Preliminary Report on Two Shipwreck Sites in the Entrances to Boot Key Harbor

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Acknowledgements

Every underwater archaeological project is a team effort. The combined team for this field project can be easily divided into three sets of individuals. Thadra Palmer was responsible for writing the initial grant to the Florida Institute of Oceanography for ship time aboard *R/V Bellows*, worth $10,000 of ship time. Both Thadra and I wrote numerous letters in advance of the project to garner supplies for shipwreck documentation. Eckerd Corporation provided batteries, film, videotape, and other supplies. An able Florida State University (FSU) crew that included Vincent Birdsong, Judy Hammel, John Kiwala, Thadra Palmer, Lauren Porter, Charles Sproul, and Brian Yates undertook the fieldwork. David Whall, the Middle Keys Submerged Cultural Resources Assessment Project (MKSCRAP) volunteer coordinator, joined us with his dingy off Sister's Creek and recommended alternative sites to work when our original sites were inaccessible. *R/V Bellows* crew, captained by Robert "Capt'n Bobby" Millender, were helpful, wise companions on the trip to and from the Keys and while we "did our business" there. Finally, the write-up crew (see credits above) deserves a hearty thanks for providing much of the data enclosed.

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Project Overview

The original scope of the November 1996 project was encompassed by a research design submitted to the Florida Keys National Marine Sanctuary (FKNMS) office in October of 1996 (Appendix A). When the field crew arrived in the proposed work area around Marathon Key, strong north to northeast winds precluded work on the original sites. Seas of 2-4 feet would have made sites on the outer reef, in 5-15 feet of water, impossible to document accurately. On the suggestion of David Whall, MKSCRAP volunteer coordinator, the crew surveyed two wreck sites, one off Sisters Creek (8MO3434) and one in the western mouth of Boot Key Harbor composed of eight shipwrecks(8MO3435-8MO3442) and a line of pilings. The latter of these two is called the "Shucker's Site" colloquially. In both cases the crew made measurements of exposed features, took photographs and videotape, and recorded observations on the visible features. This report combines those data with historical research and scaled drawings derived from aerial photos provided by David Whall. Given the observable structure on the Sisters Creek wreck, it can likely be identified as the remains of a late 19th- to early 20th-century fishing vessel. At least a few of the "Shucker's" wrecks are associated with construction of the Overseas Railroad by the Florida East Coast Railroad between 1904 and 1910.

Brief History of Boot Key Harbor and Knight's Key

The natural history of the Keys has been well documented by several investigators. Odum and McIvor (1990) have described the development of mangrove forests that line many of the tidal creeks around Boot Key. Inshore marine habitats and coral reef systems are summarized in Livingston (1990) and Jaap and Hallock (1990). The occupation of the Keys stretches back at least to the Early Holocene. The Cutler Ridge Hammock site---laying just north and west of Key Largo---is indicative of peoples that manufactured side-notched projectile points inhabited the area around 10,000 years ago and (Carr 1986; Emslie and Morgan 1995). During the late prehistoric period, foraging/fishing groups who lived in the Keys probably paid tribute to the Calusa king Carlos (Griffin 1996). The Keys were likely only sparsely populated by the Tequesta, the chief limitation being lack of fresh water supplies. However, rich fishing on both the Atlantic Coastal reefs and in shallow Florida Bay probably maintained a nutritionally rich population.

Key Vaca and Knights Key both have rich---though not necessarily honorable---historic records. From the early Spanish period to the incorporation of the Keys into the military structure of the United States during the Civil War, the middle Keys were a kind of intermodal frontier, a "refuge" for many marginalized United States citizens and fugitives. These people were the core of an economy centered on salvage, fishing, and trade. Many popular accounts have been given of the wreckers, or "wrackers," that have grown to characterize Marathon's local history. In the early Spanish Period (1500-1600), Cuban and Dominican Spanish slavers regularly visited the coast of Lower Florida, taking a substantial number of individuals to plantations in Cuba and other parts of Caribbean (Hudson 1997:32-34). In the 17th and 18th centuries, the Middle Keys were used as a base for piracy upon Trans-Atlantic and Caribbean Spanish shipping. The local environment---a network of shallow reefs, sinuous mangrove creeks, and shallow bays---required

special shallow-drafted sailing ships and much accumulated local knowledge of the waterways.

