

The 12th to 13th century Cargo Ships of Korea: Proof of Medieval Maritime Transportation Found in Taean waters, Korea

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Abstract

This paper is about the wrecked ships found in Tae-an, Korea, and the ongoing investigation. Four cargo ships of the Middle Ages were excavated from Taean, Korea during 2007 - 2011. Three of these four ships were found in a 1 km radius, as such, this sea area is famous for sinking ships since ancient times. Among the found relics were wooden tablets describing the origin of the cargoes, the receiver, types of cargoes and quantity was found. These wooden tablets were the first of its kind found in a Korean wrecked ship, which provide specific historical facts. The four wrecked ships found in adjacent place, were wrecked during the transportation of products from a production area in the mid-southern part of Korea, where a capital city was located at one time. One ship was transporting tens of thousands of porcelain, while the other three were transporting a small quantity of porcelain and foodstuffs.

Key words: Tae-an waters, Medieval maritime, Transportation, Taean Shipwreck, Yellow Sea coast

Introduction

The Taean Peninsula is a prominent area of the Yellow Sea coast. It is known for its rough seas; in the Joseon Dynasty (1392-1910 AD) they tried to build a canal to change the seaway, since many cargo vessels transporting taxed grains had wrecked. In particular, they had to pass through between Gauido and Gwansugak across the route between Sinjindo and Anheungseong to transport tax grain from the south of Yangkwang Province. This is where marine accidents happened frequently, so during the Goryeo Dynasty (918-1392 AD) this place was known as "Nanhangnyang", a waterway dangerous to pass(Anheungnyang since Joseon) and considered it as one of the most dangerous sea areas including Uldolmok in Jindo, Sondolmok in Kanghwa Island, and Indangsu in Seohae Province. For this reason, from the Goryeo Dynasty the excavation work for canals was conducted to keep cargo vessels safer. The following shows the situation of marine accidents in the early Joseon. Although all of these accidents did not occur in the Taean waters, most of them are considered involved in this area.

- Ship Accident Statistics during 1395 to 1455 (for 60 years) (a total of 200 ships; loss of grain-15,800 bags of rice)

As a part of an effort to overcome these frequent sinking accidents of cargo vessels, they had attempted the excavation of canals since the Goryeo period, to develop new routes in order not to pass through Anheungnyang. The first attempt was in 1134, which was at the Gulpo Canal passing between Cheonsu Bay and Garorim Bay. This canal was planned as a total of 7km sluiceway. They succeeded in excavating 4 km, but failed because of the bedrock in the way. It was resumed in 1391, but was ultimately uncompleted. The second attempt made was the Uihang Canal, between

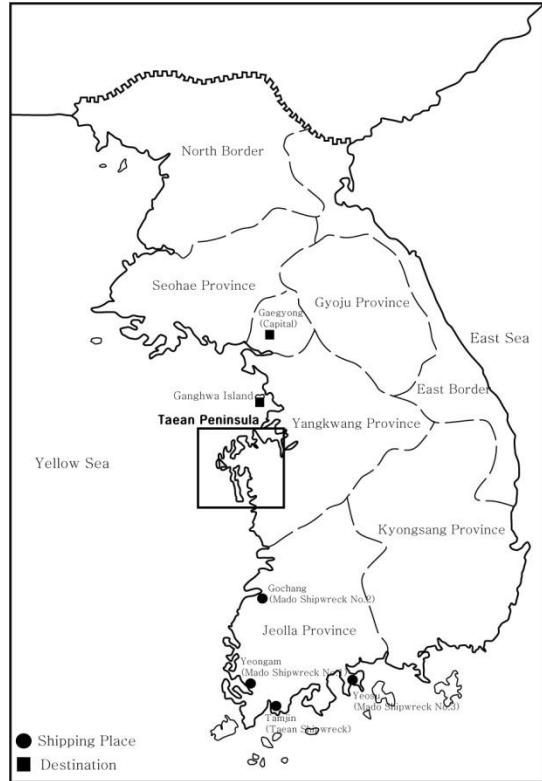


Fig. 1 Shipping places and destination of medieval Korea. (NRIMCH)

