GLOSSARY

A B C D E F G H I J K L M N
O P Q R S T U V W X Y Z

A

abiotic. The non-living or physical part of the environment.

abundance. The number of individuals of a given species found in an area over a given time period.

accretion. Accumulation of sediments by deposition, e.g., the gradual buildup of land along a river delta or shoreline.

aerobic. Occurring in the presence of, or using, oxygen; also refers to metabolic function in the presence of oxygen.

aggradation. Increase in elevation due to deposition of sediment.

algal bloom. Population explosion of phytoplankton in response to optimal growth conditions, including nutrient over-enrichment from wastewater and nonpoint sources. Blooms can result in oxygen depletion and biological impacts; see also *eutrophication*.

alluvium. Stream-deposited sediment.

ambient. Prevailing environmental conditions, as opposed to those measured in a laboratory or waste stream.

amphipod. Any of numerous small, flea-like crustaceans of the order Amphipoda. The body is generally flattened from side to side. They are abundant in marine and estuarine environments.

amnesic shellfish poisoning (ASP). A form of poisoning caused by exposure to *Pseudo-nitzschia* spp. Characterized by both gastrointestinal and neurological disorders. Gastroenteritis usually develops within 24 hours of the consumption of toxic shellfish; symptoms include nausea, vomiting, abdominal cramps, and diarrhea. In severe cases, neurological symptoms also appear, usually within 48 hours of toxic shellfish consumption.

anaerobic. Occurring in the absence of oxygen; also refers to metabolic function in the absence of oxygen, an ability of some species of microbes.

annelid. Any segmented worm of the invertebrate phylum Annelida. Annelids are subdivided into three classes: Polychaeta (marine worms), Oligochaeta (earthworms), and Hirudinea (leeches).

anoxia. Absence of oxygen. See also *anaerobic* and *hypoxia*.

aquifer. A subsurface water-bearing layer of rock or sediment that can yield water.

artesian. A perpendicular well bored into the ground through which water rises to the surface, due to underground pressure.

anthropogenic. Human caused.

assemblage. A subset of a taxonomic group located in a given area. Used in community ecology.

assimilative capacity. The amount of pollution a water body can receive without degradation as a result of the natural ability of the water and its associated chemical and biological systems to dilute or transform contaminants.

atmospheric deposition. The contribution of atmospheric pollutants or chemical constituents to land or water ecosystems. Deposition can occur as a result of human activities (e.g., fossil-fuel combustion, industrial processes, and transportation) or natural processes (e.g., volcanic activity).

autotrophic. Property of an organism sustained entirely by food created within; contrasts with *heterotrophic*.

B

bacteria implementation group (BIG). Thirty-member committee preparing an implementation plan to remedy high levels of bacteria in waterways identified in four TMDL projects in the Houston Region.

bag seine. A device used to capture fish by enclosing or encircling them. Made of a mesh panel suspended between 2 poles. The mesh panel has weights at the bottom and floats at the top. A mesh bag is attached at the center of the panel that holds the captured organisms.

ballast water. Water used to stabilize a ship—sometimes in place of cargo.

base flow. The volume of flow in a stream or river during dry conditions (as opposed to conditions influenced by storm runoff).

bathymetry. The science of measuring depths; underwater topography defined by patterns in depth.

benthic organism. An organism living primarily in or on bottom sediments.

benthos. Organisms living in or on the bottom of a body of water.

berm. An elongated mound of sediment elevated above the surrounding area; can be natural (e.g., an underwater longshore bar created by currents) or *anthropogenic* (e.g., a ridge of sediment disposed along a navigation channel.

best management practices (BMP). Pollution-control techniques applied to waste disposal, spill control, site runoff, and other activities. Implemented to prevent or reduce the amount of pollutants entering a water body.

bioaccumulation. The accumulation of a contaminant in the tissues of a living organism due to uptake from the environment.

bioamplification. The process of increasing the magnitude of a contaminant in the tissues of a living organism due to uptake from the environment.

biochemical oxygen demand (BOD). A measure of the amount of oxygen consumed by natural, biological, and chemical processes that break down organic matter. High levels of oxygen-demanding wastes in waters deplete *dissolved oxygen,* thereby endangering aquatic life.

bioconcentration. The magnification of contaminant concentrations in organisms' tissues at each successive level in a food chain; generally occurs due to a contaminant being soluble in fatty tissues and not in water.

biodiversity. Degree of variability in the living world. The term can describe the number of species, the amount of genetic variation, or the number of community types present in a given area.

biogenic. Created by biological processes.

biomass. The amount of living tissue (e.g., the unit area or volume of habitat).

bioturbation. The disturbance of sediments due to the physical and biological activities that occur at or near the sediment surface.

bivalve. A mollusk with two hinged shells belonging to the class Bivalvia (e.g., oysters, clams, and scallops).

blue-green algae. Bacteria-like, primitive algae that manufacture photosynthetic pigments but lack chloroplasts; an increase in blue-green algae can indicate an environmental stress such as pollution.

brackish. Having a salinity lower than that of seawater. Having the salinity of seawater and freshwater mixed. Typical of estuarine environments.

bulkhead. An artificial vertical wall constructed to stabilize shorelines and prevent wave damage to upland property.

by-catch. The incidental catch of one species during pursuit of another. Often applied to species of fish and shellfish captured incidentally by commercial fishing and shrimping operations.

