Disentangling Food Webs *Est. Time: Originally 1 period, 2 with accommodations*

Accomodation Key

General adjustments or additions shown in yellow.

Teacher activities are shown in blue text.

SHOW accommodation strategies in green. **The most important SHOW strategies:**

- Read-aloud activity supplemented with illustrated vocabulary cards for visual clarification of definitions on vocab list.
- NSTA organism and event cards supplemented with images
- "Planning" phase incorporated into food web creation, where students make connections with twine prior to drawing arrows (allows for rearrangement, reinforces the idea of the "web" and continuous energy flow)
- Teacher clarifies instructions by eliminating materials that are not applicable to the step at hand, and using modeling and gestures as well as verbal explanations.

TELL accommodation strategies in cyan. **The most important TELL strategies:**

- Reading task supplemented by translated vocabulary list and accompanied by read-aloud activity to support oral proficiency.
- Concept check added at the conclusion of the reading activity, including a graphic organizer to fill out using a word bank (included in this document) to assess comprehension before moving forward.
- Graphic organizer added to food chain #1 on Student Handouts (Revised) to help clarify instructions.
- Teacher checkpoints incorporated into hands-on activity to ensure student comprehension and provide opportunities leveled questioning opportunities.
- Assessment leveling is provided for final task.

Introduction

In this lesson, students create a food web using information about a group of non-existent species. They will use the food web to create food chains and a population pyramid that will show the flow of energy through the food web. Finally, they will explore how changing the population size of one species affects other species, often with unpredicted results. This allows them to create simple representations of the complex species interactions that occur in ecosystems.

Standards

- SC.912.L.17.8: Recognize the consequences of the losses of biodiversity due to catastrophic events, climate changes, human activity, and the introduction of invasive, non-native species.
- SC.912.L.17.9: Use a food web to identify and distinguish producers, consumers, and decomposers. Explain the pathway of energy transfer through trophic levels and the reduction of available energy at successive trophic levels.

Learning Objectives

1. Create food webs and food chains using information about predator-prey interactions among organisms in an ecosystem.
2. Use food webs to trace the flow of energy through an ecosystem, and to determine the effects of a population increase or decrease of one species on the rest of the organisms.

Required Materials

- Sticky notes
- Poster paper
- Twine
- Tape
- Permanent markers
- 10 cut-out sets of illustrated NSTA organism and event cards (images sourced from works licensed for non-commercial reuse) - 1 set for each group of 3 students
- 1 Printed set of illustrated vocabulary cards with magnets glued on the back
- Magnetic white board
- 30 Printed handouts of "Food Webs & Food Chains" reading (1 per student)
- Printed translated vocabulary list (1 per EL student)
- 30 Printed Student Handouts (Revised) (1 per student)

Procedure

- *Students have 3 minutes to pre-read the following text on their own (sufficient for slower readers at 150 wpm, but more time given for very slow & EL readers picking through word-by-word.) El students provided with translated vocabulary list for quick reference.*
- *At the end of 3 minutes, quiet reading stops. Students will either have completed the reading or gotten enough time to preview the topic and/or vocabulary list.*
- *The teacher then begins a group-reading activity while standing close to EL students, who have priority front-of-room seating.*

- ***Procedure**: Teacher reads the first sentence, and then tosses a soft bean bag underhand to the next person who should read. That person reads a sentence and then tosses the bean bag to another person. Struggling students can choose just to read a few words before passing on the bean bag; nonverbal beginner EL students are allowed to pass the bean bag on (teacher stands nearby to assist).*
- *As the passage is read by the students, teacher supplements with a series of cards that go along with key vocabulary; small magnets glued on the back. As the words pass, teacher holds up vocabulary cards with definitions and supporting visuals, and then places them on a magnetic whiteboard in a logical way to support text comprehension. Vocabulary with a card is colored in blue.*

- *Reading activity finishes with new "concept check" questions to make sure everyone understands the reading and is prepared to move on to the next step.*
  - *Sentence frame provided for ELs for Concept Check question #2:*
    - *"A 4 kg mongoose must eat _____ kg of snakes to survive. Those snakes must eat ____ kg of chameleons to survive."*

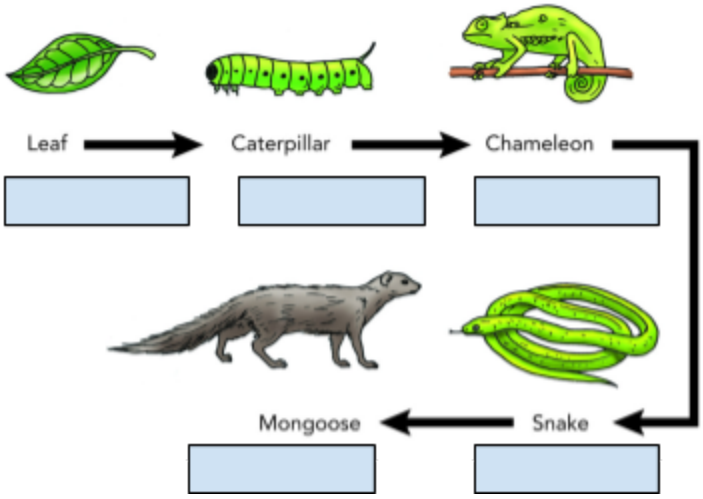
Food Webs & Food Chains

Food webs show the complex set of interactions among **organisms** in an ecosystem. they show which organisms eat which other organisms, and trace the flow of energy through the ecosystem. Therefore, food webs can be used to identify **producers** (*plants*, organisms that get their energy from the sun, *plants*), **consumers** (*animals*, organisms that get their energy by eating other living organisms), as well as **scavengers** and **decomposers** (who get their energy by eating dead organisms). There are different types of consumers: **primary consumers** (*herbivores*, who eat producers), **secondary consumers** (*predators*, who eat other consumers as *prey*), and **apex predators** (*top predators*, who eat other animals but do not have any predators themselves). Each level in the food web is called a **trophic level**. The **direction of energy flow** is shown with arrows drawn between trophic levels in food web from producers to consumers, or prey to predator.

