

# Glossary of Estuary Terms

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## A

**Abiotic factors** (n): non-living characteristics of a habitat or ecosystem that affect organisms' life processes such as temperature, salinity, amount of sunlight.

**Actions** (n): things people do that end up affecting other organisms and the environment. Sometimes people can harm or help the environment without even knowing it and sometimes people are very intentional about harming or helping the environment.

**Adapt** (v)/ **adaptation** (n): changes in physiological structure or behavior of an organism over long periods of time that make it easier to survive and reproduce.

**Algae** (n): chlorophyll containing non-vascular organisms similar to a plant. Many seaweeds are algae.

**Aquarium** (n): a container in which living water animals or plants are kept, or an establishment where collections of such animals and plants are kept and shown.

**Atom** (n): the smallest particle of an element. Sometimes they can exist alone but are often bound together in combinations called molecules. H<sub>2</sub>O is a molecule with two hydrogen atoms and one oxygen atom.

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## B

**Bacteria** (n): single-celled microorganisms that live in soil, water, plants, animals, or matter obtained from living things. Some are important because of their abilities to decompose things, turning dead things into detritus. Many help us to survive while others may cause disease.

**Biotic factor** (n): relationships between living organisms and the environment or each other. For instance, the presence of plankton in an estuary is a biotic factor because it is alive and it provides food to other animals. Photosynthesis is another biotic factor because it is something that some living things can do and it could increase the concentration of oxygen needed by other living things.

**Bivalve** (n): a class of mollusks that have a shell made of two hinged parts such as clams, mussels and oysters.

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## C

**Carbon dioxide** (n): a heavy colorless gas made of one carbon atom and two oxygen atoms formed by the burning and breaking down of organic substances (as in animal respiration). CO<sub>2</sub> is also absorbed by plants for photosynthesis.

**Centrifugal Force** (n): the force that tends to cause a thing or parts of a thing to go outward from a center of rotation. For instance, riding on a spinning merry-go-round, you can feel a pull away from the center. It also effects the tides as the earth and moon spin around their center of rotation.

**Concentration** (n): the amount of an ingredient or part in relation to that of others. For instance, as more oxygen is dissolved in water, oxygen concentration goes up. This is important for animals that use the oxygen to survive.

**Conserve** (v)/ **conservation** (n): protect something from harm or destruction. Some people have a strong desire to protect nature from harm.

**Consumer** (n): an animal that eats plants or other animals. See also “producer,” “primary producer,” “primary consumer” and “secondary consumer.”

**Crustacean** (n): class of arthropods with segmented bodies, exoskeletons made of chiton, and paired, jointed limbs, for example, crabs, lobsters, shrimp and barnacles.

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## D

**Decompose** (v)/**decomposition** (n): to break down or separate a thing into its parts or into simpler compounds. It’s what happens when you put food scraps in the compost and they turn into soil. It’s what happens in an estuary when dead plants and animals are broken down into food and nutrients for other living things.

**Decomposer** (n): an organism (such as bacterium, fungus, worms) that feeds on and breaks down dead plant or animal matter.

**Density** (n): the concentration of individuals or units in a unit of area or volume. For instance, a rock completely covered with barnacles has a greater density of barnacles than one with only a few barnacles with lots of space between them.

**Detritus** (n): decaying bits of plants and animals, providing nutrients for other plants and animals. It's an important factor in estuaries because in places where waves and tidal currents are reduced, detritus concentrations are higher providing nutrients for other plants and animals.

**Detritivore** (n): an organism that feeds on detritus such as a sea cucumber or a lugworm.

**Dissolved gas** (n): Mixing of a gas with a liquid. Gases can be dissolved in water just as sugar or salt can. Dissolved oxygen, for instance, is needed by underwater animals such as fish, crabs and clams that take oxygen out of the water with their gills.

**Diurnal tides** (n): a tide cycle which includes only one high tide and one low tide in a day.

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## **E**

**Echinoderm** (n): a category (phylum) of animals that usually have radial symmetry, spiny skin and tube feet such as, sea stars, sea urchins, sand dollars and sea cucumbers.

