

# SBMM

## Santa Barbara Maritime Museum



2019

## Docent Training

## 2019 DOCENT MANUAL CONTENTS

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**SBMM**  
Santa Barbara Maritime Museum



# I: THE WATERFRONT, MUSEUM BUILDING, PATIO & ENTRANCE



## Founding of the Museum

In 1994, a group of dedicated sailing, diving, and maritime history enthusiasts founded the Santa Barbara Maritime Museum as a nonprofit institution. Since the Museum's inception, the Board, staff, and volunteers have worked hard to plan displays and to raise funds for the building, exhibits, and educational programs.

The Museum is a dynamic cultural resource for the community and visitors. No other institution in our area documents Santa Barbara's maritime heritage. Providing educational opportunities for the community and its youth is vital to the Museum's educational outreach.

The Maritime Museum opened its doors to the public on **July 29, 2000**.

## History of the Naval Reserve Center

The Naval Reserve Center, now known as the Santa Barbara Waterfront Center, was the result of a Works Progress Administration (WPA) project. Its style is typical of an armory facility, especially its T shape. On **February 26, 1942**, the city of Santa Barbara, in a patriotic gesture, sold the building to the Federal Government for one dollar. Following 53 years of Naval Reserve training, the City of Santa Barbara reacquired the building in 1995 from the Federal Government for \$2.5 million. The City spent an additional \$2 million in renovations to bring it up to code (installing ramps, an elevator, and interior walls). The Naval Reserve Center is an historic landmark registered with the State of California.

*In 1942, the City of Santa Barbara sold the building to the Federal Government for \$1.00*  
*In 1995, the City bought the building from the Federal Government for \$2,500,000.00*

## History of the Harbor

The history of Santa Barbara harbor is intertwined with the development of Stearns Wharf. The birth of the Santa Barbara harbor dates to **September 16, 1872**, when the first deep-sea vessel **was** tied up at Stearns Wharf; however, because Santa Barbara had no natural harbor, one would have to be created. As the number of pleasure boats rose in the early 1900s, the need for a harbor escalated. Major Max C. Fleischmann, the yeast magnate, forced the issue because he wanted a safe place to anchor his huge yacht, *Haida*. In 1925, Fleischmann promised \$200,000 to build a harbor if Santa Barbara citizens matched his gift with a city bond. The bond issue passed. Following a bitter dispute over what type of breakwater to build, the city decided on riprap construction, which used enormous chunks of igneous rock quarried from Santa Cruz Island. Construction began in 1927.



**Riprap construction**

Unfortunately, the construction and location of the breakwater caused a continual and heavy buildup of sand inside the harbor and stripped the beaches east of Stearns Wharf at an alarming rate. Several solutions, including the construction of a sea wall along East Beach, failed to deter these conditions. In 1959, the city paid \$250,000 for a dredge to keep the harbor entrance open. Dredging operations are ongoing for what has been referred to as the worst man-made harbor on the West Coast!

## Our Logo



**Howard Larsen**, a founding donor of SBMM, designed our logo. Larsen based the ship depicted in our logo on a Spanish galleon that would have visited the California Coastline in the late 1500s.

## OUTSIDE EXHIBITS



### *Ranger*

*Ranger* is a genuine, classic big-game fishing yacht and is the flagship of the Santa Barbara Maritime Museum. Donated by **Jack Morehart**, she became the Maritime Museum's first exhibit. Built in 1917 by Fellows and Stewart in Wilmington, CA, she was made to the specifications of Jimmy Jump, Commodore of the Catalina Island Yacht Club. For many years, *Ranger* served as the flagship of the Catalina Island Tuna Club. The Tuna Club was formed by a group of sport fishing enthusiasts to establish a

competition based on the size and variety of fish caught on various strengths of line and type of lure. Twenty-six trophy-winning fish were caught from *Ranger*; two of these light tackle records still stand: the largest tuna and the largest broad bill swordfish caught with certain line.

Over the years, celebrities such as Humphrey Bogart, Zane Grey, John Wayne, and Errol Flynn fished from *Ranger*.

In the early 1930s, *Ranger* was shipped to Hawaii via commercial steamship where she fished the waters for three years with great success. While in Hawaii, her interior living area was paneled in the beautiful Koa wood she still displays today. Elegant curves, generous decks, and fine metalwork are found throughout the vessel. The comfortable cockpit featured two swivel fighting chairs with rod sockets. One of these chairs now sits in the Maritime Museum's *Ranger* Exhibit, while the other is part of the Museum's interactive Sport Fishing Exhibit. The wood mast and boom accommodate a stabilizing sail.

*Ranger* is 41 feet overall. She has a full galley, dining table, and berthing for four. The living area is composed of four bunks with a table between the two aft bunks. Kerosene lanterns provided the original interior lighting; today she uses a 12-volt electric system. *Ranger* still has the original anchor winch and her 1917 kerosene running lights.

*Ranger's* beam (width) is 12 feet; draft is 4 feet, 5 inches; and she has a displacement of 35,000 pounds. Because of the high quality of her original design, construction and materials, she is still seaworthy. Originally built of 2"x 3" steamed oak ribs placed on 12" centers, her original cedar planking was fastened to the oak ribs with iron nails. Today the one-inch teak planks fit over the original fir.

*Ranger* was first powered by a 30-horsepower, 600-rpm gasoline engine that was so large it took up a major portion of the galley area. In the 1960s, a 60-horsepower 4-234 Perkins diesel engine was installed, giving her a cruising speed of 8 knots. In 1998, Barry Schuyler, then Chairman of the Museum's Board of Trustees, donated a brand-new diesel engine. *Ranger* now has a cruising speed of 7 knots and a top speed of 10 knots.



### Theresa Ann

*Theresa Ann*, owned by Mike McCorkle and on loan to the Santa Barbara Maritime Museum, is a 28-foot Monterey fishing boat built in 1926 in San Francisco, CA. The beautiful and functional Monterey fishing boats were once the primary vessels in San Francisco's crab, salmon, and shrimp fleets. They were introduced to California by Italian immigrants in the early 1900s and were designed after Mediterranean sail-rigged fishing boats.

McCorkle bought *Theresa Ann* in 1996 from Rick Risso, a Santa Cruz fisherman. *Theresa Ann's* cabin has a starboard side Dutch door, room for two berths, and a propane stove. The original engine was standard in Monteareys: a one-cylinder, 8-horsepower Hicks engine, built in San Francisco. It weighed 5,000 pounds, including a 400-pound flywheel that had to be hand cranked to start. Fishermen had to stop every hour to squirt oil on parts of the engine. Today, she has a Detroit Diesel 2-71 engine and can go 7 knots. McCorkle has installed modern electronics, such as a color video fathometer, a 16-mile Furuno radar steering, and autopilot controls.

Like other Monteareys, *Theresa Ann* is built of fine lumber, including 1-inch-thick Port Orford cedar planks, 1-inch by 1½-inch steam-bent white oak frames on 9-inch centers, and an iron-bark keel. The craftsmanship on these boats is so exact that Monteareys were built without plans and without caulking, except for the seam between the keel and the garboard strakes. When the boats were placed in the water, the planks would swell and create a tight fit. The boat is very stable, even when fully loaded.



McCorkle still uses *Theresa Ann* for salmon trolling and has loaned her to the Museum to "...let people tour a real, live, working fishing boat from the 1920s."



### Sea Mew Sailboat: David T. Nidever

This 14-foot Sea Mew sailboat is based on the original 1916 Sea Mew prototype designed by Fred Goeller, Jr. These sailboats were originally developed to introduce young sailors to the bays and harbors of the East Coast and Long Island Sound. Sea Mews were known for being small, sturdy, fast, and inexpensively constructed. Because of this, their reputation grew quickly throughout the sailing community.

By the 1920s, the Santa Barbara Yacht Club had a fleet of over 20 Sea Mews for their junior sailing program. Some of these early boats were built by the Fellows & Stewart boatyard, located on Terminal Island in Wilmington, CA. Many believe that the Sea Mews brought class racing to the Pacific Coast.

In 1965, Harry Davis, a well-respected Santa Barbara boat builder, used an original Sea Mew wooden hull as a form for a new fiberglass mold. A 200-pound lead keel and lead ballast were later added to the boat to compensate for the lighter fiberglass hull materials. The mast, boom, gaff, and hardware are from an original 1917 Sea Mew.

Boat restorations were completed in April 2002 with the dedicated help and support of Santa Barbara Maritime Museum volunteers and donors. However, the vessel is not insured, so the Museum does not take it out. This vessel is named after David T. Nidever, a sailing mentor for many who grew up in the Santa Barbara harbor community.

### **Purisima Bell (Patio display, with exhibit inside Museum)**

The Purisima arrived on the Museum patio in September 2011. It was the world's first commercial diving lock-out bell used to support the deep-water oil and gas exploration taking place offshore Santa Barbara in the 1960s. Named after Purisima Point in Santa Barbara County, it was used to increase the efficiency and safety of deep-water diving operations. It was rated to 1,000 feet.

Purisima was conceived and designed in 1962 by the late Dan Wilson, a Santa Barbara abalone diver and deep-water diving pioneer. Wilson's company, General Offshore Divers (an affiliate of Union Carbide), built it in 1964. The system was launched and tested here in Santa Barbara harbor before being used on offshore projects.



Purisima allowed the deep divers to stay warm and dry during the descent and ascent to underwater worksites. They could also perform the long hours of decompression inside the bell in a controlled environment and reach depths not reachable by surface divers.

The Purisima utilized two dry spheres to transport and protect both divers and subsea engineers to underwater worksites outside of traditional surface diving. The upper sphere could be kept at surface pressure to house engineers and observers, while the bottom sphere was pressurized at depth, permitting divers to lockout and work on subsea structures at depth.

Purisima had **several design shortcomings** (it tipped over and required a third bell), it:

- set a standard and was a catalyst for future commercial deep diving systems;
- led to the development of lightweight diving gear as ease of exit became important;
- remains one of many historical icons that made Santa Barbara the birthplace of deep-water commercial diving.

### **Ships' knees (Museum Entrance & Store)**

*Donated by Richard Headley*

Ships' knees are made from the natural junction of a tree's trunk with roots or branches, the point where the natural curve of the wood grain provides the strength necessary to brace the intersecting points in the frame of a wooden ship. These knees once adorned the Harbor Restaurant on Stearns Wharf, which burned down on **April 14, 1973**. The Santa Barbara Maritime Museum restored the knees in 1998, and they now welcome visitors to the Santa Barbara Maritime Museum.



### **Hermosa paneling (Museum Kiosk & Foyer)**

This Honduran mahogany and Birdseye maple paneling once adorned the interior of the Catalina Island passenger steamship *Hermosa*. In 1889, on her maiden voyage from San Francisco to San Pedro, *Hermosa* called at Santa Barbara. The paneling and other fixtures were eventually transferred to the *Hermosa II*, which had a successful passenger ship career before being converted to a tuna clipper in 1928. At that time, the deckhouse and paneling were removed, saved, and now lead to the Museum entrance and wrap around the kiosk.

### **Figurehead (Museum Entrance)**

Our elegant figurehead is a finely crafted example of traditional maritime woodcarving. Figureheads were mounted at the bow of the ship, under the bowsprit or beakhead of a vessel. Figureheads were thought to protect ships from evil spirits or encourage good spirits to live on board. Researchers have been unable to identify all the details of this figurehead's past; however, her garments suggest that she was probably carved between the 1840s and 1870s. The ship from which this figurehead came is unknown.

## **MUSEUM FOUNDING DONORS**

The Museum has a special classification of Founding Donors (minimum donation of \$1,000 by July 29, 2000). These individuals are recognized because of their substantial gifts to the Museum during the crucial startup period. Founding Donors have received permanent recognition on the Founders Bulkhead in the Museum. The Founders Bulkhead, which lists all the Museum's founding donors, was designed and built by Gilbert Paquet and is located across from the Munger Theater.

## **GALLERY HIGHLIGHTS**

### **Munger Theater**

Sailing in from the back wall of the Museum is a rough replica of a Wilson Brothers lumber schooner that contains a state-of-the-art HD, Blu-Ray multimedia theater. Seating up to 88 people, the Munger Theater offers a high-tech audio-visual experience. Films take viewers on underwater adventures, tall ships that round the horn, deep sea archeological explorations, and much more. The Munger Theater is an ideal space for lectures, films, and digital presentations. Three schedules are maintained: 1) Monday through Friday; 2) Saturday; 3) Sunday. A kiosk outside the Theater shows days and times.

### **Presentation Wall**

The Jon and Lillian Lovelace Presentation Wall displays films relevant to the Museum's exhibit topics. This area also serves as a prime gathering spot for tours, lectures, and special presentations. In 2015, a new projector, audio system, and large screen were installed so that the main floor could host over 150 guests for lectures and other special events.



## JIM

JIM—the first exhibit to greet visitors—is a one-person, atmospheric diving suit (ADS) designed in 1969 by Mike Humphrey and Mike Borrow, partners in the English firm Underwater Marine Equipment Ltd (UMEL). The name JIM from Jim Jarrett, the diver who first used it. Despite all three letters being capitalized, it is not an acronym.

JIM maintains an interior pressure of one atmosphere, meaning the air stays the same in the suit as at sea level like a submarine. This way, physiological dangers associated with diving can be avoided. The hard magnesium shell can descend to 2,000 feet, withstanding the crushing pressures of deep water. JIM stands 6½ feet tall and weighs approximately 800 pounds above water. The suit was used in the 1970s before the industry began using Remote Operated Vehicles (ROVs). The diver climbed in through the top of the suit before the helmet was secured. A crane picked up the JIM suit and lowered it to the bottom of the ocean. Once there, the diver could not move much, but was able to lean forward and use his hands to manipulate the claws extending above them.

Famous oceanographer, Sylvia Earle wore a JIM suit 1979 and set the depth record of 1,250 feet for the deepest dive without a tether during her underwater walk.

JIM has inspired some fictional characters over the years, so guests may call it by a different name. In the 1981 James Bond film *For Your Eyes Only*, a villain chased Bond and a girl in this suit. Since the design was so cutting edge when the film was released, the suit manufacturers stipulated: If the villain is to die inside the suit, the suit should not appear to have a fault that caused the death. The manufacturers feared that companies would be discouraged from ordering a JIM suit if a fault caused death. Consequently, Bond used a magnetic bomb to blow up the villain.



The popular cartoon *SpongeBob SquarePants* has a character named Sandy Cheeks who wears a suit very similar to JIM, although she has a clear helmet with a flower on it.

### Fieldtrip Tip:

Talk about the connection between space and sea exploration in terms of how technology has helped us explore.

## II: Historic Path

### The Geology of Oil in the Santa Barbara Channel

The story of oil in the Santa Barbara Channel begins about 15 million years ago when what is now Santa Barbara County was part of the ocean floor. Oil, or petroleum, is naturally formed from fossils, which are the organic remains of plants and animals that lived millions of years ago. They are covered by layers of sediment and—with increased heat during burial—the organic remains turn into crude oil. Since oil is lighter than the water in the rock pores, it moves, or *migrates*. Some oil is trapped below impermeable rock, and these accumulations are called *reservoirs*. Today, we extract this crude oil from these reservoirs by drilling and pumping.

The oil and gas in the Santa Barbara Channel naturally seeps to the surface, where the oil is called **asphaltum**. Asphaltum is also called beach tar and comes both from underneath the seafloor and the surrounding land, usually following the abundant faults and fractures found in the Santa Barbara area. Humans have been using this natural resource for thousands of years.

The Santa Barbara channel is about 70 miles long, running mostly east-west, and averages 24 miles across. It contains numerous oil fields, including the Ellwood, Summerland, Carpinteria, and Dos Cuadras fields. It is also home to the world's second largest natural oil seep area: Coal Oil Point. At Coal Oil Point the oil seeping to the surface produces a slick that is many miles long. When degraded by evaporation and weathering, this slick produces tar balls that wash up on the beaches all along the Santa Barbara coast.



### The Chumash Exhibit

Our Historic Path encompasses the coastal environment as it existed in the period just before missionization (1700), focusing on Chumash cultural ecology, or the close relationship between these Native peoples and their environment.

Santa Barbara's maritime history begins with the presence of the coastal Chumash—the original seafarers of the Santa Barbara Channel—whose presence may date back over 10,000 years. Santa Barbara Channel Chumash villages were politically autonomous, headed by a chief or *wot*, a position that was hereditary and could be held by either men or women. In fact, the first *wot* of the Syuxtun<sup>1</sup> encountered by the Spanish was a woman. The Chumash house, or *ap*, was a thatched, dome-shaped structure often located just above the beach. Economic exchange revolved around shell-bead money and trade goods. Shell-bead money, or *anchum*, consisted of strings of small disk-shaped beads made from shells of the purple olive, *Olivella biplicata*, a small marine snail. This shell-bead money was exchanged for raw materials, food products, and craft items, although items were traded straight across the board as well. Similar trade practices can be seen today in the Trobriand Island *kula* exchange in the western South Pacific.

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<sup>1</sup> The site where Cabrillo made contact with The Chumash. There is now a story circle in its place.

## Chumash, Oil, Tomols

Marine resources provided much of the subsistence base for Chumash food procurement, in addition to gathering plant foods such as acorns. Two specific strategies were involved in obtaining marine food sources for Santa Barbara Chumash. The first involved taking advantage of low tides, when mussels and other shellfish are often exposed and can be gathered. Seals and sea lions were also hunted on or near shore. The second strategy focused on intensive fishing activity using sophisticated capture technology such as hook and line, nets, and harpoons. This capture technology was also used in offshore fishing, utilizing seaworthy plank canoes or *tomols* built by Santa Barbara Channel Chumash. *Tomols* were also used for trade between the mainland and the Channel Islands, and for ceremonial voyages. Powered with double-ended paddles, *tomols* can transport five to eight people at a time or over 2,000 pounds of fish or other cargo. Only one other civilization—located in Southern Chile—built plank canoes. Everyone else used dugouts or birch-bark canoes.



Carpinteria was named for the carpenters who built tomols there.

Estimated to be in use for over 1,000 years, tomols were frameless canoes with no internal ribs, made mainly from redwood that washed up on the beaches. Once dried, the Chumash split the logs into planks using wedges and deer antlers. The planks were carefully shaped, trimmed, leveled with scrapers, adzes (similar to an ax), and chert knives, and then finished with sharkskin sandpaper. Examples of these items are on display in this area.



## The Chumash Use of Asphaltum

The Chumash are a maritime culture, originally based on both the mainland and on the Channel Islands. They were the first people to take advantage of our local natural oil seeps and were known for their innovative use of asphaltum, enhancing their way of living by using asphaltum to seal their water-carrying baskets and waterproofing their ocean-going tomols. This allowed them to cross the Channel and move up and down the coast from island to island.

Asphaltum was also used to coat sewing strings and fishing spears, to seal tiny holes in abalone shells that became bowls, and in the construction and decoration of pipes and whistles. Similar to glue, asphaltum could be used to repair and seal fractures in broken bowls and vessels. Women even wadded up asphaltum to hold down the bottoms of their plant-fiber skirts. Yop was also used for lining the inside of baskets to be used as early water bottles.

**Fieldtrip Tip:**

Think about what natural resources can be used for. How did it benefit the Chumash? Could it benefit us today?

Holes were bored into the planks using hand drills tipped with chert or bone. The planks were then fastened together with *tok* (dogbane or milkweed fiber). Once fitted and lashed, caulking *tule* (bulrush abundant in marshy areas) was forced into the cracks on the outside of the canoe hull. For



waterproofing, *yop*, a mixture of pine pitch and hard asphaltum, was poured along the edge where the planks came together and into the holes where the cords were tied.

Historic accounts and rare photographs make it possible to reconstruct these marvelous vessels, whose sturdy construction enabled the Chumash to navigate the Santa Barbara Channel.

Today, the Chumash build *tomols* using more modern tools and methods, as they recapture their nearly lost traditional *tomol* building techniques. The efforts of the Chumash Maritime Association to recapture their maritime heritage are part of a thriving, extensive movement by West Coast tribal groups to reconstruct their seafaring traditions and pass them on to future generations.

**Some Quick Facts about the Chumash Plank Canoe:**

- The Chumash plank canoe or *tomol* is one of the few Native American ocean-going planked canoes in California. New evidence suggests that *tomols* may have been in use as many as 2,000 years ago.
  - Using traditional methods, the Chumash built these vessels from planks of redwood, lashed with milkweed or dogbane fiber cordage, and caulked with a mixture of local asphaltum and pine pitch. Today, the Chumash build *tomols* using more modern tools and methods, and they are recovering their nearly lost traditional *tomol*-building techniques.
  - Used for fishing, trade between the mainland and the Channel Islands, and ceremonial voyages, the *tomol* is powered with double-ended paddles and can hold 5 to 8 people at a time.
  - A *tomol* is capable of transporting over 2,000 pounds of fish or other cargo.
- Courtesy of the Santa Barbara County Education Office.*

## Asphaltum in different forms



Not only does oil come from natural seeps in the ocean, it also oozes out of cliff faces and rocky outcroppings along the Santa Barbara coastline and further inland.

These hardened chunks of asphaltum are found locally.

The dark substance in the jar in the case next to the tomol is not tar. It is liquid asphaltum, a sticky and highly viscous liquid or semi-solid form of petroleum that was collected from a local seep. When it hardens, it creates a protective and waterproof surface.

## Oil Exploration

In 1859, the first petroleum oil well in the United States was drilled in Pennsylvania. Two years later the first well in California was tapped. In 1866, oil was collected from tunnels dug at seeps at Sulfur Mountain in Ventura County; that same year a well was drilled nearby. Petroleum oil was emerging as a valuable new resource and reshaping society.



Oil exploration in the United States was stimulated by the search for an economical substitute to dwindling supplies of whale oil that had, until that time, been the best oil to burn in lamps. People realized it was possible to use the petroleum coming out of the ground for this purpose. The earliest petroleum extraction at Summerland, south of Santa Barbara, in the 1890s, was to produce kerosene, a replacement for costly whale oil, making the whaling industry obsolete.

Oil development at Summerland expanded rapidly. In 1896, the world's first off-shore drilling operations started here, via wooden piers that extended up to 1,350 feet from the shoreline, their piles reaching 35 feet to the floor of the Santa Barbara Channel. Using the same techniques as then used on land, steel pipes were pounded 455 feet below the seabed. The hunt for off-shore oil ultimately produced only a modest yield. The field's production peaked in 1902, and the wells were abandoned several years later.

During this time, Santa Barbara was experiencing a boom and the city quickly expanded in population and reputation as a place to visit. Roads were paved (with local asphaltum), trees planted, civic buildings rose, and grand hotels were built to accommodate the growing tourism industry. And the automobile had arrived.

World War I, followed by the economic prosperity of the 1920s and foreign demand for U.S. oil in the 1930s, further spurred oil development in Santa Barbara County. Oil production maintained a steady rate of growth during the Great Depression years due, in part, to a growing foreign demand for oil.



World War II increased oil demand considerably and pushed oil production to record-high levels in Santa Barbara County. Important oil discoveries from the late 1940s and 1950s stimulated the last significant period of local onshore exploration.

### Oil as Light and the Decline of Whaling

When Michael Dietz's clean-burning kerosene lamp appeared on the market in 1857, its effect on the whaling industry was immediate. Kerosene, known in those days as "coal oil", was easy to produce, cheap, smelled better than animal-based fuels when burned, and did not spoil on the shelf as whale oil did. The public abandoned whale oil lamps almost overnight. By 1860, at least 30 kerosene plants were in production in the United States, and whale oil was ultimately driven off the market. When sperm whale oil dropped to 40 cents a gallon in 1895, due to lack of demand, refined petroleum, which was very much in demand, sold for less than 7 cents a gallon.

