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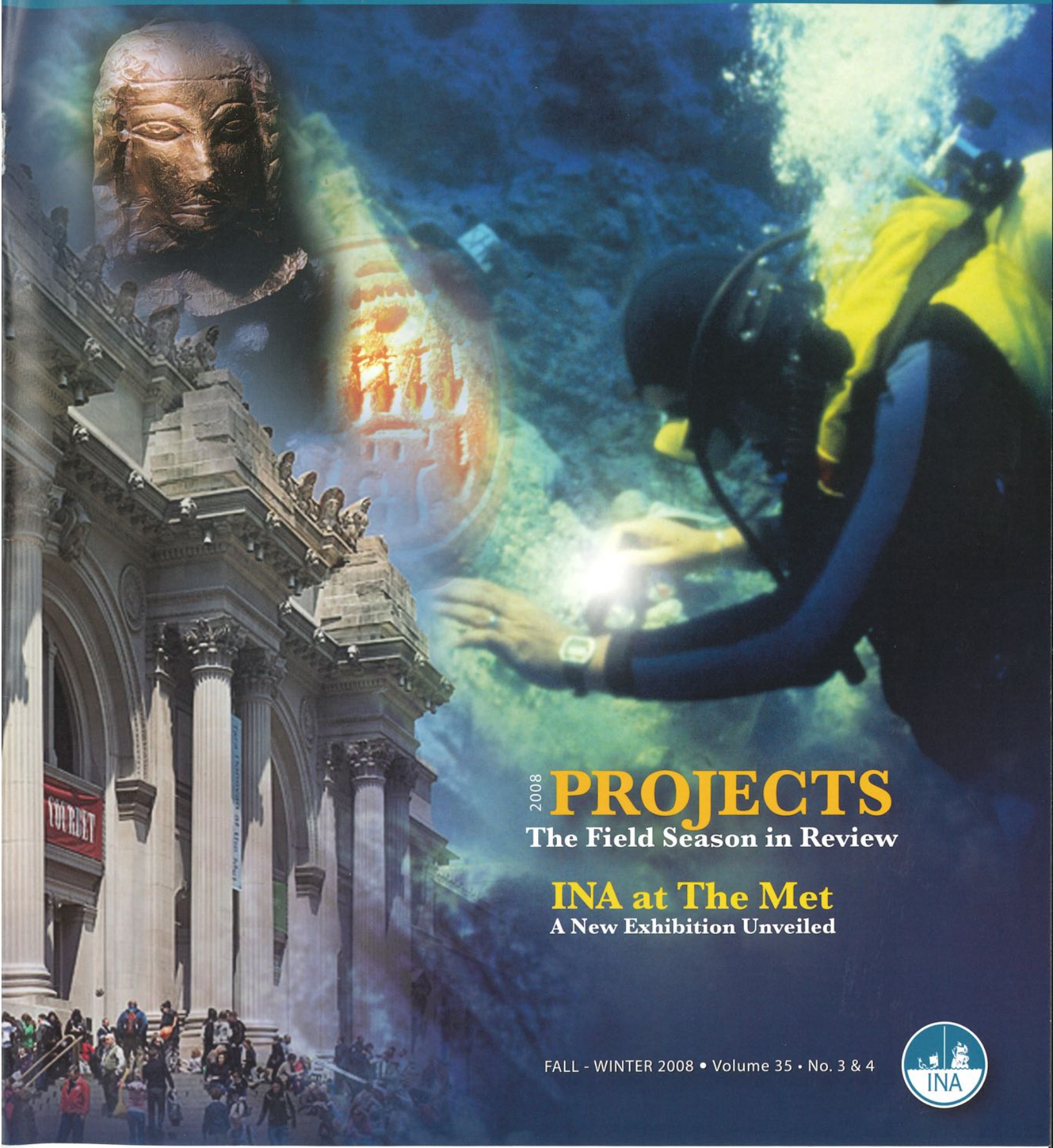






# quarterly

MAGAZINE OF THE INSTITUTE OF NAUTICAL ARCHAEOLOGY



2008 **PROJECTS**  
The Field Season in Review

**INA at The Met**  
A New Exhibition Unveiled

FALL - WINTER 2008 • Volume 35 • No. 3 & 4





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# insideINA

A Letter from the President

The past twelve months have been a time of transition for the Institute of Nautical Archaeology, as it has been for the United States and much of the world. One year ago, Donny L. Hamilton retired as INA President, and in April 2008 I was elected to fill that role. My first several months were focused on seeing that INA's projects in the field, in the laboratory, as well as those in the final stages of analysis and publication were on target, both in terms of accomplishments and budget.

Working with INA's Board of Directors we forged new partnerships, reaffirmed old friendships, and sought new opportunities. We were particularly successful in reaffirming our longstanding relationship with our Turkish partners, the Turkish Institute of Nautical Archaeology (TINA) and in establishing a new working partnership with Australia's Flinders University and their Maritime Archaeology Program. We also strongly reaffirmed our principal and most significant relationship with Texas A&M University and with the Nautical Archaeology Program and the Center for Maritime Archaeology (CMAC).

I am particularly pleased that in this past year newly appointed Texas A&M University President, Dr. Elsa Murano, joined INA's board and executive committee. INA also retained the strong leadership and counsel of A&M's Dr. Robert Walker and Dean Dr. Charles Johnson, while Nautical Archaeology Program professors Dr. Cemal Pulak and Dr. Kevin Crisman will serve as INA Vice Presidents.

As you will read in this special, double edition of *The INA Quarterly*, we have accomplished a great deal together and have taken important steps to weather the current economic crisis that grips this country and much of the world. INA, like many not-for-profits, holds its endowment in investments and we have recently lost a third of our investments in the market. Most of those losses were "paper losses" which will recover in time and The INA Foundation, which manages the endowment separately for INA, took strong steps with our investment advisors, and we have begun the job of rebuilding what was lost.

We are watching our finances carefully, and continue to spend wisely, adjusting our budget, making cuts and refocusing our efforts in some key areas. For example, we will not undertake any new excavations over the next few years in Turkey,

which will reduce the expense to the organization of constant survey and will allow us to focus our energy and resources on a backlog of conservation, analysis and publication. Fewer projects have been approved this year and we will be relying more on collaborative relationships, which allow us to share costs, especially with important initiatives such as the excavation of the Phoenician wreck at the Bajo de la Campana site. Our partnership with Spain's National Museum of Underwater Archaeology, is another example of a collaboration that will remove the expense of conservation and curation from INA.

We continue to look forward to and plan for the future with exciting initiatives supported by your generous donations and support. The new INA website at [www.inadiscover.com](http://www.inadiscover.com) has just been launched and the first edition of the *INA Annual* was published in the fall of 2008. Both are works in progress, and I look forward to your input and comments as we continue to refine and improve these projects. Through leadership and the crucial step of taking action—locating the world's most significant shipwrecks, excavating them to the highest standard, and then sharing the results with the rest of the world with expanded outreach and educational programs—INA remains an important voice in nautical archaeology and in the preservation of human history and our collective seafaring past.

In closing, I would like to acknowledge the retirement of some key figures in INA: Tufan Turanlı and Claudia LeDoux. Tufan retired from Texas A&M University and INA in 2008, although he continues as an INA research associate. Claudia is retiring this spring, after many years of dedicated work. She has been the "glue" of this organization ...the person who held together INA's offices at Texas A&M through many presidents and directors. We shall miss her, but we wish her well as she starts a new life in retirement with her family.

As always, thank you for your support, and for being a member of the INA family.



Jim Delgado  
President



In Panama, mapping the Civil War era (1865) submarine, *Sub Marine Explorer*.



# C ontents

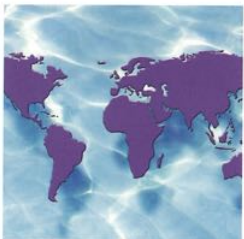
PROJECTS ISSUE VOLUME 35 • No. 3 & 4



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## Beyond Babylon

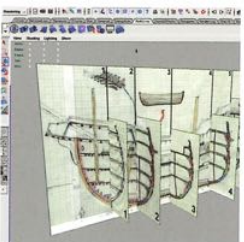
An exhibit is unveiled at The Met.



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## What INA Did This Summer

INA's 2008 Field Season from around the globe.



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## The Steffy Lecture Series

The first lecture in this distinguished series is hosted by the AIA Spokane Society.



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## INA Indepth

An interview with Cemal Pulak.

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## ON THE COVER

PHOTO COLLAGE

Archaeologist Murat Tilev working on a row of copper 'oxhide' ingots found on the Uluburun shipwreck.  
PHOTO: INA

Bronze female figurine showing a close-up of the head area clad in gold.  
PHOTO: INA

The Metropolitan Museum of Art, front entrance.  
PHOTO: Courtesy of The Met

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## INA Bookmarks

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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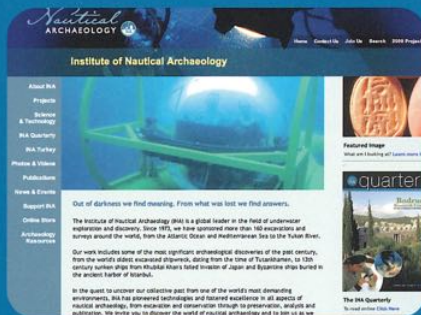


## www.inadiscover.com

Explore the fascinating world of underwater archaeology with our new website!

Human history has been hidden beneath the earth's waterways for long enough. With the launch of our new website INA continues the work it began almost five decades ago. With over 170 projects, INA is already the repository for a formidable volume of data including over 80,000 photos, hundreds of hours of film and video, thousands of artifact drawings, and over a hundred thousand pages of field notes, artifact catalog forms, ship timber recording forms, and ship plans.

This new site has been built to house existing digital materials and to be expandable in the years to come. Over the next few years, working with our partners at Texas A&M University as well as other nautical archaeologists around the world, we plan to create a new "Virtual Museum" of nautical archaeology featuring INA projects past and present with image galleries, site plans, field notes, and bibliographies that will be accessible to academic researchers, students, and history and shipwreck enthusiasts worldwide.



Navigate your way through history

Explore current INA projects

Browse photo galleries

Shop for INA apparel & gifts

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Make a donation



bringing history to light

Find out how your financial support can help create the largest, internet-accessible archive of nautical archaeological research in the world! Contact us at [info@inadiscover.com](mailto:info@inadiscover.com)

Our thanks to those INA Directors who joined in the Peter M. Way Challenge Grant.

## THE INA ANNUAL



2007

Published in Fall 2008  
*The INA Annual* examines projects and research conducted by INA Research Associates and the Nautical Archaeology Program faculty at Texas A&M University, in the previous calendar year of 2007. Approximately 60 pages and perfect-bound, *The INA Annual* is a scholarly and informed outlet for INA research featuring the findings of annual field seasons, as well as ongoing analysis and study with an editorial advisory board of Texas A&M University faculty, INA staff, and scholars from other universities and institutes.

As well as being offered in printed form, it will be available online as a downloadable PDF.