Uihang-ri and Mohang-ri, Sowon-myeon, Taean-gun in 1521 during the Joseon Era. They mobilized 3,000 people to excavate but eventually the project was abandoned. The region of Anheungnyang, Taean, was the standard ship course that they had to pass through to transport tax grain of Jeolla and Gyeongsang Provinces, the breadbasket of Korea; by ship, but as there were many barriers to sailing the region such as strong tides, rocks, winds and thick fog. About 80 anchor stones were discovered in 200 x 100 m area between Mado and Geunheung where tidal currents were relatively weak and the winds were manageable while exploring the Mado waters from 2009 to 2012. These anchor stones were used for anchoring premodern ships and tied to wooden anchors. With nearly 100 anchor stones found in that part of the Mado Sea area implies that this place used as an anchorage over a long period.

The 12th to 13th Century Shipwrecks Found in the Taean Waters

The Taean Shipwreck, a porcelain carrier, was investigated between 2007 and 2008, and the Mado 1, 2 and 3 Shipwrecks were excavated consecutively between 2009 and 2011 in the Taean waters, this place became where most of the underwater

archeological surveys were actively conducted in Korea recently. These shipwrecks are located within a radius of 4km, dating to the early 12th century to the end of the 13th century and dating within the Goryeo Dynasty Period.

The Taean Shipwreck

The Taean Shipwreck had sunk while transporting porcelain made in the famous ceramic producing area in the southern part of the Korean Peninsula, from the then capital city at that time. In a space of 12 m east to west and 8 m south to north, approximately 25,000 pieces of porcelains loaded in five stories were recovered, and external boards of the ship framed in 4 levels appeared in the bottom. It is inferred that the reason there is no bottom plank, compared to both bottom plank and external plank are identified usually in the other vessels, is that at the time of sinking the vessel was completely tilted a port or a starboard and settled on the seabed. It was likely that the other prow, stern and bottom parts disappeared, except for a part of the external plank in one side pressed by the heavy porcelain after sinking.

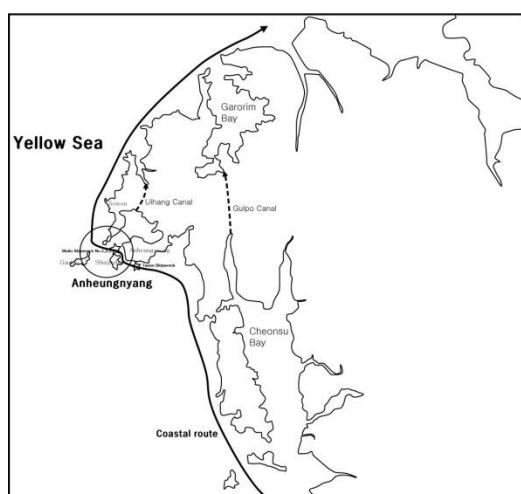


Fig. 2 Canals and shipwrecks in Taean peninsula. (NRIMCH)

The excavated relics from the Taean Shipwreck include 34 wooden tablets, 23,760 porcelains, 9 pieces of earthenware, 2 iron pots, including bamboo baskets, bronze bowls and anchor stones. Porcelain was the major cargo of the ship. On the wooden tablets were a list of recipients, and the other things were items that the crew used. Most important among these artifacts are the wooden tablets. Even though wooden tablets were also identified in the Sinan Ship (the first Korean ship excavated underwater ship) the ship

was of the Yuan Dynasty, China, and it was the first time that wooden tablets were discovered from a sunken ship operating in Korea. Since the wooden tablets recorded the kinds of cargo, quantity, shipping places, destinations, recipients and shipment times, they offers critical clues to specifically figure out the historical features of the ship. Brief examples of the tablets are as follows:

- wooden tablet 1: (the front side) “I send 80 pieces/packs of pottery to the house of a government official (隊正 仁守) in Gaegyeong from Tamjin (place name).” “We load the same amount as mentioned above. Captain’s signature/ Tamjin-hyeon as the shipping place (Kangjin, located in the southern part of the Korean Peninsula at present), a recipient called Daejeong Insu in the Goryeo’s capital, Gaegyeong (present Gaeseong), pottery as a kind of cargo, and 80 pieces or packs as the amount of cargo were inscribed there.
- wooden tablet 2: (the front) “I offer this to Daegyeong Choi”/a Daegyeong (a high-ranking title of the official of jeong 3 pum to jong 3 pum) having his last name of Choi
- wooden tablet 3: (the front) “I offer pottery to Jangmyeong Yu /a Jangmyeong (title of the office) having his last name of Yu.
- wooden tablet 4: As the result of wiggle match, combining dendrochronology and radiocarbon dating of wooden tablet/the body of the ship where year marked, if we consider the ship was made of wood cut down between 1126 and 1150 and the porcelain was made between the early and mid-12th century in terms of pottery chronology, the Year of the Swine was ascertained to be 1131, and eventually the Taean Shipwreck was assumed to be wrecked while transporting cargo in 1131. Thus, we could specifically grasp historical facts of the sunken ship through the wooden tablets discovered from the Taean Shipwreck. However, as only 4 levels of the external planks remain out of the hull, it is hard to comprehend the structure of the ship.

The Mado Shipwreck No.1

The Mado Shipwreck No.1 was found in 2009, and was investigated in the same year. The sea area where the ship was wrecked is about 15 to 20 m deep and is affected by the strongest tides in the harbor. The remaining conditions of the hull were relatively fine; 7 rows of bottoms, 2 levels of port, 3 levels of starboard, and stem, although not framed,

were identified. The port and starboard remains, in term of cross section of the bottom

of the ship almost maintains level, and in terms of longitudinal section the ship has raked forward. Artifacts found comprised of nearly 300 pieces of porcelain, 49 pieces of earthenware, 69 wooden tablets, 9 bamboo trays, 6 wooden combs, 2 bamboo baskets, 13 bronze spoons, 3 iron pots. This shipwreck was a cargo ship having transported mainly grains such as rice seed, buckwheat and bean. Other foodstuffs such as fish bones and Korean sauces inside earthenware jars were found as well. Unlike the porcelain carrier Taean shipwreck, the Mado Shipwreck No.1 was mostly a grain carrier. The shipments of the Mado No. 2 and 3 shipwrecks seem to have transported grains such as rice in the remainder but the center of hull, and earthenware jars containing food such as Korean sauces, porcelain for merchandise, and craftworks such as bamboo trays in the central part. A lot of wooden tablets were also excavated in these ships. Major items are as follows:

- wooden tablet 1 : “I offer these produce to Choi Gwang in February 19, the Year of the Dragon (1208): 10 bags of millet and 3 bags of buckwheat harvested in the field, and 2 bags of fermented soybean lumps; 10 mals (approximately 34L) of produce are put in each bag.”
- wooden tablet 2 : “I offer this produce to Honorary Army Commander Yun Gi-hwa in Capital from Juksan-hyeon in December 28, the Year of the Hare (1207): 3 bags of millet harvested in the field. 20 mals (approximately 68L) a bag”



Fig. 3 Wooden tablets of shipwrecks.
(NRIMCH)

- wooden tablet 3: “I offer this to Nangjung Choi (a government official in jeong 5 pum post having his last name Choi): a jar of salted fish”.
- wooden tablet 4: “I offer 24 bags of white rice harvested in a new field in Hoejin-hyeon (now Naju city)”.
- wooden tablet 5: “I offer these to Army Commander Kim Sun-yeong. 6 bags of rice harvested in the field”.

