

Glossary

adaptation - an adjustment or change, often genetic, by which a species or individual alters its condition in relation to its environment

The knees of a cypress tree are an *adaptation* for surviving in an aquatic habitat.

adipose fin - a rayless fin of fat found behind the dorsal fin of some fish species

The rainbow trout is partially identified by the presence of an *adipose* fin.

aerate - to supply water with oxygen

An obstruction in a stream helps to *aerate* the flowing water.

algae - an aquatic single- or multi-celled organism that is capable of photosynthesis

Algae produce oxygen in a body of water.

algal bloom - extremely high concentrations of nutrients (nitrates and phosphates) causing overproduction of algae and eventual depletion of oxygen

Algal blooms are likely to occur in eutrophic lakes.

alkaline - substances having a pH greater than 7.0; also called "basic"

Water with large amounts of calcium in it is *alkaline*.

alluvium - sedimentary deposits created by running water

Alluvium is found in a river bed.

aquifer - a bed of saturated underground soil or rock that provides vast amounts of water

Groundwater may be stored in an *aquifer*.

asexual - reproduction without sexual interaction of male and female gametes

The spiny water flea uses *asexual* reproduction to make exact copies of itself.

ballast - a bottom compartment in a large ship that is used for hauling heavy objects; when there is no cargo, water fills the space for balance

The *ballast* waters of a ship transported the first zebra mussels from Europe to the United States.

barbels - whiskerlike sensory organs on the mouth of some fish species

Barbels help the common carp navigate through murky water.

benthos - all organisms that are found on or near the bottom of a water body

In an eutrophic lake, the *benthos* consists of organisms adapted to low oxygen levels.

bilge water - the dirty and stagnant water collected in the rounded lower part of a ship

Bilge water can carry and release exotic species into waterways.

biocontrol - an organism or natural means used to control pests

A *biocontrol* (European insects) is used to help contain the exotic species purple loosestrife.

bog - area where more than 50 percent of the vegetation is herbaceous, standing water is present and the soil is acidic

The endangered pitcher plant can only be found in *bogs* in the northeastern part of the state.

buffering compound - a substance used to minimize pH changes, due to the addition of acidic or basic compounds

Acid rain may be neutralized in some areas by *buffering compounds* found in the soil.

byssal thread - strong threadlike material used by some mussels to attach to the surroundings
The *byssal threads* of a zebra mussel help it to attach to substrates.

chemical pollution - release of chemical contaminants into the environment
Chemical pollution may be caused by the application of fertilizers to land.

consumptive - use of a resource that decreases its supply
Fishing is a *consumptive* sport.

crustacean - an animal that has an exoskeleton, segmented body and jointed legs
Water fleas and crayfish are examples of *crustaceans*.

decomposer - a bacterium or fungus that receives energy from breaking down the waste products of others and in turn helps cycle nutrients back to the earth
Bacteria and fungi are *decomposers* that break down dead organisms.

diffusion - the movement of a particle or substance from an area of high concentration to an area of low concentration
Oxygen from the atmosphere can enter water through *diffusion*.

dissolved oxygen (DO) - the amount of oxygen that is present in a quantity of water
Oligotrophic lakes have high levels of *dissolved oxygen*.

dissolved solids - materials that enter a water body in the solid phase and will later dissolve in water; they will pass through a filter
Dissolved solids may be the result of weathering and erosion in the watershed.

drainage basin - a land area that delivers runoff water, sediment and other substances to a river and its tributaries or another body of water
A *drainage basin* is also called a watershed.

dredging - cleaning, deepening or widening of a waterway with a machine (dredge) that scoops or sucks out unwanted material
Dredging is necessary for a eutrophic lake to keep it from filling in with surplus organic debris.

ecological pollution - stresses created by natural processes
Ecological pollution can occur by adding a naturally occurring substance in excess to the delicate ecosystem balance.

ecosystem - the combination of the living and nonliving resources of a given area
Most people are unaware that rocks, minerals and soil are components of every *ecosystem*.

