"PACIFIC COAST INFORMATION CARDS"

use with:

"Beach Explorations: A Curriculum for Grades 5-10"

By Gloria Snively 1998

How to Use Pacific Coast Info Cards

Pacific Coast Information Cards are designed to provide students with background information about the common—and not-so-common—marine plants and animals that live on the Pacific Coast. Each of the cards includes an illustration of the organism on one side and information such as its Common Name, Latin Name, Phylum, Range, Habitat, Food Relationships, Commercial Value, and Population Status on the reverse.

The *Beach Explorations* curriculum includes activities that employ these cards to teach process skills and marine science concepts. The cards may be used for classification activities by sorting the cards into groups according to appropriate classification. When teaching food relationships, the students can read the information and use the cards to construct predator-prey relationships, food chains, and food webs. Students may draw sketches that camouflage specific organisms in appropriate habitats, such as kelp forest, sandy beach, or rocky shore environment. Students may also use the cards to gain knowledge about the commercial value of organisms, harvesting methods, and how indigenous peoples may have utilized the organism for food shelter, and clothing.

Teachers are encouraged to photocopy complete sets for classroom use only. Illustrations and photographs are protected by copyright by owner and author.

Pacific Coast Information Cards

Pacific Coast Information Cards are designed for use with the *Beach Explorations* curriculum. See back side of this card for information on how to use them.

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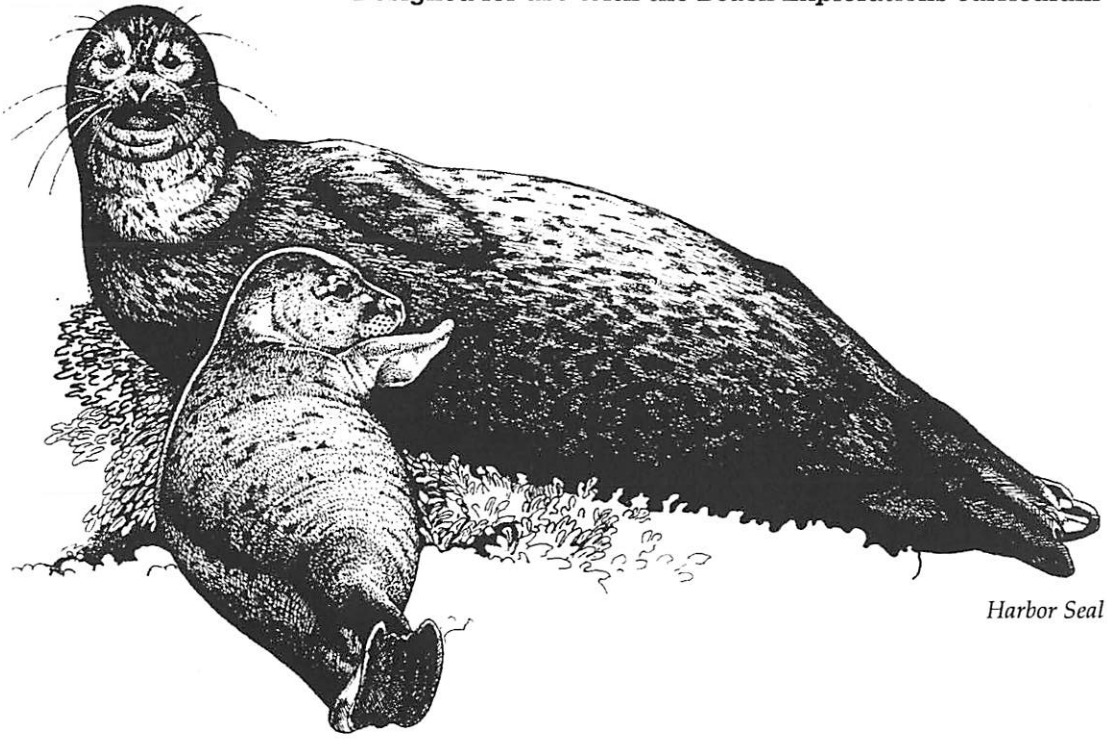
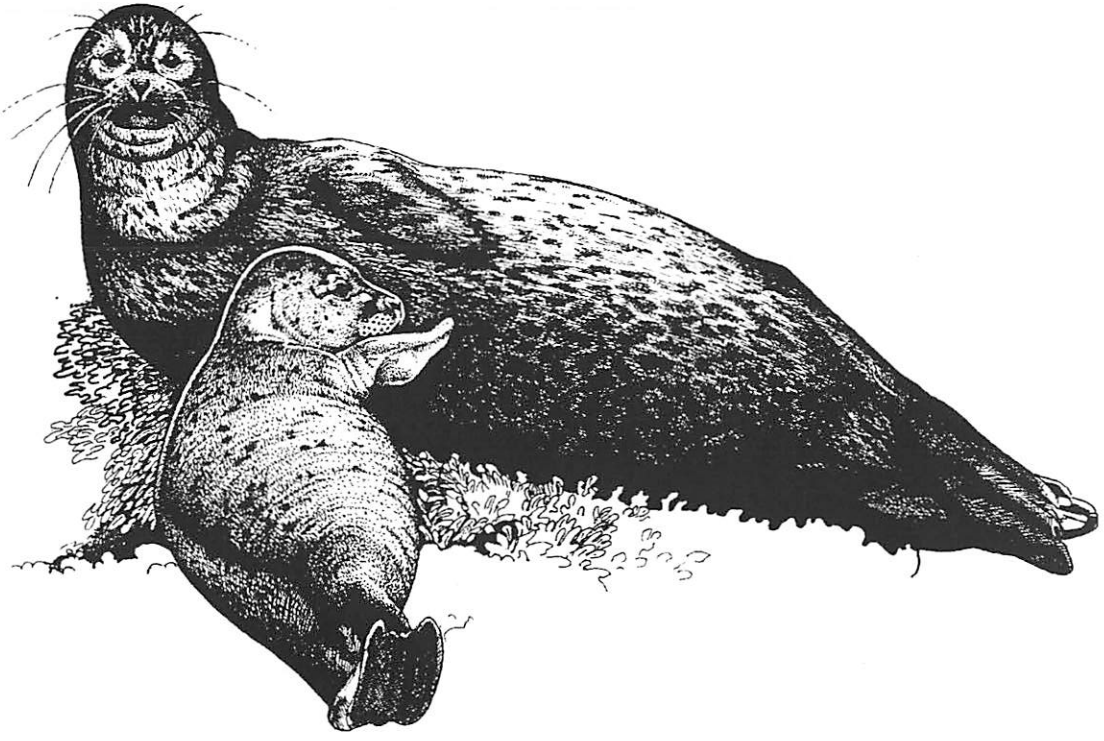
Pacific Coast Information Cards

Designed for use with the *Beach Explorations* curriculum



Harbor Seal

Harbor Seal



Information

Common Name: Harbor Seal

Latin Name: *Phoca vitulina*

Range: On the West Coast, the range of the Harbor Seal extends from the southern Arctic from Yukon and northern Alaska south to Mexico.

Habitat: The Harbor Seal lives along all types of coastal waters, including the mouths of rivers. This seal is easily accustomed to human presence and frequently can be seen basking or resting around boat docks and commercial harbors.

Quick Identification: Harbor Seals vary in color, from black to white with shades of bluish gray. Most have spots or mottled patches on their back. Unlike a sea lion, its front flippers are too short to prop up its body.

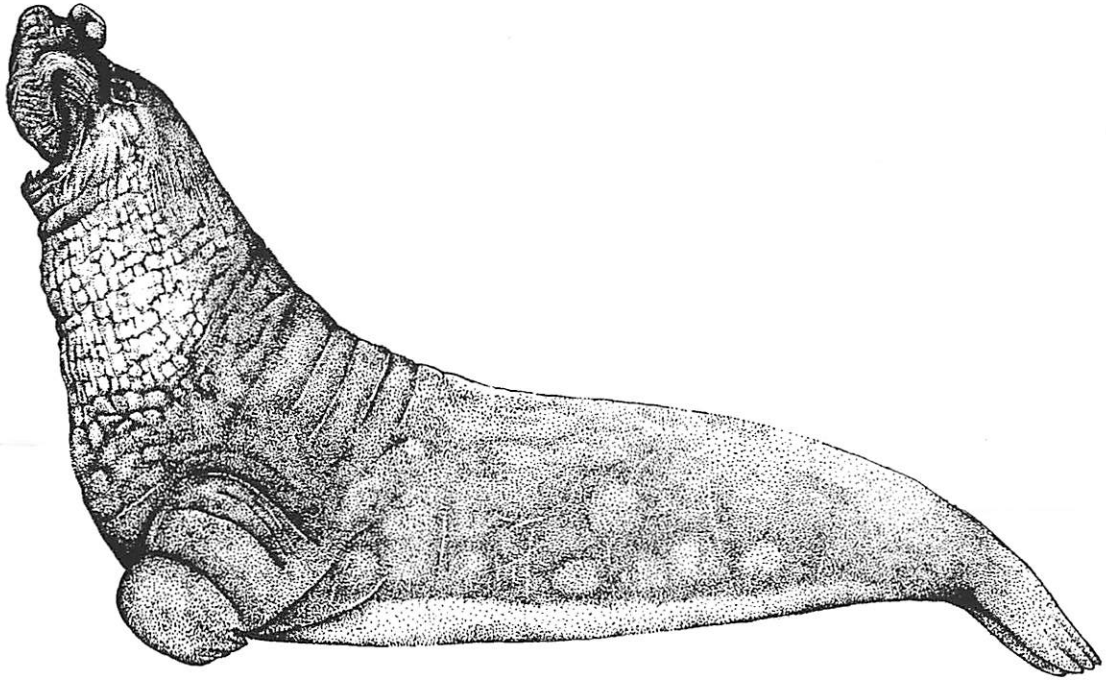
Predators: The Harbor Seal is consumed by sharks and Killer Whales. It continues to be an important part of the diet of many indigenous peoples in Alaska and British Columbia.

Feeding Type: The Harbor Seal is a predator that feeds almost exclusively on fish. Its diet includes sculpins, herring, salmon, squid, and whatever else is available. It feeds when the tide comes in, and travels great distances up rivers with the tide.

Commercial Value: The Harbor Seal has little commercial value, except for the seal's coat which is often used in native handicrafts.

Status: Common. Since they became protected in 1970 by the Canadian Fisheries Act, and in the U.S. by the Marine Mammal Protection Act, their numbers have increased by about 7–12% a year through the early '90s. The growth rate now appears to be slowing, and for some populations the growth rate appears to be leveling off.

Elephant Seal



Information

Common Name: Northern Elephant Seal

Latin Name: *Mirounga angustirostris*

Range: Pacific coastal waters from Gulf of Alaska south to Baja California

Habitat: Temperate and subtropical seas. Limited to sandy beaches for breeding and molting because of its enormous bulk. In recent years has been forced onto mainland beaches because of its increased population.

Quick Identification: Largest aquatic carnivore in Northern Hemisphere; adult males 4.5–6.5 m long (14'9"–21'4"), females 3.0–3.5 m (9'10"–11'6") long. Brown or gray above, lighter below. Adult males with large snout drooping over muzzle; when inflated during mating season, it curves down and back into mouth. Hind flippers with two lobes, reduced claws.

Predators: Large sharks, particularly White Sharks and Killer Whales

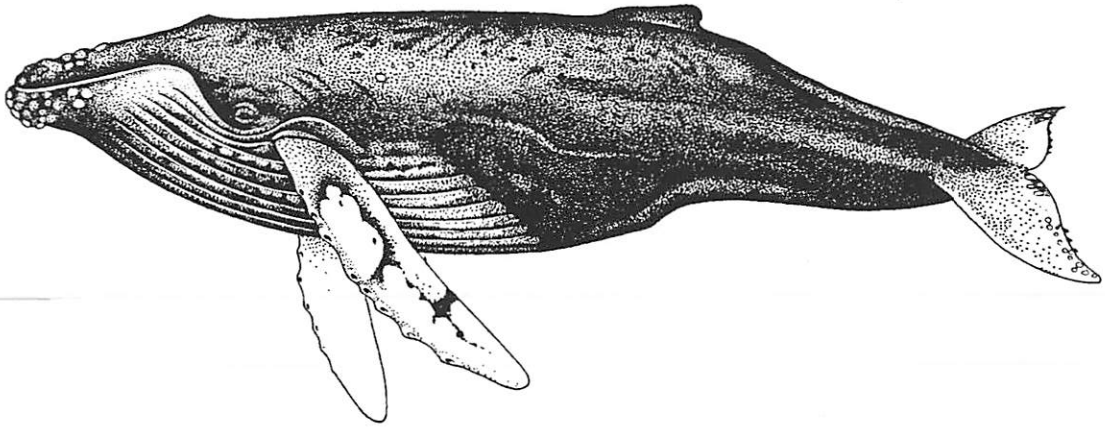
Feeding Types: They feed on fish such as skates, as well as squid, octopuses, and open water crabs.

Commercial Value: In the early 1890s this seal was nearly exterminated by the whaling industry for the oil rendered from its great rolls of blubber.

Status: In 1892 a tiny colony of fewer than 200 animals was discovered on Guadalupe Island, off Baja California. The colony was protected, and the herd now numbers more than 65,000 seals, which breed on the offshore islands from Baja north to San Francisco. The first birth on the mainland occurred in 1975, and by 1979 almost 100 cows had given birth in a new rookery at Ano Nueve Point, near Santa Cruz, California.

Comments: Each December, large adult males arrive at the rookeries. They fight for a position on the beach and a position in the male social structure. Female elephant seals begin to arrive in late December, and form compact aggregations on the beach. About a week after arriving on land, each female bears a single pup weighing up to 65 pounds. Pups are nursed for about 28 days. After weaning her pup, the female mates with a dominant male, then leaves the rookery island to feed and recover the weight lost during her month-long fast while she was nursing. Adult males begin to depart in late February, by late March the pups leave the rookery island, and head towards Alaska spending some time on islands along the way.

Humpback Whale



Information

Common Name: Humpback Whale

Latin Name: *Megaptera novaeangliae*

Range: Chukchi Sea to southern Mexico

Habitat: Humpback Whales migrate along all coasts, usually on the continental shelf, around oceanic islands, and sometimes in open ocean.

Quick Identification: Humpback Whales reach a length of up to 16.2 m. They are grey to black in color with mostly white flippers and underside. This whale has long pectoral fins and a small dorsal fin placed on a small hump about two-thirds down its back.

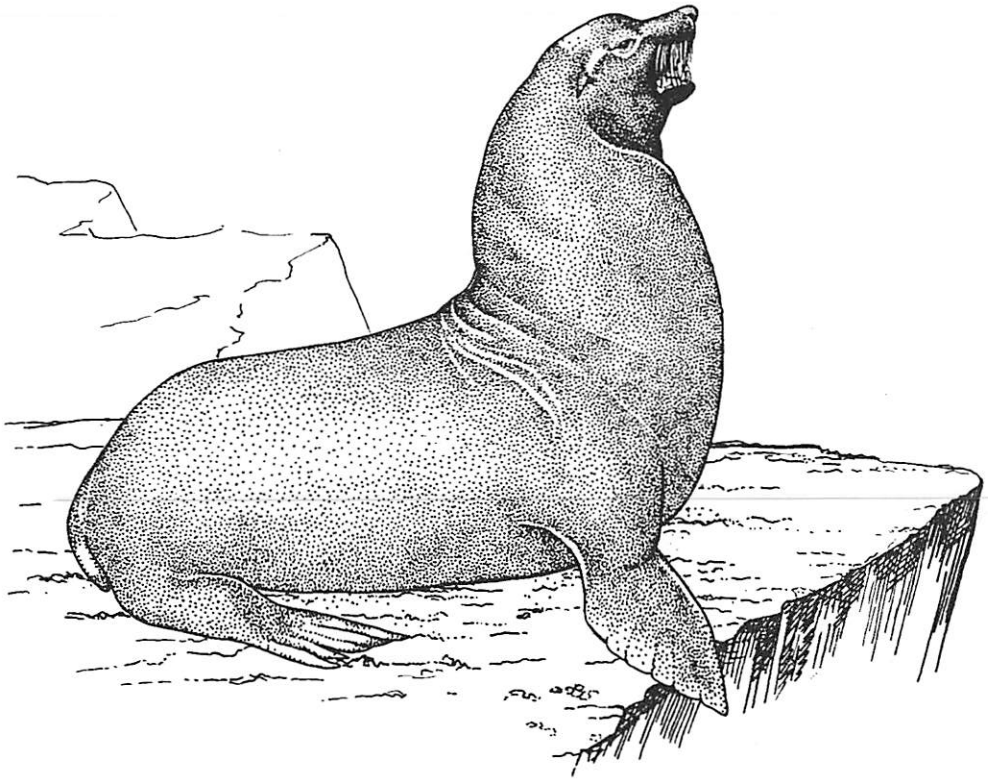
Predators: Once hunted by people, these whales are occasionally preyed upon by Killer Whales.

Feeding Type: Humpback Whales are surface feeders, feeding mainly on euphausiids (krill-like crustaceans), and will occasionally eat large meals of anchovies, herring, cod, sardines, and salmon.

Behavior Populations of Humpbacks off California and Alaska migrate to Hawaii during the winter. They are noted for their spectacular leaps out of the water and their underwater vocalizations (songs).

Status: Endangered; this whale is the second rarest of the whales found along this coast, after the Pacific Right Whale. Human activities, including boat traffic and shoreline development, are believed to have an impact on Humpback Whale behavior.

California Sea Lion



Information

Common Name: California Sea Lion

Latin Name: *Zalopus californianus*

Range: Pacific Coast from Alaska south to Baja California

Habitat: Found along surf-swept rocky and sandy shores; occasionally caves protected by cliffs, preferably on islands.

Quick Identification: These vocal animals can be identified by their loud barking. They are easily trained and are common attractions in aquarium displays and programs. These Sea Lion breeding grounds are islands off the California coast. Reproduction occurs in mid-July and the adult and young males move north as far as British Columbia. The females migrate north only as far as California's Farallon Islands. They are commonly seen resting on near-shore rocks or in bays and estuaries on buoys or boat docks.

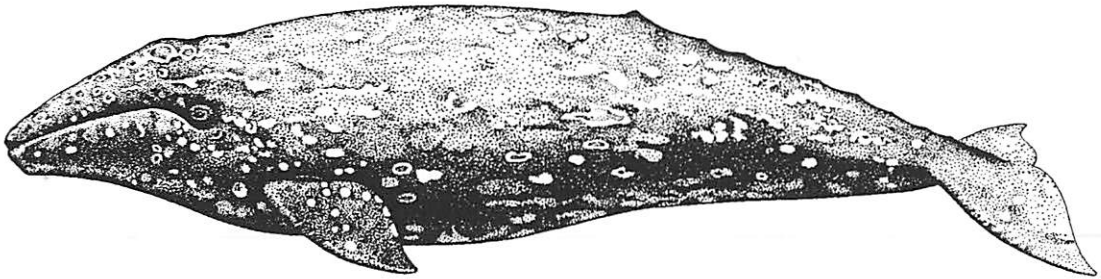
Predators: Very few predators other than sharks, killer whales, and humans. At one time they were killed by commercial fisherman who thought the sea lion competed for fishery resources.

Feeding Type: A predator that feeds extensively on fish, from herring and oolighan (variously spelled eulachon) to salmon.

Commercial Value: Once extensively harvested for their fur and oil that was rendered from their blubber. After a century of exploitation, their numbers were reduced to less than a thousand animals. The Sea Lion is now protected by the Marine Mammals Act in the U.S. and by the Federal Fisheries Act in Canada.

Status: During the past 50 years, the California Sea Lion has increased from low numbers in the Eastern Pacific to an estimated 100,000. They are now protected by the U.S. Marine Mammals Act and the Canadian Federal Fisheries Act.

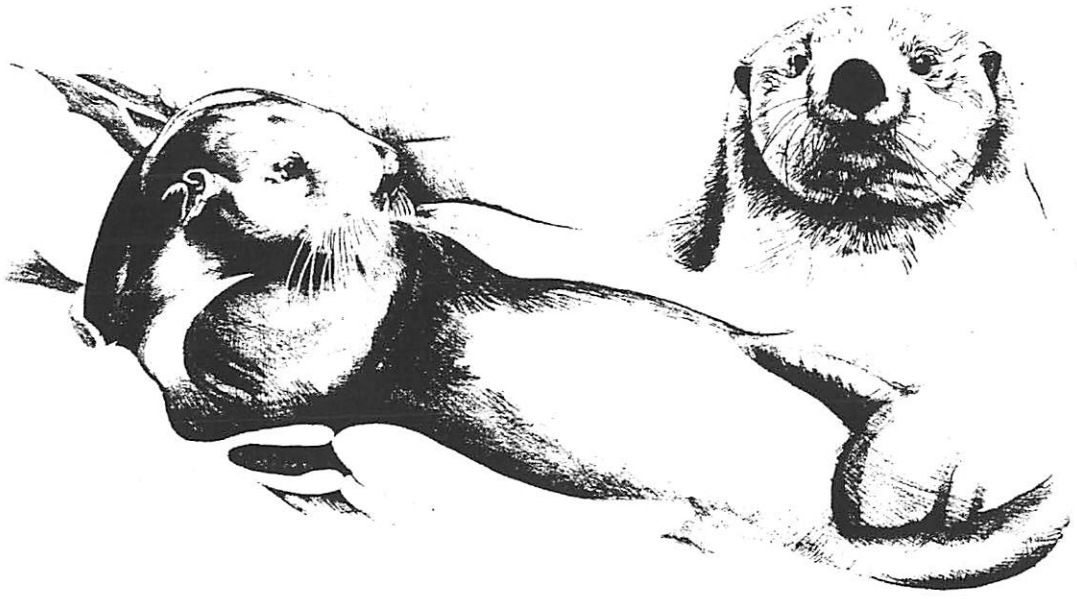
Gray Whale



Information

Common Name:	Gray Whale
Latin Name:	*Eschrichtius robustus*
Range:	From the Bering and Chukchi seas to Baja California
Habitat:	Gray Whales generally inhabit coastal waters. When migrating, these whales sometimes come close to shore, occasionally passing by kelp beds. When feeding and calving, they are found in shallow waters and lagoons.
Quick Identification:	Gray Whales are mottled gray in color and lack a dorsal fin. Instead of a fin, these whales have a low hump on their backs followed by a series of 10 or 12 knobs. Gray Whales usually surface and "blow" four or five times in a minute and then dive and remain under water for approximately four minutes.
Predators:	Once heavily hunted by people, this whale's main natural predators are killer whales.
Feeding Type:	Gray Whales are mostly bottom feeders, feeding mainly on amphipods (small crustaceans). They also feed in kelp beds, running the blades of kelp through their mouths.
Commercial Value:	During the mid-19th century, Gray Whales were easy prey for whalers who hunted them.
Status:	The number of Gray Whales has increased since enforced protection in 1947. The numbers of Gray Whales off the Pacific Coast of North America have returned to historic levels, and they were removed from the U.S. endangered species list in 1994. Although whaling is no longer a major threat to Gray Whales, habitat loss due to industrialization and pollution is still a potential threat.

Sea Otter



Information

Common Name: Sea Otter

Latin Name: *Enhydra lutris*

Range: From southern Arctic and northern Alaska to the central California coast

Habitat: Large kelp beds, located in and along the exposed rocky shore line, are habitat to the Sea Otter. The kelp beds provide food, shelter, and escape from predators.

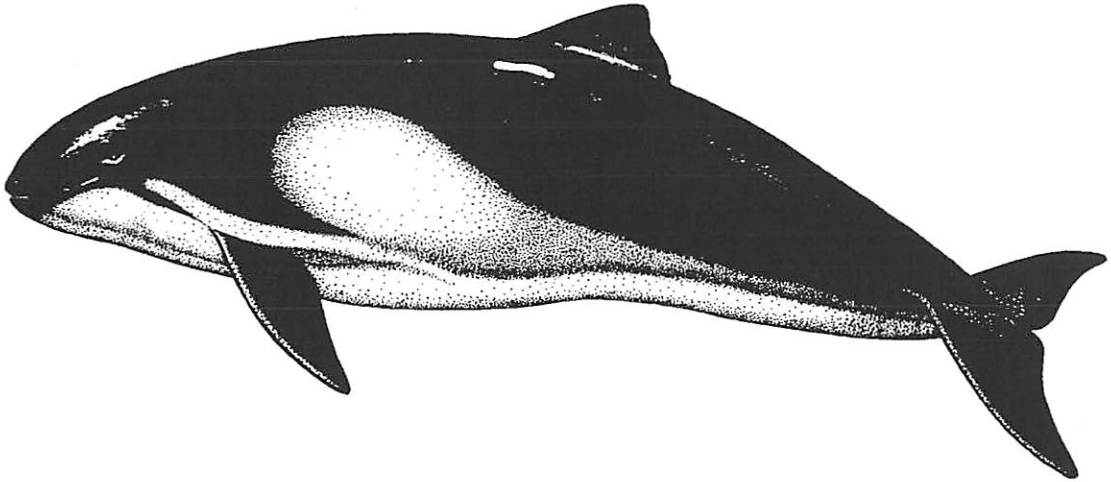
Predators: Killer whales, sharks, and humans are the predators of the Sea Otter.

Feeding Type: The Sea Otter is a predator. Its chief prey are abalone, sea urchins, crabs, mussels, and fish. The Sea Otter is one of the few animals that uses tools while it eats. When it dives for food, it also brings up a rock. It then floats on its back, places the rock on its chest, and cracks the shell against it. The Sea Otter helps control the sea urchin population, thus allowing the kelp beds to thrive.

Commercial Value: Historically, the Sea Otter was hunted for its highly prized pelt. Over-exploitation by fur traders brought the species to the verge of extinction. In 1911 an international treaty was established to protect the species.

Status: The Sea Otter is designated as "threatened." The species numbers have steadily increased since 1911. The largest remaining populations occur off Monterey Bay, California and Alaska. There have been successful reintroductions to historic ranges, including the West Coast of northern Vancouver Island, B.C. Currently, there are 1,500 Sea Otters in B.C. and the population is increasing at 17–20% per year.

Harbor Porpoise



Information

Common Name: Harbor Porpoise

Latin Name: *Phocoena phocoena*

Range: Gulf of Alaska and eastern Aleutian chain to southern California.

Habitat: This porpoise is usually found in nearshore waters shallower than 20 meters. It also is found often in bays, harbors, estuaries, and river mouths.

Quick Identification: The Harbor Porpoise rarely exceeds 1.8 m in length. It is generally grey on the back with a white belly and a small, triangular dorsal fin. Harbor Porpoises are difficult to spot because they usually flee from approaching boats.

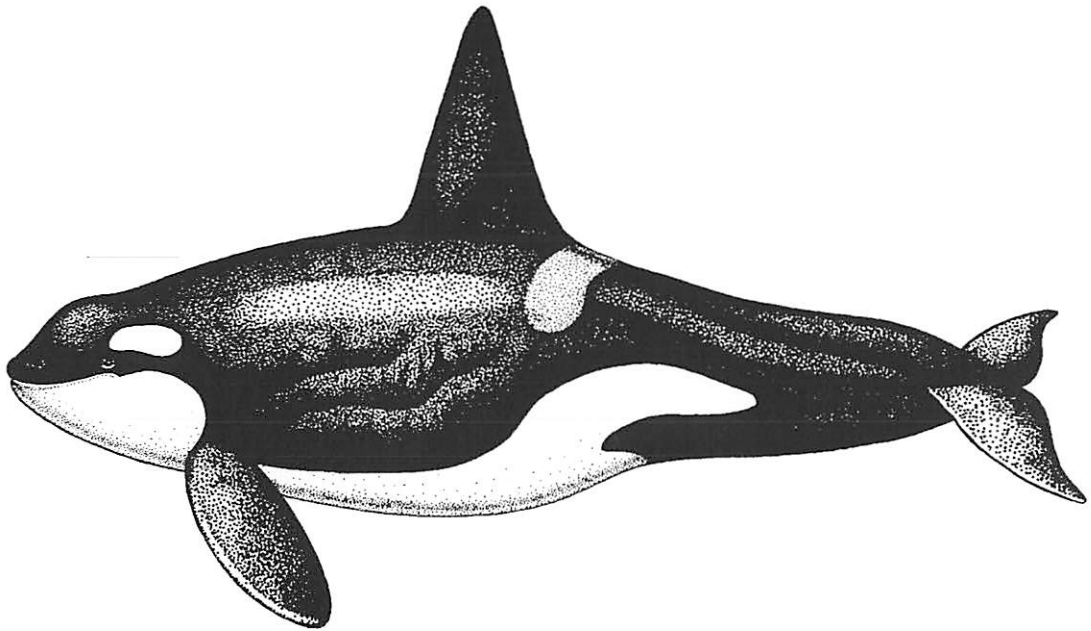
Predators: Killer whales and large sharks will attack and eat Harbor Porpoises.

Feeding Type: Harbor Porpoises feed on octopus, squid, and fish, including herring.

