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As the Sand Settles: Education and Archaeological Tourism on Underwater Cultural Heritage

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Underwater cultural heritage sites draw thousands of diving tourists lured by the excitement of shipwrecks and the beauty of the marine environment. Through scientific research and interpretation, archaeologists have the opportunity to educate these visitors about the history of the sites and, perhaps more importantly, about the need for preservation. Effective interpretation leads to appreciation of underwater cultural heritage sites as links to our past, rather than simply as mines of 'treasure' to be salvaged for personal gain or sites of interest to be consumed by tourists. This paper describes a selection of interpreted maritime sites from the continental US (with specific reference to Florida), the Caribbean, and the Pacific to show how archaeological tourism, specifically shipwreck preserves and heritage trails, can begin to change mindsets, engage emotions, and inform visitors. It also discusses ways in which we can improve upon assessment, monitoring, and long-term preservation strategies after the trails are created and the sand has settled.

KEYWORDS underwater cultural heritage, tourism, public interpretation, heritage trail, education

Introduction

Historic shipwrecks have lured diving visitors since one of the first recorded uses of a diving bell in 1531 on the wrecks of Emperor Caligula's pleasure barges in Lake Nemi, Italy (Brylske, 2012: 5). The advent of SCUBA in the 1950s soon enabled anyone to strap on an air tank and a mask to explore the world beneath the sea, including shipwrecks and other underwater cultural heritage sites. The drama of

sunken vessels has proved an enduring enticement for divers, enabling them to experience vicariously the excitement and ultimate tragedy of maritime disaster. The habitat provided by sunken structures becomes an oasis of life and colour, and an argument can be made that historic shipwrecks are the oldest of artificial reefs and should be protected as both natural and cultural assets. Shipwrecks are so popular that even obsolete modern ships are sunk purposefully to provide dedicated diving attractions; however, the question remains whether these sites are considered acceptable substitutes for the thrill of diving a 'real' shipwreck (Edney & Spennemann, 2015).

In many places around the world historic shipwrecks have, and continue to suffer from, a perceived reputation that they all must be covered in gold and silver. An epic misconception fostered most egregiously by the media, this problem with treasure has led to many historic shipwrecks being destroyed by people in the frenzy of excitement and greed (see, for example, McKinnon, 2007: 87–88). An entire cottage industry in Florida has grown around the destruction of underwater cultural heritage sites for personal gain, and commercial salvage of historic shipwrecks is still allowed under state law (see Florida Statute 267, Rule 1A-31) (Throckmorton, 1990). Even ships well documented and known to have not been carrying cargo of any kind have been ripped apart by misinformed people hoping to find non-existent treasure, such as the eighteenth-century British sloop-of-war known as the Deadman's Island Wreck or the man-of-war of the same period, HMS *Fowey*, both lost off Florida (Scott-Ireton, 2009: 49; Skowronek & Fischer, 2009). This detrimental mindset among sport divers, developed by sensationalistic media reporting and promoted by treasure salvors for their own agendas, is only encouraged by the unique challenges of protecting sites that are, by their very nature, out of sight and out of mind. Underwater archaeological sites do not have diving park rangers on site to monitor visitor behaviour, and a pervasive idea exists that if something is under water it must be up for grabs (Hall, 2007). This situation presents the ultimate challenge for protection and education.

Laws are in place that protect underwater cultural heritage sites, just as heritage sites on land are protected. In the United States, the Abandoned Shipwreck Act of 1987 provides the states with title to historic shipwrecks in their waters and charges states to protect and promote them for the public good. State historic preservation laws, such as the Florida Historical Resources Act, generally reinforce the federal law (although Florida law — Florida Statute 267 — also allows for their destruction by treasure salvor firms, a categorical misinterpretation that the state will have to deal with someday). These laws, however, often are ineffective due to wilful ignorance by some, others being simply uninformed, and the lack of law enforcement (diving police officers assigned to shipwreck sites are shockingly rare). Other places have experimented with different options for legal protection of submerged historic sites. Some countries, such as England, require licences to dive on designated significant historic shipwreck sites, which helps with tracking visitation, as well as tracking vandalism (Historic England, 2015). Italy has the option to restrict diving on some of its significant submerged heritage sites, which certainly protects them, but prevents people from experiencing them (Ministero per i beni e le attività culturali, 2004). Until 2002, Greece did not allow diving at all in its seas, a response to looting of ancient shipwrecks that significantly stunted its diving

heritage tourism industry (Georgopoulos & Fragkopoulou, 2013). Croatia has experimented with putting cages around its ancient shipwrecks, which also helps with protection but at the expense of aesthetics and sense of place (Zmaić, 2009).

