

2007 WILDLIFE CONCEPTS

Wildlife Key Points

- 1W Identify common wildlife species and wildlife signs.
- 2W Identify basic wildlife survival needs.
- 3W Describe specific adaptations of wildlife to their environment and their role in the ecosystem.
- 4 W Describe predator/prey relationships and identify examples.
- 5W Describe food chains and food webs and cite examples.
- 6W Describe factors that limit or enhance population growth.
- 7W Evaluate a given habitat and its suitability for a designated species when given a description of its habitat needs.
- 8W Describe ways a habitat can be improved for specific species through knowledge of its specific requirements.
- 9W Discuss the concept of carrying capacity and limiting factors.
- 10W Discuss various ways the public and wildlife managers can help in the protection, conservation, management, and enhancement of wildlife populations.
- 11W Describe the potential impact of the introduction of non-native species.
- 12W Describe major factors affecting threatened and endangered species and methods used to improve the populations of these species.

Suggested Core Activities/ test material

- Use local identification guides and internet resources to identify the most common wildlife in the test area. 1W
 1. Identify local songbirds by visual key or song (see attached list of 20 local birds for primary study)
 2. Identify local animals by track, scat or other sign using key at site (reproduced from Peterson track guide).
 3. based on physical adaptation of skulls or other material identify key features that indicate trophic level
- Students should be able to identify specific adaptations or strategies of wildlife to their habitat, and their role in the ecosystem specifically adaptation of the attached selected species to the dry desert and mountain habitats surrounding the test site. 3W
- Students should be able to outline the predator/prey relationships between listed wildlife in the test area and possible/probable consequences if links are eliminated. 4W.
- Students will create a display illustrating how the interdependence of the population within a food chain maintains a balance of plant and animal populations within a community. 5W
- Students should be able to outline the factors that limit or enhance wildlife population growth. 6W suggested reading: "Wildlife Populations" from the University of Minnesota (
- Students should be able to discuss how territoriality, reproductive strategies, and

dominance hierarchies enhance a species survival, and how human activities can interfere with carrying capacity. 9W

- Students should be able to identify invasives, issues regarding, and management options/ solutions to the following invasive species: Zebra Mussel, Purple Loosestrife, Yellow Star Thistle. 11W
- Students will name the two categories under the Endangered species Act in the US and list a species for each category with causes of decline and management options/. Existing conservation actions. 12W
- Be able to identify the following Major Wildlife Acts or legislation and their basic provisions.
- Identify three major conservationists who have had an effect on conserving/preserving wildlife habitat nationally or globally and identify their contributions.
- Identify and understand issues of traditional and innovative energy sources to:
migratory bird flyways
habitat loss/degradation

Top Resources:

- Wildlife identification US Fish and Wildlife Service
<http://educators.fws.gov/educators.html> 1W
- Identifying and Preserving Wildlife Tracks
<http://www.42explore.com/animaltracks.htm> 1W
- Wildlife identification, endangered species, and invasive species
<http://species.fws.gov/> 1W 11W 12W
- Canada wildlife identification and habitat
<http://www.hww.ca> 1W 7W 8W
http://www.ec.gc.ca/wild_e.html All
- National Wildlife Federation
<http://nwf.org/backyardwildlifehabitat/> All
- Wildlife links for educators US Fish and Wildlife
<http://deerflat.fws.gov/linksed.htm> All
- Basic wildlife survival needs Texas Parks and Recreation
http://www.tpwd.state.tx.us/publications/wildlife_habitat/education/urban/decline-survival.pdf 2W
- Winter animal adaptations Michigan State University Extension
<http://www.dsisd.k12.mi.us/mff/Environment/WinterAnimals.htm> 3W
- Animal Adaptations, Boreal Forest Network Canada
<http://www.borealnet.org/overview/wildlife.html> 3W

