

Nature Bowl GLOSSARY 2017

** An asterisk denotes words used for 5th/6th grade at the semifinals, but may be used for all grades at the finals.*

***A double asterisk denotes words that are required only for 5th/6th grade at both semifinals & finals; no 3rd/4th grade*

Words that are new this year are highlighted in yellow.

****Abiotic Factor:** the non-living parts or properties of an environment affects organisms in their habitats such as; soil, water, air, temperature, sunlight, elevation, climate.

Adaptation: Living things change over long periods of time to become better suited to its environment. Adaptations may be: Structural: a physical feature e.g. talons, teeth, scales, spines, waxy leaves. Behavioral: living in groups e.g. coyotes hunting in packs; bird migration and feeding in flocks. Physiological: warm/cold blooded, hibernation, torpor in hummingbirds, cones opening only in certain conditions.

Agriculture: Human practices of raising plants and/or animals mainly for food for people or animals. The plants and animals can also be raised for use as fuel or housing materials or for medical research. Examples are: farming; ranching; raising fish. Some types of agricultural land and waterways can also provide habitat for some wild animals.

***Alternative Energy:** Energy generated from renewable resources therefore reducing our need for fossil fuels. Examples: Solar, Wind, Geothermal, Biomass (see Bioenergy)

****Alpine/Subalpine:** A high mountain habitat that consists largely of low plants and animals that are adapted for weak soils and cold, snowy and rocky conditions. Alpine is generally above tree-line (trees stop growing). Both can have meadows.

Amphibian: Frogs, Toads, Newts and Salamanders. — cold-blooded vertebrates. Adults (breathing air with lungs and through moist skin) live on land or water, but lay eggs in water. Eggs hatch into a gill breathing larval stage which develops into an adult.

***Anadromous:** the migration of certain fish, such as salmon and steelhead trout. They spend most of their lives in the ocean then swim up river to spawn in the rivers and streams where they were born.

Aquatic: growing, living in, or frequently in water.

***Aquifer:** an underground layer of water-bearing rock, like sandstone or sand and gravel that readily transfers water to wells and springs. An aquifer fills with water from rain or melted snow that drains into the ground.

****Atmosphere:** The thin layer of gases that surrounds the Earth. It seals the planet and protects us from the vacuum of space.

Battery: A **battery** is a sort of container that stores energy until it is needed. Chemicals inside the **battery** store the energy. When the **battery** is used, the chemical energy changes into electric energy. These are toxic and must be disposed of properly. Lithium batteries can be re-charged.

***Biodegradable:** organic materials that can be decomposed or decayed by that living things —especially fungi and bacteria. Examples: wood, food scraps, paper, grass clippings

*** Biodiversity:** the variety, of plants and animals or abundance of different species living within a particular region.

****Bio-energy:** when natural materials are burned they release energy, like logs in your campfire. This energy is called bio-energy. Waste, from wood, agriculture and even organic city waster can be used to make renewable electricity.

****Biogeology:** the study of the interactions between the earth (geosphere) and the atmosphere (earth's layer of air), hydrosphere (earth's water), and biosphere (layer of living things).

****Biosphere:** the part of the earth's crust, waters, and atmosphere that supports life. The biosphere extends to any place that life of any kind might exist.

****Biotic Factor:** all living things affecting an organism in its environment including plants and animals, their interactions, and wastes.

****Cambium:** the first layer inside the bark of a tree that does the growing.

Camouflage: An adaptation allowing animals to blend in with their environment. Their chances of survival are greater because it helps prey can hide from predators. In turn it increases the chances of a predator not being seen by its prey.

***Carbon dioxide (CO₂):** a major greenhouse gas produced through the burning of fossil fuels (coal, natural gas and oil), solid waste, trees and wood products. Plants remove CO₂ from the air during photosynthesis. See: Greenhouse Gas, Climate Change, Carbon Footprint

****Carbon Footprint (Environmental Footprint):** The total amount of carbon dioxide and other greenhouse gases put into the air each year by a person or organization. Greenhouse gas is produced by burning fossil fuels, solid waste and wood

products. It also includes the manufacture of products used by people—plastic bags, cups, cars, etc.

