



Managing Michigan's Underwater Heritage: The Past, Present, and Future of Thunder Bay National Marine Sanctuary

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Leah Burgin's paper was initially researched as an undergraduate honors thesis in Anthropology at the University of Michigan where Leah also minored in Museum Studies and Native American Studies. It was inspired by her participation in a University of Michigan Archaeological Field school at the Thunder Bay National Maritime Sanctuary in Alpena, Michigan.

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Introduction

Shipwrecks fascinate us. There is something hauntingly ethereal and evocative about a dilapidated vessel resting on the ocean floor. But unlike many objects from antiquity that draw fascination, shipwrecks are not rare: estimates abound of more than three million vessels lost to the world's oceans (Kingsley 2011:224). And it seems that many of us—from underwater archaeologists and maritime historians to divers and amateur shipwreck enthusiasts—are deeply invested in this rich maritime heritage (Green 2004).

In the last fifty years, underwater parks, trails, preserves, and sanctuaries have been established worldwide to protect shipwrecks (Hannahs 2003; Scott-Ireton 2007; Manders 2008). This trend parallels the increasing importance that national governments, international bodies, and individual states have placed on protecting the world's heritage sites, on land and underwater (McGimsey III and Davis 1984; King 2011:412). Managing these heritage sites—also referred to as cultural resources—has developed into a field known as heritage management or cultural resource management. According to Thomas F. King, cultural resources are “all the aspects of the physical and supra-physical environment that human beings and their societies value” and cultural resource management can be defined as “actions undertaken [...] to identify and manage the ways in which change affects or may affect” these resources (King 2011a:2).

One of the most challenging aspects of cultural resource management is balancing the public’s desire to access cultural resources with the need to protect and preserve them (Hannahs 2003; Scott-Ireton 2007; Lipe 2009; Runyan 2011). Cultural resource managers consider many issues when making decisions about access to and preservation of heritage. For example, should parts of a site be closed to visitors to better preserve those spaces? Is a site easily accessible to individuals with disabilities? Should reproductions or facsimiles be used in interpretive spaces or does the public deserve to experience “the real thing”? And perhaps most importantly, how do limitations on financial

support and personnel factor in?

Balancing access and preservation becomes more complex for cultural resources that exist underwater. Most often, only a fraction of the public (certified scuba divers) can access the sites, and a myriad of factors (constantly shifting bottom features, the unpredictable presence of marine life, etc.) affect the underwater environment, rendering it particularly ill-suited for the level of control effective preservation measures usually necessitate (Halsey 1996; Scott-Ireton 2007; Bowens 2009; Runyan 2011). Managers of submerged cultural resources can anticipate many of these complications and strategies for mitigation are provided in management plans for underwater parks, preserves, and sanctuaries. Management plans are important documents in the field of submerged cultural resource management, as they “identify immediate, mid-range, and long-term challenges and opportunities, and develop a course for the future” (U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries [USDC, NOAA, ONMS] 2009:5).

Thunder Bay National Marine Sanctuary¹ in Lake Huron serves as an excellent study for two reasons. First, Thunder Bay includes shipwrecks of significant historical, cultural, and archaeological value:

it is the range of vessel types located in the sanctuary that makes the collection nationally significant. From an 1844 sidewheel steamer to a modern 500-foot-long German freighter, the shipwrecks of Thunder Bay represent a microcosm of maritime commerce and travel on the Great Lakes. [USDC, NOAA, ONMS 2013]

Second, Thunder Bay has recently expanded its boundaries (Figure 1). The 2009 Final Management Plan adopted a proposal that increased its boundaries from 448 to 4,300 square miles and doubled the number of known shipwrecks in the preserve (USDC, NOAA, ONMS 2013h).

¹A pre-expansion map of the Thunder Bay National Marine Sanctuary can be found at: http://sanctuaries.noaa.gov/pgallery/atlasmaps/images/tb_2000.jpg

