

From the Site to the Museum : Archaeologically Excavated Butuan Boat Remains Displayed in the National Museum of the Philippines <Special Theme : Material Cultural Studies on Boats and Fishing Tools Based on the Museum Collections and Fieldwork >

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From the Site to the Museum: Archaeologically Excavated Butuan Boat Remains Displayed in the National Museum of the Philippines

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水中文化遺産と博物館展示
—フィリピン国立博物館のプトアン舟資料の事例から—

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As part of its extensive mandate, the National Museum of the Philippines (NMP) carries out archaeological field research on land and underwater in addition to overseeing a network of museums throughout the Philippines. Among its most significant projects are its archaeological studies of Butuan boats starting in the 1970s, which have since been declared National Cultural Treasures. The remains of three of the boats have been recovered. They are presently on exhibition or in storage in Butuan and Manila. With at least two other Butuan boats that might yet be fully excavated and recovered, this paper recounts earlier actions related to their documentation, recovery, conservation, and exhibition, which might properly inform future measures.

フィリピン国立博物館（NMP）は、その広範な任務の一環として、フィリピン全土の博物館のネットワークを監督することに加えて、陸上及び水中における考古学的フィールド調査を実施している。その最も重要なプロジェクトの中には、1970年代に始まったプトアン舟の考古学的研究があり、プトアン舟は国の文化財に指定されている。この船は3隻発掘され、修復された後、現在プトアンとマニラにおいて展示もしくは収蔵庫での保管がなされている。この他に、まだ完全に発掘・回収されていないプトアン舟は少なくとも2隻ある。本稿では、将来的な適切な対策に向け、プトアン舟に関するこれまでの調査、修復、

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Key Words : Butuan boats, underwater archaeology, underwater heritage, concervation and exhibition, Philippines

キーワード : プトアン舟, 水中考古学, 水中遺産, 保存・展示, フィリピン

保存, 展示に関する動向について論じる。

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1 Introduction

The National Museum of the Philippines (NMP) as an institution has been uniquely ascribed a broad mandate, duties, and functions that include “carrying out... permanent research programs combining integrated laboratory and fieldwork in... archaeology [and] maritime and underwater cultural heritage,” protecting and preserving heritage, as well as the more conventional museum roles of curating exhibitions and managing collections (Republic of the Philippines 2019).

The NMP has been involved in various archaeological research projects for decades, including the excavations of wooden watercraft remnants in the country’s underwater and terrestrial environments (Lim et al. 2021; Orillaneda and Ronquillo 2011). Because of the difficulties and expenses associated with conserving the salt-water-saturated wood, ships’ timbers are usually left in-situ for good reason. In instances when specific pieces of a ship are raised to the surface briefly for documentation, they are soon returned to the original site (Goddio et al. 1996: 6). Other impediments such as concretions and accretions that bond to the wooden structures do not permit complete recording, especially when underwater work times are restricted by safe diving limits (L’Hour 1996: 118; 138).

The most notable example of watercraft remnants at terrestrial sites was found in Butuan, where remnants of several ancient boats have been found buried under mudflats of an old river system (Map 1). Three of the so-called Butuan boats have been recovered (Abinon 1989; ASEAN 1986; Lacsina 2016; Peralta 1980a). Looking at the outcomes of earlier decisions and actions provides us a better understanding of the requirements of treating waterlogged wood, which is particularly important because the retrieval of other Butuan boats that remain currently in situ is being deliberated.

The Butuan boats, first located in the 1970s by looters, are the oldest direct material evidence of watercraft in the Philippines. Seven wood samples collected from five of the excavated boats were dated to between the late 7th to the early 10th centuries, revised from earlier disparate results of 4th and 12th century dates of the first two Butuan boats recovered in the 1970s (Lacsina 2015, 2016; Peralta 1980a).

Most of the Butuan boats examined exhibit construction features shown by other Southeast Asian boats. These boats are designated as lashed-lug boats because of their easily identifiable “lugs”: sets of protrusions carved out from the inside of planks drilled and used to secure or lash the boat frames and other components (Clark et al. 1993; Green et al. 1995; Horridge 1982; Lacsina 2015; Manguin 2019; Mochtar 2018; Nishino et al. 2014; Ronquillo 1997; Salcedo 1998). Some 20 examples have been identified throughout the region and beyond, spanning a period of at least 1,500 years of use (Alcina 2005[1668]; Barnes 1996; Dwyer and Akerman 1998; Evans 1927; Flecker 2002, 2019; Hornell 1920; Horridge 1982; Lacsina 2016; Manguin 2019; Mochtar 2018; Wallace 2014[1869]).