The issue of balancing public access with protection of underwater cultural heritage is underscored in UNESCO's *Manual for Activities directed at Underwater Cultural Heritage* (2011) which states, 'Archaeologists must ensure that whatever work is undertaken results in minimum "damage" to underwater cultural heritage, while maximizing public return in the form of increased knowledge and understanding of the past; and ensure public access, where appropriate'. Some have recently argued that archaeologists and managers should consider de-centring preservation and protection and instead re-centring the public (Gustafsson & Karlsson, 2012). This would have the effect of making public involvement and participation in heritage, rather than preservation, the primary process that drives management of these sites. This is a difficult task to ask of those whose profession and ethics necessitate protection of heritage. However, the argument follows, '[...] the public's commitment to and engagement in cultural heritage is essential to its conservation and use' (Gustafsson & Karlsson, 2012: 492). As archaeologists and managers, we need to be intimately involved in the process of raising public awareness through education and outreach, particularly where it intersects with archaeological tourism.

Education *in situ*

Although archaeological sites, including those underwater, in the United States and in many other countries are protected under federal and state law (Skeates, 2000), this approach does not ensure the protection of shipwrecks (and other underwater cultural heritage sites) from the effects of treasure salvors, souvenir seekers, development, and well-meaning but uninformed divers. Historic shipwrecks continue to be looted and damaged in spite of, or in ignorance of, these laws. Educating the diving public seems to be the only viable alternative to legislation which, although based on good intentions, generally is ineffective and unenforceable (Flatman, 2003: 148). Plenty of evidence exists within the natural sciences that education can lead to a conservation ethic; the recovery of wild populations of bald eagles, alligators, and manatees are evidence. In the 1970s and 1980s, wildlife biologists made a concerted effort to promote the need for ocean conservation, which is still on-going. Messages about saving whales and dolphins, protecting coral reefs, loving manatees, and promoting catch-and-release for undersize fish have resulted in major advances in conservation. Although the war is not won and the oceans still are in peril, the major culprit today, at least where natural resources conservation is concerned, is big industry and not the average sport diver. Divers are taught to be stewards of the ocean from their initial Open Water I class, and the conservation message is pushed by major SCUBA training agencies, such as the Professional Association of Diving Instructor's (PADI) Project Aware. Maritime archaeologists and heritage managers are using this conservation mindset and education strategy in the struggle to protect historic shipwrecks and other cultural sites, which (unlike natural resources) are non-renewable. One of the most commonly used education strategies

is the creation of interpreted heritage tourism attractions at underwater sites, such as maritime heritage trails and shipwreck preserves.

The intrinsic value of maritime heritage trails and preserves and the way in which they function as *in-situ* museums is well understood (Scott-Ireton, 2014a). Visits to museums and heritage sites help people feel connected to their past. At least part of the reason for this, according to one study, is visitors feel they discover ‘true’ history at historic places that provide a sense of personal participation in the past, not obtainable from books or television programmes (Rosenzweig & Thelen, 1998: 32, 105). Museums are loci for transmitting messages and for encouraging different interpretations of long-held notions about art, culture, and history; because of the authoritative and legitimizing status of museums, the messages can be powerful tools for changing or reinforcing public opinion (Macdonald, 1996: 4–5). By regarding underwater cultural heritage sites as museums in non-traditional settings, resource managers can transmit a message of preservation and protection rather than consumption and exploitation. *In-situ* maritime historical sites offer an attraction where visitors can see the tangible remains of maritime activities and learn about a part of the past in which they may otherwise not participate. Maritime archaeologists and resource managers can use museum authority to challenge public perception of shipwrecks, to encourage protection of non-renewable cultural heritage, and to involve communities in the preservation and interpretation of their maritime heritage (Scott-Ireton, 2005).

