

Where the Wild Things Are: How Rainfall Drives Food Web Interactions

The organism, large and small, is affected by the weather. Some organisms like plants are affected directly by rainfall. Others are impacted through their food chain relationships. In wet-dry tropics found in some parts of Africa, seasonal patterns of rainfall drive one of the most impressive animal migrations in the world. Every year 1.3 million wildebeest, 200,000 zebra, and 300,000 Thompson's gazelle migrate roughly 1,500 miles from the African Serengeti in Tanzania to the Masai Mara in Kenya and back again. In this exercise students will accomplish the following:

- Review the water cycle and food web terminology (producer, herbivore, carnivore)
- Explain how changes in the water cycle cause the wet and dry season in Africa
- Illustrate how every animal ultimately depends on rainfall/water availability using the African food web
- Illustrate how rainfall changes result in changes in the African food web
- Explain how these food web changes can lead to changes in behavior (migration, increased conflict between carnivores, etc.)

Six-Degrees of Separation

There is a saying that any two humans on earth are only 6 or fewer connections away from each other. In this game students will play African animals that are each within 6 degrees of separation from the seasonal rains. Students will physically build these connections using string to create a network of living food chains. Each student in a group of 8 should choose one of the following characters.

The Cast of Characters

- Wildebeest herd
- Zebra herd
- Impala
- Cheetah
- Spotted hyena
- Lion
- Vulture
- The narrator (this can be the instructor)

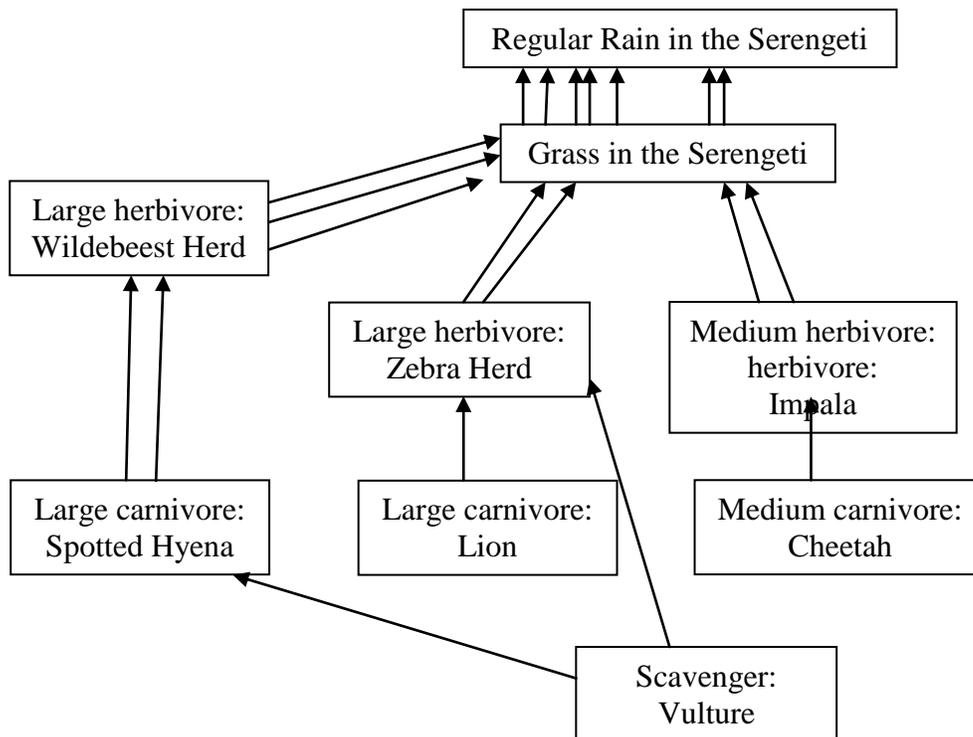
Where the Wild Things Are: Student Worksheet

SCENARIO ONE:

The Wet Season

1. Draw the connections between the animals your group created

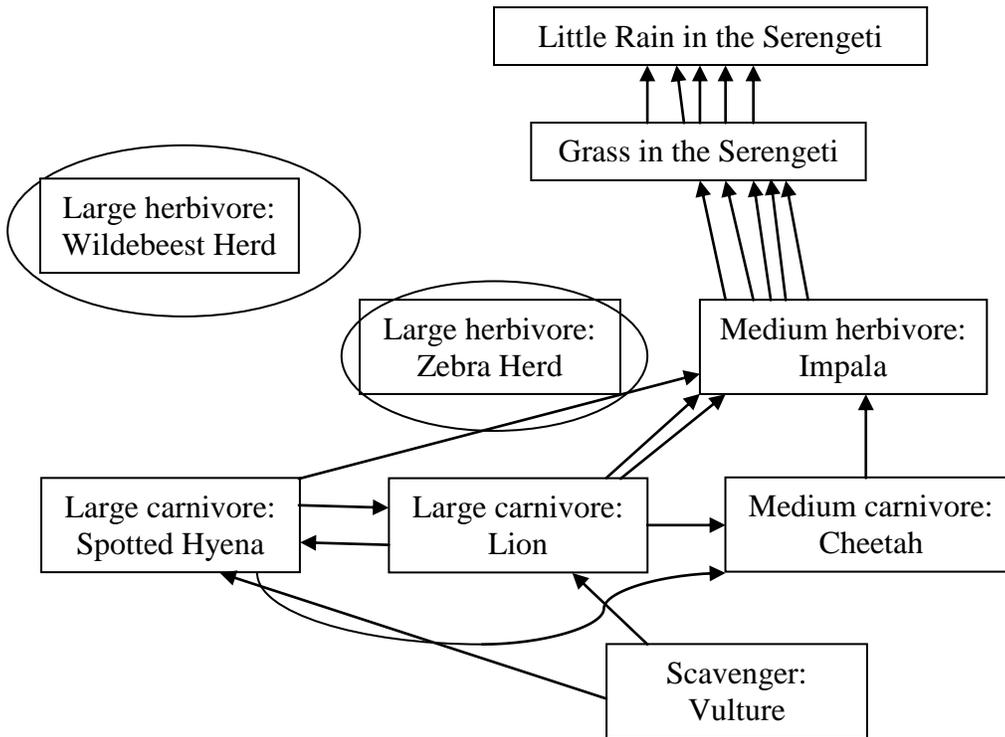
ONE SET OF POSSIBLE CONNECTIONS ARE DISPLAYED BELOW



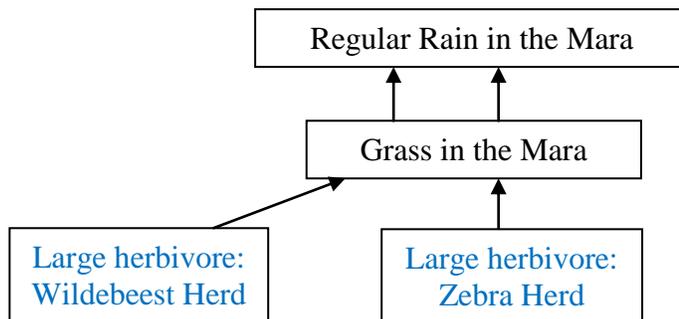
The Dry Season

2. Draw the connections between the animals your group created. If an animal chooses to migrate, draw a circle around the box in the Serengeti and redraw it in the Masai Mara.

**ONE SET OF POSSIBLE CONNECTIONS BELOW
THE SERENGETI PLAINS**



THE MASAI MARA



1. What animals are forced to migrate when the dry season comes? Why?
Wildebeest and zebra are forced to migrate because they no longer have enough food in the Serengeti.

