorable guests for the events and the exhibit. We were lucky to have the support of INA founder, Dr. George F. Bass, who addressed the gathered delegations.

Preparations for this exhibit were undertaken at INA's Bodrum headquarters, where research on the *Ertuğrul* artifacts continues year round, and the success of the opening is the result of the hard work and dedication of many. Dilek Ataç a student from Yıldız Teknik University (Istanbul) put in endless hours in cleaning and preparing the 829 artifacts that are on display in the Mersin Municipality Congress and Exhibition Center. Idil Kasap Resa, an essential member of the team since 2007, was crucial in the graphic design and content preparation of the exhibition panels, as well as coordinating a seemingly endless list of jobs to be done in Mersin. Selcuk Kolay, helped us to identify some of the objects in the collection, and his advice and expertise in Ottoman navy items and steam engines has been invaluable. The municipality of Mersin sponsored the printing of the 109-page catalogue for the exhibit in Turkish, Japanese and English.

The Mersin exhibit is the first of a number of events that will see the exhibit travel to different locations in Turkey and Japan over the course of the next few years, before the artifacts return to their final and legitimate home in the town of Kushimoto. On the night of the 16th of September in 1890, the survivors of the *Ertuğrul* wreck found their way up to the lighthouse on Oshima Island where they were cared for by the dwellers of the island in the lighthouse keeper's house. That same building—one of the oldest stone constructions in Japan, and the subject of a detailed architectural study by the Wakayama University—will be restored officially by the local government. At the end of the traveling exhibit, 120 years after the accident, those same walls will host the *Ertuğrul* collection, the relics of the ship and the sailors, as well as their memories. The historical house is a protected building and will be not only a museum but also an important part of the story itself.

These *Ertuğrul* exhibits do not mean our work on the project is finished; in fact, this is just the beginning. Conservation work and research continues. There are new objects emerging as we make our way through concretions found at the wreck site. A coffee grinder for example has been identified by INA Bodrum conservator Kim Rash, and through the cleaning of the brass mill hopper bowl and study of the decorations in the cast iron box, Don Zolotorofe, a coffee mill expert and president of A.C.M.E., was able to classify it as a T. &. C. Clark No. 4 mill, manufactured in Wolverhampton, England. We are very hopeful that cleaning, conservation and restoration of this and other pieces will yield excellent results.

Other surprises await us as work in Bodrum and Kushimoto continues. We will keep you up to date in upcoming INA publications and through the website.

FROM FAR LEFT

Artifacts filled seventeen exhibit cases.

Attending group at the opening ceremony.

SWEDEN

Nautical & Naval Foodways Assessment

INA Research Associate: **Ulrica Söderlind**

The choice of food and beverage (gastronomy) is founded very early in the history of a society and its inhabitants. In short, factors such as need, edibility, availability, human senses, philosophical thoughts, geographical and mental boundaries, economy, inheritance from childhood, ideology, social structures, social class, gender, utensils, experiences and sensations all play a vital part in the choices of food and beverage in daily life and on feast days. These choices and influences may also be reflected on board ships as much as the parameters of life aboard ships also had its own influence.

A nation's gastronomy also consists of phenomena such as diet, provisions, culinary art, fare, nourishment. The choices are therefore very complex and never static. It gets even more complicated because not all the factors influencing food choices have the same weight and meaning for all inhabitants within a shared geographical border. The factors mentioned above will be used within a theoretical framework for this assessment to test which factors were of importance for the foodways aboard ships in different times and areas.

The span of analysis will be determined by available and accessible materials from INA and other excavations, beginning with the oldest and the earliest excavated shipwreck material pertinent to the study. Obviously, the range of available material culture related to the study will define the temporal and geographical parameters of the project.

The project, while focusing on artifacts that can be linked to provisions, foodstuff, cooking, eating, and drinking aboard the different ships that have been excavated, will also assess literary and historical accounts and will attempt to fill in some of our gaps in knowledge as studies such as this one are lacking in contemporary nautical research.

BELOW

Food storage jar from exhibition at the Bodrum Museum of Underwater Archaeology.

PHOTO **Ulrica Söderlind**

CANADA

Preserved in the Yukon: *A.J. Goddard*

INA Research Associate: **Lindsey Thomas**

A.J. Goddard was the focus of the 2010 field season in the Yukon. The only known surviving example of the small Yukon River sternwheelers used during the Gold Rush, it is nearly perfectly preserved and sitting upright on the lakebed as a result of a 1901 October storm. The ship and its cargo have not moved since the ship's abandonment over 100 years ago.

Our objectives for the 2010 field season included creating a 3D plan of the *A.J. Goddard* site (by testing the highly advanced Blue View BV5000 on a shipwreck for the first time), completing the baseline survey of the wreck site in order to learn more about the ship's construction, locating and recording all artifacts on the site, and recovering select artifacts for conservation and display at the Yukon Transportation Museum in Whitehorse.

