

TRINIDAD COASTAL LAND TRUST

NATURALIST
GUIDEBOOK

About the Guidebook

This guidebook is written with Trinidad Coastal Land Trust (TCLT) volunteer walk leaders, ambassadors, and trail stewards in mind, but can be used by anyone interested in learning about the natural and cultural history of the Trinidad coast and how to share it with others. The content focuses on topics shared on TCLT walks and includes interpretive techniques for engaging others in caring about the coast. While the information presented only provides introductory highlights on select topics, we have included a “Learn More” section in the appendix with suggestions for how you can continue to expand your knowledge of the Trinidad coast. Enjoy!

Trinidad Coastal Land Trust, July 2019

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Trinidad Coastal Land Trust

THE TRINIDAD COASTAL LAND TRUST BELIEVES THAT THE WILD AND SCENIC NORTH HUMBOLDT COUNTY COAST IS A SOURCE OF JOY AND INSPIRATION. We work to ensure that people can experience the stunning coast from Little River to Big Lagoon by conserving land and maintaining public access trails, providing educational walks and activities that connect people to this place, and involving the community with conservation and stewardship of these lands. We do this because creating a more compassionate and joyful community of citizens, who care for the coast, is key to ensuring its protection for current and future generations.

Conserving lands you love

- TCLT owns 11 properties fee title and maintains 15 conservation easements on private properties with public benefits, to protect the resource values and public access. Land and easement holdings include some of the most scenic and enjoyable Trinidad coast beaches: Baker Beach, Houda Point Beach, Luffenholtz Beach and Moonstone Beach.
- Our volunteers engage in land restoration and trail work to maintain safe public access, remove invasive plant species in coastal forests, and monitor properties to ensure the conservation values are protected.
- We continue to pursue priority conservation land and trail projects such as building the Little River CA Coastal Trail, a missing link connecting Trinidad to Arcata, and working to purchase and protect the Strawberry Rock Redwood Forest Trail.
- Trinidad's Saunders Park property was gifted to TCLT and is home to the Trinidad Library, Museum, city park, native plant garden and the Simmons Gallery, which also serves as the TCLT office. Our gallery hosts local artists who highlight the scenic beauty of our coast.

Engaging education programs

- Monthly guided walks led by trained volunteer ambassadors introduce community members and visitors to natural history topics including geology, seabirds, plant identification, history and intertidal life.
- Volunteer training programs enlist community members to become involved as hike leaders, citizen scientists, representatives, land stewards and gallery hosts.
- School education programs provide an opportunity for students to visit the coast, explore and learn about intertidal ecosystems.

Involving the community

- TCLT depends on volunteers to govern our organization and help run our education and land stewardship programs. We engage the public in regular restoration and trail work days, and we participate in cooperative projects and community meetings.
- We partner with the Bureau of Land Management and other local agencies, organizations and businesses to promote and protect the 'Trinidad Gateway' of the California Coastal National Monument.
- TCLT coordinates the Citizen Science Seabird Monitoring program volunteers who monitor and collect data on nesting seabirds, helping scientists ensure the health of seabird populations and their habitat.
- A Land Stewardship Fund has been established at the Humboldt Area Foundation as a way for private citizens to help support the on-going protection and maintenance of TCLT's coastal public properties in perpetuity.
- Supporters can keep informed by signing up for our mailing list through www.trinidadcoastallandtrust.org or liking us on Facebook.



The Trinidad Coastal Land Trust is a 501(c)3 nonprofit organization. Donations are tax-deductible. We depend on donors and volunteers to continue our work.

www.trinidadcoastallandtrust.org
info@trinidadcoastallandtrust.org
707.677.2501 PO Box 457, Trinidad CA 95570

BEACHES, TRAILS, VISTAS and MORE



Trinidad Head and the Historic Lighthouse

Trinidad Head has a 1.3 mile loop trail managed by the City of Trinidad in consultation with local Native American representatives. The thirteen-acre lighthouse viewing area is managed by the BLM as part of the California Coastal National Monument. The historic Trinidad Head Lighthouse is currently open to visitors on the first Saturday of the month from 10am to 12pm, and special events. The viewing area outside the lighthouse is open during daylight hours on the first Saturday of each month.

Old Home Beach

This magnificent beach is often sheltered from wind and is accessible from walking trails in town. Steps guide you to the beach from the bluff vista at the intersection of Trinidad and Edwards Street. The Parker Creek Trail is another access to this beach, found at the end of Parker Creek Lane and via Wagner Street.

Baker Beach

This is an excellent place to go tide pooling during low tide and for bird watching. Located 1.4 miles south of Scenic Drive, look for the trailhead post on the west side, just past Baker Ranch Road. The trail is moderately steep and ends with a section of cable steps. This property is owned by the TCLT.



Luffenholtz Beach

Visitors can walk out on the point for a dramatic view above the rocky coast, or walk down the stepped, but steep beach trail 100 yards to the north. The Luffenholtz Beach trail and point trail parking areas are located approximately 2 miles south of Trinidad on Scenic Drive. TCLT manages the trails and holds ownership of the northern portion of this beach.

Houda Point

A popular beach and ocean vista for surfers, artists and bird watchers. There are three steep trails to two beaches and a vista point of Camel Rock. The anchor-chain parking area is located 2.5 miles south on Scenic Drive from Trinidad, or take Highway 101 north to the Westhaven Drive exit, turn left to Scenic Drive, turn right (north) .3 miles. This property is owned and maintained by TCLT.

Pilot Point

Pilot Point is a forested headland located on a 200-foot tall coastal bluff. It contains a unique geological formation with exposed fossils, a variety of flora, and elevated ocean vistas. Pilot Point was gifted to TCLT to preserve its natural resources and unique qualities, including fossil beds representing a geologic era for which fossil findings are rare. Access by permission only. Please inquire with TCLT for a field tour.

Moonstone Beach

Easy access to ocean waves and the Little River makes this a great family beach. Portable toilet onsite, limited parking. Located on the south end of Scenic Drive. From highway 101 north, take the Westhaven Dr. exit down to Scenic Drive turn left onto Moonstone Beach Road.

Nearby State Park Beaches and Trails

Trinidad State Beach, College Cove, and Elk Head trail provide additional State Park opportunities to enjoy this scenic coast. Nearby Patrick's Point State Park has beach trails, campgrounds and a Yurok Native American demonstration village site.

More to Explore

Visit Trinidad's memorial lighthouse and the Humboldt State University marine lab, both open to visitors. The Trinidad Museum has beautiful exhibits and is located next to the Simmons Gallery and the Trinidad Library. Note limited open hours. The Land Trust office has maps to share, photos and a rotating art exhibit. Consider shopping at the Trinidad Art Gallery in town, selling works from local artisans. This retail art gallery building, once a historic home, was willed to our Land Trust in 2012.



ABOVE FROM TOP: Trinidad Head Lighthouse viewing area, Houda Point South Beach Trail, Trinidad State Beach

**High tides and/or large ocean swells can pose a significant danger to people near the shoreline. Please stay away from the shoreline during large wave swells that can produce 'sneaker' waves that sweep up the shoreline.*

LAND TRUST PROPERTIES and PUBLIC TRAILS



As of 2018, TCLT owns and manages twenty six coastal properties and easements between Moonstone Beach to the south and Patrick's Point State Park to the north. We own eleven properties outright fee title and hold fifteen additional conservation and/or public access easements on private properties.

DISCOVERING

the CALIFORNIA COASTAL NATIONAL MONUMENT



Old Home Beach

The vertical rocks rising out of the sea, so iconic of the Trinidad coastline, hold ecological and cultural value. In order to protect offshore resources, including the many sea stacks along the California coast, President Clinton established the California Coastal National Monument (CCNM) in 2000. As a result, more than 20,000 rocks, small islands, exposed reefs, and pinnacles along the entire California coastline are protected.

Protection and Planning for the CCNM

The Bureau of Land Management (BLM) has the duty of managing and protecting the California Coastal National Monument. They focus on protection, research, education, and planning. Protection was the primary reason for establishing the CCNM. Research is critical for trying to effectively manage the CCNM. Educational programs offered by the BLM and their partners increase public awareness of the CCNM. The planning aspect is developed to provide the framework for long term protection. The Presidential Proclamation recognizes that the CCNM contains “irreplaceable scientific values vital to protecting the fragile ecosystems of California’s coastline”. These rocks are vital to our marine wildlife because they provide a habitat that is not disturbed by humans. Focusing on the physical, biological, and cultural significance is the key to protecting the CCNM.

Working Together to Conserve the Trinidad Gateway CCNM

The Trinidad area has been assigned the additional designation of a California Coastal National Monument “Gateway community” due to its proximity to one of the most spectacular and pristine parts of the California coast. One of five gateways to the California Coastal National Monument, Trinidad offers the public plenty of shore-based opportunities to view and appreciate offshore rocks and their inhabitants. The BLM has partnered with other federal, state and local organizations to work together as stewards to ensure the protection of this fragile ecosystem and its cultural resources. The Trinidad Coastal Land Trust works in collaboration with the Bureau of Land Management and local Gateway partners to help protect and share the significance of the CCNM. These local partners include: City of Trinidad, HSU Marine Lab, Trinidad Museum Society, Trinidad Rancheria, Yurok Tribe, Tsurai Ancestral Society, Trinidad Chamber of Commerce, CA State Parks, CA Department of Fish and Wildlife.

The CCNM is Weather Resistant

Sea stacks were once attached to the land and consist of weather resistant rocks such as basalt and greenstone, which resist erosion by wind and waves. Sea stacks are formed through the process of erosion. The constant hammering of waves slowly erodes away the weaker parts of the rock, leaving the harder and more resistant rock behind. These weathered rocks form the California Coastal National Monument. Due to this natural process of erosion, California's shoreline and rocks will eternally change. These monumental sea stacks have stood for 20,000 years. Their stories are long and will only grow as they withstand the treacherous exposure of being off the California coast.

Life Thrives on the CCNM

Life clings to these majestic sea stacks. Marine mammals and seabirds find refuge on the rocks because they offer protection from predators that reside on land such as foxes, bears, as well as humans. The rocks off the Trinidad coast are the third most important place for seabird nesting on the California coast (behind Farallone Islands and Castle Rock NWR). The rocks also provide a safe haven from marine predators such as great white sharks. Different species of seabirds have different requirements for their nesting sites. For example, Pigeon Guillemots build their nests at fracture points in the sea stacks while storm-petrels make burrows in patches of soil on the sea stacks for their nests. Marine mammals, such as sea lions, lie on the rocks to sunbathe and rest. Ocean dwellers such as barnacles, sea stars, and anemones stick to the sea stacks under the water's surface and live in the constantly changing intertidal zone.

CCNM Trinidad Gateway Viewing Opportunities

Trinidad offers many locations to observe and enjoy the CCNM. Along the Trinidad Head Trail, just to the north, you can see Flatiron Rock and Green Rock, important nesting sites for thousands of Common Murres. The vista bluff at the intersection of Trinity Street and Edwards Streets is an excellent place to watch for harbor seals, Pigeon Guillemots, Cormorants and Murres nesting on Pilot Rock. Breeding Season is April through August. Nesting seabirds are best seen with a spotting scope. Watch for seabird hikes and viewing opportunities listed on the TCLT website at www.trinidadcoastallandtrust.org.

SPOTLIGHT TRINIDAD IS AN AREA OF SPECIAL BIOLOGICAL SIGNIFICANCE



Ian Schatz

The giant kelp forests that surround Trinidad Head were designated by the State of California as an Area of Special Biological Significance (ASBS) in 1974. This designation affords special protections by prohibiting waste discharges within the area. The kelp beds of Trinidad Head also represent a state-identified Critical Coastal Area. Waste and pollution in this area of Trinidad is heavily monitored by the state water quality board. The area of concern includes the waters in Trinidad Harbor and on the north side of Trinidad Head, off Trinidad State Beach to Flatiron Rock. In addition to waste and pollution, changing ocean temperatures and surging sea urchin populations threaten the kelp forest, making it even more imperative to maintain water quality around the bay.

Protecting the Water

The City of Trinidad, the Trinidad Rancheria and the Humboldt State University (HSU) Marine Lab have a special permit allowing them to discharge stormwater into the bay. They are required to comply with the California Ocean Plan and Special Protections for

the ASBS. The special protections require extensive water quality monitoring to ensure that the stormwater discharges are not affecting the natural water quality and the organisms that live in Trinidad Bay in and around the kelp beds surrounding Trinidad Head. With this heavy regulation in place to protect this area, Trinidad, the HSU Marine Lab, and the Trinidad Rancheria have all completed projects to reduce pollutants from their discharges. They are all developing plans to eliminate their stormwater discharge into the ASBS by diverting and treating their stormwater.

How Can We Help?

Remember, everything that enters this highly sensitive area leads to the ocean. The City of Trinidad works with residents to promote ocean friendly gardening, native landscaping to enhance permeability, improve road runoff and drainage infrastructure, and other strategies to protect watersheds. Visit www.trinidadwatersheds.org for more information.

COASTAL GEOLOGY

OF THE TRINIDAD HEADLANDS

The Trinidad Headlands extend from Moonstone Beach, north to Agate Beach at Patrick’s Point State Park. These headlands are composed of a mixture of metamorphic, sedimentary and igneous rocks that are a part of the Franciscan Complex. The Franciscan Complex is a record of the seafloor that initially formed during the Mesozoic Era, then collided with the North American Plate starting about 150 million years ago. This collision formed the Farallon Trench as the ancient ocean crust and sediments were pushed deep into the earth. This ancient convergent plate boundary, and associated faults, have since been pushed up to the surface and are clearly evident on many of the rocky beaches.

Plate Tectonics

The theory states that the Earth’s crust is composed of a couple dozen major lithospheric (=rock, sphere) rock plates, and dozens of minor plates. The plates are composed of either oceanic or continental crustal rocks. The ocean crust is composed of basalt rock, chiefly produced at divergent plate boundaries on the mid-ocean ridge system (see diagram). Here convection currents deliver hot rock from deep in the mantle. This hot rock melts as the divergent boundary pulls apart, and the molten rock erupts onto the sea floor. These submarine fissures extrude on to the seafloor, often producing pillow basalts. Continental crust is composed of various rock types and is less dense than oceanic crust. Movement of these crustal plates, or lithosphere, are driven by convection currents circulating deep within the Earth’s middle layer of molten semi-solid material, which is often referred to as the mantle.

Plate Boundaries

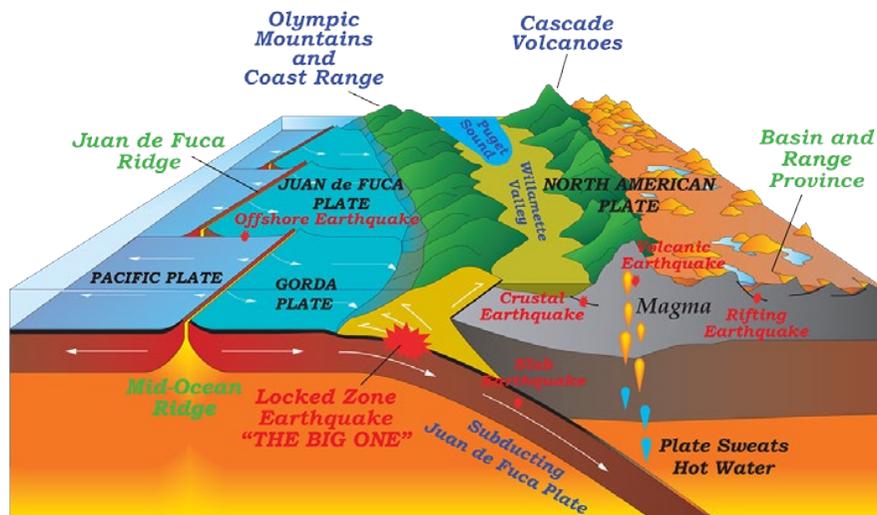
There are 3 main types of plate boundaries:

- 1.) **Divergent** plate boundaries are where new basaltic ocean crust is formed, and are commonly referred to as Mid-Ocean Ridge (MOR), a rift zone, or a spreading center.
- 2.) **Convergent** plate boundaries are where two lithospheric plates collide. Subduction zones are where a denser plate is forced under a more buoyant plate and old crust is recycled back into the mantle. This is typically where dense oceanic crust is forced under lighter continental crust.
- 3.) **Transform** plate boundaries occur when plates grind past each other.