Carnivore: a meat eater.

Carrion: The flesh of a dead animal – an important food source for scavengers

Carrying capacity: The maximum number of plants and animals an environment can support when plants and animals have all the food, water, and space (habitat) they need.

Central Valley: This super large California valley is made up of the northern Sacramento Valley and the southern San Joaquin Valley. It is the drainage (to the Delta) of most of California's rivers. This ecosystem includes many habitats including agriculture. It is low elevation between mountain ranges.

***Chaparral:** An important habitat of the CA Sierra Nevada and Coastal Mountains ecosystems. It is mostly covered by 4 to 12-foot tall evergreen shrubby plants like chemise, manzanita, toyon and scrub oak. This habitat has long dry periods in the summer and wet winters. Plants here are adapted to infrequent fires.

Climate Change: Refers to any significant change in the measures of climate lasting for an extended period of time. Climate change includes major changes in temperature, precipitation, or wind patterns, among others, that occur over several decades or longer. Global Warming is one aspect of climate change which refers to the recent and ongoing rise in global average temperature near Earth's surface, caused mostly the by the increase of greenhouse gases from air pollution. See: Greenhouse Gas, Carbon Dioxide, Carbon Footprint

***Colonial:** individual organisms of the same species living closely together, usually for the benefit of all, such as a stronger

defense. Some insects (termites, ants and honey bees,) live only in colonies.

Competition: The struggle between two or more individuals or species for a common resource. Plants may compete for sunlight. Animals may compete for food, etc.

Compost: Decomposing plant and animal matter that is used to fertilize the soil. Compost is made of decomposed grass clippings, leaves, and non-meat kitchen scraps.

Coniferous: refers to cone-bearing trees such as pines, firs and redwoods.

Conservation: is the responsible stewardship of the environment to preserve natural ecosystems while also considering human needs for production and recreation. A land can be conserved while still allowing a careful amount of harvesting or hunting or grazing.

Consumers: Organisms that get their energy by eating other organisms. Primary consumers (herbivores) eat plants. Secondary consumers (omnivores) eat plants and animals. Tertiary consumers (carnivores) are animals that consume mostly other animals. Producers are green plants which produce their own energy using the process of photosynthesis.

****Core Sample:** a small, tube-like sample from a tree that shows the inside of the tree from the bark to its center. It is taken with a drill called an increment borer.

****Crepuscular:** animals active at dusk and/or before sunrise. Examples: Deer, Mosquitos, Beaver, Burrowing Owl. Animals may be mostly crepuscular and partly nocturnal.

Deciduous: referring to trees that usually shed their leaves at one time such as cottonwood, willow, walnut, redbud and many oaks.

Decomposer: The breaking down of dead organisms into their chemical and mineral parts so they can be used by plants.

Examples: worms, slugs, snails, beetles, millipedes, and many other invertebrates are decomposers the process is referred to decomposition.

***Delta:** referring to the area where rivers meet and join. In California, the largest is the Sacramento-San Joaquin Delta, where the Sacramento and San Joaquin Rivers meet to drain into the San Francisco Bay. This region includes many kinds of habitats—riparian, marsh, river, agricultural lands, grassland, and estuary as well as towns and cities.

Development: when wild lands are converted to farms, housing, roads, industry or business uses.

Diurnal: active during the day.

Domestic: animals tamed and bred for human use and dependent on humans for survival such as pets and livestock.

***Ecosystem:** a community of plants, animals, and their surroundings that depend on each other. An ecosystem interacts through food webs and energy flows. They are also affected by and adapted to the non-living parts of their location i.e. climate, weather, earth, elevation, sun, soil, air, water, etc. The term often refers to large systems such as: ocean or marine, coastal, mountain, valley, delta; but can also refer to a smaller area: forest, marsh, river, woodland, grassland, pond, vernal pool.

