



Shipwrecks and the Maritime Cultural Landscape of the Gulf of the Farallones

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Abstract

The waters of the Gulf of the Farallones are a diverse and expansive maritime cultural landscape that includes at least 400 historically documented shipwrecks. This article summarizes a multiyear scientific mission to assess shipwreck sites in the Gulf of the Farallones and nearby waters. A series of sites were identified not only through archaeological dive surveys, but also through newly available nineteenth-century archival records that speak to the value of using these sources in maritime archaeological research. In all, twelve sites were documented. The project characterized these sites within the parameters of a regional maritime cultural landscape.

Keywords Survey · Marine protected areas · Shipwrecks · Maritime cultural landscapes

Introduction

The lands and waters in and around San Francisco's Golden Gate Bridge include three federally managed entities. Point Reyes National Seashore (established on 13 September 1962) is a 287 km² unit of the US National Park Service (NPS) with boundaries that extend 402 m offshore. The Golden Gate National Recreation Area (established 27 October 1972) is a 332 km² unit of the National Park Service. Like Point Reyes, its boundaries extend 402 m offshore. Contiguous to both park units is the Greater Farallones National Marine Sanctuary (established 16 January 1981), a unit of the Office of National Marine Sanctuaries administered by the US National Oceanic and Atmospheric Administration (NOAA). The Sanctuary's 8534 km² extend from the mean high-water line to deep-water canyons and the edge of the continental shelf in waters some 4000 m deep (Fig. 1).

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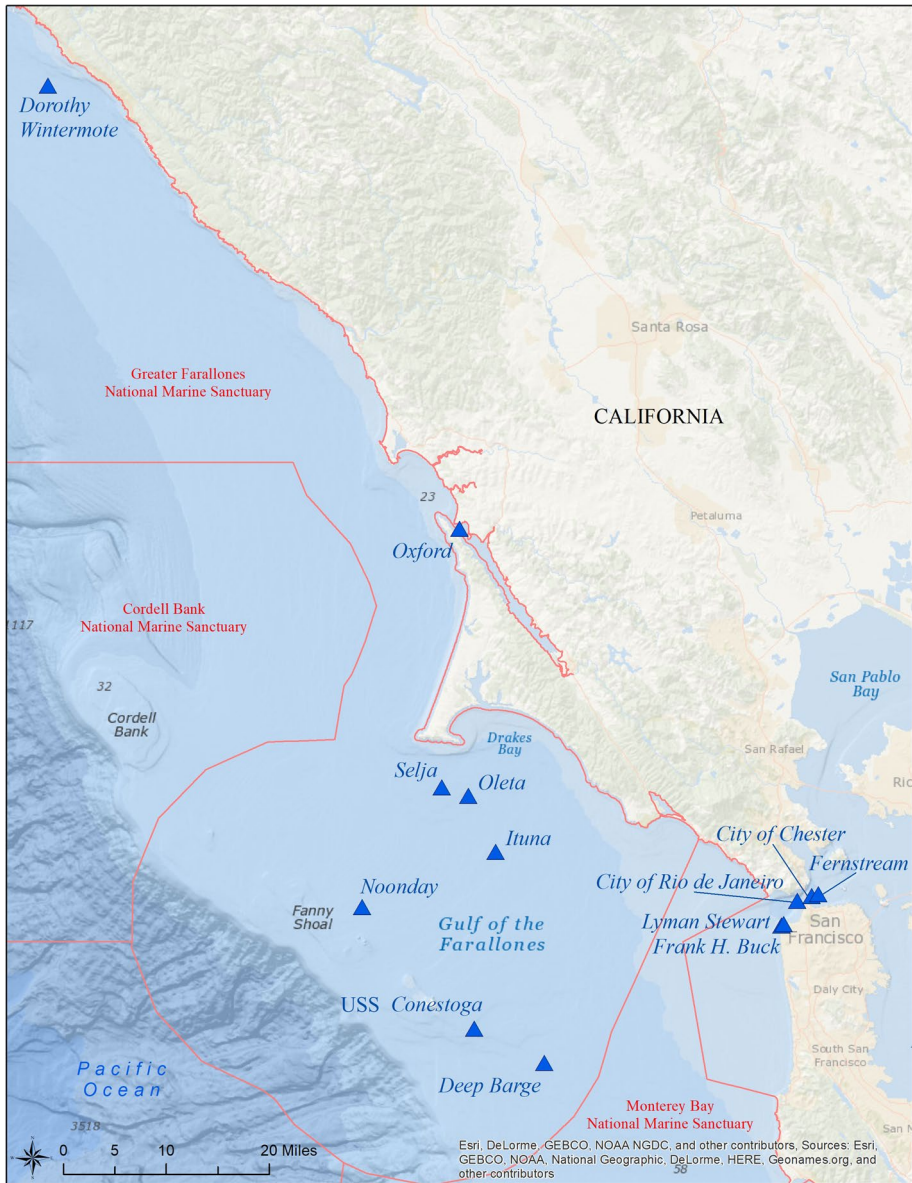


Fig. 1 Map of Site Locations (Tony Reyer, Office of National Marine Sanctuaries, NOAA)

The designation of these parks and sanctuary came with the recognition that they contain significant natural and cultural resources and that the two federal agencies would manage those resources for public use, enjoyment, and protection. Under the US National Historic Preservation Act, as well as the legislation that created the park and sanctuary systems, the agencies are required to locate, characterize, and protect

significant cultural resources that are or may be eligible for listing in the US National Register of Historic Places.

To meet this responsibility, the National Park Service and NOAA commenced maritime archaeological surveys and assessments off Point Reyes in 1982–1983, while the NPS conducted maritime archaeological work at the Golden Gate National Recreation Area starting in 1980, primarily on intertidal and beached sites (Murphy 1984; Carell 1984; Delgado and Haller 1990). An overview of the submerged cultural resources of all three areas, primarily focused on the shipwrecks, was completed in 1990 (Delgado and Haller 1990). This study summarized the historical context of the known wrecks, as well as the archaeological documentation completed as of that year. Among the sites located were five shipwrecks periodically exposed by seasonal winter beach erosion (Delgado and Haller 1990:15–19, 175) and shipwrecks located by the NPS survey of 1982–1983: SS *Pomo*, SS *Munleon*, SS *Hartfield*, SS *Richfield*, and SS *Shasta*. Magnetic anomalies were also detected that are believed to be the buried galleon *San Agustin*, lost in 1595 (Murphy 1984, Carell 1984). In addition to government-led activity, highly skilled sport divers also located wrecks, notably the 1853 steamer *Samuel S. Lewis*, and a treasure-hunting consortium located the 1901 wreck of the steamship *City of Rio de Janeiro*, but did not disclose the location (Delgado and Haller 1990:175).

Twenty-three years after that initial effort, ongoing historical research added to the list of potential sites through the creation of the Office of National Marine Sanctuaries Pacific West Coast Regional Shipwreck Database (Schwemmer 2017). In addition, area divers quietly made a series of dives and discovered some additional wrecks. However, physical surveying by the government was limited due to budgetary constraints during the intervening quarter century. Mindful of this the authors planned and executed a multiyear mission (2013–2016) to not only physically survey and characterize sites, but to also recharacterize these waters within the context of maritime cultural landscape theory. The survey benefited from technological resources including remotely operated vehicles (ROV), autonomous underwater vehicles (AUV), and associated deep-water survey and assessment tools not available in 1980–1990. Such modern deep-water technology provided the means for greater range of scope for the project as well as an essential element of safety in an area known to be a breeding and feeding ground for a large population of migratory Great White Sharks (*Carcharodon carcharias*). These 680–1100-kg, 6-m-long animals make scuba-diving in the Gulf of the Farallones hazardous. The availability of ROVs for shallow and deep-water work has now opened these waters to a focused submerged maritime cultural resources project.

The passage of two decades since the initial assessment of known and potential maritime cultural resources in the sanctuary and the two National Park Service units saw the integration of anthropological theory, especially the concept of maritime cultural landscapes. The 2013–2016 survey provided the opportunity to demonstrate, even if only in part, how maritime archaeology can play a role in discussing human social and historical processes. The maritime cultural landscape of the Gulf of the Farallones reflects how this Pacific port was shaped by human responses to the physical conditions of navigating these waters as entrepreneurs and government integrated San Francisco into the global economy.

Integrating New Data

Another factor that led to the multiyear mission was new data. The seabed of the Gulf of the Farallones has been extensively mapped as part of the ongoing work of NOAA's Office of Coast Survey to aid navigation since 1990. A variety of sonar targets, some of

them clearly shipwrecks, were known, but had not been assessed or documented by archaeologists. In addition, new archival data not available in 1990 added a significant new dimension to the study of the region and its sites. Those archival data consist specifically of the manuscript topographic sheets (T-sheets) prepared by the United States Coast Survey (USCS), renamed the United States Coast and Geodetic Survey (USC&GS) in 1878, and one of the predecessor agencies of NOAA.

The T-sheets formed the basis of published Coast Survey charts and often contain information, especially notations, as well as certain features that do not appear on the published charts. Archaeologist Scott Byram, working with NOAA historians Albert Theberge and John Cloud, has utilized the T-sheets as well as the archival manuscript records of the USCS and USC&GS on the California coast, to relocate archaeological resources. The Coast Survey's teams, "in their efforts to plot nearby landmarks as references...mapped and described shell mounds, caves and trails, embarcaderos and harbours, and innumerable structures" (Byram 2013:2). Cognizant of Byram's admonition that the Coast Survey archives "have yet to find their place as baseline data for archaeological research in California" (Byram 2013:2), and working with Byram, Theberge, and Cloud, we obtained the pertinent T-sheets for the study area. The T-sheets are available online on the NOAA Historical Map & Chart Collection database, historicalcharts.noaa.gov along with a T-sheets guide available at shoreline.noaa.gov/data/datasheets/t-sheets.

Particularly pertinent were T-sheets that documented native Miwok place names on the maritime cultural landscape, early lumber trade infrastructure on the coast north of San Francisco, Spanish colonial-era seacoast fortifications at the Golden Gate, and shipwrecks in intertidal areas, some previously surveyed, but others not yet located as of 2015. Among the better documented shipwrecks in the archives was the California Gold Rush passenger steamer *Tennessee*, lost on 6 March 1853, north of the Golden Gate. Archaeologically documented in 1979–1981 (Delgado and Haller 1990:111–112), *Tennessee* stranded in the intertidal zone of what is now known as Tennessee Cove and broke up. The previous archaeological work documented the deposition of material from the steamer on the beach, but did not pinpoint the location of the main body of the wreck, which was thought to lie off the beach on a steep slope of offshore sand often subjected to heavy wave action.

The USCS T-sheet for the coast north of San Francisco, drawn in March 1853, shows the outline of the stranded *Tennessee* in the breaker zone, and the surveyor's notebook includes a sketch of the wreck (Fig. 2). Similarly, but not yet archaeologically verified, another USCS T-sheet pinpoints the site of the 4 May 1861 wreck of the clipper ship *Sea Nymph* on Point Reyes' Ten Mile Beach as well as a temporary shed erected by salvagers working on the wreck. The USC&GS 1929 T-sheet for Drakes' Estero, in Drakes Bay, pinpoints a "bottom of mast on wreck" at the site of the 30 December 1913 wreck of the steam schooner *Pomo*. Another USCS T-sheet, for Tomales Bay, precisely locates the stranded and abandoned wreck of the ship *Oxford*, lost at the mouth of the bay on 12 July 1852 (Fig. 3). Work to verify the location of the wreck will be discussed in the main body of this article. Another wreck noted on USC&GS T-sheet recorded on May 1882 was the bark *King Philip*, lost on San Francisco's Ocean Beach on 25 January 1878 (Delgado and Haller 1990:44–45).