Subduction zones are often associated with trenches, which are the deepest points in the oceans. The subducted ocean crust is subjected to increasing heat and pressure which changes the original rocks to metamorphic rocks that are discussed below. At sufficient depth and pressure, the ocean crust eventually melts and the magma rises towards the surface and forms granitic (continental) crust or volcanic chains that are referred to as volcanic arcs.

The final primary plate tectonic feature are “hot spots” or mantle plumes. Mantle plumes are locations, about 65 of them across the Earth, where basaltic magma rises through the lithosphere, independent of any plate boundary, to form volcanoes at the earth’s surface. Yellowstone and Hawai’i are two examples of the many hot spots seen around the globe.

Cascadia Subduction Zone

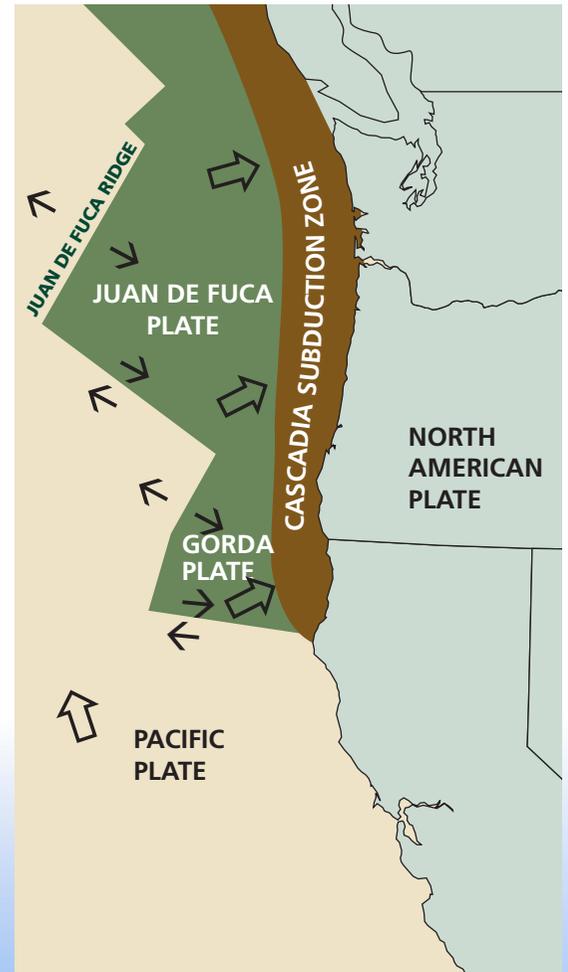


CASCADIA SUBDUCTION ZONE

Today, the oceanic collision is still taking place as the Gorda-Juan de Fuca plates collide with the North America plate. This plate boundary is called the Cascadia Subduction Zone (CSZ). The CSZ has produced several major (M8.0+) earthquakes with the last major earthquake, an estimated M 9.0 that occurred in January 26, 1700. This date is based on Japanese records of an Orphan tsunami (a tsunami with no associated earthquake) and drowned coastal forests that date back to about 320 years ago. Geologic models predict that this will occur again in the future. The combination of the Franciscan formation and the Cascadia Subduction Zone gives Trinidad the physical landscape characteristics that make this area unique and worth protecting. Seismic activity caused by the Cascadia Subduction Zone has shaped the Northern California landscape.

Even though you may not always feel them, earthquakes are common in Humboldt County because of its proximity to the Mendocino Triple Junction. This is where the Gorda plate, the North American plate, and the Pacific plate join to form the Cascadia Subduction Zone. In the Cascadia Subduction Zone, tectonic plates collide causing the land mass to push above sea level. The oceanic crust of the Gorda Plate has been subducting beneath the continent for 200 million years, moving at a rate of an inch and a half per year. Humboldt County's coastline lies near the Cascadia Subduction Zone and the Gorda Plate. Between the year 1871 and 1980, twenty-one earthquakes of a magnitude of 6.0 or higher have been recorded in Humboldt County. From 1980 to present, six more earthquakes shook the region. Of those, five reached the magnitude of 7.0. Fortunately, the majority of these earthquakes are caused within the tectonic plates and happen offshore. Offshore earthquakes are more frequent than onshore earthquakes in the Humboldt region. Onshore quakes tend to occur in intervals of twenty years.

Most quakes that occur in Humboldt County are caused from the Gorda Plate, but earthquakes can also be caused from the Cascadia Subduction Zone (CSZ). Geologists have concluded that the 7.0 magnitude earthquake in April 1992 occurred from the CSZ. This was the first earthquake caused by the CSZ recorded since the last major earthquake 300 years ago. After a major earthquake, expect highways to be closed due to landslides. People living in the area are advised to be prepared for earthquakes because help may be delayed.



TRINIDAD GEOLOGY and the FRANCISCAN COMPLEX

The rocks on the beaches of Trinidad originally formed on the ocean floor over a 100 million years ago. The original oceanic rocks were transported by plate tectonics and eventually collided with the ancient North American continent. This collision of the plates generated mixture of rock types collectively called the Franciscan Complex and includes oceanic basalts, sandstones, cherts, serpentinite, and schist. Coastal uplift and subsequent wave erosion exposed more resistant Franciscan rocks that make up the sea stacks we see off the coast today.

At the plate boundary, sediments are constantly eroding into the trench and resulted in much of the sandstones commonly seen throughout the region. These rocks are often deposited as submarine landslides and, therefore, the particles are more jumbled and poorly sorted. This rock type is often referred to “greywacke.” Rocks were also scraped off the oceanic plate by the overlying continental plate. This process preserved the original rock composition. This is

largely how pillow basalts were preserved: they were extruded at the divergent plate boundary, rode the “conveyor belt” to the convergent boundary, and were scraped off intact and added to the continent. Finally, some of the rocks were subducted under the continent and subjected to various degrees of pressure and temperature. This squeezing of the rock metamorphosed them into a new suite of rock types such as greenstone, gabbro, serpentinite and schist. Collectively, these

rocks are part of the Franciscan Complex.

The more resistant rocks seen offshore are commonly referred to as “sea stacks” and are set in a mélangé, or mixture of various rock types. This mélangé of rocks can be thought of as a sort of tectonic “pudding” of hard resistant blocks embedded in a matrix of sheared shale, serpentinite, and greywacke. In some areas, the sheared mélangé matrix weathers to a soft, sticky grey or blue-grey clay (also known as “blue goo”).

MARINE TERRACES

Ocean waves and currents are constantly at work eroding and flattening the sea floor. Over time, as the sea floor is uplifted above sea level, these flattened surfaces form the marine terraces that we see across much of the Trinidad landscape. These terraces are typically underlain by the eroded Franciscan bedrock with a deposit of relatively young nearshore sedimentary rocks on top. These deposits are a record of the continental shelf that have been tectonically uplifted over the past 250,000 years. Over the past 20,000 years sea levels have risen about 120 meters (400 feet) and shaped the coast as we see it today. As sea levels rise, the marine terrace deposits erode and give rise to the beaches that form at the boundary where the land meets the sea. Since many of the Franciscan rocks are much more resistant to erosion, they form the rocky coastline we see today. Strawberry Rock is a remnant sea stack on a marine terrace that has been uplifted from the harsh and erosive oceanic environment to its location today. This coastline is also the result of large earthquake that occur every 300-500 years, and push the land surface upward several meters (10+ ft) during earthquakes. These large (M8.0+) earthquakes are also referred to in stories told by the original people that lived here.

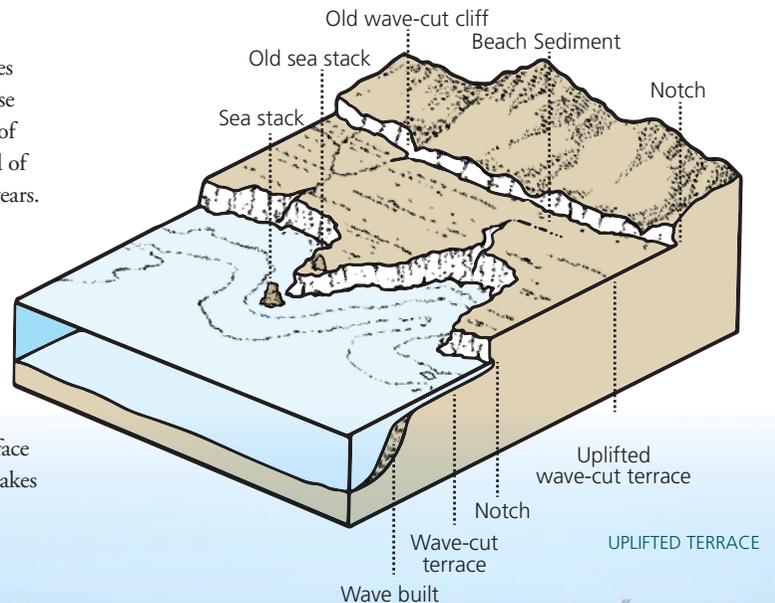
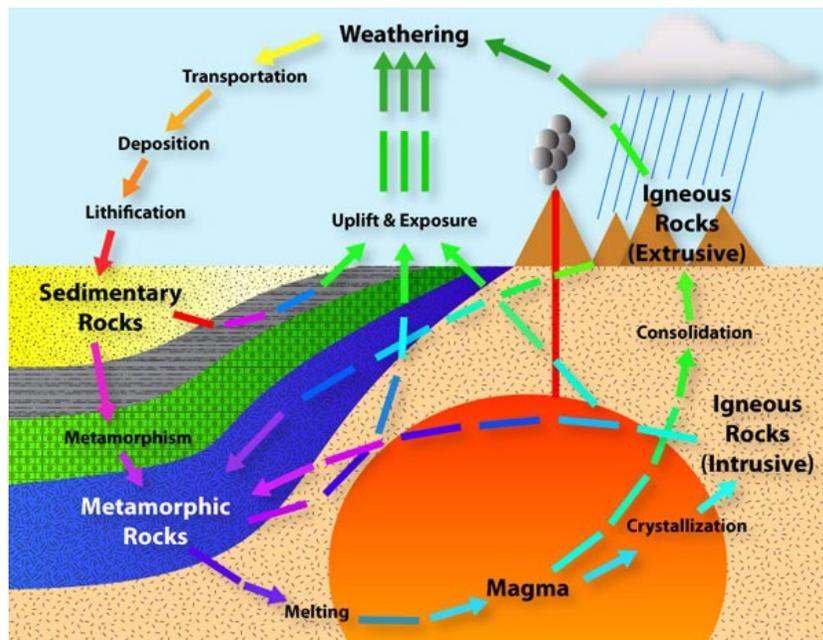


PHOTO: Franciscan Complex





THE ROCK CYCLE

Rocks are composed of minerals, which have unique chemical compositions. There are 3 major types of rocks that make up the Earth's lithosphere: igneous, sedimentary, and metamorphic. In general, rocks and minerals are identified in the field by color, hardness, crystal shape, angularity and luster. In the lab, thin sections can be placed under a microscope to identify the minerals.

Igneous rocks form from a melt, (aka magma) or molten rock. When they crystallize slowly, usually deep within the Earth, large minerals have time to form. These are referred to as intrusive-igneous rocks and the minerals, also referred to as crystals, are large enough to be seen with the naked eye. When the magma cools quickly, small crystals form rapidly and may be too small to be seen with the naked eye. These rocks are extrusive-igneous rocks and are associated with volcanic eruptions, think Hawai'i, Mount St. Helens, etc. Oceanic crustal rocks are rich in magnesium and iron (ferrum) and form "mafic" rocks. Near the surface basalt is common, at 10 km below the surface gabbro is found, and 30+km below the surface peridotite is the deepest rock and is just above the mantle.

Sedimentary rocks are the rocks that accumulate over time as a result of erosion, transport and deposition of existing rocks, accumulation of biological remains, or due to precipitation of minerals from a fluid, such as seawater. Sedimentary rocks are identified by the grain size, mineralogy, roundedness of the grains, and the degree of compaction. In general, high-energy environments (e.g. fast flowing rivers, beaches, etc.) have larger (coarse) grain sizes, whereas lower-energy environments (lake bottoms or seafloor) away from the shoreline have smaller (fine) grain sizes. Shell fragments, coral reefs and the remnants of microscopic plants and animals form biogenic sedimentary rocks. Chert is an example of a biogenic

sedimentary rock formed from accumulating layers of microscopic animals called radiolarians, which have silica in their cell walls.

Metamorphic rocks form as a result of heat and pressure due to either burial, heating and/or tectonic collision to form "new" rocks. The original rocks from which metamorphic rocks are derived are known as the protolith. The grains or minerals in the protolith undergo partial melting and the newly formed minerals may align themselves perpendicular to the direction of pressure. Metamorphic rocks are identified by the size and alignment of the newly formed minerals. Low temperature/low pressure to high temperature/ high pressure metamorphic rocks range exist within a spectrum from slate, schist, and gneiss, respectively.



FROM TOP:
Chert, Sandstone,
Serpentine, Basalt

Examples of Rocks exposed at Trinidad Beach

Greenstone: These rocks are slightly metamorphosed oceanic basalt, green because of their high chlorite content. Some of them contain rounded pillow structures, created when molten lava chilled against sea water. Greenstones can be seen along Trinidad State Beach and represent old oceanic crust.

Greywacke sandstone: These poorly-sorted, dark-to-greenish-grey medium-grained sandstones contain volcanic rock fragments, quartz grains, pieces of shale, and other detrital material. They were deposited in oceanic trenches or at the base of the continental slope by submarine landslides and turbidity currents.

Chert: These reddish, red-brown, or greenish cherts probably represent accumulations of diatom and radiolarian skeletons on the deep-sea floor. The cherts are typically thin-bedded and highly folded. They are very hard and cannot be scratched with a knife blade. They develop "conchoidal fractures" when broken – much like broken glass with smooth, curved surfaces and sharp edges.

Serpentinite: These shiny green rocks are metamorphosed peridotite, an igneous ultramafic rock that comprises most of earth's upper mantle. Serpentinite is relatively soft and weathers to the Franciscan mélange also known as "blue goo."

Schist: Depending on the tide and sand cover, you may be able to see one or more of representatives of these moderately to highly metamorphosed rocks, particularly near the northern end of the Trinidad State beach. Schist is rich in mica some of the schists contain greenish or bluish amphiboles and represent high-pressure, low-temperature metamorphism of greywackes and oceanic basalts in a subduction zone. If you look closely at the rocks, you can see the fine "foliations" in the rock that reflect the squeezing and alteration they underwent during subduction.

Gabbro: Most of Trinidad Head is composed of mildly metamorphosed dark-colored gabbro and diorite. These rocks were originally part of the oceanic crust.

Unconsolidated and poorly-consolidated recent sediments: These relatively young and soft sands and gravels form the yellow cliffs at the south end of the Trinidad State beach. They represent sediments deposited in beach and near-shore shallow marine (e.g., breaker zone) environments.

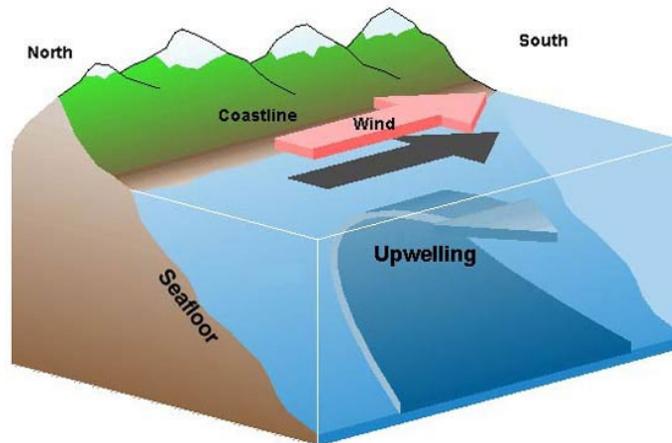
OCEAN SCIENCE

MAKING SENSE OF IT ALL UNDERWATER

Ocean Currents: An Underwater Highway

Ocean currents are continuous, directed movement of seawater generated by several forces effecting this average flow such as winds, tides, Coriolis effect and waves. Ocean currents occur at the surface, at mid-depths as undercurrents, and in the deep as ocean circulation. Wind strength and duration, tidal ranges, depth contours, shoreline configuration, and interactions with other currents influence the direction and strength of an ocean current.