- Wildlife Populations University of Minnesota
<http://www.extension.umn.edu/distribution/youthdevelopment/DA6340.html>
4W
5W 6W 8W 9W 10W 11W
- Predator/Prey Relationships "Eyes of Yellowstone" Yellowstone Park Foundation Sponsored by Canon
<http://www.ypf.org/partnerships/corporate.asp> 4W
- Create a Food Chain Canada Wildlife Act
http://www.vt_aide.com/png/foodchains.htm 5W
- Wildlife Survival Cottontail Rabbit Habitat Missouri Department of Conservation
<http://www.conservation.state.mo.us/manag/rabbit/index.shtml> 7W
- Carrying Capacity National Wildlife Federation
<http://enature.com/>
- Carrying Capacity World Builders
<http://curriculum.calstatela.edu/courses/builders/lessons/less/biomes/carryingcap.html> 9W
- Habitat Improvement
<http://www.in.gov/dnr/fishwild/hunt/open.html> 10W
- Invasive Species USDA
<http://www.invasivespecies.gov/> 11W
- Invasive Species US Fish and Wildlife 11W
<http://contaminants.fws.gov/Issues/InvasiveSpecies.cfm> 12W
- Species at Risk Canada
http://www.speciesatrisk.gc.ca/O2_e.cfm 12W

Adaptation

A genetically determined characteristic that enhances an organism's ability to cope with its environment.

Alien species

A species occurring in an area outside of its historically known natural range as a result of intentional or accidental dispersal by human activities. Also known as introduced species.

Allele

One of several forms of the same gene.

Arthropods

The animal phylum comprised of crustaceans, spiders, mites, centipedes, insects, and related forms. The largest of the phyla, containing more than three times the number of all other animal phyla combined.

Assemblage

See term, "Community."

Avifauna

All of the birds found in a given area.

Biodiversity

The totality of genes, species, and ecosystems in a region or the world.

Biogeochemical Cycles

The movement of massive amounts of carbon, nitrogen, oxygen, hydrogen, calcium, sodium, sulfur, phosphorus, and other elements among various living and non-living components of the environment -- including the atmosphere, soils, aquatic systems, and biotic systems -- through the processes of production and decomposition.

Biogeography

The scientific study of the geographic distribution of organisms.

Biological Resources

Those components of biodiversity of direct, indirect, or potential use to humanity. (Used interchangeably with Biotic Resources)

Biome

A major portion of the living environment of a particular region (such as a fir forest or grassland), characterized by its distinctive vegetation and maintained by local climatic conditions.

Bioregion [bioregional planning]

A territory defined by a combination of biological, social, and geographic criteria, rather than geopolitical considerations; generally, a system of related, interconnected ecosystems.

Biota

All of the organisms, including animals, plants, fungi, and microorganisms, found in a given area.

Biotechnology

Any technology that is applied to living organisms to make them more valuable to people.

Biotic

Pertaining to any aspect of life, especially to characteristics of entire populations or ecosystems.

Buffer zone

The region near the border of a protected area; a transition zone between areas managed for different objectives.

Carcass

the dead body of an animal

carnivorous

eating meat

carrion

the rotting flesh of a dead animal

Carrying capacity

The maximum number of people, or individuals of a particular species, that a given part of the environment can maintain indefinitely.

Class

In taxonomy, a category just beneath the phylum and above the order; a group of related, similar orders.

Climax community

The end of a successional sequence; a community that has reached stability under a particular set of environmental conditions.

Community

An integrated group of species inhabiting a given area; the organisms within a community influence one another's distribution, abundance, and evolution. (A Human Community is a social group of any size whose members reside in a specific locality.)

Comparative advantage

Relative superiority with which a region or state may produce a good or service.

Conservation

The management of human use of the biosphere so that it may yield the greatest sustainable benefit to current generations while maintaining its potential to meet the needs and aspirations of future generations: Thus conservation is positive, embracing preservation, maintenance, sustainable utilization, restoration, *and* enhancement of the natural environment.

Conservation of biodiversity

The management of human interactions with genes, species, and ecosystems so as to provide the maximum benefit to the present generation while maintaining their potential to meet the needs and aspirations of future generations; encompasses elements of saving, studying, and using biodiversity.

Cosmopolitan

Widely distributed over the globe.

Cryogenics

The branch of physics relating to the effects and production of very low temperatures; as applied to living organisms, preservation in a dormant state by freezing, drying, or both.

