

# Intertidal Zone



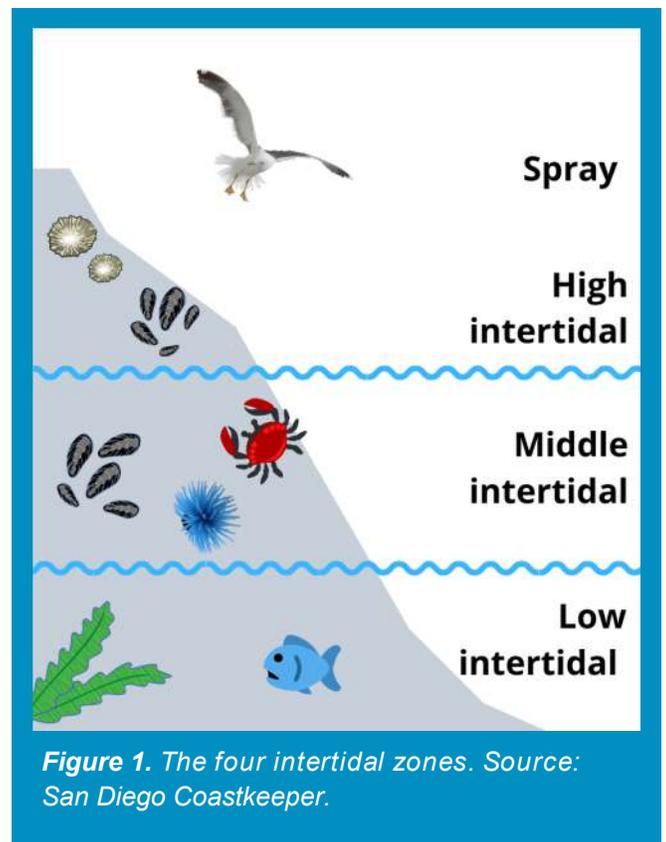
## Life on the edge

The intertidal zone is the part of the coast that is underwater at high tide and exposed at low tide. Because it sits between the high and low tide marks, the intertidal zone is a dynamic environment that changes dramatically with the rising or falling water level. Organisms living here have to be uniquely adapted to contend with many obstacles: competition for space, powerful waves, opportunistic predators, and the hot sun during low tide and being submerged during high tide. The intertidal zone is an area of constant change, and can be divided into four distinct sections, each affected differently by the tides.

## The four zones

The **spray zone** is the driest of the four zones. Sea spray provides the only water, unless there are severe rainstorms or extreme high tides. Compared to the other zones, it is hot, salty, and dry. Some of the spray zone's residents include lichens, periwinkles, crabs, and algae. Birds and other land animals will visit this area to find food. Just below the spray zone lies the **high intertidal zone**, which is only underwater during the day's highest tides. Because it is only underwater during the highest tides, creatures have to avoid drying out in the hot sun. Anemones armor themselves with a layer of shell pieces, which deters predators and keeps moisture in. Some more mobile creatures move into lower, wetter zones for shelter when tides change. Some

organisms of the high intertidal zone are barnacles, mussels, limpets, crabs, and chitons. Next comes the **middle intertidal zone**, which is underwater at high tide and exposed at low tide. The constant change of this zone makes it an extreme place to live. Because strong waves can easily wash away any creatures that aren't firmly attached to the rocks, many have adapted to hold on tight. Barnacles, for example, produce a glue-like substance that cements them to rocks. Although constant change is challenging, the balance of wet and dry supports diverse species like sea stars, anemones, mussels, limpets, chitons, sea hares, snails, crabs, fish, and octopuses. Last but not least, the **low intertidal zone** is the wettest of the zones. It is almost always underwater, except



*Figure 1. The four intertidal zones. Source: San Diego Coastkeeper.*

during the lowest low tides. The near-constant immersion in seawater supports species that don't do well with drying out, like larger fish, sea stars, urchins, marine plants, algae, eels, and abalone.

**marine protected areas:** protected areas of oceans, estuaries, or the Great Lakes

## INTERTIDAL OR TIDE POOL?

Although these words are sometimes used interchangeably, don't get them confused! The intertidal zone is the whole area between tide markers. Tide pools can be found throughout the intertidal zone. They are formed when depressions in rocks trap water, creating small pools that organisms can live in (or feed from!) during low tide.

## Visiting the intertidal zone

Want to see the intertidal zone in action? Going tidepooling is a great way to experience this unique habitat and its inhabitants firsthand. In San Diego, some of the best tide pools are found at Cabrillo National Monument, La Jolla Shores, Sunset Cliffs, Cardiff State Beach, and Swami's State Beach. Before you go, keep in mind that many of San Diego's tide pools are in **marine protected areas (MPAs)**. Like national or state parks, they have special rules to protect wildlife. In many of San Diego's MPAs, picking up or touching tide pool animals is illegal. Wherever you go, make sure to take all your trash with you, and help by picking up any litter on the beach. Walk on bare rocks instead of

slippery ones, which are usually covered with living algae; this is safer for you and for the creatures that live there. Most of all, enjoy the amazing world the intertidal zone has to offer!

## References

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