*The INA Annual* is one of the many benefits of membership. Join today at [www.inadiscover.com](http://www.inadiscover.com)



# Beyond Babylon

*In this digital age it is easy to take for granted how quickly ideas, images and influences can make their way around the world. Combine that with the modern, efficient transport of goods and materials, and our global village seems increasingly small. In contrast the world explored through the Metropolitan Museum of Art's critically acclaimed exhibition "Beyond Babylon: Art, Trade, and Diplomacy in the Second Millennium B.C." seemed vast indeed, and bridging the distances between peoples and cultures was an arduous and often dangerous journey. But journey our ancestors did, allowing the movement of raw materials, goods, and ideas to flow through Mesopotamia and the Caucasus, to the Levantine Coast and Africa over 4000 years ago... the very beginnings of a global economy.*

The opening of this fabulous exhibit on November 18th coincided with the Institute of Nautical Archaeology's 2008 Annual Meeting in New York City adding an air of excitement to the gathering. INA archaeologists, board members, and supporters were on hand to experience the vision and tireless efforts of the show's curator, Joan Aruz and her staff. Armed with the formidable political and economic resources of the Met, they achieved the singular feat of assembling, for the first time under one roof, some 350 prized Middle and Late Bronze Age artifacts gathered from museums and collections around the world.

On loan from the Bodrum Museum of Underwater Archeology, and central to the exhibit, is a collection of 98 artifacts discovered while excavating a Late Bronze Age shipwreck at Uluburun. The exhibit recreates a section of the vessel's hull and visitors enter as if through a gash torn in the ship's side as it slid to its final resting place on the sea floor. The interior of the display space also offers video footage and photographs taken during the excavation. Freight discovered from the wreck consisted primarily of tin and copper, the combination of which lends its very name to the age being celebrated by this exhibit... bronze.

Cemal Pulak, Vice President of INA and Nautical Archaeology professor at Texas A&M, together with INA founder George Bass, directed the excavation of what is considered the oldest known seagoing vessel. The excavation which began in 1984, continued for a

decade with over 22,000 dives made during that time. Conservation and preservation efforts continue to this day.

Attending the opening, Pulak observed the critical role that INA's shipwreck plays in "Beyond Babylon," noting that the material recovered from the wreck is the only direct archaeological evidence we have showing the conveyance of vast quantities of utilitarian and exotic raw materials found in transit.

"Many of the artifacts in the exhibition from various places were made of the materials that were carried on the Uluburun ship."



Images used here are provided courtesy of the Metropolitan Museum of Art, Dr. Allan Campbell, Ipek Martinez and the Institute of Nautical Archaeology.

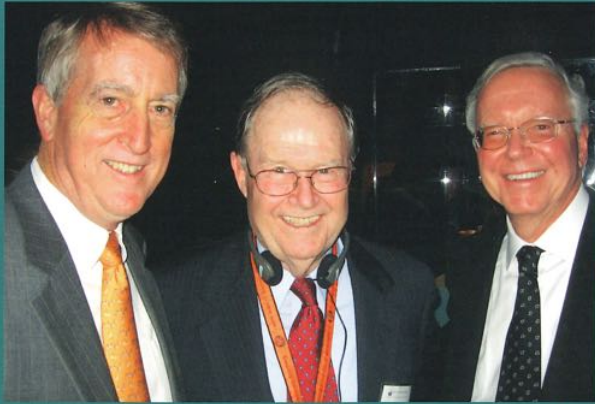
The exhibition itself is made possible by Dorothy and Lewis B. Cullman and The Hagop Kevorkian Fund. Corporate sponsors are the DEIK Turkish-American Business Council, Doğan Holding, Doğuş Holding, Koç Holding, and Sabancı Holding. Additional support is provided by the Oceanic Heritage Foundation and the National Endowment for the Arts. The exhibition is supported by an indemnity from the Federal Council on the Arts and the Humanities.





“The Uluburun shipwreck excavation truly is one of the world’s most significant underwater archaeological projects, and to share it with a larger audience through the Metropolitan Museum of Art is an important part of what INA is all about.”

— Jim Delgado



**FACING PAGE**

(Upper) Bronze female figurine, discovered at the Uluburun site, prior to cleaning and conservation.

(Lower) Same bronze figurine after restoration with head, lower arms, and feet clad in gold.

(Center)

The Metropolitan Museum of Art

**THIS PAGE**

(Clockwise from upper left) Peter Way, George Bass & Ned Boshell

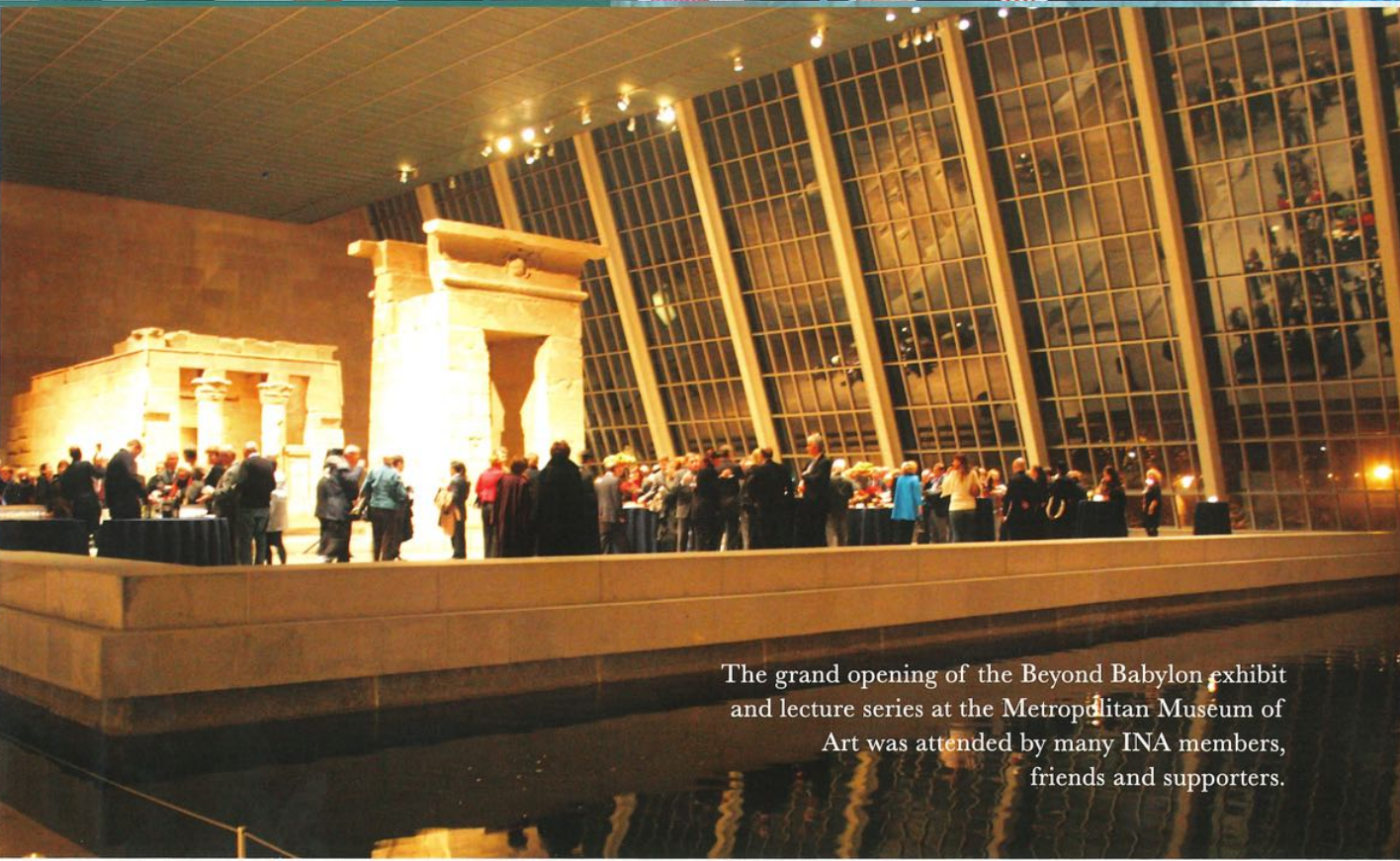
Paula Michaels and Jim Delgado

Ercan Acikel, Raynette Boshell and Barbara Duthuit

Claude Duthuit

Cemal Pulak and Refika Elibay

(Bottom) Museum gallery housing the Temple of Dendur.



The grand opening of the Beyond Babylon exhibit and lecture series at the Metropolitan Museum of Art was attended by many INA members, friends and supporters.



# INA projects

## ALBANIA

**Albanian Coastal Survey**  
Directed by Jeff Royal

## SPAIN

**Bajo de la Campana Phoenician Shipwreck Excavation**  
Directed by Mark Polzer and Juan Pinedo Reyes

## CRETE to EGYPT

**Danaos Project**  
Directed by Shelley Wachsmann

## ISRAEL

**Dead Sea Coastal Survey**  
Directed by Asaf Oron

## TEXAS

**Denbigh, Blockade Runner Write Up**  
Directed by J. Barto Arnold

## CYPRUS

**Eastern Cyprus Maritime Survey**  
Directed by Justin Leidwanger

## JAPAN

**Frigate Ertuğrul Underwater Excavation**  
Directed by Tufan Turanlı

## TURKEY

**Excavation of the Iron Age Shipwreck \* at Kekova Adasi**  
Directed by Elizabeth Greene

## TURKEY

**Kızılburun Conservation**  
Directed by Donny Hamilton and Deborah Carlson

## LEBANON

**Lebanese Coastal Survey**  
Directed by Ralph Pedersen

## SPAIN

**Mazarrón I Shipwreck Timber Study\***  
Directed by Carlos Cabrera

## VIETNAM

**Northern Vietnam Anchor Documentation & Assessment \***  
Directed by Jun Kimura and Randall Sasaki

## CANADA

**Lake Ontario Maritime Cultural Landscape Study**  
Directed by Ben Ford

## PUERTO RICO

**Puerto Rico Project \***  
Directed by Filipe Castro

## OKLAHOMA

**Red River Shipwreck Excavation**  
Directed by Kevin Crisman

In the summer of 2008 the Institute of Nautical Archaeology, in conjunction with Texas A&M University's Nautical Archaeology Program and other partners, undertook 21 archaeological projects around the globe at sites ranging from Oklahoma and the Yukon to Panama, Spain and Bermuda.

Thirteen of the projects are ongoing, and eight (marked by an asterisk) were new initiatives in 2008.

Read more about INA projects, past, present & future [www.inadiscover.com](http://www.inadiscover.com)



## ITALY

**Renaissance Venetian Naval Manuscript Study \***  
Directed by Lilia Campana

## PANAMA

**Rio Chagres - Sub Marine Explorer Surveys\***  
Directed by James Delgado, Frederick Hanselmann and Dominique Rissolo



# INA Did Last Summer!



## **BERMUDA**

### **Warwick Project\***

Directed by Piotr Bojakowski and Katie Custer

## **BERMUDA**

### **Western Ledge Reef Wreck Timber Analysis**

Directed by Piotr Bojakowski and Katie Custer

## **TURKEY**

### **Yenikapi Byzantine Shipwrecks Excavation and Study**

Directed by Cemal Pulak

## **YUKON**

### **Yukon Gold Rush Steamer Survey**

Directed by John Pollack and Robyn Woodward



# YUKON

## Yukon Gold Rush Steamer Survey

This year has been a significant one in terms of accomplishments, outreach, and refining our strategy for the North.