C

caprock production. A hydrocarbon reservoir that is trapped in an impermeable rock formation from which oil and gas can be extracted.

carbon flux. The transformation and transport of organic compounds in an ecosystem via trophic dynamics, chemical conversion and physical movements.

carnivore. An animal that eats only other animals.

catch per unit effort (CPUE). The number or weight of organisms caught per unit of fishery effort; often used as a measure of abundance.

channelization. The conversion of a naturally flowing river or stream to a dredged drainage or navigation channel, often lined with concrete. Increases flow velocity, but is harmful to stream ecology.

chlorophyll *a*. A green pigment found in the chloroplasts of green algae and higher plants. Used as an indicator of the amount of algae present in surface water.

chronic intake dose. The exposure of an individual averaged over a long time period (7 years to a lifetime). Expressed as a mass of a substance contacted per unit body weight per unit time.

ciguatera fish poisoning. Caused by exposure to *Gambierdiscus toxicus* spp., *Prorocentrum* spp., *Ostreopsis* spp., *Coolia monotis*, *Thecadinium* spp., and *Amphidiuim carterae*; produces gastrointestinal, neurological, and cardiovascular symptoms. Generally, diarrhea, vomiting, and abdominal pain occur initially, followed by neurological dysfunction including reversal of temperature sensation, muscular aches, dizziness, anxiety, sweating, and a numbness and tingling of the mouth and digits.

coarse particulate organic matter (CPOM). Carbon compounds in an aquatic system larger than 1 mm; sources may include leaf litter, dying aquatic plants and animal feces.

coastal prairie. A native habitat consisting of a mixture of upland and wetland geomorphology, hydrology, and vegetation located along the Gulf Coastal Plain, Coastal prairie was once a dominant habitat along the Texas and Louisiana coasts. However, coastal prairie has declined greatly in area during the last century due to agricultural, urban, and suburban development.

colonial nesting. The propensity for some bird species, e.g., most egrets and herons, to nest in dense colonies.

colony-forming units (CFU). A unit of measure used to determine the concentration of bacterial colonies on laboratory media.

commensal. A symbiotic relationship in which one individual benefits while the other neither is harmed nor benefits.

community. An assemblage of various plant and animal species that share a given habitat at the same time.

competition. Rivalry by multiple individuals or populations in pursuit of a limited resource (e.g., food or space).

contact recreation. Human activity involving bodily contact with water, e.g., wade fishing and swimming; increases the risk to health when contaminants or pathogens are present in the water.

contaminants of concern. Chemicals that may or may not be regulated but may pose a significant threat to ecological and human health if released into the environment.

conservation. Management that preserves, protects, and restores natural resources (e.g., habitat) in the presence of social and economic needs.

conservation easement. An agreement between a landowner and a government authority or qualified land trust for conserving habitat. The agreement restricts the way in which a land parcel can be used in the future.

copepod. A member of the class Copepoda, the largest group of small crustaceans; comprises a major portion of the zooplankton and is used as food by some species of birds and commercially important fish.
cordgrass. Any member of the genus *Spartina*; a partially submerged wetland plant common to brackish and salt marshes of the Gulf Coast.
Coriolis force. A force resulting from the earth's rotation which affects the path of winds and ocean currents. Causes hurricanes and whirlpools to rotate counterclockwise in the Northern Hemisphere and clockwise in the southern.
crustacean. Any arthropod of the class Crustacea, which includes shrimp, crabs, barnacles, and lobsters.
cryptophyte. Microscopic unicellular algae that occur in freshwater and marine habitats, and act as important primary producers in deep waters.
ctenophore. A member of the marine phylum Ctenophora, known as "comb jellies"; closely related to jellyfish, but lacking the stinging cells.
cubic feet per second (cfs). Standard unit for measurement of stream flow or wastewater discharge.
cultch. Hard materials (such as stones or shells) that are laid down on substrate to furnish points of attachment for mollusk larvae (spat).
cultivar. A variety of a plant developed from a natural species and maintained under cultivation.

D

decomposer. An organism that consumes and breaks down organic matter.
delta. An exposed or submerged deposit of stream-borne sediments found at the mouths of rivers.
demersal. Animals living on or near the bottom of a body of water; e.g., bottom-feeding fish such as the croaker.
denitrification. A function of the nitrogen cycle, the bacterial conversion of nitrates, nitrites, and ammonia to elemental nitrogen.
denivellation. Wind forcing of water resulting in depth changes. In Texas estuaries it can produce more extreme water-level fluctuations than tides.
density current. Water currents resulting from water of differing densities; dependent upon varying salinity, temperature or pressure. E.g., seawater from the Gulf intrudes landward along the bottom of the Houston Ship Channel, displacing lighter, low salinity waters, creating a salinity wedge.
deposit feeder. An organism that ingests bottom sediments and digests the microorganisms and organic matter present.
dermo. A disease of oysters caused by the parasitic protozoan *Perkinsus marinus*; outbreaks are most severe during drought periods in high salinity estuarine waters.
detritivore. An organism that feeds on and breaks down decomposing organic matter.
detritus. Decaying organic matter.
diatom. Any of a group of photosynthetic, unicellular or colonial algae; they use silica as a structural component of the cell wall. A dominant component of the plankton in Galveston Bay.
dinoflagellate. Unicellular algae with two flagellae arranged in a characteristic pattern, with characteristics of both plants and animals. This group includes some common plankton species and also red-tide organisms such as *Gonyaulax monilata* and *Karenia brevis*.
dissolved organic matter (DOM). Carbon compounds in water solution, generally from decomposition of plant and animal tissues in natural settings, but also including some contaminants.
dissolved oxygen (DO). Oxygen dissolved in water that is necessary for the survival of most aquatic life.

