Point Reyes
National Seashore

Department of the Interior
National Park Service

# The Historic Point Reyes Lighthouse

Golden Gate NRA, Park Archives

Looking across San Francisco Bay where hundreds of ships were docked during the Gold Rush era.

PRNS Archives

Butter produced out on the Point Reyes Peninsula was considered an "elegant golden delicacy," and commanded higher prices. Milking was tedious and back-breaking work before the advent of milking machines in the late 1800s.

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**Cover photo:** Lighthouse keeper in the early days of the historic lighthouse operation. **PRNS Archives**

# A Challenging Place

*"Better to dwell in the midst of alarms than reign in this horrible place."*

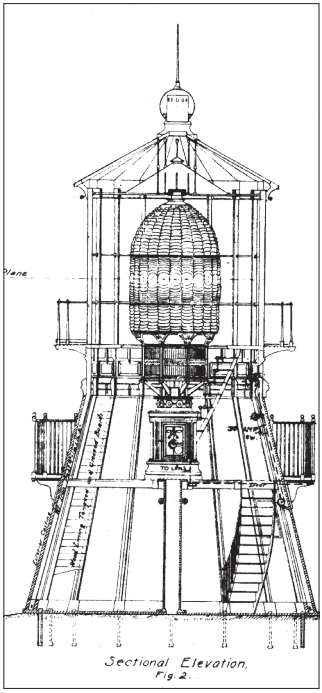
~ Attributed to a lighthouse keeper at Point Reyes

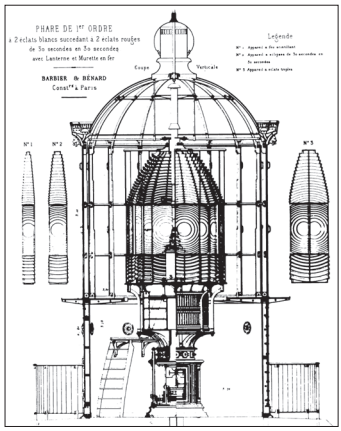
Virtually overnight, the California Gold Rush transformed San Francisco from a sleepy bayside hamlet of about 1,000 citizens to an international destination. The port hummed with activity. Would-be prospectors and ambitious merchants docked alongside cargo ships laden with mining and building materials, farm produce, and other supplies. People from all over the world boarded ships with the dream of striking it rich in the hills of California, and the main point of debarkation was San Francisco. But navigating the ferocious currents, foggy conditions, jagged cliffs, and off-shore rocks of the California coastline was a daunting proposition. In the newly-established state of California, navigational aids were virtually nonexistent. In 1853 the first California lighthouse was constructed on Alcatraz Island and lit in 1854.

After the gold rush, Point Reyes became San Francisco's chief supplier of dairy products and hogs, carried by schooners that sailed to the city from Tomales Bay and Drakes Estero. As early as 1849, it was recognized that Point Reyes would play an important role in the protection of coastal traffic and in the economic prosperity of the western United States. However, land disputes and political intrigue delayed the establishment of a lighthouse for another twenty years. During that period, about one million dollars of shipping losses were sustained in the waters offshore of Point Reyes.

Due to the delays, the Point Reyes Lighthouse installation cost of nearly $95,000 for the building and equipment, was well over the initial $25,000 allocated for it in 1854. The Point Reyes Lighthouse began operation on December 1, 1870. The historic light remained in operation until it was decommissioned in 1975. Its navigational function has been replaced by an automated beacon located on a separate building below the lighthouse. The original building and its remarkable lens and clockworks, is now preserved as an historic landmark maintained by the National Park Service.

# Building A Lighthouse Operation




PRNS Archives

Design for the Point Reyes Lighthouse and Fresnel lens and clockworks.

In 1858, a good lighthouse location was found 271 feet (83 m) above sea level to avoid the coastal fog. A dirt road was built from the dock at Chimney Rock on Drakes Bay to the construction site. A metal tramway was constructed to carry tools and material down the cliff to the lighthouse site.

