

Multidisciplinary Research Potential of Whaling Heritage in the Pacific Region

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Abstract

From the time that whaleships first rounded Cape Horn at the end of the eighteenth century, the activities of European and American whalers transformed the landscape and seascape of the Pacific region. While systematic hunting had a profound effect on cetacean populations, whaling affected more than just the hunted. The pursuit of new whaling grounds, the need to replenish food, water and firewood, and the frequent occurrence of shipwrecks and desertion, all led to interactions with the indigenous inhabitants and environments of virtually every archipelago. These interactions generated enduring influences, both positive and negative, on the cultural and material heritage of the Pacific.

The archaeological evidence of whaling can be seen through the wrecks of whaling ships, the remains of whaling stations, and shipwreck survivors' camps that are found in even the most distant corners of the Pacific. The information contained in such sites has proven potential to inform researchers from a range of disciplines including archaeology, historical ecology, biology, and conservation science. Due to the remote locations of many of these sites and the limited resources available for accessing and studying them, multidisciplinary approaches to their investigation offer researchers and heritage managers cost effective options for gleaning valuable data.

Introduction

From the time that whaleships first rounded Cape Horn, the activities of European and American whalers transformed the landscape and seascape of the Pacific. The archaeological evidence of whaling operations can be seen through the wrecks of whaling ships, the remains of whaling stations, and the shipwreck survivor camps that are found in even the most distant corners of the Pacific. The information contained in such sites has proven potential to inform researchers from a range of disciplines. Due to the fact that many of these sites are hard to reach and that often resources available for accessing and studying them are limited, multidisciplinary approaches to their investigations offer researchers and heritage managers cost-effective options for gleaning data. This paper provides a discussion of the benefits of such an approach and offers practical examples from studies of wrecked whaleships in the Pacific region.

History of whaling in the Pacific region and its legacy

In the late 18th century whale ships first entered the Pacific Ocean, where they found new hunting grounds with seemingly endless stocks of sperm whales (Raupp and Gleason 2010:66). Exploration of the Pacific Region soon led to the discovery of new grounds and an understanding of the seasonal movements of whale species. This knowledge brought increasing numbers of

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ships that roamed throughout the region year-round in search of prey, and by the 1850s the grounds extended in a rough triangle from just north of Cape Horn, west to New Zealand and north to the Arctic (Rydell 1952:68). Over the next century, hundreds of ships recorded thousands of voyages from European and American whaling ports to the Pacific Ocean and the islands scattered within (Finney 1999:33; Raupp and Gleason 2010:67).

While this systematic hunting had a profound effect on cetacean populations, whaling affected more than just the hunted. The pursuit of whales, the need to replenish supplies, and the frequent occurrence of shipwrecks and desertion, all led whalers to virtually every island in the Pacific region, both populated and not. There they interacted with the local indigenous populations and traded Western consumer goods for food, wood and fresh water. These interactions generated enduring influences on the cultural and material heritage of the islands. Sometimes these interactions resulted in tragic consequences, such as the introduction of communicable diseases like measles, small pox and syphilis; at other times intimate interaction with islander populations led to offspring, who in some instances carry the names of their whaling ancestors to this day (Finney and Graves 2000:9). Intentional or accidental, benign or catastrophic, whaling has left an indelible mark on many cultures throughout the Pacific region.

Multidisciplinary approaches to whaling heritage research

Whaleships reached some of the most remote parts of the Pacific while hunting for whales. Being nomads of the sea with no fixed course and no immediate purpose for arrival, whalers were content to drift wherever the currents carried them, so long as they found whales (Thrum 1915:135). Such drifting often led them into uncharted areas where they encountered barely visible and treacherous reefs. As a result, many of the known sites of wrecked whaleships, and ensuing survivor camps, are in difficult to reach locations. For archaeologists wishing to study those sites, accessibility is often the largest hurdle. One way to mitigate some of the challenges involved with whaling research is to investigate collaborative opportunities with researchers in complimentary fields.

The issue of finding the most cost-effective means to conducting field research is much the same case with wrecks located in deep water. Deep water wrecks are often miles off shore and require large research vessels to travel and stay out at sea for long periods of time. The excessive depths encountered generally means that they are out of reach for conventional archaeological recording methods by divers and consequently require expensive remote sensing equipment, remotely operated vehicles and sometimes autonomous underwater vehicles to investigate sites hundreds of meters below the surface. Therefore a multidisciplinary approach allows research teams to maximize expensive ship time and draw on a wide range of expertise and equipment for a holistic approach to studying shipwreck sites (Church and Warren 2009:20).