If petroleum products, such as kerosene and machine oil, had not appeared in the 1850s as alternatives to whale oil, many species of whales would have disappeared long ago. Clearly, the expanding population and economy of the 1800s, together with the development of more deadly hunting tools, would have driven the whaling industry to even greater heights than the banner year of 1856.

Later, kerosene was replaced with electric lighting as a result of 1) Edison's 1878 invention of an electric light bulb and 2) the federal rural electrification programs of the 1930s<sup>2</sup>. However, kerosene is still widely used today in all turbojet engines that power passenger and cargo jet aircraft. It is the same kerosene that was produced in the Summerland oil fields.

### Oil is Everywhere

From a 42-gallon barrel of oil, 19.4 gallons is used to produce gasoline. The rest (over half) is used to produce products such as:

ink	ballpoint pens	bicycle tires	nail polish	clothing
antiseptics	vitamin capsules	medicine	life jackets	skis
fertilizers	roofing	denture adhesive	tennis rackets	guitar strings
shampoo	aspirin	toothbrushes	sun glasses	bandages
telephones	footballs	plastic bottles	margarine	perfume

In addition to powering our transportation, lighting and heating our homes, cooking our food, and providing clothing, we are virtually eating petroleum as well. There are few parts of our lives that do not rely on oil. Every pound of food that goes on our table requires a pound of oil to produce. The same is true for textile materials like cotton, which must be transported to the other side of the world and manufactured into inexpensive garments.

### Explorers Exhibit

When Columbus reported Spain's new claims over the New World in 1494, a papal decree forced a treaty<sup>3</sup> between Spain and Portugal to split the Americas in half. The *Line of Demarcation* gave to Portugal only half of what now is Brazil and to Spain the exclusive control of the West. What no one knew was just how much west there was. The 1513 voyage of Vasco Núñez de Balboa revealed the existence of the vast Pacific Ocean and the West Coast of South America, Mexico, and California. All these lands eventually became dominions of Spain: Mexico in 1519 to Cortez and South America (Peru and Chile) to Pizarro in 1533. Thus began Spain's vast empire in the New World, lasting until 1898, when Cuba gained independence.

Early explorers sailing along the California coast were motivated by the possibility of finding gold, acquiring furs, claiming new territories, and finding a northern passage between the Pacific and Atlantic oceans.

Spain led the coastal exploration as Juan Rodriguez Cabrillo commanded the first recorded exploration of California in 1542. Encounters with native Chumash peoples were recorded. Cabrillo's expedition was part of a two-pronged exploration. The other part, led by Ruy López de Viallabobos, sailed directly to the Philippines. It was thought that if Cabrillo sailed north along the western coast of North America, he might meet up with Viallabobos in the Pacific. (China and New Spain were believed to meet somewhere.)



Cabrillo paid for the building of his ship, *San Salvador*. A lawsuit erupted between Cabrillo and Spanish officials when Cabrillo's ship was made part of Pedro Alvarado's flotilla, without proper compensation to Cabrillo.



Cabrillo was the first explorer on record to visit Alta California<sup>4</sup>. The purpose of his expedition was threefold:

- 1) to explore and map Spain's possession of its new land claim,
- 2) to search for the *seven cities of gold*, and
- 3) to locate the Strait of Anian, the mythical east/west passage. (The Spaniards hoped that they would not find such a strait, because its existence would give other countries easy access to Spanish lands.)

After his visit to the mainland, Cabrillo crossed the Channel to the islands. When Cabrillo's ship landed at San Miguel Island, some of the soldiers from his ship went ashore to get water. The Chumash attacked the soldiers, and Cabrillo went ashore to save them. In his rush, he fell and broke his arm, shoulder, or leg. Cabrillo tried to continue his voyage northward; however, he was unable to make any progress, short on supplies, and decided to winter at San Miguel Island. Cabrillo died three months later (or ten or twelve days?) in January 1543 from injuries he received on San Miguel Island. Some believe that he was buried on the island; others believe that he was buried in Goleta; and some think that he was buried at sea. His remains were never located. Although a headstone was discovered on San Miguel Island, it is of modern origin.

<sup>3</sup> Treaty of Tordesillas

<sup>4</sup> Province or territory of Viceroyalty of New Spain.

In accordance with Cabrillo's wishes, his crew continued to explore northward after his death. They turned back on March 1, having sailed to what is now southern Oregon. They reached Puerto Navidad in April, hungry and sick with scurvy. Mapmaker Andre Homem first depicted Cabrillo's discoveries in 1559. His map is the first to show the Channel Islands.

**SOME FACTS ABOUT JUAN CABRILLO:**

- Name: Juan Rodriguez Cabrillo (or João Rodrigues Cabrillo)
- Spanish explorer. Natal nationality is questioned. Both Portugal and Spain claim him.
- Date: 1542 (50 years after Columbus' 1492 voyage)
- Ships: *San Salvador*, *Victoria*
- Purpose: Search for Strait of Anian, the mythical east/west passage.
- Path: Sailed from Puerto Navidad on the West Coast of Mexico on June 27, 1542. Arrived in San Diego on September 28, 1542. Spent six days in San Diego, then sailed north to Catalina Island, San Pedro, Santa Monica, Ventura, and the Santa Barbara Channel.

Spain explored Alta California by sailing the hard way—north, up the coast, against the prevailing northwestern winds, tacking all the way. This kind of sailing was very demanding on the crew and gave sailors little time to rest on these long voyages. On every tack, or turn, the crew had to slacken or tighten tens of lines to adjust the ships' sails. The trip southward to home was significantly faster than the trip north. This kind of sailing was very demanding, and the sailors had little time to rest on these long voyages.

Sebastián Vizcaíno's 1602-1603 exploration of the California coast was tragic. By the end of his 11-month voyage, all his men were sick and 42 had died. Captains generally expected one-third to half of their crew to perish on long voyages.

The Spanish expeditions were not entirely independent explorations. Each used the knowledge and information gathered from the previous journeys, allowing mariners to develop accurate maps and an understanding of winds and currents. During most of the 16<sup>th</sup> century, Spain kept data from its explorations on a master chart called the *Padrón*, which was updated with each new explorer. The charts were eventually abandoned because they became outdated, **as there was new technology to replace them.**

The difficulty in sailing to California and its lack of obvious riches made it seem like more trouble than it was worth. The arduous voyage and California's bleak shores discouraged Spanish exploration; Spain almost abandoned its California claims between 1603 and 1769.

Not all explorers were Spanish. By the late 18<sup>th</sup> century, British and Russian sailors were actively exploring the Pacific Northwest. This alarmed the Spanish crown, and Spain rekindled its interest in California. Spain sent Gaspar de Portolá to Alta California in 1769 to lay the groundwork for permanent Spanish settlement by establishing presidios (forts) at Monterey, Santa Barbara, and San Diego, and a supply base and shipbuilding facility at San Blas, Mexico. San Blas supported the colonization effort and explorations in the far northwest of the Pacific Ocean.

In 1793, George Vancouver stopped in Santa Barbara during his survey of Spanish settlements. Although Santa Barbara residents warmly received Vancouver, one reason for his voyage was to survey these Spanish settlements to settle territory disputes between Spain and England.

### **150 Years of Manila Galleons**

In the mid-1500s, when Spain conquered the Philippines and established a regular trade route between Acapulco and Manila, Spanish Manila galleons passed the California coast almost every year from 1565 to 1815, but ships rarely stopped in California. Nevertheless, sailors' logs and maps kept Spain apprised of its California territory.



In 1565, galleons started their trade route in Mexico (or Hawaii?) and sailed to Manila, the gathering point for Asian luxury goods. Galleons then returned to Mexico for gold and silver. When the galleons reached the California coast, they generally had only a few days left in their voyage and sped south with the wind along the coast straight to Acapulco. Still, ships needed to establish a port along the California coast to get food, water, and an escort vessel to protect them from pirates, if needed. Captains avoided the challenging Monterey Harbor because galleons were clumsy ships and difficult to maneuver. Once back in Mexico, goods were offloaded and either 1) sent back up the coast to California or to other New World colonies or 2) sent overland to Veracruz and on to colonies or to Spain.

Manila galleons carried rich cargoes of silk, tea, and porcelain from China. They traded for Peruvian silver. Manila was founded in 1571 and became the center of this trade. The Spanish king decreed in 1593 that Manila galleons were to be limited to one a year and to a cargo of 250,000 pesos. Seville silk manufacturers demanded that these galleons not carry oriental silks. Because the ships were limited to one voyage a year, owners and captains crowded extra cargo into space that should have been used to hold food and water. The voyage from Manila to Mexico took six to seven months, and the crews suffered from the lack of food and water. They also feared pirates. Profits were shared with the crew.

The galleons had crews of 150-250 men. The 1606 galleon lost 80 men; the 1620 galleon lost 99 men; the 1641 galleon, *Concepción*, went aground in foul weather, in part because she was weighed down with extra goods. The 1656 galleon was found drifting south of Acapulco with the entire crew dead. Manila galleons were discontinued in 1815, when the Spanish monarchy was defeated in the Napoleonic wars.

### **Chumash Otter and Seal Hunting**

**The Chumash did not leave the land untouched.** Along the Santa Barbara Channel, Chumash took advantage of the abundant ocean life as a source for food and supplies, and their hunting probably led to a significant decrease in the otter population. They exploited the kelp beds, killed otters, and competed with otters for food. Growth of an inter-tribal trading network during the late prehistoric period increased the demands that Chumash and other coastal Native Americans placed on the marine mammal and shellfish population. They harvested more shellfish and sea mammals than they needed for their own use, and used the excess for trade. They killed otters primarily for their pelts, a highly valued trade item used for bed covers, arrow quivers, and clothing. Coastal California Indians also used certain otter bones for ornaments and tools. The pelts were valued not only for their fine fur, but also because the pelts could be stretched considerably beyond their original size. Santa Rosa Island Chumash hunted otters and traded



them with mainland Chumash for seeds, minerals, and other terrestrial resources. Ownership of otter pelts was governed by status rules. Owners were the social elite; commoners were not allowed to hunt otters and were required to give dead otters they found to the elite.

### **European and American Otter Traders**

The fur trade of sea otter pelts began in 1774, when Spanish sailors aboard *Santiago* traded abalone shells obtained near Monterey with natives in the North Pacific for sea otter pelts. On the next two voyages north in 1775 and 1779, sailors traded beads and miscellaneous items for otter pelts. **This created some competition with the local native population that also heavily relied on otter pelts.**

When Captain James Cook landed at Vancouver Island, he had received sea otter pelts as a trade item from the local Nootka Indians. The pelts' value was not realized until the ship arrived in Canton, China, and accounts of the voyage published in 1784 helped instigate the otter-fur rush.

Otter hunting facilitated American expansion to the West Coast. Hunting otters was one of several major maritime enterprises that spurred the United States to acquire California. The otter trade brought New Englanders into the Pacific and to California. It also gave Yankees valuable information on the geography, politics, and economy of Spanish and Mexican California.

Likewise, the otter hunters influenced Spanish and Mexican culture in California. Otter pelts were the major economic incentive for Americans to include California in the China/Hawaii trade. Otter pelts pulled fur trappers out of the American Territory into Mexican California. It also contributed to the establishment of an American population in Mexican California. By the 1840s, whaling and the hide-and-tallow trade grew to be more important than the otter trade,

but trade in otters did continue to a small degree through the rest of the century. The hide-and-tallow trade and the trade in otter pelts were often intertwined, as companies such as Bryant and Sturgis often shipped both.

### Seal Hunting

Sealing came into vogue as whale hunting declined because of decimated whale populations. Often, both seals and whales were hunted from the same ships. Traders, such as hide-and-tallow trader William Dane Phelps of the *Alert*, hunted elephant seals at Santa Barbara Island in 1841.

Seals were hunted during the 18<sup>th</sup> and 19<sup>th</sup> centuries for their oil (used similarly to whale oil), hides, pelts, testes, and whiskers. Stellar sea lion whiskers were used in China to clean opium pipes, and testes were dried and made into an aphrodisiac. They were hunted almost to extinction. Hunters established island base camps for hunting expeditions, using what vessels were available. These hunters were opportunistic, and often made money as they could, including smuggling. On a small scale, sealing continued in California at least until World War II. After the war, seals were captured in the Channel Islands for circuses, parks, and zoos, and were shipped out to wherever they were wanted.



## FACTS ABOUT PINNEPEDS HUNTED

### California Sea Otter, *Enhydra lutris* →

California sea otter populations once stretched from northern Japan, across the Bering Sea, and south to Baja California. They were hunted to near extinction in the 19<sup>th</sup> Century for their rich fur. The California population is now listed as a threatened species under the Federal Endangered Species Act. The sea otter is abundant in Alaska.



### ← Stellar Sea Lion, *Eumetopias jubatus*

Stellar (or northern) sea lions were hunted to near extinction. Their whiskers were used in China in the early 1900s to clean opium pipes, and their testes sold as aphrodisiacs. They were also hunted for their blubber. Stellar sea lions are now listed as threatened under the Endangered Species Act, due to over-fishing of their food stocks.

### Pacific Harbor Seals, *Phoca vitulina richardii* →

Pacific Harbor Seals are identifiable by their spotted coats and claws on the fore and hind flippers. They are found at all eight Santa Barbara Channel Islands, and were once hunted for their blubber, which was made into oil.



### ← Northern Elephant Seal, *Mirounga angustirostris*

Northern elephant seals, hunted for their blubber, almost became extinct by the late 19<sup>th</sup> Century. Their blubber was made into fine grade oil. The population recovered by the mid-1960s.

### Northern Fur Seal, *Callorhinus ursinus* →

Northern (or Alaskan) fur seals were once hunted for their fur and blubber. These seals recovered from the 19<sup>th</sup> Century hunting, but they are now severely depleted. Asian drift net fishing has decimated their population. Environmental factors have also reduced their food sources.



### ← Guadalupe fur seal, *Arctocephalus townsendi*

Guadalupe fur seals are now rarely seen in the Channel Islands. Based on bones found in Chumash middens, Guadalupe fur seals were once relatively common in the area. Hunted for their fur, they are now under protection of the U.S. and Mexican government.

## DANA EXHIBIT



Richard Henry Dana, Jr. (1815—1882), author of *Two Years Before the Mast*, sailed from Boston on **August 14, 1834**, at age 19. Diagnosed with poor health because of a bout of measles that weakened his eyesight, Dana withdrew from Harvard University to recuperate. His solution was to go to sea.

Although he was from a prominent New England family, Dana signed on as a common deck hand on the ***Pilgrim***, a hide-and-tallow brig owned by the Bryant & Sturgis Company.

After a long voyage, *Pilgrim* rounded Cape Horn and made landfall at Point Conception, Alta California, after 150 days at sea. Her first stop was Santa Barbara, arriving here on **January 13, 1835**. *Pilgrim* called on ports and landings from San Francisco to San Diego, collecting thousands of 25-pound, malodorous, and insect-infested hides for the New England leather industry.

Dana stopped in Santa Barbara on a few occasions, the most memorable being his attendance at a post wedding *fandango* for the daughter of Don José de la Guerra, the *Comandante* of the Santa Barbara Presidio, who married an agent of the Bryant & Sturgis Company. There is a painted tile plaque located on a wall at El Paseo in downtown Santa Barbara commemorating this visit.

Tired of the grueling and unpleasant working conditions, and feeling his health restored, Dana engineered a swap with a crewmember from the ***Alert***, another ship that would soon be heading home. Upon his return to Boston, Dana reenrolled at Harvard, and, in March 1836, completed his undergraduate studies at Harvard law school. He subsequently passed the bar exam and went on to a successful career in public service.



Fortunately, Dana recorded his observations during his shipboard days. Dana's memories are immortalized in his book, *Two Years Before the Mast*, which was published in 1840. "Before the mast" refers to the ship's forward section where the sailors slept. Both watches of deck hands jammed into narrow bunks in the crowded and wet quarters, where the ship's motion was most severe.

Dana's book is, by far, one of the most compelling and accurate accounts of the Mexican Period of California's history. His book was soon hailed as a masterpiece of maritime literature. Dana's vivid accounts of the hardships of the common sailor, the hide-and-tallow trade, and his accurate descriptions of Alta California and Santa Barbara provide a clear image of life here during the early 19<sup>th</sup> century.

Every fall, local fourth grade students spend a night living the life of a 19<sup>th</sup> century sailor as part of the SBMM Tall Ship Program. Students are "mustered" by a first mate from *Spirit of Dana Point* and serve on one of five crews: hide gatherer, line handler, galley, boatswain, or rigger. Typically, 20 classes participate each year.

## SHORE WHALING EXHIBIT

### Introduction

The California shore whaling stations operated during three distinct periods:

- Early Period (1854-1900)
- Early Modern (1918-1950)
- Late Modern (1956-1971)

### The Early Period (1854-1900)

Whales were hunted for their oil to use for lighting and lubricants. In modern times, whale meat was used for animal feed and the oil for lubricants, soap, and as an ingredient in margarine.

California's shore whaling industry began in Monterey in 1854, when Captain John Pope Davenport founded the Monterey Bay Whaling Company. Between 1854 and 1900, whaling stations were established along the California coast.

Two local stations were at Goleta and Cojo Viejo. The Goleta shore whaling station was located on a sand spit below the cliffs where the University of California at Santa Barbara now stands. No known photographs of this station exist. The Ward Memorial Highway now covers the site of the station.

The whaling station at Cojo Viejo was about 38 miles northwest of Santa Barbara, near Point Conception. Captain Frank Anderson established the station in 1879. Usually there were 18 to 20 men who worked at the station.

In 1880, Goleta and Cojo Viejo stations combined and produced 17,135 gallons of whale oil worth \$7,710.

The whale blubber was boiled in large try pots in a nearby cave. The try pots were heated with firewood from local oak trees. From 1867 to 1880, there were four or five small companies at this station. Some of the men who worked at the station included:

- Samuel Hackett (ca. 1867-1869)
- Captain Alfred van Doress (ca.1870-1871)
- Captain Frank Anderson and Captain Kimberly (ca. 1872)
- Vincente Cavalleri (ca.1879-1880)

Whaling at Cojo Viejo probably ended in 1886.

Nineteenth century shore whaling is distinguished from the more typical long whaling voyages by focusing operations on the beach. Similar operations were located in Australia and New Zealand during the same time, based on the archaeological remains found at shore whaling sites. Shore whaling sites also have been excavated in Red Bay, Labrador, Canada, and in San Diego at Fort Guijarros.

Coming soon in  
this area: Kerosene  
lamp exhibit.



California shore whaling was more cost effective than deep-sea whaling. It required smaller boats, fewer men, and less equipment. The invention of harpoon guns in 1852 made shore whaling easier. Also, shore whalers could be closer to their families, unlike deep-sea whalers who often spent one to three years away from home. During the off-season, shore whalers could farm or work other trades. Nevertheless, shore whaling was dangerous, and whalers were hurt or killed by whales.

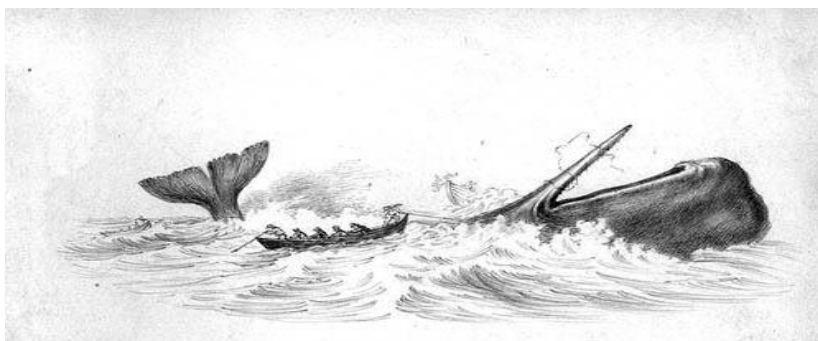


California shore whalers mainly hunted whales for oil, which was used for lamps and oiling machinery. Shore whaling was seasonal. It was based on the annual whale migrations of California gray, humpback, and blue whales. Whalers also took advantage of fin, Pacific right, and sperm whales that passed through the Santa Barbara Channel in search of food. Gray whales were hunted the most.

Shore whaling was conducted by positioning one man at the top of the cliff to watch for passing whales. Once a whale was sighted, a crew of six or seven men rowed out through the waves to pursue the whale. Whaleboats were 26 to 30 feet long and powered by oars and sometimes a small sail. The whale was killed with either a Greener harpoon gun mounted on the front of the boat or a hand-held shoulder gun that fired an explosive bomb lance. In rare cases, whalers used dynamite to stun or kill several whales at one time. Whales sometimes escaped or sank to the bottom of the ocean and were lost. The technologies of the Greener and shoulder guns enabled shore whalers to kill whales more efficiently than deep-sea whalers who used harpoons.

Once the whale was killed, the whalers towed it ashore and sliced its blubber from head to tail. They cut the blubber into smaller pieces and boiled it. The oil from the blubber was poured into wooden casks and shipped to market. Because whales were prized mainly for their blubber, the meat and bones were left on the beach to rot. The terrible stench could be smelled for miles.

Most of the whalers were Portuguese from the Azores, a group of islands lying about 800 miles off the coast of Portugal. Other whalers came from New England, Jamaica, Italy, China, and Japan. Some of the whalers had deserted deep-sea



whaling ships to strike out on their own. Most of the California shore whalers worked on the *lay* system<sup>5</sup>. In a good year, a shore whaler earned a respectable income. A single gray whale could yield between 25 and 45 barrels of oil, which sold from \$27 to \$40 a barrel in 1855. Some shore

<sup>5</sup> They received a share of the business rather than regular salaries.

whaling stations produced as much as 450 barrels a season. Profits were based on the price per barrel and the amount of oil that the whaling station produced each season. Competition from petroleum products and declining whale populations ended 19<sup>th</sup> century shore whaling.

### **The Modern Era (1918-1971)**

The modern era in shore whaling is distinguished by larger and more permanent operations, located in northern California at Richmond near San Francisco, and Moss Landing near Monterey.

Modern California whalers worked from steam and diesel-powered boats that could cover a 100-mile range. Powerful whaling cannons mounted on the bow of boats replaced the harpoon guns of the 19<sup>th</sup> century. The Museum owns a cannon that was used on the whaling vessel *Lynn Ann* and was actually used to hunt whales in the Santa Barbara Channel during this era. This cannon is now in storage.



Once the whales were killed, they were taken to processing stations that were characterized by large ramps and indoor processing areas. Whale meat was processed into animal feed. Whale oil was extracted from the blubber to make soap products, lubricants, and even margarine that was exported to Europe. Between 1956 and 1969, over 3,400 whales were killed and processed by California shore whalers.

**Fieldtrip Tip:**

What happens when we overuse our resources?

The last California whaling station closed in 1971, after eight whale species were placed on the Endangered Species List. Although commercial whaling is now banned in many countries, deep-sea whaling continues in some parts of the world.

## FACTS ABOUT WHALE SPECIES HUNTED

### California Gray Whale, *Eschrichtius robustus* →

These whales migrate annually from the Bering Sea to breed and raise their young in the lagoons of Baja California and western Mexico. The round-trip journey is 10,000-12,000 miles long. California gray whales were removed from the Endangered Species List after recovering from hunting. The gray whale is extinct in the Atlantic and extremely rare in Asia.



