

Glossary

abiotic a nonliving component of an environment (e.g., light, water, oxygen, carbon dioxide, inorganic substances) that affects ecological functions

algal bloom sudden rapid increase in the growth of algae or phytoplankton, generally caused by high nutrient levels and other favorable conditions and resulting in a concentrated mass of algae. These sudden increases, and the subsequent decay of the algae, can have widespread effects on the water column including a decrease in light and dissolved oxygen. Some algal blooms can be toxic; see red tide.

alosid fish of the genus *Alosa*, including American shad, alewife, and blueback herring

anadromous fish fish (such as shad or salmon) that begin life in freshwater, migrate as juveniles to saltwater, then return as adults to spawn in freshwater

anoxic deficient in or without oxygen

bathymetry measurement and mapping of water depth and underwater landform features

benthic living on or in the ocean floor

bioaccumulation the process by which substances, such as contaminants, are absorbed and retained over time within the tissues of an organism, either directly from the environment or as a result of consuming food that contains the substances.

biodiversity a contraction of the term “biological diversity;” the number, variety, and variability among living organisms in a region

biomagnification increase in the concentration of certain persistent substances (for example, heavy metals or fat-soluble pesticides) in successively higher levels of the food chain; if the tissues of a lower-order species contain contaminants, these substances are absorbed as they are consumed by higher-order species, leading to higher concentrations of the contaminants

biota all the living organisms in a given area, including plants, animals, and microorganisms

brackish water, such as that found in an estuary, with a level of salinity between freshwater and seawater; salinity of brackish water ranges from 0.5–30 ppt

bycatch fish other than the target species caught while fishing for a different species (e.g., blue crabs caught in shrimp trawls)

candidate species a species that is being reviewed for listing as an endangered or threatened species (at either the state or federal level)

chlorophyll a (chl a) a pigment found in many photosynthetic organisms

Clean Water Act act passed in 1972 to amend an earlier law; established the basic structure for regulating both the discharge of pollutants into U.S. waters and quality standards for surface waters

community an integrated group of species that live and interact, such as through competition or predation, in a given area

congener one of a series of structurally similar chemical compounds

cultural eutrophication nutrient enrichment and increase in biological productivity within an ecosystem caused by human activities rather than natural processes

DDT dichloro-diphenyl-trichloroethane; a chemical pesticide, widely used during the 1940s and 1950s, that is a persistent, bioaccumulative, and toxic pollutant; its use has been banned in the U.S. since 1972

diadromous fish fish that migrate between fresh and salt waters at some point in their life cycle.

Diadromous fish can be anadromous, that is, spending most of their lives at sea but returning to fresh water to spawn (e.g., salmon); or catadromous, that is, spending most of their lives in freshwater lakes, ponds, or rivers, then migrating out to sea to spawn (e.g., American eel).

dioxins family of compounds, some of which are highly toxic; produced as byproducts of combustion and industrial processes such as chlorine bleaching of paper; dioxins are stable, persistent compounds that include seven 2,3,7,8-substituted polychlorinated dibenzo[*p*]dioxin (PCDD) congeners and ten 2,3,7,8-substituted polychlorinated dibenzofuran (PCDF) congeners. One of the most toxic is known as TCDD (tetrachlorodibenzo-*p*-dioxin). Some polychlorinated biphenyls (PCBs) that have similar properties are referred to as “dioxin-like.”

dissolved oxygen (DO) the amount of oxygen dissolved in water, usually expressed in parts per million (ppm)

ecosystem function part of the set of conditions and processes by which an ecosystem remains self-supporting; ecosystem functions include such processes as primary productivity, decomposition, and nutrient cycling

ecosystem a distinct ecological unit composed of the physical environment in a specific geographic area, the processes that control its dynamics, and the organisms that live and interact within that environment

ecosystem goods and services the benefits people obtain from ecosystems; among others, these include food and water; flood and disease control; economic resources; and recreational opportunities

elver a stage in the development of eels

emergent vegetation benthic plants that are rooted underwater but grow above (emerge from) the surface of the water; they include such plants as cattails and pond lilies

estuary a semi-enclosed region where a river meets the sea and freshwater mixes with saltwater

eutrophic very rich in organisms and organic material

eutrophication nutrient enrichment in a body of water, either from natural processes or as a result of human activities; this enrichment stimulates the growth of aquatic plants and enhances biological productivity, leading to reduced levels of dissolved oxygen

fish barrier an artificial obstacle in a river, such as a dam or weir, that impedes or prevents fish movement either upstream or downstream

fish passage a structure or other means that allows fish to pass a dam or other barrier in a river

fixed solids the mineral fraction (such as sand or gravel) of total suspended solids