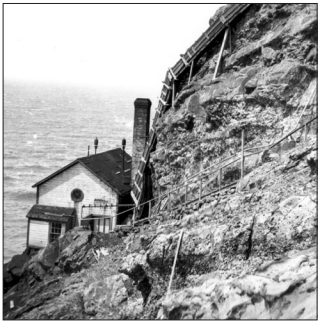
San Francisco machinist, Joseph Bien, designed and fabricated the iron tower building to house the Fresnel lens and clockworks. He had just finished construction of the Cape Mendocino Lighthouse.

The first-order Fresnel lens was made by world-famous Barbiere et Fenestre of Paris in 1867. It was shipped in numerous crates to San Francisco. There it was discovered that one section of the 24-panel lens was missing. It was tracked down by the shipping company, and shipped to the docks at Chimney Rock. They traveled overland to the constructions site, and arrived about the same time as the tower. Seven men were hired for the task of lowering these very heavy items down the tramway to the construction site. Construction and installation were completed in November 1870, and operations began the next month on December 1, 1870.


PRNS Archives

The lighthouse keepers quarters were completed in 1870 and the first keeper, John C, Bull, his wife and family arrived in November 1870.

Construction wasn't over yet. Point Reyes is one of the foggiest places on the West Coast, so a fog signal building was also needed. A site 100 (30.5 m)feet below the lighthouse was found for it, but it required heavy blasting work to make the site level. The fog signal was produced using a coal-fired boiler to generate steam, which was released through a large whistle. Because there wasn't a water source within two miles, a cistern was built that held up to 100,000 gallons (378,541 liters) of water. An iron pipe connected the cliff-top cistern with the fog signal building 335 feet (102 m) below.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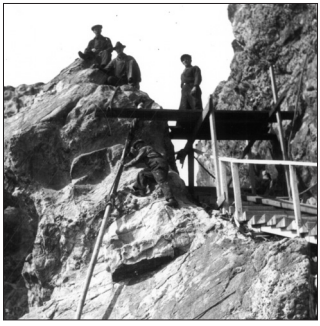
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Left: Fog signal building showing dangerous location and coal chute.
Right: Workmen laying galvanized pipe leading to fog signal building.

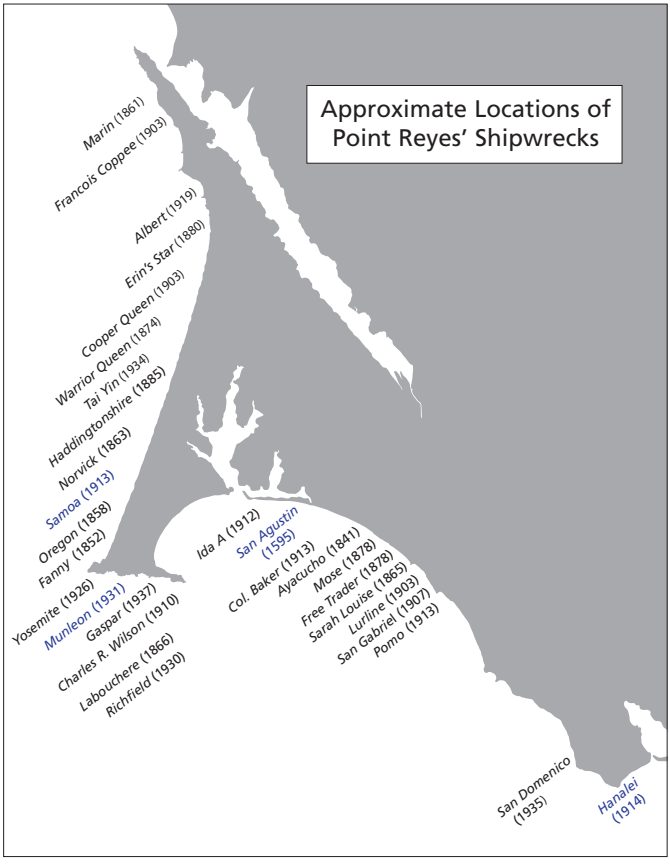
Fog signal building construction was completed in June 1871. Operating the fog signal was not just hard, but very dirty work. When it was foggy, 140 pounds (63 kg) of coal per hour were shoveled into the furnace that heated the boiler. Summer months had foggy stretches lasting days or weeks when the fog signal was in constant use. It was just the keeper and two or three assistants, so the workload was grueling.

