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For

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Washington Navy Yard

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**U.S. Navy Shipwrecks
in Hawaiian Waters:
an Inventory of
Submerged Naval Properties**

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PREFACE

The Defense Appropriations Act of 1991 created the Legacy Resource Management Program, an effort intended to provide for the preservation and protection of the Department of Defense's natural and cultural resources. One of the main components of this program is to establish an inventory of all significant historical and cultural resources within the jurisdiction of the Department of Defense landholdings. The Naval Historical Center's implementation of this program includes grants provided to outside contractors for the completion of individual state inventory reports, important parts of a larger nation-wide U.S. Navy shipwreck database. Through UH project number UH01495, the Naval Historical Center's Underwater Archaeology Branch contracted with the University of Hawai'i's Marine Option Program for the completion of the State of Hawai'i's submerged naval property inventory. The UH Marine Option Program was the only in-state program to actively pursue research and education involving submerged cultural resources. Budget cuts at the university have since restricted its ability to continue in this field.

Archaeological inventories are the main tool in preservation management. Inventory reports serve to focus attention on, in this case, a very unique historical record, the material remains of submerged naval properties. These reports are more than just management tools, though. They are, in and of themselves, a form of commemorating past achievements and events with the history of the Navy. Investigating the original construction and subsequent state of deterioration of what once was a commissioned naval vessel, but is now a shipwreck, is a way of remembering the entire class of such vessels, their function during specific periods, and ultimately the roles played by the ship's crew. Documenting wreck sites that involved the tragic loss of life involves a much more intimate and direct link to historical significance.

The beautiful waters of Hawai'i are a natural setting for shipwrecks, and the Islands have had for a long time a special significance to both naval and national history. This inventory absolutely had to be completed; there was no choice. I would like to thank both the Marine Option Program and the Naval Historical Center itself for the opportunity to work on this project. There were many individuals who contributed a great deal of guidance along the way, a few of them are: Dr. Sherwood Maynard, Marine Option Program Director; Dr. William Dudley, Director Naval Historical Center; Barbara Voulgaris, Underwater Archaeology Branch Naval Historical Center; Wendy Coble, Underwater Archaeology Branch Naval Historical Center; Glenn Helms, Naval Historical Center Library; Bob Cressman, Ships' History Branch Naval Historical Center; Jeff Adams, research assistant University of Hawai'i; Kapa Lyman, research assistant University of Hawai'i; Kevin Foster, maritime historian National Park Service; Jeff Dodge, Terry Kerby, senior chief pilot Hawai'i Undersea Research Laboratory; Sandy Smith, archivist National Archives at College Park; Barry Zerby, archivist National Archives at College Park; and Mr. Bob Lewis, who has for the past many decades collected every newspaper article on airplane crashes in the State of Hawai'i.

EXECUTIVE SUMMARY

The following report summarizes all known information for submerged U.S. naval properties in the vicinity of the Hawaiian Islands. It is based on various published and unpublished documents, oral reports, previously completed archaeological investigations, and archival resources. The report was completed as part of a grant from the Underwater Archaeology Branch of the Naval Historical Center in Washington D.C. to the Marine Option Program of the University of Hawai`i at Manoa. The survey area includes all ocean bottom lands within 200 miles of the Hawaiian Island chain, an archipelago stretching over 1,500 miles from Kure Atoll to South Point on the Island of Hawai`i.¹

Material culture serves as a window to past human activity. Submerged naval wreck sites in Hawai`i represent the physical record of naval activity among the islands beginning in the 19th century. The types of wreck sites specifically emphasize major technological changes, such as the adoption of submarines as well as amphibious warfare, and the tremendous growth of naval aviation. Wreck sites also represent major historical events, such as the Pearl Harbor attack in 1941, the Battle of Midway in 1942, and the disastrous explosions at West Loch (during preparations for the Saipan invasion) in 1944. There are many different ways one can interpret wreck sites, for they are a record of naval events unlike any other resource. The majority of Navy wrecks and submerged materials in Hawai`i remain property of the U.S. Government. The proper management and protection of these historical sites, therefore, is a concern for the Underwater Branch of the Naval Historical Center. This inventory is an important first step in that management and protection.

There are 76 identified and unidentified naval vessels within this area. Very little shipwreck survey has been accomplished to date in Hawai`i, so the true number may exceed this known sample. Some of these losses are due to tragic accidents or mysterious unknown causes, some due to intentional sinking or abandonment. Besides surface ships, amphibious vehicles, and submarines, submerged aircraft crash sites represent a large part of the naval resource in Hawai`i. Information on 12 confirmed naval aircraft sites, as well as an updated basic inventory gleaned from available documents, is included here as well. Currently there are 1,484 documented aircraft losses in the vicinity of the Hawaiian Islands, though admittedly parts of the aircraft database remain incomplete. The inventory report includes background information on the environmental setting in Hawai`i, prehistoric and historic contexts, potential nominations to the National Register, and management recommendations.

¹ In rare instances, vessels based in Hawai`i but lost beyond the 200-mile limit have also been included.

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INTRODUCTION

The Context of the Inventory

An inventory report such as this provides an opportunity to delve into specific national elements of Pacific maritime history. This is no small matter, as the Pacific is many things: the region of America's first territorial possessions and colonial ambitions beyond the continental states; the setting for historic contest between Japan and the United States during World War II; and the realm for cultural contact between western nations and the Pacific Islands. Today, the Pacific is the sea highway to East, Southeast, and South Asia, areas of strategic national interests. As the location for the Commander Pacific Fleet, Hawai'i is still the stepping-stone to an oceanic realm far beyond our borders. In terms of size, the Pacific is most likely the ultimate challenge to any navy, requiring the ability to project and maintain power across distances unequaled in any other part of the globe. This Mahanian-scale task demanded whole new styles of vessels and operations, and a major commitment to the strength of the U.S. Pacific Fleet.

The centerpiece of this inventory is the wreck site itself. Frankly the material artifacts are, in the final analysis, nothing more than steel structures, many of which rest quietly in the dark depths surrounding the volcanic island chain. If they have settled in calm conditions and achieved near equilibrium with their surroundings, these wrecks can be relatively static and inanimate objects. The importance that we ascribe to these objects, though, goes far beyond their physical description. Like many types of submerged cultural resources, Navy wreck sites are windows into the past. They are a record of human technological achievement, of sometimes tragic loss, of great and lesser events, and often of the sheer industrial capability of the nation. They may be war graves, or archaeological sites, or historic properties integral to national landmarks or memorials. They may be someone else's relatively insignificant junk. This inventory categorizes many different types of submerged Navy properties for management purposes. It should be remembered that there is no simple single scale from which to evaluate material resources. Each must be viewed from multiple perspectives.

The history represented by submerged Navy ships and aircraft in Hawaiian waters can make a claim for significance on a number of different levels. Differences are apparent between the state and federal points of view. From a national perspective, all such properties can be seen as part of the great importance placed on the strategic location of the Hawaiian Islands in the central North Pacific. As a gateway to the Pacific, Hawai'i served as a supply and repair base, a training ground, a rest and relaxation facility, a battleground, and a burial place. Pearl Harbor as a base features heavily in national importance. Wreck sites in Hawai'i are a measure of the Navy's activity and "investment" in the Central Pacific. The national history of the Navy is tied to the strategic geographic location of Hawai'i.

For the Islands, these properties represent change from the outside. Beginning in the early 1800's the influence of the U.S. Navy increased over time, to the point where the service became (during World War II) the single most important factor in all aspects of island life. The amount of land controlled by the military forces, as well as the infrastructure developed and job opportunities created, insured that the Navy played (and continues to play) a significant role in the political, economic, and even social setting of the

state of Hawai`i. Not just Pearl Harbor, but aviation and submarine support facilities as well spread throughout the Main and even Northwestern Hawaiian Island chain.

From the perspective of technological evolution, the variety of vessel types capture critical innovations and emphasize Hawai`i's role as a support base on the cutting edge of these changes. Specifically, there are a great number of submerged aviation wreck sites, some of which are from the formative period in the 1920's and 1930's. Hawai`i played a major part in the training of young aviators for combat in the Pacific. This was, of course, a major shift in tactical thinking, one featuring the air war and aircraft carriers as the centerpieces of offensive task forces, rather than the battleships.

Submarine operations and technology, relatively ineffective during World War I, matured quickly during World War II in the Pacific. Not only have a number of U.S. submarines been intentionally disposed in Hawaiian waters, but submarines have been lost mysteriously during training, and associated assets like submarine rescue vessels lay on the bottom as well. Hawai`i continues to be a major port of call for submarines of many nationalities. Amphibious vessels and vehicles, so necessary to the island-hopping campaign in the Pacific, lie scattered in many locations around the Islands. These were truly new types of ships designed to operate at sea and on the beach, and (some) beyond the beachhead and into the interior during amphibious invasions. Some were lost during training on Hawaiian beaches; some were lost during the tragic explosion at West Loch in May 1944.

Reflective of Hawai`i's chief role as a support base for the Pacific Fleet, there are a number of service type vessels lost in local waters. The utilitarian nature of these sometimes less-than-glamorous vessels may initially put them in a different category than major combatants, but oftentimes vessels like LST's and fleet oilers and other supply ships are critical to the logistical support that make the distant operations of the combatants possible at all. Several patrol craft, integral to the domestic duties of the Hawaiian Sea Frontier, also were lost throughout the island chain. Hawaiian Sea Frontier forces, a patchwork of leased and borrowed vessels, relieved more important assets for active duty on the battlefield.

Of course, the Hawaiian Islands have twice witnessed major battles resulting in losses and, subsequently, submerged naval properties. Though most of the ships damaged and sunk during the attack on Pearl Harbor were later salvaged, repaired, and put into action during the war, several are left as "survivors" of Pearl Harbor. Although most of the Battle of Midway took place beyond the limits of state or federal waters, many aircraft from both navies were lost in the immediate vicinity of Midway Atoll. Such properties represent combat losses, a distinctive classification within the site's individual profile.

From the mystery of the loss of USS *Levant* in 1861, to the more recent oiler *YO-257* sunk intentionally as an artificial reef, there remain a wide variety of ship types and aircraft beneath the surface. Some are known and have been systematically surveyed, but many are unlocated and have not been investigated in any way. As the technology for underwater survey and research continue to advance, there is increasing potential for further discoveries in this field. Hawai`i in general possesses a great deal of potential within the field of maritime heritage resources, for little survey has been accomplished anywhere within the Islands. With the increasing capability for underwater investigation, though, comes the

increasing need for the planned and intelligent management of this material resource. The small local diving community (small compared to the larger and constant traffic of visiting tourist divers) is very aware of the few known and accessible wrecks, and takes a great interest in any new discoveries. Management in terms of controlling access and position information is particularly important.

This inventory is the first step in the management of submerged naval properties in the Hawaiian Islands. The report includes background material which serves to add to the interpretation and understanding of the many known submerged naval properties in Hawai`i. It is as comprehensive as is possible for the documentary and archival sources available. The report combines material from the Naval Historical Center, National Archives collections at San Bruno, California, Washington D.C., and College Park, Maryland. It includes local public and academic archives, newspaper databases, published texts and unpublished manuscripts, National Park Service resources at Pearl Harbor, the state library and archives, the state artificial reef program, dive shops and dive boat operators, and numerous informal contacts with residents among the islands.

Format of Inventory Report

The report begins with an introduction highlighting the significance of submerged Navy properties. Throughout the various phases of the Navy's uses of the Hawaiian Islands, the dominant theme remains the great importance of the strategic location of the Islands themselves. The facilities at Pearl Harbor, the location of Naval Air Stations for training in the mid-Pacific, and the advanced submarine base at Midway Atoll all served as a distant line of defense far west of the continental coastline.

Chapter Two presents background information on both the above-water and below-water physical environment in Hawai`i. Not only does the environment often play a role in the initial loss event, storms or tsunami waves causing shipwrecks, but also over time physical parameters shape the wreck site itself. Interpretation of sites must take into account the fact that site formation processes intimately involve the natural environment.

Chapter Three provides a brief introduction to the maritime setting of the original Pacific Polynesian voyagers. Navigation, canoe construction, and the Peopling of the Pacific set the stage for understanding the contemporary Hawaiian attitudes towards the ocean.

Chapter Four gives the reader an abbreviated commercial maritime history of the Hawaiian Islands. Following their "discovery" by Captain James Cook, the islands became a strategic reprovisioning point for merchants and whalers alike. Over time sailing barks and schooners were replaced by inter island steam vessels serving the plantation economy. Transpacific steam ships tied the islands more closely to the continental United States. It's interesting to note that this refit and reprovisioning role is essentially the same as the Navy's supply base at Pearl Harbor at a later time.

Chapter Five attempts a more comprehensive history of naval activities in the Hawaiian Islands. There is currently no work, which encapsulates this broad topic in any manner, but articles and excerpts from related works help to complete the overall picture. (The subject certainly deserves fuller treatment elsewhere!) The question of the significance of the U.S. Navy's presence in Hawai`i is best addressed

within the historical context of this section. The fact that the Navy's significance in Hawai'i is a complex and varied topic necessitates a slightly longer section than the preceding chapters.

Chapter Six is the heart of the report, the actual site-by-site inventory of submerged naval properties. Sites are organized by loss dates in chronological order. Known vessels are listed first, followed by unidentified naval vessels and vehicles, followed by submerged naval aircraft crash sites. Each ship entry includes a standardized table encompassing basic descriptive characteristics. Sections featuring the individual ship's history, wreck event, wreck site history, archaeological investigations, and a final section on threats, protections, and recommendations follow this.

Chapter Seven, Management Recommendations, addresses the current state of maritime heritage resource management in the Hawaiian Islands. For most agencies involved, there is no difference between military and non-military submerged cultural resource management, it is a common field in which few have the funds, awareness, or expertise to enter. This chapter describes the management agencies with potential concerns regarding submerged naval properties, and summarizes the prevailing attitudes of a select number of professional and non-professional cultural resource providers.

Suggestions for Nomination to the National Register of Historic Places make up the contents of Chapter Eight. Register Nominations, as well as designation of National Historic Landmarks, are the principle tools employed by resource managers to protect and preserve significant historical properties. Site eligibility is based on a careful assessment of historical significance, as well as a judgment of site integrity. Both of these categories are divided into standardized and detailed criteria. The completion of full nominations typically requires documentary and field research, and is therefore beyond the scope of the current inventory report. The suggested entries in this chapter summarize possible nomination information for these U.S. Navy shipwrecks.

Sections Nine and Ten consist of references and a list of informant and contacts crucial to the completion of the inventory report. Supplementary Materials are included as "attachments" to this report, and are listed in section Eleven.

THE HAWAIIAN OCEAN/ISLAND NATURAL ENVIRONMENT

The Hawaiian Islands, the most physically isolated group on Earth, feature a very dynamic land and ocean environment. Understanding this environment is crucial in interpreting artifact preservation and site formation factors for the many U.S. Navy submerged properties among the Islands. Environmental conditions, of course, sometimes significantly vary between discrete locations, so this section can only present a generalized description of environmental influences on submerged cultural sites.

Geology

The Hawaiian Islands are almost wholly volcanic in nature. The Island Archipelago consists of submerged and emergent volcanic mountain range peaks extending east-southeast and west-northwest in the northern Pacific Ocean. The islands were all formed by the progressive movement to the northwest of the Pacific plate over a relatively stable volcanic “hot spot.” The slow extrusion of magma formed sub sea shield volcanoes, which gradually emerged from the surface of the water. Hawaiian volcanoes, then, are broadly rounded in shape, covered by innumerable thin lava flows and frequent cinder cones and craters.

Kure Island at the extreme western end is approximately 30 million years old. Currently the recent point of magma generation, or hot spot, is located at the opposite end of the long archipelago, to the southeast of the Island of Hawai`i. The slowly rising seamount is known as Loihi. The Island of Hawai`i itself is still the site of active volcanism, while the older volcanic islands to the northwest have long since settled beneath the waves.

The rocks of the main shield-building eruptions of the Hawaiian Islands are tholeiitic basalts, rich in magnesium and iron and poor in alkalis. Many contain visible crystals of green olivine. Some may be as much as 50% olivine. White crystals of feldspar are occasionally visible. Later stage lava flows consist of alkalic basalts, rocks containing more alkalis and less magnesium and iron than earlier flows. Sedimentary rocks only exist in an occasional narrow fringe around the borders of the islands.¹ There are two basic types of lava flows in Hawai`i: *pahoehoe* is the solidified rock from a smooth surface magma flow, and *a`a* is the hardened sharp-edged clinker rock flow. Lava flows remain an active concern on the island of Hawai`i, covering areas of shoreline and creating new land.

Being volcanic in origin, the Islands are dissimilar to continental plates. They have no true continental shelf. Tectonic activity, in the sense of strike-slip movement and crustal deformation, almost does not exist in Hawai`i. The entire region, though, is slowly being tilted to the southeast. The depths immediately around the main Hawaiian Islands appear to be due to the sinking of the adjacent seafloor, perhaps from the downward load of the heavier volcanoes resting on it.² This “moat,” the Hawaiian Deep, extends only part of the way around the islands. Certain geomorphic features, terraces and eroded valleys, have thus been “sunk” and now characterize the near shore bathymetry. Submarine canyons are best developed north of Moloka`i, northeast of O`ahu, and northwest of Maui.³

Mid-Pacific island formation processes can be classified by general stages of island “growth,” regulated by volcanic, erosional, and even biological activity. Young active volcanic islands consist of high rocky basaltic peaks. Calderas and cinder cones mark the landforms. The main Hawaiian Islands are

characterized by deeply cut valleys and steep volcanic cliffs. Flat alluvial floors are formed by deposition of material from the cliffs and valleys. Middle-aged islands exhibit coral reef growth around their fringes, while the original shield volcano moves into the erosional stage. As the basalt continues to erode and finally sinks below the surface of the water itself, only the coral ring or atoll remains, along with low sandy islands.

From young shield volcano to weathering calderas and reefs to coral reef atolls, Pacific islands move through distinct land forms with age. In Hawai`i, the lower older atoll environments are found to the northwest. Higher rocky peaks can be found from Necker and Nihoa Islands south. Hawaiian islands exhibit the whole range of characteristics from both high volcanic to low coral atoll formations.

Geography

Hawai`i consists of eight main islands plus more than 120 rocks, reefs, and shoals which stretch for over 1,600 nautical miles. The main islands inhabit a group to the southeast, while the long chain of atolls and low islands extend to the northwest. Because of their low and, until recently, uncharted nature, the Northwestern archipelago has been the site of numerous historic shipwrecks. The entire Hawaiian Archipelago extends from 18 degrees 55 minutes north to 28 degrees 25 minutes north, and from 154 degrees 49 minutes west to 178 degrees 20 minutes west, straddling the Tropic of Cancer. The Hawaiian Islands are located approximately 2,400 miles from the North American west coast, 3,800 miles from Japan, and 4,300 miles from Papua New Guinea. They are surrounded by the Pacific Ocean that occupies 1/3 of the total surface area of the planet.

Geological processes and stages of island “growth” affect the formation of Pacific coral reefs. Reefs, themselves, move through stages of fringing (adjacent to the coast), barrier (separated from the coast), and atoll (circular, no coast). Most reefs in the main Hawaiian Islands are fringing reefs. Only a few locations, such as Kane`ohe Bay, feature older barrier reef environments. Both corals (invertebrates) and coralline algae are the main builders of the reefs. Coral reef ecosystems thrive within a relatively narrow band of physical parameters, such as turbidity, water temperature, nutrient load, etc. To remain stable, reef ecosystems must balance processes of growth with processes of erosion.

Mechanical weathering of rocks forms only a small portion of sand in Hawai`i. The majority of white sands come from the break down of coral skeletons, calcium carbonate. Surf action accounts for some of this sand, but most is formed actually by parrot fish (sp. *Scarus*), which crush corals in their beaks and deposit the sand elsewhere. Prevailing winds can build localized sand dunes along the coast. Many areas underwater in the near shore environment can be characterized as sand substrate, coral reef substrate, or mixed coral/sand spur and groove topography. In some places geomorphic features like submarine canyons serve to channel detritus to deeper waters. Calcareous sands, mud, and gravel of shallow water origin, make up the principal sediments near the islands. Pelagic brown clays dominate over most of the deeper sea floor regions.

Island and oceans “form” coral reef ecosystems, and in turn coral reefs affect their immediate environments. An idealized cross section of the off shore of near shore and benthic zones highlights the reef’s role in forming seaward barriers and dissipating wave energy.

Many minor earthquakes are associated with volcanic eruptions, but most of these are too small to be felt. Major earthquakes in Hawai`i are associated with faults and the volcanoes themselves. Fault movement and seafloor shifts can generate large coastal waves or tsunamis. The largest Hawaiian earthquake in historic times occurred in April 1868, and the resulting tsunami generated a wave which, reportedly, dwarfed the coconut trees on the south shore of O`ahu. Since 1820, nine tsunamis have caused moderate to severe damage in the Islands. Most of these were generated by tectonic activity on the Pacific Rim, thousands of miles away from Hawai`i, though several have originated locally.

Table 1: Historic Tsunami Events in the Hawaiian Islands

Date	Origin	Effects
1868	Hawai`i	Greatest Hawaiian earthquake recorded, destruction to O`ahu south shore
1946	Aleutian Islands	Wave heights at Hilo over 30 feet, total 159 tsunami related deaths
1952	Kamchatka Peninsula	
1957	Aleutian Islands	
1960	Chile	Wave bore in Hilo Bay causes destruction
1964	Prince William Sound, Alaska	Last major Pacific-wide tsunami
1975	Hawai`i	Earthquake centered near Volcano National Park, deaths and injuries
1996	Peru	

It would be difficult to determine the exact effects that tsunami events can have in specific areas due to the complex nature of wave mechanics in the Hawaiian Islands. Tsunami waves can refract or bend around islands in the “wrap around” effect. They can also reflect off of islands and strike what might be considered sheltered coasts. In any case, they can have a significant impact on coastal communities and resources.⁴

Climate in the main Hawaiian Islands is quite temperate for the North Pacific. Considering the latitude of the Islands, there is relatively little uncomfortable heat. This cooling is a function of the prevailing northeasterly trade winds. Their influence is dominant throughout all seasons in Hawai`i, and they may blow unceasingly for weeks. The prevailing trade winds are a result of the semi-permanent pressure cell, an anti-cyclonic circulation known as the North Pacific or Hawaiian High. This high-pressure cell strengthens during the northern summer and weakens in the winter season. Northeast trade winds blow predominantly between 13-24 miles per hour. In near shore locations, diurnal heating and cooling can give rise to onshore breezes during the day and offshore breezes at night.

There are only two distinct “seasons” in Hawai`i: summer between May and October, when the sun is more overhead, weather warmer, and trade winds more persistent; and winter between October and

April, when the sun is further south, weather cooler, and trade winds more interrupted by intervals of cloud and rain. North Pacific storms, anti-cyclonic circulation, generally migrate eastwards between 35 and 65 degrees latitude, the majority of their impact missing the Hawaiian Islands. The main islands are subject to strong northern swells in the winter months, and occasional southern swells in the summer. The Northwestern archipelago can also experience severe storms in the winter.

Hurricane season in Hawai`i stretches seasonally between June and November. The long-term frequency for hurricane events is not clear; they appear to be quite variable. Prior to 1950, tropical storms were not called hurricanes at all. The advent of meteorological satellites, though, has revealed that hurricanes in the central Pacific are more frequent than previously expected. Documentation has only increased in recent decades.

Most hurricanes originate in the Pacific waters off the Central American Coast or those of Southern Mexico. They generally approach the Hawaiian Islands from the east and from the south, gradually losing power as they track over cooler waters. Most pass far to the south of the Islands, but since 1950 there have been five hurricanes that have caused significant damage to the state. Hurricanes can generate powerful and sustained swells and water movement.

Table 2: Historic Hurricane Events in the Hawaiian Islands⁵

Date	Name	Track
1957	Nina	Moving northwest, to the south of the Island chain, record winds in Honolulu
1959	Dot	Northwest, north, northwest, directly over Kaua`i, \$6 million property damage
1982	Iwa	Moving to the northeast, crossing Kaua`i, \$250 million property damage on Kaua`i and O`ahu
1986	Estelle	Floods on O`ahu
1992	Iniki	Moving west then north, directly over Kaua`i, Iniki by far the most devastating hurricane event, causing over \$2.2 billion in damages

Ocean Dynamics

The Pacific Ocean is the largest of the world's oceans and has the greatest average, as well as the greatest observed, depth. The Hawaiian Islands, with their numerous banks, guyots, and seamounts, emerge in the middle of the north Pacific as a linear ridge. Their shores and near shore environments are relatively exposed to swells generated from a distance, as well as waves generated locally. Wave erosion in Hawai`i cuts into the edges of the Islands and forms sea cliffs. Sea caves and arches may form, particularly where there are remnant hollow lava tubes along the coast. There are four basic types and sources for waves in Hawai`i. Trade wind waves from the northeast may be present all year. These are largest from late spring until late autumn, with heights from 4-12 feet and periods from 5-8 seconds. North Pacific swells, generated by distant storms, are common in the winter and early spring. These have greater heights at 8-14 feet or more and periods of 10-17 seconds. Periods of high surf between October and March can

last for several days. Kona Storm waves may strike the shores from passing southern storms at any time, with heights of 10-15 feet and periods of 8-10 seconds. Finally, Southern Swell waves, generated by Antarctic winter storms, have heights only of 1-4 feet and longer periods of 14-22 seconds.⁶

General surface currents, driven by the prevailing northeast trade winds, average 0.4 to 0.6 knots. Average North Pacific surface currents form a large basin-scale clockwise circulation known as a gyre, centered at about 28 degrees north latitude. Ocean currents vary somewhat with the changing seasons, and are also modified by the position of the main Hawaiian Islands. Eddies occur in the lee of main islands, particularly on the west coast of the island of Hawai`i. The prevailing current picture for the Northwestern Hawaiian Islands (NWHI) is more complex. Further to the north and west, these isolated locations experience southward and eastward flows. Hawai`i's diurnal mixed tides, never exceeding three feet, are relatively minor. Flood and ebb tides can affect near shore currents, particularly in the lee of islands and in narrow channels. A.P. Balder's *Marine Atlas of the Hawaiian Islands* contains a more detailed description of the various near shore currents by specific location for the Main Hawaiian Islands (MHI).⁷

Seasonal variation of sea surface temperatures in Hawai`i is only approximately six degrees, from 73-74 degrees Fahrenheit in late February and March to a high near 80 degrees by September and early October. Temperatures are slightly cooler in the NWHI. Currents and irregularly shaped islands mix in Hawai`i to prevent the establishment of a distinct sharp thermocline between surface and deep-water temperatures. Surface waters, driven by prevailing winds, have generally mixed and uniform characteristics. This mixing zone can be extensive, its depth varying with location and season. The zone is shallower in the lee of islands, though this is accompanied by greater surface warming in the same locations.⁸ In the winter the mixing zone may extend to 400 feet deep; in the summer, as shallow as 100 feet. Beneath the mixing zone lies the main thermocline or temperature change, by convention the isothermal line at 50 degrees Fahrenheit. Thermocline depth varies between 1,500 feet in the northwest to 800 feet in the northeast and southeast of the Islands.⁹ Below the thermocline there is a sharp decrease in temperature from an average of 77 degrees to 41 degrees Fahrenheit at 2,300 feet. From there on out temperature gradually decreases to 36 degrees Fahrenheit at extreme depths.

Salinity levels are generally higher in equatorial regions where evaporation exceeds precipitation, but they drop off beyond 15 degrees north latitude where there is greater rainfall. In Hawai`i salinity levels generally fall between 34.1 and 35.2 ppt.¹⁰ Oxygen concentrations tend to be relatively low in warm equatorial waters, though are almost always near saturation at the surface levels.¹¹

Site Formation Process and Environmental Factors in Hawai`i

From their original discovery and settlement by voyaging Polynesians, to their importance in the sandalwood and whaling trades, to the more recent remains left behind by World War II in the Pacific, the Hawaiian Island chain has accumulated the material record of at least 1,500 years of maritime activity. Much has of course decayed, turned into reef through biological processes, floated away, or otherwise smashed against solid rock cliffs and broken into unrecognizable pieces. The remaining submerged material record, however, testifies to Hawai`i's uniquely diverse maritime traditions.

For many near shore locations Hawai`i may be described as a high-energy environment. Periodically influenced by powerful northern and southern swells, strong channel currents, and strong consistent trade winds, there are relatively few naturally protected harbors in the Islands. These conditions, combined with the fringing reefs and solid lava rocks around the volcanic islands, have led to a great number of shipwrecks in Hawai`i. An initial examination of the relative position of shipwrecks reveals clusters around the locations of historic landings, especially on windward sides of islands where vessels needed to “beat” out of harbors upwind through narrow reef passages.¹² Trade winds, channels, and islands can combine to form “ship traps,” areas of naturally occurring concentrations of shipwrecks. The north shore of the Island of Lana`i, locally referred to as “Shipwreck Beach,” is the best example of this phenomenon. Trade winds can push all flotsam and jetsam into the Pailolo channel between Moloka`i and Maui. The channel acts as a funnel, depositing material directly onto Shipwreck Beach. Any vessel that broke its moorings at Lahaina would end up on Lana`i’s reefs, and ship owners (including the U.S. Navy) intentionally abandoned worn-out vessels there by simply casting them adrift upwind from the treacherous shore.

Many vessels have been pounded into pieces on sharp reefs or against basalt rock cliffs. Protected locations for wreck sites are relatively rare, consisting mainly of lagoons in atoll setting in the Northwestern Hawaiian Islands, back reef areas between fringing reefs and shores, and harbors. Even in these areas, large portions of heavy steel shipwrecks can still be moved and re-deposited by passing hurricanes.¹³ This has occurred in the Northwestern Hawaiian Archipelago even when such storms do not cause any damage to the main Islands. Historic boilers from sites almost 100 years old have been tossed ashore in recent storms. Ships and aircraft sunk as artificial reefs have been moved out of location, or sometimes swept entirely away during hurricane events. Any investigation of a particular site, therefore, must take into account the historical record of hurricane and tsunami events, linking site location with the direction and intensity of the natural phenomenon.

Even relatively deep-water wreck sites are subject to seabed movement and effects from the Islands’ currents. The site of the World War II Japanese midget sub, discovered by the Hawai`i Undersea Research Laboratory in 2003, lies in approximately 1,400 of water. Bottom sediments have been scoured by the currents out from under the stern portion of the vessel.

