



SEA PALM (*Postelsia palmaeformis*)



Sea palm is a brown alga that only lives in the middle and upper intertidal zones on wave exposed rocky shores. It has a tough stem-like hollow stipe that reaches about 20-30 inches (50-75 cm) tall that keeps it upright even when it is exposed to the air when the tide is low. It is topped with leaf-like blades making it look like a small palm tree from which it gets its name. A tough root-like structure called a holdfast anchors it to the rocky intertidal shore. Sea palms often grow in patches that vary in size. The blades absorb dissolved nutrients and water directly from seawater when submerged, unlike vascular plants that absorb water and nutrients from the soil through their roots.

OVERVIEW

- **Oregon Conservation Strategy Species**
- **Size:** Up to about 30 inches tall
- **Lifespan:** 1 year
- **Key Strategy Habitats:** Nearshore
- **Similar Species:** There are many other species of kelp in Oregon that grow in the intertidal zone, but the sea palm is unique in appearance making it easy to identify and unmistakable.

RANGE AND DISTRIBUTION

In Oregon: Sea palms can be found statewide on wave exposed intertidal rocky shorelines. It does not grow anywhere else in Oregon.

Everywhere Else: Sea palms can be found from central California in the south to Vancouver Island, Canada in the north. They only grow in the middle to upper intertidal zones on rocky shorelines exposed to waves throughout their range.

FUN FACTS

Food: Sea palm creates its own food through photosynthesis.

- Sea palm has alternating generations in its annual life cycle: one generation is visible to the naked eye (sporophyte), the other is microscopic (gametophyte).
- Sea palms disappear from rocky shorelines in the winter months when large waves rip them from the rocks, but the microscopic spores and gametophytes, the sexual stage of the sea palm life cycle, are still present. Dislodged sporophytes can wash ashore and often be found on beach walks.
- Sea palms live the intertidal zone and compete for space with California mussels. Sea palms depend on the annual disturbance of large waves in the winter months the help clear space for them to grow on the rocky shores.

LIFE HISTORY AND ECOLOGY

Sea palm is a brown alga that like all kelp species alternates generations. The large sporophyte generation that has two sets of chromosomes is what we see in the rocky intertidal zone along the



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Oregon coast. Starting from a fertilized egg in February or March this generation grows quickly and is a prominent part of the wave exposed rocky intertidal shoreline throughout the spring and summer. Sea palms only grow in areas exposed to substantial wave action and the wave action is thought to help make sea palms as much as twice as productive as rain forests. A single stemlike stipe grows from a holdfast that anchors it to the rocky shoreline that is exposed to waves. The stipe is flexible enough to move with the waves and currents, but stiff enough to stand upright when exposed to the air. There may be more than 100 blades growing from the top of the stipe that absorb sunlight, water, carbon dioxide, and nutrients to generate food through photosynthesis. The blades are narrow with deep grooves in them and the spores form on the blades. The spores are released in late summer dripping down onto the rocky substrate at low tide and sticking to the substrate. Dispersal of spores appears to be limited to about 3-10 feet and patches of sea palm can persist in the same location year after year. Spores that are successful germinate into the microscopic gametophyte generation of sea palms, with one set of chromosomes, that produces sperm and eggs. Very little is known about the microscopic gametophytes that grow from the spores, but sea palm eggs are immobile and release a chemical cue called a pheromone that attracts the mobile sperm, but only at very close range and new areas where sea palms grow generally are found very close to existing patches of sea palms. There can be longer distance dispersal of sea palm, but that is thought to occur when sea palms and/or their fertile blades drifting in the ocean are deposited in a wave exposed place in the intertidal zone that has been recently disturbed and cleared of California mussels where sea palms can live. The mussel beds are sometimes cleared when logs drifting in the ocean crash into them breaking them free from the rocks. In fact, studies indicate that mussel beds that are frequently disturbed with sections cleared this way that are near to areas with sea palms are likely to be colonized by sea palms. Sea palm are torn apart or dislodged from the shoreline in late fall and winter when larger waves from storms. This is a normal part of sea palm life cycle that also depends on wave action to clear space for sea palm to grow and although the larger conspicuous sporophytes that are visible throughout the spring and summer are absent from Oregon intertidal area in the winter months, sea palm is still present in its microscopic form as a natural part of its life cycle.

Sea palm is important ecologically in Oregon's Nearshore. It provides food and/or habitat for a wide variety of marine animals. Red and purple sea urchins, and a variety of snails eat sea palm and other algae. A myriad of invertebrates live where sea palm are found.

FOOD GENERATION

Sea palm like all algae generates its own food from sunlight, carbon dioxide, water, and nutrients through photosynthesis making it one of the primary producers of food in our nearshore ocean. Sea palm absorbs carbon dioxide, water, and nutrients directly from the seawater it is surrounded by.

HABITAT CHARACTERISTICS

Sea palm grows in wave exposed areas of the middle to upper intertidal zone on the shores of Northeast Pacific Ocean from central California to the north end of Vancouver Island, Canada. It needs



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adequate wave action, nutrients, sunlight, and space on the rocky intertidal. Sea palm is usually found in same types of areas that California mussels grow on these wave exposed shorelines, but specifically where there is frequent disturbance and clearing of mussel beds by wave actions and floating trees that crash into them.

CONSERVATION AND MANAGEMENT

Threats: Over exploitation, loss and alteration of habitat, including ocean warming are among the know threats to sea palm.

Conservation and management: Commercial harvest of sea palm is prohibited in Oregon, but like most other seaweed species, limited amounts may be taken seasonally.

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