If there are even a few species in an ecosystem, a food web can get very complex – there are many potential interactions among species. One way to simplify a food web is to break it down into individual **food chains**. A food chain represents a single pathway of energy flow through a food web – from producers to primary and secondary consumers, and up to apex predators. Food chains are useful because they can be used to predict how many organisms at each trophic level on the food chain are needed to support the species above it. To determine this, we use "**The 10% Rule**" as a general guideline: about 10% of energy is transferred from one trophic level to the next, since energy is lost due to waste, metabolism, etc. Therefore, it takes about 10 kg of biomass at one level (such as a primary producer) to support 1kg of species above it (such as a primary consumer). When you use the 10% rule, it becomes quite apparent that many organisms lower on the food chain are needed to support even a single apex predator.

Concept Check

1. Label the trophic levels of this food chain to the right.



Word bank:
Primary Consumer
Producer
Apex Predator
Secondary Consumer (x2)

2. **According to the 10% rule**, How many kg of snakes are needed to support a 4 kg mongoose? How many kg of chameleons are needed?

A 4 kg mongoose must eat _____ kg of snakes to survive.
Those snakes must eat ____ kg of chameleons to survive.

Procedure

1. Place the students into groups of 3-4. Intermediate students may work in teams with students who will support them; Beginner and Struggling students should be grouped together or seated in adjacent groups for more direct teacher assistance.
2. Give each group a set of laminated Organism cards and sticky notes. To avoid potential confusion, only give materials at the step they are needed.
3. The students will read the information about the organism on each card and view the illustrations. Students will group the organisms into trophic levels categories: consumers, producers, scavengers/decomposers, and further subcategories if wished. Students may use sticky notes to create labels to help them organize, and may refer to their reading hand-out for help with remembering the categories.
    a. *Note that these organisms are made-up. They do not exist in nature!*
    b. Once complete, Teacher checks the categorization the students have made. If there's a problem, provide leveled guidance to correct it.

Leveled Questions for Guidance at Step 3b	
Beginner	(Using gestures to point at an incorrect student categorization and at the illustrated vocabulary cards) A producer is a plant. Is this organism a producer?
Intermediate	What does this organism eat? (Student response in limited verbiage). Okay! Let's compare that to our vocabulary words again to find a better category.
Advanced	(No gestures) How is a primary consumer different from a secondary consumer?

    c. If categories are reasonable, send a member of the group for the next set of materials and instructions: *a piece of poster paper, roll of twine, safety scissors.*

4. Students will plan out a food web that connects each species according to what it eats or what eats it. Students lay their poster paper on a table and arrange their cards on the poster, making connections with twine prior to affixing anything permanently. Teacher may model this action to clarify.
    a. Once complete, Teacher checks the food web. If there's a problem, provide leveled guidance to correct it.

Leveled Questions for Guidance at Step 4a	
Beginner	What eats grass? (Student response in single word or gesture). Good! (Model putting card in the right place). What eats [that animal]? (Allow student to put card in the right place).
Intermediate	Let's re-read the description on this organism, the (name of animal). What does it eat? What eats it? Is it in the right spot? (Allow student to answer in a sentence to the best of their ability and attempt to rearrange card; continue questioning only if error persists)
Advanced	Can you explain why you put the organism (name of animal) in that place in the food web?

    b. If food web looks reasonable, provide tape to fix cards in place and permanent marker to replace twine with arrows. Remind student of direction of arrow (may gesture to handout) - arrow goes *FROM producer/prey TO consumer/predator*
5. Students will connect the organisms and show the direction of energy flow by drawing arrows from prey to predators or producers to consumers.
    a. Once every group is complete, students will stand up their food webs. The groups are given 3 minutes to view other students' webs, to compare and contrast with their own. Due to teacher checkpoints, all webs should be valid, though there may be some interpretive differences. **This activity ends Day 1.**

DAY 2

6. Teacher will briefly review the prior day by referring to the magnetic vocabulary cards on the whiteboard (2 minutes).
    a. Students will have 5 minutes to review by labeling the trophic levels on their poster using any visual resources from the day before (vocab cards, reading handout, etc)
7. Each student receives their own Food Pyramid Handout.
    a. Teacher will hold up a blank handout, folding so that only the top half is visible, to show that students are working on food chain #1. Teacher explains that students will use their own poster to pick out ONE food chain, gesturing to one of the

student posters and pointing to a producer, then to the bottom level; then to a primary consumer, and the second level; and so on.

8. On the handout, the students create their first food chain by choosing appropriate, connected organisms from their food webs and filling in the appropriate boxes on food chain #1, tracing the flow of energy from producer to apex predator. Teacher checks with and validates the efforts of struggling students.
9. Teacher will again review the 10% rule using the vocabulary card, which is that approximately 10% of energy (or biomass) is transferred from one trophic level to the next. Therefore, it takes about 10 kg of primary producer to support 1 kg of primary consumer and so on.
    a. Give an example using the Rahpsheraga *(one of the fictional animals - hold up the organism card for clarification)*, a puma-like cat that probably weighs around 50 kg. Using the 10% rule, it would take 500 kg of prey to support one cat and so on. *(Write on the board: 500 kg x 0.10 = 50 kg, then write the sentence: 500 kg of food supports one 50 kg cat)*
    b. Students take 3 minutes to rephrase the 10% rule in their own words on their handout in the space provided. Discussion is permitted. Teacher checks with and supports struggling students with wording. Sentence frame provided: The 10% rule
10. Teacher explains that the 10% rule can be representing using an energy pyramid, in which the more abundant primary producers are found at the bottom, and the less abundant apex predators are found at the top. Teacher directs students to try filling in their own energy pyramid. **The "Rahpsheraga" cat is the apex predator in the food web the students just built, so should always be at the top in their food chains.**
    a. Students transfer their food chains to the blank energy pyramid #1, with Rahpsheraga at the top. Teacher checks with and supports struggling students by repeating directions with gestures directly on their worksheet.
        i. *You can make it a challenge for the students to find the longest food chain in the food web.*
    b. Students then use the 10% rule to predict how many organisms at each trophic level are needed to support a single Rahpsheraga. Teacher checks with and supports struggling students by filling in 2-3 levels and showing the simple math operation on the page.
    c. **As a concept check**, Students then write and draw a second food chain and fill in a corresponding energy pyramid on their own with minimal teacher support. Teacher provides only guiding questions at this time.
11. Teacher explains that some events are happening in the ecosystem, and it is the students' jobs to determine how the events will affect the organisms in their food webs.