A manuscript chart of soundings in the bight of the Golden Gate taken by the USC&GS between 15 March 1894 and 24 February 1897 also notes the position of the 26 October 1893 wreck of the steamship *City of New York*. A particularly detailed document is a chart delineating the USC&GS's efforts to snag and plot the shipwreck position of the steamship *City of Chester* after it was rammed in a collision and sunk inside the Golden Gate on 22 August 1888. In addition to T-sheets available for geo-rectification, and hence guide

Fig. 2 1853 US Coast Survey T-Sheet for the coast North of San Francisco, showing the outline of the wreck of the steamer *Tennessee* (NOAA Central Library)

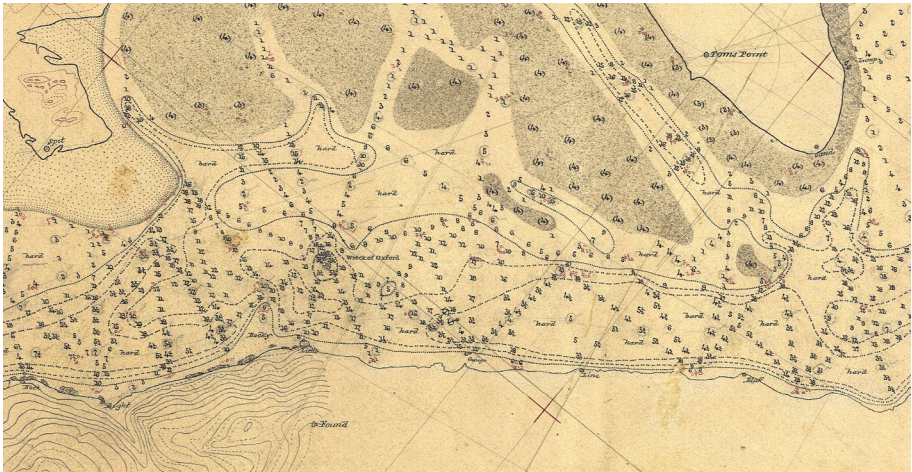


Fig. 3 US Coast and Geodetic Survey Chart (1860) Showing the wreck location for the ship *Oxford* (NOAA Central Library)

archaeological surveys to determine whether “X” truly marked the spot (which it always did when taken from the USCS and USC&GS data), the USCS and USC&GS archival records also include highly annotated published charts from the collections of George Davidson.

Davidson (1825–1911) was the founding and long-standing head of the Pacific Coast branch of the US Coast Survey. A prominent geographer who held honorary faculty appointments in astronomy and geodesy as well as geography, Davidson also served as President of the California Academy of Sciences. Among his many interests were native cultures, languages, and the history of the exploration and settlement of the coast. A prolific author, his landmark publication was the *Directory for the Pacific Coast of the United States* (1858), which was the first of an ongoing series of Pacific Coast pilots (Lewis 1954; Byram 2013:12). In 1889, Davidson’s *Coast Pilot of California, Oregon, and Washington* was published. It is a

monumental work and stands unequalled as a work of reference for the mariner, for the geographer, and for the historians. The 1889 Coast Pilot includes coastline sketches and descriptions of shipwrecks and the shoals and reefs they grounded upon and, in some cases, place names paying tribute to the wrecked vessels or ships of discovery (Schwemmer 2013). Among Davidson's many research interests was the growth of great commercial centres. Because of global maritime links and extensive maritime trade, San Francisco thrived as a port beginning with the Gold Rush (Delgado 2009). Davidson knew that one means of assessing that trade—and the economic losses occasioned by shipwrecks—was to document wrecks clustered in a vast arc of the coast centred on the Golden Gate. “The commerce of the world enters the Golden Gate” (Davidson and Pacific Coast Pilot 1889:121), and understanding the factors that led to shipwrecks was key to maintaining the flow of commerce and profit (Mitchell 1879).

Many of Davidson's papers are held at the University of California's Bancroft Library, among them a folder of clippings and lists of wrecks at the Golden Gate as well his annotated charts. Davidson meticulously noted wreck locations, causes of the loss (i.e. fog), whether it was a stranding, total or partial loss, and the cost of the loss in contemporary dollar amounts. The existence of one of these charts was known at the time of the 1990 study. Since then, additional Davidson-annotated wreck charts have not only been cataloged, but also digitized. They document wrecks from 1850 through the late 1870s. In accessing these additional charts, the 2014–2016 project was able to geo-rectify additional positions. Davidson's accuracy, at least with one wreck, *King Philip*, was verified because the wreck site is known and has been archaeologically studied (Delgado 1986; Gearhart 1988). The geo-rectified position on Davidson's chart matches the wreck's documented location (Fig. 4).

When assessed through the lens of a maritime cultural landscape, Davidson's topographic maps and hydrographic charts, and coast pilots, are invaluable data for the characterization of environmental and geographic factors in documenting vessel losses. One of the Davidson's annotated charts grouped wrecks in the locality of their losses as he apparently sought to identify those areas on the coast and at the Golden Gate that were “ship traps”. Also, of great significance to our survey was the addition, thanks to Davidson's charting, of the “ghost” shipwrecks that had “gotten away” that might have left some archaeological trace of their stranding—or not—but which also comprise intangible and yet significant elements of the maritime cultural landscape of this section of the coast, the two parks, and the sanctuary.

What also became clear was that the placement of the life-saving stations corresponded with the highest clusters of shipwreck incidents. As these stations were specifically placed to quickly respond to maritime accidents, the correlation of charted accidents to station locations clearly demonstrated how the life-saving stations, as elements of the maritime cultural landscape, were more than a political response to shipping losses and accidents. They were responsive to the patterns of marine casualties and changed locations (or were closed) as new technologies such as steam, and then internal combustion engines, as well as changing patterns of commerce—i.e. the rise of the grain trade, or the petroleum trade, as well as responses to global events such as the Klondike Gold Rush and the two world wars played out on the waters beyond the Golden Gate.

The 2013–2016 Survey: An Overview

The multiyear mission was conducted by NOAA's Maritime Heritage Program with annual funding provided by NOAA's Office of National Marine Sanctuaries. The overall mission was divided by annual field seasons punctuated by individual missions “of opportunity”.

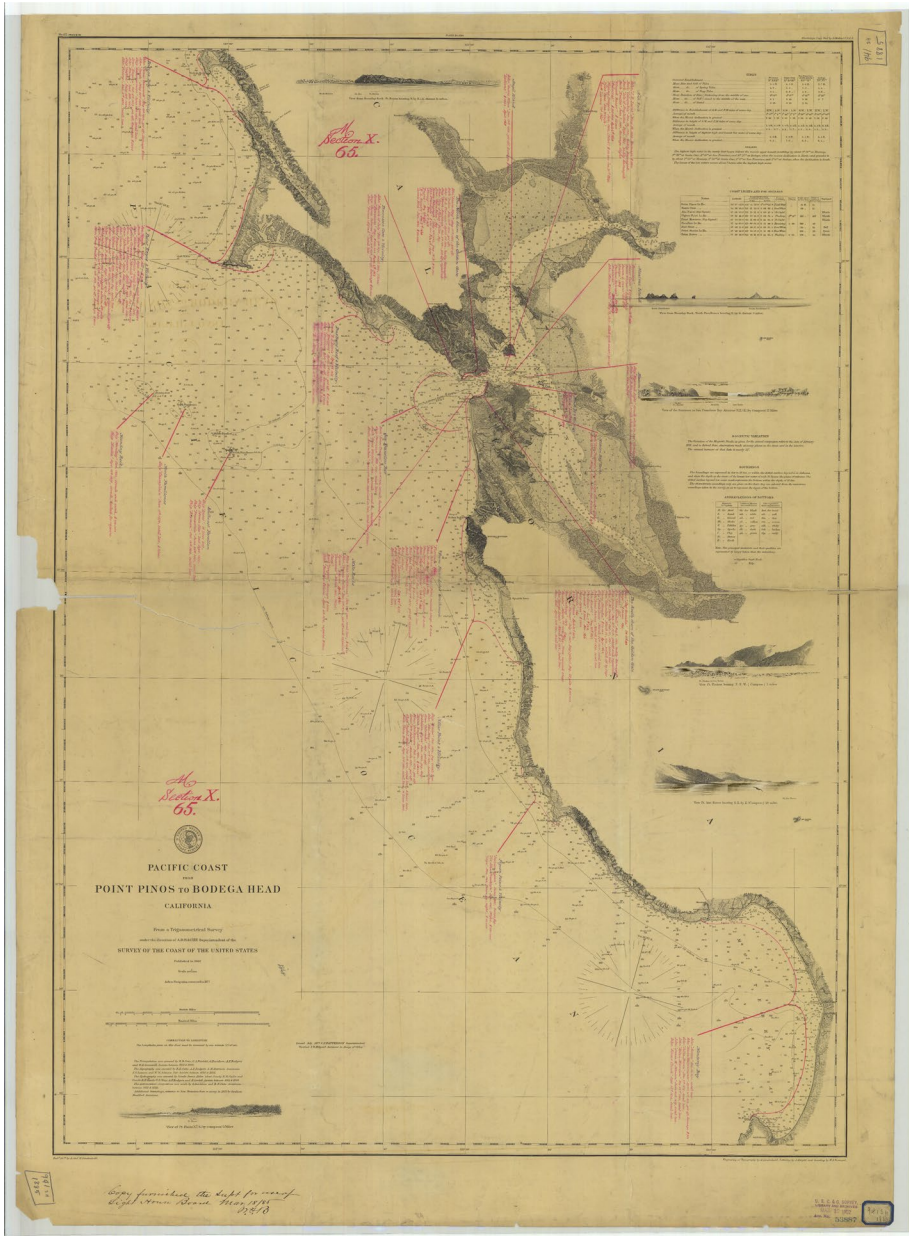


Fig. 4 US Coast and Geodetic Survey Chart. Modified by the USC&GS to Plot Shipwreck Locations (NOAA Central Library)

Initial work in 2013 included two individual opportunistic site assessments and planning for an early October cruise which would deploy an ROV to assess wreck targets. The 2013 survey mission was cancelled as a result of the shutdown of the US government’s operations when Congress did not pass a federal budget for the new fiscal year, set to commence

on October 1. The shutdown ended on October 17, but the window of availability for the boat, equipment, and personnel had closed and plans shifted to a September 2014 survey with a follow-up in October 2015. The 2014 survey ran from September 11–15, and the 2015 survey ran from October 4–12 (Fig. 8).

The 2014 and 2015 surveys were conducted from the NOAA research vessel *R/V Fulmar*, a 20.4-m aluminium-hulled catamaran that serves as a platform for a variety of functions for the Greater Farallones, Monterey Bay, and Cordell Bank National Marine Sanctuaries on the central California coast (Fig. 5). *Fulmar* was equipped with a Deep Ocean Engineering Phantom HD2ROV. Small and easily deployed, the 120-kg Phantom HD2 is rated to work in moderate to strong currents in waters up to 300 m deep. For the missions, the Phantom HD2 was equipped with a single high-resolution camera for observation and recording; additionally, GoPro cameras in waterproof housings were mounted on the ROV for some dives to capture additional imagery and perspectives.

Additional mission activities were conducted from the NOAA Office of Coast Survey Navigation Response Team 6 (NRT6)'s trailer-able 8.53-m-long survey launch and its onboard side-scan sonar system. The *M/V Eaglet* of Bay Marine Services LLC supported the mission through the deployment of a Hibbard Inshore LLC Saab Sabertooth Hybrid ROV/AUV equipped with a Coda Octopus 3-D Echoscope Sonar, with the vessel and equipment all donated along with personnel support (Fig. 6).

