

# Collecting the Marine Invertebrates of Oregon's Rocky Intertidal Areas

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by

Joe Middleton

2102 S.E. 12th St. #3, Portland, OR 97214

Oregon's rocky marine intertidal areas offer easy opportunities to view the coastline's teeming underwater wildlife up close. Though seemingly hostile, the unique habitat created by the pounding surf, and cold, nutrient rich waters provides refuge to a vast array of interesting aquatic denizens. Unique though it may be, you can bring a small piece of this beautiful creation into your own home.

The marine intertidal fauna of Oregon's coast are superbly adapted for life in their challenging and narrow habitat. For many of us, however, driving several hours to see these animals is simply not enough; their uncommon beauty and potential for study mean we must attempt to bring some home. It is legal to collect these animals in many areas. However, I urge to you consult the Oregon Department of Fish and Wildlife's regulations, available at bait and tackle shops statewide.

Though best suited for a refrigerated marine aquarium, many of the animals from tidepools will survive if kept in an understocked marine aquarium kept in a cool basement or other cool location. Most of these animals thrive at from 50-55°F, but they can tolerate temperatures up to 75°F for limited periods of time, as the tidepools they often occupy may warm up during the summer. After you get them home, you can increase survival potential with oxygenation and extra circulation.

Be careful to observe the law when collecting, as special regulations apply in some areas. Haystack Rock at Cannon Beach, for example, is now closed to the taking of all intertidal animals because it is an extensive intertidal habitat easily accessible to beachcombers. Another area prohibited to collectors, known as "Marine Gardens"

on some maps, is adjacent to Cape Foulweather on the Central Oregon Coast, immediately below the town of Otter Rock. Along with an extensive intertidal area, this location boasts a diverse ecosystem that also includes marine mammals and shore birds. While both sites are closed to the taking of animals, they are still open to those who wish to observe, and to "capture" on film.

These noteworthy sites aside, however, there are numerous smaller intertidal areas along the coast where collectors may take as many as 10 non-food intertidal invertebrates in a day. Such a haul would most certainly be enough to establish and populate almost any size native marine aquarium.

The habitats within Oregon's intertidal areas consist of three basic zones: high, middle, and low. The classification of these zones reflects the fact that areas closer to the ocean will be more frequently submerged than those higher and farther from the water. The tides vary in height and reach as well, rather than predictably covering the same spot along the beach twice a day. This difference in tides proves advantageous to some animals and disadvantageous to others. For example, colonies of California mussels can exist in higher intertidal areas than can the ochre sea star (*Pisaster ochraerus*), a potential predator. This is because the mussel has a hard bivalve shell that holds water, whereas the sea star must remain under rocks or further down in the intertidal area to prevent drying out or to avoid being picked off by shorebirds. Thus, the sea star can only encroach upon part of the mussel's territory.

The demarcations between tidal zones is often very clear. The high zone usually consists of exposed rock

covered with a thin film of algae. Acorn barnacles abound there, as they can readily withstand exposure to sunlight and air for a long time without drying out. Small periwinkle snails and limpets live in this zone, feeding off the thin film of algae at high tide and hiding in cracks or under rocks after the tide has gone out.

The middle zone is typically populated with dense colonies of mussels and various species of small macroalgae, like sea lettuce (*Ulva* sp.) and rockweed. The mussel beds are a habitat within themselves, providing a dense, labyrinthine home for everything from barnacles and porcelain crabs to sea cucumbers and even small fishes, who wait there for the returning tide. (The fishes, of course, are also interesting, but I'll refrain from describing them here. Collecting intertidal fish requires special permits which are beyond the reach of the casual collector like myself.) The tidal pools of the middle intertidal area are often lined with large numbers of the delicately colored aggregating sea anemone, *Anthopleura elegantissima*.

The lower zone is populated primarily by larger kelps and coralline algae. The most conspicuous inhabitant of this area is the giant green sea anemone, *Anthopleura xanthogrammica*. In certain cases, the purple sea urchin, *Strongylocentrotus purpuratus*, may also be very common.

Many of the common intertidal animals make good aquarium residents. Probably the hardiest are the sea anemones, *Anthopleura* sp. Both the giant green anemone and aggregating anemone can make excellent, long-lived aquarium residents after they have been carefully peeled from their rocky moorings. Bright lighting is a must for all sea anemones.

Mollusks, like the ubiquitous black turban snail (*Tegula* sp.), shield limpet, and mossy chiton, can make fine grazers of algae that grow on the rocks and panes of the aquarium. However, most nudibranchs, or "sea slugs," are very beautiful but should not be expected to live long in the home aquarium, due to their delicate nature and unique dietary needs. One such exception is the sea lemon, *Archidoris montereyensis*, which prefers sponges but may also graze on "live rocks" from tidepools. Other nudibranchs, like *Hermisenda crassicornis*, are carnivores, preying on sea anemones and even other nudibranchs.

Of the echinoderms (sea urchins), two species occur in Oregon's rocky intertidal zone. Both occur in the lower areas and so do best in a chilled tank. Both are predominantly vegetarian. The red sea urchin is a large animal that

demand a lot of room: this is the species most commonly viewed as a main threat to kelp forests, dining on the root-stalks of giant sea kelp off the coasts of California and the Pacific Northwest. The purple sea urchin is smaller and usually more abundant, living in dense colonies at the bottom of pools and channels. The sea urchin's relatives, the sea stars, are predatory. Even small species, like the six-rayed star, may prey on snails, sea cucumbers, and even other sea stars. The abundant ochre sea star is usually too large for most aquariums, but small individuals can be found under rocky shelves or boulders and may make more suitable aquarium inhabitants. The giant, highly carnivorous many-rayed star (*Pycnopodia helianthoides*) is fascinating to watch, but its demands are best met in public aquariums maintained by professionals.

Also related to the urchins and the stars are the sea cucumbers, which are filter feeders and detritivores. White sea cucumbers (*Eupentacta* sp.) are common in the mussel beds of the middle tidal zone, while red sea cucumbers (*Cucumaria miniata*) are found in pools of the lower intertidal zone. If handled carefully and kept cool, both species may survive in marine aquariums. If conditions are not right for them, however, they will die immediately, soon fouling the water if not removed right away.

Various crabs can be found throughout the intertidal region. The hermit crab (*Pagurus* sp.) and purple shore crab (*Hemigrapsus* sp.) are scavengers and usually fun to watch. Keep the aquarium tightly covered, however, to prevent the crabs from escaping by crawling along an airline or filter attachment. Add shells to the hermit crab's aquarium as the crabs will need to change into larger shells as they grow. Less frequently found, decorator crabs are interesting scavengers that "decorate" the backs of their carapaces with seaweed fragments and small invertebrates, to serve as camouflage. Decorator crabs need chilled water, however. In the striped juvenile form, rock crabs (*Cancer* sp.) are particularly attractive and can be found under rocks or in pools. However, these predators should not be trusted with other tank inhabitants. When collecting crabs, be careful to consult State laws, as many species are covered under shellfish regulations.

The listing I've provided should guide you in selecting intertidal animals well suited to life in the home aquarium and, I hope, will increase your chances for success. Although many other animals also occur in the intertidal ecosystem, it's probably best not to collect them, unless you have a chilled aquarium and are willing to experiment.