Since 1976, at least 11 Butuan boat sites have been reported, 7 of which have been excavated: Butuan boats 1, 2, and 3 from 1976 to 1977; Butuan boat 5 in 1985 and 1986; Butuan boat 7 in 1988; and Butuan boats 4 and 9 from 2012–2015. Remnants of Butuan boats 1, 2, and 5 were the only ones recovered. They are currently housed in NMP exhibitions and storage in Butuan City and Manila (ASEAN 1986; Peralta 1980a). All Butuan boats were declared National Cultural Treasures on March 9, 1987, through Proclamation No.86 by then-president Corazon Aquino. The proclamation also declared the sites at which they were found as archaeological sites. They were placed under the supervision and control of the NMP (Republic of the Philippines 1987).

In light of the above, this paper presents the circumstances which led to the discovery of each of the Butuan boats as well as the response of the NMP which is tasked as an institution to conduct archaeological research, protect and preserve heritage, as well as to curate exhibitions and manage collections. Evaluating such actions that include documentation, recovery, conservation, and museum exhibition of the Butuan boats are especially important because additional steps related to the unrecovered boats and their sites are being considered. Some possibilities and recommendations of how to proceed are discussed further.

2 Archaeological Context of Butuan Boats

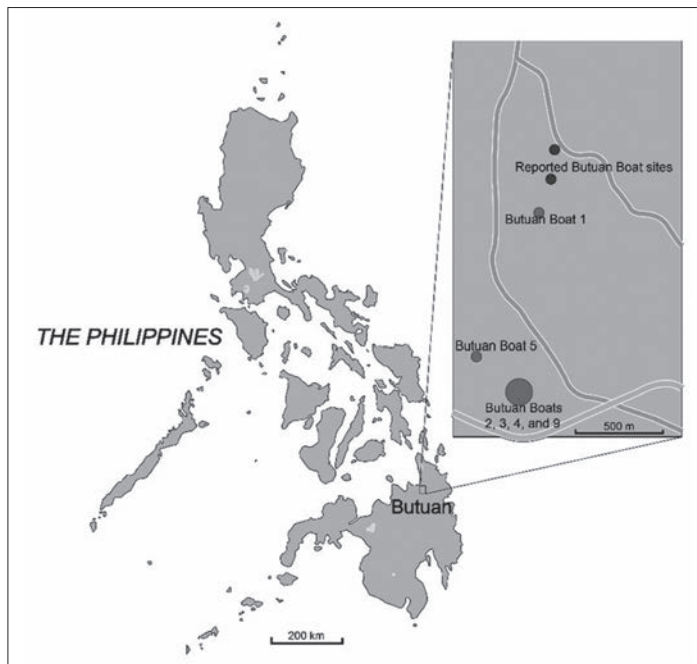
2.1 Unearthing the Butuan Boats

Butuan City is in Agusan del Norte province in northeastern Mindanao, the Philippines (Map 1). The region typically receives at least 10 cm of monthly rainfall throughout the year, and around 25 cm per month during December–February. In the mid-1970s, the city engineers’ office was carrying out flood management activities when workers inadvertently unearthed several wooden coffins in a low-lying area of Sitio Ambangan, Barangay Libertad, approximately 5 km from the city center. The coffins contained human remains showing evidence of cranial modification along with valuable grave goods such as gold ornaments and Chinese trade ceramics dating to the 12th to 13th centuries. For further investigation, Butuan City

Engineer Proceso Gonzales reported these to the NMP and researchers from what was then the Archaeology Section of the Anthropology Division. However, news of the finds also prompted extensive and illegal digging in the area (Cembrano 1998; Peralta 1980a; Salcedo 1976a, 1976b).

While NMP archaeologists were examining the burial sites in 1976, looters searched for more coffin sites to recover the grave items and sell them on the black market (Peralta 1980a). The treasure hunters used a tool called a *sonda*, a metal rod measuring 1.5–2 m long with a ball bearing welded at the end, to probe through the earth (Lacsina 2016: 99). When they believed their *sonda* struck wood, the ground was dug up (Peralta 1980b). At one point, they found long wooden planks of what would later be known as Butuan boat 1.¹⁾ Because they realized the planks had no economic value, the boat remains were reported to Gonzales, who again relayed the information to the National Museum (Peralta 1980a).

To date, the remains of at least 11 wooden boats have been reported, although not all have been verified. They were found accidentally by looters, or by residents involved in home construction or aquaculture development below the brackish water table. Even the directed archaeological survey and excavation by the NMP in the 2010s of Butuan boats 4 and 9 were facilitated by the partially open pit dug by



Map 1 Situating the Butuan boats within northern Mindanao, Philippines
(Created by the author)



Figure 1 An old treasure hunter's pit expanded to reveal remnants of Butuan boat 4 (Photo by Ligaya Lacsina, 2012)

looters years prior (Figure 1). Because of the wet environment and local weather, the sites are not readily excavatable.