With the assistance of the Yukon Territorial Government, the Institute for Nautical Archaeology, ProMare, the Texas A&M Center for Maritime Archaeology and Conservation, RPM Nautical Foundation, Spiegel-TV, the National Oceanic and Atmospheric Administration and the State of Michigan, and private donors, a 14-person team returned to the site for 10 days.

The 2010 field team consisted entirely of volunteers from America and Canada, most of whom were not professional archaeologists, and the varied experience brought by these men and women proved to be immensely valuable. In addition, the Yukon Government provided a professional archaeological conservator and a boat captain, and NOAA and the State of Michigan sent Wayne Lusardi, the State Underwater Archaeologist for Michigan. The team focused on recording the construction features of the hull, including the machinery, steering systems, and hull lines. Due to the small size and shallow draft of the vessel, it was not possible to penetrate the hull in order to fully document the interior. It was possible to see inside much of the vessel, and with the aid of a light and the 12 hatches, the majority of the interior of the vessel was recorded.

Through the donated support of BlueView Technologies and OceanGate, a tripod-mounted and diver-deployed multibeam sonar (the BV 5000) was used to create a 3D site plan of the vessel. Over the course of two days, the tripod was set in 18 different locations to create a detailed point cloud of the vessel's shape. While the sonar image of the ship is incredibly useful for quickly recording a site, the most valuable aspect of the sonar unit on this project was its ability to see inside remote sections of the hull. Construction details that were otherwise inaccessible to divers, such as the spacing of deck beams, were visible and measureable on the computer screen within minutes of the scan.

At the request of the Yukon Government, the artifacts around the vessel were recorded and some of the more interesting finds were recovered for

BELOW

(top) Local news team filming divers at the site.

PHOTO **Tim Dowd**

(bottom) Tim Vincent measuring the rail of *A.J. Goddard*.

PHOTO **Geoff Bell**

(From left to right)

Deploying the Blue View (BV5000) sonar scanner.

PHOTO **Tim Dowd**

Geoff Bell with the BV5000.

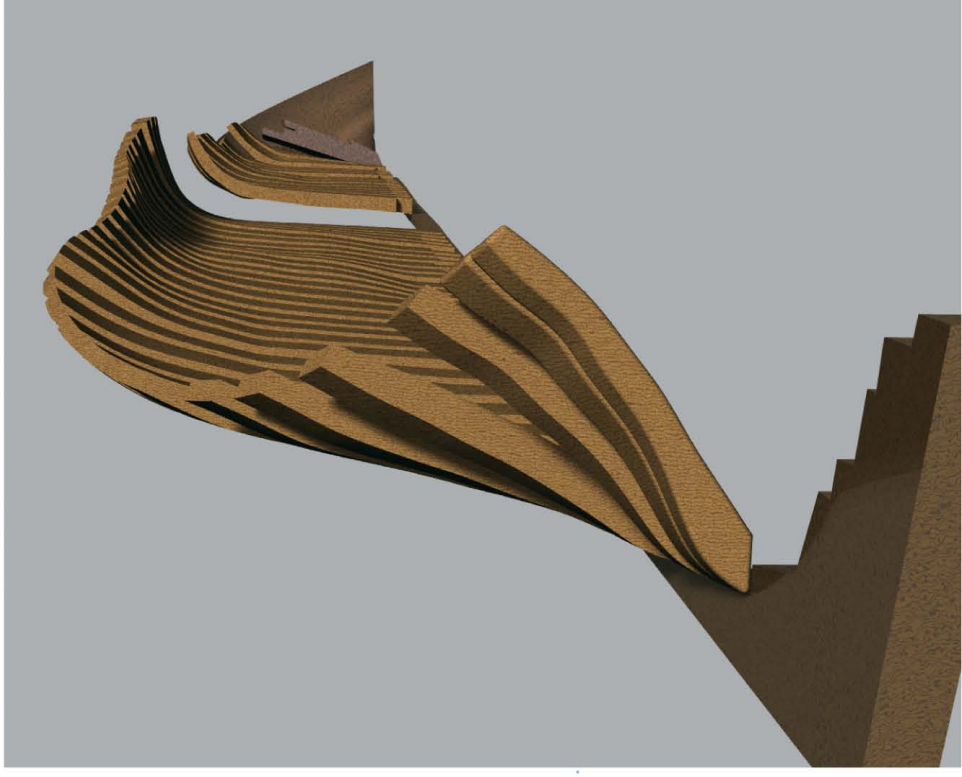
PHOTO **Sean Adams**

Team members viewing the date collected.