The post-1800 history of Boot Key, Knight's Key, and Vaca Key has been dominated by the integration of the Keys into Florida's economic, social, and political realm. First by the construction and functioning of the Overseas Railroad (1904-1912), then by the construction and maintenance of the Overseas Highway. Until 1900, Key West was the largest town in Florida south of St. Augustine. Its importance as a "jumping-off" point for shipping to the Caribbean and Central and South America was one of the principal motivating factors for connecting it to the mainland by rail. The resulting construction of housing, commercial, and military facilities has depended heavily on the establishment of mainland resources, water and electrical supplies in particular. Without mainland infrastructure support, the Keys would be far less developed than they are currently. In particular, the integration of Boot and Knight's Keys is due to the completion of the Overseas Railroad. Railway construction had a profound effect on the types and ages of the vessels now wrecked in the Florida Keys National Marine Sanctuary because it required the purchase and maintenance of more than 50 relatively shallow-drafted steamers, barges, dredges, and work boats. Many of those vessels were stationed at Marathon; many were left in the Keys after construction was completed.

The Florida Keys' Economy and Shipwrecks in the Keys

Several industries have characterized the historic period in the Keys. Early Spanish voyages to the isolated islands were often undertaken to collect slaves for Caribbean plantations. Meager numbers and the dangerous reefs soon shifted the focus to other areas of Florida. Fishing, both by Indians and Spaniards soon overtook slaving as a main source of income. Throughout the Spanish, English, and American periods, it was an important source of both food and income for the local residents. The size and number of fish on Keys' reefs remains one of the principal reason people travel to the Keys. The result of this activity is the near constant presence of fishing vessels in and around nearly all parts of Boot Key, Knight's Key, and Vaca Key. Boot Key Harbor, with its two entrances and relatively protected waters, must have always provided one of the best anchorage in the Keys for loading and unloading cargo. Small sailing vessels with drafts less than a meter could freely enter and exit the harbor even during the lowest tides. As a consequence, one would expect a range of vessels of various ages represented among the wrecks in and around the harbor's entrances.

One distinguishing feature would be their overall shallow draft, favoring shoal-draft sloops, schooners, and smacks in the early sailing period. This in turn would favor center-board, leeboard, and hard-chined designs. With the advent of steam-powered and diesel engines, stable hard-chined and rounded fishing vessels would be expected. As propeller-driven craft came into predominance, the emphasis again would be on relatively shallow draft, although concurrent channel dredging would allow large offshore boats relatively easy access to near-shore dockage. A large number of small modern fishing vessels have engines placed in a central well, shallowing the draft by as much as a foot (approx. 30cm) and providing a large work area in the stern.

"Wrecking" is another industry that has intermittently supported local groups. Extensive offshore and inshore reefs and shoals is the single most hazardous feature of the Keys to marine shipping. The public's perception of the romance, excitement, and profitability of salvage work has fueled several centuries of fables about "wreckers." The reality of salvage work in the Keys revolved around long "dry spells" interspersed with brief periods of very hard labor, often pertaining to storm-related wrecks (for an overview, see Dodd 1944). Although much lore surrounds the Keys' salvage industry, the vessels used in commercial salvage were likely the same shallow-drafted vessels normally used for fishing.

