

## BIOLOGY TERMS

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**HYDROPHYTE:** a plant living in water or extremely wet soil (above field capacity)

**FIELD CAPACITY:** maximum water that soil can hold (i.e., soil completely saturated with water)

**XEROPHYTE:** a plant adapted for survival for in-soil with a limited supply of water (Capillary water absent from the surface horizons for extended periods of time)

**CAPILLARY WATER:** water occupying the space between soil particles (the only water available to root systems)

**MESOPHYTE:** a plant living in soil with adequate available water enduring the growing season (soil below field capacity but with considerable capillary water in the surface horizons).

**HALOPHYTE:** a plant adapted for survival in soil with high salt content.

**SUCCESSION:** an orderly sequence of differing types of vegetation in a given region.

**HYDRARCH:** plant succession in open water (such as lakes and ponds).

**SUCCESSION:** an orderly sequence of differing types of vegetation in a given region.

**HYDRARCH:** plant succession in open water (such as lakes and ponds).

**XERARCH:** plant succession on bare rock or ground.

**CILMAX:** final stage of plant succession in a given region.

**PLANT COMMUNITY:** an assemblage of certain dominant indicator plant species occupying a given region (e.g., yellow pine forest and chaparral).

**BIOME:** a large geographical region whose climate (physical environmental factors) produce a characteristic climax association of plants and animals.

**CHAPPARRAL:** a plant community composed of dense, impenetrable, shrubby vegetation adapted to a Mediterranean climate with winter-wet and summer-dry seasons (well-developed in mountains of San Diego County)

**COASTAL SAGE SCRUB:** – plant community similar to chaparral but found at lower elevations (generally below 2,000 ft.) and dominated by coastal sagebrush (*Artemisia Californica*): common on hills around Palomar College.

**SYMBIOSIS:** – two or more organisms living together.

**MUTUALISM:** a symbiotic relationship resulting in mutual benefit.

**LICHEN:** symbiotic relationship between algae (autotroph) and fungi (heterotroph) in which both members derive benefit (good example of mutualism)

**AUTOTROPHIC:** mode of nutrition in which the organism is able to manufacture its own food, either by chemosynthesis or photosynthesis.

**HETEROTROPHIC:** mode of nutrition in which the organism is unable to synthesize its own food and is, therefore, parasitic or saprophytic on other organisms.

**EPIPHYTE:** a plant that merely grows upon another plant for support or to reach sunlight, e.g., the orchid or Spanish moss (*Tillandsia*).

**BROMELIAD:** an epiphyte in the pineapple family which is able to trap rain water in its rosette of leaves.

**MICROPHYLOUS:** small leaves with less surface area for water loss (transpiration): this is characteristic of xerophytic plant of chaparral and desert.

**SCLEROPHYLOUS:** tough, hard, leathery leaves with compact cell structure, few air spaces, thick or multiple layered Epidermises, thick cuticle, and with stomata often confined to the lower epidermis or in crypts: this is characteristic of xerophytic chaparral shrubs.

# BIOLOGY TERMS

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**STOMATA:** openings in leaf epidermis which allow for gas exchange: openings controlled by shape and size of paired guard cells at either side.

**SEROTINOUS:** seed cone of conifer that remains unopened and persistent on the tree for many years; the heat from a forest fire will cause cone to gradually open, thus liberating the seeds.

**BASAL BURIAL:** large subterranean stump from which many chaparral shrubs re-sprout following a fire.

**DISPERSAL:** movement of seeds or fruits away from parent plant by wind, birds, mammals, and water.

**PREDATOR:** an animal that kills or feeds upon another animal

**PREY:** an animal hunted or killed for food by another

**FOOD CHAIN:** a chain of organisms existing in any natural community such that each link in the chain feeds on the one below and is eaten by one above: there are seldom more than six links in a food chain, with plants on the bottom and the largest carnivores at the top.

**PRODUCERS:** autotrophic green plants that occupy the first trophic level in a food chain.

**PRIMARY CONSUMERS:** plant eaters (herbivores) that occupy the second (2<sup>nd</sup>) trophic level.

**SECONDARY CONSUMERS:** carnivores that eat the herbivores (3<sup>rd</sup> trophic level).

**TERTIARY CONSUMERS:** carnivores that eat secondary consumers (4<sup>th</sup>)

**DECOMPOSERS:** organisms that break down dead members of food chain, thus returning essential elements such as nitrogen and phosphorous to the ecosystem; decomposers consist chiefly of fungi and bacteria, and occupy the 5<sup>th</sup> trophic level.

