

Sister ships: three early 12th century CE shipwrecks in Southeast Asia

Michael Flecker*

Maritime Explorations, 14 Watten View, Singapore 287130

This paper discusses three shipwrecks in Southeast Asian waters. The degree of documentation for each wreck differs, as does the evidence for dating and ship construction technique. However, when the artefacts from each wreck are compared, stark parallels allow for inferred deductions. From this comparative analysis it may be reasonably concluded that *Pulau Buaya*, *Lingga* and *Flying Fish* wrecks are all Southeast Asian lashed-lug ships that sank during the first quarter of the 12th century CE, at the end of the Northern Song Dynasty (960 to 1127 CE). They were all transporting Chinese ceramics and ironware to Southeast Asian markets. They are sister ships.

Keywords: Chinese ceramics, Guangdong, Fujian, Jingdezhen, lashed-lug tradition.

Introduction

IN 1998 the Ceramic Society of Indonesia published *The Pulau Buaya Wreck: Finds from the Song Period*¹. An important maritime archaeological discovery, the first in Indonesia, was made known to the public. The wreck was initially found by fishermen off Buaya Island in the Riau archipelago (Figure 1). It was salvaged in 1989 by a private company holding a government issued licence. While the book illustrates the cargo and a variety of artefacts, since there was no archaeological documentation, the context was lost. It is more unfortunate that we still have no knowledge of the ship type and therefore no knowledge of who was transporting this cargo. It consisted primarily of Chinese ceramics from Guangdong and Fujian provinces, with a smattering of finer wares from other regions. Cast and wrought iron, metal ingots and glassware were also traded. Nearly three decades after the salvage of the *Pulau Buaya* wreck two new shipwreck sites have come to light. Remarkably the *Lingga* wreck also sank within sight of Buaya Island. The *Flying Fish* wreck sank far away, near Kota Kinabalu in the East Malaysian state of Sabah. Both new finds are Southeast Asian ships of the lashed-lug tradition. Both were transporting Chinese ceramics and iron to Southeast Asian ports. The *Flying Fish* wreck was archaeologically excavated. The *Lingga* wreck was not. However, photo-

graphs provide some context. The hull remains have been identified and an accurate date has been determined. While there are a few comparable artefacts linking these two wrecks, the *Pulau Buaya* wreck bridges the gap with many parallels. From a detailed comparison of the cargoes, it is evident that all three ships are closely related. They are indeed sister ships.

Pulau Buaya wreck

The exact position of the *Pulau Buaya* wreck remains a mystery, although she is thought to lie a few nautical miles to the north or north-east off Buaya Island. The ceramics cargo is quite diverse, with green, brown and Qingbai wares from kilns in Guangdong province, and to a lesser extent Fujian province. Finer quality Qingbai-ware is from the famed Jingdezhen kilns in nearby Jiangxi province. Fine Paste Ware from southern Thai kilns suggest that the ship stopped to trade on her voyage south. Southeast Asian earthenware cooking pots and stoves were probably for shipboard use. A fascinating array of intact glassware seem to be of Chinese origin. Cast iron cauldrons and wrought iron blades are common finds on ships voyaging from China. Other non-ceramic finds include large copper ingots, copper alloy gongs and anklets (or armbands), lead and tin ingots, grindstones and rollers, and a few Chinese coins.

With only the stylistic analysis of ceramics at their disposal (Chinese coins were used for centuries, many kiln

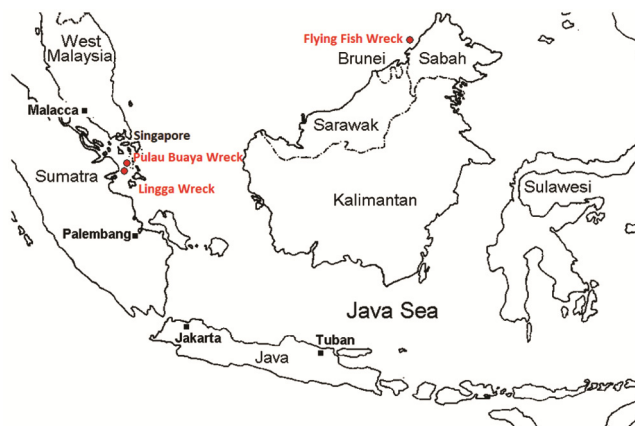


Figure 1. Locations of the three sister ships.