head of tide the uppermost point at which a river is affected by tidal fluctuations; often considered the upper boundary of an estuary

head pond a pond or reservoir created by a dam or weir on a river

hypoxic deficient in oxygen; with a dissolved oxygen (DO) content of 2 mg/L or less

intertidal zone the area between the highest and lowest tide levels, which is alternately covered by water and exposed to the air twice a day by the tidal cycle

light penetration the depth to which light can reach in the water column; the concentration of suspended solids in the water column affects light penetration because these solids absorb and reflect light

limiting factor a parameter, such as light, temperature, availability of nutrients, or abundance of predators, that restricts the growth or abundance of a species

mesohaline moderately brackish water with salinities ranging from 5–18 ppt

mesotrophic with moderate levels of nutrient enrichment and productivity

non-point source pollution pollutants whose source cannot be attributed to a single, identifiable location; these pollutants may come from a wide area (such as runoff from land) or from a number of sources, not from one specific location.

oligohaline with salinities of 0.5–5.0 ppt

oligotrophic relatively low in nutrients, with little biological productivity

parts per billion (ppb; ng/g) number of parts of a chemical found in 1 billion parts of a particular gas, liquid, or solid mixture

parts per million (ppm; µg/g) number of parts of a chemical found in 1 million parts of a particular gas, liquid, or solid mixture.

parts per thousand (ppt) number of parts of a chemical found in 1 thousand parts of a particular gas, liquid, or solid mixture.

parts per trillion (ppt; pg/g) number of parts of a chemical found in 1 trillion (10^{12}) parts of a particular gas, liquid, or solid mixture.

PCBs *see* **polychlorinated biphenyls**

PCDD *see* **dioxins**

PCDF *see* **dioxins**

pelagic living in open water

point source pollution pollution that can be attributed to a specific, identifiable location; sources often include industrial plants

polychlorinated biphenyls (PCBs) a group of chemicals that includes 209 individual compounds (congeners). Some PCBs with properties similar to those of dioxins (coplanar PCBs) are referred to as “dioxin-like.”

polychlorinated dibenzofurans (furans) *see* **dioxins**

polychlorinated dibenzo-para-dioxin *see* **dioxins**

primary productivity the rate at which new plant biomass is formed by photosynthesis

red tide term sometimes used for harmful algal blooms that may appear to stain the water red or brown. These algal blooms, which often occur in protected bays, can release toxins that harm other marine life and potentially pose a risk to humans.

resilience the ability of a community or ecosystem to recover from a disturbance or other challenge

salinity a measure of the salt concentration in water; usually given in parts per thousand (ppt); higher salinity means more dissolved salts

salt marsh a coastal habitat consisting of salt-resistant plants that are rooted in a soft sedimentary substrate and are tolerant of periods of partial submersion

salt wedge a layer of higher-salinity water that intrudes into the mouth and lower course of a river; the denser salt water moves along the bottom of the estuary in the form of a wedge, underlying fresher water from the river

smolt a young salmon that has undergone the morphological and physiological changes necessary to make the transition from living in freshwater to living in saltwater and has begun seaward migration

species of concern species that have become vulnerable to extinction and might need conservation actions to secure their long-term viability

stability an ecosystem’s ability to continue to function when stressed by disturbance and its ability to return to its original state following a disturbance (resilience)

submerged aquatic vegetation (SAV) plants that grow beneath the water’s surface

subtidal shallow water zone that is permanently under water and is never exposed, even at low tide

threatened species a species that has declined significantly in total numbers and is likely to become endangered in the near future

tidal marsh coastal wetland area that is alternately covered and exposed by the rise and fall of the tide; usually treeless, but rich in submerged and emergent vegetation

tidal prism the volume of seawater that flows in and out of an estuary in the course of a complete tidal cycle

tidal range the difference in water level between consecutive high and low tides at a given place

total suspended solids the total concentration of material that remains suspended in water, including both inorganic material, such as silt (fixed solids), and organic material, such as animal waste and plant debris (volatile solids)

trophic level position an organism occupies in the food chain: primary producers (plants), primary consumers (herbivores), secondary consumers (predators), and so on; organisms at each level eat resources from a lower level in the energy cycle, and all but the highest levels are in turn consumed by organisms at higher levels

turbidity a reduction in light penetration below the surface as a result of suspended particles in the water that absorb or scatter light

volatile solids the organic fraction of total suspended solids in the water column, which consists of organic compounds of animal or plant origin that can be treated by biological processes

water column a conceptual vertical column of water extending from the water surface to bottom sediments

watershed a region or area drained by a specific body of water, such as a river system and its tributaries