

## **MALAYSIA'S UNDERWATER CULTURAL HERITAGE: ANALYSIS OF ARTIFACTS AND SHIPWRECKS IN THE SOUTH CHINA SEA**

### ***WARISAN BUDAYA BAWAH AIR MALAYSIA: ANALISIS ARTIFAK DAN KAPAL KARAM DI LAUT CHINA SELATAN***

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#### **Abstract**

The South China Sea is one of the world's busiest maritime routes and harbours immensely valuable underwater cultural heritage. This study aims to analyse the causes of shipwrecks and identify the types of artifacts carried by vessels before sinking in Malaysian waters, particularly in the South China Sea. A qualitative approach through documentary analysis and Keith Muckelroy's (1978) theory was employed as the primary analytical framework. Eight major shipwreck sites were identified: Turiang (1370), Nanyang (1380), Longquan (1380), Royal Nanhai (1460), Xuande (1540), Wanli (1630), Desaru (1840), and Bidong, with artifact discoveries encompassing ceramics, porcelain, bronze, and coins. Four principal factors contributing to shipwrecks were identified: weather, geographical features, war, and human negligence. The findings demonstrate that Malaysian waters hold significant evidence of extensive maritime trade between China, Southeast Asia, and the wider world. This study also emphasises the urgent need to protect underwater cultural heritage sites from looting and destruction.

**Keywords:** underwater cultural heritage, shipwrecks, artifacts, South China Sea, maritime archaeology

#### **Abstrak**

*Laut China Selatan merupakan salah satu laluan maritim yang paling sibuk di dunia dan menyimpan khazanah warisan budaya bawah air yang amat bernilai. Kajian ini bertujuan menganalisis punca-punca berlakunya kapal karam serta mengenal pasti jenis-jenis artifak yang dibawa oleh kapal-kapal tersebut sebelum tenggelam di perairan Malaysia, khususnya di Laut China Selatan. Kajian ini menggunakan pendekatan kualitatif melalui kaedah analisis dokumen dan teori Keith Muckelroy (1978) sebagai kerangka analitik utama. Lapan tapak kapal karam utama telah dikenal pasti, iaitu Turiang (1370), Nanyang (1380), Longquan (1380), Royal Nanhai (1460), Xuande (1540), Wanli (1630), Desaru (1840) dan Bidong, dengan penemuan artifak merangkumi seramik, porselin, gangsa dan syiling. Empat faktor utama yang menyebabkan kapal karam dikenal pasti ialah cuaca, faktor geografi, peperangan dan kecuai manusia. Dapatan kajian ini menunjukkan bahawa perairan Malaysia menyimpan bukti sejarah perdagangan maritim yang meluas antara China, Asia Tenggara dan dunia. Kajian ini turut menekankan kepentingan perlindungan tapak warisan budaya bawah air daripada ancaman rompakan dan kemusnahan.*

**Kata kunci:** *warisan budaya bawah air, kapal karam, artefak, Laut China Selatan, arkeologi maritim*

## INTRODUCTION

The South China Sea is one of the most strategic maritime trade routes in the world, connecting China, Southeast Asia, India, and the West for centuries. Its geopolitical importance makes this area one of the busiest in the history of world navigation, and directly a region rich in underwater cultural heritage (Perez-Alvaro 2025). According to the UNESCO 2001 Convention on the Protection of Underwater Cultural Heritage, it is defined as all traces of human existence of a cultural, historical, or archeological nature that have been buried, either partially or completely, continuously or periodically, for at least 100 years.

Malaysia, located at the crossroads of maritime communication routes connecting the Indian and Pacific Oceans, possesses a highly significant maritime position (Kamal et al. 2021). This strategic factor makes Malaysian waters, particularly along the South China Sea, an area rich in underwater cultural heritage sites. The discovery of various sunken trade ships on the seabed of Malaysian waters provides strong evidence of a maritime trade history that has lasted for centuries.

However, the presence of valuable artifacts at these shipwreck sites also attracts the attention of treasure hunters who engage in illegal looting (Jing & Li 2019). This situation raises serious concerns regarding the conservation of the country's underwater cultural heritage. Therefore, this study aims to analyze the causes of shipwrecks in Malaysian waters and identify the types of artifacts carried by these ships before they sank.

