



# ACORN NATURALIST GUIDE

Point Arena-Stornetta Lands & Marine Protected Areas



partners in education

## ABOUT THE NATURALIST GUIDE

ACORN Partners in Education developed this Naturalist Guide to complement its environmental education programs on the Point Arena-Stornetta Lands. ACORN Partners in Education is a Point Arena-based nonprofit that facilitates youth stewardship projects through its Students Protecting the Coast program. The Point Arena-Stornetta Lands is a great outdoor science classroom where students can learn about local endangered species, habitat, and conservation. The bluff top trail is also a gateway for students to learn about marine protected areas off the coast.



ACORN initially partnered with the Pacific Community Charter School during the 2012-13 school year in support of the community effort for transferring the Point Arena-Stornetta Lands to the California Coastal

National Monument. ACORN and the Bureau of Land Management's Ukiah Field Office registered the Point Arena-Stornetta Lands as a Hands on the Land site during the 2014-15 school year. Hands on the Land is a network of public, nonprofit, and private partners who use local natural, historical, and archaeological settings to engage K-12 populations in place-based learning on public lands and waterways.

## TABLE OF CONTENTS

<b>Introduction</b> .....	2
<b>Area Overview</b> .....	3
<b>Maps</b> .....	4-5
<b>Land</b> .....	6-7
<b>Life on Land</b> .....	8-9
<b>Land and Marine Ecosystem Drawings</b> .....	10-11
<b>Ocean</b> .....	12-13
<b>Marine Protected Areas</b> .....	14-15
<b>Intertidal Zone</b> .....	16
<b>Birds</b> .....	17
<b>The Manchester Band of Pomo Indians</b> .....	18-19
<b>Point Arena Town History</b> .....	20-21
<b>Local Historic Timeline</b> .....	22-23
<b>Selected Sources</b> .....	24
<b>Acknowledgments</b> .....	25



## INTRODUCTION

**I**N 2014, President Obama signed the Presidential Proclamation designating the Point Arena-Stornetta Lands as the first onshore part of the California Coastal National Monument. It was the culmination of a decade-long campaign by community members who wanted to protect the unique land and provide public access to hiking trails in an area full of privately owned open spaces. The Bureau of Land Management's Ukiah Field Office administers the land, which covers 1,665 acres, has eight miles of user created trails, goes from the bluffs above Arena Cove to the Lighthouse, crosses over the mouth of the Garcia River, and covers a swathe of Manchester Beach. It's a wild part of California where coyotes scramble down cliffs to steal cormorant eggs, and great blue herons switch between hunting for gophers up on the coastal prairie to fishing for hermit crabs down in the intertidal zone.

The Point Arena-Stornetta Lands blufftop trail provides a gateway to the marine protected areas off the coast. Marine protected areas (MPAs) are designed to protect critical ocean habitats and species by prohibiting or restricting the take of marine resources,



Great blue heron fishing in the intertidal zone.

both living and non-living. California's 124 MPAs protect a wide variety of key habitats in the ocean and estuaries, forming a network across the state. The California MPA Network includes sheltered estuaries to rocky intertidal areas and lush kelp forests. The three Point Arena MPAs, Point Arena State Marine Reserve, Point Arena State Marine Conservation Area and Sea Lion Cove State Marine Conservation Area, are rich in marine resources. More than 250 species of invertebrates and numerous fish, seabirds, and marine mammals call this area their home. The MPAs support thriving species while also helping to restore endangered or threatened marine life.

## AREA OVERVIEW

Point Arena is more than just the name of this place; the headlands that form the "Point" of Point Arena, make this area unique. The Point shelters one of the few coves with safe anchorage in the region. It also creates a massive upwelling zone that feeds one of the most productive ecosystems on the west coast.