Submerged Cultural Resources and the Florida Keys National Marine Sanctuary

The National Marine Sanctuary program was instituted to protect a range of sensitive near-shore and continental shelf ecosystems in the United States from negative impacts of intensive development. The Florida Keys was recognized almost immediately as one of these sensitive areas. Congress through the Florida Keys National Marine Sanctuary and Protection Act incorporated it into the National Marine Sanctuary System in 1990. Part of sanctuary management involves the development of an inventory, monitoring, and control system for submerged cultural resources within Sanctuary boundaries. In the Florida Keys, known to have over 4000 wrecks and an as-yet-undetermined number of submerged terrestrial sites, this is a daunting problem, especially since the Sanctuary does not have one full-time underwater archaeologist.

Despite the lack of resources, the Florida Keys National Marine Sanctuary has developed an effective permitting system that allows qualified institutions and individuals to do research and salvage vessels wrecked in Sanctuary waters. The first type of permit is a survey and inventory (SI) permit, the type that was procured for this survey. This permit is for survey alone and does not allow recovery of any physical remains. Given the successful completion of the conditions of the SI permit, groups can apply for a research/recovery (RR) permit that allows for recovery and display of wreck-recovered artifacts. In special cases, commercial salvage is allowed under a deaccession/transfer (DT) permit (NOAA 1996[I]:185-186).

Research Goals and Design

The ad hoc nature of the determination to study the two sites detailed below required the rapid development of pertinent research questions and a design to derive answers from data that could be collected in the two-and-a-half days available. Some questions loomed large. First, the dates for the construction or abandonment of either the Sister's Creek Wreck or any of the Shucker's Wrecks was unknown. Construction details and measurements of the vessels' visible structure would help address at least the general age of the vessels. This in turn would provide a clue as to their dates of use and abandonment. A second question, What were the vessels' functions?, could be addressed by this same data. Fishing vessels, packets, construction barges, steamers, launches, and dredges all have distinct shapes and sizes. A third critical question---Why were the

vessels sunk where they are?---can be addressed by comparing the vessels' ages with contemporaneous construction, economic activity, and the wrecks' physical locations.

Two data collection tools were used to preliminarily record the wrecks: aerial photographs and direct survey/observation. David Whall took air photos in October 1996 and February 1997 from a United States Coast Guard helicopter stationed in Marathon, Florida. Those photos were provided to the FSU team to serve as the basis for evaluating the Shucker's Site. On the basis of the air photos, it was determined that at least seven wrecks lie in the entrance to Boot Key Harbor. Air photos of the Sister's Creek Wreck were not available. On the basis of the air photos and related position information, both sites were directly surveyed. Another helpful tool in the evaluation of both sites has been the Coast Guard chart for the Middle Keys. Both wreck sites are marked on the charts, although it is not entirely clear whether the Sister's Creek wreck examined is the one recorded on the chart. If it is, the charted position is incorrect.

Sister's Creek Wreck

The Sister's Creek Wreck (24ºxx.xxxN, 81ºxx.xxxW) is located in 2meters-3meters of water and appears to be the wreck marked on the most recent USCG charts for the area (see Figure 1). There is, however, a discrepancy between the Coast Guard position and the position recorded during this operation. It is unclear whether this is due to shifting position of the wreck (having been miss-marked on the chart) or being as-yet-unrecorded. David Whall pointed out this wreck because it had intriguing features, including two frames that protruded off the bottom, a center section that had a box-like shape, and a set of concreted bolts protruding from the bottom.