For the 2016 field season, final mission activities were conducted from the 64 m Ocean Exploration Trust *E/V Nautilus* and its telepresence-supported dual-ROV *Argus/Hercules* system

A key element to the success of the project was due to donations and volunteer support, as noted. The 2015 mission was also supported with the donation of services and personnel by Teledyne SeaBotix, which provided a *vLBV300* ROV and a portable AUV with StarFish side-scan sonar for the project. The mission would not have been possible without additional processing and analysis of sonar data by volunteer maritime historian and shipwreck researcher Gary Fabian (Fig. 7). Also invaluable were the memories and assistance of pioneering wreck divers and fishermen Robert and Bruce Lanham. Both Gary Fabian and Bruce Lanham participated in the surveys off *R/V Fulmar*. Additionally, a variety of mission personnel were deployed. The lead authors were the project co-principal investigators. The 2016 phase of the mission was not originally part of the plan, but when NOAA's

Fig. 5 *R/V Fulmar* (Office of National Marine Sanctuaries, NOAA)



Fig. 6 R/V *Eaglet*'s Sabertooth AUV/ROV combination was used to survey the wrecks of *SS City of Chester* and *SS City of Rio de Janeiro* (Robert Schwemer, Office of National Marine Sanctuaries, NOAA)



Office of Ocean Exploration funded deep-sea research in the West Coast National Marine Sanctuaries, the team was able to then add the assessment of three shipwreck sites to that project. The third author joined that phase of the project as the expedition leader and co-PI.

In summary, by the end of the mission following the 2016 cruise of the *E/V Nautilus*, twelve sites were documented. Opportunistic surveys made possible by the deployment of vessels and assets for other projects resulted in the discovery and documentation

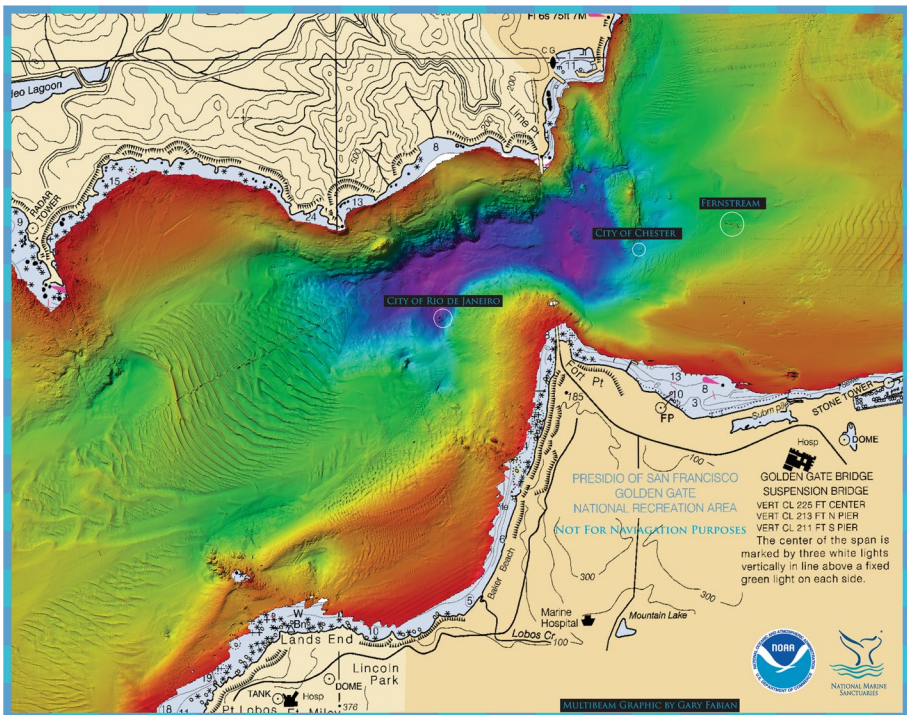


Fig. 7 Bottom contours at the Golden Gate, with the locations of the wrecks of *SS Fernstream*, *SS City of Chester* and *SS City of Rio de Janeiro* (Gary Fabian, NOAA)

of the nineteenth-century wrecks of the sailing ship *Oxford*, the steam ship *City of Chester*, the twentieth-century wreck of the steam ship *Fernstream*, and the twentieth-century wreck of the steam ship *City of Rio de Janeiro*. In addition, the opportunity to test the mapping capabilities of a new sonar provided the means to conduct the first three-dimensional archaeological documentation of the twentieth-century wrecks, the tankers *Frank H. Buck* and *Lyman A. Stewart*. In March 2015, an expedition supported by NOAA's Office of Exploration and Research and the Boeing Company to test Boeing's *Echo Ranger* AUV in conjunction with R/V *Fulmar* provided an opportunity to conduct a multibeam survey of the deep-water scuttled wreck of the aircraft carrier USS *Independence*. That wreck is separately reported and not part of this article.

The September 2014 survey with R/V *Fulmar* led to several discoveries, including what is believed to be the buried subsea remains of the nineteenth-century clipper ship *Noonday*, the twentieth-century steamship *Selja*, lost in 1910, and two targets of unidentifiable metallic debris that may represent portions of shipwrecks or largely buried wrecks. An additional unexpected discovery was the twentieth-century naval tugboat, USS *Conestoga*, a wreck not historically documented as being lost in the project area, but reported as missing in 1921 after steaming out through the Golden Gate. The October 2015 survey with R/V *Fulmar* returned to the *Conestoga* site for more extensive documentation and to conclusively determine its identity, assessed an as yet unidentified twentieth-century steel barge wreck, and discovered the twentieth-century wreck of the steam ship *Ituna*, lost in 1930. In addition, a modern, as yet unidentified fishing vessel was also located, largely buried in sediment with a partial name exposed on the bow. The August 2016 survey with E/V *Nautilus* and its robotic systems conducted extensive documentation dives on USS *Independence* and the previously discovered *Ituna*, and then identified and documented a sonar anomaly that proved to be the twentieth-century wreck of the steam ship *Dorothy Wintermote*, lost in 1938. As previously noted, the discovery of a manuscript chart detailing an 1888 wire-drag survey to find the then recently lost passenger cargo steamship SS *City of Chester* led to the modern rediscovery of the wreck.

City of Chester

Built by the Delaware River Iron Shipbuilding & Engine Works of Chester, Pennsylvania, for the Oregon Steamship Company and launched in April 1873, *City of Chester* connected Portland with Astoria, and Oregon with northern California ports including San Francisco. By 1882, under charter to the Pacific Coast Steamship Company, it served the Alaska Route connecting San Francisco, Eureka, Astoria, Portland, Port Townsend, various British Columbia ports, and Sitka. This vessel served as a regular and important connector of people and goods along the coastal ocean highway.

On 22 August 1888, while leaving San Francisco with 106 passengers and navigating through a thick fog, *City of Chester* was rammed by the incoming White Star liner R.M.S. *Oceanic*. *Oceanic*, under charter to the Occidental & Oriental Steamship Company, was arriving from Hong Kong and Yokohama with 1,102 passengers. Just inside the Golden Gate, the 3808-ton, 420-foot-long *Oceanic* rammed the 202-foot-long, 1106-ton *City of Chester* as it was departing San Francisco. The collision pinned *City of Chester* against the larger steamer briefly as passengers clambered onto *Oceanic* with hastily thrown ropes or leapt into the sea. As the two ships parted, *City of Chester* plunged bow first, boilers exploding, carrying the captain, some of the crew and a

number of passengers with it just 6 min after the collision. Lifeboats from the *Oceanic* and rescuers from ashore plucked survivors, some badly injured, from the water. Thirteen passengers and three crew died, making the wreck the largest maritime disaster at the Golden Gate until the February 1901 loss of the SS *City of Rio de Janeiro* with more than a hundred lives lost. *City of Chester* remains the second greatest loss of life at the Gate to this day (Fig. 8).

The wreck was located by the USC&GS dragline immediately after the disaster, and a local diver descended in hardhat rig to survey it. In May 2013, Navigation Response Team (NRT) 6 (Laura Pagano, Edmund Wernicke, and Ian Colvert) of NOAA's Office of Coast Survey conducted a quick search as part of their regular duties to provide better resolution sonar data for the wreck of M/V *Fernstream*, a 1952 marine casualty inside the Golden Gate. The charted location of *Fernstream* is close to the position for *City of Chester* provided by the USC&GS manuscript chart from the 1888 dragline survey, and so, we asked for NRT6 to also look in the same area for another wreck. NRT6 successfully located and imaged the largely intact wreck of SS *City of Chester* where the Coast Survey charted it in 1888, and obtained multibeam data showing it resting largely upright, with extant superstructure, at the edge of a slope in 68.8 m of water in the main shipping channel. It rises 6 m off the bottom. *Fernstream*, broken in two and badly damaged, lies in close proximity, but in shallower water. It is substantially larger than *City of Chester*, and both sonar targets conform to the reported dimensions for each ship (Fig. 9). There was no mistaking which wreck was which.



Robert Gilbert painting of the City of Chester sinking after her collision with the steamship *Oceanic*, circa 1890. San Francisco Maritime National Historical Park Museum Collection, SAFR 3753.

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Fig. 8 Sinking of SS *City of Chester*, painting by Frank Gilbert. C. 1890 (San Francisco Maritime National Historical Park)

In 2014, *City of Chester* was resurveyed through the donated services of the Bay Marine Services LLC and Hibbard Inshore LLC as part of the mission to locate and three-dimensional survey the wreck of SS *City of Rio de Janeiro*. The three-dimensional archaeological survey provided greater resolution sonar as the Saab Sabertooth ROV/AUV was lowered from M/V *Eaglet* to a position just above the wreck (Fig. 10). Given poor visibility due to suspended sediments, sonar was the only means by which the team could visualize and map the wreck. The hull of the steamer has broken down to the turn of the bilge, exposing the frames and the internal machinery. *City of Chester*'s single compound steam engine remains in situ, upright and adjacent to the two boilers, positioned forward of the engine. The sonar revealed the extent of the damage that sank the steamer. The bow is nearly completely severed on the port beam with only a portion of hull attaching it on the starboard beam. The cut is where *Oceanic*'s bow almost cut *City of Chester* in two. The site as noted lies in the main shipping channel and is swept by strong tides as a result of tidal exchange in and out of the bay. Other than the brief surveys of 2013 and 2014, there are no plans for further investigation of the site (Fig. 11).

City of Rio de Janeiro

SS *City of Rio de Janeiro* was built in 1878 by John Roach & Son at Chester, Pennsylvania, and launched on 6 March 1878. *City of Rio de Janeiro* was built to connect Brazil with the United States. The steam line to Brazil was a failure. *City of Rio de Janeiro* proved too expensive and was sold in 1881 to the Pacific Mail Steamship Company of New York, and put into immigrant service on the Panama route. *City of Rio de Janeiro* made only one voyage to Panama before going into trans-Pacific Service. The US Army's Quartermaster Corps chartered *City of Rio de Janeiro* as a troop transport during the Spanish American War in 1898. *City of Rio de Janeiro* returned to immigrant service in 1900.

