

## Glossary

**abyssal plain**—large expanse of deep ocean bottom, located at depths of 3,000–5,000 meters. Abyssal plains are interrupted by ridges, trenches, and seamounts

**air bladder or swim bladder**—balloon-like internal organ functioning in buoyancy control; found in some fish

**anal fin**—stabilizing fin found on the ventral, posterior section of some fish

**Antarctic Bottom Water**—a deep ocean current formed by thermohaline (density-driven) circulation in the Atlantic Ocean

**aphotic zone**—the area of the ocean where light levels are too low to support plant growth

**atmospheric deposition**—the release, or deposition, of water and other chemical substances back into the ocean from the atmosphere

**aquaculture**—the intensive culture (growth in artificial conditions) of marine and freshwater organisms

**asthenosphere**—the portion of the mantle that underlies the lithosphere. The asthenosphere is solid rock that “flows,” potentially allowing the overlying lithospheric plates to move horizontally.

**back marsh**—marsh that is located on the landward side of a barrier island, closest to the mainland

**barbels**—sensory structures, usually paired, found on the head or chin of some fish

**barrier island**—an island that is oriented parallel to the coast and affords protection to coastal shorelines

**bar**—coastal depositional feature comprised of mud, shell, and/or sand

**bathymetry**—ocean floor depth. A bathymetric map shows variations in the ocean floor depths

**bicarbonate**—a chemical ion ( $\text{HCO}_3^-$ ) used by certain aquatic organisms in shell production

**bivalve**—a class of organisms belonging to the Phylum Mollusca; the soft bodies of these animals are covered by two shells, held together by a common valve, or hinge.

**benthic habitat**—habitat located on the ocean floor

**benthic zone**—the ocean floor

**bloom**—a rapid increase in abundance of an organism, typically associated with phytoplankton or zooplankton

**breaker**—a term used to describe a wave as it begins to “trip” over itself as it approaches shallow water

**brood**—to incubate, as in to brood eggs or young

**bulkhead**—a sloping man-made structure, often composed of large rocks, placed parallel to the beach to retard the rate of erosion

**buoyancy**—the ability to remain afloat in a liquid

**calcium**—a naturally-occurring chemical ion ( $\text{Ca}^{2+}$ ) used by certain aquatic organisms in shell production

**carbon dioxide** ( $\text{CO}_2$ )—a naturally occurring gas, produced during the process of respiration and used during the process of photosynthesis

**carnivore**—a meat-eating organism

**caudal fin**—the posterior-most fin of a fish; the tail fin

**chemosynthesis**—a process by which organisms synthesize organic molecules by using energy derived from chemical reactions

**Clean Water Act**—Federal legislation enacted in 1972 to clean up the nation’s waterways and bordering oceans

**community**—all of the species living in a defined area or environment

**consumer**—an organism that actively catches its prey or scavenges on dead, decaying plant and animal matter

**continental crust**—the portion of the Earth’s outer layer (crust) that comprises continents

**Continental Drift Hypothesis**—the concept that continents “drift” across the ocean floor, developed by Alfred Wegener

**continental plate**—a lithospheric plate that consists primarily of continental crust

**continental rise**—the area of the deep ocean at the base of the continental slope, where the seafloor becomes less steep and flattens; occurs at depths of approximately 3,000 meters

**continental shelf break**—the transition between the continental shelf and continental slope, where the seafloor gradient increases rapidly

**continental shelf**—the uppermost part of a continental margin, adjacent to the coast

**continental slope**—the steepest area of the continental margin, just beyond the continental shelf

**Coriolis effect**—due to Earth’s rotation, objects are deflected to the right in the Northern Hemisphere and to the left in the Southern Hemisphere

**counter-shading**—a form of protective coloration where the dorsal (upper) surface of an organism is more darkly shaded than the organism’s ventral (bottom) surface