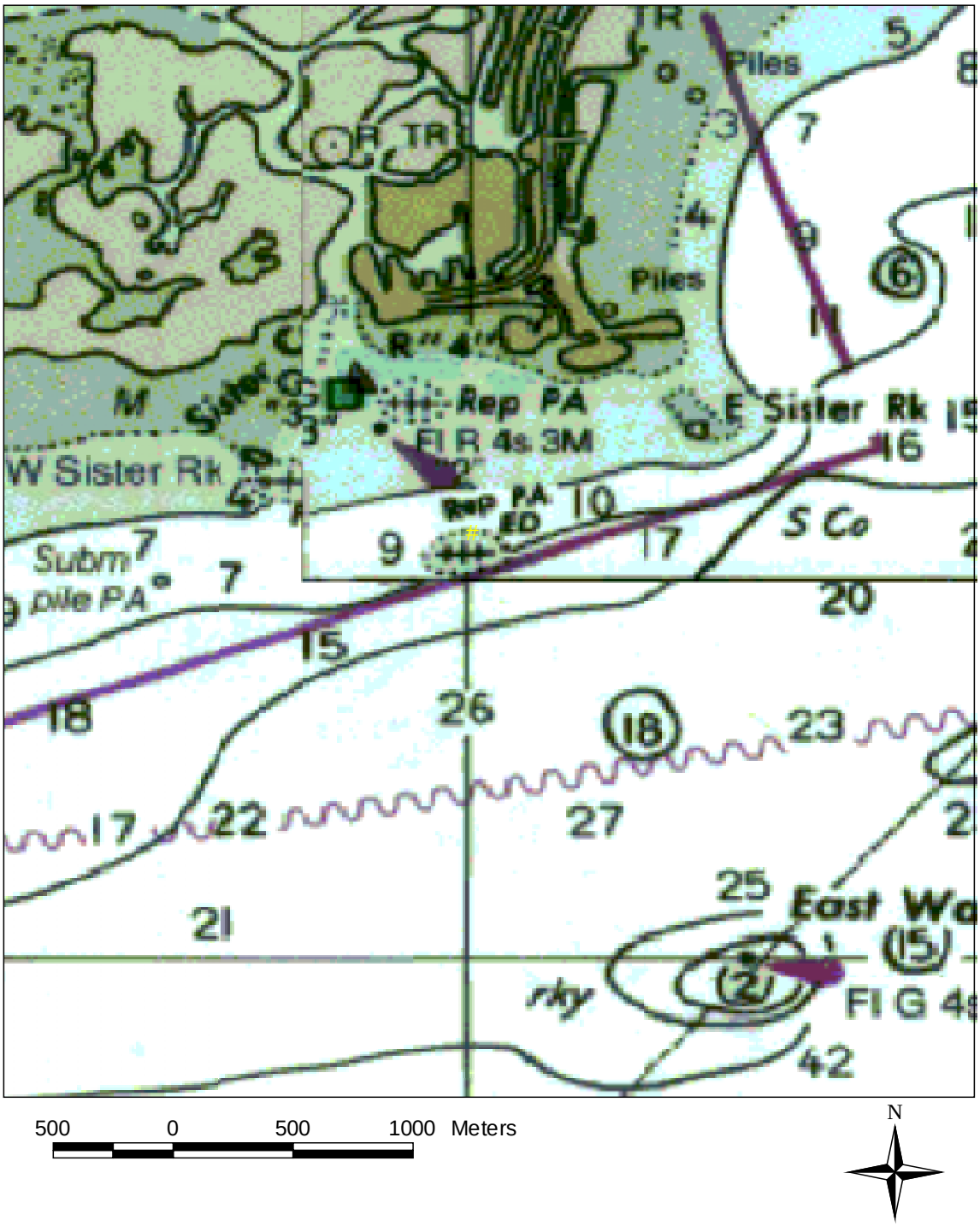

Figure 1: NOAA chart detail of the mouth of Sisters Creek with putative wreck site marked

The bottom surrounding the wreck is typical for shallow-water sites throughout the Keys. Immediately to the south of the site is an eel grass patch. To the north and east are two relatively broad areas of open sand. The wreck itself is filled with a silty, clay that is readily disturbed by even modest water movement. The fineness of the sediments suggests that the lower part of the wreck is well preserved. However, the physical preservation of exposed material is quite varied. The two frame fragments that protrude from the bottom are in a state of preservation that is relatively stable. The exposed planking and internal timbers are poorly preserved and in some case quite fragmentary.

Several features deserve further discussion. The box-like feature is located in the middle of the wreck. Its shape and size suggest three potential structures, a centerboard well, the support structure for an inboard motor, or the propeller shaft well for an inboard motor. The existing structure is represented in Figure 2.