Commercial Value: Although this porpoise was once a significant food source for native peoples along the Pacific Coast of North America, they are no longer killed for food and have never been killed commercially.

Status: Common. Currently the most serious threat to the Harbor Porpoise may be entanglement in gillnet and fish traps.

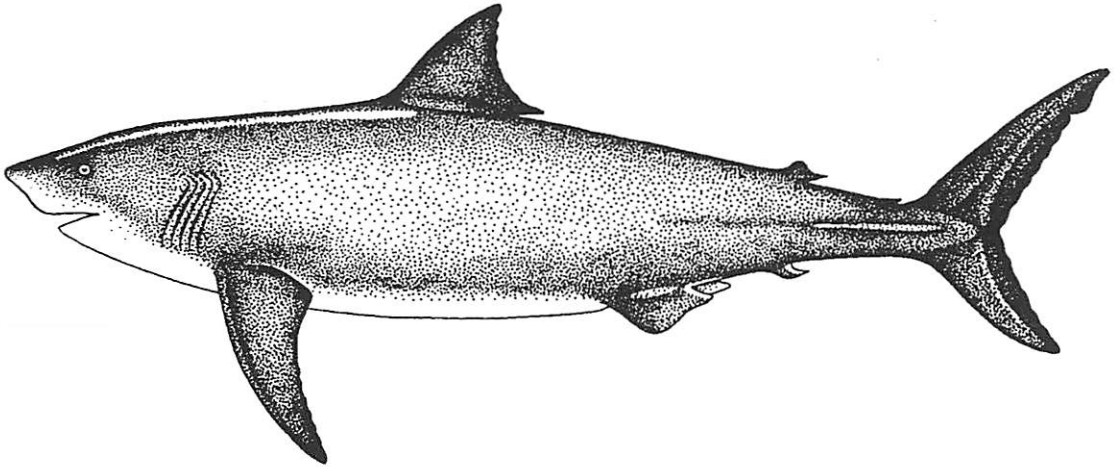
Killer Whale



Information

Common Name:	Killer Whale
Latin Name:	*Orcinus orca*
Range:	Found in all seas of the world
Habitat:	Killer Whales are found along all types of coastlines. They sometimes hunt along rock shorelines and many kelp beds.
Quick Identification:	Killer Whales can grow to a length of 9.4 m. Their bodies are black with a white underside, white oval patches just above and behind the eyes, and a light grey patch behind the dorsal fin. The dorsal fin of an adult male is tall and straight, although sometimes the flexibility of the fin causes it to bend to one side; the dorsal fin of an adult female or juvenile is short and crescent-shaped.
Predators:	None, except possibly people
Feeding Type:	Killer Whales are carnivores, and feed on a wide range of fish, seals, sea lions, and other whales.
Commercial Value:	Although not hunted commercially, Killer Whales are taken for public aquaria.
Status:	Common

White Shark



Information

Common Name: White Shark

Latin Name: *Carcharodon carcharias*

Range: Alaska south to the Gulf of California

Habitat: Coastal surface waters

Quick Identification: White Sharks can reach a length of 6.4 m. They have grey or brown backs and white bellies. Their teeth are triangular with serrated edges.

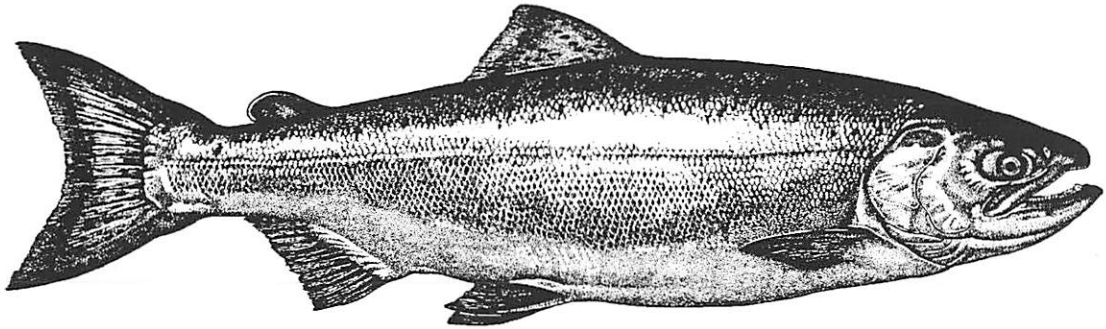
Predators: None

Feeding Type: These sharks are predators that feed on fishes, seals, sea lions, and sea otters.

Commercial Value: White Sharks are not taken commercially; however, they are occasionally caught by fishermen and the flesh is reported to be very tasty.

Status: Common.

Chinook Salmon



Information

Common Name: Chinook Salmon

Latin Name: *Oncorhynchus tshawytscha*

Range: Bering Strait south to southern California; along the coast and in fresh water streams

Habitat: Chinook Salmon are found near the water surface and at mid-depths along all coastlines. This fish spawns in freshwater in large rivers.

Quick Identification: Chinook Salmon grow to 1.6 m in length. They are greenish blue to black along the back and silvery white underneath. Black spots cover the back and both lobes of the caudal fin.

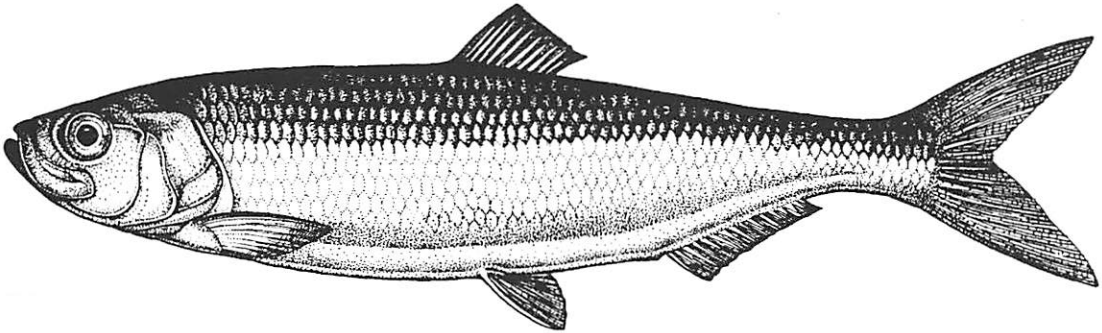
Predators: Chinook Salmon are preyed upon by seals, killer whales, and people.

Feeding Type: This salmon is itself a predator on a variety of crustaceans and fishes such as anchovies, herrings, young rockfishes, and sand lances.

Commercial Value: The Chinook Salmon is the most highly prized ocean game fish in the Pacific.

Status: Common.

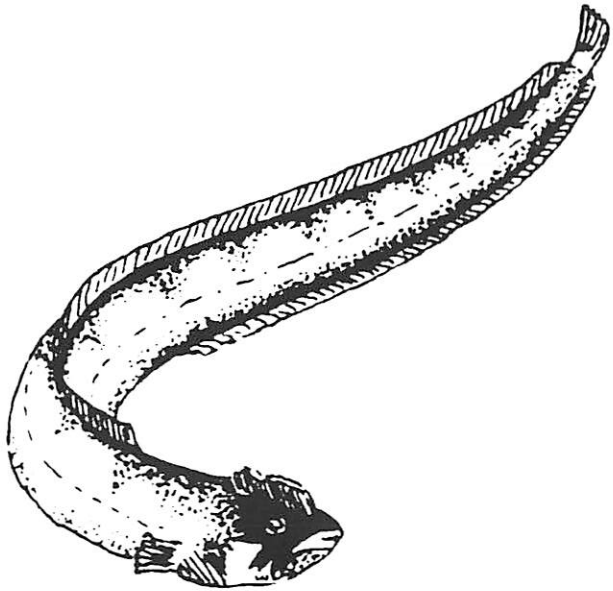
Pacific Herring



Information

Common Name:	Pacific Herring
Latin Name:	*Clupea harengus pallasi*
Range:	Northern Baja California, Mexico, to the Bering Sea and northeast to Cape Bathurst in the Beaufort Sea
Habitat:	Inshore waters, along all types of coastlines
Quick Identification:	Color is dark blue-green on the back, shading to silver on the sides. Swims in large schools. Length to 30 cm.
Predators:	The Pacific Herring is a vital part of the intertidal and inshore food chain. It is preyed upon by numerous predators, large and small, from the Gray Whale to the Common Tern. In the food chain, herring is valuable because many other fish feed on them, including valuable sport and commercial fish such as salmon.
Feeding Type:	The Pacific Herring is a predator that feeds on a variety of crustaceans and small fishes.
Commercial Value:	An extremely valuable commercial fish, Pacific Herring are processed into many different products such as kippers, bloaters, roll mops, canned fish, and smoked fish. The roe herring, or egg, fishery is particularly lucrative, with most of the products being exported to Japan.
Harvesting Methods:	On a commercial scale, herring are harvested with seine and gillnets. On an individual scale, herring are harvested using a dip net, jigged or "raked" with various hooks. Herring roe is harvested in the spring when the adults spawn in the intertidal and shallow regions that have abundant seaweeds.
Status:	Although formerly common, the population of Pacific Herring have been declining so rapidly that the fishery has been closed during some years to allow fish stocks to increase.

High Cockscomb Blenny



Information

Common Name: High Cockscomb Blenny

Latin Name: *Anoplarchus purpurescens*

Range: Point Buchon, California to the Aleutian Islands, Alaska

Habitat: On rocky or boulder-strewn beaches; under rocks the size of cobblestones, or in tidal pools; in the intertidal zone and in deep water to a depth of 10 feet.

Quick Identification: An elongated fish with a long top dorsal fin running into the tail with a combination of brown, grays, blacks, and green designs or stripes running the length of the body. The largest may reach 20 cm.

Predators: Shore birds and bigger fish.

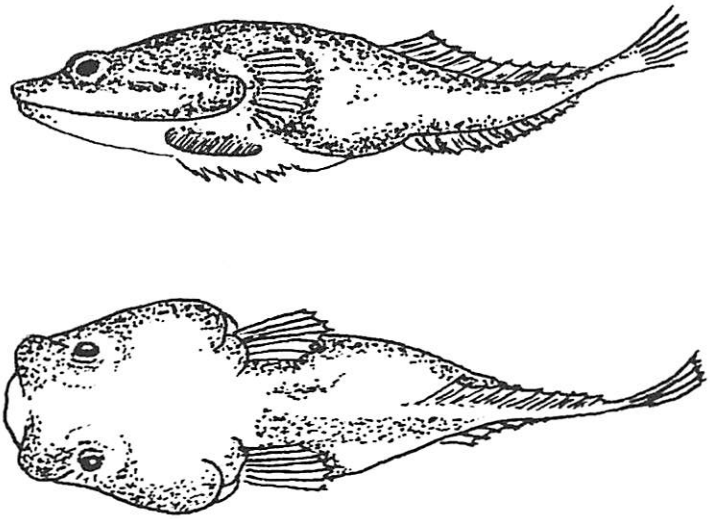
Feeding Type: Feed on green algae, worms, amphipods, snails, and crustaceans.

Commercial Value: None

Status: Common

Comments: Although frequently mistaken by children for an electric eel, this fish is really quite harmless.

Northern Clingfish



Information

Common Name: Northern Clingfish

Latin Name: *Gobiesox maeandricus*

Range: From southern California to southeastern Alaska

Habitat: On rocky or boulder-strewn beaches; under rocks the size of cobblestones

Quick Identification: The large, flat head of this little fish seems to taper to the tail, and the body changes color to blend in with the surroundings. The size varies from 8 to 15 cm.

Predators: Shore birds and larger fish.

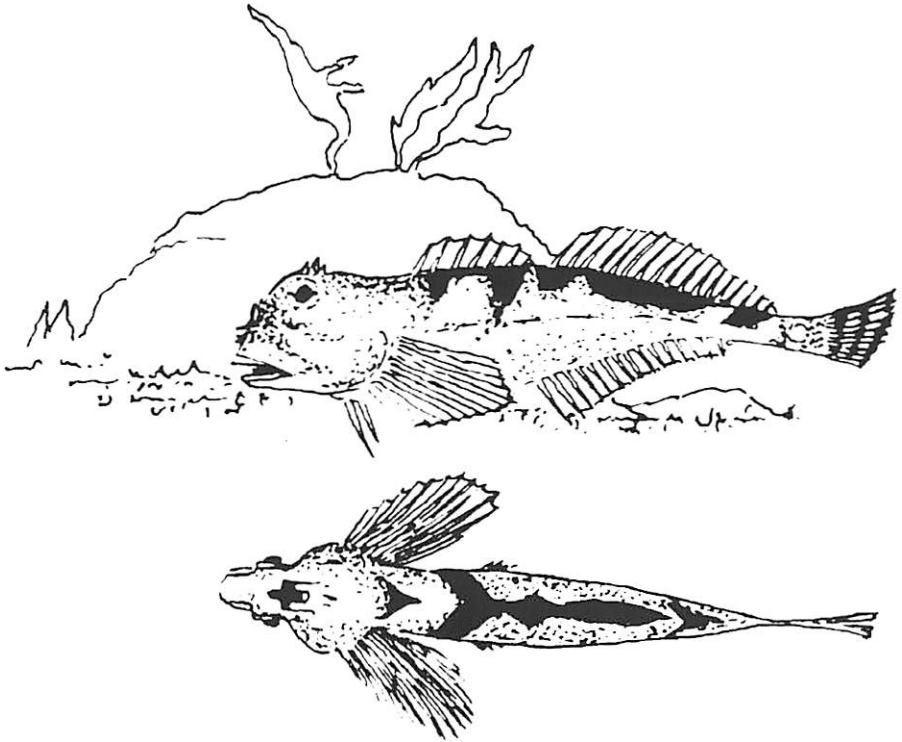
Feeding Type: Feeds on small crustaceans such as amphipods, isopods, and crabs; and small snails, mussels, and clams

Commercial Value: None

Status: Common

Comments: When the tide goes out, this fish stubbornly clings to the undersides of rocks with special fins that form a powerful suction device. As long as the Clingfish has the protection of the moist under-rock habitat, it can survive until the incoming tide.

Tidepool Sculpin



Information

Common Name:	Tidepool Sculpin
Latin Name:	*Oligocottus maculosus*
Range:	Aleutian Islands to southern California
Habitat:	Found intertidally on exposed and protected coastlines; along rocky shores; hiding in cracks and crevices, under rocks and among the seaweeds and shadows of tidepools
Quick Identification:	Tidepool Sculpins, commonly called "bullheads," have very large heads for their small tapering bodies. Colors vary greatly but usually include shades of black, brown, or green, along with some white or pink. Adults reach a length of about 10 cm.
Predators:	The Tidepool Sculpin has a variety of predators, from other fish to birds such as gulls, crows, and Great Blue Herons.
Feeding Type:	A predator that feeds primarily on small crustaceans and shell fish. It will also feed on bits of detritus that are brought in with the tide. When hunting, the sculpin lies in ambush until its prey is close, then with a quick dart it catches its prey.
Commercial Value:	None
Status:	Common
Comments:	Sculpins are well camouflaged; their colors blend beautifully with the rocks, weeds, and shadows of the pool. To a considerable extent, they can each change their colors to match their surroundings. There are over 40 different species in the sculpin family on the Pacific Coast.

Pipefish

Information

Common Name: Pipefish

Latin Name: *Syngnathus griseolineatus*

Range: From southeastern Alaska to central California

Habitat: Pipefish are common in shallow water, swimming around eelgrass beds and wharves.

Quick Identification: This is a long, thin fish with a rectangular-shaped dorsal fin halfway down the body, a very small mouth at the end of a long flexible tube, and no teeth. The color may vary from pale green to dark green or brown.

Predators: This fish is eaten by a variety of fishes and birds.

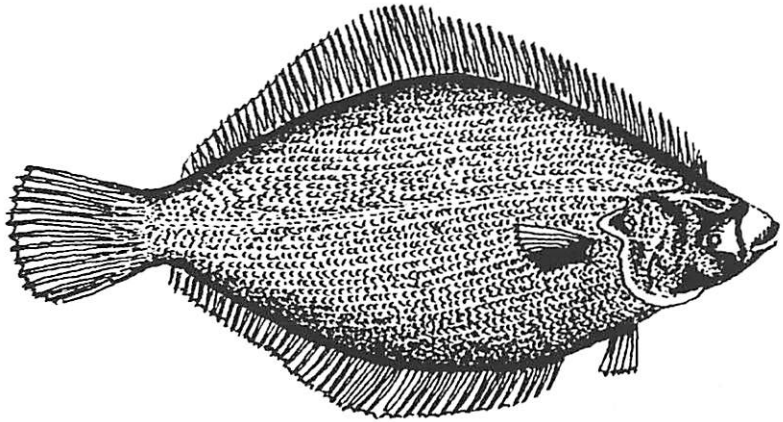
Feeding Type: By inflating its cheeks, the Pipefish sucks small crustaceans into its tubular mouth.

Commercial Value: None

Status: Common

Comments: Blending in with your environment is easy when you're the same color as your habitat and when you mimic the shape and movement of the world around you. The bodies of Pipefish are long and thin like blades of grass. Hanging tail-down in an eelgrass clump and swaying with the current, a Pipefish looks like just another eelgrass blade.

Sand Sole



Information

Common Name: Sand Sole

Latin Name: *Psettichthys melanostictus*

Range: Alaska to California

Habitat: Protected sandy shores, in shallow water up to 60 cm, often found on sandy bottoms

Quick Identification: A peculiar-looking, large-mouthed, thin, flat fish, about 20 cm in length, with both eyes on the uppermost side. The uppermost side is a brown to light green and covered with fine dark points all over its eyed side.

Predators: The Sand Sole is preyed upon by larger fish and birds, especially gulls and herons.

Feeding Type: The Sand Sole is a predator that feeds on crabs, fish, squid, worms, and shrimp. It uses its natural camouflage to blend with sandy bottoms where it lies still to ambush its prey.

Commercial Value: Since the Sand Sole lives in shallow water, it forms a small part of the commercial ground fish harvest. Sand Sole is usually marketed under the title of "sole," and is sold as fillets, either fresh or frozen.

Comments: As a juvenile the Sand Sole has each eye on either side of its head; as it matures one eye migrates to the other side of the head, so that the mature sole has both eyes on one side of its head while lying on the other side.

Bald Eagle

Information

Common Name: Bald Eagle

Latin Name: *Haliaeetus leucocephalus*

Range: Historically, the Bald Eagle was a common bird along the whole of the Pacific Coast, but because of human persecution, its numbers are greatly diminished.

Habitat: Lives close to or on all types of sea coasts, large lakes, and rivers where fish are in abundance. The Bald Eagle requires tall trees or cliffs in which to make its platform-like nest.

Quick Identification: Our largest bird of prey. Conspicuous with its white head, neck, and tail.

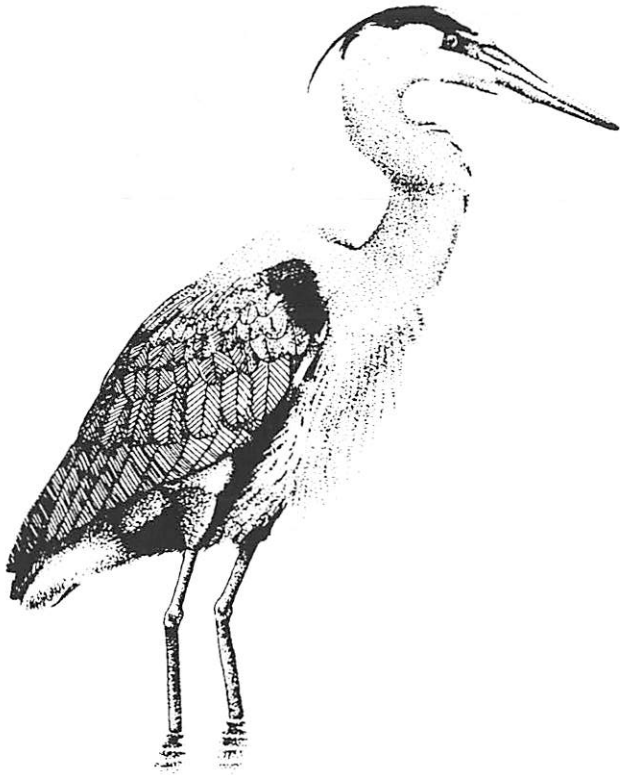
Predators: A mature Bald Eagle has virtually no predators with the exception of humans. Even though the Bald Eagle is protected, each year poaching, pesticides, habitat destruction, and high-voltage wires take a heavy toll on eagle populations.

Feeding Type: The Bald Eagle is both a predator and scavenger. It occasionally preys upon shore birds, ducks, and small mammals. Though it consumes large quantities of fish, preferably salmon, it will scavenge on dead or dying fish and animal carcasses. While hunting shore birds or ducks, the eagle will fly along the shore and make several swoops down on a group of birds, hoping to find a crippled or weakened bird. If not, it will continue on in hopes of finding an easier meal.

Commercial Value: Though there is no commercial market for eagles or eagle parts (feathers, talons), eagles are captured alive and sold illegally to be used as captive hunting birds in foreign countries. It is also illegal in Canada to possess any part of an eagle, including feathers, except by First Nations people.

Status: Rare, except in British Columbia and Alaska

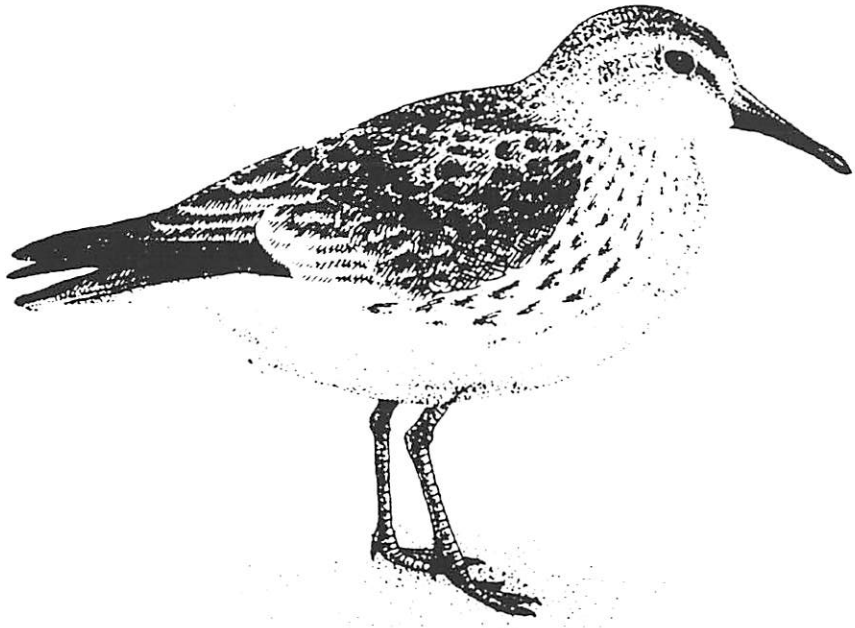
Great Blue Heron



Information

Common Name:	Great Blue Heron
Latin Name:	*Ardea herodias*
Range:	Widespread along the Pacific Coast
Habitat:	Its habitat includes exposed coastal shores, protected brackish lagoons and estuaries, mud flats, and freshwater wetlands where tall weeds and trees provide safe nesting sites.
Quick Identification:	One of our largest resident birds, reaching 1.2 meters in height and with a wing spread of nearly 2 meters. In summer these large bluish-gray birds wear breeding plumage: a white head with black side stripes; yellowish bill; long, blackish legs; and streaked grayish-brown neck and back.
Predators:	The Great Blue Heron has very few predators. It may be occasionally consumed by eagles, other large birds of prey, and land-based predators such as mink.
Feeding Type:	The Great Blue Heron is a predator that consumes a variety of different organisms. It prefers fish but will eat crustaceans, snails, limpets, frogs, salamanders, insects, and small mammals. Herons are patient predators; when hunting they will walk slowly through the water, often appearing frozen, seeking the slightest motion that will give the prey away.
Commercial Value:	The Great Blue Heron has no commercial value. Historically, they were hunted for their feathers, which were used for decoration on clothing and hats.
Harvest Methods:	No commercial harvest. Great Blue Herons are a protected bird.
Status:	Common

Western Sandpiper



Information

Common Name: Western Sandpiper

Latin Name: *Calidris mauri*

Range: Breeds in northwest Alaska and migrates up and down the Pacific Coast as far south as Peru

Habitat: Along tidal mud flats, open marshes, sandbars, and sandy beaches foraging along the low tide line

Quick Identification: A perky shorebird no larger than a sparrow—about 15 cm. This species has a long black bill that tips slightly downward, a rusty-red head, a pale breast, and black legs.

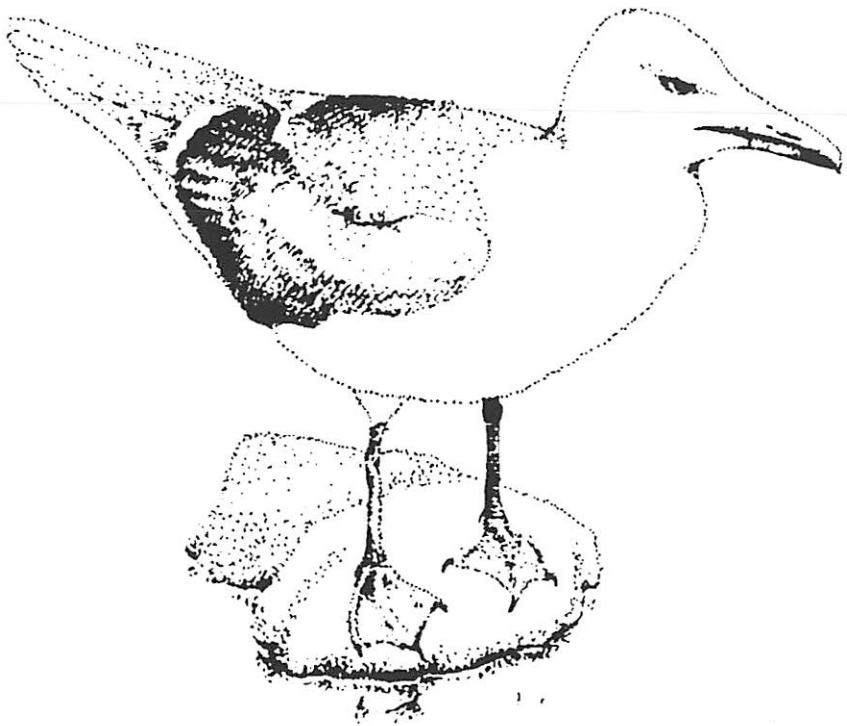
Feeding Type: Feeds on insects, worms, snails, and tiny crustaceans at the low tide line.

Commercial Value: None

Status: Common

Comments: Sandpipers run along the tide line in stops and starts, take flight in great flocks, and fill the air with soft peepings. They perform amazing antics as if responding to a prearranged signal, then settle down to continue their feeding.

Glaucus-winged Gull



Information

Common Name: Glaucus-winged Gull

Latin Name: *Larus glaucescens*

Range: Bering Sea to Baja California

Habitat: On all types of shores; breed on coastal islands and headlands

Quick Identification: This is the largest and most common of the gulls. The adults have clean white heads, pale gray mantles, yellowish bills with a red spot, flesh-colored legs, and loud voices. Like many gulls, the plumage of the young is variable, generally a mottled brown, white, gray, and black.

Predators: This gull builds its nest on top of cliffs and rocky outcrops, usually away from land predators such as mink and rats.

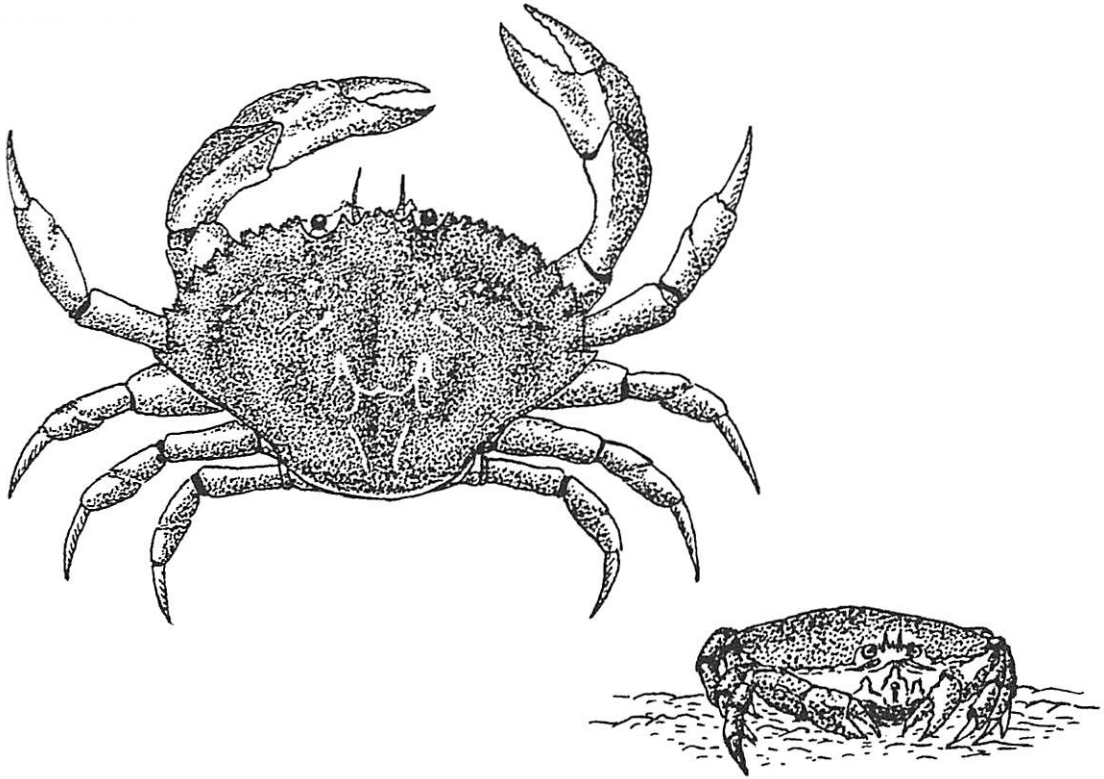
Feeding Type: As with all gulls, the Glaucus-winged Gull is both a predator and a scavenger. At low tide it picks and probes among the rocks for tidepool fish, small crabs, and sea urchins.

