

Maritime Archaeological Survey of Bình Châu Bay in Quảng Ngãi Province

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Abstract: Bình Châu is a safe sea for ships to anchor and avoid storms, it is an important position on the trade route through the East Sea from China, Japan to Southeast Asian countries, and going further to India and West Asia. It is necessary to survey and assess the potential of cultural heritage in this area using research methods of maritime archeology. Due to subjective and objective reasons, research, survey and training activities at sea here in the years 2018-2019 encountered certain difficulties. The remote sensing survey using side scan sonar and sub-bottom profiler detected traces of a boat at a depth of 9.2m and 78 targets. Surveys along the coast and in the vicinity of Bình Châu Bay show that in Gành Tre and Gành Lá Ngái, there may be traces of shipwreck dating from the 17th-19th centuries and an ancient current flowing into the Bình Châu Bay. In the future, it is necessary to continue to conduct surveys and combine interdisciplinary research in this area to better understand the role of Bình Châu Bay in history.

Keywords: Bình Châu Bay, maritime archaeology, shipwreck, suspected signs, ancient flow.

Subject classification: Archeology

1. Introduction

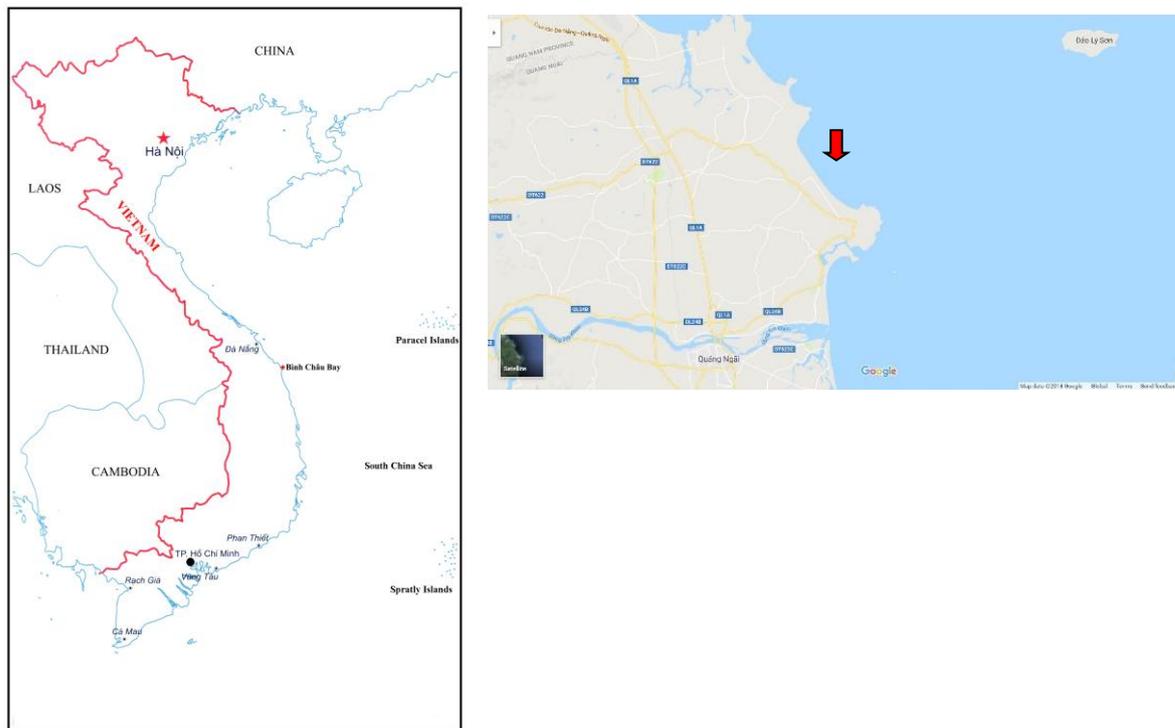
The Bình Châu Bay in Bình Sơn District in Quảng Ngãi Province is an important area on the trade route from China and Japan through the East Sea (also known as the South China Sea) to Southeast Asian countries, from which it goes further to India and West Asia (*Figure 1*). Up until now, the Châu Tân ship dating back to the eighth and ninth centuries, the Bình Châu ship from the 13th-14th centuries, and anchors from the seventh, eighth, 18th, and 20th centuries have been discovered in this area. In addition, the area also witnessed the excavation of many ceramic items dating back to the eras of the Tang, Ming and Qing dynasties. Some people have considered this bay the “graveyard of ancient

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boats” (Phạm Quốc Quân, 2017, p.292). Recognising the significance of the maritime cultural heritage in the Bình Châu Bay in the study of maritime history, ceramic history, foreign trade relations, and other topics, to date, there have been several articles published, highlighting different approaches to the bay (Noriko Nishino et al., 2014; Nguyễn Giang Hải, 2014; Bùi Văn Liêm & Bùi Văn Hiếu, 2016; Bùi Văn Hiếu & Bùi Văn Liêm, 2019).

Figure 1: Location of Bình Châu Bay



Source: Bùi Văn Hiếu.

2. History of archaeological discovery and research in Bình Châu Bay

So far, the Bình Châu Bay in Quảng Ngãi Province has seen the discovery of traces of two shipwrecks, named Châu Tân and Bình Châu.