**E. coli** (n): a bacterium found mainly in the lower intestines of warm blooded animals. Most strains are harmless or even beneficial to their hosts but some can cause intestinal illness. E. coli gets in the environment from animal feces. Because of the danger of disease, we want to keep animal feces out of surface water.

**Ecosystem** (n): A community of living things, all the nonliving things that surround it, and the relationships between them. An estuary is an ecosystem.

**Eelgrass** (n): a flowering grass, with rhizomes, roots and long, ribbon-like leaves that lives underwater in estuaries. Eelgrass beds are important nursery grounds for fish and shellfish; they provide substrate for algae and small invertebrates, help with sediment stabilization and are an important source of detritus.

**Environment** (n): the surroundings or ecological community of an organism including factors such as climate, soil, other organisms and conditions that affect its ability to survive and reproduce.

**Estuary** (n): a partially enclosed coastal body of water where fresh and saltwater mix, often associated with high levels of biological productivity.

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## **F**

**Feces** (n): bodily waste discharged through the anus.

**Fecal Coliform** (n): bacteria that live in the intestines of warm-blooded animals and help with digestion. If found in water they indicate the presence of feces and indicate that the water may also include other harmful diseases such as hepatitis.

**Fertilizer** (n): something added to soil to provide nutrients (food) for plants. If fertilizer is not used correctly or disposed of properly, it may get into surface water and cause huge environmental problems.

**Filter** (n, v): a substance or process through which a system is passed to separate out different parts.

**Filter Feeders** (n): animals such as clams and oysters that filter food (often plankton) from the water.

**Food Chain** (n): the transfer of energy (food) through a series of organisms, each a source of food for the next.

**Food Web** (n): overlapping and connecting food chains.

**Fresh water** (n): water that does not contain salt, e.g. rain, drinking water and the water in lakes and rivers.

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## **G**

**Glucose** (n): a sugar that is found in plants, fruits, and blood and is a source of energy for living things. It is a product of photosynthesis and is an important source of energy for animal life.

**Gravity** (n): a force of attraction between objects that occurs because of their mass. Objects like the Earth, Moon and Sun are very massive so they have strong pull. It is the force that causes the tides.

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## **H**

**Habitat** (n): the place where an animal or plant lives.

**Herbivore** (n): an animal that eats plants.

**High-high tide** (n): the highest tide of the two high tides in a semi-diurnal tidal system.

**High-low tide** (n): the higher of the two low tides in a semi-diurnal tidal system.

**High tide zone** (n): located between the spray or splash zone and the middle tide zone on an intertidal beach. This zone is usually not underwater except during high tides. It is home to animals adapted to living in tidal habitats with long exposure to air but occasionally flooded. Organisms living here must be adapted to being subjected to changes in conditions such as temperature and access to water.

**Human impact** (n): an effect of human activity such as pollution.

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## **I**

**Intertidal** (n): Those areas on a beach or in an estuary that are flooded by the highest tides and exposed by the lowest tides.

**Invasive species** (n): a plant or animal that is not native to an area but lives there now and has the effect of changing the conditions of the ecosystem in a way that is unfavorable to native organisms.

**Invertebrates** (n): animals without backbones. Examples include jellyfish, crabs, clams and worms.

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## **L**

**Low-high tide** (n): the lower of the two high tides in a semi-diurnal tidal system.

**Low-low tide** (n): the lowest low tide of the day in a semi-diurnal tidal system.

**Low tide zone** (n): The lowest part of the intertidal zone, located just below the middle tide zone, always covered except during the very lowest tides. The most diverse (highest number of different kinds of plants and animals) tide zone in the intertidal.

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## **M**

**Macro Algae** (n): algae that are big enough to see without a microscope.

**Manure** (n): material from bodily waste from animals. It is high in nutrients for plant growth and also could contain dangerous diseases.

**Marine Biologist** (n): a scientist who studies living things (plant and animal life) in the sea.

**Microscopic** (a): very small: only able to be seen through a microscope.

**Microorganism** (n): microscopic living things such as phytoplankton and zooplankton.

**Middle tide zone** (n): an intertidal area on a beach or in an estuary located between the high tide zone and the low tide zone. This area is under water about as much time as it is exposed by the tide.

