

**LESSON PLAN** What is biological diversity?  
**GRADE** 4-5-6  
**SUBJECT** Science, Biology, Environmental Education  
**TIME NEEDED** 1 hour



**EcoKids®**  
EARTH DAY® CANADA

Started in 1994, EcoKids is a free Earth Day Canada environmental education program that offers curriculum-linked materials and activities for Canadian elementary schools to engage in environmental action. For more information visit [www.ecokids.ca](http://www.ecokids.ca)

The word marks "Earth Day" and "EcoKids" and the Earth Day logo are registered trademarks of Earth Day Canada (1991) Inc. Charitable registration #13195 378RR0001. Use of either of these trademarks for mercantile, promotional and/or communication purposes is strictly forbidden without the written approval of Earth Day Canada.

©2012 Earth Day Canada



**Convention on  
Biological Diversity**

This lesson plan is a courtesy of Convention on Biological Diversity, a program of the United Nations Environment Programme . For more information visit <http://www.cbd.int/>

- VOCABULARY**
- Biodiversity
  - Carnivore
  - Decomposer
  - Ecosystem
  - Food Chain
  - Food Web
  - Herbivore
  - Microorganism
  - Omnivore
  - Species

---

### LEARNING OBJECTIVES/OUTCOMES

Students play a round of "musical chairs" using drawings of different species in a food web. The disappearance of "chairs" signals the extinction of that species. Students learn how the extinction of species affects others in the food web.

By the end of the activity, the students will be able to:

- Explain how plants and animals support each other in the food chain or food web;
- Identify human-caused species loss as one of the major current threats to biodiversity;
- Explain the species diversity level of biodiversity;
- Explain how the disappearance of one species affects other species.

Students will develop skills in the following areas:

- Organizing their knowledge into KWL charts.

---

### MATERIALS REQUIRED

- Blackboard
- Chalk
- Paper
- Drawing tools
- Source of music (teacher can sing)