PHOTO **Mark Thomas**

exhibit in Whitehorse, the capital of the Yukon Territory. Though 100 artifacts were located and recorded, many more are still scattered around the site. Divers recovered 28 artifacts for conservation and exhibition, including some surprising finds; a record player and records, clothing, bottles of ink and vanilla, and a prohibition era bottle that was tossed onto the site decades after the wrecking event. Currently in conservation at the Canadian Conservation Institute, an effort will be made to optically recover the music from the records. Much of what has been found on the ship, including the blacksmith's forge, can be identified from the Sears and Roebuck catalogue for 1897, the year during which *A.J. Goddard* was outfitted.

The 2010 field season filled in many of the gaps in our knowledge about *A.J. Goddard* and similar ships from the Klondike Gold Rush era. It became evident that its hull was of simple and relatively uniform construction, possibly to facilitate its reassembly in the wilderness. Much of the machinery and other structural components of the ship, such as the deck plating, could be disassembled into small pieces to facilitate transport over mountain ranges. Of the thousands of vessels that set out for the Yukon in the summer of 1898, *A.J. Goddard* was one of the few that actually made it to Dawson in time for the gold rush. Its small size and the speed with which it was outfitted and transported to Dawson were the primary reasons for its success.



Preliminary partial reconstruction of the steamer's port side frames.

ILLUSTRATION **Tiago M. Fraga**

USA

Reconstructing the Steamboat Phoenix

INA Research Associate: **George Schwarz**

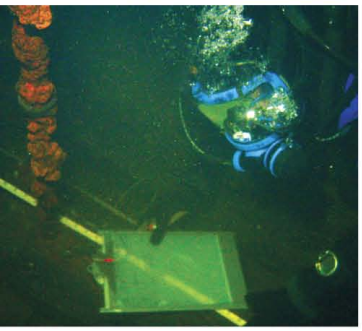
The second season of this project took place this August and September on Lake Champlain, and met with fair weather and success. *Phoenix* (1814-1819), the second steamboat to be launched in Lake Champlain and possibly the earliest surviving archaeological example of a steamer in North America, rests in 60-110 feet of water off of Colchester Shoal in a good state of preservation. The hull is exposed and intact, and has been the subject of a multi-year investigation aimed at reconstructing the ship lines and construction features for analysis and comparison with other early 19th-century steamboats. In addition to INA, project supporters include Lake Champlain Maritime Museum (partial funders and part of the archaeological team), National Geographic Foundation, and Waitt Foundation.

The archaeological team staged out of Stave Island, a private island owned by the Hazelett's, benefactors of the Lake Champlain Maritime Museum and supporters of this project. The duration of the project was ten days, of which nine were suitable for diving and field operations.

Building on last year's accomplishments, the primary goals of this field season were to document construction features of the surviving hull

Continued on page 26

INA projects



ABOVE (top)
2010 *Phoenix* Project team members aboard research vessel *Neptune*.
PHOTO **Chris White**

Recording the steam machinery support timbers on *Phoenix*
PHOTO **Tiago M. Fraga**

RIGHT
View of *Warwick* wreck site.
PHOTO **D. Inglis**

Shelve clamp and framing.
PHOTO **P. Bojakowski**

Steamboat *Phoenix* *continued*

Building on last year's accomplishments, the primary goals of this field season were to document construction features of the surviving hull timbers, record several of the existing frame curvatures, collect data on fastening patterns and steam machinery support timbers, and record high-definition digital video of the shipwreck. Due to the cooperating weather and a dedicated and knowledgeable team, the planned objectives were accomplished.

In addition to a reconstruction on paper, a three-dimensional digital reconstruction of the remains of *Phoenix is* well on its way to completion. Using software programs AUTOCAD and Rhino, two-dimensional and three-dimensional plans are being created in order to visually compare *Phoenix*'s hull data with surviving archaeological evidence for early steamers. In addition, these digital reconstructions will facilitate public interaction with museum exhibits and serve as excellent educational tools for understanding ship construction during the age of steam.

It is hoped that with the data gathered from this field season it will be possible to draft tentative lines of *Phoenix*'s hull, which will aid in the understanding of her steaming and sailing capabilities. As a passenger steamer and one of the earliest steamboats on Lake Champlain, her design was experimental and combined steam propulsion, sailing capability, and opulent passengers' quarters complete with a barber's shop for customer comfort and convenience. The story of her fiery demise, thought to be caused by a wayward candle left burning in the pantry, is shrouded in mystery and tells an interesting tale of human compassion, greed, heroism, and death. The archaeological analysis of the remains of *Phoenix* is a component of a larger study of early American steamboat design and use, and the development of the resulting maritime culture.