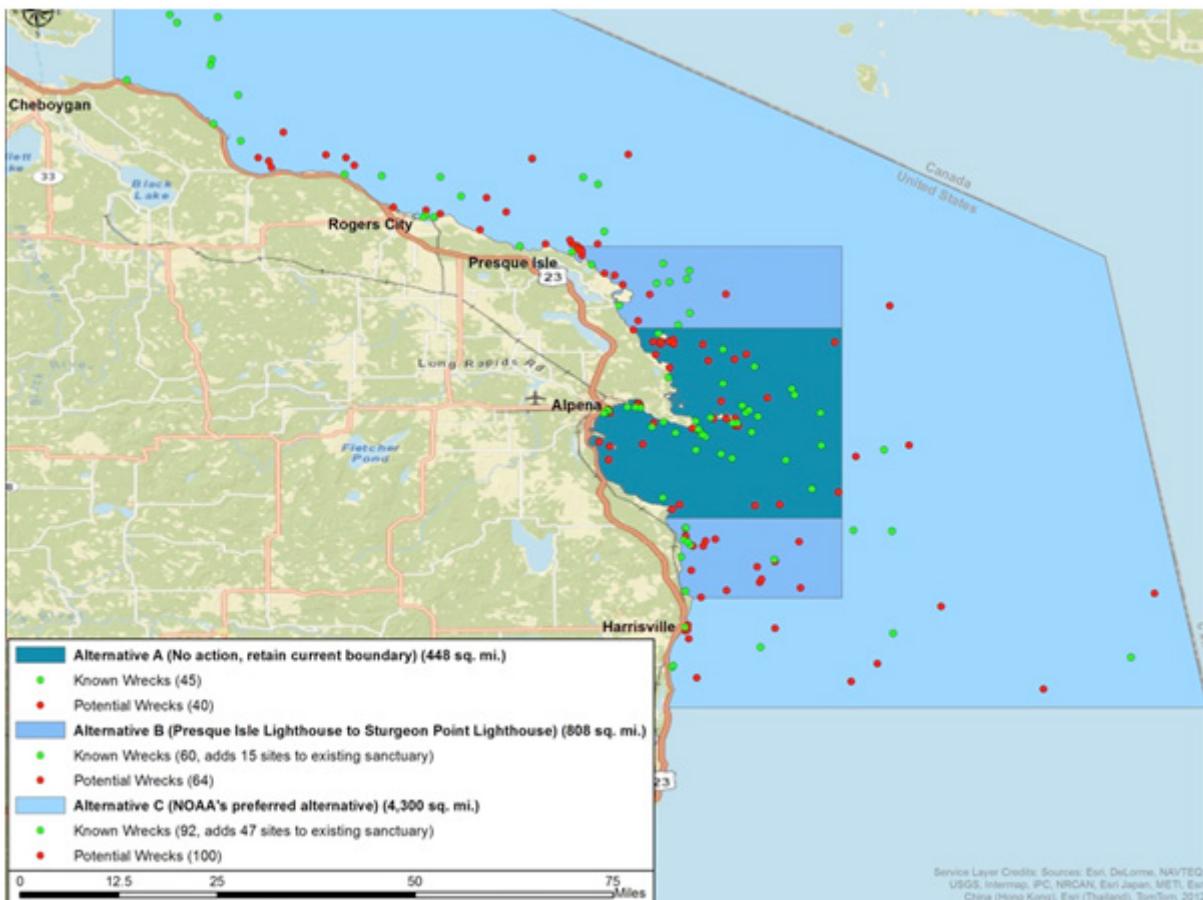


Figure 1: Changing Boundaries of Thunder Bay National Marine Sanctuary (USDC, NOAA, OMNS 2013h; http://thunderbay.noaa.gov/management/expansion_maps.html2)

This proposal was implemented in early 2015. Thunder Bay National Marine Sanctuary is as a result currently undergoing a significant expansion, and my analysis of the Sanctuary’s management plans at this moment in its development is an opportunity to examine how management decisions have changed in preparation for the expansion.² Furthermore, because the sanctuary manages a large and significant collection of historic shipwrecks worth preserving and creating access to, it is valuable to dissect how Thunder Bay National Marine Sanctuary addresses the challenges of managing underwater heritage, including the competing goals of preservation and access.

Shipwrecks as Heritage Sites

Cultural and natural heritage sites are important to many

² My research on the two management plans was conducted before the expansion of the Sanctuary was approved and implemented. However, the 2009 plan I evaluate in this study anticipates the expansion and remains the guiding management plan for the Thunder Bay Sanctuary.

groups for many reasons (Lipe 1984; Lipe 2009). For example, amateur and academic historians may value a building because of its important historic associations; Native American tribes may value a place because of its spiritual and ancestral connections; environmentalists may value a protected area because of the endangered flora and fauna it safeguards; or outdoor adventurers may value a challenging landscape they can enjoy exploring. Since the early 20th century, when the influence of sociopolitical movements like the conservation movement inspired the creation of national monuments and the National Park Service in the United States, there has been avid interest in preserving national heritage sites. In 1966, the urge for preservation of the nation’s history was spotlighted by a report issued by the United States Conference of Mayors. This report stated that a “feeling of rootlessness” pervaded postwar American society and significant historical places and objects could impart “a sense of orientation” to the public (Datel 1985:125). The report launched a series of landmark Federal laws, passed throughout the later half of the 20th century, that championed the protection and



management of cultural and natural heritage sites.

International Attention

Underwater heritage sites have also been championed by the United Nations Education, Scientific, and Cultural Organization (UNESCO) and a professional organization, the International Council on Monuments and Sites (ICOMOS), which are two of the most prominent international safeguarding bodies for cultural heritage management since the 1950s and 1960s, respectively. UNESCO has been responsible for at least twenty hosted conventions, compiled recommendations, and declarations concerning heritage management, and ICOMOS has prepared about ten charters, documents, and declarations on the subject (King 2011:412-3).

In the 1990s, many heritage professionals and organizations called for the development of “comprehensive legal protection of submerged cultural resources in both the national and international arenas” (Zander and Varmer 1996:61). This call was recognized internationally by the 1996 ICOMOS Charter on the Protection and Management of Underwater Cultural Heritage, the first international heritage statement that specifically addressed submerged cultural resources. The charter tied many of the same issues as other international statements on heritage sites to underwater heritage specifically, and directly led to the first UNESCO convention on submerged cultural resources (Runyan 2011:947).

Over 40 countries ratified the 2001 Convention for the Protection of Underwater Cultural Heritage (CPUCH) in 2009 (UNESCO 2013). Even though several of the world’s major maritime powers, including the United Kingdom, Russia, Australia, and the United States, have not ratified CPUTCH (Kingsley 2011:230), the convention is considered “the most comprehensive legal instrument” for the protection of underwater heritage (Runyan 2011:947). CPUTCH’s main principles emphasize *in situ* preservation, allow for excavation based on endangerment to the site, mandate the consideration of long-term conservation for any recovered materials, and declare that the public has a right to “enjoy the educational and recreational benefit of responsible, nonintrusive access” (Runyan 2011:949-9).

National Significance

Heritage law in the United States strives to preserve cultural and natural resources analogously to the way that medicine “preserves” life:

People obviously must die to make way for new people, so the purpose of medicine cannot be to preserve every life indefinitely. In the same

way, cultural heritage law cannot be designed to preserve every conceivable expression of cultural heritage forever. If a law requiring such preservation were ever enforced, it would be necessary for history to stop, because nothing could ever again be changed.

So the purpose of cultural heritage law [...] is to determine what constitutes cultural heritage—what it is we value for its cultural associations—and then to decide whether and how each identified element of that heritage can and should be preserved, given whatever conflicting public interests may exist [...] and then to effect that “preservation.” [King 2008:224]

Though underwater heritage sites, including shipwrecks, were generally considered as an afterthought in the first preservation laws, two pieces of Federal legislation explicitly protecting underwater heritage sites mark submerged cultural resources as valuable to the American public, present and future.

The first, the National Marine Sanctuary Act (1972, NMSA) authorized the Secretary of Commerce, through the National Oceanic and Atmospheric Administration (NOAA), to demarcate and protect marine areas of “national importance” (Runyan 2011:954). Currently, 13 national sanctuaries and one marine national monument have been created based on their “historical, cultural, archaeological, or paleontological significance,” amounting to 150,000 square miles of protected waters (Runyan 2011:954). Under NMSA, NOAA regulates and protects the underwater cultural heritage in national marine sanctuaries, including managing public access to and preservation of submerged cultural resources (Runyan 2011:954). The second, the Abandoned Shipwreck Act (1988), asserts Federal title to any of the estimated 50,000 shipwrecks located in the nation’s waters that are abandoned or deemed eligible for the National Register of Historic Places. The Federal government transfers any titles to the state in which the shipwreck is located and encourages states to “develop multiple-use management plans,” based on guidelines published by the National Park Service that encourage access by a diversity of publics and the preservation of underwater heritage (Runyan 2011:950).