## POSITION OF MALAYSIAN WATERS AND THE SOUTH CHINA SEA

The waters of Malaysia are part of the South China Sea, bordering Taiwan, China, Vietnam, and Indonesia. This area is known for its deep waters and serves as a route for cargo shipping, energy resource extraction, and international trade. According to Kamal et al. (2021), the Strait of Malacca and the South China Sea are two maritime zones that are very important in the international shipping community because they involve trade routes between the East and the West.

The strategic importance of Malaysian waters is not only in terms of the security and economic growth of the region, but also impacts international trade. This connecting route has become the main pathway for trade ships from around the world carrying various goods, including ceramics, porcelain, spices, and other raw materials (Brown & Sjostrand 2002). By applying the Muckelroy model, we can study how the interaction between marine environmental factors and human activities has preserved the artifact, thereby demonstrating the role of Malaysia's maritime evolution in the global economic network for a long time.

## KEITH MUCKELROY'S THEORY (1978)

This study is based on the maritime archaeology theory introduced by Keith Muckelroy in 1978. Muckelroy defines maritime archeology as 'the scientific study of the material remains of human life and activity at sea' (Sturt 2014). He introduced a flowchart that explains the five stages of a ship's transformation from an organized entity to a collection of artifacts submerged on the seabed.

Muckelroy argues that although the process of forming a shipwreck site involves various elements of destruction, it is possible to reconstruct the original composition of the ship's cargo by understanding the mechanisms of each stage. He also emphasized that the main goal of maritime archeology research is to understand people, not just the ships, cargo, or equipment found (Muckelroy 1978). This holistic approach encompasses social, economic, political, and religious elements that comprehensively shape the identity of ancient societies. Through this perspective, we can see how the trade system and governance structure are closely intertwined with the values of belief that are adhered to. The integration of these various aspects ultimately provides a more dynamic

picture of the way of life and the independence of ancient civilizations in facing the challenges of their time.

## THE HISTORY OF SHIPWRECKS IN THE SOUTH CHINA SEA

Shipwrecks in the South China Sea have a long history, closely linked to maritime trade and exploration in the region. Since ancient times, these waters have served as an important route for ships traveling back and forth between China, Southeast Asia, and India (U.S. Trade Representative 2024). Natural factors such as typhoons and navigation errors, as well as human factors like warfare, are among the main causes of shipwrecks in this area (Baco & Chia 2020).

Chinese junks are a symbol of the excellence of ancient maritime technology that dominated trade routes in the South China Sea and connected various great civilizations through extensive exploration. The structure of this ship was meticulously built using a combination of sturdy wood and flexible bamboo and equipped with an advanced steering system to ensure stability when navigating the rough sea waves. This technical capability allows the ship to carry large-scale cargo over very long distances, thereby strengthening its role as the main artery of the maritime economy of that era.

## SHIPWRECK IN MALAYSIAN WATERS

Eight main shipwreck sites have been identified in this study, all located in the waters of the Malay Peninsula facing the South China Sea. Table 1 below summarizes key information for each site.

Table 1. Major Shipwreck Sites in Malaysian Waters

Shipwreck Site	Date (Estimated)	Location	Artifact Type	Significance
Turiang	1370	100 nautical miles east of Johor Strait	Ceramics Thailand, Vietnam, China	The oldest shipwreck with Thai export ceramics
Nanyang	1380	10 nautical miles from Pulau Pemanggil, Johor	Celadon ceramics from Si Satchanalai, Sukhothai plates	First discovered with the Si Satchanalai celadon
Longquan	1380	23 nautical miles from the Terengganu coast	Chinese celadon, Si Satchanalai celadon, Sukhothai pottery	The largest wooden shipwreck in the South China Sea
Royal Nanhai	1460	40 nautical miles from Kuantan, Pahang	20,973 celadon ceramics, storage jars, blue-and-white pottery	Evidence of Ming maritime trade with Southeast Asia
Xuande	1540	60 nautical miles from the Terengganu Coast	Blue-and-white Chinese porcelain, celadon from Si Satchanalai	More than 20 designs of Chinese pottery were found.
Wanli	1630	Six miles off the east coast of Malaysia	Ming blue-and-white porcelains, Kraak-type	Suspected of having sunk due to an attack by a Dutch warship

