



---

# The Web of Life

## Grade 4 Lesson Plan

---

**Lesson #2:** The Web of Life

**Duration:** Two 60 min periods

**Subject:** Science

**Topic:** Species-Ecosystem Interactions in the TRUGG

### Overview

Expanding on learning in Lesson 1, students learn about a species in the Tumbler Ridge UNESCO Global Geopark (TRUGG) and identify interactions with its ecosystem, including food chains, food webs and predator – prey relationships. They conduct research and share information on a specific species of their choosing. In doing so, students develop their understanding of a species' interconnectedness to everything around it and the impact humans might have on that species.

### Lesson Objectives

Students will be able to:

- Access prior knowledge about species-ecosystem interactions e.g. predator-prey relationships, food chains and food webs
- Identify locally important species in the TRUGG region
- Conduct research and collect information about a specific species in the TRUGG
- Create a food chain and web for that species
- Communicate information on the interconnected relationships for the species they have studied
- Reflect on the loss of a particular need and the specific type of impact this could have on the long term viability of the species

### Curriculum Connections

Please see the *TRUGG Education Toolkit Curriculum Connections Matrix* for specific connections of this lesson to the B.C. Curriculum for Grade 4.

## Materials

- Computer and digital projector
- Blindfold (for the Predator-Prey Game)
- *Predator and Prey* Student Handout
- *Species-Ecosystem Interactions in the TRUGG* Slideshow and Teacher Notes
- *Tumbler Ridge UNESCO Global Geopark (TRUGG) Species Inquiry II* Student Handout
- Access to the Internet and [www.youtube.com](http://www.youtube.com) - Food Webs: Crash Course Kids #21.2

## Teacher Prep

- Review the Background Information (and other resources as needed) to ensure you have a clear understanding of predator-prey relationships, food webs and other key concepts explored in this lesson.
- Print and photocopy a class set of the *Tumbler Ridge UNESCO Global Geopark (TRUGG) Species Inquiry II* Student Handout.
- Prepare definitions of Predator and Prey on the board before class to use during your Hook activity.
  - A predator is an animal that hunts other animals for food.
  - Prey is an animal that is hunted and eaten for food.
- Ideally, you will need an open space, like an outdoor area, cleared room or gym for the Predator and Prey game.
- Review the *Predator and Prey Game* instructions (for your reference).
- Print and photocopy a class set of the *Predator and Prey* Student Handout.
- Preview the YouTube video *Food Webs: Crash Course Kids #21.2*.

## Background Information

An ecosystem is composed of a community of organisms and their physical environment. In ecosystems, matter continuously cycles while energy flows through the system. This lesson focuses on this flow of energy by exploring predator-prey relationships, food chains, food webs and other species-ecosystem interactions that help organisms meet their basic needs.

Energy generally enters an ecosystem as sunlight and is captured in chemical form by plants and algae through the process of photosynthesis. This energy is then passed along through the ecosystem, as organisms consume one another, produce waste and, eventually, die and decompose. This one-way flow of energy means that every ecosystem needs a constant supply of energy, generally from the sun, in order to function. We can represent the flow of energy through ecosystems using food chains and food webs.

A food chain is a single linear pathway (e.g. the sun > lichen > woodland caribou > wolf) through which nutrients and energy flow as one organism consumes another. A food chain shows the relationship between organisms by the food they eat. Both plants and animals require some type of food for survival. Plants can produce their own food through photosynthesis so are called producers. Organisms that do not produce their own food, like animals including humans, are known as consumers.

One way to represent an animal's role in a food chain is as a predator and/or a prey species. A predator is an animal that hunts other animals for food. Prey is the animal that is hunted and eaten for food.

A food web is a model that shows all the feeding relationships between organisms living in an ecosystem. It starts with the producers and branches off into interconnected food chains that show the various predator-prey relationships in that ecosystem. Consisting of many interconnected food chains, a food web is a more complex and realistic representation of energy and nutrient flow in an ecosystem.

Please see the *Tumbler Ridge UNESCO Global Geopark Teacher Backgrounder* for more background and details on the Geopark.

## Lesson Activities

### Introduction/Hook:

1. Ask students if they know what the terms 'predator' and 'prey' mean. Present the definitions of predator and prey on the board and discuss them with the class.
2. Explain to students that all living things are part of complex, interdependent food webs (so energy can flow through ecosystems and living things can meet their basic needs). Note that an animal can be both a predator and prey (for different animals) simultaneously.

### Activity 1:

1. Once students have a basic understanding of the two terms (predator and prey), play the Predator-Prey Game.

#### **Predator-Prey Game**

- a. Ask students to stand close together in a big circle.
- b. As a class, choose one predator species and one of its prey species. Practice a sound that the prey species tends to make in its habitat.
- c. Ask for two volunteers: one student to be the predator and a second to be the prey species identified.
- d. The object of the game is for the predator to catch the prey.
- e. The predator is blindfolded in the middle of the circle. The prey is also within the circle.
- f. The predator tries to catch the prey by listening to the prey's sound (which the prey must make every five seconds or so) and following the sound to get to its prey.
- g. Once caught (lightly tagged), ask the two students to switch roles. Following this second round, choose two different students to represent the roles of new predator and prey species and repeat the process.

## Activity 2:

1. As an introduction to food webs and how they can be affected, show students the video on YouTube called: *Food Webs: Crash Course Kids #21.2*. Access this at [www.youtube.com](http://www.youtube.com) by searching Food Webs: Crash Course Kids #21.2.
2. Distribute and review the *Predator and Prey* Student Handout. Ask students to complete the handout. Once complete, go over the responses with the class to ensure they understand the difference between the two terms.

## Activity 3:

1. Present the *Species-Ecosystem Interactions in the TRUGG* Slideshow (using the Teacher Notes, as needed) to explore the concepts of food chains and food webs. As a class, choose a species and create a food chain for that species. Extend this to the concept of a ‘food web’ (of interconnected food chains) for that species (or another of interest to students).
2. Distribute the *Tumbler Ridge UNESCO Global Geopark (TRUGG) Species Inquiry II* Student Handout and review with students. Ask students to write a species of interest at the top of the handout (note that this can be the same species they explored in Lesson 1 or a different species, as desired).
3. Provide access to the Internet and/or other resources, and have students conduct research and create a predator - prey food chain for the species in the TRUGG they have chosen and record this information on the *TRUGG Species Inquiry II* Student Handout.
4. Once the food chain is complete, have students continue their research and create a food web for their species on the handout.

## Closure:

1. Have students share their findings with a partner. Discuss key concepts involved, including predator-prey relationships, food chains and food webs as a class.
2. Ask students to consider what might happen if one or more species were removed from their food web (e.g. due to human activities or disturbances in the ecosystem). As a class, discuss how these changes can impact other species in the ecosystem, both positively and negatively. Have students complete the final question on the handout.

## Assessment/Evaluation

- Observe the introductory activities and assess student's ability to access prior knowledge about species-ecosystem interactions.
- Review and assess student's *Predator and Prey* and *Tumbler Ridge UNESCO Global Geopark (TRUGG) Species Inquiry II* Student Handout.

## Extensions

- After they have completed their research, students can extend their learning by creating a poster (or other visual representation) that explores the following:
  - *How can human involvement have an effect (positive and negative) on the relationships in a food web?*
- In an outdoor setting or gym, have students create a representation of a food web using their bodies (and props, as desired) for an ecosystem of their choice.