Figure 2: Box-like structure on the Sister's Creek wreck

Several bolts also protrude from the bottom. They are about 2.5 cm (1 inch) in diameter and appear to have more abundant corrosion on the ends, a common feature on corroding iron fasteners (Figure 3).

Figure 3: Bolts protruding from the bottom on the Sister's Creek wreck

The bolts are approximately 50cm apart and may be protruding from the keelson, although sediment was not removed to check this hypothesis. Bolts of that size are typically only used as fasteners on large structural elements. Also, the two vertical frames appear to be composite in structure and probably made of pre-molded elements, indicating a 20th century date of construction (Figure 4).

Figure 4: Standing ribs on the Sister's Creek wreck

The rough survey made of the Sister's Creek wreck provided enough information to develop sketches, but not an interpretive plan of the site. These sketches should be supplemented and corrected with additional measurements and drawings to complete an interpretive plan for the site.

Shucker's Wrecks

The Shucker's wrecks are completely different from the Sister's Creek wreck. They are a

composite of eight wrecks dragged together to form an assemblage. The overall plan of the wrecks (Figures 5-8, Table 1) extends in a roughly north-south line from a mangrove swamp adjacent to the Overseas Highway to the north. The assemblage parallels the breakwater, marina, and several houses that make up the southwestern-most buildings on Knights Key, including the Shucker's Oyster Bar, which is the wrecks' namesake. The wrecks form a shallow shoal---with several exposed portions---that separates the navigation channel adjacent to the marina from the open bay to the southwest. The ships were likely sunk there to protect the waterfront from southwesterly wind-driven waves.

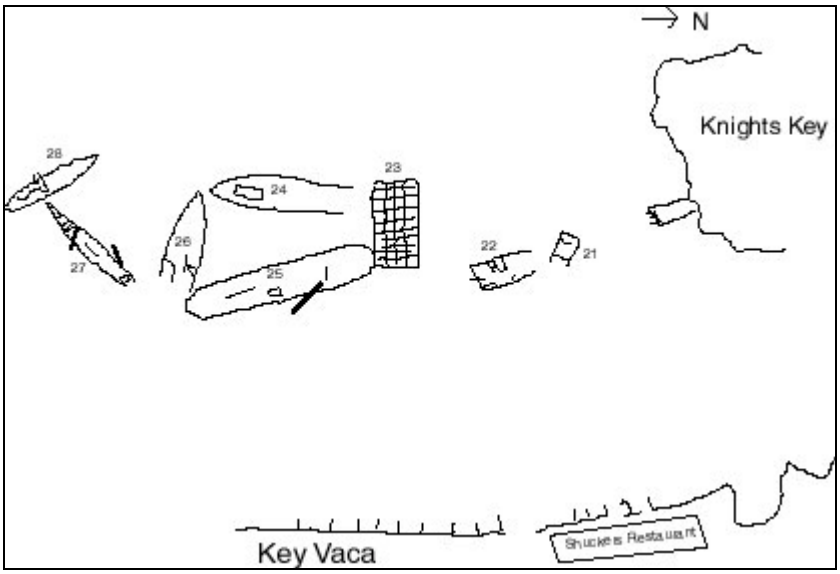

Figure 5: Sketch site plan of the Shucker's wrecks, based on air-photos and field measurements of selected elements

Figure 6: Air-photo of the southern wrecks in the mouth of Boot Key Harbor.

Figure 7: Air-photo of the northern wrecks and piling line
in the mouth of Boot Key Harbor.

The first feature (NOAA #A04-038), located on the northernmost end of the assemblage, appears to be the remains of a long pier, wharf, or set of pilings. It is 23m north/south and 7.95m

east/west, and is located 5m from the mangrove line to the north. Wood planking found in the center part of the pilings may be the remains of a box of some sort. Large metal rails---probably the remains of railroad rails---were encountered where the piling line turns from N/S to E/W. Of the 20 north/south pilings, four were square (numbers 5,12,14,and 15 N-S) and the rest were round. The round pilings averaged 30cm in diameter.