### ← Humpback Whale, *Megaptera novaeangliae*

Humpback whales of the Pacific Ocean feed on small fish and small zooplankton called krill. Humpbacks found in the Santa Barbara Channel migrate seasonally from the West Coast of the United States to Mexico and Central America. Humpbacks are known for their songs, which help them communicate underwater. Protected humpback populations are now thriving.

### Blue Whale, *Balaenoptera musculus* →

The largest animals ever to have lived on earth, blue whales live in the open seas and eat mostly krill, small shrimp-like crustaceans. In other parts of the world, blue whale stocks remain perilously low, but the California-Mexico stock is healthy and growing.



### ← Right Whale, *Eubalaena glacialis*

Historically, Pacific right whales ranged from Alaska to Baja California. Their habitat is shallow water and large bays. Right whales are an endangered species that were once hunted for their blubber, which yielded large quantities of oil. Baleen, the brush-like filters found in a right whale's mouth, was made into corset stays, umbrellas, and other objects. Although right whales were hunted here occasionally, they were rare along the California Coast.

### Sperm Whale, *Physeter microcephalus* →

Sperm whales are known for their distinctive blow, which extends forward and to the left. They live in deep water and feed on squid and fish. They were hunted for their superior oil and for a substance in their skull called ambergris that was used in the world's finest perfumes. Sailors used their teeth for ivory scrimshaw carvings.



## THE SANTA BARBARA WATERFRONT EXHIBIT

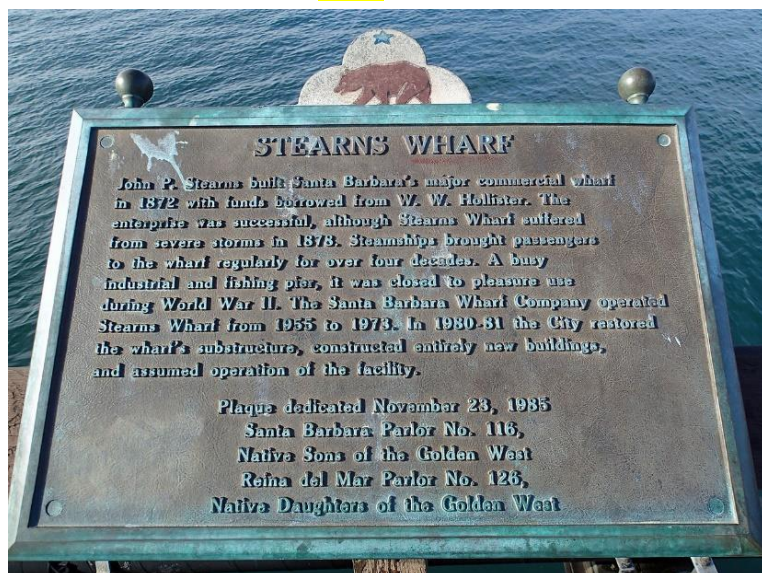
### Stearns Wharf

Santa Barbara has no natural harbor. From the time of the establishment of the **Presidio (1782)** and **Santa Barbara Mission (1786)**, ships delivering cargo and passengers had to moor up to three miles offshore, bringing goods and people into shore in small boats through the waves, often getting everyone and everything wet in the process! This went on for some time, resulting in irregular contact and lost economic opportunities for the small, isolated town.

The first attempt to correct this sad state of affairs was addressed by Dr. Samuel B. Brinkerhoff (of Brinkerhoff Avenue) in 1865, when he formed the Santa Barbara Wharf Company. By 1868, Brinkerhoff and his investors completed a 500-foot wharf at the foot of Chapala Street. Although the wharf was a major improvement, it proved to be highly inadequate. Extending only 500 feet, the Chapala Street Wharf was too short to accommodate large vessels, especially the large lumber schooners. As a result, lumber, shingles, and siding had to be floated ashore on incoming tides. To make matters worse, the rickety little stairs leading to the wharf led many a passenger to hire surf boats to take them to shore rather than risk the tricky climb.

Not content with this situation, **John Peck Stearns**, a new arrival to Santa Barbara in 1867, saw an opportunity to improve these conditions. Stearns owned a nearby lumber mill and needed better access to ships bringing in lumber. After considerable negotiations with the city, and armed with financial backing from William Wells Hollister, Stearns built a 1,600-foot wharf which was completed in **1872**. It was then the longest deep-water pier between Los Angeles

and San Francisco and served the passenger and freight shipping needs of California's South Coast for over a quarter century.



When the railroad finally reached Santa Barbara in 1877, Stearns added an additional spur to the wharf, providing a necessary transport link to his lumberyard and the nearby Southern Pacific Depot. The spur was damaged by severe storms in the early 1900s and was ultimately abandoned in 1923.

The Harbor Restaurant was built on the wharf in 1941, marking an end to the shipping and transportation era of the 1800s. The restaurant has proved to be the economic backbone of the wharf.

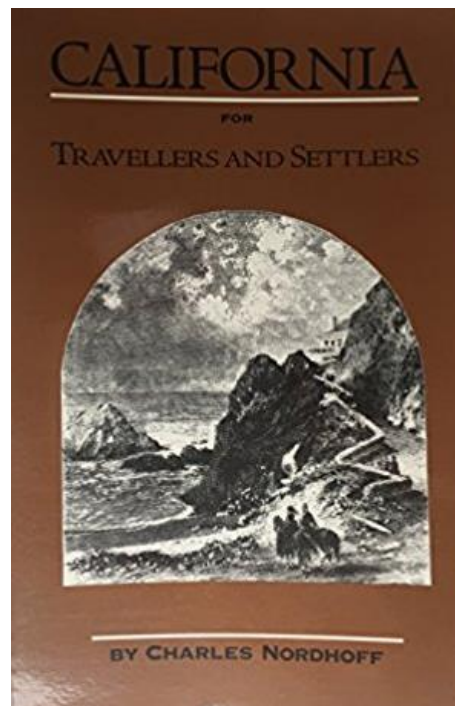
Since its beginning, Stearns Wharf has had its share of natural and economic disasters, from the big earthquake in 1925 to a fire in 1973 which caused its closing. The wharf stayed closed for six years until restorations began and finally reopened in the fall of 1981. Yet another fire in the winter of 1998 devastated the last 150 feet of the wharf, including the Moby Dick Restaurant.

Though the rest of the wharf remained open during this period, the rebuilding took over two years. The new Stearns Wharf stands today as Santa Barbara's most visited landmark.

### The Development of the Santa Barbara Harbor and Waterfront

By the latter half of the 19<sup>th</sup> century, Santa Barbara became known as a health resort. The opening of Stearns Wharf in 1872 created a tourist boom for Santa Barbara. The economic growth of Santa Barbara was publicly linked to tourism and health seekers, although agriculture was important to the economy. Charles Nordhoff's articles in Harper's Magazine and subsequent book, *California: A Book for Travelers and Settlers*, extolled the virtues of Santa Barbara. The book became a bestseller and encouraged many people to visit California. By the late 19<sup>th</sup> century, wealthy industrialists were building homes in Montecito.

Although Stearns Wharf was a successful commercial pier, it did not offer much protection for boats. As early as the 1850s, Santa Barbara citizens wanted a protected anchorage and a commercial harbor. Santa Barbara's City Council asked the Federal Government for funds to build a harbor in 1873, but the request was rejected.



The Santa Barbara Yacht Club took the initiative to test sites for a harbor in the early 1920s. To determine tides and currents, members of the club charted the path of floating bottles and sacks of sawdust they set adrift off Hope Ranch. Based on these rough experiments, the Yacht Club recommended a harbor near the present-day Andr  e Clark Bird Refuge east of Stearns



Wharf. The City supported later surveys and recommended a harbor location near the Bird Refuge. It would have been the cheapest option and would not have faced serious sand-drift problems. But the Bird Refuge site was not popular with owners of large yachts, whose boats would not fit into the proposed harbor.

In the end, nature and a very wealthy man decided the matter. On June 29, 1925, at 6:42 AM, a powerful earthquake hit Santa Barbara and destroyed much of downtown. Santa Barbara citizens enthusiastically rebuilt the city, creating its present-day Spanish look<sup>6</sup>. Major Max Fleischmann of Fleischmann Yeast joined the rebuilding spirit, and offered Santa Barbara \$200,000 for a breakwater if local citizens passed a bond measure to match his gift. He insisted that it be built at its present site so that it could

<sup>6</sup> Pearl Chase, also known as the "First Lady of Santa Barbara" attended the Santa Barbara Normal School and later became a civic planner who is largely recognized for her work in restoring Santa Barbara with Spanish-style buildings. Today, the Pearl Chase Society continues her legacy.

accommodate his 250-foot yacht, *Haida*. The measure passed on May 4, 1926, and plans were drawn for an 1,800-foot breakwater.

Construction of the harbor began in 1927. Castle Rock, damaged in the earthquake, was destroyed to make way for the harbor. Its original design was minimal: a stone wall detached from the mainland. This design, thought to minimize the littoral drift problem, did not work, as sand flowed into the new harbor and threatened to fill it. Fleischmann anteed up another quarter-million dollars to build a groin connecting the breakwater with the shore. This extension was completed in 1930. By 1930, Fleischmann had given \$630,000 to the project.

The harbor transformed the Santa Barbara waterfront. The breakwater interrupts the flow of sand down the coast and impacts the beaches nearby it. One immediate result was the creation of West Beach and Leadbetter Beach. Once just a thin strip of sand, by 1935 Leadbetter Beach had been built up by 50 acres of sand. Meanwhile, beaches down the coast were stripped of sand. Resorts such as Miramar and the Biltmore began to lose their beachfronts and in 1937 sued the City for damages.

The harbor was originally designed for recreational vessels, and commercial boats were at first unwelcome. By the 1940s, commercial fishermen became a vital part of the Santa Barbara harbor. By 1996, about 19% of the slips were used by commercial fishermen.

With the completion of the \$2.5 million Marina One expansion in 1999, the total number of berths at the harbor is 1,139. There are 113 slips for liveaboards.

*The harbor has  
1,139 berths.  
There are 113  
liveaboards.*

The cost of maintaining the harbor is now about \$1.5 million a year.



### III: UNDERWATER ARCHEOLOGY & MARITIME RANCHES

#### THE SANTA BARBARA CHANNEL: A BRIEF OVERVIEW

##### Seafaring Along California's Central Coast

The first recorded ocean expedition through the Santa Barbara Channel was by the European explorer, **Juan Rodriguez Cabrillo**, in **1542**. Since that time, ships from across the globe have plied these waters, searching for new lands, trade routes, natural resources, fabled riches, and much more.

##### Shipwrecks in the Santa Barbara Channel

There are hundreds of known shipwrecks along the Central Coast between Point Mugu and Point Conception, with still more waiting to be discovered. The earliest reports of possible shipwrecks in this area date back to the 1600s when European ships were exploring and running trade routes along the coastline.

It may also be possible to find submerged prehistoric watercraft along the Central Coast. If proper conditions exist underwater to preserve the natural materials, many types of vessels may lay buried on the sea floor.

Here in the Channel Islands, archaeological evidence exists to support the possibility of human seafaring as far back as 13,000 years ago, indicated by human occupation on the islands at that time.

##### Regulating Submerged Cultural Resources

Many Central Coast shipwrecks, also termed *submerged cultural resources*, are within state or federal waters and are regulated by the Channel Islands National Marine Sanctuary or the California State Lands Commission. Other shipwrecks that have washed up onto the islands are managed and regulated in part by the Channel Islands National Park. Any artifacts recovered from wrecks within State waters after 1979 belong to the California State Lands Commission and are regulated by State legislation for the people of California.



##### Establishing a Basis for Future Study

The shipwrecks discussed in this exhibit reveal just a small fraction of the history behind this region's rich maritime heritage. Ongoing research efforts by the Santa Barbara Maritime Museum and other state and federal agencies intend to uncover more information about these fascinating submerged cultural resources for future study.

**Exhibit Artifacts (*on rotation—artifacts listed are not always on display*)**

- *Harvard* passenger **schedule** (Schwemmer loan)
- Los Angeles Steamship Company *Harvard/Yale* **notepad** (Schwemmer loan)
- *Harvard* **deck plans** (Schwemmer loan)
- Los Angeles Steamship Company **ceramic plate** (Martin Cox loan)
- *Harvard* **passes** (Schwemmer loan)
- *Harvard* **postcards** (Schwemmer loan)
- *Harvard* **life ring** (SBMM collection)
- *Chickasaw* **life ring** (SBMM collection)
- 2 **copper bolts** off *Yankee Blade* (SBMM collection)
- **Fork** from *Yankee Blade* (SBMM collection)
- **Lead scupper** off *Yankee Blade* (SBMM collection)
- **Newspaper Headline** *Cuba* (SBMM collection)
- **Safe** off *Cuba* (Roberti loan)
- **Clock** off *Cuba* (Maria Daily loan)
- **Portholes** off *Cuba* (SBMM Collection)
- **Jacob's ladder** (wood) off *Cuba* (Marla Daily loan)
- **Pewter plate** off *Cuba* (Marla Daily loan)
- **Brochure** of Pacific Mail Steamship Company (Schwemmer loan)
- **Small parts** off *Jane Stanford* (SBMM Collection)
- *Winfield Scott* **Newspaper** (SBMM Collection)
- *Winfield Scott* **fasteners** and other small parts (SBMM Collection)
- *Winfield Scott* **pieces of pottery** (SBMM Collection)
- *Crown of England* **iron stove and iron t-handle** (National Park)
- *Aggi* **belaying pin** (Schwemmer gift)

**Winfield Scott Shipwreck Exhibit**

During the California Gold Rush, ships propelled by steam regularly carried passengers and cargo between San Francisco and Panama. One such vessel was the side-wheel steamer *Winfield Scott*. The steamer was travelling from San Francisco—southbound to Panama—with nearly 500 passengers and a cargo of one million dollars in gold and 56 sacks of mail. Her master, Captain Samuel Blunt, chose the shorter route inside the Channel Islands to save time



for the steamer's owner, Pacific Mail Steamship Company. Encountering fog in the Santa Barbara Channel, Blunt did not reduce speed, but kept the steamer steady at 11 knots. At midnight on December 2, 1853, the 225-foot steamer made a turn to the south, believing it was between Santa Cruz and Anacapa Islands, but ran hard aground on Anacapa Island, becoming permanently stranded.

Although Anacapa Island is only 26 miles from Santa Barbara, the town was no more than a small village in 1853. The northbound Pacific Mail Steamship Company's steamer *California* picked up a few survivors (the women and children) and the cargo of gold, but most passengers were forced to wait for her return from San Francisco eight days later.

Several first-person accounts of the survivor's stories have survived, telling how they were required to abandon the ship and relocate to a small rock until first light. Later in the morning

the crew found a suitable place to land (not much more than a rock) on the island at a place now called Frenchy's Cove. Although Anacapa is nearly five-miles long, there was little beach area for nearly 500 passengers to wait out eight days on the island. The survivor's camp was not without its problems, as a band of thugs took advantage of the survivors by pillaging through their baggage. The criminal element was dealt with and punished in view of the survivors, setting an example for others who might consider taking advantage of the situation. Diaries tell of survivors scaling to the top of the island to watch for the *California's* return. Other accounts tell of the cannon being salvaged from the *Winfield Scott* and set up on the beach to signal the approaching rescue steamer.

Today the site of the shipwreck *Winfield Scott* provides archaeologists and visitors with insight of a 19<sup>th</sup> century side-lever steam propulsion system and personal artifacts left behind as the ship foundered. Listed on the National Register of Historic Places, this site is an important link to the California Gold Rush, the single largest migration to California from around the world. Even though the *Winfield Scott* is the oldest documented shipwreck recorded in the Channel Islands National Marine Sanctuary and Park to date, in the decades to follow many more ships would fall victim to the frequent foggy occasions that plague the Channel Islands.

#### Fieldtrip Tip:

Talk about weather forecasting and how to respond to severe weather.

### Winfield Scott Passenger Stories

- **Edward Bosqui:** Banker from San Francisco. At the age of 21 and home sick, he was returning home to Quebec, Canada for a visit.
- **Frederick Stolp Crane:** At the age of 20 he departed Arora, Illinois in April 1853 driving 150 head of cattle to the gold miners in California, arriving at Placerville in October with 110 cattle. He decided to return home by sea to avoid a hard journey on land.
- **Asa Cyrus Call:** He was appointed Indian Commissioner as a U.S. Army Captain. He was returning East with his brother to later found the city of Algona, Iowa.
- **Charles C. P. Holden:** A miner and farmer from California who was traveling to Chicago where he became a prominent political figure.

### Do Shipwrecks Still Occur?

Difficult ocean conditions, such as fog, wind, high waves, and strong currents, have contributed to many shipwrecks along the Channel Islands and the Central Coast, as well as in other parts of the world. Factors of rough weather—combined with the potential for human error, navigational failure, or equipment malfunction, among other problems—continue to provide opportunities for shipwrecks today, even with modern navigational technology and watercraft.

**The Santa Barbara Channel is one of the most dangerous places for ships on the California coast.**



- The coastline below Point Conception turns sharply east and west instead of north and south.
- The Channel is subject to sudden and heavy fog and storms.
- Navigational equipment was not precise prior to the launching of global positioning satellites.

### **Few records of shipwrecks were kept along the Channel by the Spanish and Mexicans prior to California becoming part of the U.S.**

- The Manila Galleons sailed outside of the Channel on their return from the orient.
- There may be a wreck of a Manila Galleon off San Miguel Island.
- Most of the shipwrecks that have been documented since the 1850s have occurred at the western end of the Channel.

### **San Miguel Island**

- Between 1879 and 1923, 11 major shipwrecks occurred.
- Many were schooners bringing lumber along the coast during the building boom that followed statehood or later when taking lumber to the Orient.
- In September 1923, the Pacific Mail Steamship Co. passenger and cargo ship *Cuba* ran aground on a reef off Point Bennett with 115 passengers, 65 crewmen, and \$2.5 million in gold and silver bullion. All were rescued. The Honda Disaster occurred later that same day.

### **Santa Rosa Island**

- Between 1892 and 1962, nine major shipwrecks occurred.
- Wrecks of coastal schooners, especially lumber ships, were numerous.
- In 1892, the *Golden Horn*, a four-masted barkentine, hit a reef off the island in fog. The ship was lost, but all 28 crewmen were saved.
- In 1915, the German freighter *Aggi* ran aground.
- In 1962, a U.S. freighter *Chickasaw*, originally built for the U.S. Navy, also wrecked on the rocks and could not be saved, but no lives were lost.

### **Other notable Shipwrecks in the Channel**

- In 1854, the wooden side-wheel steamer *Yankee Blade*, a Gold Rush-era ship carrying \$150,000 in gold, wrecked in a fog on the rocks off Pt. Arguello at the entrance to the Channel. Twenty lives were lost.
- On the same day that the *Cuba* wrecked off San Miguel (September 8, 1923), the U.S. Navy's Destroyer Squadron Eleven, comprised of 14 ships sailing from San Francisco to San Diego, moving at 20 knots in heavy fog and under orders to maintain radio silence, made a premature turn to the east, thinking it was entering the Santa Barbara Channel. Eight ships followed the lead destroyer into the rocks at Honda Point, near Point Conception, and seven were total losses. Twenty-three sailors lost their lives. It is the worst peacetime disaster in U.S. Navy history.

The 9/8/23 Squadron 11 wreck of 7 ships at Honda Point is the worst peacetime disaster in U.S. Navy

## **MARITIME RANCHES ON THE CHANNEL ISLANDS**

### **Santa Cruz**

Sheep were introduced to Santa Cruz Island as early as the 1850s due to the high demand for sheep and mutton during the California Gold Rush. At one time, all eight California Channel Islands supported sheep. By 1870, Santa Cruz Island was one of the largest wool-providers in the State of California.

Free to roam the island's vast acreage, sheep populations greatly increased. By 1881, sheep numbered over 60,000. Every spring and fall, sheep were rounded up by men on horseback and herded to one of several island locations for shearing. Fleeces were packed into large burlap sacks, each full bale weighing several hundred pounds. The bales were then shipped from the island to mainland markets.

To export sheep to the mainland, they were driven through a system of corrals at Prisoners' Harbor onto the island's schooners *Star of Freedom* (1864-1893) and *Santa Cruz* (1893-1960). Each vessel could carry more than 200 sheep at a time to mainland buyers, and animals were often ordered by the thousands.



Frenchman and island owner Justinian Caire began planting grapes in Santa Cruz Island's central valley in the early 1880s. Among the many varietal grapes planted, Zinfandel was predominant. Vines were planted in low-density rows and were head-pruned without benefit of trellises or irrigation. At its peak production in 1910, the winery produced 83,000 gallons of wine (mostly red) from about 150 acres of vineyards.

Wine was shipped in puncheons, or casks, aboard the company schooner *Santa Cruz*. Island wine was never bottled on site. After the 1920 Volstead Act (Prohibition Act) was passed, Santa Cruz wine sales ceased with the expiration of the Caires' permit on December 31, 1929. Island grapes, however, continued to be shipped to the mainland and sold throughout local markets.

Basement wine production was common in Santa Barbara, especially in the Italian community. Italians also provided much of the island's seasonal labor workforce. With the repeal of Prohibition in 1933, winemaking resumed on the island. It lasted until 1936, when the last island vintage was produced.

In the 1850s, pigs were introduced for food. Some became feral and endangered island foxes and nine rare plants for the next 150 years. The National Park Service and the Nature Conservancy spent over \$5,000,000 to rid Santa Cruz of over 5,000 pigs. In 2005, Santa Cruz was again pig free and endangered species began to rebound.

Not long after Edwin L. Stanton purchased the island from the Caires in 1937, the vines were removed as unprofitable. After two years of clearing sheep from island rangelands, Ed Stanton developed a breeding herd of about 800 cows and a few dozen bulls. With their immature offspring, cattle populations could be maintained at about 2,500 animals. Polled Herefords were raised for their versatility in mountainous terrain and their ability to travel longer distances for water. Although both the Caires and the Stantons raised cattle, cattle dominated the Stantons' island enterprises for almost half a century, from 1939 to 1987.

Animals were branded, earmarked, castrated, doctored, and culled during spring and fall roundups. They were later transported to the mainland by island vessels *Vaquero* and *Vaquero II*, which provided cattle transportation for the Santa Cruz Island Company. These ships were owned by the Vail & Vickers company, which operated the neighboring ranch on Santa Rosa Island.

From 1968 to 1985, Edwin Stanton's son, Carey Stanton, partnered with a lucrative hunting club to keep sheep numbers in check. After Carey Stanton's death, both The Nature Conservancy and the National Park Service cooperated in eliminating all sheep. As of 2001, Santa Cruz Island is sheep-free.

Immediately after Carey Stanton's death in 1987, The Nature Conservancy—titled heirs to the Santa Cruz Island Company—sold the island's herd and removed the cattle from the island.

Santa Cruz Island is also known for an acoustic range facility that was located on the island. Known as **SCARF** and created by the AC Electronics Division of General Motors Corporation, the Santa Cruz Acoustic Range Facility was a three-dimensional acoustic tracking range south of the Santa Barbara Channel Islands off the California coast. It contained four bottom-mounted hydrophones located in 4,000 feet of water that were cabled to an underwater termination chamber at the 60-foot depth. Additional cables led from the chamber to the control center located on Santa Cruz Island. Designed originally to pick up submarines in the adjacent waters, the system tracked a target in 3 dimensions in the spherical mode using three hydrophones. The system is no longer used, and all buildings have been removed.