epilimnion - the warmer water located in the upper, more circulated zone of a temperature-stratified lake
Phytoplankton, zooplankton and some fishes are located in the *epilimnion*.

erosion - slow wearing or washing away
Trees can help keep heavy winds and rain from causing soil *erosion*.

eutrophic - a pond or lake with extremely high nutrient levels, which causes the overproduction of algae and eventual depletion of oxygen
Eutrophic lakes are low in oxygen and have few species present.

exoskeleton - a hard external structure present in arthropods

The *exoskeleton* provides support and protection for arthropods.

exotic species - organisms introduced into habitats where they are not native

The zebra mussel is an *exotic species* that has caused many problems.

fen - a type of wet meadow fed by an alkaline water source, with over 50 percent of the vegetation as herbs and with standing water present

Fens are wetlands found in northeastern Illinois and along the Illinois River.

filter feeder - an organism that strains food particles from the water by using either a net-like structure or a pumping action.

Freshwater mussels and fingernail clams are *filter feeders*.

flood plain - a flat area bordering a river that is likely to flood

A *flood plain* is considered a temporary wetland habitat.

food chain - a feeding sequence which depicts the flow of food, energy and materials in an ecosystem

Phytoplankton are usually at the first level in a *food chain*.

food web - interwoven food chains

A *food web* shows how the organisms of an ecosystem are dependent upon one another.

glacial lake - a large body of water formed from the digging action of a retreating glacier

There are several *glacial lakes* in northern Illinois.

groundwater - water found under the ground in the spaces between soil and bedrock

Illinois has vast amounts of *groundwater*, which is a main source of drinking water for people in the state.

habitat - the place where an organism naturally lives

Wetlands are the *habitat* of several endangered species.

hydrology - the study of the distribution and movement of earth's waters

Hydrology is a science involved in all phases of the water cycle.

hypolimnion - the colder water located in the lower, noncirculated zone of a temperature stratified lake

Benthic organisms are found in the *hypolimnion* layer of lakes.

impoundment - body of standing water constructed by artificial means or formed by nature

Impoundments are part of the surface water in Illinois.

incurrent siphon - the tube through which a mollusk (clam, mussel) draws in water

The *incurrent siphon* must be clear of debris for mollusks to receive water containing food and oxygen.

intermittent stream - one that has water flowing only part of the year

Intermittent streams are small and usually have no water, or only pools of water, during part of the year.

kettle hole - hole pushed into the earth by a large chunk of glacial ice which later fills with water

Two *kettle holes* were formed by a glacier at what is now Volo Bog.

knee - part of the root system of a bald cypress tree which juts out of the land above the high water mark

The *knees* of cypress trees are an adaptation for surviving in an aquatic environment.

lake - nonfreeflowing body of water 20 or more acres in size

Lakes are habitats for many aquatic organisms.

larva- a stage of complete metamorphosis in which the offspring looks physically different from the adult and often lives in a different habitat

A mosquito *larva* is aquatic and cannot fly.

leach - water passing through substances dissolves some of the matter, which is then carried along with the water

Underground storage tanks that are in poor condition may *leach* chemicals to water sources.

lentic - standing or nonflowing water

A lake is a *lentic* body of water.

limnetic - the open water area of a lake

Fish, phytoplankton and zooplankton are found in the *limnetic* zone.

littoral - the zone of shallow water located near the shore that receives sunlight from top to bottom

Many rooted aquatic plants are found in the *littoral* zone.

macroinvertebrate - an animal without a backbone that can be seen without the aid of a microscope

Macroinvertebrates include crayfish and mussels.

marsh - area where 50 percent of the vegetation is herbaceous, the soil has neutral pH and standing water is present throughout the growing season

Cattails, bulrushes and reeds are common *marsh* plants.

mesotrophic - lake with moderate levels of plant nutrients and fertility; levels between oligotrophic and eutrophic