In 2009, after a storm, local fishers found traces of a shipwreck on Bình Châu’s coast. Later, part of a ship was collected by Lâm Dũ Xênh (also known as Lâm Du Xênh). Although great efforts have been made in preserving the ship, its components are now dry and cracked due to the lack of funding and necessary equipment. The findings of the recent research collaborations between the Institute of Archaeology and some Japanese and Australian researchers initially showed that the Châu Tân ship was about 25m in length

and 9m in width, built with traditional techniques of the Southeast Asian area. The ship planks are mainly linked together by wooden dowels and vegetable fibers. Artefacts in the Châu Tân ship include ceramics, copper items, inkstones, and possibly books. Ceramics account for the largest share with Yue celadon ware, Changsha celadon and underglaze ceramics, Xing-type white porcelain, Three Color Ware, blue and white ceramics, and Islamic green-blue glazed jar shards, used to make artefacts such as bowls, plates, vases, cups, and boxes. Some pieces of ceramics are engraved with Chinese, Arabic, and Indic characters. Artefacts made of bronze include copper coins, copper mirrors, and copper bowls. Some of them are the “money during the reign of Emperor Xuanzong of the Tang” (開元通寶). Some characters are blurred and thus so hard to read (Noriko Nishino et al., 2014 & 2017; Nguyễn Giang Hải, 2014; Bùi Văn Liêm & Bùi Văn Hiếu, 2016; Bùi Văn Hiếu & Bùi Văn Liêm, 2019). The collection of relics on the Châu Tân ship bears similarities to those on the Belitung ship (the ninth century) discovered in the water of Indonesia (Michael Flecker, 2000 & 2001). The Châu Tân ship is evidence of China’s maritime trade relationship with Southeast Asia, South Asia, and the Middle East along Vietnam’s coast. The continuation of systematic research on traces of this ship can provide information about the role and location of ancient communities and countries in the territory of today’s Vietnam, which participated in this trade route.

In September 2012, fishers at the Châu Thuận Biển Village discovered some ceramics on a shipwreck in the Bình Châu Bay. Traces of the ancient ship were about 200m away from the coast of the Bình Châu Sea and located 3.5-4m under sea level. In June 2013, the Quảng Ngãi Department of Culture, Sports and Tourism in collaboration with the National Museum of History excavated the site, using a cofferdam¹. The ship showed signs of burning. Its remaining length is 20.5m and its biggest width is 5.6m (Nguyễn Đình Chiến & Phạm Quốc Quân, 2014, p.638). The rest of the ship was divided into 13 compartments with 12 bulkheads. Bulkheads and frames are linked together by large iron nails. The width and thickness of the side planks of the ship are about 30-50cm and 8-12cm, respectively. The two layers of side planks are bound together with smaller iron nails and caulking compound (Nguyễn Việt, 2014). The relics obtained are mainly ceramics, including brown ceramics, celadon, blue and white ceramics, white porcelain dating back to the 13th and 14th centuries (Nguyễn Đình Chiến & Phạm Quốc Quân, 2014, p.638). The collection of copper coins included 1,451 pieces, concentrated in burned compartments. A total of 36 types of copper coins from the eras of the Tang, Northern Song, Southern Song, and Yuan Dynasties have been collected (Nguyễn Đình Chiến & Nguyễn Ái Dung, 2015, p.77). Nguyễn Đình Chiến and Phạm Quốc Quân said that the celadon, blue and white ceramics, white porcelain discovered on the Bình Châu ship dating back to the 13th and 14th

¹ Cofferdam (water barrier) is a temporary structure designed to keep water and/or mud out of the construction site of an abutment pier or another work. When constructing below the water level, it is necessary to erect a wall to prevent water intrusion to create a dry working environment.

centuries. The latest coin to be found there also belonged to this era. Walter Kassela in an article in the *Southeast Asian Ceramics Museum Newsletter* (Vol. 6, No. 2&3, 2013) also asserted that the objects in the ship date back to the early Yuan Dynasty (Nguyễn Đình Chiến & Phạm Quốc Quân, 2014, pp.638-639).

At present, in addition to the Châu Tân ship and related relics, there are also anchors found in the Bình Châu Sea in the collection of Lâm Dũ Xênh. The two anchors have wooden shanks and iron arms, which are similar to the anchor of the Belitung - an Arab-style ship - dating back to the ninth century from Indonesian waters (Michael Flecker, 2000 & 2001). Recently, the age analysis has shown that these two anchors are from the seventh and eighth centuries (Ian Kenneth McCann, 2019, p.1). Based on the presence of these anchors, Đinh Thị Thanh Nga stated that during the ninth and tenth centuries, there could have also been Arab-style ships in the Bình Châu Bay, in addition to the ship in a Southeast Asian style. However, this assumption needs to be verified (Đinh Thị Thanh Nga & Jun Kimura, 2017). A single-arm wooden anchor with similar properties to the anchor salvaged in the Red River is currently kept at the house of Quách Văn Địch, the Hòa Duân anchor or the Hải Hà anchor. These two anchors recovered from the Red River date back to around the 18th and 19th centuries (Jun Kimura et al., 2011; Ngô Vương Anh et al., 2009). By comparative research, Đinh Thị Thanh Nga also initially said that the Hòa Duân anchor and the anchors collected by Lâm Dũ Xênh also belonged to this era (Đinh Thị Thanh Nga, 2016; Đinh Thị Thanh Nga & Lâm Du Xênh, 2016). The survey team also concluded that the Hải Hà anchor dates to about the 19th century (Long Sơn Survey Team, 2020). This type of anchor was also depicted in the 19th century *Gaikoku Sengu* Japanese scroll painting currently housed at the Matsuura History Museum on Hirado Island, Nagasaki Prefecture, Japan. Notably, the typical anchors of sea boats used in South Vietnam in the *Junk Blue Book* share similar characteristics to those mentioned above. Thus, the anchors of the Red River, the Hòa Duân, Hải Hà anchors and anchors in the collection of Lâm Dũ Xênh continued to be used in the 20th century in Southeast Asia.