### Santa Rosa

Santa Rosa Island is the second largest of the eight Channel Islands, with over 53,000 acres of sandy beaches, grasslands, steep canyons, and occasional groves of trees, including the rare Torrey pine grove. Called **Wimal** by the Chumash, Santa Rosa Island has a history of human occupation stretching back at least 13,000 years. Following the Chumash came European explorers, Chinese abalone fishers, sea mammal hunters and fisherman, as well as ranchers, sport hunters, oil companies and the military, all of them leaving traces of their use of the island.



Archaeologist Phil Orr's discovery of human bones in 1959 at Arlington Springs provided evidence of the oldest known habitation of the island. Recently radio-carbon dated to 13,000 years ago, these are among the oldest securely-dated human remains in North America. The age of the Arlington remains and a host of archeological sites on the Channel Islands that date to the late Holocene (10,000-6,500 years ago) indicate an early migration route from the Old World into North America along the West Coast. **To date, the earliest human remains found in North America are those of Arlington Springs Woman, found near Arlington Springs on Santa Rosa Island. This evidence suggests that as early as 13,000 years ago, indigenous people may have had the watercraft and seafaring knowledge to undertake long-distance channel crossings between the mainland and the islands.**

Desires for fine furs in China and Europe encouraged otter hunting along the Pacific coast in the late 1700s and early 1800s. English, Russian and American companies exploited this trade, employing Aleut and Hawaiian hunters to slaughter the animals.

In 1838, Mexico granted Santa Rosa Island to the Carrillo brothers, who were prominent residents of Santa Barbara. According to the land grant, improvements had to be made on the island to maintain possession. Consequently, a house and corrals were built in 1844. The first structures on the island were located between Skunk Point and East Point in an area now called Rancho Viejo or Old Ranch.

The first livestock were brought to the island in 1844: 270 head of cattle, 51 ewes, two rams, and nine horses. During the following decade, numerous livestock, horse, and wagon trails were developed across the island. Following a disastrous drought that devastated California's cattle industry during 1863-1864, a huge sheep ranch was developed and in 1873, 40,000 sheep were reportedly sheared.

A. P. More acquired full interest in the island in 1881 and increased the number of sheep on the island to 80,000 by 1888. The death of A. P. More in 1893 led to litigation and the eventual sale of Santa Rosa Island. More's heirs began to sell their shares to the Vail & Vickers Company in 1901. By 1902, Vail & Vickers owned the entire island.

Walter L. Vail and J. V. Vickers began introducing more cattle to Santa Rosa Island while removing the sheep, running a large stocker operation where young cattle were brought to feed on the island grass for one or two years and then sold to buyers on the mainland. Depending on the season and forage quality, between 3,000 and 7,000 head of cattle grazed on the island at any given time. Vail & Vickers owned the cattle boat *Vaquero* to transport their cattle to and from the island. When the government confiscated the boat for use in World War II, Vail & Vickers replaced her with the *Vaquero II*, built in Santa Barbara by Paul Robert "Sugar" Lindwall. The boats were equipped with pens to hold the cattle, and the island pier had a loading chute that allowed the cattle to be loaded and unloaded.

Vail & Vickers did not develop many roads on the island until the late 1940s. Ranch superintendent C. W. Smith blasted out a road along a cattle trail into the steep canyons on the north side of the island during the 1920s and 1930s. Oil companies constructed roads in 1932 and the 1940s for exploratory drilling. The military built roads during the 1950s.



Members of the Vail family managed the ranch operations from Los Angeles and later Santa Barbara, and regularly visited Santa Rosa Island. After Walter Vail's death in 1906, his son N.R. managed the ranch. In 1943, N.R.'s brother Edward took over management until 1962, when his nephew Al succeeded him. Al Vail, the third generation of Vails to manage the ranch, continued ranch operations until the ranch shut down in 1998. The Vail & Vickers cattle operation ended in 1998 with the removal of the last herds of cattle, nearly 100 years after they purchased the island ranch.

When the Santa Barbara area was discovered to be a rich source of oil, oil companies drilled exploratory wells on the islands. Standard Oil Company developed a well in the high elevations of the island in 1932, but was unsuccessful, as were Signal Oil and its partners. The oil companies constructed roads to their wells that later became important routes on the island.

After the United States joined World War II, the military negotiated a lease with Vail & Vickers in 1943 to set up an early warning radar facility on the south side of the island. The Army Corps of Engineers built a radar system at a location now called Signal Hill and a cantonment about three miles away. The site was closed as the war ended and the buildings and materials were left to be used by the ranch.

Because of the Cold War, in 1950 the Air Force leased 336 acres on the south side of Santa Rosa Island to house the 669<sup>th</sup> Aircraft Control and Warning Squadron. They constructed an advanced technical outpost on a high peak and established a residential, maintenance, and administrative area for over 200 personnel, along with a pier, at Johnson's Lee. The Navy added missile-tracking facilities on Navy Hill in 1952. The Air Force base closed in 1963 when advancing technology made it redundant. The buildings and materials again were left for the ranch to use, which made the guardrails into corrals and the windows, doors and building materials into new structures around the ranch.

Legislation creating Channel Islands National Park in 1980 expanded the boundaries of the 1938 National Monument to encompass Santa Rosa, Santa Cruz and San Miguel islands. In December 1986, the National Park Service purchased Santa Rosa from Vail and Vickers. Vail & Vickers retained a 25-year reservation of use and occupancy of approximately seven acres in Bechers Bay and negotiated a special use permit to continue cattle ranching as well as commercial deer and elk hunting on the island.

Cattle ranching ended on Santa Rosa Island in 1998; by 2011 the entire island was managed by the National Park Service.

Cattle ranching ended on Santa Rosa Island with the last of the cattle being shipped to the mainland in 1998. The 25-year use and occupancy reservation expired in 2011, leaving all of Santa Rosa Island under the management of the National Park Service. Approximately 5,000 visitors come to Santa Rosa Island each year to explore the world of the native Chumash, walk the shores where European explorers landed, visit the island ranch complex, and see coastal California as it might have been hundreds of years ago.

## San Miguel

Archaeological research has shown that San Miguel Island was first settled by humans at least 12,000 years ago, when San Miguel was still part of the larger Santarosae Island<sup>7</sup> that connected the northern Channel Islands when sea levels were lower near the end of the Last Glacial period. Because the northern Channel Islands have not been connected to the adjacent mainland in recent geological history, the Paleo-Indians who first settled the island clearly had boats and other maritime technologies. San Miguel was occupied by the ancestors of the Chumash people for many millennia, who developed a complex and rich maritime culture based on marine fishing, hunting, and gathering.

The first European explorer to land on San Miguel was the Portuguese explorer Juan Rodrigues Cabrillo on October 18, 1542. Cabrillo commanded three Spanish ships that spent several weeks on the island while exploring the Santa Barbara Channel and California Coast. Cabrillo died on January 3, 1543, of infection from a wound after an attack on his expedition by local tribesmen. He is thought by many to have been buried there, although his grave has never been found.

After Cabrillo's death, the island was renamed "Juan Rodrigues" or "la Capitana" in his honor. In 1748, it appeared as "San Bernardo," a name adopted by Miguel Costanso on his 1770 map. The name "San Miguel" won acceptance by English explorer George Vancouver in 1793.

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<sup>7</sup> An ancient landmass off of the southern California coast which is now today's Channel Islands. The largest was Santa Rosae which was about 3-4 times bigger than today.

In 1848, the Treaty of Guadalupe Hidalgo ceded California to the U.S. Government, but the Channel Islands were not included. The treaty was redrawn a few years later, but San Miguel Island was again inadvertently omitted from the list of islands the United States was to acquire. In 1895, Great Britain intended to take advantage of this technicality and acquire a coaling station between Vancouver and the Hawaiian Islands. In July 1896, President Cleveland ordered a local U.S. Marshall to sail with surveyors to appropriate the island. The surveyors completed their work, and the island was assumed to be a U.S. possession from then on.



Like other Channel Islands, squatters, fisherman, and otter hunters lived on San Miguel over the years. In the 18<sup>th</sup> and 19<sup>th</sup> centuries, fur trappers came to the island for sea otters.

The last of the island Chumash were removed to mainland missions and towns in the 1820s, leaving San Miguel largely uninhabited until ranchers arrived to raise sheep there from 1850 to 1948.

### San Nicholas

Early titleholders were owners by possession only. The first record of a long-term resident on San Miguel Island was **George Nidever**, who, on June 30, 1863, purchased interest in San Miguel Island from Samuel C. Bruce at a Santa Barbara County Sheriff's sale. Bruce needed to pay \$1,486.57 in debts at the time, and Nidever was the highest bidder at \$1,800 for "all the right, title, interest and ownership... in and to all the sheep, cattle, and horses upon the said Island of San Miguel, consisting of 6,000 sheep, more or less, 125 head of cattle, more or less, and 25 horses. Also the right, title, interest, claim and ownership... consisting of a possessory claim to an undivided half of the said island." Nidever built an adobe 400 feet above Cuyler's Harbor and is famous for bringing **Juana Maria** from San Nicholas Island.

Over the next 18 years, the San Miguel Island was bought and sold several times. In 1887, half the island was sold to William G. Waters for \$10,000. In 1888, Waters moved to the island and began ranching. In 1897, he formed the San Miguel Island Company with the assistance of investors. In 1908, Waters and investor Elias Beckman became involved in a lawsuit which resulted in the U.S. Government exercising its right of ownership.



Between 1911 and 1948, San Miguel Island saw its share of lessees. One of these was Robert Brooks. Brooks hired his longtime friend, Herbert Lester, to help manage the island. Lester was a victim of shell shock from World War I. After spending years in an Army hospital, Brooks thought life on the island would help him.

In 1930, Lester and his wife Elizabeth moved to San Miguel Island. They lived in the house originally built by Captain Waters—and containing wood from the *Cuba* shipwreck—and had two daughters on the island.

They seldom went to the mainland, and when it came time to educate the children, Mrs. Lester did it herself. Herbert Lester became quite proficient in obtaining unusual memorabilia from shipwrecks and displayed them in his Killer Whale Bar. Lester even proclaimed himself *King of San Miguel*. Lester's endless charm and astonishingly likable personality, together with

Elizabeth's humor and intellect, served as a magnet to draw famous people out to the island. In 1935, *Mutiny on the Bounty* was filmed near the island.

Sheep grazed undisturbed until the 1960s when the Navy ordered the elimination of all the animals. In 1966, the last 148 sheep were eliminated. The island continued to be a central point for naval training well into the 1970s. In 1980, San Miguel Island became part of the Channel Islands National Park.

Today the National Park Service maintains two airstrips, a ranger station, and a research station on San Miguel Island. The island is normally staffed by a ranger who enforces park laws, while also providing interpretive services for public visitors. The island also hosts scientists who study pinnipeds and manage the island fox captive breeding program that is conducted on the island.

## IV: COMMERCIAL DIVING & FISHING

### EARLY ORIGINS OF AMERICAN DIVING

#### Prehistoric Diving

Diving in America may date as far back as 4,000 years or more. Many historians and scientists hypothesize that the Central Coast's indigenous Chumash people used free diving as a means of collecting food from the ocean.

#### Archaeological Evidence

Past studies of ancient Chumash burial sites reveal that some of these early people had extra bone growth in their auditory canals, suggesting a medical condition resulting from prolonged exposure to cold water. People today often refer to this condition as *surfer's ear* or *diver's ear*, as cold-water surfers and divers have a greater tendency of experiencing this ailment due to the frequency of their activities in the water.

#### Chumash Maritime Tradition

Did the early Chumash free dive for abalone and other marine foods off our coasts? Modern Chumash assert that free diving for abalone has been a part of their maritime heritage until the time of the abalone ban in the 1990s. In this area, abalones were located sub-tidally, most likely requiring them to be collected underwater by a diver.

### U.S. DIVING FROM THE 19<sup>th</sup> CENTURY TO TODAY

Traditional brass and copper diving helmets, built by American manufacturers in the 19<sup>th</sup> century, became the mainstay of the commercial diving industry and are still commonly used and collected by commercial divers and enthusiasts around the world.



#### The Advent of Mixed-Gas Diving

In the mid-1920s, the U.S. Navy started to experiment with breathing gases other than regular air. These brave individuals were the first pioneers to use helium gas as a breathing mixture for diving, as helium extends the diver's ability to remain underwater for long periods of time. Helium diving would later come to play a major role in the growth and development of offshore oil exploration with the Santa Barbara Helium Rush.

#### Saturation Diving

By the 1960s, as oilfield diving was pushing the limits of depth and time underwater, the U.S. Navy's SEALAB program pioneered *saturation diving*. Saturation diving allows divers to live in a submerged and pressurized underwater habitat for many days at a time. The SEALAB program was begun for research, and primary operations were conducted in the Channel Islands off the coast of Santa Cruz Island.



## Building America Underwater

As the infrastructure of America grew during the late 1800s, the diver's trade took on greater tasks. Divers became increasingly more important in the building of bridges, dams, and harbors. Some of these early construction divers specialized in salvage or wrecking operations.

To tackle these new underwater challenges, several companies were formed on the East Coast. The New York company of Merritt, Chapman, & Scott became the nationally dominant force in construction diving. Initially formed in the late 1800s, their west coast operations included the construction of the Santa Barbara harbor in 1929.

## Diving into the Commercial Fisheries

In Santa Barbara, the Chumash first fished for abalone, prying the shells off rocks using whale bones. When the Chinese arrived, they walked the beaches in search of abalone, then dried them and shipped them back to China. But the anti-Chinese sentiments led to the banning of those practices. In the late 1800s, Japanese divers popularized West Coast abalone diving using compressed air, but during WWII their operations suffered heavily due to large-scale Japanese internment. In time, Caucasian divers—many from the U.S. Navy's diving ranks—repopulated the formerly dominant Japanese abalone industry.

In the 1950s, two-thirds of the world's abalone came from Santa Barbara. In the 1960s, Ron Radon came to Santa Barbara and his Radon boats were designed for abalone fishing.

## From Abalone to Oil

In the latter part of the 20<sup>th</sup> century, the local abalone diving industry went into rapid decline. This exodus from the industry is largely due to the over-fishing of abalone populations. Some commercial divers have changed fisheries, and now dive for sea urchins to supply Asian markets. Santa Barbara now supplies two-thirds of the world's sea urchins, and they are highly prized. Urchin divers use the same Radon boats. Other abalone fishermen made the switch to oilfield diving.

## Dan Wilson's 400 Foot Dive

About 45 years ago, in a prelude to man's successful quest to extract oil from the deep coastal waters off Santa Barbara, a group of locals developed revolutionary technology that, to this day, continues to define the field. (Hugh) **Dan Wilson**, an abalone diver, wanted to prove to oil companies that a mixture of helium and oxygen was a viable option commercially. Compressed air, which uses nitrogen, caused nitrogen narcosis when divers dove too deep. Heliox, a combination of helium and oxygen, did not cause narcosis, although it makes the body very cold.



Helium also allowed divers to go deeper into the ocean, thereby allowing oil companies to drill where crude is more abundant. Using compressed air, commercial divers could only reach around 200 feet deep.

On **November 3, 1962**, Wilson, using the converted Japanese abalone helmet that is now on display in SBMM, jumped into the Santa Barbara Channel and reached a depth of 400 feet off the east end of Santa Cruz Island. He used oxy-helium as a breathing gas, the first time by a civilian commercial diver. The dive became a catalyst for the introduction of deep-mixed gases

into the commercial diving industry, permitting expansion of domestic and international offshore oil development. Immediately following this dive, Dan Wilson, Lad Handelman, Whitey Stefens, and Ken Elmes formed their company, General Offshore Divers.

Santa Barbara diving pioneers Lad Handelman, seated, and, left to right, Bob Christensen, Chris Swann, Bob Ratcliffe, Whitey Stefens and Bev Morgan. Chris Swann wrote *The History of Oilfield Diving*. (Don Barthelmess photo)



### Commercial Diving Equipment Advances

Few are aware that Santa Barbara is seen worldwide as the birthplace of deep-water commercial diving. The Monterey Formation is one of the richest oil deposits in the world. But a major portion of it sits underneath the Santa Barbara Channel. Oil companies looking to take advantage of these oil reserves needed daring young men to go down to depths of more than 1,000 feet to drill and seal the wells. Nobody in the world had done work like that at those depths.

Pioneers in Santa Barbara developed the first commercial use of helium-oxygen (known as the **Santa Barbara Helium Rush**) and the first commercial lockout diving bell. Other inventions included lighter weight diving gear, innovations in diving helmets, and advanced breathing apparatuses.

By the mid-1960s, the search for offshore oil demanded lighter equipment that would enable divers to swim. In time, Santa Barbara and the Gulf of Mexico became the world centers of equipment innovation. Dan Wilson of General Offshore built and launched the world's first commercial diving lockout bell, Purisima, to support deep-diving operations. It is now displayed on the SBMM patio with an informational exhibit about it in the diving section of the Museum.

The Purisima, located on SBMM's front patio, allowed divers to exit the bell underwater, work on a well, and then decompress on the return voyage to the surface.

### Kirby Morgan Diving Systems International

Santa Barbara abalone divers, Bob Kirby and Bev Morgan, collaborated to form the Kirby Morgan Corporation to build diving helmets and masks in support of domestic and international deep-water diving operations. Kirby Morgan Diving Systems International has achieved the distinction for setting the global standard in commercial and military diving technology. Many of their helmet designs are on display in the Museum.

The Kirby Morgan design shop is on Garden Street, and the main factory is in Santa Maria. To this day, this 50+ year old company provides two-thirds of the commercial helmets sold worldwide.

### SBCC Diving Program

Santa Barbara City College established the world-renowned Marine Diving Technology AS degree program in 1968 to support the labor demand for marine technicians working above and below water in support of commercial diving operations. It is the only public diving program in the U.S.

## THE SPORTFISHING EXHIBIT

This sportfishing simulator is designed to re-create the experience of catching the big one. There are many species of fish that live in the Santa Barbara Channel or in the Central Coast's inland lakes. Visitors can select one of these fish and then reel it in for the highest score. They experience what it feels like to fight a fish, as well as learn to identify different species based on their markings, shape, and coloration.



### How to Begin:

- Take the fishing rod out of its holder and place it into the circular holder in the chair. The left and right leg should be on either side of the rod while fishing.
- Hold the rod with the left hand, gripping the area directly above the reel.
- Keep the right hand free to push the start buttons and then reel in the fish.
- **DO NOT make any adjustments to the reel itself. It has already been specially adjusted for use with the simulator.**
- Push the **SELECT FISH** button until the desired fish is visible.
- Push the **START** button once the desired fish has been selected.

### Tips and Techniques:

- **At the left** of the screen is the **tension bar**. This bar shows how much tension is being applied to the fishing line while winding the reel. Try to keep the tension bar in the middle of the screen for optimum performance.
- If the line is too tight, the fish can break the line, or the hook may come out of the fish's mouth.
- If enough line is not reeled in, the fish can spit out the hook or shake the hook out of its mouth.
- The small box in the lower right-hand corner of the screen indicates how much line needs to be brought in. If the box is **red**, too much or too little line is being reeled in. If the box is **green**, the right amount of line is being reeled in. If the box is **yellow**, the reeling technique is the middle.
- Pull the rod tip up, then reel in as the tips drops back down. Repeat until the fish is caught.
- As the score gets higher and higher, the size and weight of the fish increase. Look for the point score **at the top** of the screen. Once a fish is successfully caught, the weight of the fish is displayed.

All our simulated fish are caught using the catch and release method. This means that when you catch a fish, it is admired for its size, strength, and beauty, and then let go. By returning fish to their natural environment after they are caught, they continue to grow, reproduce, and increase fish populations for future generations.

## COMMERCIAL FISHING ALONG CALIFORNIA'S CENTRAL COAST

### Fishing through the Ages

For thousands of years, fishing has been a focus of human activity and livelihood along Santa Barbara's coast and offshore islands. Native Chumash peoples were among the first fishermen to catch and harvest seafood in this region. Pursuing everything from sardines to lobster to swordfish, they used fishing techniques and implements that still bear likeness to those used by modern-day fishermen. With time, technology, and globalization, Central Coast fishing has become a major international commercial industry. Today, five main fisheries are in operation along the Central Coast and offshore islands.

## Hook and Line Fisheries

The Chumash caught fish and lobster using hooks made of shell, cactus spines, bone, or iron. Since then, fishermen have used hooked longlines, set lines, and trolling gear. Catches have included rockfish, shark, barracuda, albacore, sablefish (black cod), bonito, mackerel, sculpin, halibut, sheepshead, cabezon, and salmon, among others.

## Trap Fisheries

Trap fishermen use cage-like structures, called *traps*, which are baited and lowered to the seafloor. Traps are attached to a floating buoy and are often used to catch rock crab, sheep crab, shrimp, and California spiny lobster. In the early days of trap fishing, lobsters sometimes weighed over 20 pounds! Trap fishermen have also caught fish like sheepshead and cabezon.



## Harpoon Fisheries

When we think of harpoon fisheries, we often think of the modern whaling industry of the 19<sup>th</sup> and 20<sup>th</sup> centuries. However, whales are not the only animals that have been hunted with harpoons. Over 3,000 years ago, the Chumash used wooden harpoons with stone-and-bone heads to catch swordfish. Nowadays, most swordfish are caught with nets, though some fishermen still use harpoons.

During the early 1950s, fishermen also harpooned basking sharks, which grow up to 30 feet in length and weigh several tons apiece. Oil from the sharks' livers was used to tan leather, to be a base for paints and cosmetics, **and to treat cancer.**

## Net Fisheries

Net fishing has been practiced for thousands of years. Along the Central Coast, fishermen have used gill nets, trammel nets, trawl nets, and round-haul nets like purse seines and Italian *lamparas*. Net-caught seafood from the Channel Islands includes sea bass, halibut, squid, sardines, rockfish, anchovy, shark, swordfish, shrimp, and sea cucumbers.

## Dive Fisheries

As a means of harvesting seafood, diving is another ancient practice that has a unique history along the shores and islands of the Central Coast. These waters have yielded many marine species to commercial divers, though some are now illegal to catch. Such resources have included five species of abalone, sea urchins, and sea cucumbers.

Outside the Museum, many commercial diving boats can be seen in the harbor. Unlike many fishermen who work from aboard a boat, divers harvesting seafood must always be careful of becoming prey themselves. In the water, these divers sometimes look like seals or sea lions, which are common prey of the Great White Shark. Great Whites have many nicknames, with some of the more humorous being *The Landlord*, *Mr. White*, *The Man in the Big Grey Suit*, or simply *The Fish*.

For the freshest fish, visit the City Pier, close to SBMM, on Saturday morning, and buy that day's catch direct from the fishermen.

## V: MODELS, BROOKS, AND LOUGHEAD

### Ship Models Have Ancient Origins

The ship models that you see in museums or private collections are sometimes hundreds, even thousands, of years old. Real ships and boats only last a few years or decades, but models often last long after their real-life counterparts have disappeared.

Ship models have been made for at least 5,000 years. They were made in ancient Egypt, both as a ritual piece representing material wealth and in tombs to carry the soul to the next world. These models give insight into ancient ship construction techniques, rigging designs, and uses of ships. Some of these earliest models were full scale and marked with instructions on how to reassemble them! King Tutankhamun's tomb (1300s BCE) had three (non-spiritual) fully rigged ship models. The expense of building a full-scale ship in an area with limited supplies of wood might have led to the use of smaller scale models. One of the earliest Egyptian models dates to 2600 BCE. In Europe, the earliest model ships date to the Bronze Age (1500-1200 BCE) and are simply clay reproductions of dug-out canoes.