The first wreck (A04-021) encountered, toward the southern end of the assemblage, appears to be a square, steel and wood constructed vessel that is largely submerged in the mud. The longitudinal structures (putative stringers) and relatively beam construction---27m by 13m at the centers of exposed remains---suggests a barge or dredge. A more detailed examination of the internal structure should be sufficient to determine the approximate age of the vessel and its construction design.

The second wreck (A04-22) is aligned 40 degrees west of north, with a large shaft assembly comprising the southern end of the wreck. The shaft assemblage is .6m in circumference on the narrow parts and 1.6m in circumference on the large parts. This suggests the shaft assembly for a stern-wheeler. The southern end of the exposed remains is 2.3m is wide, the exposed remains are 22.7m long on the East Side and 22.3m long on the West Side. The northern end of the remains is 5.65m wide. The overall size of the vessel (approximately 4m by 17.5m) suggests a cable-layer, shoal-drafted steamer, or relatively small workboat. The vessel appears to be entirely steel/iron.

The third wreck (A04-023) is a small, rectangular vessel that appears to be a barge. Exposed parts are iron and lie in a roughly east/west direction near the center of the assemblage.

The most prominent of all the wrecks is A04-024. The remains are 37.13m long and 9.4m wide (at 6.2m behind exposed boiler remains). The most visible feature of the wreck is the boiler assembly that protrudes from the surface, even at mean high water. This boiler assembly is 5.49m long and 2.24m wide, and is located 7.64m behind the bow of the ship. The vessel appears to be made entirely of iron. Some bricks remain around the boiler assembly. Their dimensions average 22.5cm x 11cm x 6cm and some have the stamp “Henry Maurer, No.1 New York” on them. Some of the bricks are also eroded from continuous exposure to the elements, reducing their overall dimensions. One prominent feature on the wreck is a large metal ring that protrudes above the water (Figure 8). It is unclear what type of vessel this is associated with, although its overall size and narrowness of beam (approx. 4:1 ratio) suggests a coastal trading vessel or steam packet. This vessel has been designated the “Boiler Wreck.”

The fifth vessel (A04-025) is by far the largest, and the furhtest East of the assemblage. It is 63.65m in length and 8.5m across at 31.25m from the bow. This vessel appears to have been for a full-rigged sailing ship. This type of vessel was often turned into quarters as a “hulk” after active service. It is long, and appears to have some of its rigging strewn across the preserved part of the hull.

Figure 8: Large metal ring protruding from water on wreck A04-024.

The next vessel (A04-026) is aligned in a northwest/southeast direction with its bow towards the northwest. This vessel was not examined, but appears to have been a relatively trim, iron-hulled vessel with a moderately full stern. The seventh ship (A04-027) has the narrowest bow section. This aspect combined with its relatively trim length to breadth ratio suggests that it may have been built for speed rather than cargo-carrying capacity. This in turn suggests a coastal dispatch ship or perhaps a fast passenger ship. The most southerly of the vessels in the assemblage (A04-028) is in as deep water as vessel A04-025. While the water depth and limited time prevented measurement recording, the vessel appears to be approximately the same size and shape as vessel A04-026. The condition and potential functions of the vessels and pilings are summarized in Table 1.