Because of their significance and to aid in the management of the sites at which more boat remains might still be found, the NMP decided to establish the Butuan Archaeological Park and acquire the land on which the boats and other archaeological sites have been found. The acquisition is ongoing, although several properties have already been purchased, including sites described herein. The NMP's stated general objective for acquiring land is to prevent land development and other earthmoving activities that might endanger the sites. Current residents of the area will not be affected by park operations and might be deputized for security and protection. However, exact plans for the park's development and management plan remain unknown.

2.2 Butuan Boats 1, 2, and 3

Butuan boat 1 was recovered from underneath 1.2–1.7 m of sediment and about 50 cm below the water table, oriented north to south. The remnants are about 10 m long, comprising a keel plank, a strake on one side, and two strakes on the other. According to the looters, several objects were found associated with Butuan boat 1 including a paddle, a clay crucible with glass drippings, strands of cord, and the head of a stone hammer. The looters exposed one end of the boat after digging through a midden some 60 cm above it. The midden was said to contain Chinese ceramics, but did not include porcelains, leading to the hypothesis that it dated to no later than the 10th century (Peralta 1980a: 44; 1980b: 4).

Attempts and locating photographs of the recovery of Butuan boat 1 have failed. The only images of it were obtained after it was raised and likely treated (Figure 2). A conservation report stated that its remains were treated by the AG &

P Wood Preservation Plant using a process involving a copper-based preservative and fungicide referred to in the report as Wolmanized treatment (Abinon 1977: 1). The NMP conservator who arrived after the treatment was applied observed some discoloration resulting from the process, as well as dried clumps of mud that had not been removed properly (Abinon 1977: 2).

Several months later in 1977, while the remains of Butuan boat 1 were undergoing treatment, treasure hunters reported that they found two more, Butuan boats 2 and 3, about 1.2 km distant, due south, at depths similar to that of Butuan boat 1 (Peralta 1980b). Butuan boat 2, also oriented north to south, was fully excavated and was retrieved under NMP supervision (Figure 3) (Peralta n.d.). These activities were at least photographed, although few images show details of its construction.

By this time, Philippine conservators had been introduced to polyethylene glycol (PEG) treatment. These remnants, measuring about 12.4 m long, were first cleaned mechanically using running water and nylon brushes before being soaked for four weeks in fresh, chloride-free water to desalinate them. The parts of Butuan boat 2 were then soaked for 24 hours in a vat of fixative solution of 95% ethyl alcohol, formalin and distilled water, after which they were rinsed, air-dried, and soaked in PEG 4000 and water. The initial mixture was 1-to-1, with more PEG introduced to replace evaporated water, until all water had evaporated. After the wood was air dried at 26.6°C at 30% relative humidity, it was then finally coated with ethyl vinyl acetate, which protected the wood against biological attack and deterioration (Abinon 1978: 7–10).

Unfortunately, little information exists for Butuan boat 3. Peralta (1980a; n.d.) reported that it was found close to Butuan boat 2, or a few meters southeast. It was smaller than the other two boats and had only three surviving planks. Its excavation



Figure 2 Remains of Butuan boat 1 (Photo courtesy of the National Museum of the Philippines)



Figure 3 Butuan boat 2 (Photo courtesy of the National Museum of the Philippines)

was halted with no further explanation. However, unlabelled photographs of wooden remains matching their description have been located (Figure 4) (Lacsina 2016: 29–30).

Wood samples from Butuan boats 1 and 2, along with two unspecified samples from the midden, were sent to the Gakushuin University, Japan for radiometric dating. The results were highly disparate: Butuan boat 1 was dated to 1630 ± 110 B.P. (GaK-774); Butuan boat 2 was dated to 700 ± 90 (GaK-7741); whereas the two midden samples were dated to 640 ± 110 B.P. (GaK-7742) and 210 ± 90 B.P. (GaK-7743) (Manguin 1996: 186; Peralta 1980a: 47). Nevertheless, the nearly 1000-year difference between Butuan boats 1 and 2 was generally accepted. The reliability of the findings was rarely questioned (Cembrano 1998: 27; Clark et al. 1993: 143; Manguin 1993: 257; Ronquillo 1989: 62, 1997: 79; Salcedo 1998: 207).

To test earlier results, two samples from each of Butuan boats 1 and 2, and one sample each from Butuan boats 4, 5, and 9 were subjected to accelerated mass spectrometry radiocarbon analysis at the Australian Nuclear Science and Technology Organisation (ANSTO). The keel plank of Butuan boat 1 (OZQ-841) was dated to 1145 ± 25 B.P. or cal A.D. 777–947, whereas its wing end (OZQ-842) was dated to 1130 ± 30 B.P. ($\delta^{13}\text{C} = -25.0 \pm 0.1\text{‰}$), or cal A.D. 777–988. The keel plank of Butuan boat 2 (OZQ-844) was dated to 1200 ± 30 B.P. or cal



Figure 4 Wooden remains of what is suspected to be Butuan boat 3
(Photo courtesy of the National Museum of the Philippines)

A.D. 715–940. The Butuan boat 2 wing end (OZQ-845) was dated to 1230 ± 30 B.P. Results for the other boats indicated similar date ranges between the 8th to 10th centuries A.D. (Lacsina 2015: 129). Because of this, the author contends that the earlier problematic dates found in the 1970s can be disregarded.

