What's For Dinner?

Introduction

Everybody eats. Plants, animals, orcas and people all need energy to survive. Plants are **PRODUCERS** who make their own food from sunlight and nutrients. Animals are **CONSUMERS** who eat plants and other animals. ***Herbivores***, like deer and elephants, eat only plants. ***Carnivores***, like orcas and wolves, only eat meat. ***Omnivores***, like bears and people, eat both plants and animals. **DECOMPOSERS**, like bacteria and fungi, eat dead organisms. What an animal eats depends on where it lives, what body parts it has and what food sources are available. Plants and animals are connected to each other in relationships called food chains and food webs. A ***food chain*** shows how food energy flows from one living organism to another in a simple direct link. A ***food web*** shows a network of food relationships between many different organisms in an ecosystem. At each step in a food chain, plants or animals use energy for growth, survival and reproduction. There are always fewer organisms eating at the end of a food chain than at the beginning. *For example:* Millions of plankton are needed to feed thousands of herring which can feed hundreds of salmon which can provide enough food for one orca.

Key Concepts

- Plants and animals need energy to survive.
- A ***food chain*** shows how food energy flows from the one living creature to another.
- A ***food web*** shows the energy relationships between many different plants and animals in an ecosystem.
- Orcas are consumers and carnivores. Humans are consumers and omnivores.

National Science Education Standards

Life Science – Characteristics of Organisms.
Organisms and their Environments (K-4)

Characteristics and Changes in Populations (K-4)

National Council for Teachers of English/ International Reading Association Standards:

4. Students adjust their use of spoken, written and visual language to communicate effectively with a variety of audiences and for different purposes.

8. Students use a variety of technological and information resources to gather and synthesize information and to create and communicate knowledge.

12. Students use spoken, written and visual language to accomplish their own purposes.

Inquiry Questions

- Why do we need producers, consumers and decomposers in an ecosystem?
- How do herbivores avoid being eaten? How do carnivores succeed at catching prey?
- How would your life be different if you had to find food instead of getting it at a supermarket?
- How is a human food chain similar to an orca's? Different?
- If a part of a food web is disturbed, what might happen?

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Activity #1-Dinner at the Killer Whale Café

In this activity, students experience how energy flows through an orca food chain.
Materials Needed: For a class of 30 students, use:
150 green poker chips to represent diatoms, a tiny marine plant (phytoplankton)
50 blue poker chips to represent copepods, a tiny marine animal (zooplankton)
20 white critter armbands to represent herring
8 red critter armbands to represent salmon
2 black critter armbands to represent resident orcas
20 plastic bags for herring to collect diatoms and copepods, stopwatch

Procedure:
1. Designate a defined circle area as the "sea."
2. Assign role to each student with corresponding armband.
3. Place green (diatoms) and blue (copepods) poker chips throughout the sea.
4. Explain to students that they are going to role-play animals in an orca food chain. Orca eats ->salmon eats->herring eats ->plankton (diatoms & copepods)
5. *Herring* go into sea with a bag to collect plankton. Pick up poker chips & collect in bags.
6. After 3 minutes, *salmon* are sent into sea to "catch" *herring*. Herring are caught by tagging. Once tagged, *herring* surrender their bags of *plankton* to *salmon* and sit outside the sea.
7. After 3 minutes, *orcas* enter the sea and "catch" *salmon*. Salmon are caught by tagging. Once tagged, *salmon* sit outside the sea. Stop game after 3 minutes.

Discuss: How many of each species survived? Why must there be more plankton then herring? More herring than salmon? More salmon than orcas? How did you avoid being eaten? What did you do to catch your food?

Activity #2 -Tangled in a Web

In this activity, students explore how plants and animals interact in an orca food web.
Materials Needed: ball of string, tape, Critter Cards
Procedure:
1. Ask students to sit in a circle on the floor.
2. Explain to students that they will demonstrate how a food web functions.
3. Put Critter Cards in the pile inside the circle.
4. One student gets the Sun card and sits in the middle of the circle.
5. Each student picks a card from the pile. Students use tape to attach cards to clothing.
6. The Sun gets ball of string and tosses it to a student sitting in the circle.
7. The student identifies his/her Critter Card name and tells what they eat.
8. The student holds onto string and tosses the ball to the student whose critter eats or is eaten by this critter.

Activity #3 -Make an Orca Mobile

Materials Needed: cardboard paper towel roll per student, string, yarn, ribbon, construction paper, markers, crayons, glue, tape
Procedure: Use cardboard roll as mobile base and wrap with construction paper.
Draw and cut out at least four orcas (Granny, Ruffles, Suttles & Mako) and several salmon.
Attach varying lengths of string to the top of each orca and salmon and tie to mobile base.
Arrange orcas and salmon to hang at different lengths from base.
Cut yarn and attach to each end of mobile base to hang.

Granny's Clan: A Tale of Wild Orcas
Dr. Sally Hodson

CRITTER CARDS

BALD EAGLE	**HARBOR SEAL**	**ROCKFISH**
I am Bald Eagle. I eat Salmon.	I am Harbor Seal. I eat Rockfish.	I am Rockfish. I eat Crab.

RESIDENT ORCA	**COPEPOD**	**DIATOM**
I am resident Orca. I eat Salmon.	I am Copepod, a tiny animal that floats in the sea. I eat Diatom.	I am Diatom, a tiny plant that floats in the sea. I make food from Sunlight.

CRAB	**HERRING**	**SALMON**
I am Crab. I eat Diatom.	I am Herring. I eat Copepod.	I am Salmon. I eat Herring.

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CRITTER CARDS

SUN I am Sun. I give my energy to plants.	**DOGFISH SHARK** I am Dogfish Shark**.** I eat Crab and Herring.	**SEA OTTER** I am Sea Otter. I eat Sea Urchin.
SEA URCHIN I am Sea Urchin. I eat Kelp.	**OCTOPUS** I am Octopus. I eat Crab.	**BLUE HERON** I am Blue Heron. I eat Snail and small fishes.
ABALONE I am Abalone. I eat Kelp.	**KELP** I am Kelp. I make food from Sunlight.	**SEA LION** I am Sea Lion. I eat Octopus and Shark.

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CRITTER CARDS

SHRIMP I am Shrimp. I eat Copepod.	**MINKE WHALE** I am Minke Whale. I eat Herring.	**SQUID** I am Squid. I eat Shrimp.
SEA STAR I am Sea Star. I eat Clam and Anemone.	**ANEMONE** I am Anemone. I eat Shrimp.	**SNAIL** I am Snail. I eat Kelp.
JELLYFISH I am Abalone. I eat Kelp.	**CLAM** I am Clam. I eat Diatom.	**GULL** I am Gull. I eat Crab and Sea Urchin.