An example of this can be seen in the resources needed to reach the shipwreck sites found in Papahānaumokuākea National Marine Monument (PMNM). PMNM is located in the central north Pacific Ocean and is comprised of the northwestern Hawaiian Islands, a chain of islands, atolls, and shoals extending approximately 2,000 kilometers (km) northwest from the main Hawaiian Islands (PMNM 2011:1). Situated between 19th century whaling ports in Hawaii and the rich hunting grounds of the north Pacific, the region became a trap for whaleships and at least ten are historically reported lost there. These archaeological remains represent the largest known concentration of such sites anywhere in the world and thanks to the protection afforded them by Monument status, their preservation and that of the surrounding reef environments make them ideal for detailed archaeological investigation. However, due to its remote location, accessing the wrecks in PMNM involves a great deal of infrastructure and planning. Access to the northwestern Hawaiian Islands for NOAA maritime archaeologists is facilitated through ship time requests by PMNM for the 68 metre (m) long NOAA ship *Hi'ialakai*. This ex-US military vessel has been fully converted for marine research and is capable of traversing heavy seas and carrying enough supplies to accommodate the month long expeditions. But while this kind of infrastructure support helps to facilitate maritime heritage goals, it is important to note that such research trips would be cost-prohibitive if ship time was not shared with other scientific teams working on separate, non-heritage related research in the Monument.

Historical and Archaeological Data

As with all historical archaeological research, the archaeology of whaling heritage benefits from collaborative efforts with historians and archivists. The identification of whaling shipwrecks or associated terrestrial sites usually occurs either through active research or accidental discovery. Wrecked whaleships and survivor camps are often mentioned in contemporary accounts and the locations of such sites are usually gleaned through years of searching archives for relevant data. Alternatively, occasionally stars align and wrecks are located through accidental discovery during routine survey work. In those cases divers locate material remains of ships which are later identified as whaling wrecks through diagnostic artifacts found at the sites.

Each of the above mentioned situations has occurred in Papahānaumokuākea National Marine Monument. Of the ten whaleships historically known to have wrecked within the Monument's boundaries, the wrecks of five have so far been located and archaeologically investigated. The approximate locations of four of these sites were identified through data contained in survivor's accounts and maps drawn by either the wrecked whalers themselves or later voyagers to the region (*The Friend*, 3 September 1859). Using such sources PMNM archaeologists were able to narrow down survey areas and had little trouble finding two of the sites, those of the British whaleship *Gledstanes* (1837) and the American whaler *Parker* (1842). Historic descriptions were also used to positively identify the wrecks of the British whalers *Pearl* and *Hermes* (1822) once the sites were identified by NOAA Coral Reef Ecosystem Division (marine debris) divers in 2004 (Van Tilburg 2005:1). On the other hand, as in the case of the Nantucket whaleship *Two Brothers*, serendipity played a part in site identification. In this case, historical research pertaining to this wrecking event indicated that it was lost at French Frigate Shoals (FFS), within the boundaries of PMNM. Though this presented an enormous search area from which to begin, ultimately the site was located purely by chance while PMNM researchers conducted tow-board surveys near Shark Island, on the edge of FFS.

Combined historical and archaeological research can also provide evidence of site formation and indications of the locations of possible survivor's camps. Due to the weather conditions encountered in the open Pacific Ocean and the shallow nature of the reefs and shoals on which many whaleships came to grief, archaeological remains are scattered for hundreds of meters in pockets and sand channels in various reefs. This not only makes the systematic recording of these sites incredibly challenging, it can also make site identification nearly impossible. However careful scrutiny of historical documents pertaining to wrecking can be compared to the archaeological data to recreate the event and ultimately help to determine site identity. Once determined, the data about the wreck can be further mined to determine if crews were able to escape, and if so, whether a survivor's camp exists and its approximate location.

