



Science Objectives

- Students will construct a model to describe the cycling of matter and flow of energy among organisms in an ecosystem.
- Students will identify ecological relationships among producers, consumers, and decomposers in a food web.

Vocabulary

- producer
- primary consumer
- secondary consumer
- tertiary consumer
- decomposer
- food web
- ecosystem

About the Lesson

- In this lesson, students will:
 - Construct a foodweb to describe the flow of energy through an aquatic ecosystem.
 - Identify and describe the relationships among organisms that allow for the transfer of energy in an ecosystem.

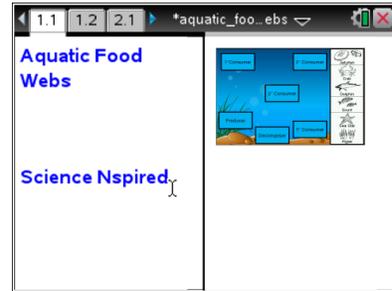


TI-Nspire™ Navigator™

- Send out the .tns file.
- Monitor student progress using Class Capture.
- Use Live Presenter to spotlight student answers.

Activity Materials

- Compatible TI Technologies:  TI-Nspire™ CX Handhelds,  TI-Nspire™ Apps for iPad®,  TI-Nspire™ Software



Tech Tips:

- This activity includes screen captures taken from the TI-Nspire CX handheld. It is also appropriate for use with the TI-Nspire family of products including TI-Nspire software and TI-Nspire App. Slight variations to these directions may be required if using other technologies besides the handheld.
- Watch for additional Tech Tips throughout the activity for the specific technology you are using.
- Access free tutorials at <http://education.ti.com/calculators/pd/US/Online-Learning/Tutorials>

Lesson Files:

Student Activity

- Aquatic_Food_Webs_Student.doc
- Aquatic_Food_Webs_Student.pdf

TI-Nspire document

- Aquatic_Food_Webs.tns



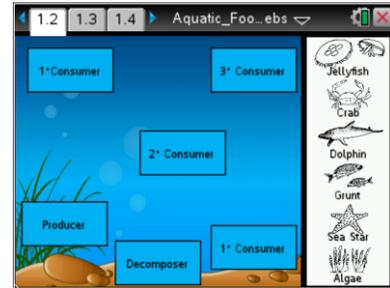
Discussion Points and Possible Answers

Have students read the background information stated on their activity sheet.

Move to page 1.2.

1. Students will move the organisms on the right by dragging and dropping them on the correct label. If the organism correctly matches its role in the food web, the border of the label box will turn green.

2. Once the organisms are in the correct positions, students will select two different organisms to show their ecological connection. Students should select the organism that provides the energy first and then select the organism that obtains the energy. There should be 10 connections.

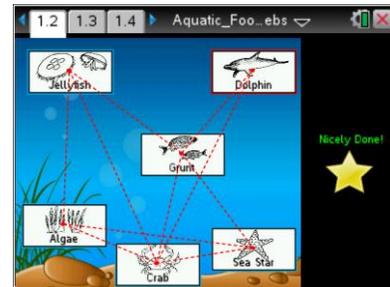


Tech Tip: To access the Directions again, select  > **Food Web > Directions.**



Tech Tip: To access the Directions again, select or **Document Tools** () > **Food Web > Directions.**

3. When students have correctly selected all of the ecological connections, a gold star with the words “Nicely Done!” will appear.



Move to pages 1.3 – 1.15.

Have students answer questions 1 - 13 on the device, the activity sheet, or both.

Q1. Identify the ecological role of the following organism: algae

Answer: A. producer

Q2. Identify the ecological role of the following organism: sea star

Answer: C. secondary consumer



Q3. Identify the ecological role of the following organism: grunt

Answer: C. secondary consumer

Q4. Identify the ecological role of the following organism: dolphin

Answer: D. tertiary consumer

Q5. Identify the ecological role of the following organism: crab

Answer: E. decomposer

Q6. Identify the ecological role of the following organism: jellyfish

Answer: C. secondary consumer

Q7. From which organism(s) does the crab obtain energy? (Multiple answers possible.)

Answer: All Choices

Q8. From which organism(s) does the jellyfish obtain energy? (Multiple answers possible.)

Answer: E. grunt

Q9. From which organism(s) does the sea star obtain energy? (Multiple answers possible.)

Answer: A. algae

Q10. From which organism(s) does the dolphin obtain energy? (Multiple answers possible.)

Answer: E. grunt

Q11. From which organism(s) does the grunt obtain energy? (Multiple answers possible.)

Answer: jellyfish & sea star



Q12. What is the main source of energy for all living things?

Answer: The Sun

Q13. What does a food web tell us about an ecosystem?

Sample Answer: A food web shows the flow of energy through an ecosystem.



TI-Nspire Navigator Opportunities

Make a student a Live Presenter to illustrate how to drag and drop the organisms in the food web. Throughout the activity, monitor student progress. At the end of the activity, collect the .tns file and save to Portfolio.

Wrap Up

When students are finished with the activity, retrieve the .tns file using TI-Nspire Navigator. Save grades to Portfolio. Discuss activity questions using Slide Show.

Assessment

- Formative assessment will consist of questions embedded in the .tns file. The questions will be graded when the .tns file is retrieved. The Slide Show will be utilized to give students immediate feedback on their assessment.
- Summative assessment could consist of questions/problems on the chapter test or a performance assessment in which they create their own food web.