**crest**—the highest part of a wave

**current**—movement of water caused by winds or density differences

**delta**—the feature made of sediments where a river meets the ocean (or a lake).

**density**—the ratio of mass ( $m$ ) to volume ( $v$ ) where  $D = m/v$

**detritivore**—an organism that feeds on dead and decaying matter

**diatom**—microscopic unicellular plant

**dinoflagellate**—a microscopic protozoan that has some animal-like and plant-like characteristics

**dorsal**—the upper surface of an organism; opposite of ventral

**dorsal fin**—a stabilizing fin found on the dorsal surface of most fish

**ebb tide**—the outgoing tide, during the transition from high tide to low tide, when tidal currents move seaward

**echo sounding**—the pulsing and bouncing of sound waves from an instrument to an object and back to the instrument again; used to map the ocean floor (see sonar)

**ecosystem**—the living and non-living parts of an environment

**endangered**—a term used to describe an organism or group of organisms on the verge of extinction

**environment**—the external surroundings and conditions that affect the growth and development of organisms

**epifaunal**—organisms living on the surface of the ocean floor

**epipelagic zone**—the uppermost part of the pelagic zone that extends to about 200 meters depth

**estuary**—a semi-enclosed body of water, such as a harbor, bay, inlet, or sound, where fresh water and salt water meet

**excurrent siphon**—a small tube-like structure found in clams and other bivalves used to expel filtered water from the organism

**exoskeleton**—outer skeleton found on some marine organisms such as crabs, sand dollars, and sea stars

**extinct**—a term used to describe species that are no longer found living on earth

**eye spot**—a structure used to detect light and dark; found in some marine organisms

**fertilization**—the joining of male and female gametes (eggs and sperm)

**fetch**—the distance of the ocean (or other body of water) over which the wind blows

**filter-feeder**—an organism that filters its food from surrounding waters, such as a clam or an oyster

**finlet**—a very small modified fin found on some fish

**flood tide**—the incoming tide, during the transition from low tide to high tide, when tidal currents move landward

**food chain**—the intricate, often overlapping, feeding relationships that exist among producers, primary consumers, secondary consumers, and detritivores; also referred to as a food web

**food web**—the intricate feeding relationships that exist among producers, primary consumers, secondary consumers, and detritivores; also referred to as a food chain

**foot**—a muscular structure found in clams; used for burrowing

**gill**—a respiratory structure that functions in the exchange of gases ( $O_2$  and  $CO_2$ ) and other compounds between certain organisms and their environment

**groin**—a man-made structure placed perpendicular to the shoreline that extends from the upper edge of the beach to beyond the low tide mark; intended to retard the rate of erosion

**Gulf Stream**—one of the most well-known and most extensively studied surface currents; found on the western side of the Atlantic Ocean, traveling north

**gyre**—a large circular surface current; often covers a large portion of an ocean, as with the North Atlantic Gyre (includes the Gulf Stream)

**habitat**—the physical place where an organism or group of organisms lives

**hadal zone**—the deepest part of the ocean; begins at a depth of 6,000 meters

**herbivore**—an organism that feeds on plants

**hydrologic cycle**—a complex series of transport mechanisms by which water moves from the oceans onto land and back to the oceans again

**hydrosphere**—the water that covers the surface of the earth

**incurrent siphon**—a small tube-like structure found in clams and other bivalves; used to bring water into the organism from the surrounding environment

**infaunal organism**—an organism that lives within the sediment of the ocean floor

**jetty**—a man-made structure placed perpendicular to the shoreline, that extends seaward from the upper edge of a beach; typically used to stabilize an inlet to prevent migration; often placed at the entrance to harbors to slow the natural longshore drift of sand and subsequent sand build-up in the harbor

**lithosphere**—the rigid, brittle portion of the outer layers of the earth. The lithosphere is comprised of the earth's crust and the uppermost mantle

**lithospheric plate**—plates formed when the brittle lithosphere breaks into huge pieces

**littoral zone**—the intertidal zone

**longshore drift**—the movement of sediment parallel to the coast, along the beach; results from the zig-zag motion of breaking waves that meet the coast at an angle

**madreporite**—large pore located on top of the central disk of the sea star which allows ocean water to enter the organism