2. List the food sources of the large carnivores (hyenas and lions):

The Wet Season

Wildebeest

Zebra

The Dry Season

(list of all possibilities below)

Impala

Steal from cheetah

Steal from lion/hyena

3. Choose 3 animals and explain how their lives are affected by rain

(possible examples below)

1. **Wildebeest:** Wildebeest eat grass and grass needs rain to grow. When the dry season comes, wildebeest migrate to follow the grass
 2. **Lions:** Lions eat herbivores which eat grass which needs rain to grow. When rain is plentiful lions eat wildebeests but during the dry season they need other food sources.
 3. **Cheetahs** eat impalas which eat grass which need rain to grow. During the dry season other carnivores steal from cheetahs since food is short
4. How do the relationships between the carnivores change when the dry season comes?
Predators in the dry season have more conflicts in the wet season since they are stealing food from each other to survive. There is also more competition between predators because they are using the same herbivore food sources.
 5. Suppose climate change dramatically alters the patterns of rain in both the wet and dry season. Which animals will be affected?

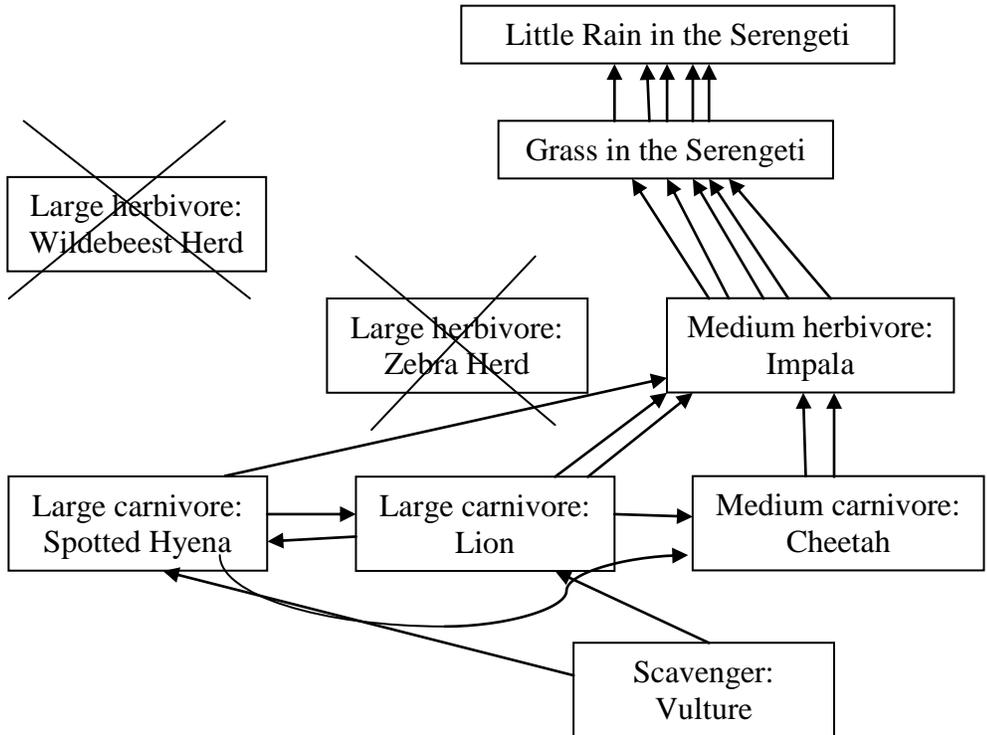
All animals will be affected since they all connect back to rain.

SCENARIO TWO: Walls around Wildlife Reserves

The Dry Season

1. Draw the connections between the animals your group created during the dry season. If an animal goes extinct, cross it out with an X.

ONE SET OF POSSIBLE CONNECTIONS BELOW
THE SERENGETI PLAINS



SCENARIO THREE: Human-Animal Conflicts

SCENARIO TWO Questions

1. What animals go extinct if you put walls around wildlife reserves in the Serengeti?
Wildebeest and zebra
2. How would you design your wildlife reserve if you were manager interested in protecting the African wildebeest?

To design a proper reserve you would need to preserve areas in both the Serengeti and Masai Mara and/or build a wildlife corridor between the two areas and/or not put permanent boundaries around your reserves so the animals can still move freely.