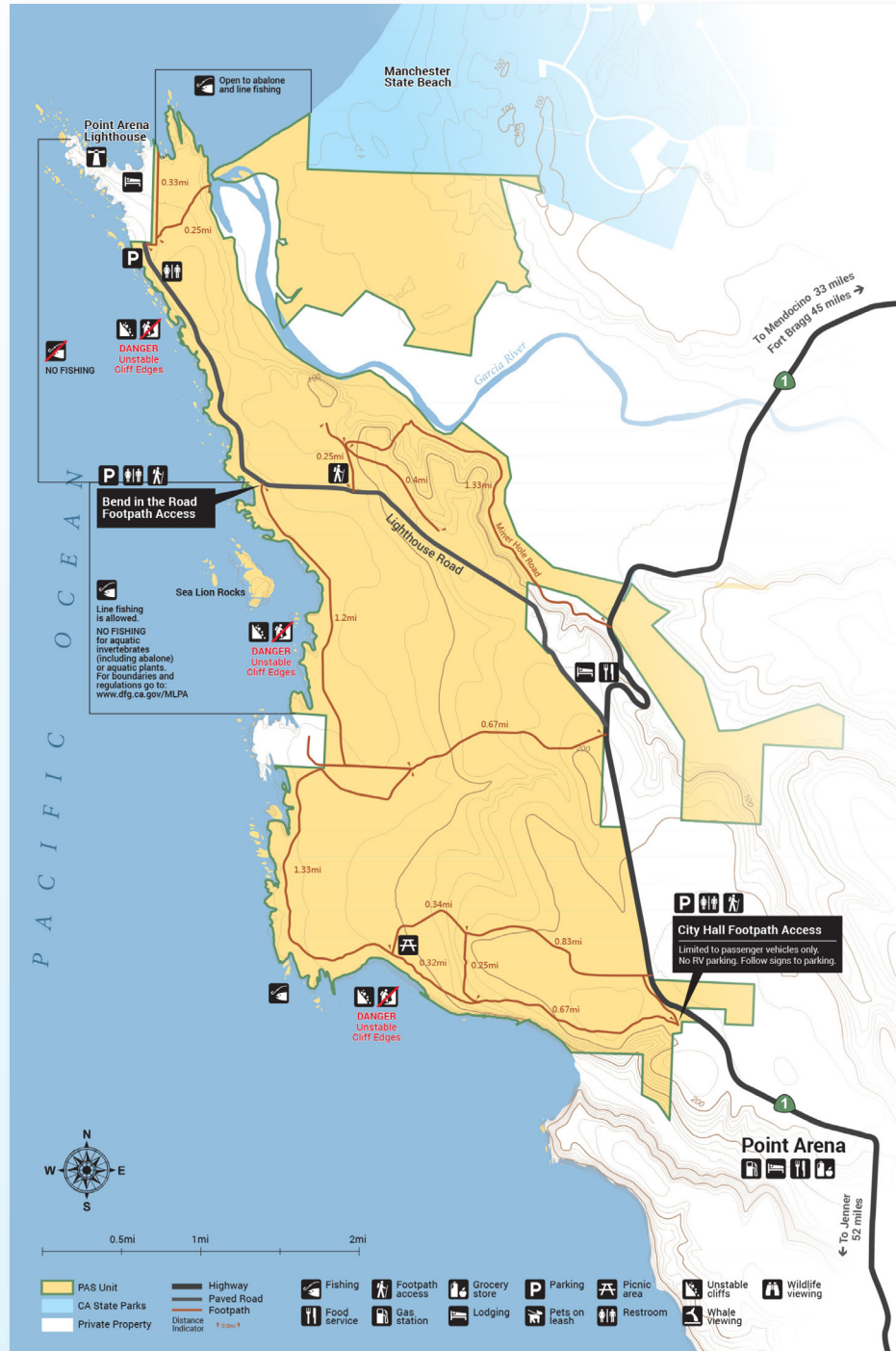
The trail behind City Hall starts above Arena Cove and follows the edge of the bluff through coastal prairie to the Point Arena Lighthouse and the mouth of the Garcia River. Along the way, you will walk past sprawling patches of wild huckleberry plants and sinkholes large enough to swallow the Lighthouse. The Point Arena-Stornetta Lands will dazzle you with wide-open views of surfers lining up for a chance to catch a wave, whales sticking close to shore, and the ocean relentlessly carving caves and arches into the rocky coastline.



