

# Geospatial Data Presentation of Wooden Coffin Burial Sites discovered during Guthe's Philippine Expedition (1922-1925)

## Presentasyon ng Geospatial na Datos ng mga Lugar na may Kahoy na Kabaong na Natagpuan nung Expedition sa Pilipinas ni Guthe (1922-1925)

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### ABSTRACT

Guthe's Philippine expedition from 1922 to 1925 resulted in the discovery of 542 archaeological sites across the archipelago. Out of these, 26 sites have been identified to contain wooden coffin remains. Using GIS, a geospatial data presentation of these sites is generated to view site distribution, revealing all of them to be near the coast, implying association with coastal populations. This work reveals a need to integrate old and new data on wooden coffin burial finds to come up with a comprehensive understanding of populations who practiced wooden coffin burials in the Philippines. A geospatial overview of these sites may also aid in predicting the location of currently undiscovered archaeological sites.

### ABSTRAK

*Ginanap ang expedisyon ni Carl Guthe noong taong ika-1922 hanggang 1925, na naging resulta ng pagtuklas ng 542 arkiyolohikal na sayt sa Pilipinas. Mayroong 26 na lugar na tinukoy na naglalaman ng mga labi ng kabaong na yari sa kahoy. Gamit ang GIS, binuo namin ang distribusyong geospatial, at natagpuang lahat ng ito'y may kalapitan sa dagat. Maaaring pinapahiwatig nito ang matinding kaugnayan ng paraang paglibing na ito sa mga taong naninirahan sa baybayin. Pinapakita nitong artikulo ang pangangailangang patuloy na pagtambal ng mga luma at bagong datos ukol sa mga kahoy na kabaong, na magpapalawak ng ating pagkaunawa sa mga sinaunang komunidad sa Pilipinas na gumagamit ng kabaong na yari sa kahoy. Maaari ring makaambag ang paraang distribusyong geospatial sa pagtuklas ng iba pang mga arkiyolohikal na sayts.*

**Keywords:** Guthe collection, Philippine expedition, GIS, wooden coffins, burials, coastal burials | koleksiyon ni Guthe, expedisyon sa Pilipinas, GIS, kahoy na kabaong, libingan, libingang baybayin

## INTRODUCTION

The Philippine expedition was a 3-year exploration led by Carl Guthe under the auspices of the University of Michigan from 1922 to 1925, with the goal of exploring prehistoric burials across the archipelago as well as the collection of oriental tradeware (Guthe 1927). Guthe also hired and trained agents to acquire archaeological materials for him (Sinopoli 2013). This exploration resulted in the recovery of numerous archaeological materials from 542 sites, all of which are mortuary contexts. The collected specimens, along with Guthe's field notes and object catalog were shipped to the University of Michigan Museum of Anthropology, making up the Guthe collection.

This collection proved to be a valuable resource in Philippine archaeology owing to the vast number of artifacts collected across several sites as well as the detailed records and reports that come with it at a time when treasure hunting activities were still not as widespread as it is today in Southeast Asia (Sinopoli 2013). While well-documented, there is inherent bias in this collection brought about by the exploration's partiality towards tradeware ceramics and probably other materials of antiquarian interest (Sinopoli 2013). Nevertheless, artifacts from this collection have been the subject of various research concerning Philippine archaeology, such as artificial cranial modification (Clark 2014), ceramics (Sinopoli 2006; Yao 2013), symbology and belief systems (Barretto-Tesoro 2020), and dental inlays (Estrella 2021), among others.

The wooden coffin burial tradition has been practiced in Southeast Asia since prehistoric times (Tenazas 1973), displaying distinct variations in coffin form and associated mortuary rituals across the region (see Liem 2005; Beavan et al. 2012; Pumijumnong and Wannasri 2015; Wardaninggar 2021). Based on ethnographic records on indigenous burial practices, Barretto (2000) identified three coffin types in the Philippines: dug-out, made of bamboo splits, and made of wooden planks. Through an archaeological survey, Canilao (2012) also identified three burial coffin traditions in the Philippines highlands.