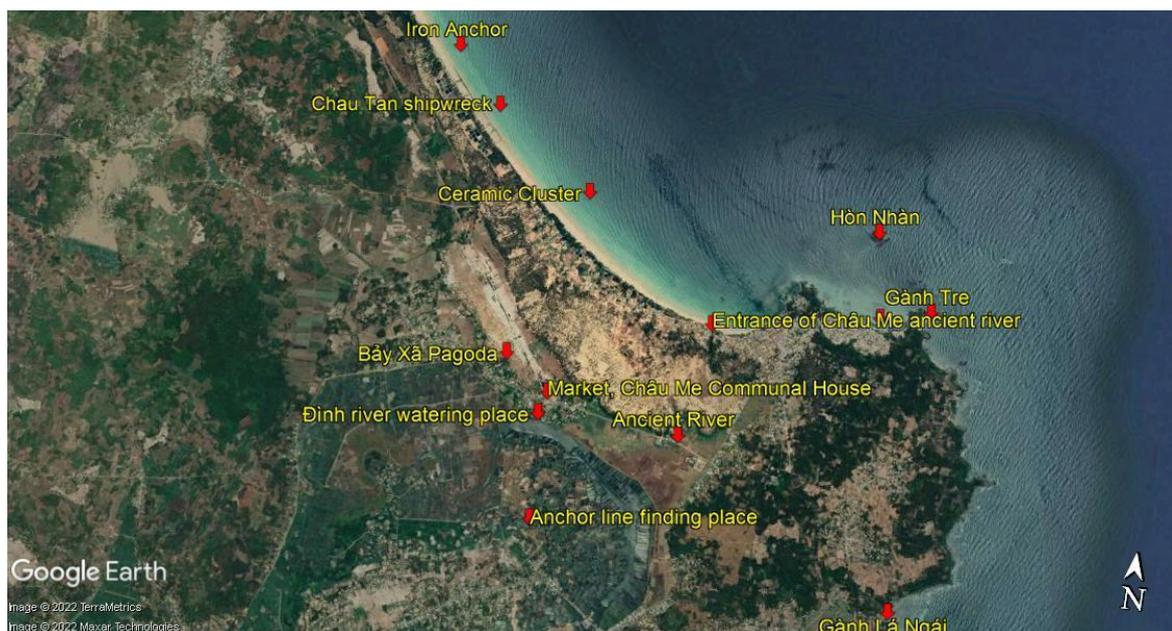
In addition, as stated above, many ceramic items dating back to Tang, Ming, and Qing dynasties were excavated in this area. Some people considered this bay a “graveyard of ancient boats.” Combined with the study of landscape and terrain, Phạm Quốc Quân said that Vũng Thuyền - Châu Thuận Biển was once a deep-sea bay with relatively favourable conditions for ships to come in and out to fulfil two important tasks, which are to obtain fresh water on the route and buy, exchange, and trade goods with people in the surrounding region (Phạm Quốc Quân, 2017, pp.291-295).

Thus, it can be concluded that the potential of underwater archaeology in the Bình Châu Bay is very promising. However, due to the limitations in human and material resources, the number of investigations, surveys, and research on maritime archaeology, especially ones using underwater archaeological methods remains modest and incommensurate to its potential. Therefore, the survey, data collection, and archaeological research in this area and the whole Quảng Ngãi Province are very necessary.

3. Survey results

In 2018 and 2019, a team comprising experts from Tokai University, Pasco Group (Japan), The University of New England (Australia), along with the staff of the Institute of Archaeology, conducted a survey of maritime archaeology in Bình Châu Bay, including underwater remote sensing surveys, SCUBA diving and test excavations, as well as surveys of coastal and adjacent areas (*Figure 2*), with the purpose of:

Figure 2: Key Survey Areas



Source: Google Earth.

- Conducting research and assessing the value of maritime archaeological relics of Bình Châu Bay to develop a basis for the overall research, build scientific records for the best sake of the long-term research, as well as the planning, protection, conservation, and promotion of relics.

- Surveying the seabed to generalise environmental characteristics and terrain of the survey area, thereby finding the right methods for further surveys and studies.

Of late, traces of only three shipwrecks dating from the eighth to ninth centuries in Southeast Asia have been discovered. It is the Belitung ship from Indonesia (Michael Flecker, 2000 & 2001), the Phanom Surin ship from Thailand (Jumprom Preeyanuch, 2014; John Guy, 2017), and the Châu Tân ship from Vietnam. According to locals, part

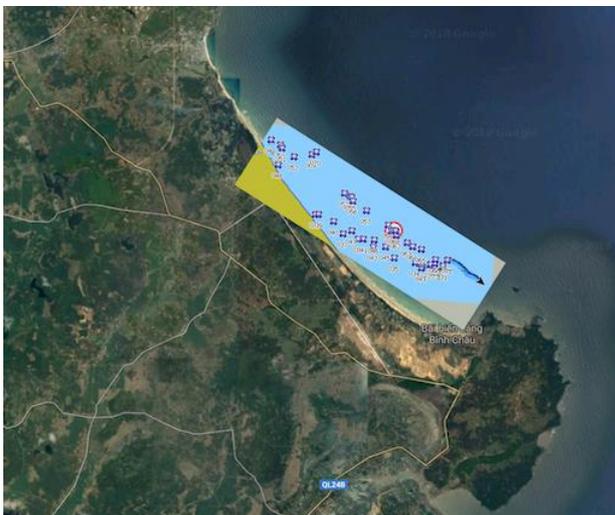
of the Châu Tân ship was salvaged and appears now in the collection of Lâm Dũ Xênh. The remains of this ship still lie in Bình Châu's seabed. Therefore, it is necessary to search for and research the remaining traces of the Châu Tân ship. This will contribute important information to understand the structure of the ships from that era, as well as goods for trade and the role of the central region of Vietnam in the trade route through the East Sea in history.

