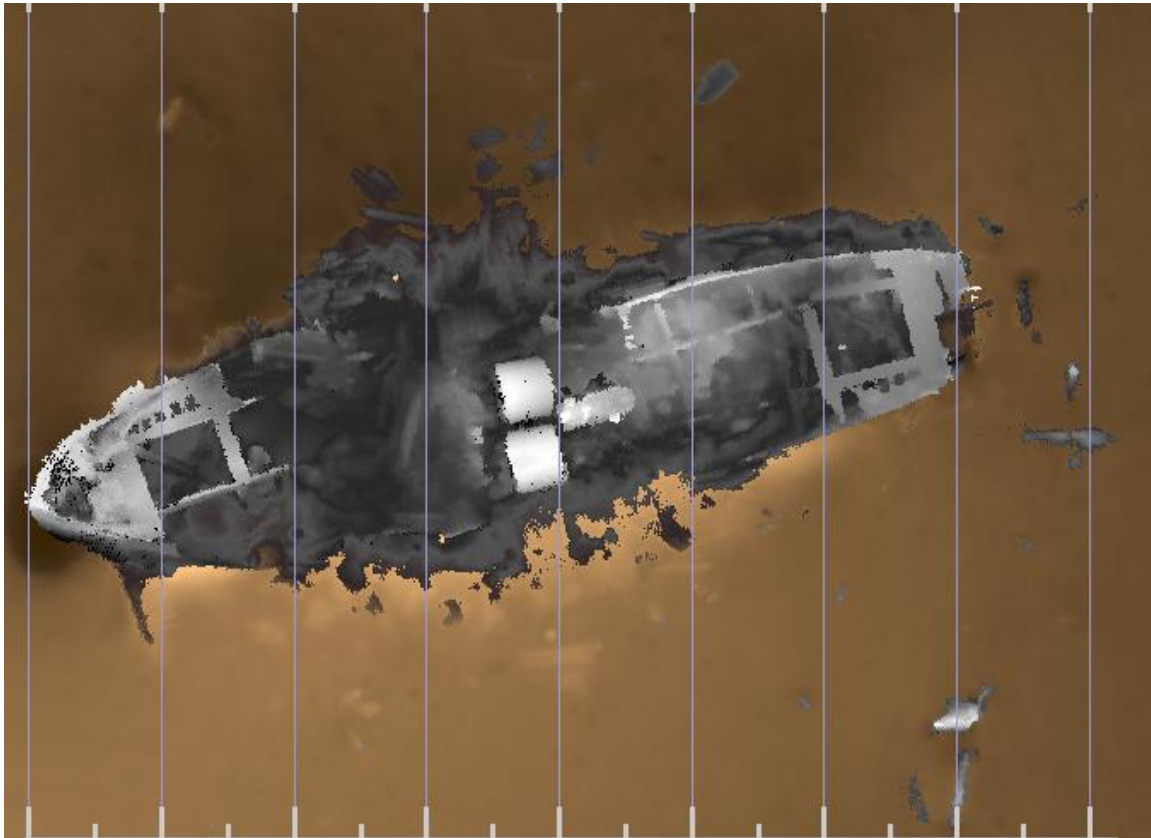


Caribsea Archaeological Survey

Research Design and Project Planning



A Collaborative Survey Between:

Battle of the Atlantic Research and Expedition Group (BAREG)

NOAA's Monitor National Marine Sanctuary

And

Kara Fox: MA Candidate East Carolina University: Program in Maritime Studies

Prepared by: Kara Fox (ECU) and Joe Hoyt (NOAA)

Project Dates and Participants

23 May: Travel to Beaufort
24 May -31 May: Dive Operations
1 June: Dive ops and Departure

Kara Fox – Co-PI
Joseph Hoyt – Co-PI
Ken Kelley – Dive Master

Logistics

Lodging: The shore base of operations will be at a large house in Atlantic Beach:

Hall Cottage
202 Glenn Street
Atlantic Beach, NC 28512

Vessel: The dive vessel is the R/V *Cutting Edge* berthed at the NOAA Lab

NOAA
101 Pivers Island Rd
Beaufort, NC 28516

A nitrox capable compressor will be kept on site near the berth for refilling cylinders.