Guthe and his agents found several coffins across the Visayas and Mindanao islands. Most of these were not collected due to them being fragmented or in very poor preservation conditions. Most bones and other organic materials that may have been associated with these burials were either disturbed or poorly preserved. One of the sites, C0.064, was reported to contain a recent coffin. Some of the sites also contained contemporary materials, such as "coconuts, remains of candles, and small offerings of money and ornaments" (Guthe 1927). These imply that some of the sites were still in use at the time of Guthe's arrival.

Due to the old wood effect, wherein the tree may have been felled long before it was used as a funerary receptacle, the coffins cannot be directly dated. Reported dates for wooden coffin burial contexts are usually based on the associated grave goods. However, some grave goods, such as porcelain, could be heirlooms and thus the associated burial may be younger than assumed (Neri et al. 2022).

While most of the coffins were not collected, the Philippine Expedition's object catalog details the location of the sites, as well as the various artifacts and materials that have been found. Even though specific coordinates for the sites were not provided, these can be approximated using the disclosed location information. This work aims to use Geographic Information Systems (GIS) to investigate the distribution of wooden coffin burial sites found during Guthe's expedition.

## Geographic Information Systems in Old Collections

The constant accumulation of artifacts and other materials through the years has crowded museum and institutions, causing a “curation crisis” (Marquardt et al. 1982). Martinez et al. (2022: 8) describes this as “characterized by the lack of funding, unstable collections storage conditions, lack of proper collections and/or preservation of field documentation, loss of contextual information, and the lack of storage space”. This has rendered some materials, especially old collections inaccessible for research (O’Gorman 2007), losing valuable information that could be potentially gleaned from these collections. Various solutions have been proposed, such as deaccessioning and selective or no-collection of artifacts (Kersel 2015; Childs and Benden 2017). However, this has been deemed problematic given that some artifacts initially considered not relevant for research may reveal important information through future technologies and methods (Bawaya 2007).

As an answer to the issue of accessibility in older collections, O’Gorman (2007) proposes the use of GIS technology in collections management as a solution. The value of archaeological data rests on how well it could be contextualized across space and time, thus emphasizing the importance of chronology and location when interpreting such data. Hence archaeologists have recognized early on the value of spatial information in the practice (Wheatley and Gillings 2002), filling up archaeological repositories with old maps and other physical documents detailing location and landmarks. Using GIS, location information from these old collections can be entered into a database and be integrated with other data concerning the site, such as digitized reports, artifact lists, and field notes. Different layers representing different variables can also be overlapped to create a thematic map, allowing the detection of overarching patterns in the data (Esteves 2011).

Using geospatial databases will “enable data-intensive methods and big data approaches in archaeology” (Gupta et al. 2020). This will allow the management and analysis of large datasets, however, the interpretive value for such an approach also lies in data quality and data availability (Gatiglia 2015). In the context of collections management, this will address issues in the continuing disintegration of old documents, inventory management, and unnecessary handling of artifacts.