A significant attribute of archaeological heritage exhibited *in situ* is they are never ‘finished’, a condition some museum professionals argue constrains displays in traditional museums (Porter, 1996: 113). Because of their location in ever-changing environments and changes wrought by natural influences, displays of underwater archaeological sites are neither finished nor static. The visitor can construct new meanings with each viewing. For example, dramatic movement of sand at a shipwreck may cover or uncover features of the ship not previously seen, allowing the returning diver to better understand construction of the vessel or to realize that features covered by sand are better preserved than those exposed to currents and waves. Even if entirely covered by sand for a time, a site can illustrate the effects of natural phenomena on cultural objects. Ultimately, a visitor to an *in-situ* archaeological site becomes an active participant rather than merely a passive spectator in the presentation of the site as a museum. Due to the increased level of interaction with the exhibit and, in the case of underwater and remote open-air museums, the lack of on-site professional staff, the visitor is asked to fill the role of interpreter, curator, educator, and trustee, and may even become part of the exhibit itself if viewed by others (Hetherington, 1996: 173). The continued existence of the unstaffed *in-situ* museum depends on the visitor taking an active part in its preservation. Visitors are, in most cases, simply trusted to participate in the site’s conservation due to their belief, fostered by interpretation, that the site is valuable and should be left intact for future visitors. The information provided through interpreted heritage attractions like trails and preserves ideally promotes this preservation mindset.

Maritime heritage trails and shipwreck preserves share two basic goals: (1) the *in-situ* preservation of maritime heritage; and (2) the interpretation of these heritage sites for public education, enjoyment, and enlightenment. Archaeological sites exhibited *in situ* take advantage of contextual integrity by encouraging visitors to

understand relationships between the site and its environment, to feel a direct connection with the content of the 'display', and to appreciate the knowledge available from a site preserved in context (Potter, 1997: 38–39). Regarding interpretation, in *Presenting Archaeology to the Public*, Potter and Chabot (1997: 48) state that, '[...] most stories about the past are trying, in one way or another, to get people in the present to do one thing or another'. Experience in managing *in-situ* underwater archaeological sites indicates that the 'story' is often the need for preservation and protection of the resource because managers see and must respond to evidence of looting, vandalism, and uninformed 'souvenir collecting'. The interpreted shipwreck can tell a compelling story about, among other themes, maritime heritage, social history, ecological conservation, and generate knowledge through archaeological investigation. The ideal end result is for the public, having experienced the attraction, to gain an understanding of the importance of the resource as an irreplaceable element of our common history and of the need to protect it and others for future generations.

While archaeologists and cultural heritage managers are responsible for developing interpretive products and for the on-going management of underwater cultural heritage sites, the local community where the site is located is an integral part of the preservation equation. Repeated experiments in developing shipwreck preserves and maritime heritage trails have shown that community engagement in the project and in the resulting attraction is crucial to its long-term success (Scott-Ireton, 2007; 2008). A project that involves the community and interested stakeholders from inception through development and into establishment can count on local support, monitoring, promotion, and assistance with long-term management and protection (Philippou & Staniforth, 2003; see also McKinnon & Carrell, 2015).

Heritage trails and shipwreck preserves have also proven to be viable economic options for promoting underwater cultural heritage and its preservation. Beyond the intrinsic value, the economic value of archaeological tourism at maritime sites is increasingly important to consider with regard to its protection and promotion (for broader discussions on values and underwater cultural heritage, see Firth, 2015; Mires, 2014; Scott-Ireton, 2005). The consideration of economic values in underwater cultural heritage management is nascent. Studies such as the Nautical Archaeological Society's investigation of the local economic benefit of a protected wreck, HMS *Coronation*, estimated in just 2012 alone £53,900 (GBP) was spent by divers visiting the shipwreck (Beattie-Edwards, 2013: 41). In the New York Great Lakes region, the economic impact of scuba divers in 1999 was estimated at more than \$108 million (USD), with \$61 million on boat and auto fuel, lodging, and food, and \$47 million on diving expenses (White, 2007: 1). In Australia, dive charter companies earn an estimated \$1 million (AUD) or more each year in tours to SS *Yongala* (Edney, 2006: 207). In 2010, a survey of Florida's Shipwreck Preserves found that diving operators around the state make trips to a Preserve as often as several times per week during the diving season; for some, this accounts for the majority of their business (Price, 2013). Another recent survey accounted for 30,000 visitors annually to the Preserves with one site, SS *Copenhagen*, capturing a third of those visits with 10,000 divers (Price, 2013: 233). Thus, education and interpretation can highlight both the intrinsic (natural and cultural) and economic values of underwater cultural heritage sites for a community and can help illustrate