Certain locations, mainly back reefs, lagoons, and protected harbors and bays, do offer shipwrecks greater protection from the elements. Sedimentation rates can be relatively high where development and agricultural runoff change the landscape. Kane`ohe Bay is the best example of this, where sewage outfall combined with the poor circulation of the Bay’s waters have led to approximately 10 feet of biogenic ooze being deposited over the historic PBY mooring area in the southeastern sector and the remains of the four PBY-5’s which were sunk there on 7 December 1941.¹⁴ Older atoll settings at the extreme end of the Northwestern Hawaiian Island chain, such as Kure and Midway Atolls, also may see higher sedimentation rates within their calmer lagoons. Erosion on the island of Kaho`olawe, initiated by years of intensive use as a naval target range, has led to a deeper sediment load in some areas around the Island. Sediments and

biofouling organisms that thrive in the warm nutrient-rich waters of Pearl Harbor have created a protective layer over the wreck of USS *Arizona*. The measurement of this layer has been an important factor in the National Park Service's study of the corrosion rates on the site.

Most of the waters around the Islands are more exposed than these exceptions. Hawai'i's shipwreck environment is dynamic. Fortunately, the greatest period of American naval activity coincides with the age of steel hulls and steam propulsion. Steel and steam material culture is therefore over-represented in Hawai'i. Though many wooden schooners and other commercial sailing vessels have been lost in the Islands, many shipwreck sites consist of steam engines, boilers, and propeller shafts in similar close association. Rigging, pieces of iron or steel hull, and other relatively heavy cargo and artifacts will be scattered in holes or *pukas* in the reef and depressions in the spur and groove topography.

Warm water temperatures in Hawai'i allow the shipworm, *teredo navalis*, to exist on organic material including wood from shipwrecks. Most wreck sites in the Islands consist of non-wooden remains, with planks and other wooden components only occurring occasionally where buried in sediment or mud in protected back reefs and lagoons. Warm clear waters also encourage coral growth, and hard substrates like shipwreck sites make excellent substrates for colonization. In waters shallower than 60 feet, coral growth can completely obscure artificial objects. In addition to the studies done on the USS *Arizona* and *Utah* by the National Park Service and associated agencies, there are a few other papers relating to the interaction of wreck sites with the biological environment in Hawaiian waters: Anthony Pico's "The *Kaua'i*, a Financial loss...an Ecological Gain," and Marc Hughes' "Marine Life Ecology and Shipwrecks in the Northwestern Hawaiian Islands."¹⁵

From the process of wrecking, to the disintegration of perishable materials, to the colonization of materials by invertebrate organisms, to the erosion and site changes caused by seabed movement and the mechanical effects of waves and current, Hawai'i's underwater environment has actively shaped its wreck sites in numerous ways and will continue to do so.

¹ Armstrong, R. Warwick. *Atlas of Hawaii* (Honolulu: University of Hawaii Press, 1983), 38-40.

² Ibid, 44.

³ Ibid, 53.

⁴ *Tsunami!* By Walter Dudley and Min Lee (Honolulu: University of Hawai'i Press, 1988) provides one of the best and comprehensive texts available.

⁵ Tom Schroeder, "Hawaiian Hurricanes: Their History, Causes, and the Future," in *Hawaii Coastal Hazard Planning Project* (Honolulu: Office of State Planning, 1993), 41-71.

⁶ Armstrong, *Atlas*, 54.

⁷ A.P. Balder, *Marine Atlas of the Hawaiian Islands* (Honolulu: University of Hawaii Press, 1992).

⁸ <http://satftp.soest.hawaii.edu/atlas/regprocess.html>

⁹ Sonia P. Juvik and James O. Juvik (editors), *Atlas of Hawaii* (Honolulu: University of Hawai'i Press, 1998), 83.

¹⁰ Ibid.

¹¹ Rhodes W. Fairbank, *The Encyclopedia of Oceanography* (New York: Reinhold Publishing, 1966), 664.

¹² Hans Van Tilburg, "Hawaiian Historic Shipwrecks: Relative Positions," Marine Option Program report, University of Hawai'i, 1999

¹³ Hans Van Tilburg, “Maritime Cultural Resources Survey: Northwestern Hawaiian Islands,” report from NOWRAMP 2002 expedition submitted to NOAA/NOS NWHI Coral Reef Ecosystem Reserve.

¹⁴ Hans Van Tilburg, “Kane`ohe Bay MCBH: Submerged Cultural Resources Survey,” report submitted to NPS ABPP 2000.

¹⁵ The first in Hans Van Tilburg, “Maritime Survey of the Kona Coast: Mahukona Harbor, Kona Coast State Park, and Kealahou Bay,” Marine Option Program report, University of Hawai`i, 1997; second in Van Tilburg, “Maritime Cultural Resources Survey: Northwestern Hawaiian Islands.”

PREHISTORIC BACKGROUND: VOYAGING in the PACIFIC¹

For many in Hawai`i, the story of Polynesian voyaging in the Pacific represents the boldest maritime migration ever recorded. In the words of anthropologist Patrick V. Kirch, “The history of the Pacific is more than anything a history of voyages, and all that word entails: curiosity, courage, skill, technique, stamina, doubt, hope, and more.”² The vast distances to be covered, combined with the minuteness of the islands themselves, called for lifestyles and skills completely adapted to the sea.

The intentional voyaging, which accounted for the maritime migration of Polynesian seafarers throughout distant locations in the Pacific, is a phenomenon which has only been recently accepted by the Western academy. Previous theories attempting to explain the wide distribution of Austronesian language family populations revolved around several common themes: Pacific voyagers were actually lost tribes of previously known civilizations; Pacific voyagers actually migrated from the Americas westward (downwind and down current at equatorial latitudes); and Pacific voyagers somehow accidentally managed to populated distant islands, being blown off course by storms.³ All of these theories assume that Polynesian voyagers lacked the necessary skills to cross long stretches of open ocean against prevailing currents and winds. All of these theories contradict indigenous Pacific traditions. The first, that Pacific voyagers were actually a lost tribe of Israel or Persian or Egyptian seafarers, reflects 19th century social Darwinism and environmental determinism. The second, tested by Thor Heyerdahl’s *Kon Tiki* passage from South America, flies in the face of biogeographical and genetic evidence. The third, the accidental drift theory, was found unfeasible in the 1970’s by current and weather computer modeling.⁴

Lapita Migration

The core of the most current anthropological theory on the peopling of the Pacific comes from archaeological evidence of eastward migration. Though pottery remains do not exist throughout the entire Polynesian area, traces of a distinctive tradition, the Lapita pottery culture, do reveal eastward migration from Southeast Asia to the Fiji/Tonga/Samoa area of Polynesia. Lapita pottery styles and relative dates correspond to more recent traces of habitation in a progressively eastward pattern. To be more exact, Lapita culture is more of a rubric for a collection of seemingly related cultural artifacts, including ornaments, adze and tools, fishhooks and sinkers, etc. The Lapita people were seafarers, moving with their whole cultural assemblage. The Lapita theory and the basic model for Pacific migration begin with archaeological site work in the late 1960’s and early 1970’s.⁵ Lapita theory is by no means complete and internally consistent, but it encompasses most of the major important elements of contemporary work. It consists of an eight-step chronology:

Table 3: Lapita Theory Pacific Migration

- 1) Austronesian language family Lapita people move south into Southeast Asia from eastern Taiwan 8,000-6,000 BCE;
- 2) Migration turns east into the Pacific;
- 3) Areas in Melanesia settled relatively quickly (interaction between Austronesian migration and Melanesian inhabitants not clear);
- 4) Component of Lapita migration splits off and moves north into Micronesia;
- 5) Migration reaches Samoa/Fiji/Tonga area around 3,600 BCE;
- 6) Samoa/Fiji/Tonga area (Western Polynesia) settled relatively quickly;
- 7) Migration halts for approximately 1,500 years (cultural development from Austronesian to Polynesian lifestyles);
- 8) Distant outliers (beginning with Marquesa Islands and Tahiti and later Hawai'i, Easter Island/Rapa Nui, and New Zealand/Aoteroa) discovered and settled.

Lapita site investigations continue into the present day. It is important to note that this theory presupposes eastward sailing migration against the prevailing winds and currents at the equatorial latitudes, as well as the navigational capabilities to locate and colonize islands across distant stretches of open ocean. Many in the academic community were not willing to accept these Pacific voyaging abilities until archaeological evidence was combined with actual experimental testing and replica voyaging in the 1970's.

Canoe Construction

Polynesian voyaging encompasses both the technical skills of double-hull canoe construction and a complex body of navigational lore. Technical descriptions of Pacific outriggers and voyaging canoes have been compiled in Haddon and Hornell's *Canoes of Oceania*, but this does not include examples of double-hull voyaging canoes for the Hawaiian Islands.⁶ Archaeological examples of ancient voyaging canoes are quite rare. To date there are no known elements of ocean going voyaging canoes from any underwater site. Outrigger or double-hulled canoes with no need for ballast simply don't seem to sink very often. The most likely areas for such finds, therefore, include swamps and ancient occupation sites on land, long since filled with mud. The best known terrestrial site was discovered by Yosihiko Sinoto, chairman of the anthropology department of Hawaii's Bernice P. Bishop Museum. In the early 1970's Sinoto uncovered a canoe production site in French Polynesia. Excavations were initiated by the construction of Hotel Bali Hai on the small island of Huahine, 110 miles northwest of Tahiti.⁷ The partially waterlogged site contained a number of shell, bone, and wooden artifacts as well as stone tools. Inundated by a tsunami, everything had been quickly covered by a thick layer of sand and silt, and then preserved in wet site conditions for hundreds of years. The most critical finds relevant to Hawai'i occurred in 1977 with the discovery of a large wooden steering paddle, an outrigger boom, and two wooden canoe planks measuring 23 feet in length. Such boards would have been upper splashboards for the bow section of a canoe under construction. These were apparently meant for the construction of a large double-hulled sailing canoe.

Though found in French Polynesia, these remains were to help shape the direction of experimental archaeology and the revival of voyaging culture in Hawai`i.

The study of Hawaiian long distance voyaging technologies has chiefly been the result of experimental archaeology, beginning with the construction of the performance-accurate *Hokule`a* in 1974. Anthropologist Ben Finney at the University of Hawai`i, along with Tommy Holmes and Herb Kane, envisioned the creation of a double-hull Hawaiian voyaging canoe from modern materials (fiberglass laminated plywood). Sailing this replica would allow them to test the vessel's speed, habitability, sea keeping qualities, ability to go to windward, etc. *Hokule`a*'s launch in 1974 and first long distance voyage in 1976 coincided in Native Hawaiian resistance to the continued use of Kaho`olawe Island as a military target range. In these and other ways, the experiment in replica archaeology took on a new aim of cultural symbolism and a revival of Hawaiian identity.⁸ Hawaiians accompanied the anthropologists on the first voyage to the Marquesas.

The story of the revival of indigenous Pacific navigation methods begins with the *Hokule`a* project and the formation of the Polynesian Voyaging Society (PVS). A number of scholars, such as Thomas Gladwin and David Lewis, had previously become involved in investigating traditional Pacific navigation techniques.⁹

Relationships to the Sea

Beyond just sailing skills, traditional Hawaiian lifestyles remained connected to the ocean in numerous ways. For hundreds of years the Hawaiians lived in close relation to the sea, and the cultural resources associated with this lifestyle are still very much in evidence throughout the main islands. Structures such as seawalls for fishponds, tools, and fishing implements, speak of an advanced maritime culture and a sustainable form of food production. Today, of course, most of the necessities of life are shipped to Hawaii from any number of distant locations.

Stonewalls for fishponds and fish traps were once prominent features in the Hawaiian coastal landscape. Prior to Western contact, there may have been between 400 and 500 stone fishponds in the Hawaiian Islands, producing something around two million pounds of fish annually.¹⁰ Today only 12 ponds are in condition to produce some fish. Stone canoe houses and canoe launching ramps can also still be found in certain locations. Such lithic remains can sometimes endure hundreds of years in relatively good shape. Marine Option Program maritime archaeology students mapped a stone fish trap at Koloko Honokahau National Park on the Big Island during the field school in 1997.¹¹ Compartments that seemed to be traps or holding areas were surrounded by a larger seawall. Information gathered can help determine the presence or absence of a traditional gate or *makaha*. Not only are such structures examples of an advanced and efficient food production system, but also if restoration is to take place, accurate surveys should be completed before the sites are further altered.

While terrestrial *heiau* or temples have been investigated, submerged *heiau* and other unclassified coastal structures do exist. One university researcher is currently studying the Hawaiian oral histories and chants in an effort to locate further underwater sites.¹² It should be mentioned that understanding the

cultural significance of such places could be quite challenging to the traditionally trained researcher. In Hawaiian culture, as with other Pacific peoples, the land itself possesses a special connection with the remembered history of the ancestors, sites being a direct link to historical genealogies and events. This cultural difference adds a layer of significance to, and demands a greater sensitivity from, what has often been in the past a strictly Western interpretation of artifacts.

Hawai`i has the richest archaeological record of any Pacific archipelago.¹³ The Hawaiian cultural sequence has been depicted by several semi-discrete phases: 1) Colonization Period, A.D. 300-600; 2) Developmental Period, A.D. 600-1100; 3) Expansion Period, A.D. 1100-1650; and 4) Proto-Historic Period, A.D. 1650-1795. The date of initial settlement during the first phase remains controversial, but apparently separate phases of migration and two-way voyaging, first from the Marquesas and later from Tahiti, took place. Coastal settlements and forest clearing for agriculture mark the Developmental Period. Population estimates during this phase do not exceed 20,000 for the Islands. Eastern Polynesian traits at this time transformed into distinctly Hawaiian patterns. The first archaeological traces of habitation near the Pearl Harbor area appear in the late Developmental Period. During the Period of Expansion, the archipelago's population increased exponentially, moving out from the windward areas of best cultivation and inhabiting more marginal (dry) regions. Terraced field systems and large fishponds for aquaculture intensified production. Pearl Harbor became a center for agriculture and aquaculture. The hierarchical organization of the Hawaiian chiefly class, the *ali`i*, increased, and many interpret the Hawaiian culture to be the most stratified example of Pacific Polynesian societies. Land tenure systems matured, and the *ahupua`a* divisions, units separated by ridgelines running from mountain to sea, solidified. The final Proto-Historic phase witnessed increasing wars of territorial aggression and the increasing unification of once independent chiefdoms.¹⁴ These wars were influenced by the introduction of western ships and weapons in the 1790's.

Most archaeology in Hawai`i has focused on the terrestrial remains of habitation sites, as well as stone heiau or temples. There is no doubt, though, that the canoe and voyaging remain (or have become again) central symbols of Hawaiian Islander identity. Since the 1970's, the experimental archaeology of voyaging canoe construction and navigation has blossomed throughout the island Pacific, tied closely to a transpacific cultural revival surrounding not just the physical form of the *vaka* or sailing canoe, but around the social organization of a voyaging society and the continuing transmission of traditional navigating techniques. The Polynesian Voyaging Society, formed in 1973, successfully makes the connection between experimental archaeology, cultural revival, and popular education. In 1994 the *Hokule`a* was followed by another replica of a traditional voyaging canoe, the *Hawai`iloa*, a vessel this time carved from the solid trunks of enormous trees. Both are now two of about 20 or so other ocean-going voyaging canoes throughout the Pacific Islands, still making traditional long distance round-trip journeys relying on the ancient skills of their navigators, i.e. without charts, modern directional aids, satellite navigation etc.¹⁵ The Festival of the Pacific Arts, sponsored by the South Pacific Forum, has focused on voyaging themes in the past, and continues to provide an opportunity for various traditional canoes and cultures of Hawaiians,

Maoris, Tahitians, Cook Islanders, Marshallese, etc. to assemble. Experimental maritime archaeology has thus been transformed in Hawai`i and other Pacific islands, becoming again long distance ocean voyaging truly in the traditional style. This has led to an increased awareness about maritime cultural resources of all types. The significance of these journeys goes beyond the academic discipline, for the vessels, the voyages, and the sailors are a proud revival of an ancient Pacific lifestyle. The canoes themselves are symbols of this reawakening.¹⁶

Though most archaeology and anthropology has featured land sites, many of the traditional ties that Hawaiians have developed for the sea, and in particular the respect held for sacred locations both on and under the ocean as well as on shore, continue today. The islands and surrounding waters are locations created by the rich interplay of the ancestral gods. From the indigenous point of view, these locations themselves are “ancestors,” places that hold spirit or *mana*. The Northwestern Hawaiian Islands provide a contemporary example of this, as Hawaiian groups seek to protect genealogical ties to the distant reefs, atolls, islands, and surrounding waters during the current Federal process of National Marine Sanctuary designation for the area.

In accordance with *kanawai* (Hawaiian law), which established responsibilities inherited from the *kupuna* (ancestors), and *kini akua* (multitude of gods) through the *kumulipo* (creation chant), and in accordance with perpetual *Kanaka Oiwi* (indigenous Hawaiian) sovereign authority, *Kanaka Oiwi* are responsible for the exercise of *na kuleana* (responsibilities) related to their interests in the Northwestern Hawaiian Islands (NWHI). *Kuleana* created inherent and inalienable duties for *Kanaka Oiwi* to *malama* (care for) and *kupale* (protect) the *kino lau* (body forms) that preceded us in the evolutionary process including *na uku koakoa* (coral polyps), *limu* (seaweed), *ia* (fish), all other ocean life forms, *na manu* (birds), and *na mokupuni* (islands). Connections to these *kino lau* are genealogically based. They are all *kupuna*, connected to *Kanaka Oiwi* in space, time, and *mana* (spiritual energy). Therefore, *Kanaka Oiwi* are responsible for their ancestors who reside in the NWHI in their multitude of *kino lau*.¹⁷

Frankly, the Hawaiian view of the environment is unlike the distinct separation between the individual and the physical elements, as found in western geography. The significance of the marine environment, therefore, goes beyond artificial boundaries on a chart. Connections with place (terrestrial or submerged) emphasize not the legal authority defined by jurisdictional boundaries, but responsibility on a personal and spiritual level. There should be a way to recognize these more intangible cultural perspectives within the field of cultural resource management.

As far as the protection and preservation of submerged naval properties in Hawai`i is concerned, understanding some of the pre-western contact history and traditional uses of the marine space can only help the practice of resource management in a multicultural setting. Navy shipwrecks often do not rest in a maritime void, in a blank spot on a western chart. There was and is a rich culture which came before western influence and maintains close contacts with the sea. Only following this acknowledgment can common ground be found. During recent public discussions, Hawaiian participants noted with most interest the fact that Navy wrecks and aircraft crash sites at Midway are often war graves. Places where

sailors and others have been lost, particularly if there are human remains, are particularly sacred.¹⁸ Respect for the dead and for sacrifice is common to both cultures.

¹ Includes excerpts from Hans Van Tilburg, "Underwater Archaeology Hawaiian Style," in *International Handbook on Maritime Archaeology* (New York: Kluwer Academic/Plenum Publishers, 2002).

² Patrick V. Kirch, *On the Road of the Winds: an Archaeological History of the Pacific Islands before European Contact* (Berkeley: University of California Press, 2000), 302.

³ Alan Howard, "Polynesian Origins and Migrations," in G.A. Highland, R.W. Force, A. Howard, M. Kelly, and Y.H. Sinoto (eds) *Polynesian Culture History* (Honolulu: Bishop Museum Press, 1967); Thor Heyerdahl, *Sea Routes to Polynesia: American Indians and Early Asiatics in the Pacific* (London: Allen and Unwin, 1952); and Andrew Sharp, *Ancient Voyagers in the Pacific* (Wellington: Polynesian Society, 1956), respectively.

⁴ R.G. Ward, J.W. Webb, and M. Levison, "The Settlement of the Polynesian Outliers: a Computer Simulation" *Journal of the Polynesian Society* 82:330-42.

⁵ Roger Green, "The Immediate Origins of the Polynesians," in G.A. Highland, R.W. Force, A. Howard, M. Kelly, and Y.H. Sinoto (eds) *Polynesian Culture History* (Honolulu: Bishop Museum Press, 1967); and Jack Golson, "The Pacific Islands and their Prehistoric Inhabitants," in R.G. Ward (ed), *Man in the Pacific Islands: Essays on Geographical Change in the Pacific Islands* (Oxford: Oxford University Press, 1972).

⁶ A.C. Haddon and James Hornell, *Canoes of Oceania* (Honolulu: Bishop Museum Press, 1975).

⁷ Yosihiko Sinoto, "The Huahine Excavation: Discovery of an Ancient Polynesian Voyaging Canoe," *Archaeology* 36:2 (1983): 11.

⁸ Ben Finney, *Voyage of Rediscovery: a Cultural Odyssey through Polynesia* (Berkeley: University of California Press, 1994).

⁹ Thomas Gladwin, *East is a Big Bird: Navigation and Logic on Puluwat Atoll* (1970); David Lewis, *We, the Navigators: the Ancient Art of Landfinding in the Pacific* (Honolulu: University of Hawai'i Press, 1979).

¹⁰ Personal communication with Joseph Farber, 2-11-97. For a good example of a single study of one fishpond, see Marion Kelly, *Loko I'a O He'eia: Heeia Fishpond*, (Honolulu: Bernice Pauahi Bishop Museum, 1975).

¹¹ Hans Van Tilburg, "Maritime Survey..."

¹² Personal communication with Tom Stone, 8-27-98.

¹³ Kirch, *On the Road of the Winds*, 290.

¹⁴ *Ibid*, 300.

¹⁵ Ben Finney, *Voyage of Rediscovery* (Berkeley: University of California Press, 1994).

¹⁶ Jon Jonassen, "The Politics of Culture: the Case of the Voyaging Canoes," in Werner vom Busch et al (ed.), *New Politics in the South Pacific*, (Suva: University of the South Pacific, 1994), 305-318.

¹⁷ Cited from work submitted by the Hawaiian Cultural Working Group, NWHI Reserve Advisory Council meeting Honolulu 6/25/03.

¹⁸ Reserve Advisory Council meeting, Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve, Hilo, 30 April 2003.

INTRODUCTION to a GENERAL MARITIME HISTORY of HAWAII¹

Hawai`i's maritime past begins with the original discovery of the Islands by Polynesian voyagers approximately 1,500 years ago. The double-hull canoe voyaging connections between Hawai`i and the Marquesas, and later Tahiti, made the discovery and colonization of the Hawaiian Islands possible. Both the technical abilities of canoe construction and the navigational skills involved in long-distance voyaging were part of a learned "package" maintained within many Pacific cultures. Though passages between Hawai`i and the Polynesian homeland had long ceased by the 18th century, inter island navigation (including trips to certain distant locations in the Northwestern Hawaiian archipelago) and canoe construction continued.

Around the Hawaiian Islands themselves, maritime activity before western contact was quite different from later modes. Most traffic featured either recreational travel or military movements, as each sub-tropical island was relatively self-sufficient. War fleets sent between competing chiefs could be quite large. Passengers often preferred travel by water, rather than steep and dangerous treks over sharp cliffs. Inter island trade, however, was relatively undeveloped. There was no word for "trade" or "trader" in the Hawaiian language.² Dense basalt rocks for tools and timber best suited for canoe construction were the two exceptions to the basic lack of commodity exchange. This may be due to the basic self-sufficient nature of separate island communities. From a broad perspective, the maritime commerce "revolution" in Hawai`i features a marked shift from self-sufficiency among the islands to dependency on the mainland.

Mifflin Thomas, author of *Schooner from Windward: Two Centuries of Hawaiian Interisland Shipping*, divides maritime history in the Islands into four basic periods: the age of canoe transport, the age of western sail, steamship days in Hawai`i, and the modern era of tug-and-barge and container ship traffic. (Thomas is primarily concerned with commercial/civilian maritime activity.) These categories are somewhat artificial and overlap significantly with each other. Paddling canoes were used as "tugs" during the days of western sail at Honolulu Harbor, and steam and sail existed side-by-side for an extended period. There was no completely distinct maritime cultural break between what was traditionally Hawaiian and what was imported from the West, both styles existed and adapted to the other. Asian maritime cultures contributed to the changing setting as well. Maritime history in Hawai`i is a mixed bag. Western ships, though, did begin to introduce radical changes in the Hawaiian maritime and domestic scene in the late 18th century.

Western Contact

This change started in January 1778 during Captain James Cook's third expedition to the Pacific. With the HMS *Resolution* and *Discovery*, the British voyage of exploration's main goal was to discover the long sought after Pacific entrance to the Northwest Passage, a high latitude water route across the American continent. That goal would not be achieved. But, while wintering in more southern latitudes, Cook happened on warm tropical islands in the North Pacific previously unknown to him. His first landing took place on west side of Kaua`i near a place called Waimea. The natives seemed impressed both by the abundance of iron that the foreigners possessed, as well as the effectiveness of their guns. To the foreigners, it seemed as if the Hawaiians regarded Cook as some kind of god.

His stay was fairly brief. Having landed at Kaua`i and Ni`ihau and sighted O`ahu and two smaller islands in the Northwestern archipelago, Cook then sailed north returning to his main task.

Resolution and *Discovery* returned to the Hawaiian Islands in January of the following year, this time circumnavigating the island of Hawai`i and eventually landing at Kealahou Bay, where a multitude of people were celebrating the Makahiki festival. During this annual hiatus, the agricultural god Lono took the place of the dominant war god Ku, and all fighting was strictly forbidden.³ Cook and his crew were given a warm welcome, and the visitors took advantage of the situation to provision and effect repairs on *Resolution*'s mast and spars. On 4 February the ships set sail. A few days later *Resolution*'s foremast was sprung during a gale, and the vessels turned again for Kealahou Bay to effect more repairs.

The Makahiki festival had concluded by the time of this second and unexpected visit, and the welcome was notably cooler. Cook (now suffering from intestinal difficulties), once again troubled by what seemed to him to be petty thievery on the part of the Hawaiians, made an attempt to take the chief Kalaniopuu hostage and force the return of one of the ship's boats. A crowd gathered on the shore of the Bay to safeguard their chief. A fight broke out, the Marines fired into the crowd, and Captain Cook, stabbed in the neck, fell into the shallow water.⁴ The British retreated to their ships and cannon fire, directed at an adjacent village, killed approximately 60 Hawaiians. Tempers cooled, though, and the expedition did finally leave the Islands on a peaceful note, relations between the two not irrevocably broken. For many reasons Cook's "discovery" of the Hawaiian Islands and subsequent death at Kealahou Bay remain permanently etched in European narratives as a critical turning point for the Islands' maritime history.

By the late 18th century, Hawaiian voyaging canoes had long since ceased making regular passages to the South Pacific. Cook encountered an advanced maritime society existing in isolation. Whether he was actually the first European to make contact with the Hawaiians, or whether a stray Spanish galleon making one of the many annual Pacific crossings between New Spain and Manila had first sighted and perhaps even shipwrecked on the Hawaiian islands, remains a matter of some discussion. Areas of Kealahou Bay which some feel may contain traces of a Spanish shipwreck were surveyed in 1997 during remote sensing training by Marine Option Program students. While oral traditions do refer to a shipwreck at that location, magnetic anomalies there coincide with an underwater lava flow, and no hard evidence of a western shipwreck predating Cook's visit has yet been found.

The possibility also exists that Japanese or Chinese ships, perhaps disabled and adrift on the currents, may have made very early contact with the Hawaiian Islands. Documents record disabled junks making exactly this type of landfall in historic times, as well as survivors of several disabled junks being rescued in near island waters. (In 1832 a Japanese junk wrecked on Oahu's north shore, an event covered by local newspapers.⁵) Cook's visit, though, placed the Hawaiian Islands firmly on European charts, and insured increasing maritime contact.

Multicultural Maritime Setting

Initially, very little changed in Hawai`i in the decades following their discovery by the West, for explorers in the wide Pacific were a rather rare commodity. Not until a number of years later in 1785 did ships, slowly beginning to capitalize on the abundance of otter furs in the Pacific Northwest, begin to stop at Hawai`i on their way to Canton, China. Soon Chinese carpenters and merchants could be found in Hawai`i. Hawai`i as a port-of-call was

brought into a large regional and even global trade network, a business mainly focused on the riches of the Far East (only now ships were coming from the opposite direction rather than from the Indian Ocean). Merchants and explorers from England, France, Russia, and increasingly the newly independent United States realized the geographical advantage of Hawai`i. This would be the beginning of a trade in guns and increasing reliance on advice from western “advisors” who jumped ship or were otherwise deposited in Hawai`i. Cannon and advisors would soon be most useful to the first unification of all of the Hawaiian Islands.

Kamehameha I, a chief from the island of Hawai`i, was the first to unify the Hawaiian Islands into one kingdom by the first years of the 19th century. Swivel guns and cannon, as well as a captured vessel, the *Fair American*, contributed to his military campaign both at sea and on land. Following the successful unification, Kamehameha I promoted the purchase as well as the construction of western style vessels, until finally there were some 30 plus western ships in his inventory.⁶

By the early decades of the 19th century, Hawai`i was being drawn solidly into transpacific western trade patterns. James R. Gibson’s *Otter Skins, Boston Ships, and China Goods: the Maritime Fur Trade of the Northwest Coast 1785-1841* paints a broad picture of Hawai`i’s strategic importance to Yankee skippers in, what often turned out to be, a circumnavigation of commercial trade from New England to Canton and back.⁷ The Islands were not only a stopping point in the long transpacific passage, but also an important source for provisions and resources themselves. During the pre-western contact period, some limited trade between islands took place involving basalt tool material and other items, but overall each location was much more self-sufficient in terms of food and agricultural resources. Inter island commercial trade really takes off with the provisioning business stimulated by foreign ships. During the first few decades of the 19th century, the *ali`i* or chiefs monopolized inter island trade, and made large profits from the shipment of pigs, fruits and vegetables, and salt (for curing seal pelts). Secondary locations began to funnel supplies to the central hub of Honolulu harbor, where larger foreign vessels could ride safely at anchor.

As a provisioning point on a major Pacific trade route, Hawai`i was soon drawn into the boom and bust cycle of resource exploitation itself. Western merchants, attempting to address the trade deficit at Canton, soon began seeking out sources of fragrant sandalwood, or *Myoporum sandwicense*. Used as scented wood for furniture and incense in China, Hawai`i’s supply was soon stripped from the mountains, as some of the Hawaiian chiefs themselves fitted out their own sandalwood voyages to the Hong merchants in Canton. This sandalwood trade has disastrous consequences for the commoners of the Islands. Forced into the for-profit trade to benefit the *ali`i* class, fields were abandoned and agricultural processes were disrupted, initiating famine. Much of the profit, though, was turned into an expanding inter island fleet as chiefs purchased or had built scores of western sailing vessels for their own uses. Topsail schooners and brigs, some of them in the advanced stages of rot, went immediately into the inter island trade. Many were lost around the islands, grounding onto reefs.

The maritime scene in Hawai`i was quickly becoming very culturally mixed, as Hawaiian men found employment on board European vessels, as Western ships purchased by Hawaiians sailed between islands, and as missionaries and whalers and sandalwood hunters increasingly altered local society.⁸ Dr. David Chappell, history professor at UH, refers to this period as a “second diaspora” of renewed Hawaiian travel throughout the Pacific on

European ships. (The first diaspora consists of the initial discovery by Polynesians, and the third is comprised of modern migrations on airliners.) At one point Hawaiian and other Polynesian sailors comprised 1/5 of the American whaling fleet.

