

Virginia Department of Education Standards

III. The Living World

The student will investigate and understand that the Earth is one interconnected system to include the hierarchy and the flow of energy within an ecosystem. Key content includes

- the characteristics and components that define each of the Earth's terrestrial and aquatic biomes;
- biotic and abiotic factors in an ecosystem and how energy and matter move between these;
- the movement of energy through the living world to include food webs, food chains, trophic levels; and
- factors limiting population growth in a given area (carrying capacity).

Student will describe stability and change as it relates to both populations and ecosystems. Key content includes

- the Earth in a state of dynamic equilibrium;
- interactions between individuals (i.e. commensalism, mutualism, parasitism, predation, and competition);
- factors that determine growth rates in populations (birth, death, and migration rates);
- adaptations of organisms to the environment in terms of ecological niches and natural selection;
- the role of genetic diversity and population size in the conservation of a species;
- the natural processes of change in the environment, including examples of succession, evolution, and extinction;
- factors that influence patterns of ecological succession, including invasive species, loss of biodiversity, and catastrophic events;
- effects of change in the hydrosphere, atmosphere, geosphere, or anthrosphere on the biosphere; and
- biodiversity and co-evolution in ecosystems.