BERMUDA

English Galleon *Warwick:* First Season of Archaeological Excavation

INA Research Associates: **Piotr Bojakowski, Katie Custer-Bojakowski**

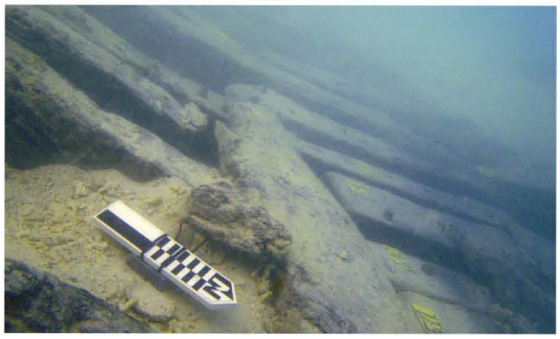
In November 1619, a devastating hurricane wreaked havoc on the islands of Bermuda. Amongst the victims of the tempest, was *Warwick*, a veteran English galleon which wrecked while at anchorage near the entrance to Castle Harbour. Belonging to the Earl of Warwick, it operated during the voyage as a magazine ship for the Virginia Company transporting goods and settlers to Bermuda and Jamestown colonies.

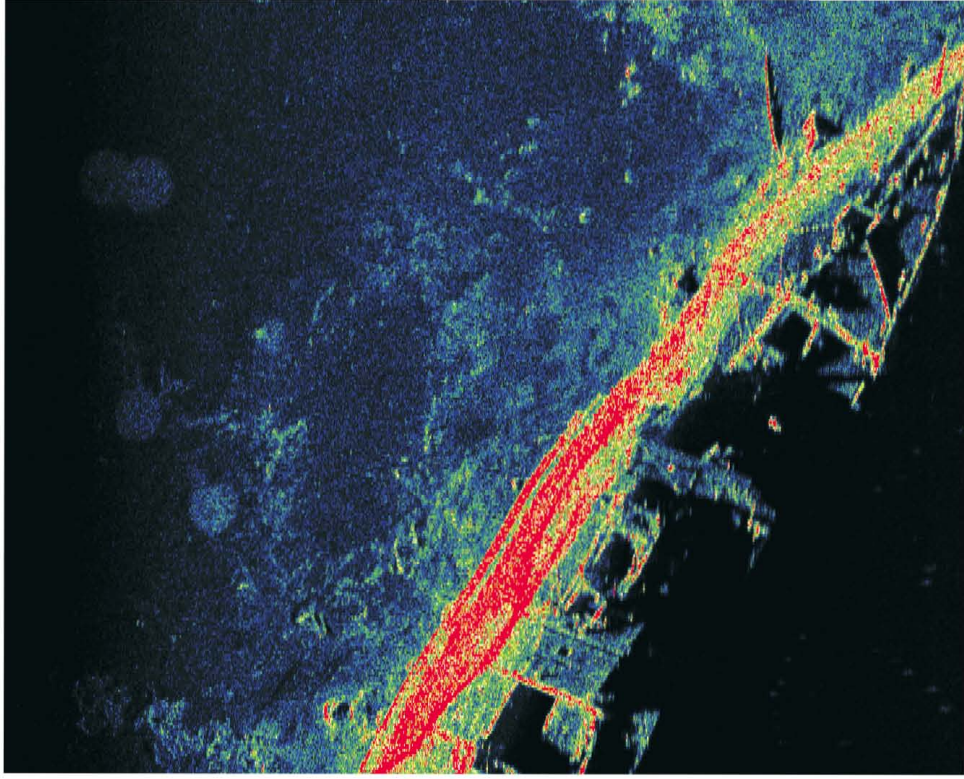
More than 390 years later, the full-scale excavation of the well-preserved *Warwick* has begun with the help of archaeologists and graduate students from the Center for Marine Archaeology and Conservation, and the Institute of Nautical Archaeology, as well as the National Museum of Bermuda, and the University of Southampton. Between June 19th and July 23rd, 2010, the team uncovered and recorded a large section of the starboard side of *Warwick's* hull from the turn of the bilge to the gun deck.

The framing elements included the floor timber's wrungheads as well as first, second, and third futtocks. Even though the framing timbers showed distinct overlapping between the futtocks, the arrangement was rather loose and the elements did not appear to be horizontally fastened to each other. The second element uncovered during the project was nine ceiling planks, which followed an alternating pattern with three considerably more

robust stringers. Of the three stringers, the uppermost one served as a shelf clamp on which the lodging knees and two types of beams were placed. The evidence associated with the beams suggests that it was the first deck or the orlop, which most likely would have been used as a gun deck. The uncovered section yielded 15 planks which constituted the first layer of the external strakes. Underneath the first layer there was a layer of doubling, while the very exterior of the hull was covered with a light wooden sheathing. The frames were fastened to the planking exclusively with treenails. The doubling was fastened to the first layer with a combination of treenails and iron nails. Finally, the sheathing was secured to the doubling with small regularly spaced tacks.