We can understand concretely about the Mado shipwreck No.1 through the contents of the wooden tablets. First, regarding freight shipping and departure date, as a result of comparing with Kim Sun-yeong, a figure appearing in “History of the Goryeo Dynasty Period”, a historical book on Goryeo, we can find out that the period of shipping was around October 1207 to February 19th, 1208, and the departure date was not later than February 19th. The places of shipping identified in wooden tablets are at present Haenam-gun, Naju-si, Jangheung-gun and Yeongam-gun in South Jeolla Province, and the recipients were persons of high position, including Army Commander Kim Sun-yeong, Nangjung Choi, Kwon Geuk-pyeong and Yun Bang-jun. In the kinds of cargo, well-polished rice, unpolished rice seed, millet, buckwheat, bean, fermented soybean lump, salted fish, salted mackerel, salted crabs, bamboo tray and comb are verified in the wooden tablets. In particular, as all recipients of the grains were individuals, the freight was almost for rent. Therefore, the Mado 1 doesn't seem to be a state cargo ship but a private one transporting grains, food and craftworks of South Jeolla region where there were private lands of the then influential persons residing in capital.

The Mado Shipwreck No. 2

The Mado shipwreck No.2 was discovered in 2009 in process of trial excavation and fully excavated in 2010. 2 levels of external planks of the port, 7 rows of bottoms and 5 levels of external planks of the starboard remain; it listed 25 degrees to starboard in terms of cross section yet it was almost level between stem and stern. We removed soil layers by checking exposed relics. There are 5 layers into the Mado Shipwreck No.2. The first layer was the surface of the mud; the second is the state that base blocks expose stacks of grain; the third is the side where bridging, vessels for living, and earthenware and porcelain for cargo in the central part are exposed after removing the

base blocks; the fourth is the side where the hull is completely exposed; and the fifth is the state after salvaging the hull.

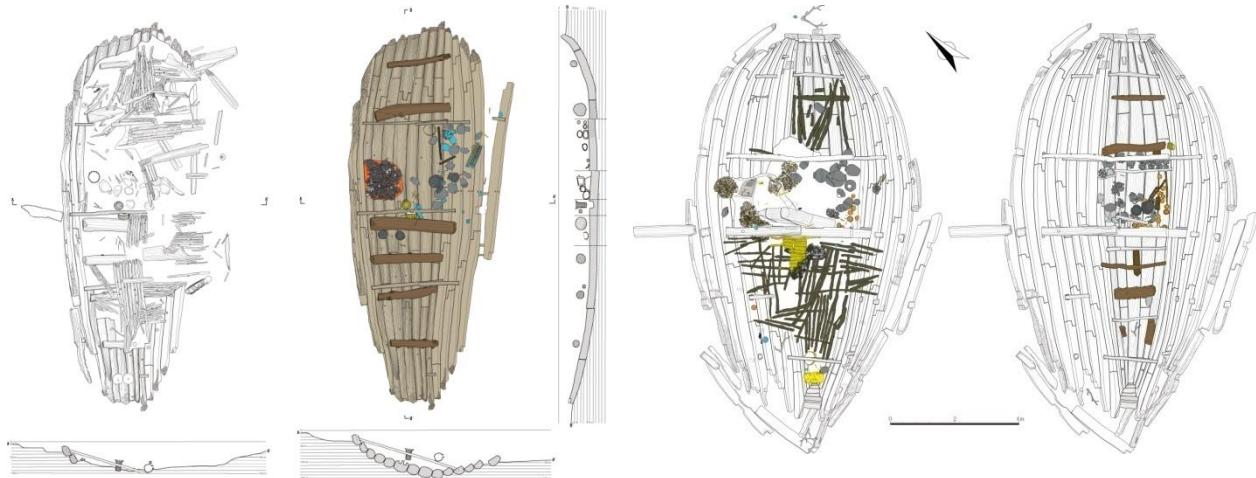


Fig. 4 Plans of Mado shipwreck No. 2. (left: 3-1 second layer plan, right: 3-2 layer plan). Fig. 5 Plans of Mado shipwreck No. 3. (left: 3-1 layer plan, right : 3-2 layer plan). (NRIMCH) (NRIMCH)