The annual field trip was conducted in June 2008 under permit from the Yukon Territorial Government. The team included John Pollack, Robyn Woodward, Chris Atkinson (TAMU graduate student) and Doug Davidge. This year the Territorial government provided substantial assistance by lending us one of their capable staff (Tim Dowd) and a riverboat. The group traversed 253 km through remote wilderness with no road access, progressively moving a tent camp north between Deep Creek and Carmacks.

On our first day, less than a week after the ice went out on Lake Laberge, we unexpectedly pinpointed the small (15.2 m) steel-hulled sternwheeler, *A.J. Goddard*, lying upright in 12 m of water at the northern end of Lake Laberge. The find was simply a large target noted while calibrating electronics. Its identity was confirmed later that summer when Doug Davidge returned to the location with an ROV and drop camera.

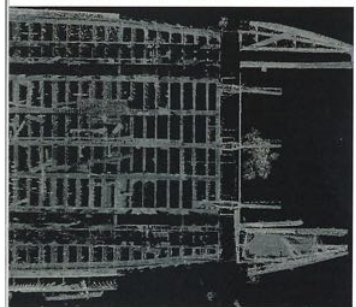
***A.J. Goddard* is significant given it is the only intact Gold-Rush-era sternwheeler wreck known to exist in the Territory.** This small vessel was prefabricated in San Francisco in 1897, taken over the Chilkoot Trail in pieces, and assembled on the shore of Lake Bennett in 1898. She was the third sternwheeler to run downstream through Miles Canyon into Whitehorse, and was lost in 1901 during a storm on Lake Laberge. Her superstructure has fallen apart, but the hull, boiler, paddlewheel, hog post and chain system, engines are intact. We know nothing about the condition of her cargo—if she had any.

North of Lake Laberge we entered the Thirty Mile Section of the Yukon River and capitalized on the low, Spring water levels. Over the course of several days three additional wreck sites were located: a) the engines and paddleshaft of a small (20 m) unidentified sternwheeler near km 135, b) the lower hull, frames and engine mounts of the 37.1 m, 1898 wooden-hulled sternwheeler *James Domville* at km 145, and finally c) scattered iron hull remnants of the 30.4 m 1902 wooden-hulled sternwheeler *La France* at km 165. The latter two sites lie in fast (7 knot) water and detailed work at these locations will be difficult.

Moving steadily north, we left the favorable water conditions north of the junction of the Teslin and Yukon Rivers. We planned to conduct a total station survey of the giant (64.1 m) wooden-hulled sternwheeler *Klondike*, lying just north of the junction, but found the site overwhelmed by swift brown, and any work was impossible. High water extended another 130 km downstream to our next search area—the 44.7 m wooden-hulled sternwheeler *Columbian* near km 311. Here we located scattered debris on shore associated with the 1906 explosion and fire on this vessel. Determining a precise location was not possible but we did narrow the search area, and there is a good chance this vessel can be located on the next low-water visit.

In addition to these four newly confirmed sites, a good deal of publication, outreach and ancillary mapping took place over the winter in British Columbia. Carlos Velazquez (EPICSCAN) and John Pollack continue to process the 2007 LIDAR data from the sternwheeler *Evelyn* into line drawings and cross-sections of the hull, with publication planned in the SHA Technical On-Line series in 2009. Also a hull mapping project has been initiated on *Moyie*, at Kaslo, BC. *Moyie* is a composite (steel-and-wood) hulled sternwheeler and a sister ship of *Tyrell* (now lying at West Dawson). *Moyie* is being used as a test-bed for hull documentation methods to be applied at the West Dawson site, and to better understand the construction methods and nomenclature used on the three composite-hulled sternwheelers built in Western Canada. Robert Turner, Curator Emeritus of the Royal BC Museum in Victoria, has provided substantial assistance with archival research.

At the request of the Territorial Government, 22 known sternwheeler sites have been summarized in a report entitled “A CATALOGUE OF HISTORIC STERNWHEELER WRECKS AND HULKS IN THE YUKON.” A detailed report on our 2008 work was posted on the Royal Canadian Geographical Society website at [www.rcgs.org/programs/research\\_grants/research\\_grants\\_2008\\_yukon.asp](http://www.rcgs.org/programs/research_grants/research_grants_2008_yukon.asp) in addition to print coverage in their October 2008 issue of *Canadian Geographic*. The survey’s findings to date were also summarized in a Society of Historical Archaeology conference paper given at the January 2009 meeting in Toronto, (Pollack, Woodward, Easton and Velazquez).



ABOVE  
ROV image of the sternwheeler *A.J. Goddard* lying in 12m of water in Lake Laberge.

Engines and paddlewheel machinery from small sternwheeler, Thirty Mile Section of the Yukon River, north of Lower Laberge.

LIDAR scan image from the sternwheeler *Evelyn*



Given the wealth of possible projects, a strategic plan for the next five years was presented to, and approved by, the INA Archaeology Committee in December 2008. If sufficient funding can be found, our immediate plans for 2009 are to make the first dives on *A.J. Goddard* and conduct a photoinventory of this important site. Then we will relocate to West Dawson and continue to document the seven hulls lying there with our main focus being one of two wooden-hulled king-post vessels. Finally, hull documentation is continuing on the composite-hulled sternwheeler *Moyie* at Kaslo, BC. As always there are opportunities for participation by TAMU Nautical Archaeology Program students.

*We wish to thank our INA donors, the staff of the Yukon Government, the Yukon Historic Resources Fund, the Royal Canadian Geographical Society, and the Kootenay Lake Historical Society, for their support and assistance.*

—John Pollack

## VIETNAM

### Northern Vietnam Anchor Documentation & Assessment

In late May and early June 2008, an international team from the Institute of Nautical Archaeology, the Maritime Archaeology Program at Flinders University, and the Historical Association in Vietnam conducted an intensive survey in northern Vietnam with the generous support of the RPM Nautical Foundation. The purpose of the survey was to record two wooden anchors that had been recovered by a local fisherman from the Red River and to identify the significance and archaeological potential of a historic battle site on the Bach Dang River, near Halong Bay, where an invading Chinese and Mongol naval force sent by Kublai Khan was trapped and destroyed by the Vietnamese in 1288.

The two large wooden anchors are currently stored in a private house in Hanoi. The owner purchased them from fishermen who had snagged them in the Song Hong, or Red River. The National History Museum of Hanoi and History Associates, prior to the anchors becoming part of the museum's collections, wanted to know if these anchors were associated with the 13th-century Mongol invasion of Vietnam. The Vietnamese regard the battle of 1288 as a particularly historic and culturally significant victory in which warrior prince and general, Tran Hung Dao, snared the Mongol fleet in a narrow part of the river, trapping them with huge wooden stakes that his troops and local villagers had set into the river bed at low tide. When the Mongols entered the trap at high tide, the Vietnamese attacked, and held the Mongol fleet at bay until the tide fell. Unable to retreat, the Mongol fleet was then destroyed by fire rafts while the invaders who waded ashore were killed.

Some of the stakes were exposed by river bank construction of a fish pond in the 1950s. In the 1980s, the Vietnam Institute of Archaeology excavated and recorded hundreds of the wooden stakes that remain in situ on the Bach Dang's now silted-in foreshore. Thousands more, as well as the remains of the fleet, should lie close by. The INA/Flinders/History Associates team visited the site, pinpointed where additional remains should lie with the help of local villagers, and also documented a series of temples dedicated to Tran Hung Dao and his victory. The Bach Dang area is a unique maritime cultural landscape that reflects seven hundred years of tradition associated with a major naval battle largely unknown in the west, unlike Kublai Khan's earlier, and more famous naval defeat in Japan in 1282. The team plans to return to Vietnam in 2009 to work with the Vietnamese to record the battle site, conduct a survey, and begin test excavations to find the Khan's lost ships.

In Hanoi, the team documented stakes from Bach Dang that are now in museum collections and then turned their attention to the anchors. A detailed program of photographic documentation, offset measurements, and taking wood and fiber lashing samples was followed by laboratory analysis and drafting plans of these intact and rare wooden anchors. It is now clear that they do not date to the 13th century, but instead may be from the 16th to 18th centuries. Research continues to determine their exact date.

—Jun Kimura

Maritime Archaeology Program, Flinders University



**ABOVE**  
Documentation of the wooden anchors.

A local farmer at Gen Yang shows Dr. Vu The Long and INA Director George Belcher the site of the battle of Bach Dang.

**PHOTOS** Jim Delgado





# ITALY

## Renaissance Venetian Naval Manuscript Study

In ancient times the *quiqueremis*, or *quinquereme*, was a technological improvement on the earlier trireme, with five men at each oar to increase the speed and power of the war galley. With the fall of the Roman Empire, however, the knowledge of how to build the quinquereme disappeared—that is, apparently, until a professor of Greek in Venice named Vettor Fausto (ca. 1480-1541) managed to resurrect the quinquereme from a deep knowledge of Greek and Latin mathematicians' texts, despite the fact that he was not even a skilled shipwright. The Arsenal of Venice built several galleys "a la Fausto," the last of which was meant to be the flagship of Marc'Antonio Colonna in the battle of Lepanto (1571). However, no archaeological remains of the quinquereme—from the ancient or Renaissance period—have survived to this day.

In order to better understand Fausto's achievement and how the quinquereme was built, I am focusing my research on one of the most intriguing aspects in the history of Renaissance naval architecture: the development of the Marina Architectura, a geometrical shipbuilding method that has its origins from a deep knowledge of Greek and Latin mathematicians' texts. My primary field of investigation is archival research, which in the summer of 2008 was carried out in Venice, primarily in the State Archive, but also in the Marciana Library and in the Library of the Correr Museum.

From May 28 to August 11, I found and transcribed more than 300 unpublished documents, as well as the 16th century naval treatise *Misure di vascelli di...proto dell'Arsenale di Venetia*, which highlights important questions about Venetian shipbuilding practice. All of these manuscripts and the above mentioned naval manuscript will be included in my Texas A&M Nautical Archaeology Program master's thesis titled "Vettor Fausto: a Professor of Greek in Venice. A New Light on the Manuscript *Misure di vascelli di...proto dell'Arsenale di Venetia*." (May 2009) The technical aspects of the quinquereme are currently being studied under the supervision of Mauro Bondioli, whose research has been critical for the study of the Italian shipbuilding and seafaring.

In addition, many other documents not specifically related to my research topic—but of much interest to historians of naval architecture—came to light, including several folios regarding four Venetian shipwrights in the early 17th century who were accused by the Inquisitors of Venice of having sold some galley drawings (*disegni*) to the King of Spain. These are the earliest mentions of line drawings yet known.

—Lilia Campana, INA research associate

# TEXAS

## Denbigh, Blockade Runner Write Up

As part of the publication phase of the *Denbigh* Project, investigator J. Barto Arnold announces the publication of Book No. 4 in the *Denbigh* series, "Colin J. McRae: Confederate Financial Agent; Blockade Running in the Trans-Mississippi South as Affected by the Confederate Government's Direct European Procurement of Goods." This biography of Confederate financial agent Colin McRae is now offered in an expanded 2008 edition which includes archival documents, correspondence and accounting records that illustrate how this man was instrumental in the financial management of the Southern States during the Civil War. Arnold has easily doubled Davis' original 1960 text. Drawing on his experience from excavating the *Denbigh*, one of the most successful blockade runners of the American Civil War, Arnold adds more insight into how McRae used blockade running particularly in the Trans-Mississippi to shore up financial strength in order to fight the war. Written for Civil War history buffs and students, this book contains plenty of photographs of the original documents and correspondence.