State Safeguards: Michigan

Maritime culture has shaped Michigan since prehistory. Archaeological discoveries reveal that people have lived near the lakeshores and interacted with and reacted to their maritime environment for the last 12,000 years (Halsey 1990:9-11; Pott 1999:359). More recently, during the last two-thirds of the nineteenth century especially, “sailors,

fisherman, and shipwrights were as much a part of Michigan's social fabric as the farmer, miner, and lumberman" (Pott 1999:360). The lighthouses, lifesaving stations, harbors and canals that were built and the fishing and shipping industry that blossomed continue to impact the lives of Michiganders today. From prehistory to contemporary times, Native Americans, early Euroamerican settlers, and indeed, all Michigan citizens have created economical, political, social, and cultural ties to the Great Lakes (Halsey 1990:13-19; Pott 1999:360). Shipwrecks are an unavoidable outcome of water-based travel, commerce, and recreation, and have become objects of fascination in maritime societies, especially in the Great Lakes, with many different stakeholders expressing interest in their discovery, protection, exploitation, and recreational use.

Federal legal protection measures for underwater heritage influenced heritage legislation passed in Michigan during the 1980s and 1990s. Michigan received title to the Great Lakes and its bottomlands upon the area's inclusion in the Northwest Territory and the state's admittance into the United States in 1837 (Halsey 1999:29). An estimated 10,000 shipwrecks rest in the Great Lakes: 1,000 to 1,400 of which are embedded in the over 38,000 square miles of Michigan state bottomlands. These wrecks are legally protected by the State of Michigan (Halsey 1990: 29; Vander Stoep et al. 2002:126). Michigan has passed a series of public acts that define the state's relationship with the bottomlands and their submerged cultural resources, including shipwrecks, and assert the value these underwa-

ter heritage sites have to the citizens of the state (Halsey 1990; Halsey 1996; Pott 1999). Perhaps the most important of these acts for underwater cultural heritage is Public Act 184 (1980), which granted "the state clear authority to manage all resources of historical value found on its bottomlands" (Pott 1999:363). Public Act 184 authorized the Department of State and the Department of Natural Resources to establish underwater preserves and regulate the removal of artifacts from underwater sites (Halsey 1990:29; Pott 1999:363). The act also stipulated that the goal of these preserves was to create a sanctuary for shipwrecks and a spot for recreational usage, specifically diving (Pott 1999:363). Subsequent public acts, such as Public Act 452 of 1988 and Public Act 451 of 1994 strengthened the state's position on protecting submerged cultural resources (Halsey 1996:28; Act 451:Part 761), reinforcing the value and importance of underwater heritage to the state of Michigan.

A Balancing Act: Managing Access and Preservation

Woven throughout the international, national, and state laws and policies on underwater heritage are the competing management imperatives of preserving submerged cultural resources while simultaneously providing public access to them. To meet this challenge, heritage management legislation and policy emphasizes the potential power of public access and preservation goals to complement each other and create a feedback loop (Figure 2, below):



Figure 2: Feedback Loop of Access and Preservation



If members of the public can engage with heritage sites in a meaningful way then they will advocate for sites to be preserved so they and/or future generations can continue enjoying access to heritage sites (Gustafsson and Karlsson 2012:491). This strategy, logical and simple on paper, quickly becomes more complicated in the day-to-day operations of heritage sites. It is important to understand the scope of the issues affecting heritage managers in order to understand the impetus behind management plans. My discussion of underwater heritage preservation and access focuses on heritage sites of archaeological importance, while acknowledging that there are also many challenges that managers must consider for other types of heritage sites.

Preservation: in situ or ex situ?

Just as on land, underwater heritage managers must consider a wide array of factors when making decisions on how to best preserve submerged cultural resources. Some argue that preserving shipwrecks is more challenging than protecting terrestrial heritage sites, as “shipwrecks are especially vulnerable because their continued preservation depends on maintaining the equilibrium that is established over time between wrecks and their environment” (Scott-Ireton 2007:26). This equilibrium could be easily affected by widespread environmental factors, such as pollution or invasive species; by human factors, such as maritime industry traffic or impacts of recreation; and by the dynamic, nebulous nature of oceans, seas, and other waterways (Oxley 2001:414). Because of the difficulty of preserving underwater heritage, there are opposing opinions on how best to preserve it. Comparable to terrestrial heritage management, the main debate that has emerged in underwater heritage preservation has been over in situ (on site) versus *ex situ* (off site) management strategies, and the opportunities and challenges each approach provides.

According to ICOMOS and UNESCO guidelines, preservation in situ is considered to be the first and best option for shipwrecks (Manders 2008:39). This preference exists because shipwrecks usually exist in homeostasis with their underwater environment (Zamora 2009:20) and it is difficult and expensive to recover and preserve shipwrecks in constructed environments (Kingsley 2011:226). Since the 1960s, a variety of in situ preservation techniques have been developed for many different types of vessels (Goggins 1960:353). The Nautical Archaeology Society (NAS) recently published a handbook that presents detailed and thorough recommendations for how underwater heritage should be monitored for changes and how to best protect different types of shipwrecks (Bowens 2009:164-8). However, NAS concedes that sometimes in situ preservation cannot work for shipwrecks, especially those that are

in a heavily trafficked or recently polluted environment, so managers need to prepare for this potentiality in site management plans (Bowens 2009:168). Furthermore, it is important for managers to balance the costs of preservation, how effective protective measures can be, and the importance of the heritage site when making preservation decisions (Manders 2008:34).

Though in situ preservation is often preferred and effective guidelines have been established for managers, there are weaknesses to this strategy. Most important is how challenging it can be to protect vast swatches of marine environments with limited personnel and resources. When sites cannot be monitored consistently and thoroughly, it is more likely that looting can occur. Just like terrestrial sites, looting is destructive to underwater heritage sites. Equipment such as prop washers or “mail boxes” that some treasure hunters use can destroy an entire shipwreck (Gould 1983:41). Prop washers attach to a vessel and direct the propellers’ power to the seabed, blasting all remains that are not heavy enough to withstand the pulses of powerful air—like gold or cannons—into oblivion. While prop washers allow treasure hunters to easily discover valuable artifacts, they can completely erase any traces of old, fragile wooden vessels. Underwater heritage managers must take these threats into account when making decisions on how to best preserve heritage sites *in situ*.