One particular wreck that shows how detailed research into site formation processes can be useful for site identification is that of the British whaler *Litherland*. Historic records state that this vessel struck rocks off of Clarke Island in Bass Strait (Australia) and sank in 1853. A detailed account of the wrecking event and a description of the ultimate disposition of the vessel were published in a local newspaper (*Hobart Town Courier*, 30 June 1853; Nash 1990:14). Physical data recorded about the main site, other remains scattered on the seabed and the locations, and the positions of anchors and chain enabled a number of conclusions to be made concerning the wrecking process and site formation (Nash 1990:20). Thus by combining relevant data contained within historical sources with that recovered during archaeological investigations, researchers were able to not only positively identify the site as that of *Litherland*, they also recreated the loss of the vessel and deduced information about historical environmental conditions on the day that the wreck occurred.

As each of these examples illustrates, the value of combining preliminary historical research into project planning should not be underestimated when it comes to conducting research in remote locations. However heritage management offices are often inundated with massive workloads and lack of staff, and simply do not have the spare time necessary to chase sources listed in logbooks, journals, account ledgers and other archival materials that are scattered in libraries and museums around the world. Because of this, a comprehensive

approach to researching whaling heritage is not feasible for the individual archaeologist; thus building relationships with historical researchers is extremely important.

Geophysical Survey

As mentioned previously, whaleships hunting in the Pacific were occasionally lost on shallow reefs and crews were forced to abandon their vessels and seek refuge. In some cases they narrowly escaped and drifted in whaleboats until rescued, but in others they were able to find suitable locations to establish camps where they lived until rescued. Martin Gibbs (2003:128) has shown that the study of shipwreck survivor camps can provide a range of information related to human behavior in crisis situations including social organization, salvage, subsistence and rescue strategies. Examples of such occurrences from the Pacific region include whaleships wrecked in Fiji, Palau and Hawaii (see Holden 1836; Twynings 1850; DuPont 1954). Accounts of each of these incidents exist which provide details of life at the camps, contact with indigenous cultures, and the construction of rescue vessels.

Archaeologically such sites can be difficult to detect due to the low lying nature of the islands and their tendency to be washed over in heavy weather conditions. However, impacts and alterations made to the physical environment by activities such as shipbuilding can often be revealed through remote sensing surveys. Clark and de Biran (2010) recently conducted a geophysical and archaeological survey of the shipwreck survivor camp for the British packet ship *Antelope*, which wrecked in Palau in 1783. By combining terrestrial remote sensing techniques with traditional archaeological investigation and historical research, the researchers were able to accurately identify and interpret the remains of the camp. The positive results of this project are encouraging and provide evidence that geophysical surveys make an important contribution to successful archaeological research into shipwreck survivor camp sites.

Historical Ecology

Historical ecologists use a range of information to understand the histories of past ecosystems which in turn may be used in helping to better manage current ecosystems and resources. Included in their data sets are archaeological data, anecdotal historical accounts, ethnographic information and modern ecological and social data (Kittinger 2010). It has been postulated that fishing and whaling were the first massive human-induced alteration of the marine environment and preceded other impacts such as pollution and climate change (Jackson, *et al.* 2001; Worm, *et al.* 2007:333). Historical information pertaining to whaling activities in the Pacific region has great potential to inform studies of historical ecology throughout the region. Whalers are known to have kept detailed records of their catches, of daily activities such as subsistence fishing, and of sightings of other animals in their logbooks and journals; thousands of these sources exist in museums, libraries and private collections around the world and can be scoured for ecological data that is invaluable to researchers. As the editors of the International Whaling Commission's report on *Historical Whaling Records* stated, they were "... enthralled by the discovery of the rich treasure of biological data which resided within old, musty whaling logbooks and journals", (Tillman and Donovan 1983:ii).

The potential for archaeologists and historical ecologists to work together is evident in their use of the same historical sources. Such sources record not only whale catches but also information about shipwrecks, shipwreck sightings, and exploitation of other biological resources on land and on the sea. Historical ecologists have the ability to supply archaeologists with sets of data that outline the numbers and species of whales spotted and their movements, to which whaling captains would have inevitably responded. As a result some predictive modeling for shipwrecks, whaling stations and survivor camps may be drawn from this data. Alternatively, archaeologists studying shipwrecks and their shipwreck survivor camps may provide historical ecologists with evidence of diet and utilization of native wildlife through faunal remains recorded during excavations (Nash 2005:19). One such study is currently underway using data pertaining to the northwestern Hawaiian Islands, where university researchers and an agency archaeologist are collaborating to better understand the effects that shipwreck survivors had on island ecology (Kittinger, *et al.* 2011).