Endangered: a species of plant or animal in danger of extinction throughout all or a significant portion of its range (refer to threatened and rare).

***Endemic:** naturally occurring only in a certain geographic area; the Yellow-billed Magpie is endemic to the Sacramento Valley.

Energy: The capacity to do work or the source of power to do work.

1. It is what drives all life processes. Plants and animals make energy from food and water. Plants get food and water via root systems and photosynthesis. Animals drink water and consume other organisms. Energy is released as food is processed by the organism.

2. Energy in the form of heat and electricity is created from solar, wind, water, and geothermal power sources—also by burning fossil fuels and biomass. Energy sources are renewable or nonrenewable.

Environment: The air, water, minerals, organisms, and all other external factors surrounding and affecting a given organism at any time.

Erosion: removal or wearing away of soil or rock by water, wind, or other forces or processes.

Estuary: an area where a river flows into the sea where there is a mixing of salt water and freshwater; an important habitat for fish and many kinds of birds and other animals.

Evergreen: a plant that does not lose all its leaves at one time, such as the live oak and most coniferous trees.

Exoskeleton: any hard external supporting structure of an invertebrate (insects, spiders, crayfish, snails, etc.)

Exotic: a foreign plant or animal; one that has been introduced into new, non-native area. Examples include opossum and ring-necked pheasant. (See introduced)

Extinction: the condition of having been removed from existence. An animal or plant facing extinction is one in danger of vanishing from our world. Examples of extinct organisms include the passenger pigeon and dodo.

***Feral:** refers to a domesticated animal or plant that goes back to being wild.

Fertilizer: a chemical or natural substance added to soil to improve plants' growth and yield. Natural fertilizers are made from composted manures and plants or extracted from minerals in the earth.

Food Chain: the transfer of food energy from the source in plants through a series of animals. For example, a green leaf-eating insect and insect-eating bird would form a simple food chain. Any one species is usually represented in several food chains.

****Food Web:** more than one food chain connected together.

Foothills: lower elevation hills of a mountain range. Habitats of foothills include woodland, grassland, savannah, creeks, rivers and chaparral habitat, and provide transitional zones between the valley and the mountains for animals which adapt to seasonal changes by migrating up and down to different elevations.

Fossil Fuel: a fuel such as coal, oil or natural gas formed in the earth millions of years ago from plant and animal remains.

Forest: a complex community of plants and animals in which trees are most dominant, and which form a closed or semi-

closed canopy. In California generally refers to a coniferous forest.

Fungus: A plant-like organism, such as a mushroom, that gets energy and matter primarily from other dead organisms. Examples are: molds, rusts mildews, mushrooms, and yeasts.

***Game Animal:** legal designation for animals that are managed and hunted under the regulation of a government agency.

****Geosphere:** the solid earth, not including the water, gases, or life forms and on and around it

***Geothermal Energy:** comes from heat transferred from the earth's interior to underground concentrations of steam or hot water trapped in fractured or porous rock. The energy from this super-heated steam and water can be harnessed using the conventional turbines of a power plant to generate electricity.

Groundwater: water within the earth that supplies wells and springs. Geological formations called aquifers hold and contain groundwater.

****Greenhouse Gases:** Act like a blanket around Earth, trapping the sun's energy in the atmosphere and causing it to warm i.e. the greenhouse effect. The largest source of greenhouse gas emissions is from burning fossil fuels for electricity, heat, and transportation. Carbon Dioxide is the major greenhouse gas produced from burning fossil fuels. See: Greenhouse Gas, Climate Change, Carbon Footprint

Habitat: A place where an organism lives providing; food, water, shelter or cover, and space suitable to plants and animal's needs. Examples: grassland, meadow, woodland, chaparral, forest, river, marsh, riparian, alpine, estuary, etc.

Hatchery: a place that raises fish, usually from eggs.

