

Ecosystem Hunt



Before the Film:

A. The Savannah: Home of the Lion King:

Use the information provided to answer some questions about the home of Simba and Nala.

Tropical Savannah

The tropical savanna is a biome characterized by tall grasses and occasional trees. Large regions of tropical savanna extend through the nations of Botswana, Namibia, and Kenya in Africa. Savannas exist in areas where there is a 6 to 8 month wet summer season and a dry winter season. Annual rainfall in savannas varies depending on the geographic location. Competition for water during the dry season is intense. Consequently, most birds and many of the large mammals migrate during the dry season in search of water. Because drought conditions are sometimes localized, the migration may be just to another area within the savannah. When drought conditions exist for a long time and over a wide area, the animals may migrate to another biome until the rainy season begins again.

Tropical Savannah: Animals

The species of animals in a savanna depends upon the geographic location of the biome. The African savannah, the savannah with which most people are familiar, is home to a wide variety of animals. A short list of some of those animals includes wildebeest, warthogs, elephants, zebras, rhinos, gazelles, hyenas, cheetahs, lions, leopards, ostrich, mousebirds, starlings, and weavers.

Symbiosis on the Savannah

The acacia tree has developed very useful physical and behavioral adaptations to discourage animals from eating its leaves. It developed long, sharp thorns and a symbiotic relationship with stinging ants. The ants live in acacia thorns they have hollowed out, and they feed on the nectar produced by the tree. When an animal takes a bite of leaves (and thorns), it also gets a mouthful of angry, stinging ants. The ants defend their homes from other insects as well, thus protecting the acacia tree.

Cool Savannah Adaptations:

Giraffes graze on the tops of the acacia, which results in the dome-shaped top characteristic of acacia trees. A behavioral adaptation aimed at preventing giraffe grazing is a chemical defense system that is triggered when the giraffe begins to munch on the leaves. First, a poisonous alkaloid that tastes nasty is pumped into the leaves. The giraffe only gets a couple of mouthfuls of leaves before the remaining leaves become inedible. Then, the tree warns other acacia trees in the area by emitting a chemical into the air. The other acacia trees respond by pumping alkaloid into their leaves.

The baobab tree has adapted to the savanna biome by only producing leaves during the wet season. When leaves do grow, they are in tiny finger-like clusters. The small size of the leaves helps limit water loss. Another adaptation that enables the baobab tree to survive the long months of drought is its ability to store water in its large trunk.

Although elephants do migrate, they have a physical adaptation that allows them to access water that is not available to other animals. Baobab trees store water in their large trunks. The elephant's physical strength and anatomy allow it to tear open the trunk of the baobab tree and to suck the water from it.

1. Describe the savannah biome.
2. What types of organisms would be found there?
3. Describe the symbiotic relationship between ants and the acacia tree.
4. What adaptations have acacia trees and baobab trees developed to help defend against predators?
5. What adaptation to living in the savannah do elephants have?

During the Film:

B. Ecological Identifications:

Give two examples of each ecological term **from the film**. You may use the character name or the generic animal name. *Organisms may be used in more than one category.*

ex. Omnivore

monkey

simba

6. Producer

7. Primary Consumer

8. Secondary Consumer

9. Tertiary Consumer

10. Herbivore

11. Carnivore

12. Abiotic factor

13. Biotic factor

14. Predator

15. Prey

16. Organism on 1st trophic level

17. Organism on 2nd trophic level

18. Organism on 3rd trophic level

19. Limiting factor

20. Energy Source

(only one required)