3.1. Underwater archaeological surveys

3.1.1. Remote sensing survey

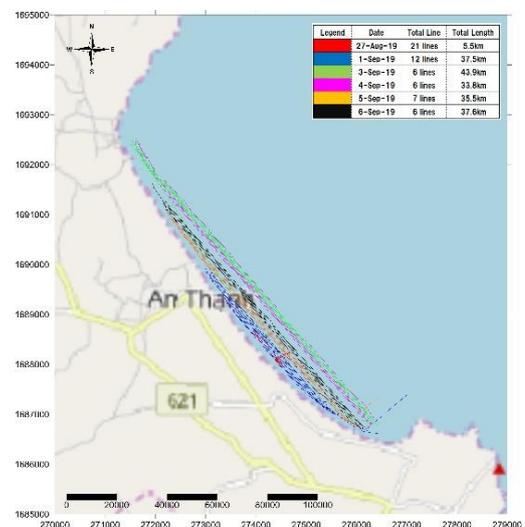
Geophysical survey methods such as using side-scan sonar, sub-bottom profilers, and magnetometers allowed archaeologists to conduct systematic assessments without damaging the sites. These were very effective methods, with which the survey of a large area could be carried out in a short time. However, the results of geophysical surveys are often not easy to expound on, it is thus necessary for experts with extensive experience in analysing and processing data to deal with them. Usually, it is not easy to predict the survey results until each type of equipment is used, and the data is evaluated at each specific location. The survey team used side-scan sonar (2018) and sub-bottom profilers (2019) to survey a part of the Bình Châu Bay.

Figure 3: Area Surveyed with Side-scan Sonar in 2018



Source: Googlemap.com and Ian McCann.

Figure 4: Survey Tracks Using Sub-bottom Profilers in 2019



Source: Kohei Nara.

a. Using a side-scan sonar

A small wooden fishing boat with a capacity of 20CV was used for the survey. The survey team used a third-generation Lowrance Carbon side-scan sonar with a 3D structure scanning function for the mission. The machine was placed at the stern and submerged underwater. The navigation and data were collected by global positioning integrated software with high resolution. The boat ran at a consistent speed of no more than 10km/h to minimise interruptions in the data collection process.

Figure 5: Underwater Archaeological Survey in Bình Châu Bay Using a Side-scan Sonar



Source: Ian McCann.

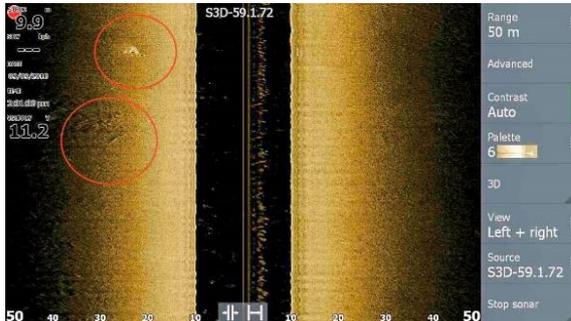
Seven tracks, with 3.4km in length and 40-50m width each, were scanned. Thus, the survey covers an area of about 1.2km². We run the sonar from the far ocean backwards the seashore, from the deep water to the shallower water (*Figure 3*).

Coral reefs, reefs, fishing nets, and traces of anchor lines were discovered during the survey. A trace suspected to be from a boat was found at a depth of 9.2m (*Figure 5, left*). The research team then attempted to re-locate the trace so that it would be checked by SCUBA diving, but the effort failed.

Other signs were also detected, but they are related to the fishing activity or lost or dumped objects. *Figure 6* shows traces of a metal object (top left circle) and related relics (lower left circle). The strongest reflective signals obtained are from the two parallel objects at a depth of 15m. The shapes of the objects distorted by waves have an estimated length of about 3-4m (*Figure 5, right*).

Low reefs were detected throughout the bay. The sand in the bay was not thick, indicating that any shipwrecks here, such as the Châu Tân ship, were also only covered with a thin layer of sand, which was partly evidenced by the discovery of the Châu Tân ship in 2009 through a storm.

Figure 6: Bình Châu Bay Survey Using Side-scan Sonar



Source: Figure 6 by Ian Maccan.

Figure 7: SCUBA Diving



Source: Figure 7 by Jun Kimura

b. Sub-bottom profiler survey

The SyQuest Stratabox sub-bottom profiler was attached to a steel pipe of about 3m in length. It was then fixed perpendicular to the water to the starboard. The entire system was easily set up and dismantled without obstructing the movement of the boat. The boat was controlled to steadily run at a speed of no more than 10km/h (usually 5-6km/h) to minimise interruptions in the data collection process. The entire area consisted of multiple parallel survey lines. Images from the sub-bottom profiler were recorded by Hypack software with GPS coordinates and specific time (*Figure 8-12*). The distance between the survey tracks was about 20m. There were points of time when survey boats were unable to run in a straight line due to the sea weather, shallowness of the water, and obstacles. Hence, some data gaps when carrying out the survey were inevitable.

The survey area was originally planned to be in Bình Châu Bay and expanded to the waters of Lý Sơn Island. However, due to personnel difficulties, unfavourable weather conditions, and difficulties in finding suitable boats for the survey, we could only survey a part of Bình Châu Bay.