Hazardous Waste: A waste potentially dangerous or harmful to human health, wildlife or the environment including **toxic wastes** which are harmful or fatal when ingested or absorbed. Examples: Electronic devices, telephones and cell phones, televisions, computers, printers, fluorescent and compact fluorescent lights, mercury thermometers, treated wood, nonempty aerosol paint cans, latex and oil paint, motor oil, antifreeze, batteries, rodenticides, pesticides and herbicides.

Hazard (Wildlife)—includes **hazardous waste** and any obstacle or discarded material or which can injure wildlife through physical contact, absorption through skin or eating. Examples: Windows, (birds), barbed wire, fishing line, plastic bags, six-pack rings, bottle caps, plastic and glass containers, broken glass, aluminum cans, cigarette litter.

Herbicide: a chemical substance or preparation used to kill plants.

Herbivore: a plant eater.

Hibernation: the act of passing the winter (or a portion of it) in a deep sleep or resting state

Hydroelectric: electric power converted from water. Dams generate hydroelectric power.

****Hydrosphere:** The world of water that surrounds all of us.

Inorganic: not composed of organic matter— not of plants or animals E.g. water, minerals, rocks. (See organic).

***Insecticide:** a chemical used to kill insects. Some insecticides are harmful to the environment and can be washed into rivers when it rains. All insecticides are pesticides.

***Introduced:** to leave or bring in for the first time; to introduce a non-native species into a habitat. (See exotic)

***Invasive species:** a non-native plant or animal whose population threatens the native populations because of its ability to spread uncontrollably.

Invertebrate: animal that has no backbone like insects, worms, snails, clams, spiders etc.

Landfill: a developed site for disposing of solid waste (garbage) in the earth; sometimes referred to as a “trash dump.”

Lichen: any of numerous complex plant-like organisms made up of an alga and a fungus growing in symbiotic association on a solid surface (such as on a rock or branch/limb).

Life cycle: a series of growth stages in the life of any organism.

****Limiting Factor:** Biotic and abiotic aspects of the environment which limit the growth, population or distribution of an organism
Examples: Food, water, shelter, space, soil, predation, temperature, climate, other species. (See carrying capacity).

Litter: Solid waste such as plastic containers, plastic bags, cans, paper products, and glass bottles carelessly discarded outside of garbage and trash collection containers. It is often highly visible on roadsides, parks, and other public places.

Mammal: a warm-blooded vertebrate animal having hair or fur, milk produced by females for feeding of the young, the birth of live young, teeth which are not all the same.

Marine: of or relating to the sea or ocean.

Marsh: a wetland with few or no trees where standing fresh and/or salt water exists for some, or most, or all of the year.

(different than a *swamp* which is a tree dominated wetland, typically in warm climates and usually found in eastern US.)

Metamorphosis: series of changes in shape and function that certain animals go through as they develop from birth to adult. Caterpillars become butterflies and tadpoles become frogs. Example: egg, larva, pupa, adult. When an insect doesn't have a pupa stage the larva are called nymphs as in Dragonfly Nymph.

Microhabitat: a small habitat within a larger one in which environmental conditions differ from those in the surrounding area. A hole in a tree trunk is a microhabitat within the forest.

Microorganism: A very small organism that can be seen only with the aid of a microscope.

Migration: The seasonal passage of groups of animals from one region to another for food, water, shelter or breeding--especially birds and fish.

****Mitigate or Mitigation:** The activity of replacing or providing substitute natural resources or habitats that over time will minimize or make up for damage to natural resources and habitats caused by human development. For example the mitigation for removing an oak tree woodland to build a Shopping Mall may be to restore an oak woodland elsewhere. A fish hatchery mitigates for a dam.

Native: refers to animals or plants that naturally occur in an area.

Natural Resource: 1. Materials, such as water, minerals, energy, animals, and soil that people use from nature and natural systems.
2. An area appreciated for its beauty and recreational value like a river, lake, or mountain.