The first two decades had many problems. A fire destroyed the fog signal building in the first year and it had to be rebuilt. Drought required that water be hauled from a ranch two miles away. Some ships could not hear the signal and wrecked. Eventually, additional cisterns were built and signal equipment updated, improving this important part of the operation.

## Why Is This Such A Dangerous Place?

Many ships wrecked here due to the treacherous currents and navigational challenges the peninsula presents. Point Reyes is also one of the windiest and foggiest places on the Pacific Coast. Powerful winter storms often come howling in from the southwest. Springtime wind speeds can reach hurricane force. Winds exceeding 130 mph (210 kph) have been measured at the headlands. In summer, thick fog forms when warm, moisture-laden air comes in contact with the cold ocean water.

To this day, these hazardous conditions threaten the safety of the cargo and sailors that pass by the point. It is no wonder that the area now known as Point Reyes has seen over 73 major marine wrecks, 37 of them total losses. The first known shipwreck on the California coast was the *San Agustin* at Point Reyes in 1595.

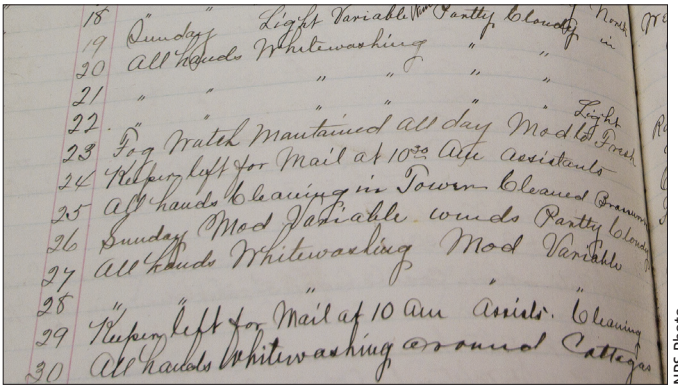


## A Day in the Life

Keeping the lighthouse in working condition was a twenty-four hour job. The light was lit between sunset and sunrise, but there was work to do all day long. The head keeper and three assistants shared the load in shifts that could last twelve hours.

Every evening, a half-hour before sunset, a keeper walked down the wooden stairs to light the oil lamp inside the lens. Then he wound the clockwork every two hours and twenty minutes to rotate the lens and create the flash. He kept the lamp wicks trimmed so that the light would burn efficiently.

It must have been a lonely vigil on evenings when the wind howled and storms broke against the lighthouse and fog signal buildings. Imagine spending the dark night watch by the light of an oil lamp. Or, on foggy nights, shoveling 140 pounds of coal an hour to keep the fog signal blaring for several miles out to sea.



NPS Photo

Lighthouse logbook page from April, 1896 lists at least six days in which the main task is "All hands Whitewashing."

At the end of each shift, the keeper trudged back up the wooden staircase, sometimes in winds so strong that he had to crawl on his hands and knees to keep from being blown off the cliff. Men of fortitude lasted several years, while others barely stayed a month. Some men succumbed to drink, even reputedly drinking the cleaning fluid. At least one man was hauled away to an asylum.

The work combined mind-numbing routine with back-breaking toil. Some days were spent washing, scraping, and whitewashing buildings. One regular task involved hauling coal from Drakes Bay to the top of the stairs and sending it down two chutes to the fog signal building. Other duties included cleaning the lens, polishing brass, and making necessary repairs.