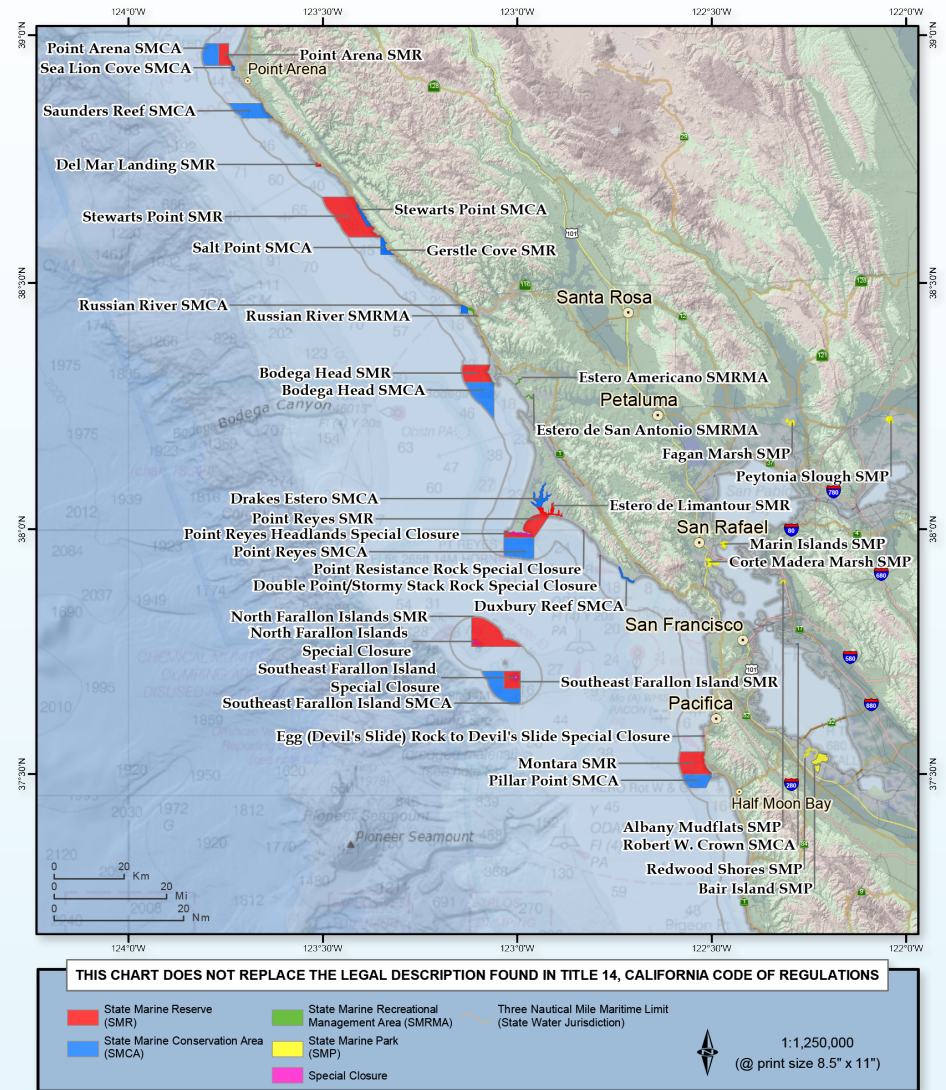
The Point Arena Lighthouse marks the "Point" of Point Arena and is located next to the Point Arena-Stornetta Lands and marine protected areas.



# POINT ARENA-STORNETTA LANDS MAP



# MARINE PROTECTED AREAS MAP





## LAND

People built the Point Arena Lighthouse to mark the line between land and sea clearly, but nature has other plans. Thanks to an active fault line, changing sea level, and wave erosion, the line between the land and sea slowly changes over time. The rock formations on the Point Arena-Stornetta Lands are spectacular and complex and provide clues about how the coastline has changed over millions of years. As waves bash the rocky coastline, they cause erosion and carry sediment to the ocean floor, which fills low spots and gradually forms flat terraces.

The bluff-top trail from City Hall to the Lighthouse is on a sandy terrace that was a beach about 80,000 years ago. This terrace was pushed up from the ocean basin by the Pacific Plate as it slowly grinds against the North American Plate. The collision between these two plates started about 30 million years ago and formed the San Andreas Fault. This active fault is responsible for the lifted, twisted, and shattered rocks that are visible on the cliffs at the Point Arena-Stornetta Lands.

Traces of sea level change are also evident on the Point Arena-Stornetta Lands. As the world's ice sheets and glaciers slowly expand and contract over eons, sea level rises and falls, which forms wave cut terraces at different elevations. Several of these sandy terraces are recognizable from the bluff top trail.