Some of the rare shipwreck surveys among the Islands bear this multicultural maritime setting out. In 1995 Dr. Paul F. Johnston, curator of maritime history at the Smithsonian Institution's National Museum of American History in Washington D.C., began his first season of survey work in Kauai's Hanalei Bay, searching for the remains of *Cleopatra's Barge*, an American brig built as a luxury yacht by George Crowninshield Jr. at Salem, Massachusetts in 1816. The ship, 100 feet long on deck and lavishly fitted out, was eventually sold to Kamehameha II in 1820 for 8,000 piculs of sandalwood, and then renamed *Ha`aheo o Hawai`i* or *Pride of Hawai`i*. As often happened with these ships in Hawaiian waters, the brig soon went into inter island service, conducting the royal court between locations in the kingdom. Members of the Sandwich Island Shipwreck Museum, as well as Steve James of Panamerican Maritime Ltd., based in Memphis Tennessee, assisted Dr. Johnston in his search and subsequent excavations. The magnetometer survey located a promising area close inshore where test trenches confirmed the contemporary historical account by Boston missionary Hiram Bingham regarding the presence of the wreck. Hydraulic removal of the sand overburden preceded the recovery of artifacts. After four seasons, the collected artifacts indeed portray a Pacific/Western mixed culture on board.⁹ Traces of Chinese pottery were discovered as well.

Whaling and Sugar Days

The importance of the Hawaiian Islands to whalers probably needs no special emphasis.¹⁰ In the first half of the 19th century, whaling operations spread north into the Pacific basin, progressively seeking out lucrative whaling grounds off South America, Australia, Japan, and finally the Gulf of Alaska and the Bering Sea. Soon after the *Balaena* and the *Equator* harpooned the first whale off the coast of Maui in 1819, Hawai`i won its place on whalers' charts. Grog shops and brothels soon made their appearance in Honolulu on the island of O`ahu and in Lahaina on the island of Maui. Some residents in Hawai`i today can trace their lineage to the frequent deserter from a whaling ship. Hawaiian waters were not as much a celebrated whaling ground as they were a familiar rest and reprovisioning point for whaling vessels working in less hospitable locations, such as the high arctic seas. Shore stations for whaling were never established, unlike other location in the Pacific such as Aoteroa (New Zealand) and Australia. Fresh food, a warm climate, and hospitable population in Hawai`i made extended whaling voyages of two to three years possible for New Englanders far from home. American vessels more and more dominated Pacific whaling grounds and particularly the Sperm whale fishery in the mid 19th century. Where 60 whalers had called at the Islands in 1822, almost 600 were annually making port by 1845.¹¹ Interestingly, there is not much indication that Hawaiians took whales at sea, though beached whales provided important resources.

Currently Lahaina, once known as "one of the breathing holes of hell," hosts a whaling museum, though no underwater survey of the anchorage there has yet been completed.¹² The Hawai`i Maritime Center (part of the Bishop Museum) on O`ahu also features a whaling exhibit at the museum, the try pots, whaleboats and implements of a truly global industrial pursuit. Offshore of Honolulu harbor are the remains of the brickworks from an as yet unidentified whaler, the bricks broken apart following a successful voyage. Local researchers allude to 18 other

documented wrecks of whalers in and around the Hawaiian island chain.¹³ Maritime archaeologists with the NOWRAMP 2002 science expedition to the Northwestern Hawaiian Islands discovered what might be the site of the *Gledstanes*, a British whaling ship that was lost at Kure Atoll in 1837.¹⁴

During the Islands' whaling and ranching days (cattle were an important resource shipped between Islands as well as to the mainland), a small but critical agricultural experiment introduced the beginnings of an entirely different socio-economic structure to Hawai'i. In the 1830's and 1840's a robust species of sugar cane was first produced for profit on the island of Kaua'i. By the 1840's planters began to take advantage of Hawai'i's productive setting by making plans for the first sugar cane plantations. Plantation economies needed land and a large pliant labor force, demands which would contribute to both the loss of sovereign territory for the Kingdom and the introduction of Asian and Pacific contract laborers and the creation of an even more notably multicultural society. This represented a brand new economic system for the Islands, altering social, political, and economic realities.

Maritime traffic in Hawai'i was, thus, intimately tied to the large agricultural exporters, or the "Big Five" companies as they have been known. Modern day companies like Matson Navigation, which currently dominates all commercial traffic between the Islands and the mainland, found their niche within the plantation-era lumber (building materials) and agricultural exports trade.

By the mid-19th century the first side-wheel steam vessels were operating in Hawaiian waters. Transport in the Islands remained dominated by sailing schooners, given the expense, relative inefficiencies, and general lack of coal for the steam vessels. More often than not, early steamers in Hawai'i like the *Akamai* and *Constitution* were shipped to Hawai'i and assembled so that shipping companies could attempt to secure lucrative subsidies against potential expansion of service in the future. It was not until the plantation boom in the second half of the 19th century that the economic foundation for the transition to steam navigation among the islands was firmly established.

Transition to Steam

The history of inter island steam transport in Hawai'i basically corresponds to the plantation boom in the latter half of the 1800's and the industrialization of the Hawaiian economy. By 1900, what had been a sailing trade between the islands had become the domain of iron ships and steam navigation. Technology had created the relatively efficient double and triple compound steam engines, and cylindrical steel Scotch boilers provided high-pressure steam. Companies like Wilder Steam Navigation Company and the Hawaiian Inter Island Steam Navigation Company operated many locally well-known and well-loved vessels in the cargo and passenger trades in the early decades of the 20th century. Sugar and cattle were, of course, major concerns in Hawai'i, and steamers were often required to moor in small exposed ports near hazardous reefs. Some 60 sugar mills were scattered around five main islands in 1884, these serviced by dozens of small private landings.¹⁵

These landings were more than just economic conjunctions in the plantation system, though. They were also the focal point for the local community's leisure activities, a place to gather and simply hang out. Everything for the plantation villages came and went through these landings...cargo, visitors, mail, and personal items. And in the off hours, landings were the center for fishing, swimming, camping, and almost any kind of transit between sea and shore. They are well remembered in oral traditions and in family collections of local history. And these kinds

of informal activities continued long past the official plantation service of these structures. Community play at landings continued right up to when they literally crumbled into the sea, sometimes being deliberately burned by the Army Corps of Engineers as too hazardous to the general public (as was the case with Waimanalo in the 1950's). The physical remains at landing sites, therefore, reflect more than the economic development of Hawai`i, but the lifestyle and activities of the local community as well. On top of this, there is a higher frequency of shipwrecks to be found near the landings.

The Marine Option Program at the University of Hawai`i, host of the Graduate Maritime Archaeology and History Program, has documented two submerged wreck sites relating to this period. The SS *Kauai*, lost at Mahukona Port in 1913, has long been a popular dive and snorkeling destination. The wooden-hulled ship went onto the reef while carrying railroad parts and bags of sugar between islands. Both the steamer remains (boiler, engine, propeller, scattered cargo) and the ruins of the port itself combine to record a major era of Hawai`i's economic and social development, particularly as the days of the commercial sugar industry in Hawai`i have drawn to a close. Recent storms have since placed the boiler ashore, as well as destroying the old government wharf at Mahukona. The SS *Maui*, an iron-hulled wreck located further south on the Kona coast of the island of Hawai`i, was also employed in the sugar industry when it broke its back on the lava reef in 1917. Built in 1898 by Union Iron Works of San Francisco, her triple-expansion steam engine, boiler, hull plates, and stern section remain scattered atop an underwater lava field. Additionally, maritime archaeology students have documented 19th century landing site ruins at historic locations.

Following the passage of the Reciprocity Treaty with the mainland in 1876, which eliminated the sugar tariff between the Islands and the West Coast (in exchange for granting the U.S. Navy exclusive access rights to Pearl Harbor) planters among the Hawaiian Islands could make a complete commitment to the plantation economy model. It became profitable to operate and maintain steamships in Hawaiian waters. Outfits like the Wilder Steamship Company and Inter Island Navigation Steamship Company ran regular circuits stopping at numerous small landings. Vessels were built both on the mainland and in Hawai`i specifically for operation in local waters. Hawai`i's economy relied on these landings and local ships in the inter island trade. They were vital links between the source of goods and produce and the larger trans-shipping ports. Commercial navigation in Hawai`i was strongly tied to diverse agricultural and industrial interests both in the islands and on the mainland. For example, by 1901 William Matson, president of Matson Navigation Company, controlled multiple oil companies on the mainland, ran the Matson shipping line, was president of the Honolulu Sugar Plantation Company and had investments in other plantations, and had further interests in the Oceanic Steamship Company.¹⁶

Whether sailing schooner or steamship, inter island vessels operated in a trade hazardous to both life and property. With the exceptions of Honolulu (Oahu), Hilo (Hawai`i), and Kahului (Maui), there were no wharves where ships could lie in safety in all weather. Open roadsteads and narrow passages between fringing reefs were the usual condition, and often the skillful use of surfboats or elaborate moorings and overhead wire systems were the only way to transport both passengers and products. In other words, these landings functioned as a kind of ship trap, and a survey of the hundreds of shipwrecks in Hawai`i's past reveals clusters of such wrecks at the landing locations. The challenge today, as obvious traces of many of these landings have vanished, is to relocate and investigate these

sites through research into historical maps and aerial photographs and underwater surveys. The significance of inter island navigation and the landings and shipwrecks, therefore, is deeply wrapped up in the plantation economy and plantation culture of the islands of Hawai`i for a large portion of the 19th century.

In the 1920's and 1930's steamships would capitalize on another growing commodity...tourists. Hawai`i's reputation as an idyllic vacation hideaway fitted well with the type of luxury passenger liners which began to call at Honolulu. "Boat Days" is still a celebrated theme among the waterfront, and the coming of the passenger liners is recalled at least once a year during the annual Honolulu Harbor Festival.

Sampans in the Pacific

Not all cultural influence took place from the West to the Hawaiian Islands. As new visitors to Hawai`i quickly find out, Asians have made up a significant proportion of the population in the islands for a long while. Many migrants arrived in Hawai`i in successive waves (Chinese, Japanese, Korean, Filipino etc.) a phenomenon tied to the needs of the plantation owners. For maritime historians and nautical archaeologists this cultural influence takes the form of a unique style of fishing vessel known today as the Hawaiian sampan, celebrated locally in restaurants, on cocktail napkins, books and film. The origins of the Hawaiian sampan, in fact, are purely Japanese. In 1899 a Japanese fishing craft was imported to Hawai`i on the deck of a steamer by Gorokichi Nakasugi.¹⁷ Such fishing boats retained features of very ancient Yamato-gata style vessels as recorded in a study by Basil Greenhill.¹⁸ Mr. Nakasugi, a fisherman and shipwright, was soon employed in the *aku* or tuna fishing industry, and the design elements of Japanese fishing vessels were thus imported "across the beach" as it were to Hawai`i.

Eastern and Western construction methods truly blended in the small boatyards on O`ahu, Maui and the Big Island. Such vessels continued to be built by Japanese shipwrights in Hawai`i throughout the 1920's and 1930's, the same shipwrights who repaired many Western vessels visiting from the mainland.¹⁹ Diesel engines and prominent deckhouses replaced the traditional square sail of Japanese design. In the years before World War II there were hundreds of large and small sampans throughout the islands. Sometimes students were sent to Japan to study traditional ship construction, then returned to their homes in Hawai`i. Today the remains of these far ranging vessels might be found anywhere within the long Hawaiian island chain, stretching from the main Hawaiian Islands to the northwest.

In the years before World War II, Americans and especially the navy became increasingly suspicious of these vessels and their operations. Such feelings reflected the general growing apprehension in Pacific relations with Japan. United States Customs officials seized many of these sampans on discovering that Japanese nationals were operating some of the domestic fleet. The U.S. Navy, facing a critical shortage of boats, then purchased many of these sampans, which were fitted out for harbor salvage and inshore patrol duty. The U.S. Coast Guard operated many of them during the war years. After 1945 the Japanese tuna fishing industry never recovered its prewar levels, though, and today there are only a handful of these wooden pre-war sampans left in operation.²⁰

Dependency and Containerization

During the decades before World War II, the maritime scene in Hawai`i changed from inter island commerce between relatively self-sufficient islands to an agricultural export economy focusing on delivering a much reduced variety of outer island products (mainly sugar, pineapple, cattle, rice) to Honolulu, and from there to

markets on the American Mainland. With little local industrialization or capacity for manufacturing, the Islands now had to import goods and foodstuffs for an increasing population. The restrictions imposed following the attack on Pearl Harbor disrupted the inter island commercial connections, as well as the lifeline from the Mainland, and a concerted effort had to be made during the War to reintroduce a certain amount of self-sufficiency among local residents (“Victory gardens”). Fortunately, Japanese submarines were not able to seriously threaten Hawai`i’s connections with the Mainland, and food shortages were kept under control.

Following the war, aviation and containerization played the largest role in changing the nature of maritime traffic to Hawai`i and between the Islands. Where once Aloha Tower at Honolulu Harbor had been the familiar debarkation/embarkation point for steam ship passengers, commercial jets now flew overhead on their way to and from Honolulu International Airport. Where once a fleet of inter island steam vessels carried break-bulk cargoes between numerous roadsteads and landings, barges with stacks of steel boxes became the most economical method of shipment. Containerships from the Mainland were soon unloading beneath the giant container bridges at Sand Island on O`ahu. Today approximately 90% of all goods used on the Islands arrive via containers from the Mainland. The sugar and pineapple industries faced stiff competition from foreign sources, and tourism soon outstripped them as Hawai`i’s number one industry. Hawai`i as a tourist destination goes back to efforts to promote the islands in the 1890’s with the publication of Harry M. Whitney’s *The Tourist’s Guide through the Hawaiian Islands*, featuring descriptions of pleasure trips to the volcanoes of the island of Hawai`i.²¹ Most, though, would associate the familiar passenger liners

Except for evening dinner cruises and recreational yachting, most commercial maritime traffic has moved away from the downtown harbor area and to the container terminal at Sand Island, echoing changes in the maritime industry world-wide. Modern harbors, with their increasing demands for large landholdings (container parking lots), have been forced to move away from the city center and out to a more featureless “no man’s land.” Container bridges and straddle carriers work the waterfront on a scale that makes the individual longshoreman hardly noticeable. The commercial maritime scene is less suited to the individual and more suited to economies of scale. It is no longer possible to travel commercially between the Islands, though limited ferry service is being attempted between some locations. Most of the older landings from the plantation era are now only rusting pilings or concrete ruins. Hawai`i has become a tug-and-barge state.

While over the long stretch of time the numerous and varied commercial watercraft employed in numerous roles among the Hawaiian Islands have seemed to dwindle to a handful of unmanned barges pulled by anonymous ocean tug, it would be a mistake to think that residents and visitors are not oriented to the sea. Recreational marine activities have boomed. Pleasure boats compete with commercial and military uses of the marine space. Paddling canoes, yachts, fishing boats, night time dinner cruises (the “booze cruise”), and even surf boards fitted out with outboard engines, can all be found offshore of Waikiki.

Increasingly, an awareness of the natural resources of the sea and the fragility of coral reef ecosystems is emerging in Hawai`i. The Hawaiian archipelago boasts the majority of coral reef ecosystems in the United States, and the tropical climate and coral seas provide more than enough room for surfing, swimming, fishing, diving, and sailing. The Hawaiian Islands Humpback Whale National Marine Sanctuary, established in 1997, typifies the

growing concern for marine resources and environmental education. The Northwestern Hawaiian Island Coral Reef Ecosystem Reserve alone, established by Executive Order in 2001, is larger than all other 13 National Marine Sanctuaries combined. A number of Federal and State agencies, such as NOAA's National Marine Sanctuary Program, the U.S. Fish and Wildlife Service, and the State of Hawai'i's Department of Land and Natural Resources, are involved in the management of the waters and marine resources surrounding the Hawaiian Islands. There is a growing awareness of the importance of marine resources and coral reef ecosystems to the health of the general environment. To this end, historical and maritime topics such as the past nautical activities in Hawai'i, overlap with contemporary concerns about marine eco-tourism, potential maritime resources and hazards, and the overall conservation and preservation trend, or stewardship, of what is found beneath the sea. What remains to be seen is the place of submerged cultural resource management within the growing awareness of (generally) marine natural resources.

¹ Includes excerpts from Hans Van Tilburg, "Underwater Archaeology Hawaiian Style," in *International Handbook on Maritime Archaeology*

² Mifflin Thomas, *Schooner from Windward: Two Centuries of Hawaiian Interisland Shipping* (Honolulu: University of Hawai'i Press, 1983), 9.

³ Much subsequent analysis of this cultural contact revolves around the question of whether or not Cook himself was regarded as the god Lono by the Hawaiians.

⁴ Gavin Daws, *Shoal of Time: a History of the Hawaiian Islands* (Honolulu: University of Hawai'i Press, 1968), 20.

⁵ John Harden Connell, "Typhoon and Shipwreck Brought First Japanese to Hawai'i over Century Ago; Old Records Tell of Arrival on Junk," *Honolulu Advertiser* 20 June 1933.

⁶ Ralph S. Kuykendall, *The Hawaiian Kingdom: 1778-1854* (Honolulu: University of Hawai'i, 1938), 86-97.
⁷ 1992

⁸ David Chappell, *Double Ghosts: Oceanian Voyagers on Euroamerican Ships* (New York: M.E. Sharpe, 1997).

⁹ Personal communication with Dr. Paul Johnston, 7-23-98.

¹⁰ One useful resource is Robert Langdon, *American Whalers and Traders in the Pacific: a Guide to Records on Microfilm* (Canberra: Australian National University, 1978).

¹¹ Thomas 1983: 22

¹² See Maui Historical Society (Wailuku), *Lahaina Historical Guide* (Honolulu: Star Bulletin Printing Company, 1964).

¹³ Personal communication with Rick Rogers, 8-15-98.

¹⁴ Van Tilburg 2002: 53

¹⁵ Mifflin Thomas, *Schooner from Windward: Two Centuries of Hawaiian Interisland Shipping* (Honolulu: University of Hawai'i Press, 1983), 64.

¹⁶ Worden 1981: 28

¹⁷ Jesse Bowman, "The Trouble with Aku," *Beacon* 13 no.11 (1973): 16.

¹⁸ Basil Greenhill, *The Archaeology of Boats and Ships* (Maryland: Naval Institute Press, 1995), 107.

¹⁹ Leslie Nakashima, "Sampan Boat Building," *Advertiser*, 10 March 1934.

²⁰ Robert P. Chenoweth, "Hawai'i's Aku Sampans: Historic Treasures Still at Work," (unpublished report, anthropology department, University of Hawai'i, 1990).

²¹ Thomas 1983: 81

U.S. NAVY IN HAWAII: HISTORY OF ACTIVITIES

Clearly there has been and is no other location as important to the U.S. Navy's position in the Pacific than the Hawaiian Islands. Hawai'i has been America's closest secure position to Asia for quite some time. This has led to the establishment of a number of military bases, which occupy a sizable percentage of the land in the state.¹ Given the current status of the U.S. Pacific Fleet and its wide ranging area of responsibility, there may be no other single location as strategically and logistically important to the nation as a whole as the Hawaiian Islands. The best way to portray the significance of the Hawaiian Islands to the Navy (and vice versa), as well as to summarize naval activities among the Islands, is to examine the changing presence of the American Navy in Hawai'i through time. The importance of Hawai'i to the Navy, and the Navy to Hawai'i, has evolved through a number of distinct phases.

Early Contacts and Goodwill Visits

Association between Hawai'i and U.S. naval activities dates back to the early 19th century. Prince George P. Kaumualii Humehume, the son of the chief of the Island of Kaua'i, traveled to the United States to be educated at Cornwall School in Massachusetts. He later enlisted in the U.S. Navy and served in the Tripoli Expedition as well as during the War of 1812.² During that war in 1814, Marine Lieutenant John Gamble was given command of a captured British ship by Captain David Porter of USS *Essex*. The 390-ton vessel loaded with whale blubber, *Sir Andrew Hammond*, was captured by *Essex* in the Marquesas, along with *Greenwich* and *Seringapatam*, and prize crews were placed on board. British prisoners later mutinied, but Lieutenant Gamble managed to put down the rebellion on his ship (being wounded in the process), and set a course for the Sandwich Islands in search of a Hawaiian crew. He reached "Waohoo" on the island of "Owyhee" on 23 May 1814, the first and only Marine Lieutenant to be given command of a U.S. naval prize.³ The U.S. prize vessel was recaptured soon after its stop at Hawai'i, and Gamble and his crew captured.

In comparison to the future importance of Pearl Harbor and Hawai'i, the first phase of naval activity in the Islands can be categorized as informal visits and showing the flag. This is a period without a serious commitment to establishing a long-term presence in the Islands. U.S. Navy ships called at Hawai'i to reprovision, and to sometimes lend support for the activities of American merchants abroad. Navy ships were not the first American vessels in the Islands, but sailed in the wake of Yankee merchants, who had pioneered the transpacific route in the late 18th century. John Jacob Astor's sandalwood trade ships were in the Islands in the 1790's. Ships from New England sought far-flung profits by rounding the Horn and trading for seal furs on the rugged Northwest Coast. From there they crossed to Asia, stopping at Hawai'i for necessary provisions and secondary trade. Reaching Canton in Southern China, they then began their passage home to New England across the Indian Ocean and around the globe. Many of the sealing vessels in the early 19th century wintered in the Islands rather than remain on the Northwest Coast. American whalers began operating in the mid-Pacific early in the century, sometimes coming into conflict with Boston missionaries in Lahaina and Honolulu. The flag followed commercial profits to Honolulu Harbor.

USS *Dolphin* is usually cited as the first commissioned U.S. warship to arrive at Hawai'i, January 1826. In October of that year, USS *Peacock* arrived, commanded by Captain Thomas ap Catesby Jones. Jones had been

empowered to negotiate a treaty of commerce and friendship with the Hawaiian Kingdom. Captain Jones' visit on USS *Peacock* produced early results, the first treaty between the U.S. and the Hawaiian Kingdom. Signed on 23 December 1826, the Treaty provided America with Most Favored Nation trade status, as well as a wartime neutrality promise from the Islands. Oddly enough, it is not clear that Jones' had the authority to negotiate this treaty, and it was never ratified by the U.S. Congress.⁴

Over the next two decades, close on the heels of USS *Dolphin* and *Peacock*, were *Vincennes* (13 October 1829), *Potomac* (22 July 1832), *Enterprise* (6 September 1836), *Peacock* 7 September 1836), *Columbia* (10 October 1839), *John Adams* (10 October 1839), *Flying Fish* (19 September 1840), *Vincennes* 24 September 1840), *Peacock* (30 September 1840), *Porpoise* (7 October 1840), *Vincennes* (8 March 1841), *Porpoise* (24 March 1841), *St. Louis* (6 April 1841), *Flying Fish* (14 June 1841), *Peacock* (16 June 1841), *Yorktown* (9 October 9 1841), *Vincennes* (17 November 1841), *Porpoise* (17 November 1841), *Flying Fish* (17 November 1841), *Oregon* (18 November 1841), *United States* (4 December 1842), *Boston* (13 February 1843), *Constellation* (6 July 1843), *United States* (3 August 1843), *Cyane* (4 September 1843), *Constitution* (16 November 1845), and *Cyane* (March 1846).⁵

These visits generally expressed to good will efforts of the American government, and captains typically transported letters to and from the respective leaders of both nations. Claims for debts made by American merchants against the Hawaiian *ali`i* or royalty proved to be a constant issue. Occasionally the Navy became involved in resolving disputes between missionaries, sailors, and citizens of the Kingdom. Lieutenant John "Mad Jack" Percival's first visit on USS *Dolphin* captured the various perspectives under contention. Arriving initially in January, Captain Percival assisted British Captain Edwards in salvage of the ship *London*, which had gone aground on the north shore of Lana`i. Returning to Honolulu early in February, Percival found that, in his absence, missionary Hiram Bingham had managed to persuade Regent Queen Kaahumanu to ban all Hawaiian women from visiting the U.S. warship. Attempts to convince government officials that prostitution was indeed a practice of civilized countries fell on deaf ears. Missionaries had also supported restriction on the sale of alcohol. Some of *Dolphin's* crew, while on leave ashore, joined with various whalers and led a charge at the local missionaries, chasing them into their houses and breaking up some of their structures. Hawaiians and a female chief, Lydia Namahana, were also involved in the fight against the sailors. Captain Percival later made muted apologies, and Governor Boki rescinded the prohibition during the rest of *Dolphin's* stay.⁶ Recommendations were later made for Mad Jack's court martial.

The strategic location of the Island did not escape many of these early commanders in the Pacific. Both Britain and America offered informal advice to the Kingdom, each navy keeping a careful eye on the influence wielded by the other. HMS *Blonde*, returning the bodies of King Liholiho or Kamehameha II and Queen Kamamalu (both died in London from measles), commissioned the first survey of Pearl Harbor. This was carried out by Scottish engineer Lieutenant Charles R. Malden, who is credited in some sources for naming the shallow bays "lochs."⁷ This was a fairly complete survey of the whole of Pearl Harbor. In comparison, Commander John Downes, arriving on USS *Potomac* July 1832, merely made official note of Hawai`i's wartime significance.

“During a war, what interest would not these islands hold out to us, as sources of refreshment for our men-o’-war, while protecting our commerce and other interests in these seas?”⁸

Surveys of Pearl Harbor

The first American survey of Pearl Harbor was not carried out until 1840, when Commander John Wilkes’ six ship “U.S. Exploring Expedition” arrived in Hawai`i. In addition to paying close scrutiny to the government and lineage of the Islands, and the nature of New England society being recreated by the American missionaries, Wilkes conducted an accurate charting of the inlet of the “harbor of Ewa and the Pearl River,” noting that “if the water upon the bar should be deepened, which I doubt not could be effected, it would afford the best and most capacious harbor in the Pacific.”⁹ This partial survey of the entrance was completed a year before the Malden chart of Pearl Harbor was published.

During the 1840’s an increasing number of American whalers and merchant ships were anchoring at Honolulu O`ahu, Lihue Kaua`i, and Lahaina on Maui. So many Hawaiian men were signing on board European and American ships that laws were passed to limit the nautical exodus from the Islands. In 1841 an editorial in *The Polynesian*, a journal for foreign residents in the Hawaiian Kingdom, supported the construction of a naval base in the Islands to protect the interests of Americans, particularly in the whaling industry.¹⁰ British observers were quick to see this as further evidence of America’s rush to annex the Kingdom, despite official denials by the U.S. government. On 14 December 1842 American Secretary of State Daniel Webster made clear the United State’s position on other countries seeking influence in Hawai`i:

The United States have regarded the existing authorities of the Sandwich Islands as a government suited to the condition of the people, and resting on their own choice, and the President is of the opinion that the interests of all nations require that the Government should not be interfered with by foreign powers. Of the vessels, which visit the Islands, it is known that a great majority belong to the United States. The United States, therefore, are more interested in the fate of these Islands and in their government, than any other nation can be: this consideration induces the President to be quite willing to declare, as the sense of the Government of the United States, that the Government of the Sandwich Islands as a conquest, or for the purpose of colonization, that no power ought to seek any undue control over the existing government, or any exclusive privileges of preference in matters of commerce.¹¹

Nonetheless in February 1843 Lord George Paulet on board HMS *Garysfort* sailed into the harbor, dispensing with the normal salutes to the Kingdom. Ostensibly addressing grievances stemming from a commercial lawsuit, Paulet threatened violence in an attempt to annex the Island for Britain. Formal cessation took place at the Honolulu Fort, set against the strains of “God Save the Queen.” USS *Boston* in harbor standing by, and the subsequent arrival of USS *Constitution*, publicized the incident and signified America’s opposition to this move. Authorities in London disavowed Paulet’s brash actions. On 26 July HMS *Dublin* arrived from the South American coast. The independence of the Kingdom was immediately restored, and the British flag was lowered from the Hawaiian palace.¹²

USS *Constitution* did not only respond by showing the flag during this incident, but also appointed Lieutenant L.W. Curtis USMC, with the support of local figure Gerrit P. Judd, to complete a report on strategic sites

on O`ahu for the construction of fortifications for defense. Pearl Harbor was the area recommended for gun emplacements to defend the town. It should be pointed out that this report was officially secretly instigated at the request of Dr. Judd, desiring information on how the Hawaiian government might best defend itself from foreign aggression. Dr Judd, though, medical missionary-politician-plantation owner, was an American statesman for the Island Kingdom. In a letter to Dr. Judd accompanying his report, dated at Mazatlan 21 February 1846, Lieutenant Curtis requested to be allowed to supervise the construction of the defenses himself, including Paixhans guns and Martello towers.¹³ These were never built, and for the next 20 years the significance of Pearl Harbor vanished from U.S. ship reports, a clear indication of the lack of particular interest in acquiring this property at this time.

It was not until the 1860's that Army and Navy engineers again began looking at the Pearl Harbor situation. During this time, though, the U.S. remained committed to influence over the Islands. When France agitated for special concessions from the Hawaiian government in the 1850's, American advisors directed the King to draw up a deed of cession to the United States.¹⁴ Like the British incident earlier, this too came to naught, but the Navy Department received orders to maintain the naval armament in the Pacific in order to guarantee the safety of the Hawaiian government. Furthermore, "special commercial privileges were granted to Hawai`i in exchange for the exclusive material and military privileges secured to the United States."¹⁵

The Kingdom was technically neutral during the American Civil War, but the period in general served to strengthen the economic ties between Hawai`i and the American mainland. Admiral Mathew Galbraith Perry's squadron of "black ships" had opened Japan to American commerce. Though he did not stop in the Islands, this foot in East Asia highlighted Hawai`i as a strategic port-of-call. During the Civil War, the collapse of the South's agricultural exports initiated the plantation boom in distant locations in the Pacific. Projected trade with the East and agricultural exports focused attention on the Pacific region. Also, the predatory activities of commerce raider CSS *Shenandoah*, with some 38 prizes to her name, proved that even in the distant Pacific region Union commerce was quite vulnerable. USS *Vanderbilt*, *Tuscarora*, *Powhatan*, and *Monadnock* were added to the Pacific Squadron during the War, bringing its total strength to 14 vessels. In 1865 the squadron was split into North and South Pacific elements. The North Pacific Squadron was responsible for Hawai`i and the West Coast.