dioxin. A class of chemical contaminants formed during combustion processes such as waste incineration, forest fires, and backyard trash burning, as well as during some industrial processes, such as paper-pulp bleaching and herbicide manufacturing. Dioxins have been linked to cancer and reproductive and developmental problems.

diurnal tide. Tide occurring on a cycle of once daily (one low and one high tide within one lunar day).

diversity. A measure of the variety of living things in a community, based upon one of several mathematical formulae which account for both numbers of species and numbers of individuals within species. High diversity results from high numbers of species and an even distribution of numbers within species. Stressed environments generally have low diversity.

DO deficit. The difference between the oxygen saturation value in water (calculated under the conditions measured at sampling) and actual oxygen concentration. The measure is useful because it corrects for temperature, salinity, and atmospheric pressure conditions that influence the saturation level. A high deficit can indicate a water quality problem.

dredge and fill. The movement of sediments from one location to another, typically for navigation channel maintenance, shoreline development, or habitat-restoration activities. Dredge-and-fill activities typically require a Section 10/404 permit issued by the U.S. Army Corps of Engineers.

dredging. Excavation usually carried out at least partly under water, in shallow seas, or freshwater areas, for gathering up bottom sediments and disposing of them at a different location.

E

E. coli- *Escherichia coli* is a gram-negative bacterium found in the intestines and waste of warm-blooded (endothermic) animals. When *E. coli* bacteria are present in the environment, viral and bacterial pathogens may also be present. *E. coli* is a currently accepted indicator of contamination in freshwater.

ecological niche- The way in which a species relates to, or fits within its environment, including the conditions in which it lives, the resources that it consumes, and how it interacts with other organisms or species. If each condition, resource and interaction is assigned a variable, the niche is an "*n*-dimensional hypervolume".

ecological services (ecosystem services). Human benefits arising from the ecological functions of ecosystems (e.g., fisheries harvests, nature tourism, and provision of clean water).

ecosystem. A natural system that includes the totality of living things, their physical environment, and the interrelationships among them.

ecosystem-management model (ecosystem-based management). Management of ecological systems that integrates ecological, social, and economic goals and recognizes humans as key components of the ecosystem.

ecotourism. Tourism involving travel to areas of natural or ecological interest for observing wildlife and learning about the environment, e.g., birdwatching.

effluent. Wastewater discharged to a receiving body of water.

El Niño southern oscillation. Result of the cyclic warming and cooling of the ocean surface of the central and eastern Pacific. This phenomenon can have dramatic effects upon weather patterns and the movement of marine populations.

embayment. A bay or body of water enclosed in such a way as to resemble a bay.

emergent wetlands. Marshes in which vegetation is rooted underwater and the tops exposed (as contrasted with submerged vegetation or upland habitats).

Enterococcus. Genus of bacteria, some of which are pathogens, that are enteric to humans or animals. *Enterococcus* is a currently accepted indicator of contamination in saltwater.

entrainment. Transport of sediment or living organisms in a water current, as when organisms enter a cooling-water intake structure.

environmental impact statement (EIS). A document required under the National Environmental Policy Act that outlines the predicted environmental effects of actions undertaken by the federal government.

ephemeral. Describes a body that only contains water during part of the year.

epibenthic. Located at the bay bottom.

epifauna. Organisms living on the bay bottom.

epiphytic. Any plant growing on another plant; e.g., algae growing on the surface of submerged aquatic vascular plants.

estuary. A coastal, semi-enclosed body of water within which saltwater from the sea mixes with freshwater from land drainage.

estuarine debris. Trash in a bay or along its shoreline. Consists of tires, construction wastes, household trash, and plastic. Degrades aesthetic values and represents a hazard to wildlife (e.g., entanglement or mistaken consumption as food).

eustasy. Global sea-level fluctuation caused by changes in the volume of seawater.

eutrophication. Nutrient over-enrichment of a water body resulting in overgrowth of algae, frequently followed by algae die offs and oxygen depletion.

evapotranspiration. Loss of water from the soil through uptake by living plants, transport to leaf surfaces, and evaporation to the atmosphere.

exotic species. Nonindigenous species of plants and animals (e.g., grass carp, Chinese tallow tree) often established purposefully or inadvertently by human activity. Some such species have fewer natural population controls in their new environment, becoming pest or nuisance species.

exposure dose. The amount of a pollutant an individual is exposed to during a given time period.