**Supporting Institutions** The Texas Historical Foundation, the Ed Rachal Foundation, the Hillcrest Foundation, and the Strake Foundation

—J. Barto Arnold, M.A., INA research associate



# LEBANON

## Lebanese Coastal Survey

**Site:** northern Lebanese coast

**Date:** Iron Age ( ca. 8th century B.C.) Byzantine Period

**Investigator:** Ralph K. Pedersen, INA research associate

### Fieldwork description

During the course of a six-month long informal survey at the ancient Phoenician city of Enfe, the Chekka Peninsula, Batroun south to Tell Fadous, and in west Beirut, three shipwreck sites were found, and one probable site was discovered. The first target was to locate a Byzantine shipwreck whose discovery was reported in 1974. This shipwreck was located lying off the north side of the Chekka Peninsula. Surprisingly, another shipwreck of the same date was found just a few meters away. It was apparently not previously recognized, possibly due to modern dumping on the site. A third possible shipwreck lies on the west side of the Chekka Peninsula, and is comprised of fragmented ceramics. Amphora handles of tentatively Chian date the site to the Imperial Roman period. A site located in Beirut consists of an ovoid stone anchor sitting on top of ceramics, with similar pottery pieces scattered over an area perhaps 20 meters across. Based on the shape of one large handle sherd, the experts place the probable date of the site in the Iron Age, possibly in the 8th century B.C., with some opinions ranging as early as the Middle Bronze Age. The fabrication has been said to be similar to ones found in Gaza in the southern Levant.

### Highlight

The possible Iron Age (or earlier) wreck in Beirut was shown to the survey team by the head of one of the Beirut diving clubs. Unfortunately, it is directly under the spot where local dive clubs insert their members. A number of sherds have been recently removed from the site as souvenirs by sport divers. Additionally, the shallow site is susceptible to storms that further contribute to the disturbed nature of the site. This shipwreck is particularly important because of its date, and it should be the focus of a rescue excavation in the near future.

# JAPAN

## *Ertuğrul*, Frigate Underwater Excavation

**Site:** Oshima Island

**Date:** late 19th century

**Investigators:** Tufan Turanlı, INA research associate and Cemal Pulak, Vice President INA and professor, Nautical Archaeology Program, Texas A&M

### Fieldwork description

The Imperial frigate *Ertuğrul* was constructed in Istanbul in 1889 and sank during a diplomatic visit to the Japanese Emperor in southeastern Japan in 1890. All but 69 of her 609 crew and their commander were lost during the typhoon that destroyed the frigate. 2008 marked the first season of excavation at the wreck site, and after the six week season, 144 individual dives were made in two excavation areas, and more than 1000 artifacts were raised, registered, and cataloged. The most compelling discovery of the season was also a poignant reminder of the human tragedy these recovered materials represent. This was a fragment of a human skull along with a finger or toe bone. These finds were not treated as archaeological objects, and it was decided by the project directors in consultation with Turkish and Japanese authorities to bury the remains with the rest of *Ertuğrul's* dead that rest in peace in a Turkish monument on Oshima Island. The event was accompanied by an Islamic burial ceremony held on location by the Turkish Iman from Tokyo. The Turkish Military attaché in Japan, Japanese dignitaries, and the project participants attended the ceremony.

### Supporting Institutions

Yapikredi Emeklilik, Mr. David Koch, Turkish Airlines, Kushimoto Municipality, TOYO sonar survey and OYO magnetometer survey services





# SPAIN

## Bajo de la Campana Phoenician Shipwreck Excavation

The first full field season of excavation at the Bajo de la Campana Phoenician shipwreck site began in July 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 the preliminary survey of 2007, 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.

Under the co-directorship of INA Research Associates Mark Polzer and Juan Pinedo, the 2008 field season got off to an auspicious beginning with the discovery of a unique fluted stone pedestal with a scroll capital top on the very first day of site work. Excavation yielded many objects from the three ships that wrecked at the site—Phoenician (7th-6th century B.C.), Punic (2nd century B.C.), and Roman (1st century A.D.)—though Phoenician material predominated. The expedition recovered broken pieces of amphoras, bowls, plates, and other ceramic vessels, 10 elephant tusks, 28 small tin ingots and two more of copper, hundreds of galena (lead ore) nuggets, pine cones, and numerous large, round ballast stones.

Of the ships themselves the team found over 100 metal fastenings, fragments of lead hull sheathing, and several small wooden structural elements believed to have been used in stowing the cargo. Recovered personal items belonging to one or more of the unfortunate crewmembers include a tiny stone cube that may be a gaming piece, and a stone rod that appears to be a whetstone. The latter bears what looks like Phoenician graffiti scratched onto its surface—quite possibly the owner's name. The team also found several double-sided wooden combs; these however seem to be part of the cargo rather than grooming items used by the crew. In addition, several nuts and seeds, including an acorn, a hazelnut, and an olive pit, give some idea of the provisions carried on board for the crew's sustenance.

Being completely exposed to wind and waves, the site is proving to be a challenging one. Unseasonably erratic weather this summer hampered the team's work and cost it a good many days of diving. The many rocks and boulders littering the site also made excavation slow and demanding. In spite of these difficulties, the team made good progress and was able to excavate more than a meter deep in some areas. The deep sediment and good preservation of buried objects is encouraging and suggests that there could very well be significant hull remains from the shipwrecks. These, along with the vast majority of cargo and shipboard items, must be buried still deeper and await discovery. The excavation at Bajo de la Campana has figuratively—and literally—only just scratched the surface.

—Mark Polzer, INA research associate

# BERMUDA

## Western Ledge Reef Wreck Timber Analysis

**Site:** Western Ledge Reef Wreck

**Date:** late 16th-century Iberian-Atlantic vessel

**Investigators:** Piotr Bojakowski and Katie Custer, INA research associates

**Fieldwork description:** Materials and artifacts in the Bermuda Maritime Museum collection related to original excavations in the 1990s were researched and documented, and research was also conducted in the Archivo General de Indias. During the project's archaeological phase, the team studied the wreck's hull timbers, preserved frames and futtocks, and elements of a distinctively Iberian stern assembly. At this stage, it is safe to say that all the data related to the Western Ledge Reef Wreck is secured. Analysis and interpretation will integrate the research and writing of principal investigator Bojakowski's dissertation.

**Highlights:** This project has been showcased at the October 2008 international conference of the Association of Preservation Technology in a presentation entitled "Conservation Aspects of the 16th-century Western Ledge Reef Wreck."



### ABOVE

Juan Pinedo Reyes searches a grid sector in the Phoenician wreck area.



A decorated elephant tusk found at the site.

### BELOW

INA research associate Piotr Bojakowski in Bermuda.





# CYPRUS

*Far-flung trade in a quiet Roman neighborhood.*

**Site:** Cape Greco area

**Date:** circa A.D. 100

**Investigator:** Justin Leidwanger, INA research associate

**Fieldwork description:** Four weeks were dedicated to investigating a shallow shipwreck discovered during 2007. The vessel appears to have been carrying a mixed cargo in at least three amphora types: jars from southeast Asia Minor, which predominate; a small number of a poorly documented type of unknown origin, perhaps from Cyprus itself or the neighboring mainland; and, of most interest, a form manufactured along the Mediterranean coast of France, alongside what we believe are local knock-offs of these more cosmopolitan Gaulish wine jars. Thick remains of a resinous lining probably confirm a wine content, at least for this latter type, and although additional non-cargo ceramics were recorded, no anchor or other ship fittings have yet been found.

**Highlight:** Though scattered, the remains may provide significant insights into the long-distance and regional commercial connections of this quiet Roman province.

**Supporting Institutions:** University of Pennsylvania, RPM Nautical Foundation and the Thetis Foundation of Cyprus



## ABOVE

Documenting the remains of a Roman merchant vessel (ca. AD 100) near Protaras, Cyprus.

## BELOW

Mike McGlin, Kim Rash, and John Littlefield pose atop a massive marble drum from the marble quarries of Proconnesus Island in the Sea of Marmara, the point of origin for the marble column drums on the Kizilburun wreck.

# TURKEY

*A Final Destination for the Kizilburun Column Ship?*

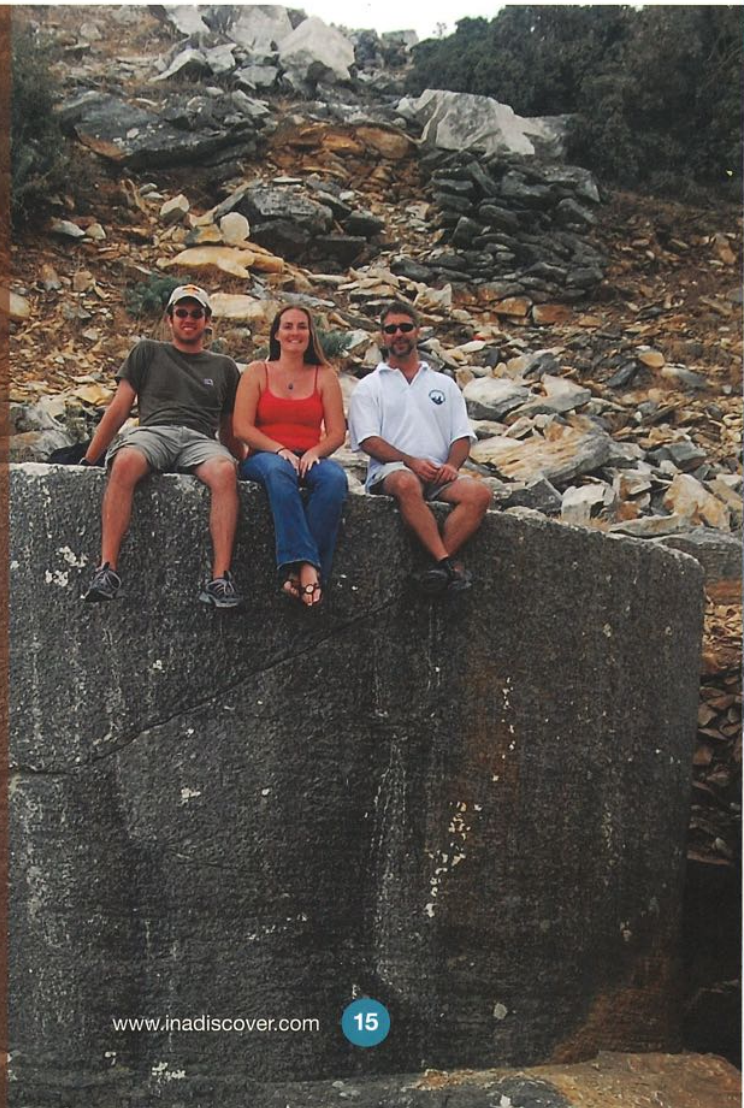
**Date:** ca. early 1st century B.C.

**Investigators:** Donny Hamilton and Deborah Carlson, professors, Nautical Archaeology Program, Texas A&M University

**Fieldwork description:** After three seasons of excavation of the Roman marble carrier at Kizilburun, the 2008 season was dedicated to researching some of the more than 3,000 whole and fragmentary artifacts raised from the site that are currently being conserved at INA's Nixon Griffis Lab in Bodrum. The artifacts under examination include hundreds of wood fragments preserved under the ship's cargo—50 tons of newly-quarried white marble carved up into the eight drums and capital of a single Doric column.