Research Goals

Today, the remnants of World War II casualties are scattered across the ocean floor. Although archaeologists and historians have slowly begun to document and research these wreck sites, their partial status as contemporary irrelevant wreckage has thwarted their historical significance and contributed to a lack of public interest. While wrecks within the 3-mile limit fall under the protection of the Abandoned Shipwreck Act (1987) and sunken warships irrespective of their distance from shore are covered by the Sunken Military Craft Act (2005), merchant vessels such as the *Caribsea* comprise the majority of these sunken watercraft have an “uncertain” legal standing. These vestiges of the men and women who supplied the frontlines of the conflict while keeping America fed during Germany’s *guerre de course* are the ubiquitous site type representing naval activities of the period.

The ongoing NOAA “Battle of the Atlantic” expedition is in the process of recording and documenting World War II German U-boats, convoy vessels, and merchant freighters and tankers off the coast of North Carolina. Since 2008, a collaboration of NOAA’s *Monitor* National Marine Sanctuary, the UNC-Coastal Studies Institute and East Carolina University has been documenting the remains of North Carolina’s submerged World War II heritage. Through the implementation of remote sensing surveys, high definition imagery, and biological surveys, these past expeditions have

produced an extensive database of archaeological information on the historically significant shipwrecks tragically lost during World War II. High resolution, multibeam data of wreck sites including the *Caribsea* has been gathered from previous NOAA Battle of the Atlantic Expeditions. This data will assist in research producing explanatory three-dimensional models designed to inform management actions regarding long-term stewardship of these World War II wreck sites.

Objectives:

- Produce a comprehensive site map of the shipwreck:
 - What types of environmental or cultural factors are affecting the shipwreck site?
- Contribute towards the creation of a 3D multi-stage model design to illustrate the deterioration of World War II ferrous-hulled shipwrecks

Historical Background

The Battle of the Atlantic, the longest and arguably the most pivotal battle of World War II, was not fought between two equivalent adversaries—but was waged over the unarmed, civilian merchantmen who braved the treacherous shipping routes through the North Atlantic. The passageway through the North Atlantic, more commonly referred to as “Torpedo Alley,” was the area of ocean most severely attacked by German U-boats. For the eight months following Pearl Harbor, German U-boats successfully hunted down Allied merchant ships and scores of convoys, littering the ocean floor with men, ships and their cargoes.

In the devastating year of 1942, between January and July, the German U-boats stalking the eastern seaboard sank or damaged 397 Allied vessels. Approximately 5,000 people, including armed military forces and civilian seamen were burned to death, crushed, drowned, or vanished into the sea. The majority of these attacks occurred in the war zone off North Carolina’s Outer Banks, forcing the residents of the Outer Banks to stand by and watch as war was waged right off their front porches.

On March 14, 1942, the unarmed freighter, *Caribsea*, was torpedoed and sank in just under two minutes—killing 21 men onboard, including beloved Outer Banks native, third mate Jim Gaskill. This tragic event, was just part of the vessels story. The lifespan of *Caribsea*, bridged both world wars, encompassing the progression of steel-hulled ship construction, the development of American shipping, and the Allied victory of World War II.

Caribsea was a freighter steamship built in 1919 by McDougall-Duluth Shipbuilding Company. Originally launched as *Lake Flattery*, the bulk carrier was one of a series of ‘Laker’ vessels built in the Great Lakes for the United States Shipping Board. These Laker style vessels were a modified version of an earlier McDougall-Duluth design built shortly before the war. This type of “Fredrickstad” vessel was a medium-sized freighter, built of steel with a two full-length decks and a top boat deck. The design was known as “three island types” because of the three individual decks located forefront, amidships, and aft of the vessel.

completion, the dimension of *Lake Flattery* was 261 feet long between perpendiculars, 43 feet in beam and a draft of 25 feet. The ship was propelled by a single bronze screw, driven by a three cylinder triple-expansion engine and two single-ended Scotch boilers. The oil engines and boilers were designed and manufactured by McDougall-Duluth Shipbuilding Company. The engines were capable of 1500 horsepower, and could propel the vessel up to 10 knots.

