

Oxbow Phenomena: Gopher Tortoise Adaptations

The Gopher Tortoise is a keystone species in Georgia and resides in the Coastal Plain region, mostly in Longleaf Pine Forests. They eat a variety of grasses, mushrooms, and fruits as herbivorous scavengers. Gopher Tortoises are engineers in their environment, or “eco-engineers” that dig burrows up to 30 feet long and 10 feet deep, which provide habitat for over 300 additional species, including the Indigo Snake, Gopher Frog, burrowing owls, rabbits, foxes, rodents, and small invertebrates. Gopher Tortoises are terrestrial turtles known as tortoises that lay eggs. They are a very social species and will develop complex social relationships, often communicating dominance through a “head bob” motion. (Vulnerable species on IUCN Conservation List).

Grade	Standard	Guiding Question(s)	How to include in lesson?
K	SKL1. Obtain, evaluate, and communicate information about how organisms (alive and not alive) and non-living objects are grouped.	What in the video is living or alive? What is non-living?	-Observe different items in the video and decide if they are living or non-living <ul style="list-style-type: none"> • Draw a picture of the animal and the living things in its habitat. What things should you <i>not</i> draw, that are non-living?
1st	S1L1. Students will investigate the characteristics and basic needs of plants and animals.	What does a tortoise need to survive? Can you think of other animals that are good at digging? Why would they dig? What shape do you think a burrow is?	-Use to discuss what a tortoise may eat <ul style="list-style-type: none"> • Try finding different shaped grasses and leaves • Draw a picture of the tortoise’s needs (food, water, cover/space, air). -This tortoise is great at digging its own home or habitat. <ul style="list-style-type: none"> • Can you think of other animals that are good at digging? Why would they dig? (burrow, food, cool) • Incorporate math by adding and subtracting different burrow lengths. What shape do you think a burrow is?
3rd	S3L1. Obtain, evaluate, and communicate information about the similarities and differences between plants, animals, and habitats found within geographic regions (Blue Ridge Mountains, Piedmont, Coastal Plains, Valley and Ridge, and Appalachian Plateau) of Georgia.	What types of reptiles reside in the Chattahoochee Valley? What other species make up the Coastal Plains Ecosystem?	-Discuss the variety of biodiversity you may observe in or near the Coastal Plains. <ul style="list-style-type: none"> • This tortoise is an eco-engineer, building homes for lots of other animals. What other animals may reside in the Gopher Tortoise burrow? Draw a complex burrow ecosystem with at least 5 resident animals.

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	S3L2 Students will identify factors that affect the survival or extinction of organisms such as adaptation, variation of behaviors (hibernation) and external features (camouflage and protection).	How does this tortoise's adaptations help with survival? How would you describe the locomotion or movement of the tortoise? How can a tortoise shelter, protect, or defend themselves?	<p>-Discuss behavioral adaptations that affect behaviors such as mating, evasion of predators, and alerting of weather conditions, etc.</p> <ul style="list-style-type: none"> • Create a table of 5 different adaptations you observe and how you think they are used for survival. • Write a story of where you think the tortoise goes or what it does in the Winter. <p>-Can use to analyze how the structure of the tortoise's body helps it to survive.</p> <ul style="list-style-type: none"> • Draw a picture of a tortoise's adaptations and write how they help it survive. Create your own shell (scute) pattern, paying close attention to symmetry. How do leathery scaly skin, a beak mouth, a hard shell, long front claws and "elephantine" hind feet help with survival?
4th	S4L1. Obtain, evaluate, and communicate information about the roles of organisms and the flow of energy within an ecosystem.	What does a Gopher Tortoise eat? Do all turtles have the same diet?	<p>-Discuss the difference between different diets of turtles (and other reptiles).</p> <ul style="list-style-type: none"> • "Prepare" a balanced meal for a tortoise remembering that tortoises are herbivores. Fruit has lots of natural sugars and should be eaten in moderation (less than 25% of their diet).
5th	S5L1. Obtain, evaluate, and communicate information to group organisms using scientific classification procedures.	How are tortoises classified? What characteristics can you observe?	<p>-Discuss characteristics of reptiles</p> <ul style="list-style-type: none"> • Reptiles have scaly skin, even turtles! A turtle's scales can be seen on their feet and on their shell. The scales on their shell are known as "scutes"

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			<ul style="list-style-type: none"> • Draw a unique scute pattern that is symmetrical using a variety of shapes.
	<p>S5L2. Obtain, evaluate, and communicate information showing that some characteristics of organisms are inherited and other characteristics are acquired.</p>	<p>How is digging an inherited or acquired behavior? How is camouflaging an inherited or acquired behavior?</p>	<p>-Use to differentiate between anatomically and behaviorally different traits.</p> <ul style="list-style-type: none"> • Draw the tortoise and label its anatomy and how it uses its body parts for certain behaviors (try to draw the internal structures of the animal and what processes they are responsible for). <p>-Use to discuss different types of traits including reproductive, feeding, survival, locomotion, etc</p>