**ECOSYSTEM:** all organism in a community plus the associated environment factors with which they interact: e.g., ponds, lakes, the ocean, and terrestrial ecosystems (including the topsoil and

atmosphere); a self-contained spaceship may be thought of as an ecosystem.

**BIOSPHERE:** the whole zone of air, land, and water at the surface of the earth occupied by living things: the earth ecosystem (in grave danger of overpopulation, pollution, and exploitation by man).

**ENVIRONMENT:** the sum total of conditions and influences surrounding an organism or group of organisms.

**ECOLOGY:** study of the interrelationships between plants and animals and their environment.

**1<sup>st</sup> Law of Thermodynamics:** no energy transfer is 100% efficient because during each energy transfer some energy is “lost” or dissipated, primarily as heat.

**PYRAMID OF ENERGY:** at each link in the food chain, energy that was originally stored by the autotrophic plants is dissipated (i.e., the more links in the food chain, the more wasted or unusable energy).

**PYRAMID OF MASS AND NUMBERS:** the mass (weight) and numbers of organisms decreases along a food chain: e.g., grass-grasshoppers – frogs – snakes – hawk: it takes many pounds of grass to produce one pound of beef steak.

**BIOLOGICAL MAGNIFICATION:** the concentration of certain chemical residues, such as DDT, increases along a food chain.

**BIOLOGICAL CONTROL:** the control and elimination of dangerous or destructive insects without the use of deadly biocides.

**ORGANICALLY GROWN:** plants grown with the use of natural fertilizers derived from matter of living origin, such as barnyard manure, green crops turned under and incorporated with the soil, compost, humus and natural leaf mold, bone meal, cottonseed-meal, fish scrap, etc.; to be distinguished from plants grown with commercially manufactured, concentrated fertilizers derived from mineral or inorganic

# BIOLOGY TERMS

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origin, and sprayed with poisonous fungicides and insecticides.

**BIODEGRADABLE:** chemicals or compounds that will decompose or break down into biologically useful elements through the action of decay processes, such as decay bacteria.

**ZYGODACTYL:** feet adapted for clinging and climbing on tree bark, such as the woodpecker.

**CARNIVORE:** animal that eats the meat or flesh of other animals.

**HERBIVORE:** animal that eats herbage or plant material.

**GRANIVORE:** herbivore with diet primarily of grains and seeds.

**OMNIVORE:** animal that eats both plant and animals materials.

**INSECTIVORE:** animals with diet consisting chiefly of insects.

**DIASTEMA:** wide gap in skull of rodent separating the incisors from cheek teeth.

**WARNING COLORATION:** insects with some obnoxious quality (at least to their would-be predators), such as bad taste, bad smell, or powerful sting, often exhibit bright colors to warn of their presence.

**MATING COLORATION:** bright coloration among the males of many animals, particularly the plumage of certain birds, appears to give the male a definite advantage in mate selection and attraction: the mating cells and coloration of the most "fit" and aggressive males serves also to stabilize the population density by allowing only the most sexually select males to mate with females.

**CRYPTIC:** concealing forms and coloration (camouflage): e.g., the walking stick and katydid or leaf-hopper.

**FOSSORIAL:** legs adapted for digging or burrowing.

**RAPTORIAL:** legs adapted for grasping (e.g., preying mantis).

**SALTATORIAL:** legs adapted for jumping.

**CURSORIAL:** legs adapted for running swiftly.

**SWIMMING LEGS:** flattened legs covered with hair, characteristic of the streamlined water beetles.

**ECHOLOCATION:** method of navigation used by bats based on high frequency sound waves (similar in principle to sonar).

**METABOLIC WATER:** water produced as a by-product of certain metabolic reactions, such as the water produced from the oxidation of lipids in the diet of the kangaroo rat: lipid molecules (including fats and oils) contain a very high proportion of hydrogen atoms which combine with oxygen to form water.

## Ecology

Study of interrelation between plants and animals and their environment.

Environment: the physical factors of environment are climate, weather condition, light, fire, nutrients. The biotic factors --- other living creatures --- are predation (predator relationships) and pollination: symbiosis

Adaptations to environment, naturally, are fire...some good effects from fire, though, do occur on certain plants. For instance, fire adapted plants are knob cone pine, pinus attenuate. Fire provides heat and the ability of pine cones to release its seeds