Between 1820 and 1860 the Hawaiian Islands became progressively more important to American merchants and whalers. Naval activities focused on assuring the flow of trade and provisions, and assuring the success of the American whaling industry. Tasks for naval officers in Hawai`i as often as not consisted of political advice, diplomacy, and commercial negotiations (see *Levant*). The strategic location of the Islands was of great importance to merchant vessels, and therefore of interest to the U.S. Navy. Considerations involving a military base in the central Pacific and the projection of power to East Asia were secondary. Britain and France, as minor as their influences were compared to the U.S., were clearly not allowed to establish a foothold and limit America's future options. Yet even compared to British efforts, surprisingly little actual survey was carried out by Americans at Pearl Harbor.¹⁶

For Hawaiians, enormous changes had taken place. An inter island trade in provisions, to be sold to foreign ships, had become a regional Pacific involvement in plantation exports. Diseases brought by foreign ships took their toll, and lands belonging to the commoners had been made accessible to foreign purchasers in the 1840's via Mahele

Land transfers. Traditional “kapu,” social restrictions, had been broken. Missionaries and foreign commercial interests dominated the royal government. Amidst these changes, the presence of U.S. Navy ships provided a market for island produce and livestock. Navy officers were a direct line of communication to the government of the United States, as well as an introduction to the formalities of national diplomacy. At times, the Navy provided a balance against the competing interests of other foreign powers, as well as a protection against armed cruisers.

Staking a More Permanent Claim

By the mid-1800’s the period of informal influence was over, and it was time for the U.S. Navy to begin more serious preparations for a long-term presence in the Hawaiian Islands. In 1866 the screw-sloop USS *Lackawanna*, a veteran of the War between the States, was recommissioned and transited the Straits of Magellan, arriving in Honolulu in February. *Lackawanna* cruised off-and-on in the Hawaiian Islands for the next 19 years, surveying the reefs and islands of the Northwestern archipelago and operating among “a locality of great and increasing interest and importance.”¹⁷ Middle Brook Island, more specifically the circular atoll and both Sand and Eastern Islands at Midway, were named and claimed as possessions of the United States by Commander William Reynolds in 1867. The Navy later named Middle Brook “Midway” due to its geographic location at the near center of the North Pacific. Very simply, Midway was and still is the most important historical location in the Northwestern archipelago, with the only protected lagoon deep enough to accommodate vessels of any substantial size.

It’s interesting to note that Midway was acquired, and in fact dredging operations for a suitable channel were initiated, much earlier than at Pearl Harbor. Under the direction of Congress, Midway was to be made into a coaling station for the Pacific Mail Steamship Company, necessitating the opening of the channel at the atoll. USS *Saginaw*, a fourth-rate bark-rigged steam ship, served as the supply ship for a team of engineers and divers who took up their six-month residency on the deserted island and began the difficult task of blowing a passage through the reef. The original appropriation of \$50,000 failed to see the project through, though, and by 12 October 1870 only a 15-foot path of the planned 170-foot width through the coral passage had been completed. The operation was terminated. *Saginaw* later was lost on the reef at Ocean Island (Kure Atoll...see *Saginaw*). In hindsight this seems somewhat of a half-hearted effort.

By 1870 the possibilities for American naval expansion into Pacific were taking shape. Discussions regarding future access to Pearl Harbor were underway with the Hawaiian monarch. Annexation talks, which had actually begun in 1856, were again the topic of the day. Major General J.M. Schofield and Brevet Brigadier General B.S. Alexander surveyed Pearl Harbor and recommended its development as a U.S. military base. If the harbor were to be effective, it would have to be prepared in advance, and not during, a conflict.

An enemy could take position outside the entrance to the harbor and command the entire anchorage as well as the town of Honolulu itself. This harbor would, therefore, be of no use to us as a harbor of refuge in a war with a powerful maritime nation...

If the United States are ever to have a harbor of refuge and a Naval Station in the Hawaiian Islands in the event of war, the harbor must be prepared in advance by the removal of

the Pearl Harbor bar. When war has begun, it will be too late to make this harbor available, and there is no other suitable harbor in the islands.¹⁸

In February 1873 the Honolulu Chamber of Commerce, representing the interests of the plantation owners among the Islands, petitioned King Lunalilo to negotiate a reciprocal treaty with the U.S. mainland. The suggestion was to offer to cede the Pearl River “lagoon” to the U.S. as an inducement for reduced tariffs for Hawai`i’s agricultural products. In July the American Minister notified Washington D.C. that the King had offered to negotiate a treaty on this basis. However, four months later a notice appeared in the *Hawaiian Gazette* to the effect that the King was satisfied that “a treaty carrying with it the cessation of Pearl Harbor would not receive the legislative approval required by the Constitution of the Kingdom,” and hence the offer was withdrawn.¹⁹ Apparently there was contention over the issue of “cessation” versus “lease” regarding access to Pearl Harbor. King Lunalilo died in February of the following year without an heir. At this point, politicians in Hawai`i courted popularity with the masses by opposing any possible cession of territory to foreign powers. The Navy’s access to Pearl Harbor is historically tied to the Reciprocity Treaty of 1876.

Kalakaua and the Reciprocity Treaty

The Hawaiian government was forced to call an extraordinary legislative session to find a sovereign. Elections in 1874 featured three candidates: the pro-English candidate Queen Emma, Bernice Pauahi (Mrs. Charles R. Bishop), and David Kalakaua, running on a “Hawai`i for the Hawaiians” platform. Only Bernice Pauahi was perceived as friendly to the American interests, though this stance did not boost her hopes for being elected. The crowd surrounding the government house, expecting Queen Emma to be named the victor, erupted into violence upon learning that Kalakaua had won.²⁰ They attacked the parliament building, entering the hall and throwing furniture, records, and legislators out the windows. Anticipating violence following the heated debates, the American Minister Henry A. Pierce had made previous arrangements with the senior officer of the American squadron then in harbor. Ships’ boats had been plying the harbor waters all day. At a pre-arranged signal flown from a merchant ship at the wharf, 150 Marines and Blue Jackets from *Tuscarora* and *Portsmouth* (along with some 70 from the British gunboat HMS *Tenedos*) made an instant landing and forced the mob back from the government house. King Kalakaua owed his accession to the throne in a very direct way to the power of the American Navy.²¹ It would not be the only time that U.S. Marines would protect the Hawaiian King from protestors during this period of intense transition.

Kalakaua arrived in Washington D.C. in 1875, the first monarch of a foreign power to visit the United States. His stance on foreign influence had moderated before he was appointed King, and the reciprocity treaty movement, intent on opening the American market to Hawai`i’s agricultural products, found strong support among British, Chinese, German, and American firms. It represented a potential boom for the economy of the Islands, and was the first item on the agenda of the new monarch. Kalakaua was committed to such a treaty with the United States, if it could be obtained on reasonable terms.²² This did not include the cessation of any territory. Minister Pierce, however, stated “if the U.S. Government is of opinion that acquisition of the harbour of Pearl Bay...is, as a national measure desirable; a proposition to that end could very properly be made by the State Department to the Hawaiian negotiators when offering to treat on the basis of Reciprocity of Commerce.”²³ After all, the offer to cede

the harbor had been temporarily on the table in 1873. Pierce's views capture the military role of an advanced base in the Hawaiian Islands, anticipating the later publication of Alfred Thayer Mahan's works:

The acquisition of the Hawaiian Islands by the United States, sooner or later, must become a national necessity, to guard the approaches against hostile attempts on the Pacific States...If reciprocity of commerce is established between the two countries, there cannot be a doubt that the effect will be to hold those islands with hooks of steel in the interests of the United States...Refuse the offered treaty, necessity will drive the islands to seek for more intimate political and commercial relations with the British colonies of [British] Columbia, New Zealand, Feejee, and Australia, and to eventuate in the Hawaiian Islands becoming also a colony of the British Crown.²⁴

The Treaty of Reciprocity was put into effect in 1876 to the satisfaction of the majority of both parties. It was basically a commercial agreement fostering trade; rice and sugar were allowed to enter the United States tariff free. The U.S had added an important amendment, however, to article IV:

It is agreed, on the part of His Hawaiian Majesty, that, so long as this treaty shall remain in force, he will not lease or otherwise dispose of or create any lien upon any port, harbor, or other territory in his dominions, or grant any special privilege or rights of use therein, to any other power, state or government, not make any treaty by which any other nation shall obtain the same privileges, relative to the admission of any articles free of duty, hereby secured by the United States.²⁵

The initial term was set for seven years, followed by renegotiations. Direct mention of Pearl Harbor was not made until January 1887 when, during a U.S. Senate secret session to modify the convention, a further amendment was added:

His Majesty the King of the Hawaiian Islands, grants to the Government of the U.S. the exclusive right to enter the harbor of Pearl River, in the Island of Oahu, and to establish and maintain there a coaling and repair station for the use of vessels of the U.S. and to that end the U.S. may improve the entrance to said harbor and do all things useful to the purpose aforesaid.²⁶

Both Britain and France, of course, raised formal objections to this agreement, citing the Franco-English Compact of 1843 when those nations agreed never to take possession of the Hawaiian Islands "either directly or under the title of a protectorate."²⁷ The exclusive right of access to Pearl Harbor was set as coterminous with the convention ratified in 1887.²⁸ This "Bayonet" Constitution, implying the use of force in its adoption, also notably reduced the sovereign powers of the Hawaiian ruler. The question of America's use of Pearl Harbor in perpetuity had to be raised (but never resolved by the pre-annexation Hawaiian government) later in the early 1890's as a separate and very controversial issue. It is not so surprising, then, that following the 1887 convention, very little advantage was taken by the U.S. concerning permanent improvements to Pearl Harbor as a naval base. The shallow bar remained a barrier to the inner harbor. The small coaling station established at Honolulu Harbor in 1860 remained the only such facility.²⁹ From the point of view of military planners, Hawai'i presented a number of difficulties: there was a lack

of heavy industry, a lack of logistical transport, a scarcity of safe harbors, a shortage of laborers, and a shortage of land.

The Illegal Overthrow of the Hawaiian Government

In 1890 King Kalakaua departed once again for the American mainland, where he died in January the following year. Queen Liliuokalani had clear intentions of altering the nature of the Kingdom's constitution and redefining the location of sovereign power. Many of the framers of the constitution of 1887, backed by plantation interests, had formed an annexation clique, and saw their chance for a successful revolution in January 1893. In the sometimes violent contest between royalists and republicans, the U.S. Navy had a direct role to play. Powerful commercial and political interests, including men such as Lorrin Thurston, Sanford B. Dole, William Wilder, J.B. Castle, H.P. Baldwin, Alexander Young, J.H. Soper, and William R. Castle...some of the most influential foreigners in Hawai'i...pressed for change. Captain G.C. Wiltse, on board USS *Boston*, responded to orders from United States Minister John L. Stevens, who approved of the aims of the annexation clique.³⁰ This time, U.S. marines would not support the independent monarchy against armed insurrection. *Boston's* presence alone carried considerable weight; she was a 3,185 ton 283-foot long *Atlanta* class protected cruiser, armed with two 8" and six 6" guns. One hundred sixty-two Blue Jackets and Marines from USS *Boston* landed at 5:00 PM on 16 January to protect American lives and property in anticipation of pleas from the annexation group, who were "unable to protect ourselves without aid and, therefore, pray for the protection of the United States forces."³¹ A few were posted at the Consulate near the waterfront, others marched up Nuuanu Street to the American Minister's office, and the rest occupied Arion Hall near the Palace.³² On 17 January the Queen was forcefully dethroned and placed under house arrest. Liliuokalani surrendered under protest, not to the annexationists, but to the "superior forces of the United States of America, whose minister plenipotentiary...has caused United States troops to be landed at Honolulu and declared that he would support the said provisional government."³³ Sanford B. Dole was named President the following day. The United States government, faced with this *fete accompli*, did not recognize this annexation until 1898, when outside forces again made clear the Islands' strategic necessity.

In 1993 President William Clinton signed a resolution acknowledging, and apologizing for, the U.S. role in the overthrow of the Hawaiian government. Portions of the resolution directly address the Navy's role:

...Whereas, on January 14, 1893, John L. Stevens (hereafter referred to in this Resolution as the "United States Minister"), the United States Minister assigned to the sovereign and independent Kingdom of Hawai'i conspired with a small group of non-Hawaiian residents of the Kingdom of Hawai'i, including citizens of the United States, to overthrow the indigenous and lawful Government of Hawai'i;

Whereas, in pursuance of the conspiracy to overthrow the Government of Hawai'i, the United States Minister and the Naval representatives of the United States caused armed naval forces of the United States to invade the sovereign Hawaiian nation on January 16, 1893, and to position themselves near the Hawaiian Government buildings and the Iolani Palace to intimidate Queen Liliuokalani and her Government...

Whereas, without the active support and intervention by the United States diplomatic and military representatives, the insurrection against the Government of Queen Liliuokalani would have failed for lack of popular support and insufficient arms...

Be it resolved...that the Congress... apologizes to Native Hawaiians on behalf of the people of the United States for the overthrow of the Kingdom of Hawai'i...³⁴

Annexation and the Spanish-American War

On 25 April 1898 the United States declared war on Spain, following the sinking of the battleship *Maine* in Havana Harbor in February. As part of that war, Assistant Secretary of the Navy Theodore Roosevelt, with questionable authority, ordered Commodore George Dewey's East Asian Fleet to Manila Harbor, instigating a period of American occupation of the Philippine Islands. Nothing previously highlighted Hawai'i's significance to distant naval operations as much as the Spanish-American War. A depot and transshipment point in the Islands was critical to the movement of troops, livestock, and equipment. The Spanish-American War provided concrete examples of the Fleet's dependence on bases, and as a result America gained both Apia Harbor in Guam and Manila in the Philippines. Acquisition of the third great harbor in the Pacific was immediately pending.

The treaty of annexation of the Hawaiian Islands, which had been simmering in Congress for a number of years, suddenly was brought back to life and was signed by President McKinley on 7 July 1898. Landing forces from USS *Philadelphia* and *Mohican* attended the American flag hoisting ceremonies at Iolani Palace 12 August (see *Bennington*). Within a month, Commander Z.L. Tanner was ordered to proceed to Honolulu and begin planning for the construction of Navy wharves, coal sheds, and warehouses. Contracts were awarded to increase the capacity of the small coaling station already at the harbor from 1,000 to 20,000 tons. Presidential proclamation in November reserved certain land in Honolulu and elsewhere for naval purposes.³⁵ In May 1899 Commander J.F. Merry was ordered to Honolulu as "Naval Representative" with authority to transact business for the Navy Department and its Bureaus. The tug *Iroquois* and two coal barges were assigned to Hawai'i. By November Naval Station Honolulu had been established, its title changing to Naval Station Hawai'i in February 1900.³⁶ After previous requests by the U.S. Navy had been denied by Congress, authorization to spend \$100,000 of the survey and dredging of the channel at Pearl Harbor was finally granted.³⁷ A permanent naval presence in the Islands had begun.

From 1860 to 1900 the significance of Hawai'i's position in the Pacific caught up with U.S. naval planners. The Islands were not only the logical transshipment point for Pacific operations, but represented an advanced location for the defense of the American West Coast. This type of thinking was very much in line with the writings of Alfred Thayer Mahan, President of the Naval War College. Rear Admiral Mahan supported distant repair facilities and coaling stations, not because suitable harbors granted control of ocean spaces, but such facilities supported modern mobile navies that were a necessity to great nations. Furthermore, looking ahead to the Panama Canal, Mahan urged the annexation of Hawai'i as a possession crucial to the protection of the approaches to the Isthmus.³⁸ These realities demanded a serious commitment to a permanent naval presence in Hawai'i, and changes to the Treaty of Reciprocity reflected the importance of Pearl Harbor as the Gibraltar of the Pacific. Surveys were conducted and channel work at both Midway and Pearl Harbor was begun.

From the island perspective, the Navy during this period once again served as protection from the possibility, no matter how remote, of attack from the Spanish Fleet. For the most part, though, Navy ships continued to play a minor role in the commerce of the Islands. They did, however, represent powerful interests in Washington D.C., and the desire for access to Pearl Harbor assured the economic plantation boom in Hawai'i. The role of naval force in the revolution, restricted officially to the symbolic protection of American lives on shore, was

nonetheless significant. The numbers and arms of the forces loyal to the Queen were inferior to the annexationists without the naval complement. Whether *Boston's* troops acted in direct cooperation with the annexationists or not, the Navy was clearly involved in the overthrow of the Hawaiian government.

Beginning the Naval Construction

As an island nation, land was at a premium in Hawai'i, so the immediate obstacle to the growth of the naval establishment was the acquisition of property around Pearl Harbor. They had, after all, been granted access, but not land. This was not only a contest between the government and the Hawaiians, but between the government and the local American landowners, who knew a good investment when they saw it, as well.

Occasional bits of information come from Washington that the Pearl Harbor improvement project is being attended to and that operations initiating the erection of a fortress, the deepening of the harbor and the construction of wharves are about to begin. The Secretary of the Navy has lately been seized with the apprehension that the landholders in the vicinity are going to try to make some money out of Uncle Sam by stiffening the value of certain properties most desirable to the government. This is natural and if true is commendable on the part of the fortunate real estate owners there. The U.S. Government has had nearly a quarter of a century to consider the matter, and if values have increased with the progress of the Islands it is not the fault of the property owners who have been patiently paying taxes on their algeroba forests all these years in the hope that some day the long contemplated naval station would materialize.³⁹

Much of the land around the lochs was actually owned by the Trustees of the Bishop Estate, the legacy of Bernice Pauahi Bishop. "Owners" there enjoyed use and possession, but not necessarily title. The area around Pearl Harbor had been mainly planted with sugar, taro, or grazing land for cattle. Banana trees and pineapple fields were tended by local homesteaders. Fishermen and recreational sailors used the waters in the lochs, and both Ford and Kuahua Island were the sites for weekend picnics.

Opportunistic landowners expecting the big payoff would be disappointed. Legal maneuvering intensified. The Organic Act of 30 April 1900 stipulated that title of all public lands belonging to the Republic of Hawai'i at the time of annexation (1898) passed to the United States, but the use and possession remained with the new Territory. An additional clause included that "if at any time, the United States required it, the Territory would transfer the use and possession to the United States."⁴⁰ Congress decided to acquire the initial 720 acres of land through condemnation, and the legal work involved in the United States of America versus the Estate of Bernice Pauahi Bishop grew. Smaller parcels of property continued to be acquired piecemeal for decades.

Social Tensions

As early as the turn of the century there was some concern among Navy planners regarding O'ahu's large Japanese population. Most had come as contract laborers for the plantations, but in the early decades of the 20th century Japanese fishermen, many of whom were foreign nationals, were operating long range motorized fishing sampans throughout the islands. In 1897 Republic of Hawai'i President Sanford Dole, without consulting Washington, decided to restrict Japanese immigration, precipitating a diplomatic crisis. The Japanese government issued firm protests, and President McKinley then ordered the cruiser USS *Philadelphia* and the sloop-of-war USS *Marion* to Hawai'i. By April the Japanese had sent their battle cruiser *Naniwa* to anchor alongside the American

ships at Honolulu Harbor. USS *Oregon* was ordered to stand by, and USS *Maine* was almost transferred to the Pacific, but was kept in the Caribbean instead.⁴¹ Tensions eased, but did not vanish altogether, with the withdrawal of *Naniwa*. In 1900 Rear Admiral Albert Barker, president of the Pearl Harbor Board (subordinate to the General Navy Board), wrote:

Were I the Japanese Admiral with the power to act, I should get the Japanese vessels ready for service in their respective ports, so as not to attract too much attention, then issue orders to go to sea...to rendezvous on a certain day at the Hawaiian Islands...I would arm the adult Japanese population to the number of 25,000, hoist the Japanese flag over the islands, attack and defeat the US vessels—for all could easily be destroyed, as they would be tied up head and stern in Honolulu Harbor. If the Japanese mean business they will endeavor to take the Islands and attack the fleet by surprise.⁴²

War Plan Orange, America's plans in case of war with Japan, began to take shape under the direction of Theodore Roosevelt as early as 1890.⁴³ The Plan recognized that U.S. possessions to the south and west of Japan would inevitably be lost, making Hawai`i the first line of defense in the Pacific. In event of war, the Atlantic Fleet would be mobilized, round Cape Horn, reassemble on the West Coast, reprovision in Hawai`i, and then proceed to the Philippines for action. Officials in Hawai`i were not necessarily pleased with this Plan, as the Islands were generally considered to be in a deplorably defenseless condition. A series of Army forts along the coast, including Ruger, DeRussy, Armstrong, Kamehameha, and Weaver, as well as Schofield barracks inland, were planned but not ready. Plan Orange changed as relations with Japan and the status of U.S. forces in East Asia changed, but the importance of Hawai`i as a base for advanced operations did not.

Between 1901 and 1908 the Navy was devoted to improving two facilities at the same time: Pearl Harbor, and the 85 acres of Naval Station Hawai`i at Honolulu Harbor. In January 1905 the small gunboat *Petrel* steamed into the upper part of the lochs. A channel 35 feet deep and 200 feet wide and approximately four miles long was completed in 1913. The official Station, though, was at Honolulu, where over time the small coal shed became a larger coal shed. In 1908 only six officers were assigned there for permanent duty.

An insight into the problems of the Commandant is revealed in some of the correspondence of Rear Admiral Samuel W. Very. In the 19th endorsement to a letter by the Medical Officer requesting a typewriter, which became involved in official red tape due to an improperly filled out voucher, the Commandant indicated his responsibilities. He typed on his own personal typewriter that "all correspondence passing through the Commandant's officer here, necessarily received the personal attention of the Commandant. There is no Aide. There is no trained clerk...Without the personal attention of the Commandant, all correspondence and much other work would have been at a standstill...The Commandant, besides doing all the typewriting and all the other clerical work of his own office, sending and receiving important code-cablegrams, supervising out-of-door work, attending the wants of the Fish Commission, Steamer *Albatross* and the needs of the officer-less crew of the *Iroquois*, and the entertaining of the French Commodore who was present with his flagship" was "overwhelmed with petty details which could not be delegated." As the occasion arose he would sign his correspondence not only as Commandant, but also as "Acting Civil Engineer," "Head of Department," "Captain of the Yard," and "Ordnance Officer."⁴⁴

In 1913 the naval station and Commandant's headquarters finally made the move to Hospital Point in Pearl Harbor. Until that transfer, the naval reservation at Honolulu was never more than an elaborate coaling station. Its major

duties included the shipping and weighing of coal and the checking of invoices. No repairs were performed on Navy vessels. When local vessels like USS *Iroquois* or USS *Midway* were in need of repairs, bids were solicited from local commercial firms.

With the construction of the Panama Canal underway, and demonstrated aggression in East Asia (Japan had defeated the small but modern Chinese fleet at the Yalu River naval engagement in 1895), money flowed to these projects. A Marine contingent was relocated from California to Hawai`i in January 1904. They were housed in a coal shed built in 1842, rarely used and never repaired. The Navy was gaining property that now needed protection from the Marines. Four years later they were still housed in the “temporary Marine barracks.” Conditions would, eventually, improve. In 1908 Congress passed appropriations for \$1,000,000 to develop Pearl Harbor as the primary defensive position of the United States in the Pacific Ocean.

Table 4: Pearl Harbor Construction Costs

Dredging an entrance channel	\$400,000
Construction of dry docks	\$300,000
Erecting machine shops	\$100,000
Storehouses	\$100,000
Yard development	<u>\$100,000</u>
	\$1,000,000

The role of Pearl Harbor remained fairly consistent since Commander Merry had conceived the station: fuel supply, repair, refuge, provisioning, and a defensive naval presence.⁴⁵ During this time the Pacific and Asiatic Squadrons were joined, combining to form the U.S. Pacific Fleet. It would not be until February 1941 that the Pacific Fleet headquarters were moved to Pearl Harbor, though.

In July 1908 President Roosevelt’s Great White Fleet arrived off of Diamond Head crater on O`ahu. Sixteen American battleships and 14,000 men took part in the extended circumnavigation. Plantation owners entertained officers with picnics on the shores of Pearl Harbor, where participants could see the beginnings of Dry dock No.1 taking shape. The fleet lay anchored in the Waikiki Roadstead for a week, though the Third Division had to transit to Lahaina for coal as Pearl Harbor remained undeveloped and Naval Station Honolulu had limited capacity. Tours were conducted of the future naval base; unfortunately ensigns Harold R. Stark and Husband E. Kimmel did not record their impressions at that time.⁴⁶ Former Queen Liliuokalani and her entourage did not take part in the festivities, having left the city a few days before the arrival of the ships. From Hawai`i the Fleet departed for Auckland New Zealand. Not only did Roosevelt’s grand exercise demonstrate American sea power abroad, but also the circumnavigation also revealed many difficulties involved in operating a modern fighting force in distant waters.

Consolidating Control of Pearl Harbor

Questions surrounding the use and ownership of adjacent lands had been addressed, but the waters of Pearl Harbor were still open. In 1910 an Army-Navy Board recommended that no commercial or private vessels of American registry be permitted to enter Pearl Harbor except by permission of the Commandant of the Naval Station. By August 1912 Congress supported this decision by providing the proper authority.

For the proper control, protection, and defense of the naval station, harbor, and entrance channel at Pearl Harbor, Territory of Hawai`i, the Secretary of the Navy is hereby authorized, empowered, and directed to adopt and prescribe suitable rules and regulations governing the navigation, movement, and anchorage of vessels of whatsoever character in the waters of Pearl Harbor, island of O`ahu, Hawaiian Islands, and in the entrance channel to said harbor, and to take all necessary measures for the proper enforcement of such rules and regulations.⁴⁷

Traditional fishing rights and leases were thus terminated. Japanese fishermen who routinely gathered baitfish in the shallow waters for the offshore tuna industry were particularly affected. Fishing rights in Pearl Harbor continued to be a contested issue for a decade. World War I would confirm the naval imperative for control of the harbor, and end the hopes of steamship lines like Inter Island Navigation and Matson Steamship Company from ever benefiting from facilities there.

Progress continued and, by 14 December 1911, the cruiser USS *California*, flagship of the Pacific fleet, steamed through the channel and anchored in East Loch, the largest warship to date to enter the harbor. Two years later, though, progress was marred by the catastrophic collapse of Dry dock No.1. In February 1913 hydrostatic pressure broke through the bottom of the 1,000-foot long excavation, and “the work of five years became nil in five minutes.”⁴⁸ Almost two years were spent before the government accepted blame and assigned a new contract for work to resume. Thousands of pilings were later driven into the mixed coral and sand stratum, meant to pin the concrete bottom to the harbor. Interestingly, a Hawaiian “kupuna” or teacher by the name of Kanakeawe had warned against the construction of the dock in that specific location. The island of Moku`ume`ume was sacred to Ka`ahupahau, the local shark goddess, and her son Kupipi resided in nearby Southeast Loch, which was not to be defiled. Pearl Harbor was known as a breeding ground for many sharks. For years fish sacrifices had been offered, but ultimately to no avail. Before work began a second time, a priestess named Kahuna Kainani was brought in from the native communities at Waikiki. After conducting the official blessings, she stated, “No more *pilikia* [trouble] to this dry-dock. The next time you start a big job, don’t forget to call me.”⁴⁹ Dry dock No.1 was completed in 1919 and functioned flawlessly for the next 80 years. What had started as a two-year project would take 12.

Naval Aviation and Submarines

At about the same time, two new weapons were introduced to the Hawaiian scene. In 1910 the Navy Department took charge of an experimental aviation detachment, and very soon Eugene Ely, a Curtiss test pilot, landed a plane on board the modified USS *Birmingham* and later USS *Pennsylvania* in San Francisco Bay in 1911. Two Curtiss floatplanes were shipped to Hawai`i from San Francisco on 13 July 1913. These were assigned to the U.S. Army at Fort Kamehameha near Pearl Harbor, not a facility particularly suited to air operations. By January 1918 the U.S. War Department had condemned and secured the majority of Ford Island property for the creation of a landing strip. This would later be named Luke Field in honor of the World War I ace and Medal of Honor recipient. By December 1919 a naval unit of nine flying officers, 40 mechanics, and four seaplanes was operating in Hawai`i. The Commandant of the now designated “14th Naval District” (as of 1916) stated:

Seaplanes, brought by swift carriers within reaching distance, could rise from the lee of the nearest reefs to the Northward and Westward, or the neighboring islands, or from the sea itself, swoop down on Pearl Harbor and destroy the plant unless an adequate defense was provided.⁵⁰

It would be difficult to overemphasize the overall impact naval aviation would ultimately have on Hawai`i and in the Pacific.

The second weapon proved more stealthy. In August 1914 American submarines arrived at Pearl Harbor. The First Submarine Division, Pacific Torpedo Flotilla, had originally been stationed at San Pedro. In Hawai`i *F-1* through *F-4* began operations from an old pier at the site of the initial naval station at Honolulu Harbor, what is now the foot of Richards street. Following the loss of *F-4* with all hands on 22 March 1915 (see *F-4*), all of these F class submarines were returned to the West Coast. K class submarines followed, operating this time from Kuahua Island (later a peninsula) in Pearl Harbor from 1915 to 1917.⁵¹ Their tender, the cruiser USS *St. Louis* C-20, also served as a receiving and training ship, as well as a traditional cruiser. *St. Louis* was the first major Navy ship to be stationed at Pearl Harbor. These submarines, though, soon returned as well to the mainland, being recalled during America's entry into World War I.

World War I in Hawai`i

During the first few years of the War visiting ships from both England and Germany anchored in the neutral waters of the Territory of Hawai`i. For a time the Japanese battleship *Hizen* cruised the three-mile limit outside the harbor, waiting for the German gunboat *Geier* to come out. When faced with the neutrality ultimatum to either leave the harbor by 7 November 1914 or remain for the duration of the war, five German merchant ships and the gunboat *Geier* chose internment. Tensions surrounding the watch on the German vessels increased as the United States involvement in the conflict became imminent. In February 1917, two months before the U.S. declaration of war, smoke was observed billowing from *Geier* and the other German ships. *St. Louis* and the Honolulu Fire Department responded, extinguishing the fires and placing the crews under arrest. The collier *Locksun* was renamed *Gulfport*, remaining at Pearl Harbor as an oil tender for the rest of her career. *Geier* became the American second-class cruiser *Carl Shurz*, sunk after a collision off of North Carolina in 1918. *Geier* was the first German vessel captured by the Americans during World War I.⁵²

The War memorial Natatorium at Waikiki beach commemorates those citizens from the Territory who fought overseas. The above incident, though, was the only direct involvement by Hawai`i. More important than *Hizen* cruising near O`ahu were the overall actions of the Japanese in the western Pacific. Japanese forces captured Taiwan, annexed Korea, and had clear intentions for expansion into Manchuria on the Chinese mainland. For military planners these actions only reinforced the perceived threat of conflict with Japan in the Pacific.