Ocean currents may flow for great distances over long periods of time, or vary seasonally due to storms. Together, this creates a global conveyor belt that plays a dominant role in determining the climate of many of the Earth's regions. Ocean currents move warm water toward the poles, and cool water toward the equator, influencing the temperature, humidity and climate of the regions through which they travel. For example, the California Current flows south along the coast of California and works its way past Trinidad State Beach and eventually to southern Mexico. Since the water flowing past the California coast comes from the north, near the Canada/Washington border, it is much cooler than other beaches at similar latitudes, such as along the east coast of the U.S. This is in part why the ocean water in Northern California doesn't feel the same as the water you may have experienced on other coastlines. The other reason the coast is cooler here is coastal upwelling.



Coastal Upwelling

Coastal upwelling in an oceanographic circulation pattern that involves the movement of dense, cooler and usually nutrient-rich water towards the surface, replenishing the warm, nutrient-depleted surface water. This circulation is the result of winds blowing from the north and driving surface waters offshore. Coastal upwelling makes the waters near the coast very cold and is essential for plant, and ultimately, animal life. Upwelling contributes to migration patterns of seabirds, fish and marine mammals. Nutrients that have moved up from the sea floor increase plant growth in the water and form the basis for a food chain that sustains a variety of animals from seabirds nesting on the rocks to gray whales feeding in the bay. Just as the ocean has established this system of seasonal upwelling, organisms from many families gather in the bay to feast. Upwelling generally occurs April through June, but can vary depending on winds and a variety of climate conditions such as El Nino.

A related circulation pattern is coastal downwelling, which typically occurs in the winter months from December through April. Downwelling results when winds blow from the southwest forcing water up against the coast. This water then sinks to the seafloor taking nutrients and plankton back down to the deep ocean.

Waves

Waves are actually a concentrated form of solar energy! Uneven heating of the Earth's surface creates pressure differences and causes wind. Waves are generated by friction between the wind blowing over a distance of water. That distance is referred to as the fetch, and because the Pacific Ocean is so vast, the large fetch leads to a very energetic wave environment along the California coast. Waves generated by storms are chaotic but as they travel

away from the storm, they sort themselves out by their wave period, or the time between successive wave crests. As the waves disperse across the open ocean they have a characteristic circular, or sinusoidal shape. The wave visible at the surface of the water is in fact only a part of the wave. The wave extends down through the water column to a depth equal to $\frac{1}{2}$ the wavelength, the distance from crest to crest. As the waves travel toward the shore and reach depths less than $\frac{1}{2}$ the wavelength, the bottom part of the wave drags along the ocean floor. The upper part of the wave above the water line continues and moves faster than the rest of the wave. As the ocean depth decreases closer to shore, the drag on the wave's bottom becomes stronger, and the wave shape becomes more oval and the upper part of the wave begins to tilt forward. At a certain depth, the wave tilts far enough forward so that the crest curls over creating a breaking wave showing off the characteristic, rolling shape of a crashing wave. Once the waves break they generate very powerful currents in the surf zone that can sweep people off their feet and drag them offshore. These rip currents are very dangerous to most beachgoers, however, they help push surfers quickly outside the breaker zone.

Rip Currents

All that ocean water being thrown up on the beach by the waves must flow back out. This outflow does not happen uniformly because the water will return to the sea where it is easiest to do so, such as through a break or dip in underwater sandbars offshore, or near a pier or jetty. In these situations, strong “rip currents” can develop that put swimmers at risk of drowning. Rip currents often appear frothier and darker than surrounding water which can help swimmers spot them. In order to escape a rip current, swimmers should not try to swim straight back to shore, because they will be fighting the current and exhausting themselves. Instead, swimmers should aim to get free of the narrow rip current by moving parallel or diagonally to shore.



Tides

There are many different factors that go into explaining the ebb and flow of the ocean. The big three are the Moon, the Sun and the Ocean. In short, the gravitational forces of these two celestial bodies interact with each other to raise the surface of the ocean creating tides. The Moon has almost two times the tide raising force as does the Sun and together dictate the tidal height and period. Because our oceans are liquid, unlike redwood trees that are attached to the ground by their roots, the ocean surface

is pulled upward towards the Moon, and secondarily the Sun, creating a high tide on the ocean where the Moon is above. However, the Earth itself is also being pulled towards the Moon and also the Sun ever so slightly, and this creates a second bulge of water at the exact opposite side of the moon. Maximum/ King Tides: When the Moon, Earth and Sun are directly aligned, known as syzygy, the gravitational pull of the Sun adds to that of the Moon causing maximum, or spring tides. Spring tides occur twice a month, every month of the year when the Sun and Moon are on the same side of the earth (New Moon) or when they are on the opposite sides of the Earth (Full Moon). The highest of the spring tides are also referred to as King Tides. When the Moon and Sun are at right angles to each other, during the First

and Last quarter (Half Moon), the tide raising forces partially cancel each other out. Tides during this time of the month do not spring up as high, nor drop down as low as during the New and Full Moon, and are called Neap Tides.

‘El Nino’

El Nino is a climate phenomenon that occurs every 2 to 7 years and results in extreme global weather conditions. El Ninos occur when the tropical trade winds in the Pacific Ocean relax, or even reverse causing large-scale warming of the surface of the tropical Pacific Ocean. This prevents equatorial upwelling and is catastrophic for seabirds, fish and marine mammals living in those areas. El Ninos also cause droughts, floods and fishing and agriculture collapses as warm waters move eastward across the tropical Pacific.

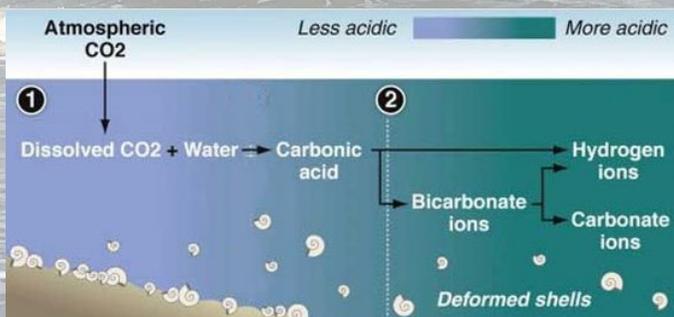
El Ninos vary in intensity and last from nine months to two years. This natural process can have significant impacts on weather and climate.

Tsunami

A tsunami is a series of ocean waves generated by sudden displacements in the seafloor, landslides or volcanic activity. In the deep ocean, the tsunami wave may only be a few inches high. The tsunami wave may come gently ashore or may increase in height to become a fast-moving wall of turbulent water several meters high. A large earthquake can trigger a Tsunami in our area. If you feel the ground shake for a half a minute or more, head inland and to higher ground. A tsunami may be coming.

Ocean Acidification

Ocean Acidification is a term describing the trend of decreasing pH levels in the Earth's oceans which is the result of the uptake of carbon dioxide (CO_2) from the atmosphere. It is estimated that 30-40% of the carbon dioxide from human activity released into the atmosphere dissolves into oceans, rivers and lakes. When the water and carbon dioxide combine, they form carbonic acid, which causes ocean acidification. The ocean covers up 71% of Earth and holds 375 times more CO_2 than does the atmosphere, so it makes sense the CO_2 released into the air is eventually absorbed by our ocean. Ocean acidification has made it very difficult for many organisms in the ocean to survive, especially the microscopic algae and animals with calcareous shells. If the oceans become too acidic from all the absorption of CO_2 , many species may not be able to adapt and could result in the catastrophic collapse of food webs including many of the fish we catch.



Ocean Acidification

CO_2 emissions from human activities are acidifying oceans and threatening sea life.

1. Up to 50% of the CO_2 released by burning fossil fuels over the past 200 years has been absorbed by the world's oceans
2. This raises hydrogen ion concentration in water, limits organisms' access to carbonate ions, which are needed to form hard parts

EXPLORING INTERTIDAL ZONES



EXPLORING TRINIDAD'S COASTAL HABITATS The Trinidad coast is a great place to see and observe a variety of plants and animals. It is the third most important place on the California coast for nesting seabirds. Seals and sea lions haul out on the rocks, gray whales can be seen spouting during migration and a myriad of intertidal seaweeds and invertebrates inhabit rocky tidepools.

Life in the Tidepools

Trinidad has some of the best tidepools in Humboldt County. Baker Beach, Patrick's Point State Park, and the Trinidad Pier are great places to explore tide pools. In the highest intertidal zone, called the splash zone, animals may be out of the water for days when the tides are not high enough to cover them. Conversely, in the lowest of the intertidal zone, animals may be revealed above water for only a day or two a year.

The Splash Zone

The splash zone begins high up on the beach, where waves and high tides send salt spray splashing over the rocks. Life in the splash zone must be adapted to being exposed to the drying air. Here, life is sparse but you can find isopods, periwinkle snails, and barnacles.



ABOVE FROM TOP: Isopod, Periwinkles and Barnacles

High Intertidal Zone

Below the splash zone is the high intertidal zone. Life here is alternately exposed and covered by the tides. Seaweeds like rock weed first appear here, along with shore crabs, limpets, barnacles and turban snails.



ABOVE FROM TOP: Limpet, Green Crab, Mussels and Barnacles

Middle Intertidal Zone

Below the high intertidal is the middle intertidal zone. The ocean covers this zone at least half of each day. Life is much richer here with a variety of seaweeds, sea stars, sea anemones, nudibranchs, hermit crabs, fish and a host of other animals.



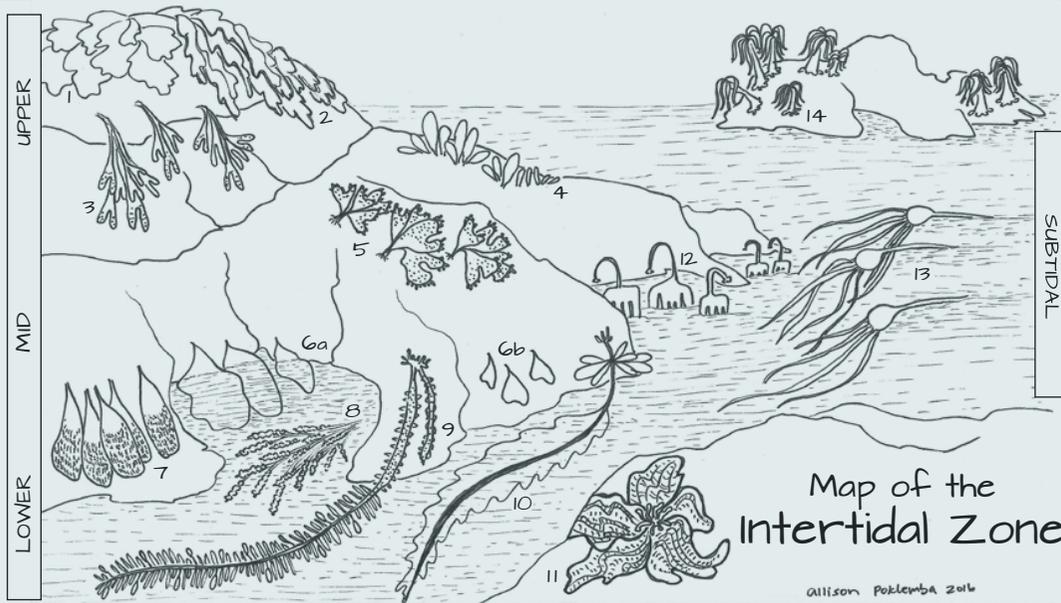
ABOVE FROM TOP: Giant Green Anemones, Ochre Star, Frosted Nudibranch

Low Intertidal Zone

The low intertidal zone is only exposed once or twice a month at the lowest tides. Sea stars, small octopuses, sea urchins, sponges and brittle stars can be found here.



ABOVE FROM TOP: Leather Star, Purple Sea Urchin, Gumbot Chiton



SEaweEDS PICTURED:

- 1 . Sea lettuce (*Ulva sp.*),
2. Nori (*Porphyra sp.*),
3. Bladderwrack (*Fucus gardneri*),
4. Sea sac (*Halosacion glandiforme*),
5. Turkish washcloth (*Mastocarpus papillatus*),
10. Wakame (*Alaria marginata*),
- 11 . Sea cabbage (*Hedophyllum sessile*),
12. Kombu (*Laminaria setchellii*),
13. Bull kelp (*Nereocystis luetkeana*),
14. Sea palm (*Postelsia palmaeformis*),
- 6a. Rainbow leaf (*Mazzaella splendens*) in protected location,
- 6b. Rainbow leaf in location exposed to wave action,
7. Turkish towel (*Chondracanthus exasperatus*),
8. Sea oak (*Cystoseira osmundacea*)
9. Feather boa (*Egrecia menziesii*)

SEaweEDS

SEaweEDS PLAY A MAJOR ROLE IN MARINE ECOSYSTEMS. As the first organism in marine food chains, they provide nutrients and energy for animals – either directly when fronds are eaten, or indirectly when decomposing parts break down into fine particles and are taken up by filter-feeding animals. People too have a long history of collecting some seaweeds as a nutrient-packed food source.

Seaweeds are algae, classified by pigments and ancestral relationships. Their growth is limited by light availability, so they need to stay close to the surface of the water, or be buoyant.

Seaweeds fall into three major divisions: Green, Red, and Brown.

- **GREEN ALGAE** (Chlorophyta)
Bright green colors, typically found in shallow water, high intertidal zone. Example: sea lettuce
- **RED ALGAE** (Rhodophyta)
Can appear red-green-gray-black, found in hi-mid intertidal zone, source of agar and carrageenan. Example: Nori
- **BROWN ALGAE** (Phaeophyta)
The kelps, often quite large brown-greenish color, low-subtidal zone. Example: Bull Kelp

Species Highlights



Xeranthemum at English Wikipedia

Bull Kelp (*Nereocystis luetkeana*)

This kelp (also known as Bull Whip Kelp) is named after its bull whip-like appearance. Many long, narrow blades grow from the float (balloon like structure) and form a golden-brown canopy on the water's surface. Bull kelp is an annual seaweed which means that it fully develops within the span of one year. To reproduce, bull kelp spores fall to the ocean floor around the holdfast of the parent plant. These spores eventually continue to grow in a suitable habitat until maturity and the cycle begins again. It grows quickly! Sometimes growing 10 inches in one day. Winter storms wash spent bull kelp onto beaches where the plants dry and turn brown.



Sea Lettuce (*Ulva sp.*)

Sea lettuce is a common green seaweed with a broad translucent frond that is just two cell layers thick. This seaweed has a rather 'crumpled' appearance and is reminiscent of a lettuce leaf, hence the common name. The frond is typically bright green or dark green in color with paler margins that are often white. It attaches to the substrate with a small disc-like holdfast, but in sheltered areas it may detach and live as large free-floating masses.



Bladderwrack (*Fucus gardneri*):

This rockweed's branching tips swell up and provide flotation for the plant as well as reproductive chambers for developing sperm and eggs. During low tide, the swollen tips dry up squeezing out sperm and eggs which unite into a zygote during the next flood tide and settle onto a surface to produce a new individual.

SEABIRD vs SHOREBIRD

Seabirds are pelagic, which means that they spend most of their lives far out at sea. An easy way to identify them is by their coloring. They are often light on the undersides and dark on the top. Their light underbellies camouflage with the sky when predators from below look up towards the surface of the ocean. Conversely, their dark-upper bodies are camouflaged with the dark



WESTERN SNOWY PLOVER

water when predators in the sky look down at them. Shorebirds on the other hand, spend most of their time along the shore and are

specially adapted with longer legs to wade in the shallow water and pointed beaks for eating out of the sand. Most shorebirds are migratory and are able to store food to travel long distances along the shore.

COMMON SEABIRDS

The rocks off the shore of Trinidad are the third most important breeding area on the California coast. Seabirds are adapted to the challenging environment on the off-shore rocks and depend on them as safe havens to rest, roost, breed, nest, and brood. Seabird populations have been impacted in the past by egg harvesting, gill nets and pollution/oil spills.

WESTERN GULL

LIFE SPAN: 10-15 years
DIET: Everything
MIGRATION: Resident (found on our coast year-round)
NESTS: On coastal rocks, building their nest with surrounding grasses and vegetation
EGGS/YOUNG: 3 eggs/chicks
FUN FACT: Western Gulls are only found on the west coast, while they might seem abundant, the west coast is the only place they breed.