Another problem with preserving shipwrecks *in situ* is the difficulty in creating access to the sites (Manders 2008:39). Managers need to make a choice between bringing the public to the shipwrecks or bringing the shipwrecks, either physically or virtually, to the public (Manders 2008:35). This latter option is considered *ex situ* preservation. Though *ex situ* preservation is no longer the recommended option for the preservation of shipwrecks, it was a popular technique in the 1960s and 1970s for recovered underwater artifacts (McCarthy 2011:1045) or, sometimes, entire shipwrecks (Kingsley 2011:226). Whether or not *ex situ* preservation is ultimately a more effective preservation technique for underwater heritage, the debate over its use is usually tied to a discussion of how *ex situ* preservation allows more members of the public to interact with shipwrecks remains than does *in situ* preservation.

Ultimately, managers of underwater heritage need to consider all the benefits and challenges of using *in situ* and *ex situ* preservation strategies, as they have a duty to “preserve a representative part of underwater cultural heritage for future enjoyment and research” (Manders 2008:32). Managers need to make decisions that can protect submerged cultural resources in the short and long term, while also ensuring that the public can continue to access shipwrecks and other underwater heritage sites (Green



2004:39). These decisions start with the management plans compiled for underwater preserves, parks, trails, and sanctuaries.

Access: Managing Stakeholders

One of the most persistent challenges of managing cultural heritage is the acknowledged need to balance the access of different stakeholder groups with the preservation of cultural resources (Scott-Ireton 2007:19; Manders 2008:32; Runyan 2011:957). An added difficulty for underwater cultural heritage lies in the fact that, unlike terrestrial heritage, a majority of the public cannot access shipwrecks and other submerged cultural resources (Watts and Knoerl 2007:224). Managers of underwater heritage sites thus need to create ways to include the diving community and also “communicate to the 99 percent of the population that doesn’t dive that these are their wrecks too” (Halsey 1996:33).

This problem is further compounded by the fact that the public is comprised of many different stakeholder groups with diverging opinions on what types of access they desire. These stakeholder groups include the general non-diving public (school groups, tourists, etc.), the recreational diving public, the local diving public, commercial dive charters and tourist operations, other commercial groups, the government, archaeologists and other researchers, and non-government organizations (NGOs) (Green 2004:376-80). Since the 1960s, managers of underwater heritage have been trying to balance the needs of these groups by providing avenues through which they can directly and/or indirectly access shipwrecks, while also limiting the negative effects they might have on the preservation of submerged cultural resources (Green 2004:380-9; Kingsley 2011:232).

Some common ways managers have addressed this issue include creating museum exhibitions, land-based wreck trails, underwater wreck trails, and shipwreck databases. They also publish information and work with dive charters and include archaeologists and other underwater researchers in management decisions (Green 2004:180-9). Some managers have been able to expand on these general strategies and have encouraged snorkeling, glass-bottomed boat tours, submersible tours, and remotely operated vehicle (ROV) tours. Managers have also built replica vessels for museum exhibition and developed GPS applications for cell phones that provide information on nearby shipwrecks (Manders 2008:36; Cohn and Dennis 2011:1075; Runyan 2011:957).

How ever managers for submerged cultural heritage are able to create modes of access, any successful underwater

preserve, park, trail, or sanctuary will include community involvement, effective interpretation, and active management, with success being defined as:

[the] resource is visited consistently by the public who are educated as well as entertained, and that the resource is maintained in a manner consistent with sustainable use (both public and scientific) and long-term preservation. [Scott-Ireton 2007:21]

Community involvement, effective interpretation, and active management are interrelated. If there is effective interpretation, then the community will be more interested in becoming involved with management. And, if the community is involved, the management will be more effective, especially in terms of preservation, and managers will be able to develop more interpretation programs for the community to enjoy and benefit from (Scott-Ireton 2007:22-4).

Of course, how heritage managers successfully manage underwater heritage is different for each site and is responsive to how the heritage management field as a whole is changing. Recent suggestions for the management of underwater heritage sites include incorporation of more programming for beached wrecks (Halsey 2007) and better utilization of the Internet (Watts and Knoerl 2007). These strategies can greatly increase the number of stakeholders with a higher quality of direct and indirect access to underwater heritage. For example, if managers were to establish programs involving beached wrecks, “everyday people, not just archaeologists and divers can [...] see and touch and conjecture about shipwrecks and the past and present realities they represent” (Halsey 2007:168). Additionally, if managers further develop existing websites with more integrated, exciting, and educational information on submerged cultural resources, they would have the opportunity to reach the at least 75 percent of American households that have Internet access (Watts and Knoerl 2007:232). Though the Internet is in a constant state of flux and many managers may not have the necessary programming skills, “the internet may well offer the most exciting opportunity for sharing the excitement of discovering our maritime heritage” for the non-diving public (Watts and Knoerl 2007:239).

The Diving Public: Challenges and Opportunities

Traditionally, the diving public and managers of underwater heritage have not had a mutually beneficial relationship, with many divers advocating their perceived right to dive on any wreck at any time and calling managers of submerged cultural resources “bureaucratic vampires who should be buried so deep that [they] burn in h---,



“forever” (Halsey 1996:29). This is particularly problematic for Thunder Bay National Marine Sanctuary because it is estimated that there are more than 100,000 certified divers in the Great Lakes region (Halsey 1996:32). Underwater heritage managers have recently been attempting to reach out to this stakeholder group and turn them from stakeholders to shareholders.