Following the end of the war, *Lake Flattery* was finally completed and launched in July of 1919 and delivered to the U.S. Shipping Board. The USSB maintained ownership of the ship until 1922. *Lake Flattery* was then sold to Panama Rail Road Company in New York City, a significant shipping line connecting its service from New York to San Francisco. Eventually named *Buenaventura*, the ship continued service as a passenger and mail ship bound for South America and the West Indies. In 1940, Stockard Steamship Corporation bought *Buenaventura* for the beginning of a new Caribbean service route. The ship was once again given a new name, and was officially renamed *Caribsea*. *Caribsea* continued to transport cargo between Caribbean ports and the eastern seaboard. During World War II, this route would later be stalked by German U-boats and the waters of North Carolina would prove to be the untimely demise of the ship.

On March 11th, 1942 as *Caribsea* approached Cape Hatteras at approximately 14 miles from off of Cape Lookout Lighthouse. Shortly after 2:00 am, the ship was torpedoed by U-158. Although it was later speculated from survivor accounts that there were two torpedo impacts from the subsequent explosion following the first torpedo impact, the German Kriegstagebucher (war diary) specifically states that one torpedo was fired from U-158 at *Caribsea*. Following the impact, there was no time to launch the lifeboats; the bulk cargo of highly combustible manganese ore took the vessel and 21 men down in under two minutes.

After the sinking, *Caribsea* sat upright on the ocean floor in approximately 85 feet of water. The vessel had sunk within a shipping lane, and the superstructure extended up towards the surface forming a navigational hazard. In 1944, the Navy Salvage Service team demolished the wreck site to an authorized 40 feet of clearance. These activities further accelerated the deterioration of the shipwreck.

Today, the hull of *Caribsea* is contiguous, with the exception of the stern area. The aft portion of the shipwreck site exhibits the most damage. The pilot house, boat and main decks are completely gone. The bridge deck remains, but is actively disintegrating. The port and starboard outer hull includes iron framing extending upwards 10 feet. Deck plating can be observed, but appears to be slowly deteriorating. The three cylinder engines and two scotch boilers are located amidships, and remain intact with moderate deterioration. The ship's bow and forward sections are mostly intact, with the bow standing upright with overhead relief. Additional recognizable features include the rudder, winches, and piping throughout the debris field covering the remaining frames and decking components of the bridge deck.

Caribsea is a partially continuous assemblage, consisting of scattered features and severe structural damage. The boundary for the site is based upon obtained contoured magnetometer imagery; diver survey of the area; and the location of significant features (bow, engine, and rudder) continuous with the main wreckage. Because of existing historical and archaeological datasets, the primary archaeological objective includes the active preservation of World War II ferrous hulled wreck sites such as *Caribsea*. Further

archaeological and environmental data collected from the wreck site, combined with the historical datasets, will possibly reveal deterioration patterns of the wreck site ultimately assisting with future preservation initiatives.

Methodology

The research design identified several goals and questions to be addressed during the investigation. The goals proposed included:

- 1) Assessing the historical significance and archaeological integrity of each individual site;
- 2) Determining if the resources are eligible for nomination to the National Register of Historic Places;
- 3) Identify to what degree is site preservation influenced by environmental formation processes and cultural impact;
- 4) Determine whether or not the sites warrant further investigation;
- 5) Complete a thorough exterior survey of each site and artifact inventory;
- 6) Produce a site map (or photomosaic) of each site for interpretation and as a representation of baseline data for use in follow-up inquiry and future monitoring at the sites;
- 7) Complete a detailed video and photographic surveys of the sites.

In order to answer these questions, the survey goals are designed to recover data that would identify the site, and contribute to their nomination to the National Register of Historic Places. Only through site documentation and the recording of diagnostic features and artifacts can the nomination process be completed.

Scope and Limitations

Production of the research design is essential to provide detailed boundaries for the scope of the project. This project was not designed to be a completely comprehensive investigation, and should be viewed as a preliminary baseline assessment, upon which future research can be founded. Without this baseline information it is difficult to know what questions to ask because the resource is generally undefined until this type of survey is completed. So the questions posed in this project are of a general nature with the intent to provide a more solid basis for formulated advanced questions.

As with any project, certain limitations are present that are taken into account in preparing the expedition. Fiscal constraints limit the amount of time and the availability of resources, which typically governs the duration of the project. As conditions off North

Carolina vary, predicted days of inactivity are built-in and personnel will spend time processing data sets during this time.