**magnesium**—a naturally-occurring chemical ion ( $Mg^{2+}$ ), used by certain aquatic organisms in shell production

**metamorphosis**—distinct changes in body form that occur as an organism transforms from an embryo to the adult form

**Mid-Atlantic Ridge**—a long chain of submarine mountains found near the center of the Atlantic Ocean; formed by seafloor spreading

**molt**—the process by which an organism sheds its exoskeleton

**mud flat**—a coastal depositional feature composed primarily of fine silts and clay (mud)

**niche**—all of the physical and chemical factors affecting an organism's habitat, as well as the role that the organism plays in its habitat

**nitrate**—a naturally-occurring chemical ion ( $NO_3^-$ ) that serves as a nutrient to aquatic organisms; the most common form of nitrogen (N) found in the ocean

**neap tide**—when tidal range is less than the average; occurs twice a month during the two quarter phases of the moon, when the sun and moon are at a right angle relative to the Earth

**neritic zone**—the part of the pelagic zone that extends from the high tide mark seaward to a depth of approximately 200 meters

**nonpoint source pollution**—pollution that cannot be attributed to a single source

**North Atlantic Deep Water**—a deep ocean bottom current in the Atlantic Ocean formed by thermohaline (density-driven) circulation

**North Atlantic Gyre**—a large circular surface current that rotates clockwise in the Atlantic Ocean in the Northern Hemisphere; includes the Gulf Stream

**nourishment/renourishment**—a man-made attempt to redirect or replenish sand on beaches, so as to retard the rate of erosion

**nursery**—an area of high productivity where organisms in their early life cycle stages find an abundance of food and protection from predators

**ocean basin**—each of the Earth's four major oceans is defined by the basin-like appearance of its seafloor

**oceanic crust**—the portion of the Earth's outer layer that is formed at spreading ridges and is the solid rock that underlies ocean sediments

**oceanic zone**—the part of the pelagic zone that extends from 200 meters depth seaward to deep ocean waters

**oyster reef (or bed)**—a unique coastal habitat composed primarily of oysters and vacated oyster shells

**ozone layer ( $O_3$ )**—found in the Earth's upper atmosphere; acts as a protective layer by reducing the amount of ultraviolet radiation that reaches the Earth's surface

**Pangea (or Pangaea)**—the supercontinent that existed more than 240 million years ago, the break-up of which led to the development of our modern continents

**pectoral fins**—a pair of lateral fins used for swimming in fish

**pelagic habitat**—the open ocean

**pelagic zone**—the area of the open ocean located just below the ocean's surface

**pelvic fins**—paired fins on the ventral surface of fish; function in steering in some fish

**photic zone**—the area of the ocean where light penetrates enough to support plant growth

**phytoplankton**—small plants that float with the ocean currents, most of which are photosynthetic

**phosphate**—a chemical ion ( $\text{PO}_4^{3-}$ ) that serves as a nutrient to aquatic organisms; the most common form of phosphorus (P) found in the ocean

**photosynthesis**—the process by which plants use energy from the sun to transform carbon dioxide ( $\text{CO}_2$ ), water ( $\text{H}_2\text{O}$ ), and nutrients, such as nitrate ( $\text{NO}_3^{2-}$ ) and phosphate ( $\text{PO}_4^{3-}$ ), into a usable form of food and consequently, energy. Oxygen ( $\text{O}_2$ ) is given off as a by-product

**pincer**—a modified appendage that functions in feeding and protection in some crustaceans (e.g., crabs)

**plankton**—generally small plants and animals that float with currents near the ocean's surface; plankton typically are not strong swimmers, if they swim at all

**plate boundary**—the edge of a lithospheric plate

**plate**—see lithospheric plate

**point source pollution**—pollution that can be connected to a single source

**Polar Easterlies**—winds that blow from east to west in the polar regions

**population**—a group of organisms of the same species living in a defined area

**predator**—an organism that feeds on other organisms; usually refers to animals that hunt and eat other animals

**primary dune system**—the line of sand dunes closest to the water's edge

**primary producer**—a green plant that produces its own food through the process of photosynthesis

**primary productivity**—related to the amount of photosynthesis occurring in a certain region

**producer**—an organism that produces its own food; for example, green plants make their food through the process of photosynthesis