the need for their long-term preservation. A tour of a few developed underwater heritage attractions (chosen as examples for the simple fact the authors were involved in their creation and management, and therefore have first-hand knowledge) provides examples for the practical application of management, interpretation, and engagement principles, in particular showing how focused, accurate, and informative interpretation can question, form, and change the meaning and value of underwater sites.

Examples of archaeological tourism at underwater sites

Florida's Underwater Archaeological Preserves and the 1733 Spanish Galleon Trail

In Florida, the Underwater Archaeological Preserve system — a programme of the Florida Bureau of Archaeological Research — is one of the largest and oldest programmes of this kind. Begun in 1987 and continuing to the present with new Preserves established every few years, these historic shipwrecks are presented and managed as ‘museums in the sea’ for divers and snorkelers (Scott-Ireton, 2003). Each Preserve is created as a response to a nomination from a member of the public and must meet certain criteria, including a verified identity and safe diving conditions (Scott-Ireton, 2003: 98). A local ‘Friends’ group is formed to assist with documentation, recording, and on-going monitoring of the site. In most cases, the shipwrecks nominated to become Preserves are sites that have long been dived and visited, although its name and history may not be known. An example is the Bear Cut Wreck; research and archaeological documentation confirmed its identity as an early twentieth-century racing yacht that once belonged to a German count and was originally christened *Germania*. After several adventures, the yacht, renamed *Half Moon*, found its way to Miami where it was used as a floating cabaret before wrecking in a storm in the early 1930s (Beach, 2000). Now with a verified story, the site’s fascinating life history helps to make a visit to the shipwreck, whether for diving, fishing, or sightseeing, more interesting, educational, and exciting. The research prompted by nomination to Preserve status, presented through interpretive brochures and an underwater guide available from local dive shops and visitor centres, a website¹, poster, and underwater plaque, brings a new dimension to an old dive site.

The Florida Keys have long been a bastion of the treasure-hunting industry, due to the presence of Spanish shipwrecks from the 1733 plate fleet sunk by a hurricane (Smith, 1988: 96–103). Some of the earliest modern treasure salvage using diving apparatus was conducted on these sites, resulting in Florida’s first museum — McKee’s Museum of Sunken Treasure — which was opened in 1948, dedicated to recovered shipwreck treasure. Unfortunately, this public-oriented mindset did not last, and the 1733 sites became the location of a frenzied free-for-all in the 1960s and 1970s as treasure hunters ripped apart intact sites (McKinnon, 2007). This idea of the Keys as a haven for modern-day ‘pirates’ and diving adventurers persists, although the 1733 shipwrecks now are within the Florida Keys National Marine Sanctuary and Biscayne National Park, and are protected by state and federal law from further depredations (Skowronek & Fischer, 2009). Nevertheless, some

people still seem to think they can hunt for treasure in the Keys unchecked. In an effort to educate visitors (and citizens), the State of Florida, in partnership with federal programmes, developed the 1733 Spanish Galleon Trail (McKinnon, 2007). The trail features the story of the Spanish treasure fleet system and the dramatic tragedy of its demise, presented through a printed booklet available from Keys dive shops, bait and tackle stores, visitor centres, and Sanctuary offices, as well as online.² The interpretation stresses the damage inflicted to the sites by early treasure hunters and explains how the sites now are some of the oldest artificial reefs in the Keys — home to fish, crustaceans, molluscs, and invertebrates. Additionally, the interpretation and promotion of their history is used in promoting Hispanic heritage during Hispanic Heritage Month in Florida, further identifying them as sites of cultural importance in the history of Florida. Visitors are provided with GPS coordinates to visit the sites, but are cautioned to dive them with care and respect to avoid damaging the ecosystems that have grown around them. In changing public perception of these shipwrecks from ‘mines’ of treasure to habitats and heritage sites, their value is reassigned and promoted through the conservation ethic.