Cultivar

A cultivated variety (genetic strain) of a domesticated crop plant.

Cultural diversity

Variety or multiformity of human social structures, belief systems, and strategies for adapting to situations in different parts of the world.

Crepuscular

Animal that is most active a dawn and dusk.

Decomposition

The breakdown of organic materials by organisms in the environment, releasing energy and simple organic and inorganic compounds. About 10 percent of the energy that enters living systems through photosynthesis in plants passes to herbivores, and a fraction of this energy then passes to carnivores. Whether feeding on living or non-living material, however, the *detritivores* (the organisms consuming non-living material, such as many fungi, bacteria, and earthworms) and consumers break down organic material (such as sugars and proteins) to obtain energy for their own growth, thereby returning the inorganic components (the nutrients) to the environment, where they are again available to plants.

Demography

The rate of growth and the age structure of populations, and the processes that determine these properties.

Diurnal

Animal most active during daylight hours.

Donor control

A predator-prey interaction in which the predator does not control the prey population size.

Ecosystem

The organisms of a particular habitat, such as a pond or forest, together with the physical environment in which they live; a dynamic complex of plant, animal, fungal, and microorganism communities and their associated non-living environment interacting as an ecological unit. Ecosystems have no fixed boundaries; instead, their parameters are set according to the scientific, management, or policy question being examined. Depending upon the purpose of analysis, a single lake, a watershed, or an entire region could be an ecosystem.

Ecotourism

Travel undertaken to witness sites or regions of unique natural or ecologic quality, or the provision of services to facilitate such travel.

Ecotype

A genetically differentiated sub-population that is restricted to a specific habitat.

Edaphic

Pertaining to soil.

Endemic

Restricted to a specified region or locality.

Environmental heterogeneity

The physical or temporal patchiness of the environment. Heterogeneity exists at all scales within natural communities, ranging from habitat differences between the top and underside of a leaf, to habitat patches created by treefalls within a forest, to the pattern of forests and grasslands within a region. The mosaic of habitat patches within an ecosystem is created by such disturbances as fire and storms; differences in microclimate, soils, and history; and both deterministic and random population variation. Patches in early stages of succession provide unique structural habitats and contain different species than those in late-successional stages do.

Evolution

Any gradual change. Organic evolution is any genetic change in organisms from generation to generation.

Ex situ conservation

A conservation method that entails the removal of germplasm resources (seed, pollen, sperm, individual organisms, from their original habitat or natural environment. Keeping components of biodiversity alive outside of their original habitat or natural environment.

Extinction

The evolutionary termination of a species caused by the failure to reproduce and the death of all remaining members of the species; the natural failure to adapt to environmental change.

Fauna

All of the animals found in a given area.

Flora

All of the plants found in a given area.

Gene

The functional unit of heredity; the part of the DNA molecule that encodes a single enzyme or structural protein unit.

Gene bank

A facility established for the *ex situ* conservation of individuals (seeds), tissues, or reproductive cells of plants or animals.

Genetic diversity

Variation in the genetic composition of individuals within or among species; the heritable genetic variation within and among populations.

Genotype

The set of genes possessed by an individual organism.

Germplasm

The genetic material, especially its specific molecular and chemical constitution, that comprises the physical basis of the inherited qualities of an organism.

Grassroots [organizations or movements].

People or society at a local level, rather than at the center of major political activity.

Guild

A group of organisms that share a common food or habitat resource.

Habitat

The environment in which an organism lives. Habitat can also refer to the organisms and physical environment in a particular place.

Herbivores

animals that eat only vegetation

hibernation

a time during which an animal is in a sleeplike dormant state, living off reserves of body fat, with slower metabolism and decreased body temperature and pulse rate

Home Range

The in which an animal conducts its activities during a defined period of time.

Hybridization

Crossing of individuals from genetically different strains, populations, or species.

Inbreeding

A mating system involving the mating or breeding of closely related individuals, the most extreme form of which is self-fertilization. It is used to "fix" economically useful genetic traits in genetically improved populations; however, it also can result in fixation of deleterious recessive alleles.