The wood used for the planks of Butuan boats 1 and 2 was previously identified as *Heritiera littoralis*. The dowels of various boats were reported as *Diospyros* sp., *Heritiera littoralis*, *Xanthostemon verdugonianus* and *Diospyros philippinensis*. When 58 samples were taken from individual components of all the accessible Butuan boats to be identified at the Forest Products and Research Development Institute (FPRDI) of the Philippines, not one was found to be *Heritiera littoralis*. Instead, it was determined that the Butuan boat 1 timbers were cut from *Petersianthus quadrialatus*, *Shorea* sp., and *Vatica* sp. For Butuan boat 2, the hull parts were made of *Hopea* sp., whereas its wing end was *Pterocarpus indicus* (Lacsina 2016: 148; 154; 156; 157; 159; 161; 195).

Newer research has also uncovered several early inconsistencies in the various Butuan boat drawings, reported dimensions and exact locations. Details of these have been discussed elsewhere (Lacsina 2016; 2020). The remains of Butuan boat 1 were eventually placed in a site museum operated by the NMP, previously named Balangay Shrine, but now designated as the Butuan Archaeological Park. The site

museum is located less than 4 km from the Butuan National Museum. The remains of Butuan boat 2 were transferred to the NMP in Manila (Peralta n.d.).

2.3 Butuan Boats 5, 6, (and) 7, and 8

In the early 1980s, the NMP continued archaeological research in various parts of Butuan. These investigations did not include Butuan boat research, however. By the mid-1980s, attention returned to the boats, reports, and their included maps, which indicated the existence of 8 boats but offered little or no accounts of the new additions (ASEAN 1986; Bautista 1989; Ronquillo 1997). For example, Butuan boat 6 was only described as “completely destroyed by gold panners” (ASEAN 1986: 46). Moreover, no appreciable information related to Butuan boat 7 was given. It was in poor condition when archaeologists unearthed it (Bautista 1989). The only documentary evidence of Butuan boat 8 is in the maps described earlier.

The next major archaeological activities related to Butuan boats was the recovery of Butuan boat 5 as part of a course on archaeological excavation and conservation organized by the Association of Southeast Asian Nations (ASEAN) and hosted by the NMP (ASEAN 1986).²⁾ Butuan boat 5, measuring about 12.5 m long, was located approximately 1 km southwest of Butuan boat 1 and less than 400 m northwest of Butuan boats 2 and 3. It was unearthed by the local city government in 1985 and was left in situ until the ASEAN course in 1986, where the participating conservators noted its fragile state and elected for its retrieval to protect it from further degradation. The report of this project stated that Butuan boat 6, located north of Butuan boat 1 was destroyed completely by gold panners (ASEAN 1986: 46).

Photographs and drawings of Butuan boat 5 show clearly that it was the most intact of the Butuan boats to date (Figure 5). However, no image showed the 7 frames that were recovered with it, nor does the report describe whether the frames were found still articulated and lashed to the boat’s lugs. There is in fact no detailed recounting of the activities beyond a brief explanation that the longer wooden remains of Butuan boat 5 were “divided into smaller parts” (ASEAN 1986: 141) and that their original locations were marked on a map. Unfortunately, these were not included in the report, which stated only that the timbers were labeled according with the 24 ℓ -m² from which they had been retrieved. In all, 343 pieces of wood, placed in 48 bags, were collected (ASEAN 1986: 216–217).

The remains of Butuan boat 5 underwent preliminary treatment involving cleaning, followed by soaking in fresh water that was replaced until soluble salts had been removed. A fungicide (sodium pentachlorophenate) was added to the soak to prevent organic growth. It was recommended that the timbers be kept soaking while waiting for the procurement of PEG 4000 to replicate the treatment of Butuan boat 2. Unfortunately, the PEG never came. The remains of Butuan boat 5 were kept in the vat for several years. No conservator was on site because they



Figure 5 Butuan boat 5 (Photo courtesy of the National Museum of the Philippines and the Western Australian Museum)

were based in Manila.

When they were examined in 1992, the wood was described as degraded (Green et al. 1995: 183). It is not clear when Butuan boat 5 was later removed from the freshwater soak and transferred to a sheltered open air storage space at the Balangay Shrine between 1992 and a re-examination in 2013. However, comparison of photographs after more than two decades reveals that the planks appeared even more degraded and misshapen from warping because no PEG was available to replace the water that had dried out. According to separate wood identification done in 1986 and 2013, the hull components of Butuan boat 5 were of *Pistacia chinensis*. Its frames were identified as *Vitex parviflora* and a *Dimocarpus* species in 2013 (ASEAN 1986; Lacsina 2020).