*For correspondence. (e-mail: mdflecker@gmail.com)

sites had yet to be excavated and contemporaneous wreck sites had yet to be discovered), the authors of the book have broadly assigned the 12th or early 13th century CE as the date of the wreck. From its location and cargo, the authors conclude that the ship was heading for the Batanghari River, or perhaps the Indragiri. The former leads to the ancient Melayu capital of Muara Jambi.

Lingga wreck

The *Lingga* wreck lies in 35 m of water depth in *Lingga* Strait, approximately eight nautical miles south-west off Buaya Island. It was found by fishermen and looted before a licensed salvage company took over. While the company gridded the site and photographed the recovery, there was no archaeological supervision. The author was invited to investigate the site post excavation in order to identify the vessel type.

Only a few sections of surviving hull were uncovered, generally beneath iron concretions. The hull planks incorporated carved lugs at regular intervals. The bevelled rectangular lugs were pierced with two to four sets of holes for frame lashings. Their width was approximately half of the plank width with some well offset from the centre. The planks themselves were relatively narrow, varying from 14 to 19 cm, and only 3 cm thick. They were edge-joined with wooden dowels, with a typical centre-to-centre spacing of 11 cm. There is only one Asian shipbuilding tradition that utilizes planks with carved lugs. The *Lingga* wreck is a Southeast Asian lashed-lug ship. All documented pre-14th century CE Southeast Asia ships belong to this technical tradition, the oldest discovery dating to the 3rd century CE.

Planks are carved, rather than bent to shape, and incorporate protruding lugs, locally termed *tambuku*. On first impression a lashed-lug boat appears to be flimsy, suitable perhaps for fishing or coastal transport. But from archaeological evidence, ships of up to 35 m were constructed by this technique². These early Southeast Asian crafts were steered by two quarter rudders, a system that survives to this day on many sailing vessels still plying the waters of Indonesia, the *pinisi* being a fine example. They were rigged with up to four tripod masts and a bowsprit and used canted square or lug sails.

While Guangdong ceramics formed the bulk of the surviving cargo, cast-iron cauldrons and bundles of wrought iron blades were also a major component. Other non-ceramic items include copper ingots, Chinese coins, gongs, and copper alloy anklets and coils. The only Southeast Asian artefacts were resin, grindstones and candlenuts.

Stylistically, the ceramics from the *Lingga* wreck appear to be products of the Northern Song Dynasty (960 to 1127 CE). Hundreds of Chinese copper coins recovered from the wreck represent several periods: Huang Song

Tong Bao (1039–1053 CE); Xi Ning Zhong Bao (1068–1077 CE); Yuan Feng Tong Bao (1078–1085 CE); Yuan You Tong Bao (1086–1094 CE); Zheng He Tong Bao (1111–1117 CE).

The coins provide a *terminus post quem*, or earliest possible date for the wreck, of 1111 CE. But as Chinese coins are known to have been kept in circulation for centuries, that is all the dating information they can provide. Iron-brown painted bowls found on the wreck were made at or near the Xicun kilns in Guangdong province. Most have a simple floral decoration, however, several are painted with four Chinese characters. The characters can be interpreted as ‘Zhi He yuan nian’, the ‘first year of the Zhi He reign’, a date equivalent to 1054 CE. This is, of course, not consistent with the coin dates. Perhaps the bowls were ‘antiques’, being at least 57 years old when shipped. It is more likely that this decoration proved popular for some reason, and was therefore applied well after the date.