COMMON MURRE

LIFE SPAN: 25-30 years
DIET: Use their wings to “fly” underwater and catch fish and can dive up to 600ft!
MIGRATION: Residents (move to the open ocean in the winter)
NESTS: Lay a single egg directly on steep rocks and ledges in large densely packed colonies. Here in Trinidad, one of California’s largest colonies of Common Murres, up to 60,000 birds, nest on Green and Flatiron rocks each spring and summer.
FUN FACT: Their egg is pear-shaped which allows it to spin, rather than roll off the ledge, which is important because Common Murres are better at swimming than flying and often crash into the rock and their eggs when trying to land.

PIGEON GUILLEMOT

LIFE SPAN: 14 years
DIET: Use their wings to “fly” underwater and catch fish
MIGRATION: Residents (move to the open ocean in the winter)
NESTS: Lay eggs in rock crevices
EGGS/YOUNG: 1-2 eggs/chicks
FUN FACT: They are easily identified by white patches on their wings and bright red legs that match the inside of their mouth. They also have sharp claws that allow them to climb steep rock faces.

PELAGIC CORMORANT

LIFE SPAN: 17 years
DIET: Use their feet to propel themselves through water and catch fish
MIGRATION: Residents (move to the open ocean in the winter)
NESTS: On the sides and ledges of coastal rocks, building their nest with surrounding vegetation that is solidified with guano
EGGS/YOUNG: 3-5 eggs/chicks
FUN FACT: The smallest among the three species of cormorant and easily identified by white butt patches that can be seen while the bird is roosting and flying.



FROM LEFT: Western Gull, Common Murre,



BRANDT'S CORMORANT

LIFE SPAN: 18 years

DIET: Use their feet to propel through water and catch fish

MIGRATION: Residents (move to the open ocean in the winter)

NESTS: On the top of coastal rocks, building their nest with surrounding vegetation that is solidified with guano

EGGS/YOUNG: 3-6 eggs/chicks

FUN FACT: They are often found nesting within the dense colonies of Common Murres and are easily identified by their cobalt blue gular pouch.

DOUBLE-CRESTED CORMORANT

LIFE SPAN: 17 years

DIET: Use their feet to propel through water and catch fish.

MIGRATION: Residents (move to the open ocean in winter).

NESTS: On the sides and tops of coastal rocks, building their nest with surrounding vegetation that is solidified with guano

EGGS/YOUNG: 3-4 eggs/chicks

FUN FACT: The largest among the three species of cormorants and easily identified by their orange skin and two feather tufts on their head, hence the name "double-crested".

BLACK OYSTERCATCHER (actually a shorebird)

LIFE SPAN: 40 years

DIET: Uses their strong bill to pry mussels and limpets from the rocky shorelines

MIGRATION: Resident (found on our coast year-round)

NESTS: Lays eggs directly on the rocky shorelines in pockets of mixed sand and gravel

EGGS/YOUNG: 2-3 eggs/chicks, and will nest in the same location for several years

FUN FACT: They will mate for life and are easily identified by their bright red-orange bill.



ABOVE: Common Murre
LEFT: Pigeon Guillemot,
Pelagic Cormorant,
BELOW:
Black Oystercatcher,
Brandt's Cormorant,
Double-Crested Cormorant





To help seabirds thrive, the North Coast Seabird Protection Network (NCSPN) has been established to address human disturbance to breeding seabird colonies and enhance the recovery of seabird populations damaged by oil or other contaminant spills along the north coast with a focus on the Trinidad area.

The NCSPN's Citizen Science Seabird Monitoring program works to inform current research by:

- reporting human-caused seabird disturbances
- informing long-term research on seabird health and reproductive success by reporting the number of roosting and nesting seabird species
- helping the public learn more about seabirds and seabird natural history

TCLT works collaboratively with the BLM to help recruit and train citizen science seabird monitors to collect data that will help us learn more about how we can help local seabird populations.

LESSER KNOWN SEABIRDS NESTING in the CALIFORNIA COASTAL NATIONAL MONUMENT



Cassin's Auklet (*Ptychoramphus aleuticus*) Usually feeding in flocks, these seabirds are stocky and duck-like. Their bodies are dark gray with white marks above and below their eyes. Because of their small size, these seabirds are vulnerable to predators such as large gulls.



Tufted Puffin (*Fratercula cirrhata*):

Best location to find this species in Northwestern California now is Castle Rock in Del Norte County. It is almost extirpated as a breeder in Humboldt County with only a couple of pairs still found around the Cape Mendocino area. It can also be found occasionally on pelagic trips.



Rhinoceros Auklet (*Cerorhinca monocerta*)

Closely related to the puffins, the Rhinoceros Auklet is similar in shape, but is named after the horn-like bump on their beak. It is difficult to study Rhinoceros Auklets because they are burrow nesting seabirds and very sensitive to disturbance.



Marbled Murrelet (*Brachyramphus marmoratus*)

This is a seabird that does not nest on off-shore rocks, instead, they nest inland at the top of old-growth redwood trees and fly to the ocean to forage and find food for their chicks.



Leach's Storm Petrel (*Oceanodroma leucorhoa*)

Small, dark and not usually gregarious or attracted to ships, this species is inconspicuous at sea. Even at nesting islands, individuals fly to and from their subterranean nests only at night. Many aspects of their lives remain a mystery.



Other Notable Birds Seen Around Trinidad

The diversity of coastal habitats attracts a wide variety of birds. See appendix 2 for a list of common bird species.

THIS ROW: Common Raven, Turkey Vulture, Wren-tit
BELOW: Brown Pelican, Osprey, Chestnut-backed Chickadee



MARINE PROTECTED AREAS

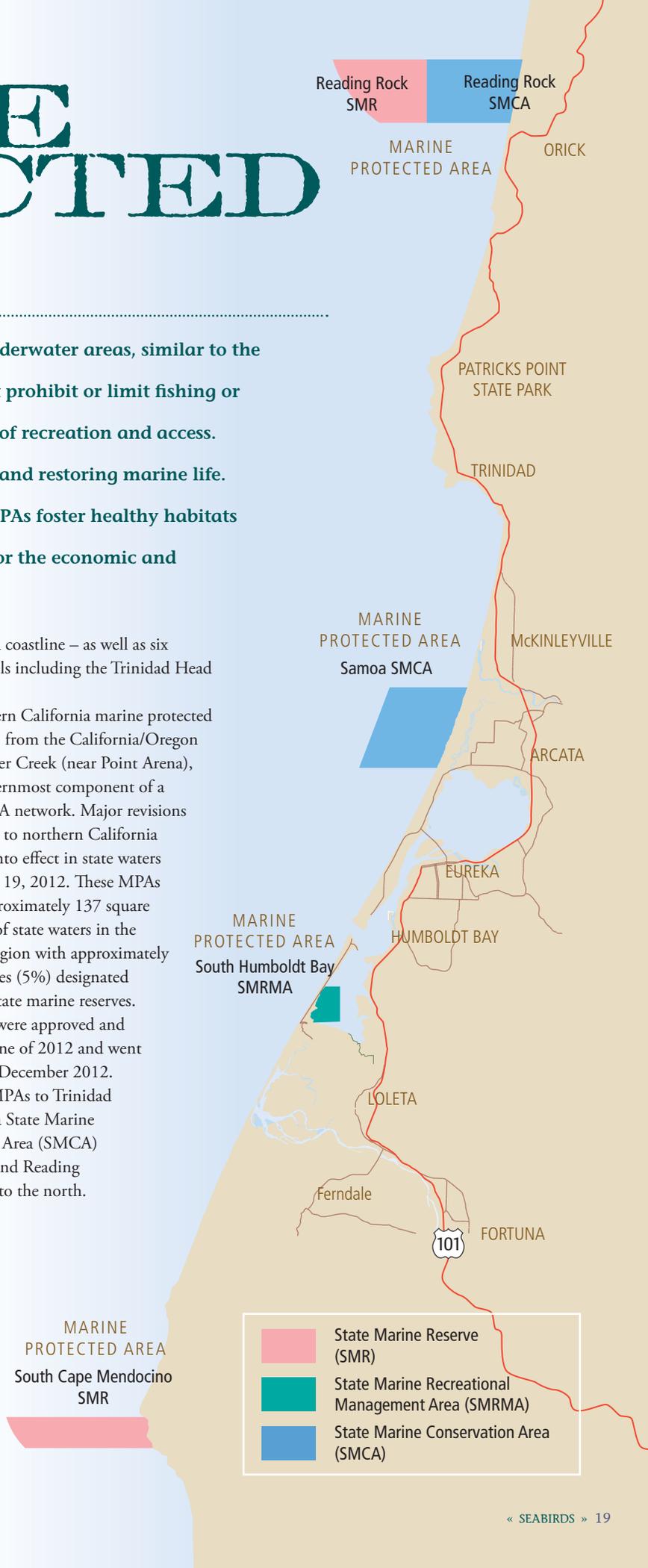
Marine protected areas (MPAs) are special designated underwater areas, similar to the nation's parks, forests and wilderness areas on land, that prohibit or limit fishing or other removal of marine resources but allow other types of recreation and access. MPAs are recognized as a tool for protecting, enhancing and restoring marine life. By protecting areas from fishing and other extraction, MPAs foster healthy habitats and natural diversity, safeguarding the ocean's bounty for the economic and recreational opportunities of future generations.

Another key benefit of MPAs is that they provide a unique opportunity for research that can help us understand not only how the MPAs are working, but how other factors are affecting marine ecosystems. Since fishing is restricted inside MPAs, ongoing scientific monitoring inside MPAs and similar non-MPAs (like the Trinidad area) can provide insight into whether observed changes in ecosystems are at least partly driven by local fishing – or whether other factors, such as climate change, ocean acidification, pollution, etc., are more likely explanations. Of course, for MPAs to function as intended, there must be enforcement to ensure that the protection they provide is respected.

While there are no designated MPAs in the Trinidad Area, local partners are working together to help the public understand the importance of protecting Trinidad's marine environment. For example, the Seabird Protection Network is working to protect sensitive marine resources in the Trinidad Area, monitor human disturbance, and provide community education about the importance of seabirds. Another form of marine protection in the Trinidad Area is the California Coastal National Monument which protects the more than 20,000 rocks, islands, exposed reefs and pinnacles along

the California coastline – as well as six onshore parcels including the Trinidad Head Lighthouse.

The northern California marine protected areas (MPAs), from the California/Oregon border to Alder Creek (near Point Arena), are the northernmost component of a statewide MPA network. Major revisions and additions to northern California MPAs went into effect in state waters on December 19, 2012. These MPAs represent approximately 137 square miles (13%) of state waters in the north coast region with approximately 51 square miles (5%) designated as “no take” state marine reserves. These MPAs were approved and adopted in June of 2012 and went into effect in December 2012. The nearest MPAs to Trinidad are the Samoa State Marine Conservation Area (SMCA) to the south and Reading Rock SMCA to the north.



For information on the North Coast MPAs:
<https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Network/Northern-California>

Map of the North Coast MPAs:
<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=47582&inline>

MAMMALS at SEA and on the COAST

MARINE MAMMALS



GRAY WHALE

Gray Whale

LIFE SPAN: 50-70 years

DIET: Gray whales feed on bottom-dwelling animals, mostly amphipods (which are related to shrimp) using their baleen, which acts as a sieve.

DISTRIBUTION: The most commonly seen whale off the coast of Trinidad is the gray whale. They can be seen during their migration north to their summer feeding grounds in the Arctic from March to June, and on their migration south, to winter calving lagoons in Mexico, September-January. Gray whales have one of the longest migrations of any mammal. There are some populations of Gray Whales that do reside off the coast, so it is possible to see Gray Whales at any time of year.

IDENTIFYING FEATURES: The gray whale is a dark grayish slate color with white patches covering its body, hence its name. Length: 44-48 ft.

Other cetaceans (whales, porpoises or dolphins) that could be spotted off our coast include: orcas, humpback whales, and harbor porpoise.



STELLAR SEA LION

Stellar Sea Lion

LIFE SPAN: 20 to 30 years.

DIET: Variety of fishes (capelin, cod, herring, mackerel, pollock, rockfish, salmon), bivalves, squid, octopus, and gastropods

DISTRIBUTION: Steller sea lions are distributed mainly around the coasts to the outer continental shelf along the North Pacific Ocean rim. Locally in Humboldt County this species is generally seen further offshore. Keep this in mind when distinguishing between CA Sea Lion (which are more common closer to shore).

FUN FACT: Steller sea lions' impressive low-frequency vocalizations sound more like a roar when compared to California sea lions, which sound more like a bark.

IDENTIFYING FEATURES: Blonde to reddish body with darker brown chest and flippers. Can easily be misidentified as a California Sea Lion (see photo above for subtle differences).



CALIFORNIA SEA LION



HARBOR SEAL



NORTHERN ELEPHANT SEAL

California Sea Lion

LIFE SPAN: 20 to 30 years

DIET: California sea lions feed mainly in upwelling areas on a variety of prey such as squid, anchovies, mackerel, rockfish, and sardines.

DISTRIBUTION: California sea lions range from the Pacific coast of Central Mexico north to British Columbia, Canada. Their primary breeding range is from the Channel Islands in Southern California to Central Mexico.

FUN FACT: When diving deep, California sea lions slow their heart rates to allow them to remain underwater for nearly ten minutes before surfacing to breathe.

IDENTIFYING FEATURES: Color: Adult males dark brown to black; Adult females and juveniles are golden brown to blonde; Snout: long and narrow Ears: Visible external ear flaps; Flippers: Long and mostly hairless, broad fore flippers

Harbor Seal

LIFE SPAN: Up to 30 years

DIET: Harbor seals eat a variety of prey consisting mainly of fish, shellfish, and crustaceans.

DISTRIBUTION: Widespread in the Pacific and Atlantic Oceans, from Alaska to Baja, California

MIGRATION: Harbor seals are generally non-migratory and live in temperate coastal habitats and use rocks, reefs, beach, and drifting glacial ice as haul out and pupping sites.

FUN FACT: Harbor seal pups can swim at birth and can dive for up to 2 minutes when they are only 2-3 days old.

IDENTIFYING FEATURES: Generally blue-gray back with light and dark speckling; they lack external ear flaps and have short forelimbs; they have short, concave, dog-like snouts, and they tend to haul out on land and rest with head and flippers elevated, in a banana like fashion.

Northern Elephant Seal

Much less common than harbor seals, elephant seals move through this area as a rest stop to their final destination, whether it be south to Monterey or North to Oregon. Keep your eyes open year-round for an elephant seal basking on the coastline. Fur trappers slaughtered hundreds of thousands of northern elephant seals for their blubber, which was rendered into lamp oil. The U.S. started protection of elephant seals in 1925 when there were only 100 left of the species. Now, with 160,000 living in the Pacific Northwest, we are reminded of the importance of protective status and marine sanctuaries in the conservation of our ocean.



Spot the Difference between SEALS and SEA LIONS!

FLIPPERS AND FLAPS

THESE COUSINS HAVE A LOT IN COMMON, BUT IF YOU LOOK TO THE FLIPPERS OR THE EAR FLAPS, YOU'LL FIND THE KEY DIFFERENCES THAT MAKE THESE ANIMALS UNIQUE. Elephant and harbor seals are true seals (phocids) and lack external ear flaps. Their relatives, the eared seals (Otariidae), like sea lions, have visible ears. Sea lions also have hind flippers they can turn underneath their bodies for "walking."

SPOTLIGHT BANANA SLUG

Banana yellow, sometimes brownish, slugs come out with heavy rains. Their coloring helps them



camouflage against the forest floor. Banana slugs have small teeth on their tongues that they

use to file down their food. Their two pairs of tentacles sense their surroundings. The hole on the right side of their bodies is their lung that allows for gas exchange. When you see them together, they are likely mating. Slugs are simultaneous hermaphrodites, and reproduce by exchanging sperm with their mate. They produce up to 75 translucent eggs, which are laid in a log or on leaves.

LAND MAMMALS

River Otters

While not a marine mammal, river otters can often be spotted along the Trinidad coast, especially near the pier. As a top predator of fish, crustaceans, and snails, river otters are a key indicator of the health of the ecosystem. If the river otter population is declining it means the ecosystem is not healthy. River otters live along freshwater rivers and streams but can also be found in the ocean. Sea otters differ from river otters in that they can float on their backs for extended periods, have shorter tails and are much larger than river otters. Fur trapping has extirpated sea otters from our area, though lone individuals from southern populations have been sighted near the mouth of Humboldt Bay.