A wood sample from Butuan boat 5 (ANU-6193) was first dated at the Australian National University Radiocarbon Dating Laboratory with a result of 960 ± 70 B. P. or cal A.D. 990 (Ronquillo 1989: 63; 1997: 79). Unfortunately, some confusion arose in the 1980s and 1990s because several different dates for this boat were reported, including 900 ± 70 B.P., A.D. 1215, 735 ± 90 B.P. or cal A.D. 1230–1229 (Abinon 1989: 1; Cembrano 1998: 4; Clark et al. 1993: 143). Subsequent analyses at ANSTO returned results of 1150 ± 30 B.P. and cal A.D. 776–971, similar to the date that had been first assigned (Lacsina 2015: 129).

The keel plank, a frame and two planks were eventually moved to the archaeological exhibit of the Butuan National Museum.

A series of archaeological excavations was undertaken by the NMP in 1989, including that for Butuan boat 7. It was reported to be in too poor condition and was not recovered (Bautista 1989: 3–4; 6–10; 15). Regarding Butuan boat 8, no information about it has been found other than its general location being marked in maps.

2.4 Butuan Boats 4 and 9

The excavation of Butuan boats 4 and 9³⁾ commenced in 2012 and continued for several field seasons following a survey conducted in 2011. An open pit of approximately 1 m diameter and 40 cm deep was found several meters from the excavation site of Butuan boat 2. In 2012, NMP archaeologists extended this pit until the remains of Butuan boat 4 were exposed, oriented northeast to southwest. Although neither end of Butuan boat 4 has been exposed, it is quite fragmented. It appears to be at least 8.5 m long. The remains of Butuan boat 9, which is at least twice the size of other Butuan boats and which does not appear to be a lashed-lug boat, were found just underlapping and oriented slightly askew of Butuan boat 4 (Figure 6).

Butuan boats 4 and 9 have not been recovered, but doing so is being strongly considered. Questions about what the next steps should be are worth careful consideration, especially in view of what occurred with Butuan boat 5. The conditions of both Butuan boats 4 and especially 9 were degraded. One end of the keel plank of Butuan boat 4 appears to have been sawn off cleanly at some point in the past; the rest of its planks have been broken off at various lengths. The opposite end of Butuan boat 4 is still buried at the other end because of a nearby running creek that threatens to collapse the excavation wall and flood the site.

The timbers of Butuan boat 9 are in such poor condition that wood of one of the two samples collected from it could not be identified at FPRDI. Because of their size and fragility, there is a marked risk of breakage if they are lifted. It is



Figure 6 Excavation of Butuan boats 4 (upper part of photo) and 9 (lower part of photo) in 2013 (Photo by Ligaya Lacsina, 2013)

noteworthy that the team excavating Butuan boats 4 and 9 did not include a conservator. The decision to retrieve them should be linked to an assurance that resources for their proper conservation, as planned and supervised by expert conservators, are in place. From a research perspective, lifting Butuan boat 9's timbers will provide an opportunity to understand its construction better. Its construction differs greatly from those of the other Butuan boats.

3 Butuan Boats as Museum Collections

Following the conservation treatment given to Butuan boats 1 and 2, their placement in exhibitions at museums managed by the NMP in Butuan and Manila has been largely straightforward. Minor issues that have occurred are more related to the presentation of the inconsistent data described earlier, which has been since addressed. Their physical condition has been assessed by conservators, who have noted no severe difficulty related to their physical condition.

The site museum at the Butuan Archaeological Park houses the remains of Butuan boat 1, placed on top of a metal cradle, in a glass enclosure with several openings that allow air to circulate (Figure 7). Another glass enclosure at the site museum contains several wooden coffins also recovered from the area, some containing human remains. Several photographs show excavations of the other Butuan

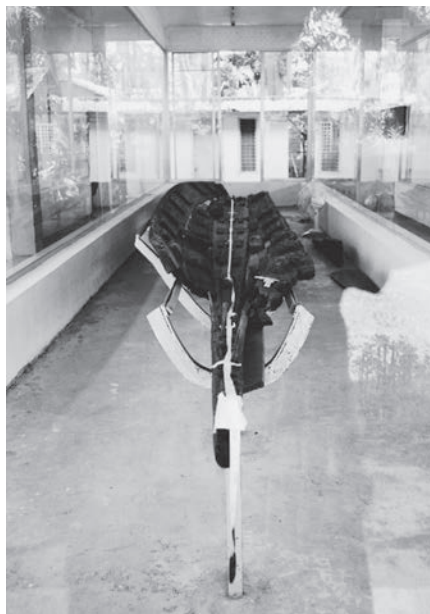


Figure 7 Butuan boat 1 exhibition space at the NMP site museum in Butuan (Photo by Ligaya Lacsina, 2013)

boats. For many years, the excavation pit from which the boat was retrieved was left open. Its walls were allowed to collapse naturally. This area behind the museum was landscaped in 2017 but it is now closed to visitors as the NMP decides how to proceed.