# The U.S. Life Saving Service

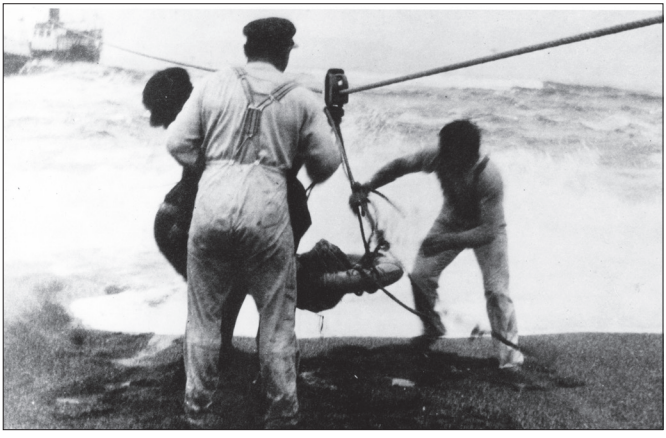
However, even the combination of lighthouses and fog signals does not eliminate the tragedy of shipwrecks. Because of this ongoing problem, a lifesaving station was established on the Great Beach north of the lighthouse in 1890. Men walked the beaches in four-hour shifts, watching for shipwrecks and people who needed rescue from frigid waters and powerful currents. U.S. Life-Saving Service crews assisted in 35 rescues at Point Reyes, saving hundreds of lives. However, four crew members lost their lives in the first four years.

On January 28, 1913, the *Samoa* was en route to San Francisco with a heavy cargo of lumber. In deep fog off the Point Reyes Beach, she ran aground less than 600 yards (550 m) from the U. S. Lifesaving Service station.

Rescuers rushed to the beach, breeches buoy in tow. This rescue tool is employed using a small cannon that shoots a line to the wrecked ship, then a buoy is attached and sent along the line to the ship to bring the passengers and crew to shore. This is challenging work, especially as it was often performed under extreme weather conditions. However, with the help of local ranchers, all crew members of the *Samoa* were hauled to safety.


PRNS Archives

Lifesaving Service surfman in uniform in the late 1800s.



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Operating the breeches buoy during the rescue of the *Samoa* in 1913.

The steamer *Munleon* was bound from San Francisco to Astoria, OR carrying sugar, salt, and other general supplies. Due to a navigational error on the part of the Third Officer, she ran aground one mile east of the Point Reyes Lighthouse on November 7, 1931. The Coast Guard managed to launch a rescue boat from the newly-constructed Life Saving Station marine railway at Chimney Rock, and rescued all 29 hands.

PRNS Archives

*Munleon* wrecked on the rocks near the Point Reyes Lighthouse in 1931.

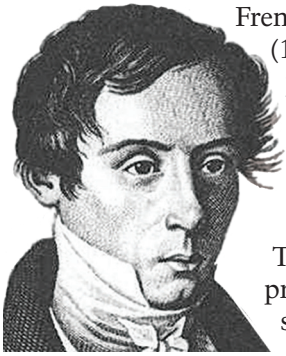
Not all lifesaving attempts were so successful. In 1914, despite 18 hours of effort, rescuers were unable to save 23 of the 62 passengers and crew of the *Hanalei*, which ran aground on Duxbury Reef.

The U.S. Coast Guard was established in 1915 and continued the rescue mission. In 1927, a new life boat station building was built at Chimney Rock. The operation remained active there until 1968. Today, the building is a National Historic Landmark.


PRNS Archives

U.S. Coast Guard Servicemen posing alongside Motor Lifeboat CG-36542 as it sat on the marine railway of the Historic Lifeboat Station.