One way managers have been engaging the diving public is by creating more educational and entertaining underwater shipwreck trails and underwater interpretative sites (Manders 2008: 35), as “an interested and excited diver is ripe for education efforts” (Scott-Ireton 2007:26). Some managers have added aesthetically interesting elements, such as anchors, windlasses, and cannons to make heritage sites “more exciting and visually appealing” (Scott-Ireton 2007:26). However, this practice is accompanied by its own set of management dilemmas, as adding inauthentic elements to heritage sites can misrepresent the site and complicate interpretation efforts. Managers must ask themselves, “to what extent is dramatizing a shipwreck ethically acceptable?” even if it is for stakeholders (Scott-Ireton 2007:26). In a more collaborative approach, programs like the Sport Diver Archaeology Program in South Carolina (Deming 2014) and the Submerged Sites Education and Archaeological Stewardship program in Florida (Jameson Jr. 2014; Scott-Ireton 2014) are training interested members of the diving public to work with archaeologists and heritage site managers to discover, monitor, document, and preserve submerged cultural resources. These programs are hailed as success stories, as they allow archaeologists and recreational divers to work together, and empower “divers to produce information, rather than just consume information” (Scott-Ireton 2014:126).

While these efforts have helped bridge the gap between the management and diving communities, there is room for improvement, and managers need to be able to address these concerns in management plans. For example, in 2002, there was a study conducted of recreational divers who were known to actively search for shipwrecks in the Great Lakes region (Vander Stoep et al. 2002). Though the number of identified shipwreck discoverers in the study is small, they have immense knowledge of Great Lakes shipwrecks and could be potential partners in monitoring and protecting shipwrecks in and around the Michigan preserve system.

However, the answers participants provided to the study’s questions revealed that divers still have some general misgivings about working with underwater heritage managers in Michigan. For example, while 19 shipwreck discoverers in the study said they would be willing to help the heritage managers “document, assess and/or monitor”

new-found shipwrecks, three participants did not respond to the question, two said “no,” and one diver emphasized “As a contractor (PAID), whatever is required. To volunteer my services without compensation, NOTHING.” (Vander Stoep et al. 2002:132-3). Based on a similar range of responses to questions like this one, the study concluded with measured optimism for the future of manager/diver relations:

Yes, relationships still must be built; respect must be earned and given. But the diversity of opinion and willingness of some to try public/private partnerships provides an opportunity to begin to build those relationships. [Vander Stoep et al. 2002:134].

The solution for balancing access and preservation for shipwreck management is elusive. Like terrestrial heritage management, there is no easy checklist to follow for preservation and no clear path for allowing access to a range of stakeholders. Yet the responsibility for “deciding the best use of the resources generally falls to the resource manager who must weigh the benefits of public education with possible damage to the site and the information it holds” (Scott-Ireton 2007:26). This is where management plans come in. Management plans translate laws and policies into attainable goals that attempt to mitigate some of the tensions created by the incompatible desires of a diversity of stakeholders and balance access to and preservation of submerged cultural resources in underwater heritage sites. If management plans are well constructed and consider the breadth of challenges and opportunities for creating access *and* promoting preservation, underwater heritage sites have the capacity to be platforms for discussing the importance of submerged cultural resources and the diversity of information they contain about our past, present, and future.

Case Study: Thunder Bay National Marine Sanctuary

Thunder Bay Underwater Preserve, established in 1981, was the first underwater preserve created in the Michigan preserve system. In 2000, after a series of assessments, inventories, public hearings, and informational sessions, Thunder Bay Underwater Preserve was designated as a national marine sanctuary (U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management [USDC, NOAA, OOCRM] 1999). As a result, the sanctuary is jointly managed by the state of Michigan and Federal government. It was during this time that the 1999 Final Environmental Impact Statement/Management Plan was produced, proposed, and adopted. As defined in the 1999



plan, the management plan is:

a five-year plan describing management (operations and underwater cultural resource protection), education, and research programs for the Thunder Bay NMS [National Marine Sanctuary]. [...] The MP [Management Plan] is based on sound practices for comprehensively managing and protecting underwater cultural resources, and for promoting awareness and understanding of Great Lakes maritime heritage. [USDC, NOAA, OOCRM 1999:30]

The 1999 management plan included information on the history and significance of the area that would be protected by the sanctuary. The plan also explored multiple alternatives to the preexisting Thunder Bay Underwater Preserve, and explored the impacts and consequences of those alternatives, if implemented, such as different combinations of boundaries, regulations, and administration policies for the potential National Marine Sanctuary (USDC, NOAA, OOCRM 1999).

With the guidance of the 1999 management plan, Thunder Bay National Marine Sanctuary has developed into a multi-faceted preserve with many opportunities for stakeholders to interact with submerged cultural resources on land, underwater, and virtually, in addition to providing opportunities for the research and the protection of submerged cultural resources. The adoption of the 1999 management plan established, in addition to these programs and policies, the current boundaries of Thunder Bay National Marine Sanctuary. In 2006, the sanctuary's management plan was reviewed and a new management plan was crafted and proposed. This new plan was formally adopted in 2009. The 2009 Final Management Plan provided much less detailed information on the sanctuary and surrounding areas than the 1999 plan, but followed the same general format of suggesting goals, strategies, and activities to implement in the future (USDC, NOAA, ONMS 2009). Since the many public committees and working groups involved in the 2009 management plan creation process decided that "many of the activities in the original management plan have been accomplished," the 2009 plan's centerpiece is a new challenge: a proposed expansion of the sanctuary (USDC, NOAA, ONMS 2009:6).

The adopted proposal, passed by NOAA on September 5, 2014, increases the sanctuary's area from 448 square miles to 4,300 square miles and doubles the number of protected known wrecks. The Final Rule on the Boundary Expansion of Thunder Bay National Marine Sanctuary has broad implications for the management of Thunder Bay National Marine Sanctuary (USDC, NOAA, ONMS 2014: 52960-52972). Steps to execute the expansion were

included in the 2009 management plan (USDC, NOAA, ONMS 2009:11-2). The expansion drastically changes the scope and presence of Thunder Bay National Marine Sanctuary and its potential to preserve and provide access to submerged cultural resources. As such, the expansion will be a major consideration in my analysis of Thunder Bay's two management plans.