Butuan boat 2 was first displayed at the former venue of the National Museum along Pedro Gil Street, Manila (Figure 8), before being moved to the National Museum of Anthropology (formerly the Museum of the Filipino People) along Finance Road at Manila in 1998 (Figure 9). Here, it was part of the *Pinagmulan*



Figure 8 Exhibition of Butuan boat 2 in the NMP Manila in the 1980s (Photo courtesy of the National Museum of the Philippines and the Western Australian Museum)



Figure 9 Butuan boat 2 on exhibit in at the NMP in Manila in 2013. The gallery has since been dismantled. The boat parts are in storage. (Photo by Ligaya Lacsina, 2013)

(The Origin) gallery. It was presented as a partly assembled boat with frames and missing planks. A scale model of a planked boat was displayed next to it. This section also included reproductions of lashed lug boat parts with which viewers could interact and assemble parts together. The *Pinagmulan* gallery and Butuan boat 2 were dismantled to give way to new exhibits in the mid-2010s. Because of their length, the boat remnants, as of this writing, are stored in a hallway outside offices. Its inclusion in a new exhibition on maritime trade in the Philippines is being planned.

The handling of the remnants of Butuan boat 5 has been problematic because of missteps in its conservation treatment in earlier years. The unspoken predicament was whether these mistakes should be kept quiet or acknowledged, as they were eventually. For some time after they were examined in 1992, the warped timbers were kept on two tables (Figure 10), lightly covered with sheets of brown paper and plastic in an open-air storage shed at the Butuan site museum. As stated earlier, several fragments of the keel plank, two planks, a frame and wing end were transferred to the Butuan National Museum's archaeology gallery (Figure 11). The remainder of Butuan boat 5 is kept in storage here. Furthermore, in storage are several pieces of another lashed-lug boat that was donated to the museum to by a resident who retrieved them after accidentally unearthing them. Its form differs slightly from the others. It is worth documenting them in detail.

Although Butuan boats 4 and 9 have yet to be retrieved, the NMP can opt to release information about their excavation to the public. Watercraft remnants left in situ are still viable for use in museums and as research tools if they are thoroughly documented. Well-produced visual media including photographs, illustrations and



Figure 10 Wooden components of Butuan boat 5 in storage at the Butuan Archaeological Park in 2013 (Photo by Ligaya Lacsina, 2013)

digital media can convey even more information about an object to viewers. Interactive boat models can also be brought back to engage with the public to show the individual construction traits of each of the documented Butuan boats (Figure 12).

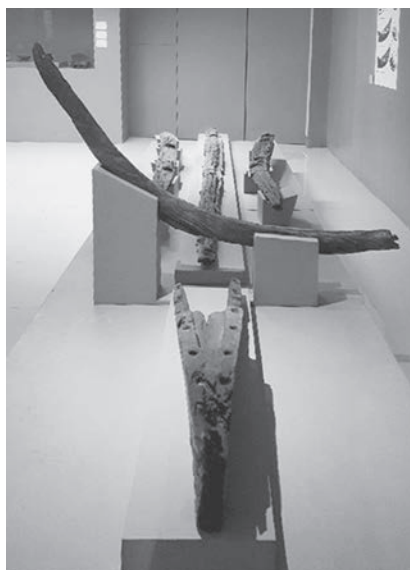


Figure 11 Parts of Butuan boat 5 on exhibit at the NMP Butuan regional museum (Photo by Ligaya Lacsina, 2019)



Figure 12 Wooden construction blocks like this were placed next to the exhibition of Butuan boat 2 as an interactive tool to present the construction of lashed-lug boats (Photo by Ligaya Lacsina, 2015)

4 Discussion and Conclusion

Since they were first unearthed by treasure hunters in the 1970s, the Butuan boats have elicited great interest from the public and scholars. Review of the NMP's past activities, including decisions on what boats to excavate, recover, or rebury, provides the benefit of informing new plans to bring other Butuan boats from the archaeological site and present them as museum objects that educate the public. These do not preclude indefinite preservation of the boats in situ, if necessary. The establishment of the NMP Butuan Archaeological Park provides new possibilities for public interpretation and engagement as a cultural trail or additional site museums.

To summarize, the first boat, Butuan boat 1, was found in 1976; Butuan boats 2 and 3 were found in 1977. Documentation of the archaeological and conservation activities during this period was scant. Much of what is available is incomplete or confusing. This inadequacy is especially true for activities related to Butuan boats 1 and 3. The conservation of Butuan boat 2 is recorded in greater detail. Its excavation was documented photographically. Nevertheless, the written reports lack detail.

