

Building a Food Web and Analysis--Introduction

Assume in this ecosystem the sun supplies 1,000,000 units of energy to producers

Based on the following organisms—draw a food web that represents the trophic level relationships.

Grass (Photosynthesis)

Bushes (Photosynthesis)

Giraffe (Grass, Bushes)

Baboon (Grass, Fruit from bushes)

Leopard (Giraffe, baboon)

Lion (Giraffe)

Create a data table:

Savannah Ecosystem	Highest Trophic Level	Energy Available @ Trophic Level Based on Food Web	Energy Available @Trophic Level Based on Disruption of Food Web
Grass			
Bushes			
Giraffe			
Baboon			
Leopard			
Lion			

***Disruption Herbivores have increased in population by 25%

Analysis:

1. After adjusting the disruption to the food web and make a well reasoned argument citing evidence from your data table to support which organism(s) will most likely be negatively impacted and which organism(s) are most likely to be positively impacted on the increase in herbivores:

Positively Impacted

Negatively Impacted

2. After the disruption--which organism(s) would be most negatively affected by interspecific competition?

3. To survive the disruption--identify the successful qualities (adaptations) by the following species:

Grasses

Lion

Building a Food Web and Analysis—Lab Disruption of Ecosystem

Ecosystem: Arctic

Algae (Photosynthesis)

Arctic Willow (Photosynthesis)

Grass (Photosynthesis)

Arctic Hare (Algae, grass)

Snowy Owl (Arctic hare, Ferret)

Hawk (Arctic Hare)

Arctic Wolf (Arctic Fox, Arctic Hare)

Ferret (Arctic Hare)

Zooplankton (Algae)

Fish (Zooplankton)

Seals (Fish)

Polar Bears (Seals, Fish, Hare)

Arctic Fox (Arctic Hare)

Task:

1. Create a food web showing all of the relationships between the species in the list above.

For Steps 2-4 Create a Data Table

2. Determine the trophic level for each organism (producer, primary consumer, secondary consumer, tertiary consumer, and quaternary consumer, top-level producer, decomposer, etc).

3. Assuming that the amount of energy available from the sun to the producers is 600,000, determine the overall energy value for each organism taking account what they eat and how many food sources they have (arrows).

4. Apply the following disruption, due to warming oceans, polar bears have decreased 75%, adjust the energy value of your organisms.

5. Determine the organism(s) most likely to be negatively impacted and the organism(s) most likely to be positively impacted by this ecological disruption.

6. List all examples of interspecific competition found within the food web.

7. Analyzing Interspecific Competition: after the disruption--which organism(s) would be most negatively affected by interspecific competition?

7. Analyzing Intraspecific Competition: to survive the disruptions--identify the successful qualities an arctic willow must have to survive amongst other producers; identify the successful qualities ferrets and arctic hares must have to survive amongst its own species.