

Ecology

Adopted 2019

Obtain, evaluate, and communicate information on how biotic and abiotic factors interact to influence the distribution of species and the diversity of life on Earth. **SEC1**

- a. Develop a model describing the organizational structure of a habitat within an ecosystem. **SEC1.A**

 - b. Ask questions to predict the cause and effect of varying levels of abiotic and biotic factors on a habitat in Georgia. **SEC1.B**

 - c. Construct an argument based on evidence to explain factors that lead to sustainability of biodiversity in an ecosystem. **SEC1.C**
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Obtain, evaluate, and communicate information to analyze factors influencing population growth, density, and dispersion. **SEC2**

- a. Construct an explanation of factors that regulate population density and growth within communities. **SEC2.A**

 - b. Develop and use models to predict population dispersion as a result of population growth and resource availability. **SEC2.B**

 - c. Construct an explanation to describe how population growth and dispersion are influenced by natural selection. **SEC2.C**
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Obtain, evaluate, and communicate information to construct explanations of community interactions. **SEC3**

- a. Construct an argument based on evidence to support how species interactions (e.g., predation, parasitism, mutualism, commensalism, and competition) and adaptations are a response to selective pressures. **SEC3.A**

 - b. Obtain, evaluate, and communicate information about various ecological niches within habitats and determine how interactions between species lead to resource partitioning. **SEC3.B**

 - c. Construct an explanation based on evidence that describes the impact of keystone, invasive, native, indicator, and rare species in Georgia ecosystems. **SEC3.C**

 - d. Construct an explanation about species diversity and how it relates to the stability of ecosystems and communities. **SEC3.D**

 - e. Develop a model to explain ecological succession in terms of changes in communities over time and the impact of disturbance on community composition. **SEC3.E**
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Obtain, evaluate, and communicate information about biogeochemical cycles and how the flow of energy influences ecosystems. [SEC4](#)

- a.** Plan and carry out an investigation of the movement of nitrogen and phosphorus through an ecosystem as a limiting factor in plant communities related to aquatic system succession. [SEC4.A](#)

- b.** Construct an explanation of the movement of carbon through an ecosystem. [SEC4.B](#)

- c.** Develop a model utilizing the first and second laws of thermodynamics and the law of conservation of matter to explain and illustrate the flow of energy and matter in ecosystems. [SEC4.C](#)

- d.** Construct an argument based on evidence to explain the relationship between net primary productivity and biodiversity. [SEC4.D](#)

Obtain, evaluate, and communicate information on the impact of natural and anthropogenic activities on ecological systems. [SEC5](#)

- a.** Analyze and interpret data on the ecological impacts of sustainable and non-sustainable use of natural resources and predict the cause and effect of unsustainable use of natural resources on ecosystems. [SEC5.A](#)

- b.** Construct an argument based on evidence to predict the impact of climate change on an ecosystem. [SEC5.B](#)

- c.** Construct an argument based on evidence of the consequences of habitat fragmentation and habitat loss on biodiversity in relation to island biogeography. [SEC5.C](#)

- d.** Obtain, evaluate, and communicate mitigation strategies to reduce the impacts of non-sustainable activities on Georgia ecosystems. [SEC5.D](#)