The total number of scanned tracks is 64 with a total length of 213.2km. Each survey track is about 3.5km long with 5-21 tracks scanned per day. Survey boats run along the coast of Bình Châu Bay. Over seven days, we surveyed 30-40% of the bay (*Figure 4*). Through initial analysis, 78 anomalies were identified in the sea sand sediment. They can be either geological features, modern debris, and archaeological objects (*Figure 13*). Specifically, Block 1 shows images of some anomalies buried more than 2m deep on the top of the bedrock. Blocks 4 and 5 show unique concentrations near the Anchor and the Châu Tân Wreck areas. According to residents, the Châu Tân ship was buried at a depth of 2-3m below the surface of the seabed. Of the 78 targets, 13 were located at a depth of 2-3m below the surface of the seabed. These are highly potential spots for the next surveys.

No.	Day	Begin	Finish	Number of scanned tracks	Total length (km)
Day 1	27/8/2019	15:00	16:00	21	5,5
Day 2	01/9/2019	8:50	16:20	12	37,5
Day 3	03/9/2019	8:30	17:50	6	44
Day 4	04/9/2019	8:00	15:30	5	34
Day 5	05/9/2019	8:30	15:30	7	35
Day 6	06/9/2019	8:30	16:00	6	37
Day 7	08/9/2019	8:30	13:45	7	20,2

Figure 8: Sub-bottom Profiler

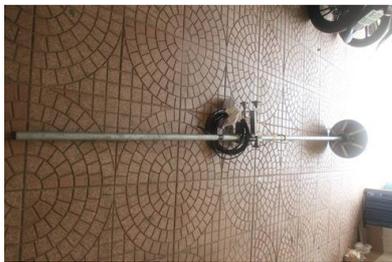


Figure 9: Sub-bottom Profiler Installed on the Starboard



Figure 10: GPS Devices Installed on Roof of Boat



Figure 11: Survey Equipment

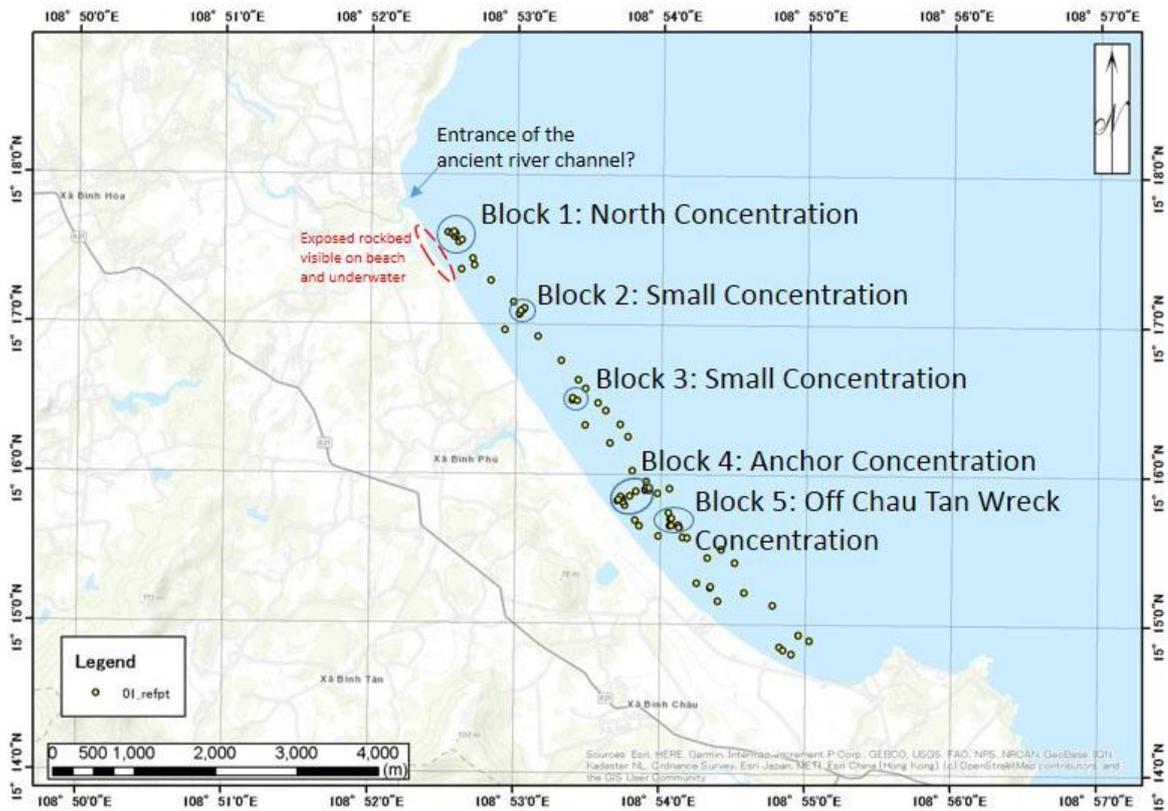


Figure 12: Operation of Survey Equipment



Source: To Figure 8 from Figure 12 by Bùi Văn Hiếu.

Figure 13: Suspected Points after Surveying with a Sub-bottom Profiler



Source: Jun Kimura and Kohei Nara.

3.1.2. SCUBA Diving and test excavation

In 2018

The main objective of SCUBA diving was to check the identified targets through remote sensing survey. At the same time, areas with cultural traces were also surveyed by snorkelling. The survey team was based on information obtained from residents, especially fishers. With the help of Mr Lê Bá Như, who discovered, salvaged, and sold the Châu Tân ship to antiquities collector Lâm Dũ Xênh, the team dived for surveys in the areas where the Châu Tân ship and anchors were discovered. The diving depth was below 10m.