Cayman Islands maritime heritage trail

The Cayman Islands are one of the world’s top diving destinations, with an economy that thrives on tourism. Over 1.25 million tourists visit the islands every year, and this number is steadily increasing (CIGIS, 2001: 70). Most visitors arrive on cruise ships and rarely leave the vicinity of the capital of George Town. The government encourages visitors to explore more of Grand Cayman and, where possible, to visit the Sister Islands of Little Cayman and Cayman Brac as well to spread the economic benefits of tourism. A maritime heritage trail featuring Cayman’s history, both above and below water and spanning all three islands, was envisioned to help meet this goal by providing incentives and attractions for visitors in all locations. However, the physical remains of the islands’ cultural heritage often are subtle and fragile, raising a concern for their preservation while promoting their value as attractions. A major consideration in developing the trail was to balance increased tourism with protection, and a set of criteria was used to choose the sites most appropriate for visitation (Leshikar-Denton & Scott-Ireton, 2007: 70–71). Spearheaded by the Cayman Islands National Museum and a consortium of heritage organizations called the Maritime Partners, the trail provides an opportunity for tourists to learn about the islands and to appreciate them as more than just a cruise-line port call to buy duty-free rum and jewellery. For residents, the trail preserves and presents elements of their history that they otherwise might not know existed or perhaps thought were lost (Leshikar-Denton & Scott-Ireton, 2006).

Calling attention to these tangible remains of the islands’ past by featuring them on the Maritime Heritage Trail serves to increase public awareness of their existence and, ideally, encourages public participation in their continued preservation. A driving trail interpreted with informational posters, the Cayman Islands Maritime Heritage Trail’s value for the Cayman Islands is realized in many ways, both symbolic and practical. The trail is the first of its kind in the Caribbean and is a uniquely Caymanian attraction accessible by everyone (not just divers). It utilizes existing heritage, which in many cases were previously ignored or overlooked, to promote

Cayman Islands history, heritage, and national pride. The trail is an attraction that encourages travel around all three of the islands, supports patronage of business along the trail route to enhance the local economy, and promotes stay-over visitation. It is a sustainable tourism model in terms of preserving sites through education and directed use, guiding people to places that can sustain visitor pressures. The trail also provides an additional attraction for return visitors to the islands and is a means to manage and interpret Cayman Islands' historical and cultural heritage for the public. Ultimately, the information and education provided by the trail's interpretive products are envisioned as a way to stimulate curiosity, encourage interest, and help protect and preserve Caymanian heritage for future generations (Leshikar-Denton & Scott-Ireton, 2012).

World War II Maritime Heritage Trail: Battle of Saipan

The island of Saipan in the Commonwealth of the Northern Marianas is perhaps best known for its part in the Pacific campaign of World War II. The site of a major battle, the Battle of Saipan in June and July of 1944, is often overshadowed by the D-Day invasion in Europe; however, the battle was one of the hardest and bloodiest fought in the Pacific. Remains of the amphibious invasion and conflict — including sunken aircraft, amphibious tanks, landing craft, and ships — litter the lagoon and surrounding waters, and are now fascinating diving locations. Although a bitter struggle between American and Japanese troops with immense civilian casualties, the tangible remains of the battle today provide heritage tourism sites for thousands of divers and snorkelers attracted to Saipan's clear blue water, astounding variety of ocean life, and historical significance. In interpreting and promoting the battlefield, researchers took care to be thoughtful, balanced, and sympathetic to the universal plight of the soldier, sailor, conscript, and civilian, regardless of ethnicity (McKinnon, 2014). Some questions that arose during the development of the trail included, for whom the trail should be developed (fly-in and fly-out tourists? the local community?) and whose story it should tell (US and Japanese soldiers, Japanese civilians, indigenous Chamorro, Korean conscripts?). All of these questions led to interpretive products that focused on inclusiveness through telling all sides of the story and maximum usability through multilingual products (McKinnon & Carrell, 2015).