Commercial Value: None

Status: Common

Comments: Nests in colonies on flat, low islands; rock ledges; or headlands. The female lays her two or three olive-brown eggs in a nest made of seaweed or grass. Western Gulls and Glaucus-winged Gulls often interbreed, producing hybrids.

Dungeness Crab



Information

Common Name: Dungeness Crab or Edible Crab

Latin Name: *Cancer magister*

Phylum: Arthropoda

Range: The entire Pacific Coast of North America

Habitat: Sometimes in low intertidal sandy and muddy bays where there is a good growth of eelgrass, but more commonly on deeper sandy bottoms.

Quick Identification: The Dungeness Crab is quite large compared to other crabs found along the Pacific Coast, with a carapace up to 20 cm wide. The color of the carapace is grayish brown, sometimes with a purplish or orange tinge.

Predators: The Dungeness Crab is consumed by octopus, gulls, and sea otter, but likely its greatest predators are people.

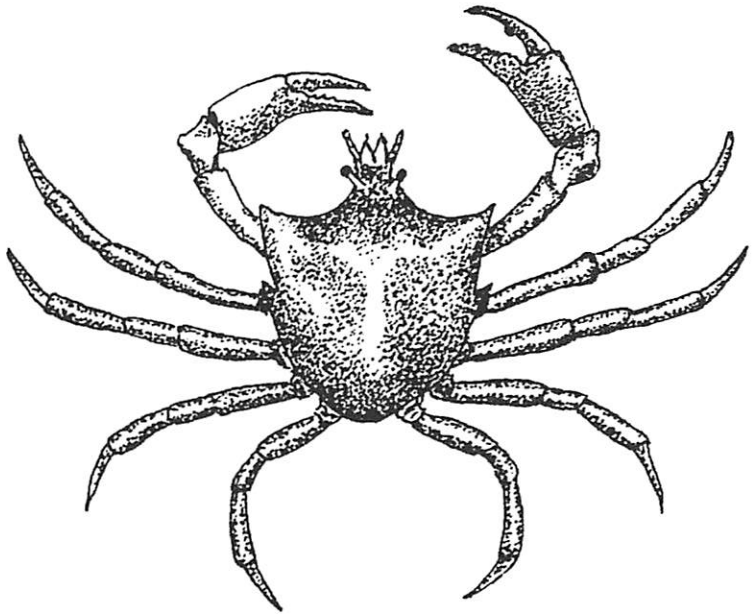
Feeding Type: The Dungeness Crab is a predator and carnivore that feeds largely on small clams and oysters, which it can open by chipping away at the shell with its heavy pincers.

Commercial Value: This crab, which is the largest edible true crab on the West Coast, supports a large fishery from California to British Columbia. It is taken with traps set on a sandy bottom in deep water. The minimum size for crabs of this species, taken for food, is 16 cm, and only male crabs can be kept.

Status: Common

Comments: The male has a narrow, V-shaped abdominal "flap" on its underside; the female has a wide, U-shaped "flap" where she carries her eggs.

Kelp Crab



Information

Common Name: Kelp Crab

Latin Name: *Pugettia producta*

Phylum: Arthropoda

Range: Alaska to Baja California

Habitat: As the name suggests, the Kelp Crab is found along rocky shores where there is kelp.

Quick Identification: The Kelp Crab is a strong, aggressive crab, rather large, with a carapace of almost 10 cm in length, sharp spines, and long, slim legs. The olive brown color of this constantly squirming crab helps it blend perfectly among the stems and fronds of kelp and eelgrass.

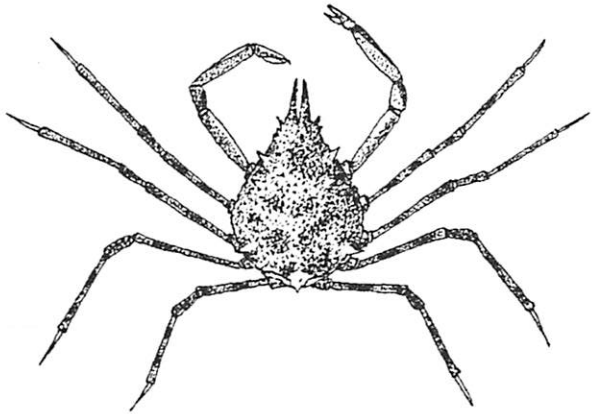
Predators: The Kelp Crab is eaten by a variety of different organisms; in the water it is often eaten by fish such as Kelp Greenling and Cabezon; along the shore it is often the prey of crows and gulls.

Feeding Type: The Kelp Crab is both a grazer and a predator. As a grazer it feeds primarily on kelp; in areas where the kelp dies in the winter, it is a predator that consumes barnacles and sponges.

Commercial Value: It is too small to have any commercial value.

Status: Common

Decorator Crab



Information

Common Name: Decorator Crab

Latin Name: *Oregonia gracilis*

Range: Bering Sea to Monterey, California

Habitat: Found in the intertidal zone among wharf pilings, among seaweeds, and in eelgrass beds

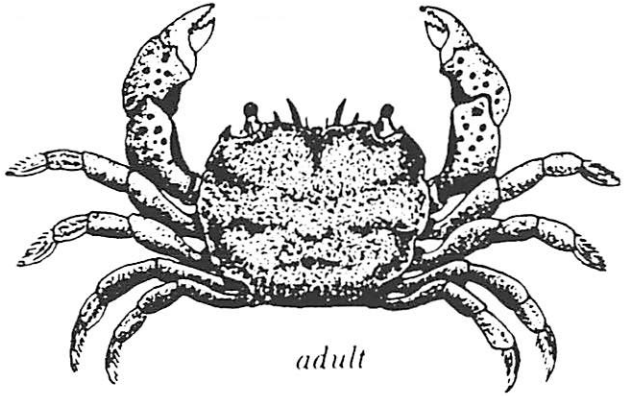
Quick Identification: The Decorator Crab is most likely to have a luxuriant growth of small seaweeds, sponges, and bryozoans, which settle and grow on its body. The triangular carapace is 4 to 6 cm wide; the legs are very long and thin, the first set of legs adapted for collecting seaweed.

Feeding Type: The Decorator Crab feeds on seaweeds and scavenges on bits and pieces of dead and decaying plant and animal material.

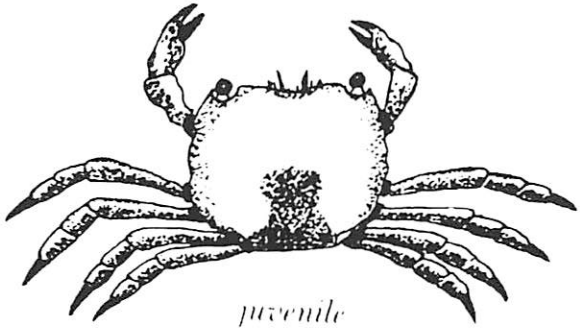
Commercial Value: None

Comments: This crab actively decorates itself, picking up seaweeds and other materials and fixing them to its carapace with a sticky glue from its mouth.

Purple Shore Crab



adult



juvenile

Information

Common Name: Purple Shore Crab

Latin Name: *Hemigrapsus nudus*

Phylum: Arthropoda

Range: From Yakobi Island, Alaska to Baja California. Uncommon in southern California and southward.

Habitat: Well-drained rocky beaches where boulders rest on sand or gravel. At the high tide or middle tide zones, this crab hides under rocks, in crevices, or among seaweeds in tidepools.

Quick Identification: Reddish or reddish-purple with distinct purple spots on the pincers. Small specimens come in great varieties of color, and have intriguing white designs on their carapace.

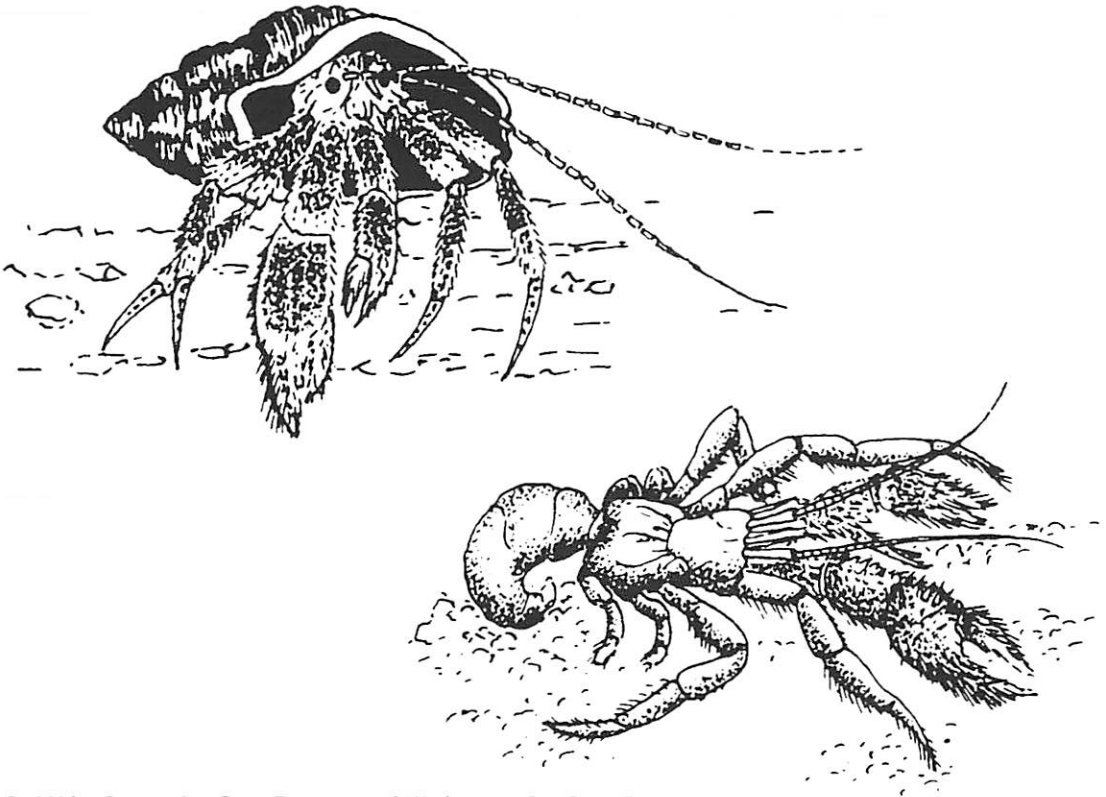
Predators: Shore birds and fish that swim in from deep water

Feeding Type: Purple Shore Crabs, along with other scavengers of the seashore, act as a garbage disposal system by recycling waste materials from the seashore. Also feeds on algae and diatoms scraped from the rocks with its claws.

Commercial Value: None

Status: Common

Hairy Hermit Crab



Information

Common Name: Hairy Hermit Crab

Latin Name: *Pagurus hirsutiusculus*

Phylum: Arthropoda

Range: Alaska to southern California

Habitat: Found along protected and exposed coastlines; in tidal pools between and under rocks, and under masses of seaweeds.

Quick Identification: The Hairy Hermit Crab can be distinguished from other hermit crabs by its general hairiness. Other characteristics are white spots on the antennae and white or pale blue bands around the legs. Larger specimens prefer the shells of whelks.

Predators: The Hairy Hermit Crab is the prey of a variety of different organisms, such as shore birds and crab-eating fish like Kelp Greenlings. It is particularly vulnerable when seeking a new shell home.

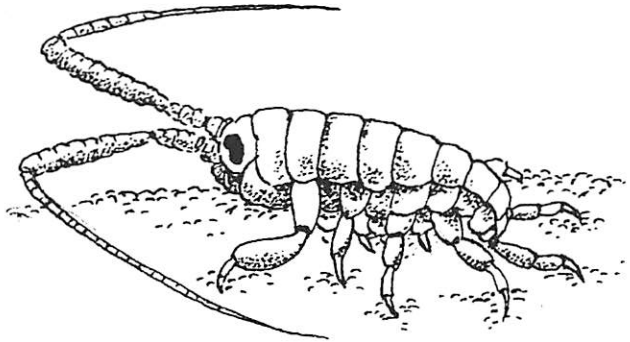
Feeding Type: The Hairy Hermit Crab feeds primarily on detritus, and will scavenge on dead plant and animal materials.

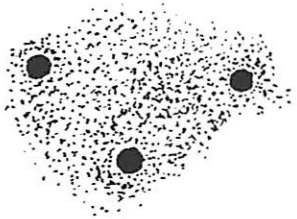
Commercial Value: Has no commercial value.

Status: Common

Comments: Hermit crabs never lose interest in their lifelong search for a suitable home. Because their lower abdomen is soft and curled, as they grow they must constantly find larger shells to protect their bodies. The hermit crabs, therefore, often fight vicious battles over empty snail shells.

Beach Hopper





Information

Common Name: Beach Hopper

Latin Name: *Orchestoidea californiana*

Phylum: Arthropoda

Range: British Columbia to southern California

Habitat: Beach Hoppers are common on wide, fine-sand beaches along open shorelines, near the high tide line and above.

Quick Identification: The largest Beach Hopper in this region, the California Beach Hopper, reaches a body length of about 2.5 cm and has a pair of long, thin, bright orange antennae. Its body is generally grayish brown, ivory white, or brownish white in color.

Predators: The Beach Hopper is fed upon by shorebirds, certain beetles, and raccoons.

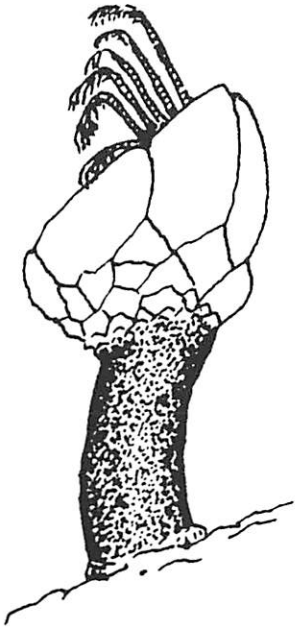
Feeding Type: California Beach Hoppers are scavengers on washed-up seaweed at low tide.

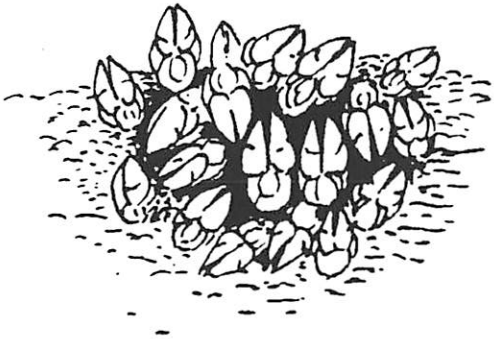
Commercial Value: None

Status: Common

Comments: Large numbers of California Beach Hoppers live under clumps of seaweed, which provide them with food and protection from daytime heat, winds, and predators.

Goose Neck Barnacle





Information

Common Name: Goose Neck Barnacle

Latin Name: *Pollicipes polymerus*

Phylum: Arthropoda

Habitat: In the middle intertidal zone, on exposed rocky shores, generally in clusters with the beds of California Blue Mussels

Quick Identification: The leathery stalk, or "neck," is generally about 2 cm, and the upper part of the brownish-red body covered with white plates of varying sizes. Use your imagination and this barnacle looks a little bit like the head of a goose.

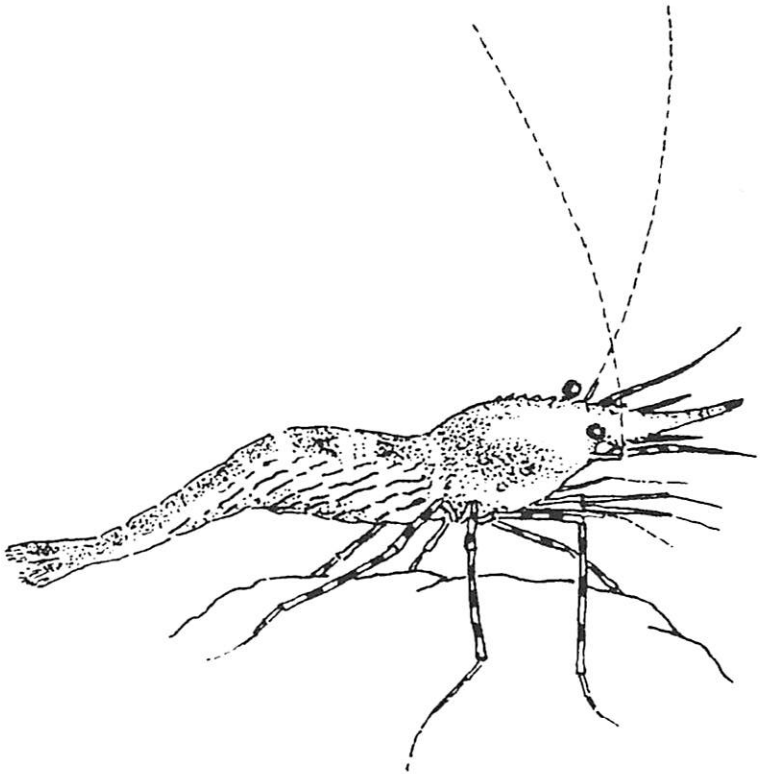
Feeding Type: A filter feeder, this barnacle feeds by putting its feathery legs into the current to strain plankton and large particles of detritus (decaying plant and animal matter) from the seawater.

Commercial Value: A delicious sea food, the Gooseneck Barnacle is occasionally sold to seafood restaurants, and is harvested for export to Europe.

Status: Common

Comments: This barnacle is specially adapted for life in a violent world: its tough elastic stalk bends back and forth with the surf. Stay well away from the breaking waves when observing this barnacle, because it lives where unpredictably strong currents and rushing waves beat the shore.

Coon-striped Shrimp



Information

Common Name: Coon-striped Shrimp

Latin Name: *Pandalus danae*

Phylum: Arthropoda

Range: Alaska to central California

Habitat: Found around dock pilings and floats, in eelgrass beds, and in sandy or gravely bottoms where there is a rapid current

Quick Identification: This is a large shrimp about 146 mm long. Body is pale red with blue stripes and sometimes white spots. Legs are striped brown and white.

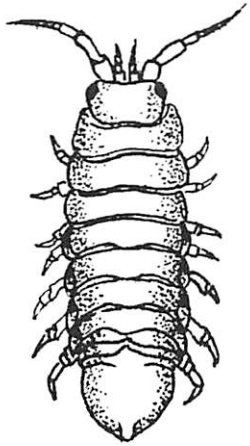
Predators: These shrimps are of enormous value to the marine community; they provide food for many invertebrate animals, fishes, and birds.

Feeding Type: These shrimps are carnivores, catching and scavenging tiny food in the water.

Commercial Value: Coon-striped Shrimps form the basis for the commercial shrimp industry.

Status: Common

Rockweed Isopod



Information

Common Name: Rockweed Isopod

Latin Name: *Idotea wosnesenskii*

Phylum: Arthropoda

Range: Alaska to southern California

Habitat: Common in mussel beds, under rocks, and among seaweeds in bays and exposed rocky shores, between the high- and low-tide lines.

Quick Identification: This isopod is approximately 1 cm long and has a long, flattened body with seven pairs of legs of about equal size. It may be light brown, green, or olive-brown.

Predators: The Rockweed Isopod is eaten by a variety of shallow water fishes.

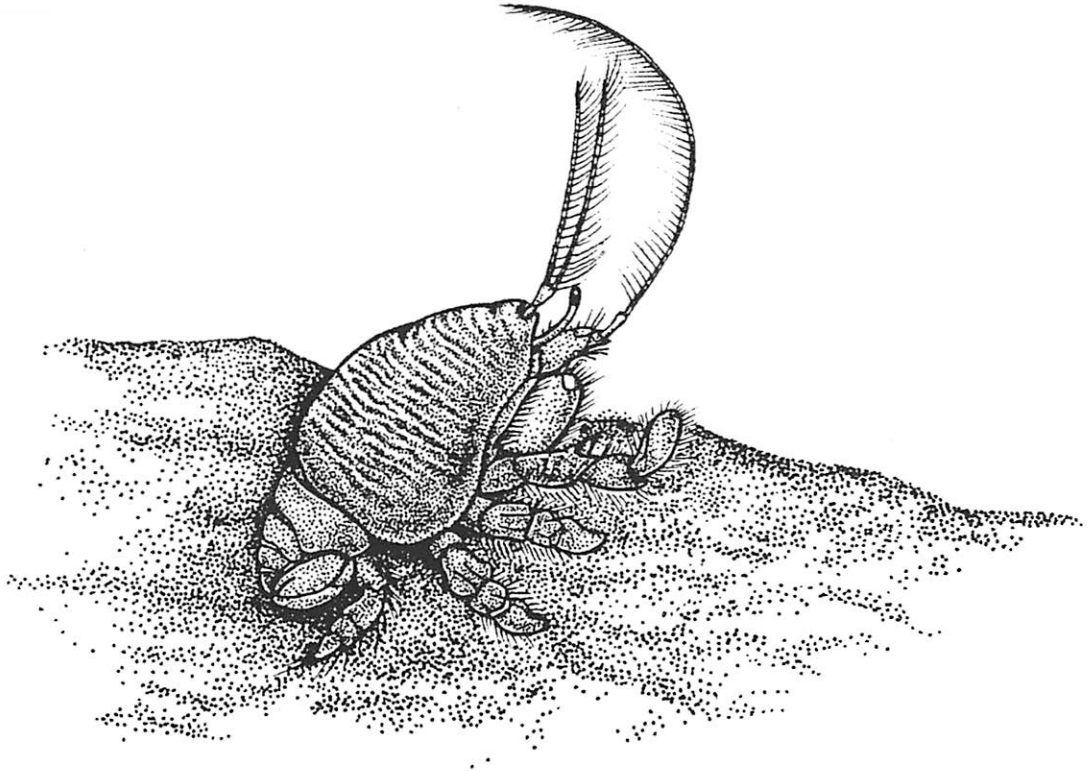
Feeding Type: Most isopods feed on detritus, seaweeds, and the eggs of seashore animals.

Commercial Value: None

Status: Common

Comments: This isopod is well-camouflaged against the olive-green Rockweeds that it eats and from which it gets its own color. Its tight grip on the seaweed fronds keeps a flattened body shape that perfectly matches the width and shape of the seaweed.

Pacific Mole Crab



Information

Common Name: Pacific Mole Crab

Latin Name: *Emerita analoga*

Range: Alaska to Peru and Chile

Habitat: On open, sandy surf-swept beaches, usually burrowed in sand between low- and high-tide lines.

Quick Identification: The carapace of the Mole Crab is oval, about 35 mm long, and green or sand-colored. The first pair of legs lacks claws, and the tailpiece is shaped like a spear head.

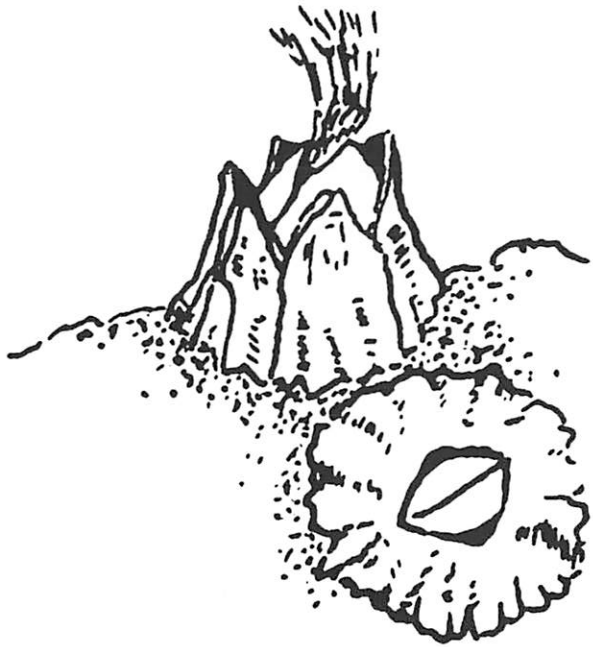
Predators: Mole Crabs are eaten by many shorebirds, fishes, and swimming crabs. Dead Mole Crabs form the main diet of certain sand crabs and beach isopods.

Feeding Type: These crabs use their long, feathery antennae to strain small food particles from the water along the tide line.

Commercial Value: None

Status: Common

Common Acorn Barnacle



Information

Common Name: Common Acorn Barnacle

Latin Name: *Balanus glandula*

Phylum: Arthropoda

Range: Found along the entire length of the Pacific Coast

Habitat: All types of coastlines, exposed, protected, and transitional, on rocky shores, often found in high to low intertidal zones.

Quick Identification: A very abundant barnacle with dingy white, heavily ribbed plates, and reaching a width of 1.5 cm. Barnacle shells are made up of a number of plates: some from the volcano-like wall, and the rest, when drawn together, tightly cover the opening to create a protective, moist chamber for the soft, shrimp-like animals inside.

Predators: The Common Acorn Barnacle is consumed primarily by the Wrinkled Whelk and by some species of fish, crabs, and sea stars.

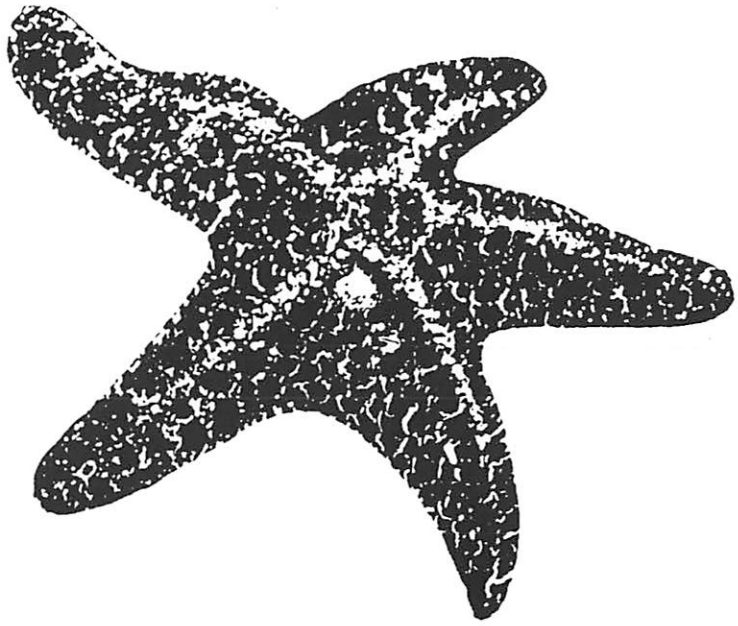
Feeding Type: Barnacles are filter feeders. When covered with sea water, they thrust groups of feathery plumes in and out. Each plume is made up of six jointed legs, or cirri, and works like a net to sweep the water for microscopic food.

Commercial Value: The Common Acorn Barnacle has no commercial value.

Status: Common

Comments: Barnacles regularly molt, or shed their thin inner covering, to allow room for their bodies to grow, and during the spring and summer their clear cast-off skins float in the quiet waters of protected bays.

Purple or Ochre Sea Star



Information

Common Name: Common Purple or Ochre Sea Star

Latin Name: *Pisaster ochraceus*

Phylum: Echinodermata

Range: Alaska to Baja California

Habitat: Found along exposed as well as protected rocky shores, well above low tide line and sometimes below. Usually found close to mussel or shellfish beds.

Quick Identification: This is the most abundant intertidal sea star, with large specimens growing to about 30 cm across. This sea star is harsh to the touch because it has many blunt spines. The color varies greatly: specimens on the surf-swept outer coast and along southern Pacific coastlines are generally orange (ochre). Those in more protected and more northerly waters are generally purple.