Although still tentative, it is hypothesized that *Warwick's* hull construction is reminiscent of older technology; quite analogous with *Mary Rose*, a Tudor warship that was lost in 1545. By being placed somewhat in between the mid 16th-century *Mary Rose* and the early 17th-century *Sea Venture*, *Warwick* may be a vestige of the transformational processes in English shipbuilding that took place at the turn of these centuries. Since many of the features found during the excavation were obviously the product of well-established practice, its place in the evolution of ships and shipbuilding is remarkable. In addition, as a ship that was sailing from England, via Bermuda, to Jamestown, Virginia; *Warwick* might shed an interesting light on the cargo, the personal possessions of passengers and crew, and a multitude of other ordinary items that were shipped to the colonies in the year of 1619.





ABOVE

Sonar scan of *Titanic*'s bow.

Image Courtesy of **RMS *Titanic*/ Premier Exhibitions**

INTERNATIONAL

Titanic Archaeological Mapping and Imaging Project

INA Research Associate: **James Delgado**, PhD

In response to a rare opportunity to conduct a deep oceanic archaeological mapping of the wreck site of RMS *Titanic*, I was asked to serve as principal investigator and lead archaeologist on a summer 2010 expedition. The project involved a unique partnership with INA and two U.S. government agencies, the National Oceanic & Atmospheric Administration's Maritime Heritage Program in the Office of National Marine Sanctuaries, and the National Park Service's Submerged Resources Center. The other partners were Woods Hole Oceanographic Institution, the Waitt Institute for Discovery, and RMS *Titanic*, Inc./Premier Exhibitions, the company which has held salvage rights to *Titanic* since the 1980s.

The mission and the partnership resulted from a decision by RMS *Titanic* to shift from previous missions to recover artifacts from the site for their traveling exhibitions and instead to work with the government to complete a comprehensive archaeological site plan of the wreck site and then to prepare an archaeological report on *Titanic* that encompasses the data gathered from all missions to

Continued on page 28

Editor's Note

Jim's involvement with Titanic dates back decades to his time as the founding head of the U.S. Government's maritime preservation program, the National Maritime Initiative. Jim played a key role in drafting the Titanic treaty, and the wreck site was in his portfolio during his 10-year tenure on the International Committee on the Underwater Cultural Heritage for ICOMOS as well as his chairmanship of the archaeological committee for the International Congress of Maritime Museums.

In 2000, Jim dived to Titanic to audit tourist visits to the wreck for ICOMOS and ICMM. As members of INA know, Jim has now returned to public service as Director of Maritime Heritage at NOAA, where Titanic remains an important part of his duties.

Titanic continued

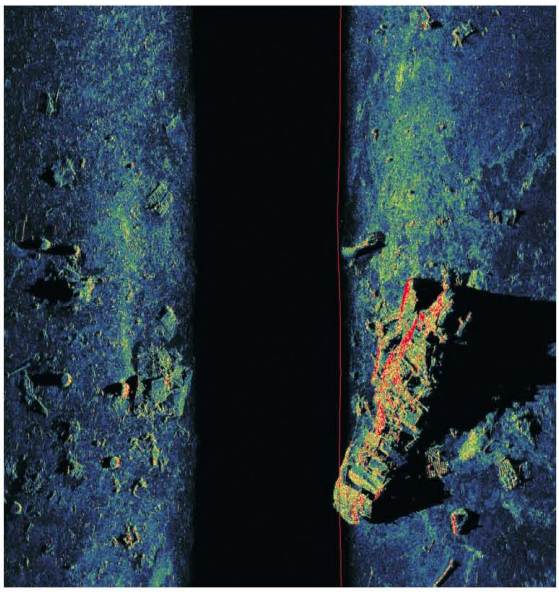
ABOVE
Jim with Dave Gallo of Woods Hole Oceanographic Institute on board R/V *Jean Charcot* on the first day of ROV operations on the site.

PHOTO **Chris Davino**

BELOW
(Left to right)
Bow of Titanic from Jim's visit to the site in 2000.

Sonar scan of *Titanic*'s stern wreck assemblage.

Images courtesy of **RMS *Titanic*/ Premier Exhibitions**



the site since its discovery in 1986. The government agencies were particularly interested in this approach, especially since the salvage of artifacts from *Titanic*, even though they have not been sold, has been controversial. Legislation to declare the wreck a maritime memorial, historical and archaeological site, and to treat it as a marine protected area, has been pending before Congress for some time, and an international treaty with the same goals awaits ratification by the United States, Canada and France, with only the United Kingdom as a signatory. NOAA mounted its own expedition to the wreck in 2004, and Dr. George F. Bass participated in that venture, diving to *Titanic* in a Mir submersible, as did the Larry Murphy of the National Park Service's Submerged Resources Center.