a. Teacher provides a set of illustrated event cards to each group, then models describing the effect of a random event using one of the student webs using sticky notes.
   i. Teacher models brainstorming by placing sticky notes on affected organisms with an up arrow for more of the species, a down arrow for less of the species, or an X for extinction in the ecosystem.
   ii. Teacher then shows that students should write on a piece of paper the event and the effects it had on the ecosystem, in students' own words.
   iii. Based on the food webs/chains they created, students follow their sticky-note brainstorming and writing procedure to show that they can predict the effects of each event on the ecosystem.
   iv. Students should take turn writing to the best of their ability; however, everyone participates in the visual brainstorm. Sentence starters may be provided, such as:
      1. The _____ event *(helped or hurt)* the _____ organism.
      2. As a result, the _____ would have *(more or less)* to eat.
      3. As a result, the _____ would have (*more or fewer*) predators.
   v. Students should be given time to complete at least 3 events of their choice from the deck.

12. (Last 10 mins) giving students time to write answers to the thought questions on the back of the Student Handout. The handout will be used as a formative assessment. Students may quietly discuss with their group but should write their own answers.
    a. Changes may be made to level the writing task for EL students (see below):

Leveled Assessment Tasks / Expectations	
Beginner *(Focus on building vocabulary and basic English reading skills)* ***Students may refer to the illustrated vocabulary cards for visual clarification - if done out of class with a specialist, they may take a printed***	Draw a line to match the word to its definition: Food web — anything that lives, either plant or animal. producer — carnivore animals which get their energy from eating other animals primary consumer — Shows ALL the animals and plants in an ecosystem, and what they eat. secondary consumer — plants, which get their energy from the sun all the energy levels in a food web, including producers, consumers, and

<table>
<tr><td>set to use with the specialist.</td><td>
<table>
<tr><td>organism</td><td>scavengers</td></tr>
<tr><td>apex predator</td><td>Shows just a few organisms connected by what they eat.</td></tr>
<tr><td>food chain</td><td>herbivore animals, which get their energy from eating plants</td></tr>
<tr><td>scavengers</td><td>the carnivore at the top of the food chain or food web</td></tr>
<tr><td>trophic levels</td><td>animals that eat other dead animals.</td></tr>
<tr><td>The 10% rule</td><td>only 10% of energy is transferred from one trophic level to the next.</td></tr>
</table>
</td></tr>
<tr><td>Intermediate

(Focus on comprehension & composing responses into understandable written language)</td><td>1. You created a food web with just a few organisms that don’t really exist. Real ecosystems are more complicated. Why do you think this is true?
2. Why do food chains have producers at the bottom and apex predators at the top? Think of where energy comes from and where it goes.
3. Describe what happened during one of the “events” your group chose, and how it affected the rest of the ecosystem.</td></tr>
<tr><td>Advanced

(Focus on connecting with and broadening content, given extra time for comprehension and composition)</td><td>Advanced students should be able to answer the questions as written but may take more time to do so. Allow these students to complete as much as possible within the 10 minutes, but if #3 is incomplete do not remove points.

In addition, EL students may bring this assignment with them to their EL class, or sit with an EL professional to work through the reading and writing tasks, prior to turning it in for grading.</td></tr>
</table>

b. Students will receive their papers back the next day for the purpose of sharing and discussing their answers in order to review the topic before moving on.
   i. Advanced EL students will have sufficient support from their notes to participate.
   ii. Intermediate EL students may need sentence starters:
      1. Ecosystems are complex because…
      2. Food webs are helpful because...
      3. Producers are at the bottom because…
      4. Energy moves through an ecosystem when...

iii. Beginner EL students will require yes/no or single-word answer questions during conversation such as:
   1. Look at your food web. What is the name of a consumer? What is the name of a producer? *(several answers possible from their handout)*
   2. Where does the producer get energy? *(the sun)*
   3. In a food chain, does energy flow up or down? *(up)*
   4. True or False: Real ecosystems are very complex.

iv. Teacher should encourage student-centered discussion, but encourage students to think creatively and connectedly, for example:
   1. Food webs are an example of a scientific model – a simplified version of a complex phenomenon. In this case, food webs allow us to simplify the complex set of species interactions in an ecosystem.
   2. Humans (and other biotic and abiotic disturbances) can have very different effects on food webs, depending on which species they affect. For example, changing the population size of a well-connected species may have lots of ecosystem effects, whereas changing the population size of a more isolated species may have relatively fewer effects.