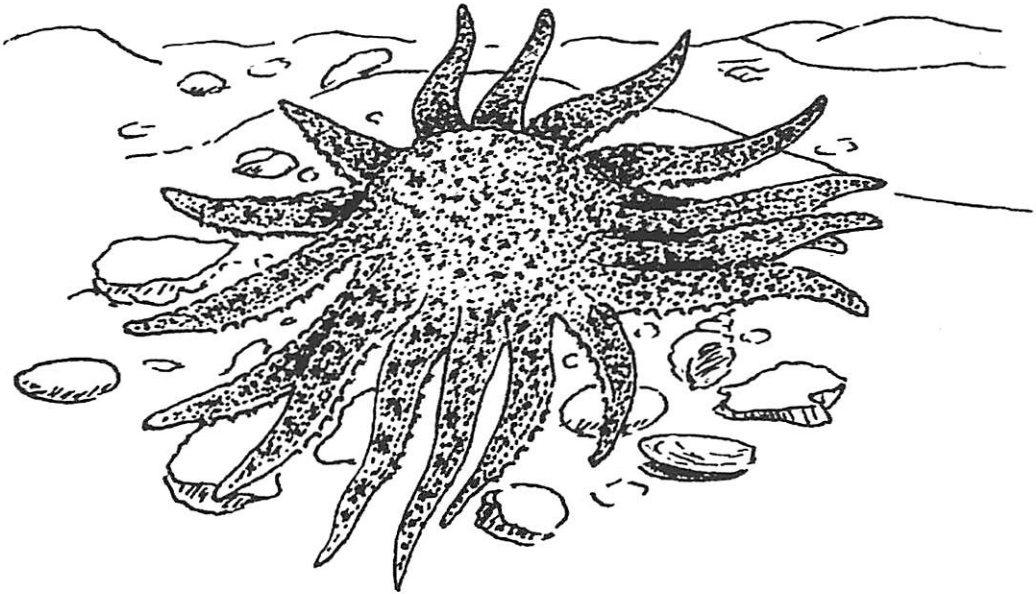
Predators: The Purple or Ochre Sea Star is consumed by a variety of organisms such as gulls and fish. However, once this sea star fastens itself to a rocky surface, it is very difficult to dislodge.

Feeding Type: The Purple or Ochre Sea Star is a predator. It feeds primarily on clams, mussels, oysters, and barnacles. When attacking a shellfish, the sea star uses its tube feet to pull and pull, until slowly the muscle holding the two shells together begins to gape slightly. The sea star quickly slips its bag-shaped stomach from itself into the shellfish. The stomach secretes enzymes, and as the tissues of the prey soften, the sea star extends its stomach farther into the open space and digests the animal right inside its own shell.

Commercial Value: Little value other than being dried and sold in handicrafts and souvenirs.

Status: Common

Sunflower Star



Information

Common Name: Sunflower Star

Latin Name: *Pyncnopodia helianthoides*

Phylum: Echinodermata

Range: Alaska to southern California

Habitat: On rocky shores and soft bottoms (sand and mud); from low tide to 437 m deep

Quick Identification: Bright pink, purple, or orange, and possibly the largest of the sea stars, having a spread quite commonly of 60 to 80 cm. When this sea star is young it has 6 rays (arms); as it ages the number of rays increases up to 24.

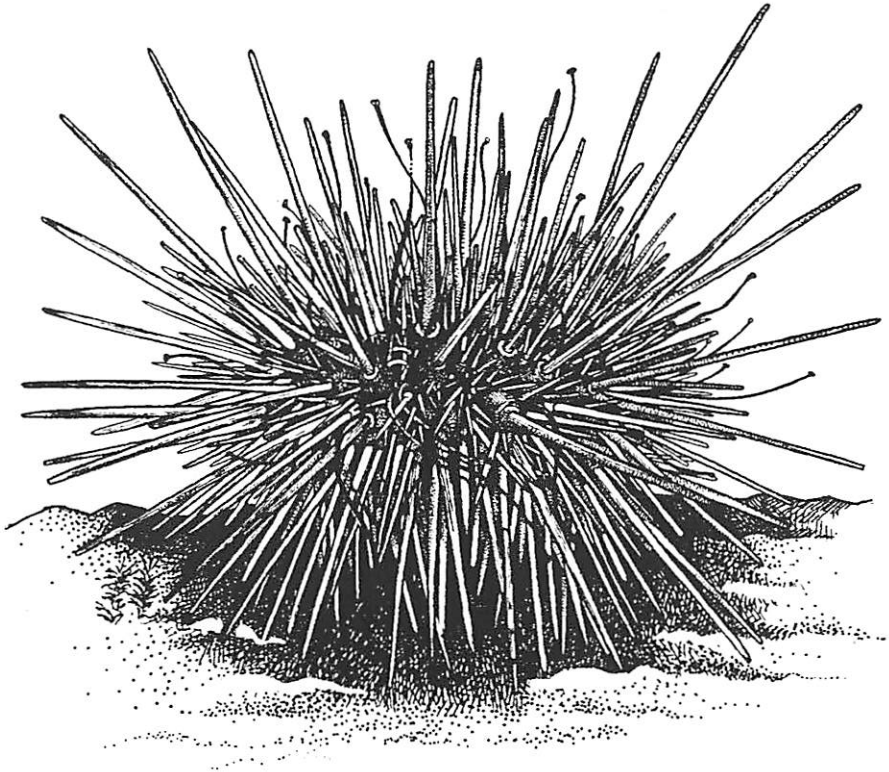
Predators: Because of its large size it has very few predators.

Feeding Type: The Sunflower Star is a voracious predator. It consumes almost everything in its path—shellfish, urchins, crabs, fish eggs—and is also known to scavenge on dead fish. If placed in a populated tidepool, organisms try to escape from the Sunflower Star.

Commercial Value: None

Comments: The Sunflower Star is the fastest sea star afoot, moving about 2 m a minute; this speed enables it to catch its prey.

Red Sea Urchin



Information

Common Name: Red Sea Urchin

Latin Name: *Strongylocentrotus franciscanus*

Phylum: Echinodermata

Range: Alaska to Baja California

Habitat: The Red Sea Urchin inhabits the rocky shores of exposed coastlines that receive some protection from surf, from the low-tide mark to water that is 91 m deep.

Quick Identification: These bright red "sea porcupines" have long tube feet and long, sharp, bristling spines. Sea urchins have five movable teeth, which come together to form a powerful scraper. Look for the brittle white "shell," or test, with its five-point star pattern, which is left behind when the animal dies.

Predators: The Red Sea Urchin is preyed upon by a variety of organisms, from fish to shore birds, and in particular the Sea Otter. The Sea Otter keeps the sea urchin population from becoming too large, thus preventing the destruction of kelp beds.

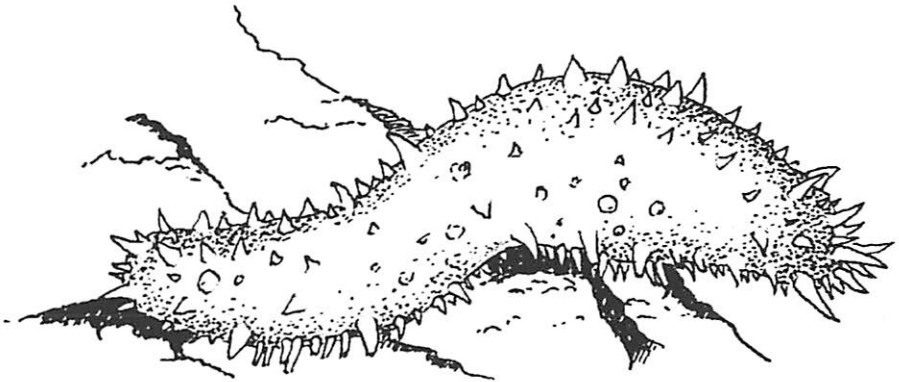
Feeding Type: The Red Sea Urchin is a grazer that feeds primarily on seaweeds, most commonly kelp. Sometimes they destroy whole kelp beds by cutting away holdfasts (the lower portions) of the plant.

Commercial Value: The Red Sea Urchin is harvested primarily for export to Japan, where the urchin's ovaries (or sea urchin roe) are considered a delicacy. Many indigenous groups along the Pacific Coast also harvest the sea urchin for food.

Harvesting Methods: Commercially, Red Sea Urchins are harvested by divers. However, during a low tide urchins can be gathered by hand.

Status: Common

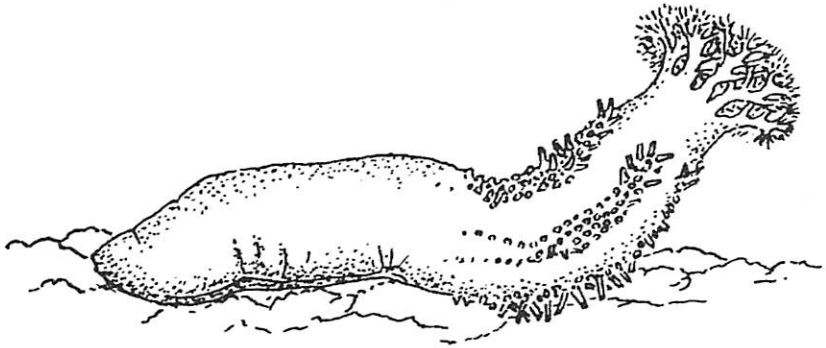
Giant California Sea Cucumber



Information

Common Name:	Giant California Sea Cucumber (Stichopus)
Latin Name:	*Parastichopus californicus*
Phylum:	Echinodermata
Range:	Alaska to Baja California
Habitat:	On protected shores and cobblestone beaches mixed with sand and mud; and on pilings in clean, quiet waters from low tide to water 91 m deep.
Quick Identification:	A strange-looking creature something like a large, reddish-brown dill pickle covered with many large warts. Rows of tube feet on the underside of the body are used for attaching and moving, and 15 mop-like, branched tentacles surround the mouth. When undisturbed, it can stretch to 45 cm, but when annoyed it contracts to 15–20 cm, and becomes very firm.
Predators:	This sea cucumber has a variety of different predators from birds to fish. However, the Giant Sea Cucumber has a unique way of protecting itself. When severely disturbed, it spews out its internal organs, gut tract, respiratory tree, stomach, and all. While the predator is consuming the internal organs, the sea cucumber moves away and begins growing new internal organs.
Feeding Type:	The Giant Sea Cucumber is both a detritus and filter feeder. It uses stumpy, mop-like appendages to sweep small organisms and debris into its mouth.
Commercial Value:	Historically, the Giant Sea Cucumber had little or no commercial value although it has always been a valued seafood of Pacific Coast indigenous people. Today, it is harvested by divers and sold to Japan as a seafood delicacy. Oriental merchants boil and dry the muscular body wall and sell it as "trepang."
Status:	Common except in areas of intensive sea product harvest.

Orange Sea Cucumber



Information

Common Name: Orange Sea Cucumber

Latin Name: *Cucumaria minitata*

Range: Alaska to central California

Habitat: Abundant under rocks and in crevices near the low tide line of the rocky intertidal region

Quick Identification: This sea cucumber, which can grow to a length of 20 cm, is often bright orange in color, but may range from pinkish-white to brown or purple. It has rows of tube feet and 10 branched feeding tentacles, which are bright orange in color.

Predators: Certain predatory sea stars prey on the Orange Sea Cucumber.

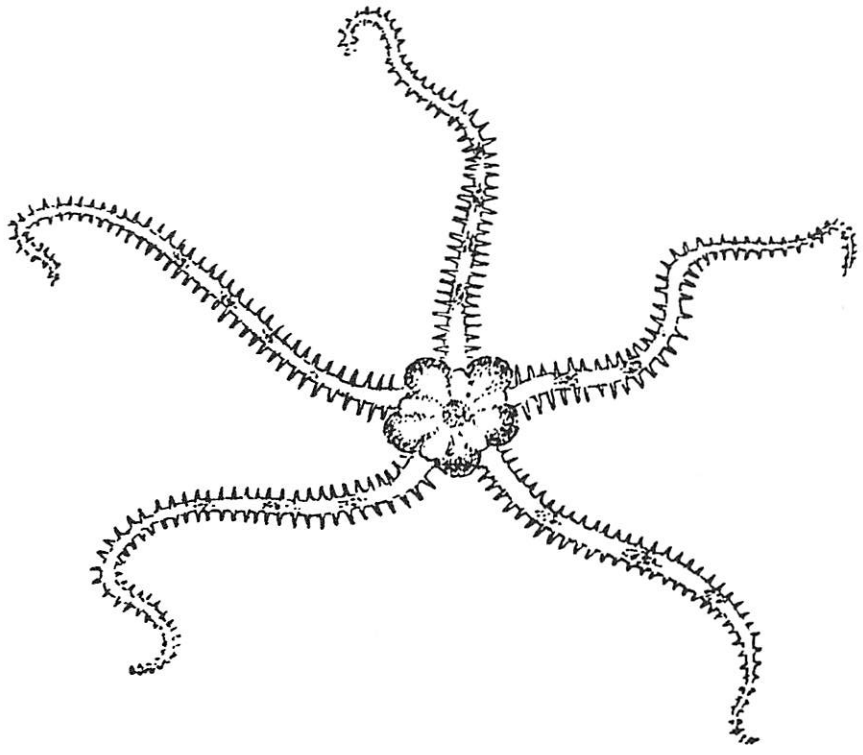
Feeding Type: The feeding tentacles are used to filter small organisms and detritus suspended in the water.

Commercial Value: None

Status: Common

Comments: When undisturbed, this cucumber often lies with its body curved in a U shape so that the mouth and anal openings are exposed to the moving water.

Daisy Brittle Star



Information

Common Name: Daisy Brittle Star

Latin Name: *Ophiopholis aculeata*

Phylum: Echinodermata

Range: Bering Sea to southern California

Habitat: Found on rocky shores, usually in the lower intertidal zone in crevices and between tight-fitting rocks

Quick Identification: This is a beautiful sea star with brightly colored bands, spots, and lines on the central disk, and long, snaky arms.

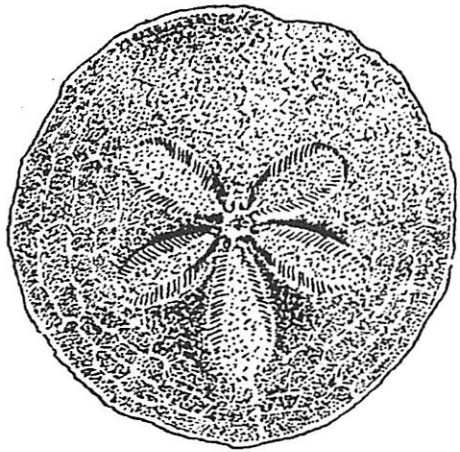
Feeding Type: These brittle stars feed on diatoms and detritus suspended in the water.

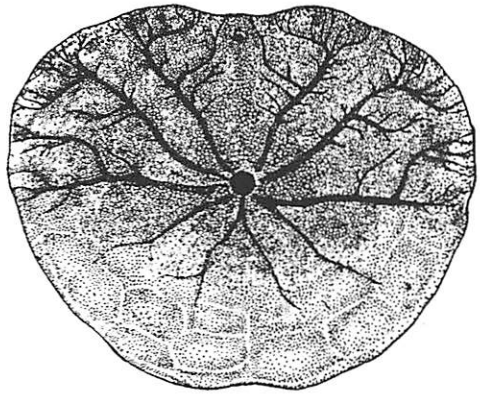
Commercial Value: None

Status: Common

Comments: Brittle Stars move rapidly when disturbed, using their arms rather than tube feet to pull and push themselves over a surface. They are so named because of their ability to easily lose an arm and grow it back again.

Sand Dollar





Information

Common Name: Sand Dollar

Latin Name: *Dendraster excentricus*

Phylum: Echinodermata

Range: Alaska to Baja California

Habitat: On clean sandy bottoms of sheltered bays, and on clean beaches of the surf-swept open coast. Lives from the low-tide line to water 40 m deep.

Quick Identification: The familiar Sand Dollar has a gray or purplish flattened body, and tube feet and spines so small and densely packed that the living animal looks and feels like velvet.

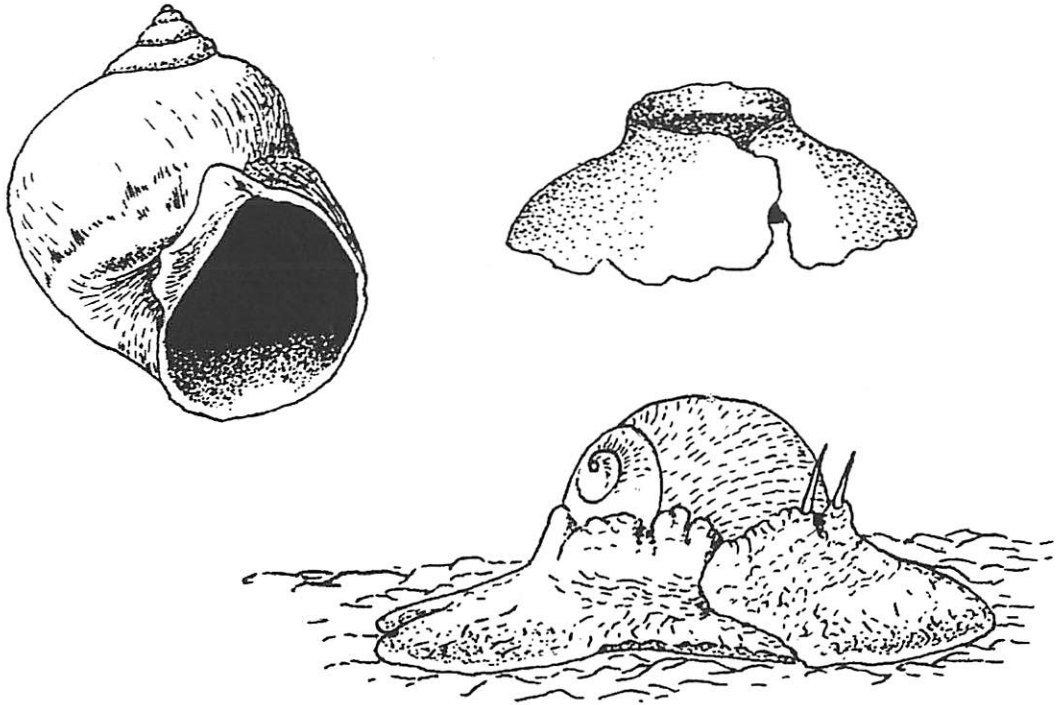
Feeding Type: A detritus feeder that eats decayed plant and animal matter. It slowly plows along and selects grains of sand covered with small, edible particles, such as diatoms and detritus, and passes them along food tracts located on the underside and lined with microscopic hair-like cilia. The food is passed to the mouth located at the center of the shell.

Commercial Value: Of little commercial value, occasionally used in handicrafts and souvenirs.

Status: Common where there are clean sandy beaches.

Comments: The Sand Dollar is closely related to sea urchins and sea stars. Living specimens are seen less frequently than the familiar white shells, or tests, cast up on the beach during high tides.

Moon Snail



Information

Common Name: Moon Snail

Latin Name: *Polinices lewisii*

Phylum: Mollusca

Range: Vancouver Island, British Columbia, south to Baja California.

Habitat: The Moon Snail inhabits clean sandy beaches protected from heavy surf, and fairly protected beaches where the sand is mixed with mud, intertidal to water 183 m deep. It is not often seen, for it finds its food by burrowing beneath the surface of the sand and mud.

Quick Identification: One of the largest snails on our coast. Its light brown shell is about 12 cm in height and made up almost entirely of one great whorl.

Predators: Consumed by raccoons and a variety of different shore birds

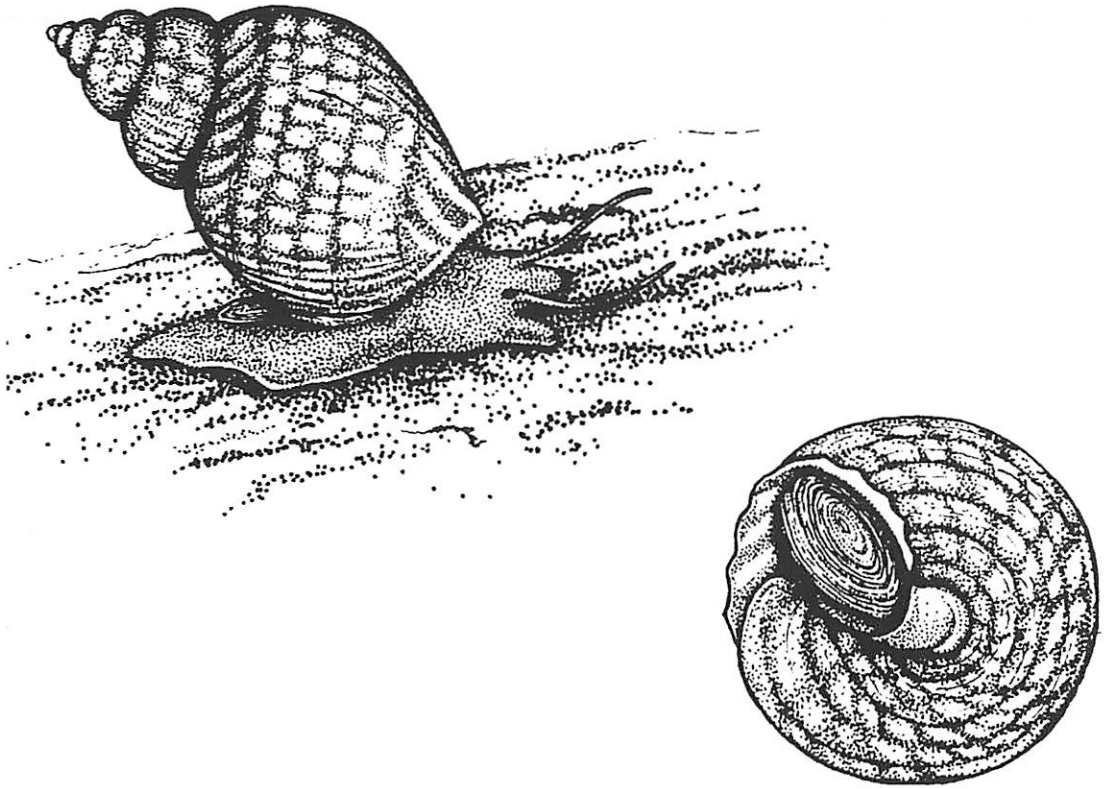
Feeding Type: The Moon Snail is a predator that feeds on shellfish, clams, mussels, and oysters. It kills its prey by drilling a neat counter-suction hole through the shell of its victim; the drilling is done with its radula and is aided by chemical secretions. Once finished, the Moon Snail rasps out and consumes the shellfish's soft body tissues. Occasionally the Moon Snail suffocates its victim by using its large, fleshy foot.

Commercial Value: Of little commercial value; occasionally collected for its large shell

Status: Common, except where unthinking beachcombers have taken them for their shells

Comments: Moon Snails lay thousands of tiny eggs, which become pressed together with particles of sand to form a collar-like ring around the snail's shell. During high tide, at about mid-summer, the egg case crumbles and half a million or so free-swimming larvae (young Moon Snails) are released into the sea.

Checkered Periwinkle



Information

Common Name: Checkered Periwinkle

Latin Name: *Littorina scutulata*

Phylum: Mollusca

Range: Alaska to Baja California

Habitat: The periwinkle is found high in the intertidal along rocky shores.

Quick Identification: Small, dingy brownish snails often showing a checkerboard pattern of white, brown, and bluish-black. The largest reach a length of 1 cm.

Predators: The periwinkle is consumed by a variety of different organisms from birds to fish.

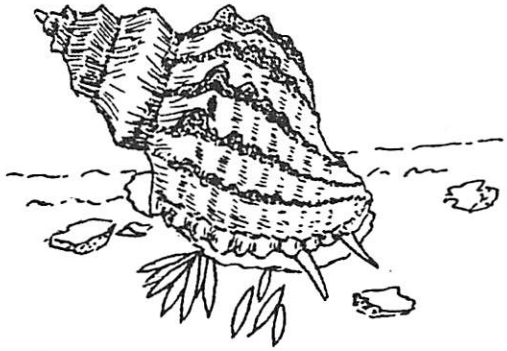
Feeding Type: This snail is a grazer that feeds primarily on the black lichens and algae that grow on the rocks.

Commercial Value: None

Status: Common

Comments: Even though the periwinkle is considered a marine organism, it has the ability to stay out of water for days. It is usually the highest organism found on a rocky shore. Like all snails, it has an operculum, a hard, bony plate at the tip of the foot. To keep from drying out when the tide is out, the snail withdraws into its shell and closes its operculum like a trap door, to create a moist chamber inside its shellhouse.

Wrinkled Whelk



Information

Common Name: Wrinkled Whelk

Latin Name: *Nucella lamellosa*

Phylum: Mollusca

Habitat: On rocky or cobble beaches, clinging to the rocks or living on the overhangs of the middle- and lower-tide zone, on both protected and exposed shores.

Quick Identification: The shell of this snail is variable: some have light, fragile, and very ornamental shells; others are extremely heavy and show few frills and ornaments. The shell usually has seven whorls; reaches a length of 4 to 7 cm; and can be white, yellow, orange, purple, brown, or gray.

Predators: The adults are preyed upon by shore birds and large fish; the egg capsules are preyed upon by other animals; and only 10% develop to reach 1 year of age.

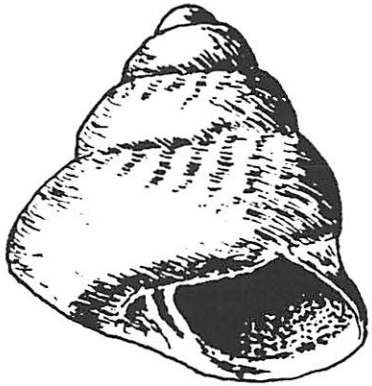
Feeding Type: This carnivorous snail uses its file-like tongue, or radula, to drill a hole through the shell of its prey and suck the soft flesh. Like other whelks it prefers acorn barnacles, but also feeds on clams, oysters, and mussels.

Commercial Value: None

Status: Common

Comments: In the spring and summer, look for the large clusters of their yellow egg cases on the undersides of moist rocks. Commonly called "sea oats," the egg cases are the size of large oat grains.

Brown Turban



Information

Common Name: Brown Turban

Latin Name: *Tegula Brunnea*

Phylum: Mollusca

Range: Found from British Columbia to southern California, and is more abundant in Oregon and California

Habitat: This species occurs low in the intertidal zone and in deep water; and on the upper blades and stipes of kelp offshore.

Quick Identification: A rather large shell to 30 mm in diameter; smooth, round, and shaped something like an old-fashioned toy top; orange or bright brown.

Predators: Adult snails are preyed upon by sea stars such as the Common Purple Star. Some are taken by Sea Otters and by the Edible or Dungeness Crab.

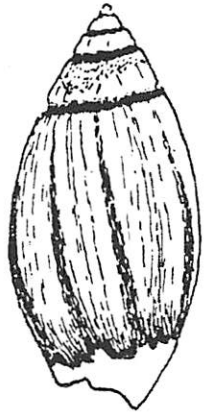
Feeding Type: A herbivore grazing on seaweeds, especially Giant Kelp and Feather Boa Kelp. When in kelp forests, the snails more commonly feed on the stems and fronds near the top of the kelp-forest canopy, than at the holdfasts.

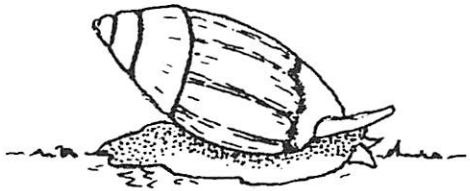
Commercial Value: None

Status: Common

Comments: This species commonly gives "piggyback" rides to other snails, especially to the slipper shells. The empty shells are used by larger hermit crabs. The brown turban snail is common in the southern portion of its range. From the Oregon coast and north, the closely related Black Turban Snail is commonly seen.

Purple Olive Snail





Information

Common Name: Purple Olive Snail

Latin Name: *Olivella biplicata*

Phylum: Mollusca

Range: Vancouver Island, British Columbia to Baja California

Habitat: Common on sandy bottoms in lagoons, bays, and protected areas along the open coast; from low-tide line to water 46 m deep.

Quick Identification: The shell of this snail may be 1.3 to 3.8 cm high, oval, smooth, and shiny. Its color may vary from all white to lavender or grayish black with dark purplish lines outlining the edges of the whorls. The Purple Olive Snail has a large foot, which curves back over the shell as the snail pushes through the sand.

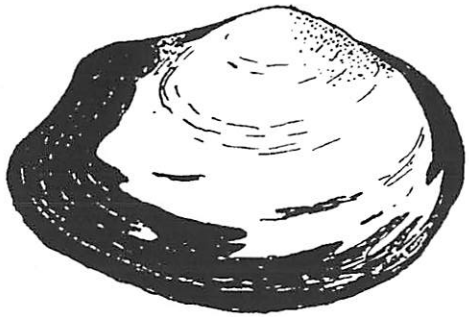
Predators: Purple Olive Snails are fed upon by octopuses, moon snails, and sea stars; by gulls and other shorebirds; and by crabs and fishes.