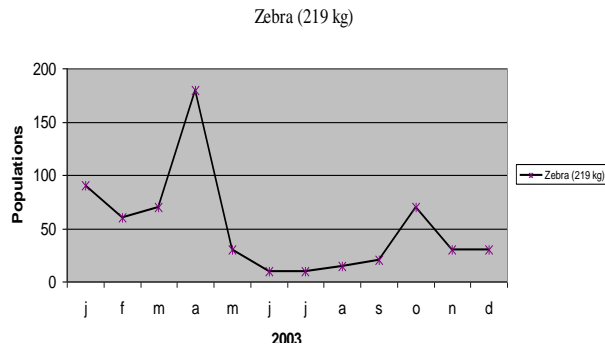
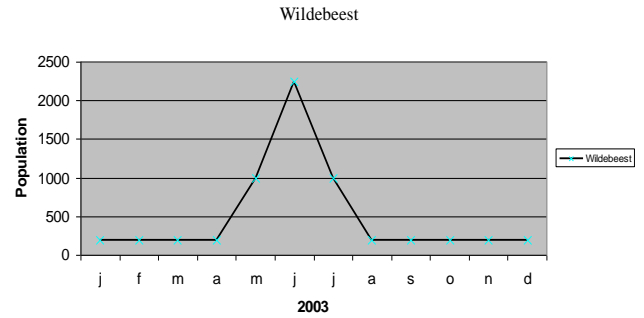
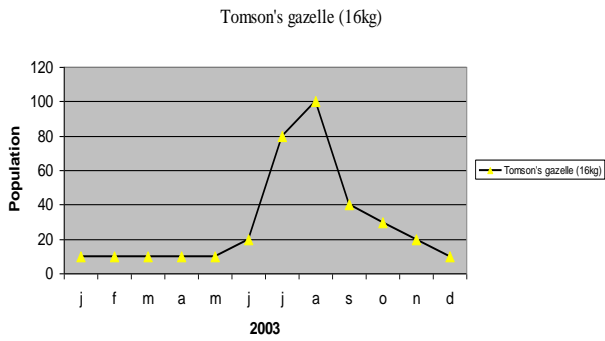
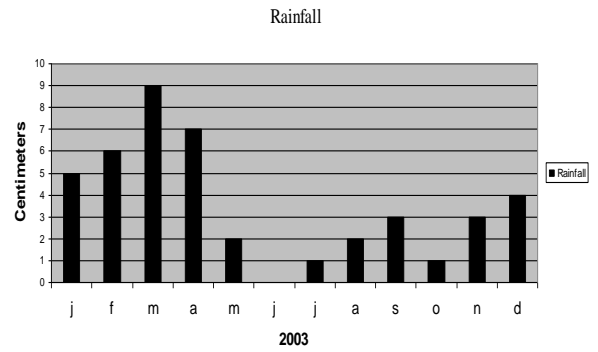
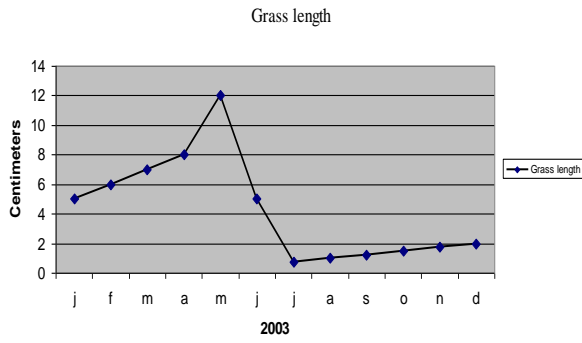


After the film:

C. Food Chain Diagram:

Using the organisms from the movie (see above), diagram a hypothetical food chain. **Include one of each (energy source, producer, primary consumer, secondary consumer, tertiary consumer, decomposer (not shown in movie)).**

D. Analysis Questions



Examine the graphs above which show the relationships between rainfall, the length of grasses, and the populations of zebras, wildebeests, and gazelle's on the Serengeti Plain over one year.

21. Using the graphs, explain how rainfall is related to grass length.

22. Which animals appear in the area first after the rains begin? _____ Which are next? _____
Which are last? _____

23. How is this grazing pattern beneficial to all three species?

24. What type of symbiotic relationship does Scar have with the hyenas? Explain your answer.

25. During the movie, Mufasa talks to Simba about the kingdom. He says, "Everything you see, exists together in a delicate balance.... you have to respect every living thing from the tiny ant to the antelope." Why do you think that Mufasa believes that all living things are important?

26. Mufasa describes the Circle of life to Simba when he says "When we die our bodies become the grass and the antelope eat the grass so we are all connected in the great circle of life." In your own words describe what you think this means.