Amazingly, even though several missions to *Titanic* have studied portions of the wreck, the entire site has not been mapped or assessed. During the 2010 expedition, the entire site, encompassing 25 square miles of seabed 2 ½ miles down, was mapped with high resolution sonar and digital imagery to include artifacts as large as portions of machinery and as small as a cup.

This level of archaeological mapping has never before been accomplished to this scale this deep in the ocean. In the 50th anniversary year of scientific nautical archaeology, INA was able to participate, at no cost to INA, in a mission that demonstrated that this degree of scientific accuracy is possible at any depth. As well, the digital imaging team from Woods Hole, led by Dr. William Lange, mapped *Titanic*'s bow and stern sections, as well as key assemblages on the site with three-dimensional imagery that will overlay 3D sonar scans to create a measured record of *Titanic*'s major hull components as they exist in 2010. This is an important step for future assessment of the site and management of *Titanic* as a marine protected area.

The next steps are the assembly of the data, the writing of the report, and a renewed push for the treaty's ratification and the passing of legislation in the United States and Canada to protect and manage *Titanic*. While the application of archaeology on the *Titanic* site has different goals from the work done on older sites, such as the Bronze Age wreck at Uluburun, a key factor in the 2010 mission was the application of archaeology and hard science to a wreck site which has posed challenges for the archaeological community since its discovery, and in doing so, creating a map not only of the site, but perhaps a blueprint for its future.

In closing, I want to thank Chris Davino of RMS *Titanic*/Premier Exhibitions for making this "sea change" possible, as well as my colleagues Dan Basta, Ole Varmer, Dave Gallo, Bill Lange, Dave Alberg, Larry Murphy and Dave Conlin, who worked on the agreement to proceed with RMST's Brian Wainger, as well as the team on R/V *Jean Charcot*, especially the scientists, technicians and crew who made science happen at 12,436 feet.

—Jim Delgado

$1 Million Legacy Gift

Director Robyn Woodward Makes $1 Million Legacy Gift to INA

Dr. Robyn Woodward

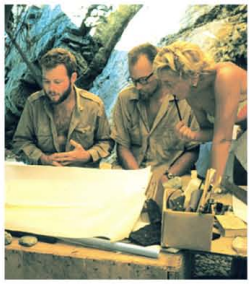
Nautical archaeologist Dr. Robyn P. Woodward of Vancouver, British Columbia is a graduate of the Nautical Archaeology Program at Texas A&M who worked on INA projects in Turkey and at Port Royal Jamaica before completing her Ph.D. studies at Simon Fraser University in Canada. Dr. Woodward's ongoing projects include her soon to be published dissertation on Sevilla La Nueva, a Spanish colonial town founded at the site of one of Columbus' landfalls in Jamaica, where Dr. Woodward continues her National Geographic Society-funded excavations. One of the major discoveries made by Dr. Woodward and her team was a sculptor's workshop with surviving examples of his work. For several years, Dr. Woodward has also co-directed the Yukon Gold Rush Steamboats project with INA research associate John Pollack. A past president of the Underwater Archaeological Society of British Columbia, as well as past chair of the Vancouver Maritime Museum's board of Governors and Board of Trustees, Dr. Woodward is also a trustee of the Archaeological Institute of America, and a director of INA, where she serves on the archaeology committee.

Robyn Woodward is an undisputed leader in the field of nautical archaeology, and this is demonstrated by her recent gift of a $1 million annuity to Texas A&M University. This annuity, payable when she passes away, will create a $1 million fund which will create a $50,000 a year grant program, to be administered by the President of INA, to support emerging scholars in nautical archaeology in their fieldwork, analysis and publication as well as professional development, and field projects.

INA thanks and commends Dr. Woodward for her leadership, and her dedication to archaeology, especially to archaeologists of future generations. For more information on gifts like Dr. Woodward's, contact INA's interim President, Dr. Robert Walker, at **rwalker@tamu.edu**

in memory of...

It is with sadness that INA notes the passing of **Honor Frost** (1924 - 2010). Frost was a pioneer in the field of underwater archaeology and an expert diver in a time when women were not commonly found in the field. In 1958 Ms. Frost, a talented archaeological illustrator, arrived at Bodrum and worked with Peter Throckmorton sketching the wreck site and the recovered artifacts that he would later use to *make his case* back in the US that Cape Gelidonya was something worth exploring and Honor was part of the original team that undertook that historic excavation. She worked with UNESCO from the 1960s, and was part of the survey team that originally investigated the waters off Alexandria in 1968, confirming that the submerged remains were indeed that of the lost palace of Alexander and Ptolemy, and of great historical and international importance. Ms. Frost was featured in the 1997 NOVA production "Treasures of the Sunken City" that followed the eventual excavation of the site when it was under threat from harbor construction.