The area where the Mado No. 2 sank is not an area that has active sedimentation, since there were not many collapsed timbers of the upper part. Relics from the upper part, the external planks of port and starboard, stem and stern seem to have been all washed away. We see the entrance of the vessel as the second section and the central part as the third section, the bridging and base blocks for loading grain were found in the second, fourth and fifth spaces, and grains such as rice seed were identified in the exposed upper side of base block, so grains probably was loaded in the second, fourth and fifth sections. A mast was installed in the central part of the end of the third section, and there is an area to make a fire comprised of fragments of roof tiles, stones and clay to port. Iron pots that sailors used, big jars containing water, dinnerware, spoons and bamboo baskets were excavated around the “fireplace”, and there were jars for salted fish, 2 mae-byeong (a type of jar), a pack of cups and overlapped iron pots assumed as freight were recovered in the second section. In the last (sixth) section a millstone was recovered.

The excavated relics from the Mado No. 2 are: 157 pieces of porcelain, 28 pieces of earthenware, 58 wooden tablets, 8 bronze spoons, 4 bronze bowls, 8 iron pots, bamboo baskets, and grains such as rice seed, millet, buckwheat, wild sesame, and bean.

Similarly, we can find out the places of shipment, recipients and date of the wreck through the contents of the wooden tablets. The places of shipment were Gochang-gun and Jeongeup of North Jeolla, Korea, and the recipients were government officials residing in capital, whose names are Lee Geuk-seo, Yu Ja-ryang and Oh Mun-bu. The sailing time is not correct, but it can be assumed to be approximately 1200 to 1213 CE in the light of records on the persons above. Freight carried included polished rice, beans, malt, fermented soybean lumps, salted fish, honey, sesame oil, and some iron pots. Like the Mado No.1 shipwreck, we can see this shipwreck as a cargo ship that mainly carried grains, including food and other craftworks of the North Jeolla region, where there was private lands of influential people living in the capital.

The Mado Shipwreck No. 3

The Mado Shipwreck No. 3 was investigated in 2011 and holds the best state of its hull among the regions' shipwrecks discovered. The maximum height of the ship is 2.8 m; 10 levels of port, 9 levels of starboard, and 5 rows of bottoms remain; body of the ship tilted 8 to 12 degrees to port and about 5 degrees to bow. The reason that the Mado No. 3 remains are well preserved is in the position of sinking. The area where the Mado No.3 was discovered was about 200m from shore, and as it is surrounded by land and islands like the Mado No.2. There is almost no tide and it is a place used for a refuge area in storms even today. It is also an area where there is active sedimentation. We can guess why the Mado No. 2 and 3 sank although they already arrived at refuge.

The Mado No. 3 was excavated in four sections. The first section is a state that clay is removed up to around – 60cm, with lumbers for loading grain and wooden relics were recovered from this side. The second section is the exposed side where the ship framework collapsed, where fragments assumed to be a deck board of the upper part and the upper external boards collapsed. The third section is comprised of shipped or used relics at –180 to 250 cm depth. The upper area in the section is classified as 3-1 and the lower part as 3-2. The inside of the hull is divided into six sections; from the bow, the first space was too steep to ship goods. In the second, fourth and fifth sections, a bridging and base block for loading grain was recovered, as well as some grains. The sixth section of the stern part is the narrowest space, where bamboo boxes containing shark jerky, baskets and earthenware jars were loaded. Grains are found in the port and

southern areas along with earthenware in the third section the central part (where a mast is installed), yet these grains seem to have flowed into this section from the second and fourth sections while the ship wrecked. Particularly, there is a space only for earthenware jars in about 70 cm section of the central part from the second section, from which about 20 pieces of earthenware were excavated. A fire place for cooking was installed in the southwest corner in the 3-2 side of the third section; earthenware goods are loaded in two rows north; iron pots and earthen goods in the central part; and about 50 bronze containers such as bowls, plates and spoons (9) were identified around the starboard side and right lower side corner. From the bow, the first section was the space unfit for use due to the inclination of the bottom part, a large amount of grains were onboard in the second, fourth and fifth section, and additional cargoes were loaded in the sixth section. And in the center of the third section, there was a fireplace and a living space for crew dinnerware and cooking containers. Earthenware jars containing salted fish for freight were also loaded.

