



Figure 1. A 1:50 scale model of the Java Sea Shipwreck vessel built by Nicholas Burningham. The original vessel is estimated to have been about 28 meters long. Photo © The Field Museum, Image No. A115140d_017B, Cat. No. 357835, photograph by John Weinstein

The Field Museum's Java Sea Shipwreck Collection: Salvaging History from a Sunken Cargo

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About eight hundred years ago, when merchants at the Chinese port of Quanzhou carefully packed items into nearly every nook and cranny of a trading ship, little did they suspect that they were readying the vessel for its last voyage. It would have been unfathomable for them to imagine that the tens of thousands of ceramics passing through their hands would, centuries later, be in the storage areas, research labs, and display cases of the renowned Field Museum of Natural History in Chicago. How did part of the cargo from this sunken vessel found on the floor of the Java Sea end up at the Field Museum on the shores of Lake Michigan?

What is now known as the Java Sea Shipwreck was once a trading vessel that plied the waters off the coasts of China and southeastern Asia during the twelfth or thirteenth century.¹ Thought to have been built in Southeast Asia using traditional lashed-lug construction² (fig. 1), the ship sailed the winter monsoon winds from China to Indonesia. The summer monsoons enabled the ship to complete its circuit, delivering it from the islands of southeastern Asia to China.

During one of these winter journeys, the ship failed to make it to its primary destination, likely Tuban on the Indonesian island of Java. Instead, the ship sank—causes unknown—in the Java Sea, between Java and Sumatra.³ Although the vessel appears to have descended to the seafloor relatively intact, over the centuries, its wooden hull disintegrated and its large and varied cargo was strewn across the seabed. Finely made Chinese ceramics mingled with degraded bundles of iron bars, and this detritus formed excellent habitat for a variety of marine life. The artificial reef created by the remains of the vessel and its cargo gave rise to a thriving ecosystem, which in turn provided a feast for seabirds. It was during one of these avian feeding frenzies that fishermen, who knew the fish they sought were plentiful where birds fed, discovered the wreck site in the 1980s, nearly eight hundred years after the ship last rode the waves. Instead of netting fish at the site, the fishermen pulled up Chinese trade ceramics and other sundries—and the next leg of the Java Sea Shipwreck's journey began.



Figure 2. A variety of ceramic bowls with light-blue to bluish-gray glazes from the Field Museum's 12th- or 13th-century Java Sea Shipwreck collection. Photo © The Field Museum, Image No. A115095d_025, photograph by Karen Bean

For several years after its discovery, the site was looted, and an estimated four thousand ceramics were illegally removed from the wreck before the Indonesian government scuttled these activities. In the early 1990s, the position of the wreck site was sold to a salvage company that undertook two recovery operations at the site, recovering an estimated eight thousand artifacts. The company folded around 1994. Subsequently, a license for excavation was granted to Pacific Sea Resources (PSR) in 1996. Under the direction of underwater archaeologist Dr. Michael Flecker, PSR recovered more than fourteen thousand items, representing a small portion of the one hundred thousand ceramic pieces estimated to have made up the original cargo.⁴ Per PSR's partage agreement with the Indonesian government, the recovered items were split between the two entities.

Mr. William Mathers, owner of PSR, sought a home for PSR's portion of the recovered material, one that would promote its use for research and education. The Field Museum emerged as the wrecked vessel's next port of call. Under the tenure of Dr. Bennet Bronson, former Curator of Asian Ethnology, a shipment of about 150 boxes containing items from the Java Sea Shipwreck arrived in Chicago—fittingly, via shipping container—in late 1998.

Even before becoming part of the Field Museum's permanent collection, materials from the Java Sea Shipwreck supported scholarly inquiry. The original archaeological report supplied important details about the site's excavation, the recovery and treatment of the materials found there and their historical context, and initial technical investigations of the cargo.⁵ After the materials arrived at the Field Museum, a crew of staff, interns, and volunteers photographed, documented, and cataloged items from the site. In 2011, research on the collection gained momentum when former Boone Postdoctoral Researcher Dr. Lisa Niziolek joined the Museum's scientific staff. Since then, Niziolek,

Curator Dr. Gary Feinman, and Collection Manager Jamie Kelly have collaborated with scholars from around the world on projects focused on reassessing the date of the wreck, identifying the origins of the vessel's cargo, investigating the organization of the production and procurement of trade goods, and reconstructing trade networks. In 2015, about forty artifacts from the Java Sea Shipwreck collection went on display in the Museum's then new permanent exhibition on the history and culture of China, the *Cyrus Tang Hall of China*. These shipwreck pieces highlight for the public the scale and complexity of maritime trade in the Eastern Hemisphere nearly a millennium ago.

There is no doubt that the Java Sea Shipwreck ship was a trading vessel. It was carrying a diverse cargo, much of which was from China. The Field Museum's collection includes more than 7,500 items from the wreck site. High-fired ceramics make up the bulk of the collection (fig. 2), and stylistic and compositional analyses have identified numerous potential kiln sites in southeastern China where these pieces were produced.⁶ In addition to lower-quality, mass-produced bowls from Fujian province, the collection includes more finely made pieces with translucent bluish-white glaze (*qingbai*) from the famous kilns of Jingdezhen, Jiangxi province (fig. 3).