13. Student-produced food webs and vocabulary cards are displayed for remainder of unit as visual reference materials.

References

McNutt, D. (n.d.). Disentangling food webs. *CPALMS*. Retrieved from http://www.cpalms.org/Public/PreviewResourceUpload/Preview/125140

Rockow, M. (2007, January 4). Tabizi Pythons and Clendro Hawks: using imaginary animals to achieve real knowledge about ecosystems. *National Science Teachers Association: Science Scope.* Retrieved from http://www.nsta.org/publications/news/story.aspx?id=53157

EL Vocabulary List

Word	***Spanish***	***Haitian Creole***	**French**	**Definition**
food web	red alimentaria	rezo alimantè	réseau alimentaire	A chart that shows the many ways that energy flows through an ecosystem.
organism	organismo	òganis	organisme	Anything that lives, either plant or animal.
producer	Productor	pwodiktè	producteur	An organism that get its energy from the sun through photosynthesis, like a plant.
consumer	consumidor	konsomatè	consommateur	An organism that get its energy from eating other organisms, like an animal.
primary consumer	consumidor primario	primè konsomatè	consommateur primaire	An organism that gets its energy from eating producers/plants (also called an *herbivore*).
herbivore	herbivore	èbivò	herbivore	An animal that eats plants.
secondary consumer	consumidor secundario	segondè konsomatè	consommateur secondaire	An organisms that gets its energy from eating other consumers (also called a *carnivore* or a *predator*)
carnivore	carnívoro	kanivò - ki manje vyann	carnivore	An animal that eats meat.
prey	presa	pwa - victim	proie	An animal who is hunted and eaten by another animal.
predator	depredador	predatè - ki manje lòt bèt	prédateur	An animal who hunts other animals for food (also called a *carnivore* or *secondary consumer*)
apex predator (top predator)	depredador superior	tèt predatè	prédateur supérieur	A predator that at the top of the food web or food chain **(Apex = top)**. It eats other animals but has no predators that eats it. *After the animal dies, it may be eaten by scavengers and decomposers.*
scavenger	basurero	scavenger, tankou yon votour	charognard	An animal that gets energy from eating other dead organisms.
decomposer	descomp-onedor	dekonpozè (ki manje plant oswa bèt mouri)	décomposeur	An organism that gets energy from breaking down other dead organisms.

complex food web	red alimentaria compleja	konplèks entènèt manje	réseau alimentaire complexe	A complicated food web with many organisms. Real ecosystems are very complex (complicated).
food chain	Cadena de comida	chèn alimantè	chaîne alimentaire	a chart that shows a single path of energy flow through a food web, from a producer to a primary consumer, to secondary consumers, up to an apex predator.
trophic levels	Niveles tróficos (niveles de una cadena alimentaria)	nivo trofik (nivo yon chèn alimantè)	niveaux trophiques (les niveaux d'une chaîne alimentaire)	Energy levels in an ecosystem; also the levels of a food chain or food web. Includes producers, consumers, scavengers, etc.
The 10% Rule	La regla del 10%	Règ la 10%	La règle des 10%	Only about 10% of energy is transferred from one trophic level to the next. Ex: Wolves eat rabbits. 100 kg of rabbits is needed to feed 10 kg of wolves (100 kg * 0.10 = 10 kg)
Direction of energy flow	Dirección del flujo de energía	Direksyon koule enèji	Direction du flux d'énergie	Energy moves from the organism that is eaten to the organism that eats it. Producer ----> Consumer Prey -----> Predator

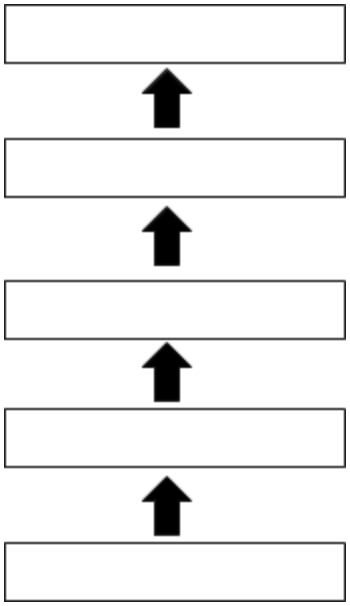
Source for all languages: Google Translate
Source for Haitian Creole: Intermediate Science Glossary in Haitian Creole, Retrieved from https://steinhardt.nyu.edu/scmsAdmin/media/users/xr1/glossaries/Science/ScienceIntermediate/ms6to8sciencehaitian.pdf