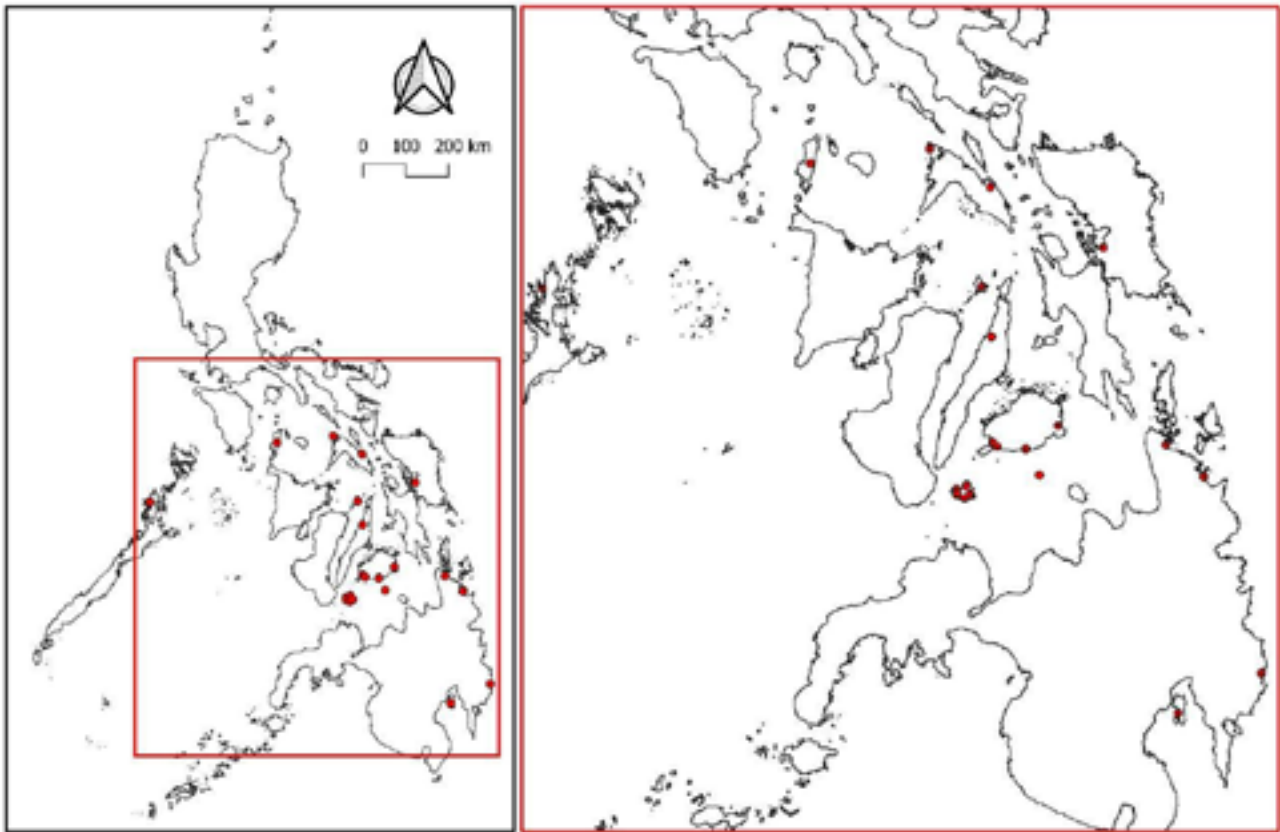
Thousands of archaeological materials have been collected during the Philippine expedition (Guthe 1927). Creating a spatial database for the discovered sites and recovered archaeological materials, as well as integrating new data, using GIS could potentially reveal a narrative or pattern that was not possible to uncover with past technology, as well as ensure the long-term preservation of data from this collection.

## Methodology

542 sites were documented during the Philippine Expedition. The object catalog documents 26 sites where wooden coffins or coffin remains were found (Table 1). Five of these sites were reported by agents who brought or sent the specimens to the laboratory. The catalog does not include site coordinates and were thus approximated based on the reported municipality or province where the site was found. These coordinates were entered into a GIS application to display site distribution in a Philippine map (Figure 1).

Site	Location	Site Type
B0.052	Barrio Conisad, Siquijor	Overhang
C0.005	Dinago Island, Surigao	Cave
C0.011	Sukgong Cave, Bohol	Cave
C0.016	Majaras Cave, Samar	Cave
C0.034	Cave 34, Larena, Siquijor	Cave
C0.047	Sitio Malibon, Barrio Mataba, Municipality of Aroroy, Masbate	Cave
C0.048	Sitio Catincau, Barrio Mataba, Municipality of Aroroy, Masbate	Cave
C0.05	Sitio Ilihan, Barrio Uson, Municipality of Dimasalang, Masbate	Cave
C0.053	Bantayan Island, Cebu	Cave
C0.054	Jilantangan Island, Cebu	Cave
C0.058	Sitio Paulang-agau, Barrio de Parang-Parang, Municipality of Cantilan, Surigao	Cave
C0.062	Kabulao Point, Bohol	Cave
C0.069	Puigan Cave, Bacuit Bay, Palawan	Cave
C0.072	Barrio Cambalagio, San Juan, Siquijor	Cave
C0.073	Barrio Campalanas, Lazi, Siquijor	Cave
C0.075	Malipano Island, Davao Gulf	Cave
C0.076	Barrio Mamurigao, Bacul Point, Davao	Cave
C0.08	Barrio Sagod, Badajoz, Tablas Island, Romblon	Cave
C0.081	Barrio Majabang Baybay, Badajoz, Tablas Island, Romblon	Cave
C0.082	Barrio Cabaong, Badajoz, Tablas Island, Romblon	Cave
C0.084	Brought by agent; specimen from Barrio Buyoc, Valencia, Bohol	Cave
C0.085	Brought by agent; specimen from Barrio Dao, Tagbilaran, Bohol	Cave
C0.094	Brought by agent; specimen from Barrio Payajan, Baclayon, Bohol	Cave
C0.099	Sent over to lab; Barrio Taboilan, Tuburan, Cebu	Cave
G0.084	Maria, Siquijor	Overhang
G0.167	Brought by agent; specimen from Barrio Limoco, Valencia, Bohol	N/A

