Georgia Science

# Ecology

Adopted 2019

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| **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 |
| **Ob co** Skip to main content | **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** |

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| **information about biogeochemical cycles and how the flow of energy influences ecosystems.** SEC4 | **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 |