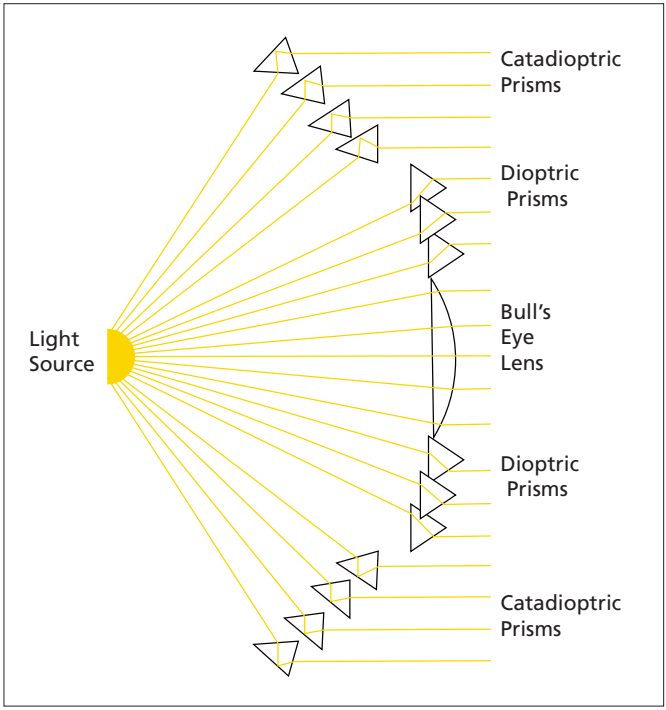
## The Fresnel Lens



Frenchman Augustine Jean Fresnel (1788–1827) documented the properties of light as it travels through prisms and lenses. He used his findings to develop the first lighthouse Fresnel lens in 1823.

The Fresnel lens works through precise prism and lens alignment, so that the light from an oil or electric lamp at the lens' focal point is bent or refracted and transmitted as concentrated parallel beams, making the light visible from farther away.

## How Refraction Works




The bull's eye lens focuses light that is close to horizontal. Dioptric prisms catch low-angle light and bends it once. Light hitting the catadioptric prisms is refracted or bent twice. The combined effect of prisms and lenses makes the light visible from much further away.

The Fresnel lens revolutionized lighthouse optics. Prior to 1823, lighthouses used mirrors to reflect light out to sea. This limited the best lighthouse visibility to only eight to twelve miles away.

The Point Reyes Fresnel lens resembles a giant beehive. It is divided into 24 vertical panels that each have 42 prisms and one bull's eye lens. Each panel sends out a horizontal beam of concentrated light. The 6,000-pound (2,721 kg) lens rotates above a clockworks mechanism that uses gears and a 175-pound (79 kg) weight to turn the lens. One rotation takes two minutes. As the lens rotates, beams sweep across the ocean and create a flash visible every five seconds. The weight was wound up every two hours and twenty minutes to maintain the lens rotation during its nightly use.

## A Look Inside the Lens

Take a walk back in time, visit the historic lighthouse and lens—use the QR code to check for days and hours when tours in the lens room are available.

Stephen Covey

The original equipment, manufactured in 1867 in Paris, is still housed in the historic lighthouse lensroom. This equipment was decommissioned in 1975, and replaced by automated equipment.

# Natural History at the Lighthouse

The Point Reyes Lighthouse is a cultural treasure enjoyed by thousand of visitors each year, but it isn't solely the lighthouse that people come to see. The Point Reyes headland is a destination for nature lovers, too.

The complex geologic formations draw rock enthusiasts. They are eager to see the rock that was uplifted from the ocean floor, especially the unique Point Reyes Conglomerate—contorted sandstone embedded with cobbles that washed out from mighty rivers millions of years ago. Granitic outcroppings give glimpses of the bedrock on which the peninsula is carried.

In fall, birders armed with enormous spotting scopes turn out to search the Monterey cypress trees for vagrants blown off course or resting from the exhaustion of their migration south. Point Reyes is in the Pacific Flyway and is a birder's dream.

In winter, Pacific gray whales swim past on their annual migration south to Baja California, where they have their calves in the warm protected bays. On their return to the cold-water feeding grounds off Alaska, mother-and-calf pairs swim within a quarter mile of the coast! The lighthouse observation deck provides an excellent platform for viewing these majestic travelers as they surface, breathe, and dive on their journey.

In spring and summer, thousands of common murres struggle to protect their incubating eggs while perched on the surf-pounded rocks below the lighthouse. Nesting peregrine falcons chase marauding ravens from their territory with raucous defense calls, stooping overhead and zooming by.

The stairs leading down to the lighthouse are graced with a great diversity of flowers in spring. Douglas iris, checkerbloom, seaside daisy, Indian paintbrush, cow parsnip, and many other species add color to the rocky slopes. A bright orange-colored algae called *Trentepohlia* grows on north-facing surfaces of rock, trees, and buildings.

Black-tailed deer graze peacefully on the precariously steep hillsides. Fierce predators like long-tailed weasels dart about on the prowl for pocket gophers, field mice, and brush rabbits. In the waters below, California sea lions swim, hunt, and haul out on the rocks to rest. The natural world is remarkably diverse in this austere and sometimes challenging place.