The development of fishing boats to sea-worthy cargo ships to military ships traces the growth of civilization over the centuries. Before the days of practical radio communication, the ship provided the main contact—sometimes even the only contact—between one country and its neighbors. The ship was literally the vehicle of civilization and culture in ancient times.

### Sailors as Craftsmen

For hundreds of years, sailors have made models as a way of passing the time. Sometimes sailors made models to give their families or sweethearts. Sailors even made money selling models. French sailors, imprisoned by the British during the French Revolutionary Wars (1792-1802) and Napoleonic Wars (1803-1815), sold exquisitely crafted ship models made from their beef bone rations, boxwood, and other found material. SBMM has an example of this.

During the Napoleonic Wars, prisoners were held for longer periods than in past wars, sometimes until the end of the war—which could have been years—instead of merely months.

- Napoleon urgently needed men for his Navy and conscripted into service all sorts of craftsmen, including ivory carvers, jewelers, and watchmakers, many of whom were eventually captured by the British. Their talents fed a small industry. The skilled carvers used the natural curves of the bone from their beef rations for the ribs and planks for the model. They made glue and metal fittings from found materials. The models usually did not have sails. If there were sails, they were often made from horn, boiled until it de-laminated.
- The rigging of these models was usually very detailed and accurate, much more so than the hull shape. Sailors were much more familiar with a ship's rigging than with the hull shapes. Lines were made from whatever was at hand: horsehair, human hair, or other materials. The models are of French-type ships, though rarely identifiable, and often with English names to help their sale.
- Some models had a device, operated by two cords; which enabled the guns to be withdrawn or run-out. These intricate mechanisms may have been made by captured watchmakers or jewelers.
- Prisoners were allowed to sell anything they produced and could add to their otherwise spare rations with the money they made selling ship models. These prisoner-of-war models gained in popularity and could sell for 40 pounds or more! Some prisoners formed organized ship-model making teams. The trade was so lucrative that some French prisoners remained in Britain to make and sell models.
  - Boxwood models were never as popular as bone models, but were frequently more finely made. The models were probably made by ships' carpenters.
  - Prisoners also made tiny straw and wood-chip models.

*French prisoners built the Prisoner-of-War model during the Napoleonic Wars from beef bones and human hair.*

## Design Prototypes

Models have often been used to test new ship designs or to gain funding for new ships to be built. Depending on the purpose, models ranged from half-hull versions, showing only half a ship, to detailed replicas of an entire vessel. Historians think that by the 1500s, shipbuilders used half-hull models to assist in designing their vessels. By the 1870s, shipbuilders began using large-scale models to test hull designs in pools. The designers of *Queen Mary* tested a variety of designs in a simulated Atlantic Ocean before they built the real vessel.

## Symbols of Status and Wealth

In years past, ship models were used to signify the wealth and prestige of individual people or companies. Models often served as a miniature showpiece of the owner's or captain's original vessel. For example, in the 18<sup>th</sup> century, wealthy Dutch patrons commissioned models of their ships to display in their homes. Status models were common in England and the United States by the 1800s.

## Attractive Advertisements

Ship models can be effective advertisements for exhibiting a shipwright's talent. Shipbuilding yards once used models as an advertising tool, much like salesmen's samples. Today, cruise lines often exhibit models of their ships to entice tourists.



## Models Today

Nowadays, most ship models are built for display or recreation. Some are very high-tech and are operated by remote control. Modelers are usually employed by museums, commissioned to work for a patron, or simply make models for their own pleasure. We hope you enjoy our ship model collection.

Modern ship models tend to fall into these categories:

1. Models made by sailors and others who work on the sea.
2. Models made as a part of the process of ship and boat-building.
3. Models made in the commercial world for prestige purposes, e.g., advertising. They usually are often replicas of ships that already exist.
4. Models made for amusement or as toys.

## BROOKS MODELS

SBMM has nearly 30 models built by Dwight F. Brooks. These were donated to SBMM before the Museum even opened its doors and were our first important collection.

### **SS-383, U.S.S. *Pampanito***

Built by Dwight F. Brooks in 1982, this model is based on the 312-foot Balao class submarine U.S.S. *Pampanito*, built at the Portsmouth Navy Yard in 1943. *Pampanito* had six patrols in the Pacific and is credited with sinking six large ships and damaging four others. U.S.S. *Pampanito* also rescued downed pilots and survivors of torpedoed transports carrying allied prisoners-of-war.



The original U.S.S. *Pampanito* can be seen at Fisherman's Wharf in San Francisco, as a floating exhibit of the San Francisco Maritime Museum. The model weighs 100 pounds and is 10 feet long.

Scale: 4/10 inch = 1 foot

### ***Atlantic II* - Racing Toward a New Era**

*Atlantic II* was a three-masted, 185-foot schooner yacht, built in 1903. It was constructed for American yachtsman Wilson Marshall by the New York shipbuilding company, Townsend & Downey.

On May 17, 1905, *Atlantic II* made history when it set a 3,014-mile transatlantic racing record in the Kaiser's Cup race. It sailed from Sandy Hook, NJ, to The Lizard, a point off the coast of Cornwall, England. This event was the first officially organized open ocean race in the history of yachting.

The race was won by Captain Charlie Barr. Barr was considered one of the best professional skippers in the yachting world, having already sailed three America's Cup yachts to victory. Wilson Marshall hired Charlie Barr and a professional crew of 30 men to race the *Atlantic II* for him, and race they did. *Atlantic II* finished the course in a record-breaking time of 12 days, 4 hours, 1 minute, and 19 seconds.

In its long lifetime, *Atlantic II* had more than eight owners and served several functions. During WWI, the yacht served active duty as a U.S. Navy anti-submarine guard ship, and it also belonged to the U.S. Coast Guard during WWII. Sources indicate that *Atlantic II* finally sank in the mid-1970s off the coast of Virginia from old age and a rusted hull.

*All these models are seaworthy and remote controlled.*

Dwight Brooks was intrigued by *Atlantic II's* rich history. He began building the model in October 1978 and completed it in August 1979. It is ten feet long and weighs 148 pounds. The main mast is eight feet high, and its decks are planked in teak. Look inside. Can you see its parquet floors, flower vases, dainty silverware, and working crystal lights?

Scale: ¾ inch = 1 foot

### ***Gulfstreamer II* - A Vision of Elegance**

Dwight Brooks first caught sight of the Italian-built *Gulfstreamer II* in Marina del Rey in September 1986. Immediately impressed by the 114-foot yacht, he later discovered that the yacht belonged to an old friend of his, Al Paulson of Gulfstream Aerospace.

Paulson invited Brooks on board to photograph the yacht. Brooks made this model using his photographs and the original yacht plans. The model was built between late 1988 and late 1991.

The *Gulfstreamer II* model has complete interior lighting and sound systems. Brooks planked its decks in teak and modeled the mahogany furniture after the furnishings on the real vessel. It weighs 334 pounds and is ten feet long.

Scale: 1 inch = 1 foot

*The Gulfstreamer II is fully furnished inside based on furniture of the real vessel.*

### **The Madcap Nordkap**

*Nordkap* is a replica of a 68-foot Norwegian fishing trawler used in the North Sea. This radio-controlled model operated like an actual fishing boat, complete with a troll winch for raising or lowering objects over the side of the vessel.

Model maker Dwight Brooks had a good sense of humor. He liked using his models to sneak up on fishermen and surprise them. Using a walkie-talkie built into the bow of the *Nordkap*, he would talk to them or ask them for their license. If they got upset or ventured too close to his model, he might fire water cannons or a rocket launcher at them.

Amazingly, *Nordkap* can even catch live fish. If the model hooks onto a fish too large, it automatically releases the net and line!

Dwight Brooks built *Nordkap* in 1981. It is 8 ½ feet long and weighs 285 pounds.

Scale: 1 ½ inch = 1 foot.

### **Toot the Tugboat**

Built by Dwight Brooks in 1978, *Toot Toot* is perhaps one of the most loveable models of the Brooks collection. This tugboat model was built in only three months' time.

Brooks drew his inspiration for this little tug from many different sources. The exterior of this model is based on 32-foot tugboats of the San Pedro area. Its interior is based on the tug *Contender* of Long Beach. The model is named after the *Toot Toot* tug in Los Angeles.



Brooks liked to test out his models at his cabin, located on Gull Lake in Northern Minnesota. He was interested to find out how much weight the tug could pull; one day he had *Toot Toot* tow a woman in a rubber raft, as well as a 14-foot outboard boat with a woman and 2 children inside. *Toot Toot* surprised everyone! For being just a model, this little tug can really TUG.

*Toot Toot* weighs 100 pounds and is 6 feet, 3 inches long. The radio-controlled vessel has a complete lighting system, as well as ringing bells, a tooting horn, and a functioning fire hose that can shoot a stream of water up to six feet.

Look inside *Toot Toot's* rooms. Many of the miniatures were hand made by Dwight Brooks himself. Can you tell which items he made?

Scale: 2 inches = 1 foot

### ***Sirius***

*Sirius* is modeled after typical motorsailers designed by Philip L. Rhodes. These vessels are known for their speed, easy handling in rough water, and comfort. This model is not based on an actual vessel named *Sirius*. Brooks used the classic design concepts of a Rhodes ketch, approximately 85 feet in length, to build this model.

Built from 1982 to 1983 at Dwight Brooks' workshop in Los Angeles, *Sirius* was flown to his summer home at Gull Lake, Minnesota, for performance testing.

This molded fiberglass and wood model is powered by a 12-volt electric motor. It is 7 ½ feet long and weighs 115 pounds.

Scale: 1 inch = 1 foot

### **The Incredible U.S.S. *Cree***

U.S.S. *Cree* (ATF-84) is a 216-foot Apache class U.S. Naval Fleet Tug, built in 1942 and commissioned in March 1943. U.S.S. *Cree* performed as a towing and salvage vessel during WWII, cruising throughout the Pacific in numerous military operations. These tugs were specially designed to accompany fighting fleets and were fast enough to match their cruising speeds.

U.S.S. *Cree* and other Apache class tugs were instrumental to the war effort in many ways. They were responsible for towing damaged aircraft carriers, battleships, and other vessels and equipment to safe locations. Fleet tugs sometimes acted as fireboats, putting out fires aboard warships with their highly efficient water pumping systems. When necessary, these tugs performed their duties while defending themselves from attack.



These ships helped with general defense during air raids and used depth chargers for anti-submarine warfare when needed. In postwar years, fleet tugs were just as important. They performed many different roles, among which towing and rescue duties were just a few.

U.S.S. *Cree* received two battle stars in WWII and three in the Korean War. Despite surviving these conflicts, U.S.S. *Cree* was accidentally bombed by aircraft while towing a target and was decommissioned in April of 1978. It was afterwards sunk as a target in August of that same year.

This remote-controlled model has a complete lighting system, fully operable water hoses, and rotating radar masts. In case of attack, the U.S.S. *Cree* even has a working depth-charge delivery system and guns that fire blanks!

Dwight Brooks built this model between October 1979 and June 1980. He obtained plans for the U.S.S. *Cree* from both the Long Beach Naval Station in Long Beach, CA, as well as the U.S. Navy base in Pearl Harbor, HI. It weighs 204 pounds and is nine feet long.

Scale: ½ inch = 1 foot

### PT-168

*PT-168* is based on an 80-foot vessel built by ELCO in 1942 in Bayonne, NJ. The original *PT-168* served in the South Pacific and was scrapped shortly after the end of World War II. This molded fiberglass model, built by Dwight Brooks, is operated by remote control.



*PT-168* boasts many fine details, such as zinc swiveling gun mounts, aluminum torpedo tubes, and depth charges. The model is powered by an Italian Olympic 21-cc gas engine. *PT-168* is eight feet long and weighs 85 pounds.

Scale: ¾ inch = 1 foot

### Hot Shot Hydroplanes!

Dwight Brooks built 20 gas-powered speedboat models, 13 of which are hydroplane racers. Hydroplanes are high-powered racing boats that are designed to skim across the surface of the water. *Carol's Barrel #87* and the *U-95* are two fine examples of these models, and are constructed of wood and fiberglass.

## THE LOUGHEAD BROTHERS

The story of Lockheed Aircraft begins with **Allan and Malcolm Loughead**. The brothers first became fascinated with aviation after witnessing several glider demonstrations. In 1910, Allan began work as an airplane mechanic and shortly thereafter learned how to fly. When Allan returned to San Francisco in 1912, he and his brother, Malcolm, decided they might be able to make money flying people in planes.



Borrowing \$4,000 from a local cab company, the Loughead brothers built their two-seat flying boat Model G in 1913. The ten-dollar fee the brothers were charging for a plane ride was apparently more than most people were willing to pay. Unable to make payments, the creditors seized their plane. For the next two years, the brothers tried every scheme possible to earn the money to get the plane back, even panning for gold. Eventually they succeeded, and the brothers brought their plane to the Panama-Pacific International Exposition in San Francisco. The huge crowds there enabled the brothers to find plenty of willing passengers. With the small fortune they made at the exposition, the brothers moved to Santa Barbara and started the Loughead Aircraft Manufacturing Company in 1916.

Their first project would be the F-1, the world's largest seaplane, able to carry ten passengers. The brothers hired **Jack Northrop**, a 20-year-old draftsman and Santa Barbara high school graduate, to work on the project. The plane successfully flew in 1918, and the brothers soon received a request to build a flying boat for the Navy. After World War I, the company devoted its energies to the S-1, a single-seat biplane for civilian use. It was supposed to be inexpensive, but after spending \$30,000 developing and building it, the plane's \$2,500 asking price was too much for the typical plane-buyer. Financially strained, Loughead Aircraft closed in 1921.

Malcolm Loughead quit the aviation industry, moved to Detroit, and became successful with a hydraulic-brake system he developed for cars. Tired of his name being mispronounced as *Log-head*, Malcolm officially changed the spelling to match its pronunciation. He called his new company the Lockheed Hydraulic Brake Company.

In 1926, Allan Loughead and Jack Northrop reunited. They secured the money to form the Lockheed Aircraft Corporation, specifically incorporating the *Lockheed* spelling to associate themselves with Malcolm's successful brake company. Using their innovative construction of a single bodied hull from their earlier creation, the S-1, they produced an incredibly successful high-speed monoplane, the Vega. With a range of 1,000 miles, a cruising speed of 185 miles per hour, and capacity for six people, the Vega quickly became a popular choice for many of the world's top aviators, including Amelia Earhart and Wiley Post.

Jack Northrop left Lockheed in 1928 to start his own successful aircraft business. The following year, Allan Loughead sold the company to the Detroit Aircraft Corporation. Shortly after being sold, Lockheed Aircraft went bankrupt, unable to stay afloat during the Depression. In 1932, an investment financier named Robert Gross purchased the company and salvaged the Lockheed name. Over the next few decades, the Lockheed Air Corporation would continue to develop innovative planes such as the economical Electra and the high-performance Constellation.

Allan Loughead, like his brother, legally changed his name to Allan Lockheed in 1934. He went on to form two other aircraft manufacturing companies in the 1930s. Both were unsuccessful. After WWII, he continued his career as a real estate salesman, while occasionally serving as an aviation consultant. His love of flying never diminished, though, and Allan Lockheed kept an informal relationship with the Lockheed Air Corporation until his death in 1969.

### **Loughead F-1 Seaplane**

Between 1917 and 1918, Allan and Malcolm Loughead designed and built the F-1 flying boat in a mechanic's shop at the foot of Santa Barbara's State Street, close to where Rusty's Pizza is today. They were assisted in the design by the young Jack Northrop.

The F-1's beach launch ramp was located near the site of the present-day harbor parking kiosk, just north of the Museum. The Loughead brothers flew the F-1 to San Diego to interest the U.S. Navy in purchasing their design. World War I was ending, however, and they were not successful in selling the plane.



For several years afterward, the brothers flew sightseers around Santa Barbara and the Channel. They even flew the King and Queen of Belgium to Santa Cruz Island. Santa Barbara's Flying A Studios also used the F-1 in its films. Mary Miles Minter, one of Flying A's beautiful silent-screen actresses and a local resident, christened the F-1 before its inaugural flight on **March 28, 1918**.

Original plans and blueprints of the F-1 are not known to exist today. The Santa Barbara Radio Control Modelers' Club devoted more than seven years and 8,000 hours to build this quarter-scale flying replica of the F-1, using historic photographs of the original F-1.

On **November 7, 2004**, this model seaplane astounded and thrilled the public as it flawlessly completed its inaugural flight on Lake Cachuma in the Santa Ynez Valley.

## VI: ENVIRONMENTAL EXHIBITS & GOLETA CANNONS

### Impact of Civilization on Santa Barbara's Central Coast

For thousands of years, humans have interacted with the world's oceans and waterways to pursue many interests, e.g., food, water, mineral and energy resources, trade and commerce, transportation, recreation, exploration, and colonization. Continuous usage of these natural environments and resources has contributed to their deterioration over time. In Santa Barbara, community efforts are ongoing to clean and restore our coastal waters and to ensure their future stability. A wide variety of industrial, recreational, scientific, and urban activities exist in the Santa Barbara Channel area, as do many natural habitats and wildlife species. Deteriorating conditions of natural resources in the Santa Barbara area reflect much of what is occurring worldwide. Efforts to counteract environmental problems are ongoing.

#### Shipping

The Santa Barbara Channel is an active transportation corridor. Many large vessels pass daily through the Channel's International Shipping lanes. Most of these ships carry containers with cargo. About half of them go southeast and half go northwest. Oil tanker ships must travel outside the Channel.

Shipping wastes, pollutants, and the risks of vessel accidents impact commerce and the environment on a global scale. Researchers work to monitor these issues and find solutions.

Recently, the Channel shipping lanes were narrowed from three miles to two miles, and ships are incentivized to slow down in an effort to reduce whale strikes.

#### The Growth of a Major Transportation Corridor

For over 1,000 years, Chumash people paddled between the mainland and islands in redwood *tomols*. In 1542, Cabrillo explored the Channel in wooden sailing ships. Since then, ships of many nations have sailed these waters. Added activity has caused greater risks to both ships and the ocean environment. Over time, hundreds of vessels have wrecked in the Channel.

Modern-day ships of steel, some over 1,000 feet long, now travel through the Channel. The environmental impacts of shipwrecks on this scale can be enormous.

#### Shipping Accidents

Since World War II, there have been three major accidents involving large vessels in the Channel. In 1962, the freighter *Chickasaw* (photo below) went aground on Santa Rosa Island. In 1968, the *Cossatot* hit the *Copper State* head-on in the shipping lanes. In 1987, the *Atlantic Wing* rammed and sank the *Pac Baroness* outside the traffic lanes north of Point Conception.



Potential hazards of large vessel traffic in the Channel include:

Ship-to-ship collisions	Oil spills at sea caused by any of the above hazards
Ship groundings and sinkings	Smoke and fires on land, resulting from a grounded ship or fire
Ship collisions with an oil platform	Whale strikes

Most mariners follow shipping regulations while navigating in the Channel. The National Science Foundation estimates, however, that eighty percent of most accidents are still caused by human error.

### **Evaluating Shipping Risks**

What are the risks of shipping hazards? How likely are they to occur? Despite the three ship accidents since the mid-1940s, the only major oil spills came from a platform and an on-shore pipeline, not from a ship accident. Clearly, the risks are not very great.

Research indicates that about 18 to 24 ships pass through the Channel every day. Studies of past accidents in the Channel estimate that approximately one in a million ship passages through our shipping lanes may result in an accident. Such an event, however, could be a major environmental catastrophe.

At least 30 vessel-to-platform collisions have been reported across the world since platforms first entered the ocean. Studies of the English Channel show that this risk is very small, perhaps one in a billion per vessel passing by a platform.

### **Vessel Pollution**

Vessels pollute. They discharge oil from cleaning tanks, and there are various wastes from normal operations. Their engines contribute to air pollution. Regulations exist against these forms of pollution, and most ships make good efforts to comply with those regulations. It is often difficult to identify offenders. Furthermore, invasive marine life can also attach to ships' hulls or be discharged from ballast tanks. Fast-growing Asian kelp can overwhelm giant kelp and has been found in local harbors.



Pollution from sunken ships such as the *Pac Baroness* can be dangerous. This ship carried 21,000 metric tons of powdered copper concentrate and about 349,000 gallons of fuel and lubricating oil. Scientists estimate that some copper concentrates and at least 20,000 gallons of oil have escaped since its 1987 accident.

These types of pollution are sometimes very difficult to identify and can be nearly impossible to remedy. Many state and federal agencies are working to find solutions for sunken-ship pollution.

### **Urban Growth**

More than half of Americans live in coastal counties. Santa Barbara and Ventura counties are among their favorite destinations in California. Lining the waterfronts are homes, businesses, farms, freeways, tourist lodgings, and other urban developments.

Over time, increasing amounts of waste runoff from human activities have significantly affected coastal water resources. Public demand for action has resulted in efforts to clean up each source of waste runoff in our community.

## ENVIRONMENTAL IMPACTS OF URBANIZATION ALONG CALIFORNIA'S CENTRAL COAST

### Waste Runoff

Human settlement and urban activities have grown rapidly along the Santa Barbara Channel in the last 100 years. This region's beauty, climate, abundant resources, and improved methods of transportation have inspired many to build homes, establish businesses, and raise families here. Unfortunately, rapid coastal development has resulted in increasingly polluted coastal waters, particularly since 1950. Many regulatory agencies were criticized for not responding effectively to the impacts of a growing human population.



Waste runoff from streets, parking lots, farms, and golf courses greatly impact coastal resources, as it is the largest source of pollution on the California coast. Dumping in creeks, storm drains, and the ocean also contributes to ocean pollution. Rainwater, watering the lawn, and even washing your car all contribute to waste runoff. This water collects trash, gasoline, pesticides, and disease causing pathogens and flushes it into our ocean. If you go to the beach after the first storm or rain you will see more plastic on the sand and in the wrack zones. What we do not see is the toxic waste that has also been deposited. Public agencies started taking serious action over the last few decades after concerned citizens strongly protested frequent beach closures. The Santa Barbara Channelkeeper monitors industrial facilities and construction sites to make sure that the ocean is protected with industrial and construction stormwater permits.

#### Fieldtrip Tip:

Talk about what plants and animals need to survive and how it is important to understand that being a good citizen involves acting in certain ways.

### Stopping Pollution where It Starts

Local communities are working hard to help reduce ocean pollution. Governmental and citizen groups are cooperating to decontaminate watershed creeks, tighten sewage disposal standards, and reduce seepage of pollutants from onshore soil.

In 1998, Santa Barbara county septic tank owners volunteered to hook up to water treatment systems to reduce ocean and groundwater polluting. In November 2000, voters approved an increase in Santa Barbara's hotel bed tax to pay for cleaning creeks. Carpinteria greenhouses have been working with public agencies since the 1980s to end chemical runoff from acres of flower factories. Storm drain filters trap street and household garbage from flowing into the ocean. Beach cleanups help remove trash on the beach. Focused efforts and legislation continue to effect positive changes.

## Plastic Pollution

Plastic was invented in 1856 and has since changed the world. It is the accumulation that greatly affects life both on land and in the sea. Production of this material is high because of its durability and inexpensiveness. There are three types of plastic pollutants, micro-, meso-, and macro-. Some manufactured plastics can be recycled however most are resistant to the degradation process due to their chemical structure.