Desaru	1840	20 meters off the coast of Desaru, Johor, Malaysia	Blue-and-white ceramics, bronze, coins, and an opium pipe	Chinese merchant ship with various non-ceramic artifacts
Bidong	1500–1550	Situated approximately 2.5 km from Pulau Bidong at 18 meters of water	Nails, tin cans, wooden planks, coins	Recent discovery by researchers from Universiti Malaysia Terengganu (UMT)

### **The Turiang shipwreck (1370)**

Turiang is one of the oldest shipwrecks associated with Thai export pottery found in Malaysian waters. Located more than 100 nautical miles to the east near the Johor Strait at a depth of 42 meters, this Chinese ship carried a diverse cargo, consisting of Thai, Vietnamese, and Chinese pottery. The estimated date of this ship is between 1305 and 1370 AD (Brown & Sjostrand 2002).

This discovery is highly significant as it marks the early phase of the involvement of kilns in Sukhothai and Si Satchanalai in the regional ceramic export market, thereby reflecting the diversity of trade goods transported across the maritime routes of Southeast Asia during that period.

### **The Nanyang shipwreck (1380)**

Located about 10 nautical miles from Tioman Island in Malaysian waters, the wreck of the Nanyang ship was found upright at a depth of 54 meters and is believed to have sunk between 1372 and 1390. The ship, measuring approximately 18 x 5 meters, is categorized as a South China Sea type based on construction details such as the use of transverse bulkheads and wooden pegs. The location of its discovery near Tioman Island is significant because the island was a popular stop for ancient sailors to obtain fresh water along the strategic maritime routes of Southeast Asia. Technically, this ship carried a large cargo estimated to reach 10,000 to 15,000 pieces of ceramics, including exceptionally large storage jars, resembling the cargo found on the Turiang and Longquan ships.

From an archeological perspective, the main cargo of the Nanyang ship consists of Si-Satchanalai celadon ceramics that exhibit unique characteristics as evidence of early production techniques, particularly the presence of spur marks on the surface of the plates (Maritime Asia 2014). The presence of these marks, along with the inwardly tapering and short foot ring of the plates, serves as a stylistic bridge between the earlier Turiang ceramics and the later Longquan. Comparison with the Royal Nanhai ship from the mid-15th century shows significant evolutionary differences, where the Nanyang ship still used overlapping arrangement techniques with disc-shaped supports that left large scar marks. Therefore, the typological evidence from the 402 units of artifacts successfully recovered so far reinforces the theory that the Nanyang ships represent an important transitional era in the history of trade and ceramics production in the region.

### **The Longquan shipwreck (1380)**

The Longquan site is the most significant discovery of a Chinese shipwreck to date. Located at a depth of 63 meters, 23 nautical miles from the coast of Terengganu. This ship is estimated to be 30 meters long and 8 meters wide, making it one of the largest wooden shipwrecks found in the South China Sea. This type of 'South China Sea' ship was fully loaded with various ceramic materials, including Chinese celadon and Si Satchanalai black-gold pottery from Thailand (Brown and Sjostrand 2001).

Its large physical structure reflects the sophistication of ancient maritime engineering in building ships capable of accommodating a very large cargo capacity for long-distance trade. The significance of the Longquan site lies not only in the physical size of the ship but also in its role as a

historical archive that connects the evolution of Thai ceramic technology with global market demand along the maritime Silk Road.

### **The wreck of the Royal Nanhai (1460)**

Discovered in February 1995 about 40 nautical miles east of the Terengganu coast, the Royal Nanhai was a ship much larger than the Longquan, measuring approximately 50 meters in length with a cargo capacity of at least 1,000 tons. This ship sank between the years 1420 and 1450, believed to be on its way to Java to deliver goods to the Majapahit kingdom. More than 20,000 pieces of green and brown celadon ceramics were found at this site (Baco et al. 2021).