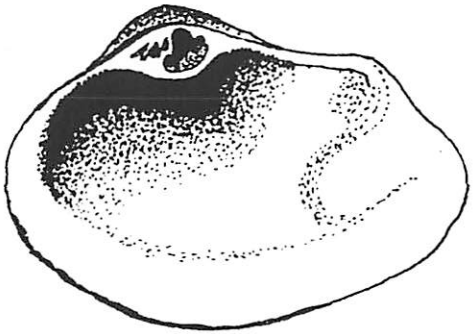
Feeding Type: This snail is a scavenger, feeding on kelp pieces and a variety of fresh and partially decayed animals such as other mollusks.

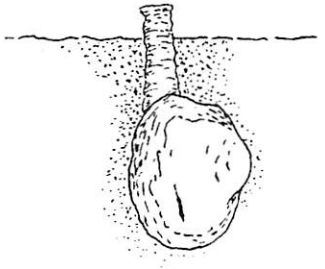
Commercial Value: This snail is sometimes collected by people and boiled for its beautiful shell, and sold in stores as ornaments.

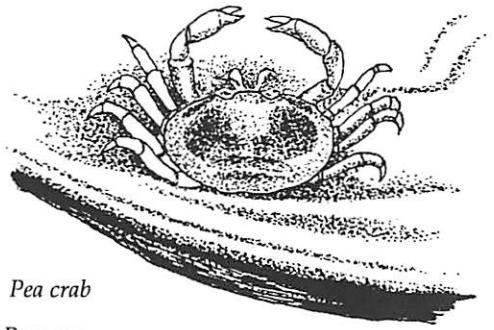
Status: Common except where over-enthusiastic beach collectors have seriously reduced their numbers

Horse Clam









Pea crab

Information

Common Name: Horse Clam

Latin Name: *Tresus capax*

Phylum: Mollusca

Range: California to British Columbia

Habitat: Soft, sandy mud flats; low intertidal zone in bays and on sheltered bottoms; offshore to depths of 30 m

Quick Identification: A very large clam, 14–19 cm long; white shells, usually smooth, with concentric lines and covered with a thin brown skin that peels off easily. Long, leathery siphon.

Predators: Moon Snails, crabs, some sea stars, and humans prey on this clam.

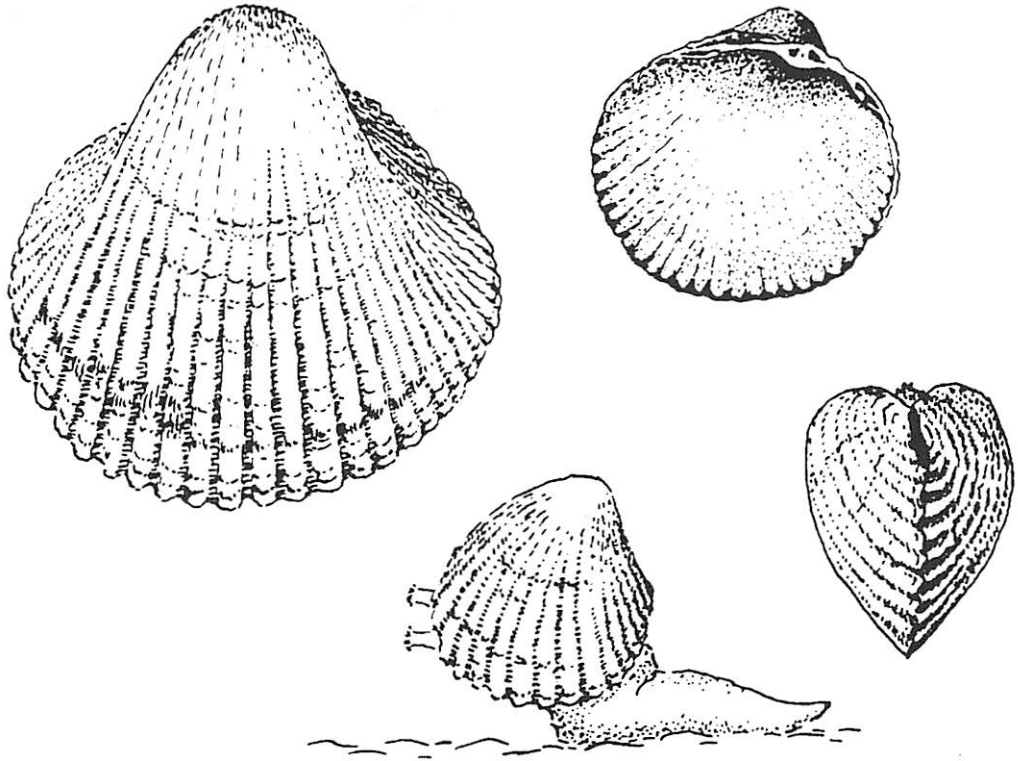
Feeding Type: Horse Clams are filter feeders.

Commercial Value: Horse Clams are a more popular clam to harvest on a small, local scale rather than commercially, because the meat dries out in storage. Both siphon and body are eaten.

Status: Common

Comments: Inside the shell of almost every Horse Clam lives at least one pair—a male and a female—of soft-bodied Pea Crabs, *Pinnixa faba*, each about 1.5 cm across the carapace. By living in a commensal relationship with the clam, these crabs are protected from predators and obtain their food from the sea water brought in through the clam's siphon.

Heart Cockle



Information

Common Name: Heart Cockle

Latin Name: *Clinocardium nuttallii*

Phylum: Mollusca

Range: Bering Sea to southern California

Habitat: Common in mud or muddy sand of sheltered bays and estuaries, and in eelgrass flats. Lives on or just beneath the surface of fine sediments.

Quick Identification: The two shells of this rather striking clam are thick, with strong ribs running up and down from the hinge. Viewed from the side, the shells have a heart-shaped profile. Young cockles are pale yellow and mottled; older cockles are reddish-brown.

Predators: Heart Cockles are the food of predatory sea stars such as the Common Purple Star and the Sunflower Star; as well as carnivorous snails.

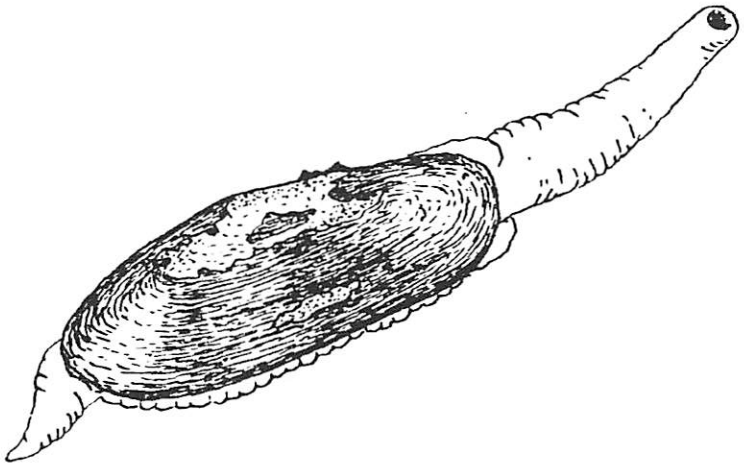
Feeding Type: Cockles filter food particles from sea water taken in through the animals' small siphons.

Commercial Value: There is a small commercial market for Heart Cockles in the Puget Sound area as well as in British Columbia.

Status: Common

Comments: Place this active clam in a tidal pool with sea star predators. The clam will react violently, pushing itself around, and may even flip over, trying to escape by burrowing.

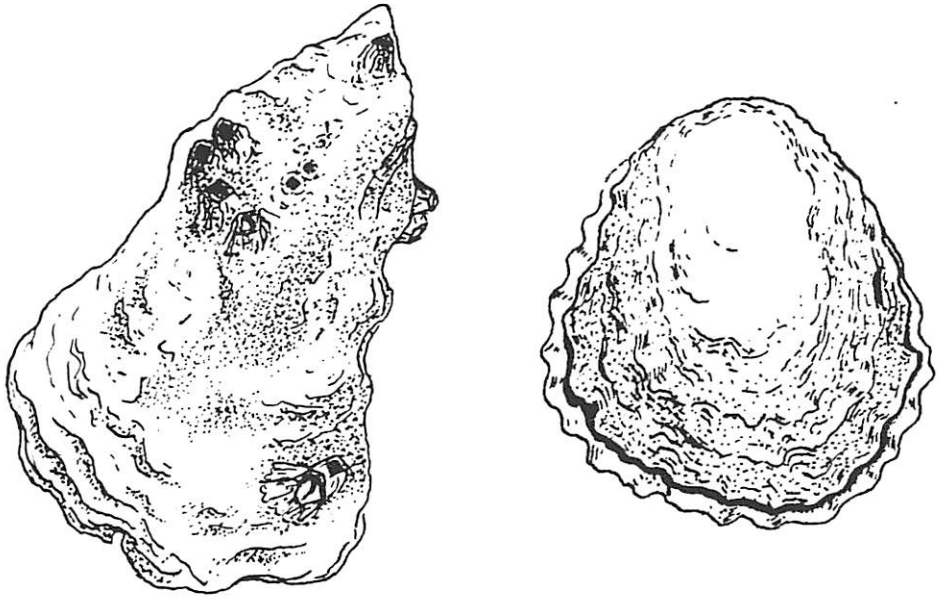
Razor Clam



Information

Common Name:	Razor Clam
Latin Name:	*Siliqua patula*
Phylum:	Mollusca
Range:	Alaska to central California
Habitat:	Buried in the sand at the lowest tide level on violent surf-swept sandy beaches of the exposed outer coast
Quick Identification:	The Razor Clam has a long, thin, brittle shell that is tan or olive-green in color and reaches a length of 15 cm.
Predators:	Razor Clams are consumed by Starry Flounders and humans.
Feeding Type:	Razor Clams are filter feeders. They extend their siphon to the surface and filter food from the sea water.
Commercial Value:	Razor Clams are highly regarded as food by people. They are taken by commercial diggers as well as weekend harvesters.
Status:	Common; however, on some beaches, restraint from digging for these clams is required to avoid depleting their population.
Comments:	These clams are very fast burrowers in sand. Using their muscular foot to pull themselves downward, they depend on speed in digging for protection from large waves and from enemies.

Japanese Oyster



Information

Common Name: Japanese Oyster

Latin Name: *Crassostrea gigas*

Phylum: Mollusca

Range: Southern Alaska to southern California

Habitat: On rocks, soft mud, or firm sand or gravel. Common to mud flats and in low intertidal zones.

Quick Identification: This is a giant oyster: the length of a large animal may exceed 25 cm. The shell is variable in shape and color, but usually has a rough, fluted surface. Young oysters settle down on empty shells or other surfaces, to which the left valve or shell becomes permanently cemented.

Predators: The main predators, besides people, are the Bat Stingray and several species of large sea stars.

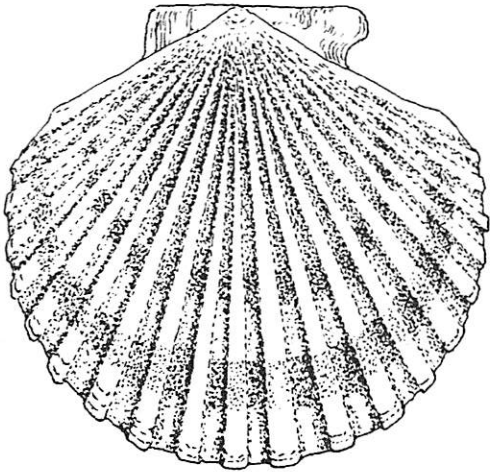
Feeding Type: Japanese Oysters are filter feeders that feed on very small plankton.

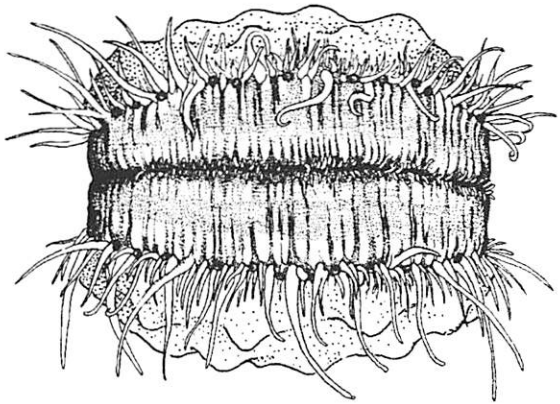
Commercial Value: Japanese Oysters have a greater commercial value than the oyster that is native to the Pacific Coast, because they grow faster and larger.

Status: Common

Comments: Japanese Oysters were cultured in Japan for 300 years and introduced to the west coast of Canada in 1902 or earlier. Undisturbed, this oyster may live more than 20 years.

Swimming Scallop

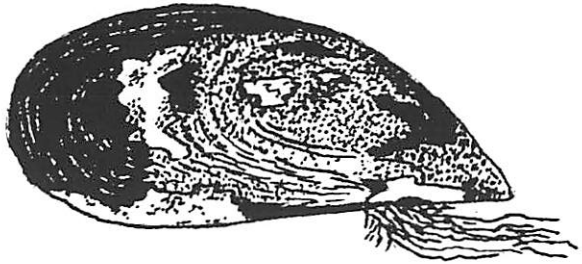


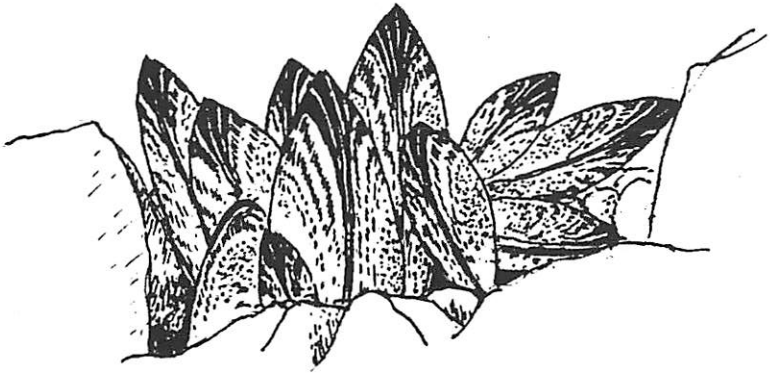


Information

Common Name:	Swimming Scallop
Latin Name:	*Chlamys hastata*
Phylum:	Mollusca
Range:	Bering Sea to southern California
Habitat:	Mainly found in deeper water, but also occurs along rocky shores, in the intertidal zone and below the low tide line
Quick Identification:	These animals have two fan-shaped shells that have alternating ridges. Around the outer edge of their shells is a striking row of simple, blue-green eyes.
Predators:	Certain predatory sea stars, such as the Sunflower Sea Star; anemones; and birds
Feeding Type:	Scallops normally lie on the bottom with the two halves of their shell open to allow the animal to bring in water and filter microscopic food from it.
Commercial Value:	Scallops are harvested by trawlers that sweep the bottom of the ocean with nets, scooping up hundreds in a single haul. This animal has one muscle for closing its shell, and it is usually this muscle that is marketed, although the entire animal is edible.
Status:	Common
Comments:	The shells of Swimming Scallops are usually covered by an encrusting Golden Sponge. By living together, the sponge is protected from predators because the scallop swims away from its own enemies. In return, the sponge helps to protect the sea star from predatory sea stars.

California Blue Mussel

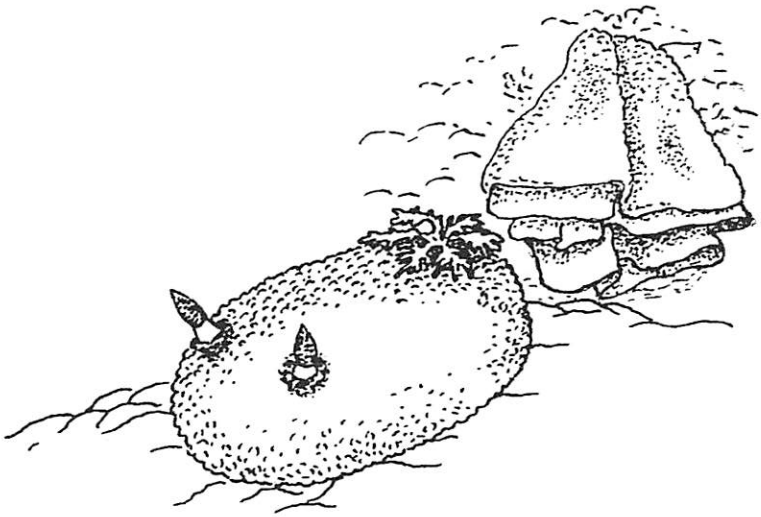




Information

Common Name:	California Blue Mussel
Latin Name:	*Mytilus edulis*
Phyllum:	Mollusca
Range:	Aleutian Islands (Alaska) to southern Baja California
Habitat:	On surf-swept rocky shores on the outer coast
Quick Identification:	The handsome, heavily ribbed shells are blue, brown, and black. The inside of the shell can be iridescent, and is generally blue-grey in color. A very large mussel can be 20 to 25 cm in length.
Predators:	Large predatory sea stars such as the Common Purple Star or the Sunflower Star, as well as carnivorous snails.
Feeding Type:	A filter feeder that strains microscopic plankton from seawater
Commercial Value:	Although the bright orange flesh is edible, the mussel is too large and tough to be of commercial value. A few specimens contain tiny pearls, but they are of no value.
Comments:	This mussel is considered an "indicator organism" for the surf-swept rocky shore.

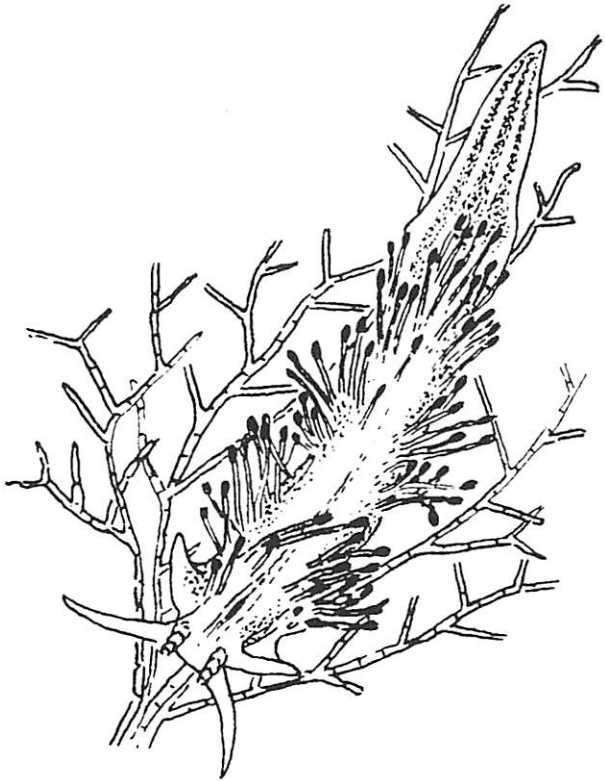
Sea Lemon



Information

Common Name:	Sea Lemon
Latin Name:	*Archidoris montereyensis*
Phylum:	Mollusca
Range:	Alaska to southern California
Habitat:	Common in the low intertidal zone on moist rocks, in tidepools, and on pilings.
Quick Identification:	This is one of the largest and most conspicuous nudibranchs, usually 6–7 cm long. Sea Lemons are bright yellow or orange in color with black, peppery dots. They have horn-like antennae at the front end and feathery gills near the rear end.
Predators:	Not known, but possibly none
Feeding Type:	These nudibranchs are predators on some sponges.
Commercial Value:	None
Status:	Common
Comments:	In the summer, Sea Lemons deposit long, ribbon-like yellow egg masses, with up to 2 million eggs, on rock and plant surfaces. After about six weeks, the eggs hatch and the tiny Sea Lemon larvae become part of the plankton.

Opalescent Nudibranch



Information

Common Name: Opalescent Nudibranch

Latin Name: *Hermissenda crassicornis*

Phylum: Mollusca

Range: Sitka Alaska to Baja California, most common in center of range

Habitat: Found in a variety of habitats; on rocky shores among seaweeds, in eelgrass beds, dock pilings, mud flats, and in kelp.

Quick Identification: This beautiful nudibranch is white with orange or red streaks, and a blue line, like a neon light, decorates each side. Generally about 4 cm long.

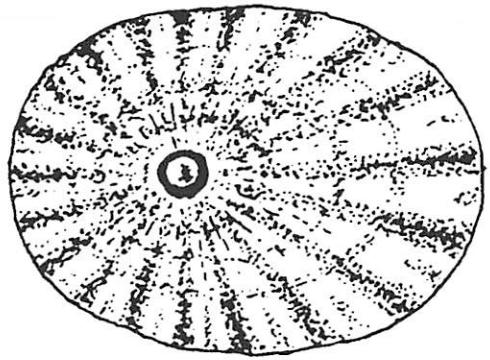
Predators: This nudibranch appears to have no natural predators. Even fish will spit them out.

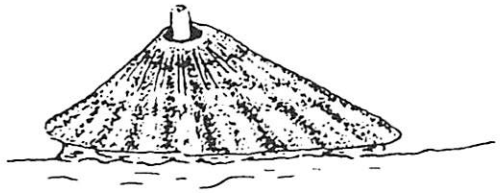
Feeding Type: Feeds on small sea anemones, snails, sea squirts, tiny clams, bryozoans, and even other Opalescent Nudibranchs.

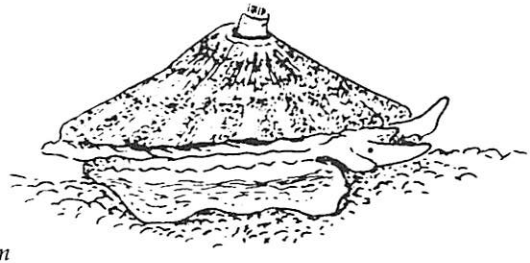
Commercial Value: None

Status: Common

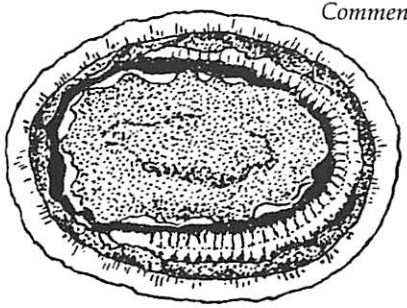
Keyhole Limpet

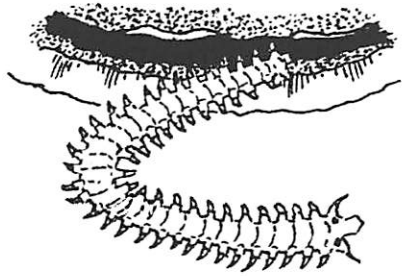






Commensal Scaleworm





Information

Common Name: Keyhole Limpet

Latin Name: *Diodora Aspera*

Phylum: Mollusca

Range: Alaska to Baja California

Habitat: This limpet is common on large boulders, under stones, or under the canopy of seaweeds, in the low intertidal zone.

Quick Identification: The Keyhole Limpet may reach a length of 7 cm. The shell is grayish gray to yellow or brown, sometimes with white or brown bands running down from the top. The top of its cone-shaped shell has an oval hole.

Predators: This limpet is preyed upon by certain sea stars. It defends itself by extending its foot, elevating the shell, and enveloping the foot and shell with mantle tissue, giving the sea star no firm place to attach its tube feet.

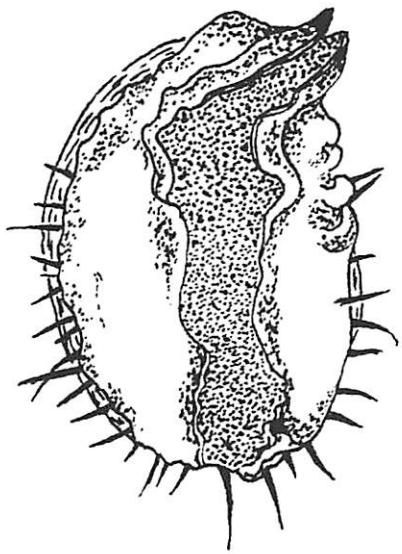
Feeding Type: Keyhole Limpets are herbivores that feed on algae.

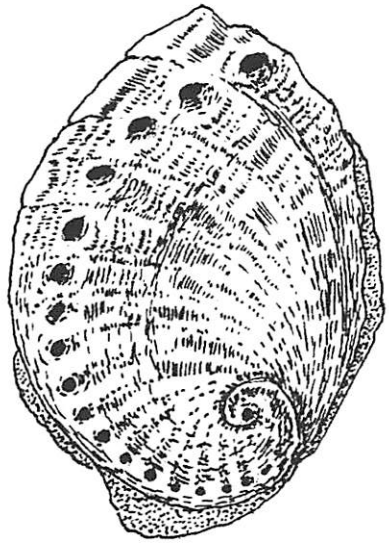
Commercial Value: None

Status: Common

Comments: Examine the underside of this limpet to see an interesting little worm tucked snugly away between the foot and the shell. The Commensal Scaleworm (*Aretonoë vittata*) receives free rent in a protected house, and may even partake of the limpet's food. In return, the limpet has an extra line of defense against its sea star predators, for the scaleworm has been observed biting the tube feet of an attacking sea star.

Northern Abalone

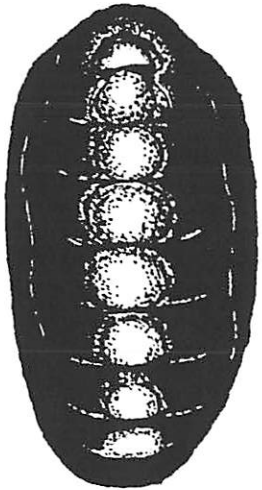




Information

Common Name:	Northern Abalone
Latin Name:	*Haliotis kamtschatkana*
Phylum:	Mollusca
Range:	Alaska to California
Habitat:	Found intertidally on rocks and also in deeper water.
Quick Identification:	This abalone has a long, thin, ear-shaped shell that is a mottled green and brown color and reaches a length of 15 cm. There are 3 to 6 holes in the shell that permit water passing over the animal's gills to leave the body, taking with it waste and toxins from digestion.
Predators:	Sea otters and predatory sea stars feed on the Northern Abalone.
Feeding Type:	Northern Abalones are grazers, using their rasping tongue or radula to scrape plant material from the surface of rocks.
Commercial Value:	Very valuable in Vancouver, B.C., although further south the Red Abalone (*Haliotis rufescens*) is preferred.
Status:	Locally common, although over-harvesting has led to a complete ban on collection in B.C.

Black Chiton



Information

Common Name: Black Chiton

Latin Name: *Katharina tunicata*

Phylum: Mollusca

Range: Alaska to Monterey, California

Habitat: Black Chitons are found in the middle and low intertidal zones, clinging to sides and upper surfaces of rocks, exposed to strong wave action and often direct sunlight, on the unprotected outer coast; also in inland marine waters associated with swift currents.

Quick Identification: This chiton attains a length of 4 to 8 cm. Its body is covered in a thick black girdle. Often attached to the body are a variety of plants and animals such as coralline algae and barnacles. A large, muscular foot enables the animal to cling to rocks.

Feeding Type: This is a herbivore that grazes on diatoms and seaweeds using a radula or file-like tongue.

Commercial Value: None

Status: Common

Pacific Octopus

Information

Common Name: Pacific Octopus

Latin Name: *Octopus dofleini*

Phylum: Mollusca

Range: California and northward to Alaska and Asia

Habitat: Found in deep water and along rocky shores, usually under a ledge, in its den between rocks, or in a tidal pool in the lowest part of the intertidal region.

Quick Identification: Probably the largest species found anywhere, with an arm length of 3 m and weighing about 45 kg. The body of the octopus is shaped like a bag with eight long arms covered in suction cups.

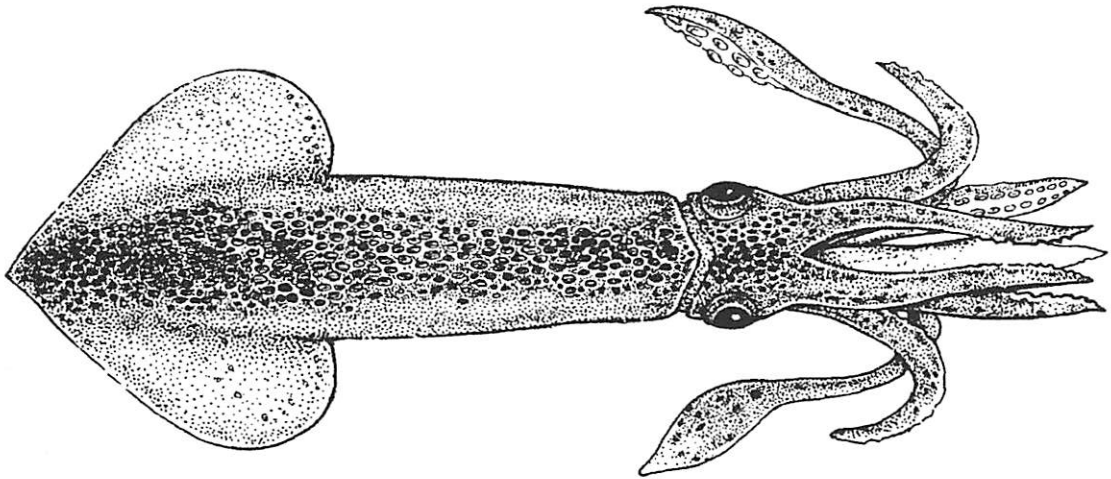
Predators: A variety of fishes and mammals feed on the Pacific Octopus.