### Fieldtrip Tip:

Think about where plastic goes when you throw it away. What are some ways to avoid relying on plastic?

One of today's consequences of plastic-use is The Great Pacific Garbage Patch. Located in the North Central Pacific Ocean, this collection of plastic is said to take up 1.6 kilometers squared, according to researchers from the Ocean Cleanup project. That is almost 400 acres.



Most of what is found here are micro plastics. Other plastics there are things such as toothbrushes, toys, water bottles, cellphones, and nurdles<sup>8</sup>. About 100 million tons of plastic is produced each year and 10%



of that ends up in our oceans, that is to assume that we can count it all.

The Santa Barbara City Council approved new ordinances to ban Styrofoam, plastic straws, stirrers, and cutlery within city limits in 2019. 120 other cities have done the same to protect the marine environment. In Santa Barbara, each plastic straw represents one violation, meaning that the penalties could accumulate quickly. Restaurants can be fined \$1,000 or 6 months in jail after a second violation.

## Ocean Acidification

As levels of carbon dioxide (CO<sub>2</sub>) increase in our atmosphere, more and more carbon is absorbed by our oceans. In water, CO<sub>2</sub> is converted to carbonic acid, which lowers the ocean's pH. This phenomenon, called "ocean acidification," is expected to have major impacts on many forms of marine life worldwide.

The Santa Barbara Channel is a hub of ocean acidification research, and several ocean pH monitoring stations are currently in place to continuously measure changes in acidity. Channelkeeper is using our research vessel to assist Dr. Gretchen Hofmann's laboratory at UCSB by collecting regular samples at coastal pH sensors so that they can be properly calibrated. Channelkeeper also purchased a new monitoring station to be deployed at Naples Reef, which is important to researchers because of its thriving kelp forest ecosystem, its status as a Marine Protected Area, and its proximity to concurrent biological monitoring efforts. Through this research, we hope to learn more about how species in the Santa Barbara Channel will adapt to this globally significant phenomenon.

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<sup>8</sup> Small plastic pellets that are used to make larger plastics

## **The Clean Water Act**

Perhaps one of the most significant acts of legislation to protect coastal waters is the federal 1972 Clean Water Act. Although a federal law, it empowers local governments and citizens to enforce the legislation. Until the early 1970s, urban runoff into coastal waters occurred without sufficient governmental regulation and enforcement. The Clean Water Act requires zero discharge of pollutants into coastal waters to make the ocean safe for swimming and fishing.

Discharge standards were also set for sewage treatment plants and industries. By 1987, states were required to manage non-point source pollution, or runoff pollutants, from onshore. When progress was slow or lacking, citizen groups sued public agencies to act.

## **Coastal Alteration**

On a constant basis, waves and currents alter shorelines. Coastal residents' and business owners' efforts to build seawalls and other barriers only redirect these erosive forces and can make matters worse. Seawalls along Goleta's shorelines divert sand to Santa Barbara beaches further south and contribute to dredging problems in Santa Barbara's harbor.

Coastal construction also changes shorelines. Santa Barbara's breakwater, finished in 1930, greatly interrupted sand flow down the coast. Miles of beaches south of Santa Barbara were depleted of sand. The Maritime Museum actually stands on sand trapped by the breakwater.

In the 1970s, the rerouting of Ventura County's Highway 101 onto ocean landfill wiped out southern beaches as sand flow was trapped or diverted seaward. Eventually 65% of Ventura County's channel coast was lined with seawalls in an effort to prevent coastal erosion. Since then, California has imposed tough standards on shoreline construction, but the struggle continues.

## **Resource Extraction**

Historically, humans have taken many natural resources from the ocean, such as fish, shellfish, marine mammals, kelp, and oil. In the Santa Barbara Channel, some of this resource extraction became extreme as certain marine species' populations noticeably declined or approached extinction.

Many rules and restrictions have been created to protect and monitor marine resources. Local, state, and federal groups help enforce these policies and promote awareness, but work remains to be done.

# **CONSIDERING THE CONSEQUENCES OF EXTRACTING OCEAN RESOURCES**

## **Fishing**

In recent years, there has been much discussion about ocean fishing and its intensive competition for limited marine resources. In Santa Barbara County, 375 commercial fishermen plied local waters in 2002, compared to 477 fishermen in 1999. Landings of harvested seafood during this period declined slightly, while catch-value rose from \$6.4 million to \$6.7 million.

Increased regulation, popularity of farm-raised seafood, and competition from foreign suppliers contribute to these statistics. Meanwhile, the State of California implemented several Marine Protected Areas (MPAs), or *no-take zones*, around the northern Channel Islands in April 2003. These areas are now entirely off-limits to commercial or recreational fishing. Both conservationists and fishermen hope these reserves will promote biodiversity and help sustain ocean fisheries. The MPAs have proved successful and were recently enlarged. The SBMM's Environmental Exhibit map shows the **old** MPAs.

### Marine Mammals

Throughout history, marine mammals have been hunted by humans for food, pelts, oil, and other resources they offer. Many animals—some hunted to near extinction in recent centuries—now enjoy refuge in the Channel. All marine mammals are now protected by state and federal law.



About 27 species of whales, dolphins, and porpoises, six kinds of seals and sea lions, and even sea otters—twice considered extinct after intensive Pacific hunting—now visit or live near Santa Barbara on a year-round basis. Some mammal populations, such as the California grey whale, are recovering and have been removed from the endangered species list. Others, such as the blue whale, are doing well in the Channel but are still listed as endangered.

### Offshore Oil Production

Most of California's offshore oil production comes from Santa Barbara and Ventura county waters, where the world's first offshore wells were drilled more than a century ago.



### The Oil Spill of 1969

The Santa Barbara oil spill began in January 1969 in the Santa Barbara Channel near the community of Santa Barbara. It was the largest oil spill in United States waters at the time, and now ranks third after the 2010 Deepwater Horizon and 1989 Exxon Valdez spills. It remains the largest oil spill to have occurred in the waters off California.

The Santa Barbara spill was caused by a blow-out on **January 28, 1969**, six miles off the coast on Platform A in the Dos Cuadras Offshore Oil Field. Within a ten-day period, an estimated 80,000 to 100,000 barrels of crude oil spilled into the channel and onto the beaches, fouling the coastline from Goleta to Ventura as well as the shores of the four northern Channel Islands. The spill had a significant impact on marine life in the channel, killing thousands of sea birds, as well as marine animals such as dolphins, elephant seals, and sea lions.





The public outrage engendered by the spill, which received prominent media coverage throughout the United States, resulted in numerous pieces of environmental legislation over the next several years, legislation that formed the legal and regulatory framework for the modern environmental movement in the United States. The year after the spill, the 1<sup>st</sup> Earth Day was celebrated in San Francisco.

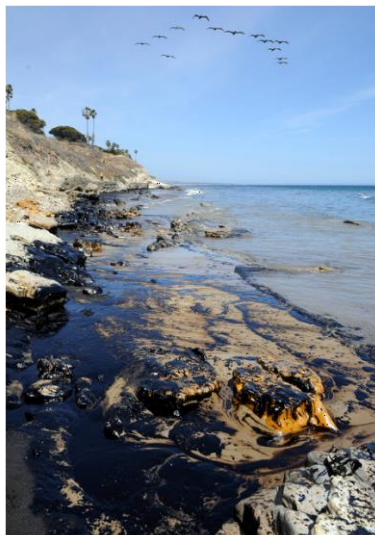
The blowout from the Dos Cuadros Offshore Oil Field was the spark that brought the environmental issue to the nation's attention. The Santa Barbara community acted to preserve and protect the environment. A wave of national legislation followed, including the National Environmental Policy Act and Clean Air and Water acts that protect sensitive coastal areas and endangered species. Additionally, UCSB created the first Environmental Studies Program.

Generally, oil spills have been much smaller since then, but Santa Barbara residents continue to support firm regulations to reduce oil spills, leaks, accidents, and air pollution, especially in areas where oil is produced. Clean Seas, an oil industry cooperative, has two vessels on standby in the Channel, both equipped to help clean up oil spills if they occur. They are required to be able to respond to a spill in 15 minutes, 24/7, 365 days a year.

In 2009, about 22 million barrels of oil and 21 billion cubic feet of gas were produced locally from 20 remaining platforms, continuing an annual decline. Most oil now travels by pipeline to the refineries, as oil tankers no longer load in the channel.

### Refugio Oil Spill of 2015

On May 19, 2015, a pipeline owned and operated by Plains All America Pipeline ruptured near Refugio Road by Refugio State Beach. An estimated 124,320 gallons of crude oil spilled, much of which ran down a culvert and into a ravine under the freeway. An estimated 20,000 gallons reached the Pacific Ocean.



Field teams documented dead fish, invertebrates, and other wildlife in the oiled areas following the spill. NOAA and its state and federal natural resource co-trustees investigated the extent to which the incident may have caused harm to birds (brown pelicans, common murres, Pacific loons, snowy plovers), marine mammals (including California sea lions), fish (especially surf perch and grunion), and marine invertebrates and their habitats. The spill also shut down fisheries, closed multiple beaches, and impacted recreational uses such as camping, non-commercial fishing, and beach visits.

### Oil Rigs

The oil platform is a multi-level steel structure on which all the equipment for extracting oil is located. The oil is transferred to shore by pipelines.

The oil platform is a fully self-contained city to house the workers since the oil rig operates around the clock. The typical elements of an oil platform include: communications center, helicopter landing pad, living quarters, mess hall, pumping control equipment, oil transfer systems, tubing structure to sea floor, multiple drill shafts, drill ships, and survey ships.



In addition, oil platforms have proven to be fertile ground for many species of marine life. The undersides of the platforms serve as artificial reefs which attract and support abundant and varied fish, thereby providing a significant fishery resource. Studies show that these manmade reefs can host four to five times as much marine life than the rest of the ocean. In the 1970's, Santa Barbara was at the forefront of the aqua-culture industry, using the oil platforms to farm mussels. This was the world's first alternate use of an oil platform.

For many Californians, offshore oil rigs are an eyesore, ugly and lifeless. Some marine scientists, however, say they are vibrant ecosystems with life that clings to many of these rigs. All that life complicates the question of what to do with offshore oil rigs that are no longer productive. Should they be completely dismantled and hauled ashore? Or should they just stay there?

**Fast Facts:** Each platform is a community complete unto itself, with all the functions necessary to support the persons living there.

**Typical Shift:** 12-hour shifts for 28 days, followed by 28 days off.

**Size:** As long as two football fields and almost as wide, it has living quarters for 86 persons on three levels, a six-bed sick bay, a mess hall, laundry, control rooms, and mechanics.

**Utilities and Systems:**

- Waste water treatment plant
- A desalinization plant that provides fresh water for crew members and operations
- Massive ventilation and air conditioning systems that keep working and living areas comfortable
- Elaborate safety equipment, including two large lifeboats to evacuate crews in any emergency

**Amenities:**

- Television and Internet
- Gym
- Drinking on board is prohibited
- Four meals a day: breakfast, lunch, dinner, and late-night supper
- Laundry service

### Dangerous Work:

- Some California ocean fields have proven unusually hazardous for hydrogen sulfide, a lethal gas found in sour crude formations that can endanger workers.
- Lifesaving oxygen kits and gas masks are immediately at hand for every person on board.
- Lifeboats have their own oxygen supplies, enough to serve 106 persons in event of evacuation.
- Drills are conducted regularly to acquaint workers with procedures for a possible blowout, fire, hydrogen sulfide, and other emergencies.

### What to do with Decommissioned Platforms?

Recently it was announced that Platform Holly, off the Santa Barbara Coast at Ellwood, will be decommissioned. At some point in the future, the other 19 platforms that line the Santa Barbara Channel will also be deemed unproductive. What to do with these rigs?



Should the oil companies completely remove them? What about the marine life that now calls these rigs home? Recent research shows that beams on the rigs are covered in anemones, brittle stars, mussels, and scallops. Schools of fish swarm around the platforms.

In a "rigs-to-reef" program, the top of the platform is chopped off, leaving the underwater scaffolding in place to conserve the fish and invertebrates gathered there, to transform these oil-drilling machines into long-term artificial reefs.

Others argue that oil companies need to completely remove the rigs.. Would it be better to remove all the equipment, but leave part of the superstructure that supports local marine life? These are questions we all must decide soon.

### Solutions and Preparedness



#### Clean Seas

Supported by the oil companies that operate the oil rigs in the Santa Barbara Channel, Clean Seas owns a large amount of oil spill containment and recovery equipment. In addition, it has a substantial amount of equipment available under contract in the event of a major oil spill event that requires greater capacity. You can see their vessel in Marina One and their barge anchored off East Beach.



#### Marine Spill Response Corporation

Marine Spill Response Corporation is a nonprofit oil spill removal organization that provides response services to help mitigate environmental damage in the Santa Barbara Channel and throughout the United States. Marine Spill Response Corporation owns a large inventory of oil spill sensing, containment, and recovery equipment in Santa Barbara but has additional equipment that can be rushed to the area in the event of a major oil spill. In 2012, four new 65-foot skimming vessels—the *Ocean Scout*, *Ocean Sentinel*, *Ocean Defender*, and *Ocean Guardian*—were built, joining an inventory of existing oil spill response vessels. Three of these

vessels are positioned in the Santa Barbara Channel and can be on-site to respond to a spill emergency within 15 minutes.

### Environmental Defense Center

Formed in 1977, the Environmental Defense Center works to protect our climate and local environment through education, advocacy, and legal action. Representing more than 120 nonprofit organizations, the Environmental Defense Center has helped terminate 40 offshore oil leases, prevented three coastal liquefied natural gas terminals, ended the barging of oil production in California waters, stopped several offshore oil drilling projects, and preserved more than 100,000 acres of open space. The Environmental Defense Center is the only nonprofit, public interest environmental law firm between San Francisco and Los Angeles.



### Heal the Ocean

Heal the Ocean was formed in 1998 in response to the closing of local beaches due to bacteria. It is a citizens' action group that tackles a variety of issues that affect the health of our ocean, including important work to cap previously decommissioned wells that continue to leak oil into the Santa Barbara Channel. One example is the Becker Well in Summerland that was finally capped in early 2018. It had been leaking since the early 1900s after it was abandoned.

### SOS CALIFORNIA SOS (Stop Oil Seeps) California

Bridging the gap between the environmentalists and energy industry, SOS California works to promote awareness of the natural oil and gas that seep in the Santa Barbara Channel and seeks solutions to eliminate their negative impact. SOS aims to alert the public to the magnitude of natural seep pollution and serves as a resource to fund environmental cleanup and develop alternative energy sources. Dedicated to collaborating with an informed public, SOS works to build the bridge to a healthy and sustainable future.



### Santa Barbara Channelkeeper

Founded in 1999, Santa Barbara Channelkeeper is a grassroots, nonprofit organization dedicated to protecting and restoring the Channel and its watersheds. Through science-based advocacy, education, monitoring, and enforcement, Channelkeeper defends the community's right to clean water and informs, inspires, and empowers people to speak and act for our waterways.



### Get Oil Out! (GOO!)

Formed in the aftermath of the 1969 oil spill, Get Oil Out! (GOO!) has spent nearly 50 years working to preserve and conserve Santa Barbara County's unique natural environment, scenic beauty, and resources by opposing offshore and onshore fossil-fuel developments that pose a significant danger to the environment. GOO! Actively encourages the development of renewable resources as alternative fuels that would decrease our fossil-fuel consumption and

our reliance on oil by promoting energy conservation measures and education on petroleum addition reduction.

### **Additional Channel Uses**

#### **Kelp Harvesting**

Under rigid state controls, kelp is harvested in the Santa Barbara Channel because of its many commercial and industrial uses, and because it grows so fast—up to two feet per day. Over time, however, the giant kelp growth off Santa Barbara has declined, and the impact of harvesting is still uncertain.

Storms, water temperature, and overgrazing by proliferating sea urchins all affect kelp growth. Sedimentation of the rocky bottom, industrial and domestic wastewater discharges, and warm water discharge from power plants are also part of the problem.



Invasive Asian kelp, which overwhelms giant kelp, has recently been found in local harbors. It is being weeded out by divers on a periodic basis to control further distribution and growth. The status of kelp along the entire coastline of Santa Barbara and Ventura is a matter of concern. Kelp restoration projects have had mixed results, though researchers continue to look for new solutions.

#### **Recreation**

The Santa Barbara Channel is a natural playground. Recreational enthusiasts and their equipment, however, often impact water quality, wildlife, and coastal beaches with pollutants, excessive noise, speed, and proximity to sensitive habitats and wildlife.

Surfers, swimmers, and other concerned citizens have effectively demanded action to reduce the harmful effects of various recreational activities. Ecotourism, environmental education, and scientific research efforts also help to promote public respect for the natural world and its wildlife.



#### **Recreation's Impact**

Santa Barbara County's beautiful beaches attract many people who may eventually destroy the splendor of these natural environments. These broad sandy beaches are often closed because of polluted coastal waters. Contamination flows mostly from inland, but some waterfront visitors contribute to the problem.

There are hundreds of pleasure craft, fishing boats, and a few industrial vessels in Santa Barbara's Channel. Coastal cities are responsible for monitoring discharges from visiting boats, liveaboards, and recreational craft in local harbors.

Recreational offshore power craft may also pose environmental challenges. Jet skis are especially noisy and fast. Careless driving can menace birds, marine life, and swimmers. Coastal cities are looking for ways to get these jet-propelled craft under control.

- **Non-Motorized Recreation**

- Many types of non-motorized recreational activities occur around the Santa Barbara Channel and its coastal recreational area. Activities include beach volleyball, camping, sunbathing, picnicking, hiking, arts and crafts, swimming, surfing, stand up paddling, kayaking, sailing, sport fishing, scuba diving, and much more. Local waterfront restaurants on piers and in beach parks also attract many residents and visitors.
- Municipal and state parks, beaches, and campgrounds cover much of the mainland shores. Some private foundations have preserved vast oceanfront vistas as open space for the public. The Channel Islands National Park is open to visitors year-round.
- These recreational activities are generally harmless as they produce minimal noise or water-borne pollution. Beachgoers need to be respectful of their natural surroundings, avoid dumping trash and other pollutants, and try not to feed or harass local marine life.



- **Motor-Powered Recreation**

- Water recreation activities that rely on propellers or jet thrust can be fun, but they can also create a lot of noise, go too fast, or leak pollutants. It is always important to have fun, but also to be considerate of the natural environment and those around you.
- Recreational and charter boat owners are usually environmentally responsible. Regular boat inspections and maintenance help avoid leaks of gas, oil, or human waste. Careful boaters also obey speed limits and avoid harassing marine mammals at sea.
- Jet skiers also need to be responsible. Jet skis' speed, noise, and sudden turns may frighten or endanger nearby wildlife, swimmers, or boaters. Ideally, watercraft should be operated at safe speeds and away from people and animals.



### **Recreation's Coastal Monitors**

Many beach users take the condition of their waterfront seriously. Surfers and swimmers, with the support of public agencies, are working hard to reduce the deterioration of coastal waters in California, including Santa Barbara. Coalitions of public and private groups are now seriously trying to clean up these waters.

Whale watching is another activity that in recent years has turned recreationalists into activists. Many people go whale watching just for fun but return to shore eager to participate in efforts to protect marine mammals from further harassment.

## FINDING SOLUTIONS TO ENVIRONMENTAL PROBLEMS

Many environmental problems in the Santa Barbara Channel are caused by human error or oversight. Consider ways in which you can get involved to reduce your environmental impact on your community. Find helpful solutions and try putting them in action.

### Assessing the Consequences: Restoring the Oceanic Community

The condition of the waters, islands, atmosphere, and continental coast of the Santa Barbara Channel are under constant study. They are often case studies of global ocean deterioration. To some degree, what happens here is happening everywhere.

Much research here focuses on marine creatures, including sea urchins, abalone, sea bass, rockfish, seabirds, pinnipeds, humpback whales, and blue whales. Other studies delve into habitats such as sandy beaches, lagoons, intertidal regions, kelp forests, sub tidal rocky reefs, soft bottom habitats, and the open ocean.

Ocean water temperature, salinity, oxygen content, ocean currents, and wind patterns are also under study. Air pollution from ocean-going cargo carriers, onshore industry, and urbanization are scientifically monitored. Scientific research is helping local communities identify environmental problems and recommend solutions.

Coastal communities here are committed to maintaining the health of the ocean and watershed environments. Research is conducted by public agencies on every governmental level, universities from across the nation, scientific foundations, and countless private organizations, ranging from neighborhood creek monitoring programs to national research institutes.

Involved federal agencies include the Channel Islands Marine Sanctuary, Minerals Management Service, Channel Islands National Park, National Marine Fisheries Service, U.S. Geological Survey, and the U.S. Environmental Protection Agency.

Among participating State agencies are the Department of Fish and Game, Lands Commission, Department of Water Resources, Coastal Commission, and the State Environmental Protection Agency. Scientists at the University of California at Santa Barbara (UCSB), especially at the Marine Science Institute, continuously have research in progress.

#### Fieldtrip Tip:

Talk about how we can reduce our impact on the environment. What could be done to protect our diverse marine life? What can we do to help every day?



## GOLETA CANNONS

In 1981 after a strong storm washed away much of the sand from the beaches, a jogger discovered five cannon near Goleta Beach. The cannon underwent an extensive restoration process conducted by archaeologists from UCSB and volunteers, using methods developed at the Institute of Nautical Archaeology Laboratory at Texas A & M, College Station, TX.



The cannon are believed to have been built in the late 18<sup>th</sup> century, based on markings on the cannon as well as metallurgy testing. Two of the cannon are marked with a letter H, a symbol used by the foundry Harrison of Robertsbridge, located in Sussex, England. If Harrison was the manufacturer, the cannon were made before 1746. Based on other markings made on the trunnions, it is believed that they were built in England or Scotland.

It is not known exactly how the cannon made their way into the Santa Barbara Channel. There are, however, many theories. They may have been lodged at the bottom of the ocean during a shipwreck. Sometimes, when ships ran aground, heavy items like cannon were thrown overboard so the ship could be refloated. A few have suggested that Sir Francis Drake may have left the cannon behind during his 1578 visit to California. This theory is extremely doubtful because the cannon are believed to have been built in the 18<sup>th</sup> century, and there is no other evidence that Drake ever entered the Santa Barbara Channel.

Another theory suggests the cannon came from the Santa Barbara schooner *Dorotea*, which foundered near the Goleta Slough around 1829 or 1830. The Goleta Slough was a natural harbor during the Age of Sail. Ships used it to escape storms and to work on their hulls, when necessary. The cannon possibly were thrown overboard at this time. When the *Dorotea* was sold to Santa Barbara resident Jose De La Guerra, the ship's bill of sale listed four six-pound guns and one three-pound gun. The Goleta Cannon consist of four four-pound guns and one three-pounder, but some believe that the variance occurred because it is difficult to see a difference between the cannon sizes unless actually measured. It is improbable, however, that we will ever know the true source of the cannon.

When discovered, the cannon were covered with sand, gravel, and magnetite. They were stored in water until restoration began to prevent the iron from exfoliating. The heavy encrustation materials were chipped away, and the cannon then underwent an electrolysis treatment to remove salts from the iron. Student volunteers at UCSB carefully cleaned the cannons before bathing them in alcohol and tannic acid. Following the final bath, each cannon was dipped in 350-degree microcrystalline wax and pronounced ready for display.

Two of the cannons that were discovered are on loan to the Maritime Museum from the Goleta Valley Historical Society.