****Natural System:** The parts, processes, and cycles in an environment, and the interactions among plants animals, and other organisms within their environment. (See ecosystem)

***Niche:** the ecological role of an organism in a community especially in regards to food consumption.

Nocturnal: active at night.

***Non-renewable Resources:** Resources are considered nonrenewable if they cannot be replenished (made again) in a short period of time. Fossil fuels; coal, petroleum, natural gas, and propane were formed from the buried remains of plants and animals that lived millions of years ago and therefore cannot be renewed. Rocks and minerals are also non-renewable for the same reason.

Organic: being or composed of matter from plants and/or animals.

Omnivore: an animal that eats both plants and animals.

Organism: A living thing, such as a plant, animal, or other life form that can grow and reproduce.

Parasite: an organism which feeds upon the tissues or fluids of another animal (the host) which is harmful, but generally does not kill the host animal, as this would destroy its food supply. Examples: Leeches, fleas, ticks, and mosquitoes are parasites.

Pesticide: a chemical used to kill “pests”. Pests can be any organism people do not want around—insects, plants, fungus, and rodents for example. Pesticides can be toxic to the environment. Rains can carry pesticides into rivers.

Photosynthesis: the process by which green plants make simple sugars (food) in the presence of sunlight, carbon dioxide and water.

Poaching: Hunting illegally. Not complying with regulations regarding the hunting of game or non-game animals.

Pollination: the transfer of pollen within a flower or between flowers to fertilize the parts necessary to make a seed. Pollen is carried by wind, water; or unintentionally by pollinators such as insects, hummingbirds, and bats as they feed on nectar produced by the flower to attract them.

Pollution: harmful substances deposited in the environment leading to a state of dirtiness, impurity, unhealthiness, or hazard.

Population: the number of a particular type of organism (or species) living in a defined area

Predator: an animal who kills and eats other animals.
Predation is the act of seeking and killing for its food.

****Prescribed burn:** intentional burning of an area, usually to remove brush, slash, or unwanted species of plants— also called a “controlled burn”.

***Preservation:** when nature is protected and maintained (preserved) in its original unspoiled form, and its resources (plants, animals, land, water, minerals) are used very passively by people as in hiking.

Prey: animals that are killed and eaten by other animals.

Producers: Green plants which make their own food using the sun’s energy and photosynthesis. Plants are the only organisms that can utilize the energy of the sun to make their own food.

Product: Something (usually goods) made from natural resources (whether renewable or nonrenewable.) For example: paper is made from trees, a plastic toy is made from petroleum, clothing is made from cotton plants, a soda can made from aluminum ore, glass is made from silica or sand. This can include electricity, a product made from energy sources.

Raptor: “Birds of Prey” – Hawks, Owls, Falcons – Carnivorous birds having sharp bills and talons and otherwise are adapted for hunting prey animals, alive or dead, so includes vultures.

Recycle: to process used or waste materials to make suitable for reuse.

Reduce: consume or use fewer goods or products.

Refuge: an area of land or of land and water set aside for the preservation and protection of plants and wildlife.

***Renewable Resource:** a plant, animal, or substance (natural resource used by people) which can replenish (renew) itself over time for example trees, soil. Trees are renewed through reproduction (seeds) and soil through plant decomposition, and deposition of weathered materials.

Reptile: cold-blooded air-breathing vertebrates having skin covered with scales or bony plates, true claws (if they have legs) and lay soft shelled leathery eggs. Most common: Tortoises and turtles, lizards and snakes, alligators and crocodiles.

Reproduction: The process by which plants or animals create offspring or new organisms.

***Restoration:** to return an area to its historic or previous natural condition.

Reuse: to use the same product or item over again (e.g. bag, aluminum foil, bottle, etc.)

***Riparian:** located or living along or near a stream, river, or body of water, usually a type of woodland habitat.

****Rookery:** A place where animals of the same species nest and/or breed, in groups, especially herons, egrets and seals.

Runoff: water that drains or flows off the surface of the land.