Texas A&M graduate student John Littlefield is drawing and examining the fragments in an effort to determine if they represent internal support timbers or the actual remnants of the ship's hull. Kim Rash, another Texas A&M graduate student researching wreck material for her Master's degree, x-rayed and cast some of the metal concretions from the wreck, including tools and pieces of the ship's equipment. Mike McGlin, a recent graduate of Holy Cross, sorted and cataloged many of the Kizilburun ceramics, from transport amphoras to bowls, lamps, and cooking pots. This assemblage of late Hellenistic ceramics promises the best chance of narrowing the date of the wreck, which probably lies some time in the early first century B.C.

**Highlights:** Carlson traveled to Claros (near Izmir) to meet with French architects studying the architectural remains of the Temple of Apollo. Comparison of the unfinished drums from Kizilburun and the finished pieces at Claros suggests a strong probability that the Kizilburun column was destined for Claros.







**PHOTO**  
Survey crew on the beach at the mouth of the river.

**INSET IMAGE**  
The remains of the Civil War era *Sub Marine Explorer*.



## PANAMA

### Rio Chagres - Sub Marine Explorer Surveys

In February, a team from the Waitt Institute for Discovery, INA and Indiana University, with funding from the Waitt Institute, conducted two field projects on Panama's Atlantic and Pacific coasts. The first was a final phase of documentation and survey of the 1865, New York-built submersible *Sub Marine Explorer*, on Isla San Telmo in the Pearl Islands of the Bay of Panama. Scientists from Woods Hole Oceanographic Institute (WHOI) joined the WID/INA/IU team to assess the pearl beds off the island, the scene of the submarine's final dives in 1869, and conducted an Autonomous Underwater vehicle (AUV) survey of the waters offshore. A WHOI marine biologist also studied and documented the marine organisms growing inside and outside of the submarine. Final drawings of the submarine were completed, and a final report summarizing management options for the submarine is being sent to the Government of Panama.

On the Atlantic side, a survey/reconnaissance of the mouth of the Rio Chagres revealed a half-millennia's worth of substantial archaeological remains at this once-busy global trading crossroads. Remote sensing revealed at least one 17th-century shipwreck site, and other anomalies may represent additional wrecks. The areas surveyed were the site of at least fifteen known shipwrecks, including the fleet of pirate Henry Morgan, wrecked in 1671 during Morgan's fabled "Sack of Panama." Other wrecks included Spanish trading vessels, and ships carrying fortune seekers on their way to California during the Gold Rush years of 1848-1851. The team documented remains of the settlement of Chagres, a 17th-century Spanish town occupied until 1914, as well as ruined fortifications, cannon, and ordnance deposited in the shallows beneath the 18th-century World Heritage site, El Castillo de San Lorenzo. The mouth of the Chagres also contains early U.S. Army fortifications built to guard the river and the Gatun Dam, several miles above the river's mouth, from attack. Now submerged, some of the fortifications documented by the team include emplacements established during World War II to prevent Nazi saboteurs from using U-boat launched seaplanes to blow up the dam and thereby drain the Panama Canal.

The results of the study have been sent to the Government of Panama, and plans for ongoing work on the important sites on the Chagres are underway.

—Dr. Jim Delgado, INA President and CEO

**ABOVE**  
Cannon found in the shallows of the Rio Chagres.

Donald Geddes III, Chairman of the INA Board of Directors being interviewed at San Lorenzo.



# CANADA

Lake Ontario Maritime Cultural Landscape Study

## Warships on Lake Ontario

**Location:** New York and Canada

**Site:** northeastern Lake Ontario

**Date:** Contact Period to early 20th century

**Investigator:** Ben Ford, INA research associate

**Fieldwork description:** The Lake Ontario Maritime Cultural Landscape Project completed the survey of three one-kilometer-square blocks along the lake's shore. Each block was divided into a terrestrial component covered by pedestrian survey and a submerged component surveyed using a side-scan sonar and a magnetometer (both provided by INA). An attempt was made to speak with every property owner within each survey block, as well as local archaeologists and historians, both professional and avocational. The 2008 survey team identified approximately 13 historic and pre-Contact sites, including two pre-Contact camps, two farmsteads, a lime kiln, an early 19th-century artifact scatter, four turn-of-the-century docks, a ferry landing, and a schooner that ended its days as a coal barge. We also re-identified Haldimand, a circa 1765, 16-gun British naval snow. Haldimand was scuttled at Carleton Island, the British naval station on the lake during the Revolution. This wreck and surrounding features and structures, including Fort Haldimand and the shipyard that produced the recently-found *Ontario*, has strong potential for an integrated terrestrial and underwater archaeological project. Additional information about the 2008 field season is available through the Museum of Underwater Archaeology: [www.uri.edu/mua/](http://www.uri.edu/mua/)

**Highlight:** A probing survey conducted in the possible location of a War of 1812 gunboat identified during the 2007 season was not definitive, but greatly reduced the search area for the wreck.

# SPAIN

## An Unusual Phoenician Ship

Mazarrón I Shipwreck Timber Study

**Site:** Cartagena

**Date:** 7th century B.C. (Phoenician) wreck

**Investigator:** Carlos Cabrera Tejedor, INA research associate

**Fieldwork description:** This was the first post-conservation attempt to the study the 7th-century B.C. Phoenician Mazarrón 1 shipwreck, discovered in Mazarrón, Spain, in the late 1980s and excavated in the mid-1990s. The planks of the hull are joined with pegged mortises and tenons; the frames of the ship, however, are lashed. In addition, the edges of the planks are beveled and sewn. The Mazarrón 1 appears to be an extremely important transitional ship for the study and understanding of shipbuilding evolution in antiquity.

**Highlights:** This type of ship construction, which combines Phoenician and Greek traditions, has no known parallels.



### ABOVE

Late-18th to mid-19th century pipe bowl, identified on the shore of Wolfe Island. Note the fully rigged ship.

Jessi Halligan setting up remote sensing equipment on the INA inflatable.

INA research associate Ben Ford prepares for a dive.



# BERMUDA

English galleon may fill in the gaps...

**Site:** Warwick Project, Castle Harbour

**Date:** early 17th century

**Investigators:** Piotr Bojakowski and Katie Custer, INA Research Associates

## Fieldwork description

In July 2008, INA collaborated with the Bermuda Maritime Museum (BMM), to conduct a reconnaissance survey of the early 17th-century English galleon *Warwick*. Preliminary results of the survey suggest that the remains of *Warwick* represent an entire starboard section of the ship from near the keel to the upper works, a never-salvaged midship section, and—potentially—a bow fragment.

## Highlights

The hull structure of *Warwick* bears quite a strong resemblance to that of the early 17th-century *Sea Venture*; excavation of *Warwick* together with what is already known from *Sea Venture* could fill an important gap in our understanding of English shipbuilding from this period. What is even more significant is the fact that the structure of this galleon might provide comparative data not only for *Mary Rose*, *Warwick*'s only English predecessor, but also for the early 17th-century Swedish warship *Vasa*. The historical significance of *Warwick* is undeniable and its role in early colonial Bermudian history has elicited support from many different interest groups on the island.

**Supporting Institution:** Bermuda Maritime Museum

# PUERTO RICO

A Rare Nao Discovered?

**Site:** coasts of the municipios of Loíza, Carolina, and San Juan

**Dates:** Precolumbian to Modern Periods

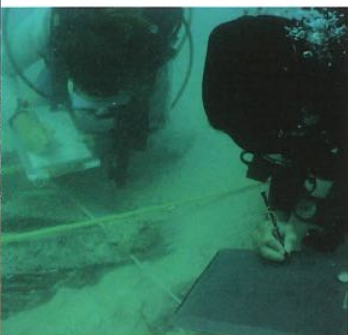
**Investigator:** Filipe Castro, Professor, Nautical Archaeology Program, Texas A&M

## Fieldwork description

The main objectives of this survey were to evaluate the number, chronologic span and condition of the known shipwreck sites and document the destructions of treasure hunters and looters. In the course of a three-week field season, 20 sites were located and inspected, and about 80 sites with potential interest were identified through conversations and interviews with local divers and informants. Next year, efforts will be made to classify areas or shipwreck sites in terms of their stability and threats, and in relation to their rarity and archaeological relevance. Project plans involve the eventual establishment of a small conservation laboratory in Puerto Rico, perhaps in cooperation with the local Council of Underwater Archaeology.

## Highlights

A shipwreck of unknown date, with timber under the ballast, was visited during the survey. There is a historical account of a nao being lost at the site in 1621, and the wreck was originally surveyed by project member Richard Fontanez in the 1990s and the timbers partially recorded. According to the historical account a company of soldiers was sent to the site to salvage as much as they could from the stranded ship. In the 1970s a treasure hunter is said to have turned each and every ballast stone and raised all the artifacts he could find, which were sold and have since disappeared. The timbers are in a good state of preservation, and a sample taken for carbon dating yielded a range of possible dates situated between 1650 and 1950. Very few archaeological remains of Iberian naos exist today; if this is indeed the ship that wrecked in the 17th century, it would be a very important find.



ABOVE

Katie Custer and Sara Hoskins recording the *Warwick*.

*Warwick* site in Castle Harbour, Bermuda.

BELOW

Virtual image of a nao created by Audrey Wells.





# TURKEY

*Maritime internationalism before money...*

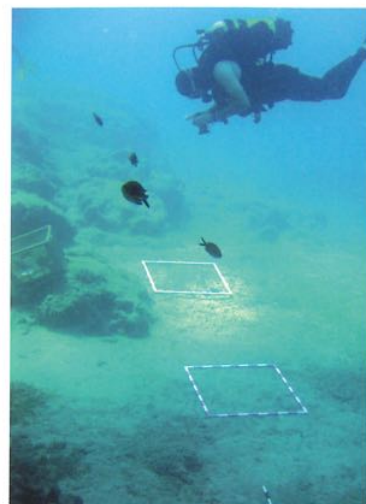
**Site:** Kekova and Cokterme (Mediterranean Coast)

**Date:** Archaic Period (ca. 8th-6th centuries B.C.)

**Investigator:** Elizabeth S. Greene, assistant professor, Brock University

**Fieldwork description:** The visible surface of the wreck at Kekova, which is far more complex than earlier surveys seem to suggest, was mapped over the course of two weeks. About 100 broken basket-handle amphoras, possibly Cypriot, and perhaps a dozen each of types from Corinth and Samos were found on the surface of the site, as well as two mortaria (shallow bowls like those found at Pabuç Burnu), and a one-handed Ionian cup. In Cokertme the plan was to look at an archaic wreck with basket-handle amphoras found at Kepeçe Burnu at the western edge of the harbor (according to George Bass's 1973 survey report) and "another wreck" at Cokertme according to the 1980 survey. Elizabeth Greene and Justin Leidwanger reviewed the survey finds last summer and were suspicious that the "two wrecks" were one and the same. A day of diving the shallow, extensive site confirmed these suspicions. While the site is probably not worth excavating as it is badly broken up, the scattered sherds do indicate another example of archaic exchange between Cyprus and the Ionian coast.

**Highlight:** The Kekova wreck holds potential to reveal interesting answers about maritime internationalism in the archaic world—what did the premonetary economy look like, why were these three regions (Greece, Cyprus, and Anatolia) trading with each other—etc.