**protandry**—a form of sexual hermaphroditism; an organism matures first as a male, spawns for several years as a male, then undergoes sexual transition as it transforms into a female, living the remainder of its life as a female

**protective coloration**—an adaptive color trait that aids an organism in avoiding predators

**protogynous**—a form of sexual hermaphroditism; an organism matures first as a female, spawns for several years as a female, then undergoes a process of sexual transition as it transforms into a male, living the remainder of its life as a male

**protozoan**—a microscopic unicellular organism

**renewable resource**—a resource that is unlimited in its bounty and ability to renew itself, such as energy from the sun

**rocky outcrop**—rocks and overhanging ledges that are exposed on the seafloor and form unique marine habitats; also known as live bottom or hard bottom habitats

**salinity**—total amount of dissolved inorganic salts in the ocean; expressed in parts per thousand, or ‰

**sand bar**—a coastal depositional feature composed primarily of sand; forms elongate bottom features; sometimes exposed at low tide

**sand flat**—a coastal depositional feature comprised primarily of sand in a broad, flat area; often exposed at low tide

**Sargassum**—a floating brown alga abundant in the Atlantic Ocean’s Sargasso Sea

**seamount**—a volcano that has its origin on the seafloor. Seamounts that grow above sea level are most often referred to as volcanic islands.

**seawall**—a man-made solid vertical structure constructed parallel to the beach; intended to retard the rate of erosion and protect beaches or buildings

**secondary consumer**—an organism that feeds on other consumers

**secondary dune system**—a system of sand dunes located landward of the primary dune system

**semidiurnal**—occurring twice in a 24-hour time period, as with semidiurnal tides

**simultaneous hermaphroditism**—a form of sexual hermaphroditism in which both male and female sex organs are present in the same individual

**slack tide**—the time just before the tide turns during which there is very little tide-induced water movement

**sonar**—the pulsing or bouncing of sound waves from an instrument to an object and back to the instrument again; used to map the ocean floor (see echo sounding)

***Spartina alterniflora***—smooth cord grass found in saltmarsh and wetland areas

**spawn**—to release gametes (eggs or sperm)

**spit**—the elongate extension of sand on the downdrift end of a barrier island; formed as a result of longshore drift

**spring tides**—when tidal range is greater than the average; occurs twice a month, during the full and new moon phases, when the sun, Earth and moon are arranged in a line

**stormwater runoff**—refers to rainwater as it flows over and through the ground

**supratidal environment**—any coastal area that is above the high tide mark

**surface current circulation**—the movement of water as the result of wind motion along the surface of the open ocean

**swash**—the movement of the waves up onto the beach as they break and release energy

**swim bladder or air bladder**—a balloon-like internal organ functioning in buoyancy control; found in some fish

**synchronous hermaphroditism**—a form of sexual hermaphroditism in which an organism spawns for several years as one sex, undergoes sexual transition, actually “turning into” the opposite sex, and lives the rest of its life as the sex that it transformed into

**thermohaline circulation**—temperature and salinity-driven (i.e., density-driven) circulation of water masses throughout the ocean (surface and deep)

**Thermal Convection Hypothesis**—the concept that convection cells of heat within the Earth’s mantle generate the energy that ultimately drives the lithospheric plates on the Earth’s surface

**thermocline**—where temperature changes rapidly; typically in the upper 75 meters of the ocean’s surface

**threatened**—refers to organisms in danger of becoming extinct

**tidal bulge**—the elevated portion of the sea surface (i.e., high tide) that results from the “pull” of gravitational attraction between the Earth and moon (and from the Earth and sun)

**tidal cycle**—the complete cycling from one high tide to the next high tide

**tidal range**—the vertical difference in the height of the water between high and low tides

**tides**—the periodic rise and fall of the ocean’s surface due to the gravitational attraction on the Earth by the moon and sun