Arriving in San Francisco, California on 21 February 1901, with passengers and freight from Hong Kong, Yokohama and Honolulu, *City of Rio de Janeiro* took on Pilot Frederick Jordan. Due to fog, the steamer was anchored offshore. The next morning at 4 a.m., *City of Rio de Janeiro* was slowly moving through the narrow entrance of the Golden Gate, which was enveloped in fog. Captain Ward and Pilot Jordan made no attempt to retreat back offshore. Without warning, the ship struck Fort Point at 5:30 a.m. At the time of the stranding, an ebbing tide pushed the steamer back from the Golden Gate and off the rocks. The ship's bulkheads were not watertight; it rapidly flooded and sank within 10 min. Many of the passengers, most of them Chinese and Japanese emigrants, were asleep in their cabins and died below. Those who did escape were either in lifeboats or clung to debris before being rescued by the local fishing boats. Of the 210 on board, 128 lives were lost, making this shipwreck the highest loss of life at the Golden Gate. *City of Rio de Janeiro* is considered by historians as the "Titanic of the Golden Gate". Court proceedings found Captain William Ward, who went down with the ship, and Pilot Frederick Jordan, who survived, both guilty of gross negligence (Fig. 12). Rumours of treasure on board the lost steamship led to a series of unsuccessful searches through the twentieth century. In 1985, a California-based private consortium, SEAGAMB, Inc., notified the California State Lands Commission that they had located the wreck outside the Golden Gate, just outside the main channel on its side in 91 metres of water. They provided a side-scan sonar image of the wreck to the State, but not an exact location (Delgado and Haller 1990:179). SEAGAMB subsequently did not pursue salvage of the wreck, and holds no claim over the wreck. Working with existing

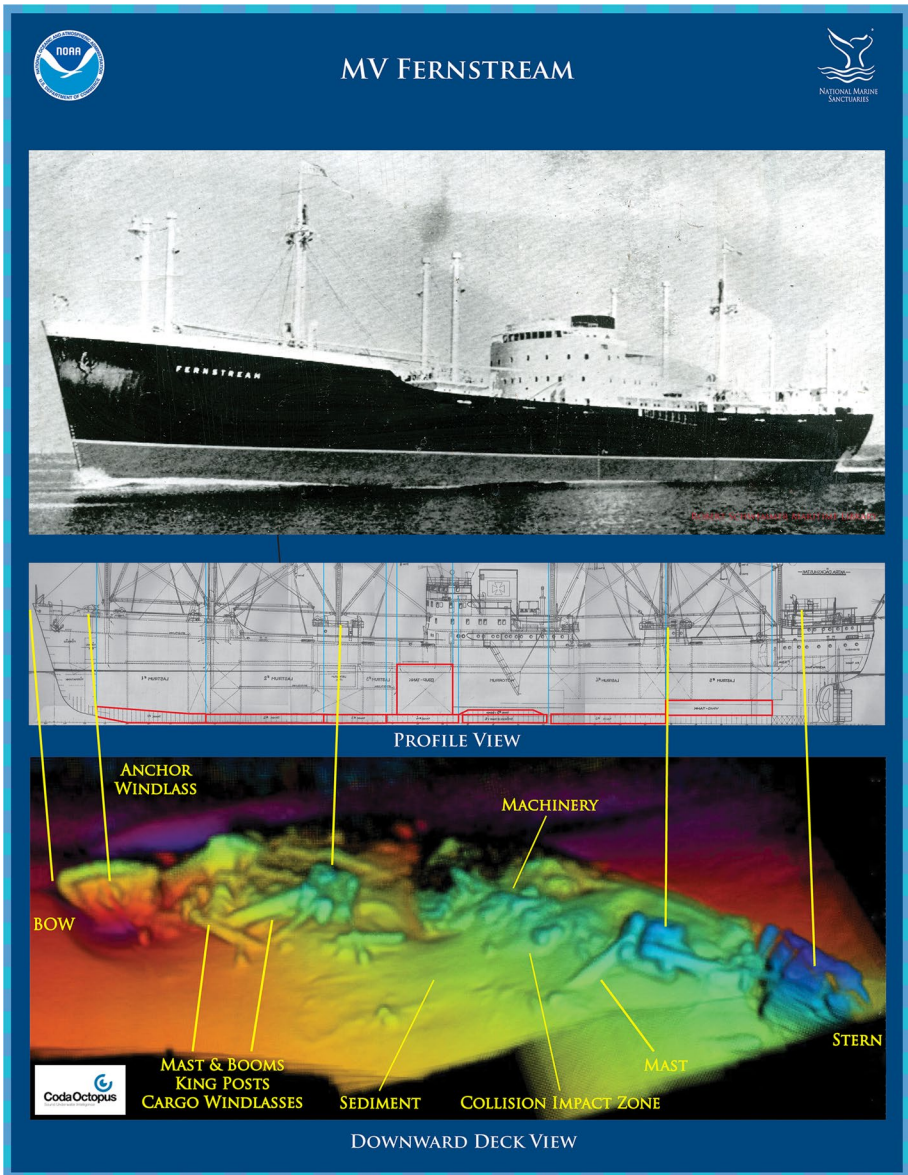
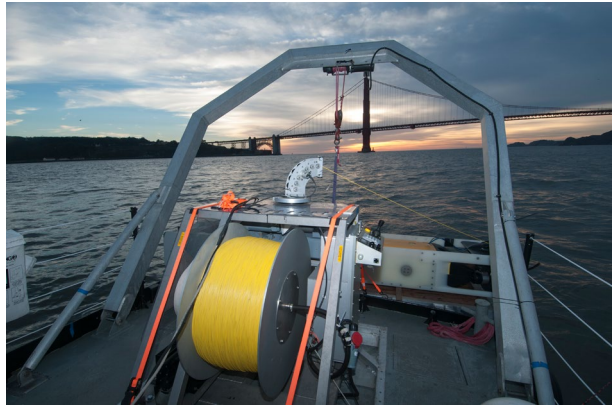


Fig. 9 NOAA Interpretive Poster of the Wreck of SS *Fernstream* (NOAA/Coda Octopus)

NOAA multibeam sonar data of the area, at the request of NOAA as part of the three-year maritime heritage survey, Gary Fabian pinpointed a likely anomaly off the channel entrance and outside the Golden Gate.

The opportunity to survey the anomaly came through the donation of vessel and equipment time and services from Bay Marine LLC and Hibbard Inshore LCC in November 2014. At the same time, the team also documented the previously located wreck of *City*

Fig. 10 R/V *Eaglet* in position over the wreck of SS *City of Chester* (Robert Schwemmer, Office of National Marine Sanctuaries, NOAA)



of *Chester*, as noted above. Hibbard's Saab Hybrid can operate as an autonomous underwater vehicle (AUV) with no tether, or as a remotely operated vehicle (ROV) via a thin fibre optic tether. For this mission, the Saab was set up in ROV mode and equipped with Coda Octopus Echoscope sonar. The Echoscope is volumetric sonar producing real-time three-dimensional imaging. The patented technology generates a complete three-dimensional model composed of more than 16,000 data points from each acoustic transmission in real time. Echoscope ping geometry allowed the science team to study the archaeological remains of the shipwreck from different angles in real time and guide the ROV pilot as data was collected keeping a safe distance from the wreck so as not to impact the historic remains.

City of Rio de Janeiro lies in 87.48 metres at the base of a submerged slope. The sonar survey showed a marked difference in the appearance of the site in the 1985 side-scan sonar survey. The wreck appears to have begun to collapse on the seabed, while at the same time undergoing burial in the sediments exiting the Golden Gate with each ebb tide. Little, if any, visual remains of diagnostic artefacts were distinguishable due to the encapsulation of mud, though the symmetrical features of the bow were visible. The stern appears to have detached near the machinery space and slid 19.8 metres deeper than the elevation of the forward two-thirds of the wreck (Fig. 13).

Frank Buck and SS Lyman Stewart

Just prior to the *City of Rio de Janeiro* and *City of Chester* surveys, NOAA's Office of Coast Survey, seeking to test a new three-dimensional imaging sonar, deployed NRT6 in September 2014 to two well-known, but never surveyed, shipwrecks outside the Golden Gate and immediately offshore of what is locally known as Lands End. The single-screw oil tankers SS *Lyman A. Stewart* and SS *Frank H. Buck* lie in close proximity to each other in several metres of water, with their marine steam engines and the rudder post of *Frank H. Buck* visible at low tide. The two tankers, built as sister ships, were constructed alongside one another at San Francisco's Union Iron Works in 1913–1914. *Frank H. Buck*, the first ship launched, was built for the Tide Water Associated Oil Company. The tanker's 23-year career included being commissioned into the US Navy in 1918 as USS *Frank H. Buck*. The naval armed guard on *Frank H. Buck* encountered the German submarine *U-155* on 1

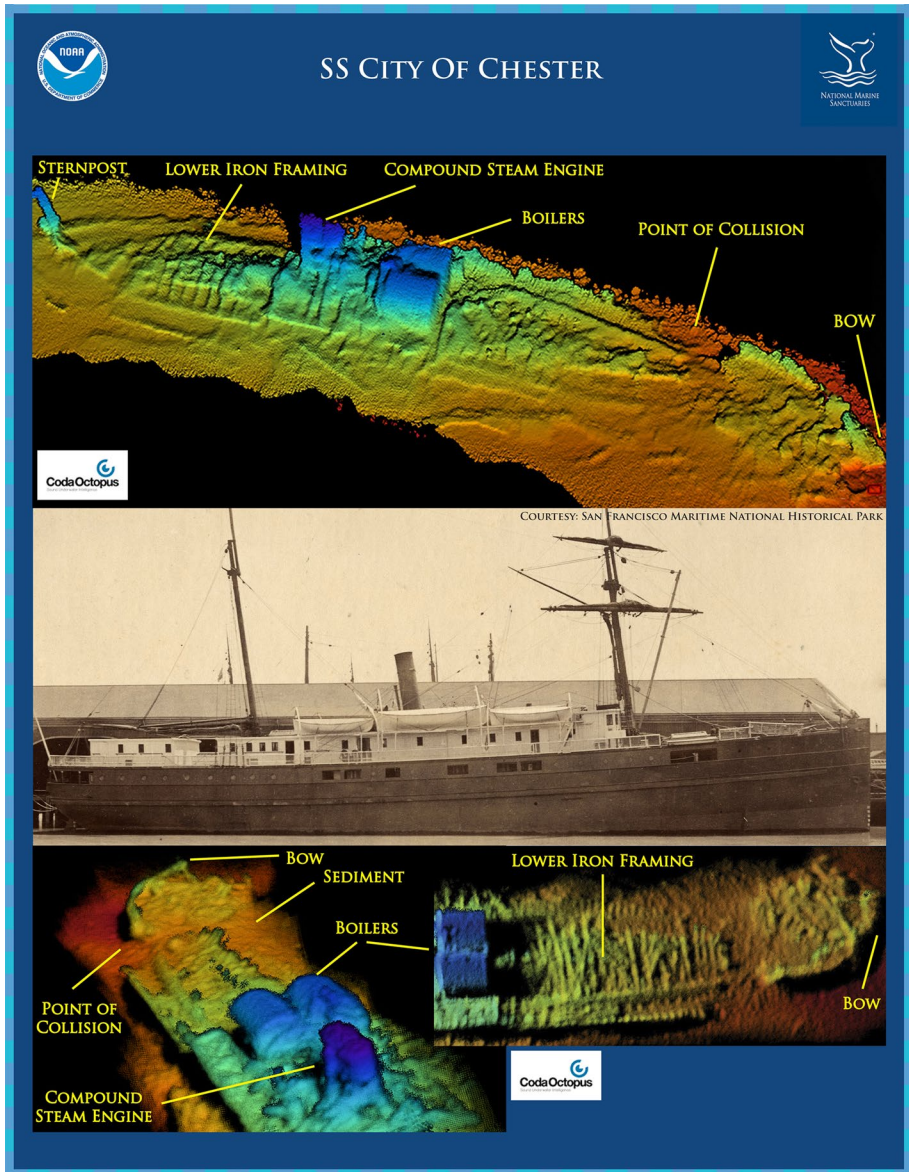


Fig. 11 NOAA Interpretive Poster of the Wreck of SS *City of Chester* (NOAA/Coda Octopus)

September 1918 on its final naval voyage. The crew attacked the German submarine, which was acting aggressively, with gunfire, inflicting serious damage to *U-155*. *Frank H. Buck* survived that encounter as well as a 1924 grounding, and remained afloat and active until it wrecked in 1937.