## ABOVE

Troy Nowak shoots pictures for a photomosaic of the 7th-century BCE shipwreck at Kekova Adasi.

Brock University's Katie Ongaro maps diagnostic artifacts on the seabed at Kekova Adasi.

# ISRAEL

*A shrinking sea reveals its history...*

**Site:** Dead Sea (north basin, western shore)

**Date:** Hellenistic to Modern

**Investigators:** Asaf Oron, head conservator, INA Bodrum Research Center, and Dr. Gideon Hadas, director, Ein Gedi Oasis Excavation

**Fieldwork description:** The continual drop in the level of the Dead Sea—recently at an average rate of one meter per year—has led to the exposure of vast areas of former seabed. The Dead Sea Coastal Survey project, initiated in 2004, aims to conduct a systematic search, primarily on foot, of these newly exposed areas. During the 2008 season, some of the more remote areas of the coastline were surveyed, as well as several coastal areas, previously surveyed, where significant portions of seabed are newly exposed. Although 2008 field work was somewhat slowed by an unusually high level of rainfall, several new sites and artifacts were located, including an intact Byzantine (or later) cross made of a copper alloy, and a beautifully preserved cast bronze leg in a shape of a hoof that was probably attached to a large metal container.

**Highlight:** The cast-bronze leg and hoof was found in association with several bronze coins of a Hellenistic date. Altogether it appears that this assembly is part of a larger cargo that was most likely lost in the area.



Asaf Oron at the shore of the Dead Sea where an ongoing drop in the water level has helped shed exciting new light on the maritime history of the region.



# OKLAHOMA

Since 2002 INA, the Oklahoma Historical Society, and Texas A&M University have been engaged in a joint study of the western steamboat *Heroine* (1832-1838), sunk in the Red River between Texas and Oklahoma. Excavation of the wreck's interior between 2003 and 2006 yielded details of the hull's construction and a collection of tools, cargo, machinery, and personal items. The 2006 work concluded with the disassembly of the drive mechanism (the port paddle wheel, and the fly wheels and main shafts) and its recovery by helicopter.

One last item of business remained to be finished. In 2006 we located the shaft and outboard flange of *Heroine's* starboard paddle wheel and rigged it for removal. Unfortunately, the assembly was reburied by a rise in the river a few days before the helicopter operation and not recovered at that time. A short field project to re-excavate and lift this last piece of machinery was scheduled for 2007, but a rainy summer and very high river levels intervened, forcing postponement of the work until 2008.

After all of the delays, it is with great relief that we report the return of an INA-TAMU-OHS team to the Red River in September, 2008 and the successful retrieval of the second paddle wheel. Nature cooperated with low water and good weather, although Hurricane Ike sideswiped Oklahoma during the project, bringing two days of clouds, rain, and concern. Over the course of two weeks we were able to relocate and then uncover the elusive machinery using excavation dredges. We didn't have a helicopter on this trip, so lifting the wheel's 1600 pounds (725.75 kg) of cast iron was done the old-fashioned way by reconfiguring our dive rafts into lift barges and hauling away with chain hoists, cable pulls, slings, and a moderate amount of crude language.

The 2008 effort also included the recovery of two port side shaft bearings, blocks of iron cast in a half-circle shape to support the weight of the paddle shafts. The two bearings still on the wreck were beneath the shafts we lifted in 2006, and thus inaccessible at that time. After the ordeal of getting the starboard paddle wheel assembly hauled out of the river, we found the 2008 bearing recovery to be a minor operation. It involved a small amount of digging and work with sledge hammers and wedges to lift the pieces above their support timbers, and after cutting four steel bolts with hacksaws they were ready to come out of the water.

Over our six years of work on the Red River Wreck we learned to always budget extra time for any operation. Because the machinery recovery in 2008 went so smoothly, we had a few extra days for "fun," which in this case meant opening a test excavation on the port side of the wreck, outside the hull and outboard of the area where the boilers were once mounted. During our earlier excavations inside the hull we found no boilers and only fragments of their cast iron mounts and sheet-metal covering, but thought it would be worthwhile to check outside the wreck in case any boiler elements fetched up in this location.

We had to dig through six feet (1.82 m) of river bottom sand to reach hull structure, which in this case consisted of the guard timber (that outboard extension of the deck that was a distinctive feature of western steamboats). Despite repeated sweeps with a hand-held metal detector, we found no pieces of the boiler assembly, but the new structure we uncovered more than made up for our disappointment. The beams, stanchions, and cap plank on the guard revealed a myriad of clues to the steamboat's appearance, clues that will be very useful as the graphic reconstruction of the hull moves forward.

The clean up of the wreck site on the final two days of the 2008 project was an occasion for relief, but also for sadness. The field work has always been exciting and a challenge, and the discoveries interesting. *Heroine* has proved far more complete and significant than we dared hope in 2002, and the experience of laboring on and under the river with students, volunteers, and especially with the people of the Oklahoma Historical Society has been terrific. The diving is done, but the discoveries will continue as the conservation, analysis, and writing move forward.



## ABOVE

Texas A&M Nautical Archaeology graduate students Ben Ford (L) and William Moser (R) prepare to recover a paddle shaft bearing block on the wreck of the steamboat *Heroine*.

PHOTO Kevin Crisman

*Heroine* excavation director Kevin Crisman.

The earphones are for an underwater metal detector used to search for missing elements of the boiler assembly.

Photo Carrie Sowden

## RIGHT

Several days of intensive digging and lifting operations resulted in the lifting of *Heroine's* starboard paddle wheel shaft and flange.

PHOTO Kevin Crisman





# CRETE

## Finding the ancient way from Crete to Egypt

**Site:** southwest of Gaidhouronísí (Krisi) Island

**Date:** Classical to Modern

**Investigator:** Dr. Shelley Wachsmann, Nautical Archaeology Program professor, Texas A&M

**Fieldwork description:** The Danaos Project aims to reconstruct the ancient direct passage from Crete to Egypt by locating and studying shipwrecks and jetsam on the seabed. The 2008 expedition completed the survey of a plateau located southwest of Gaidhouronísí (Krisi) Island begun in 2007. Thirty-three artifacts, mostly amphoras, were located; these varied in date from the Classical to the Late Roman/Byzantine periods. A line of Late Roman/Byzantine period amphoras trailed in a northwest to southeast direction, which apparently represent the archaeological manifestation of cargo being jettisoned during storms. ROV (remotely operated vehicle) inspections resulted in the discovery of additional artifacts, but no evidence of a shipwreck. Plans for 2009 focus on a survey of select portions of the Kassian Strait and its southern approaches.

**Highlight:** One anomaly proved to be the remains of a WWII airplane. This wreckage has been tentatively identified by Peter Fix of the Center for Maritime Archaeology and Conservation as a Focke-Wolf (FW-190); it may have been lost during the Battle of Crete.



**ABOVE**  
Shelley Wachsmann returning from a dive aboard the HCMR's submersible *Thetis*.

# ALBANIA

## Ancient and modern along the Albanian Coast

For an archaeologist, the conclusion of fieldwork marks the beginning of the most demanding and vigorous phase of a project—one that will typically continue for years. However, it's also the most exciting and gratifying phase, as analysis and historical context brings field discoveries to life. This is particularly true given the splendid discoveries from our second field season of the Albanian Coastal Survey Project, undertaken by RPM Nautical Foundation (RPMNF) in conjunction with Drs. Adrian Anastasi and Neritan Ceka of the Albanian Institute of Archaeology (AIA) and Auron Tare, Director of the Albanian National Trust.

The completed multibeam survey of 2007 was extended into the southern portions of Kakomea Bay for a total of approximately 37 kilometers of coastline. In addition, diver investigation was conducted in selected areas closer to shore in order to survey shallow-water cultural material. These operations resulted in the discovery of nine sites, several of which were associated with the great conflicts of the twentieth century. A WWI-era gunship and WWII mine sweeper were found, as well as a deposit consisting of two likely WWII-era armored vehicles. Two spiked sea mines and a metal wreck carrying 50-gallon drums and tires from this period were also located, as was a small modern ship carrying a stone cargo.

Two ancient wrecks were discovered in the deep waters off Cape Qefalit. The Rodon wreck, is a mound formed by amphoras at a depth of 70 meters. An amphora recovered for analysis is from the Greek city of Corinth and dates to the late 6th to early 5th-century B.C. Also apparently from Corinth is the Qefalit Tile wreck, which was carrying a large cargo of roofing tiles. Two amphoras raised from 76 meters by ROV (remotely-operated vehicle) for analysis indicate a date for this wreck in the 4th century B.C. Another late 6th to early-5th century B.C. wreck from Corinth was discovered during diver investigation of the coastline south of the Butrint River. This wreck site, Butrint III, is strewn over rocks in 5 to 12 meters of water very close to shore. The fragmentary nature of the amphoras is undoubtedly due to the site's vulnerability to storm waves. Also on this stretch of coast, Butrint II, a 1st to 2nd-century A.D. Roman wreck with amphoras from North Africa, was discovered on a slope at between 20 to 25 meters of depth. Additionally, a high frequency of Greek-to-Late-Roman-era domestic and transport ceramics and metal objects were encountered in this area, with those of Corinthian origin particularly well represented. Several noted concentrations of amphoras suggest a high probability for additional wreck site discoveries in the 2009 season.

— Dr. Jeff Royal, RPM Nautical Foundation



**ABOVE**  
The Sarande harbor at sunset.  
  
Adrian Anastasi and Nicolle Hirschfeld record one of the ca. 35 Corinthian B amphoras found on the wreck site.



# YENIKAPI

The Yenikapi site, located in the Istanbul neighborhood of the same name, was first revealed in 2004 during the construction of a subterranean rail line and station for a new rail link between Europe and Asia. Archaeologists from the Istanbul Archaeological Museum quickly realized they were looking at the ancient harbor of Theodosius, one of Constantinople's trade harbors, built during the reign of Theodosius (AD 379-395). A major trade center from the 4th century until river silt filled it in around 1500, the harbor, its stone walls, and amazingly well-preserved remnants of the port's activities lay forgotten for centuries.

Between 2004 and 2008 the site was one of the world's largest archaeological digs. Each day, hundreds of laborers dug under the direction of the Istanbul Archeological Museum. Yenikapi's wet soils have revealed everything from the foundations of wattle-and-daub mud huts from the Chalcolithic period (4500 to 3500 BC) to elegant Ottoman structures, and myriad artifacts ranging from wooden combs and Byzantine leather shoes to the bones of hard-worked dockside horses and camels, and human skulls that may have come from criminals whose severed heads were tossed in the harbor.

As of 2008, the remains of 32 separate vessels dating from the 5th to the 11th centuries had emerged from the mud. The first archaeological examples of Byzantine rowed ships—perhaps warships—as well as merchant vessels, some with cargoes, lay preserved thanks to their burial in a thick layer of wet mud.

Eight of the hulls dating from the 7th to the 11th centuries were turned over to INA Vice President and Texas A&M University professor Cemal Pulak. With his characteristic attention to detail and meticulous scholarship, Cemal, archaeologist Sheila Matthews and a hard working team of INA staff and Texas A&M graduate students worked for over two years in the heat and mud of the active construction site in tent-covered pits to document and carefully recover the ship remains. While many of the timbers are well preserved, with original tool marks and intricate detail, they can also be very fragile, with the consistency of wet cardboard. It makes the job even more challenging, and yet the patience and persistence of Cemal's team made a difference.