The vast majority of ceramics recovered from the *Lingga* wreck were made at kilns in Guangdong province. Guangzhou was one of the few sanctioned gateways for Song Dynasty maritime trade, so there is little doubt that this was the port of embarkation. The *Lingga* ship would have followed the western route down the South China Sea towards the Riau archipelago. As with the nearby *Pulau Buaya* wreck, the likely destination was the Batanghari River, enroute to Muara Jambi (Figure 2). However, as there is a less hazardous route to the Batanghari via the South China Sea to the east of the Riau archipelago, there remains the possibility that both ships were bound for an as yet unknown port in the vicinity of the Indragiri River further to the west. Lying in open water, the ship probably capsized and sank when struck by a localized squall.

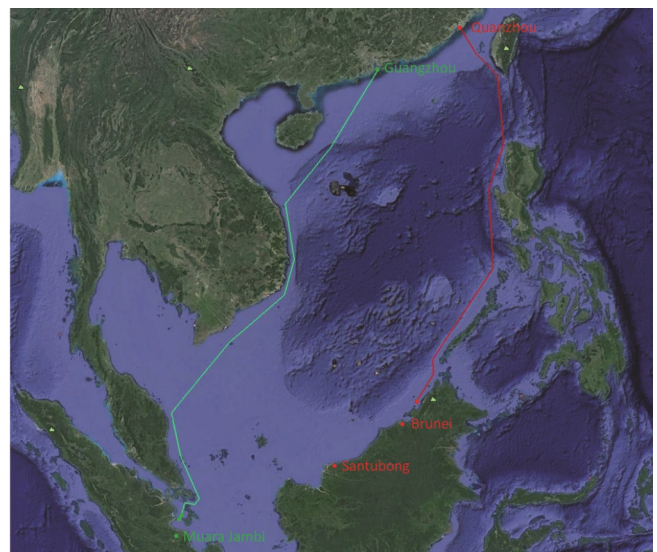


Figure 2. Probable routes followed by the ships: *Pulau Buaya* and *Lingga* ships followed the western route while the *Flying Fish* ship followed the eastern route.

***Flying Fish* wreck**

The *Flying Fish* wreck lies 13 nautical miles off the nearest mainland, and 35.40 km west-south-west of Kota Kinabalu, the capital of Sabah. The ship struck a reef, wallowed on, and sank in 25 m of water. As with the *Lingga* wreck, it was looted before official intervention by a private company working in close cooperation with the Sabah Museum. The author directed the excavation.

Deep sand protected a large part of the cargo from the looters and sections of the hull from the teredo worm. Hull planks incorporated rectangular lugs, joined longitudinally by means of a narrow raised strip every second plank. Planks varied in width from 30 to 36 cm, the lugs from 19 to 24 cm, and the raised joining strip was typically 6 cm across. Plank thickness varied from 3 cm to 5 cm, with dowel holes at typical 13 cm spacing. Frames were composed of several parts, roughly circular in section, with diameter varying from 8 cm to 12 cm. They were lashed with both a rattan-like material and *ijok* (sugar-palm fibre). Longitudinal poles or stringers, of 5 cm diameter lay on the frames, with additional light thwart-ship poles above that. The hull planks are *shorea* genus, the dowels are *belian* (Borneo ironwood) and the frames are teak.

The ceramics cargo is mostly from Fujian province. A freely painted Flying Fish on basins from the Cizao kilns provides the name for the wreck. Some higher quality Qingbai ware is from Jingdezhen. Finer still are some rare examples of northern greenware from the Yaozhou kilns of Shaanxi Province. Several fine greenware bowls may be from the Longquan kilns in Zhejiang Province. The non-ceramic cargo consists of cast and wrought iron, lead ingots, lead rings, copper alloy anklets and gongs. Southeast Asian resin, shell ornaments and stoneware stoves were also recovered.

The dating evidence for the *Flying Fish* wreck is not quite as solid as the *Lingga* wreck. Two wood samples were radiocarbon dated, yielding adjusted calibrated 2-sigma (95.4% probability) date ranges of 1065 to 1155 CE for a frame and 1081 to 1152 CE for a branch, which could have been dunnage or firewood.