Brown Bat

Prefer beetles to other insects. Can reach speeds of up to 40 mph when flying. Most brown bats will die during their first winter due to lack of fat storage on their bodies during hibernation.

Mountain Lion

Also known as: puma and cougar. With their strong jaws, large claws and stalking abilities, cougars are able to take down some of the largest prey such as elk, deer and moose.

Black Bear

Black bears are excellent climbers. Cubs can venture to the tops of the trees thanks to their claws that give them great grip. They have a great sense of smell that allows them to hunt down food in trash cans or stored outside or even in cars. It is estimated that a black bear can smell seven times better than a bloodhound!

Mountain Beaver

The mountain beaver (*Aplodontia rufa*) is a unique rodent found only in the western portions of southern British Columbia, Washington, Oregon, and northern California. The mountain beaver is not a "true" beaver, but was so named by California miners due to its habitat of cutting limbs and gnawing bark, similar to that of the beaver.

Other common mammals include raccoons, opossum, striped skunk, brush rabbit, mice, voles, and moles.



FROM LEFT: Brown Bat, Black Bear, Mountain Beaver, River Otter, Mountain Lion





Zack Stanton

FLORA

The coastal forests and northern coastal scrub plant communities provide a verdant habitat to explore. Spruce forests can grow near the ocean and are tolerant of salt spray while redwood forests grow more inland along the coast. Riparian habitats dominated by red alder are found near streams. Coastal scrub, with its characteristic shrubs including coyote brush, silk-tassel and salal can be found on Trinidad Head. Below are some of the most common plants you will encounter on your explorations.

TREES



Sitka Spruce (*Picea sitchensis*)

These evergreen trees are very common in the Pacific Northwest from about Cape Mendocino to southeast Alaska in a narrow strip along the coast of California. They can be between 60 and 200 feet tall when full grown. The bark has a scaly potato chip appearance. Not many trees can withstand being so close to the coast due to the salt spray, but this one is very tolerant.



Douglas Fir (*Pseudotsuga menziesii*)

These evergreen trees are easily identified by the cones you may find on the ground around them. The cones have an extended three-pronged bract that pokes out from the scales that looks like a mouse tail.



Coast Redwood (*Sequoia sempervirens*)

Coast Redwoods occur in the coastal fog belt from just over the Oregon border to Big Sur. Standing at 300 feet for a mature tree, Redwoods showed up on Earth shortly after dinosaurs. People come from all over the world just to see these magnificent trees that are only found on the Pacific Coast.



Red Alder (*Alnus rubra*)

The name comes from the rusty red color seen on scraped bark. The bark is ashy-gray and smooth but is usually covered in lichens and mosses. This tree is usually found near wetter climates in the Pacific Northwest into southeast Alaska and is especially common along streams. It is a pioneering species in disturbed areas and bacteria in its root nodules enrich the soil with nitrogen.



Cascara (*Rhamnus purshiana*)

Large deciduous shrub or small tree that usually has brownish to silver-gray bark and oval, glossy leaves with smooth margins and prominent veins. When flowering, the flowers are small with greenish yellow petals that turn into red to purple fruit with a hard pit seed in the center. Berries are a favorite food of fruit-eating birds such as Band-tailed Pigeons and Cedar Waxwings.

SHRUBS AND SHRUBBY GREENERY



Thimbleberry (*Rubus parviflorus*)

Known for their large (4-8") soft and downy maple-like deciduous leaves. When flowering, they have little white flowers that turn into tart, red berries.



Pacific Poison Oak (*Toxicodendron diversilobum*)

This one is important! "Leaves of three, let it be!" The leaflets occur in clusters of three and often resemble the leaves of an oak tree or blackberry vine. This deciduous plant usually appears in a shrub form, but can also grow as a vine. While the leaves are usually a glossy green, they can reddish, or brownish depending on the season and the health of the plant. Poison oak is common on the south side of Trinidad Head, but can be avoided by staying on the trail.



Salal (*Gaultheria shallon*)

This evergreen shrub has stiff, waxy green leaves in a zig-zag growth pattern. Urn-shaped pinkish-white flowers produce berries which are an important food source for birds and mammals.



Evergreen Huckleberry (*Vaccinium ovatum*)

Usually 2' - 3' tall in the sun, but taller in the shade. A relative of salal, the urn-shaped flowers provide nectar for bumble bees and turn into dark purple fruits that are an important source of food for wildlife. They have glossy green leaves that range from ½" to 1.5" in length.



Blue Blossom (*Ceanothus thyrsiflorus*)

This shrub with deep blue blossoms is in the same family as cascara but produces dry, non-fleshy fruits. It is especially attractive to bees, butterflies and hummingbirds.

SPOTLIGHT DUDLEYA

(*Dudleya farinosa*)

This hardy succulent grows on rocky outcrops and is also known as bluff lettuce. In recent years, this flowering plant of the rocky coast has been sought after by illegal plant smugglers who have pillaged fragile California coastal habitats, in some cases rappelling down ocean-facing cliffs to poach native succulents and ship them to Asia, particularly Korea, where people place them on window sills as status symbols. It is thought that their symmetrically arranged leaves are reminiscent of lotus flowers, an important symbol in Asia. Please report any plant thieves. Anyone who believes they are witness to unlawful poaching or pollution activity is encouraged to call CalTIP, CDFW's confidential secret witness program, at (888) 334-2258 or send a text to tip411.

REPORT POACHING!

Succulent plants are being stolen from our public lands.



Removal of plants from public lands is illegal and harms fragile ecosystems. Anyone who believes they are witness to plant theft, or other unlawful poaching is encouraged to contact CalTIP, CDFW's confidential secret witness program. Call (888) 334-2258, or send text to "tip411" (847411), stating "CalTIP" and then your tip information. This will provide CDFW's officers with factual information to assist with poaching investigations. Tips can remain anonymous, if desired, and a reward can result from successful capture and prosecution.



COMMON SHRUBS



FROM TOP: Wax Myrtle ,
Coyote Bush, Silk Tassel

COMMON HERBACEOUS PLANTS

This page by row from top:

Creeping Wild Ginger (bloom) *Asarum caudatum*

Creeping Wild Ginger (foliage) *Asarum caudatum*

Columbia Lily *Lilium columbianum*

Redwood Violet *Viola sempervirens*

Trillium *Trillium ovatum*

Cow Parsnip *Heracleum maximum*

Sword Fern *Polystichum munitum*

Fireweed *Chamerion angustifolium*

California Bee Plant *Scrophularia californica*





CULTURAL HISTORY

NATIVE CULTURE

Local Tribes Historical Overview

In the pre-contact period, California had an estimated indigenous population ranging from 133,000 to 221,000 (Kroeber, Cook, Ubelaker), with an 1877 estimate of 700,000 (by journalist Stephen Powers). During the period of the Gold Rush era, an estimated 100,000 indigenous California Indians were killed.

The 2010 U.S. Census reports that California has the largest Native American population in the United States, numbering above 690,000. California's north coast region is home to the largest population of tribes in the state, with three of the largest tribes being the Yurok Tribe (>5,000), Karuk Tribe (>4,800), and the Hoopa Valley Tribe (>2,000).

While local tribes share similar historical traditions, each tribe has a distinct heritage. For example, Trinidad, Big Lagoon and Resighini Rancherias are located within the aboriginal territory of the Yurok peoples, and share Yurok ancestry and heritage, but are each a distinct and separate federally recognized tribe from the Yurok Tribe. Additionally, congress has identified Trinidad Rancheria, Big Lagoon Rancheria and Resighini Rancheria as "tribes of historic Yurok origin." (1988 Senate Report 100-564, p. 29).

Amendments to the Indian Reorganization Act of 1994, and the related colloquy between Senators Inouye and McCain made clear that each federally recognized tribe:

- stands equal to other tribes in its relationship with the United States,
- has the same governmental status and powers of self-governance as other federally recognized tribes,
- is entitled to the same privileges and immunities as other tribes and has the same right to exercise the same inherent and delegated authorities.

25 U.S. Code § 476 - Organization of Indian tribes; (f) and (g) Privileges and immunities of Indian tribes.

The **federal Indian trust responsibility** is a legal obligation under which the United States "has charged itself with moral obligations of the highest responsibility and trust" toward Indian tribes (Seminole Nation v. United States, 1942). The federal Indian trust responsibility is also a legally enforceable fiduciary obligation on the part of the United States to protect tribal treaty rights, lands, assets, and resources, as well as a duty to carry out the mandates of federal law.

A **federally recognized tribe** is an American Indian or Alaska Native tribal entity that is recognized as having a government-to-government relationship with the United States, with the responsibilities, powers, limitations, and obligations attached to that designation. Furthermore, federally recognized tribes are recognized as possessing certain inherent rights of self-government (i.e., tribal sovereignty) and are entitled to receive certain federal benefits, services, and protections because of their special relationship with the United States.

Traditional Culture

Traditional Foods and Sustenance

Coastal and inland tribes depend upon the abundant and diverse marine and coastal resources as part of their daily lives. Important marine resources include seaweed, smelt, candle fish, crab, clams, abalone, mussels, eels, sturgeon, and salmon, along with many species of rockfish. Some marine resources such as abalone, clams and mussels serve dual duty both as food and for the usage of their shells. Sea shells are used for traditional regalia and also as tools and implements. Non-marine food resources include acorn and other nut varieties, berries, bulbs, deer, elk, and small game.

River and Ocean Transportation

Redwood canoes are used mainly for transportation on the ocean and in the many local rivers, but canoes are also important for the White Deerskin Dance for transporting dancers and ceremonial people. Canoes are carved from redwood trees and are considered living beings with a heart, lungs, body and spirit. Before carving begins, the size of the boat is determined, ranging from twelve to twenty feet in length and two to three feet in width. Canoes that are for ocean use can be up to forty feet long and five to ten feet wide. The canoe is carved out with adzes made of steel, elk horn or shell. After the shape is roughed out the inside is carefully and slowly burnt out to reduce the amount of labor of carving the canoe and to season the wood. To finish the canoe, adzes are used again to make a smooth, splinter-free surface. You can view redwood canoes at Sumeg Village in Patrick's Point State Park, the Trinidad Museum Society, Clarke Historical Museum, Humboldt State University Library, and the Yurok Tribal headquarters in Klamath.



Traditional plank homes

The houses of the local tribes are made of split redwood or cedar planks lashed together with hazel or grapevine ties. A typical house is square shaped and about 20 feet to a side with a pitched roof, with an interior twelve by twelve square pit area dug about three feet into the ground. The pit is the living space where families sleep, work and cook around a fire. The area between the pit and the outer walls is used for storage. A house is considered a living being, the hearth within is the heart and the entire house analogous to a mother. Each house within a village has a name and its residents are identified by the house from which they come. See family-style houses and other traditional buildings when you visit Sumeg Village at Patrick's Point State Park, completed in 1990.



Medicinal and Traditional Plant Usages

In addition to abundant plant food resources along the coast and nearby inland areas, this region supplies a plethora of plant medicines utilized by local native peoples to heal various ailments. It is estimated that the local native population uses over two hundred plants for food, medicine and basketry. Plants are prepared a number of ways from teas (Labrador tea or swamp tea), to poultices, soaks, washes and salves. Pepperwood leaves are used as an insect repellent and are often placed in baskets to keep insects out. The pepperwood nuts are used to prevent colds and flu, to treat sore eyes, draw out boils, and to treat spider bites. The root of the angelica plant is commonly used to carry prayers to the spirit people. Indian doctors also make medicine by utilizing plants, songs and reciting prayer formulas. Different kinds of doctors included herbalists and prayer doctors.

Language Revitalization

With the advent of Spanish and English-speaking settlers moving into aboriginal territories of California tribes, the use of native languages dramatically decreased to the point of near extinction in the late 1880's. In the following century, revitalization programs were established locally to strengthen native language fluency. Modern technological tools and curriculum are being used as teaching tools in various programs such as teacher training, community and school-based classes, workshops, summer camps, immersion programs, and other language-based activities designed to bolster our native speakers so that once again all generations gain the fluency our ancestors once enjoyed.

Local Tribes Today

Several north coast tribes own land adjacent to the ocean and exercise direct jurisdiction on the coastal environment – Cher-Ae Heights Indian Community of the Trinidad Rancheria (Trinidad Rancheria), Yurok Tribe, Wiyot Tribe, and Tolowa Dee-Ni' Nation. However, coastal resources are shared by other tribes located further inland. Tribal identities continue to be intimately linked to the ocean, beaches, rivers, estuaries, bays, lagoons and their associated plants and animals, rocks, landforms, and climatic and seasonal patterns (Ocean Communicators Alliance Marine Protected Area Docent Training Handbook 2014).

Trinidad Rancheria, one of the local tribes whose western boundary is the Pacific Ocean also shares its northern boundary with the City of Trinidad, in addition to owning Trinidad Harbor within the city limits. The harbor properties were purchased from Bob Hallmark in 2000. The tribe has made many improvements since then, including rebuilding the pier, installing a state-of-the-art wastewater treatment system and constructing public restroom facilities. The Rancheria continues to collaborate with the City of Trinidad on many projects including the harbor, transportation, roads, and water system improvements. Another collaboration was established when the Rancheria became the first tribe in California to become signatory to the Bureau of Land Management's California Coastal National Monument (CCNM) as a stewardship partner. They are also one of the founding members of the BLM's CCNM Trinidad Gateway group.

The Yurok Tribe, located in Klamath, California, is also associated with the CCNM and the Trinidad Gateway. The historic Yurok village of Tsurai, also spelled Chue-rey in the contemporary Yurok alphabet, is located within the city limits of Trinidad. In 1775 the Spanish landed at Trinidad and made contact with the village on Trinity Sunday, erecting a wooden



SOURCE: Northern California Indian Development Council

cross on Trinidad Head (Chue-rey-wa). Tsurai is the most southerly village of the Yurok people, whose aboriginal territory extended from Little River north to Wilson Creek and inland along the Klamath River to Bluff Creek. The Tsurai

Ancestral Society, a non-profit group formed by descendants of the village of Tsurai are active in the preservation of the village site and are primarily members of the Yurok Tribe.

TRINIDAD EUROPEAN EXPLORATION and SETTLEMENT HISTORY TIMELINE



TRINIDAD HARBOR WHALING DOCK 1920
PHOTO: County of Humboldt



GRANITE MONUMENT OF SPANISH CROSS

1775: Spanish Explorers

Don Juan Francisco Bodega y Quadra and Don Bruno de Hezeta landed at Trinidad on the Catholic Feast Day of the Holy Trinity and named it for that day. They claimed the area for Spain and left a wooden cross that they erected on Trinidad Head in the name of king Charles III of Spain. A stone replica of the cross, installed in 1913, can still be seen today.

1800-1850: The California Fur Rush

Trinidad, along with the majority of the Humboldt coast, was being rushed by American, English and Russian fur hunters. They were drawn to the northern California coast for southern sea otter and fur seals. This quickly endangered the populations of both species. With the resource so scarce, fur traders from all over eventually moved down the California coast to hunt for beaver, river otter, marten, fisher, mink, fox, weasel and harbor seal. It was California's early fur trade, more than any other single factor, that opened up the West. In the early 1800's, Trinidad Bay served as a port for fur trading and Russian and English trade expeditions. Several trading ships were documented in the Trinidad Bay early in the century, but few after 1817. It wasn't until the gold rush that white incursions into the area were made in earnest.

1849: The Gold Rush

In 1849, gold was found near the Trinity River (so named because it was mistakenly thought to lead to Trinidad Bay). Miners attempted to locate Trinidad Bay in the hopes of finding gold. This was considered the best route to the mines because they had the misguided idea that they could go to Trinidad Bay in a vessel and then up river to the mines. After many failed attempts to relocate the bay, on the 16th of March, 1850, the Cameo arrived at the south side of Trinidad Head and sent a boat's crew off ship to examine a point (the little Trinidad head).

The discovery of gold in the Trinity region of Northern California in 1848 caused a population explosion in Humboldt County, especially near Trinidad Bay. The explorers, traders, and trappers who came seeking adventure and wealth, now gave way to miners seeking gold and settlers anxious to claim the rich farmlands. Companies that supplied interior mining settlements began looking for coastal supply ports as alternatives to the slow and expensive overland Sacramento Valley route then in use.