## VII: SURFING

### ***The Marilyn & Tennity Surfing Exhibit Surfs Up! Santa Barbara***

Santa Barbara surfers have changed surfing and surf culture around the world while finding success and the perfect wave at any number of our fabled surf spots.

#### **The Wave**

- 12-foot long, 9-foot tall right-breaking wave
- Surf Spots: Since the 1930s, Santa Barbara's impact on surfing has grown exponentially. Santa Barbara's many surf spots quickly made a name for themselves as surfers discovered breaks known to locals for years. Listed below are the spots featured on the Surf Spots panel.
  - El Capitan State Beach
  - Jalama Beach Park
  - Hollister Ranch
  - Rincon, the *Queen of the Coast*
  - Leadbetter
  - Campus Point
  - Santa Barbara Harbor
  - Channel Islands
- The video footage on the monitor is from *Echoes* (part of George Greenough's *Crystal Voyager*), which inspired the Pink Floyd song *Echoes*. The video is linked to a motion sensor and will begin when someone walks past the Surf Spots panel.



#### **Santa Barbara Surfing History**

Surfing History (divided into 4 chronological panels)

- **The Sport of Kings:** Surfing's origins in Polynesian and Hawaii in the 1800s. Duke Kahanamoku and the Beach Boys of Waikiki revived surfing in the early 1900s.
- **1960s and 1970s: The Surfboard Revolution:** Films such as *Gidget* and *The Endless Summer* introduced the sport to future surfers worldwide. New board and fin shapes made the new shortboards much more maneuverable.
- **1980s: The Birth of Professionalism:** Surfing became a professional sport with local pros and shapers leading the way.
- **1990s-2000s: Surfing Goes Mainstream:** A new generation of local surfers rose to prominence.

There is a touch screen monitor showing a series of nine oral history videos that include interviews with and surf footage of Renny Yater, Al Merrick, Tom Curren, Kim Mearig, Bobby Martinez, Gates Foss, George Greenough, and two other segments on *Groms*—our surfers of the future—and the local surf spots.

Interchangeable panels feature topics such as Legendary Surfers, Surf Shapers, Legendary Shapers, the Rincon Classic, Surf Film Makers, the Curren Family, Surf Art, Surf Gear, and the Santa Barbara Surf Club.

**Artifacts:**

- **George Greenough's Camera and Kneeboard:** Innovator and filmmaker George Greenough used this 28-pound shoulder-mounted camera (with water housing) to film his 1969 full-length surf movie, *The Innermost Limits of Pure Fun*. Behind the camera you will find an early kneeboard, which Greenough rode at Rincon. He was the first to film surfers from the water and the first to curve the fin on a kneeboard.
- **Blue and Green Al Merrick Shortboard:** This shortboard was cut to fit the exhibit; it was originally 6 feet 8 inches long.
- **Vintage 1960s Longboard:** This Steve Brom board was also cut to fit the exhibit; it was originally about 8 feet long.
- **Surf' n Wear Hammonds Surf Classic 1986 T-shirt:** This never-before-worn t-shirt was donated by Roger Nance. In 1979, Nance and Jeff White created the Rincon Classic, a locals-only contest for Santa Barbara surfers to show off their skills.
- **Yater Surfboard:** Reynolds "Renny" Yater is considered the ultimate artist of surfboard design. He built long boards designed for Rincon. In the film *Apocalypse Now*, Robert Duvall wears a Yater T-shirt, and one of his lines in the famous "Charlie don't surf" scene is, "Grab my Yater spoon, my 6'8", a famous surfboard during the 1960s.

**Surfboards hanging overhead:**

- **Matt Moore:** Designed by Matt Moore of Rincon Designs, this board is between a short and a fish board; it is like a fish board because it has a wide deck surface, but its shape is that of a short board.
- **Tom Curren's Red Beauty:** An Al Merrick/Channel Islands Surfboards board signed by Tom Curren. This is one of Tom's signature boards. Tom is a three-time World Champion.
- **Kim Mearig shortboard:** An Al Merrick/Channel Islands Surfboards short board used by Kim Mearig. Kim—a classmate of Tom Curren's—was the 1984 World Champion.
- **Kelly Slater:** An Al Merrick/Channel Islands Surfboards board signed by Kelly. It was used by Kelly to win one of his first World Championships. While not a local, Kelly surfs Channel Island boards and is a ten-time World Champion.
- **Bobby Martinez:** An Al Merrick/Channel Islands Surfboards short board he used in competition. It is signed by Bobby on the bottom of the board (facing up).
- **Clyde Beatty Jr.:** The original rocket fish; designed by Clyde Beatty Jr. and Wayne Rich.

**Surf Gear and Technology**

*The gear—other than a board—and what you need to know to surf:*

Visitors can stand on a custom-made surfboard by shaper Dave Johnson and have their picture taken in front of a beautiful barrel wave shot by photographer David Pu'u.

**Dominant foot:** Before stepping on a surfboard, you need to figure out which is your dominant foot. With both feet firmly on the floor, start bending your upper body forward. As you start to fall, pay attention to which foot moves forward to catch yourself; this is your dominant foot and goes toward the nose, or front, of the board.



**Leashes:** Leashes help keep you attached to the board when you fall, or wipe out. There is one attached to the board that visitors can try on.

**Wax:** Unlike floor wax, which makes things slide, surfboard wax gives you traction and helps your foot stick to the board. In 1972, Zog asked his friend, local artist Hank Pitcher, to design his logo. Hank came back with the “Zog’s Sex Wax” design. “Why sex wax?” Zog asked. “Because sex sells,” Hank replied.



There is a bar of Mr. Zog’s Sex Wax, the leading manufacturer of surfboard wax around the world, mounted on one of the text panels.

**Wetsuits:** These are needed to help keep warm in California’s cold coastal waters. There is a wetsuit on display for visitors to feel. There is also information on different types of wetsuits:

- Baggies
- Full Suit
- Shorty/Short John/Farmer John
- Diving helmet maker Bev Morgan experimented with polyurethanes to make diving suits and to mold into snorkels. Bev thought surfers would also like these suits, but Miklos “Miki” Dora, a famous surfer in the ‘50s and ‘60s, said surfers would never wear these. Undeterred, Bev paid surfers to wear his wet suits at surf competitions, and the rest is history. He sold his business to identical twins Bill and Bob Meistrell, who founded Body Glove in Redondo Beach, CA, in 1953.

**Board Technology:** Information on different types of boards and why surfers choose particular boards for different conditions:

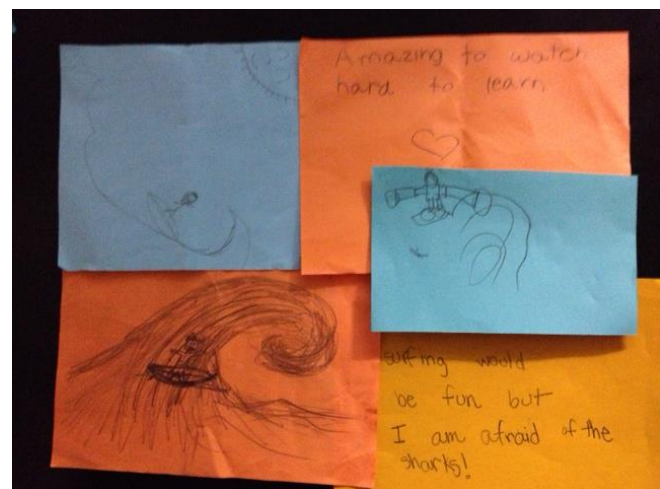
- Longboards
- Shortboards
- FunShape

**Board Science:** The materials and techniques used to make surfboards.

- **Fin Technology** - Fins allow for more maneuverability, control, and stability for surfers as they ride the board. Fins work like the rudder on a boat.
- **Shaper**
- **Glasser**
- **Airbrusher**

### Why Surf?

*Panels along the railing about what surfing means to different people include quotes by surfing legends, shapers, and pros. Visitors can leave their thoughts and comments on the cards provided.*



## VIII: SURVIVAL AT SEA & NAVIGATION

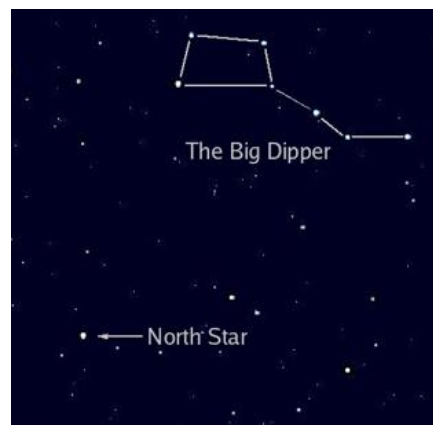
### Introduction

The Safety at Sea exhibit combines several exhibits into a coordinated presentation of topics that all deal with successful voyages at sea.

- Storms at Sea Experience
- Navigation and Piloting
- Weather
- Safety and Survival Equipment
- Institutional Safety Programs and Operations
- Education and Programs

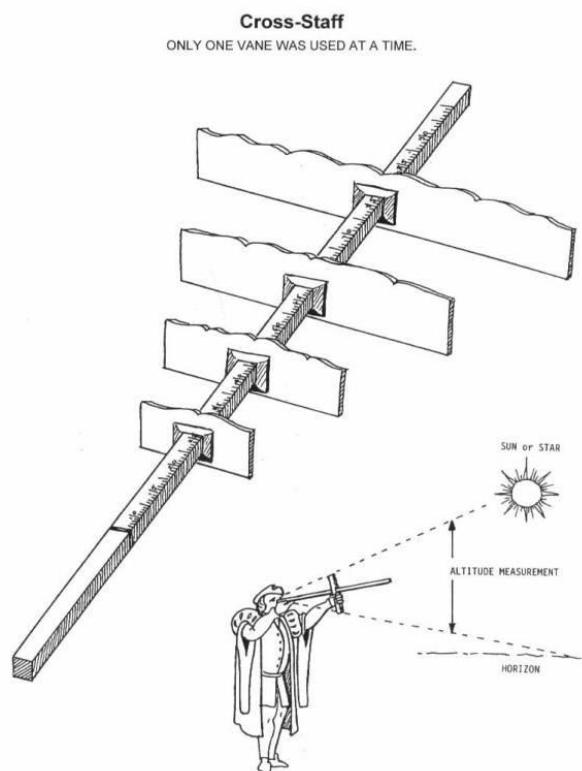
### The Art of Navigation

Long before mariners could think of navigating the trackless oceans, astronomers studied the heavens. For generations, they had tracked the mysterious movements of the stars, sun, moon, and planets. They had noted the mysterious North Star which seemed to remain in one place and shows both a direction (North) and an indication (altitude) of how far north or south one is (latitude).



Thus, philosophers and mathematicians concluded the following:

- The earth is spherical (first postulated circa 60 BCE - Thales).
- The earth's diameter is approximately 8,000 miles.
- The moon revolves around the earth, the earth around the sun, and the tides are related to these motions.

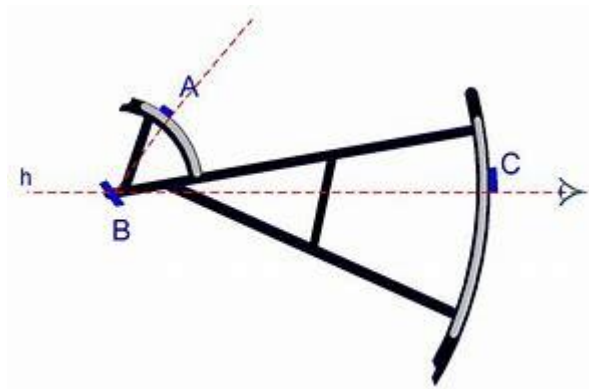


These astronomers had noted that the sun appeared to pass overhead farther to the north in winter months and to the south in summer months. In fact, generations of careful measurements led to the understanding that if one knew the date and could measure the angle of the sun above the horizon at noon, one could deduce latitude, clearly a tool useful to sailors.

The way this angle was measured on land was to hold an astrolabe (see exhibit) such that it would show the angle between vertical and the sun. But when this instrument was tried at sea, a few problems arose: the waves caused the astrolabe to swing around, preventing its use except on a calm sea; likewise, three men were needed to take a reading: one to hold the astrolabe; one to aim; and one to read the angle. As wonderful as an astrolabe was on land, it was not useful at sea.

A maritime version of the Cross staff, or cross stake (see exhibit), was developed. This instrument handles like a slide trombone. The user would stand on the deck as noon approached and hold the apparatus to his eye and slide the cross arm in or out until the upper end was aimed right at the sun and the lower end aimed right at the horizon. Then one could look at the position marks on the track to read the angle between the sun and the horizon. This was much better, but problems remained: as the operator changes view from sun to horizon, the instrument would surely move (remember the rolling deck?!). So, the user's accuracy was limited. A good reading would be one which would come within five degrees, an astoundingly small margin of error for the 15<sup>th</sup> and 16<sup>th</sup> centuries. However, each degree of error would represent 60 miles of latitude! Furthermore, after years of looking directly at the sun, the navigator would lose his eyesight!

After centuries of using lesser instruments, a brilliant sailor named John Davis invented the vastly superior Davis Quadrant (see depiction of 1590 model and 1743 instrument) in 1590. This



instrument allowed the user to simultaneously align his horizon and an image (shadow; later, optical spot). The user did not have to look back and forth from one target to another and hope that the instrument had not moved during the process. This improved accuracy to half a degree or better (closer to 30 miles) and allowed the user to make a reading with his back to the sun.

This basic instrument was the mainstay of latitude determination for 140 years. During this time, it was improved. The moving trombone

arm shadow caster was replaced with a slide on a circular track. Eventually, the shadow image was replaced with a single optical lens which cast a circular image on the front sight. A more important improvement consisted of clever patterns incorporated on the accurate slide scale. These patterns increased the accuracy of reading without requiring large unwieldy instruments. Little differences in slide settings became readable.

It was not until the much more modern instruments utilizing a mirror on a movable beam were conceived in about 1725 that the Davis Quadrant was finally phased out. Thus, the instrument in our collection, manufactured in 1743, was already obsolete when produced.

The modern sextant uses one fixed mirror and a second mirror which moves with the reading arm. This shows the operator a view that allows very accurate alignment of the horizon and an image of the sun (or a star, as the image is readable in much reduced light).

The key elements of the modern sextant include:

- The continuous screw adjustment knob, which allows very precise movement of the measuring arm
- Easy calibration by simply checking a zero reading when one sights the same target directly and through the mirrors
- Incorporation of modern optical filters which protect the eye from solar radiation during solar reading



## Navigation

This exhibit shows the visitor:

- the importance of location at sea
- how to determine location at sea
- how to get to the desired destination
- how to communicate
- how to determine the status of a vessel
- how to determine the conditions affecting it

## Navigation and Piloting Orientation

This exhibit tells the visitor what information and equipment is needed to successfully navigate and operate a vessel

- Position
- Weather
- Communications
- Speed
- Course
- Depth
- Wind, and
- Vessel's condition

## Storms at Sea Experience

This video exhibit depicts four different vessels in storm conditions:

- The tall ship *Peking* rounding Cape Horn on its way to Beijing from New York City
- a Coast Guard rescue of a crab fishing boat
- a sailing race in the South Seas
- a specially designed, self-righting Coast Guard vessel, whose prototype is at the Columbia River Maritime Museum in Astoria, OR.



## Pilot House interactive

This is the primary interactive exhibit of the Gallery. The exhibit consists of a fully operational modern pilot house that allows the visitor to steer, observe course changes, and monitor various operational electronics and instruments. The pilothouse window moves right and left when the ship's wheel is turned to simulate steering. The scene in the window also enlarges or shrinks to simulate movement. **Push the button twice to skip the long introduction.**

## IX: POINT CONCEPTION & LIGHTHOUSES

### Augustin-Jean Fresnel

(born May 10, 1788, Broglie, France, died July 14, 1827, Ville-d'Avray)



The French physicist, Augustin-Jean Fresnel (pronounced Fray-nell) developed what would be known as the *Fresnel lens* utilized in lighthouses around the world.

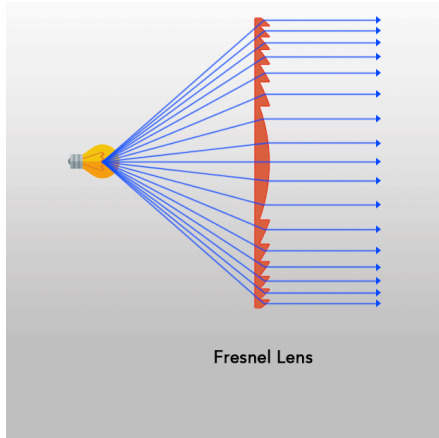
Beginning in 1804, Fresnel served as an engineer building roads in various departments of France. He began his research in optics in 1814. In 1817, he was the first to obtain circularly polarized light. This discovery led him to the conclusion that light was not a longitudinal wave as previously supposed, but a transverse wave.

In 1819, Fresnel joined a government committee to improve French lighthouses. In 1821, he produced his first apparatus using the refracting properties of glass, now known as the dioptric system. On a lens panel, he surrounded a central bull's-eye lens with a series of concentric glass prismatic rings. The panel collected light emitted by the lamp over a wide horizontal angle. It also collected the light that would otherwise escape to the sky or to the sea, concentrating it into a narrow horizontal pencil beam. With a number of lens panels rotating around the lamp, Fresnel then was able in 1824 to produce several revolving beams from a single light source, an improvement over the mirror that produces only a single beam. Argand lamps, for example, uses a mirror and captures only 15% of the light source. Fresnel's system captures up to 85% of the light source.

To collect more of the light wasted vertically, he added triangular prism sections above and below the main lens to both refract and reflect the light. By doing this, he considerably steepened the angle of incidence at which rays shining up and down could be collected and made to emerge horizontally. This emerged as the full Fresnel catadioptric system.

Although his work in optics received scant public recognition during his lifetime, Fresnel maintained that not even acclaim from distinguished colleagues could compare with the pleasure of discovering a theoretical truth or confirming a calculation experimentally.

Today, the lenses that Fresnel pioneered still play a major role in magnifying and concentrating light. Stage and movie spotlights, digital projectors, traffic lights, even car brake, back-up and signal lights still rely on the applications of pure science Fresnel discovered in the early years of the 1800s.



The lens and the clockworks that accompanied it around Cape Horn to Point Conception were made by the French firm Henry-Lepaute in Paris. Originally clockmakers to French kings in the 1700s, the firm had worked with Fresnel since 1825, first making the clockworks that turned the lighthouse lenses and eventually making the lenses themselves.

The U.S. Lighthouse Service was slow to embrace Fresnel's breakthrough in light science and technology. European lighthouses were using Fresnel lenses as early as the 1820s, but it was 1840 before the U.S. finally saw the light. Stephen Pleasonton, Fifth Auditor of the Treasury, was responsible for lighthouse management, and he preferred the older Argand lamp and parabolic reflector system used in early East Coast lighthouses. These were cheaper to purchase, though less effective and used more oil.

Pleasanton resisted Fresnel lenses until forced by Congress and constant complaints from shippers, navigators, and maritime chambers of commerce to test one, which then was deemed highly successful.

Fresnel produced six sizes of lighthouse lenses, divided into four orders based on their size and focal length. In modern use, they are classified into first through sixth order. A first-order lens like the one installed in the Point Conception lighthouse in 1855, and first lighted on February 1, 1856, had a focal length of 36 inches (920 mm) and an optical area of 8.5 feet (2590 mm). The complete assembly was about 12 feet tall and six feet wide. Its beam of light could be seen for up to 24 miles. In fact, shortly after being lit, the ship *Golden Gate* reported seeing some light, though not a direct beam, from 42 miles off Point Conception.

Point Conception is also known as the *Cape Horn of the Pacific*.

### Point Conception Lighthouse (A designated National Landmark)



A keeper's life at Point Conception lighthouse was never dull and never easy. The mythology of the lonely keeper tending his light is quickly dispelled by the records, reminiscences, and letters of the men and their families who tended the light. It was hard work, sometimes against insurmountable odds and daunting weather, to keep the revolving First Order Fresnel lens and deep-

throated foghorn in operation, warning ships of the narrow western entrance to the Santa Barbara Channel.

Just two weeks after the light was first turned on in 1856, the first keeper, George Parkinson, came to Santa Barbara to brag about the First Order Fresnel lens. The Santa Barbara Gazette quoted him as saying the new lantern was "of a superior order". Those first two weeks were to set the model of continuing hard work at the Point. The Gazette continued its story by reporting, "Another quite severe gale visited Point Conception on the 7<sup>th</sup>. During the storm, a large dead whale was washed ashore from which Mr. Parkinson, in company with others, succeeded in extracting 126 gallons of oil, and would have obtained much more but for the lack of necessary conveniences for the work."

Apparently not the right man for the keeper's job, Parkinson was gone from Point Conception before the end of the year. Leaving, he called the point "...this dreadful promontory of desolation" and complained that he was 65 miles from the village of Santa Barbara, the nearest point at which supplies could be obtained, adding, "...in consequence of the difficulty of transportation, the freight on goods amounts to more than my pay...." If Parkinson was not right for the keeper's job, **John Scollan**, the third keeper, definitely was. He was appointed head keeper at Point Conception on **January 1, 1857**, and continued at the lighthouse until **1862**. Scollan kept a duplicate record of all hand-written letters to his superiors during that time. They reflect his struggle to keep the lighthouse working in the face of daunting odds and an inefficient bureaucracy. For the whole time Scollan was at Point Conception, he faced the twin obstacles of getting supplies sent in a timely manner to his isolated location and keeping his assistant keepers on the job despite the harsh conditions and low pay that more often than not was late in arriving.



The lighthouse shown above was built in 1880 on a lower bluff with no road access. It housed two of the keepers. The original house was built on top of the hill. It began falling apart immediately and was often obscured by fog.

In the last half of the 19<sup>th</sup> century, keeping a lighthouse properly lighted was not a simple task. It took three assistant keepers working shifts with the head keeper throughout the night to keep the flame burning properly behind the giant Fresnel First Order lens. A fourth keeper was added in 1872 when the fog bell was replaced with a steam fog horn.

Also needed was a reliable supply of fuel. Scollan continually confronted the issue of keeping the lamp lit. It was a two-fold problem: On January 2, 1858, he wrote to the Acting Superintendent of Lights about the departure of his third assistant, saying, "His leaving at the present time will be very injurious to the interest of this station as there is only the 1<sup>st</sup> assistant and myself here. How long I may be able to exhibit the light under the present state of things I know not." A year later, in March 1859, he informed his boss, "Not more than ten night's consumption (of oil) remain at this time in the lighthouse." Two weeks later, still not having received any oil, he wrote again, "I shall have to discontinue exhibiting the light at this station, but a very few nights supply of oil remaining on hand."

### **Family Life at Point Conception Lighthouse**

Captain Thomas Longworth Perry was a navy veteran who became keeper at Point Conception in 1872. He had run away from home at the age of 21 to join the navy and saw action in several engagements during the Civil War. He left the navy due to an injury and came to California as a government contractor working on lighthouse construction in 1868. He held the keeper's job at Point Conception until 1898.

For Captain Perry, lighthouse keeping was somewhat of a family affair. His wife likely lived at Point Conception with him and he solved the revolving door assistant situation by hiring his brothers as his assistants. John B. Perry is listed as an assistant and brothers George Albert

Perry and Richard Cornell Perry were also both assistants, with John possibly becoming head keeper in 1884.