Access and Preservation as Management Goals

Balancing the relationship between access and preservation is addressed as an important, and arguably central, goal for sanctuary management in the 1999 and 2009 management plans. For example, the 1999 management plan states in its introduction that the sanctuary should provide "educational opportunities that promote understanding, appreciation, and involvement in the protection and stewardship of underwater cultural resources" and create "a framework for protection and management that relies on governmental cooperation and citizen participation" (USDC, NOAA, OOCRM 1999: 29). The 2009 plan continues this trajectory, asserting that the sanctuary should "strengthen protection of Thunder Bay National Marine Sanctuary's resources [...] while increasing resources access" (USDC, NOAA, ONMS 2009:11) and "use education as a management tool to protect sanctuary resources by increasing public awareness and understanding of the sanctuary's maritime landscape and by encouraging responsible stewardship of its maritime heritage resources" (USDC, NOAA, ONMS 2009:19).

These priorities are supported in other official documents. In the 2013 Condition Report for Thunder Bay, which assessed the conditions of the water, living resources, and maritime archaeological resources in the sanctuary, NOAA asserted that:

The sanctuary assesses and documents maritime archaeological resources to establish each site's current state of preservation and to create a baseline for monitoring future impacts. The sanctuary maintains a growing number of moorings at sanctuary shipwrecks, and conducts effective education and outreach programs aimed at fostering a greater preservation ethic among divers and the public. [USDC, NOAA, ONMS 2013i]

These statements consider access and preservation as ideally existing in tandem, as touted by heritage laws and policies as the ideal management strategy. The above statements demonstrate that by creating access to underwater heritage in the sanctuary, NOAA aspires to promote a preservation ethic among the public, and by promoting this preservation ethic, NOAA hopes that the sanctuary's heritage will continue to exist in a condition that will



allow it to be accessible to current and future publics. My research focuses on this interaction between access and preservation in the 1999 and 2009 management plans.

Methods of Comparison

My research compares the 1999 and the 2009 management plans to determine how Thunder Bay National Marine Sanctuary's management strategies for the integration and balance of access and preservation changed in the ten-year interval between the two plans. In order to make meaningful comparisons between the two documents, I considered the portions of the management plans that are most salient to my research questions and only included sections that were present in both documents. These criteria led me to focus my study of the management plans to the sections titled Resource Protection, Education and Outreach, and Research.

Within these three sections, I focus both on the broader goals expressed (labeled as goals in the 1999 plan and strategies in the 2009 plan) and the more specific and concrete ideas listed to enact these goals/strategies. I use "strategies" to discuss the broader goals and "activities" when considering the more specific and concrete ideas. For example, a strategy in the Education and Outreach section of the 1999 plan is to "develop and implement educational programs that promote awareness and understanding of the Sanctuary underwater cultural resources, Thunder Bay Maritime heritage, and the NMS Program" and an activity is to "designate a Thunder Bay Kid's Week" (USDC, NOAA, OOCRM 1999:40-41). I decided to use these strategies and activities for comparison because they are the central focus of the management plans and the way NOAA chose to outline their most important goals for the sanctuary and establish practical benchmarks for the assessment of how those goals will be met. As such, the strategies and activities are the areas in the management plan in which NOAA should clearly emphasize the access and preservation goals for the sanctuary.

Analyzing the Management Plans: Strategies

In general, in both the 1999 and 2009 management plans the Education and Outreach strategies focused on promoting access to the sanctuary, Research strategies promoted preservation of the sanctuary, and Resource Protection strategies promoted both access and preservation. On paper, these Education and Outreach, Research, and Resource Protection strategies seem to complement one another and ultimately aim for a feedback loop of access and preservation—with all of the strategies supporting each other in the overall structure of the management plans. In implementing these strategies, Thunder Bay National Marine Sanctuary has maintained this balance and feedback

loop management approach.

For example, Thunder Bay National Marine Sanctuary's Education and Outreach initiatives have led to the creation of a Great Lakes Maritime Heritage Trail and established a free museum and educational space (the Great Lakes Maritime Heritage Center). In addition, the Sanctuary hosts an ROV-building competition, provides lesson plans for teachers, hosts distance-based learning programs (i.e., live expeditionary broadcasts) and school and shipboard tours, and provides information for divers, fishermen, kayakers, snorkelers, and those interested in glass bottom boat tours (USDC, NOAA, ONMS 2009, 2013a, 2013b). These programs foster public access to many different stakeholders, including "recreational divers, heritage tourists, dive and tourism business people, museum professionals, historic preservationists, history enthusiasts, researchers, educators, and state and Federal resource managers," the sanctuary's self-identified stakeholder groups. (USDC, NOAA, OOCRM 1999:214).

In contrast to Education and Outreach strategies and activities, the sanctuary's management plans' Research initiatives mostly support preservation of the natural, cultural, and historical resources within its boundaries, prioritize the archiving of historical maritime artifacts and documents, and provide vessels outfitted for research (USDC, NOAA, ONMS 2013f). Research efforts bolster knowledge of the sanctuary's resources and allow for better preservation and management.

Preservation efforts are also evident in the Resource Protection sections of the management plans. For example, Thunder Bay protects the submerged cultural resources located in the sanctuary by partnering with the U.S. Coast Guard and the Michigan Department of Natural Resources and the Environment to enforce the state and Federal laws that protect underwater heritage (USDC, NOAA, ONMS 2013d).

The sanctuary also relies on these partnerships to enforce the regulations for Thunder Bay and maintain a mooring buoy system at popular shipwrecks for the diving and snorkeling public, thus intertwining access and preservation goals (USDC, NOAA, ONMS 2013e). The 2009 plan also attempts to include recreational divers and the local diving businesses, thus trying to move forward from the traditionally poor relationship between heritage managers and divers in Michigan. For example, one of the Resource Protection activities states that NOAA will "Monitor use of sanctuary resources by recreational users in order to better understand use patterns and the effects of use on the resources, and to better serve recreational users" (USDC, NOAA, ONMS 2009:12). To accomplish this goal, NOAA plans to "develop procedures to allow users to easily and



voluntarily report recreational use of the resources and provide incentives for reporting use” and “work with dive stores and charter boats to document recreational use of the resources” (USDC, NOAA, ONMS 2009:12). Furthermore, NOAA aims to

reduce the impact of divers and snorkelers on Thunder Bay’s maritime landscape by forming a partnership with commercial operators to educate their customers about maritime heritage resources, the sanctuary, and diving and snorkeling etiquette. [USDC, NOAA, ONMS 2009:14]

These efforts represent an attempt to create more access for the diving public at the sanctuary, while simultaneously bolstering preservation efforts.