Between 1900 and 1920 the strategic role of the Hawaiian Islands for the Navy became clearly defined. During this period the U.S. Navy took on the responsibilities of a much larger Pacific "empire" than perhaps most had imagined. By the end of the War, all of the military services had a firm initial establishment in the Islands. War games began to be held on O`ahu. The island was frequently "invaded" from two beachheads, one the north shore and the other at Pearl Harbor.⁵³ Expansion required ownership of far-flung bases, and so the Navy, after years of delay, finally took control of Pearl Harbor. The Secretary of the Navy officially dedicated the naval station there on

15 August 1919. The defense and the development of all of these Pacific bases, though, was difficult at best, and would prove problematic for military planners right up to World War II.⁵⁴

For the Islands, construction at Pearl Harbor and Honolulu meant jobs, as well as a future in ship repair and related services. Obviously the Navy now offered full time protection for the official U.S. Territory. Military and economic benefits came at the price of that territory, though, and at times the loss of land and waters provoked long-term animosities.

Defense Preparations

Following World War I work on the naval defenses of the Islands slowed as public sentiments at first, and then economic depression later, drained resources for military projects. Naval Arms Reduction talks set the stage for the uneven development of the naval establishment in Hawai`i. Reductions in spending following wars are no surprise. In 1921 only three training flights were allowed in the Hawaiian area. Furthermore, the naval station at Honolulu was forced to close due to insufficient funds.⁵⁵ When R class submarines were ordered to Hawai`i in 1920, they arrived to a backwater Quarry Point, the site chosen for the modern submarine base. It was basically one small finger pier at a 32-acre wasteland area covered with cactus plants and algeroba trees. The Commander of Submarine Division 14, Chester W. Nimitz (later Fleet Admiral), made the best of the situation and began converting the site into a functioning location. Soon the base had a temporary mess hall, administration building, and machine, carpenter, and electric shops. By 1923 living quarters were located on board the barracks ship *Alton* (see *Alton ex-Chicago*), alongside a permanent causeway. What had seemed like an increasing flow of federal dollars to Hawai`i now shrank to a trickle. In 1921 only approximately \$1,500,000 of what many thought could have been \$50,000,000 came by way of appropriations, most of which went to the naval air station at Ford Island. All other needs at Pearl Harbor received the balance, so inadequate that the naval base actually closed for two weeks that year.⁵⁶

Work did continue, though, especially on the entrance to Pearl Harbor. The channel was not noted as being very easy to navigate, and at least 11 Navy vessels went aground during the 1920's while transiting into the harbor. By the mid 1930's approximately \$42,000,000 had been spent on naval developments at Pearl. Pearl Harbor would soon boast a Navy yard, larger submarine base, hospital, air station, Marine barracks (finally), ammunition depot, railway, tank farm, supply warehouses and dozens of buildings for support activities. Major ammunition depots existed at West Loch in the harbor and Lualualei on O`ahu's Leeward shore. Advisory reports in December 1938 recommended that facilities at Pearl Harbor be capable of supporting 10 patrol plane squadrons (modified to five squadrons due to crowding) and two aircraft carrier groups.⁵⁷ In 1939 President Franklin Delano Roosevelt declared a Defensive Sea Area around Pearl Harbor. By 1940 appropriations for the naval base had exceeded \$100,000,000.⁵⁸

Additional support was on the way for air base construction throughout the Hawaiian Island group as well. Early plans for further bases in the main Hawaiian Islands beyond Naval Air Station (NAS) Pearl Harbor included NAS Barber's Point, NAS Kane`ohe, the Ewa Mooring Mast (lighter-than-air ships), Maui Airport (later to become NAS Maui and then NAS Pu`unene), and Molokai Airport. Construction at NAS Kane`ohe began in September 1939. Marine Corps Air Station (MCAS) Ewa, originally intended to be part of NAS Barber's Point, became an individual station in 1940 due to the overall increase in air base construction plans.⁵⁹

Beginning in the fall of 1939 development at Pearl Harbor was tied to the fortification of other Pacific island possessions under the National Defense construction program. For air facilities this fell to the contractor group known as the Pacific Naval Air Base Contractors (PNAB), a syndicate of large construction companies. An initial contract of \$15,500,000 covered construction at Kane`ohe and Ford Island on O`ahu, and Midway, Johnston, and Palmyra Islands as well. By the time the contract was terminated in December 1943, total construction and procurement costs had exceeded \$692,000,000.⁶⁰ PNAB was, in 1941, the largest construction venture in the world. Over time the significance of air power simply became more and more apparent to all.

Aviation in the Pacific continued to evolve. In 1925 a group of Navy planes attempted the flight from San Pablo California to Hawai`i. The last floatplane ran out of fuel 200 miles short of land, but was then able to “sail” west until being taken under tow.⁶¹ Army and Navy units conducted joint amphibious operations on O`ahu, testing (to their mutual disappointment) British amphibious doctrine in the wake of the failed Gallipoli landings during the War.⁶²

Air Attack Exercises

If there was a weak point in the defenses of the naval establishment, it was from the air. As early as 1923 air space above Pearl Harbor had been set aside for military use only. That same year Army officer William “Billy” Mitchell warned that the Hawaiian Islands, and in particular the naval base at Pearl Harbor, were open to a Japanese surprise air attack. In 1928 Naval Problem #28 demonstrated this fact, as USS *Langley*, on paper anyway, completely surprised the defensive forces and destroyed both the harbor and the fleet. In 1932 Rear Admiral Harry E. Yarnell staged another simulated air attack on Pearl Harbor, this time using the carriers *Lexington* and *Saratoga*. He based his attack on four assumptions:

First, a small carrier-centered task force would be more difficult to find than a larger fleet accompanied by a landing force with support ships.

Second, rain squalls could cover his approach.

Third, winter clouds form and cling to the Ko`olau mountains east of Pearl Harbor. Attack planes could approach undetected, break out of the cloud banks, and be over Pearl Harbor in clear skies before the defense forces would realize they were even close.

Fourth, no one would expect, or be ready for, an attack early on a Sunday morning.⁶³

Yarnell’s success was complete, nine years before the Japanese were to do almost the same thing. In 1938 Admiral King repeated an attack on Pearl Harbor during Fleet Problem #19 with *Saratoga*. He steamed to the northwest, entered an eastward moving weather front, and ran back towards the Hawaiian Islands. Army Air Corps flyers, unfamiliar with navigation over water in bad weather, missed the strike force. *Saratoga*’s aircraft, theoretically, inflicted great damage on the base without losing a single plane. Admiral King then continued on to successfully attack Mare Island Naval Shipyard.⁶⁴ The lessons seemed clear.

The naval establishment during this period spread throughout the Hawaiian archipelago. Pre-war plans as of February 1941 stressed the centrality of the naval base.

The district activities comprise the main base, O`ahu, together with the branch bases, auxiliary air stations and other naval stations located in other islands, but all depending on the

main base for maintenance and support. A primary district purpose is to hold and use the islands to provide base position, base security, and base facilities for the operating Fleet, and to serve the Fleet and district operating forces in supply, repair, salvage, overhaul, and maintenance to the maximum degree permitted by existing and improvised facilities. Outside of the purely naval facilities and installations now here or to be provided, there is little in the way of commercial activities of naval interest in the islands. For example, the Navy industrial plant [to be redesignated Pearl Harbor Navy Yard] is the major industrial activity in the islands and is much larger than all the civilian industrial plants combined. In a sense, the whole district is a naval base, and unlike continental naval districts, it is almost wholly depended on sea communications to the mainland for supplies and personnel.⁶⁵

Issues of Security and Multiculturalism

All of this change did not necessarily make improvements in the relationships between the Navy and the communities of the Islands. The plantation and contract laborer society of Hawai'i at this time remained rife with undercurrents of racial tension. During the 1920's and into the 1930's such strife began to cause greater concern to officers at the Navy base. Legislation in 1921 had restricted employment on any public works in the Territory to citizens or those eligible for citizenship. This meant importing workers from the mainland at higher prices, to the detriment of many local laborers. Rear Admiral Yates Stirling in particular, Commandant of the 14th Naval District, involved the Navy in these social conflicts. He found the numbers of Chinese, Filipino, and especially Japanese local inhabitants to be a perceived threat to the base's security. Stirling advocated a commission form of government before a Federal Board in 1932.

The large number of aliens is a matter of grave concern to our National Government and years of study by civilian, military, and naval authorities, of the probable attitude of certain of the island-born Orientals has led to the conclusion that but doubtful reliance can be placed upon their loyalty to the United States in the event of war with an Oriental power. The present system of self-government tends to increase the number of voters and consequently of politicians and potential office holders from amongst racial mixtures, bred for centuries with ideas of government, of social and living standards, so diverse from our American ideals that the social and political conditions in these islands will have a tendency to drift further and further from such ideals and thus make the islands more and more difficult to control in a time of emergency. It is true that ours is a democratic government under a constitution, and it is also true that one of our basic principles of government is against legislation without representation. But do we apply this axiom of government to our ships of war and to our military reservations?⁶⁶

Concerns for security ran headlong into not only the principles of democracy, but also the multicultural make-up of the Hawai'i's citizens. Despite goodwill efforts such as liaisons with the Chamber of Commerce and the Rotary Club, and the observances of Navy Day, many in the Islands could not tolerate such blatant racism. The Massie Case was a measure of this tension. In 1931 a local man, charged of allegedly raping the wife of a Pearl Harbor submariner (amidst conflicting testimony) but released following a mistrial, was brutally killed by Thalia Massie's mother and husband in Manoa Valley. Admiral Stirling had publicly stated his initial inclination to "seize the brutes and string them up on trees."⁶⁷ In defense of their own actions, Massie's mother stated "But it wasn't murder! We had not broken the law. We were trying to aid the law."⁶⁸ Famed lawyer Clarence Darrow took up the

case. Their sentence of ten years hard labor at O`ahu Prison was, in the end, reduced by Lawrence M. Judd, Governor of the Territory, to one hour...to be served in the custody of the high sheriff.

The local commercial tuna industry in Hawai`i, opened by the Japanese, would be decimated by such discrimination and fears. Military planners feared that Japanese nationals, some of whom were illegal immigrants smuggled on board steamships from Wakayama prefecture, had almost complete control over a wide-roving fishing fleet. Many of the larger powered sampans were over 80 feet in length, with ranges as high as 1,500 miles. These vessels observed few, if any, regulatory restrictions. U.S. law at that time required that only American-made and American-owned vessels be documented, and foreign fishing vessels below five net tons operated with impunity. Thanks to certain loopholes in shipping regulations, sampans and other powered wooden vessels were allowed to deduct 75% of their machinery spaces from their calculated net tonnage. Thus long-range sampans could qualify as minor five-ton craft. Sampans filed no clearances for any destinations, nor any paperwork regarding their crews. They were not crossing any boundaries into foreign waters. This is indeed a kind of gray zone, where "foreign" vessels operated in a domestic fishery.

Establishing control over the Japanese fishermen and their fleet was a major issue for the U.S. Navy. Were these vessels spying for an increasingly aggressive Japan? Were they supplying submarines? Changing crews at sea and transporting agents to the islands? One secret document sent from a planning committee to the Commandant of the 14th Naval District stated that the sampans were:

...manned in large part by alien Japanese whose loyalty to Japan as opposed to the United States is a practical certainty...Their personnel would, in time of war, serve to provide Japanese vessels with a sufficient number of able, competent pilots thoroughly familiar with all local waters...They can obtain exact soundings by means of weighted fishing lines...They would serve as a means of secretly landing intelligence or sabotage agents shortly prior to war.⁶⁹

Such fears developed into near hysteria in Northern Australian waters, where aerial patrols were discussed as a way to keep track of the sampans and "how evil has grown in and around the Torres Straits."⁷⁰ The immigration service in Hawaii stepped up its operations, and by 1940 most of the *Mikkosha* (illegal migrants) had been deported back to Japan.⁷¹ Confiscation of fishing sampans by immigration officials began long before the December 7th attack (see *YP-183*). Civil liberties historically seem to always have a difficult time in the face of increasing security measures.

In the between war years following World War I, the Navy found it increasingly difficult to continue constructing sound defenses during the period of disarmament and shrinking support. In hindsight it's fortunate that efforts continued, however. In general, the Pacific had gained in military and naval importance. In 1922 both the Pacific and Atlantic Fleets were combined to form the United States Fleet, which positioned the main body of ships in the Pacific and a scouting fleet in the Atlantic. For the first time, the majority of American sea power was assigned to the Pacific region.⁷² The U.S. would again split its fleet into Atlantic and Pacific components during World War II.

A considerable amount of progress had been achieved in Hawai`i by December 1941. The role of all the now numerous naval facilities in Hawai`i revolved around supporting the Pacific Fleet and defending the islands.

Protection from an increasingly defined threat from an aggressive Japan became much more important for the “Gibraltar of the Pacific.” For this period the Navy, by its own assessment, emerged as the single largest industrial activity in the region.⁷³ The payroll for constructing Dry dock No.1 alone contributed \$60,000 a month for over ten years. Pearl Harbor would become the home of the Pacific Fleet. And, due to the Japanese diplomatic code having been broken, Navy training schedules increased towards December 1941.

Some have described 1940 and 1941 in Hawai`i as one continuous battle drill. By 1939 the entire Pacific Fleet could be berthed in Pearl Harbor, thanks to the channel widening and deepening efforts over the years (see *Arizona, Utah, Nevada, Oklahoma, New York*). The days of ships having to anchor off Waikiki and Lahaina were over. Military maneuvers during 1940 and 1941 were carried out under simulated war conditions. By 1941 the Pacific Fleet, previously only intermittently in Hawaiian waters, was based there permanently. Millions of dollars were appropriated by Congress to hasten war construction. Additional defense workers, troops, supplies, and equipment poured into the islands. The defense boom begun in 1939 gathered momentum. Before the War the Navy had over 5,800 officers and men based ashore on O`ahu, with thousands more on ships in local waters.⁷⁴ Military planners recognized that reparations in Hawai`i faced unique obstacles: 1) remoteness from sources of supply meant the area would be affected by shortages of shipping, 2) the Islands were 2,000 miles closer to any Pacific front than the mainland, and 3) one-third of the population was racially Japanese.

Navy expenditures in Hawai`i, exclusive of construction projects, have been estimated for 1941 at \$150,000,000. Honolulu wholesale business increased 20% in 1940 and a further 42% in 1941.⁷⁵ For Hawai`i, the economic benefits springing from this commitment, though, came at the price of social tensions in the form of racism and discrimination. It may be a natural instinct to suspect foreigners of acts of sabotage during times of impending war, but in hindsight the “Orientals” and particularly the Japanese-Americans proved to be some of the most loyal “citizens” and soldiers during the conflict. A *nisei* (second generation or locally born) resident of Hawai`i, Shigeo Yoshida, testified at statehood hearings in 1937:

As much as we would hate to see a war between America and Japan, and as much as we would hate to see the day come when we would have to participate in such a conflict, it would be much easier, for us I think, if such an emergency should come, to face the enemy than to stand some of the suspicion and criticism, unjust in most cases, leveled against us. It is extremely difficult to bear up under the gaff of suspicion and expressions of doubt which have been leveled at us. It would be easier for me to pack a gun and face the enemy.⁷⁶

Social tensions during the 1920’s and 1930’s broadened the plantation society’s gap between white and Pacific-Asian inhabitants. The Navy’s suspicions of the Japanese made matters worse. The increasing movement of servicemen to housing near Pearl Harbor meant that many Chinese and Japanese inhabitants were forced to move to the hills above the city, to what they would later term “duration housing,” homes further from their businesses for the duration of the war. Yes, taxi owners, barbers, tattoo artists, nightclub owners, and brothel keepers profited from the increased naval presence, but often the serviceman’s money was more welcome than the serviceman himself.⁷⁷

America Enters the War

The ramifications and changes and intensification of activities which follow the Japanese attack on O`ahu are too numerous to treat adequately here. This chapter must feature naval activities in Hawai`i and the significance of the U.S. Navy, and focus less on general naval history in the Pacific. The attack, of course, had an immediate impact on Hawai`i and the Navy (see *Arizona, Utah, YO-21*).

7 December 1941

The Japanese attack on the Island of O`ahu is one of, if not the, most written about and studied battle in American military history. Frankly, the Japanese Pearl Harbor Striking Force exhibited excellent training and organization, managing in less than two hours to inflict damage on every major military target on the island. The air attack accomplished two goals: destroy the American Fleet at Pearl Harbor, and eliminate the potential for military aircraft on O`ahu to respond. The Strike Force consisted of six aircraft carriers and support vessels. Maintaining radio silence and taking advantage of moving storm fronts, the Force reached a point 220 miles north of O`ahu without being detected. Some 350 aircraft were launched in two separate waves. The Sunday morning raid lasted one hour and 50 minutes, during which time 188 American Army and Navy aircraft were destroyed. All air bases were out of commission for several hours. Only token air resistance could be mustered during the attack. Vessels sunk or severely damaged at Pearl Harbor included four auxiliary ships, three cruisers, three destroyers, and eight battleships. Japanese losses totaled 29 aircraft and five midget submarines.⁷⁸ Torpedo planes took advantage of stationary and tightly packed targets in the harbor. For America, this was the worst naval catastrophe in history. A total of 2,251 servicemen were killed or fatally wounded during the attack, 1,119 more wounded. The Navy bore the brunt of these losses: of the 2,251 killed, 2,036 were Navy personnel. Of the 1,119 wounded, 759 were in the Navy.⁷⁹ The shock of the surprise attack and subsequent defeat of U.S. forces would have far ranging consequences.

The extent of the American government's foreknowledge of the attack and the reasons for Hawai`i's relatively unprepared status on Sunday 7 December 1941 continue to be controversial issues. What is clear is that most people, if not all, in Hawai`i considered sabotage and internal "5th column" activity much more of a threat than attack by external military forces. Prior to the attack defense postures taken by both Lieutenant General Walter Short and Admiral Husband E. Kimmel, Commander-in-Chief of the U.S. and Pacific Fleet, reflect almost an obsession with internal sabotage. Warnings from the mainland had been received, but did not exactly specify the nature of the impending threat. On 27 November the Navy Department warned Kimmel:

This dispatch is to be considered a war warning. Negotiation with Japan looking toward stabilizing conditions in the Pacific have ceased and an aggressive move by Japan is expected within the next few days.⁸⁰

Other reports on Japanese movements seemed to indicate the potential for amphibious invasions in the Philippines, the Thai or Kra Peninsula in Southeast Asia, or Borneo. There was no specific mention of Hawai`i as the target. Short's reply to war warnings stated that all measures against internal uprisings had been taken. Kimmel's own

fleet war plans officer assured him that there was absolutely no chance of a Japanese air attack.⁸¹ Overconfidence had dulled the senses of those at the “Gibraltar of the Pacific.”

Such misjudgment led to airplanes being lined up in neat rows in the center of airfields, protected imaginary saboteurs but vulnerable to strafing attacks. Anti-aircraft ammunition for Ford Island was kept locked up off base, safe from imaginary Japanese theft. The destroyer USS *Helm* moored in West Loch also kept some ammunition under lock and key. Sentries were issued whistles, due to the numerous saboteur false alarms. Most damaging though, long-range aerial patrols, the most logical defensive deployment against air attack, were not initiated. Instead, units at Ford Island on 6 December drilled against sabotage attacks.⁸² Again, there was no sabotage or internal insurrection in Honolulu or anywhere in Hawai`i. The only known cases of espionage were conducted by the Japanese consular staff and a German resident.⁸³ Some American officials found the very absence of evidence suspicious.

The Immediate Response

American forces responded valiantly during the surprise attack. Fleet doctrine required all ships to get underway, but with the single exception of USS *Nevada*, this was simply not possible due to substantial damage. After the attack some destroyers and cruisers did put to sea, but these searched southward and, fortunately, did not make contact with the enemy fleet. The Japanese Strike Force, still possessing significant air power, escaped detection intact and returned to port. Had American ships been lost at sea, there would have been no subsequent salvage and reuse.⁸⁴

On 7 December Fleet Orders specified that only one-quarter of the anti-aircraft batteries be manned. 50 caliber machine guns were supposed to be furnished with 300 rounds of ammunition, and 5-inch guns to have 15 rounds each in ready service boxes.⁸⁵ General Quarters was sounded almost immediately on all ships. Machine guns responded promptly, and according to subsequent reports, the 5-inch anti-aircraft guns were firing within four to seven minutes. Individual deeds of heroism were common that day in both the Army and the Navy. The Navy later awarded 15 Medals of Honor and 60 Navy Crosses.

Unfortunately, friendly fire accidents do occur during wartime, and Hawai`i was no exception. Some 40 5-inch anti-aircraft shells fell on the city of Honolulu, most of them after the Japanese planes had departed. Approximately 300 civilians on O`ahu were wounded, and 60 were killed, most from the explosions and fires associated with the accidental shelling. This was popularly interpreted as evidence of Japanese pilots bombing Hawaiian civilians (and, ironically, Japanese residents on O`ahu), but testimony during closed-door investigations revealed that these were all U.S. naval shells. Either the fuses for aerial detonation were not set or they malfunctioned. One projectile exploded near the driveway of Territorial Governor Joseph B. Poindexter.⁸⁶

The outer islands, as well as any boats at sea, remained almost completely unaware of the attack. Radio stations, except for emergency broadcasts, had gone off the air, not wishing to provide a navigational beacon to any other enemy planes. Waterfront areas on O`ahu's south shore became critical security zones, and all unidentified vessels approaching the island were targets. Six fishermen were killed on sampans coming back to port. Several sampans off of Barbers Point were strafed by American fighter planes. At least three landing parties on sampans were confirmed between Barbers Point and Nanakuli. American planes engaged these targets, reportedly "returning

fire.”⁸⁷ Again on December 12th sampans were strafed off of both Kailua and Kohala coasts. Captured local fishermen were listed as prisoners of war and held under guard. Four Navy planes of a group of six, off the carrier *Enterprise*, were later shot down by nervous anti-aircraft gunners at Ford Island.

In the days before the war civilian authorities in the Territory of Hawai`i had been preparing emergency measures in case of attack. A Major Disasters Council had been formed and the Hawaiian Defense Act, also known as the M-Day Bill, had been passed with the support of both the Army and the Navy. This granted additional powers during times of emergency to the Governor. Following the attack, Governor Poindexter announced on radio station KGU the Defensive Period, invoking the Defense Act. Civilian medical and ambulance forces were the first from Honolulu to respond. By 9:15 AM 18 First Aid stations had been set up, and doctors and nurses were streaming towards Tripler Army and Queens Hospital.⁸⁸ Most of the naval casualties were treated at the Pearl Harbor Naval Hospital at Hospital Point and the hospital ship *Solace* AH-5. Plantation hospitals at Ewa, Aiea, and Waipahu treated 130 naval personnel.

By noon General Short requested that Governor Poindexter relinquish all civilian control of the islands immediately by declaring martial law. He assured Poindexter that this was “absolutely necessary” in the face of sabotage and impending invasion, stating that if no invasion materialized, it could be lifted in a “relatively short time.”⁸⁹ With President Roosevelt’s approval, martial law was declared. Short became the Territory’s military governor, with a monopoly on all legislative, executive, and judicial power. The writ of *habeas corpus* was suspended.⁹⁰ Within three hours, most of the 1,450 Japanese residents previously designated as suspicious by Army Intelligence and FBI agents had been arrested. These were mainly language school principals, Buddhist and Shinto priests, commercial fishermen, consulate members, and business members of Japanese controlled corporations.⁹¹ About one-third of the Japanese were second generation *nisei*, Hawaiian-born and therefore American citizens. Approximately 100 residents of German descent and a handful of other foreigners were also arrested. On O`ahu these detainees were held initially at the immigration station, and then detention facilities on Sand Island. Detainees were also held on Hawai`i, Kaua`i, and Maui. Approximately 900 of the Japanese were then sent to internment camps on the U.S. mainland. Internment of Hawai`i’s entire 160,000 population of Japanese residents, as was the case on the mainland, was never considered feasible. Thousands were investigated, though, and race-based restrictions were promulgated. On 10 December military police at Pearl Harbor rounded up all Japanese workers and marched them to the front gate.⁹²

Of all the repair and reconstruction tasks following the 7 December attack, the Navy faced the most daunting challenge. Some ships in Pearl Harbor, surrounded by oil, tangled debris, and unexploded ordnance, would require years of work for successful salvage. It proved to be a major effort simply to get enough salvage equipment to Pearl Harbor to begin the work. More than a thousand divers, burners, pumpers, and other specialists were rushed from the mainland for the effort. Relatively few vessels would fail to be returned to active service of some sort during the war. Only two, *Arizona* and *Utah*, remain on the bottom at Pearl Harbor today.

Hawai`i During the War Years

Hawai`i, the major supply and repair base in the region, was literally the springboard from which the Fleet could project itself across the Pacific. Some 7,000 naval vessels received repairs at Pearl Harbor during the war.

Prior to October 1943, an average of 70 ships per month were serviced at Pearl Harbor. Thereafter, the number increased to 252 per month.⁹³ At one point there were 528 ships berthed at the same time at Pearl. Some 200 submarines made the base at Pearl Harbor their home for operations ranging into the western Pacific. Preparations for major offensives in the Pacific brought periods of intense activity.

Besides staging and supply for offensive operations, the Islands played a major role in training and casualty evacuation. Hawai`i was particularly suited for jungle warfare exercises and amphibious operations. Beaches along O`ahu's leeward side's Waianae coast simulated many Pacific locations. The Waianae Amphibious Training Center, largest of the several amphibious schools among the Islands, sent forces northward to Makua beach, where they assaulted replicas of the Japanese defenses at Tarawa Island. The Waimanalo Amphibious Training Center on the windward side included nearby Rabbit Island, where logs, concrete emplacements, and sandbags represented fixed shore positions defending against invasions from the nearby shore.

Neighbor Island Facilities and Naval Air Stations

After the Pearl Harbor attack a tremendous expansion of military construction on O`ahu and the outer islands took place. O`ahu alone boasted 26 naval stations, and most of the Navy's property was located on this island. By the end of the war, the Navy controlled thousands of acres around Pearl Harbor, as well as the 29,000 acres of uninhabited Kaho`olawe Island, used for aerial and surface ship target practice. At the start of war-program construction in November of 1939, the Army occupied only about 1/3 of Ford Island, and the waterfront was chiefly designated for fleet moorings. Reconstruction of the Army airfield (as the Army completed its air facilities at Hickam) included regrading a landing mat with asphaltic concrete, was completed by June 1941. Facilities by 7 December 1941 included hangars, warm-up ramps, BOQ, dispensary, administration buildings, underground fuel storage, main wharf, seaplane ramps, assembly shops, etc. During the attack, one seaplane hangar and the dispensary were damaged, and the seaplane parking area was also damaged. Revetments, personnel shelters, and a bombproof command center were subsequently constructed.⁹⁴

Beyond Pearl Harbor, O`ahu featured the Marine Corps Air Station at Ewa, the headquarters for Marine aviation in the Pacific. The area of MCAS Ewa was originally planned to be a part of NAS Barbers Point, but in 1940 it became an individual station during the general increase in all aviation construction plans. During the December 7 attack all aircraft at Ewa were destroyed. By 1942 four runways were operational. The facility was completed in 1944.⁹⁵

In 1942 the Naval Air Transport Service expanded into the Pan American Airways terminal, and the Navy subsequently took over the commercial John Rogers Airport, which then became known as Naval Air Station Honolulu. Work was begun in February of 1943 with the commencement of dredging operations in Ke`ehi Lagoon. Eventually, three seaplane runways, each 1,000 feet wide by three miles long, were completed. Seaplane ramps, aviation fuel facilities, floating seaplane docks, machine shops, repair facilities, and officer quarters soon followed.⁹⁶ The Naval Air Station at Barber's Point became, during the war, an important technical aviation training school and fortification. NAS Barber's Point was originally intended to be an auxiliary airfield of Ford Island, capable only of supporting the land-based operations of two aircraft carrier groups. In the days after December 7 1941, as it became apparent that Hawai`i would have to accommodate much heavier air traffic, Barbers Point plans expanded to two

main runways and capacity for four carrier groups. The original construction contract was terminated on 15 July 1943.⁹⁷ The valley of Lualualei, also on the windward side of O`ahu, became a permanent ammunition depot of 8,000 acres.

Kane`ohe Naval Air Station, on the Mokapu Peninsula, began as a small seaplane base in the late 1930's and grew into a major air station, housing 18,000 officers and men. Construction of the NAS began on the 1830-acre tract on the Mokapu Peninsula pursuant to the Hepburn Board recommendations in September 1939. The station was originally planned to be a seaplane base capable of supporting five squadrons. Three years of extensive dredging were required, moving some 11 million cubic yards of materials. An airstrip was added to the facility in 1940, with accompanying increases in housing, hangars, fuel storage, etc.⁹⁸

Ships and aircraft required a great deal of fuel for operations. The construction of large underground oil storage facilities at Red Hill, begun in 1940, eventually employed 3,900 workers and required \$42,000,000 to complete, making Pearl Harbor one of the great gasoline and oil storage centers of the world.

Navy facilities during the war were scattered throughout the neighboring Hawaiian Islands. This was done not only to facilitate operations, but also to disperse targets as a precaution against further enemy air attacks. Kaho`olawe, close to the Island of Maui, became known as the most shot-at island in the world. The Navy leased the Island for one dollar a year, and constructed a fake runway with replica aircraft as targets for pilots and ships' gunners.⁹⁹ The Navy also used Ilio Point on the northern end of Moloka`i, and Mokuhooniki Rock, off Moloka`i's eastern end, as dedicated target areas.¹⁰⁰

The Island of Maui featured the Combat Demolition Training Center on Maalea Bay, where 40 100-man teams were trained in surveying and destroying undersea obstructions, and reconnaissance techniques in shore invasions. Maui had two naval air stations. NAS Puunene, originally known as Maui Airport, provided target-towing services for the Fleet. Plans for NAS Pu`unene expanded to include training facilities, bomb and ammunition magazines, and capacity for one aircraft carrier group. By 1943 NAS Pu`unene offered advanced training and staging for fighter, torpedo-bomber, and dive-bomber pilots.¹⁰¹

NAS Kahului served as a maintenance station for the continual influx of visiting carrier air groups. Construction began on NAS Kahului in November 1943. Much of the land was leased from a commercial sugar company. Two runways and associated facilities were completed by 1944. NAS Kahului included a moving target machine gun range, a machine gun school, and a malfunction range. Nearby were piers and shore facilities of Kahului Section Base.¹⁰²

On Kaua`i both the Coast Guard and Navy took over the whole of the waterfront at Nawiliwili Harbor. Hanalei Bay on the north, and then the western and southern side beaches at Waimea, Port Allen, and Hanapepe became areas for amphibious training.