The myth of the lonely lighthouse keeper does not ring true in the records at Point Conception. Frequently, keepers and

**Fieldtrip Tip:**

What would it be like at sea without electricity?

their assistants had their wives living with them at the lighthouse station and some raised their children there. At times it was a lively, vibrant community complete with Fourth of July fireworks and Christmas parties.

The lighthouse had no electricity or telephone until 1948.

### Reflections of Women Living at Point Conception

Alice Weeks, daughter-in-law of keeper Harley Alonzo Weeks, Jr., wrote an article for Human Interest Magazine in 2001 about life at Point Conception Lighthouse as her husband, Harry Weeks, the keeper's son, described it to her. Harry grew up living at Point Conception at the beginning of the 20<sup>th</sup> century. "There are no words to describe the exhilaration of looking out to sea, the thundering waves edged with foam and sea gulls shrilly circling, or perhaps fog falling thick as dew.... My first 21 years spent there were among the happiest of my life!" he told Alice. After her husband died, Martha Hellwig moved to the Point Pinos Lighthouse to live with her son, Charles, in 1937. He was an assistant keeper there. Together they came to Point Conception in 1939 when Charles was transferred there. Charles' daughter, Audrey, lived with him and her grandmother and courted and married Bud Moll, the son of another assistant keeper, while they both were living at the lighthouse station.

Martha Hellwig, although not on the Point Conception payroll, took on the chores of cleaning six rooms in the large duplex house on the high ground of the point, as well as keeping the kerosene lamps full and making sure the cooking stove had coal and wood. She said she never got bored during her years there, but she hated the drive into Lompoc.

### Other Point Conception Lighthouse Facts

- The lens originally burned colza or rapeseed oil (wild cabbage), then used lard oil, and then mineral or kerosene oil. The lens (and the families living at Point Conception) did not have electricity until 1948.
- The lens was automated in 1972 and decommissioned in 1999. A new, smaller solar powered light was installed. Point Conception no longer utilizes a foghorn.
- The Point Conception Lighthouse is a designated National Landmark, and the lens is considered one of the most important maritime artifacts along the Santa Barbara Channel.
- The lens was transferred to the Santa Barbara Maritime Museum in the summer of 2013 so that the United States Coast Guard could transfer the light station property to the United States Air Force.



- Only five lampists are designated by the Coast Guard to restore and maintain Fresnel lenses. The Santa Barbara Maritime Museum commissioned three of them (Jim Woodward, Jim Dunlap and Kurt Fosburg) to disassemble, transfer, restore, and re-assemble the Point Conception lens to the Maritime Museum, a process that took five weeks.
- Lighthouses used a variety of 1<sup>st</sup> through 6<sup>th</sup> order Fresnel lenses, with 1<sup>st</sup> order being the largest category of lens. The Point Conception lens is one of the largest lighthouse lenses still intact. The largest one in the U.S. is in Hawaii.
- The base of the lens was originally covered with green paint that was expensive to import from France for touch ups. From WWII on it was painted battleship gray to cut costs, but when the lens was being restored to display at SBMM it was repainted to look similar to the original design.

### Wives and Daughters: Keepers of the Light

Over 300 women are known to have served as head lighthouse keepers in the U.S. between 1850 and 1920. This exhibit shows their firsthand accounts of life as a keeper, stories that are rare and often unknown.

Julia Williams was the keeper for the Santa Barbara lighthouse over 40 years, which was the longest of any lighthouse keeper in California. Her husband Albert received an appointment to be keeper at the Santa Barbara lighthouse when it was still under construction. They moved to the then tiny village and waited seven months until the lighthouse was finished. It was first lighted on December 1, 1856. For four years, Julia helped Albert tend the light until by some misunderstanding, another keeper was sent to replace Albert.



Albert began farming on some nearby property while the lighthouse changed keepers several more times, but in 1865 Julia petitioned for the keeper position, knowing she could do the job better than her husband's successors. Albert, in the meantime, had lost interest in being a lighthouse keeper, so he worked on their ranch until his death in 1882.

Julia was the keeper at the Santa Barbara lighthouse for forty years, retiring at the age of 80 in 1905 when she fell and broke her hip, ending her career. During her tenure, Julia kept the lighthouse clean and functional, climbing the stairs every night to light the lantern, while at the same time taking care of her five children.



Fresh water was difficult to come by and Julia often had to saddle a horse, take a baby in her arms with the other children following, and travel a mile to the nearest spring. Like other mothers of her time, she did all the cooking, cleaning, sewing, and mending as well. Years later, her grandson remembered the smell of her fresh-baked bread and the colorful flowers in her garden.

She is believed to have missed two nights in her 40 years of service. Those were NOT the nights her two children were born; they were when her sons married.

## X: MARITIME MILITARY HISTORY

### **Cuba Shipwreck**

In 1897, *Cuba* was launched as the German passenger-cargo steamer *Coblentz* at the Blohm and Voss shipyard in Hamburg, Germany. *Coblentz* was built of steel web-frame construction and was 308 feet long. When the United States entered WWI, the 3,162 gross-ton *Coblentz* was seized as a war prize in the Philippines. Through a joint resolution of Congress on May 12, 1917, the steamer was admitted to the American registry and renamed *Sachem*. It was later purchased by the Pacific Mail Steamship Company and rechristened *Cuba* on May 11, 1920.



**Cuba Panama Canal**  
Courtesy Robert Schwemmer

Under its new ownership, *Cuba* first provided passenger and cargo service between San Francisco and Havana, Cuba. Later, the ship traveled between San Francisco and various Mexican and South American ports. Early on the morning of September 8, 1923, going from Panama to San Francisco, *Cuba* entered the Santa Barbara Channel. The ship had been traveling in thick fog for days on its way up the coast. Due to low visibility conditions, *Cuba's* crew was forced to navigate based on dead reckoning, using estimated calculations to establish their approximate location. To further complicate issues, the ship's radio was not working, and there were no spare parts to repair it.

At 4:15 AM, *Cuba* stranded on a reef off Point Bennett, San Miguel Island. The ship carried 71 crewmen, 41 passengers, and a cargo that included silver bullion and coffee. Despite rough seas, fog, lifeboat difficulties, and no radio contact, all passengers and crew were later rescued. For a week after the accident, the captain and six crewmembers stayed in a fisherman's hut on Point Bennett. They helped remove baggage, bullion, and other valuables from the wreck. Much of the cargo and parts were later salvaged, but not all through legal channels. Though *Cuba* wrecked in an isolated and remote location, many smaller vessels could still gain access to the ship and its goods.

### **Honda Disaster**

This exhibit consists primarily of graphic panels, historic photographs, and artifacts. There is a 13-minute-long documentary, which plays on a loop at the exhibit as well.



The *Honda* Disaster is considered the largest Naval disaster in United States History. It is not the largest loss of life (23 sailors), but it is the most ships lost at one time, and none of these vessels were more than five years old.

On September 8, 1923, the cargo-passenger ship *Cuba* was making its way up from Panama towards San Francisco. At 4:15 AM, it ran aground off San Miguel Island. The fourteen destroyers leaving San Francisco that day all received word of the *Cuba's* grounding, causing them to worry about heading too far south before turning into the Santa Barbara Channel on their way to San Diego. A number of other things may have helped cause this *Honda* tragedy:

- Captain Edward H. Watson, Commander of Destroyer Squadron 11, wanted to set a record for the fastest transverse of a squadron from San Francisco to San Diego (remember the saying, “speed kills”). He may have felt a need to redeem himself since a few months earlier, after just taking over the squadron, they went to the Pacific Northwest. While there, his newest ship, *Zeilin*, rammed another ship so hard two sailors fell into the sea. If that was not bad enough, they were in the Pacific Northwest for a **Presidential Review**, and President Warren Harding was aboard the rammed vessel.
- The Navy had just increased its post-WWI budget, allowing the ships to cruise at 20 knots versus the former limit of 12 knots.
- They were just beginning to use radio-navigation technology, and there was a radio-navigation station at Point Arguello, a few miles from where they struck land. However, they did not trust this new technology; instead, they used “dead reckoning” and calculated their position by using a previously determined position, or fix, and advancing that position based upon known or estimated speeds over elapsed time and course, such as counting the number of turns of the propeller).
- They were under radio silence as a training maneuver, so they were not talking to one another.
- Due to weather conditions, they last sighted land at 11:30 AM.
- On September 1, a large earthquake struck off the coast of Japan, killing 140,000 people and creating 40-foot tsunamis.

Because they wanted to set a speed record, Lt. Commander Donald Hunter, commanding officer of the squadron flagship *Delphy*, took over the navigation duties. Hunter did not believe the multiple radio navigation readings he received from Point Arguello, which indicated they were on a direct course for the point. He asked for a reciprocal reading (the opposite angle), which showed they were in the mouth of the Santa Barbara Channel. This corresponded with the dead-reckoning calculations, and at 9:00 PM Hunter ordered a 90-degree turn to port.

Immediately upon turning, visibility worsened, and within five minutes *Delphy* ran aground near a little river/ravine called Honda. Before losing all power, Hunter—thinking they had struck San Miguel Island—ordered the rest of the squadron to “turn hard left.” However, the ships, traveling at 20 knots in a long single column approximately 250 yards apart, had little time to turn. Within five minutes of *Delphy* striking shore, six other ships had wrecked and two others suffered some damage but were able to back off the rocks.

The squadron was traveling in three Divisions. Commander Roper, leading the Third Division, had two young navigators who told him they were too far north and too close to land, so when the order to turn hard left came, they did not make a full turn, and had no damage to their ships.

Twenty-three sailors lost their lives in this tragedy. Three were aboard *Delphy*. The other twenty were aboard *Young*, third in the line of ships. *Young* is believed to have hit submerged rocks, which caused the ship, in the words of the Commanding Officer W. L. Calhoun, “to rise up in the air and hit the water like the belly of a whale.” The rocks ripped a hole along the whole length of the ship, and within 90 seconds *Young* was on her side. Most of the *Young* sailors

were probably below decks, in the fire and engine rooms, and just got washed out to sea. The last ship to wreck, *Chauncey*, (photo at right) was trying to help rescue those aboard *Young*, whose propeller continued to turn. *Chauncey* got too close, and the propeller ripped a hole in her side, stranding her on the rocks nearby.



While obviously a major embarrassment to the Navy, it should be noted that after striking the rocks, these sailors and officers exhibited extreme discipline, courage, and bravery. No one abandoned ship before being ordered to. Several exhibited acts of courage and were later cited for their efforts. Three gave up their chance of rescue for the benefit of others.

#### Repercussions of this tragedy:

- All Commanding Officers and the Navigator (though not the acting Navigator) of *Delphy* were brought before a Board of Inquiry and Court Martialed. The Court ruled that the disaster was the fault of the fleet commander and the flagship's navigators. They assigned blame to the captain of each ship that ran aground, following the tradition that a captain's first responsibility is to his own ship, even when in formation.
- Three were found guilty at the Court Martial: Squadron Commander Watson, Commander Hunter of *Delphy*; and Lieutenant Commander H. O. Roesch, of *Nicholas*. Watson was the Squadron Commander and Hunter was Commander of the lead ship; Roesch should have acted on his received information that, although required to be under radio silence, his radiomen had listened to and received course bearings.
- The court martial ruled that the events of the Honda Point Disaster were "directly attributable to bad errors and faulty navigation" by Captain Watson, who was stripped of his seniority
- All officers who were court-martialed were acquitted.
- A Court of Inquiry recommended Commander Roper for a Letter of Commendation for turning his division away from danger.

#### Interesting Stories:

- Santa Barbara and SBMM have several connections to this tragedy.
  - The grandfather of SBMM Board Member and Past President George Writer was Lieutenant Leslie Bratton, Commanding Officer of *Stoddert*. The Navy sent Bratton to Georgetown Law School. This would never happen today, but they made him the Judge Advocate in both the Board of Inquiry and the Court Martial. He had to prosecute his Naval Academy buddies.
  - The wife of SBMM Docent Jim McClure, Kathleen, is the granddaughter of James Calhoun, Commanding Officer of *Young*. Years later a diver found Calhoun's Naval Academy ring at the wreck site.
  - Local lawyer Harris Seed (now deceased, of Seed & Mackall) is the distant cousin of Lieutenant Commander Walter Seed, Commanding Officer of *Fuller*.
  - Past SBMM Board Member Keith Mautino Moore's family owned the Moore Mercantile Store in Lompoc. They donated all their quilts and blankets that night for the sailors.
- For the first 90-minutes, the sailors thought they were stranded on San Miguel Island, which was pretty much uninhabited at that time. Then, around 10:30 PM, about 100-yards away, they heard a train pass by.
- The Navy always wants two things from their ships when they are scuttled or moth-balled: the ship's log and the bell. Years later a woman possessed the bell from *Lee*, the second ship to sink

in this tragedy. Being a good citizen, she offered it to the Navy. The Secretary of the Navy wrote her back basically saying: never mind, you keep that. They wanted to forget this ever happened!

- The last living survivor of this tragedy, Gene Bruce, spoke at SBMM before he passed away. He was 16 when this tragedy occurred.
- For more information, read *Tragedy at Honda* or *Destroyers on the Rocks*.

## Ellwood Shelling

On Monday, February 23, 1942, at 7:00 PM, President Franklin D. Roosevelt updated the nation on the progress of World War II in his 20<sup>th</sup> fireside chat, *On the Progress of War*. Meanwhile, at sundown off Ellwood Mesa in present-day Goleta, CA, a Japanese submarine under the



command of Nishino Kozo fired the first naval attacks on mainland American soil since the War of 1812. The attack left no casualties, but accusations that spies in Santa Barbara were flashing signals to the submarine brought support to the recently passed Executive Order 9066, which created Internment Camps that would hold about 120,000 Japanese Americans during the war. It was later determined that the lights seen during the Ellwood attack were likely headlights from a car driving along a winding road amidst the chaos.

Imperial Japanese Navy submarine I-17 launched the attack upon Ellwood's Barnsdall-Rio Grande Oilfield. From about a mile offshore, the 365-foot sub fired up to 25 shells from its 5.5-inch deck gun. The shells caused minimal

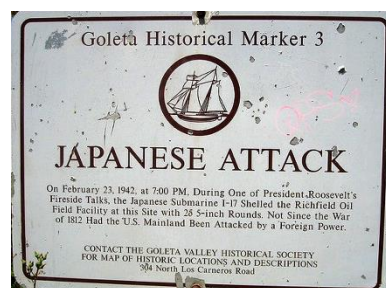
damage to a wooden pier, an oil derrick, and a pump house. Most of the shells landed in nearby fields, canyons, and ranches. The

sub ceased fire after about 20 minutes and retreated south. U.S. planes gave chase to the sub, but Nishino got away. Thereafter, American coastal defenses were improved, so the mainland suffered only one more submarine attack by the Japanese during the war, at Fort Stevens in Oregon.



One of the shells blew a tin door (on exhibit) off a pump house. Photos in a nearby case show the pump house, the damaged pier, and large holes caused by shells that landed on nearby ranchland.

One of the episodes of *California Gold with Huell Howser* features the submarine bombing at Ellwood Beach.



This sign can be found at Haskells Beach, commemorating the attack on Ellwood.

## Boy Scouts Join the Local War Effort

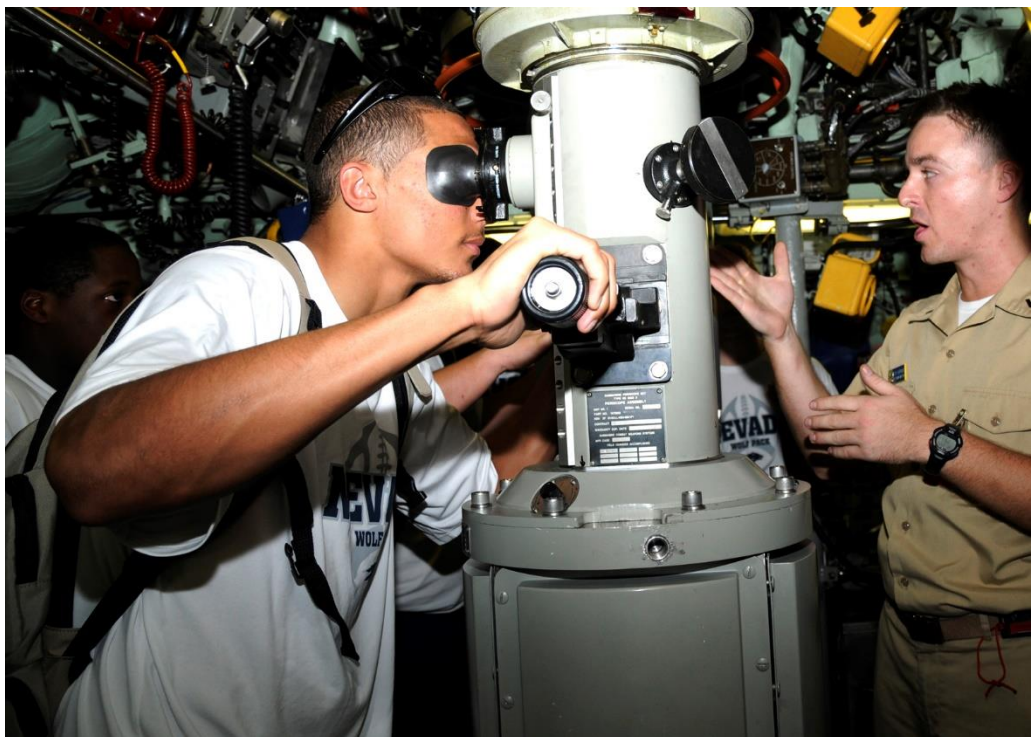


Pete Langlo was a founding member of Troop One Goleta Boy Scouts. He was 12 years old at the time of the shelling and donated many artifacts from his time in the Boy Scouts watching over the coastline as a help to the military during the war. "As a boy scout, I would volunteer to be an airplane spotter, which meant I would go with an adult to a place up the coast past El Capitan Ranch to an old oil field shed that was wired for a phone. There we would listen and look for any planes. When one was heard and seen, we would phone it into Los Angeles central receiving,

and they would make note of our report. They were all friendly aircraft of course, but to a 12-year old during the war, it was exciting."

## Conning Tower

The Conning Tower contains a periscope that extends through the Museum roof and provides a 360-degree outside view. The periscope, a gift from the U.S. Navy, is from the 1970s and was never used on an actual ship. Instruments typically seen in a conning tower, sponsored by the Santa Barbara Navy League, are exhibited. The number on the conning tower honors the submarine *California*.



## XI: CHILDREN'S GALLERY & TATTOO PARLOR

### Gail Berkus Children's Gallery

The children's area provides a stimulating environment where children can learn about the sea in a fun and creative way. Activities and crafts often change. Highlights include interactive exhibits, arts and crafts activities, a dress-up area, a block and tackle, healthy oceans, and a simulated kelp forest.

In December 2015, a newly built wall in the Children's Gallery made way for the installation of a 13 x 6 feet mosaic mural wall by local artist, Patti Jacquemain, featuring Man's Interaction above and below the Sea.



### Tattoo Parlor Interactive

This exhibit celebrates the long history of nautical tattoos and sailor art, with a blend of historical artifacts, archival photos, and contemporary photography. Whether you are interested in tattooing culture, maritime culture, or both, this exhibit will inform and entertain.

Without sailors, tattooing would not be what it is today. It is a tradition that lives on for always. Tattooists have survived on sailors' fascination with tattoo images. Many of these images were created for them, tailor made for particular duties on a ship.



The exhibit features contemporary photography, illustrations, equipment, and tattoo flash, all of which serves to illuminate the unique connection between these vastly different art forms and the seafarers with whom they are linked. When you push one of the buttons at the tattoo parlor, a voice tells you the meaning behind the tattoo symbol you have selected, as a hologram of the design begins to appear on your outstretched arm under the small spotlight. Once the tattoo is filled in, the voice stops and the image fades away.

For early sailors, a tattoo was as much an identity statement as it was a description of achievements and places visited: a single anchor to denote passage across the Pacific; a dragon to indicate time spent in the Orient; a palm tree or Hula girl to show service in Hawaii.

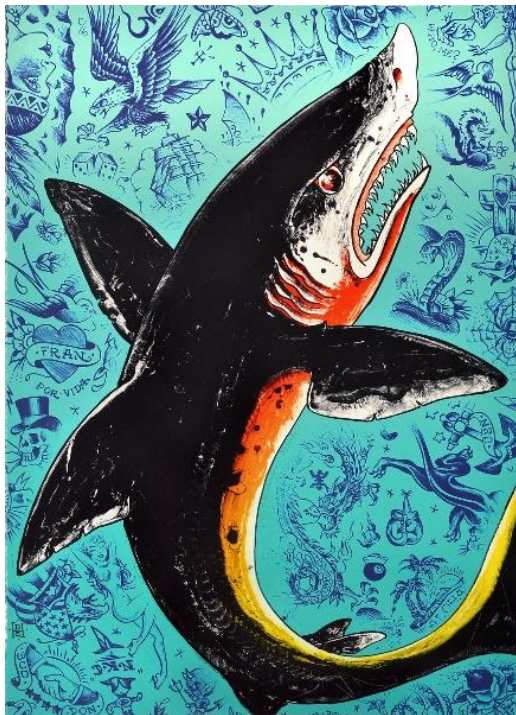
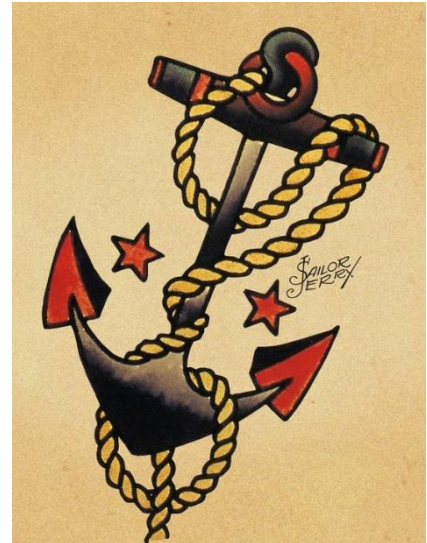
Crossed anchors indicated that the sailor was a boatswain or a boatswain's mate, while crossed cannons signified service in the navy. Although sailor tattoos evolved and rose to prominence in the North America of the 20<sup>th</sup> century, the practice has existed for thousands of years.

Observing the practice in Tahiti in July 1769, Captain Cook wrote, “Both sexes paint their bodies, Tattow, as it is called in their language. This is done by inlaying the color of black under their skins and this is a painful operation performed once in their lifetimes.”

Cook’s fascination with the practice—not to mention the fact that his botanist Joseph Banks returned with a tattoo of his own—touched off a frenzy amongst Europe’s upper class: King George V and Winston Churchill sported tattoos as a result of Cook’s voyage and the word tattoo as it exists in the West derived from the Tahitian *tatau*. From there, tattooing made its way into the U.S., first being recorded during the Civil War, where it is closely linked with both sailors and the sea. The typical sailor tattoo, now a common sight, had its beginnings in the U.S. Marine culture of the mid-20<sup>th</sup> century.

Tattooing remained on society’s fringes into the 1940s and 1950s, often outlawed. Thanks in large part to Hawaii-based artist Norman “Sailor Jerry” Collins, it continued to evolve and flourish among sailors and members of the merchant marine.

Tattoos for a lot of people represented the exotic. Many were from the central U.S. or farm towns and were going to the coast for the very first time. It represented something unusual and foreign and a bonding experience for guys who had shared life on a boat at sea.



Don Ed Hardy is a protégé of Sailor Jerry whose nautical tattoo designs are found on t-shirts, clothing, running shoes, and rum bottles after years of being relegated to the fringes of society.