In the Mado No. 3 various relics were recovered, including 50 pieces of earthenware, 41 pieces of porcelain, 35 wooden tablets, 2 iron pots, 43 bronze tableware, 9 bronze spoons, 7 wooden combs, fabrics, janggi (Korean chess) pieces, 12 antlers, and grains such as rice, buckwheat, millet and barley. The facts that we can know through the wooden tablets are that the shipping place of the Mado No. 3 was Yeosu-city of southeast area of South Jeolla Province, and individual recipients were Shin Yun-hwa, Yu Cheon-u and Kim Jun, among whom especially Kim Jun was a man of supreme power who seized power of the Goryeo at that time. Unlike the other ships, individuals as well as state institutions appear as the recipients; Jeonmin in charge of the reforming land system, Jungbang-ubeon and U-sambeon-byeolcho were military departments in nature, and Dogwan, in charge of documents on slaves and lawsuit. Barley, salted abalone viscera, salted mussel, abalone, shark jerky, peasant, fish oil, and dog meat jerky are verified as the kind of freight in the wooden tablets. We can find out that the Mado No. 3 sunk between 1265 and 1268 through the comparison of persons' names on the wooden tablets and historical records.

Conclusions

The number of the sunken ships excavated in the sea of Korea by now is 12, and all of them fall under the Goryeo Period (10th to 14th centuries). Thus, it can be said that in the Goryeo maritime transportation at home and abroad was the most active. These four cargo vessels of the Goryeo period were discovered in Taean waters, over recent years, and they give more abundant proof of maritime transportation in the region than anything else among the sunken ships of the time e.g. the data of the ship structure, the pottery, grains, food and articles of the crew. The most significant finds are the wooden tablets inscribed with specific information of the cargo. As these wooden tablets sometimes have records on the shipping time as well as the shipping places, recipients, kinds and quantity, we can figure out historical facts of the shipwrecks. Cargo ships of Goryeo investigated by now are classified into two kinds according to the kinds of freight. One is a porcelain carrier, which was a vessel transporting porcelain made in the southern part of the Korean Peninsula, the then major porcelain-producing area, mostly to the central region where the capital was located. The Taean Ship represents one of these types, as well as the Wando Ship and the Sibidongpado Ship. These pottery carriers seem to have shipped only porcelain and earthenware usually, not other freight. The other type of ship is identified as a grain carrier, represented by the wrecks Mado No.1, 2 and 3. For convenience sake, we can call it a grain carrier, but in these vessels various goods were shipped, not only grains but also various foods such as salted fish, fermented soybean lumps, Korean sauces, jars of honey and sesame oil, craftworks such as bamboo trays, combs, bronze vessels, iron pots, porcelain and fabrics, and raw material for handcrafts such as antlers. In the light of Mado No. 2 and 3, it is thought that the method of shipping cargo such as food and craftwork was in the central part of the ship, or in the central part and in the stern part, and grains were commonly shipped in the other sections. These sunken ships were generally estimated to be between 13 to 20 m long and more than 2.5 m high, but it is not certain; a mast was installed in the central part in terms of ship structure; and the floor was flat. A simple cooking facility was located in the central part where the mast was installed, and articles for the sailors, food and craftworks seem to have been packed there as well. It is not certain yet

whether these ships were operated officially by the state, by influential persons or by a merchant group.

Acknowledgements

I am thankful to everyone who participated in the underwater excavation on Taean Shipwreck and Mado Shipwreck No. 1, 2, 3 projects. Also, I appreciate to Mr. Sung-Tae Lim and Gwang-Hee Hong who were supposed to join in 2014 APCONF. I have deep gratitude to Mr. Seojin Kim who helped me a lot and all of my colleagues of the NRIMCH.

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