Naval activity on the Island of Hawai`i centered on NAS Hilo, which was not completed until July 1944. NAS Hilo included a small commercial field on Upolu Point in North Kohala district. Recommendations were made by a joint Army-Navy board in 1942 for the expansion of the pre-existing Army Air Field in Hilo in order to meet Navy needs. Existing installations at the time included three runways, fuel storage, and revetments for 24

planes, in addition to quarters and mess facilities. NAS Hilo came into existence in response to the increasing number of aircraft being provided to Hawai`i from the mainland for future Pacific operations.¹⁰³

Among the long chain of atolls known as the Northwestern Hawaiian Islands, Tern Island at French Frigate Shoals was developed as a staging point for flights from the main islands to distant Midway. The strategic value of Tern Island, its protected anchorage and calm water for landing seaplanes and potential for a landing field, was first recognized in 1928. French Frigate Shoals was used before World War II for seaplane maneuvers.¹⁰⁴ The Shoals were a staging point for two Japanese seaplane attack/reconnaissance patrols between December 1941 and June 1942, one at Midway and one at Honolulu. Both were ineffective, but they did serve to point out the air “gap” in Pearl Harbor’s defenses. The presence of the U.S. Navy at French Frigate Shoals prevented the location’s use by the Japanese in the attempted invasion of Midway. Construction of the landing strip on Tern Island began in July 1942 when a ship channel was dredged adjacent to the island, and the spoils were used as landfill to enlarge the runway. By late 1942, as the runway-shaped island neared completion, expendable wing tanks became available, making the intermediate staging point unnecessary.

Midway consists of two small flat islands (Sand and Eastern, collectively referred to as “Midway Island”) and a coral atoll almost exactly in the geographic center of the North Pacific Ocean. Its strategic importance was clear early to the Navy. The atoll had previously been an important stop for transpacific commercial flights. Initial naval plans included support for one squadron of seaplanes at the atoll. War-construction PNAB contract work began at Midway in March 1940. Three runways and two hangars were constructed on Eastern Island. Sand Island featured seaplane ramps and hangar, ordnance, radio, engine, and repair shops, communication facilities, a naval hospital, and housing.

Following the Battle of Midway, 4-6 June 1942, plans for Midway changed. Subsequent improvements featured three runways on Sand Island itself, as well as a numerous revetments for high explosives. By the spring of 1943 Midway’s role was changed from a defensive to an offensive base, and construction of a major submarine base was begun. By 1944, three 471-foot piers, a 769-foot tender pier, and an ARD wharf had been completed, all of wood pile construction.¹⁰⁵

The Training and Labor “Migration”

Hundreds of thousands of troops were equipped, provisioned, trained, transported, and housed in the Islands. On 7 December 1941 there were 43,000 soldiers on O`ahu. At this time the 14th Naval District had 5,800 Navy men assigned ashore. Six months later the number had grown to 135,000. By June 1945 O`ahu alone had over 253,000 soldiers. The number of naval personnel in the Island peaked in December 1944 at 137,200. The following year the headquarters for the Pacific Fleet moved (temporarily) forward to Guam, reducing numbers in Hawai`i by some 25%.¹⁰⁶ The sporadic impact of Fleet visits, though, remained impressive. As many as 35,000 sailors could come ashore at any one time.

Nearly all the hospitalized casualties from the multiple Pacific fronts received treatment on O`ahu. The U.S. Naval Hospital at Pearl Harbor, the only naval facility at the beginning of the war, was later incorporated into Base 128 Hospital as an enlarged unit. Aiea Naval Hospital was commissioned in November 1941, soon to become

the largest American military hospital outside the continental U.S. Naval personnel held that “if a casualty reaches Aiea, he will live.”¹⁰⁷ Other naval installations in the Islands had smaller hospital and dispensary facilities.

Such an overwhelming number of servicemen in the Islands strained the image of Hawai`i as a tropical beach with friendly native women. Numerous recreation centers, both on and off base, were established by the Navy Recreation and Morale Office. Shortly after the start of the war, the Royal Hawaiian Hotel, the oldest of the resorts on Waikiki, became the Navy R&R establishment. During the war 200,000 sailors, mainly submariners, passed through the “Pink Palace,” averaging a ten-day stay. Officers paid \$1.00 a day, enlisted men stayed free. Bars, arcades, and brothels capitalized on the traffic. The Red Light district near Chinatown possessed 20 to 25 brothels where, for between \$3.00 to \$5.00, servicemen could spend approximately four minutes with a prostitute. Lines stretched around the block.¹⁰⁸

In the weeks after the attack, the civilian population responded in unprecedented ways. Evacuation of all non-war essential personnel became the order of the day. Some 20,000 Army and Navy dependents, as well as 10,000 local women and children, were shipped to the mainland.¹⁰⁹ Many later felt that, despite specific instructions from the military government, those who left the Islands were somehow abandoning Hawai`i in her time of need. More than 82,000 war workers would eventually head the other way, arriving in the Islands to fill the labor shortage created by the booming war economy. They would face a severe shortage in housing near Pearl Harbor and other areas.

For those who remained, life changed radically during the war. Civilian courts ceased to function. Curfew and blackout conditions were the most immediate and noticeable changes. Gasoline and liquor were the only items to be rationed. Many people, through the Territorial Office of Civil Defense, volunteered once a week as members of the local police force. Air raid wardens reported violations of blackout laws. Residents were required to carry gas masks at all times. Every family was required to build a shelter of some sort. Trenches and bunkers proliferated across Honolulu. Four million feet of barbed wire was strung around the beaches of the Islands. The whole of the waterfront in Honolulu became a security zone, controlled by the U.S. Coast Guard. Vaccinations became mandatory. Teachers were put in charge of registration of everyone in the Islands. Identification papers were required for everyone above six years of age. Censorship reigned over all mail, radio, and newspaper communication. Despite these changes, the civilian population actively responded with salvage drives, blood drives, and war bond sales that were often two to four times greater than mainland quotas.

The Battle of Midway

Thanks to successful intelligence operations, the planned Japanese attack and invasion of Midway was foiled in a major sea battle between 4-6 June 1942. This battle is commonly regarded as the turning point in the Pacific War, the moment when the Japanese Imperial Navy was forced to go on the defensive for the remaining years of World War II.

Advanced notice of Japanese plans allowed the American Navy to make hasty but critical preparations and position its own carriers appropriately. The battle has, like the attack on Pearl Harbor, been studied in great detail, and need not be repeated in full here. It should be understood, though, that preparations included the entire chain of Northwestern Hawaiian Islands and not only Midway Atoll itself. The Naval Air Facility at Midway was packed

with aircraft from Marine Fighting Squadron 221, Marine Scouting-Bombing Squadron 241, 7th Army Air Force Detachment Marauders and Flying Fortresses, Patrol Wing 1 and 2 Detachments, and Torpedo Squadron 8 Detachment. Eight PT-boats were stationed at Midway lagoon, and three larger vessels made up the refueling unit there. Two PT-boats were also stationed at Kure Atoll, along with four smaller patrol craft. Two seaplane tenders, a destroyer and a gasoline tanker were moored at French Frigate Shoals. A minesweeper and a patrol yacht were deployed to Pearl and Hermes Reef. Lisianski, Gardner Pinnacles, Laysan and Necker Islands each had patrol craft present.

Four Japanese carriers and one American carrier were sunk as a result of the Battle of Midway. Approximately 144 American aircraft (186 airmen) and 256 Japanese aircraft (301 airmen) were lost.¹¹⁰ Though the majority of the battle took place some 200 miles to the north of Midway, an estimated 26 aircraft from both sides crashed in waters within the vicinity of the Atoll itself, with at least 20 airmen not being recovered. Facilities at Midway were also hit. The hospital, a group of fuel oil tanks, and the partly completed torpedo shop at the submarine basin as well as other buildings were completely destroyed, and the administration buildings, laundry, and seaplane hangar received considerable damage.¹¹¹

The Hawaiian Sea Frontier

While naval activities in the Pacific usually feature distant locations and major offensive strikes, all mundane “normal” local patrols and inter island convoy tasks fell to the Hawaiian Naval Coastal Frontier forces. The Hawaiian Sea Frontier was established by executive order prior to 7 December 1941, but did not actually come into settled form until September 1942. Its major tasks included the maintenance of picket ships outside Pearl Harbor and the Port of Honolulu, escorting inter island shipping, and operation of air-sea rescue facilities.¹¹² The Hawaiian Sea Frontier developed as an offshoot of the 14th Naval District’s activities. Boundaries included a coastal zone 500 miles from all islands, as well as Johnston and Palmyra Islands and Kingman Reef. Vessels of the Pacific Fleet were used for offshore patrol, while a variety of confiscated vessels and district craft fulfilled inshore patrol duties (see *YP-277*, *YP-183*, *Kailua*). Motor Torpedo Boats (MTB’s) were assigned early to the Sea Frontier. These were fast and potent, but not sturdily built and could not maintain effective patrols for long periods of time. Other units included local sampans, numerous tuna boats, and even a Chinese wooden junk *Cheng Ho IX-52*.¹¹³ Many of these vessels carried depth charges at the stern, taking on anti-submarine patrol duties in local waters. Japanese submarines were active briefly following the attack on Pearl Harbor, shelling Hilo Hawai`i, Kahului Maui, and Nawiliwili Kaua`i in December-January 1942 (see *Neches*). Damage was minor and the submarines did not return to the main Hawaiian Islands.¹¹⁴

Rescue facilities for downed aircraft were established by February 1942. The first organization was a joint Army-Navy office known as Rescue Service Control (RSC), located at Hickam Air Force Base. Navy captains in charge of rescue vessels taking orders from Army officers on the base presented difficulties, and by August 1943 the Hawaiian Sea Frontier took over all rescue operations, establishing the Joint Operations Center (JOC) in Aliamanu Crater. The JOC assumed responsibility for all rescue service throughout the Central Pacific area. Air-Sea rescue organization, by necessity, developed in tandem with the increasing aviation training activities and offensive air strikes in the Pacific.

Legacy of World War II in Hawai`i

The naval facilities throughout the Islands, and Pearl Harbor at their center, represented the fulcrum for Pacific war plans. Hawai`i served as a support, repair, and training center for the Pacific Fleet. The Islands were literally overwhelmed by the number of servicemen and military activity during the war. Soldiers at times outnumbered the civilian population on O`ahu. The military permeated Hawaiian land and society during the war. At its peak, over 600,000 acres of land were controlled by the military (roughly two and a half times current use). Only private islands like Ni`ihau and Lana`i remained relatively untouched.¹¹⁵ The military, and particularly the Navy, today is still a large and active component of Hawaiian society. Honolulu remains a “Navy” town. Buses, taxis, bars, restaurants, and other services continue to thrive when the Fleet is in port.

Military activity in Hawai`i during the war radically changed the nature of Hawaiian society. The Pacific-Asian culture in the Islands, which had been the source for so much concern among military planners, had the chance to step up and demonstrate unshakable loyalty to America in numerous ways during the conflict. Volunteer Civil Defense activities, salvage drives, blood drives, military enlistment, the complete lack of sabotage and internal dissent, and the now legendary accomplishments of the Japanese-American 442nd regiment and the 100th battalion in Europe, all demonstrated clearly defined Hawai`i’s loyalties. The period of martial law, though in hindsight heavy-handed and based on imaginary fears of sabotage, did the most to break the hold of the “Big Five” companies and change the plantation era oligarchy into a modern democracy. Returning *Nisei* veterans, who had changed the image of disloyal Japanese into “Go for Broke” Japanese-American soldiers, entered the political realm. The stratified and controlled pre-war plantation society had been shaken up, never to return to its former self. For the American public, servicemen put Hawai`i on the map. What had been a sleepy Pacific island in the 1930’s became a tourist Mecca in the 1980’s.

The question of sabotage and the reasons for this deep miscalculation by Army and Navy officers have never been adequately examined. Rumors without proof proliferated during the war, and the Navy’s treatment of Japanese citizens did little to alleviate the situation. Such imaginary fears and incipient racism have been used to explain the particularly brutish nature of the martial law period in Hawai`i, as well as the internment of over 110,000 Japanese on the continental U.S., and (ultimately) the defeat at Pearl Harbor. Attempts at official reconciliation have been slow in coming and plagued by notable failures. In 1953 the Navy forbid veteran aviator Mitsuo Fuchida from laying a wreath at the *Arizona* memorial. This same year, though, saw the first goodwill visit of a Japanese Navy ship to Pearl Harbor, amidst much protest.¹¹⁶ In 1991 the Pearl Harbor Survivors Association still struggled with the issue of “allowing” Japanese veterans to attend the 50-year commemoration activities. Naval security in Hawai`i, and national security in general throughout the nation, still stands in opposition to civil liberties.

During World War II the Navy, and the military in general in Hawai`i, took direct control of the population in the Islands. On many ways the significance of the Navy in Hawai`i was formulated during period.

Post War Reductions

In the years that followed World War II a general “phase down” took place, during which time ships and certain facilities were moth-balled and placed on reserve status. NAS Kane`ohe Bay was put in caretaker status in

1949. Five years of peace were again interrupted by the conflict on the Korean Peninsula. The Pacific Fleet, headquartered in Hawai`i since February 1941, responded by providing carrier forces for air strikes. The Navy and combined forces also carried out the major amphibious landing at Inchon Bay. Pearl Harbor again served as a ship repair, refueling, and supply center for vessels bound for Korea. The armistice was signed on 27 July 1953, and the Navy establishment in Hawai`i once more stood down from its war status.

In 1955 Pearl Harbor Naval Base (the Naval Yard had been redesignated Base in 1945) became the Pearl Harbor Naval Station. The Naval Station took on six major tasks: naval station, supply center, shipyard, public works, ammunition depot, and Marine barracks.¹¹⁷ By mid-1968 the Pacific Fleet was again actively engaged in the Vietnam War, providing air support from offshore carriers, forces for river patrols, and submarines for reconnaissance and intelligence duties. More than 220 ships were committed to duties in the South China Sea. The cease-fire was implemented in January 1973.

Control of land in an island state is always a measure of overall status. Statehood for Hawai`i in 1959 brought with it the current patterns for military landholding in the Islands. A five-year review period was established, and the end of which all armed forces reduced their property holdings to, basically, what they are today. As of 1979, the Navy controlled (through lease, fee simple ownership, or ceded land) 22,660 acres on O`ahu; 2,374 acres on Kaua`i; and 28,777 (almost the whole island) on Kaho`olawe. The Navy now holds no property at all on Maui, Hawai`i, and Moloka`i, all bases there being shut down. The Marine Corps holds 3,450 acres on O`ahu; 18,000 on Kaua`i, and 11,781 acres on Moloka`i. Total Navy and Marine landholdings, as of 1979, were approximately 2% of the 4,111,500 acres of the state of Hawai`i.¹¹⁸

The Navy in Hawai`i Today

Whereas six naval air stations had been operating in the Islands during World War II, there is now only one. NAS Kane`ohe was reactivated in 1952 as Marine Corps Air Station Kane`ohe Bay. Now the base is designated Marine Corps Base Hawai`i (MCBH) Kane`ohe Bay, and is in the process of consolidating some of the property from nearby Bellows AFB. In 1992 the naval air facility at Midway Island, which after World War II was a staging point for the Korean and Vietnam Wars and part of the Distant Early Warning Line during subsequent years, was closed down under the Base Realignment and Closure Act. Designated as a Wildlife Refuge four years earlier, the U.S. Fish and Wildlife Service stepped in and, for the past several years, has operated Midway with the Phoenix Air Corporation as an eco-tourism destination. The last U.S. Navy personnel departed from Midway in 1997, following the completion of environmental clean-up measures.¹¹⁹

On the west coast of Kaua`i what had been the Army air field Bonham AFB during the 1940's was, in 1956, leased by the Air Force to the Navy for use in the Regulus I missile program. In 1958 the Pacific Missile Range Facility (PMRF) at Barking Sands was officially established. The 1,885 acres were formally transferred to the U.S. Navy. In 1967 the Barking Sands Tactical Underwater Range was added to the facility. PMRF continues to maintain facilities at Barking Sands, Makaha Ridge, Port Allen, Mauna Kapu, and an unmanned radar site on the island of Niihau. The goal of the PMRF is to "provide integrated range services in a modern, multi-threat, multi-dimensional environment which ensures the safe conduct and evaluation of both training and T&E missions."¹²⁰

They test missiles. PMRF has also created a “virtual” target island by incorporating ocean sensors into an offshore firing range. This has replaced Kaho`olawe, which was transferred back to the state of Hawai`i in 1994 and is now undergoing the process of being cleared of unexploded ordnance.

The streamlining of military landholdings in Hawai`i, and the basic reduction of visible assets due mainly to peacetime downsizing and increasing technology, has made the current impact of the military on the state less apparent. At the same time, a number of activities and properties, mainly surrounding Army training exercises in locations like Makua Valley on O`ahu, continue to cause conflict between civilians and the military. For the Navy, the issue of the Kaho`olawe clean up remains the major source of social contention. Kaho`olawe Ranch, in May 1941, signed an agreement with the Navy to lease a portion of the Island for training/targeting purposes. With the declaration of martial law, the Navy claimed the rest of Kaho`olawe. The Island was an uninhabited military target for the next 49 years. The Navy currently claims that only 38% of the island, at the current level of funding, can be made safe. The 1993 agreement, though, “commenced the clearance of unexploded ordnance and environmental restoration to provide meaningful and safe use for appropriate cultural, historical, archeological and educational purposes as determined by the State.”¹²¹ The Navy continues to provide civilian jobs in a number of different capacities, and defense funding has been an important source of revenue for the state. Certain environmental concerns over contested property will continue to be a cause of social tension, though, as the balance between military training activities and civilian control of the land is achieved.

Today Hawai`i is home to the United States Pacific Fleet. For purposes of naval control, the “Pacific” now includes Southeast Asia and the Indian Ocean. The Pacific Fleet maintains a forward presence and regional stability, therefore, over half of the world’s surface, more than 100 million square miles. Under the direction of the U.S. Pacific Command and the Chief of Naval Operations, the U.S. Pacific Fleet controls both the 7th Fleet in the western Pacific (the largest forward-deployed fleet), and the 3rd Fleet on the American West Coast. Fleet components include all air forces, surface forces, submarine forces, Fleet Marine forces, and the Seabees. Almost 200 vessels make up the mobile forces of the U.S. Pacific Fleet.¹²² There are some 2,000 naval aircraft and approximately 240,000 sailors, Marines, and civilians, throughout the Pacific Fleet.

Navy Region Hawai`i (the Pearl Harbor Naval Yard became a U.S. Naval Base in November 1945; redesignated Navy Region Hawai`i in 1998) has grown into a small city with a network of roads, piers, workshops, buildings, fire and police stations, etc. There are currently 81,000 naval military, family members, and civilian employees in Hawai`i. Active duty personnel account for 27,500 of this total - 18,500 Navy and 6,000 Marines as of January 2003. Expenditures by the Navy/Marine Corps community in the Islands were well over one billion dollars in 1995, making the Navy and Marine Corps (still) a major contributor to the Hawaiian economy.¹²³ Navy Region Hawai`i currently extends over more than 12,600 acres of land and water.

Based in Hawai`i, the Pacific Fleet is currently the world’s largest naval command, controlling a region from the North to the South Pole, from the America to the East African coast. National Security Strategy today dictates that Hawai`i is and will remain a key component in support of the U.S. forward presence in the Pacific, East Asia, Southeast Asia, and South Asia.¹²⁴ Given this statistical outline, it would be hard to overestimate the significance of Hawai`i to the Navy.

Summary

U.S. naval activities in Hawai`i have evolved through a number of distinct phases. Beginning with early goodwill visits in the 1820's, interest in surveys of Pearl Harbor and establishing a permanent presence was relatively slow to emerge. During the 1870's, though, the U.S. Navy played an influential, if indirect, role in strengthening America's hold on the Kingdom of Hawai`i. This role culminated in the Navy's direct support of an illegal overthrow of the Hawaiian government in 1893, when "naval representatives...caused armed naval forces of the United States to invade the sovereign Hawaiian nation."¹²⁵ Shortly thereafter outside influences (the Spanish-American War) provided a pretext for official annexation. The role of Hawai`i as a naval base developed alongside American colonial expansion in the Pacific. Activities and development increased in response to the growing perceived need for military capability across the wide ocean.

For the next several decades, even as the Pacific emerged as the critical theater for military planners, improvements on the physical establishment of naval presence in Hawai`i were slow to take place. The military construction boom and transfer of real power to the Islands did not really take off until the late 1930's. With World War II on the horizon, Hawai`i became home for the U.S. Pacific Fleet, and numerous naval stations popped up throughout the Hawaiian archipelago. World War II in the Pacific brought with it drastic military, social, and economic change, forever altering the nature of civilian and naval "societies" in the Islands, and forging the basis for a permanent relationship between the two.

In the last 50 years the U.S. Navy has maintained a strong presence in Hawai`i, though operations have been streamlined and a number of stations have been closed. The Navy has become an integral part of the Hawaiian scene, to the point that it would be hard to imagine the Islands today without a U.S. naval presence. Today the role of the Pacific Fleet has grown so large, and the naval presence is so established, that questions which seek to draw a clear line between the Navy and Hawai`i must be carefully worded. The Navy is an economic and social part of the Islands, and the Islands are central to the role of the U.S. Pacific Fleet.

The U.S. Navy and the American military during World War II changed the nature of the Islands. Frankly, the Navy is such a major player in the society that in many places in the Islands, Caucasian ("haole") youth are simply assumed by be "Navy brats." This is not a negative term, but simply an acknowledgement of the pervasive naval demographic. The military and naval presence in Hawai`i has played a major role in shaping the modern economy in the state. Not all of this change has been easy or pleasant. At times the contest over control of limited land resources and social tensions stemming from the massive movement of mainland Americans to Hawai`i's multiethnic society have led to conflict. Many remember the details of how this relationship originated, and mourn the loss of independence and cultural stability of the Native Hawaiian people. Others still remember the land condemnation proceedings in which families lost control of Pearl Harbor properties. Yet there can be no denying that, during World War II, the people of Hawai`i exhibited strong loyalty to the United States and to the U.S. Navy, and that these feelings of loyalty continue today. These apparently contrasting perspectives are not necessarily mutually exclusive, for the history of U.S. naval presence in Hawai`i is a significant and complex topic. Certainly the subject is suited to a much more thorough treatment than can be included in a single chapter in an archaeological inventory.

Table 5: Chronology of Naval Activity in Hawai`i

1814	Lieutenant John Gamble arrives in Hawai`i with war prize <i>Sir Andrew Hammond</i> in search of crew. Vessel soon retaken by British
1826	USS <i>Dolphin</i> first commissioned U.S. warship to call at Hawai`i
1840	First American survey of Pearl Harbor conducted during U.S. Exploring Expedition under Commander John Wilkes
1866	Screw-sloop USS <i>Lackawanna</i> arrives in Hawai`i and commences 19 years of cruises and surveys in Hawaiian Island area
1867	Midway Atoll claimed by as American possession by Commander William Reynolds U.S. Navy
1876	Treaty of Reciprocity put into effect between U.S. and Hawaiian Kingdom, allowing agricultural products into Mainland
1887	Amendment to Treaty allowing USN exclusive access and rights to make improvements to Pearl Harbor added during senate secret session
1893	Government of the Kingdom illegally overthrown by commercial interests with assistance of U.S. Minister and U.S. Navy
1898	Hawaiian Islands annexed, construction of Naval Station Hawai`i begun
1908	Roosevelt's Great White Fleet arrives off of Diamond Head crater
1914	First Submarine Division Pacific Torpedo Flotilla arrives at Pearl Harbor (F-4 lost the following year)
1919	Navy seaplanes begin operations in Hawai`i
1922	Chester Nimitz assumes command of submarine base at Pearl Harbor
1932	USS <i>Lexington</i> and <i>Saratoga</i> stage successful practice air raid on Pearl Harbor, exercise repeated in 1938
1939	FDR declares Defensive Naval Sea Area around Pearl Harbor, airbase construction on outer islands begun by PNAB
1941	Pacific Fleet based in Hawaiian waters; Japanese surprise attack 7 December, martial law declared
1942	Battle of Midway turns tide of Pacific War, June 4-6
1944	Explosion at West Loch during preparations for Saipan invasion destroys numerous LST's
1956	Army airfield on Kaua`i leased by Navy, Pacific Missile Range Facility (PMRF) established two years later
1992	Naval Air Facility at Midway shut down under Base Realignment and Closure Act
1993	Clean-up of Kaho`olawe Island target range begun

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- ¹ R. Warwick Armstrong, *Atlas of Hawai'i* (Honolulu: University of Hawai'i Press, 1983).
- ² Albert Pierce Taylor, "The American Navy in Hawaii," *U.S. Naval Institute Proceedings* August (1927): 907; <http://www.dreamwater.net/regiment/RoyalArk/Hawaii/kauai.htm>.
- ³ Lyndall and Donald Landauer, *Pearl: the History of the United States Navy in Pearl Harbor* (Lake Tahoe: Flying Cloud Press, 1999), 42-3; Taylor "American Navy..." 908.
- ⁴ Landauer, *Pearl* 73; Gavin Daws, *Shoal of Time: a History of the Hawaiian Islands* (Honolulu: University of Hawai'i Press, 1968), 78.
- ⁵ Taylor, "American Navy..." 910.
- ⁶ Landauer, *Pearl* 73; Daws *Shoal of Time*, 78.
- ⁷ *Ibid* 60.
- ⁸ Taylor, "American Navy..." 916.
- ⁹ Landauer, *Pearl*, 85-6. Wilkes' ships were: *Vincennes, Peacock, Relief, Porpoise, Flying Fish, and Seagull*.
- ¹⁰ *Ibid*, 96.
- ¹¹ Taylor, "American Navy..." 917.
- ¹² Daws, *Shoal of Time*, 117.
- ¹³ Taylor, "American Navy..." 917.
- ¹⁴ <http://www.history.navy.mil/docs/wwii/pearl/hawaii.htm>. Texts at this site are excerpts from *Administrative History of the Fourteenth Naval District and the Hawaiian Sea Frontier*.
- ¹⁵ Taylor, "American Navy..." 917.
- ¹⁶ The first full survey of Pearl Harbor was conducted by launches and cutters from USS *Philadelphia* in 1894, a year after the overthrow of the Hawaiian government; Taylor, "American Navy..." 924.
- ¹⁷ <http://www.history.navy.mil/docs/wwii/pearl/hawaii.htm>
- ¹⁸ Taylor, "American Navy..." 919.
- ¹⁹ <http://www.history.navy.mil/docs/wwii/pearl/hawaii.htm>
- ²⁰ Taylor, "American Navy..." 919.
- ²¹ *Ibid*, 920.
- ²² Kuykendall, *Hawaiian Kingdom*, 21.
- ²³ *Ibid*, 20.
- ²⁴ *Ibid*, 27
- ²⁵ *Ibid*, 28.
- ²⁶ <http://www.history.navy.mil/docs/wwii/pearl/hawaii.htm>
- ²⁷ <http://www.history.navy.mil/docs/wwii/pearl/hawaii.htm>
- ²⁸ Kuykendall, *Hawaiian Kingdom*, 500.
- ²⁹ <http://www.history.navy.mil/docs/wwii/pearl/hawaii-3.htm>; this was the first regular U.S. Navy shoreside presence in the Islands, on leased land.
- ³⁰ Wiltse had also composed his own order, in accordance with standard Navy procedure and past instructions from the American Secretary of State. Forces were to "assist in preserving public order," but warned to remain neutral in any conflict, acting with extreme prudence. U.S. Commissioner James H. Blount's report, critical of the illegal overthrow, later charged that Navy troops were landed under a prearranged agreement to assist in overthrowing the Queen; Kuykendall, *Hawaiian Kingdom*, 594-5.
- ³¹ Daws, *Shoal of Time*, 273; also Kuykendall, *Hawaiian Kingdom*, 594.
- ³² This location, scouted by Minister Stevens, would not lend support to American citizens, but bolster's Blount's accusation.
- ³³ Daws, *Shoal of Time*, 276.
- ³⁴ Apology Bill: U.S. Public Law 103-150, 1993; cited at <http://www.hookole.com/non-hawaiians/apology.html>
- ³⁵ <http://www.history.navy.mil/docs/wwii/pearl/hawaii-3.htm>
- ³⁶ Edward A. Solomons, "Hawaii and the Navy 1820-1920," essay delivered before the Social Science Association of Honolulu, 5 April 1965.
- ³⁷ Landauer, *Pearl*, 154. The money was authorized, but not allocated by the Navy Department deemed an insufficient amount for the completion of the project. Work began in March 1901 with a congressional appropriation of \$150,000, the contract going to a California firm; *ibid*, 175.
- ³⁸ Alfred Thayer Mahan, "Hawaii and Our Future Sea Power," (1893) cited in Allan Westcott (editor), *Mahan on Naval Warfare: Selections from the Writings of Rear Admiral Alfred T. Mahan* (New York: Dover Publications, 1999), 154.
- ³⁹ *Paradise of the Pacific* June 1901, p16.