SS Lyman A. Stewart, the second of the two tankers launched, was built for Union Oil Company of California. Its career was shorter than its sister ship. Leaving the Union Oil Company's dock at the San Francisco Bay port of Oleum, heavy with oil and bound for

Fig. 12 SS *City of Rio de Janeiro* at Nagasaki, Japan in 1894 (San Francisco Maritime National Historical Park)



Seattle, *Lyman A. Stewart* approached the Golden Gate on the afternoon of 7 October 1922. A heavy swell and a strong tidal current added to the danger of a thick fog bank as the tanker proceeded out the harbour entrance along the northern, or outbound, side of the main ship channel.

At the same time, the freighter SS *Walter A. Luckenbach* was heading into the Gate at the end of a long voyage that had begun in New York. The fog muffled any horns and whistles on both vessels. The master of *Luckenbach* saw the long hull of *Stewart* cut across his bow and heard the blasts of its whistle too late to avoid disaster. The freighter cut deep into the port bow of the heavily laden tanker, causing water to rush in and immediately putting it down by the bow. *Stewart's* master ordered all hands to abandon ship, while he stayed with his command and piloted it towards shore, trailing oil. *Stewart* grounded on the rocks at Lands End and ripped its hull on the jagged rocks. All thirty-eight hands aboard were saved. The hulk of the stranded tanker remained on the rocks, visible above the water, until storms battered the hull apart, leaving only the engine exposed at low tide.

On 6 March 1937, bound through the Golden Gate for the bay port of Martinez with a full cargo of oil from Ventura, SS *Frank H. Buck* was rammed head-on by the passenger liner SS *President Coolidge*. When *Buck* was down by the bow trailing oil, the crew was ordered into the lifeboats. Quick and efficient lowering of the boats, and the prompt response by rescue craft from the Coast Guard and the San Francisco Police Department, were largely responsible for saving all hands. The drifting wreck settled next to the exposed engine of *Lyman A. Stewart* and the two sister ships were reunited in death, albeit 15 years apart. Their fate inspired a mention in the popular cartoon, “Ripley’s Believe It or Not!”

While well known to passing hikers on the bluffs of Lands End, the submerged remains of the two tankers were not documented, although anecdotal evidence from local divers suggested that *Frank H. Buck's* steeply angled wreck was more intact as the bow lies in deeper water than the more exposed stern. The NRT6 sonar survey provided a three-dimensional map of the directly adjacent stern sections of the two tankers, with *Buck* oriented 90° perpendicular to *Stewart*. Despite resting in a shallow and active surf zone, the double-bottomed lower hull of each tanker was observed to be intact with the triple expansion marine steam engines on their beds and rising above the water. In addition, each tanker’s four Scotch marine boilers remained in situ and bedded next to the engines. The survey

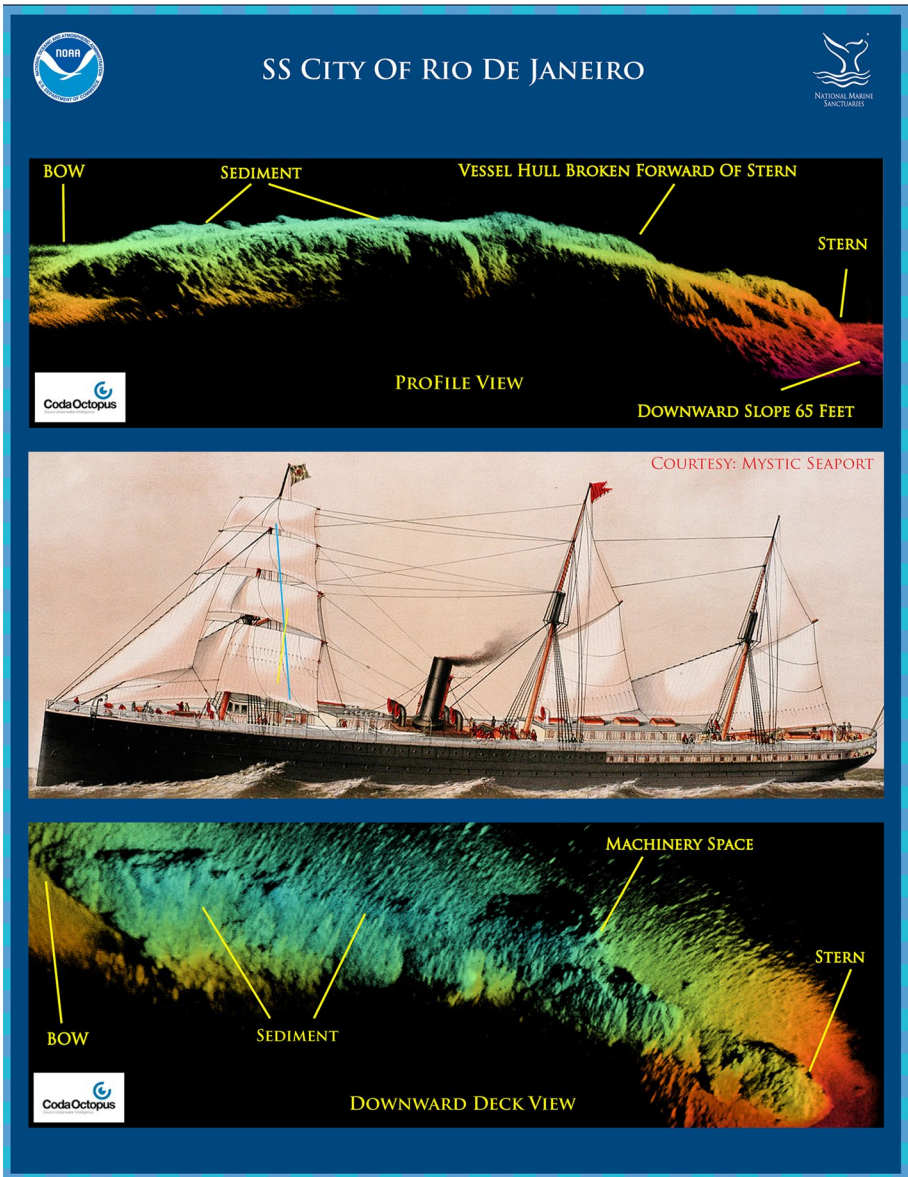


Fig. 13 NOAA Interpretive Poster of the Wreck of SS *City of Rio de Janeiro* (NOAA/Coda Octopus)

ended due to changing surf conditions and hence the extent of *Frank H. Buck*'s wreckage offshore, and the question of how intact the forward hull is, were not determined (Fig. 14).

Oxford

The wooden-hulled ship *Oxford* was built as a passenger and cargo-carrying packet ship in the transatlantic immigrant trade in 1836. Owned by the Black Ball Line, *Oxford* regularly sailed between Boston and Liverpool until 1850. That year, Black Ball sold the ship to Henry Heiser, a New York merchant. *Oxford* cleared Boston in late 1851 for San Francisco with a speculative cargo for the city's inflated Gold Rush market. Heiser and his partners hoped to double their \$100,000 investment in the ship's cargo, which included building materials, ice (packed in sawdust), and whisky. Unfortunately, the master and crew mistook their position when *Oxford* arrived off the California coast in a thick fog in July 1852. Unsure of the location of the Golden Gate, the master followed the coast until the fog cleared, and he mistook a promontory for the Gate. It was Tomales Head, 72 km north of the Golden Gate. *Oxford* stranded in the shallows and quickly bedded down more than a metre into the sand and mud of Tomales Bay's entrance.

When news of the accident reached San Francisco, salvage crews were able to remove the cargo of the stranded ship, but could not pull *Oxford* free of the mud. Contemporary accounts noted that a "quicksand" was swallowing the hull as the surf rolled in (Delgado

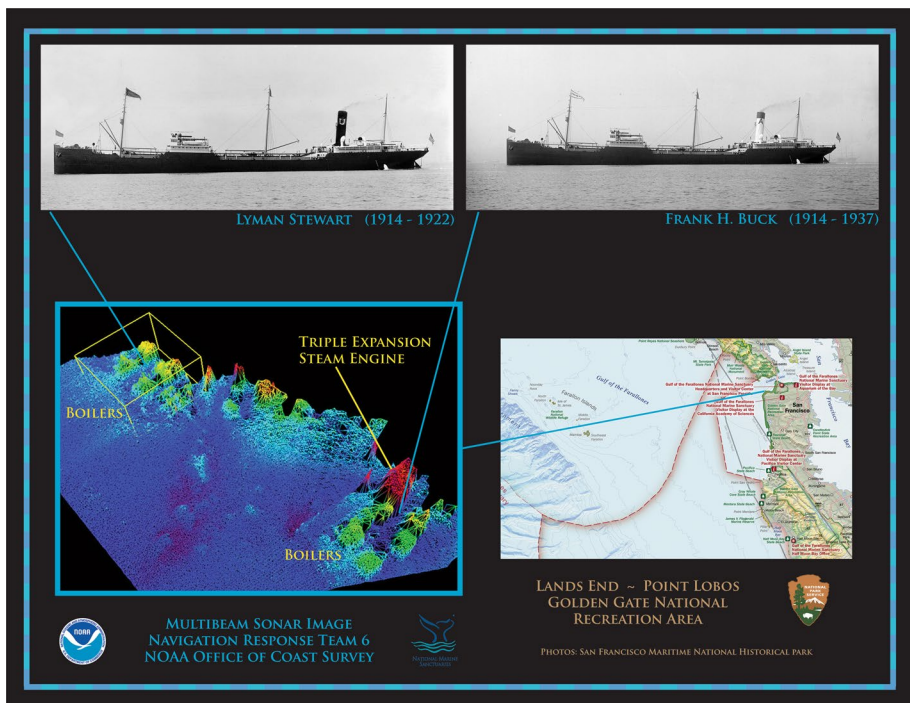


Fig. 14 NOAA Interpretive Poster of the wrecks of SS *Frank H. Buck* and SS *Lyman Stewart* (Office of National Marine Sanctuaries, NOAA)

and Haller 1990:143). Stripped of its upper masts, yards and rigging, *Oxford* was abandoned and “lay inside of Sand Point for some years” (Davidson and Pacific Coast Pilot 1889:250) (Fig. 18).

The Coast Survey marked a wreck inside the entrance of the bay on its charts until 1931, but without specifically noting its identity. The archival T-sheets, as previously noted, specifically identified it as *Oxford*. The abandonment of *Oxford* and subsequent salvage of its cabin gained the scholarly attention of Scott Byram and associates, and the excavation of this historic period land site, associated with the indigenous native peoples at Tomales Bay, has documented maritime hardware (Byram 2013:37–38). Armed with a geo-rectified position for the wreck site from the 1860 T-sheet and using a shallow draft boat, a small team (George Clyde, James Allan and James Delgado) manoeuvred over the site and conducted a systematic hydraulic probe survey. A mud and sand shoal at the site lay slightly exposed at low tide and under 1.2 metres of water at high tide. The probe located the likely wreck site on average 3.6 m below the surface of the shoal for approximately 32 m.

The probe contacts indicate it was not with solid wood, but rather a “crunchy” mass. This is consistent with observed site formation processes of other exposed wooden vessels we have observed in the region. The brigantine *Galilee*, built in 1891, ended its career in Richardson’s Bay, part of San Francisco Bay, where it was beached in the shallows as a houseboat in 1933. The vessel’s wooden hull that lay above the mud and below the high-tide line over time was consumed by marine organisms while also being colonized by barnacles and other mollusks. In time, abandoned and left to the elements, the dry-rotted upper works fell into the water. The site, as of 2017, is a low-lying mound of shell and fragments of *Teredo navalis*-tunnelled wood fragments overlying the buried lower hull in the mud. The archaeological remains of *Oxford*, delineated by the T-sheet and probed in 2014, are a comparative example, albeit older, of this type of site. Because the wreck of *Oxford* lies within a marine protected area (Greater Farallones National Marine Sanctuary) and in an ecologically sensitive wet land, Tomales Bay, it was decided to not pursue test excavation to further define the site.

