

Appendix IV

Glossary

Acid – a solution or substance having a pH lower than 7, indicating that it has a high concentration of hydrogen ions. One example of an acid is lemon juice.

Aerobic – a metabolic process that uses oxygen.

Alkaline – a substance having a pH greater than 7, indicating it has a low concentration of hydrogen ions. An alkaline substance is also called a base. Ammonia is an example of a base.

Ammonia (NH₃) – product of the decomposition of plant matter and human and animal waste in water. Some ammonia can be absorbed by aquatic plants, but most ammonia is broken down further into nitrite and nitrate by bacteria.

Ammonia compounds – includes ammonia (NH₃) and ammonium (NH₄⁺).

Ammonium (NH₄⁺) – ionized form of ammonia.

Anaerobic – a metabolic process that does not use oxygen.

Aqueous – a solution that is mostly water.

Ballast water – water that is taken up into the ballast of the ship. The ballast is a compartment located between the outside and the inner hull used to balance the ship full of cargo. The water is released when the ship enters a port.

Base – See alkaline.

Broadcast spawn – simultaneous release of gametes (eggs and sperm) in the water column. Paddlefish eggs are scattered over shoals of sand, gravel, boulders or mussel beds.

Brood – young of animals.

Brood stock – adult population of fish that spawn in a given year.

Cabbage water indicator – solution made from red cabbage that is used to measure the pH of a substance.

Cartilaginous – made of cartilage. Paddlefish are cartilaginous; their skeletons are made of cartilage not bone.

Cleavage – series of cell divisions in a fertilized egg.

Clitella – a saddle-like sac in the body wall of an earthworm that secretes a mucous layer during copulation. The mucous layer hardens into a tough, chitin-like band that forms a cocoon.

Compost – a mixture of decaying organic matter that has nutrients to improve the soil.

Conservation – actions to manage or improve the health of an ecosystem, ecotone, habitat or species.

Copepod – a small crustacean living in fresh and/or salt water. The body of the copepod is slender and segmented; its antennae allow it to drift in the water. There are 9,000 species of copepods. Most crawl or swim, but at least one-third live as parasites on fish and invertebrates.

Critical conditions – chemical, biological and physical conditions that must be met in order for something to occur.

Critically imperiled – informal term for very small or rapidly declining population that is at risk of extinction.

***Daphnia* spp.** – small freshwater crustaceans commonly known as water fleas.

Dentary – the jawbone of a paddlefish. It is the fish's only bony structure. Dentaries can be cross-sectioned, and the age of the fish can be determined by the growth rings.

Deionized water – has a pH of 7, which is neutral. This means the level of hydrogen ions (H⁺) and hydroxide ions (OH⁻) in pure water are equal.

Drought – a long period of time without rainfall that negatively affects growing or living conditions.

Electroreceptors – specialized organs that sense mild electronic current. Tens of thousands are located on the rostrum, opercular flap and head of the paddlefish. The receptors respond to microvolt-scale electrical emissions of planktonic prey and are used to locate the plankton during feeding behavior.

Embryo – the fertilized egg of a vertebrate after cleavage.

Endangered – in great danger or at risk of ceasing to exist.

Exotic – See nonindigenous.

Extinct – no longer living anywhere on Earth.

Extirpated – a species that no longer exists in a specific geographic area it once inhabited.

Eye-fork length – the measurement from the eyespot to the fork of the tail. This measurement is used instead of total body length in paddlefish because rostrums can be damaged and their lengths vary naturally.

Fecundity – capacity for producing offspring. In paddlefish, it is a general term used to describe the number of eggs produced.

Filter feeder – an animal that uses gillrakers or other modified mouth parts to harvest tiny particles of food from the water column.

Fingerling – small, immature fish less than one year old.

Fish kill – any biological, chemical or physical event that causes a large amount of fish to die.

Flex cam – See video microscope.

Free-living – nonparasitic, living independently of another organism.

Fry – recently hatched fish. It is still considered an embryo.

Gillraker – an arched structure that protects tender gill filaments. In paddlefish, they are modified into numerous elongated structures that augment or increase efficiency in filtering plankton from the water.

Gravel bar – an area on the bottom of a waterbody covered by small rocks.

Habitat – a place where an animal or plant lives and obtains food, water, shelter and living space.

Hard substrate – any solid structure covering the bottom of a waterbody, e.g. logs, gravel and mollusk shells.