In 1986, Butuan boat 5 was recovered after being unearthed the year prior. Butuan boat 7 was excavated, but was only described as being in poor condition. Again, documentation of the excavations of both boats and the recovery of Butuan boat 5 only yields brief, general explanations. The excavations of Butuan boats 4 and 9 commenced in 2012; they have not been completed.

Of the excavated boats, Butuan boats 1, 2, and 5 have been recovered. Butuan boat 1 is exhibited at the site museum in the Butuan Archaeological Park, whereas Butuan boat 5 is in the Butuan National Museum, partly on exhibit, with most of its parts in storage. Butuan boat 2 is currently in storage at the NMP Museum of Anthropology in Manila. Intentions include resumption of the Butuan boats 4 and 9 excavations, but no firm plan has been prepared as of this writing. They are presently in situ (Table 1).

Field reports of the 1980s included an area map showing the general locations of 8 boats, with very little, if any, explanation of them. Another source mentions 11 boats (Cembrano 1998: 4). It could not be recalled if the other numbered boats had been verified by archaeologists or if they were merely reported to the NMP staff in Butuan (B. Galpo pers. comm. 2011). No other report has been found to suggest that they were excavated archaeologically. It was then assumed that the Butuan boats have been assigned numbers in the sequence of their initial report: not in the order of their excavation. These and other gaps in earlier activities have only come to light in recent years (Lacsina 2016; 2020).

The lack of detailed written and photo-documentation of the NMP's earlier Butuan boat excavation, conservation, and exhibition activities has presented a major challenge to research, as described here. Future work must include detailed,

Table 1 Archaeological activities and present locations of the Butuan boats

Butuan boats as reported	History of archaeological activities	Present location
Butuan boat 1	Excavated, recovered ca. 1976	On exhibit at the Butuan Archaeological Park, Butuan City
Butuan boat 2	Excavated, recovered ca. 1977	NMP Museum of Anthropology storage, Manila
Butuan boat 3	Excavated, reburied ca. 1977	In situ, exact location to be determined
Butuan boat 4	Excavated from 2012 to 2015, unrecovered	In situ with Butuan boat 9; excavation is currently suspended
Butuan boat 5	Excavated in 1995, recovered in 1986	Several pieces on exhibit at the Butuan National Museum, Butuan City. Most parts are in storage at the same location
Butuan boat 6	Not excavated archaeologically	Reportedly destroyed by gold panners, exact location is unknown
Butuan boat 7	Excavated in 1989, unrecovered	In situ, exact location to be determined
Butuan boat 8	Not excavated archaeologically	In situ, exact location to be determined
Butuan boat 9	Excavated during 2012–2015, unrecovered	In situ with Butuan boat 4; excavation is currently suspended

(Created by the author)

organized, and properly labeled recording and documentation. These efforts can help ensure that the information communicated to the museum's viewing public is accurate. It can also engage and thus enrich their experience.

Further systematic surveys of the area can be undertaken, especially where the concentration of boats was found earlier, i.e. Butuan boats 2, 3, 4, and 9. The *sondas* used by treasure hunters to find them were effective, but only up to their maximum length. It is possible that boat remnants that lie deeper might exceed the length of the *sonda*. Geophysical tools such as ground penetrating radar might not adequately reveal features beneath the water table, although future technological advances might overcome this obstacle.

As the NMP's Butuan Archaeological Park is expanded and more land is acquired, a detailed management plan on how the Park will operate should be formulated while the park is managed and operated by the NMP, with meaningful inputs from experts in archaeology, conservation, engineering, as well as informed stakeholders who are knowledgeable about the available options, the benefits, and risks, as well as earlier failings. The NMP has already organized several events such as presentations and local stakeholder meetings that have been intended to formulate such plans. These should continue, especially as new developments take place. Among the decisions yet to be made is what to do with the unrecovered Butuan boats 4 and 9, and others that are yet to be found and unearthed. A multi-disciplinary approach to future Butuan boat activities is necessary. Especially crucial is the need for a conservator to be involved through all stages. The plan

should also include mechanisms for regular reviews and assessments to respond to unforeseen circumstances.

Difficulties in protecting the site itself invariably emerge soon after the excavation of a boat. Moreover, the wet environment and local weather can be expected to cause deterioration and wall collapse. Field work is best done during the driest months of the year. Even then, water pumps are necessary for constant removal of water from the excavation pit. The risk persists that the walls might collapse and endanger the safety of the excavators. This hazard represents a major concern in relation to the northeast wall because it is close to a running creek: the wall still conceals one end of Butuan boat 4. Normally, shoring up the walls with a braced structure provides adequate support, as was the case in the excavations of Butuan boats 2 and 5 (Figures 3 and 5). In the case of Butuan boat 4, for which there is a body of flowing water close by, other solutions might be considered under the supervision of an engineer. One such solution might be to use sandbags to support the wall and to act as a barrier to prevent the creek from overflowing the excavation pit.