The Yenikapi dig was a once-in-a-lifetime opportunity to work with a diverse collection of hulls from this period. In time, after analysis, the work at Yenikapi will rewrite the history books on Byzantine shipbuilding, as well as the role of maritime trade in the history of Constantinople and the later Roman Empire.

## INA's new eight-legged outreach...

*Amy, did you draw from any of your experiences with INA for inspiration?*

ANTON: I have been peripherally involved with INA through my parents since I was a teenager. I fell in love with Turkey and the people and from the minute I left, couldn't wait to get back.

*What's your artistic background, Mary Faye?*

WAY: I studied art at SMU and I taught art for three years, and after retiring to have a family I took classes at the Glassell School of Art. This is when I discovered how much I loved watercolor. When we decided to do the book, Amy and my old watercolor teacher eventually persuaded me to try my hand at it.

*What sort of feedback are you getting?*

ANTON: We have had amazing feedback about Ina, it has been so encouraging to see such enthusiasm from people from all over. We sold out of books before Christmas!

*For kids growing up, the idea of treasure and treasure hunting is often popularized in books and cartoons. Do you think the nautical archaeological community needs to focus more outreach on children in order to ensure that shipwrecks are protected in the future?*

ANTON: It is so important for adults to cultivate the younger generations to appreciate culture and history. I learned to love history though my parents, and I hope my children will also inherit that love.

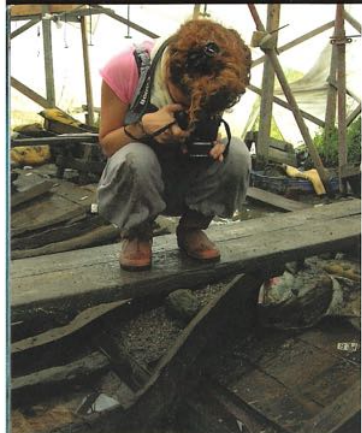
*Do you have any future projects lined up?*

ANTON: I have another book in the works about turtles. Children, especially my three boys, love stories about animals and adventures.

WAY: Amy now has me researching turtles!

*Do you have any upcoming adventures for Ina?*

ANTON: We have discussed the idea of Ina exploring other shipwrecks and learning more about ancient cultures. I think that definitely calls for a research trip ...to Turkey!



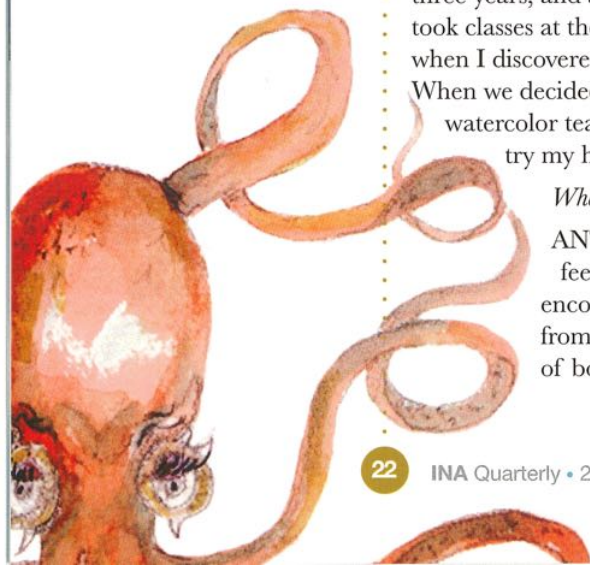
ABOVE

Photographing the hull of a 7th-century wreck after excavation.

The exposed hull of the 8th-century wreck at Yenikapi

PHOTOS Jim Delgado

Recently, we spoke to author Amy Way Anton, and illustrator Mary Faye Way (daughter and wife respectively of Peter M. Way, who was chairman of INA from 2005–07) about their new book "Ina the Octopus and Her Shipwreck Adventure".





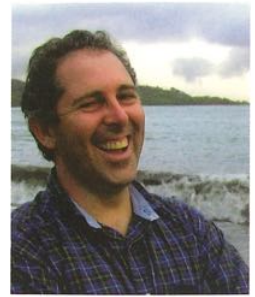
THE STEFFY LECTURE SERIES

# Computers & Shipwrecks

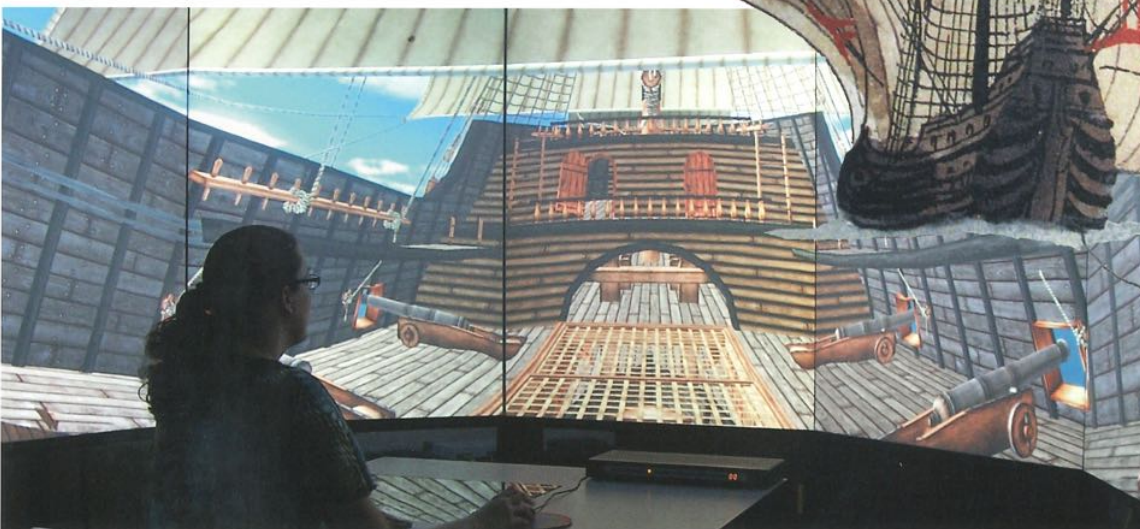
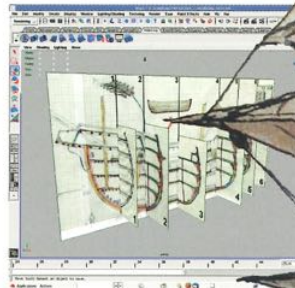
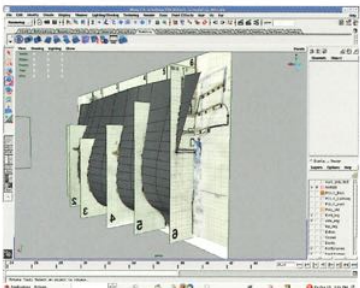
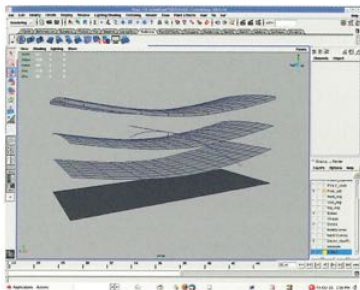
INA is proud to announce the first lecture in the J. Richard (Dick) Steffy Lecture Series, established through generous contributions made by the members and friends of INA and by members of the Archaeological Institute of America's (AIA) Underwater Interest Group/Subcommittee. Dr. Filipe Castro, associate professor in the Nautical Archaeology Program at Texas A&M University, spoke at the AIA Spokane Society sponsored event on Wednesday, March 4, 2009 at the Northwest Museum of Arts & Culture.

His presentation, "Computers and Shipwrecks: The Pepper Wreck Reconstruction as a Virtual Hypothesis," explored how a group of researchers from Texas A&M University and the Technical University of Lisbon, Portugal, are reconstructing a Portuguese India nau from around 1600. Using computer modeling, the team is testing the nau's sailing abilities and developing a virtual model that may provide a glimpse into these long-gone floating cities and their inhabitants.

This series honors a key figure in INA's history, one of the world's foremost ship reconstructors, J. Richard "Dick" Steffy (1924-2007). Watch for future lectures in this distinguished series in the **News & Events** section of the new INA website at... [www.inadiscover.com](http://www.inadiscover.com)



**Dr. Filipe Castro** is an Associate Professor in the Nautical Archaeology Program of the Department of Anthropology of Texas A&M University. He is the Director of the Ship Reconstructing Laboratory of the University's Centre for Maritime History and Conservation, and investigator at its affiliated Institute of Nautical Archaeology. Filipe is the author of *A Nau de Portugal* (2003) and the *Pepper Wreck: A Portuguese Indiaman at the Mouth of the Tagus River* (2005), and is currently working on a book about Iberian shipbuilding in the 16th and 17th centuries.



**LEFT**  
Using futuristic tools to peer into a distant past... Audrey Wells, a student in the Department of Visualization Sciences at Texas A&M University, works on a computer model of the Pepper Wreck.



## New Directors

*We are pleased and privileged to announce the election and appointment of new INA directors.*



ABOVE

Robert Hohlfelder  
Alfred Scott McLaren

Archaeologist/historian **Dr. Robert Hohlfelder** is a professor and former chair of the Department of History at the University of Colorado in Boulder and a member of the common room of Wolfson College, University of Oxford. He has participated in or directed 43 maritime archaeological expeditions throughout the Mediterranean. Currently, he is preparing the archaeological data from the submerged harbor area of ancient Aperlae (Turkey) for publication and is also co-directing a pan-Mediterranean study of the development, properties, and use of Roman hydraulic concrete in maritime environments. He currently serves as a senior maritime archaeologist for an international, interdisciplinary team (headed by Dr. Shelley Wachsmann) engaged in a deep-water search for shipwrecks in the sea lanes off southeastern Crete. The recipient of 66 post-doctoral grants, Professor Hohlfelder has been a visiting scholar at the American Academy in Rome (four times), Wolfson College-University of Oxford (three times), and Edith Cowan University, Perth Australia (twice), as well as a research fellow at Harvard University's Center for Byzantine Studies at Dumbarton Oaks in Washington, D.C (twice). His most recent book is *The Maritime World of Ancient Rome*, (Ann Arbor, 2008). Dr. Hohlfelder resides in Boulder, Colorado with his wife, Kathryn Barth, a restoration architect in private practice. "Our passion is enjoying the wonderful state in which we live to the fullest," he tells INA. "We are avid skiers and hikers. All too infrequently, I get to do some fly-fishing as well."

**Captain Alfred Scott McLaren** U.S. Navy (Ret.), Ph.D is a pioneer nuclear submarine officer and commander whose expeditions include the first submerged transit of the Northwest Passage, and a 1970 North Pole voyage that included the first survey of the entire Siberian continental shelf. Dr. McLaren graduated from the U.S. Naval Academy in 1955 with a degree in electrical engineering. During his military service he participated in over 20 Cold War missions in both diesel-electric and nuclear attack submarines that included a four-year command of *USS Queenfish*. A graduate of and instructor at the U.S. Naval War College, he retired from command of the U.S. Naval Underwater Systems Center, Newport, R.I. After his retirement in 1981, McLaren earned a M.Phil. from Cambridge University and his Ph.D. in Physical Geography of the Polar Regions from the University of Colorado at Boulder. Today McLaren, a president emeritus of The Explorers Club, is a deep-sea researcher and scientist, and has completed several submersible dives to *RMS Titanic*, the German battleship *Bismarck*, and Mid-Atlantic Ridge hydrothermal vents. He is currently a director of Sub Aviator Systems LLC and senior pilot of its revolutionary new deep-diving Super Aviator submersible.