Table 1: Summary table for Shucker's Wrecks with current condition and potential function

Vessel Number	Lat/ Long	Condition	Potential function
Piling line (A04-038)	24ºxx.xxxN 81ºxx.xxxW	Poor above mudline	Probably pier foundation
A04-021		Poor structural preservation	Small work barge
A04-022	24ºxx.xxxN 81ºxx.xxxW	Average structural preservation	Small work barge
A04-023		Above average preservation	Work barge
A04-024	24ºxx.xxxN 81ºxx.xxxW	Above average preservation/may be well-preserved below the mudline	Moderate sized steam-powered work vessel

A04-025	24ºxx.xxxN 81ºxx.xxxW	Average preservation	Large sailing vessel/coastal packet ship
A04-026		Average preservation	Work vessel
A04-027	24ºxx.xxxN 81ºxx.xxxW	Well preserved	Fast transport
A04-028	24ºxx.xxxN 81ºxx.xxxW	see A04-026	see A04-026

Recommendations for Preservation, Interpretation, and Further Research

The features and construction of the Sister's Creek Wreck suggest a vessel built in the 20th century. Although there might be limited interest in conducting further investigation of this wreck, it does not appear to be of historical significance. The wreck is in a relatively stable environment and is covered with fine sediments. These factors, as well as its location beside a large eel grass bed, lead to the recommendation that further work on the wreck is not necessary. However, the physical location and condition of the wreck would make it a good candidate for instruction of shipwreck documentation techniques. Limited hand-fanning, additional measurements, and monitoring of exposed materials would help narrow the age and construction features of the vessel. Baseline data collected in 1996 can also be used to monitor the ongoing site formation processes at work on the site (e.g. hull disarticulation, corrosion, coral growth, sediment movement related to weather conditions, etc.). The wreck's location should be accurately recorded and the site monitored.

The Shucker's Wrecks provide a different kind of opportunity, one that is not often available to nautical archaeologists. Several features set this group of wrecks apart from most. First, there are at least six wrecks present; each wreck is of a distinct vessel type. Second, the wrecks can be associated with the most transformative event in Florida Keys history: the building of the Overseas Railway. The wrecks represent the multiple purposes to which vessels can be put: they transported people, acted as working vessels, were used for storage, and are now used to protect the SW entrance to Boot Key Harbor. Third, the wrecks are located close to shore, allowing accessiblity to individuals who normally do not feel comfortable at sea or are disabled. Finally, and most importantly, they are located near local businesses that could benefit from the establishment of interpretive displays highlighting the vessels. These factors suggest that NOAA, the State of Florida, Monroe County, and the City of Marathon should make a cooperative effort, to highlight these wrecks with an interactive and interpretive display.

There are several steps that can be taken to bring this cooperative effort to fruition. First, additional archival work should be commissioned by NOAA to clarify the role of each vessel represented in the Shucker's Wrecks assemblage. This research should target visual representations of these vessels: photos of the vessels, construction drawings for each wreck, shipyard photos, and railway photos of construction in and around Marathon.

High-quality reproductions of these visuals could be incorporated into the interpretive displays. Another important aspect of the archival research is collecting both moving images of the Overseas Railroad construction and personal recollections of some of the workers on the project. These two sources, properly combined, would effectively balance the "official" version of the railway's construction.

Concurrently with the archival research, a more detailed plan map and perspective drawings of the sites should be made on the basis of a detailed survey. This will supplement the preliminary information presented here. Any such survey should be directed towards providing the exhibit designers with highly accurate information about the positions of each wreck. This survey should be conducted with a total station and geographically related to the nearest benchmark and surrounding buildings. Once a highly detailed plan map is developed, several of the wrecks could be tested, representative artifacts could be removed and conserved, and interior construction features should be noted. The artifacts should be included in an interpretive exhibit.

The largest artifacts, the wrecks themselves, are probably not significant enough historically to disturb or actively conserve. While the corrosion process is well advanced on these wrecks, it has also likely diminished considerably in the last several decades. Usually wrecks stabilize to their environment over time and can persist over hundreds of years in a relatively stable state. Only with disturbance do they begin to deteriorate anew. While the expense of active conservation may be quite high for the Shucker's wrecks, passive conservation (i.e. protecting the site from dragging, prop damage, salvage, etc.) is relatively cheap, and could involve as little as clearly marking the site's boundaries and providing appropriate maintenance of those markers.

