Georgia Science

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
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
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

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