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- ⁴⁰ Landauer, *Pearl*, 176.
- ⁴¹ Ibid, 154. *Maine* would be lost in Havana the following year.
- ⁴² Ibid, 179. Interestingly, Barker is presupposing here 5th column activities and the (imaginary) threat of internal uprising among the Islands' Japanese population...in 1900.
- ⁴³ <http://www.sandiego.edu/~pbugler/page5.htm>
- ⁴⁴ <http://www.history.navy.mil/docs/wwii/pearl/hawaii-3.htm>
- ⁴⁵ Landauer, *Pearl*, 199.
- ⁴⁶ James R. Reckner, *Teddy Roosevelt's Great White Fleet* (Annapolis: Naval Institute Press, 1988), 89. Neither did ensign William Halsey or midshipman Raymond Spruance. All would be intimately involved in the Pacific following the attack on Pearl Harbor.
- ⁴⁷ Landauer, *Pearl*, 200.
- ⁴⁸ Taylor, "American Navy..." 924.
- ⁴⁹ Landauer, *Pearl*, 228.
- ⁵⁰ Rear Admiral W.B. Fletcher; *ibid*, 202-3. Fletcher also suggested the building of airstrips on Necker Island, French Frigate Shoals, Laysan Island and Johnston Island, quite prophetically as it turns out.
- ⁵¹ <http://www.history.navy.mil/faqs/faq66-5a.htm>
- ⁵² Landauer, *Pearl*, 212.
- ⁵³ Ibid, 207. The invading forces consisted of infantry, cavalry, artillery, and Marines.
- ⁵⁴ Robert L. O'Connell, *Sacred Vessels: the Cult of the Battleship and the Rise of the U.S. Navy* (New York: Oxford University Press, 1991), 99.
- ⁵⁵ <http://www.history.navy.mil/docs/wwii/pearl/hawaii-3.htm>
- ⁵⁶ Landauer, *Pearl*, 241.
- ⁵⁷ *14th Naval District*, 517.
- ⁵⁸ <http://www.history.navy.mil/docs/wwii/pearl/hawaii-3.htm>
- ⁵⁹ *Building the Navy's Bases during World War II: History of the Bureau of Yards and Docks and the Civil Engineering Corps 1940-1946* (Washington DC: US Government Printing Office, 1947), 138, 144.
- ⁶⁰ Ibid, 121.
- ⁶¹ The first mainland-Hawai`i flight took place 1 June 1927.
- ⁶² E.B. Potter and Chester W. Nimitz, *Sea Power: a Naval History* (Englewood Cliffs: Prentice-Hall Inc., 1960), 630.
- ⁶³ Landauer, *Pearl*, 245.
- ⁶⁴ Potter and Nimitz, *Sea Power*, 637.
- ⁶⁵ *14th Naval District*, 54.
- ⁶⁶ *Administrative History of the Fourteenth Naval District and the Hawaiian Sea Frontier* (Washington D.C.: Department of the Navy n.d.), 43-4.
- ⁶⁷ Daws, *Shoal of Time*, 322.
- ⁶⁸ Ibid, 325.
- ⁶⁹ Declassified document 11/1/35; RG 181; National Archives, San Bruno California.
- ⁷⁰ "Japanese Shell Poachers," *Pacific Islands Monthly* 4 no.8 (1934): 18.
- ⁷¹ Tadao Yamamoto, unpublished manuscript 1986 (Hawaii Maritime Center archives) 2.
- ⁷² <http://www.cpf.navy.mil/facts/history.html>
- ⁷³ Non-Navy observers sometimes placed the "plant" fourth, behind sugar, pineapple, and fishing. Some might argue that contrasting the domestic commercial product of a territory to the appropriation power of the federal government might not render a meaningful comparison.
- ⁷⁴ Gwenfread Allen, *Hawaii's War Years, 1941-1945* (Honolulu: University of Hawai`i Press, 1950), 71.
- ⁷⁵ Ibid.
- ⁷⁶ Cited in Daws, *Shoal of Time*, 339.
- ⁷⁷ Ibid, 317.
- ⁷⁸ Thurston Clarke, *Pearl Harbor Ghosts: a Journey to Hawai`i Then and Now* (New York: William Morrow and Company, 1991), 14. Fortunately, the fuel tank farm at Pearl Harbor and the submarine base were (oddly) not targeted.
- ⁷⁹ Homer N. Wallin, *Pearl Harbor: Why, How, Fleet Salvage and Final Appraisal* (Washington DC: Naval Historical Division, 1968), 108. The Navy later buried 328 men at O`ahu Cemetery in Nu`uanu, 18 at NAS Kane`ohe, and 204 at the naval cemetery at Red Hill in Aiea; Allen, *War Years*, 32.
- ⁸⁰ Clarke, *Pearl Harbor Ghosts*, 97.

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- ⁸¹ Ibid, 117.
- ⁸² Ibid, 97-9.
- ⁸³ Wallin, *Pearl Harbor*, 108; Allen, *War Years*, 131.
- ⁸⁴ Ibid, 101.
- ⁸⁵ Ibid, 106. Expended ammunition totals include: 50cal rounds 275,807; 5-inch 50cal rounds 1,741; 5-inch 25cal rounds 1,523; 5-inch 38cal rounds 1,665.
- ⁸⁶ DeSoto Brown, *Hawaii Goes to War : Life in Hawaii from Pearl Harbor to Peace* (Honolulu: Editions Limited, 1989), 28; Allen, *War Years*, 7.
- ⁸⁷ *War General Staff Journal*, HQ 25th infantry division, 8-9; loose-leaf notes, Hawai`i Maritime Center Archives.
- ⁸⁸ Allen, *War Years*, 31.
- ⁸⁹ Ibid, 35.
- ⁹⁰ Ibid, 237. In 1946 the U.S. Supreme Court ruled that the sustained three year imposition of martial law in Hawai`i was unconstitutional.
- ⁹¹ Ibid, 134. Thus, the three most influential Japanese institutions, the Shinto shrines, Buddhist temples, and language schools, were simultaneously shut down. Japanese in Hawai`i immediately burned or buried all traces of traditional culture, and many hundreds changed their names as well.
- ⁹² Clarke, *Pearl Harbor Ghosts*, 325.
- ⁹³ Allen, *War Years*, 224.
- ⁹⁴ *Building the Navy's Bases*, 137.
- ⁹⁵ Ibid, 144.
- ⁹⁶ Ibid, 144.
- ⁹⁷ Ibid, 140.
- ⁹⁸ Ibid, 138.
- ⁹⁹ The 1977 court action "Aluli v. Brown" (437 F.supp. 602) sought to prohibit the Navy from using the island as an aerial and surface bombing target by pointing to Federal agency responsibilities regarding preservation of historic and archaeologically important sites (Executive Order 11953). No injunctive relief was forthcoming for Native Hawaiians, but the court did require the Navy to file an annual EIS as long as the bombing continued.
- ¹⁰⁰ Allen, *War Years*, 231. Other bombing target areas included Kahuku O`ahu, Makanalua Peninsula Moloka`i, and Opaua Point Maui; *14th Naval District*, 519. Currently a danger zone extends for two miles around the Island of Kaho`olawe, and entry into adjacent waters is prohibited without the consent of the Commander, Third Fleet, Pearl Harbor.
- ¹⁰¹ *Building the Navy's Bases*, 151.
- ¹⁰² Ibid, 152.
- ¹⁰³ Ibid, 154.
- ¹⁰⁴ Manta Corporation, "Tern Island Study: Final Report," prepared for USFWS (Kailua, Hawai`i, 1979), 157.
- ¹⁰⁵ *Building the Navy's Bases*, 155-57.
- ¹⁰⁶ Allen, *War Years*, 219.
- ¹⁰⁷ Ibid, 197.
- ¹⁰⁸ Brown, *Hawaii Goes to War*, 135.
- ¹⁰⁹ Allen, *War Years*, 107.
- ¹¹⁰ Robert J. Cressmen et al, *A Glorious Page in Our History: the Battle of Midway* (Montana: Pictorial Publishing Company, 1990), 220.
- ¹¹¹ *Building the Navy's Bases*, 156.
- ¹¹² <http://www.history.navy.mil/docs/wwii/pearl/hawaii-4.htm>
- ¹¹³ *14th Naval District*, 778. This vessel was purportedly a diesel powered replica of Zheng He's famous Ming Dynasty treasure junks. The *Cheng Ho* was built in Hong Kong for American botanists planning a collection cruise throughout the South Pacific. When the War came, the vessel was sold in Honolulu.
- ¹¹⁴ Brown, *Hawaii Goes to War*, 62.
- ¹¹⁵ *Navy/Marine Corps Activities Hawaii Regional Profile* (Honolulu: Naval Facilities Engineering Command, 1980), D-2.
- ¹¹⁶ Clarke, *Pearl Harbor Ghosts*, 21.
- ¹¹⁷ Landauer, *Pearl*, 298.
- ¹¹⁸ *Navy/Marine Corps Activities*, D-4.
- ¹¹⁹ <http://www.fishdive.com/midway/History/history.html>
- ¹²⁰ <http://www.pmr.f.navy.mil/>

¹²¹ http://www.hawaii.navy.mil/CNBDATA/Kahoolawe/Fact_Sheet.htm

¹²² <http://www.cpf.navy.mil/>

¹²³ <http://www.hawaii.navy.mil/NavyHI.htm#History>

¹²⁴ *Pearl Harbor Integrated Cultural Resources Management Plan* (2002), 4.

¹²⁵ Apology Bill: U.S. Public Law 103-150, 1993; cited at <http://www.hookole.com/non-hawaiians/apology.html>

**The History and Archaeology of Submerged Naval Properties
in Hawai`i
Inventory Known Vessels**

**Pages 64 to 356 were removed due to sensitive information pertaining to specific
archaeological sites.**

**To obtain this information, please contact the Cultural Resources Management
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the Legacy Resources Management Program office:

(703) 604-1724

or

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MANAGEMENT RECOMMENDATIONS

Many types of cultural resources commemorate and honor our national and military history. Resources such as sunken ships and aircraft pay particular tribute to the history and traditions of the U.S. Navy. The question of whether these types of resources must be managed is implicitly related to the question of whether the Navy's history and traditions deserve recognition and respect. The answer is clear. Inventories such as this, therefore, do not simply exist in a vacuum for purely antiquarian purposes, but must be a major part of the management design for naval maritime heritage resources. This section provides an overview of the current status of maritime heritage resource management in the State of Hawai'i, and makes recommendations regarding the specific category of submerged Navy properties. Although the State of Hawai'i possesses numerous submerged wreck sites, and has literally thousands of recorded losses of ships, submarines, and aircraft in Hawaiian waters, the concept of managing such resources is a relatively new one for the islands. The challenge of including a naval inventory of previously unseen and often unrecognized resources is another step in the direction of responsible stewardship for natural and cultural resources.

Managing Agencies:

A number of State and Federal agencies share responsibility for marine resource management among the islands. Most of these entities have not previously been active in the field of maritime heritage management, but their individual responsibilities have been clearly laid out by various preservation laws and guidelines. The picture of State and Federal jurisdiction over Hawaiian waters is complex. Frankly, the attempt to define specifically who controls exactly which part of the ocean, important in determining the status of individual sites, is somewhat contrary to the more general movement for joint agency jurisdiction and broad collective ecosystem management of a fluid and interrelated environment. Nonetheless, these jurisdictional agencies include:

Navy Region Hawai'i--The Navy's own direct management of its submerged resources in Hawai'i centers only on Pearl Harbor. Commander Navy Region Hawai'i (CNRH) is the onsite "manager" of cultural and historic resources within its 12,600 acres of land and water, as made clear by its *Integrated Cultural Resource Management Plan (ICRMP)* completed in 2002.¹ The *ICRMP* applies to the Pearl Harbor Naval Complex only. The Department of Defense Environmental Conservation Program contains a number of mandates concerning the management of both natural and cultural resources, including preparation of a management plan for all lands and waters under the Department's control that contain cultural resources.² Management plans for the Pearl Harbor Naval Complex stem directly from the overall preservation mission and goals for Navy Region Hawai'i:

Mission: the Department of the Navy is a large-scale owner of historic buildings, districts, archaeological sites, ships, aircraft, art, artifacts, documents, and other cultural resources. Protection of these components of the nation's heritage is an essential part of the defense mission and the Department of the Navy is committed to responsible cultural resource stewardship.³

It should be noted that Federal Law does not require cultural resources to be protected at the expense of the Department of the Navy's primary defense mission.

Naval Historical Center--All submerged U.S. Navy wreck sites in Hawai'i, unless sold out of the service prior to loss or removed from the naval register by specific act of Congress, remain property of the U.S. Government and therefore come under the management jurisdiction of the Underwater Archaeology Branch of the Naval Historical Center at the Washington Navy Yard. This branch of the NHC advises the Navy in all matters relating to the historic preservation of Navy ships and aircraft wrecks, as well as those pertaining to war graves, unexploded ordnance, weapons recovery, and legal issues. All warships or "State" vessels are entitled to sovereign immunity no matter their location, as explained in the United Nations Convention on the Law of the Sea (UNCLOS) Articles 95-6.

The boundaries of Pearl Harbor National Historic Landmark extend outward to encompass the entrance area to the Pearl Harbor Channel. This area (according to charts) is a "Naval Defense Sea Area" and is closed to the Public...only vessels authorized by Secretary of the Navy are allowed passage.

State of Hawai'i—The State commonly maintains jurisdictional control over submerged lands and waters out to the three nautical mile limit within the Main Hawaiian Islands (MHI) and the Northwestern Hawaiian Islands (NWHI). The key State agency for maritime heritage resources is the Department of Land and Natural Resources (DLNR) that includes the Land, State Historic Preservation Division, Boating and Ocean Recreation Division, and the Coastal Zone Management Program. The Land Division of the DLNR reviews all Conservation District Use Applications (CDUA's) regarding activities that may affect the state bottomlands. Where deemed appropriate, these are forwarded to the Historic Preservation Division for review.

For all the development which has occurred at Hawai'i's harbors and historic landings, including submarine cable installations, channel dredging, spoils dumping and breakwater construction, there has been very little actual underwater survey as required by section 106 of the National Historic Preservation Act (NHPA 1966). This is unfortunate, for there is little doubt that submerged resources at historic anchorages like Kahului, Hilo, Honolulu Harbor, and other locations may have been disturbed simply due to a lack of awareness. This is not altogether surprising, though, for Hawai'i, like many other states, has long been a location intent on attracting commercial and business investment rather than raising obstacles to development. The State Historic Preservation Division (SHPD) has rarely been confronted by a direct challenge to enforce the regulations included in the NHPA as they pertain to submerged cultural resources. There has never been an underwater archaeology program within the State, nor has an attempt been made to adopt the Department of the Interior's State and Federal Guidelines for the implementation of the Abandoned Shipwreck Act of 1987. The appropriate funding and trained personnel to carry out maritime heritage management have not previously been available to the SHPD.

This is not to say that State statutes do not make any reference at all to submerged cultural resources, they do. Hawai'i Revised Statutes Chapter 6E, which establishes the State's historic preservation program, makes specific mention of aviation artifacts and crash sites, as well as underwater sites as historic (50 years plus) properties. Penalties for the theft of State property from historical sites are clearly laid out. The State's Coastal Zone Management Program, as well, is directed to protect, preserve, and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian

and American history and culture. Such intentions exist, but as far as submerged historical resources are concerned, they have almost never been enforced.

State boundaries over Hawaiian waters within the archipelago are actually more complex than simply a three-mile limit drawn around all islands. The State has never actually explicitly limited itself to just three miles, but has cited the definition of “archipelagic” waters in the MHI. This serves to connect islands separated by more than three miles with an artificial baseline, from which to extend a continuous State claim between the entire chain. For the Northwestern Hawaiian Islands the area claimed is limited “to the extent of the State’s jurisdiction in most authorizing statutes.”⁴ Frankly, there remain areas of contested jurisdictional authority, given the somewhat open-ended definition of some of the State boundaries. Generally, though, the three-mile limit is accepted as the working model. The archaeological assessment of Navy properties (“Threats, Protections, Recommendations” notes within individual ship histories) is based on this commonly held three-mile limitation. The possible differences between Hawai`i’s definition of State waters and, say, the Federal Abandoned Shipwreck Act’s definition of State waters (three miles only) raises the potential for future disagreements.

U.S. Fish and Wildlife Service, Department of the Interior—The US FWS currently hosts a Cultural Resources Management program, which includes historical preservation and interpretation projects within the boundaries of National Wildlife Refuges (NWR’s). The Hawaiian and Remote Pacific Islands National Wildlife Refuge system contains eight NWR’s scattered throughout the Pacific. The Hawaiian Islands NWR itself, one of the eight, includes Pearl and Hermes Atoll, Lisianski and Laysan Islands, Gardner Pinnacles, Maro Reef, French Frigate Shoals, and Necker and Nihoa Islands. Midway Atoll NWR features the 1942 Battle of Midway, but takes into account as well the longer period of Navy activity both before and after World War II. Currently in the NWHI, the US FWS bases its jurisdictional claim on the boundaries established by the 1909 Presidential Order by Theodore Roosevelt, establishing the 10-fathom boundary to include all reefs, atolls, and islands within the first NWR.

The US FWS Cultural Resources Team, based on the West Coast, prepared a historic preservation plan for Midway Atoll in 1999, though it did not address any properties beyond the water’s edge.⁵ (Prior to that, the US FWS contracted with Manta Corporation for the completion of the 1979 *Tern Island Study*, an interdisciplinary planning document which included mention of historic and archaeological resources, as well as the US FWS responsibilities for preservation management.⁶) In September 2000 Secretary of the Interior Order 3217 designated Midway Atoll NWR as the Battle of Midway National Memorial, paying particular tribute to the aircraft and ships that did not return from the battle, and those that lie beyond NWR boundaries. The US FWS remains committed to the long-term protection, conservation, and interpretation of Midway’s history. To date, despite the intended focus on the Battle and ships and naval aviation, this plan does not consider nor include any submerged sites.

NOAA’s National Marine Sanctuary Program Department of Commerce----The NMSP considers all shipwrecks, submerged aircraft, and related historical, archaeological, and cultural properties within the boundaries of Marine Sanctuaries and Reserves as potentially important resources. The Sanctuary Act, NMSA 1972, provides the Secretary of Commerce the authority to designate and manage “certain areas of the marine environment possess[ing] conservation, recreational, ecological, historical, research, education, or esthetic qualities which give them special national significance.” In 2003 the NMSP’s Maritime Archaeology Center (MAC) was officially

inaugurated at Newport News, Virginia, to serve as the coordination point for the protection of maritime heritage resources within the NMSP. The Center is the research facility for the NMSP's newly formed Maritime Heritage Program. Researching, locating, assessing, and protecting submerged sites and educating the public about this resource and the nation's maritime heritage are, thus, important parts of the NMSP's overall mission. Both the *Monitor* Sanctuary (the nation's first marine sanctuary) and Thunderbay Sanctuary in the Great Lakes are specifically devoted to maritime archaeological resources.

In 2003 the Northwestern Hawaiian Island Coral Reef Ecosystem Reserve created the position of Maritime Heritage Manager for the Pacific Island region, a spot with responsibilities covering maritime heritage resources within the NWHI, Fagatelle Bay NMS in American Samoa, and (potentially) the Hawaiian Island Humpback Whale National Marine Sanctuary (HIHWNMS). This is the first time that any managing agency has actually provided for the effective management of submerged maritime resources in the Hawaiian Islands.

National Park Service, Department of the Interior—In 1972 the NPS first formed the Submerged Cultural Resource Unit (SCRU), based at the NPS archaeology center at Santa Fe, New Mexico. The SCRU team was created to conduct surveys to identify and evaluate historic shipwrecks in all National Park units. The office is currently known as the Submerged Resources Center (SRC), and the SRC team is highly regarded in the field of underwater archaeology. SRC members have investigated a number of sites within Hawai'i and the Pacific, including the USS *Utah* and the USS *Arizona*, and are currently involved in the ongoing monitoring at the *Arizona* Memorial.

Management Zones:

Like many states, Hawai'i's waters are categorized by a number of different artificial zones. State waters are generally accepted to consist of the area from the mean high water mark to three miles offshore. Imposed on specific sites within State waters are State and National Parks, Marine Conservation Districts, Marine Protected Areas, etc. From the three-mile limit to the 12-mile offshore boundary, states claim sovereign territorial rights, or territorial waters. The area between the 12-mile limit and the 24-mile boundary is known as the contiguous zone. Though not an area of complete national sovereignty, recognition of this zone allows regulation and enforcement of commerce and customs laws. The Exclusive Economic Zone or EEZ extends from the 24-mile limit to the 200-mile offshore boundary. Nations exercise fewer rights this far offshore, though the United Nation's Cultural Heritage Unit has drafted a Convention outlining national and international rights and responsibilities towards submerged cultural heritage resources within the contiguous, EEZ, and international sea areas.⁷

Overlain upon this generalized scheme are additional controlled zones consisting of National Marine Sanctuaries, Federal Marine Reserves, Reserve Protected Areas, National Wildlife Refuges, State Wildlife Sanctuaries, etc. Currently there are no underwater trails, marine historic parks, or any other type of cultural or historical marine (underwater) zones for any publicly accessible waters in Hawai'i. Hawai'i lists only two vessels as National Historic Landmarks: USS *Arizona* and USS *Utah*. The patchwork montage of jurisdictional management zones is complex. There is no comprehensive or summary document, so the broad picture must be pieced together from a number of currently unrelated sources.

Although, as made clear in national and international law, the U.S. Navy can and does assert jurisdictional authority over most of the wrecks contained within this report, the specifics of access and management should be worked out through communication and cooperation with a number of local and Federal agencies.

Potential for Management of Maritime Heritage Resources:

Maritime Heritage management must take into account numerous factors regarding the assessment and preservation of submerged sites. Natural transformations to the site, such as mechanical erosion, biological deterioration, and even storm damage and lava flows can threaten significant features and properties. Cultural transformations, such as looting or inadvertent damage from dredging or dumping, can likewise erase or otherwise damage the material record. The largest obstacle to the successful management of submerged historic resources in Hawai'i is not any single item that may directly affect a given site, however, but the overall lack of awareness and coordination among the variety of management agencies at the State and Federal level. As part of the Hawai'i inventory project, Jeff Adams (anthropology graduate student University of Hawai'i) conducted informal interviews with representatives from the State Historic Preservation Division, Navy Region Hawai'i, the National Park Service, CRM firms and the small avocational underwater archaeology community. His results make clear the effects of the total lack of management for a field that, many agree, is perfectly suited for Hawai'i's maritime setting. Adams' findings emphasize: 1) a general ignorance concerning the presence or absence of submerged cultural remains in any given area; 2) the feeling that there is fair to strong potential for underwater archaeological research and management activities in the state; and 3) general agreement that nothing or virtually nothing is being done to identify or manage submerged cultural resources in the state, including naval properties.

Some of the representatives gave examples of resources warranting further work, most particularly in the Pearl Harbor area. The justification for this type of submerged work in general lies in the significance of the material and the threat of visitation by recreational divers. It appears from the informal survey that the greater depth and lack of investigation of properties outside Pearl Harbor have contributed to the lack of regard for their presence or potential. None of the Navy personnel interviewed made mention of Navy vessels lost or sunk during exercises/target practice in Hawaiian waters as being worthy of investigation or management. The only area of focus so far has been Pearl Harbor, where magnetometer surveys and historical research indicates that there is a lot of "junk" down there, but poor visibility (allegedly) renders detailed surveys all but useless. Some report feeling that dredging has destroyed everything anyway. There do not appear to be any plans for further underwater work in the harbor, other than the 'breakout surveys' and other explorations accompanying pipelines and other work. The following summarizes the survey's contacts and responses.

Table 12: Maritime Management Survey⁸

name	position	contact	comments
Theresa Donham	State Historic Preservation Division archaeologist (former)	808.281.4620	Only archaeologist with State to have interest in u/w resources; carried out several inspections on own initiative. Wonders why NPS (which supports SHPD budget) has not forced the maritime issue with SHPD. Advisory Council on Historic Preservation should be contacted in cases of non-compliance resulting in resource destruction.
Richard Rogers	Hawaiian Airlines pilot; avocational u/w archaeologist	808.622.2947	Great potential for research and management in this field, especially naval wrecks. Sites will be increasingly threatened by high-tech diving techniques and rebreathers (deeper capabilities). Current (lack) state of affairs is absurd. Navy is not proactive but only makes claims of ownership, and SHPD has displayed total non-involvement. Individuals may care, but State not interested in archaeology for its own sake. Should try involving sport divers, credit them for their information/discoveries.
Steve Athens	Archaeologist, President of Institute of Archaeological Research Inc.	808.946.2548	Not aware of much activity or of many submerged resources in Hawai'i. Historical value is reason for concern regarding naval properties, tremendous potential/value for public access and interpretive planning, lots of public interest. Archaeologists have obligation to publish research in popular media.
Patrick Walsh	Pacific Division Naval Facilities Engineering Command archaeologist, Pearl Harbor Naval Complex	808.474.5921	Has not thought about submerged resources (terrestrial archaeologist); potential there for interpretive planning; traditional sites should be included. Navy preservation field outside NHC is without direction/responsibilities regarding maritime heritage.
Jeff Dodge	Pacific Division Naval Facilities Engineering Command, environmental planning division, Historic preservationist specialist	808.474.4886	No management going on, though potential for management in federal waters. Needs good survey, but difficult because of depth, bottom type etc. Shoreline survey may be minimal 1 st approach in Pearl Harbor. F-4 submarine one of few times submerged resources have raised concern. Has gathered some information on submerged resources at Pearl, willing to share.
Steve Smith	Environmental department, Navy facilities engineering services center, Pearl Harbor	808.474.5922	Significant debris fields in Pearl Harbor entrance channel and elsewhere. Harbor visibility very poor, limits survey. Ship husbandry diving from piers goes on every day. Has made 230 dives in Pearl Harbor/entrance area over last 2 years (ecological surveys). Has interest in West Loch LST explosion area. Call back in a few months.

name	position	contact	comments
Annie Griffin	Pacific Division Naval Facilities Engineering Command Supervisory archaeologist	808.474.4887	Submerged resources not Facilities Command concern, has not been brought up...will contact NHC when necessary. Did demolish and rebuild pier, sub wreck believed in area (not found by side scan survey).
Conrad Erkelens	Fleet Environmental Division Natural and cultural resources manager	808.471.5455	Handles only human remains, ordnance, proprietary technologies; not aware of submerged cultural resources.
Pat McCoy	State Historic Preservation Division acting chief (w/ Sara Collins)	808.692.8029	Field has not received much attention. Potential there for inter island shipping and Hawaiian sites. Need to pay more attention to development and harbors, but SHPD has no data or staff; poor prospects for funding or staff in future. Not much involvement in field outside Kaua'i/Smithsonian project (Paul Johnston and <i>Cleopatra's Barge</i>). Has referred SHPD to Hans Van Tilburg in the past.
Daniel Martinez	USS <i>Arizona</i> Memorial Park Service historian	808.422.2771	State has great potential, needs federal recognition from Dept. of Interior; DOI has mandate to collaborate with State. Consortium of people needed for national and state initiative. Field should be showcased to water-oriented visitors. Inventory needs to be done. Wreck hunting not huge problem, but public needs to be informed of laws. Potential to tie together all naval properties. Problem of no cohesive program in Pacific. Problem of destruction of historic properties by DLNR [Army Air-Sea rescue crash boat <i>Bali Hai</i>]. NHC should partner for preservation.

Obstacles:

Despite interest in the field from the small avocational group in the Islands, and the proven commercial exploitation of artificial reef/wreck sites by the sport diving companies, both Federal agencies and the State itself seem to have left the topic of maritime heritage resources untouched and unexamined. This naturally raises a number of management concerns regarding Navy properties in Hawaiian waters.

- Deep-water targets are becoming more accessible due to technological advancement; due to their previous isolation, these same targets are the most intact and undisturbed material records. A rumored ship (possibly Navy material) in 300 feet of water is the best example of this.
- Dredge spoils from construction on O`ahu are often dumped off the south shore, where a number of Navy properties are located. The potential effect on such sites remains unknown.

- Navy properties have been looted; several aircraft and shipwreck sites are rumored to have been disturbed and material removed. One aircraft site has been damaged by an illegal mooring cable attached to the propeller shaft.
- Nearshore dredging and construction projects currently do not involve any NHPA section 106 survey for cultural resources; this issue of lack of compliance has been raised at the State level several times in the past, so far without definite results.
- Resource management in Hawai`i lacks a coordinated approach.

Management Recommendations:

In general there are two levels of activities which could help improve the management situation for naval properties in Hawai`i. The first involves specific recommendations for individual sites, as suggested in the “Threats, Protections, Recommendations” section of the ship history chapter. These are site-specific low-level activities carried out on a case-by-case basis. The second involves a broader approach to the problems of lack of management and coordination. Certain projects have the capability of addressing larger concerns, and should therefore be granted higher priority.

- Expand historic theme among islands (not just Pearl Harbor, but attack on O`ahu; not just WWII, but Naval Aviation in the Pacific). Adams suggests this could perhaps take the form of a statewide park with a unified interpretive regime. That would provide an entrée for subprograms addressing the history of the Navy in the Pacific, WWII in the Pacific, etc. This kind of broad approach fits well with the suggested multiple property nomination for amphibious vessels and vehicles (see “potential nominations to the National Register”).
- Encourage coordinated management through cooperative agreements with State and Federal management agencies. An example would be a coordinated project between the Naval Historical Center, the NWHI Coral Reef Ecosystem Reserve, and the US FWS at Midway.
- Support Navy Region Hawai`i preservation efforts by emphasizing the moral and legal cultural resource management obligations for Hawai`i and the Pacific. Adams notes that, whereas the NHC has the responsibility and authority to manage submerged naval resources, field offices like the environmental division at Pearl Harbor have the data and on-site capability (theoretically). There should be some way of bringing incentives “in the field” in line with the goals of the NHC. The interest among cultural resource management staff may be there, but currently submerged resources are not their direct responsibility.
- Encourage nomination of Navy property (USS *Macaw* at Midway) to the National Register for Historic Places or National Historic Landmark status.
- Participation by the NHC in the survey of a deep-water site in order to demonstrate proactive management of widespread but previously unrecognized resources.

There are, no doubt, other methods to increase the active management of submerged naval properties in the Hawaiian Islands, but all will face the fact that all aspects of this field are relatively new to Hawai'i.