Inbreeding depression

A reduction in fitness or vigor as a result of fixation of deleterious, recessive alleles from consistent inbreeding in a normally outbreeding population.

Indicator species

A species whose status provides information on the overall condition of the ecosystem and of other species in that ecosystem.

Indigenous peoples

People whose ancestors inhabited a place or country when persons from another culture or ethnic background arrived on the scene and dominated them through conquest, settlement, or other means and who today live more in conformity with their own social, economic, and cultural customs and traditions than with those of the country of which they now form a part (also: native peoples or tribal peoples).

In situ conservation

A conservation method that attempts to preserve the genetic integrity of gene resources by conserving them within the evolutionary dynamic ecosystems of the original habitat or natural environment.

Intellectual property right (IPR)

A right enabling an inventor to exclude imitators from the market for a limited time.

Introduced species

A species occurring in an area outside of its historically known natural range as a result of intentional or accidental dispersal by human activities. Also known as alien species.

In vitro

Storage of plant or animal germplasm in tissue-culture form in glass containers.

Keystone species

A species whose loss from an ecosystem would cause a greater than average change in other species populations or ecosystem processes.

Landraces

A crop cultivar or animal breed that evolved with and has been genetically improved by traditional agriculturalists, but has not been influenced by modern breeding practices.

Landscape

- An area of interacting ecosystems where patterns are repeated because of geology, landform, soils, climate, biota, and human influences throughout the area.
- Lentic
Relating to or living in still waters.
- Life form
Characteristic structure of a plant or animal.
- Lotic
Relating to or living in actively moving waters.
- Mesic
Environmental characterized by moderate water availability.
- Minimum viable population
The smallest isolated population having a good chance of surviving for a given number of years despite the foreseeable effects of demographic, environmental, and genetic events and natural catastrophes. (The probability of persistence and the time of persistence are often taken to be 99 percent and 1000 years, respectively.)
- Mutualism
Relationship between two or more species that benefits all parties.
- Mycorrhizal fungi
A fungus living in a mutualistic association with plants and facilitating nutrient and water uptake.
- National income accounts
System of record by which the vigor of a nation's economy is measured. (Results are often listed as Gross National Product, or Gross Domestic Product.)
- Native species
Plants, animals, fungi, and microorganisms that occur naturally in a given area or region.
- Nitrogen fixation
A process whereby *nitrogen fixing bacteria* living in mutualistic associations with plants convert atmospheric nitrogen to nitrogen compounds that plants can utilize directly.
- Niche
A site or habitat supplying the factors characteristically necessary for the successful existence of an organism or species.
- Nocturnal
An animal primarily active at night.
- Omnivorous
eating both meat and vegetation

opportunistic omnivores

animals that take the opportunity to eat whatever is available

predator

an animal that hunts, kills, and eats other animals in order to survive

prey

an animal that is hunted or killed by another animal for food Pathogen

A disease-causing microorganism; a bacterium or virus.

Phenotype

The morphological, physiological, biochemical, behavioral, and other properties of an organism that develop through the interaction of genes and environment. (See genotype.)

Phylogenetic

Pertaining to the evolutionary history of a particular group of organisms.

Phylum

In taxonomy, a high-level category just beneath the kingdom and above the class; a group of related, similar classes.

Population

A group of individuals with common ancestry that are much more likely to mate with one another than with individuals from another such group.

Potential Natural Community

The biotic community that would be established if all successional sequences of its ecosystem were completed without additional human-caused disturbance under present environmental conditions.

Predator control

A predator-prey interaction in which the predator controls the prey population size; that is, in which the predator population is the limiting factor for the prey population size.

Primary [or natural] forest

A forest largely undisturbed by human activities.

Primary productivity

The transformation of chemical or solar energy to biomass. Most primary production occurs through photosynthesis, whereby green plants convert solar energy, carbon dioxide, and water to glucose and eventually to plant tissue. In addition, some bacteria in the deep sea can convert chemical energy to biomass through chemosynthesis. Primary production refers to the *amount* of material produced. *Net primary production* is the measure of the actual accumulation of biomass after some of the products of photosynthesis (or chemosynthesis) are expended for the plant's own maintenance.