The WWII Maritime Heritage Trail: Battle of Saipan features both American and Japanese sites interpreted with a series of multilingual informational posters, dive guides, interpretive film, and a website.³ The trail's purpose was to refine understanding of the battle, to educate the public about the battle and the resulting unique underwater cultural heritage sites, and to provide a sustainable heritage attraction for the island's struggling economy. Although the underwater ships, planes, and amphibious vehicles represent an incredibly difficult conflict, one which also involved hundreds of non-combatative civilians, it still can be used to remember and commemorate, and even lament, confront, and challenge our collective destructive pasts through the sensitive and inclusive interpretation products created for these *in-situ* sites.

These examples are certainly not the whole story of interpreted maritime sites, and many places around the world are using this kind of strategy to educate and inform

visitors with the purpose of encouraging appreciation and preservation, as well as boosting tourism (Jameson & Scott-Ireton, 2007; Scott-Ireton, 2014b; Spirek & Scott-Ireton, 2003). What these limited case studies illustrate is that effective interpretation can help to change mindsets, such as showing how shipwrecks previously thought of as treasure troves to mine are actually vibrant artificial reefs and heritage sites; or that, given a name and a verified history, an unknown shipwreck can become an interesting attraction with a dramatic backstory; or why the preserved remains of weapons of war are important places for former opponents to come together in recreation and education. Just as museums and heritage sites on land present messages about our present and future as well as our past, 'museums' under water can use the same power of authenticity to present messages of preservation, education, and heritage values.

Considerations for the future

Schadla-Hall and Larkin (2014: 1) have observed that:

Archaeologists need to be involved, and in many cases should lead developments and not stand idly by whilst others develop their work and use, or misuse, their expertise. They need to consider and understand the potential impact of their work and acquire additional skills, to ensure archaeology (and archaeologists) are financially sustainable and seen to be of value by the public.

This statement is both axiomatic and unnerving. As archaeologists, we understand we have to be involved in the development and promotion of our work and sites, but what do we know of financial sustainability? Are not sustainability, tourism, and economics distinct fields of study? And, even more disconcerting, by promoting visitation will we be at fault for commodifying our heritage or, even worse, possibly contributing to its ultimate destruction? These concerns and questions currently do, and should continue to, lead us down a path of effective collaboration, thoughtful assessment, and critical reassessment of the heritage tourism attractions we develop and advocate. It is no longer acceptable to create a product and walk away, dusting the sand off our hands and fins. We have to ask ourselves: is the product serving and continuing to serve the stakeholders as an audience? Is it sustainable? Is it serving the resource and providing protection? The following outlines some considerations for moving forward after the sand settles.

Understanding diver motivations for visiting underwater cultural heritage sites and their attitudes towards protecting them is critical to inform the products we develop for interpretation and the approaches we use for resource preservation. 'If we build it, they will come', runs a line from the Hollywood movie *Field of Dreams*, which can also be applied to developing heritage attractions, but our responsibilities do not stop there. As attitudes towards diving underwater cultural heritage sites evolve, we need to understand these changes and incorporate them into our interpretive strategies. Although qualitative and anecdotal evidence for the popularity of interpreted maritime sites abounds, little quantitative data has been collected, for various reasons, including the difficulty of tracking divers at off-shore sites and getting surveys into the hands of visitors (Scott-Ireton, 2007: 27–28;

see also Price, 2013). Currently, few strategies for collecting diver visitation statistics have been developed and, even more unfortunate, very little research has been conducted on the subject of what motivates divers to visit underwater cultural heritage sites and their attitudes towards these sites (Edney, 2012). As researchers, managers, and producers of these products, we have to understand our stakeholders and consumers. Thus, more quantitative data needs to be collected, not just prior to the development of a trail or preserve but also *after* it has been developed when interpretive materials begin to (hopefully) affect diver motivations and attitudes. This information is not only critical to the content and message of our interpretation, but also to the perceived and real 'economic value' of underwater cultural heritage for communities as heritage attractions.