F

fecal coliform bacteria. Microorganisms that usually occur in the intestinal tract of warm-blooded animals (including humans), e.g., *Escherichia coli*. Commonly used as an indicator of contamination.

feedback loop. A pathway in a system whereby some of the output contributes to the input of a system—for example, population size (environmental) or body temperature (physiological).

filter feeder. An organism (e.g., an oyster) that feeds by pumping and filtering large volumes of water to consume material in suspension, such as phytoplankton.

fine particulate organic matter (FPOM). Organic matter (for example plant tissue) which has undergone the first stages of decomposition to the fine particle stage.

finfish. Fish, as opposed to shellfish.

fingerlings. Immature finfish.

flocculent. Fine-grained material in suspension in water, which can settle to form a coating on the bottom.

flood attenuation. The ability of a landscape to store and slowly release rainfall.

flooding surface. a surface that separates landward deposits below from open bay or marine deposits above.

flushing. The natural process of water replacement in an estuary. Galveston Bay, for example, is flushed four to five times per year by river water and other runoff.

food chain. A series of interconnected feeding relationships; the process of energy capture (by green plants) and successive transfer to grazers (primary consumers) and predators (secondary consumers and above).

food web. The network of trophic relationships in an ecosystem; a complex network of food chain interactions.

Foraminifera. A group of mostly marine, amoebae-like protozoa characterized by an internal calcareous shell.

fragmentation. The breaking up of large expanses of habitat into smaller tracts,

freshet. A large influx of freshwater inflow, for example, following seasonally high precipitation.

freshwater inflow. Flow from freshwater rivers, streams, and runoff that contributes to salinity gradients, nutrient loadings, and sediment inputs required to support an estuary.

fringing marshes. Estuarine wetlands at the bay-land interface that are typically dominated by salt-marsh cordgrass (*Spartina alterniflora*).

furans. A class of dioxin-related chemical contaminants that are formed during combustion processes such as waste incineration, forest fires, and backyard trash burning, as well as during some industrial processes, such as paper-pulp bleaching and herbicide manufacturing. They have been linked to cancer and reproductive and developmental problems.

G

gastropod. A member of the class Gastropoda of the phylum Mollusca; examples include shelled snails, limpets, abalones, and shell-less nudibranchs.

gentrification. The sociocultural changes in an area resulting from affluent people purchasing property in that community. It often results in the displacement of lower-income people or suburbanization of communities based on traditional occupations (such as the suburbanization of communities traditionally dominated by commercial fishing families).

geographic information system (GIS). Any computer hardware-and-software system that relates and displays collected data in terms of geographic or spatial location. GIS tools are increasingly being applied to ecosystem, watershed, and landscape studies, both in ecological research and for environmental planning.

gill net. Gear used to capture fish by entanglement. Composed of a curtain of netting with floats at the surface and weights at the bottom.

green algae. Algae of the division Chlorophyta. They contain chlorophyll and accessory pigments called carotenoids.

ground-truthed. Verified (as remote-sensing data) with reference to information is collected on location.

groundwater. Subsurface water, in the zone of saturation (below the water table); occurs in aquifers at one or more depths.

guild. A group of species with similar ecological niches. E.g., the planktivorous fishes would constitute an estuarine species guild.

H

habitat. The place in the environment where an organism lives or can be found.
halophytic. A plant adapted to living in a saline environment.
Hazard Analysis Criteria Control Point (HACCP). Management system in which food safety is addressed through the analysis and control of biological, chemical and physical hazards from raw materials production, procurement and handling, to manufacturing, distribution, and consumption of the finished product.
hazard index. As defined by the U.S. EPA: "A summation of the hazard quotients for all chemicals to which an individual is exposed. A hazard index value of 1.0 or less than 1.0 indicates that no adverse human health effects (noncancer) are expected to occur."
hazard quotient. As defined by the U.S. EPA: "… Simply the ratio of the exposure estimate to an effects concentration considered to represent a 'safe' environmental concentration or dose."
hemocyanin. A compound acting as the oxygen-transport system in the blood supply of mollusks and arthropods.
herbivore. An animal that eats plants or algae.
herbaceous matter. Matter from to a non-woody perennial plant in which the aboveground biomass dies back each year.
heterotrophic. Property of a species that acquires its energy through the consumption of other organisms rather than by producing its own food within; contrasts with *autotrophic*.
homogeneous. Of uniform nature; similar in kind.
hydric. Property of a soil formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper layer, such that it supports hydrophytic vegetation.
hydrologic cycle. The continuous cycling of water in the biosphere as solid, liquid, and gas. Water evaporates from oceans to the atmosphere and is returned to the ocean via precipitation and river flow.
hypoxia. Depletion of dissolved oxygen to low levels in water, i.e., less than 2 mg/L; can result from natural or human introduction of oxygen-demanding compounds or from nutrient over-enrichment.