Many animals and plants are found in a productive *mesotrophic* lake.

metalimnion - the middle layer of water found in a temperature stratified lake; thermocline

Temperatures fall with increasing depth in the *metalimnion*.

metamorphosis - one of a series of changes that some animals go through to become an adult (3 or 4 stages)

The stages in the *metamorphosis* of a mosquito are egg, larva, pupa and adult.

molt - to shed an outer covering and replace it with a new one

Geese are unable to fly for a short period each summer when they *molt* their flight feathers.

nekton - free swimming organisms in lakes

Nekton in an Illinois lake would include bluegill, crappie and bass.

neuston - an animal or plant that lives on or suspended from the water's surface

Neuston includes organisms that live on the surface film of water, like water striders and duckweeds.

niche - the role or place an organism or species has in its environment

The channel catfish occupies the *niche* of a bottom-feeder in water bodies.

nonconsumptive - a use of a resource that does not degrade or destroy the resource

The observation of wildlife is a *nonconsumptive* use.

nonpoint source pollution - widespread contamination or pollution that does not originate from one specific point

Examples of *nonpoint source pollution* are agricultural fields, residential areas and paved parking lots.

nymph - a stage in incomplete metamorphosis; the offspring looks like a miniature adult but is not fully developed
A *nymph* of a dragonfly looks like an adult, but without wings.

oligotrophic - a body of water with a plentiful supply of oxygen and low concentrations of plant nutrients
Oligotrophic lakes will not have large algal blooms.

organic pollution - supplying an aquatic ecosystem with large quantities of nutrients
The runoff of fertilizers from agricultural lands is an example of *organic pollution*.

oxbow lake - a horseshoe-shaped lake formed when a meandering stream creates a new, straighter channel
An *oxbow lake* is an old stream bend that is now cut off from the main channel.

parthenogenesis - a form of reproduction that does not require male fertilization
Water fleas use *parthenogenesis* to make clones of themselves.

particulate - small liquid or solid particle
High levels of *particulates* are found in eutrophic lakes.

pelagic - the zone of a lake referring to open water and the organisms that live there
Fishes, frogs, turtles and some insects are *pelagic*.

perennial stream - a continuously flowing waterway
Most *perennial streams* are fed by a combination of groundwater and surface runoff.

pH - the measure of acidity or alkalinity of a substance on a scale of 0-14; pH of <7 = acid, pH of 7 = neutral, pH of > 7 = basic (alkaline)
Rain water in Illinois has an acidic *pH* of about 4.4.

phytoplankton - microscopic plants (algae) that float or are suspended in the water of lakes and rivers
Diatoms and green algae are examples of *phytoplankton*.

plankton - microscopic plants (phytoplankton) and animals (zooplankton) that are free-swimming or floating in open water
Fish that feed on *plankton* are planktivores.

point source pollution - an identifiable place where pollutants are released
Point source pollution could come from a leaking underground storage tank.

profundal - an area below the limnetic water of a lake, where light does not regularly penetrate
Photosynthesizing plants will not be found in the *profundal* zone.

protozoan - a microscopic, one-celled organism in the Kingdom Protista
Protozoans are classified as zooplankton.

reservoir - a body of water collected and stored in an artificial or natural lake used for drinking water or flood control
The U.S. Army Corps of Engineers constructed three *reservoirs* in Illinois--Carlyle Lake, Lake Shelbyville and Rend Lake.

riparian - located or living near a body of water
Cottonwoods and willows are characteristic vegetation for the *riparian* zone.

river - a deep water habitat contained within a channel

The Illinois, Rock and Cache are *rivers* in Illinois.

sediment - material carried by water that may be deposited on the bottom of a water body

Navigation channels must be dredged of *sediment* to remain open.

seep - a small opening in the ground through which groundwater oozes to form a pool

A *seep* may provide the water for a fen.

seepage lake - lake supplied with water from groundwater

Seepage lakes show little variance in water volume throughout the year.