The presence of such a large-scale cargo not only proves the strength of diplomatic and economic relations between ceramic producers and the Majapahit kingdom but also demonstrates the sophistication of maritime logistics in the 15th century. This discovery further solidifies the role of Terengganu's waters as a critical maritime silk route in the distribution of luxury commodities and the spread of cultural influence throughout the Malay Archipelago.

## **ANOTHER SHIPWRECKS**

The Xuande shipwreck (1540) is located 39 nautical miles from Tioman Island at a depth of 53 meters. Although no ship structure was found, more than 20 designs of Chinese pottery have been identified at this site. The Wanli shipwreck site (1630) is located 6 nautical miles from Tanjung Jara, Terengganu, and is believed to be a Portuguese merchant ship that sank due to an attack by a Dutch warship (Sjostrand & Syed Idrus 2007). The Desaru site (1840) was discovered in May 2001, 2 nautical miles from the coast of Desaru, Johor. Meanwhile, the Bidong shipwreck site, located a few nautical miles from Pulau Bidong, Terengganu, is the latest discovery studied collaboratively by researchers from Universiti Malaysia Terengganu (UMT) in 2015 (M. Abdullah et al. 2022; Soo Chen et al. 2024).

## **TYPES OF ARTIFACTS FOUND**

### **Ceramics**

Ceramics are the most commonly found type of artifact at shipwreck sites in Malaysian waters. Ceramic materials, created from a mixture of clay and minerals through a high-temperature firing process, are valued for their durability and hardness (Kurian & Thankachan 2023). Ceramics have been found at the Nanyang, Longquan, Royal Nanhai, Xuande, and Desaru sites.

At the Nanyang site, the main discovery was Si Satchanalai celadon ceramics, amounting to between 10,000 to 15,000 pieces, along with 20 Sukhothai plates and five large Suphanburi storage jars (Maritime Asia 2014). The Longquan ship, on the other hand, carried Chinese celadon and Si Satchanalai pottery with black and gold layers that are still in good condition (Song 2022b & 2022a). The cargo of the Royal Nanhai consisted of 20,973 pieces of ceramics, mostly Sisatchanalai celadon, storage jars from Singburi, as well as four blue-and-white Chinese bowls and two blue-and-white Vietnamese boxes. The Desaru ship, on the other hand, carried thousands of porcelain spoons adorned with beautiful floral motifs, as well as the finest blue-and-white Jingdezhen bowls (Feiran et al. 2025).

### **Porcelain**

Porcelain, which is a type of high-quality ceramic characterized by its white, translucent, and very strong appearance, is primarily found at the Wanli site. Porcelain is created by heating kaolin, feldspar, and quartz at temperatures between 1,300 and 1,400 degrees Celsius. During the commercial salvage operations at the Wanli site between 2004 and 2005, blue-and-white ceramic artifacts from the Ming Dynasty, as well as a mix of Kraak-type porcelain, were discovered. This finding indicates that the

two porcelain motifs were produced in different periods, yet both were highly valuable (Sjostrand & Syed Idrus 2007).

### **Bronze and Copper**

Although the Desaru site is commonly known as a Chinese trading ship carrying ceramics, the findings there also include significant non-ceramic materials. Among the items found were ship anchors, cannons, iron bronze, trade seals, animal bones, opium pipes, tobacco pipes, and coins (Sukham et al. 2021). This discovery proves the diversity of cargo carried by ancient trading ships and provides a more comprehensive picture of the economic and social activities of that time.

### **Coins**

Coins are among the important artifacts found at the Bidong site. According to Mustapa et al. (2023), the findings at this site include metal artifacts and bone remains such as nails, tin containers, wooden axes, small statues, and parts of the wooden skeleton of a sunken ship. These findings provide valuable information about past trade activities and the daily lives of the crew.

## **FACTORS CAUSING SHIPWRECKS**

### **Weather Factor**

Weather is one of the most dominant factors affecting the safety of ships at sea. The South China Sea is known as one of the world's typhoon and monsoon regions, making it one of the most dangerous areas for navigation (Li et al. 2023). Strong typhoons and monsoons can cause ships to lose steering control, run aground on reefs, or sink due to strong waves. The discovery of the Bidong Ship, for example, indicates that the ship is believed to have sunk due to bad weather or technical problems during its voyage (M. Abdullah et al. 2022).