McLaren has been honored with the Societe de Geographic Paris' Silver Medal for Polar Exploration and La Medaille de La Ville De Paris; the Distinguished Service Medal, the nation's highest peacetime award; two Legions of Merit; and four Navy Unit Citations. He received The Explorers Club's Lowell Thomas Medal for Ocean Exploration in 2000, and his first book, *Unknown Waters*, was published in early 2008.

McLaren resides in the Rocky Mountains above Boulder, Colorado with his wife, Avery Battle Russell, a former senior executive at the Carnegie Corporation of New York. He enjoys reading, skiing, travel, and is an instrument-rated private pilot.



The 23rd President of Texas A&M University, **Dr. Elsa A. Murano** is the first woman and first Hispanic-American to lead the oldest public institution of higher learning in Texas. She joined the Texas A&M faculty in 1995 and eventually became a full professor in the Department of Animal Science and Director of the university's Center for Food Safety. In 2001, Murano was named undersecretary for food safety at the Department of Agriculture. In leading the USDA Food Safety and Inspection Service, she was responsible for an agency of 10,000 employees, a budget of approximately \$1 billion, and the mission of working to improve public health through the application of science in policy decisions. While at the USDA, Murano presided over the first case of mad cow disease in the United States. In 2002, Hispanic Business Magazine recognized her as one of the nation's "100 Most Influential Hispanics." Murano returned to Texas A&M in 2005 as Vice Chancellor and Dean of Agriculture and Life Sciences, joint positions in which she served until being appointed President of the university.

With the rise of Fidel Castro, Murano's family left Cuba and lived in several Latin American countries before settling in Miami when she was 14 years old. She later received a bachelor's degree in biological sciences from Florida International University, and earned both a master's degree in anaerobic microbiology and a doctorate in food science and technology from Virginia Tech. Murano began her professorial career in 1990 as an Assistant Professor in the Department of Microbiology, Immunology and Preventative Medicine at Iowa State, the position she held prior to joining the Texas A&M faculty.

She is married to Dr. Peter S. Murano, Associate Professor of Nutrition and Food Science and Director of Texas A&M's Institute for Obesity Research and Program Development.

## New Associate Director

California-based real estate investor **Stephen Chandler** has more than 36 years of experience buying, selling, and managing investment properties in Los Angeles and Orange Counties, as well as in Tucson, Arizona. The Woodbury University graduate is a Trustee of his alma mater, as well as a board member of the Pasadena Pops. Chandler has served on the Bowers Museum Board of Governors from June 1992 to the present, and was Chairman of the Board of Governors from June 1995 through June 1997, and June 2003 through June 2005.

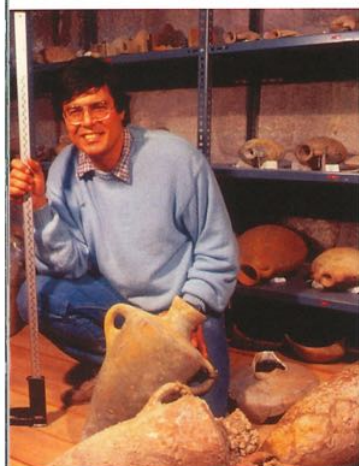
Chandler and his wife, Susan live in San Marino. They have three adult children: Stephanie who works in investment banking, Michael who works for the Department of Defense, and Jennifer who works in advertising in Manhattan Beach.



**ABOVE**  
Elsa Murano  
Stephen Chandler



## INA **in**depth



INA's Cemal Pulak was the project director at Uluburun.

This interview was conducted by Kristin Romey.

After the excitement of the New York opening was over, Cemal Pulak spoke with us about “Beyond Babylon,” and what the nautical archaeological community can do to encourage more museums to incorporate shipwreck assemblages into their exhibitions, and the Uluburun shipwreck’s upcoming voyages.

*You’ve been there from the beginning with the material from Uluburun—now, more than two decades since the excavation first began, what was your initial impression when you walked into the exhibition hall at the Metropolitan Museum of Art and saw the artifacts on display?*

That’s right. The “Beyond Babylon” exhibition offers a rare opportunity to view together some of the most important examples of Egyptian, Canaanite, Cypriot, Syro-Anatolian and Mycenaean Greek luxury goods from the period when the ship sailed.

*Did seeing all of these hundreds of objects in physical context with the Uluburun artifacts inspire any new research ideas, or make you question any of your previous assumptions?*

I had already examined the Late Bronze Age artifacts at the exhibition which pertained to the Uluburun artifacts in various publications, but I had seen only a few of them in museums, so this was a unique opportunity for me to be able to compare these objects that were brought over from many museums with those from Uluburun. This is an opportunity seldom afforded to most excavators. The curator of the exhibition, Joan Aruz, an old friend, had been most encouraging and accommodating with the procurement of some of the artifacts. Several times she asked me if there were any particular pieces that I would like to see incorporated into the exhibition that would help Uluburun research. She has been fantastic and the exhibition is a tribute to her energy, enthusiasm, and simple love for the period.

*The presentation of the Uluburun wreck obviously played a critical role in the “Beyond Babylon” exhibition. Do you think that museums too often overlook the role of shipwreck assemblages when trying to convey larger ideas of cross-cultural exchange?*

Perhaps, but also shipwreck assemblages are not always easy to incorporate into exhibition themes, especially for art museums. The Uluburun ship is, to an extent, exceptional in variety and value of the cargo it carried, and “Beyond Babylon” demonstrates this aspect.

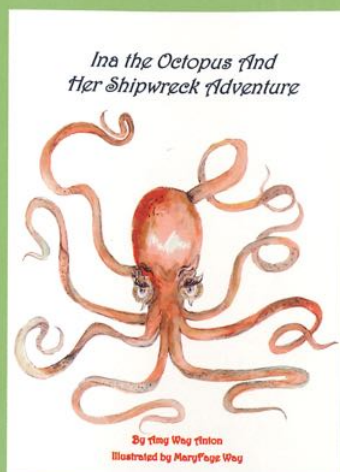
*What can the nautical archaeology community do to encourage museums to incorporate shipwrecks and their artifacts into exhibitions that cover trade and exchange?*

If the shipwreck material is well published and there is sufficient exchange between the shipwreck excavators and other archaeologists and museum curators, I believe the necessary infrastructure will be laid to include shipwrecks in appropriate museum exhibition venues. Giving popular and professional talks is also an important way of bringing the shipwreck material to the forefront for others to consider for exhibition purposes.

*Would you like to see the Uluburun artifacts travel to more museums around the world?*

My natural tendency is, of course, to say yes. But such events require tremendous investments of time, effort, and resources, and there’s also still so much needed to do in terms of conservation, reconstruction, analysis and publication of the more than 15 tons of cargo we recovered from the shipwreck. Of course, public exposure is important, as it increases awareness and the possibility of acquiring financial support for the project, but this also requires a lot of effort and follow up... it doesn’t happen by itself.





## Ina the Octopus and Her Shipwreck Adventure

written by Amy Way Anton and illustrated by Mary Faye Way  
Publisher: AuthorHouse

Softcover **\$11.95**

Order your copy online at: [www.inadiscover.com/publications](http://www.inadiscover.com/publications)

The idea of a children's mascot for INA as a way to bring the world of nautical archaeology to children, was first discussed in 2007. There are plenty of INA excavators who can tell a good fish tale, but it was the team of Mary Faye Way and Amy Way Anton (wife and daughter of INA Past Chairman Peter Way) who worked together to create and publish "Ina the Octopus and Her Shipwreck Adventure."

Written by Amy and illustrated by Mary Faye, "Ina the Octopus" was published in time for the opening of the "Beyond Babylon" exhibition in New York in November 2008 and is the story of a resolute and curious octopod comfortably ensconced in a pithos called home in the middle of a fascinating shipwreck. That is until a nautical archaeologist turns up to excavate her neighborhood. How does it turn out?. Order your copy today!

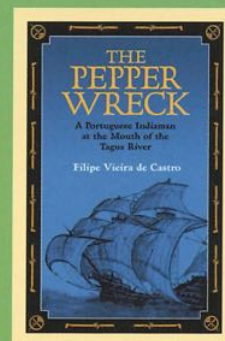
All proceeds from "Ina the Octopus" go the Institute of Nautical Archaeology.

## more...

As an INA member, you can receive special subscription discounts on great publications like the *International Journal of Nautical Archaeology* (IJNA), as well as...

### The Pepper Wreck: A Portuguese Indiaman at the Mouth of the Tagus River

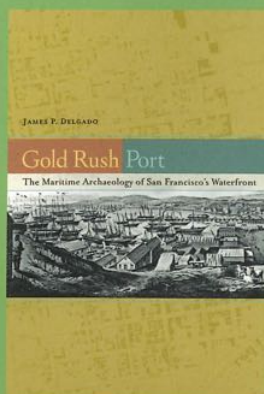
By Filipe Vieira de Castro  
for the Ed Rachal Foundation  
*Nautical Archaeology Series*



In 1606, a Portuguese ship, *Nossa Senhora dos Mártires*, put into Lisbon laden with peppercorns, porcelain, and other products from Cochin. The ship foundered during a storm in a northern channel of the Tagus River. Within hours the currents and the storm had torn it asunder and spread its precious cargo along the shores of the estuary.

The Pepper Wreck tells the story of the ship's excavation by crews working in cold water and fast currents between 1997 and 2000.

[www.tamu.edu/upress](http://www.tamu.edu/upress)



## Gold Rush Port: The Maritime Archaeology of San Francisco's Waterfront

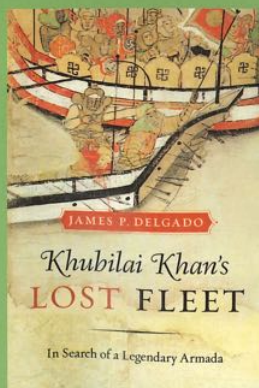
by James P. Delgado  
Publisher: University of California Press, 2009

Hardcover/256 pages,  
6 x 9 inches, 22 b/w photographs,  
9 line illustrations, 18 tables

**\$45.00**

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<http://www.ucpress.edu/>

Described as a "forest of masts," San Francisco's Gold Rush waterfront was a floating economy of ships and wharves, where a dazzling array of global goods was traded and transported. Drawing on excavations in buried ships and collapsed buildings from this period, James P. Delgado re-creates San Francisco's unique maritime landscape, shedding new light on the city's remarkable rise from a small village to a boomtown of thousands in the three short years from 1848 to 1851.



## Khubilai Khan's Lost Fleet: In Search of a Legendary Armada

by James P. Delgado  
Publisher: University of California Press  
Hardcover/256 pp.

**\$38.95**

Order your copy at:  
<http://www.ucpress.edu/>

In 1279, Khubilai Khan routed the Song navy and completed the grand dream of his grandfather, Genghis Khan—the conquest of China. With the world's largest navy the Mongols then began attacks on Japan, Vietnam and Java. Using original sources as diverse as sunken ships, hand-painted scrolls and historical and literary records, James P. Delgado tells the fascinating tale of Khubilai's maritime forays and solves one of history's greatest mysteries: what sank the Khan's great fleet?