****Sapwood:** part of a tree that carries water and nutrients.

***Savanna:** is a grassland ecosystem characterized by widely spaced oak trees allowing the growth of vast areas of primarily grasses and some shrubs. It is usually is in a zone between grassland and woodland, between a valley and foothills.

Scavenger: An animal that gets its energy and matter by eating dead organisms. Some carnivores, like Bald Eagles, are part-time scavengers. Crows and Raccoons (omnivores) are scavengers too. Turkey Vultures are full-time scavengers.

Sierra Nevada: The mountains in northern and central California that span many habitats that lie between the Central Valley and the desert lands.

***Silt:** sediment that is suspended in stagnant water or carried by moving water that often accumulates on the bottom of rivers, bays, etc; smaller than sand, larger than clay.

Solar: refers to the sun (and its energy). Solar power refers to the energy captured from the sun’s rays by cell or panels for making electricity.

Spawning: generally refers to the release of eggs into water by a female fish for reproduction purposes.

****Species:** a population of similar individuals which are able to breed and produce fertile offspring under natural conditions.

****Succession:** the gradual change in plant and animal species of an ecosystem, over time, until a stable “climax “ecosystem is reached. A mature forest is a climax ecosystem—a forest fire would restart the succession process. Example: bare ground, grassland, shrubland, woodland, mature forest.

****Sustainable Use** – Using renewable resources at a rate which ensures they can naturally replenish resulting in the continuation and availability of the resource. Example: Water is finite natural resource. The same amount is here now as when the Earth was formed. Water is replenished in the water cycle but sometimes (as in a drought) not quickly enough to replace the water used by people; therefore, using water wisely and sustainably is important.

****Symbiotic Relationship:** A special close living association and interaction between two organisms which allows at least one species to better survive. Three main types are:
Mutualism: mutually beneficial to both (pollinators and plants).
Parasitism: harmful to one –beneficial to the other (deer and ticks).
Commensalism: beneficial to one --no harm or benefit to the other (oak gall wasps and oak trees).

Terrestrial: living or growing on land; referring to land.

Threatened: a species of plant or animal that is in danger because of a decline in numbers

Timber: a forest stand containing trees of commercial size and quality suitable for sawing into lumber.

Valley: A usually large land area between mountain ranges that is flat and/or rolling, dominated by grasslands, savannas and woodlands, and usually with rivers flowing through it . Examples in CA are the Sacramento Valley, the San Joaquin Valley or the combined Central Valley.

***Vernal Pools:** a habitat of the Central Valley grasslands characterized by shallow, clay-bottom pools that collect rainwater. The pools evaporate in the late spring/summer, and are habitat for many endemic plants and animals.

Vertebrate: an animal with a backbone.

Water cycle: the continuous circulation of water from oceans to air, to land and back to oceans. The cycle involves condensation, evaporation, run-off, precipitation and transpiration.

Waterfowl: a bird that frequents water, such as ducks, geese, and swans (as distinguished from wading birds, cormorants, shorebirds). Many (but not all) types of waterfowl migrate.

****Watershed:** An area of land that catches rain or snow and drains or seeps into a marsh, stream, river, lake or groundwater. Small watersheds are typically part of much larger watersheds. The American River is part of the Sacramento River Watershed.

Weathering: a process in which weather breaks down rocks into smaller and smaller pieces. The rock fragments created during the weathering process do not move from one place to another but stay in the same location—which makes it different from erosion.

Wetland: areas that are flooded or saturated by surface water for a sufficient time to support vegetation typically adapted for life in wet soil conditions. Wetlands generally include swamps, marshes, vernal pools, bogs and similar areas.

Wildlife: animals that are not tamed or domesticated; may be small organisms visible only through a microscope or as large as a whale.

***Wind power:** the energy harnessed or captured from the force of winds by large blades of windmills.

Woodland: a complex community of plants and animals in which trees, shrubs and grasses are the most common and dominant members; tree-tops do not form a closed cover.