Biological Science

For many years the assistance of biologists has been requested on archaeological projects because they can provide species identification and condition assessments on shipwrecks. However in the past decade there has been a growing interest among maritime archaeologists and marine biologists to work together to gain a more holistic understanding of how shipwrecks have altered site environments through the addition of unintentional artificial structure and changes to the natural reef structure. There are a variety of scientific techniques for collecting data that biologists can contribute to archaeological sites including site formation studies and the dating of shipwrecks through sclerochronology, or dating of associated coral via core examination (Smith, *et al.* 2005:10). And just as biological studies can aid archaeologists in better understanding site environments and the processes acting upon the wrecks, archaeological and historical information gives biologists insight into the structure of artificial reefs (i.e. shipwrecks) and the temporal contexts of their formation (Church and Warren 2009:21).

Such is the case with a recent study on biodiversity in the ecology of shipwrecks in PMNM (Smith 2010). This innovative project aimed to determine whether shipwreck sites supported distinct ecosystems and if residual effects from disturbances caused by the wrecking create differences between wreck sites and surrounding coral communities. Data recovered from this project not only provided answers to questions about reef recovery, it also proved invaluable for archaeologists investigating site formation processes and served as the foundation for long-term monitoring protocols. The study found that the growth and health of a reef system on a shipwreck can provide clues as to its age and the amount of cultural or natural interference that may occur short and long-term (MMP 2010). The results of this research exemplify the value of multidisciplinary research through the various types of practical information that can be gleaned from viewing shipwrecks from a different perspective.

Conservation – *In Situ* studies

The remote locations in which many whaling shipwrecks have been found would provide an excellent opportunity to undertake baseline *in situ* conservation studies. *In situ* conservation surveys involve collecting data to assess the preservation of sites, and the value of these surveys to managers cannot be understated (Richards and McKinnon 2009:i). Most of the whaling sites identified in Pacific waters are subjected to very little cultural disturbance due to their remote nature. They are not impacted by recreational divers or souvenir collectors and in many instances were not contemporarily salvaged. This lack of cultural disturbance means that only natural impacts are affecting these sites. This presents an excellent case for conservation scientists who study preservation and deterioration rates.

Additionally, due to the dynamic nature of the environment and the conditions in which these vessels wrecked, their archaeological remains are represented by collections of artefact clusters generally dispersed over large areas. According to David Gregory (2010:3) in open seawater the physical effects of scouring and biological processes are the major causes of deterioration of wooden and organic materials. This explains the almost complete lack of wooden structure encountered on several whaling wreck sites that have been identified in the Pacific region. Instead, these sites are characterized by the heavy iron objects associated with the various industrial activities involved in onboard whaling operations such as trypots and blubber hooks.⁴ Metal submerged in seawater corrodes in a micro-environment that prevents the formation of protective oxide layers normally associated with terrestrial corrosion processes (Carpenter, *et al.* 2010:34). Thus corrosion processes are constantly weakening and breaking down these metal artefacts.

⁴ Pelagic whaling operations involved activities that centred on preparing and processing whale blubber into valuable oil. Known as “cutting in” and “trying out”, these processes employed sturdy iron hooks and reinforced rigging tackle to lift blubber pieces onto the deck, where they were further trimmed and then placed into large cast iron trypots built into brick hearths for rendering the oil. In most cases when wrecked whaleships have been located, the presence of these artefacts provides diagnostic evidence.

In situ conservation surveys and monitoring programs are becoming a commonly used method for managing site preservation in many parts of the world. Its relatively low costs when built into a research design at the early stages would be a suitable option for whaling wreck sites and would allow conservation scientists the ability to study sites affected only, in many cases, by their natural environment.

Conclusion

This paper has attempted to highlight the nature of whaling shipwreck sites found in the Pacific region and the usefulness of multidisciplinary approaches to their investigation. In an age when budgetary restrictions are the norm and fuel costs are on the rise, archaeologists must think laterally about the way they organize their field research. Collaboration has been a strong suit of the discipline of archaeology for many years and this paper illustrates how this type of collaboration is successful and can continue to be cultivated in future explorations of the impact of whaling in the Pacific and throughout the oceans of the world.

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