NPS Photo

Point Reyes conglomerate contains rounded pebbles of chert and volcanic rock separated by beds of graded sandstones.

Anela Kopshever

Gray whales swim past the lighthouse on their journey to and from Baja California where they give birth to their calves.

NPS Photo

Common murres crowd the offshore rocks below the lighthouse during their nesting season in late spring and summer.

NPS Photo

Peregrine falcons hunt common murres and other birds. They nest on the rocky cliffs near the lighthouse.

NPS Photo

In April and May, blue-eyed grass, a member of the iris family, dot the hillsides of the Point Reyes headlands.

NPS Photo

*Trentepohlia* has a strong orange color due to large quantities of carotenoid pigments which mask the green of the chlorophyll.

# Places to Visit En Route

**Mount Vision Road**
Near the top of this narrow road you can see the western side of the park laid out beneath you. Drakes Estero and the Point Reyes headland are often visible on clear days.

**Life-Saving Service Cemetery**
From 1890 to 1915, surfmen with the United States Life-Saving Service braved the treacherous surf and sea to rescue distressed mariners. Four of those brave men are buried in a cemetery on a small hill above Drakes Estero's Schooner Bay.

**Drakes Beach**
Drakes Beach is one of the most visually stunning beaches at Point Reyes. Its cliffs are the result of millions of years of compression and uplift. Northern elephant seals arrive for their breeding season in late December and can be seen crowding the beaches from the parking lot.

**Historic Ranches**
By the end of the 1800s, Point Reyes was home to the largest dairy operation in California. The historic ranches are part the rich ranching history of this area. Visit Historic Pierce Point Ranch to learn more about this important story.

**Chimney Rock Trail, the Elephant Seal Overlook, and the Historic Life Boat Station**
The Elephant Seal Overlook and the Historic Lifeboat Station at Chimney Rock are especially appealing in winter and spring. Northern elephant seals congregate here for their breeding season in late December and can be seen from the overlook. In spring and summer they return for their annual molt. In spring, wildflowers including tidy tips, poppies, iris, and paintbrush adorn the Chimney Rock Trail.

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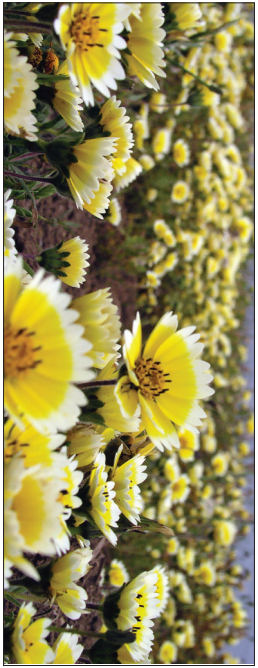

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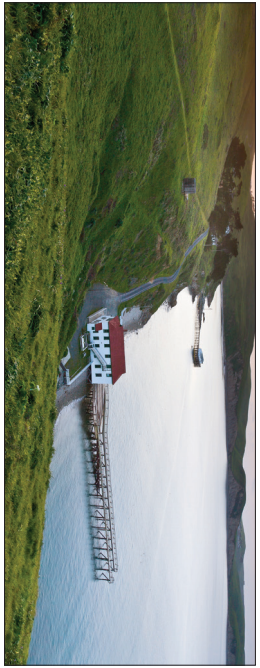

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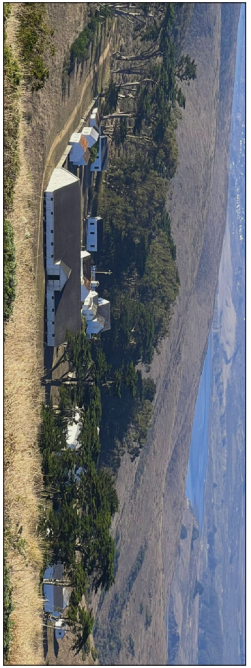

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Lighthouse Visitor Center
27000 Sir Francis Drake Blvd.
Inverness, CA 94937

415-669-1534

NOTE: When wind speeds exceed 40 mph, the stairs to the lighthouse close.

Point Reyes National Seashore
Bear Valley Visitor Center
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