Heterocercal tail – a tail fin like that of a shark, with the upper lobe longer than the lower lobe.

Hydroxide – hydroxide ions (OH⁻). Concentration determines the alkalinity of a solution or substance.

Inference – a conclusion based on facts or evidence.

Ion – an atom with extra electrons or missing electrons that make it unstable and ready to react with another atom to form a neutral compound.

KWL chart – a learning tool: K – What do you know? W – What do you want to know? L – What did you learn?

Limiting factor – any physical, chemical or biological condition that interferes with or prevents a population from thriving.

Logarithmic scale – scale in which one unit of change is a tenfold increase of the previous unit.

Metamorphosis – a change in form and often habits of an animal during normal development after the embryonic stage, such as egg to larva to pupa to adult.

Native species – animals or plants that occur naturally in an area.

Nitrate – a water-soluble inorganic form of nitrogen (NO_3) that is a common water pollutant. In the nitrogen cycle, nitrites are broken down into nitrate by bacteria.

Nitrify – a chemical reaction that results in nitrate formation from nitrite. This is usually done by bacteria.

Nitrite – a water-soluble inorganic form of nitrogen (NO_2) that is a common water pollutant. In the nitrogen cycle, ammonia is broken down into nitrite by bacteria.

***Nitrobacter* spp.** – beneficial bacteria that convert nitrite to nitrate.

***Nitrosomonas* spp.** – beneficial bacteria that convert ammonia to nitrite.

Nonindigenous species – plants and animals that live outside their natural geographic boundaries, also referred to as exotic, introduced or non-native.

Non-native – See nonindigenous.

Notochord – a flexible, rod-like structure that forms the main support of the body in the lowest chordates; a primitive backbone.

Nuisance species – a nonindigenous plant or animal that out competes native species for food or habitat and alters the environment.

Occurrence – to exist or be present in a geographic area.

Osmoregulation – regulation of water potential in living cells that allows movement of water across the cell membrane to maintain optimal function.

Ostracod – a small crustacean enclosed in a bivalve carapace that resembles a tiny clam. There are 8,000 different species that live in both fresh and salt water. Most ostracods are benthic (live on the bottom) organisms.

Otolith – ear bone of a fish. When the otolith is cross-sectioned, the rings on the ear bone can be counted like tree rings to determine the age of a fish. Each ring represents one year of life.

pH – the potential of hydrogen. It is the measure of the concentration of hydrogen ions (H^+) in solution. The pH will equal 7 for neutral solutions and increase to 14 with increasing alkalinity and decrease to zero with increasing acidity.

pH indicator – used to determine whether a solution is an acid or a base.

Phytoplankton – microscopic, free-floating aquatic plants.

Plankton – organisms that float or drift in fresh or salt water.

Poach – to kill, collect or hunt an animal or a plant illegally.

Population – two or more individuals of the same kind occupying a specific area.

Predator – an animal that kills and eats other animals.

Prey – animals that are hunted by predators.

Propagation – multiply or increase by natural reproduction.

Protected – Limited in number, therefore, prevented by state laws from being disturbed.

Range – a geographical area in which a species of organisms lives.

Restoration – to return to a former state of existence.

Restricted – governed by laws and regulations that limit the use or harm of something.

Rostrum – a snout-like projection on the head.

Sample population – a small group that represents the characteristics of an entire population.

SOAR (Scope-on-a-Rope) – See video microscope.

Species – a group of organisms that can interbreed and produce more of their own kind.

Species of concern – Informal term indicating that the U.S. Fish and Wildlife Service has some concern for the future well-being of a species that does not receive an Endangered Species Act protection.

Stagnant water – water that is not moving or flowing.

Status – current state of a species' existence.

Threatened – an animal or plant that is likely to become endangered in the future throughout a significant part of its range.

Tree cookie – a cross segment of a trunk of a tree that can be used to find information about the age and past physical environment of the tree.

Urogenital opening – a common passage that functions for both excretion and reproduction.

Venn diagram – an education tool used to show differences and similarities among objects.

Video microscope – a microscope that is attached to a TV/VCR or computer to examine and/or film magnified objects.

Yolk sac – a round sac on the belly that supplies food to the embryo.

Zooplankton – animals that float or drift in the water. Some, such as copepods, spend their entire lives as plankton, while others such as fish, mollusks and crustaceans are planktonic only during larval stages.