Finally, granting agencies and government sources for construction and displays need to be identified. Some programs, like the Florida Department of State Special Category Grant program are relatively obvious, but other sources, like the Florida East Coast Railway, are not. It is clear from other projects that this type of endeavor is more successful if it is initiated and spearheaded from the local level. For this reason, a consortium of local business owners and residents has to coordinate the plan and head the organization.

The advantages of such an exhibit:

1. Accessibility,
2. Education of local children and residents,
3. Attracting Key West-bound tourists,
4. Fishing access, and
5. Community-based activity,

should be emphasized. The economic benefits of parks and wildlife sanctuaries to surrounding communities is well-documented. Bringing tourists to this part of Marathon should help all the nearby communities. The strategies mentioned above are summarized in Table 2.

Action Categories	Archival Research	Archaeological Research	Interpretation/ Construction

Step 1	Confirm identity, age, function, and construction of individual vessels	Produce highly detailed site plan of Shucker's Wrecks (using laser transit)	Determine "interested parties" in any potential construction (i.e. Corps of Engineers, NOAA, Coast Guard, State and Local Government)
Step 2	Produce report on individual vessels	Collect representative artifacts from individual wrecks for conservation and interpretation	Identify funding sources for potential exhibit
Step 3	Research artifacts recovered from individual wrecks by archaeologists	Conserve recovered artifacts	Write grants for planning and construction of exhibits
Step 4	Produce popular pamphlets describing various aspects of the wrecks' histories	Produce report for mapping and collection projects	Plan and build interpretive exhibits or on-site displays

Table 2: Action plan for interpreting the Shucker's Wrecks

An important factor to consider, regarding this interpretive exhibit, is accessibility.There are many visitors to the Florida Keys that don't have the opportunity to see the maritime cultural resources that lie just offshore. This is because many visitors do not feel comfortable on relatively small boats. This includes many older visitors, less well-off people, individuals confined to wheelchairs or other assistive devices, and young people. The quality of their experience in the Keys would be improved greatly by having access to "real" wrecks and interpretive exhibits.

Permanent exhibits---stationed over and around the sunken wrecks---also would provide a local venue for Marathon schools to integrate lessons about the marine character of the Keys, the construction of the Overseas Railway and Roadway, and the environmental condition of the Keys into elementary and secondary curricula. The construction of the Arizona Memorial in Honolulu Harbor is a prominent example of how this type of exhibit can function as a physical reminder of the historical and environmental context of a local human community.

Another perennial concern of the Marathon community is its position as a "way-point" for Key West-bound visitors, but not a destination for many Keys visitors. While "destination" status may not be the objective of many Marathon residents, clearly there are advantages to capturing a higher proportion of visitors by providing interesting, educational attractions. When the visitors stop, it provides a natural point at which they can look around, observe the local community, and potentially purchase food, drinks, souvenirs, and services (charters, etc.). The implications of this increase in visitation should be clear enough, although the net economic consequences have not been quantified.

There is also a need to accommodate residents in any plan for an exhibit. Towards that end, it would be relatively easy to build a fishing facility into an "over-water" exhibit, giving residents access to the Boot Key Harbor channel that is not tied to a roadway or other mode of transportation. One traditional problem with this latter type of fishing facility is pedestrian/vehicle accidents. The Florida Department of Transportation might be persuaded to help fund a non-bridge fishing facility because it will provide a less dangerous alternative to automobile bridge fishing.

Finally, a properly designed exhibit facility could become a focus for local activities. For instance, a community Christmas tree could be placed on the end of the exhibit pier, serving as a significant attraction for boaters entering and leaving Boot Key Harbor. Additionally, a relatively small facility could host small music performances, community education activities, and fishing contests. Residents and visitors alike traditionally enjoy these types of activities. With the social climate of the Keys so divided about the merits of the Florida Keys National Marine Sanctuary, NOAA would do well to initiate visible, concrete steps towards providing improvements to the local economy and infrastructure. NOAA's role cannot be merely regulatory for its programs to succeed.

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