## Sinkholes, Sea Caves, Sea Arches, and Sea Stacks

Wave erosion and plate tectonics create sea caves, sinkholes, arches, and sea stacks. The waves gradually carve out faults and weak points in the rock to create sea caves. As the erosion progresses, the rock formations slowly change. A sinkhole is formed when the ceiling of a cave collapses. A sea arch is formed when waves keep cutting a cave until it passes all the way through the rock. A sea stack is formed when the top part of an arch collapses.





## LIFE ON LAND

The Point Arena-Stornetta Lands supports many different plant communities. There are large swaths of coastal scrub with coyote bush, huckleberry, and monkeyflower. Forested areas contain bishop pine, shore pine, and Monterey cypress. There is a surprising amount of wetlands and marshes with willow, red alder, and Humboldt Bay owl's clover. Of all the plant communities found here, the coastal prairie played a vital role in the story about how these lands became federally protected.



PHOTO: USFWS

Coastal prairie is a rare and unique plant community with tufted hairgrass, native bunchgrass, and a variety of wildflowers like the Douglas iris. The early blue violet is the larval host plant of the endangered Behren's silverspot butterfly. These butterflies lay their eggs on the early blue violet, and the caterpillars feed on the plant's leaves. Between July and early September, the adult butterflies spend their short 3-week life trying to reproduce and feeding on wildflower nectar. Some of its favorites are goldenrod, gum plant, yarrow, and seaside daisy.

Although early blue violets grow in many different environments in the west, the most critical habitat for the Behren's butterfly is coastal prairie. Coastal prairies require regular disturbance to keep them from growing into scrubland and forests. Herds of elk once roamed this part of the coast, and their intense grazing helped create coastal prairies. Unfortunately, the elk disappeared because of overhunting right around the same time dairy farmers started grazing their livestock on this land in the late 1800s.



BLM has a grazing plan with local ranchers.



Coyote roaming the coastal prairie.

Although livestock grazing significantly impacted plant communities, it also kept the coastal prairie open. Now that the Point Arena-Stornetta Lands are part of the National Monument, the Bureau of Land Management works with local ranchers as part of a managed grazing plan.

Without coastal prairie, the Behren's butterfly is likely to go extinct. Historically, the butterfly's range was from the town of Mendocino down to Salt Point State Park, but its habitat is shrinking because of development, invasive plants, and overgrazing by livestock. As a result, the Point Arena-Stornetta Lands might be the butterflies' best chance for survival.



Skunk and wildflowers on the trail.



## ON THE LAND



### SPECIES LIST:

- |                                 |                     |                              |
|---------------------------------|---------------------|------------------------------|
| 1 Behren's silverspot butterfly | 8 Wax myrtle        | 15 Great blue heron          |
| 2 Early blue violet             | 9 Juncus            | 16 Banana slug               |
| 3 Pelagic cormorant             | 10 Bishop pine      | 17 Northern Alligator Lizard |
| 4 Huckleberry                   | 11 Tufted hairgrass | 18 Garter snake              |
| 5 Douglas iris                  | 12 Mountain lion    | 19 Pt. Arena Mountain Beaver |
| 6 Goldenrod                     | 13 Bobcat           | 20 Ravens                    |
| 7 Yarrow                        | 14 Coyote           |                              |

## IN THE WATER



### SPECIES LIST:

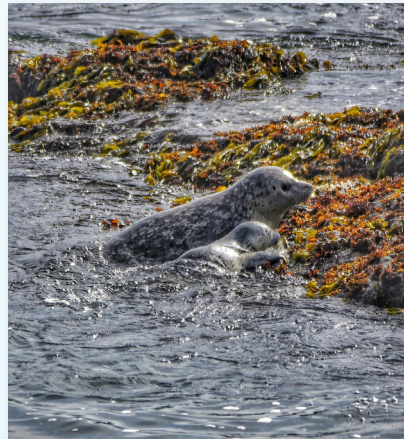
- |                 |                       |                   |
|-----------------|-----------------------|-------------------|
| 1 Sea star      | 6 Eel grass           | 11 Cabezon        |
| 2 Red abalone   | 7 Surf grass          | 12 Dungeness crab |
| 3 Purple urchin | 8 Gooseneck barnacles | 13 Sea lion       |
| 4 Bull kelp     | 9 California mussel   | 14 Harbor seal    |
| 5 Sea palm      | 10 Ling cod           | 15 Grey whale     |



