



# Getting to Know Georgia's Regions

## *A Walk Through Time in Georgia Scavenger Hunt:* High School Biology Georgia Performance Standards

### **Piedmont Region**

Examine the trees in the Piedmont region. Like all trees, they cycle carbon dioxide and oxygen through two processes. The process by which plants use energy from the sun and convert it to produce sugar is called photosynthesis. The process by which plants use stored energy to do metabolic work is called respiration.

- **SB3. Students will derive the relationship between single-celled and multi-celled organisms and the increasing complexity of systems.**
  - a. Explain the cycling of energy through the processes of photosynthesis and respiration.

Explain how the structure of the trees' leaves help them to accomplish photosynthesis.

- **SB3. Students will derive the relationship between single-celled and multi-celled organisms and the increasing complexity of systems.**
  - b. Compare how structures and function vary between the six kingdoms—archaebacteria, eubacteria, protists, fungi, plants, and animals.

### **Ridge and Valley Region**

Looking around at the Ridge and Valley mountain region, match up all of the organisms or environments with their proper designations.

- **SB4. Students will assess the dependence of all organisms on one another and the flow of energy and matter within their ecosystems.**
  - a. Investigate the relationships among organisms, populations, communities, ecosystems, and biomes.

Can you find the copperhead in the Ridge and Valley Region? Explain how natural selection for better camouflage helps each subsequent generation achieve all of the following: live longer, produce more offspring and catch more prey.

- **SB5. Students will evaluate the role of natural selection in the development of the theory of evolution.**
  - b. Relate natural selection to changes in organisms.

Notice the green lichens (a symbiotic relationship between fungi and algae) on the mountain rocks. Fungi and algae differ in function in that: Fungi are decomposers, breaking down materials for nutrients and energy. Algae are producers, able to make their own food and energy.

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### **Coastal Plain Region**

Using plants and animals from the Coastal Plain, create a food chain for this habitat.

- **SB4. Students will assess the dependence of all organisms on one another and the flow of energy and matter within their ecosystems.**
  - b. Explain the flow of matter and energy through ecosystems by
    - arranging components of a food chain according to energy flow.

Does the amount of energy increase or decrease as it gets passed along the food chain?

- **SB4. Students will assess the dependence of all organisms on one another and the flow of energy and matter within their ecosystems.**
  - b. Explain the flow of matter and energy through ecosystems by
    - comparing the quantity of energy in the steps of an energy pyramid.

How are the nutrients that have been passed through this food chain recycled back into the environment?

- **SB4. Students will assess the dependence of all organisms on one another and the flow of energy and matter within their ecosystems.**
  - b. Explain the flow of matter and energy through ecosystems by
    - explaining the need for cycling of major nutrients (C, O, H, N, P).

### **Okefenokee Swamp Region**

On the cypress tree, notice that the trunk is very wide at the bottom. This is called a buttress. How do you think this helps the trees grow in the swamp?

- **SB4. Students will assess the dependence of all organisms on one another and the flow of energy and matter within their ecosystems.**
  - e. Relate plant adaptations, including tropisms, to the ability to survive stressful environmental conditions.

Notice also that several of the bird species have long legs. This allows the birds to wade in the water looking for food. Pretending that you are a mother egret who wants the best for her offspring, you would pick a mate that has: longer legs or shorter legs?

- **SB4. Students will assess the dependence of all organisms on one another and the flow of energy and matter within their ecosystems.**
  - f. Relate animal adaptations, including behaviors, to the ability to survive stressful environmental conditions.

This is an example of Natural Selection.

- **SB5. Students will evaluate the role of natural selection in the development of the theory of evolution.**
  - b. Relate natural selection to changes in organisms.



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### **Coast and Barrier Islands Region**

Explore the beach scene, then answer the following true or false statements.

Sea turtle hatchlings have no natural predators.

- **SB4. Students will assess the dependence of all organisms on one another and the flow of energy and matter within their ecosystems.**
  - a. Investigate the relationships among organisms, populations, communities, ecosystems, and biomes.

One of the largest causes of beach habitat destruction is human activity.

- **SB4. Students will assess the dependence of all organisms on one another and the flow of energy and matter within their ecosystems.**
  - d. Assess and explain human activities that influence and modify the environment such as global warming, population growth, pesticide use, and water and power consumption.

Beach erosion is irreversible.

- **SB4. Students will assess the dependence of all organisms on one another and the flow of energy and matter within their ecosystems.**
  - c. Relate environmental conditions to successional changes in ecosystems.

### **Gray's Reef**

Take a look at the animals on Gray's Reef. Animals such as sponges and coral have the ability to reproduce sexually or asexually, and they choose which one depending on the current conditions of the environment. Give two benefits for each means of reproduction.

- **SB2. Students will analyze how biological traits are passed on to successive generations.**
  - e. Compare the advantages of sexual reproduction and asexual reproduction in different situations.