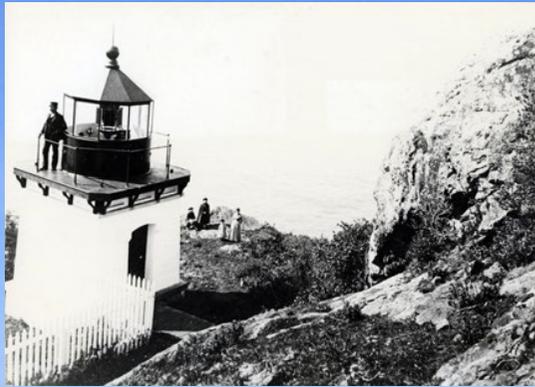
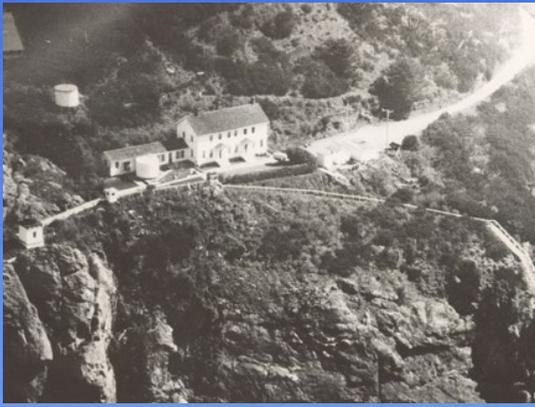
After 1850: Growth of Industry in Trinidad

Euro-American settlement began in 1850, when Trinidad became a port of entry to the Trinity River gold diggings. Since then, Trinidad harbor has hosted lumber and fishing fleets, and even

served as a whaling port during the 1920s, processing up to 300 humpback whales a year. Humboldt County's first economy was lumber and this was no different in the town of Trinidad. Logging and the lumber trade soon dominated the area because of the plentiful supply of timber and the great demand for lumber in San Francisco in the early 1900's. To keep Trinidad on the map and current with the times, lumber distributors looked to the unique coast found here. Houda Point actually once acted as a loading dock of sorts. Redwoods would be chopped down and hauled from the forest to the coast. Ships would line up and wait for their turn to load the Redwoods in their hull.

Coastal Fishing

The Trinidad Pier is the northernmost oceanfront pier in the state and sits in one of the state's most beautiful settings. This pier gets steady use by pier anglers. Although fishing from the pier is generally only fair, few seem to mind. For most people, especially visitors from southern California, the pier fishing itself is secondary. More visited are the nearby surf for red tail perch and smelt, while coastal lagoons offer a relaxed environment with plentiful trout. Now the harbor is more important for commercial and recreational crabbing.



Trinidad Head Lighthouse Station
1940's, Janet Harrington, wife
of Fred Harrington, lighthouse
keeper from 1888-1916, Captain
Harrington, on the lighthouse
circa 1900.



Trinidad Head Historic Lighthouse



LIGHTHOUSE VIEWING AREA

Trinidad Head Lighthouse is a small tower perched on a 175-foot shelf above sea level. The lighthouse is still active with a LED beacon mounted outside the lantern room. The lighthouse was transferred from the U.S. Coast Guard into public ownership and the Bureau of Land Management (BLM) in 2014. The BLM is currently managing the facility cooperatively with the City of Trinidad, Trinidad Rancheria, Trinidad Museum society and Yurok tribe and is one of the newest additions to the California Coastal National Monument. While the lighthouse viewing area is open on the first Saturday of the month during daylight hours, the lighthouse itself is only open to visitors from 10 am to 12 pm.

Lighthouse History Highlights

- 1850** City of Trinidad was established and settled as a supply station for Trinity River mines.
- 1854** To aid vessels engaged in commerce, including the lumber trade, a lighthouse was proposed for the ocean-facing side of Trinidad Head.
- 1850-1865** At least 25 ships sank and around 274 lives were lost off California's north coast, but the most tragic event took place on July 30, 1865 when the steamer "Brother Jonathan" was wrecked on St. George's reef eight miles off Crescent City which resulted in the death of at least 166 people including an army general and a territorial governor.
- 1866** All of Trinidad head (42 acres) was acquired by the Lighthouse Administration and funding was requested from Congress to build the lighthouse.
- 1871** Congress approved and gave \$20,000 to build a lighthouse, a two-story lighthouse keeper's home and outbuildings.
- 1871-1888** Jeremiah Kiler was the first lighthouse keeper and lit the first oil lamp on December 1, 1871. Everything was done manually. Lighthouse keepers were needed to trim wicks, replenish fuel, wind clockwork, and perform maintenance tasks such as cleaning lenses and windows.
- 1888-1916** Fred Harrington served as lighthouse keeper from 1888-1916.
- 1898** Fog Bell House and two-ton fog bell installed 125 feet above sea level. It is the last remaining bell house in California. It now has an automated bell and the original bell is located by the memorial lighthouse.
- 1913** During a storm on December 31st, a 200 ft wave struck the lighthouse.
- 1916** The last year of habitation of the Yurok village of Tsurai.
- 1942** Electricity came to the station in 1942. As a result, in 1947 the fog bell was replaced by compressed air horns, and the lens was removed in favor of a modern beacon.
- 1949** A replica of the lighthouse opens on civic club land opposite the west end of Trinity Street. The replica contains the original lens while the bell hangs next to it.
- Late 1960's** Historic Lighthouse keeper dwellings were razed and a modern triplex was built to house three coastguardsmen and their families.
- 1974** The station was automated but Coast Guard personnel continued to live in the housing until sometime after 2000. Trinidad Head Lighthouse is still active, with a drum-type Fresnel lens in the tower and a backup modern beacon mounted outside the lantern room. A pair of fog signals are stacked next to the fog bell house, which is the only remaining bell house in California.
- 2014** A ceremony with docent-guided tours was held at the lighthouse on May 16, 2014 to celebrate the transfer of the 13-acre property from the Coast Guard to the Bureau of Land Management, who plans on holding open-houses at the lighthouse in the future.
- 2017** President Obama designated BLM's Trinidad Head property (13 acres) as the newest on-shore unit of the California Coastal National Monument.

INTERPRETIVE TECHNIQUES



According to the father of modern interpretation, Freeman Tilden, interpretation is “an educational activity which aims to reveal meaning and relationships through the use of original objects, by firsthand experience, and by illustrative media, rather than simply to communicate factual information.” The National Park Service defines interpretation as “a catalyst in creating an opportunity for the audience to form their own intellectual and emotional connections with the meanings and significance inherent in the resource.”

YOUR JOB AS AN INTERPRETIVE GUIDE IS TO EDUCATE YOUR AUDIENCE ON THEIR SURROUNDINGS AND INSPIRE THEM TO TAKE FURTHER ACTION TO PROTECT THE ENVIRONMENT. You can do this by bridging the gap from scientific fact to memorable and relatable stories. This section will help guide you through the process of creating an interpretive walk and will provide various tips to use while interacting with visitors of all types.

DEVELOPING YOUR WALK

Before you can take visitors out on an interpretive walk, you have to create one. Your walk should consist of an introduction, three to five subtopics depending on the length of your walk, and a conclusion. The content of your walk will focus around one theme.

- **What are you interested in?**

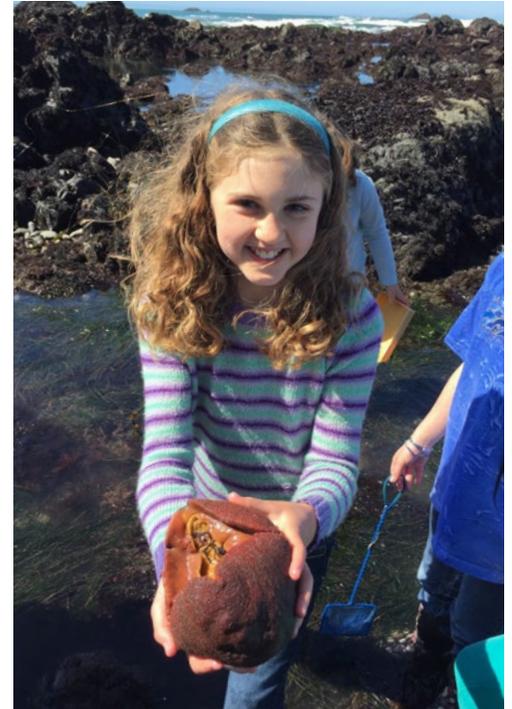
Interpretive walks can be effortless to put together if your topic is something you are interested in. This is where you identify what you want to talk about.

- **Develop a Theme.**

This is often one of the most difficult steps and the most important. A presentation that contains a bunch of facts will be easily forgotten. The most memorable walks are created from messages that are tied together by a common thread. This common thread is the big idea of your program, the central message, known as a theme. Your theme is not just your topic or your title; it is all encompassing of what you want your audience to learn and remember from your walk. Your theme is one main idea portrayed in a full sentence that answers the question of “So what?” Each of your subtopics should relate to and support your theme. If your audience can remember the theme of your walk when they leave, then you have done your job.

- **Organize your content.**

Now that you have your theme, what specifics do you want your audience to learn about? Think about what order your subtopics should go in and how they transition from one to the next. The number of subtopics is going to depend on the length of your walk and how many stops along the trail you make. Typically, you want to have between three and five subtopics that can be spread out over multiple stops. To help organize subtopics, you can map out the trail’s interesting features that you might want to share with your audience. Then you can consider the best order of stops to support the theme of your walk. When selecting stops also be sure to consider the size of your group to make sure everyone can fit comfortably and can still hear and see you while you are presenting.



- **Make it relevant to the visitors.**
Your walk should be relevant not only to the place you are delivering it, but also to your audience. The topic should relate to something the audience knows or cares about. Use examples, make comparisons, ask questions to make the audience think about a personal experience, and use their first names.

- **Make it enjoyable and engaging!**
Your audience will be with you for an extended period of time and you want to make sure they want to stay for the entire walk. Involve your audience by telling stories, using appropriate humor, asking questions, including props, doing a demonstration, using inspirational quotes and sharing fun facts. These techniques will help your audience retain important information.

- **Practice.**
All experienced presenters practice before they present. You want to practice the content of your walk on and off the trail. As you are practicing on site, present as if you were giving the walk to an audience; bring along friends and family if it helps. This way you can make sure your walk goes as planned, the message is received how you intended and you are staying on time. Your friends and family can also give great presentation feedback before you present to the public. Make notes of other things to stop and talk about that relate to your theme but are not incorporated into your walk. Practice as much as you feel you need, but there is no need to memorize every detail. The best presenters are loose, flexible, and able to discuss topics sometimes unrelated to the walk but related to the area.

Giving a Walk

The introduction is an important part of your walk because this is where you familiarize yourself with your audience and get them excited about going on the walk. Your introduction should include the following:

Standard Introduction

- Greeting Title of Walk
- Introduction of yourself
- Identify yourself with the Trinidad Coastal Land Trust
- Mention the TCLT's goals (promoting properties donated to benefit the public)
- POW (a hook that quickly gets the visitors' attention and excites them for the walk)
- Theme Main Points
- Length of walk: Time and Distance Difficulty of Walk
- Where to find Restrooms and Water
- Establish "Caboose"
- Mention any safety items you are carrying (First aid kit / radio)

Example Introduction:

Hello everyone and welcome to "The Native Plants of Trinidad" walk. My name is Carol and I am a docent with the Trinidad Coastal Land Trust. Our goal at the Land Trust is to get people back into nature and to learn by seeing this beautiful world that we understand needs to be preserved. Today we will be exploring the different benefits of native plants in Trinidad. We will be talking about the benefits plants have for humans, animals, and the surrounding ecosystem. This walk will be about an hour and is of moderate difficulty. If you need to use the restroom or fill up a water bottle, you can do so at the museum. Before we head out, can I have someone to volunteer be my caboose? You will stay in the back of the group and help to signal me when the whole group is with us. Great! Thank you for volunteering! Last but not least, I do have a first aid kit if it is needed throughout the walk as well as some extra water if anyone needs it.

Transitions

It's important to clearly transition between subtopics as well as keep the audience engaged as you move from one stop location to the next. Good transitions will also help keep your audience focused on the main theme of the program. A perfect transition creates a bridge between the subtopic you just completed and the one you will cover next while also reminding visitors how the subtopics support the main theme.

Transition Techniques:

Ask the audience to engage in an activity.

"On the way to our next stop, look for the native plants we just discussed and count how many you find."

Create a sense of mystery around the next stop.

"We just met a native plant that can reduce a fever; at our next stop we'll meet a native plant that might just come in handy when you have the Humboldt crud."

Example Transition:

Now that we have met a variety of native plants that benefit humans let's now take a look at the many benefits native plants have to animals that live right here on the coast.

Standard Closing

The closing is where you wrap everything up and thank your audience for joining you. Make sure you include the following:

- Repeat Theme Repeat Main Points
- Take home message (what action you want your audience to take when they leave)
- Thank the visitors for joining you
- Repeat Your Name
- Repeat Identification with the Trinidad Coastal Land Trust
- Ask for Questions
- Give directions back if you did not loop

Example Closing

Today we have explored the benefits of the native plants in Trinidad. We saw how they have medicinal benefits for humans, they are a great food source for animals, and they increase the biodiversity of the ecosystem. I hope you all can now see the importance of native plants and will take the time to plant some in your own gardens. On behalf of Trinidad Coastal Land Trust, I would like to thank you for joining me today. Again, my name is Carol. If you have any additional questions I will be hanging around for a while to answer them. For those of you who are ready to head back, you just have to follow this trail and it will take you back to the parking lot. Thank you and I hope you all have a wonderful rest of your day!

Mechanics of Leading a Walk

The next step is to lead a great walk. Use these tips to keep your group together and stay on track throughout the entire walk.

- **Arrive 10-15 minutes early.** You will want to stand in an open, easy to find area that is close to the parking. Here you can greet the guests and start to get to know your audience, starting with their names.
- **Stay on Time.** If you say you are going to end in 20 minutes, be sure you are ending in 20 minutes. It is important to respect that your audience may have other time commitments.
- **Don't try to memorize your content.** It will feel more natural if it is not memorized.
- **Establish a "caboose" so you don't lose anyone.** Ask for a volunteer who will stay in the back of the group. When he/she has arrived at your next stop you now know everyone has arrived.
- **Stay in the lead.** You are the one that knows where each of the stops are and this way you can monitor how fast you go.
- **Set the pace according to the slowest walker.**
- **Wait for the whole group to arrive before delivering content.** You want to make sure everyone in the group is hearing all of the information.
- **Plan where you stand so your audience is not facing the sun.**
- **Find your natural stage.** While on the trail you will want to stand so you can be seen and heard at each stop, sometimes this means standing on a bench or uphill.
- **Avoid turning your back towards your audience at stops to ensure that everyone can hear you.**
- **Keep stops short.** More short stops will help your audience retain information better than a few long stops.
- **When in doubt, restate your theme.**



Example Topics, Themes, and Subtopics

Interpreting the Trinidad Gateway to the California Coastal National Monument

Central Interpretive Theme of the CCNM

The California Coastal National Monument is a dynamic interplay of land, sea, and life, which provides a safe haven for plants and animals, and contributes to the integrity and richness of California's coastal experience.

Subthemes are based on an aspect of the central theme, which creates opportunities for enhanced understanding of the resource.

Storylines are suggested starting points for focused awareness and connection to the resource, developed from the subtheme.

Subthemes and Storylines

SUBTHEME 1. *Seabirds are adapted to this challenging environment and dependent on the Monument features as safe havens to rest, roost, breed, nest, and brood.*

Storylines:

- Brown pelicans, recently removed from the endangered species list in 2009, are plentiful and can be observed year-round, foraging and nesting along the California coast.
- American Black Oystercatchers are easily distinguished birds, with their red eyeliner, orange beak, and raucous call.
- Common Murres nest in large communities; their eggs have evolved to a shape that keeps them from rolling off of rocks.
- Cormorants are great fishermen, indicating a plentiful ocean. They dive up to 200 feet to catch fish.
- Peregrine Falcons sometimes nest on the rocks, and enjoy the predatory opportunities in and around the Monument.
- Western Gulls are a hardy species, a predator to some birds, and are very resilient in urbanization.
- Pigeon Guillemots, with red legs and white wing patches, nest in crags and rocky cavities on cliffs and islands.
- If a bird is reacting to your presence you are probably too close.

