

Getting Started

The language of biodiversity: A glossary

Consolidated from several sources by Greg Eckert and Glenn E. Plumb

A **S DESCRIBED IN THIS ISSUE** of *Park Science*, national parks undertake many different kinds of biodiversity discovery and conservation activities that bring together various public groups, such as professionals and students from the formal education and science sectors; representatives from local, state, tribal, and federal governments and agencies; nongovernment organizations, including the private for-profit and not-for-profit sectors; and the overall citizenry. An aspiration of this undertaking is developing a common shared comprehension of and passion for biodiversity discovery and conservation. For most people, learning a new language is indeed challenging, though personal experience and passion can engender conditions of flexibility conducive to absorption of new words, syntax, and meaning. Knowing even a few words of a new language can be meaningful for eventual linguistic fluency. The following terms, used in this edition, and short descriptions are but an illustrative share of the exciting and powerful language of biodiversity!

Adaptation: Any morphological, physiological, sensory, developmental, and behavioral change in a character that enhances survival and reproductive success of an organism. Typically adaptation focuses on the process of genetic change within a population resulting from natural selection, whereby the average state of a character becomes better suited to some feature of the environment.

All-Taxa Biodiversity Inventory

(ATBI): Intense inventory to identify all species of all taxa within a geographic area.

Bioblitz: Short-term (usually 24- to 48-hour) event that brings together professional species specialists and the public to sample biodiversity in a particular area.

Biodiversity: Full variety of organisms at all levels of biological organization, including the genetic, species, and ecosystem levels.

Biome: Major regional ecological community characterized by distinctive life-forms and principal plant (terrestrial biomes) or animal (marine biomes) species.

Bioregion: Geographic area whose limits are defined by natural features such as topography, biological attributes, and environmental processes rather than by political boundaries.

Biota: All of the species in a place.

Biotope: Large regional area with relatively uniform environmental conditions and consistent assemblages of populations of animals and plants.

Citizen science: Research science that engages the public in the scientific process, including training in methods and analysis, formulation of research questions, collecting data, and interpreting results.

Ecology: The study of the interrelationships among living organisms and their environment. Ecology is the study of patterns, networks, balances, and cycles rather than of the straightforward causes and effects studied in chemistry and physics.

Ecoregion: Area of general similarity in ecosystems and in the type, quality, and

quantity of environmental conditions such as climate, landforms, hydrology, soils, and communities of plants and animals.

Ecosystem: Community of organisms and their physical environment interacting as a cohesive whole.

Ecotone: Boundary or transitional zone between adjacent ecosystems or biomes.

Endemic: Native to, and restricted to, a particular geographic region.

Genome: The total genetic constitution of an organism.

Habitat: The locality, site, and particular type of local environment occupied by an organism; its “address” or place where conditions are right for its survival.

Island biogeography: A theory affirming that the number of species inhabiting an island is a function of island area and distance from the mainland and is determined by the relationship between immigration and extinction.

Keystone species: A species that through food web or nutrient cycle position has a “disproportionate effect on the persistence of other species” and determines the composition of a biological community.

Niche: An organism’s lifestyle; distinguished from habitat, an organism’s place.

NPSpecies: Database, maintained by the National Park Service, of park species records, accessible Service-wide and by the public.

CONTINUED ON PAGE 10

Phenology: Timing of seasonal or periodic biological events, generally tightly coupled to climate, such as flowering and migration.

Phenotype: The physical expression (outward appearance) of a trait of an organism, which may be the result of genetics, environment, or an interaction of the two.

Population: A group of organisms of one species, occupying a defined area, and usually isolated from other similar groups. The National Park Service typically manages populations of a species, not the whole species.

Range: All of the habitat areas where a species is usually found.

Species: Groups of individual organisms that can interbreed, resulting in fertile offspring. (Advances in analytical technologies have allowed other concepts to emerge, but they are beyond the scope of this glossary.)

Species richness vs. species diversity: Species richness is the actual number of different species in an area. Species diversity is an indirect measure that also takes into account the frequency of occurrence of species (e.g., rare vs. common).

Subspecies: A group of interbreeding natural populations different taxonomically and with respect to gene pool characteristics, often isolated geographically from other such groups within a biological species.

Taxon (pl. taxa): Unit or category used in the biological system for classifying related organisms. Taxa are ranked in descending order from kingdom to subspecies and include groups such as phyla, families, genera, and species.

Taxonomic working group (TWiG): Self-organized group of taxonomists and other scientists with particular expertise and interest in specific taxa.

Taxonomy: The theory and practice of describing and naming organisms and classifying them into hierarchical series of groups that emphasize their phylogenetic, and now genetic, interrelationships. Evolution now drives taxonomy, emphasizing "descent with modification"; that is, life-forms evolve in family trees.

Voucher: Representative specimen of an organism used to confirm a species' identity in a biological study. Vouchers are usually entire preserved specimens, though they may consist of photos, sound recordings, or tissue.

About the authors

Greg Eckert is restoration ecologist and Glenn E. Plumb is chief wildlife biologist with the NPS Biological Resource Management Division in Fort Collins, Colorado. Correspondence can be directed to the editor at jeff_selleck@nps.gov.