ABOVE (left to right)
George Bass, Peter Throckmorton, and Honor Frost work on the site plan in the camp "drafting room" at Cape Gelidonya.

INA in depth
with Nicolle Hirschfeld

Our thanks to both Nicolle Hirschfeld and Ryan Lee for sharing these thoughts about their shared adventures at Cape Gelidonya this summer. Along with George Bass they represent the best of INA's past, present and future. It is the collective passion of our people that will continue to move this organization forward.

OF COURSE I said yes when George Bass asked if I would be willing to direct a "return to Gelidonya" excavation! Late Bronze Age seafaring is the stuff of my dreams. And Gelidonya and G.F. Bass are the names that started it all. The scientific report will come later, but here, are a few discoveries I was not expecting:

"If you don't grab the bull by the horns when you have the chance, you'll never get anywhere!" George recalls being told by his mentor, in *Archaeology Beneath the Sea*. I assign this reading to my undergraduate class every year, but only this summer did I finally comprehend the big horns George agreed to grab fifty years ago. Returning to Gelidonya half a century later it was difficult to figure out the logistics of establishing a base camp for this new project – even though we had the benefit of George's remembered experiences, two other scouting expeditions earlier this spring, Harun Özdaş' familiarity with the area due to his survey work there, and even Google Earth. In the end, as you will know from reading Ryan Lee's blog on the INA website, we gave up altogether on the idea of building a camp and chartered a wooden sailing ship instead. That is a whole other story. My point here is that half a century later Gelidonya is still formidable. For me, it took coming here to truly appreciate George's guts and vision.

The joy of collaboration Twenty-five years ago at Uluburun, Harun and I, both students, learned how to excavate underwater. Now we were co-directors at the site where underwater archaeology was born. But our team is able to excavate at Gelidonya only because of the efforts and energy of Harun, who spent much of the summer on long bus rides crisscrossing Turkey and sitting for hours in the offices of officials waiting for the papers and permissions we needed. In the end we were able to work together again to re-excavate, survey, and better understand what happened at Gelidonya more than three thousand years ago.

The joy of collaboration, part 2
I first met Tuba Ekmekçi in the basement of the museum at Bodrum, where she was sorting through the *kazillion* amphora sherds that had shattered on the seabed at Uluburun. She is now director of INA-Bodrum and simply put, Gelidonya 2010 would not have happened without her industry, creativity, and determination.

The joy of mentoring Our excavation team rapidly grew to include almost thirty people and at first I was frustrated with George, for each addition meant that I had to figure out how to house and feed that individual. But George was right… the next generation of scholars should be at the top of the priority list for any project. And, of course, when it came down to it, each of them contributed beyond expectation and we were fortunate to have these talented and dedicated members of the next generation on board. Ryan kept our computers humming and wrote the blog for the INA website; he is now working on his M.A. with Cemal Pulak. Kim Rash cared our finds at sea and continues to oversee their conservation in Bodrum. John Littlefield is now studying the Kızılburun hull fragments, Laura Gongaware is at Tulane studying maritime law, Ania Kotarba has just enrolled in the School of Archaeology at Oxford, and Marilyn Cassedy and Haley Streuding continue their degree work in College Station. I look forward eventually to seeing each of these names listed as authors in *The INA Quarterly* and elsewhere as they pursue their own careers.

So I got far more than I bargained for when I said yes to George. It was much, much harder than I expected, but the rewards were also greater. I come away from Cape Gelidonya with the happy challenge of continuing the research and publication, deepened respect for my colleagues, a joy in our students, and the memory of days of sparkling waves and nights of glittering stars.

BELOW
Nicolle Hirschfeld is a Bronze Age scholar and Associate Professor in the Department of Classical Studies at Trinity University. She is co-director of the 2010 excavation project at Cape Gelidonya.

ALL PHOTOS **Ryan C. Lee** (except where noted)

moredepth
with Ryan Lee

Ryan Lee
PHOTO **John Littlefield**

Like Nicolle, I wanted to be an astronaut growing up, a goal that I focused on until I started university as an Engineering major. Within a few months, buried by a mountain of calculus homework, I decided that an engineering career was not for me, though I didn't have an alternate option. I thought next that I wanted to be a pilot, but by the time I finished my flight training, I realized I missed academia. Inspired by a co-worker, who was studying to be an archaeologist I sat in on a few classes at the University of Alberta and quickly realized that I had finally found my path.

I had grown up watching Bob Ballard on National Geographic's 'Secrets of the Titanic' repeatedly (one of the few tapes we owned, courtesy of a burned-down rental store), and reading my father's books about ocean liners, tall ships, and submarines. Throughout junior high and high school, I read every C.S. Forester and Patrick O'Brian novel I could get my hands on, and spent many weekends hunched over a table building scale models of *Titanic*, *Queen Mary*, *Cutty Sark* and USS *Constitution*. Looking back over how much time I spent learning about boats for fun, or even playing nautical-themed video games, I can't believe I hadn't thought of nautical archaeology sooner.