Additionally, the sites locations also pose limitations underwater. High and variable currents may be present, and visibility may range from zero to more than one hundred feet. These factors produce differing degrees of in-water efficiency from day-to-day. Furthermore, the depth of the sites, ranging from 70-100 feet deep, greatly limits the amount of time that can be spent on site each day.

The site is being treated as a grave, also presents some limitations that will be meticulously observed. This limits the survey to exterior observations only. In addition, the research team will not conduct any exterior work that would impact or disturb the site in any way. This precludes, establishing permanent baselines or removing or manipulating anything on-site.

Personnel and Equipment

The overall project will be planned and conducted by the Battle of the Atlantic Research and Expedition Group (BAREG) with archaeological guidance provided by NOAA, Office of National Marine Sanctuaries *Monitor* National Marine Sanctuary.

Equipment used will include traditional survey instruments such as fiberglass measuring tapes, slates, mylar sheets, clinometers, and straight edge scales. These instruments will be used to recover detailed measurements of the site and the data will later be transferred to a master site plan. Photographic and videographic data will be acquired using a range of instruments.

Each individual will be providing personal equipment, including dive gear, and photographic equipment. All data recovered during this project will become available for use by BAREG and NOAA in coordination with the Principal Investigators.

Environment

The site lies in a dynamic environment. The waters off of North Carolina, Cape Hatteras in particular, are an interface for two major oceanic currents. Coming down from the north are cold waters of the Labrador Current. From the south flows the warm waters of the Gulf Stream. The two currents carry with them different properties and support very different ecosystems. The position of the target site is such that it lies near this interface (Figure 4.2).

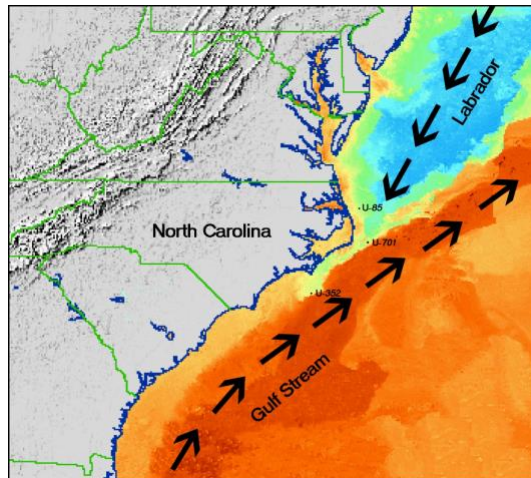


Figure 4.2. Image showing the convergence of oceanic currents

The site lies in potentially highly dynamic area where the Gulf Stream and the Labrador collide. This creates a high degree of variability in currents and has a noticeable effect on shifting sands, creating deep scours and deposits which shift continually (Figure 4.3). This is believed to cause periods of episodic scour and fill-in at these sites.

As this is a preliminary survey, only a general description of the sites environment is going to be conducted. Depending on future management strategies, it may be valuable to establish more concrete scientific descriptions of the environment and ecosystems present at each site. Water quality and characteristics at each site would aid in the study of corrosion potential and help researchers understand more accurately site formation processes acting on these sites.

Archaeological Methodology

The archaeological methodology consists primarily of documenting the site by generating detailed site plans, photo-mosaics, recording diagnostic hull features, intensive video and photo documentation, and documentation of artifacts *in situ*. Due to the sites dynamic environment and the nature of this non-invasive survey, permanent baselines will not be established at the sites, though temporary tapes will be carefully installed by non-invasive means. Given constraints of bottom time at depth and the duration of the project, a hybridization of methods will be used to generate the site plans. A combination of video, scaled drawings, original design plans, and scale photographs will be combined with available acoustic data to generate a detailed exterior survey of each wreck site.

Divers will be assigned specific sections along the hull to document, which will then be compiled to create an overall site plan. Simultaneous with the site mapping, a photographic/video survey will be conducted to create photo-mosaics, document artifacts, ordnance, and diagnostic features of the site. The photographic/video documentation includes the outer hull structure, diagnostic structural features and any damage or degradation to the hull structure, as well as artifacts *in situ*. At no point during the survey will the hull structure or any feature of the wreck sites be altered.