Analyzing the Management Plans: Activities

The major difference between the 1999 and 2009 management plans is found in the activities: the specific plans for implementing the sanctuary’s broader strategies. In the 1999 management plan, Education and Outreach activities account for half of the total, and over 60% of the total activities focus on promoting access to the sanctuary. In the 2009 management plan, there is a more even focus on Education and Outreach, Research, and Resource Protection, and on promoting both access and preservation in the activities. Overall, there are about twice as many activities in the 2009 plan than in the 1999 plan, with major increases in Resource Protection and Research activities; the number of Education and Outreach activities remains similar between the two plans.

One reason why the 1999 management plan strongly focused on Education and Outreach activities that promote access may be because this plan established the sanctuary. When heritage managers discuss how access and preservation efforts work together, the issue of access is mentioned first. Meaningful access that promotes a preservation ethic must exist before better preservation of the resources can develop. Thunder Bay National Marine Sanctuary’s 1999 plan seems to support this approach, as more attention was given to developing activities for Education and Outreach in the short term, though Education and Outreach strategies—the long term plans—are evenly balanced with Resource Protection and Research. Comparatively, the 2009 management plan was preparing for the sanctuary’s expansion by continuing to promote a high number of Education and Outreach activities, while bolstering their Resource Protection and Research activi-

ties to be more robust to accommodate the much larger area of the sanctuary and the doubling of shipwrecks that would be protected.

Looking Ahead for Thunder Bay

Based on my analysis of the 1999 Final Environmental Impact Statement/Management Plan and the 2009 Final Management Plan, Thunder Bay National Marine Sanctuary is actively attempting to promote access to and preservation of the sanctuary in their management plans. As I have discussed, creating meaningful access to heritage is a crucial first step in preserving a heritage site and Thunder Bay National Marine Sanctuary creates access to its submerged cultural resources in many ways while simultaneously protecting their submerged cultural resources and supporting research efforts to learn more about the sanctuary.

Based on my experiences at Thunder Bay National Marine Sanctuary and my research on its management plans, I recommend that to improve its already robust management efforts the sanctuary should consider pursuing two projects that have the potential to vastly increase access and preservation efforts: improving their website and promoting in situ beached wrecks.

Shipwrecks in the Virtual World

The heritage world has been grappling with how to effectively use the Internet for access and preservation goals since the Internet developed (Abid and Radaoykov 2002; Badanelli and Ossenbach 2010; Evens and Hauttekeete 2011; Kunda and Anderson-Wilk 2011; Manders 2008; Tonta 2008). The Internet’s power lies in its ability to engage individuals who might not have the ability to physically visit a heritage site and to continue engaging individuals who did visit the heritage site. For underwater heritage, this potential is even more potent, as only a small percentage of the public is able to access submerged cultural resources. The Internet may provide a platform for non-divers to experience rich and engaging virtual worlds of underwater heritage sites (Watts and Knoerl 2007:223-5). While it is beyond the scope of this study to make specific design and content recommendations for Thunder Bay’s website, I would like to stress the importance of the Internet for the sanctuary’s potential to increase access to more stakeholders.

The 2009 Final Management Plan includes consideration of Thunder Bay National Marine Sanctuary’s website (www.thunderbay.noaa.gov) with one Education and Outreach activity stating NOAA’s desire to “Enhance Thunder Bay’s Web site to provide quality, up-to-date information about the sanctuary, including implementing



Web 2.0 components (social networking, wikis, blogs, etc.) to encourage collaboration and interaction with the public” (USDC, NOAA, ONMS 2009:23). Thunder Bay’s current website provides helpful information on visiting the sanctuary, how to get involved, what types of programs the sanctuary offers, and the history of the sanctuary and the heritage it protects. The website also has started incorporating Web 2.0 components, such as badges linking to Thunder Bay’s Facebook, Twitter, and YouTube pages (USDC, NOAA, ONMS 2013).

However, the sanctuary could further develop its website to be more engaging for the public. Most of the site is static. There are few videos or interactive elements (unless you access the connected social media sites) that allow visitors to explore the sanctuary’s history and heritage in an interesting way.

The standout feature of Thunder Bay’s current website is the detailed information on the shipwrecks located in and around the sanctuary. Visitors can search for individual vessels by name or explore an interactive map that layers clickable portions of Lake Huron and selectable shipwrecks. If a visitor clicks on a shipwreck icon or searches for a vessel by name, they are directed to a webpage featuring pictures of the sunken vessel and information on its location, measurements, history, and description. Most vessel webpages include a link to the online Vessel Database of the George N. Fletcher Alpena County Public Library. This site usually includes detailed information on a vessel’s history, historical images of the vessel, and scanned images of important documents, such as ship manifests or insurance papers. Some vessels may also have a link to site plans of the shipwreck, which depicts in detail how the wreck is currently situated and where the mooring buoy (if one is placed at the site) is located. The diving public, maritime historians, and laypeople interested in shipwrecks will find this information on Thunder Bay’s shipwrecks helpful and engaging (USDC, NOAA, ONMS 2013c).

When considering updates for its website, Thunder Bay should try to incorporate more interactive elements similar to the above example in order to improve virtual access to underwater heritage for its stakeholders. One potential model Thunder Bay could consider is visible on the website for the Confederate submarine from the U.S. Civil War, the *H. L. Hunley* (<http://www.hunley.org>). This website includes detailed and interactive information on the history of the submarine and documentation of the archaeological excavation, the recovery of the vessel, and the ongoing conservation efforts. It also allows virtual exploration of the *Hunley* via a virtual tour of the vessel’s remains and a simulation that allows visitors to conduct

a mission in a virtually reconstructed *Hunley* (Watts and Knoerl 2007:225). If Thunder Bay were to incorporate some of these elements into its website—especially the inclusion of detailed and interactive information about the sanctuary’s archaeology and conservation practices—the sanctuary might be able to not only increase stakeholder access to underwater heritage but also further promote a positive preservation ethic among its stakeholders.

As with all heritage sites, funding is usually limited, and new, high-caliber websites can be expensive. Furthermore, the Internet has not reached (and may never reach) a state of equilibrium; it is always changing and if Thunder Bay does develop a new website, it may well be outdated before it goes live (Watts and Knoerl 2007:232-3). Additionally, as the proposed expansion moves forward, the sanctuary will have a vast new territory and twice as many shipwrecks to monitor and protect, and funding, resources, and personnel will most likely prioritize the authentic wrecks over website development. Though these limitations and challenges should be acknowledged and mitigated, the potential of the Internet to engage and provide access to a vast number of stakeholders should not be ignored as Thunder Bay considers its future.