## OCEAN

When it's not foggy, the Point Arena-Stornetta Lands is an ideal place to watch the ocean life swimming along California's coast. From November through May, migrating grey whales cling to the shoreline as they round the point on their migration between Alaska and Baja California. Harbor seals haul themselves onto the rocks, the ocean dripping from their coats, to nap in the sun. Just north of the Lighthouse is the mouth of the Garcia River, an estuary that connects freshwater habitat with the ocean. River otters swim through the river mouth to roll around in the sand and try their luck fishing in the sea. Chinook and coho salmon return from the ocean to the Garcia River to spawn. They swim upstream to lay their eggs, and the juvenile fish live in the river for a year before swimming out to the ocean.

Although it is easy to tell how windy this part of the coast is, it is surprising to learn how this affects the ocean. Like a giant fisherman throwing out chum, the headlands create a feeding frenzy for wildlife. The rocky point stretches out and catches the strong wind-driven current, pushing surface water out to sea and pulling up cold, nutrient-rich water from the ocean depths, in a process called upwelling. The Point Arena headland amplifies winds and currents, creating a massive upwelling zone that spreads



Adult harbor seal with pup.

nutrients hundreds of miles out to sea and down to Point Reyes. This nutrient-rich water feeds phytoplankton and kelp, which are the base of a bountiful food chain. Krill, a small shrimp-like crustacean, feed on phytoplankton and become the staple food for hundreds of different species, everything from small fish to giant whales.

Point Arena's rocky shoreline and cold, nutrient-rich waters provide ideal growing conditions for bull kelp forests. Bull kelp is an alga that gets energy through photosynthesis and from nutrients in the water and is the foundation of a whole ecosystem. It is a staple food for small fish, abalone, and a host of other organisms that in turn become food for larger animals like harbor

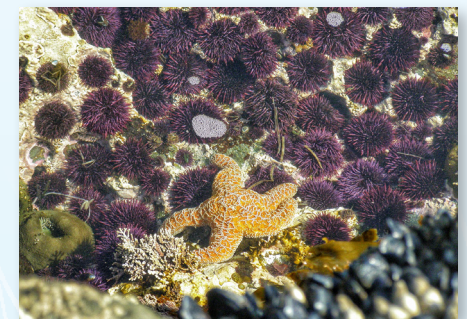


Whales can be spotted close to shore from the bluff-top trail.

seals and sea stars. From the rocky holdfast on the ocean floor, all the way up to the surface, kelp provides habitat where creatures can live and raise their young. Many animals also temporarily shelter in bull kelp to cope with storms, rough waves, and predators. Grey whales and harbor seals will swim into kelp forests to escape from chasing orcas.

Unfortunately, a combination of ecological and oceanographic factors caused a dramatic reduction in kelp forests all along the north coast of California. From 2013 to 2016 a record-breaking marine heatwave massively disrupted this ecosystem, and scientists think that climate change is causing these extreme events to occur more frequently.

Around this same time, a wasting disease killed most sea stars, an important local predator of purple urchins. Left unchecked, the purple urchin population exploded to 60 times higher than usual. Purple urchins are voracious consumers of kelp and they turned areas that used to



Sea star surrounded by purple urchins.

support productive kelp forests into urchin barrens. Since 2013, kelp forests declined by more than 90% in northern California and this vital ecosystem is struggling to recover. In 2021, scientists observed a large amount of kelp forest regrowth, an unexpected but promising sign that will hopefully continue.



# MARINE PROTECTED AREAS (MPAS)

Marine protected areas, or MPAs, are underwater places designed to protect key habitats and species by prohibiting or restricting the take of marine life. California's MPAs protect a wide variety of key habitats in the ocean and estuaries, forming a network across the state. California's MPA Network includes sheltered estuaries and rocky intertidal areas, to lush kelp forests and submarine canyons. The three Point Arena MPAs are rich in marine resources. More than 250 species of invertebrates as well as numerous fish, seabirds and marine mammals call this area their home. MPAs here protect many species, including the habitats they depend upon, and may also help restore endangered or threatened marine life over time.