Untangling Food Webs Name _____

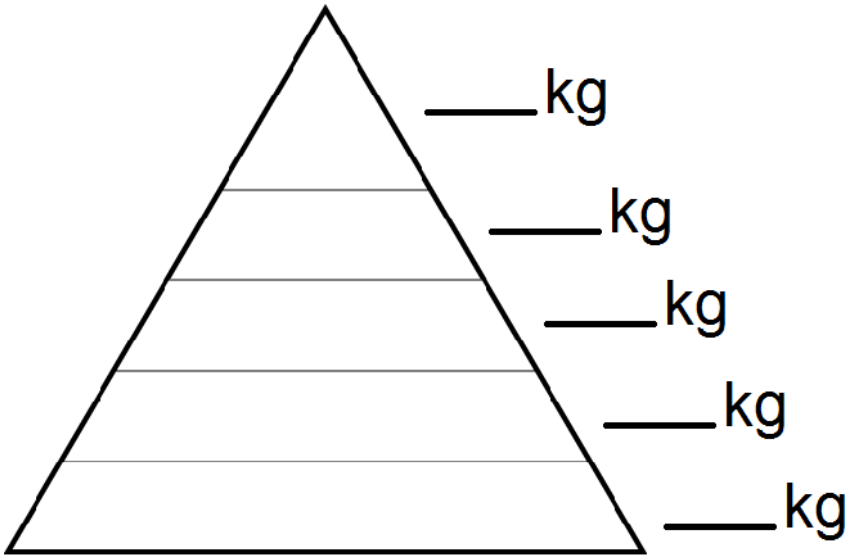
"The 10% Rule" says: _____

_____

Food chain 1

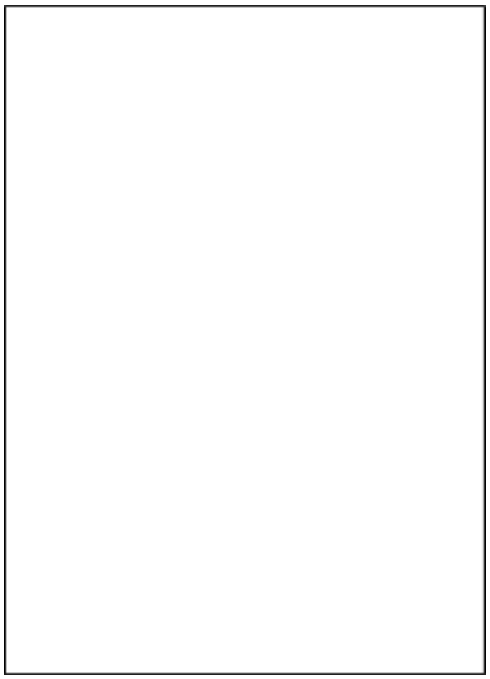


Energy pyramid 1

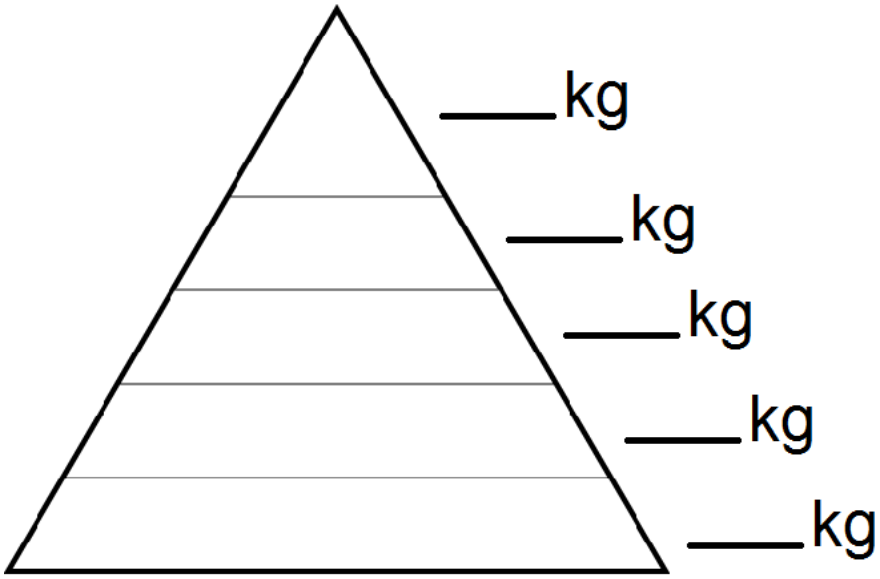


Food chain 2

Draw it yourself!



Energy pyramid 2



Thought Questions

Answer the following questions in full sentences.

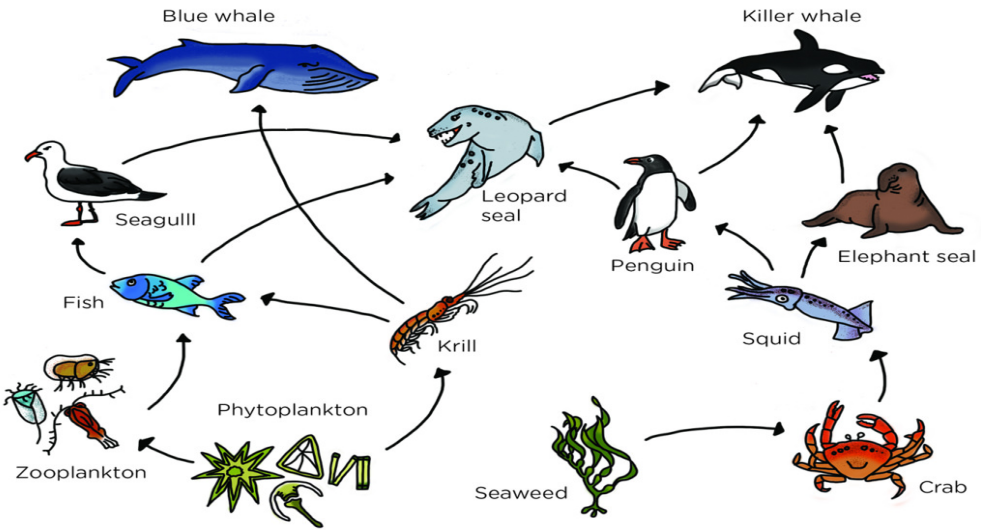
1. You created a food web with just a few organisms of non-existent species. How might food webs in actual ecosystems be more complex in both the number of species and connections among species?

2. How did breaking the food web down into individual food chains help you to better understand the flow of energy through the ecosystem?

3. When you changed the population size of a species at the end of the activity, it affected other organisms in the same web. Do you think that these effects would be different if the species were normally very abundant versus rare?