With no nautical archaeologists at the University of Alberta to take classes from, I borrowed every book from the library I could find on the subject and I naturally learned about the pioneering work of George Bass, and the subsequent projects by the Institute of Nautical Archaeology. Given the choice of which archaeological site to report about for a history of archaeology class, I jumped at the chance to talk about Cape Gelidonya, never for a second imagining that I would one day be able to work there.

While I knew I wanted to be an underwater archaeologist, I put off learning to scuba dive year after year, and continued participating in terrestrial digs, first in Ecuador, then Nicaragua and Greece. I was not a strong swimmer, and was worried that I would be a terrible diver, and that I would be forced to change career paths again! I finally learned to dive when I came to A&M, but then I avoided the diving issue by working at Yenikapı in Istanbul under Cemal, which provided me with an excellent experience recording shipwrecks without the need to get my face wet.

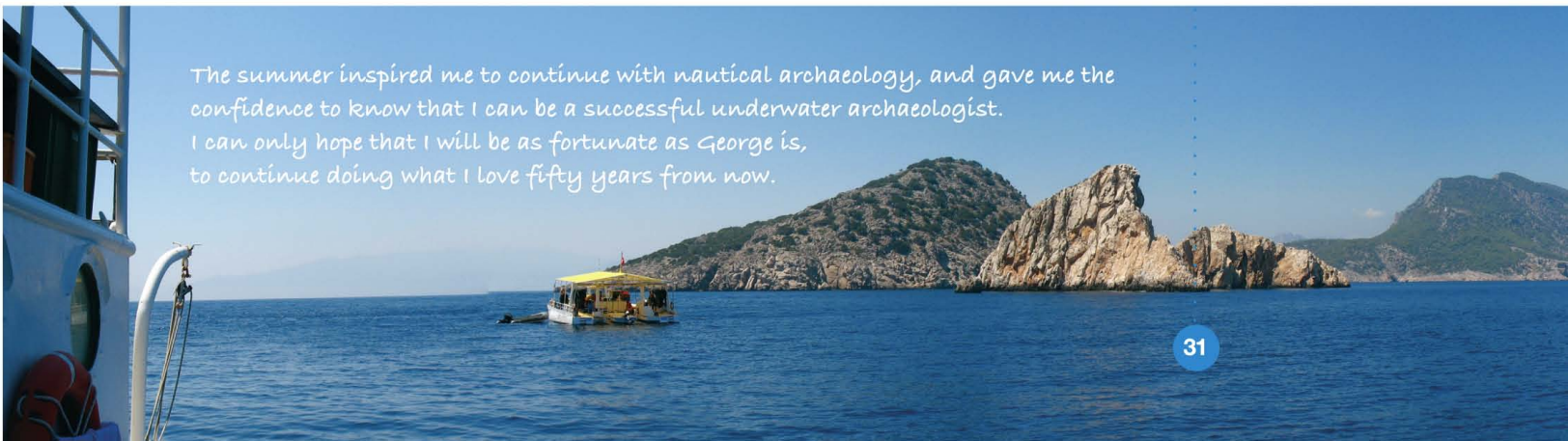
When I prepared to jump off *Millawanda* for the first time this summer, I was a trained archaeologist, but one of the least experienced divers on the project, but I had George's oft-repeated manta to reassure me: *It is easier to train an archaeologist to be a diver, than to train a diver to be an archaeologist*. I also kept telling myself that while I was 'behind' many of my colleagues, at the age of 27 I was exactly the same age as George was when he dove here in 1960, fresh from his YMCA course. After a couple weeks, I felt much more confident in my abilities as a diver, and could focus on the real reason I had come to Gelidonya: to become a better archaeologist.

The 2010 season was not a field school, but I couldn't imagine a better group to study under. It was a real treasure to be able to work with the four surviving members of the original Gelidonya team: George Bass, Ann Bass, Claude Duthuit, and Waldemar Illing. We were also blessed to have the opportunity to work with numerous veterans in the field, including co-directors Nicolle and Harun, but also Cemal, Faith Hentschel, Sheila Matthews, and Orkan Köyağasıoğlu. These individuals all provided a wealth of instruction to me and the other students on the project, on everything from excavation and mapping techniques, to boat handling and mooring procedures. I kept a journal and took photographs to be able to publish INA's first blog from the field, and share the experience with the world.

BELOW

From the bow of the STS *Bodrum*.

Dr. Harun Özdaş leaps into the water ahead of George, Claude, and Waldemar.



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