## Benefits of Marine Protected Areas:

- Conserve key marine life and habitats
- Preserve natural diversity
- Help rebuild depleted populations
- Protect geologic features and cultural areas
- Support research and education
- Offer recreational and economic opportunities



## MPAs off the coast of the Point Arena-Stornetta Lands

MPA	Allowed Uses
Point Arena State Marine Reserve	It is unlawful to injure, damage, take, or possess any living, geological, or cultural marine resource.
Point Arena State Marine Conservation Area	It is unlawful to injure, damage, take, or possess any living, geological, or cultural marine resource for recreational and/or commercial purposes except: <ol style="list-style-type: none"> <li>1. Recreational take of salmon by trolling is allowed.</li> <li>2. Commercial take of salmon with troll fishing gear is allowed.</li> </ol>
Sea Lion Cove State Marine Conservation Area	It is unlawful to injure, damage, take, or possess any living, geological, or cultural marine resource for recreational and/or commercial purposes except: <ol style="list-style-type: none"> <li>1. Recreational and commercial take of finfish is allowed.</li> </ol> <p>Finfish, as defined for purposes of MPA regulations, are any species of bony fish or cartilaginous fish (sharks, skates and rays). Finfish do not include amphibians, invertebrates, plants or algae.</p>

For more information about MPAs and fishing regulations, visit: [www.wildlife.ca.gov/Conservation/Marine/MPAs](http://www.wildlife.ca.gov/Conservation/Marine/MPAs)



## INTERTIDAL ZONE

The rocky shoreline stretching from the Arena Cove north to the Lighthouse is ideal habitat for intertidal creatures. The intertidal zone is the narrow edge of the ocean that lies between high and low tide. Although many animals visit, only those specially adapted to its challenging conditions can live there full time. Temperature, salinity, and moisture levels all change as the tides come and go.

For intertidal animals, it is not enough to be able to breathe underwater while being dashed about by rough waves; they must also survive exposure to open air and the drying, warming effects of the sun. Sea stars and fish, like the tidepool sculpin, can't get completely dried out in the sun, so they find tidepools to stay in during low tide. Snails, barnacles, and mussels avoid drying out by holding seawater inside their shells and by hiding under seaweed. These techniques also protect them from shorebirds, like the black oystercatcher, that rely on the intertidal zone for food.



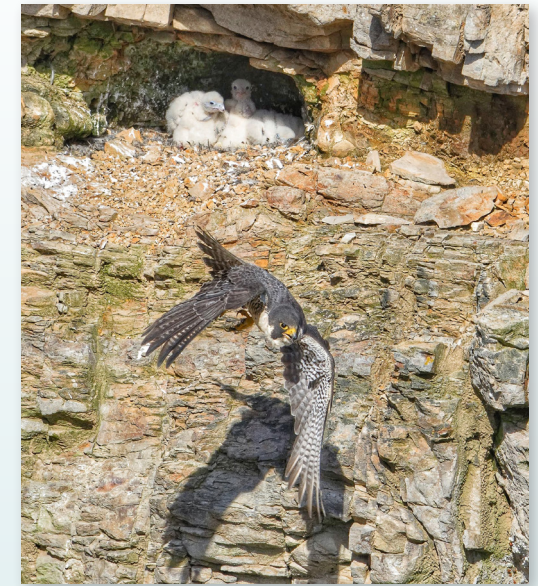
Sea anemones in the intertidal zone.



Black oystercatcher looking for food.

## BIRDS

The shoreline, coastal prairie, and Garcia River estuary at the Point Arena-Stornetta Lands are all excellent bird habitats. Bird watchers have observed more than 126 species here, including shorebirds like the black oystercatcher; seabirds like the Laysan albatross, and land birds like the peregrine falcon. These different types of birds have adapted to different environments. For example, sea birds spend most of their time in the open ocean and have special glands that let them drink salt water. They mainly come to land when it's time to nest and raise their young. Shorebirds live on land but have long legs and bills for fishing on the edge of the ocean.



Peregrine falcon with chicks.



Pelagic cormorants nest on the cliffs.