Productivity, or the *rate* of production, is affected by various environmental

factors, including the amount of solar radiation, the availability of water and mineral nutrients, and temperature.

Protected area

A legally established land or water area under either public or private ownership that is regulated and managed to achieve specific conservation objectives.

Rehabilitation

The recovery of specific ecosystem services in a degraded ecosystem or habitat.

Restoration

The return of an ecosystem or habitat to its original community structure, natural complement of species, and natural functions.

Riparian

Relating to or living or located on the bank of a water course or sometimes on a lake or tidewater .

Saprobe or saprophyte

An organism that derives nourishment from non-living or decaying organic matter..

Scavenger

animal that feeds on dead or decaying food

Seedbank

A facility designed for the *ex situ* conservation of individual plant varieties through seed preservation and storage.

Selection

Natural selection is the differential contribution of offspring to the next generation by various genetic types belonging to the same populations. Artificial selection is the intentional manipulation by man of the fitness of individuals in a population to produce a desired evolutionary response.

Seral Stage

A biological community viewed as a single developmental or transitional stage in an ecological succession.

Snag

A standing dead tree, often defined by decay class and size.

Species

A group of organisms capable of interbreeding freely with each other but not with members of other species.

Species diversity

A function of the distribution and abundance of species. Approximately synonymous with species richness. In more technical literature, includes considerations of the evenness of species abundances. An ecosystem is said

to be more diverse, according to the more technical definition, if species present have equal population sizes and less diverse if many species are rare and some are very common.

Species richness

The number of species within a region. A term commonly used as a measure of species diversity, but technically only one aspect of diversity.

Stability

A function of several characteristics of community or ecosystem dynamics, including the degree of population fluctuations, the community's resistance to disturbances, the speed of recovery from disturbances, and the persistence of the community's composition through time.

Stand

A community of trees or other vegetation that is sufficiently uniform in composition, age spatial arrangement, and condition to be distinguished from adjacent communities, thus it forms a management entity or definable habitat component.

Stochastic

Random or uncertain variation.

Subspecies

A subdivision of a species; a population or series of populations occupying a discrete range of differing genetically from other subspecies of the same species.

Succession

The more or less predictable changes in the composition of communities following a natural or human disturbance. For example, after a gap is made in a forest by logging, clearing, fire, or treefall, the initial (or "pioneer") species are often fast-growing and shade-intolerant. These species are eventually replaced by shade-tolerant species that can grow beneath the pioneers. If a community is not further disturbed, the outcome of the successional sequence may be a so-called *climax* community whose composition is unchanging. In practice, many communities are frequently disturbed and may never reach a climax composition.

Suitable Habitat

The biological and physical components necessary to meet some or all of the needs of a species.

Sustainable development

Development that meets the needs and aspirations of the current generation without compromising the ability to meet those of future generations.

Systematics

- The study of the historical evolutionary and genetic relationships among organisms and of their phenotypic similarities and differences.
- Taxon** (pl. taxa)
The named classification unit (e.g. *Homo sapiens*, Hominidae, or Mammalia) to which individuals, or sets of species, are assigned. *Higher taxa* are those above the species level.
- Taxonomy**
The naming and assignment of organisms to taxa.
- Temporal**
Relating to time..
- Terrain**
Physical land form features.
- Threshold**
The minimum concentration or amount of a given substance or condition necessary to produce a measurable effect.
- Trophic level**
Position in the food chain, determined by the number of energy-transfer steps to that level.
- Variety**
See cultivar.
- Vascular plants**
Plants with a well-developed vascular system that transports water, minerals, sugars, and other nutrients throughout the plant body. Excludes the bryophytes: mosses, hornworts, and liverworts.
- Watershed**
The entire area that contributes water to a drainage system, stream or river.
- Wetlands**
Areas inundated by surface or ground water with a frequency sufficient to support a prevalence of vegetative or aquatic life dependent upon water for growth and reproduction. Also characterized and identified by anaerobic soil conditions
- Xeric**
Habitat characterized by dry conditions

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