Feeding Type: Octopuses are predators that use a pair of jaws, shaped very much like a parrot's beak, to subdue their prey. The favorite food of this octopus is crabs, but it also eats snails, oysters, abalones, clams, mussels, and small fish.

Commercial Value: Octopus is considered a culinary delight in some cultures and is harvested mainly for food, although some hunters of abalones and lobsters capture them accidentally.

Status: Rare in some areas where they have been taken in large numbers.

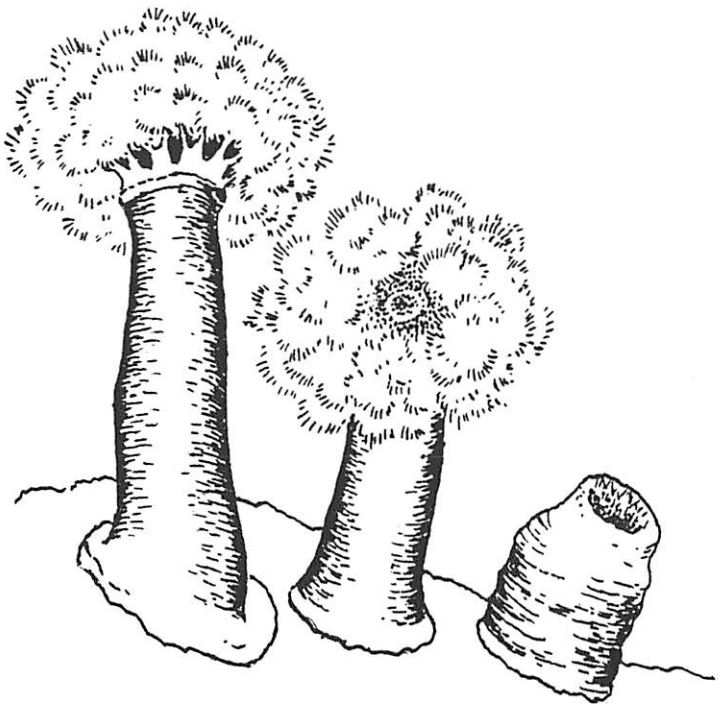
Opalescent Squid



Information

Common Name:	Opalescent Squid
Latin Name:	*Loligo opalescens*
Phylum:	Mollusca
Range:	Central British Columbia to Baja California
Habitat:	In open coastal waters, returning to school and spawn on muddy sand in shallow inshore areas.
Quick Identification:	A small head with large eyes, body tapering to a point at rear, eight long arms with rows of suckers, two tentacles, siphon under the neck, and a triangular fin. The color is a transparent bluish white, changing to mottled gold and brown in the light or to dark brown or red when the animal is feeding, frightened, or attracting a mate. Males reach a length of 28 cm and females a length of 20 cm (including tentacles).
Predators:	Squid are eaten by many fishes, birds, and marine mammals.
Feeding Type:	Adults feed mainly on shrimp-like crustaceans, fishes, bottom worms, and their own young.
Commercial Value:	This is the squid sold in fish markets and as calamari in seafood restaurants. Opalescent Squid are seined commercially on the spawning grounds.
Status:	The mating behavior of this squid is elaborate, and the females produce numerous, large, cylinder-shaped egg capsules, each containing 180–300 eggs. Adults die after spawning.

Plumose Sea Anemone



Information

Common Name: Plumose Sea Anemone

Latin Name: *Metridium senile*

Phylum: *Cnidaria*

Range: Southern Alaska to southern California

Habitat: This anemone is rarely seen at the seashore because it occurs in the low intertidal zone and hides away in protected places under ledges and in caves where there is little wave action.

Quick Identification: A long sea anemone reaching 50 to 60 cm when fully extended. At high tide it expands to show its feathery, snow-white or orange tentacles. But when the tide drops, the anemone hangs down unattractively from ledges, dock pilings, and floats.

Predators: Certain nudibranchs, such as the Opalescent and Shaggy Mouse, feed on small Plumose Anemones.

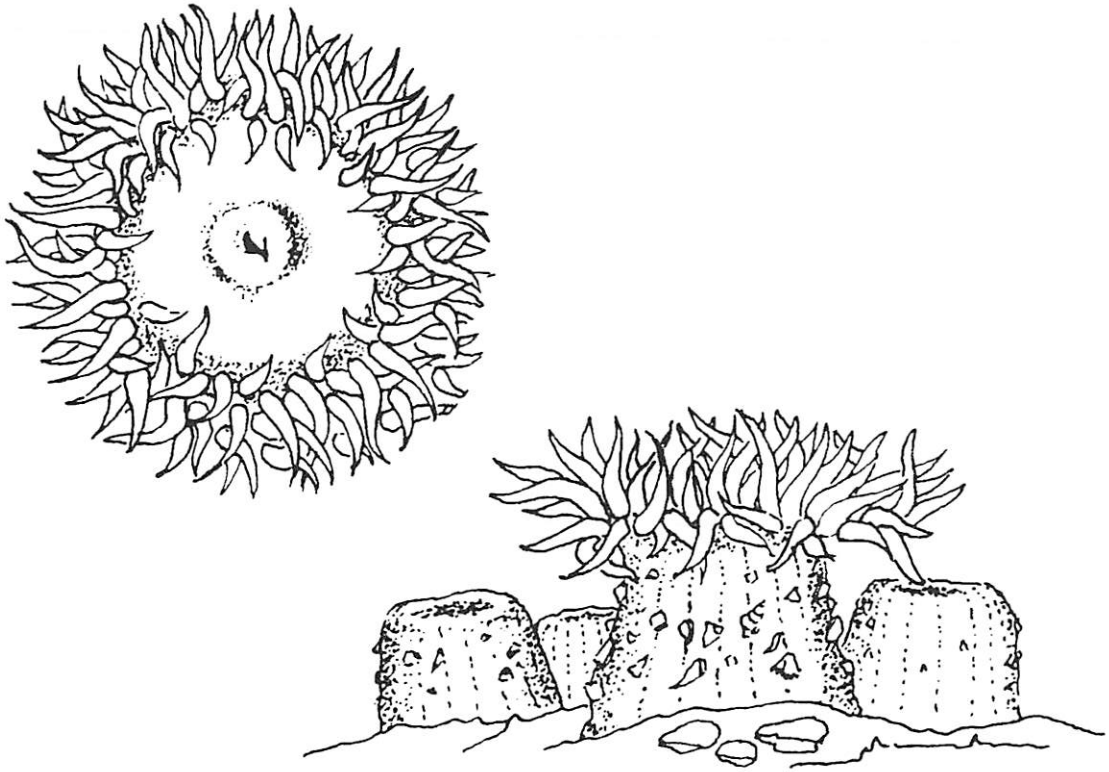
Feeding Type: A predator, this sea anemone uses its feather-like tentacles armed with stinging cells to paralyze and capture tiny zooplankton.

Commercial Value: None

Status: Common

Comments: This anemone can reproduce by breaking off its place of attachment and leaving behind tiny fragments that develop into new, tiny anemones, which feed and grow. In this way, clusters of individuals, all the same color, are produced.

Giant Green Sea Anemone



Information

Common Name: Giant Green Sea Anemone

Latin Name: *Anthopleura xanthogrammica*

Phylum: Cnidaria

Range: Alaska to Baja California

Habitat: Lives along exposed coastlines and in bays and harbors that receive some protection from surf; on rocks, sea walls, and pilings; in tide pools; above the low-tide line to water more than 15 m deep.

Quick Identification: This giant sea anemone can be 25 to 30 cm wide when fully opened. Bright green and commonly covered with broken shell.

Predators: Because of their stinging tentacles, sea anemones have very few predators.

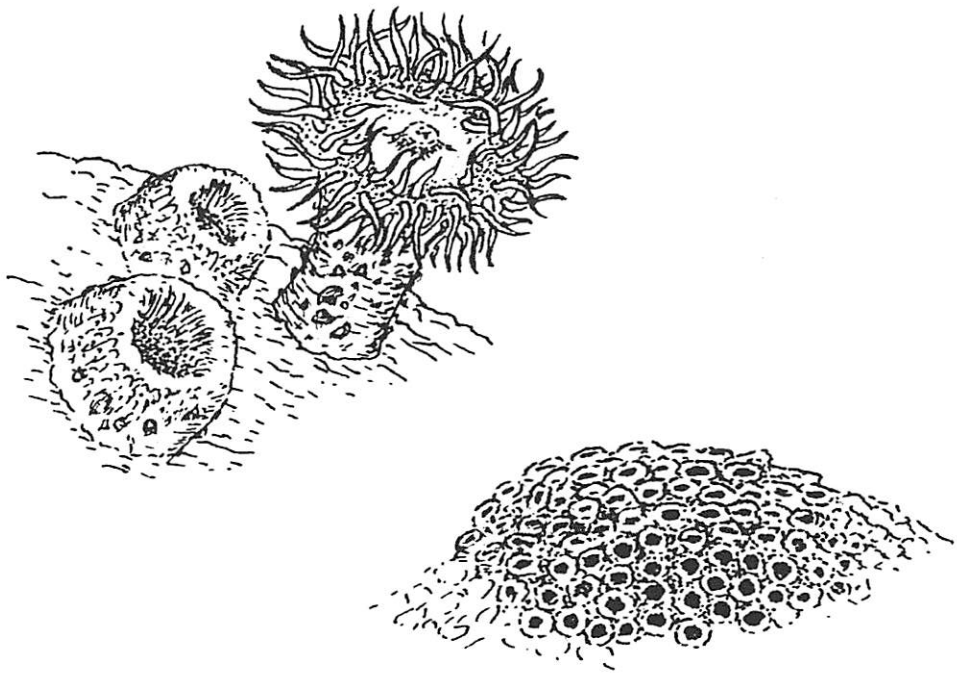
Feeding Type: The Giant Green Sea Anemone is itself a predator. It consumes small fish, crabs, shrimp, and snails. It has tiny, stinging cells at the tips of the tentacles that paralyze and trap prey animals. The Sea Anemone swallows the victim whole and digests it; then spits out the indigestible bits and pieces of shell, and expands back into its flower-like posture.

Commercial Value: None

Status: Common

Comments: The bright green color of the Giant Green Sea Anemone is caused by large populations of microscopic green algae living in the tissue of the anemone. These sea anemones are not harmful to humans. A person can touch the tentacles with her or his fingers and not feel a sting; however, never touch a sea anemone with your tongue. Some individuals have tried it, and barely lived to tell the tale.

Aggregate Anemone



Information

Common Name: Aggregate Anemone

Latin Name: *Anthopleura elegantissima*

Phylum: Cnidaria

Range: Alaska to Baja California

Habitat: This anemone is found on rock walls, boulders, or pilings between high- and low-tide lines of exposed rocky shores.

Quick Identification: Aggregate Anemones may live in dense groups or singly. When fully extended, a single animal may be 4 cm across and 2.5 cm high. The body is light green to white and has various-colored tentacles with pink or blue tips.

Predators: Aggregate Anemones are preyed upon by certain nudibranchs, snails, and sea stars.

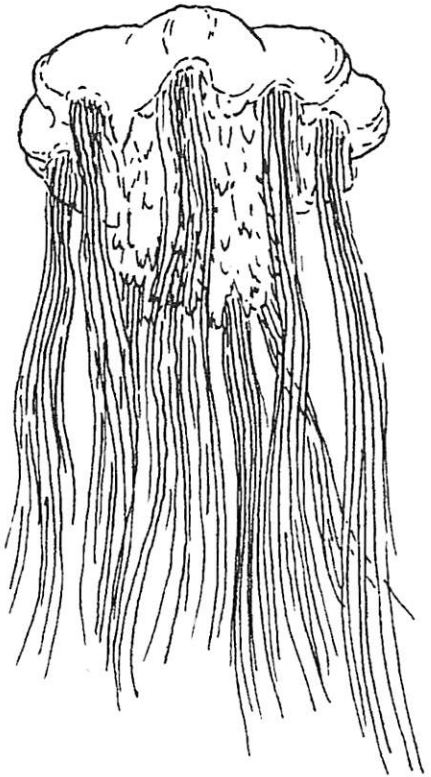
Feeding Type: These anemones feed on zooplankton and small crustaceans that come into contact with the tentacles.

Commercial Value: None

Status: Common

Comments: Aggregate Anemones are often covered with bits of gravel and shell, which protects these animals from drying out when exposed to the sun at low tide. When these anemones draw their tentacles in, their bodies blend in with their surroundings.

Sea Nettle or Lion's Mane



Information

Common Name: Sea Nettle or Lion's Mane

Latin Name: *Cyanea capillata*

Phylum: Cnidaria

Range: Alaska to southern California

Habitat: Around floats and dock pilings in deep water; in calm bays and inlets

Quick Identification: This is one of the largest jellyfish in the world. Most specimens are 50–60 cm in diameter; specimens 2 m wide have been found. Its huge, transparent jelly body may be milk-colored or tinted orange, yellow, or brown. Eight clusters of tentacles extend from the bell, and each cluster has a hundred tentacles, which may trail 10 meters in length.

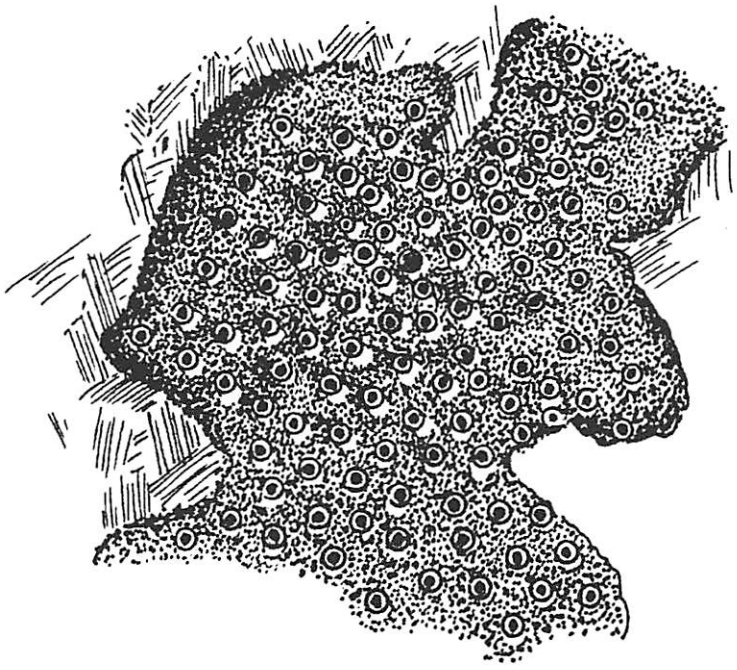
Feeding Type: Related to sea anemones, jellyfish have tentacles tipped with poisonous darts used to capture small planktonic prey, such as small crustaceans and fish.

Commercial Value: None

Status: Common

Comments: This very impressive jellyfish frequently becomes stranded during storms and high tides. It can cause a severe and nasty rash in humans. Avoid it! Do not touch it even when it is washed up on the beach and is dead.

Encrusting Sponge



Information

Common Name: Encrusting Sponge

Phylum: *Porifera*

Range: British Columbia to southern California

Habitat: Found along open rocky coast, in mid- and low-intertidal zones, on the protected sides of rocks and on the undersides of moist ledges

Quick Identification: The Sponges are simple, multicellular animals; often brightly colored and soft to touch; forming spongy carpets in greens, purples, golds, reds, and greys. Generally irregular in shape and measuring 10 to 30 cm across and 1 cm thick.

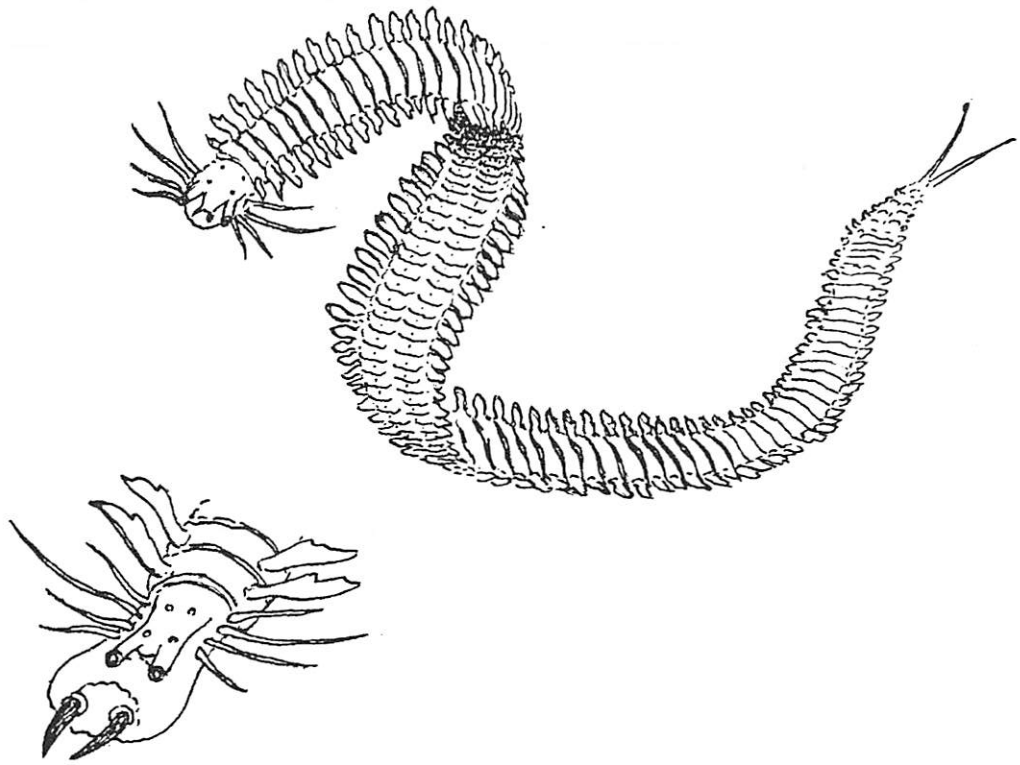
Predators: Certain nudibranchs are specialized feeders on Encrusting Sponges.

Feeding Type: Sponges filter microscopic food from seawater, which passes through specialized feeding pores.

Commercial Value: None

Status: Common

Sandworm



Information

Common Name: Sandworm

Latin Name: *Nereis vexillosa*

Phylum: Annelida

Range: Entire Pacific Coast

Habitat: In quiet bays under pieces of wood or debris; in mussel colonies; and in shallow burrows in mud, sand, or gravel.

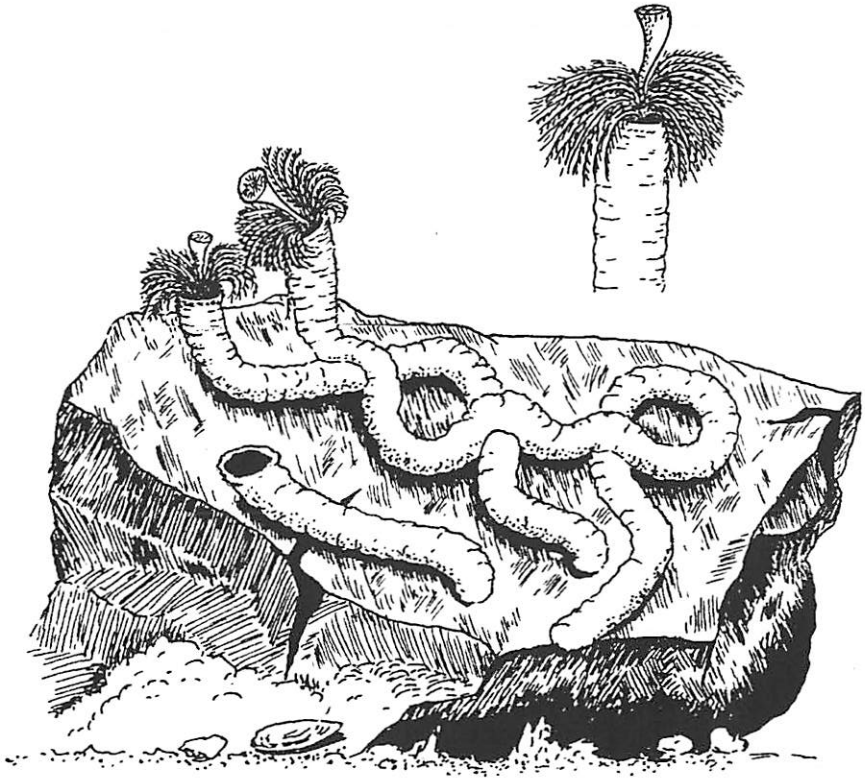
Quick Identification: A large, fleshy worm that ranges in length from 5 to 30 cm. Tan-colored body with iridescent blues, greens, and sometimes reddish tones. These worms have paddle-like feet for swimming, and large, black feeding jaws.

Feeding Type: Sand worms are herbivores, feeding mainly on algae.

Commercial Value: None

Status: Common

Calcareous Tube Worm



Information

Common Name: Calcareous Tube Worm

Latin Name: *Serpula vermicularis*

Phylum: Annelida

Range: Alaska to southern California

Habitat: This worm lives in a tube attached to the sides of rocks, pilings, floats, and shells in protected tide pools and on open rocky shores.

Quick Identification: This worm is easily identified by the hard, white, coiled tube it lives in, which, for large worms, may be 15 to 20 cm long and almost as thick as a crayon. The worm itself may be no more than 6 to 8 cm long and has long, feathery tentacles with whitish bands.

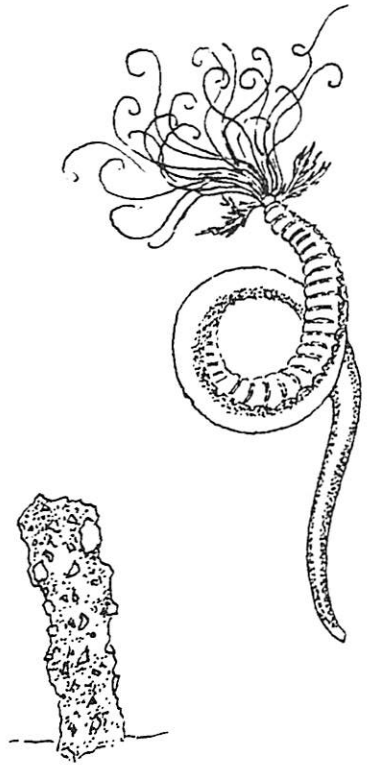
Feeding Type: Calcareous Tube Worms are plankton feeders; their bright red fan-like tentacles trap microscopic food in the water and pass it to the mouth.

Commercial Value: None

Status: Common

Comments: When disturbed, this worm quickly snaps back into its tube for protection and, after a minute or so, reemerges to feed and to breathe.

Hairy Gilled Worm



Information

Common Name: Hairy Gilled Worm

Latin Name: *Thelepus crispus*

Phylum: Annelida

Range: Entire Pacific Coast

Habitat: The Hairy Gilled Worm is common under rocks on exposed, rocky shores, from the middle to the low intertidal zone.

Quick Identification: This worm lives in a tough, sand-encrusted tube. It is reddish-pink in color, with numerous red gills and pink tentacles extending from the head end.

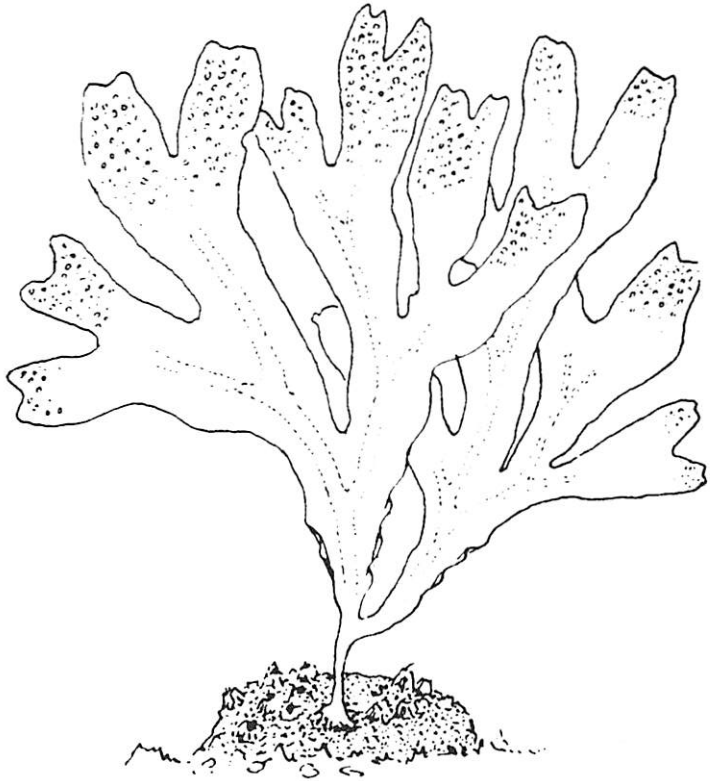
Feeding Type: The long tentacles of the Hairy Gilled Worm are used to trap suspended food particles in the water.

Commercial Value: None

Status: Common

Comments: The Hairy Gilled Worm belongs to a family of tube-building worms that cement hard bits of shell and stone and other debris together with a sticky mucus to form a protective tube home.

Rockweed



Information

Common Name: Rockweed (Popping Wrack)

Latin Name: *Fucus distichus*

Division: Phaeophyta

Range: Alaska to California

Habitat: Rockweed is found along all types of coastlines; exposed, protected, and transitional; on rocky and cobble shores; in the mid-intertidal zone.

Quick Identification: Olive-green, often with yellowish tips, and reaching a length of 30 cm. Rockweeds often have conspicuous, gas-filled, swollen tips, which are the sites of egg and sperm production.

Predators: The Rockweed is consumed by a variety of different organisms, such as small herbivorous crustaceans, which graze upon it.

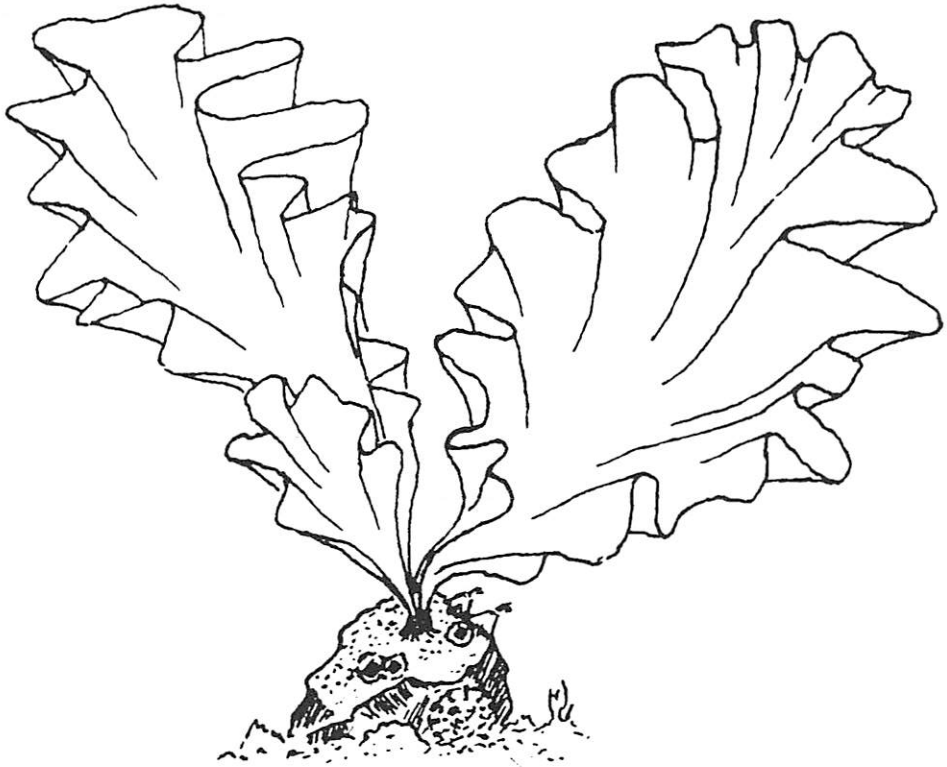
Feeding Type: The Rockweed is a producer that generates food from the sun's energy, water, and carbon dioxide through photosynthesis.

Commercial Value: Is of little commercial value in North America. In a few locations it is gathered and used as cattle fodder or as fertilizer.

Status: Common

Comments: Rockweeds grow in bush clumps, lying flat across the rocks or hanging down in curtains, and keeping the moisture in. During the spring and summer months, Rockweed beds, called "nurseries," provide moist hiding places for a host of juvenile snails, limpets, crabs, sea stars, and shrimps.