This statistically indicates a higher likelihood of Northern Song (62 years from 1065 to 1127 CE) than Southern Song (28 years from 1127 to 1155 CE) periods. Fine Qingbai bowls on the wreck, with an incised cross-hatched design and an unglazed rim (known as 'Haji cap' bowls), have also been found in a Chinese tomb dated to 1127 CE (ref. 2). The tomb, belonging to Madam Zhang, was located in Wuyuan county in Jiangxi province, adjacent to the Jingdezhen production centre. Tai Yew Seng, of Singapore's Institute of Southeast Asian Studies, is of the opinion that a Qingbai bowl from the *Flying Fish* wreck, with a delicately lobed rim and a high foot ring, was produced at a specific Jingdezhen kiln that only made this type of ware during the reign of Emperor Huizong (1100

to 1125 CE). It may therefore be concluded from the combined evidence that the *Flying Fish* wreck is dated to the very late Northern Song period, say the first quarter of the 12th century CE. Links to her sister ships strongly support this dating, as shall be discussed below.

With a surviving cargo made up mostly of iron and Fujian ceramics, there is no doubt that the *Flying Fish* ship's last voyage originated in China. The port of embarkation was almost certainly Quanzhou. She was heading southwards along the eastern route of the South China Sea, paralleling the coastlines of Taiwan and the Philippines before crossing to Sabah. From terrestrial archaeological evidence she was bound for ancient habitation centres such as Sungai Limau Manis in the vicinity of Brunei or Santubong in Sarawak.

Discussion

The tabulation of similar artefacts from the *Pulau Buaya*, *Lingga* and *Flying Fish* wrecks highlights some remarkable relationships (Table 1). Six artefact types were recovered from all three wrecks. Two of them are ubiquitous: cast-iron cauldrons and wrought-iron blades or bars are found on most ships carrying ceramics from China, from the 9th century CE to at least the 17th century CE. Copper alloy anklets or armbands are of identical form on all three wrecks, only the *Flying Fish* example has been chemically analysed (80% copper and 20% lead). They are known from terrestrial sites in Borneo but not from other wrecks. Occurring in small numbers, flat gongs may have been for shipboard use. During the Southern Song Dynasty, gongs were the only permitted copper alloy export item, apparently because they were needed for signalling and warning aboard ship. Small-mouth jars are nearly identical in form. However, greenish glaze on some of the *Lingga* jars suggest that they were made in Guangdong, while the *Pulau Buaya* and *Flying Fish* jars which were probably from the Cizao kilns were Fujian. Jars of this nature may have been containers for wine or other traded liquids, and hence could be widely distributed. Most telling are vases with a series of lightly incised rings around a long tapering neck, a flared cup-like mouth, and a flared foot ring. Remnants of Qingbai glaze on the *Flying Fish* example suggest that it was made in Jingdezhen. The *Buaya* and *Flying Fish* examples are probably from the Xicun³ kilns or perhaps from the Chaozhou Bijiashan kilns⁴ in Guangdong Province. Regardless of kiln (designs were frequently copied), production of this uniquely shaped vessel seems to have been short lived. It is the most powerful direct link between all three ships.

However, the *Pulau Buaya* wreck provides many stronger links. There are five common artefact types linking it to the *Flying Fish* wreck. Three of these are rare and fine products of Jingdezhen: the 'Haji cap' bowl, a

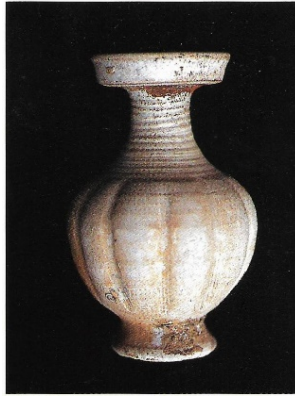
Table 1. Comparison of artefacts from the three shipwrecks