I

immunocompromise. An impairment of an individual's immune system which diminishes the ability to battle infection.
impervious cover. Land surface with a low capacity for soil infiltration, e.g., parking lots or roadways. Degrades water quality by increasing surface runoff and the quantity of nonpoint source pollution.
impingement. The accumulation of organisms on a water-intake screen, e.g., at a power-plant cooling-water intake.
indicator species. A species which, through its population size or condition, mirrors environmental conditions within an ecosystem.
infauna. Animals living within sediments.
inflow. The water feeding an estuary, generally referring to river sources.
inlet. A channel of water between adjacent barrier islands that connects a bay with the open ocean.
intertidal. The portion of shoreline exposed at low tide and inundated by high tide.

invasive species. Nonnative species that establish, reproduce, and spread in the region to which they were introduced.

isopod. A member of the crustacean order Isopoda; the body is covered by a series of armor-like plates. The pill bug is a terrestrial isopod.

J

jetty. An artificial structure that projects into a body of water and is used to direct water currents or accommodate maritime vessels.

L

lacustrine. Relating to a lake environment.

landings. The part of fishing vessel's fisheries catch that is brought ashore. Landings are the total catch minus the discards.

Landsat. An unmanned satellite system, which acquires images of the earth's surface features and digitally transmits them to earth for use in a variety of applications.

light attenuation. The decrease in light intensity with depth.

limiting nutrient. Elements required for growth of organisms, particularly primary producers such as algae and vascular plants. A nutrient that has a lower concentration relative to other available nutrients. The limiting nutrient has the greatest inhibition on the population growth of plant species.

loading. The rate of introduction of a constituent (e.g., contaminant) to a receiving water, for example in pounds per day. Loading is significant in relation to the volume and circulation of the receiving water; problems occur when high loadings occur into receiving waters with limited assimilative capacity.

longshore drift. The movement of water and suspended and dissolved materials along and parallel to a shoreline as a result of tidal, wind-driven, or other currents.

lowstand. The lowest sea-level depth reached in a given geologic period.

M

macroalgae. Algae large enough to be visible.

macrobenthos. Bottom-dwelling organisms larger than 1 mm (0.04 inch); dominated by polychaete worms, anthozoans, echinoderms, sponges, ascidians, and crustaceans.

macroflora. Plants large enough to be visible.

macroinvertebrates. Invertebrates large enough to be retained on a 0.5 mm mesh screen.

macrophyte. A higher green plant—for example, rooted aquatic vegetation.

macrozooplankton. Planktonic animals that range in size from 200 to 2,000 mm.

meander. One of a series of curves in the course of a stream.

meiofauna. Intermediate-sized animals in the 0.002 to 0.02-inch size range; in part composed of nematodes, copepods, and juvenile forms of larger invertebrates.

meroplankton. Temporary planktonic life stages of non-planktonic species.

mesozooplankton. Planktonic animals 200 µm to 2 centimeters in size.

microalgae. Planktonic, epiphytic, or epibenthic algae too small to be visible.

microfauna. Benthic animals smaller than 0.1 mm in size.

microflora. Microscopic plants.
microzooplankton. Microscopic planktonic animals.
midden. A large mound of used shells, bones, debris, and other artifacts associated with past human activity.
mima mounds. Also called "pimple mounds." Naturally occurring, circular to oval dome-like mounds found in coastal prairie wetland complexes.
minimal risk level (MRL). As defined by the U.S. EPA: An "estimate of the daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse noncancer health effects over a specified duration of exposure."
miocene. The geologic time period from about 23 to 5 million years before the present, in which bony fishes proliferated.
mollusk. Soft-bodied invertebrates of the phylum Mollusca, usually possessing a calcium carbonate shell; examples include chitons, oysters, clams, nautiluses, squids, and octopuses.
most probable number (MPN). A method of measuring the concentration of fecal coliform bacteria in a water sample.
mudflats. Areas of mud and sand found in bays, bayous, lagoons, and estuaries that are exposed at low tide. They provide important foraging habitat for many fish and wildlife species.
mysid. Any small shrimp of the family Mysidae, common in marine environments and used for standardized laboratory toxicity testing.

N

nanoplankton. Members of the plankton assemblage 2 to 20 µm in size.
nanozooplankton. Planktonic animals 2 to 20 µm in size.
National Estuary Program. A nonregulatory program of the U.S. EPA that encompasses 28 estuaries of national importance. It requires that each estuary develop a comprehensive conservation and management plan. Its goal is to improve the quality of the nation's estuaries.
National Pollution Discharge Elimination System (NPDES). A federal regulatory program to control discharges of pollutants to surface waters of the United States; see also *Texas Pollution Discharge Elimination System*.
nekton. Any free-swimming animal of the water column (contrasted with most plankton, which are at the mercy of currents).
nematodes. Simple roundworms that are unsegmented and lack appendages. Live in freshwater, saltwater, and terrestrial habitats and include many of the parasitic species that cause important diseases of plants, animals, and humans.
neurotoxic shellfish poisoning (NSP). Poisoning by brevetoxin (a toxin produced by some species of dinoflagellates). Symptoms may include dizziness and nausea and, can also cause respiratory irritation when the neurotoxin becomes airborne through wave action.
niche space. The range of niche dimensions (environmental conditions, necessary resources, and interactions) of a given species or organism.
non-contact recreation. Human activity on water but not involving bodily contact with water, e.g., boating.
nonpoint source (NPS). Any source other than a point source; any of a number of diffuse, land-based sources of constituents (including pollutants) in water, which are generally transported in runoff from precipitation. Contrasts with point source pollutants, or end-of-the-pipe constituents generally transported in wastewater from a discrete source.

nursery habitat. Portions of the estuary where marine species spend their early life stages, fulfilling requirements for adequate food and protection from predators. Examples include emergent marshes and seagrass beds.

nutrient cycle. Chemical transformation of nitrogen, phosphorus, and silica compounds in continuous cycles of organic and inorganic phases in an ecosystem.