If the decision is made that any boat will be retrieved, then the necessary infrastructure for conservation and eventual exhibition or storage space should be completed in advance of its excavation. Such procedures were followed in the case of the Punjulharjo Butuan boat, a 7th century lashed-lug boat in Indonesia (Mochtar 2018: 21–22). The wooden waterlogged remnants can be stabilized and protected indefinitely at the site by reburying, at least under several centimeters of earth, to maintain an anoxic and waterlogged environment. Conservators should monitor the site regularly and make additional recommendations if necessary. Unfortunately, the conditions of Butuan boats 4 and 9 are not regularly assessed because of the lack of capable staff in Butuan. Junior conservators are currently based in NMPs museums in Manila. Nevertheless, the wooden remnants are best kept in this environment until necessary steps allowing their retrieval are undertaken.

Today, many options are available to the NMP to ‘exhibit’ boats that are still in-situ. The COVID-19 pandemic and the closure of museums to visitors have made virtual exhibits commonplace. Digital three-dimensional models can now be produced easily using photogrammetry software to present an accurate visual representation to the audience. These, along with photographs, videos, and illustrations, can be presented online, or more traditionally in a museum exhibition. Virtual and physical interactive construction blocks, as shown in Figure 12, are useful to engage viewers better.

Considering the difficulties of management and conservation of waterlogged archaeological sites with wooden ship or boat materials, the Samed Ngam Ship site museum in Chanthaburi, Thailand presents an interesting possibility, but one that must be studied more closely. Here, an 18th century ship, presumably of Chinese origin, was found buried in a riverbank in 1980. It was examined by archaeologists



Figure 13 Samed Ngam Ship site museum in Chanthaburi, Thailand
(Photo by Ligaya Lacsina, 2009)

in 1982, reburied, and examined again in 1989 (Prisanchit 1990). The ship remains are left in situ and are submerged in shallow water, which contains dissolved oxygen that encourages organic growth, possibly causing some microbial attack (Figure 13). The site museum is managed by the local government. It remains clear what conservation activities are performed to ensure protection of the wooden remains from deterioration.

The conservation of the Butuan boats once they have been recovered must be aimed at properly removing any soluble salts and replacing water that has been absorbed into the wood cells. The treatments of both Butuan boats 1 and 2 can be considered successful, even if based only on visual observation. The PEG treatment of Butuan boat 2 is the more known treatment for waterlogged wood, but it is expensive. Other chemical soaks such as sucrose, acetone–rosin, alcohol–ether, and camphor–alcohol might be recommended by a conservator, depending on what best suits the kind of wood. Apart from the expense, the size of Butuan boat 9 requires the construction of vats that are sufficiently large to accommodate its parts, in addition to a space where it can be cleaned properly. For reference, see the ongoing treatment using PEG of the 9 m long Bangaroo Butuan boat in Australia (Silentworld Foundation 2021). Once the waterlogged wood has undergone proper treatment, the boats can be handled similarly to any other kind of wooden object in

the museum.

Although the 2001 UNESCO (United Nations Educational, Scientific and Cultural Organization) Convention for the Protection of the Underwater Cultural Heritage has not been ratified by the Philippines, its relevance to the management of the Butuan boats should be studied, particularly the contention that in-situ preservation should be applied as the first, but not necessarily only, option. Rule 1 of its Annex states the following.

The protection of underwater cultural heritage through in situ preservation shall be considered the first option. Accordingly, activities ... shall be authorized in a manner consistent with the protection of that heritage, and subject to that requirement may be authorized for the purpose of making a significant contribution to protection or knowledge or enhancement of underwater cultural heritage (UNESCO 2001).

Each of the Butuan boats that has been studied so far possesses unique characteristics which warrant the excavation, examination and potential retrieval of others, particularly that of Butuan boat 9. At the same time, lessons from the mishandling of Butuan boat 5 should justifiably deter any major actions until full detailed plans, alternate plans, and adequate funds are assured.

To reiterate, the Butuan boats survived for hundreds of years in a low-oxygen or no-oxygen waterlogged environment. Activities such as an excavation introduce oxygen and the risk of exacerbating deterioration. This risk underscores the importance of maintaining an anoxic environment if interventions are not immediately available and if backfilling the site with a layer of mud between excavation seasons. These precautions will help ensure that the Butuan boats can be appropriately presented as National Cultural Treasures.

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Notes

- 1) The Butuan boats were also designated as *balanghai*, and later *balangay*, a Philippine word for a type of plank-built boat.
- 2) It was not explained why the sequence of Butuan boat excavations was 1, 2, 3, and 5, but a site map of “locality 6” shows the general locations of Butuan boats 2, 3, and 4, with the two latter boats labeled as “unexcavated” (ASEAN 1986: 52).
- 3) Because they were unexcavated previously, it remains unclear if Butuan boats 4 and 9 excavated

by the NMP starting in 2012 are the same as those referred to in earlier reports. Butuan boat 4 is certainly within the originally reported vicinity.

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