Selja

The steel-hulled SS *Selja* was built in West Hartlepool, England, in 1907 as a workhorse cargo-carrying steam ship and was chartered by the Portland & Asiatic Steamship Company for trade with the Far East. Loaded with the commodities of the Pacific Northwest, usually lumber, timber, and flour, *Selja* regularly steamed to China and Japan, sold the cargo there, and returned to the USA, usually San Francisco, with manufactured “China goods” before heading back to Portland to restart the cycle. Bound from San Francisco, *Selja* was lost after it collided with the steamer SS *Beaver* off Point Reyes in a thick fog on 22 November 1910. Despite both ships being aware of the other through whistle blasts, they struck, with *Beaver*’s bow cutting into the hull of *Selja*. *Selja* sank bow first 10 min after the collision, and when the bow struck the bottom, the wreck was almost straight on end with its stern sticking out of the water some 30 metres. It then gradually turned bottom up and sank. *Beaver*’s crew rescued the captain, his wife, and two children and all *Selja*’s crew except for two Chinese crew members.

The wreck diving Lanham brothers located a wreck they believed was *Selja* and dived it only once in pitch darkness and difficult conditions, describing it to the survey team as a confused twisted mass of steel, snagged with nets. A US Geological Survey low-resolution

side-scan sonar target analysed by Gary Fabian conformed to the general location the Lanhams reported. The September 2014 survey made a single dive with the ROV and found that the hull was substantially intact. When *Selja* sank, the bow had dug into the seabed and remained in place, while the hull twisted as the stern, still above the surface, sank over the course of 10 min. During the October 2015 survey, the site was documented with a small AUV that provided a more detailed sonar image of the wreck (Fig. 15).

Selja is an example of how the 2013–2016 survey located a wreck not identified in the 1990 assessment of potential sites that might lie within the marine sanctuary. Historical accounts in some cases can only suggest that a cultural resource exists within a management area. Therefore, the inventory of potential cultural resources for the sanctuary only noted *Selja* as a possibility. With its steel hull inverted, broken, twisted, and torn, the 2014–2015 ROV and AUV surveys located a ship that we can verify as part of the cultural inventory of the sanctuary and also an important element in the overall maritime cultural landscape of the Gulf of the Farallones. *Selja* also featured prominently in a legal case that ultimately was argued before the United States Supreme Court in 1917 over a key aspect of maritime law, the rules of the road. The Master of *Selja*, Olaf Lie, on behalf of the owners of his ship, as well as his crew, sued the steamer *Beaver* and its owners in Admiralty Court for the loss of *Selja*, its cargo, and personal effects. The Supreme Court case, *Lie v. San Francisco & Portland SS Co.*, 243 US 291, was a landmark in defining the parameters of the “rules of the road” at sea. At every stage of the case, Lie and his owners lost as it was demonstrated in court that both ships were proceeding too fast in a thick fog, and

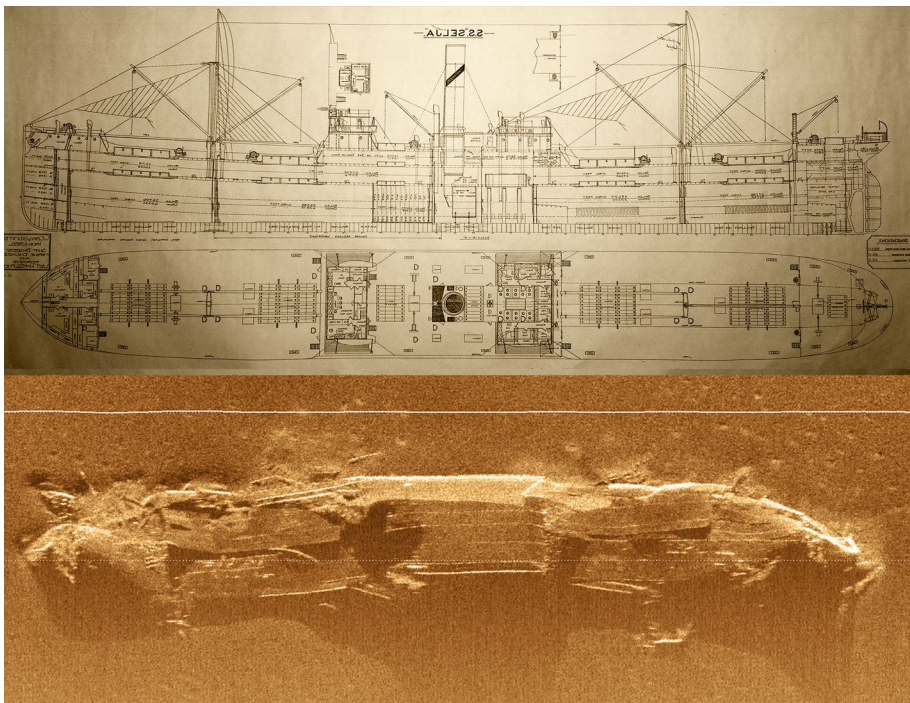


Fig. 15 Sidescan sonar of the wreck of SS *Selja* compared to the ship's plans (NOAA/Coda Octopus)

shared the blame. Lie and his owners were culpable and thus were left, in the words of the Supreme Court ruling, to suffer their self-inflicted loss.

Ituna

The British luxury steam yacht SS *Ituna* was built in Glasgow, Scotland, for John G. Mackie and launched on 21 April 1886. As a steam yacht, *Ituna* had several owners. Under the ownership of Allison Vincent Armour, a wealthy socialite and yachtsman interested in the natural sciences, *Ituna* sailed from New York on 16 December 1894 for Havana and Atlantic ports of Mexico on a scientific research expedition. In Jacksonville, Florida, Professor Allan Marquand of Princeton, Dr. Charles F. Millspaugh, Curator of Botany in the Field of Columbian Museum, and Mr. William Henry Holmes, Curator of Anthropology in the same institution, joined the expedition. For 3 months, the yacht sailed to Yucatan, Chiapas, and Oaxaca and the science team examined and described archaeological remains encountered during the journey. The expedition results were published as *Archaeological Studies Among the Ancient Cities of Mexico*, which was immensely valued by scholars of Mesoamerican anthropology, then in its infancy.

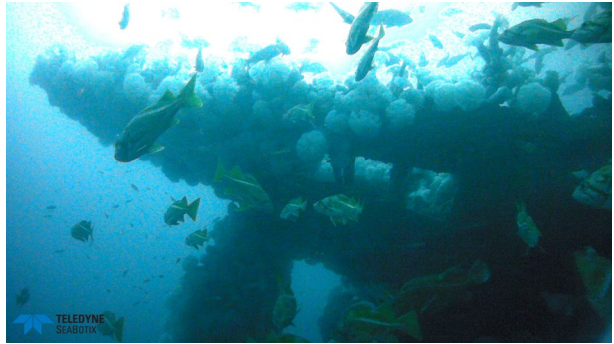
Sold to American owners, *Ituna* finally entered US registry during World War I. Based in Los Angeles, *Ituna* was converted in 1916 by its owners into a passenger and cargo steamship to run between Los Angeles and Mexico for the newly established Mexican Navigation and Commercial Company. The company took advantage of *Ituna*'s cold storage plant, sufficient to hold 120 tons, to transport seafood cargoes between Baja California and San Diego. This in turn led to the sale of the steamer to Frank E. Booth, president of F.E. Booth Canning Company of San Francisco, who converted *Ituna* into a fishing trawler.

On 13 March 1920, *Ituna*, under charter to Reedsport Fish Company, was en route from San Francisco, to Reedsport, Oregon, when the ship encountered a storm. At 10:30 p.m., *Ituna* foundered at a position noted as lying 15 miles northwest of the San Francisco Lightship. Fourteen crewmen were on board; two were trapped in their bunks and drowned. *Ituna* sank by the bow within 10 min of springing a leak in the forward hold. The cargo included cannery machinery worth \$30,000 and cement. Fighting heavy seas in a lifeboat for 4 h the survivors made it to the San Francisco Lightship where they were rescued and later transferred to the Associated Oil Company's tanker, *W.S. Porter*, which brought the survivors to San Francisco.

Like *Selja*, *Ituna* is a wreck not originally noted in the 1990 assessment, but subsequently added to the NOAA West Coast Regional Shipwreck Database, without having been physically located. A 2009 sonar survey for a missing yacht located a wreck in the general area of *Ituna*'s loss, and after processing by Gary Fabian, the target was selected as a high priority for assessment during the 2015 mission. The wreck was dived with a ROV during the 2015 mission and quickly identified as *Ituna* based on its intact hull, which retained the lines and form of the original yacht design, and its machinery and fittings (Fig. 16). In addition, elements of the cargo lost with the ship were also noted, including an intact wall of now solid bags of cement, and the broken remains of the cannery machinery in the forward hold (Fig. 17).

During the 2016 mission E/V *Nautilus* dived the wreck of *Ituna* with its larger, more sophisticated ROV systems and further documented the site. The wreck has remained untouched in more than 100 m of water. The ceramics from the galley, cargo, bridge equipment, the brass whistle from the stack, and gauges still mounted in the engine room (itself

Fig. 16 Stern of the wreck of SS *Ituna* (Office of National Marine Sanctuaries, NOAA)



exposed to the open sea) indicate a wide range of associated material culture as part of the site (Fig. 18). However, recent damage to the stern transom, intact in 2014, but smashed and lying in fragments on the seabed in 2016, suggests that possibly a fishing trawl struck the wreck and damaged it.

Noonday

The wooden clipper ship *Noonday* was built in Portsmouth, New Hampshire, for Henry Hastings of Boston. Like other clippers, the fast ship was sent into the high-end commodity and passenger trade with gold-rich California. *Noonday* completed four westbound

Fig. 17 Ceramics from the galley of SS *Ituna* (Office of National Marine Sanctuaries, NOAA)



Fig. 18 Engine room, SS *Ituna* (Office of National Marine Sanctuaries, NOAA)



passages from Boston to San Francisco during its career; the fastest was completed in 117 days in 1857. On 1 January 1863, *Noonday* was approaching the entrance to San Francisco harbour, 139 days out of Boston, with clear weather and smooth seas, but with a long swell on, the ship under all sail to main skysail and topgallant studdingsails and making 9 to 10 knots.

When about eight miles west of North Farallon Island, it struck a submerged rock, but glided clear. The shock was not sufficient to carry away the spars or rigging. However, the bottom had been stove and it immediately started to fill. Capt. Henry and his crew had only time to save a portion of their effects and take to the boats before the ship sank in 40 fathoms. The pilot boat *Relief*, some two miles distant, picked up all hands. It appears that the rock that caused the disaster was covered by 18 feet of water; its existence was known to pilots, but it had not been charted. In spite of the depth, there were apparently some attempts made to salvage *Noonday*'s cargo, in some reports valued as high as \$600,000.

As a result of the wreck, the rock the clipper struck was designated as "Noonday Rock" and retains that name. Fishing trawls snagged the wreck "continually" over the course of the next several decades at a location between Noonday Rock and the coast. In April 1934, the trawler *Junta* pulled up a ship's bell with *Noonday* engraved on it. The bell is now in the collections of San Francisco Maritime National Historical Park. A ship-shaped, low-relief sonar target at an 80 m depth in the approximate area suggested by the *Junta* snag of the bell was dived by ROV in 2014. No artifacts or visible remains were observed. It is possible the wreck has been reduced in profile by repeated trawl hits, and buried by sediment. The presumed site is covered with sand waves showing that this is an active, shifting area of the sea bed.

