



7th Grade – Interdependence on the African Savanna

Teacher Guide

Goal: Students will be able to discuss the interdependence of animals within the African Savanna.

GSE Connections:

S7L4A: Construct an explanation for the patterns of interactions observed in different ecosystems in terms of the relationships among and between organisms and abiotic components of the ecosystem.

Background Information: The African savanna is one example of an *ecosystem* where organisms are interdependent upon one another in order to survive. The relationships between species on the African savanna range from *predator-prey* (lions hunt zebras) to *mutualistic* relationships where both organisms benefit (acacia tree provides nutrients to ants; ants protect tree from grazers such as giraffes). These relationships help illustrate how different species must either work together or take advantage of each other in order to survive. In any ecosystem, there are limited environmental resources (food, water, space and mates) that plants and animals must compete for. This *competition* among species defines how plants and animals use their adaptations and characteristics to obtain these limited resources. For example, the oxpecker bird will perch on the back of a white rhinoceros and use its stout, sharp beak to eat parasitic insects (ticks) off the rhino's body. The oxpecker not only receives a meal and a safe place to rest, but the rhino in return is freed of these potentially disease-carrying insects. In this relationship we see both mutualism as well as the attempted *parasitic* relationship by which ticks attempt to benefit from the rhino at the rhino's expense. The interdependence of organisms on the African savanna is demonstrated not only through intricate food webs, but also through these dynamic relationships.

Vocabulary	
Ecosystem - a biological community of interacting organisms and their physical environment.	Mutualism - relationship between two or more species in which everyone benefits.
Predator-prey - relationship between two species in which one acts as predator to capture and eat the other that acts as prey.	Parasitism - relationship between two species in which one benefits at the expense of the other.
Competition - interaction between organisms in an ecosystem over limited environmental resources of food, space and mates.	Commensalism - relationship between two species in which one benefits while the other is not affected.

Activity: Provide students with the Student Explore Sheet to record their observations and research about the African savanna animals. Before they begin, discuss the African savanna as a unique ecosystem home to diverse plants and animals. Ask students to explain to you the different types of relationships that occur in ecosystems, making sure to touch on the above vocabulary. Students will have an opportunity on their data sheet to define some of these terms as review. With your students, spend time observing each of the African species to better understand their relationships to one another. Once they have completed the Student Explore Sheet, ask students to think and discuss what would happen to the African savanna ecosystem if an animal were to disappear.



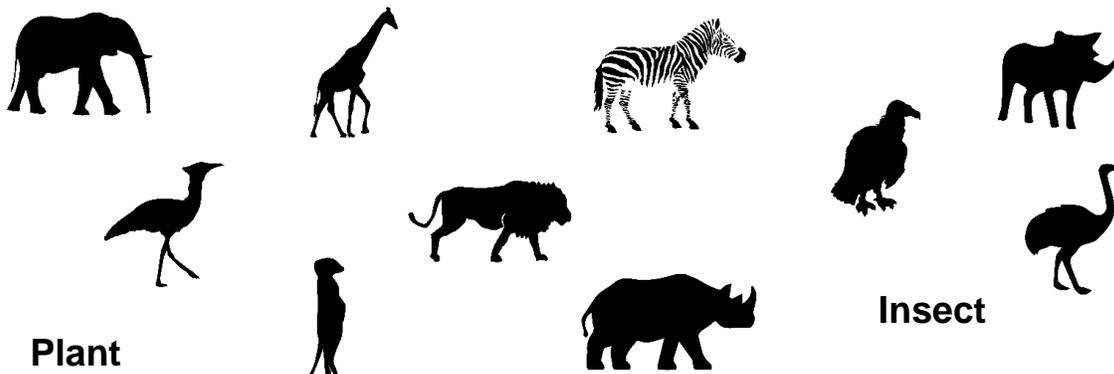
7th Grade – Interdependence on the African Savanna

Student Explore Sheet

Student Review: Define the following terms.

Ecosystem -	Mutualism -
Predator-prey -	Parasitism -
Competition -	Commensalism -

Using the images below, draw arrows between species to represent their relationship within a food web:



Visit the animals of the African Savanna, explore their relationships, and record your findings:

Relationship	Species in the Relationship	Explain the relationship in detail
Predator-Prey	<i>Example: Lion and zebra</i>	<i>Lion (predator) eats zebra (prey)</i>
Competition		
Mutualism		
Parasitism		
Commensalism		

Think and Discuss: What happens to the African savanna ecosystem if a species were to disappear from the ecosystem?