The Benefits of Beached Wrecks

Archaeologists John O’Shea (2004) and John Halsey (2007) have promoted the research and interpretive potential of beached wrecks in the Great Lakes. Beached wrecks, also known as “scattered wrecks,” result from vessels that wrecked in shallow water and were not recovered or repurposed, thus remaining, decomposing, and drifting in their broken form. These types of wrecks are common in the Great Lakes, especially on the western Lake Huron shore, and are often highly visible and accessible from land (Halsey 2007:158; O’Shea 2004:2). For underwater heritage management interpretive strategies, beached wrecks represent an invaluable opportunity: allowing the non-diving public to directly access authentic shipwrecks.

With Thunder Bay National Marine Sanctuary’s expansion, the diving public will have a substantial increase in the number of underwater heritage sites they will have access to, as there are 39 new known wrecks and 60 new potential wrecks to explore in the expanded sanctuary (USDC, NOAA, ONMS 2013h). Beached wrecks may be one way to similarly increase direct access to the sanctuary’s heritage for non-divers. This could be accomplished through implementation of the Education and Outreach activity of the 2009 Final Management Plan that states the sanctuary should “Continue to develop the Great Lakes Maritime Heritage Trail in Alcona, Alpena, and Presque Isle counties” (USDC, NOAA, ONMS 2009:24).



There is an easily accessible, relatively intact, and intellectually intriguing wreck located in the Harrisville Harbor in Harrisville, MI. When I participated in the University of Michigan Underwater Archaeology Field School at Thunder Bay National Marine Sanctuary, I and the other field school participants conducted a shoreline survey from Alpena, MI to Oscoda, MI. During the shoreline survey, we documented many beached wrecks. One of the most easily accessible wrecks located in a public area (i.e., not in a bog or abutting private property) was a piece of hull submerged in the less than three feet of water in the Harrisville Harbor. This beached wreck has the potential to provide an opportunity for non-diving stakeholders to directly interact with an authentic wreck, engage with Thunder Bay's cultural heritage, and recognize the importance of preservation as a management goal.

When I took my family to see the shipwreck at the Harrisville Harbor, it was simple to park our car and walk into the water to the wreck site. I was able to interpret the beached wreck in a way that explained to my family how we had studied beached shipwrecks in the field school, how beached shipwrecks are common, and how what they were observing is similar to what a sunken wooden vessel would look like if they were diving. My family volunteered that, after interacting with an authentic shipwreck, they more clearly understood why underwater archaeology is important, how underwater archaeology is conducted, and the fascinating nature of interacting with underwater heritage.

Because this wreck is so easily accessible and the sanctuary is intending to expand its Great Lakes Maritime Heritage Trail into Alcona County, in which Harrisville is located, as the approved expansion is adopted, it would be beneficial to the non-diving public to include a trail marker at the Harrisville Harbor. However, this suggestion illustrates the difficulty of balancing access and preservation in heritage management: Creating access to the beached wreck in Harrisville Harbor opens up the possibility that the wreck's current state of preservation will deteriorate with increased visitation to the site. Because of this possibility, Thunder Bay and the city of Harrisville will have to consider if the pros of access outweigh the cons of preservation in this situation. And, if they decide to provide public access to the beached wreck, they will have to consider how to best facilitate access while ensuring as high a level of preservation as possible. Some options include stationing a guide at the harbor at pre-appointed times to provide a guided exploration of the wreck and/or posting signage to guide interested visitors to the wreck site. While there are admittedly many technicalities to consider, there is much potential in the interpretive powers of beached wrecks for Thunder Bay National Marine

Sanctuary. As Halsey remarked,

It is the immediacy of these remains and their generally unhindered accessibility, physically and intellectually, that gives them the unique ability to inform and to tantalize at the same time” (2007:169).

Closing Thoughts

Access to and preservation of underwater heritage are complex and intertwined issues, rendered even more complicated by the laws and policies that have for the last fifty years shaped the overarching management strategies for submerged cultural resources. Managers of underwater heritage have been consistently challenged by the legal and ethical mandates of heritage management policy, yet they have developed creative solutions to ensure that submerged cultural resources are preserved and accessible. Thunder Bay National Marine Sanctuary's 1999 Final Environmental Impact Statement/Management Plan and 2009 Final Management Plan demonstrate how heritage managers have been able to navigate this complexity.

My research analyzed how Thunder Bay National Marine Sanctuary has been able to grapple with the challenges of access and preservation efforts. As Thunder Bay moves forward with its expansion, it will be interesting to see if and how management strategies evolve to meet new challenges. Thunder Bay, however, is just one sanctuary in a world full of underwater heritage sites. There are many other underwater sanctuaries, parks, trails, and preserves in the world, and more information on how underwater heritage is preserved and made accessible is needed to ensure that submerged cultural resources remain protected and, when possible, enjoyed by public stakeholders. For example, though the legal protection of underwater heritage has been greatly augmented throughout the last 40 years, underwater heritage managers and Federal agencies note that, because of the complications of pre-existing maritime laws and loopholes in current heritage preservation laws, more comprehensive legal protection of underwater heritage sites is necessary for the long-term stability of shipwrecks and other underwater sites of cultural significance (Zander and Varmer 1996; Varmer 2014). More research and lobbying efforts should focus on “closing the gaps” in legal protection of underwater heritage sites.

Furthermore, more research should be conducted on the success and larger-scale implementation of formal recreational diver site stewardship programs, like the Sport Diver Archaeology Program in South Carolina (Deming 2014) and the Submerged Sites Education and Archaeo-



logical Stewardship program in Florida (Jameson Jr. 2014; Scott-Ireton 2014). Individuals passionate about underwater heritage are incredible resources for the protection of submerged sites and we can only benefit from focusing research on successful collaboration efforts. Extrapolating success stories to individual heritage sites or wider policy will hopefully lead to more wide-reaching and effective preservation, which will in turn lead to meaningful access for generations to come. Shipwrecks will continue to fascinate us. In return, we must continue to vigilantly safeguard their future.

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