In our modern society, often the tangible bottom line counts as much as, if not more than, the intangible value of anything. Economic analyses of the tangible contributions made by underwater cultural heritage tourism need to be undertaken to understand the benefits of such endeavours. We can look to our terrestrial counterparts for how they investigate the economics of heritage (for example, see *Public Archaeology*, 13, 1–3 for more detailed discussions). Cost analysis data for creation and implementation of underwater cultural heritage attractions, as well as the long-term economic value of underwater cultural heritage to stakeholders, cannot be ignored any longer. After all, it is taxpayers' monies through state and federal programmes and grants that often allow us to create these products — taxpayers who pay taxes and elect politicians who set the agenda for protection and promotion through yearly budgets. If we as archaeologists cannot do a better job of identifying and quantifying not just the intrinsic, but also the economic value of our work, we will have missed the proverbial boat.

While work needs to be conducted to address questions of economic sustainability, assessment and reassessment of sites open to and interpreted for the public are probably the most vital strategies to ensure we are achieving physical sustainability in terms of preserving sites in their present condition. Low-tech data-gathering is useful, such as photographic and visual surveys. In the Cayman Islands, periodic visual surveys of the heritage trail sites, both on land and under water, help to determine human impacts and levels of visitation, data which assist with management and possible trail expansion decisions. Additionally, collecting quantitative corrosion and degradation data (in addition to anecdotal) through on-site conservation surveys can assist in understanding sustainability. For example, physical sustainability of the WWII Maritime Heritage Trail: Battle of Saipan was considered key to the viability and protection of the heritage, and measures were put into place to ensure the sites' longevity as well as to monitor sustainability (McKinnon & Carrell, 2015: 11). During establishment of the trail, on-site conservation surveys collected corrosion measurements which can be used as baseline data for understanding visitor impacts, thus ensuring a long-term, data-driven approach to management strategies. This data was collected at sites on the trail, but also at similar control sites not included on the trail. While establishing these quantitative data collection strategies during attraction development is ideal, it is never too late to start. Well-established attractions, such as the Florida Preserve system and Spanish Galleon Trail, would benefit from on-site conservation surveys now to help inform management strategies, as well as interpretation and promotion directions for the future. More

pre-emptive and planned approaches to conducting baseline data collection will contribute greatly to our understanding of site preservation and sustainability over time (Richards & Carpenter, 2015).

Conclusion

In-situ displays are described as ‘immersive and environmental’ (Kirshenblatt-Gimblett, 1998: 3). Nothing could better describe shipwrecks in their original contexts. *In-situ* heritage sites provide a context of meaning often missing in static displays of objects behind glass in a traditional museum. Museum visitors seek the human element in the static object and a way to feel connected to the maker or owner of an artefact (Bower, 1995: 36–37). Shipwrecks, as tangible remains of what often was a dramatic and tragic human event, can evoke powerful feelings in those who visit. Divers see the ship or plane or amphibious vehicle and feel connected to those who lived, worked, and may have perished as a result of its sinking; they relate their watery experience to those who were lost. Cultural heritage is a part of both the past and the present, allowing the contemporary viewer to feel he or she has experienced the past through a real and direct contact in the present (Lipe, 1984: 4).

At the time of writing, the interpretation of underwater cultural heritage for the public seems to be a phenomenon limited to those areas with established bureaucracies capable of organizing and managing underwater cultural heritage. As the growth of diving tourism leads divers to ever more exotic locations, local peoples must decide how their submerged history will be treated: destroyed to make way for cruise-ship terminals and harbour expansions, exploited for the personal gain of a few treasure-hunting salvors, or protected to preserve their heritage, sustain future visitors, and bolster their economy. A careful review of existing programmes and a plan of action taking into consideration both intrinsic and economic values as well as diver attitudes and behaviours must be weighed against viability of the site(s) before any tourism programme is presented (Grussing, 2009; Hannahs, 2003; McKinnon, 2015; Scott-Ireton, 2005). Furthermore, an on-going evaluation and re-evaluation plan should be put into place to fully understand the effectiveness, sustainability, and impacts we as managers and researchers are effecting.

Notes

¹ The website for this project is available at: <<http://www.museumsinthesea.com>>

³ The website for this project is available at: <<http://www.pacificmaritimeheritagetrail.com>>

² The website for the Spanish Galleon Trail is available at: <<http://info.flheritage.com/galleon-trail>>

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