The underwater survey was conducted in about one hour to investigate two points. During the survey, the probing method with a long iron rod was used. This is a simple and easy-to-deploy method, helping to answer questions such as the thickness of the sediment layer and the distribution area of cultural vestiges buried under the sea sand.

At the area where the *Châu Tân* ship and an Arabic anchor were detected, the team found a strange phenomenon. However, because it was deep under the sand and the team did not have a dredge system, the phenomenon's nature remained questionable.

In the area where the iron anchor currently archived at the collection of Lâm Dũ Xênh was found, a piece of Vietnamese celadon bowl body dating back to the 14th century had been discovered. In addition, according to Lê Bá Như, a copper gun with Chinese characters, a box of bullet barrels, and traces of a boat sized 50x20m were dug up in this area.

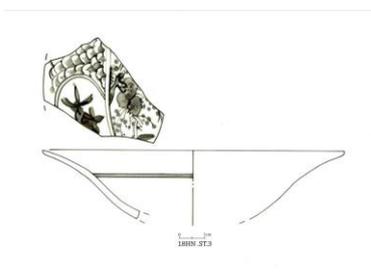
According to Dr Jun Kimura and Ian Maccan, only a third of a 70cm iron bar could be inserted into the seabed sand. The seabed sand has a fine grainy and tight structure, contributing to a highly anaerobic environment, which explains why wooden ship planks are well preserved in this area.

Figure 14: Snorkelling Survey



Source: Bùi Văn Hiếu.

Figure 15: 18th-century Chinese Ceramics at Nhàn Islet



Painter: Đào Xuân Ngọc.

Figure 16: 18th-century Chinese Ceramics at Nhàn Islet



Source: Jun Kimura.

The survey team also surveyed by snorkelling around Nhàn islet in front of Ghềnh/Gành Cả because as for local people, this area also witnessed the discovery of some pieces of ceramics and stoneware (*Figure 14*). The artefacts collected here are 14 pieces of glazed ceramics (two celadon pieces and 12 blue and white pieces and two pieces of fine stoneware). Two pieces of bowl foot of Chinese origin, dating back to the 13th-14th centuries and 12 pieces of blue and white ceramic with two types of bowls and plates of Chinese origin, except for one piece dating back to the 17th century were found, with the remaining pieces dating back to the 18th century (*Figure 15-16*). Two pieces of fine stoneware, including one piece of pot mouth of Vietnamese origin, dating back to the 20th century and one vase/jar body of which origin and age cannot be identified were also found.

In 2019

Based on the results of the remote sensing survey, two test excavation pits with an area of 2m² each had been opened at two suspected points. Both reached their bottoms at a depth of about 1m. The first pit did not detect any relics or findings. The strata were completely pale-yellow seabed sand with a strong structure. In the second pit with a depth of about 1m, a dark grey rock shelf extracted from volcanoes was dug up. Currently, on the shores of Gành Lá Ngái and Gành Tre, such a rock shelf also appears in many places. In this pit, a piece of white glazed bowl dating back to the 18th-19th centuries has been discovered. Based on the stratigraphy structure, the authors think that this piece of the bowl was likely to be washed away by the waves and got stuck on this rock shelf.

3.2. Coastal survey

Besides remote sensing and SCUBA diving combined with test excavation of Bình Châu Bay, to get a fuller view of the landscape of the surrounding area and the relation between this bay and neighbouring sites, the team also conducted additional surveys in several other areas.

3.2.1. Ghềnh/Gành Cả

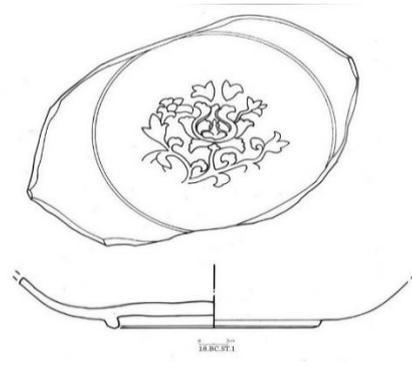
Located south of Bình Châu Bay, in the neighbourhood of Ghềnh/Gành Cả Hamlet, Châu Thuận Biển Village, Bình Châu Commune, Bình Sơn District, Quảng Ngãi Province, in front of Gành Cả Hamlet is Nhân Islet, with its south being quite rocky. The artefacts obtained here include three pieces of the glazed ceramic foot. There is a Chinese celadon plate foot dating back to the 13th century, similar to the one obtained in the Bình Châu wreck excavated in 2013 (*Figure 17-18*).

Figure 17: Celadon Plate Dating Back to 13th Century in Gành Cả



Source: Bùi Văn Hiếu.

Figure 18: Celadon Plate Dating Back to 13th Century in Gành Cả



Painter: Đào Xuân Ngọc.

3.2.2. Ghềnh/Gành Tre

Located in the south of Gành Cỏ, at the UTM coordinates of 49P 0278448 1686711, the area is densely woven with small pieces of ceramics in black rock crevices from a volcano. They are mainly blue and white ceramic pieces of Chinese origin, dating back to the 17th and 18th centuries. Due to being hit by waves for a long time, the ceramic fragments are very tightly attached to the rock crevices and cannot be taken out. All ceramic pieces are broken, lying in disorder, and consisting of pieces of mouth, body, and base of various types of artefacts such as small bowls, plates, large bowls, vases, and others (*Figure 19*). Based on the density of relic distribution, this site can be divided into areas 1 and 2. In area 1, the relics are more densely distributed in the east of Gành Tre. Area 2 has a lower distribution density of artifacts, located in the south of Gành Tre.