O

oligochaete. Any annelid worm of the order Oligochaeta. These worms are segmented and have greatly reduced heads and may be found in freshwater, terrestrial, and saltwater habitats.

omnivore. An animal that eats various types of food such plants, animals and detritus.

opportunistic species. Species that take advantage of an ephemeral condition of great resource availability, especially soon after a disturbance.

organic matter. Decaying plant and animal matter (*detritus*) in varying stages of decomposition.

organochlorine pesticides. *Anthropogenic* chlorinated chemicals used for the control of insects. These pesticides (such as DDT) are highly persistent in the environment and have been linked to hormone disruption and reproductive problems in aquatic animals.

osmoregulation. The physiological ability of organisms to regulate cellular ion concentrations, thus maintaining biochemical balance in the face of variability in environmental conditions such as salinity.

ostracod. A member of the crustacean subclass Ostracoda, small marine organisms resembling clams with appendages.

outfall. A site where there is a large point loading of domestic, industrial, or heat wastes to an aquatic system; a discharge point for a wastewater stream, e.g., a sewage treatment plant or refinery.

oyster dredge. A shellfish-collection device composed of a basket attached to a bar that is dragged by a boat over any oyster reef for scraping oysters off the bottom.

P

paralytic shellfish poisoning. Caused by exposure to *Alexandrium* spp. Symptoms are purely neurological and their onset is rapid. Effects last a few days in non-lethal cases. Symptoms include tingling, numbness, and burning of the mouth, loss of muscle coordination, giddiness, drowsiness, fever, rash, and staggering.

palustrine. Relating to a freshwater environment, e.g., a fresh marsh.

pathogen. A disease-causing microbe.

pelagic. Living in open waters; not associated with the bottom or other structures, e.g., sharks of the open ocean.

penaeid shrimp. Members of the shrimp family Penaeidae, including the well-known commercial species (brown, pink, and white shrimp).

percolation rate. A property of sediments measured by the volume of water that can infiltrate per unit time. Fine clays have extremely slow percolation, while percolation into coarse sand is essentially instantaneous.

pH- a measure of how acidic or basic a solution is. pH is measured on a scale of 0 to 14, with 7 being neutral, below 7 being acidic, and above 7 being basic.

photic zone. The upper portion of the water column admitting sufficient light for photosynthesis. Reduced with increased turbidity and, in Texas estuaries, rarely reaches the bottom in open bays.

photosynthesis. The incorporation of solar energy into carbon compounds by green plants, chemically combining atmospheric carbon dioxide and water. The chemical opposite of respiration (the equivalent of burning of carbon compounds to power metabolism), ultimately powering the vast majority of life on earth.

physiography. The physical structure of an environment.

phytoplankton. Green plants (for example algae) inhabiting waters, unattached and drifting with the currents.

piscivorous. Fish-eating.

planktivorous. Plankton-eating.

planktonic. Drifting unattached in water. The plankton include both plants and animals, ranging from microscopic to those weighing several pounds or more (e.g., jellyfish).

pleistocene. The geologic period from approximately 2.6 million to 12,000 years before the present, when large characteristic mammals flourished and then went extinct, and humans first appeared.

point source. End-of-the-pipe constituents (including pollutants) generally transported in wastewater from a discrete source.

polychaete. Marine worms of the class Polychaeta of the invertebrate worm order Annelida. Polychaete species dominate the marine benthos, with dozens of species present in natural marine environments. These worms are highly diversified, ranging from detritivores to predators, with some species serving as good indicators of environmental stress.

polychlorinated biphenyls (PCBs). A family of organic compounds; mixtures of up to 209 individual chlorinated compounds. They have been used as coolants and lubricants in transformers, capacitors, and other electrical equipment because they do not burn easily and are good insulators. Many commercial PCB mixtures are known in the U.S. under the trade name Aroclor.

polycyclic aromatic hydrocarbons (PAHs). A family of organic compounds deriving from fossil fuels and their combustion. The higher the molecular weight, the more environmental concern due to their bioaccumulation in organisms and their toxic, carcinogenic metabolic activity.

population. An aggregation of organisms of a given species, capable of interbreeding.

population dynamics. Short and long-term changes in population density and size.

pore water. The water found in the interstices of submerged sediments. The basis of some types of toxicity testing, since it is pore water to which benthic organisms are exposed.

prairie pothole. A small freshwater depression in coastal prairie habitat characterized by freshwater wetland vegetation. May be seasonally or permanently flooded.

predation. Capture and consumption of one organism by another.