USS *Conestoga*

The US Navy's seagoing fleet tugboat *Conestoga* (AT 54) was originally built as a civilian tugboat to tow coal barges for the Philadelphia and Reading Railroad Company in 1903. *Conestoga*'s 13-year career as a civilian tug included towing large "schooner barges", three-masted schooners with cargo holds full of coal. With the outbreak of World War I and the USA's subsequent entry into the conflict, the US Navy purchased *Conestoga* in September 1917. The tug carried out towing duties along the Atlantic coast, transported supplies and guns, and escorted convoys to Bermuda and the Azores. In September 1919, the tug was then assigned to harbour tug duty in the 5th Naval District at Norfolk, and reclassified USS *Conestoga* (AT 54) on 17 July 1920. Ordered to duty as a station ship at Tutuila, American Samoa, it underwent alterations and fitting out in Norfolk, and cleared Hampton Roads 18 November 1920 for the Pacific. Arriving in San Diego 7 January 1921, it continued to Mare Island on San Francisco Bay departing February 17 and arriving on February 19 for voyage repairs. On 25 March 1921, *Conestoga* departed for Pearl Harbor. It was never seen again (Fig. 19).

When *Conestoga* failed to reach its destination by its anticipated arrival date of April 5, the Navy mounted a massive air and sea search off Hawaii and then off the Mexican coast. The ship's mysterious disappearance gripped newspapers all across the USA. On 30 June 1921, the Navy officially declared *Conestoga* lost with all her crew (Fig. 20). It remained one of the top ten mysteries in the history of US Navy vessel losses for nearly a century.

Fig. 19 USS *Conestoga* (US Navy History and Heritage Command)



The first steps towards solving the mystery of *Conestoga*'s disappearance began taking shape thanks to historian Steve Lawson, who provided a multibeam sonar image of a mysterious, previously uncharted shipwreck off Southeast Farallon Island that had been reported in 2009 to NOAA's Office of Coast Survey. With additional data analysis from Gary Fabian, the 2014 mission made three ROV dives on the wreck, which was quickly determined to be a late nineteenth- or early twentieth-century ocean-going tug. The riveted steel hull is intact, but the superstructure, constructed of lighter steel, has collapsed and lay scattered on and around the wreck. A variety of diagnostic features, including the triple expansion marine steam engine, Scotch boilers, a spare propeller,

Fig. 20 Ship's Crew, USS *Conestoga* (US Navy History and Heritage Command)

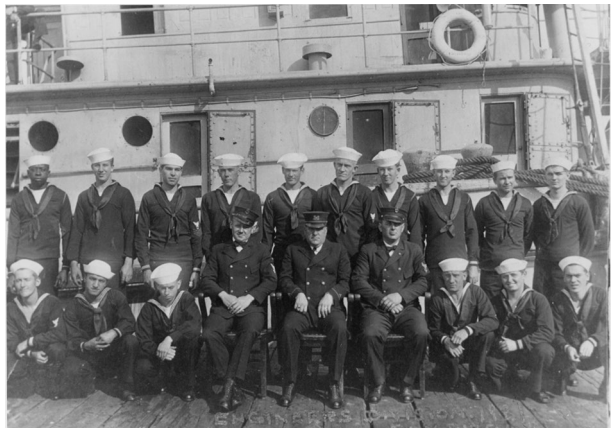
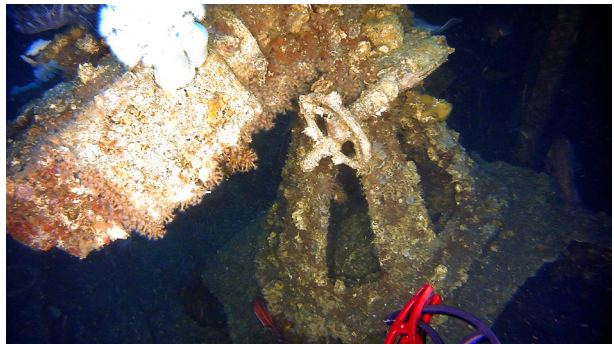


Fig. 21 Triple Expansion Engine, USS *Conestoga* (NOAA/Teledyne SeaBotix)



Fig. 22 Gun on the wreck of USS *Conestoga* (NOAA/Teledyne SeaBotix)



a towing winch with a broken towing wire, a steam windlass, and steering gear showed that the wreck was not a stripped or scuttled hulk, which was an initial hypothesis. All evidence pointed to the tug having been swamped, sinking by the stern (Fig. 21).

Researching historical accounts of tugboats that departed the Golden Gate and were never again seen led to the story of *Conestoga*. All of the documented features on the wreck were an identical match for *Conestoga*. In addition, review of the GoPro footage from a camera strapped to the bottom of the ROV showed what the survey team had missed on all three “live” dives, namely a US Navy 3-inch 50 calibre gun which matched *Conestoga*’s armament (Figs. 22 and 23). While naval officials were briefed, the probable discovery was kept secret. The 2015 mission was greatly aided by Teledyne SeaBotix Inc.’s loan of a technician and mini-ROV that allowed careful examination of the inner hull. BlueView sonar provided high-resolution underwater acoustic imaging and measurements of the hull.

In addition to further documentation of the site and its various diagnostic features, including the gun, some of the raised steel lettering spelling out the “ON” from “*Conestoga*” was noted on the transom, although heavily covered with anemones. Reconstructing the event, the team believes the tug, caught in a gale and battered by heavy waves, and only recently repaired, began to founder, and made for a nearby Naval radio station next to the Southeast Farallon Island Lighthouse, only to lose its battle with the sea 5.7 km from the island.

Fig. 23 Gun Crew of USS *Conestoga* (US Navy History and Heritage Command)



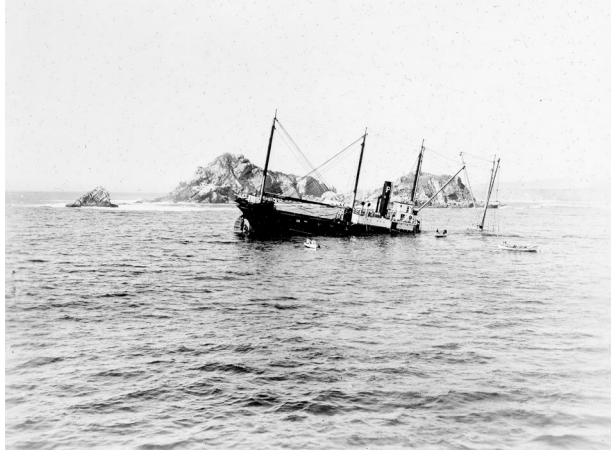
Dorothy Wintermote

This “Laker class”-designed steel cargo freighter was laid down as SS *War Lilly* for the Cunard Steamship Company, Ltd., during World War I. The US entered the war, while the freighter was being built at the Toledo Shipbuilding Company in Ohio, and the US Shipping Board requisitioned the ship under the Urgent Deficiencies Act of 13 June 1917 and renamed it SS *Lake Cayuga*. Under government ownership, the freighter carried wartime cargoes under charter to the West Indies until 1923. Purchased by private interests on the US Pacific Coast, the freighter, renamed SS *Dorothy Wintermote*, operated in the coastal lumber trade.

On 17 September 1938, *Dorothy Wintermote*, with a crew of 29, was en route from San Francisco to Portland, Oregon, with a cargo of general cargo valued at \$115,000, likely with plans to return with a cargo of lumber. The master encountered fog off the northern coast of California and gave orders for the vessel’s speed to be reduced and was about to take soundings to determine water depth when the ship struck bottom off Fish Rock, 11 miles south of Point Arena. Fish Rock had claimed many vessels over the years. The US Coast Guard cutter *Shoshone* responded to the SOS sent by the stranded freighter’s radio operator and picked up survivors in the lifeboats. The freighter became completely submerged from the bow up to the pilot house with the forward cargo hold underwater (Fig. 24).

On 20 September 1938, *Dorothy Wintermote* was refloated at 11:00 p.m. after a heavy sea broke it free and it was taken in tow by the Red Stack tugboat *Sea Giant*. The freighter began to list as the sea poured into what was reported as a 15-foot hole forward. While under tow *Dorothy Wintermote* sank in deep-water offshore. The 2016 cruise of E/V *Nautilus* began at a point farther north than the 2014–2015 R/V *Fulmar* missions. With a sonar target off Fish Rock that appeared to be *Dorothy Wintermote*, the decision was made to make a shallow 93 m dive to investigate. A single ROV dive on 20 August 2016 found *Dorothy Wintermote* upright, with the bow badly mangled from the head-first sinking and the full weight of the hull bearing down on the already damaged (from stranding) bow. From midship’s aft, the ship was essentially intact, but with fallen masts and stack, and the wooden bridge gone. The forward hold was open, and inside a variety of the general cargo was visible in the form of glass jars, small cans, and 55-gallon drums.

Fig. 24 SS *Dorothy Wintermote* sinking (San Francisco Maritime National Historical Park)



Unidentified Barge and Fishing Boat

In addition to the named shipwrecks, a welded steel, apparently modern fuel barge lying in the main shipping channel off Southeast Farallon was the subject of one ROV dive in 2015. No identifying marks or a name was observed. A modern steel-hulled fishing boat lying off Point Reyes was also the subject of a brief ROV dive. The trawler's bow was partially buried by sand and sediment, leaving only a portion visible. Some lettering on the starboard side, "Oleta", clearly part of the vessel's name, was observed, but proved insufficient and, to date, this modern wreck also remains unidentified.

Possible Wreck

A sonar target reported to NOAA's Office of Coast Survey in 2007 was dived in 54 m of water. The sonar showed a low-relief target that the 2007 report designated as an "old wreck". No articulated structure was observed, only scattered elements including a possible section of hull bottom, loose steel plate without any discernible rivets or welds, and a small (1 m) steering quadrant. The visible wreckage was heavily snagged with fish net and proved too hazardous to continue the ROV dive. It appears there is a wreck at this location, probably one which has been blasted or wire-dragged to clear it as an obstruction to navigation. The steel suggests a late nineteenth- to twentieth-century date for the wreck.

Discussion

For archaeologists, especially those who manage resources, the focus is on finding sites. In this case, the focus was shipwrecks, and this project effectively doubled the number of verified, ground-truth wrecks in the federally managed waters and bottomlands of the Gulf of the Farallones. The project also attested to the veracity of the USCS and USC&GS's T-sheet archival records. But we risk not seeing the forest if we focus solely on the trees. In the initial 1990 characterization of shipwrecks in the Gulf of

the Farallones, specifically those in federally managed waters, a “population” of 151 wrecks looked at total losses in which as archaeologists we could logically expect to find tangible physical remains. Since then, as previously noted, ongoing archival work added some 250 additional wrecks, including downed aircraft. Based on that, and with new empirical sonar data, wreck diver reports, and available resources, we set out over a three-year period to find what we could.

The results are more than the group of shipwrecks we have cataloged in this article. What is clear in the assessment of these wrecks is that the Gulf of the Farallones is an active, changing landscape in which natural factors introduce dramatic changes to the wrecks. Site formation process is a well-known aspect of study. In the Gulf of the Farallones, as we see with the wrecks of *Oxford*, *Noonday*, *Frank H. Buck*, and *Lyman A. Stewart*, shipwrecks in shallow water environments break down, and become, over time, either scattered pieces of redistributed metal or sites buried by moving sediments. Even deeper wrecks like *Ituna*, *City of Chester*, and *City of Rio de Janeiro* have undergone environmental change.