Sea Lettuce



Information

Common Name: Sea Lettuce

Latin Name: Ulva *sp.*

Division: Chlorophyta

Range: Bering Sea to Chile

Habitat: On rocks; in the upper intertidal zone, on exposed and protected coastlines

Quick Identification: A bright, emerald-green seaweed located just below the Rockweed bed. Looks like leaf lettuce with thin, wrinkled fronds. When sun-dried, the seaweed looks and feels like tissue paper.

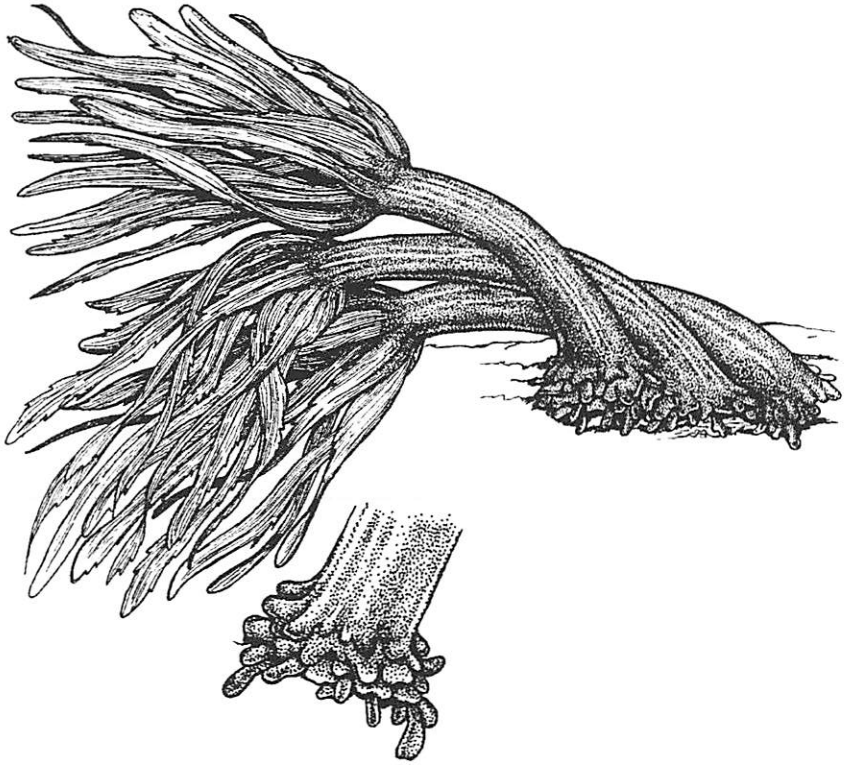
Predators: Sea Lettuce is consumed by a variety of different organisms from herbivorous snails and crustaceans to human beings.

Feeding Type: Sea Lettuce is a producer that makes its own food from the sun's energy, water, and carbon dioxide. It takes nutrients from the water for growth.

Commercial Value: Sea Lettuce is a commercially valuable seaweed used in many seafood and non-seafood delicacies. It can be eaten raw or used fresh or dried in salads. Sea Lettuce is high in minerals and vitamins.

Status: Common

Sea Palm



Information

Common Name: Sea Palm

Latin Name: *Postelsia palmaeformis*

Division: Phaeophyta

Range: British Columbia to central California

Habitat: Sea Palms are found on rocky shores of the exposed outer coast with very high wave action, often in areas with Giant Blue Mussels and Gooseneck Barnacles.

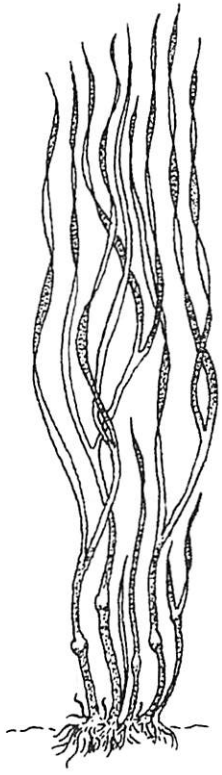
Quick Identification: This interesting seaweed looks like a small, olive to brown palm tree. It has a tough, rubbery stalk, 20 to 40 cm tall; and up to 100 blades, each 25 cm long, which droop when the plant is out of water. Plants often grow together, fastened by their strong holdfasts to the most surf-swept rocks in the mid-intertidal zone.

Feeding Type: Like the other marine plants, Sea Palms are producers, using the sun's energy, water, and carbon dioxide to produce food.

Commercial Value: Although not a commercial seaweed, Sea Palm is collected locally and eaten fresh or cooked in stir-fries and soups.

Comments: This distinctive seaweed is referred to as an "indicator" plant because it is a sure sign that the area is extremely exposed and dangerous.

Eelgrass



Information

Common Name: Eelgrass

Latin Name: *Zostera marina*

Range: From Alaska to Mexico

Habitat: Found on protected beaches and in quiet bays where the bottom is a mixture of sand and mud

Quick Identification: A long, thin, bright green, grass relative that grows to a meter or more in length. Its thick, tangled root systems bind the plants to the mud. Eelgrass is an important food for many animals including snails, fishes, and waterfowl.

Feeding Type: Eelgrass is a producer that generates its own food from the sun's energy, water, and carbon dioxide through photosynthesis.

Commercial Value: Not harvested commercially, Eelgrass was once collected by various native tribes along the coast who ground the plant into flour and used it as mattress stuffing and insulation.

Status: Common

Comments: The thick, tangled roots stabilize the beach and prevent wind, waves, and currents from carrying away the sand. The stable bottom with massive Eelgrass beds provides protected homes and food for a wide variety of plants and animals: amphipods, isopods, snails, nudibranchs, shrimps, crabs, and fish which sit on the leaves, dart over the surface, or settle among the roots and burrow under the sand.

Giant Kelp

Information

Common Name: Giant Kelp

Latin Name: *Macrocystis integrifolia*

Division: Phaeophyta

Range: Alaska to California

Habitat: Found in shallow (approx. 10 m) water in areas exposed to the open sea but sheltered from the full force of the waves

Quick Identification: This is the largest kelp on the Pacific Coast, growing as long as 30 m and forming thick offshore kelp forests. It has an extremely large holdfast, gold or brown corrugated blades, and elongated, gas-filled floats.

Predators: Sea urchins and people feed heavily on Giant Kelp.

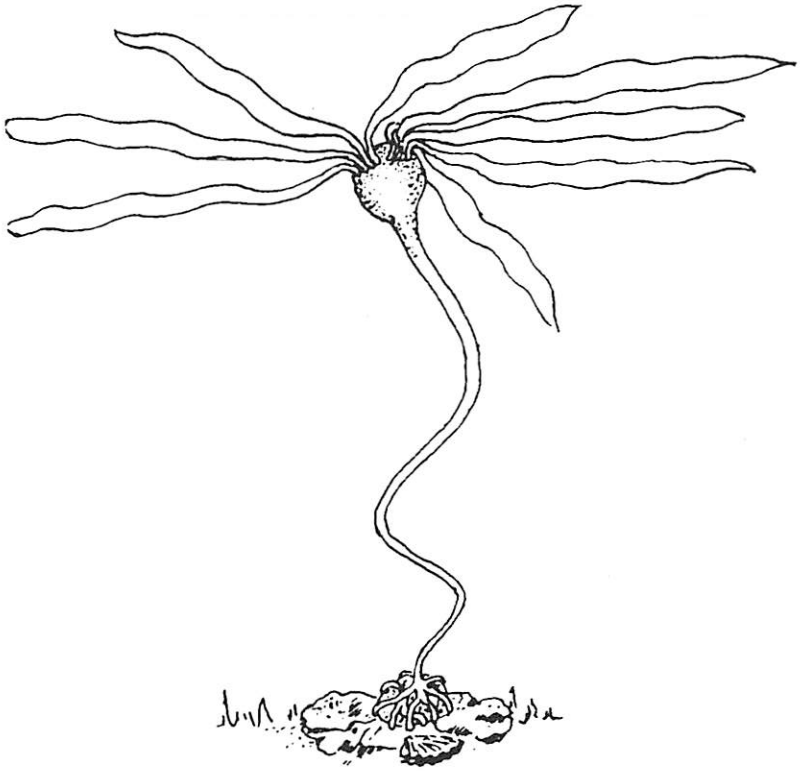
Feeding Type: This kelp is a producer, using the sun's energy, water, and carbon dioxide to produce its food.

Commercial Value: Giant Kelp is harvested by underwater mowing machines mounted on barges. Algin is extracted from the kelp and used to thicken food products such as ice creams, puddings, and salad dressings; as well as paints, polishes, and insecticides.

Status: Common; in some areas regulations are enforced to prevent over-harvesting.

Comments: When the sea otter was hunted to near extinction along the Pacific Coast, sea urchins, on which the otters had preyed, increased in number. The urchins, in turn, ate more kelp and destroyed whole kelp forests. In areas which now have sea otters, urchin populations are kept in check and Giant Kelp beds have once again flourished.

Bull Kelp



Information

Common Name: Bull Kelp

Latin Name: *Nereocystis luetkeana*

Division: Phaeophyta

Range: Alaska to southern California

Habitat: Bull Kelp is found off exposed and protected shores, in shallow water where sunlight penetrates to the bottom. It requires a rocky bottom on which to secure the holdfast, a mass of stubby root-like structures.

Quick Identification: Whip-like, with a long, thin, hollow stalk leading to a floating, gas-filled float, with several long, thin blades from the float

Predators: Bull Kelp is consumed by a wide variety of different organisms, from snails and urchins, which graze upon it; to fish; and even to land animals such as deer, which consume the kelp that has come ashore with the tides.

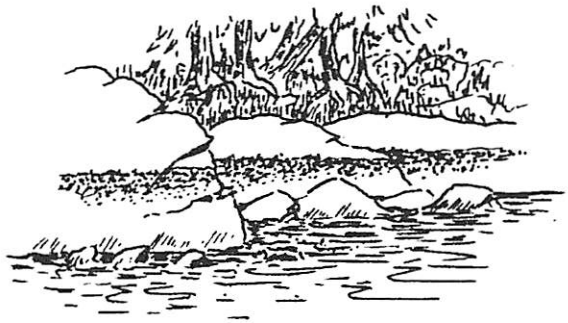
Feeding Type: Bull Kelp is a producer that generates its own food from the sun's energy, water, and carbon dioxide through photosynthesis. Tissue growth is enhanced from minerals in the water.

Commercial Value: In North America there is a limited commercial use of Bull Kelp. It is used in the production of various seafood and non-seafood products. The indigenous people of the Pacific Coast historically used Bull Kelp in a variety of ways, and continue to do so in the present.

Status: Common

Comments: Bull Kelp is one of the largest seaweeds. Because of winter storms, most Bull Kelp plants do not survive the winter. They grow to their large size of 15 m in one season. The kelp forests are of vital importance, for they provide food and habitat for numerous organisms.

Black Lichen



Information

Common Name: Black Lichen

Latin Name: *Verrucaria maura*

Range: Worldwide, high on the rocky shore

Habitat: Common on rocks in the spray zone, which receives little water in the form of sea spray

Quick Identification: Black Lichen forms a thin, black coating on the rocks. Seen from a distance the lichen form a black band that is often a meter in height.

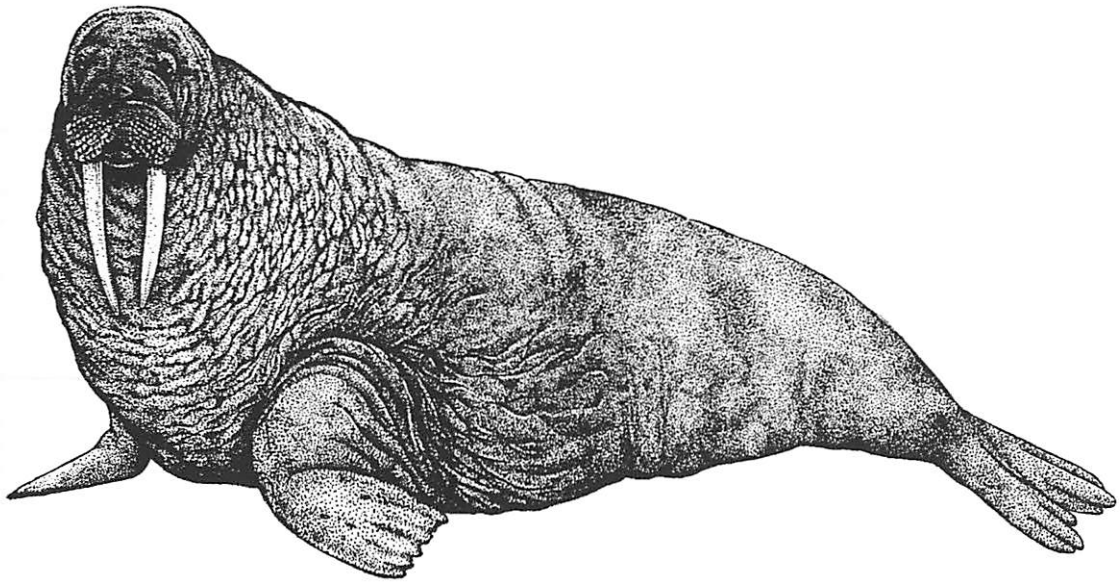
Predators: Periwinkles, isopods, and limpets

Feeding Type: Lichens are producers, using the sun's energy for food production.

Commercial Value: None

Comments: Lichens are really two organisms, fungi and algae, living together. Both organisms benefit from this symbiotic relationship in the form of nutrients, shelter, and a secure place to grow. Lichens are so hardy that they can live in areas in which no other organism can survive, and are often called "pioneers."

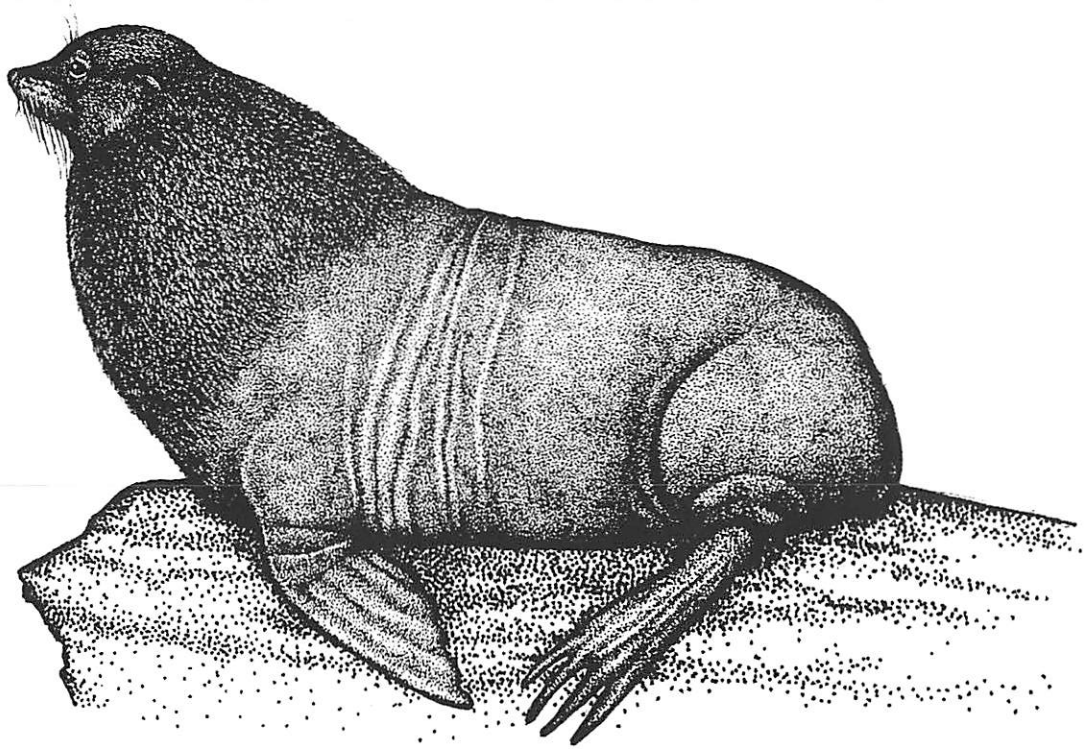
Walrus



Information

Name:	Walrus
Latin Name:	*Odobenus rosmarus*
Phylum:	Chordata
Range:	On the Pacific Coast from the Pribilof Islands in the Bering Sea, north to Bering Strait during most of the year, but many migrate in summer north to the Arctic Ocean
Habitat:	Because of their heavy weight, they prefer thick ice as a habitat, but will come ashore on rocky islands when ice is not available.
Quick Identification:	Males are 3 to 3.6 m long and weigh up to 675 kg; females are 2.1 to 2.4 m long and weigh 900 kg. Both have very thick bodies, with several inches of blubber protecting them against cold. Heads are rather small in proportion to bodies, with two huge ivory tusks—especially large and straight in males—protruding from the mouth. The grayish-colored body is almost hairless; the skin quite wrinkled; the nose very blunt.
Predators:	They are preyed upon by polar bears and killer whales, as well as humans, particularly Inuit.
Feeding Type:	Walruses feed mainly on mulluscs, particularly clams they find and grub out from the mud with their tusks. They also feed on octopuses, polar cod, worms, crabs, shrimps, amphipods, and krill. Some males become hunters of smaller seals such as Harp Seals.
Commercial Value:	The Inuit use all the parts of their bodies; flesh for food, blubber to burn for light and heat, and skin for boat coverings. Ivory from tusks are valued by carvers and jewelers for their beauty.
Status:	Common to occasional. Walruses are protected by law and only the Inuit are allowed to harvest walruses for food and subsistence purposes.
Comments:	Walruses use their tusks with extraordinary dexterity, and their ability to cooperate as social units to defend themselves makes them very dangerous to attack, even by the largest polar bears and killer whales. These prefer to attack the young, sick, or wounded walruses, especially when separated from the herd, rather than the healthy adults.

Steller Sea Lion



Information

Name: Steller or Northern Sea Lion

Latin Name: *Eumetopias jubatus*

Range: Pacific Coast from the Santa Barbara Channel Islands north in winter to the Pribilof Islands in the Bering Sea, and in summer still farther north to St. Lawrence Island at the Bering Sea, but staying always south of the pack ice

Habitat: They tend to stay fairly near the coast and coastal islands, often hauling out to sleep, though they can sleep in the open ocean floating on their backs. They rarely go up rivers or into bays.

Quick Identification: The largest of the sea lion species, adult males (bulls) grow 2.7 to 3.9 m long and weigh up to 990 kg or more; adult females (cows) grow 1.8 to 2.7 m long and weigh up to 360 kg or more. Bulls are buff above, reddish brown below, with dark brown flippers and massive necks and forequarters. Cows are uniformly brown and one-third the size of males. Snout and face are otter-like; low forehead.

Predators: Killer Whales and White Sharks

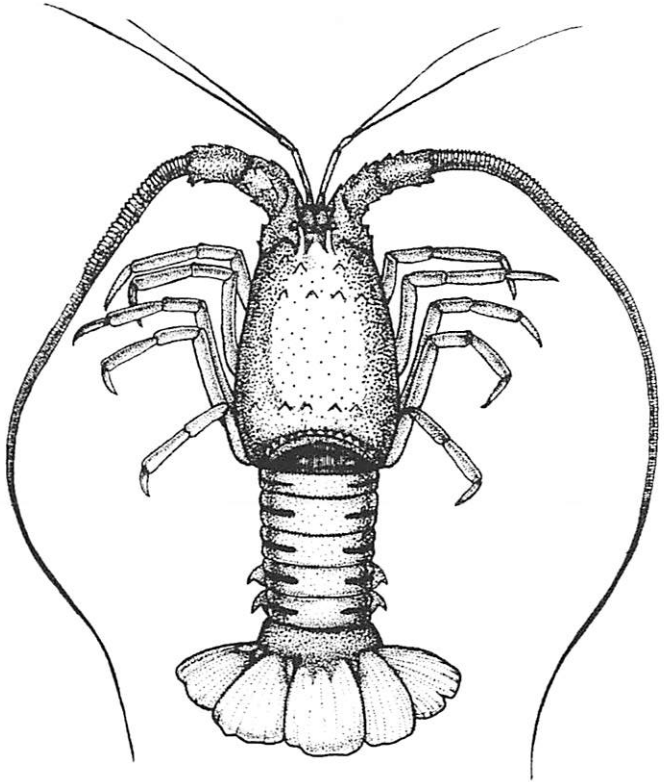
Feeding Type: Predators. They eat several species of fish including flatfish, rockfish, and more rarely, squid and octopus; and will eat various kinds of clams, shrimps, and crabs and the pups of Northern Fur Seals.

Commercial Value: Steller Sea Lions were harvested in great numbers for their fur and oil that was rendered from their blubber. They are still harvested by the native people of the Aleutian Islands.

Status: Like the California Sea Lion, the number of Steller Sea Lions had rapidly increased since protected by law in 1970, and by 1980 there were an estimated 300,000 Steller Sea Lions in the world. Since then, approximately $^{2}/_{3}$ of the Steller population has simply vanished. They are once again considered a threatened species.

Comments: The list of possible factors affecting the Steller population includes predation, harvesting and fishing, disease, pollution, and nutritional stress caused by declining prey species such as herring and salmon. It is likely that no one factor is acting alone to cause their decline, but rather several factors may be acting in combination to reduce overall sea lion numbers.

Spiny Lobster



Information

Name: Spiny Lobster or California Rock Lobster

Latin Name: *Panulirus interruptus*

Range: Central California to Baja California

Habitat: Among rocks, in crevices, and in tide pools; at the low-tide line and below to moderately deep water

Quick Identification: Up to 16" (41 cm) long; 4" (102 mm) high. Long, cylindrical body covered with rows of strong spines. Reddish-brown, spines red, underside lighter brown; legs pale brown with long stripes.

Predators: Large fish such as the Sheephead and Jewfish, and the Pacific Octopus.

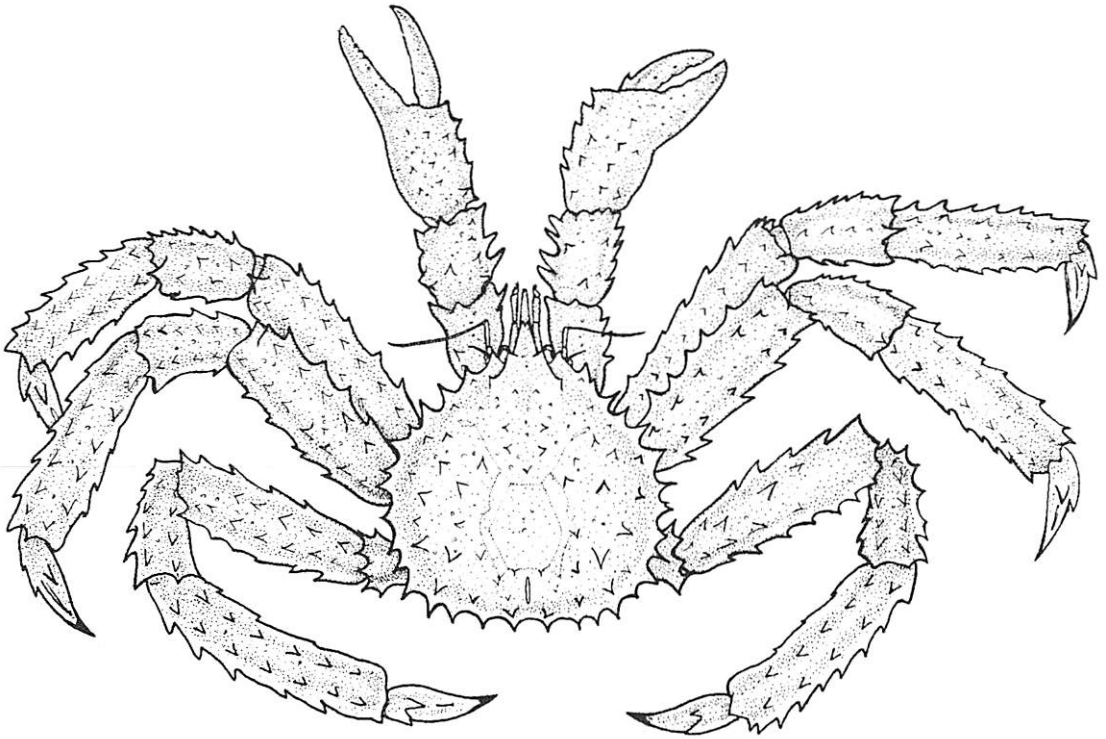
Feeding Type: It feeds at night on a wide variety of material, both of plant and animal origin, and does not discriminate against decaying material.

Commercial Value: This is the lobster displayed in the fish markets of the West Coast, and along with the Atlantic Lobster is sold in restaurants.

Status: The Spiny Lobster is in danger of serious depletion of numbers, if not extinction, and the state of California has enacted strict laws designed to conserve the species.

Comments: Lobster fishermen use traps that are commonly large boxes made of laths. There is a hole in the top surrounded by sharpened laths pointing inward to prevent escape after the lobster has entered.

Alaska King Crab



Information

Name: Alaska King Crab

Latin Name: *Paralithodes camtschatica*

Range: Cold waters of the north Pacific Ocean from Japan to Alaska and northern British Columbia, including the Queen Charlotte Islands

Habitat: Muddy bottoms where it ranges from 100 to 900 feet deep (30–300 meters). Migrates to shallow water to mate in the spring. Young inhabit shallower water than adults. King Crabs travel more than 100 miles in their lifetime.

Quick Identification: This large crab may have a carapace measuring over 8 inches (20 cm) in width, and the long legs may span more than 75 cm. (30 inches). Weight to 11 kg (24 lbs) of which 25% is meat. The carapace is covered with spines. Individuals have a large, powerful, right claw and a smaller left claw. The color of the carapace in adults is brownish-red or purplish-red and cream white. Spines mostly deeper in color. Juveniles are orange overall.

Predators: Sea otters, seals, and big fish

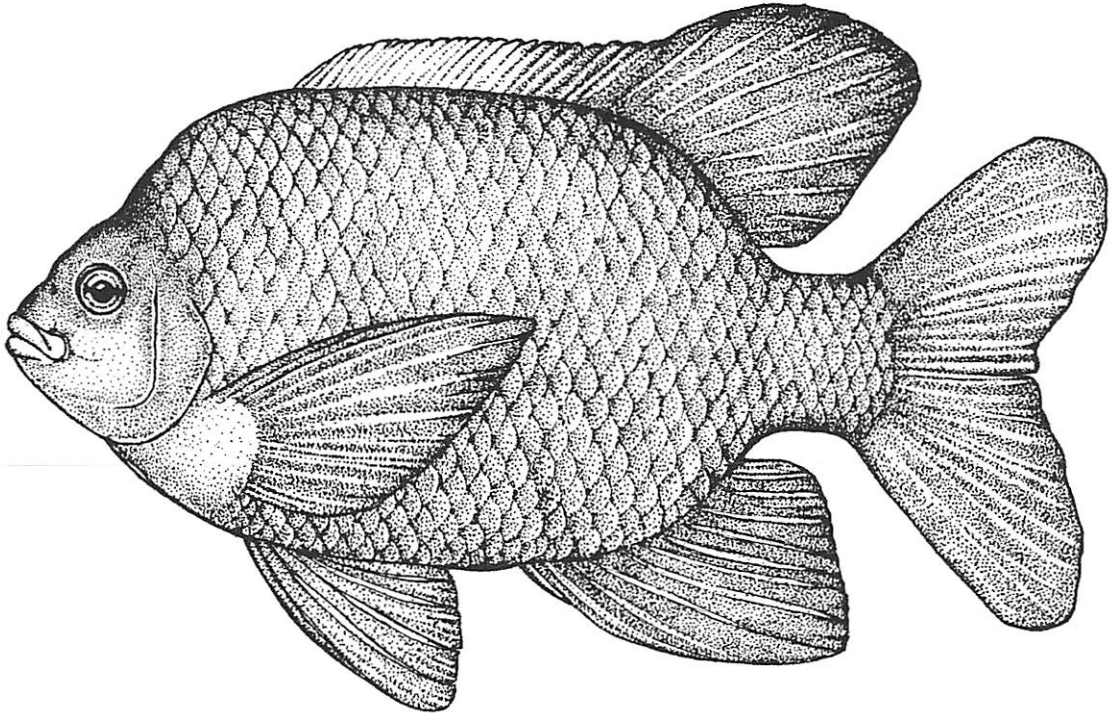
Feeding Type: Feeds on clams, sea urchins, and even fish. It is well protected from many would-be predators with its hard exoskeleton and sharp spines, its ability to hide among rocks and kelp, and its night-time feeding habits.

Commercial Value: A prized species sold in restaurants

Status: The Alaska King Crab has dwindled rapidy from over-harvesting. Over the past several years, strict regulations have prohibited a large-scale fishery, and the crab is less frequently seen on restaurant menus.

Comments: Two-year old juveniles form aggregations of thousands of individuals who cling upon each other to form ball-shaped pods, apparently for protection against predators. King Crabs may live to be 30 years old.