Flying Fish wreck

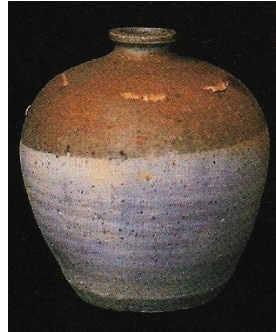
Pulau Buaya wreck

Lingga wreck

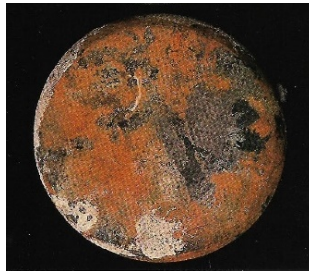
Cup-mouthed vase



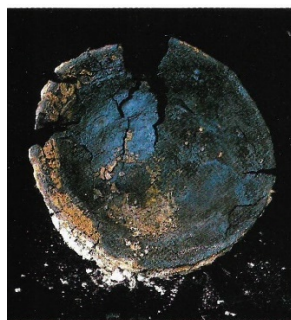
Small mouth jar



Bronze gong















Cast iron cauldrons



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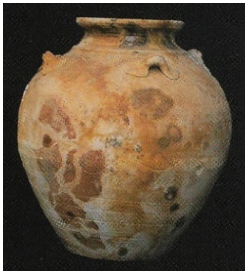

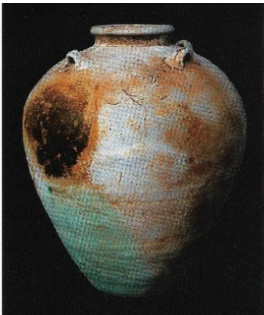



SPECIAL SECTION: SHIPWRECKS

Table 1. (Contd)

<i>Flying Fish wreck</i>	<i>Pulau Buaya wreck</i>	<i>Lingga wreck</i>
	Wrought iron bars/blades	
		
	Copper-alloy anklet	
		
	'Haji cap' bowl	
		
	Lobed ewer	
		
	Lobed covered-box	
		

(Contd)

Table 1. (Contd)

Flying Fish wreck	Pulau Buaya wreck	Lingga wreck
	Lobed dish	
		
	‘Cat’s paw’ bowl	
		
	Jar with wavy decoration	
		
	Jar with stamped decoration	
		
	Small jar	
		

(Contd)

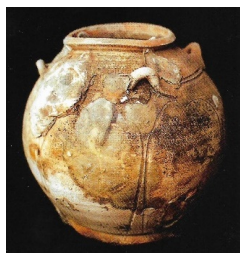
SPECIAL SECTION: SHIPWRECKS

Table 1. (Contd)

Flying Fish wreck

Pulau Buaya wreck

Lingga wreck



Small decorated jar

Chinese coins



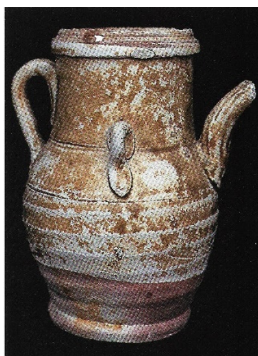
Grindstone and roller



Folded-rim bowl



Strait-necked ewer



(Contd)

Table 1. (Contd)

Flying Fish wreck

Pulau Buaya wreck

Lingga wreck

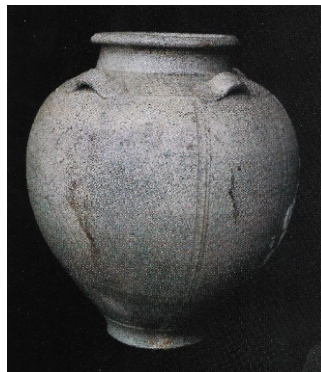
Basin



Bowl with high foot-ring



Decorated qingbaijar







Copper ingot



(Contd)

SPECIAL SECTION: SHIPWRECKS

Table 1. (Contd)

Flying Fish wreck	Pulau Buaya wreck	Lingga wreck
	Lead/silver ingot	
		
	Temmoku	
		

All photographs of *Pulau Buaya* shipwreck (Edmund McKinnon) and other remaining photographs of the paper (M. Flecker).

lobed ewer, and a lobed covered box. Indeed, the box bases both exhibit a moulded workshop mark. In the case of the *Flying Fish* wreck, it reads 'Ye Jia He Zi Ji', meaning 'covered box of the Ye family workshop'. The other two links are a fine lobed dish from an unknown kiln, and green-ware bowls with an external 'cat's paw' decoration from the Tongan or Nanan kilns of Fujian province.