SUBTHEME 2. *Seals and sea lions are pinniped marine mammals dependent on Monument features to restore themselves and raise pups safely apart from human populations.*

Storylines:

- Pinnipeds need to haul out to warm themselves, and thermoregulate by raising their flippers into the air to warm the circulating blood.
- One can tell true seals from sea lions by the presence of an ear flap on sea lions (seals don't have this ear flap). On land, sea lions move about using their tail like a foot. Seals wiggle and bounce along on their bellies.
- If a seal or sea lion is reacting to your presence you are probably too close.

SUBTHEME 3. *Tidepools found on exposed reefs are delicate and complex ecosystems.*

Storylines:

- Life forms in tidepools are resilient to changes in temperature, dramatic wave action, exposure to air, and variety of salinity.
- Each tidepool hosts a unique interdependent community.
- Tidepools are vulnerable to human disturbance, both direct and indirect.

SUBTHEME 4. *The geology of the California coast reveals the drama of the North American continent's formation.*

Storylines:

- The California coast owes its rugged beauty to the fact that it is a geologically active place. It is situated in a zone of collision between the shifting Pacific Plate and the North American Plate, and to the north the Mendocino triple junction with the Juan de Fuca Plate at Cape Mendocino.
- Many of the rocks and small islands are part of the Franciscan formation of Jurassic and Cretaceous age, the upper Cretaceous strata, and the upper Miocene strata, each with distinct characteristics identifiable by the weathering of their geologic materials by wave, wind, and tidal action.
- The actions of wind and waves upon the land create an ever-changing landscape which can be both beautiful and dangerous.
- Geologic features found in the Monument have either of two basic formative histories: Tectonic and volcanic activity generate uplifts that formed some of the larger islands off of the coast as well as some nearshore CCNM features. Other nearshore rocks and islands are sedimentary in formation, the result of deposition of geologic material over time.



Ian Schatz

SUBTHEME 5. *Human relationships with Monument resources persist across time and cultures.*

Storylines:

- Native Americans have lasting relationships with the features and pelagic seasonal changes. California's offshore rocks and islands were used by humans as early as 13,000 years ago.
- Humans have used these resources as temporary landing areas, resource procurement locations, habitation sites, and landmarks for both offshore and onshore navigation.
- Seagoing vessels engage with the Monument, sometimes ending in disaster.
- Outdoor recreation opportunities abound in and on the water, as well as from the shore.
- The responsibility for protecting the resources of the CCNM is so challenging that we need everyone to work together to accomplish the task.
- Local, national, and international conservation organizations assist in ecological and administrative oversight.
- The interrelated missions of the numerous public agencies responsible for managing the coastal region lead to conservation accomplished at the landscape level.

SUBTHEME 6. *Interactions between offshore currents influence temperature, nutrients and distribution of organisms, creating three distinct marine bioregions along the California coast.*

Storylines:

- The intertidal zone is rich with life at low tide with crabs and worms and mid tide where mussels, anemones and seastars cling. Snails and leafy algae can live in high tide regions and the hardy splash zone life forms tolerate regular spray of salty water.
- A diverse blend of terrestrial grasses, forbs, and succulents naturally exist on many of the taller Monument features.
- Conifers, chaparral and scrub communities exist on larger islands where similar vegetation thrives onshore.

SUBTHEME 7. *National monuments provide economic, social, and ecological benefits for communities.*

Storylines:

- Contemporary medicine has linked healthy children with activities in natural settings.
- Tourism trends indicate a rising preference for hiking and natural settings.
- The presence of a national monument ensures the activity of federal resources spent directly and indirectly on its management, which can support adjacent communities.
- The responsibility for preservation of Monument geologic forms and habitat ensures that the BLM will take every means possible to sustain these natural characteristics.



Example Interpretive Walk

This is an outline you can use for a Guided Walk around Trinidad Head. This outline has the basic information and layout. When out on the walk with visitors, be sure to provide more information.

OUTLINE: TRINIDAD HEAD HISTORY

Before You Begin Greet the visitors in the parking lot. This will be your staging area before the hike. Remember to introduce yourself and mingle with the audience before you begin your talk. This helps build credibility with your group and allows you to get some of your nerves out before you embark.

See the breakdown of how to build an introduction to an interpretive walk in the previous section. Direct the group to meet just up the hill where the pavement starts for the trail, which is your introduction stop. Be sure to tell them about how much longer until you will be starting.

Introduction

Gather your group at the start of the pavement for your introduction to the walk. Be sure to include the following:

- Greeting
- Title of Walk: Trinidad is a Gateway to the California Coastal National Monument
- Introduction of yourself
- Identification with Trinidad Coastal Land Trust
- Theme: Human relationships with the CCNM Trinidad Gateway resources persist across time and cultures
- Main Points/Cognitive Map
- The First Views of Trinidad
- Kiler Harrington and the Lighthouse
- Captains Bodega and Heceta
- Length of walk in Time: 60-90 min
- Difficulty of walk: Moderate, mostly unpaved, elevation gain of 300 ft
- Where to find Restrooms and Water: Restrooms are in the parking lot, no water
- Establish “Caboose”
- Mention any safety items you are carrying (First Aid Kit / Radio)

Stop 1: Trinidad is a Gateway to the California Coastal National Monument.

Lead your group to the first stop which will be at the three benches at the fork in the road overlooking Trinidad State Beach.

1. **Focus Attention:** You can't talk about treasures in Trinidad without mentioning the California Coastal National Monument (CCNM). The CCNM protects more than 20,000 rocks, small islands, exposed reefs, and pinnacles along California's coastline.
2. **Gateway definition:** An area that offers the best shore-based opportunities to discover and view offshore rocks and islands and their inhabitants. In 2017, an on-shore unit was added to the CCNM- the 13-acre lighthouse viewing area.
3. Point out Pewetole Island (island), Elk Head (Peninsula), Green Rock (at the tip of the peninsula), Trinidad State Beach
4. CCNM declaration for this area showcases the biological and cultural treasures of Trinidad and preserves it for the future.
5. **Thematic Connector:** The California Coastal National Monument is a monumental treasure found along the shore that you can see as we travel around the head.
6. **Transition:** Now that we've talked about a treasure found from shore, let's discover a treasure of Trinidad found in the sky.

Stop 2: Flatiron Rock is the home of the largest colony of Common Murres.

Lead your group to the second stop which will be at the four benches looking at Flatiron Rock.

1. **Focus Attention:** These birds have chosen this place for centuries to raise their young.
2. Have your audience look at the rock and discuss amongst themselves why this area would be a good place to raise young.
3. Predator avoidance
 - a. Talk about the shape of a Common Murre egg and how that might have helped when choosing a place to raise young
 - b. Possible Answers
 - i. Not traditional "egg" shaped
 - ii. Looks more like halfway between a bowling pin and an egg
 - iii. Very narrow point allows for egg to not wobble on the rocks
 - iv. Strong exterior makes this egg able to handle a nudge or bump from mom as she tends to the fertilized eggs
4. **Thematic Connector:** The Common Murre is a treasure found in the sky (and on the rocks) as we journey around the Trinidad Head.
5. **Transition:** Now that we've talked about a treasure in the sky, let's journey to a historic treasure standing tall at the peak of the Head.

Stop 3: In 1775, Captains Bodega and Heceta sailed from Spain and claimed Trinidad for the King on Holy Trinity Sunday.

Lead your group to the third stop, which will be at the cross.

1. **Focus Attention:** In 1775 the Spanish landed at Trinidad and made contact with the Tsurai village on Trinidad Bay. Tsurai is the most southerly village of the Yurok people, whose aboriginal territory extended from Little River north to Wilson Creek and inland along the Klamath River to Bluff Creek. On Trinity Sunday, they erected a wooden cross on Trinidad Head (Chue-rey-wa in Yurok), claiming it for the King in spite the fact there was already a thriving village that had been there thousands of years.
2. In 1913 the stone replica of the cross was installed and stands before us today.
3. The discovery of gold in the Trinity region of Northern California in 1848 caused a population explosion in Humboldt County, especially near Trinidad Bay. The explorers, traders, and trappers who came seeking adventure and wealth, now gave way to miners seeking gold and settlers anxious to claim the rich farmlands.
4. **Thematic Connector:** Every piece of Trinidad has been and will forever be a treasure to the people who come here.
5. **Transition:** Now that we've discussed a treasure that surrounds us, we'll look at a much more modern treasure.

Stop 4: The Trinidad Community is a treasure that is priceless.

Lead your group to the last stop for your conclusion, which will be where you are overlooking Trinidad.

1. Holy Trinity Church was built in 1873 which was close to the time that Trinidad became incorporated as a city in 1870.
2. The memorial lighthouse serves as a monument to those lost at sea.
3. The marine lab develops new ideas about the ocean we know so little about
4. **Thematic Connector:** Modern Trinidad is a treasure that is entirely up to us to value and protect Trinidad so that generations to come can enjoy and appreciate its natural and cultural heritage.
5. **Transition:** Thank you for joining me for a journey of treasure discovery around our Trinidad Head.

Conclusion

By taking part in this tour, you are helping keep the history of Trinidad alive. The Trinidad Coastal Land Trust is grateful for your interest in Trinidad and your wish to be educated by the land. Remember, you can discover many treasures by taking a walk around Trinidad Head, such as the California Coastal National Monuments, Common Murres, the history of Captain Bodega and Heceta, and the history of the town of Trinidad.

Be sure to:

- Thank your audience for joining you. Let them know that TCLT depends on community support to offer free programs.
- Provide information about how to become a TCLT member.
- Ask if anyone has questions.
- Give directions back to the Parking Lot.

Sender Characteristics

Here are some ideas to keep in mind that will make your audience more open to you and the information you are providing.

Enthusiasm

This is the priceless ingredient in the recipe of interpretation. Some characteristics that can help convey enthusiasm are:

- *Smile!* It's really hard to not smile when someone else is smiling at you.
- *Vocal Mechanics.* Your voice and vocabulary set the tone for the walk. Using a conversational tone and fluctuating your pitch will make it more interesting to listen to.
- *Open body language.* When your body is welcoming and you are making eye contact, your audience will be more accepting of the information you are providing.
- *Connect with your topic.* There should be a reason you chose the topic. If you are talking about something you are passionate about your audience is more likely to be engaged.

Establish Credibility

Your audience is going to want a reason to believe what you are saying so you need to establish your credibility. You can do this in a number of ways including, stating you are a volunteer with the TCLT and how many years you have volunteered, where you found the information, especially when talking about specific numbers, and by dressing the part.

Confidence

If you sound confident your audience will have a much easier time listening to you. Ways to show confidence is by making eye contact with the audience, having good voice quality, not stuttering or using filler words such as “um,” and having open body language.

Appearance

Your audience is going to make one of their first impressions of you based on your appearance. Dressing professionally is a must. It increases your credibility and makes you look more confident.

Interpretation Tips

Now that you have written your walk, let's discuss presenting. These are some key tips to make sure you are the best presenter you can be.

Look for Teachable Moments.

Key moments of interpretation occur when you are leading a hike and there is an unplanned opportunity to talk about a rare animal, plant or situation. These are often excellent opportunities to fully engage your audience.

Questions often set the stage for teachable moments. Be ready for them by anticipating the questions many visitors will ask as well as being open to questions that are not content related. If an audience member asks an important question between stops tell the person that it is a great question and you will address it at the next stop with the entire group so everyone has the chance to learn.

Use All Five Senses.

Every person learns differently, so the more ways you can engage the audience through different senses the higher the chances everyone will be able to take something away.

1. *Auditory:* Listening to you or a recording of an animal sound.
2. *Sight:* A picture or pointing out a plant.
3. *Touch:* Feel the leaves of a Thimbleberry plant.
4. *Scent:* Smell the ocean breeze.
5. *Taste:* Try a Huckleberry (when appropriate).

Tell Stories.

Stories are one of the most engaging ways of sharing information. Human brains are hardwired to take in and retain information through storytelling.

Ask Questions to Involve your Audience.

- *Focus questions:* require the audience to describe, name, observe or recall.
Example: What do you notice about the shape of the trees that grow here on the edge of the coast?
- *Process questions:* require the audience to analyze, compare, or explain.
Example: Why do you think the trees living here on the edge of the coastline are shaped this way?
- *Evaluative questions:* require the audience to imagine, predict, theorize, or extrapolate
Example: What adaptations do you think these trees might have in order to survive not only the salty air but also the strong coastal winds?

Use Props.

These are a fun way to engage the audience and keep yourself organized; whether it is a prop for the audience to hold while you are telling a story or displaying a simple picture as a visual aid.

Props are a great way to appeal to the multiple learning styles your audience may have. Props always add a visual element, and if used in activities they can add a kinesthetic element of learning.

So What?

Make sure you are connecting your theme to meaningful and personal experiences. Chances are if it impacted you, it will impact your audience.



Ian Schatz

APPENDICES

Appendix 1

CA Coastal National Monument **FUN FACTS**

- Brown pelicans, recently removed from the endangered species list in 2009, are plentiful and can be observed year-round, foraging and nesting along the California coast.
- American Black Oystercatchers are easily distinguished birds, with their red eyeliner, orange beak, and raucous call.
- Common Murres nest in large communities; their eggs have evolved to a shape that keeps them from rolling off of rocks.
- Cormorants are great fishermen, indicating a plentiful ocean. They dive up to 200 feet to catch fish.
- Peregrine Falcons sometimes nest on the rocks, and enjoy the predatory opportunities in and around the Monument.
- Western Gulls are a hardy species, a predator of birds and eggs, and are very resilient in urbanization.
- Pigeon Guillemots, with red legs and white wing patches, nest in crags and rocky cavities on cliffs and islands.
- If a bird is reacting to your presence you are probably too close.
- Pinnipeds need to haul out to warm themselves, and thermoregulate by raising their flippers into the air to warm the circulating blood.
- One can tell true seals from sea lions by the presence of an ear flap on sea lions (seals don't have this ear flap). On land, sea lions use their hind flippers (legs) to move. Seals wiggle and bounce along on their bellies.
- If a seal or sea lion is reacting to your presence you are probably too close.
- The California coast owes its rugged beauty to the fact that it is a geologically active place. It is situated in a zone of collision between the shifting Pacific Plate and the North American Plate. The two plates are sliding past each other while the Gorda Plate is subducting, causing uplift and crushing and distortion of rocks.
- Many of the rocks and small islands are part of the Franciscan formation of Jurassic and Cretaceous age, the upper Cretaceous strata, and the upper Miocene strata, each with distinct characteristics identifiable by the weathering of their geologic materials by wave, wind, and tidal action.
- Geologic features found in the Monument have either of two basic formative histories: Tectonic and volcanic activity generate uplifts that formed some of the larger islands off of the coast as well as some nearshore CCNM features. Other nearshore rocks and islands are sedimentary in formation, the result of deposition of geologic material over time.
- The interrelated missions of the numerous public agencies responsible for managing the coastal region lead to conservation accomplished at the landscape level.
- A diverse blend of terrestrial grasses, forbs, and succulents naturally exist on many of the taller Monument features.
- Conifers, chaparral and scrub communities exist on larger islands where similar vegetation thrives onshore.
- The presence of a national monument ensures the activity of federal resources spent directly and indirectly on its management, which can support adjacent communities.
- The responsibility for preservation of Monument geologic forms and habitat ensures that the BLM will take every means possible to sustain these natural characteristics.

Appendix 2

FREQUENTLY ASKED QUESTIONS

- **Can I bring my pet?**

Dogs are allowed but not recommended. No dogs are allowed during guided hikes. No dogs on sensitive habitat or wondering off the trails. We also ask that if you bring your dog, make sure you bring a leash and are prepared to pick up anything they might leave behind.

- **Where are the restrooms?**

There is a public restroom at the Trinidad pier parking lot, outside the town hall building, and there is a portable toilet unit at the Moonstone Beach parking lot.

- **Where is the Memorial Lighthouse?**

In 2018, when the Memorial Lighthouse was threatened by unstable slopes, and in danger of falling into the original village site, members of the Yurok Tribe, Tsurai Ancestral Society and other community members urged that the Memorial Lighthouse be moved, further away from the Tsurai Village Site. The Trinidad Rancheria offered to host the memorial lighthouse located on their property. It is currently near the harbor. A final location is pending permit approval.