---

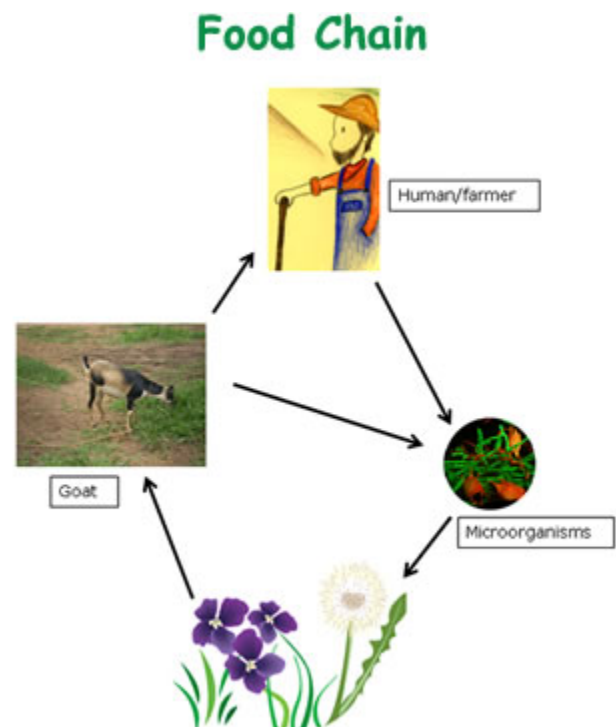
### DESCRIPTION OF ACTIVITY

## Part 1 – Understanding food webs (30 minutes).

1. As a class, create a KWL chart and fill in the K and W columns. This step will help students start reflecting on biodiversity, and is an opportunity to introduce new vocabulary. (See appendix 1(a).)
2. Explain learning objectives of this exercise. Have students read “What is biological diversity?” in Biodiversity, food and farming for a healthy planet. If reading in class, students can take turns reading out loud. Explain new vocabulary as the section is read in class or when the reading is assigned.
3. Have students create a word wall to put on the wall for the duration of the biodiversity module. (See appendix 1(b).)
4. In small groups (or as a class), have students brainstorm examples of food chains, identify the component microorganisms, plants and animals and explain the relationships among the components. (See sample below.)
5. Write the five typical levels of food chains on the black board (“plants/primary producers”, “herbivores”, “omnivores”, “carnivores” and “decomposers”). Have students classify each species in their food chain according to these divisions. Have students write each species in its appropriate category on the board. There should be multiple organisms for each level of the food chain.
6. Draw lines connecting the various components of each food chain. Use a different coloured piece of chalk for each food chain. Students should recognize that one species can be part of multiple food chains. Explain that a food web is various food chains that are connected. Explain that the connections between species are why biodiversity is sometimes called “the web of life”.
7. Ask students how humans, human activity and human inventions can affect food web(s) in both positive and negative ways. Students should consider the effects of various levels – for individual species, for a particular food chain, and for the entire food web (e.g. felling trees to build homes destroys plant and animal habitats and disrupts an entire food web; birds have less food to eat when farmers apply insecticides to kill insect pests). Before sharing their answers with the class, have students spend one minute sketching their answers.
8. Have students select one or more food chains for the game. Have students choose one species they want to draw (ensuring that there is at least one species per category). Only one species per piece of paper.
9. After students have completed their drawings, ask students to arrange the drawings in a web, according to the food chain.

## Part 2. Game to understand biodiversity loss (30 minutes).

1. Explain that the rules of game (an adaptation of musical chairs):
  - o The drawings are set up in a circle (one drawing per student).
  - o The music is turned on and the students walk around the drawings.
  - o The teacher sneaks in and takes one of the drawings out—representing the loss of a species.
  - o When the music stops the students sit on the drawings.
  - o The student left standing is taken out of the game.



- The teacher shows the picture of the 'extinct species' and asks the students "what could have made this species go extinct?"
  - Students have 30 seconds to consult with the student sitting next to them. The teacher asks two or three groups to report their conclusions.
  - The students all stand again and the music is started again. Another drawing is removed.
  - This procedure is continued for several rounds.
  - After several rounds have students compare the remaining species to the food webs on the board. Ask if and how any of the remaining species would be affected by the loss of removed species.
  - Repeat previous steps until only one student remains.
  - Ask what would happen to the species if it were the only species remaining.
2. Play the game.
  3. Finish with a short discussion on species extinction and a brainstorming session on what students can do to reduce and eliminate biodiversity loss.
  4. As a class, complete the L column of the KWL chart.

---

## ASSESSMENT

- Active student participation in food web discussion.
- Active student participation in brainstorming session of what students can do to reduce and eliminate biodiversity loss.
- See appendix 3(a) for a sample rubric for assessing participation and group work.

---

## EXTENDED ACTIVITIES

Have students brainstorm causes of biodiversity loss (e.g. habitat destruction to construct new homes and businesses; habitat changes due to climate change) and ways to mitigate biodiversity loss (e.g. government creates new protected areas; citizens plant local species in private and community gardens). Have students draw each idea onto a card (one idea per card). Play the game with a modification: instead of always removing a species, the teacher can add or remove species. In each round, the teacher draws a card – if it is a cause of biodiversity loss, a species goes extinct; if it is a way to mitigate biodiversity loss, a species is added.

Have students write a letter to their government representative and/or the Minister of Environment informing him or her about how they feel about biodiversity, its relevance to their lives and their opinion on the role of the government in biodiversity issues.

[Diagram 1. Sample food web illustrating the relationships among soil organisms, plants, organic matter, birds and mammals.](#)

---

## PRINT AND WEB SITE REFERENCES

[Video Gallery:](#) The 3-minute 2010 video is visually appealing and contains good background information on biodiversity issues for teachers; however, the words change too quickly for young students to read.

Food webs: [Fitting Algae Into the Food Web](#)  
[Interesting Facts about Food Chains](#)  
[Food Webs](#) (with a web activity to create a food web)