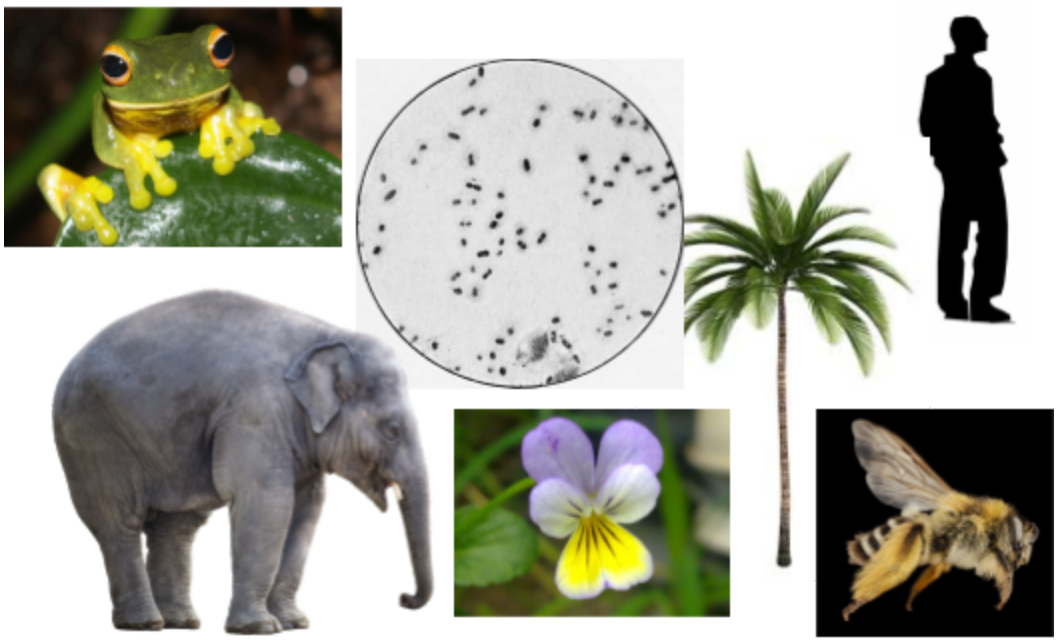
   Would the effects be different if the species interacted with many versus few other species?

FOOD WEB



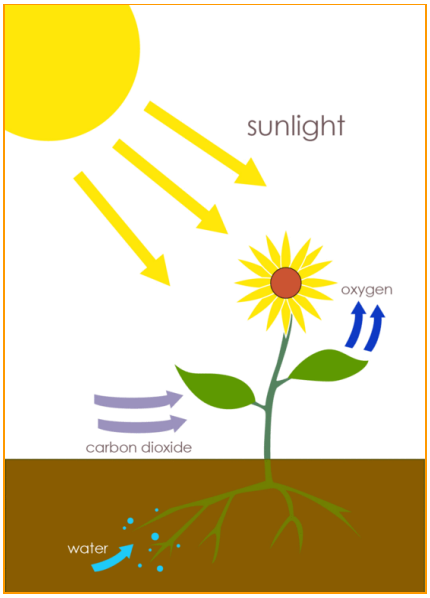
shows the many ways that energy flows through an ecosystem

ORGANISM



Anything that lives, either plant or animal.

PRODUCERS



*organisms that get their energy from the sun through photosynthesis - like **plants**!*

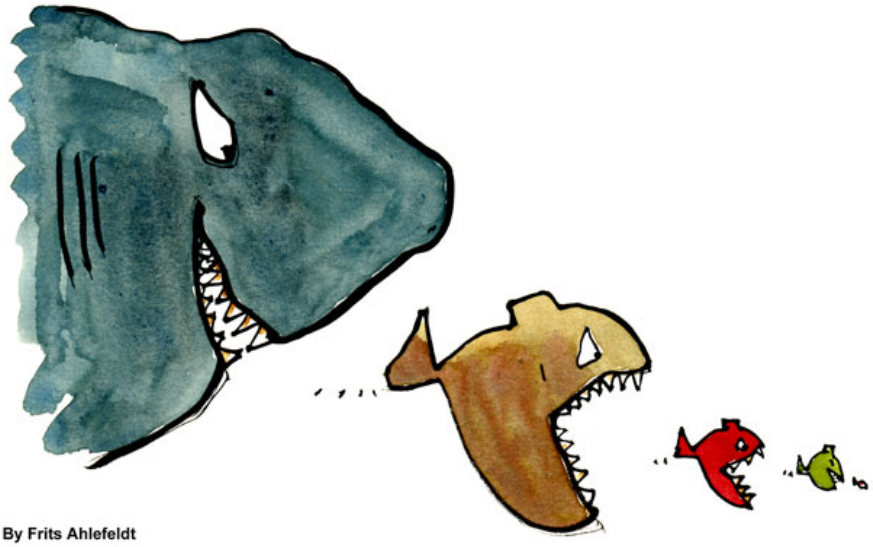
CONSUMERS

*organisms that get their energy from eating other organisms - like **animals**!*

PRIMARY CONSUMERS

*organisms that get their energy from eating producers - also called **herbivores***

SECONDARY CONSUMERS



*organisms that get their energy from eating other consumers - also called **carnivores** or **predators***