**top-level consumer**—an organism near or at the top of a food chain or food web

**topography**—the shape of the surface of land above sea level

**Trade Winds**—the major surface currents driven by winds which blow from east to west at about 20 degrees of latitude

**trophic levels**—different “levels” of feeding, as in a food web

**trough**—the lowest part of a wave; between two crests

**tube feet**—special suction cup feet found in sea stars

**ventral**—the underside surface of an organism; opposite of dorsal

**watershed**—all precipitation that falls over a specific geographic region that is physically separated from other drainage basins by areas of higher elevation. This precipitation accumulates in streams, rivers, lakes, and ultimately the ocean.

**water vascular system**—specialized system that aids the sea star (and its nearest relatives) in locomotion and with obtaining its food

**wave height**—the vertical distance between the trough and crest of a wave

**wave length**—the horizontal distance between the crests of two successive waves

**Westerlies**—winds that blow from west to east along the 40-50 degree latitudes

**wetland**—an area of gradual transition where land meets water; classified by water saturation for specific time periods annually.

**zooplankton**—small animals that float with the currents at the ocean’s surface; these organisms cannot significantly alter their position in the water column

## References

- Adkins, A.T.** (Editor). 1982. *Understanding Our Coastal Environment*. South Carolina Coastal Council, 40 p.
- Ballantine, T.** 1991. *Tideland Treasure*. University of South Carolina Press, South Carolina, 218 p.
- Castro, P. and M.E. Huber.** 1997. *Marine Biology*. Wm. C. Brown Publishers, Iowa, 450 p.
- Coulombe, D.A.** 1992. *The Seaside Naturalist*, Simon & Schuster, New York, 246 p.
- Garrison, T.** 1996. *Oceanography—An Invitation to Marine Science*, Wadsworth Publishing Company, California, 567 p.
- Gosner, K.L.** 1987. *A Field Guide to the Atlantic Seashore from the Bay of Fundy to Cape Hatteras*. Houghton Mifflin Company, Boston, 329 p.
- Greene, T. F.** 1998. *Marine Science*. Amsco School Publications, Inc., New York, 580 p.
- Hayes, M.O. and T.W. Kana,** Editors. 1980. *Terrigenous Clastic Depositional Environments*, University of South Carolina Press, Technical Report No. 11-CRD, 316 p.
- Kana, T.W.** 1988. *Beach Erosion in South Carolina*, South Carolina Sea Grant Consortium Special Publication SCSG-SP-88-1, 55 p.
- Kaufman, W. and O. Pilkey** 1983. *The Beaches are Moving*. Duke University Press, Durham, NC, 336 p.
- Meyer, P.** 1992. *Nature Guide to the Carolina Coast*. Avian-Cetacean Press, North Carolina, 148 p.
- Natural Resources Defense Council.** *Ebb Tide for Pollution: Actions for Cleaning Up Coastal Waters*. Natural Resources Defense Council, Washington, 43 p.
- Report of the Governor's Freshwater Wetlands Forum.* 1990. Springs Foundation, Inc., South Carolina, 52 p.
- South Carolina Public Beach & Coastal Access Guide.* South Carolina Department of Parks, Recreation & Tourism and the South Carolina Coastal Council, 127 p.
- Sumich, J.L.** 1976. *An Introduction to the Biology of Marine Life*. Wm. C. Brown Company Publishers, Iowa, 348 p.
- Turekian, K.K.** 1976. *Oceans*. Prentice-Hall, Inc. New Jersey, 149 p.
- Weber, M. and R. Tinney.** 1986. *A Nation of Oceans*. Center for Environmental Education, Inc. Washington, 95 p.
- Wells, J.T. and C.H. Peterson.** *Restless Ribbons of Sand—Atlantic & Gulf Coastal Barriers*, Louisiana Sea Grant College Program, Louisiana, 19 p.
- Williams, S.J., K. Dodd, and K.K. Gohn.** 1991. *Coasts in Crisis*. U.S. Geological Survey Circular 1075, 32 p.