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| **Glossary** |  |
| **Chapter 4** |  |
| **adaptation** | Any genetically controlled structural, physiological, or behavioral characteristic that helps an organism survive and reproduce under a given set of environmental conditions. It usually results from a beneficial mutation. See biological evolution, differential reproduction, mutation, natural selection. |
| **adaptive trait** | Any genetically controlled structural, physiological, or behavioral characteristic that helps an organism survive and reproduce under a given set of environmental conditions. It usually results from a beneficial mutation. See biological evolution, differential reproduction, mutation, natural selection. See adaptation. |
| **alien species** | Species that migrate into an ecosystem or are deliberately or accidentally introduced into an ecosystem by humans. Compare native species. See nonnative species. |
| **artificial selection** | Process by which humans select one or more desirable genetic traits in the population of a plant or animal species and then use selective breeding to produce populations containing many individuals with the desired traits. Compare genetic engineering, natural selection. |
| **background extinction rate** | Normal extinction of various species as a result of changes in local environmental conditions. Compare mass extinction. |
| **biological evolution** | Change in the genetic makeup of a population of a species in successive generations. If continued long enough, it can lead to the formation of a new species. Note that populations, not individuals, evolve. See also adaptation, differential reproduction, natural selection, theory of evolution. |
| **biome** | Terrestrial regions inhabited by certain types of life, especially vegetation. Examples include various types of deserts, grasslands, and forests. |
| **ecological niche** | Total way of life or role of a species in an ecosystem. It includes all physical, chemical, and biological conditions that a species needs to live and reproduce in an ecosystem. See fundamental niche, realized niche. |
| **endemic species** | Species that is found in only one area. Such species are especially vulnerable to extinction. |
| **evolution** | Change in the genetic makeup of a population of a species in successive generations. If continued long enough, it can lead to the formation of a new species. Note that populations, not individuals, evolve. See also adaptation, differential reproduction, natural selection, theory of evolution. See biological evolution. |
| **exotic species** | Species that migrate into an ecosystem or are deliberately or accidentally introduced into an ecosystem by humans. Compare native species. See nonnative species. |
| **extinction** | Complete disappearance of a species from the earth. It happens when a species cannot adapt and successfully reproduce under new environmental conditions or when a species evolves into one or more new species. Compare speciation. See also endangered species, mass extinction, threatened species. See biological extinction. |
| **fossils** | Skeletons, bones, shells, body parts, leaves, seeds, or impressions of such items that provide recognizable evidence of organisms that lived long ago. |
| **functional diversity** | Biological and chemical processes or functions such as energy flow and matter cycling needed for the survival of species and biological communities. See biodiversity, ecological diversity, genetic diversity, species diversity. |
| **gene mutation** | Random change in DNA molecules making up genes that can alter anatomy, physiology, or behavior in offspring. See mutagen. See mutation. |
| **generalist species** | Species with a broad ecological niche. They can live in many different places, eat a variety of foods, and tolerate a wide range of environmental conditions. Examples include flies, cockroaches, mice, rats, and humans. Compare specialist species. |
| **genetic diversity** | Variability in the genetic makeup among individuals within a single species. See biodiversity. Compare ecological diversity, functional diversity, species diversity. |
| **genetic engineering** | Insertion of an alien gene into an organism to give it a beneficial genetic trait. Compare artificial selection, natural selection. |
| **geographic isolation** | Separation of populations of a species into different areas for long periods of time. |
| **habitat** | Place or type of place where an organism or population of organisms lives. Compare ecological niche. |
| **indicator species** | Species whose decline serves as early warnings that a community or ecosystem is being degraded. Compare foundation species, keystone species, native species, nonnative species. |
| **invasive species** | Species that migrate into an ecosystem or are deliberately or accidentally introduced into an ecosystem by humans. Compare native species. See nonnative species. |
| **keystone species** | Species that play roles affecting many other organisms in an ecosystem. Compare foundation species, indicator species, native species, nonnative species. |
| **mass extinction** | Catastrophic, widespread, often global event in which major groups of species are wiped out over a short time compared with normal (background) extinctions. Compare background extinction. |
| **mutation** | Random change in DNA molecules making up genes that can alter anatomy, physiology, or behavior in offspring. See mutagen. |
| **native species** | Species that normally live and thrive in a particular ecosystem. Compare foundation species, indicator species, keystone species, nonnative species. |
| **natural selection** | Process by which a particular beneficial gene (or set of genes) is reproduced in succeeding generations more than other genes. The result of natural selection is a population that contains a greater proportion of organisms better adapted to certain environmental conditions. See adaptation, biological evolution, differential reproduction, mutation. |
| **niche** | Total way of life or role of a species in an ecosystem. It includes all physical, chemical, and biological conditions that a species needs to live and reproduce in an ecosystem. See fundamental niche, realized niche. See ecological niche. |
| **nonnative species** | Species that migrate into an ecosystem or are deliberately or accidentally introduced into an ecosystem by humans. Compare native species. |
| **reproductive isolation** | Long-term geographic separation of members of a particular sexually reproducing species. |
| **specialist species** | Species with a narrow ecological niche. They may be able to live in only one type of habitat, tolerate only a narrow range of climatic and other environmental conditions, or use only one type or a few types of food. Compare generalist species. |
| **speciation** | Formation of two species from one species because of divergent natural selection in response to changes in environmental conditions; usually takes thousands of years. Compare extinction. |
| **species** | Group of similar organisms, and for sexually reproducing organisms, they are a set of individuals that can mate and produce fertile offspring. Every organism is a member of a certain species. |
| **species diversity** | Number of different species (species richness) combined with the relative abundance of individuals within each of those species (species evenness) in a given area. See biodiversity, species evenness, species richness. Compare ecological diversity, genetic diversity. |
| **species evenness** | Degree to which comparative numbers of individuals of each of the species present in a community are similar. See species diversity. Compare species richness. |
| **species richness** | Variety of species, measured by the number of different species contained in a community. See species diversity. Compare species evenness. |
| **theory of evolution** | Widely accepted scientific idea that all life-forms developed from earlier life-forms. It is the way most biologists explain how life has changed over the past 3.6?3.8 billion years and why it is so diverse today. |

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