All survey goals are designed to recover data that will document the site, augment historical significance, and enhance thenomination to the National Register of Historic Places. The methodology followed on the project to accomplish these goals is outlined as follow:

In-Water Documentation

1. Documentation of the sites by generating detailed site plans and recording diagnostic features
 - (a) Identify and record diagnostic structural features such as deck machinery, hatches, etc.
 - (b) Identify and record hull damage due to the sinking event
 - (c) Identify and record hull damage caused to the sites post-sinking due to natural and/or man-made causes
 - (d) Identify and record all exposed artifacts within the sites immediate vicinity
 - (e) Identify, record, and determine the extent of hazardous material remaining on the site while maintaining all safety protocols
2. Create scaled photo-mosaics of the sites by generating plan and profile photo-mosaics and supplement with hull measurements
 - (a) Conduct plan view photo-mosaic survey by video documenting sites using the photo-mosaic sled as a platform coupled with digital sonar to maintain a minimum of 30 ft. above the subject
 - (b) Conduct profile and oblique photo-mosaics surveys by video documenting sites using the photo-mosaic sled or scooters as a platform coupled with digital sonar to hold a constant distance from the sites and depth gauge to hold a constant depth while moving from bow to stern
 - (c) Combine photo-mosaic data with the diver generated site plans
3. Intensive video and photo documentation of the hull and diagnostic features
 - (a) Video/Photograph hull and diagnostic hull features from all angles
 - (b) Video/Photograph diagnostic artifacts from all angles with scaling device
4. Identify and document areas on the sites to monitor hull and structural degradation over time
 - (a) Select features on the bow, amidships, and stern that would best illustrate hull and structural degradation over time
 - (b) Document the extent of the features degradation
 - (c) Clearly identify the features on the site plans for future reference
 - (d) Document the list on the sea floor by calculating the degree of angle with a clinometer to determine the current pitch and roll of the hull
5. Document artifacts, and any hazardous material, *in situ* showing their spatial relationships viz a viz the rest of the shipwreck

- (a) Video, measure, and record exposed artifacts, and hazardous material *in situ*, and their relation to the rest of the site
- (b) Identify artifacts with diagnostic features and makers' marks

Assessment

1. Identify the sites and make recommendations for future management
 - (a) Identify sites name and type
 - (b) Assess if historical accounts coincide with archaeological interpretations
 - (c) Assess whether additional fieldwork is needed
 - (d) Nominate the site to the National Register of Historic Places
 - (e) Make suggestions for public interpretation

2. Determine if remaining artifacts are threatened and/or have historical significance
 - (a) Identify artifacts of historical significance or unique type
 - (b) Identify artifacts of duplicative objects
 - (c) Evaluate danger to artifacts if left undisturbed

3. Determine if there are environmental hazards remaining at the sites and make recommendations for their possible removal or neutralization
 - (a) Identify environmental hazards at the site and contact the appropriate federal government oversight agency (*i.e.* U.S. Coast Guard)
 - (b) Identify ordnance at the site and contact the U.S. Navy, and NOAA General Consul
 - (c) Make recommendations for the possible removal or neutralization of any environmental hazards that balances public safety with preserving the historical significance and integrity of the site

4. Determine the site stability and integrity of each site and make recommendations for its long term preservation
 - (a) Assess site damage and determine if it was caused by the sinking event or post-sinking
 - (b) Evaluate post-sinking hull damage/alterations and determine causes based on environmental and cultural considerations.
 - (c) Evaluate long-term hull integrity and make recommendations for site preservation

In planning for factors beyond control (*e.g.* inclement weather, equipment breakdown, personal illness, poor visibility on the site, etc.) the task list is designed to provide flexibility and adaptability. Dive tasks could require a single dive or multiple dives, but each task is related to a discrete objective. The tasks are prioritized, and some tasks may not be conducted until others have been completed.

Operating within the conditions outlined above the archaeological investigation of these sites will likely produce useful results. These environmental parameters establish the conditions that are potential detractors on site and may have impact on the work

conducted. The diving procedures also govern the scope and practicality of each goal set forth. Ultimately the research questions and goals, in tandem with these other limitations and conditions, guide the project. These conditions are important to understand in order to be able to address these conditions as they are encountered.