The Museum also cares for some of the roughly two hundred tons of iron found at the site in the form of bundles of iron bars and stacks of cooking pots. The collection includes pottery from Southeast Asia, including many examples of the more than 350 fine-paste *kendis* (handleless, spouted vessels) from the site, as well as items in lesser quantities, such as metal figurines, gongs, implements, and tools; sharpening stones; scale weights; and glass fragments (fig. 4). These more scantily represented materials probably were not trade items but were possessions of the individuals (Buddhist monks, merchants, and other travelers) onboard.



Figure 3. Gourd-shaped, dragon-handled *qingbai* ewer produced at Jingdezhen, Jiangxi province, China, from the 12th- or 13th-century Java Sea Shipwreck. Height: 17.5 cm, width: 18.1 cm, depth: 15.2 cm. Photo © The Field Museum, Image No. A115034d_003, Cat. No. 350401, photograph by John Weinstein



Figure 4. A small metal figure, thought to be a table leg or platform support, found at the site of the 12th- or 13th-century Java Sea Shipwreck. Height: 6.6 cm; length: 7 cm. Photo © The Field Museum, Image No. A115035d_019A, Cat. No. 351351, photograph by John Weinstein



Figure 5. Ceramic storage jars and bowls from the Field Museum's 12th- or 13th-century Java Sea Shipwreck collection. Photograph © Stephanie Ware



Figure 6. Elephant tusks recovered from the site of the Java Sea Shipwreck. Length: approx. 40 cm. Photo © The Field Museum, photograph by Pacific Sea Resources

Although they often do not survive well in the archaeological record, natural products were a major trade item along maritime trading routes. Unlike ceramics and iron, which were traded in bulk, these types of materials would have been part of high-value, low-volume trade. The merchants of the Java Sea Shipwreck vessel were transporting organic goods that came from the forests, jungles, and waters of East and Southeast Asia, India, Africa, and the Middle East. More than two hundred whole or partial storage jars of various sizes were recovered, which could have held spices, tea, fish sauce, pickled vegetables, rice, rice wine, or even mercury (fig. 5).

Two types of organic materials—elephant tusk and resin—may have originated far outside of the Java Sea Shipwreck vessel's immediate sphere of transit. The Museum's collection includes twelve of the sixteen pieces of elephant tusk recovered at the site (fig. 6). Ivory would have been carved into decorations or used in medicinal preparations. DNA analyses of the elephant tusks undertaken by our team in collaboration with Dr. Cynthia Wagner, University of Maryland, Baltimore County, and former Museum Grainger Bioinformatics Center intern Claire Scott have been critical for reassessing the history of the shipwreck. Our research has shown that many of the tusk pieces originated not from elephants in Southeast Asia (*Elephas maximus*), as originally hypothesized,⁷ but from African bush elephants (*Loxodonta africana*). Resin, eight blocks or chunks of which were found, primarily would have been used in religious rituals associated with Buddhism, the main religion in China at the time. It was also used in medicines, for caulking ships, and in paints and inks. Like the elephant tusks, the resin may have been originally procured outside of East or Southeast Asia. The shipwreck resins are probably from a tree native to India (*Shorea robusta*), and initial investigations list Gujarat, India, as one of the areas where similar resins have been found.⁸ Both the elephant tusks and the resin would have

been transshipped from their origins to a trading port (or ports) in Southeast Asia, where they were loaded onto the Java Sea Shipwreck vessel.

Numerous shipwrecks dating to the late first to early second millennium have been found in the South China Sea Region, and more continue to be identified every year. Shipwreck discoveries such as the Java Sea Shipwreck attest to the intensity and scale of historical trade taking place in the region and provide detailed glimpses into the role of maritime trade in the world's early global economy. Museums, because of their educational missions and dedication to collections care and research, are ideal harbors for these once lost treasures.

Endnotes

- 1 Lisa C. Niziolek et al., "Revisiting the Date of the Java Sea Shipwreck from Indonesia," *Journal of Archaeological Science: Reports* 19 (June 2018): 781–90, <https://doi.org/10.1016/j.jasrep.2018.04.002>.
- 2 Michael Flecker, "The Thirteenth-Century Java Sea Wreck: A Chinese Cargo in an Indonesian Ship," *Mariner's Mirror* 89, no. 4 (2013): 388–404, <https://doi.org/10.1080/00253359.2003.10656872>.
- 3 Michael Flecker, "Rescue Excavation: The Java Sea Wreck," *Heritage Asia* 3, no. 2 (December 2005–February 2006): 25–29; William M. Mathers and Michael Flecker, eds., *Archaeological Recovery of the Java Sea Wreck* (Pacific Sea Resources, 1997).
- 4 Flecker, "Rescue Excavation."
- 5 Mathers and Flecker, *Archaeological Recovery of the Java Sea Wreck*.
- 6 Lisa C. Niziolek, "A Compositional Study of a Selection of Song Dynasty Chinese Ceramics from the Java Sea Shipwreck: Results from LA-ICP-MS Analysis," *Journal of Indo-Pacific Archaeology* 35 (2015): 48–66, <https://doi.org/10.7152/jipa.v35i0.14893>; Wenpeng Xu et al., "Sourcing Qingbai Porcelains from the Java Sea Shipwreck: Compositional Analysis Using Portable XRF," *Journal of Archaeological Science* 103 (March 2019): 57–71, <https://doi.org/10.1016/j.jas.2018.12.010>.
- 7 John Miksic, "Historical Background," in *Archaeological Recovery of the Java Sea Wreck*, ed. Mathers and Flecker, 5–33.
- 8 J. B. Lambert et al., "The Resinous Cargo of the Java Sea Wreck," *Archaeometry* 59, no. 5 (February 2017): 949–64, <https://doi.org/10.1111/arc.12279>.