



SCIENTIST IN RESIDENCE PROGRAM™

Unit: Oceans of Energy

Lesson 2: *It's All Connected*

Summary: In this lesson, students go beyond the typical simple 3-5 animal food chain and are asked to find the connections between 20+ animals that are present in the Salish Sea and BC coastal waters

Lesson type: Hands-on activity & exploration

Grade level: Presented to grade 4; appropriate for grades 3 – 10 with age appropriate modifications

Duration of lesson: 50 min

Developed by: Jonathan Kellogg (Scientist); Catherine Barber and Carel Wilkin (Teachers)

Developed for: Sir William Van Horne

School Year: 2015-2016

- Notes:**
- There are 27 animals used in this lesson, but it would not be hard to expand or shrink that number to fit your class size.
 - See the associated folder of photos to adjust cards or worksheet to suit your needs.

Objectives

- Students will understand the complexity of marine food webs and that some organisms are more interconnected than others
- If time allows, students will understand the basic life history and habitat of their organism

Materials

- Copies of food web worksheet
- Rulers (it gets complicated without them)
- Organism cards (included)

Background Information for the Teacher

Food chains are a basic concept that is common in primary education. They often involve 4-5 organisms from top level consumers down to primary producers and may be marine or terrestrial in nature. This lesson is an expanded food web of organisms that are present in the Salish Sea and the west coast of North America. Since there are so many organisms in the local ecosystem, each student can represent one species and learn that it is both predator and prey to different organisms.



SCIENTIST IN RESIDENCE PROGRAM™

Included in this food web, that aren't often included in marine food webs, are bacteria, viruses, nutrients, and humans. These are included in an effort to help students see a more complete food web from the smallest organism to the top level predators. Bacteria are the recyclers of the marine environment and break organic matter down to its inorganic nutrients that can again be utilized by phytoplankton. Viruses are included because they keep bacteria in balance with the environment. Humans are included since fishing pressures make them a top level predator in the marine environment.

Vocabulary

- Primary Producer – Any organism that can take nutrients and convert it to complex organic compounds like sugars, carbohydrates, and fats. Ex. Phytoplankton and algae
- Primary Consumer – An organism that consumes primary producers in order to sustain life.
- Consumer – Any organism that eats other organisms to sustain life.
- Food chain – Sequence of multiple higher order consumers that are sequential predators of each other. The base of the food chain should be a primary producer.
- Food web – Network of organisms made up of multiple interacting food chains.
- Predator – A consumer
- Prey – An organism that is eaten by another animal
- Decomposer – An organism that breaks down discarded organic matter into smaller molecules
- Trophic level – The position an organism occupies in a food chain relative to the primary producer (level 1).

Lesson Detail

Introduction

Engage students by asking them to recall the details of a food chain and refresh their memories about some of the terms that are commonly used (see Vocabulary). Explain to them that while food chains are nice and simple, nature is often more complicated. They will explore what it means to be an organism in the Salish Sea and will have to discover the relationships between each of the species represented.

Activity

Much of the lesson is spent allowing students to interact with each other and sharing some of the information on their organism cards. Each organism card has the name, size, mass, lifespan, habitat, prey, and predator listed on it. A few cards have a more general name for the organism along the top, and a more specific name along the right side of the picture. This would be useful if students had the opportunity for self-directed investigation of the organism.

Closure Discussion

Examples of questions to help students share their results and observations...

1. What organism was the most connected in the food web? Why do you think that is?
2. What are the top predators in the food web? How do you know?
3. What would happen to the food web if you removed XXX?
4. What crucial element is missing from the foodweb? A: The sun!



SCIENTIST IN RESIDENCE PROGRAM™

Extensions of Lesson

The lesson can be extended by each student having time to research their organism to better understand its role in the environment. This was attempted using iPads in the classroom, but proved to be too complex for the 50 min period.

References

While the information for each organism included was not my own, I did not accurately document all of the websites that I used as sources for each. Apologies, Jonathan Kellogg.

Notes about Worksheets

Original downloaded images can be found with the photos. Also included are .png files of the circular food web with various iterations from blank to complete should you want to generate your own worksheet or purpose.