Figure 19: Ceramics in Gành Tre



Figure 20: Chinese Blue and White Ceramics Dating Back to 17th Century in Gành Tre



Source: Figure 19&20 by Bùi Văn Hiếu.

a. Area 1

Apart from a group of artefacts of which origin and age cannot be determined, the collection of artefacts consists of glazed ceramics and fine stoneware. Glazed ceramics here originate from China with white glazed, celadon and blue and white ceramic products, including one base dating back to the 12th century; two pieces of celadon from the 14th and 15th centuries; two pieces of white glazed bases and one piece of blue and white ceramic base from the 16th century; 15 bowl bodies and 39 bases made of blue and white ceramics from the 17th century; two white glazed bowl bases and 11 pieces of blue and white ceramics which could be produced from Đức Hóa kiln in the 19th-20th centuries. Three pieces of fine stoneware were also collected. In particular, two pieces were dated back to the tenth century, but there is no way to determine which artefacts they are a part of. The other piece is the bottom of a large bowl from the Phù Lãng kiln, dating to the 15th-16th centuries.

b. Area 2

The collected artefacts are four pieces of bases, including two pieces of blue and white ceramics and two pieces of peeling glazed ceramics. Two pieces of blue and white ceramics are parts of the bowl base of Chinese origin, dating back to the 17th and 18th centuries.

3.2.3 Gành Lá Ngái

Located in the south of Gành Tre, at the UTM coordinates of 49P 0278325 1684076, in An Hải Village, Bình Châu Commune, Bình Sơn District, Quảng Ngãi Province, the artefacts obtained here comprise eight pieces of blue and white ceramics and one piece of fine stoneware. The ceramics were made in China and Vietnam and include bowls and plates, dating from the 18th to the 20th centuries (*Figure 21*). It is impossible to determine the origin and age of the stoneware.

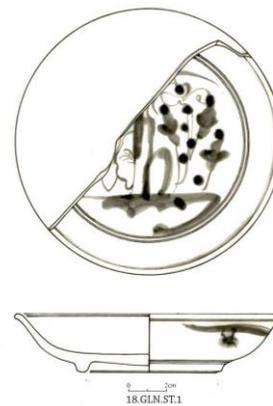
3.3. Survey results of other sites

In addition to coastal and offshore surveys, the research team also surveyed the surrounding sites, identified GPS coordinates, described the sites, took pictures, and sketched in a notebook to understand the terrain of the survey area, thereby developing a more adequate overview of the development progress of this area.

3.3.1. Châu Thuận Biệ̉n village

As mentioned above, when reporting about an ancient seaport in Bình Châu Bay, Phạm Quốc Quân (2017) touched upon an ancient waterway here. The team surveyed this trace. In Châu Thuận Biệ̉n village, at the coordinates 49P 0276527 1686356 UTM, there is a small water creek of about 5-10m in width leading to Bình Châu Bay. Following this creek to the west is a wide valley. However, due to the severe saltwater intrusion, no plants can be cultivated in this area, which is a remaining trace of a saltwater bay connected to the aforementioned

Figure 21: Blue and white Plate Dating Back to 18th Century in Gành Lá Ngái



Painter: Đào Xuân Ngọc.

Figure 22: Mouth of Ancient River in Châu Thuận to Bình Châu Bay



Source: Bùi Văn Hiếu.

creek according to Phạm Quốc Quân (2017). According to the locals, some objects such as big ropes, ship masts, and ship planks were still dug up in this area and the creek is connected to the Châu Me River (*Figure 22*). In addition, we visited the system of wells, pagodas, and shrines around Châu Thuận Biền Village.

3.3.2. Châu Me market and pier

Bình Châu has the Bờ Đấp and Châu Me markets (Châu Me pier moored with many boats for trading goods). To date, the following six-eight foot distich is still being circulated: “It is rumoured that Đông Phước is grown with a lot of bamboos, Tham Hội is rich in rice and people in Châu Me rake in money.” In the area, we surveyed the Châu Me communal house, market, Đình landing place, and Bảy Xã pagoda.

Châu Me market is located at the coordinates 49P 0275162 1685567 UTM, right at the T-junction of the big road. Currently, only a few small stalls make their presence visible here. In the past, there were large temples and pagodas next to the market. Châu Me communal house was destroyed when a road was built to connect Bình Châu, Châu Ổ, and Dung Quất. The remaining material traces of the communal house consist of a system of stone pillar bases currently stored at the headquarter of Bình Châu Agricultural Cooperative (*Figure 23*).

Đình landing place has the coordinates 49P 0275105 1685376 UTM, where the boats were anchored when the operation of Châu Me market was still vibrant. Currently, the landing place is only a small, shallow river with two grassy banks. According to the locals, the water level of this river is very high when the flood comes with a tremendous volume of water.

Situated at the coordinates 49P 0274756 1685869 UTM, there are no traces on the outward surfaces of Bảy Xã Pagoda (Châu Me Pagoda), only a large block of laterite remains. As far as the local people are concerned, this is the type of laterite used to build the pagoda, which has a bell with a sound that can be heard by all seven communes. The campus of Bảy Xã Pagoda is quite large. Nevertheless, currently, there is only a small space for worshipping, and another one has been just built by the locals in the southwest. Two stone pillar bases made in the time of the Nguyễn Dynasty, a stone pillar, and some blocks of laterite have been discovered here.

Figure 23: Stone Pillar Bases of Châu Me Communal House



Source: Bùi Văn Hiếu.