While some of these sites retain archaeological integrity, i.e. the ability, if excavated, to yield important information, these sites are also assessed by resource managers in the USA based on their level of structural intactness in terms of how they meet the criteria of the US National Register of Historic Places as representations of specific ship types or construction, or as historic entities. When confronted with a no longer intact or visible site, the individual site must present significant opportunities to add to the record through archaeological excavation to meet the solely “archaeological” criterion of the National Register. What that means, in this scenario, is that not all wrecks are equal. We argue that this is not always an appropriate way to look at it.

While meaningful for management reasons, especially when one deals with a more or less intact site of special significance such as USS *Conestoga*, the application of the National Register criteria makes sense. However, there is more to the collection of sites in the Gulf of the Farallones than a group of more or less intact shipwrecks. The probable wreck site we assessed during the survey may well have been, as late as the initial study (1990), as intact a wreck as *Ituna* or *Conestoga*. It may have been identifiable not only as a wreck, but also as a ship to which we could place a name and context. Despite our inability to do that without a more extensive intervention and assessment of this site, we had to leave it as we did, as a probable wreck. Does that make the site any less significant? We argue that the ultimate measure of significance is assessing all of the known or probable wrecks in the Gulf of the Farallones as a collection, as historically infamous or mundane as each may be on their own.

The collection of wrecks speaks to more than trades or vessel types. It speaks to global economic forces that San Francisco as a port responded to as a participant in global and regional maritime trade. It speaks to the fact, as the Coast Survey wreck charts graphically demonstrate, that this was not an easy maritime environment in which to work, with rocks, shoals, heavy seas, fog, and inevitable human error. The USCS and USC&GS charts of wrecks end in the 1870s; if these were updated to the present, the number of wrecks would more than double. The pattern of wrecks as both total losses and accidents speak to more than the dangers of this specific maritime landscape. The other elements of the maritime cultural landscape in the Gulf of the Farallones are seen more clearly as responses to the environment and the wrecks via, for example, the location of the lighthouses at Point Bonita, Fort Point, and Lime Rock, and Alcatraz inside the gate as a clear line to follow “in” or “out” while navigating these waters. The placement of a growing number of life-saving stations, including one situated directly on shore from where *City of Chester* was lost, as

well as the later closure of stations outside the gate to inside the gate show how the shifting patterns of commerce and technology are reflected in the landscape.

In taking a maritime cultural landscape approach, what this survey also reminds us, especially with the integration of the Coast Survey T-sheet documented wrecks, is that we deal with incomplete data if we focus solely on the sites “we can find”. In assessing this landscape and the human behaviours associated with it, we must include the wrecks that may not be archaeologically “there” on the seabed—either through making it off the beach or rocks and salvaged to sail another day, or salvaged, or eroded and broken through site formation processes to not be readily findable. Having said that, we ended this project without a ready list of other sonar targets to dive and assess. One other note, in conclusion, is that in order to truly understand the scope of maritime accidents and losses in this landscape, we cannot limit our focus to those which took place within the boundaries of federally managed seabed. In this, it is important to note that *City of Chester* and *City of Rio de Janeiro* both lie outside of federal jurisdiction. Yet to not have included these two ships and their losses would be wrong on many levels.

In that context, the other key point is that the maritime cultural landscape of the Gulf of the Farallones includes a variety of natural and cultural resources that join the inventory of shipwrecks and ship accident locations in offering a richer view of the role of maritime activity in shaping the larger history and development of San Francisco. While, as resource managers, we may focus on that which “we manage”, we cannot and did not exclude that which lies beyond our “jurisdiction”.

We conclude therefore by noting that the “forest” is the total record of the shipwrecks of this bight that served as a funnel for the maritime commerce of America’s greatest port on the Pacific. In reassessing these resources, both tangible and intangible, working with the archival record as well as the archaeological record, we gain a true perspective of the consequences of working and taking risks in the challenging landscape and environment of the Gulf of the Farallones. The discovery of gold in California in 1848 and the subsequent Gold Rush propelled San Francisco from a small village into the largest port and metropolis on the Pacific Coast of the Americas as thousands of vessels arrived (Delgado 2009:3). Among the earliest developments in San Francisco, in response to the rapid influx of shipping during the Gold Rush, was a high-capitalized waterfront built out over the bay’s shallows to handle the influx of passengers and cargo, and to transship them up the bay and its tributaries to the gold mines (Delgado 2009:3).

What followed was a massive influx of government funding—federal, state and municipal—that physically transformed the landscape. San Francisco Bay and its entrances were charted, obstructions such as undersea promontories noted (some of them named for shipping accidents) and in some cases removed by blasting, while a series of seawalls girded and protected the city’s waterfront, shipping channels, and anchorages were established, as well as physical infrastructure in the form of immigration and customs stations, seacoast fortifications, life-saving stations (to assist mariners and ships in distress), and lighthouses and fog signals.

The shipwrecks, both accidents and total losses, specifically the life-saving stations, lighthouses, and fog signals are all part of the maritime cultural landscape. At first focused on the Golden Gate, these included the first American lighthouse on the Pacific Coast, located on Alcatraz Island. Alcatraz dominated the entrance to the bay, and at the time of the first surveys by the US Coast Survey in 1850 used to determine where to place lighthouses, it had been the site of a near wreck in 1849. Alcatraz Light went into operation on 1 June 1854 (Shanks and Shanks 1990:30). The second light, built at the same time, but not lit, was at the gate itself on the south (San Francisco) side on Fort Point. The lighthouse

was torn down, however, 3 months after it was completed, as the government commenced construction of what in time would be a massive brick and stone fortification to guard the Golden Gate (Shanks and Shanks 1990).

The third light, outside the gate at Point Bonita, was also noted as a priority for a lighthouse by the Coast Survey in 1850; the wreck of the steamer *Tennessee* in 1853 spurred action as Congress appropriated the money for it in the same month as the wreck (Shanks and Shanks 1990:65). Two years later, on 2 May 1855, Point Bonita's light went into service. At the same time, a cannon was placed nearby to be used as a signal to warn off ships caught in the fog that often hugs the landscape; this too was a response to *Tennessee* missing the Golden Gate in a thick fog (Shanks and Shanks 1990:368). Point Bonita as the second light to be lit was augmented by a temporary wooden tower and light at Fort Point that went into service in March 1855; it in time was replaced by a cast iron tower placed atop the fort in 1864 and augmented with a fog warning bell (Shanks and Shanks 1990:105–106).

Changes to the lights to improve visibility and the range of the fog signals followed as the Golden Gate continued to be the primary focal point of shipping mishaps. In 1883, after a series of near losses, the government built a fog signal station at Lime Point, the northern promontory of the Golden Gate (Shanks and Shanks 1990:151). The loss of SS *City of Rio de Janeiro* in 1901 spurred the construction of another light and fog signal at Mile Rocks, just outside the gate and in line of sight and sound of Fort Point and Point Bonita (Shanks and Shanks 1990:129–131). In addition to the lighthouses, life-saving stations on Ocean Beach, at Point Bonita, and finally inside the gate at Fort Point were other government responses to shipwrecks that added elements to the maritime cultural landscape. We only noted these as part of the historical narrative in 1990; we now see them as integral elements of the maritime cultural landscape along with the natural features charted and, in some cases, modified in the name of maritime trade and commerce.

Conclusion

Resource managers responsible for cultural resources should, as a general requirement, conduct comprehensive surveys, both in the literature and then in the field, to locate, characterize, and assess the relative significance of what lies in the waters they manage. That being said, fiscal realities, especially when confronted with a vast national marine sanctuary, make that at best a daunting task. NOAA's Maritime Heritage Program was able to take advantage of a body of data that had been amassed through a variety of other surveys, notably those done as part of the regular charting work of NOAA's Office of Coast Survey. Another major amount of assistance came with the generous donation of privately obtained sonar and ROV data from a 2007 survey to try and find the missing yacht *Tenacious*, which disappeared with its sole occupant, noted computer scientist Jim Gray while off the Farallones scattering his mother's ashes on 28 January 2007. The volunteer contributions of sonar expert Gary Fabian, who reassessed US Coast Survey and US Geological Survey data to seek out likely wreck targets, as well as the extensive local knowledge of the pioneer wreck diving Lanham brothers, also made a substantial, positive contribution.

The previously mentioned donated services of vessel time, equipment, and knowledge also bolstered this effort where government funding was not available. That being said, NOAA funding provided by the Maritime Heritage Program and the West Coast Regional Office of the Office of National Marine Sanctuaries provided R/V *Fulmar*, its crew, and its

ROV with two seasons of survey, a first for submerged cultural resources in Greater Farallones National Marine Sanctuary. A number of knowledgeable volunteers in addition to Fabian and the Lanhams, as well as the crews of R/V *Fulmar*, M/V *Eaglet*, and E/V *Nautilus*, were key to the success of the four-year mission.

As a result of the work accomplished between 2013 and 2016 in Greater Farallones National Marine Sanctuary and Golden Gate National Recreation Area, the number of “known” shipwreck sites that have been physically assessed doubled from 12 sites before to 24 sites documented after the mission. The level of documentation varies, in some cases, one could argue superficially, as is the case with the modern wrecks of the barge and fishing boat, others with limited assessments due to hazardous conditions (*Selja*), others inconclusive with buried sites not test-excavated (*City of Rio de Janeiro*, *Oxford*, and *Noonday*), and others with extensive documentation (*City of Chester*, USS *Conestoga*, *Dorothy Wintermote*, and *Ituna*).

A major research development, as noted earlier in this article, is the available data from the archives of the US Coast Survey, especially the T-sheets. We cannot underestimate the value of this resource. In addition to shipwrecks, the T-sheets extensively document maritime infrastructure, landings, marine resources, then contemporary shorelines (a baseline for assessing coastal erosion)—in essence, the T-sheets provide detailed data for the larger maritime cultural landscape for the Gulf of the Farallones. The value of the resource has been evident in a separate mission with California State Parks (CSP) on the northern “Redwood Coast” as well as in other areas of the national marine sanctuary system. We have also shared the data with CSP for other coastal units in their system and with the National Park Service for both Point Reyes National Seashore and Golden Gate National Recreation Area.

All archaeological data have been shared where jurisdictions overlap with the NPS, the State Historic Preservation Officer (SHPO), and the California State Lands Commission (SLC). Additional Coast Survey data, including modern survey data, have also been shared with the SHPO and SLC, notably for three historic wrecks in San Francisco Bay recently surveyed by NRT6. It should go without saying that true science is collaborative and sharing is essential. Sharing extended, with the E/V *Nautilus* mission, to live Internet broadcast of the investigation of *Ituna*, *Dorothy Wintermote*, and USS *Independence*. In addition to a number of other archaeologists, historians and a range of scientists who made observations and remotely participated in these multidisciplinary missions, the public also watched and asked questions. It should also go without saying that when we work with public funding and resources on public lands, we should be transparent and open. We did not broadcast the positions (locations) of the sites we dived, but we shared our sense of wonder and excitement over what we were seeing, and explained the how and why of archaeology and ocean science with the compelling backdrop of shipwreck exploration as it unfolded in real time.

In 1990, we observed that, while many of the wrecks were individually significant, “as a study collection, the group of shipwrecks is significant in documenting and assessing the progression of maritime development and activity associated with the port of San Francisco and its surrounding subports” (Delgado and Haller 1990:x). We can argue individual significance for most of the sites we encountered and documented, especially USS *Conestoga*, which, once lost, has now been found, providing closure for families who still carry the memory and the pain of the loss. The same is true for the surviving family of one of the men lost with *Ituna*, who watched as we explored that wreck. The other key aspect, by revisiting these waters more than two decades after our initial work, was in assessing not just the individual sites, but in line with our theoretical perspective of maritime cultural landscapes, assessing the sum total of the wrecks, including those “that got away” as

physical, material records of human response to the environment as the great port of San Francisco assumed international commercial significance.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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