Garibaldi



Information

Name: Garibaldi

Latin Name: *Hypsypops rubicundus*

Range: From Monterey Bay, California, to Baja California, Mexico

Habitat: Reefs and kelp beds

Quick Identification: Adults are up to 14" (36 cm) long, bright orange; juveniles have iridescent blue markings on head, body, and fins. Dorsal fin has 11–13 spines, forked caudal fin, tips rounded.

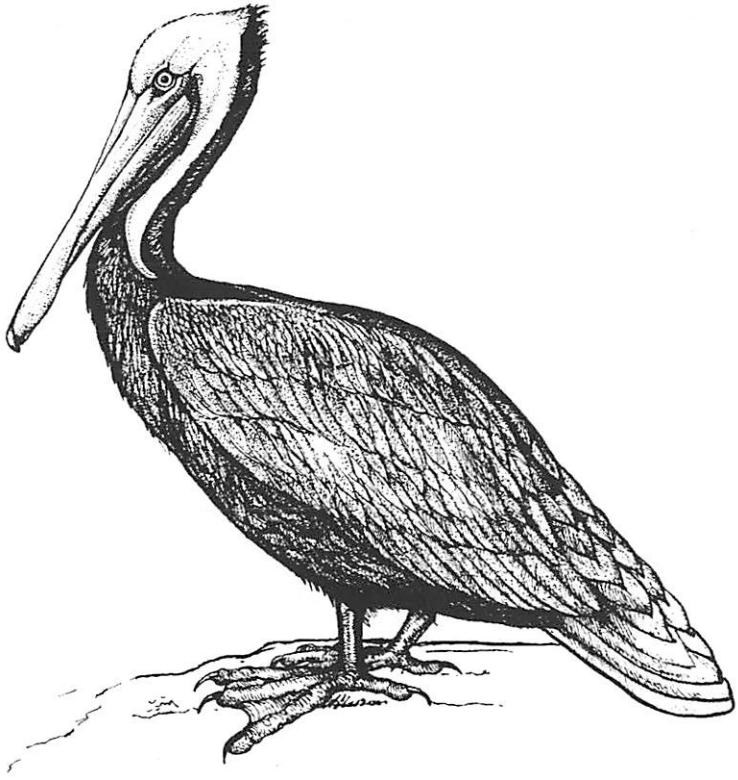
Feeding Type: A variety of invertebrates, including sea urchins

Commercial Value: Because of its bright orange color, the Garibaldi is prized as an aquarium exhibit, by would-be hobby enthusiasts, and by recreational divers. Garibaldis are protected by law in California, and may not be taken for either sport or commercial purposes.

Status: Common in its home range

Comments: Garibaldis spawn from March through July. The male prepares the nest, entices the female to lay her eggs in the nest, fertilizes the eggs, and vigorously guards the eggs until they hatch in 2 or 3 weeks.

Brown Pelican



Information

Name: Brown Pelican

Latin Name: *Pelecanus occidentalis*

Range: Southwestern Pacific and southeastern Atlantic coastal areas of North America, also Central and South America. Occasionally seen as far north as Vancouver Island, B.C.

Habitat: Offshore islands, shallow inshore waters; bays, breakwaters, open sandy beaches; stands on pilings or rocks.

Quick Identification: Large, heavy bird 45–54" (114–137 cm) in length. Huge, dark bill and large throat pouch; adults grayish-brown with white head and neck; immature dark-head, pale below.

Predators: Introduced land predators such as racoons prey on the eggs and chicks.

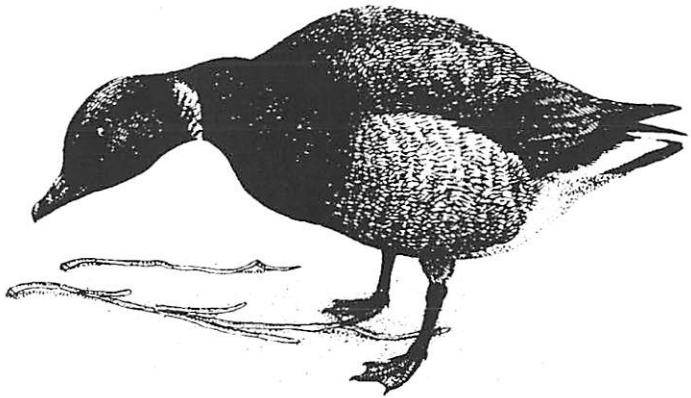
Feeding Type: These social birds fly in single file low over the water. On sighting prey, they plunge from heights of up to 30 feet into the water, at the final moment expand their net-like pouch to scoop up small fish, then surface to swallow their catch.

Commercial Value: None

Status: In the Pacific, casual to abundant from Oregon to Central America, very rare transient and winter visitor in B.C.

Comments: These social, colonial birds were threatened with extinction during the 1950s and 1960s because of DDT pesticides absorbed from the fish they eat and from habitat loss. The pesticides cause calcium deficiency, resulting in thin-shelled eggs that break when moved by the incubating bird. Since DDT was phased out in North America during the 1970s, the bids' recovery has been spectacular.

Brandt



Information

Name: Brandt

Latin Name: *Branta bernicla*

Range: Breeds in summer in high arctic in Alaska and Canada, winters from southern B.C. to Baja California. Migrates along Pacific and Atlantic coast. During migration, sometimes found inland in fresh water areas.

Habitat: In winter and during migrations it occurs on estuaries, bays, lagoons, rocky shores, and mudflats, especially where there are beds of eelgrass.

Quick Identification: Males and females are colored alike: black head, neck, and breast; smoky brown back and belly; white neck band, and whitish tail and below-tail. These small geese weigh up to 2.5 kg (6 pounds).

Predators: Goshawks, Arctic Fox while breeding, and humans.

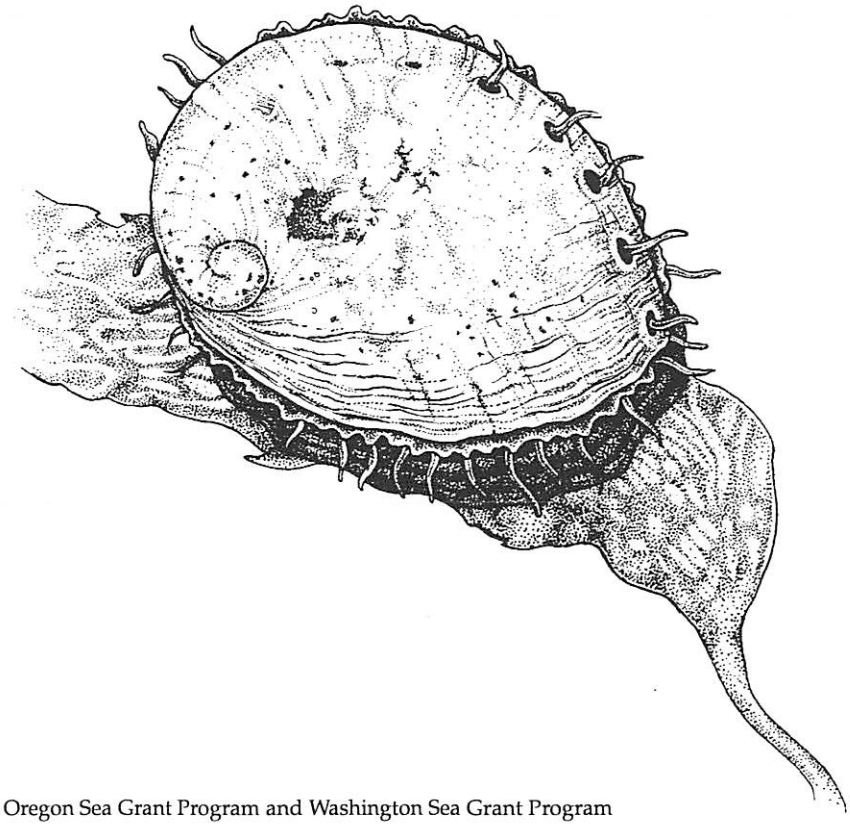
Feeding Type: These predominantly marine birds feed largely on the succulent roots and stems of Eelgrass in winter, which makes up to 90% of their food. They also eat Sea Lettuce, crustaceans, shellfish, and worms, and are known to concentrate in areas where Pacific Herring spawn.

Commercial Value: Coastal aboriginal peoples were fond of both the eggs and meat of Brandts. During the early 1900s, market hunters were especially busy in December shooting large numbers of Brandt for sale at Christmas.

Status: Common to abundant local winter visitor along the coast. Formerly very abundant in winter.

Comments: During the past 100 years, the wintering population in British Columbia has declined drastically, largely due to overhunting, harassment, and disturbance of birds by people, habitat loss, and the disappearane of Eelgrass, its most important food.

Red Abalone



Information

Name: Red Abalone

Latin Name: *Haliotis rufescens*

Range: Oregon to central Baja California; most abundant in California south of Monterey

Habitat: Uncommon, on rocks intertidally to water over 160 m (540') deep. Most abundant between 6–12 meters (20–40').

Quick Identification: The largest of the seven species of abalone found on the Pacific Coast, the Red Abalone's shell may grow nearly 30 cm (12 inches) across. Large abalones may be 15–20 years old or more. The name refers to the outer shell, which is usually a red brick color.

Predators: Sea otters and large octopuses

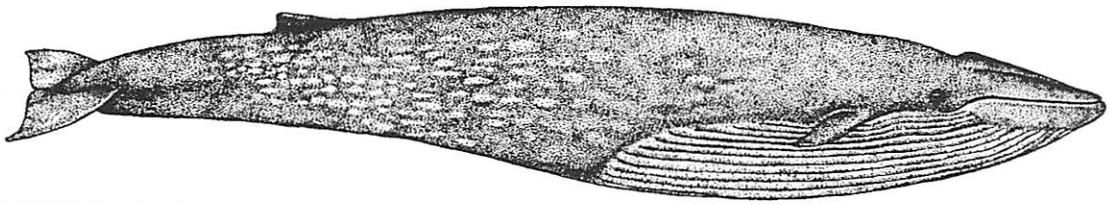
Feeding Type: This abalone feeds almost exclusively on drift kelp. Kelp plants continually produce new fronds that grow toward the surface. Old fronds regularly break off and drift away to make room for new growth. When a drifting plant is detected, usually by the tentacles of the abalone, the sides of the foot fold toward the midrib of the plant, grasping it; then the whole foot traps the plant.

Commercial Value: This is the most important commercial species of abalone, and is the one sold in some seafood restaurants. Its large size yields up to a pound of delicious, high-priced meat. The shell is prized for its beautiful color and bright iridescence.

Status: Because of its commercial value, this abalone has been severely over-harvested. Strict regulations regarding harvesting have been put into effect by the state of California to conserve its population.

Comments: Successful re-establishment and protection of sea otters along the California coast have brought complaints from abalone divers that the otters now take too many.

Blue Whale



Information

Name: Blue Whale

Latin Name: *Balaenoptera musculus*

Range: On the Pacific Coast, Blue Whales migrate north in spring to the Arctic to eat tons of krill, and south in late fall to the warm sub-tropcial ocean off Mexico to breed and raise young.

Habitat: In offshore areas but sometimes in shallow waters

Quick Identification: Length up to 24–28 m (105 feet), males larger, a few weighing possibly up to 150 tons, making it the largest of all animals ever. Distinguished also by the bluish, mottled with gray upper parts, the very thin dorsal fin far back near the tail, and the bluish gray flippers with white below.

Predators: Killer Whales and humans

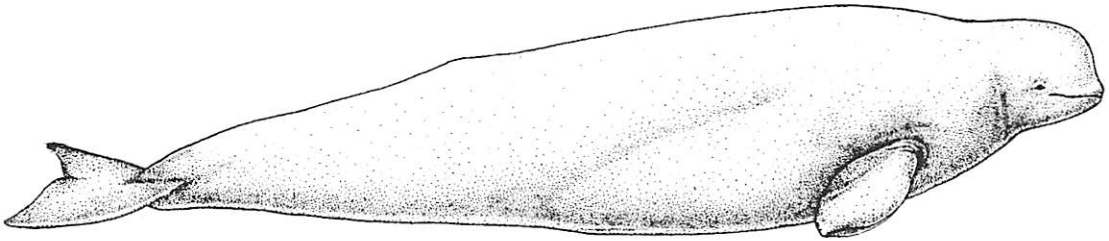
Feeding Type: Feeds almost exclusively on the shrimp-like krill. When feeding, the whale usually makes about 12 to 16 shallow dives to catch schools of krill, then 1 deep dive of about 10 to 20 minutes' duration. In summer it eats up to 4 metric tons of krill a day.

Commercial Value: Following the invention of the harpoon gun, the Blue Whale was the most sought-after target of whalers the world over. In addition to oil and meat, baleen was a valuable product. Because of its strength and low weight, baleen was used in the manufacture of numerous items such as corsets, parasols, suspenders, umbrella frames, fish rods, shoehorns, and brushes.

Status: A badly endangered species with possibly only 1,000 or fewer remaining in the world. The original population probably numbered over 200,000.

Comments: This whale has been protected since 1966 by the International Whaling Commission. The most one would see now are probably one or two together. These whales are now fully protected, but whether its population can recover appears doubtful.

Beluga Whale



Information

Name: Beluga Whale (or White Whale)

Latin Name: *Delphinapterus leucas*

Range: Circumpolar in Arctic. There are many populations in Alaska and the Canadian Arctic; some are in very low numbers and others on the order of 5,000 to 10,000 animals. One population is resident of the St. Lawrence Estuary.

Habitat: In summer, these whales frequent the shallow waters of estuaries and bays; in winter, they migrate in areas of loose ice packs or open water.

Quick Identification: Length up to 3–5 m, males larger than females. Weight 500–1,500 kg. Adults are white; juveniles gray; newborns brown or dark blue. They have a short body with small head; well-defined neck; prominent, rounded forehead; and no dorsal fin.

Predators: Killer Whales

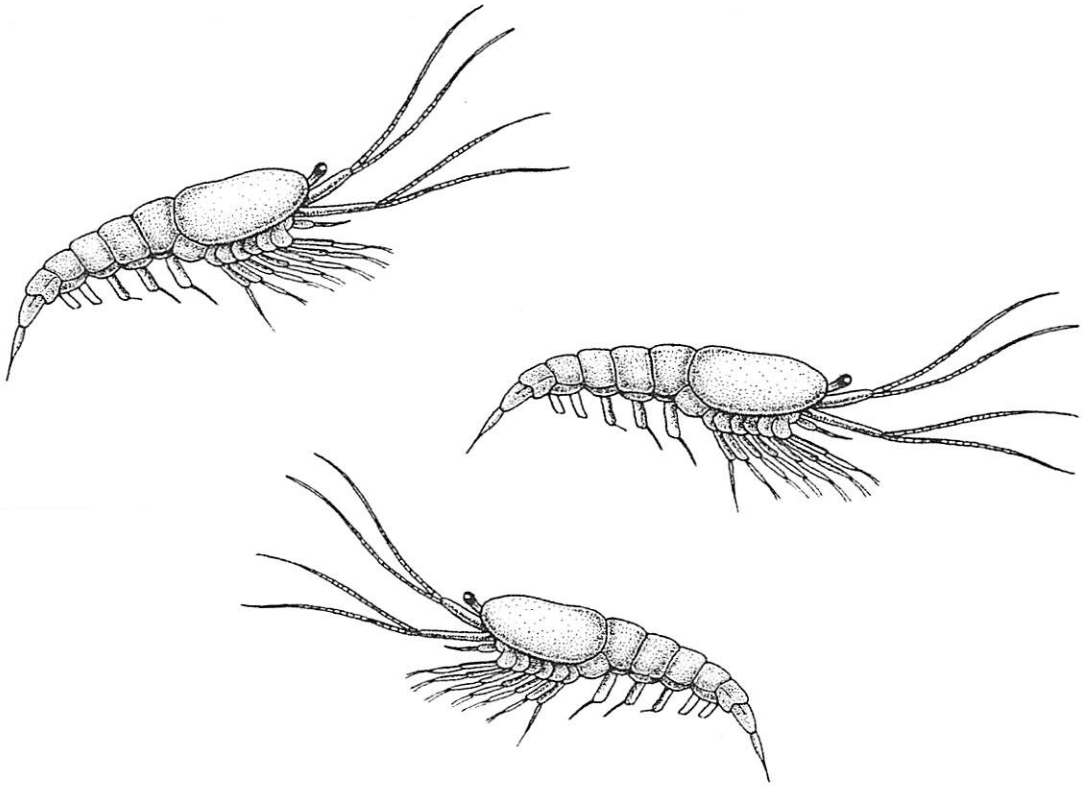
Feeding Type: On the Pacific Coast, fish such as salmon and herring; and bottom invertebrates such as squids, octopuses, crabs, shrimps, clams, snails, and sandworms.

Commercial Value: A few Beluga are taken for exhibits in public aquariums.

Status: The St. Lawrence Estuary population (350–750 animals) is endangered and fully protected by law.

Comments: This interesting whale travels in pods of 2 to 10, although groups of up to several hundred are common. It surfaces two to three times per minute to breathe, then submerges 10 to 15 minutes. Females reach sexual maturity at 4–5 years. Gestation period is $14^{1}/_{2}$ months. One young is produced every 3 years.

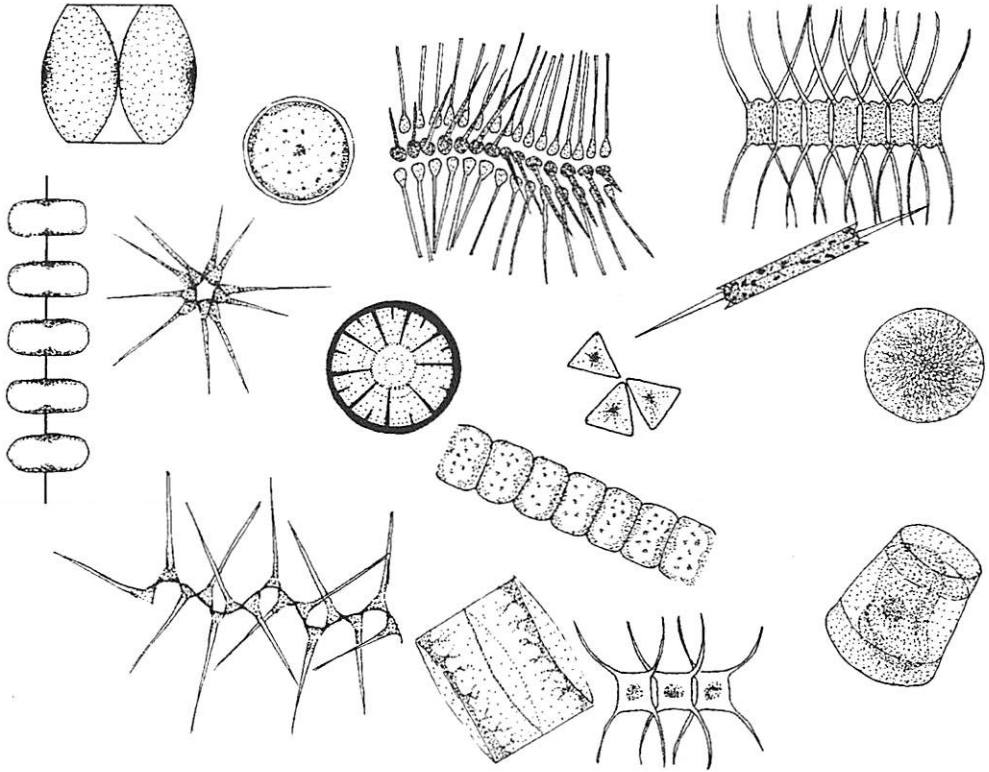
Krill



Information

Name:	Krill (Euphausids)
Latin Name:	*Euphausia sp.* The name "euphausid" means shining light. If you have ever been to an ocean at night and experienced a brightly lit sea, you may have experienced the bioluminescence of the krill.
Range:	Among the many species of krill, most prefer cold water and are found in huge numbers in the Arctic and Antarctic oceans. At times they congregate in such numbers that the water turns red. They range the entire Pacific Coast.
Habitat:	Most krill live between the surface and 3,000 feet in the open ocean, but some range to depths of 6,500 feet.
Quick Identification:	Shrimplike animals that are mainly colorless, but some have spots or washes of pink or red.
Predators:	Krill are consumed in vast numbers by baleen whales such as the Humpback Whale, Blue Whale, and Right Whale; as well as fishes, squids, and some seabirds.
Feeding Type:	The krill that occur in the warmer waters are carnivorous, but most live on diatoms and dinoflagellates, and also zooplankton (the copepods) that they filter out of the plankton with the feathery hairs on their front legs.
Commercial Value:	Some countries such as Russia are harvesting krill as a food source by making a "paste" and other foods for human consumption. Some scientists are concerned that the harvesting of krill may seriously damage vital ocean food webs.
Status:	Abundant, especially in the North Pacific
Comments:	Whalers refer to the euphausids as "krill" and have long known that when the krill put in an appearance whales will soon be sighted.

Diatoms



Information

Name: Diatoms

Range: Diatoms are tiny, plant-like organisms that drift in ocean currents. The word "plankton" means "wanderers."

Habitat: Diatoms float near the surface of the sunlit sea because they need light to grow, but there are no diatoms where the ocean is dark.

Quick Identification: These tiny, one-celled organisms have double shells composed of silica that are often decorated. Under a microscope, some look like sparkling diamonds or twinkling stars; some have spines; and some are joined together in long chains. Some diatoms are large enought to be seen by the naked eye.

Predators: Diatoms are the food of countless animal plankton, including copepods and amphipods. Plant plankton are also the food of filter-feeding seashore organisms such as oysters, clams, mussels, and scallops.

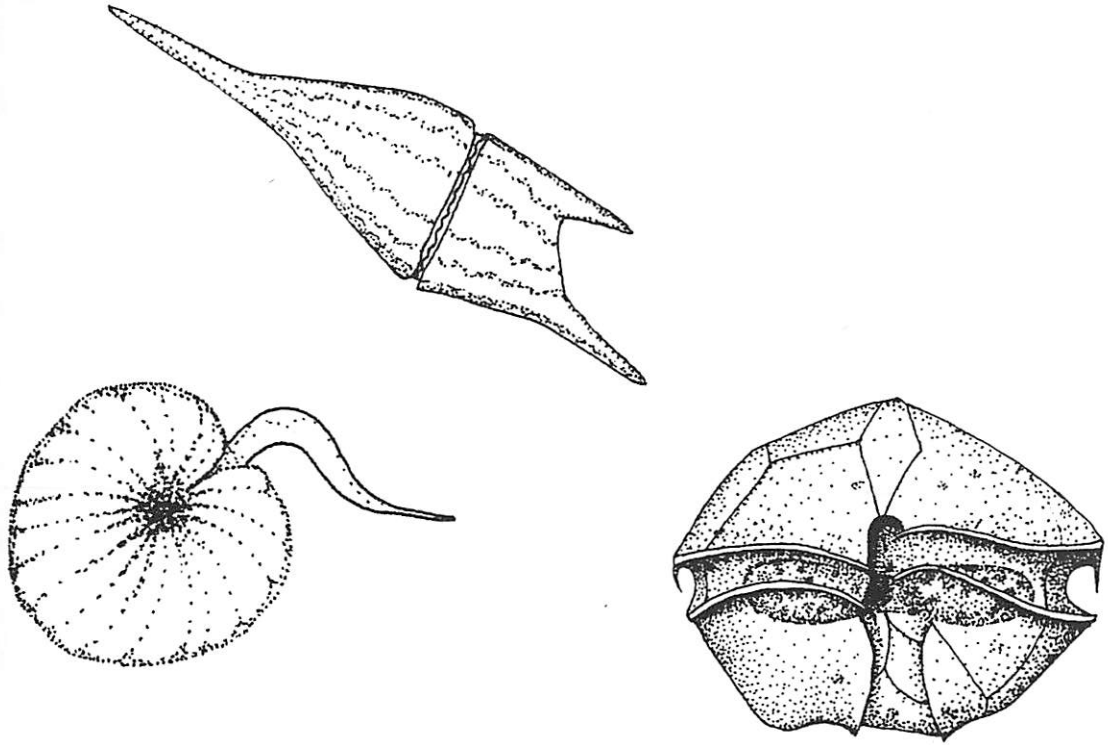
Food Relationship: Diatoms are the base of food chains and food webs. Diatoms produce their own food by using the action of sunlight on the green chlorophyll that colors all plants to form sugars from carbon dioxide and water while giving oxygen back to the ocean.

Commercial Value: None

Status: Abundant, although some scientists believe that in the Subarctic Ocean diatom populations are decreasing due to the hole in the ozone layer.

Comments: Plant plankton are so tiny and so many animals eat them that they must reproduce themselves at a staggering rate so that enough will survive to continue the population. Most plant plankton reproduce by dividing in two. Diatoms can divide into two new diatoms every 24 hours.

Dinoflagellates



Red tide

Information

Name: Dinoflagellates

Range: Dinoflagellates make up 2% of the plant-like plankton; diatoms make up the remaining 98%.

Habitat: Like diatoms, dinoflagellates remain near the surface of the ocean during the daytime, but tend to sink somewhat at night when the sun's light does not reach them.

Quick Identification: These single-celled organisms have one or two whip-like hairs (or flagella) that usually trail behind. The hair aids the dinoflagellates during movement.

Predators: Like diatoms, dinoflagellates are the food of countless animal plankton, including copepods, and amphipods; and are also the food of filter-feeding shellfish such as oysters, clams, mussels, and scallops.

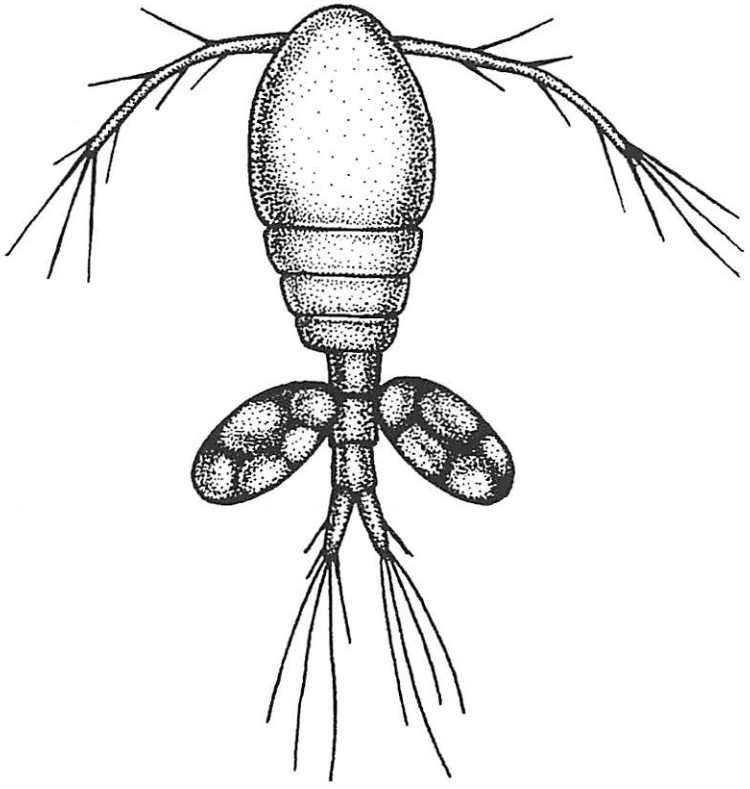
Food Relationship: Dinoflagellates and diatoms are the base of the food chain.

Feeding Type: Most are capable of photosynthesis, but many are known to eat other organisms.

Commercial Value: None

Comments: There are several kinds of dinoflagellates associated with red tide on the Pacific Coast, but *Gonyaulax catenella* (illustrated) is the one responsible for shell fish poisoning in British Columbia. Occasionally *Gonyaulax* becomes so numerous that it colors the water—hence, "red tide." When filter-feeding shellfish feed on *Gonyaulax*, the shellfish itself is not harmed, but toxin concentrates in the internal organs may become toxic to humans and even cause death. Many red tide species luminesce—that is, give off light through complex chemical reactions.

Copepods



Information

Name: Copepods. The word "copepod" comes from the Greek word "kope," meaning "an oar."

Range: There are over 7,500 species of copepods. Copepods populate every ocean of the world.

Habitat: Surface of inshore waters

Quick Identification: Copepods are easy to identify with a microscope because they are so numerous and because of their odd appearance: pear-shaped bodies and two long antennae that usually point sideways from the head. Most young copepods have a single eye and six legs. Adults still have six legs, but may have no eyes, one eye, or several eyes depending on the species. Many species can be seen with the naked eye.

Predators: Copepods are the food of countless animal plankton, as well as filter-feeding seashore organisms such as barnacles and tube worms.

Feeding Type: Copepods are a very important link in the ocean food chain because they feed on diatoms. A single copepod can have as many as 120,000 diatoms in its stomach at one time.

Commercial Value: None

Status: Abundant

Comments: Copepods reproduce very rapidly. Some species go through their entire life cycle in 9 to 10 days. After mating, the eggs are laid in two brood pouches, or egg sacs, on either side of the female's tail. In fact, you can watch the eggs hatch into free-swimming larvae under your own microscope.

Create Your Own Card

Information