**Molecules** (n): the smallest particles of a substance, made up of atoms bound together by chemical bonds. For instance, a water molecule has two hydrogen atoms and one oxygen atom so it is also called H<sub>2</sub>O.

**Mollusk** (n): a large group (phylum) of invertebrates, usually unsegmented, with a head, foot and body covering called the mantle. Examples include octopuses, clams, snails and sea slugs.

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## **N**

**Neap Tide** (n): a tide cycle with high tides that are not very high and low tides that are not very low. Neap tides occur when the moon is in first and third quarter (half-moon), as compared to a spring tide that goes very high and very low during new and full moons.

**Nitrates** (n): chemical compounds containing nitrogen that can exist in the atmosphere or as dissolved gas in water and are an important nutrient for plant growth. Even so, we have to be careful not to let nitrates from human activity get into our estuaries. Too much plant growth can easily disrupt the balance of nature and create conditions where animals can't survive.

**Nutrients** (n): chemicals needed for the maintenance, growth and development of an organism. We have to be careful to keep nutrients from human activity out of our estuaries. Too much plant growth can easily disrupt the balance of nature and create conditions where animals can't survive.

**Non-native species** (n): an organism that naturally lives in another ecosystem but has been transported to a new ecosystem where it survives and reproduces.

**Non-point pollution** (n): water pollution from sources that are not regulated or permitted. Each individual source is often releasing only a tiny amount that is not enough to damage an ecosystem. But these sources are often so numerous that they add up to a big pollution problem. For instance, one drop of oil from one car is not enough to hurt anything very much but with so many cars, dripping oil can be a big pollution problem. Non-point source pollution is often harder to regulate than point-source pollution.

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## O

**Ocean** (n): the whole body of salt water that covers nearly 3/4 of the surface of the earth

**Organism** (n): something that's alive such as a bacterium, algae, plant or animal.

**Oxygen** (n): a gas that is plentiful in Earth's atmosphere and can dissolve in water in small concentrations. It is used by animals in respiration, so we have to be sure not to do things that will reduce the small amount of oxygen dissolved in water habitats such as an estuary.

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## P

**Pesticide** (n): a poison used to destroy organisms that are harmful or not desired. We have to be careful with pesticides because they may kill things we want to keep, not just the things we want to get rid of.

**Photosynthesis** (n): when plants use sunlight to change carbon dioxide and water into food and oxygen.

**Phytoplankton** (n): free-floating photosynthetic organisms (producers), mostly microscopic.

**Plankton** (n): tiny plants and animals that float freely in water. Most are microscopic.

**Point source pollution** (n): water pollution that enters surface water, oceans and estuaries from a facility with a permit. There is often a pipe (point source) at an identifiable industrial site. Point source pollution is easier to regulate than non-point source pollution.

**Pollutant/Pollution** (n): something that contaminates the natural environment.

**Preserve** (v): to keep or save from loss or ruin, to be kept for future use, or (n) an area where natural resources are protected.

**Primary producer/productivity** (n): the production of food and organic matter using energy from the sun (photosynthesis). Nutrients from detritus are used to transform solar energy to biomass.

**Primary consumer** (n): an animal that eats only producers. Herbivores are primary consumers.

**Producer** (n): something that makes its own food, such as a plant or algae.

**Puget Sound** (n): a deep inlet of the Pacific Ocean in western Washington extending south from the Strait of Juan de Fuca through Admiralty Inlet. A good example of a large estuary.

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## **R**

**Recreation** (n): pleasant activities people enjoy doing in their spare time to refresh their health and spirit.

**Respiration** (n): the process in which nutrients are converted into energy. For instance, animals eat to get nutrients to respire to get energy to move and grow.

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## **S**

**Salinity** (n): the concentration of salts dissolved in salt water.

**Salish Sea** (n): a new name (first coined in 1988 by Bert Webber and officially adopted by Washington State, British Columbia, the U.S. and Canada in 2009) for the inland sea including the waters of the Puget Sound, Strait of Juan de Fuca, Georgia Strait, Hood Canal, San Juan Islands and Gulf Islands.

**Salmon** (n): any of various large food and game fishes that are related to trout, have reddish or pinkish flesh, live in oceans or large lakes, and swim up rivers or streams to deposit or fertilize eggs and usually die after breeding.