preservation. The management of a natural resource which strives to maintain the natural state of the ecosystem so that it is not artificially interrupted or destroyed and natural resources are not depleted.

primary consumer. An organism deriving its energy directly from green plants.

primary producer. An organism capable of producing biomass from inorganic compounds; the base of the food web.

produced water. Used in the oil-and-gas industry to denote water (initially trapped in rocks within the wellbore) that is extracted along with oil and gas.

progradation. The growth of a river delta due to the accumulation of river-deposited sediment being greater than losses of sediment due to subsidence, erosion, or relative sea-level rise.

propagule. A cutting, seed, or a spore used in asexual or sexual reproduction of a plant. Plant propagules are often used in habitat restoration projects.

protozoan. A single-celled organism.

pseudofeces. Material that has been filtered from the mantle cavity of bivalve mollusks such as oysters, but not processed through the digestive tract.

R

reaeration. Elevation of the dissolved oxygen concentration in water resulting from mechanical agitation, for example by wave action.

red tide. Algae bloom involving dinoflagellate phytoplankton species which naturally manufacture biotoxins. Depending upon species, can cause fish kills, irritation of the human respiratory tract, and several types of shellfish poisoning in human consumers.

reference dose. As defined by the U.S. EPA: "An estimate of a daily oral exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime."

residence time. The period of time water is retained in a reservoir, bay, or other system, based upon flow rates into and out of the system. See also *flushing*.

restoration. Returning a degraded system to a natural, healthy, and undegraded state.

resuspension. Incorporation of non-soluble matter into water by physical forces, e.g., sediments resuspended by currents or dredging activity.

return flow. Wastewater discharged to an aquatic or marine environment. Return flows can alter hydrology and fresh water inflow, especially when the original source of the water is not the ultimate receiving waterbody; for example, discharge of groundwater (as wastewater) to surface waters of an estuary.

revetments. Shoreline retaining walls.

riparian. Associated with the bank of a watercourse, for example, the riparian woodlands bordering a river.

riprap. Rock**,** concrete, or other material used as a hard, artificial shoreline facing to reduce erosion.

risk analysis. The estimation of hazards associated with containments or other environmental conditions, as they affect exposed humans or selected elements of the ecosystem. Seafood consumption risk analysis procedures normally follow a standardized EPA protocol.

rock groin. A structure made of large rocks that is built out from a shoreline for the purpose of interrupting water flow and reducing shoreline erosion. Examples in the Galveston Bay area include the Galveston jetties.

S

salinity. A measure of salt concentration in marine waters, ranging from zero to about 33 parts per thousand in estuaries.

salinity gradient. A spatial salinity transition, e.g., from a fresh river mouth to saline ocean inlet.

salinity wedge. A layer of dense saltwater that lies below less dense, lower-salinity waters. The salinity wedge in Galveston Bay moves northward (particularly through the Houston Ship Channel) with high tides and low freshwater inflows.

salt marsh. Coastal wetlands that occur on the intertidal shorelines of estuaries where salinities vary due to mixing of freshwater and seawater. The dominant salt-marsh plant species in Galveston Bay is salt-marsh cordgrass (*Spartina alterniflora*).

seafood advisory. Warning issued by a public-health authority recommending avoidance or reduced intake of certain species of seafood that may pose increased health risks to consumers.

sea grass. Rooted, submerged marine or estuarine vegetation. Habitats created by seagrass meadows are among the most diverse and productive estuarine environments. Loss of sea grass is a marine conservation issue in many estuaries.

secondary consumer. Predator which derives its energy from eating primary consumers.

segmentation. Demarcation of a water body into subsections for monitoring or management.

semi-diurnal tide. Tide occurring on a cycle of twice daily.

sentinel species. A species which, through its numbers or condition, can give advanced warning of more general environmental degradation. (See also *indicator species*.)

sergestid shrimp. Any of several species of noncommercial shrimp of the decapod crustacean family Sergestidae.

sessile. Attached at a given location; immobile (for example, an adult oyster).

shoaling. Decrease in water depth due to sediments deposited by currents.

siltation. The accumulation of sediments transported by water.

silviculture. Use and management of forest resources.

spat. A larval oyster attached to a hard substrate. The spat set is the process of settling and attachment of planktonic larvae and onset of shell growth, establishing new recruitment on a reef.

stakeholder. An individual or organization with an interest in a natural resource or other issue by virtue of livelihood or simple personal concern.

standing crop. The biomass of a trophic level, species, or community at a given time and location; relates to "productivity" (the rate of biomass creation).

storm surge. The increase in water depth caused by a hurricane, due to a combination of low atmospheric pressure (which creates a bulge in surface waters) and wind-piling of water against the shore. Serious damage can result when a storm surge moves onshore and as waters flow back to their source.

storm water runoff . Water from rain or snowmelt that does not soak into the ground but runs off the land and flows, untreated, into waterways.

stratification. Vertical separation of water masses into layers with different characteristics. For example, dense salt water intruding under fresher water in a navigation channel can establish salinity stratification.

stress proteins. Proteins synthesized by aquatic organisms as a physiological response to environmental stress. Tissue analysis for stress proteins can be combined with other more traditional measurements to indicate environmental contamination.