As you soak in the views from the coastal bluffs, look for the colonies of pelagic cormorants that use the cliffs as multi-family apartments. They huddle away their days on the steep rocks to protect their nests from ravens, coyotes, and other predators. Then, when it's time to eat, they dive more than 100 feet down into the ocean to hunt small fish, crustaceans, and worms. For cormorants near Point Arena, the collapse of the kelp forest ecosystem and increase of urchin barrens made it difficult to find enough food to raise their young. A 2019 study found that cormorants produced far fewer chicks of fledgling age than usual.



## MANCHESTER BAND OF POMO INDIANS

The Indigenous people in the Point Arena area were called the Bokeya, a triblet of the Pomo. In pre-contact times, the Bokeya territory spanned about 300 square miles from the Navarro to the Gualala rivers and extended into the coastal mountains towards Yorkville. Their population ranged between 350 to 1,200 people who lived in 3 to 5 village communities. One of their largest villages was located at the mouth of the P'da Hau River (currently called the Garcia).

Neither the Spanish mission system, which extended to Sonoma County, or the Russian colonization of coastal Sonoma and Mendocino Counties had a major impact on the Bokeya. However, when the Mexican Republic gave Rafael Garcia a large tract of their land in 1844, the Band's way of life started to drastically change. Diseases, slave raids, and warfare decimated their population. In 1850 the United States took over California, and the displacement of the Bokeya and erosion of their culture continued. The U.S. Government moved the Band onto a reserve in Fort Bragg in 1856. When the reserve closed 11 years later, many Bokeya returned to their homeland only to find it occupied by farmers and ranchers.

In 1902, the Northern California Indian Association (NCIA) helped the Band purchase a small amount of land and create the Manchester Reserve along the Garcia River. The NCIA discovered that the U.S. Government had signed treaties that promised several California Indian Tribes reservations, but the treaties were never ratified and were being kept secret. After several years of investigation, the NCIA found copies of the treaties and used them to pressure Congress into fulfilling its obligations by purchasing tracts of land for the Tribes. Because of this work, the Bureau of Indian Affairs



Tribal members share knowledge of the ocean and land with students during ACORN's field studies.

added additional acreage to the Manchester Reserve and put the land in a trust that is owned by the Bokeya. Around 1940, the Band purchased an additional 254 acres for a dairy farm operation, which was active until the late 1960s. The Bokeya are now called the Manchester Band of Pomo Indians and their historic connection to the land continues to this day.

### CENTRAL POMO LANGUAGE: LOCAL FLORA & FAUNA

- Red Abalone: k'əš
- Purple Urchin: qati:t'
- Bullwhip Kelp: kaiyéholo
- Sea Palm: t'a:kohai
- Gooseneck Barnacles: ča:šó ("pigs feet")
- California Mussel: qáw
- Cabezon: ba:ták' ("bullhead")
- Dungeness Crab: k'í: ("crab")
- Sea Lion: bo:qá bta:ka ("west water bear")
- Harbor Seal: p'iyun
- Grey Whale: ts'im ("whale")
- Silver Spotted Butterfly: ts'a:dát' ("butterfly")
- Pelagic Cormorant: qhyú:
- Huckleberry: qa:qái
- Bishop Pine: ša:žóm qle
- Tufted Hairgrass: č'hi:m ("sedge, carex")
- Mountain Lion: da:mót'
- Bobcat: da:lóm
- Coyote: ʔa:wí
- Great Blue Heron: qlé:yaq'a: ("crane")
- Gopher: lám
- Peregrine Falcon: t'át'a ("black hawk", "chickenhawk")
- Banana Slug: p'la
- Alligator Lizard: mt'ú:lu ("lizard")
- Garter Snake: msá:la ("snake")

# POINT ARENA TOWN HISTORY

The town of Point Arena's story began in 1844, when the Mexican government gave Rafael Garcia a large land grant and he created a cattle ranch in the area. Garcia's luck ran out when California became a U.S. State in 1850, and he sold the ranch to people who permanently settled.

The Americans who founded Point Arena focused on farming and lumbering. They built a wharf at Arena Cove around 1866, which gave the lumber industry a way to ship old-growth redwood to markets. Although the local lumber era had plenty of booms and busts before slowing down for good around 1915, Arena Cove continued to support the town with wares, services, and transportation until the 1940s. It is the only natural harbor in more than 50 miles of rugged coastline and was the main driver behind the town of Point Arena. However, maritime safety was a significant problem, so the Federal Government built the Lighthouse in 1870 to help with navigation. Still, an average of one ship a day ran aground near Point Arena in the 1880s.