There are no less than thirteen links between the *Pulau Buaya* wreck and the *Lingga* wreck, although some are not so strong. For example, storage jars with incised wavy lines, and others with impressed stamps on the shoulder share the decorative technique but differ in shape, and therefore in production centre. Both wrecks carried small open-mouth jars, which were produced in large quantities in several places, and Chinese coins which are frequently found on wrecks voyaging from China. Southeast Asian grindstones and rollers are also a common find.

The other seven similarities are solid. Large numbers of folded-rim bowls are products of the Xicun⁴, Chaozhou Bijiashan⁵ and Huizhou kilns in Guangdong. Significantly, these have been found in quantity at Bangko in the middle reaches of the Batanghari River near the ancient capital, Muara Jambi¹. Squat ewers with

a wide, straight neck are typical of the Xicun kilns⁴ in Guangdong. As are distinctive stoneware basins, glazed dark greenish-brown with a series of impressed floral or zoomorphic decorations in the interior centre. Finely potted bowls with an everted rim and carved spiral or S-shaped striations on the outside wall are also similar to some Xicun wares but perhaps more indicative of Chaozhou Bijiashan production⁶. High quality storage jars, with a pale green to Qingbai creamy glaze, and decorated with incised diagonal spirals or petals between horizontal rings are thought to be the first of their kind found in an archaeological context in Indonesia⁴. Large copper ingots are of the same shape and size, although the *Lingga* examples have Chinese characters moulded on the upper surface. Finally, both wrecks contained rectangular metal ingots inscribed with a variety of Chinese characters. While these look identical, the composition seems to vary markedly. The *Buaya* ingots are of lead. Preliminary analysis suggests that the *Lingga* ingot is silver. Both lead and silver were exported from China.

Only one artefact type was found on the *Lingga* and *Flying Fish* wrecks, but not on the *Buaya* wreck: small black or brown-glazed bowls referred to as *temmoku*, the Japanese term for a tea-bowl. While these bowls are

attractive in their own right, they are a far cry from the famous *temmoku* made at the Jian kilns in Fujian province. In line with the bulk of their ceramic cargoes, the *Lingga temmoku* were probably made at Chaozhou⁷ or Xicun⁴ in Guangdong Province, while the higher quality *Flying Fish temmoku* are more likely to have been made in Fujian province.

Conclusion

This wide range of overlapping cargo elements cements the demise of these three ships to within a decade or so of each other. The *Lingga* wreck has been firmly dated to 1111 CE or shortly thereafter. Rather than a vague 12th to early 13th century range, the *Pulau Buaya* wreck may now be far more accurately dated to the end of the Northern Song dynasty, say 1100 to 1127 CE. Furthermore, it is now possible to speculate on the *Pulau Buaya* vessel type. Both the *Lingga* and *Flying Fish* ships are Southeast Asian lashed-lug craft. The *Pulau Buaya* wreck contained Southeast Asian paddle-decorated earthenware cooking pots, earthenware stoves, and grindstones and rollers. Chinese junks tended to have an exclusively Chinese inventory, so the *Pulau Buaya* wreck was almost certainly another Southeast Asian lashed-lug ship.

The fact that the cargoes of these Southeast Asian ships are entirely Chinese in origin is not at all unusual. The Chinese did not freight their own products into Southeast Asian waters in significant quantities until well into the 12th century. Instead Southeast Asian, Indian and Arab ships made their way to China to exchange their home

products, Chinese ceramics, ironware and silk and others they picked up along the way.

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ACKNOWLEDGEMENTS. I thank the Sabah Museum and Mr Dickson Lee for inviting me to direct the excavation of the *Flying Fish* wreck. I also thank Mr Kiyoshi Nakatsuka and Mr Harry Satrio for the invitation to investigate the *Lingga* wreck and Dr Edmund McKinnon for background information and for allowing me to use the images from his ground-breaking book on the *Pulau Buaya* wreck.

doi: 10.18520/cs/v117/i10/1654-1663