Glossary

A **abiotic factors** – nonliving components of an organism's environment. They can include waves, tides, temperature, sun exposure, salinity, etc.

adaptation – reduction of vulnerability of natural and human systems against change

algae – single-celled, multi-celled or colonial marine or freshwater plants that contain chlorophyll; they don't have true roots, stems or leaves and also do not flower or contain seeds

anthropogenic – generated by the actions of humans

apex predator – an organism (predator) that has virtually no predators of its own, occupying one of the top spots in its particular food web

autotroph – organisms that are able to produce their own food through processes such as photosynthesis

B **baseline** – measurable quantities form which an alternative outcome can be measured

biodiversity – range or variety of all organisms and ecosystems

biotic factors – living components of an organism's environment, such as predation and competition with other organisms

bivalves – have shells consisting of two halves, or valves, like clams, oysters and mussels

byssal threads – hair-like filaments that mussels produce to bind themselves to rocks and other substrates

C **chemical pollution** – the introduction of toxic substances into an ecosystem, e.g., acid rain, contamination of water supplies by pesticides

chiton – a mollusk with a long, flat foot, hardened shell, and symmetrical double gills; the shell is divided into eight adjoining segments; closely related to snails (Class:Polyplacophora)

coastal zones – interface between land and water

D **debris** – also termed marine litter, is defined as any *that does not naturally occur in the marine environment*, including articles that have been made or used by people and deliberately discarded or accidentally lost

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desiccation – the process of drying out, which is increased by the wind and the heat from the sun on exposed organisms in the rocky intertidal habitat

E **ecosystem** – relationships between and among living organisms and their non-living environment.

eddy – small volume of air (or any fluid) that behaves differently from the larger flow in which it exists

El Niño – appearance of unusually warm waters in the eastern Pacific; termed the "Christ child," because of the time of year it effects the South American coastline

ENSO – acronym for El Niño Southern Oscillation. ENSO occurs when the easterly equatorial surface winds weaken, or reverse and the warm water in the western equatorial Pacific Ocean moves to the central and eastern Pacific Ocean. This flow is accompanied by heavy rainfall along the coast of Peru, California and Mexico.

encrusting algae – multicellular algae that covers the substrate instead of growing upright

evenness – a measure of the relative abundance of the different species making up the richness of an area

exoskeleton – an external skeleton, like the “shell” of a crab

F **filter-feeder** – an animal that feeds by passing surrounding water through a filtering device (like barnacle legs, clam gills, etc.) and filtering or straining out small particles of food

G **grazer** – see **herbivore**

H **herbivore** – an animal that only eats plants or algae

high zone – twice a day, for a total of only a few hours per day, the ocean water submerges the high zone. Limpets, chitons, and the black turban snail (*Tegula funebralis),* all three mollusks, crawl on top of rocks primarily within this zone and use a sharp tongue called a radula to scrape off short growing algae.

holdfast – the part of an alga that holds it to a firm surface (substrate) by root-like branches called haptera

I **intertidal** – the area of the shore between the highest and lowest tidal levels

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L **limpet** – any member of marine gastropods with a simple, conical shell (Order Archeogastropoda)

low zone – Species that survive within the low zone are less resilient to exposure to air and sunlight but more resilient to the submergence under water and waves. These places may be exposed to air only a few times a month. It is in this zone that most life exists within the intertidal ecosystems.

M **mid zone** – is marked by its very high density of living organisms. The California mussel (*Mytilus californianus*) also occupies this zone. When the tide ebbs, mussels can tightly close their two shells to avoid desiccation.

mobile – moving; unattached to the ocean floor, opposite of sessile

N **nudibranch** – sea slug; any member of marine gastropods without a shell (Order Nudibranchia)

O **organism** – a living thing

P **photosynthesis** – the process by which green plants and algae use energy from sunlight to produce sugar and oxygen from carbon dioxide and water

predator – an animal that kills and eats other animals

prey – an organism that is killed and eaten by other animals

Q **quadrat** – a tool often used to measure the quantity of species in an area of known size

R **regenerate** – to grow back part of the body that has been removed or lost

richness – a measure of the number of different kinds of organisms present in a particular area (also see **evenness**)

rocky intertidal – stretches of the shoreline, between the highest and lowest tidal levels, that are rocky—not sandy

S **seaweed** – algae; any large photosynthetic protist, including kelp. They are not true plants but like plants they can make their own food.

sessile – stationary; attached to the sea floor or an object such as a rock, opposite of mobile

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splash zone – the area that gets only splashes from waves on most days and submerged by water for only a few hours per month

substrate – any surface on which an organism lives, ie rock, another animal, or plant

subtidal – below the intertidal, or below the level of the lowest tide

T **tides** – The daily occurrence of tides is a major factor determining the diversity of organisms living within the rocky intertidal. The sea level rises and falls as a tide twice a day on the Pacific Coast of North America. The rise and fall of the ocean is a result of gravitational forces from the Moon and the Sun. The Moon has a greater effect on the tides because it is closer to the Earth. The Moon's gravity pulls on the Earth and creates a high tide on the side that faces the Moon. The opposite side also has a high tide because of the centrifugal force that keeps the Moon and Earth apart. The other two sides have low tide. As the Earth rotates each side will get a high and low tide. These tides are exaggerated during new and full moons, when the Moon is in alignment with the Sun and the Earth. At these phases of the moon, both the Sun and the Moon's gravitational pull work together to create both extreme high tides and extreme low tides, also known as spring tides. Neap tides result when the Moon and the Sun are at right angles to each other. At these times, the difference between high and low tide is smaller.

tidal range – the difference in height between the highest and lowest tidal levels

tide pools – During low tide, tidepools often form throughout the different zones because of the irregular rocky environment. A myriad of plants and animals live in these pools, because they provide the most protection from desiccation and predation. However, these inhabitants must be able to withstand temperature and salinity changes.

transect line – a line marked at regular intervals used to measure along an area in the field (also see **quadrat**)

tube feet – an extension of the water vascular system of echinoderms (sea stars, sea urchins, etc.) which aids in locomotion, grasping, and feeding

W **wave action** – the force of the waves crashing on the rocks and organisms

Z **zonation** – the distribution of the plants and animals into horizontal bands or zones. In the rocky intertidal, zonation is determined by the tidal height and wave action