Modern roads reached Point Arena in the 1940s and replaced maritime transport as the main link to the outside world. In some ways, the town hasn't

changed much since; it has many of the same buildings and roads, the same population size, and the same independent spirit.

Storm of 1983 destroyed the pier. Photo from "The Great Disaster at Arena Cove" by Nicholas King.

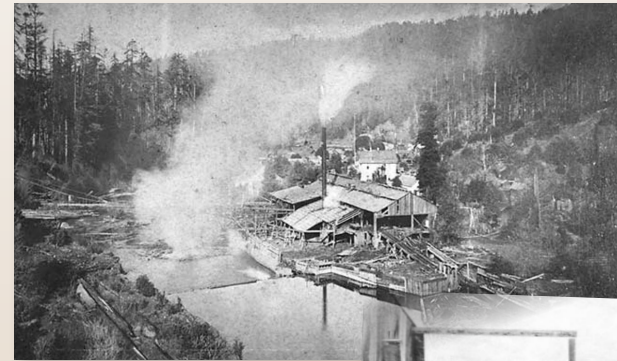


View of the Arena Cove from the bluff trail.



## The Historic Point Arena-Stornetta Lands Log Ride

An elaborate system moved lumber from the Garcia River lumber mill to ships at the Arena Cove. First, lumber floated down a 6-mile-long flume from the mill to the bottom of the bluffs near Miner Hole Road. A water powered conveyer belt lifted boards up to Rollerville Junction, where they were loaded onto a steam powered train and hauled about two miles to the bluff edge behind City Hall. Finally, boards were sent down a 900-foot-long chute to Arena Cove and loaded onto ships.





# LOCAL HISTORIC TIMELINE

7,000 BCE

Pomo ancestors inhabit Clear Lake

2,000 BCE

Date of the oldest artifacts discovered on the Point Arena-Stornetta Lands

1812

Fort Ross built and Russian sea otter fur trade along the Sonoma and Mendocino coast

1823

Spanish Mission founded at Sonoma (Mission San Francisco Solano)

1842

Russians leave Fort Ross

1844

Mexican Government gives Rafael Garcia land grant

1850

California becomes a U.S. State

1859

First buildings in Point Arena

1866

Wharf developed at the Arena Cove

1869

Garcia Lumber Mill starts operations

1870

First Point Arena Lighthouse

Bokeya Manchester Reserve created, which becomes the Manchester Rancheria

1902

Arena Cove Life-Saving Station

1903

Earthquake damaged town and Point Arena Lighthouse

1906

Point Arena incorporated, new lighthouse begins operations

1908

Town of Point Arena burns in fire

1927

Modern roads arrive and schooner service ends

1940s

PG&E proposes building a nuclear power plant on what will become the Point Arena-Stornetta Lands

1971

Pier at the Arena Cove destroyed in storm

1983

Point Arena marine protected areas created

2010

Point Arena-Stornetta Lands become part of the California Coastal National Monument

2014



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## ACKNOWLEDGMENTS


### THANK YOU TO ALL OF OUR PARTNERS WHO MADE THIS GUIDE POSSIBLE!


 Pomo language contributions by Sal Martinez, Manchester-Point Arena Band of Pomo Indians.

 Guide reviewed by California Department of Fish and Wildlife.

 Point Arena-Stornetta Lands managed by Bureau of Land Management’s Ukiah Field Office.

 California’s marine protected areas are managed as a statewide network through the MPA Management Program.

 Support for ACORN’s environmental stewardship program, Students Protecting the Coast, provided by Friends of Point Arena-Stornetta Lands, Conservation Lands Foundation, Coastal Quest and the Ocean Protection Council.

 Land and marine ecosystem illustrations by Point Arena artist Erin Kirchner.

 Wildlife and landscape photos by Point Arena photographer Michael Beattie.

 Graphic design by David Gilmore.

 Naturalist Guide writing and editing by Ben Duggan and Jennifer Ketring, ACORN Partners in Education.





*Naturalist Guide* produced by ACORN Partners in Education  
through the Marine Protected Area (MPA) Outreach and Education Small Grants  
Program administered by Coastal Quest. November, 2021.



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