SCAVENGERS

animal organisms that get their energy from eating other dead organisms

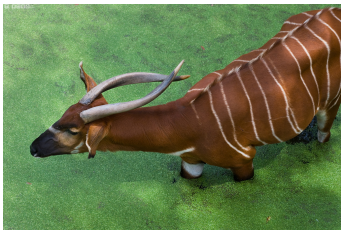
DECOMPOSERS

organisms that get their energy from breaking down other dead organisms

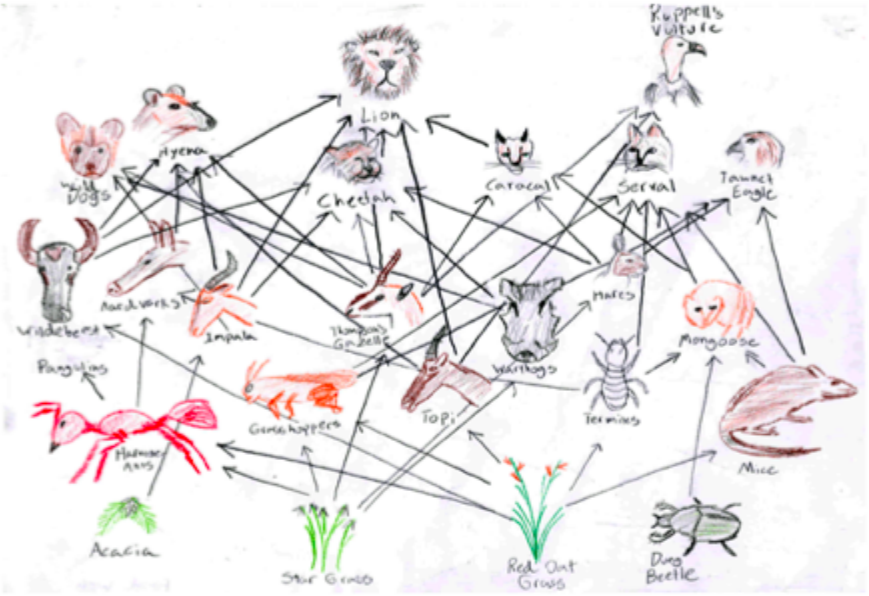
APEX PREDATORS

*predators (secondary consumers) that are not eaten by other predators - **top of food web!***

DIRECTION OF ENERGY FLOW

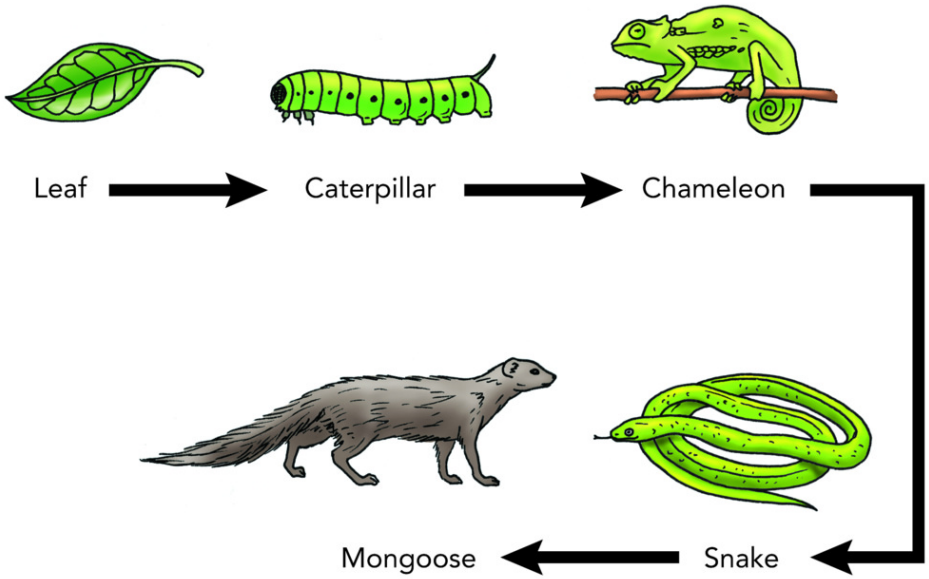
	consumer	predator	
↑	↑	↑	↑
	producer	prey	

A COMPLEX FOOD WEB



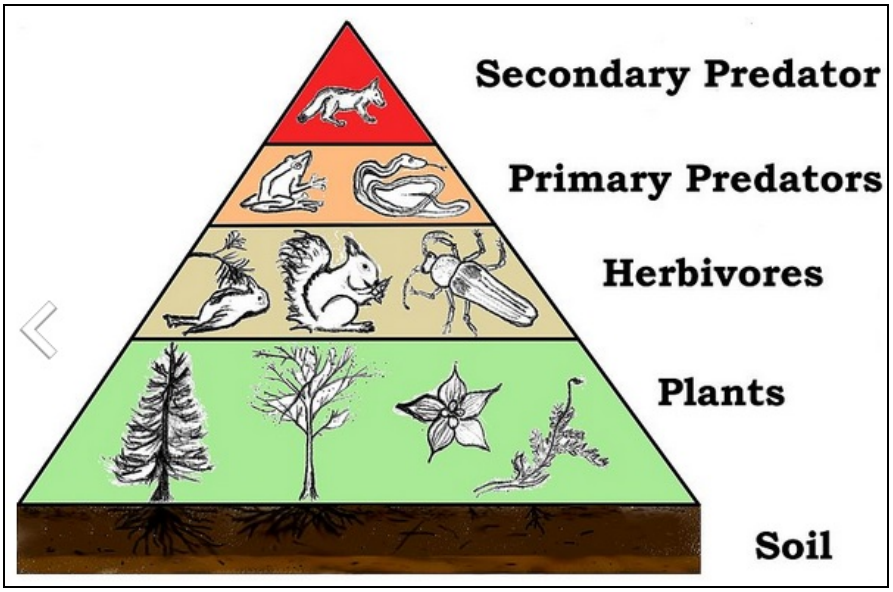
Too many organisms can mean a complicated food web!

FOOD CHAIN



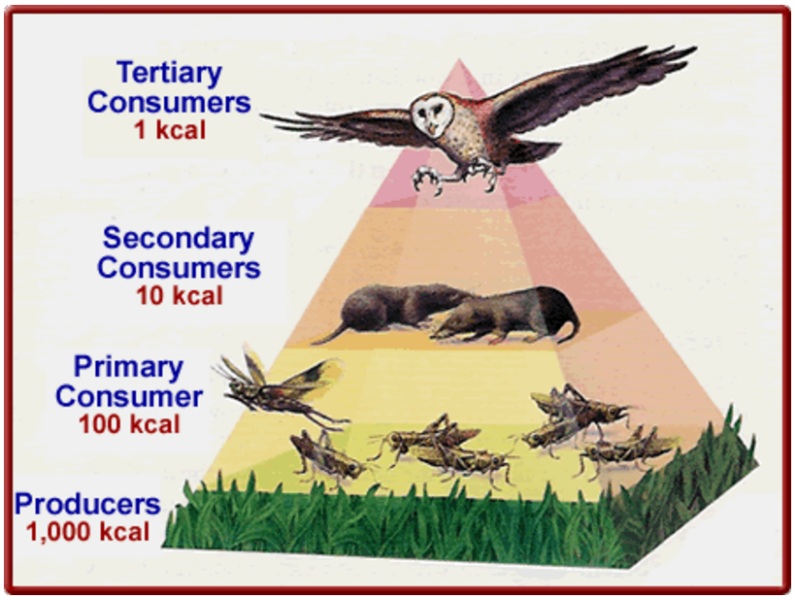
a single path of energy flow through a food web, from producers to primary & secondary consumers, up to an apex predator

TROPHIC LEVELS



Energy levels in an ecosystem

THE 10% RULE



Only about 10% of energy is transferred from one trophic level to the next.