subaerial. Surrounded by air, for example terrestrial plants and animals.

submerged aquatic vegetation (SAV). Rooted, submerged vegetation, including seagrasses and freshwater rooted macrophytes; contrasts with *emergent* species such as smooth cordgrass.

subsidence. The loss of land elevation due to groundwater or petroleum withdrawal and natural settling and compaction.

substrate. The material or substance on which an organism lives, grows, or obtains its nourishment.

subtidal. Below the low-tide line, submerged virtually continuously; contrasts with *intertidal* (intermittently submerged).

subwatershed. A subdivision of a watershed based on hydrology, generally corresponding to the area drained by a small tributary or bayou, as opposed to a major river.

supersaturation. A concentration of a gas in water (e.g., oxygen) above the equilibrium concentration. Occurs when the gas enters the solution more quickly than releases it from the liquid to a gas phase, for example, under extremely high rates of plankton photosynthesis.

surface microlayer. The immediate surface of the water, important as the interface for atmosphere-water equilibrium processes; the location of highest concentrations of hydrophobic pollutants like oil, and the location of floating marine eggs and other biological forms.

suspended solids. Small particles that remain suspended in water.

suspension feeder. An organism that feeds on materials in suspended in the water column—for example, oysters filtering plankton.

T

Texas Clean Water Act Section 303(d) List. The list of impaired surface waters in Texas, updated annually by the TCEQ under section 303(d) of the federal Clean Water Act.

terrestrial. Refers to land, as opposed to the aquatic or marine environment.

Texas Pollutant Discharge Elimination System (TPDES). Texas' state water quality program administered by the TCEQ. Authorized by the U.S. EPA in September 1998, it has regulatory authority over discharges of pollutants to Texas surface waters. See also *National Pollutant Discharge Elimination System*.

tidal amplitude. Difference in height between consecutive low and high tides.

tidal flats. Non-vegetated areas of sand or mud that are alternately submerged or exposed to air, depending on the tides.

total dissolved solids (TDS). Sum of all dissolved materials e.g., salts, which are non-filterable and remain following evaporation of the water.

total maximum daily load (TMDL). As defined in the federal Clean Water Act, the maximum amount of a pollutant a water body can receive and still meet water quality standards.

total organic carbon (TOC). Sum of all organic carbon compounds in water.

total suspended solids (TSS). Particles of all sizes that are suspended in a measured volume of water.

toxicant. An element or compound that causes damage to a living organism, including illness or its death.

toxicity test. Laboratory procedure in which living organisms are subjected to varying dilutions of sampled water or sediment. Mortality, declines in reproductive rates, or behavioral changes are measured to determine if there is a toxic response.

trawl. A collection device used by commercial fishermen and scientists; a large, conical net dragged behind a boat and used to catch aquatic organisms.

treatment wetlands. Constructed wetlands that are designed and created to filter and treat storm water runoff or wastewater effluent using natural physical, biological, and chemical treatment processes.

tributary watersheds. The land area drained by a river and all of its associated tributaries.

trophic dynamics. Describes the transfer of energy through the food web; the hierarchy among organisms in the food web based on energy transfer—i.e., predator-prey relationships.

trophic level. The position in the food chain relative to eating and being eaten; includes primary producers, primary consumers, and higher consumers.

turbidity. The relative lack of clarity (cloudiness) of water, caused by suspended material (e.g., sediments), colored materials in solution, and plankton. Turbidity correlates inversely with available light for photosynthesis.

turtle-excluder device (TED). One of several devices attached to shrimp trawls, used to deflect sea turtles from the catch.

U

urban heat island. A metropolitan area that is warmer (approximately 2–5 °F) than a surrounding rural area.

V

***Vibrio*.** Genus of bacteria containing naturally occurring and nonnative species, some of which can cause rapid and sometimes life-threatening infections in humans. *Vibrio vulnificus*, a native estuarine bacterium, favors warm saline conditions in Texas bays.

W

washover fan. Fan-shaped deposit of sediment resulting from deposition by water currents, e.g., when a storm surge breaches a barrier island.

water column. The portion of an aquatic or marine environment extending from the water surface to the bottom.

water quality criteria. Limits set for constituents (including pollutants) in water that are either the minimum or maximum for maintaining a particular use of a water body related to protection of aquatic life or human health.

water quality standards. The foundation of the water quality-based pollution control program in the U.S. Define management goals for a waterbody by designating uses and setting water quality criteria to protect those uses.

watershed. The land area drained by a river or stream. The natural hydrologic unit associated with numerous ecological and physical processes involving water. Increasingly, the watershed is being accepted as the most appropriate geographic unit for management of water quality.

watershed-based management. A comprehensive land-use and water-management plan targeted at improving water quality.

wetland. An area where saturation with water is the dominant influence on characteristics of the soil and on composition of the plant community.

X

xeriscaping. Landscaping in a way that reduces or eliminates the need for irrigation water.

Y

young of the year. Fish or other animals that were born within the past year and hence have not reached one year of age.

Z

zooplankton. Animals that are suspended in, and move within, the water column.