**Table 1** List of wooden coffin burial sites documented in the Philippine Expedition Object Catalog.



**Fig. 1** Distribution of coffin burial sites documented during Guthe's Philippine Expedition.

The municipalities and provinces within the scope of this paper are based on the current administrative boundaries in central Philippines. These noted locations match the names of the municipalities and provinces in the Philippine expedition object catalog where wooden coffin remains have been reportedly found. The geographic coordinates for these were sourced using Google search and encoded into an excel spreadsheet to be saved as a CSV file. This file is uploaded into QGIS, an open-source GIS application, to plot the positions and distribution of these sites across a Philippine map. Layers for elevation and other variables can be added but for the purpose of this paper, layers are kept to a minimum to focus on clearly presenting the distribution of these sites across central Philippines.

## DISCUSSION

One of the challenges encountered in plotting the site locations in this paper was going through the names of the municipalities and provinces as geographical boundaries may have changed within the last 100 years. Regardless, this attempt to generate an overview of the wooden coffin burial sites discovered by Guthe and his agents using GIS have allowed for the identification of relevant patterns in the data, guiding decisions on analysis and interpretation.

The Philippine expedition covered the Visayas and Mindanao islands, thus, there is no data for Luzon. All sites appear to be near coasts, implying that the coffin burial culture in the Philippines is associated with coastal populations. However, it was also likely that Guthe's explorations were limited to coastal areas due to logistical and chronological constraints.

Following early archaeological explorations in the Philippines, consequent explorations found more wooden coffin burial sites across the archipelago (Burton 1977; De la Torre 1996; Pineda et al. 2022). Unfortunately, most of this information is locked in gray literature. In Luzon, wooden coffins have also been found in highland areas (Solheim 1959; Peralta and Legaspi 1968; Aromin 1985; Canilao 2012).

Based on more recent literature on wooden coffin burials in the Philippines (Burton 1977; De la Torre 1996), variation in coffin form and design is apparent. As Tenazas (1972) pointed out, the geographic nature of the Philippines is “not favorable to cultural uniformity”. This could not be demonstrated using data from the Guthe collection alone since most of the recovered coffins were badly weathered or were mere fragments, rendering spatial distribution by coffin type not possible. Using GIS technology would allow for the integration of new data from recent research on wooden coffin burials in the Philippines to data from old collections. This will enable a more expansive understanding of the wooden coffin burial culture in the Philippines and perhaps be used to predict the location of other archaeological sites.

## CONCLUSION

Spatial information is a crucial component in archaeological research. Applying GIS technology enables the integration of different data sets from various research, potentially revealing overarching patterns and allowing for the prediction of yet unlocated sites that could have not been possible with past technology. A geospatial data presentation of identified wooden coffin burial sites from the Philippine expedition catalog reveals the sites to be in coastal areas. Seeing that the expedition was limited to the central Philippines, there is a need to integrate data from more recent research on the subject to include newly discovered wooden coffin burial sites. Coffin form and other data can be added as well for a comprehensive understanding of the populations who practiced wooden coffin burials in the Philippines.

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