**Salt** (n): any of numerous ionic compounds formed by replacement of part or all of the hydrogen of an acid including but not limited to common table salt: crystals that consist of sodium and chloride, used for seasoning or preserving food.

**Saltwater** (a): related to, living in, or consisting of salt water.

**Salt water** (n): water containing salt, usually found in the ocean and, in lower concentrations, in estuaries.

**Saturation** (n): the state of water being filled (absorbed or dissolved) to the point where no more can be added. Oxygen and salt are examples of substances that can be dissolved in water but the water can only hold so much. When it is full, it is 100% saturated. If it only has half of what it can hold, it is 50% saturated.

**Secondary Consumer** (n): an animal that eats other animals: for instance, carnivores.

**Sediment** (n): material suspended in, or settled out of a liquid. A river will carry sediment washed from the land but when it gets to the estuary, the water will slow down and the sediment will settle out to the bottom and fill in the estuary.

**Semi-diurnal tide** (n): a tide cycle which includes two high tides and two low tides in one day

**Slough** (n): a backwater where there is not much current. It can look like and may be connected to a river or stream but it is often influenced by the tide in an estuary.

**Smolt** (n): the juvenile stage of salmon life cycle when they change from freshwater to saltwater fish with changes in body chemistry. This is one of the reasons salmon need estuaries, where fresh and salt water mix.

**Splash zone** (n): the zone highest up on the beach that only gets salt water on it from the splash from waves and ocean spray. Often this zone is completely dry or soaked in saltwater so animals must be adapted to wild changes in conditions.

**Spring tide** (n): a tide cycle with very high and very low swings. This is not a seasonal thing, but rather a big rise and fall like a bouncing spring. This happens at full and new moons.

**Storm water** (n): also known as runoff, this is the water that runs into streams, rivers, ditches, gutters and ponds when it rains. Coming off of roofs, roads, pavement, lawns and other places on the land, storm water may carry dirt and pollution from the land into water bodies where plants and animals live. Development of roads and buildings and associated drainage can also change the amount of water that runs off the land. These changes can be harmful to nature so we have a lot to do to protect our salmon, crabs and orca whales.

**Sub-tidal zone** (n): The part of the shore located just below the low tide zone. During times of very low tides, this zone is covered with shallow water right at the water's edge. It is always flooded but as the tide comes in, it gets deeper and further from the water's edge.

**Surface water** (n): water on land in streams, brooks, rivers, ponds, lakes etc. This is the water that will eventually run into an estuary.

**System** (n): a group of interrelated objects or units combined to form a whole and to function or work together. An automobile is a complicated system. There are many parts and if they all work, and if they are connected properly, the car will go. An estuary is like that, too, but it is much more complicated. If the parts are healthy and if they are connected properly, we will have salmon and orca whales.

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## **T**

**Temperature** (n): important abiotic factor affecting estuary organisms and whether they thrive or perish by influencing metabolic rate, growth and reproduction.

**Thermal** (a): having to do with heat or temperature.

**Tide** (n): periodic rise and fall of ocean waters due to the gravitational pull of the sun and moon, the terrain of the sea floor and shore and the rotation of the earth.

**Tide Table** (n): a document predicting when the tides will be high and low each day.

**Toxic** (adj): poisonous

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## **V**

**Vertical Axis** (n): the top-to-bottom line on a graph that usually represents a change in a variable per fixed unit of measurement (the horizontal axis). On a tide chart, for instance, the vertical axis is the height of the water level and the horizontal axis is time.

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## **W**

**Water body** (n): lake, stream, pond, bay, river, ocean, estuary, etc.

**Water Quality** (n): measurement of factors of water such as temperature, salinity, dissolved oxygen, pH. These factors will determine suitability of the water for organisms.

**Watershed** (n): the area of land that drains into a water body.

**Waves** (n): an oscillating energy that moves across the surface of water that is generated by wind.

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## **Z**

**Zones/zonation** (n): distributions of plants or animals caused by gradations of abiotic and biotic factors such as the tidal zones on a beach.

**Zooplankton** (n): free-floating, aquatic animals, usually microscopic.