4. Conclusion

Bình Châu is a safe sea for boats to anchor and avoid storms, and plays quite an important role on the trade route through the East Sea from China and Japan to Southeast Asian countries, thereby going further to India and West Asia.

Recognising the significance of the maritime cultural heritage in the Bình Châu Sea in Quảng Ngãi Province, up until now, initial studies of the area have been carried out with different angles and approaches, and there has not been much maritime archaeological research conducted here. Therefore, it is essential to assess the potential of cultural heritage in the area, using research methodologies of maritime archaeology.

On-the-sea research, surveys, and training activities in the area in the 2018-2019 period encountered certain difficulties due to unfavourable weather conditions. There are days and times when it was impossible to conduct surveys due to strong winds and waves. In addition, the sites are mostly buried under the sand of the seabed, so the survey did not detect many relics. Surveys using side-scan sonar detected traces of a boat at a depth of 9.2m. However, the specific characteristics and properties of the boat were not clarified.

In 2019, for the first time, a remote sensing survey using a sub-bottom profiler was conducted in this area to initially study the topographical features of the seabed. A total of 78 anomalies were detected, which can be either geological features, modern debris, and archaeological objects. The information obtained through preliminary analysis shows that many points need clarification by diving and archaeological excavation. Understanding the seabed characteristics and the properties of signs will make an important contribution to the next studies.

The results of using probing method showed that the seabed sand in the area where the Châu Tân ship and anchors were discovered was of a fine, grainy, and tight structure, contributing to creating a high anaerobic environment. This explains why the ship components discovered here remain well preserved. The seabed in Gành Tre and Gành Lá Ngái has a lot of rocks.

The appearance of pieces of ceramics, pottery, and stoneware in Gành Tre and Gành Lá Ngái, (especially dense in Gành Tre), combined with the results of surveys and interviews with locals, can initially confirm that traces of wreck may exist around these two areas. These wrecks are located near the seashore. Based on the age of the discovered artifacts, the wreck in Gành/Gành Tre mainly carry Chinese ceramics, dating back to the 17th and 18th centuries. The wreck in Gành Lá Ngái are dated later, around the 18th and 19th centuries.

When studying the Hội An Trade Port, many researchers such as Phan Huy Lê, Trần Quốc Vượng, Đỗ Bang, Lê Văn Lan, and Dương Trung Quốc, among others, thought that Đà Nẵng used to act as an important outpost for merchant boats from Japan, China, and other countries to trade with people here through the Cổ Cò River (Đỗ Bang, 1996; Lê Văn Lan, 1991; Phan Huy Lê, 1991; Dương Trung Quốc, 1991; Trần Quốc Vượng, 1991). The route

not only ensures the safety of merchant boats but also shortens the travelling distance by a third if people enter Hội An from Cửa Đại (Đỗ Bang, 1996, p.234).

Based on the remaining vestiges and the discovered targets, the author assumes that there was an ancient flow into the Bình Châu Sea (Bay) of which the watergate is in Châu Thuận Biển Village today. According to the locals as well as based on the current map, the river is not only connected to the Châu Me River but can also flow to the south to connect with the estuary of Trà Khúc River. Currently, not many traces related to trade activities in the estuary of Trà Khúc River were discovered in the past. So, did Bình Châu Sea (Bay) also serve as a outpost for the central port at the estuary of Trà Khúc River, or as an independent trading port and have a relationship with the estuary of the Trà Khúc River to the south, or was it just a landing place for boats anchored to avoid the storm? It is necessary to continue to conduct surveys in combination with interdisciplinary research in this area. Hopefully, we will clear up this issue soon.

Based on the survey results, in the upcoming time:

1. It is necessary to conduct SCUBA diving surveys, coupled with test excavation in suspected areas, especially where traces of boats were found at a depth of 9.2m, to determine their characteristics and properties.

2. Currently, only three traces of shipwreck dating back to the eighth and ninth centuries have been discovered in Southeast Asia: The Belitung ship from Indonesia, the Phanom Surin ship from Thailand, and the Châu Tân ship from Vietnam. The Belitung ship was salvaged, and the Phanom Surin ship was excavated. According to locals, parts of the Châu Tân ship were salvaged and now belong to the collection of Lâm Dũ Xanh. The remaining parts of the ship are buried under the Bình Châu seabed. The area where the Châu Tân ship was found is quite close to the shore and covered with shallow and transparent water, which is very convenient for excavation and research. Therefore, in the coming time, it is necessary to develop a plan for excavation. This not only provides a lot of important information for the study of local maritime history, boat building techniques, and the position of the Bình Châu Sea in Vietnam's ancient trade but also contributes to training and improving the capacity of underwater archaeology in Vietnam.

3. One of the important tasks is to reconstruct details of the ancient environment of the Bình Châu Sea, such as the shape of Bình Châu's ancient coastline and the identification of traces of ancient currents pouring into this sea. The environmental geomorphology survey and information from the ancient mapping system can provide useful insights into the reconstruction of the ancient environment. To precisely detect traces in the ancient river, it is necessary to do coring here for research. Another useful source of information can be obtained through investigating and interviewing local communities about the changes; displacement, reclamation, and erosion of coastlines; beliefs in fishing; the area where ceramic, pottery and stoneware clusters were discovered; and the area where they often catch fish with nets or detect relics when fishing.

4. With the addition of more sources of information, we can conduct further remote sensing survey programmes using equipment such as multibeam echosounders, sub-bottom profilers, and magnetometers in combination with SCUBA diving and test excavation.

5. It is also necessary to expand the survey to the surrounding areas to identify the ancient environmental landscape and developmental process of this land more comprehensively, especially the relationship between Lý Sơn Island and the Bình Châu Sea.

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