“Quadralupa”
Organism

Flowering plants that produce bright, red flowers with four petals.

“Neumelinda”
Organism

Large, leafy tree that produces Neumelinda fruits.

“Pedreaucus”
Organism

A long, green species of grass.

“Minedra”
Organism

Small rodents that burrow.

They eat roots of grass and fruits.

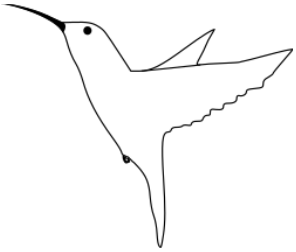
Their predators are Tabizi python, Clendro hawk, and Rahpsheraga.

“Tukatume”
Organism

Small, wild birds that perch on trees to eat.

They eat the nectar from the blossoms of Neumelinda trees.

Their main predator is is the Tabizi python.



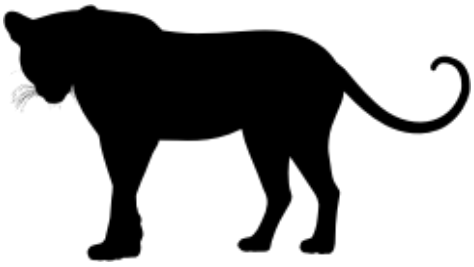
Illustrated NSTA Organism & Event Cards

“Rahpsheraga”
Organism

Part of the big cat family.

They eat rodents, like Minedra, and bigger game, like Pluplenra and Vulumadai.

They have no predators; they’re apex predators.



“Pluplenra”
Organism

A species of antelope that lives in the open.

They eat grasses and other flowering plants.

Their predator is the Rahpsheraga.

“Bronilla Bear”
Organism

Small yellow and brown mammals that are not really bears.

They eat the delicious stems of the Quadralupa.

Their predator is the Rahpsheraga.

“Halati”
Organism

A small, ferocious species of weasel.

They eat Pluplenra, Bronilla bears, and Tabizi pythons.

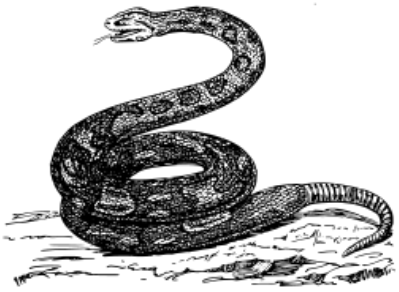
Their predator is the Rahpsheraga.

“Tabizi Python”
Organism

Constrictor snake.

They eat birds and small rodents.

Their predators are mainly Halati.



Illustrated NSTA Organism & Event Cards

“Vulumadai”
Organism

A small canine, known to be a scavenger.

They eat the remains of any animal, including Tabizi pythons and the Minedra.

Their predator is the Rahpsheraga.

“Clendro Hawk”
Organism

Small hawks that nest in trees.

They eat rodents like Minedra.

Their predator is the Tabizi python.

“Walaruna”
Organism

Small, blue songbirds that climb on trees to eat.

They eat the seeds of the ripening Neumelinda fruits.

Their main predator is the Tabizi python.

“Lilac Tarmal”
Organism

Lilac-colored songbirds that perch on trees to eat.

They eat bugs and worms that live on Neumelinda trees.

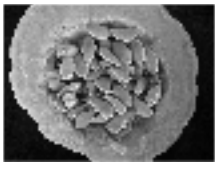
Their main predator is the Tabizi python

“Red Tarmal”
Organism

Red-colored songbirds that perch on trees.

They eat the seeds of fruits that fall from Neumelinda trees.

Their main predator is the Tabizi python.



Illustrated NSTA Organism & Event Cards

EVENT: Drought!

A terrible drought occurs in this ecosystem, and all the water dries up.

Due to the disaster, most of the grasses dry up and die.

EVENT: Wildfires!

A lightning storms trigger wildfires that burn up a lot of the plants and grasses in the ecosystem.

Afterwards, most of what remains are trees.

EVENT: Tree Disease!

A strange disease finds its way to the area.

It causes the fruits of the Neumelinda tree to fall off before they are ripe, and quickly rot.

EVENT: Hunters!

A rumor circulates among the native peoples that the teeth of the Bronilla bear can cure baldness.

This triggers increased hunting of the animal.

EVENT: Angry Farmers!

A Rahpsheraga comes in contact with some local farmers.

The farmers begin hunting the Rahpsheraga in large numbers to protect their herds.

Illustrated NSTA Organism & Event Cards

EVENT: Conservation Laws!

New conservation laws are enacted.

The laws place strict limits on the hunting of Minedra, previously valued for their soft, warm fur.

EVENT: Change of Heart!

Until recently, some locals killed the Clendro hawk for their tail feathers.

They have stopped this practice after animal rights groups protested it.

EVENT: Grazers in Danger!

A disease, spread by farmers' livestock, begins to infect and kill off the Pluplenra.

EVENT: Pesticides!

People have discovered how tasty the fruits of the Neumelinda tree are and have begun spraying them with pesticides.

The pesticides are causing the eggs of the Tukatume to become too fragile and their babies are dying.