### **Geographical Factors**

Geographical features of the ocean, such as coral reefs, shallow waters, and strong currents, also significantly contribute to shipwrecks. Inaccurate navigation equipment or imperfect marking of coral reefs can cause ships to run aground. According to the study by Wang et al. (2014), the safety of the South China Sea is often threatened by natural factors, including complex seabed topography and extreme weather, where transportation during the monsoon season is found to be the most at risk.

### **Warfare Factors**

Direct enemy attacks, such as torpedo or air strikes, are among the main causes of shipwrecks in armed conflict situations. In addition, collisions between ships can also occur in naval battles involving many ships operating in proximity. The discovery of the Wanli Ship, a Portuguese merchant vessel, near the waters of Terengganu, linked to an attack by Dutch warships, provides concrete evidence of the impact of warfare on shipwrecks in the South China Sea (Sjostrand & Syed Idrus 2007).

### **Human Negligence**

Human errors in various forms also contribute to shipwrecks. Imperfect ship maintenance, poor navigation skills, procedural errors, and overloading are among the main factors. Wang and Dai's (2012) study revealed that the majority of ship accidents worldwide are attributed to human error: 70-80% of collision accidents, 65-70% of grounding accidents, and 85-90% of fires or explosions are caused by human factors.

## **Threat to Underwater Cultural Heritage**

The high value of shipwreck artifacts makes them a primary target for treasure hunters. Studies have found that the islands around Mersing face the threat of artifact looting by illegal collectors from both within and outside the country (Manaf et al. 2012). In comparison, the same situation occurs in Indonesia, where residents in the waters of Taka Kappala, Selayar Regency, South Sulawesi, are responsible for large-scale looting of underwater cultural heritage (Jusdi et al. 2022).

The loss of artifacts not only brings significant economic losses but also results in the loss of invaluable historical data about the arrival of foreign traders through Malaysian waters. In Malaysia, all historical shipwreck site recovery projects to date have been carried out with the assistance of commercial salvage companies that possess underwater technology and expertise in recovery (Baco 2024). Therefore, closer cooperation between authorities, academic institutions, and maritime archaeology experts is greatly needed to ensure this heritage is effectively protected.

## **DISCUSSION**

The findings of this study indicate that Malaysian waters, particularly in the South China Sea, hold a rich historical record of maritime trade spanning the 14th to the 19th centuries. The presence of various types of ceramics from China, Thailand, and Vietnam in shipwreck sites in Malaysian waters proves that this area once served as the heart of international trade routes connecting various civilizations.

Muckelroy's theory (1978) helps explain how these artifacts reached their current state, through the processes of shipwreck, salvage operations, organic material decomposition, seabed movement, and excavation features. Understanding these processes allows researchers to reconstruct the original cargo of the ship and subsequently comprehend the trade patterns of ancient times.

In terms of artifact types, ceramics dominate the findings at most sites, reflecting the importance of ceramics as a major trade commodity during the Ming era and earlier. However, the discovery of bronze, coins, and non-ceramic artifacts at the Desaru and Bidong sites indicates a diversity of trade ship cargo and a broader range of economic activities. Four factors causing shipwrecks, namely weather, geography, warfare, and human negligence, remain relevant today in the context of maritime safety. Understanding these factors is not only important from a historical perspective but also guides current maritime safety practices.

## **CONCLUSION**

This study has successfully analyzed eight major shipwreck sites in Malaysian waters and identified various types of artifacts found, as well as explained the four main factors causing the shipwrecks. These findings overall confirm the significance of Malaysian waters as a crucial maritime trade route in world history.

Malaysia's underwater cultural heritage needs to be protected more seriously through stricter enforcement of regulations at shipwreck sites, the development of local expertise in maritime archeology, and closer cooperation between the government, academic institutions, and the international community. The digitization of shipwreck site data and the development of a national underwater cultural heritage database are also proposed as steps forward. Further research using interview methods with maritime archeology experts, as originally planned in the thesis, is expected to produce more comprehensive data and further strengthen our understanding of Malaysia's unparalleled underwater cultural heritage.

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