Table 13: Site Jurisdiction Estimation⁹

UH Site number	Vessel name	Navy property	Agency area jurisdiction
1	<i>Levant</i>	Yes	unknown
2	<i>Saginaw</i>	yes	state
3	<i>Bennington</i>	no	Unknown
4	<i>S-4</i>	yes	Unknown
5	<i>Alton</i>	yes	Unknown
6	<i>Sanderling</i>	yes	International waters
7	<i>Ingraham</i>	yes	fed
8	<i>S-19</i>	yes	fed
9	<i>F-4</i>	yes	USN
10	<i>Utah</i>	yes	USN/NPS
11	<i>Arizona</i>	yes	USN/NPS
12	<i>Walker</i>	yes	Unknown
13	<i>Neches</i>	yes	Fed
14	<i>YP-277</i>	yes	Fed USFWS
15	<i>YP-183</i>	yes	state
16	<i>Macaw</i>	yes	Fed USFWS
17	<i>YT-247</i>	yes	International waters
18	<i>LCT-984</i>	yes	Fed
19	<i>LCT-988</i>	yes	Fed
20	<i>LCT-961</i>	yes	USN
21	<i>LCT-963</i>	yes	USN
22	<i>LCT-983</i>	yes	USN
23	<i>LST-69</i>	yes	USN
24	<i>LST-353</i>	yes	USN
25	<i>LST-480</i>	yes	USN
26	<i>LST-43</i>	yes	Unknown
27	<i>LST-179</i>	yes	Unknown
28	<i>Shahaka</i>	yes	International waters
29	<i>S-28</i>	yes	Fed
30	<i>Baltimore</i>	no	Fed
31	<i>YG-44</i>	yes	USN
32	<i>YF-926</i>	yes	fed
33	<i>YC-883</i>	yes	USN
34	<i>Kailua</i>	yes	Fed
35	<i>Oklahoma</i>	yes	International waters
36	<i>New York</i>	yes	Fed
37	<i>Nevada</i>	yes	Fed
38	<i>YOGN-42</i>	unclear	State/(HIHWNMS)
39	<i>YO-21</i>	unclear	State/(HIHWNMS)
40	<i>YMS-107</i>	yes	Fed
41	<i>Mission San Miguel</i>	yes	NWHI CRER
42	<i>Stickleback</i>	yes	Fed
43	<i>Chittenden County</i>	yes	Fed

UH Site number	Vessel name	Navy property	Agency area jurisdiction
44	<i>Tinosa</i>	yes	Fed
45	<i>Barbero</i>	yes	Unknown
46	<i>Fessenden</i>	yes	Fed
47	<i>TR-4</i>	yes	State
48	<i>Bluegill</i>	yes	Fed
49	<i>Carbonero</i>	yes	Unknown
50	<i>Chahao</i>	yes	Unknown
51	<i>Scrimmage</i>	no	State
52	<i>YO-257</i>	no	State
53	<i>PH-1</i>	yes	state
54	<i>PH-2</i>	yes	state
55	<i>PH-3</i>	yes	state
56	<i>PH-4</i>	yes	state
57	<i>PH-5</i>	yes	state
58	<i>PH-6</i>	yes	state
59	<i>PH-7</i>	yes	state
60	<i>PH-8</i>	yes	state
61	<i>Hawaiiikai-1</i>	No	state
62	<i>Hawaiiikai-2</i>	No	state
63	<i>Hawaiiikai-3</i>	No	state
64	<i>Mamala-1</i>	yes	state
65	<i>Mamala-2</i>	yes	state
66	<i>Maui-1</i>	yes	State/(HIHWNMS)
67	<i>Maui-2</i>	yes	State/(HIHWNMS)
68	<i>Maui-3</i>	yes	State/(HIHWNMS)
69	<i>Maui-4</i>	yes	State/(HIHWNMS)
70	<i>MCBH-1</i>	yes	state
71	<i>Waianae-1</i>	yes	state
72	<i>Waianae-2</i>	yes	state
73	<i>Waikiki-1</i>	yes	state
74	<i>Midway-1</i>	yes	Fed/USFWS
75	<i>Midway-2</i>	yes	Fed/USFWS
76	<i>Tern-1</i>	yes	Fed/USFWS
77	<i>Corsair midway</i>	yes	Fed/USFWS
78	<i>Corsair kure</i>	yes	State
79	<i>Corsair kokohead</i>	yes	state
80	<i>PBY-5 Kaneohe</i>	yes	USMC
81	<i>Hellcat ewa</i>	yes	state
82	<i>Dauntless kokohead</i>	yes	state
83	<i>Avenger kaneohe</i>	yes	state
84	<i>PB4Y kihei</i>	yes	State/(HIHWNMS)
85	<i>Hellcat kihei</i>	yes	State/(HIHWNMS)
86	<i>Seaplane-1</i>	yes	state
87	<i>Seaplane-2</i>	yes	state
88	<i>Seaplane-3</i>	yes	state

Table 14: Cumulative Totals per Agency

Agency	Number of wrecks
Department of Land and Natural Resources, State of Hawai`i	38
U.S. Fish and Wildlife Service	6
NOAA National Marine Sanctuary Program	9
National Park Service	2
“Federal” waters (3-200 miles offshore)	17
U.S. Navy	11
U.S. Marine Corps	1

Table 15: Cumulative Totals per Management Unit

Management Unit	Number of Navy wrecks
Pearl Harbor National Historic Landmark PHNHL	10
Hawaiian Island Humpback Whale National Marine Sanctuary HIHWNMS	(8)
Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve NWHI CRER	1
Hawaiian Islands National Wildlife Refuge	2
Kure Atoll State Wildlife Refuge	2

¹ *ICRMP* 2002: 1-1

² *Ibid*, instruction 4715.3: 1-2

³ SECNAVINST 4000.35, cited in *ICRMP* 2002: 1-2

⁴ Athline M. Clark, Division of Aquatic Resources, personal communication with author 5/7/03

⁵ Speulda, Raymond, and Parks 1999

⁶ Manta 1979

⁷ The “2001 Convention on the protection of the Underwater Cultural Heritage.” Though the United States has stated that it will not sign this Convention, NOAA and officials of the Federal Archaeology Program have made clear that the U.S. agrees with the Convention’s management guidelines as stated in the Annex (Rules).

⁸ Selected excerpts from Jeff Adams’ survey

⁹ “Site” jurisdiction addresses the area surrounding the wreck. This represents a “best guess” for vessels listed simply within vicinity of Pearl Harbor (inside the 200 mile limit). Ownership for the majority of vessels listed in this report clearly remains with the Navy and the U.S. Government. Unless sale to private ownership or state is documented, wrecks are assumed to remain property of the U.S. Navy. As of 2003, NOAA’s HIHWNMS sanctuary is a single-resource protected area (humpback whales), and as such does not actively manage its maritime archaeological resources. Important: these totals do not take into account the many reported (but unconfirmed) aircraft losses in Hawaiian waters. Only confirmed aircraft sites are included in this report.

NOMINATIONS to the NATIONAL REGISTER for HISTORIC PLACES

Nomination to the National Register for Historic Places remains one of the main tools for protecting historic sites and properties. This process applies to historic ships and shipwrecks just as it does to historic buildings. National Register Bulletin 20 addresses in detail guidelines for nominating historic maritime properties to the National Register. Shipwrecks, included in the guidelines as a distinct vessel “type,” are defined as “a submerged or buried vessel that has foundered stranded, or wrecked. This includes vessels that exist as intact or scattered components on or in the sea bed, lake bed, river bed, mud flats, beaches, or other shorelines, excepting hulks.”

In order to be listed on the Register, the nomination of a maritime property must address seven characteristics of historic integrity, including integrity of location, design, setting, materials, workmanship, feeling, and association. It must also meet one or more of the National Register criteria A, B, C, and D. Criterion A ties the property to events that have made a significant contribution to American history; B to the lives of significant persons in the historical past; C to characteristics of a distinctive type or period or particular work of a noted builder; and D to the site’s potential simply to yield a significant amount of historical or archaeological information. In general, vessels less than 50 years old do not qualify for the National Register.

Depending on the integrity of the physical remains, shipwrecks may be classified as either structures (relatively intact hulls), archaeological sites (broken or scattered sections with localized deposition), or objects (widely scattered discrete artifacts). Shipwreck sites typically feature attention to questions of description, significance and geographical data.

At present there are five possibilities for nomination to the Register. While several of the more familiar major combatants now lying in Hawaiian waters, such as the battleships *Nevada* and *New York*, certainly qualify due to their construction and significant ship histories, there are no immediate threats to these deep sites. Basically, nomination of these sites would serve as recognition and commemoration, but contribute little to their protection. Protection from what? Likewise, the historic ship *Baltimore* remains in deep water. Several other vessels, such as USS *Bennington*, *Saginaw*, and *Alton* (ex-*Chicago*) remain unlocated, with no “site” specified for nomination purposes. Were these to be located, or were losses involving significant casualties, such as *S-28* and USS *Neches* ever to be found, they would provide prime opportunities for nomination. USS *Utah* and *Arizona*, as National Landmarks themselves, are already spoken for. At the moment, naval vessels that would benefit most from protections associated with recognition and specific designation are those that combine definite National Register criteria with relatively shallow and accessible (“spoilable”) sites.

The necessary research involved in nominating shipwrecks to the Register often includes both fieldwork and historical documentation, and therefore a purely archival inventory cannot produce complete nominations. The following entries summarize possible nomination information for these U.S. Navy shipwrecks.

USS *Macaw* ASR-11

The site of USS *Macaw*, as described in the individual ship history, represents the only accessible remains of an ASR, a true Navy workhorse. Additionally, equipment carried by these ASR’s, such as the McCann Rescue

Chamber, and the deep diving rescue and salvage methods employed, were innovative steps in the field. It's interesting to note that submersible pontoons used in salvage were developed in Hawai'i (see *F-4*). The S-class submarine *S-4*, used as a test hulk for the development of submarine rescue operations, also lies in Hawaiian waters. In other words, local associations add to the context and significance of the wreck site.

Macaw was lost while attempting the salvage of USS *Flier* at Midway Island, 1944. For all the submarines operating in the western Pacific, the Midway Submarine Advanced Base, established in July 1942, was the last stepping off point before extended and often dangerous wartime patrols. Additional food and fuel, torpedoes, and rest and relaxation opportunities at Midway made these extended patrols possible. Submarine activities and the importance of the base only increased during the war. Midway is a U.S. possession now managed by the U.S. Fish and Wildlife Service. USFWS possesses an historic preservation management plan, which emphasizes Midway's role during World War II. Some 11 properties at Midway on land are currently listed as historic properties within the Battle of Midway National Memorial. With the exception of the torpedo shop building and some submarine netting and a torpedo, though, there are no other properties even associated with the critical role of submarines listed in the Midway inventory.¹ Bob Dieli, USFWS outdoor recreation manager for Midway Atoll, has expressed interest in bringing out the submarine base component of Midway's history, as has Lou Ann Speulda, member of the USFWS Cultural Resources Team. ASR-11 can and should fulfill that role as a national historic landmark.

Properties eligible for the National Register must possess both historic significance and integrity. The loss of USS *Macaw* at Midway and associated material remains relate directly to three of the four basic National Register criteria, which establish historic significance. Under criterion A—event or pattern of events, *Macaw* represents 1) the increasing importance of submarine operations during World War II in the Pacific, and 2) the tragic wartime loss of vessel and crewmembers at Midway. In the broad pattern of national events, submarines made their first significant contributions during World War II, and since then the “Silent Service” has grown into an extremely powerful factor in military and political/diplomatic affairs. Submarine operations during the formative period of the 1940's were inherently very dangerous, and dedicated rescue vessels had a necessary and critical role to play. This rescue and salvage work featured its own hazards, as documented by the loss of ASR-11. The story of the event and subsequent salvage operation, as contained in records from the National Archives, has only begun to come to light. The bodies of the five crewmembers were never recovered. Furthermore, the site itself is literally the creation of the salvage divers from USS *Shackle* who, for months, worked to reduce the vertical profile. *Macaw* is the record of this wartime salvage “event.” Under criterion C—type of construction, *Macaw* represents specialized submarine rescue vessels, an important part of the development of submarine warfare. The Chanticleer class ASR's represented the biggest and best of critical wartime developments. Building plans (not yet located) and construction details would expand on the technological evolution of the ASR, a design concept continued today by USS *Grasp* ARS-51 and USS *Grapple* ARS-53. Also, as noted above, technological advancements applied to the equipment and methods employed by *Macaw*, as well as *Macaw* herself. Finally, in lieu of building plans, the remaining structure of USS *Macaw* is the physical record of ASR construction, emphasizing the archaeological component of criterion D—archaeological content of a site. *Macaw* has certain significance at the local level (Midway history), the state level (Pearl Harbor assets and activities within the Northwestern Hawaiian Islands), and the national level

(development of submarine operations and events during World War II). The site commemorates the history and accomplishments of Navy salvage and diving units, topics rarely addressed in any way.

The *Macaw* site is the only known representational sample of a specific class of Navy vessel. In any database inventory, this feature of uniqueness should be highlighted as contributing to the site's assessment in terms of priority. One of the main functions of the database is to point out significant gaps in the material record. World War II ASR's are that gap.

The question of historic integrity involves a number of related parameters that quantify significance in terms of physical characteristics of the property. These include location, design, setting, materials, workmanship, feeling, and association. The physical remains of USS *Macaw* lie where the vessel was lost at Midway (now a National Memorial), still extending into the single channel that leads into the deep lagoon. This is directly across the channel from the location of the former submarine base. There were no changes to *Macaw*'s basic design at the time of her loss. Integrity of setting usually means that the candidate vessel is maintained in the water, not particularly applicable to shipwrecks. It is fitting, though, that the submarine rescue and salvage vessel is sunk at the spot where she attempted to salvage a submarine. Likewise, materials and workmanship refer more directly to vessels physically maintained as replicas. No changes have been intentionally made to the physical remains of USS *Macaw* since salvage operations ceased in 1944. (Salvage itself does not necessarily compromise integrity, particularly when the salvage attempts following *Macaw*'s loss were part of the site formation event.²) Integrity of feeling alludes to a tangible aesthetic or historic sense of the past. *Macaw*'s prominent bow section, emerging from the reef, along with the heavy salvage gear and anchors which lie nearby, evoke sense of a massive auxiliary workhorse of this naval ship, while the twisted remains of the superstructure are testimony to the demolition of her upperworks and the long salvage and clearance effort. There is a narrow window of opportunity for diving the site, due to the same difficult environmental conditions that led to *Macaw*'s loss and obstacles during the attempted salvage. Strong channel currents move in and out of the lagoon, and the site is only accessible during periods of good weather. This adds a certain element to the feeling of the site. Finally, integrity of association involves features of the waterfront that are related historically to the vessel. Buildings on shore at Midway capture the feeling of the War period, enhancing the integrity of location. A strong case can be made for historic integrity of the physical remains of USS *Macaw*.

Macaw is more than 50 years old. Though her superstructure has been reduced, her lower hull remains relatively intact and the vessel occupies the same dimensions on the sea floor as she did when afloat. The National Register categorizes all submerged cultural resources as either sites or structures, and shipwrecks may fit into either of these categories.³ Mostly intact hulls, as is the case with *Macaw*, are historic structures. An archaeological site description of the shipwreck is necessary for wreck site nominations. A full inventory of features, as well as a complete site plan, awaits further site work. As more information on the vessel, her loss, and the current conditions of the site comes to light, the *Macaw* story continues to expand.

USS LST-480

LST-480, rather than representing a rare and highly specialized vessel, represents the successful design of a mass-produced, highly practical, "generic" amphibious landing ship. LST's, as described within the individual ship

history section, were multipurpose cargo carriers, landing their tanks and trucks and troops on beaches, or launching tracked amphibious vessels at sea. LST's served alternately as hospital facilities, water ships, and even "aircraft carriers."⁴ Their slow speed (10 knots) led to the nickname "Large Slow Targets," and their ungainly appearance fostered the term "ugly ducklings." More than 900 LST's were built during the war. Despite the somewhat unglamorous nature of the LST, their capabilities were essential to the island-hopping amphibious campaign waged in the Pacific. Naval historian Norman Friedman has emphasized this role, referring to LST's as "an entirely new type of ship."⁵

Like USS *Macaw*, historic significance for *LST-480* encompasses three of the four National Register criteria. The event of *LST-480's* loss (criterion A) was a major tragedy for the Navy at Pearl Harbor during wartime in which a number of other similar vessels were destroyed as well and approximately 163 men died and 396 were wounded. Impressions have been recorded by multiple eyewitness accounts. All information about the explosions was immediately censored in an attempt to prevent any security breach regarding the pending invasion. Investigations into the causes of the initial explosion reveal the segregation of the labor force at the West Loch ammunition depot, a situation reminiscent of similar events such as the July 1944 Port Chicago Naval Magazine disaster in which 320 sailors, the majority of whom were African-American enlisted men, were killed. The event on a local level, therefore, has implications for operations at Pearl Harbor, Navy control of public information, and race and labor and segregation issues in the military. It would be interesting to compare the May 1944 event at West Loch with the Port Chicago disaster two months later.

Regarding *LST-480's* wartime record during the Gilbert Islands "Operation Galvanic" November and December 1943, and occupation of Kwajalein and Majuro atolls during February 1944, more needs to be learned.⁶ From the broad perspective, the event at West Loch symbolizes the role of LST's in amphibious warfare, particularly as logistical auxiliaries and floating ammunition depots in support of the massive amounts of firepower needed during beach invasions. This role is part of the logistical train which, compared to the major combat vessels, has not received an appropriate amount of attention (yet).

LST construction and design (criterion C), unlike that of the ASR, has been fairly well documented. The evolution of the large capacity multi-decked durable cargo carrier, one capable of adjusting its own trim as well as landing directly on beachheads and offloading men and machinery in record time, is a success story for the Navy. Building plans and details on critical design modifications exist. *LST-480* is historically significant in as much as the material remains record the construction features of this class of vessel. The wreck, though, gains specific importance from the fact that, to date, there has been very little information uncovered regarding the archaeological characteristics of the wreck and the immediate vicinity (criterion D). So much material was lost, and there has been so little subsequent use of the West Loch area, that the archaeological value of the site is likely high. There is potential to learn a great deal about the historic event by physical survey.

Historic integrity for *LST-480* is more problematic. The vessel's location remains the same, but the area is now a backwater of Pearl Harbor, without the historic infrastructure that once characterized the ammunition depot. Furthermore, LST's are more commonly associated with beach landings, and not generally imagined as merely moored at a loading barge. The setting at Pearl Harbor's West Loch is appropriate, but integrity of association may

be stretched to the limit, picturing the LST wreck having any connection with the surrounding and vacant shore. The parameters of materials and workmanship, like USS *Macaw*, are not quite applicable to the shipwreck site. The integrity of feeling remains to be seen, pending a cursory inspection and survey of the restricted access site.

As the most prominent remaining artifact of the explosions that sank a number of vessels, the potential nomination of *LST-480* serves as a way to acknowledge all of the losses that occurred at West Loch on 5 May 1944. These vessels and their site are already within the boundaries of the Pearl Harbor National Historic Landmark, defined as co-terminus with any area that served as an active Navy base. Beyond being located within the Landmark boundaries, *LST-480* has no other designation. A memorial plaque on shore records some images and information about the event, but very few visitors have access to the area.

Submarine *F-4*

It is odd that accidents sometimes seem to do as much or more towards inducing technological advancement as more intentional research and development; certainly the history of submarine design has been marked by notable tragedies such as the loss of *S-4* in 1927 off of Provincetown, Massachusetts (see *S-4*). The earlier loss of submarine *F-4* provides a similar case. She was among the first group of submarines to be based in Hawai`i. Her loss with all hands in 1915 was the first major submarine tragedy for the U.S., and the greatest naval disaster for the nation since the sinking of USS *Maine* in 1898.⁷ Frankly, the U.S. Navy, in 1915, was found to be wholly unprepared to carry out effective search, rescue, and salvage efforts.⁸ The subsequent salvage and investigation led to a better understanding of submarine design, record-breaking diving operations, and the innovation of salvage gear (see individual ship history). Important design weaknesses involving corrosion and the lead lining of battery compartments, and how these weaknesses could adversely affect trim, came to light. Divers surpassed the previous Navy depth record of 274 feet by 31 feet (305). They underwent a pre-dive pressure test in a steel tank to ascertain their ability to handle the record-breaking depth (this during a period before the clear understanding of the effects of depth on physiology). The “marine mike” was invented on the spot by Ensign Bates on board USS *Alert*. This submarine detector consisted of two 300-foot long insulated copper wires, with projecting contacts at the ends. When both probes made contact with ferrous metal, an electrical circuit was completed and an audible click was heard over the headsets.⁹ Thus, confirmation could be attained that the wire sweeps had indeed located a submarine, and not simply become snagged on rock or reef. Finally, submersible salvage pontoons capable of 60 tons of lift were designed specifically for the recovery of *F-4*. These were delivered to the site by the armored cruiser USS *Maryland*. Such equipment became a standard for the salvage field, and examples of these pontoons can still be found scattered around the Hawaiian Islands. These evolved beyond simple empty containers, but were floodable diver-operated vessels that contained their own internal pressurized air source. As a result of the loss of *F-4* (as well as a similar close-call involving submarine *E-2*), the Navy Department ordered all submarines to be fitted with new and thicker steel hull plates in the vicinity of *F-4*'s corrosion area as well as a double thickness of lead lining in the battery compartment.¹⁰

For the history of the Navy in the state of Hawai`i, and for the more general history of submarines and submarine salvage, *F-4* can be intimately tied to an event which has made a significant contribution to the broad pattern of the American past (criterion A). Were it not for the *F-4* tragedy, deep diving operations and innovations

in submarine salvage would have continued to remain at their relatively undeveloped stage. Furthermore, *F-4* and the recovery operations can be associated with several notable historic figures. Though *F-4* was built and launched by Moran Brothers in Seattle, Washington, her construction is directly attributable to the early basic designs of the Electric Boat Company in Groton, Connecticut (successor to the Holland Torpedo Boat Company). F-class submarine construction began in 1909 (SS-20 through SS-23). The E and F-class boats were the first production submarines to be powered by diesel engines. John Holland (1824-1914), of course, is regarded by many as the father of the modern submarine, responsible for the creation of the basic design elements. In the field of submarine development, Holland (arguably) accomplished more than any contemporary or previous inventor, American or otherwise.¹¹ Holland produced the Electric Boat Company's basic designs. Therefore, *F-4* represents a crucial technological stage in the design history of submarines (criterion C), as well as a property associated with the life of a significant person in the nation's past (criterion B).

John Holland is not the only name associated with *F-4*. One could make the case that Chief Gunner's Mate Frank Crilley, the Navy diver who first surpassed 300 feet in depth and also rescued a fellow diver from 250 feet during the submarine salvage operations, should also be tied with the submarine. Crilley was awarded the Medal of Honor for his salvage and rescue heroism in 1929. In truth, all of the five divers involved in *F-4*'s salvage, including W.F. Loughman, George D. Stillson, S.J. Drellishak, and F.C.L. Neilson, conducted work at 305 feet and deserve mention. In those days, 12 minutes of bottom time required 1 hour 47 minutes of staged decompression. But the figure who often goes unnoticed is the salvage master, Lieutenant Commander (later Rear Admiral) Julius Augustus Furer. Admiral Furer served in the Navy Department in both World War I and World War II, and played a number of significant roles as Navy constructor, inventor, administrator, and author (*Administration of the Navy Department in World War II* 1959). He played an important part in developing research and coordination between the U.S. Navy and civilian scientists.¹²

The issue of historic integrity for *F-4* can best be addressed by a physical assessment of the property itself. Integrity of feeling, in particular, cannot be assessed for a property that is currently buried in a mud-lined trench. Certainly, *F-4*'s current location near the Pearl Harbor submarine base is perfectly fitting, and the submerged setting is most appropriate for a submarine. No known design changes were made following the vessel's loss in 1915. Integrity of materials and workmanship do not really apply to a shipwreck such as *F-4*. Unfortunately, the integrity of association, or proximity to any vestiges of the historic submarine base, is low. *F-4* arrived in Hawai'i prior to the creation of the modern submarine base, and was moored at Honolulu Harbor at the foot of Richards Street. Nonetheless, location, design, setting, and possibly the more subjective "feeling," grant the submarine its historic integrity.

F-4 lies within the boundaries of the Pearl Harbor National Historic Landmark, defined as co-terminus with any area that served as an active Navy base. Beyond being located within the Landmark boundaries, the submarine has no other designation.

Gasoline Barge YOGN-42

Possibly the most unlikely candidate for nomination among these selections, the utilitarian barge *YOGN-42* remains stubbornly hard aground on Lana'i's north shore, a testimony to the strength of this steel-reinforced

concrete design. While some may feel that such a non-self propelled unglamorous service vessel might not qualify for special recognition, criterion C, characteristics of a distinctive type or period or particular work of a noted builder, does not necessarily require the presence of large guns or even of engines. Concrete vessels have been called an experiment in shipbuilding. The lack of historical data on the vessel's wartime service renders criterion A, association with a significant historic event, non-applicable. No particular historic figure rises to attention, so criterion B remains only a distant possibility. Only criterion C, and possibly criterion D, the site's potential simply to yield a significant amount of historical or archaeological information (in lieu of accessible building plans or other documents), contribute to *YOGN-42*'s significance.

The most distinctive element of the site is the vessel's concrete hull type. With the scarcity of steel during World War I, Woodrow Wilson approved construction of 24 concrete hull ships. By the time 12 had been completed, the War had ended. Most eventually ended up as floating oil barges or breakwaters. One became a restaurant and is now a fishing pier. One is now a ten-room hotel. During World War II steel again became scarce, and in 1942 the US Maritime Commission contracted for the construction of 24 concrete ships, both lighter and stronger than their World War I counterparts. Two of these ships were sunk as blockships during the Allied invasion of Normandy. Nine were sunk as breakwaters for a ferry landing at Kiptopeke, Virginia. Two more are wharves in Yaquina Bay, Newport Oregon. Seven, including *YOGN-82* launched (like *YOGN-42*) by Concrete Ship Constructors at National City, California, are part of a giant floating breakwater on the Powell River, Canada.¹³ Besides concrete ships, the U.S. Maritime Commission ordered the construction of several fleets of concrete barges during World War II (see individual ship histories). None are currently known to be listed as historic properties.

The historic integrity for this large structure comes chiefly from its characteristics of design, setting, materials, and feeling. There are not many examples of wartime concrete ship construction available for examination, so investigation could lead to a better understanding of design details. Not enough is known about post-war history or modifications to be able to assess historic design at this point. Although aground, *YOGN-42* remains in the water, and the strong currents and winds of the channel give this vessel the distinct illusion of still being underway; the setting is striking. The materials used for construction, in this case, grant this barge its considerable ability to withstand the surf and elements on the reef. (The same is true for the use of ten concrete ships and barges as an enduring breakwater on the Powell River.) Integrity of feeling, as always a more subjective category, combines a number of factors for *YOGN-42*. Suffice it to say that, due to the feeling associated with this site, this barge is most frequently (mis) identified as something completely different, often as a Liberty ship, by casual visitors. The property and the remote setting combine to produce the desire to attach a significant history to this service vessel. This is one measure of the characteristic of integrity of feeling.

Though integrity of location or association, in this case, contribute little to the historic naval significance of this gasoline barge (Shipwreck Beach on Lana`i is merely a disposal ground for abandoned ships, not a facility in any way associated with tanker or barge operation), the location itself is important in other more public terms. Shipwreck Beach is the best example of a "rotten row" or disposal area in the Hawaiian Islands. Not only have a number of historic and non-historic vessels been abandoned there, but many have been unintentionally lost on the shore's treacherous windward reefs. There are other naval properties, both confirmed and rumored (see *YO-21*)

along this shore, but *YOGN-42* is by far the most prominent and accessible, and remains the single property from which the whole eight mile stretch derives its name “Shipwreck Beach.” Tourism agencies actively promote the “historic” area, and visitors make the trek down to the remote location expecting a striking example of maritime history (and they are not disappointed). The sheer size and intact nature of the structure is impressive, as is the natural beauty of the immediate environment. These elements should be taken into consideration, beyond the characteristics that limit “integrity of location” strictly to a ship’s historic function.

There is currently no specific designation that grants *YOGN-42* protection (beyond property of the Navy status) in any way.

AMTRACs, Landing Craft, and the Pearl Harbor Defensive Sea Area

For more than a decade, the Hawai`i Undersea Research Laboratory (a NOAA and UH combined marine research unit) has conducted training dives as part of their research program. Primarily due to senior submersible pilot Terry Kerby’s interest in discovering the Japanese midget submarine sunk outside the harbor entrance on 7 December 1941, these dives have been conducted within the Pearl Harbor Defensive Sea Area (see article in Supplementary Materials). As a by-product of this informal search, a number of AMTRACs (amphibious tracked vehicles) and landing craft have been located, and these have been included in the current inventory as unidentified but potentially historic sites (PH-1 through PH-8).

Nomination of any of these sites on an individual basis should probably await confirmed identification of the particular vessel or vehicle. But the potential for inclusion of the general area, which is a disposal or loss site for multiple potentially historic properties including the Japanese midget submarine, is a distinct possibility. The attention raised by the Japanese submarine has brought the issue of designation for this area to the table. Though there may be other property related to the sinking of the Japanese submarine, such as unexploded ordnance, multiple property designation applies more to the numerous amphibious vessels and vehicles within the area. The historic significance of trends and patterns within related property types is the main criteria for multiple property nomination.¹⁴ Amphibious vessel design, a specialized and innovative field including the LVT’s, LCU, and DUKW discovered so far, is the theme. (Multiple properties possibly related to a single historical event, the West Loch explosion in May 1944, is a possible secondary unifying factor.) The several early versions of LVT’s (see PH-1 through PH-4) relate particularly to a distinct and critical period of development for naval transportation in the late 1930’s and early 1940’s, the success of which had major implications for training in the Hawaiian Islands and World War II combat throughout the Pacific. Very few documents or museum facilities (with the possible exception of the LVT Museum located at Camp Pendleton, California) preserve aspects of this technological development.

According to National Park Service personnel at the USS *Arizona* Memorial, the Defensive Sea Area just south of the channel entrance is not now within the boundaries of the Pearl Harbor National Historic Landmark. Whether the future designation and protection of properties within this area takes the form of an extension of the harbor’s National Landmark boundaries, or of the creation of a specific National Marine Sanctuary (NOAA’s NMSP program), or of specific listings for individual properties, is not yet clear. The issue does, however, emphasize the need for cooperative multi-agency management of maritime resources, and is useful for raising awareness of this field in a state which has not previously recognized submerge cultural resources.

The best solution would be to assure that any future designation include all multiple properties within a specific geographic area, rather than a single property such as the Japanese submarine. It makes little sense to protect a single significant World War II site while ignoring other World War II properties in the immediately adjacent vicinity. Several of these properties, while not playing a role in the major event of the Pearl Harbor attack, are quite significant for their own reasons. And there is great potential for the discovery of more historic sites within the area. Multiple property designation of these amphibious vessels and vehicles would serve to focus research efforts and bring attention to a technological and naval history previously unexamined. Furthermore, there are a number of other landing craft and AMTRACs located beyond the boundaries of the Defensive Sea Area, near other islands, etc. While these should not be included within the geographic boundaries of the Sea Area, they may perhaps benefit from protective measures granted similar multiple properties, for they are related to the exact same technological and naval theme. These sites in shallower waters, scattered as they are in separate individual locations, are definitely in need of additional recognition and protection. Indeed, even concrete vessels similar to *YOGN-42* can be related to the operations of vehicles like LVT's and DUKW's. For example, during beach invasions concrete ships were sometimes sunk in an attempt to create protective breakwaters for the landing craft.

The amphibious naval theme may be the most likely category for potential multiple property listings in the Hawaiian Islands. The idea of a multiple property listing based on a technological theme and specific time period fits well with the suggestion to expand the public interpretation of naval history in Hawai'i beyond the Pearl Harbor attack (see "Management Recommendations").

¹ Speulda, Raymond, and Parks 1999: 3-7

² Delgado et al 1985: 17

³ Ibid, 14

⁴ Friedman 2002: 125

⁵ Ibid, 115

⁶ DANFS VII

⁷ Barnes 1944: 72

⁸ Lockwood and Adamson 1962: xiii

⁹ Ibid, 39-40

¹⁰ Barnes 1944: 78

¹¹ Ibid, 14

¹² Admiral E.M. Eller, cited in Furer 1959: viii

¹³ <http://www.concreteships.org/ships/barges/yogn82/>

¹⁴ National Register Bulletin "How to Complete the National Register Multiple Property Documentation Form." See also the Bulletin's "Defining Boundaries for National Register Properties."

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Table 16: List of Source Abbreviations

DANFS	Dictionary of American Naval Fighting Ships
RG	Record group (National Archives)
NHC	Naval Historical Center
ICRMP	Pearl Harbor Integrated Cultural Resource Management Plan
PACDIVNAVFACENGCOM	Pacific Division Naval Facilities Engineering Command
NMR	Northern Maritime Research Database 2002
NOWRAMP	Northwestern Hawaiian Islands Multiagency Education Project
NOS	NOAA National Ocean Service
DOD NSC	Department of Defense coordinates (NMR database)
MAST	Maritime Archaeology Survey Techniques report (UHM)
NVR	Naval Vessel Register website
HURL	Hawai`i Undersea Research Laboratory (NURP/NOAA)