- **Is there a bell on Trinidad Head?**

There is a bell house that creates a sound approximately every 40 seconds to signal that boats are reaching a huge land mass. This bell is not in the lighthouse, but at another nearby facility.

- **What is all that white on the sea stacks?**

That's bird poop. Just to give you a better idea of how many and how long these birds have been living on the offshore rocks of Trinidad.

- **How can I volunteer for the Trinidad Coastal Land Trust?**

There are a variety of volunteer jobs available at TCLT. They are listed on the website at trinidadcoastallandtrust.org and you can sign up for what interests you. Opportunities include CCNM Ambassador, Seabird Citizen Science, Land Stewardship, Gallery Docent and more. Call 677-2501 for more information.

- **How does the TCLT maintain trails?**

TCLT depends on volunteers to assist with monitoring, repairs, invasive species removal and trash clean up. A Land Stewardship Fund has been established at the Humboldt Area Foundation as a way for private citizens to help support the on-going protection and maintenance of TCLT's coastal public properties in perpetuity. For more information on how to volunteer and donate to this 'Protection in Perpetuity Land Stewardship Fund', visit trinidadcoastallandtrust.org.

Appendix 3

COMMON SPECIES LIST

BIRDS

Surf Scoter	<i>Melanitta perspicillata</i>
Western Grebe	<i>Aechmophorus occidentalis</i>
Marbled Murrelet	<i>Brachyramphus marmoratus</i>
Common Murre	<i>Uria aalge</i>
Pigeon Guillemot	<i>Cephus columba</i>
Rhinoceros Auklet.....	<i>Cerorhinca monocerata</i>
Black Oystercatcher	<i>Haematopus bachmani</i>
Western Gull	<i>Larus occidentalis</i>
Common Loon.....	<i>Gavia immer</i>
Brandt's Cormorant	<i>Phalacrocorax penicillatus</i>
Pelagic Cormorant	<i>Phalacrocorax pelagicus</i>
Double-crested Cormorant.....	<i>Phalacrocorax auritus</i>
Brown Pelican	<i>Pelecanus occidentalis</i>
Anna's Hummingbird.....	<i>Calypte anna</i>
Turkey Vulture	<i>Cathartes aura</i>
Red-tailed Hawk	<i>Buteo jamaicensis</i>
Downy Woodpecker.....	<i>Dryobates pubescens</i>
Northern Flicker	<i>Colaptes auratus</i>
Peregrine Falcon	<i>Falco peregrinus</i>
Black Phoebe.....	<i>Sayornis nigricans</i>
Steller's Jay.....	<i>Cyanocitta stelleri</i>
American Crow	<i>Corvus brachyrhynchos</i>
Common Raven.....	<i>Corvus corax</i>
Black-capped Chickadee.....	<i>Poecile atricapillus</i>
Chestnut-backed Chickadee.....	<i>Poecile rufescens</i>
Brown Creeper	<i>Certhia americana</i>
Pacific Wren	<i>Troglodytes pacificus</i>
Golden-crowned Kinglet.....	<i>Regulus satrapa</i>
Wrentit	<i>Chamaea fasciata</i>
American Robin.....	<i>Turdus migratorius</i>
Cedar Waxwing.....	<i>Bombycilla cedrorum</i>
House Finch.....	<i>Haemorhous mexicanus</i>
Lesser Goldfinch.....	<i>Spinus psaltria</i>
American Goldfinch	<i>Spinus tristis</i>
White-crowned Sparrow.....	<i>Zonotrichia leucophrys</i>
Song Sparrow	<i>Melospiza melodia</i>
Yellow-rumped Warbler.....	<i>Setophaga coronata</i>

REPTILES/AMPHIBIANS

California Slender Salamander ...	<i>Batrachoseps attenuatus</i>
Northern Alligator Lizard.....	<i>Elgaria coerulea</i>
Ensatina.....	<i>Ensatina eschscholtzii</i>
Western Fence Lizard	<i>Sceloporus occidentalis</i>
Western Terrestrial Garter Snake.....	<i>Thamnophis elegans</i>
Pacific Chorus Frog	<i>Pseudacris regilla</i>
Northern Red-legged Frog.....	<i>Rana aurora</i>

TIDEPOOL/BEACH

Acorn Barnacle.....	<i>Balanus glandula</i>
Aggregating Anemone	<i>Anthopleura elegantissima</i>
Black Turban Snail.....	<i>Tegula funebris</i>
Bull Kelp	<i>Nereocystis luetkeana</i>
California Mussel	<i>Mytilus californianus</i>
Feather Boa	<i>Egria menziesii</i>
Giant Green Anemone	<i>Anthopleura xanthogrammica</i>
Giant Gumboot Chiton.....	<i>Cryptochiton stelleri</i>
Leather Star	<i>Dermapterias imbricata</i>
Leopard (ring-spotted) dorid.....	<i>Diaulula sanddiegensis</i>
Ochre Sea Star.....	<i>Pisaster ochraceus</i>
Purple Sea Urchin.....	<i>Strongylocentrotus purpuratus</i>
Rough Limpet.....	<i>Lottia scabra</i>
Sea Palm.....	<i>Postelsia palmaeformis</i>
Rainbow leaf	<i>Mazzaella splendens</i>
Sea lettuce.....	<i>Ulva sp.</i>
Bladder wrack	<i>Fucus vesiculosus</i>
Hermit crab	<i>Paguroidea</i>
Goose neck barnacle	<i>Pedunculata</i>
Beach hopper	<i>Emerita sp.</i>
Lined shore crab.....	<i>Pachygrapsus crassipes</i>
Dungeness Crab	<i>Metacarcinus magister</i>

MAMMALS

California Sea Lion	<i>Zalophus californianus</i>
Steller Sea Lion.....	<i>Eumetopias jubatus</i>
Harbor Seal.....	<i>Phoca vitulina</i>
River Otter.....	<i>Lontra canadensis</i>
Gray Whale.....	<i>Eschrichtius robustus</i>
Gray Fox	<i>Urocyon cinereoargenteus</i>
Brush Rabbit.....	<i>Sylvilagus bachmani</i>
Raccoon.....	<i>Procyon lotor</i>
Douglas's Squirrel	<i>Tamiasciurus douglasii</i>
Fog Shrew	<i>Sorex sonomae</i>

TREES

Douglas Fir	<i>Pseudotsuga menziesii</i>
Sitka Spruce.....	<i>Picea sitchensis</i>
Coast Redwood.....	<i>Sequoia sempervirens</i>
Red Alder	<i>Alnus rubra</i>
Cascara Buckthorn.....	<i>Frangula purshiana</i>

SHRUBS

Deer Brush.....	<i>Ceanothus integerrimus</i>
Blueblossom.....	<i>Ceanothus thyrsiflorus</i>
Coyote Brush.....	<i>Baccharis pilularis</i>
Evergreen Huckleberry.....	<i>Vaccinium ovatum</i>
Sticky Monkeyflower	<i>Diplacus aurantiacus</i>

Salal.....	<i>Gaultheria shallon</i>
Thimbleberry.....	<i>Rubus parviflorus</i>
Salmonberry.....	<i>Rubus spectabilis</i>
California Blackberry	<i>Rubus ursinus</i>
Coast Twinberry	<i>Lonicera involucrata</i>
Red-flowering Currant.....	<i>Ribes sanguineum</i>
California Wax Myrtle.....	<i>Morella californica</i>
Coast Silk Tassel.....	<i>Garrya elliptica</i>
Poison Oak	<i>Toxicodendron diversilobum</i>
Oceanspray.....	<i>Holodiscus discolor</i>

WILDFLOWERS (HERBS)

Creeping Wild Ginger.....	<i>Asarum caudatum</i>
Fireweed.....	<i>Chamerion angustifolium</i>
Candy Flower	<i>Claytonia sibirica</i>
Yarrow	<i>Achillea millefolium</i>
Pearly Everlasting.....	<i>Anaphalis margaritacea</i>
Sea Luttuce.....	<i>Dudleya farinosa</i>
Western Wakerobin	<i>Trillium ovatum</i>
Redwood Violet.....	<i>Viola sempervirens</i>
Columbia Lily.....	<i>Lilium columbianum</i>
California Bee Plant	<i>Scrophularia californica</i>
Common Cowparsnip	<i>Heracleum maximum</i>
Coastal manroot	<i>Marah oregana</i>

FERNS

Western sword fern.....	<i>Polystichum munitum</i>
Five finger maidenhair	<i>Adiantum aleuticum</i>
Deer Fern.....	<i>Blechnum spicant</i>
Western Bracken Fern.....	<i>Pteridium aquilinum</i>

INTRODUCED

English Ivy.....	<i>Hedera helix</i>
Pampas Grass.....	<i>Cortaderia selloana</i>
Himalayan Blackberry.....	<i>Rubus armeniacus</i>

FISH

Rock fish.....	<i>Sebastes sp.</i>
Lingcod.....	<i>Ophiodon elongatus</i>
Salmon	<i>Oncorhynchus sp.</i>
Pacific Halibut	<i>Hippoglossus stenolepis</i>
California Halibut.....	<i>Paralichthys californicus</i>

Pacific Banana Slug.....	<i>Ariolimax columbianus</i>
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Appendix 4

CCNM AMBASSADOR GUIDELINES

CCNM Ambassadors are TCLT trained volunteers who help the public understand and appreciate the natural resources and significance of the California Coastal National Monument by assisting with outreach events, tabling opportunities, interpretive walks and school education programs. While you are not expected to be an expert, it helps that you are familiar with the diversity of resources, are an enthusiastic supporter of Trinidad Coastal Land Trust (TCLT), protecting our coast, and know where to learn more about the many aspects of the CCNM Trinidad Gateway.

1. As a **CCNM Ambassador on a walk**, it is your job to:

- Arrange to pick up the Ambassador Box (containing sign-up sheet, info about TCLT and the CCNM) from the from the TCLT office before the walk and return it after. If you need to make other arrangements, please email info@trinidadcoastallandtrust.org or call 677-2501.
- **Arrive a minimum of 10-15 minute early** to check in with the walk leader and prepare for the walk.
- **Welcome participants** and have them sign in. Encourage them to fill in all the contact information so that we can put them on the TCLT e-newsletter list to learn about upcoming events and be sure we have a total number of participants. If R.S.V.P.'s are required, make sure those who have registered are checked in first. If anyone without an R.S.V.P. shows up, they can participate if there is room. Make sure to check in with the walk leader about the maximum number of participants they will allow.
- **Acknowledge Trinidad Coastal Land Trust** as the organization offering this walk, as well as the manager/owner of the property on which the walk is being held (see more info in the Naturalist Guide or on the website at trinidadcoastallandtrust.org). Offer brochures and maps to anyone interested and encourage them to visit the website Trinidadcoastallandtrust.org for more info.
- **Encourage donations and memberships.** Explain that our public guided walks and field trips for school groups, are free but donations are gladly accepted. In order to steward properties and keep guided walks free, TCLT relies on community support through memberships and donations. Provide membership envelopes to anyone interested, encourage everyone to visit the website to learn more.
- **Introduce the walk leader,** go over guidelines and expectations for the walk.
- **Walk Guidelines** include: stay together, stay on the trails, do not pick anything, be respectful of other walk participants and wildlife. While dogs are discouraged on walks, if one shows up, they must be on a leash and the owner must be prepared to clean up after their dog
- **Conclude the walk** and thank everyone for coming.

2. As an **advocate for walk participants**, your responsibility is to:

- Before leaving the meeting area, explain what the walk will entail physically (i.e., walking up and down stairs, steep trails, getting wet in tide pools etc..) and look for any red flags, e.g. someone who is barefoot, has trouble walking or is accompanied by a small child. Give people the opportunity to opt out if they came unprepared or did not realize what the physical demands would be.
- Make sure everyone can keep up. If there are stragglers, check in with them, and to discretely remind the walk leader that he/she should be moving at the pace of the slowest person.
- Bring up the rear. Try to stay behind or walk with the last person in the group.
- Make sure everyone can hear and see. It is your job to politely ask the walk leader to speak up, turn around, step aside, hold the object higher so everyone can see it, etc.
- Make sure everyone can understand. If the walk leader is using jargon or scientific names, politely ask him or her for clarification or to explain again in laypersons terms.
- Be the timekeeper. Make sure the walk starts and ends on time. This may mean reminding the walk leader of how much time is left.
- If someone is falling behind, find out if they are OK. If they seem distressed, give them the option to go back. You will need to accompany the person to ensure they makes it back safely. Let the walk leader know if you do this. **In an emergency, stay calm, call 911 and stay with the victim until help arrives.**

Appendix 5

LEARN MORE

Marine Life

HSU Telsonicher Marine Lab:
570 Ewing Street, Trinidad
Wwww.hsumarinelab.org

Tidepools of the Pacific Coast, A Quick Field Guide,
Western National Parks Association, Michael Rigsby, 2015

History

Trinidad Historical Museum:
400 Janis Court at Patricks Point Dr.
www.Trinidadmuseum.org

Images of Trinidad, Dione Armand, 2010

The Four Ages of Tsurai, A Documentary History of the Indian Village on Trinidad Bay by Robert F. Heizer and John E. Mills. 1962

Birds

www.seabirdprotectionnetwork.org

Sibley Field Guide to Birds of Western North America, David Sibley, 2003

Plants

Native Plant Gardens:

Saunders Park, behind the Trinidad Museum
Patricks Point State Park

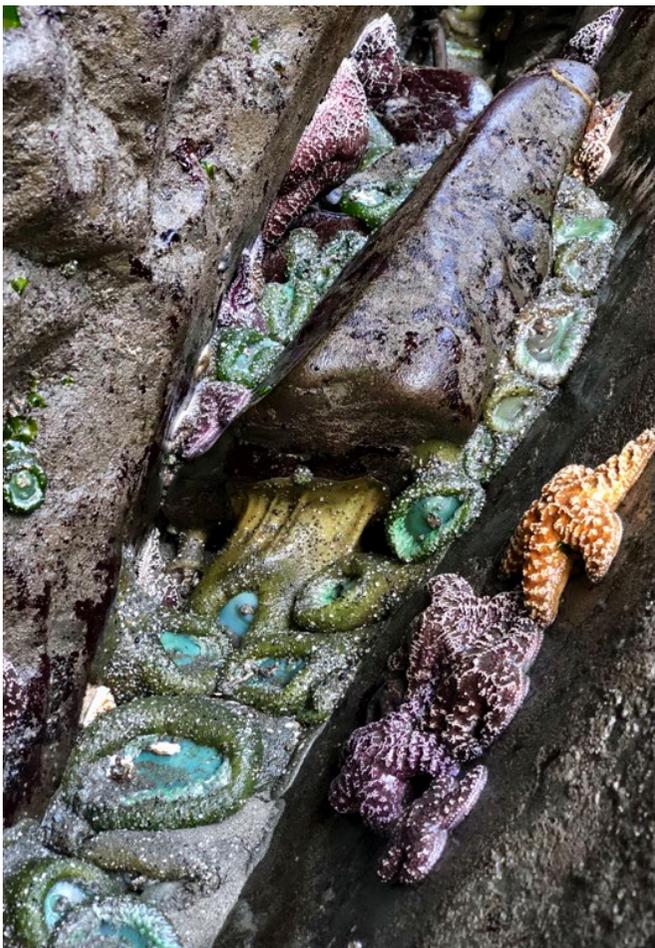
Friends of the Dunes Plant Guide, www.Friendsofthedunes.org

Trees and Shrubs of California, John Stuart, John Sawyer, 2001

Wildflowers of the Pacific Northwest, Mark Turner and Phyllis Gustofson, Timber Press, 2006

Learn more about the TCLT and our conservation properties, beaches and trails at our website www.trinidadcoastallandtrust.org. TCLT depends on annual membership donations to keep our programs and projects active. Please consider an online donation to TCLT. Your support will have multiplying benefits for this coast and future generations.

Ian Schatz



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Editors

Carol Vander Meer, *Director of Community Engagement, Trinidad Coastal Land Trust*
Ben Morehead, *Executive Director, Trinidad Coastal Land Trust*

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www.trinidadcoastallandtrust.org
info@trinidadcoastallandtrust.org
707.677.2501 PO Box 457, Trinidad CA 95570