segmented worm - has a body divided into sections and no legs

Leeches are classified as *segmented worms*.

silt - fine soil particles that are either deposited as sediment or carried by water

An accumulation of *silt* may cover the eggs of aquatic animals.

siltation - the process where a water body becomes filled with silt

Siltation reduces the volume of water a lake can hold.

slough - a stagnant swamp, marsh, bog or pond, especially as a backwater

Sloughs are associated with nonmoving water and mud.

soil erosion - the movement of soil, especially topsoil, by running water or wind

Soil erosion can be accelerated by the acts of humans.

spawning - the process of depositing eggs

Spawning occurs in the spring for crappie, bass and muskellunge.

spring - groundwater flowing to the surface of the earth

The soil is always wet around a *spring*.

stratification - the formation of different levels in a lake according to the density and temperature of water

Stratification occurs because water's density changes with temperature.

stream - a body of water, which constantly flows in a channel due to gravity

Streams make up about 20 percent of the surface waters in Illinois.

streambank erosion - the removal or wearing away of soil or rock from the bank of a stream by moving water or wind

The construction of a wing dam will minimize the effects of *streambank erosion*.

substrate - a surface on which an organism grows or attaches

Stonefly and mayfly nymphs attach to the *substrate*.

succession - a continuous, gradual and orderly replacement of one organism by another in an environment over time

The stage of *succession* affects the types of organisms that live in an area.

surface tension - a thin barrier created from the attraction of water molecules, which separates the air above and water below

The *surface tension* of water provides habitat for a whirligig beetle.

suspended solid - particle carried by the water that is not dissolved and can be trapped by a filter
Suspended solids contribute to increased turbidity in water bodies.

swamp - a wetland area where more than 50 percent of the vegetation is woody, adapted to water and over 20 feet tall
Bald cypress trees are typically found in a *swamp*.

symbiotic - a close relationship between two species that benefits at least one of them
Some fungi provide orchids with food in a *symbiotic* relationship in bogs.

thermal pollution - variance of temperatures above or below the normal condition of the water
Thermal pollution could affect the water near a power plant.

thermocline - middle layer of water found in a temperature stratified lake; metalimnion
Temperatures fall with increasing depth in the *thermocline*.

tributary - a stream or river flowing into a larger stream or river
The Illinois River is a *tributary* of the Mississippi River.

turbidity - the cloudy or muddy appearance of a naturally clear liquid that is caused by the stirring of sediment
A Secchi disk is used to measure the *turbidity* of a water body.

turnover - the complete mixing of nutrients and oxygen in a lake during the spring and fall
Turnovers benefit lakes by making nutrients available at all levels in the water.

veliger - the microscopic larval stage of a zebra mussel
Of the vast amounts of *veligers* produced, 99 percent of them will die due to environmental conditions or predators.

velocity - the rate water flows in a channel
The *velocity* of a stream is influenced by the type of material in the stream bed.

water cycle - the circulation of water molecules from the earth to the sky and back again
Water is constantly in motion in the *water cycle*.

watershed - the total land area that provides water to a river or stream
The Illinois River's *watershed* covers more than 18 million acres.

wet meadow - also known as "wet prairie;" see definition that follows
Draining *wet meadows* resulted in habitat loss for a variety of aquatic birds.

wet prairie - an area having more than 50 percent of the vegetation being herbaceous, standing water present seasonally during the growing season and neutral pH
Draining of some *wet prairies* resulted in habitat loss for a variety of aquatic birds.

wetland - land that holds water for at least a portion of the year, has soils lacking oxygen and has water-loving plants
Wetland types range from marshes and swamps to the Mississippi River.

wing dam - a structure built into a stream perpendicular to the river bank, which diverts stream flow toward the center of the channel
A *wing dam* is used to reduce erosion of the stream bank.

zooplankton - a category of plankton composed of microscopic animals and animal matter
Zooplankton are an important link in the food chain.