

Sea Turtle Food Webs



Objectives:

- Students will utilize research skills to develop a food web for one of 7 sea turtle species.
- Students will analyze the interconnectedness of various species.

National Education Standards:

- NS.5-8.3
- NS.9-12.3

Suggested Grade Levels: 6-12 (The lesson is split into 3 levels)

Subject Area: Science

Timeframe: One or two 50 minute class periods (without using extension activities)

Teacher Information:

This lesson can be used to teach your students the basics of food webs. Prior to this lesson, the students should have an understanding of a food chain and trophic levels. Additionally, the students should be made aware that the arrows represent the flow of energy through the given ecosystem, not based upon whom is eating whom, as many students tend to think.

The lesson gives the teacher basic guidelines for the structure of a food web. It will be individual teachers' decisions as to the specific format the students should use when creating their own. The lesson gives options for differentiation, depending upon the level of the students. Level one gives the students a partially filled in web in which they will need to research to fill in the blanks. Level two gives the students a list of organisms for each sea turtle species, forcing the students to construct the web from scratch in addition to researching the trophic level for each species. Level three asks that the teacher only give students the name of a sea turtle species; the students do all the work from there.

Included with the directions are websites that will be helpful to the students when researching organisms for the web. Background information for the teacher follows the lesson itself.



Materials:

- Computers with internet access for research
- Paper, markers, glue (if food webs are not computer generated)

Lesson:

1. Prior to this lesson, students should be taught the basics of food chains, trophic levels, and energy flow. Key background terms: producer, consumer, carnivore, omnivore, herbivore, trophic level. (Please also see the Teacher Background page 4.)

2. Ask the students to generate some ideas as to what sea turtles eat and what organisms eat sea turtles.

3. Split the class into seven groups and assign one sea turtle species to each group: Green, Loggerhead, Hawksbill, Olive Ridley, Leatherback, Flatback, or Kemp's Ridley. Each group will create a food web for their individual species of sea turtle.

4. From here, you will need to determine which level to use for the class or per group.

Level One

Give the group(s) using level one a sheet with the beginnings of a food web for their assigned turtle species. They should use the website list to research organisms to fill in the blanks.

Level Two

Give the group(s) using level two a list of organisms involved in a food web for their assigned species. They should use the website list to research organisms to see how they fit into their web.

Level Three

Students are given no additional resources other than the name of a turtle species and the list of websites provided.

5. Students should generate a final food web to present or place on display for the class. The food webs should be posted somewhere visible if other Sea Turtle lessons are to be used.

Note: It will be up to the teacher to decide if each organism within the web should be able to trace their energy to a producer. The provided web resources focus only on the organisms involved in providing energy to the turtles or eating the turtles. Teachers may also have the students research the additional connections within the web (i.e. – zooplankton eating phytoplankton and other zooplankton).

6. Ask the students to discuss, within their groups, examples of possible impacts on their food chains.

Assessment:

- Students using level three should have the correct species of organism linked into their food chain.
- The arrows should represent the energy flow.
- The organisms should be placed into the correct trophic level.

Extensions:

- Have students determine common threads among the sea turtle species' webs. This could lead into a lesson on threats to sea turtles.
- Movement of energy through the food web connects easily to this lesson. Additionally, a lesson or discussion of the movement of toxins or poisons could follow. The hawksbill species tend to eat sponges that contain poisons, causing some turtles to become poisonous themselves.
- By studying the food webs generated by the student, some may realize that the loss of a turtle species could disrupt an ecosystem. The hawksbill species is a keystone species who eats many common sponges, allowing rarer ones to populate where they would otherwise not survive.

Teacher Background

The study of food webs and food chains are typically introductory lessons taught before more complex ecological concepts. A lesson such as this one, allows students to see the interconnectedness of species within an ecosystem. Prior to any food chain or food web lesson is taught at the secondary level, it will be important for students to have some background knowledge. The following are key concepts that students should understand.

- All energy is derived directly or indirectly from the sun.
- In a food chain and a food web, the arrows show the direction in which energy flows.
- Organisms are generally classified as producers or consumers; consumers can be broken into herbivores (eats only producers), omnivores (eats producers and consumers), or carnivores (eats only consumers).
- An organism's trophic level is its position within a food chain or web.

All organisms can trace their energy back to the sun. The food webs on the resource pages above only consider organisms that link directly to each turtle species. Students could be asked to research the organisms further to the point at which each does link to the sun eventually.



These materials are provided by SEE Turtles, a non-profit project that protects sea turtles through conservation travel. Please see our website, www.seeturtles.org for other lesson plans, fundraising ideas, in-class presentations, and field trips. For more information, please contact Brad Nahill, SEE Turtles Director, at brad@seeturtles.org or 503.608.9679.

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Resource Websites

All Turtle Species:

SEE Turtles Species Fact Sheets: <http://www.seeturtles.org/43/sea-turtle-biology.html>

National Oceanic & Atmospheric Administration (NOAA) – Gray’s Reef National Marine Sanctuary: <http://graysreef.noaa.gov/tw/turtles.html>

Caribbean Conservation Corporation: <http://ccturtle.org/seaturtleinformation.php>

NOAA Fisheries: <http://www.nmfs.noaa.gov/pr/education/turtles.htm>

<http://www.enature.com> (great site for researching other organisms from the food webs)

Leatherback:

Hawaii Association for Marine Education and Research:

http://www.hamerinhawaii.org/Main%20Web%20Pages/Education/Marine%20Life/Turtles/leatherback_turtles.htm

Olive Ridley:

National Geographic:

<http://animals.nationalgeographic.com/animals/reptiles/olive-ridley-sea-turtle.html>

MarineBio: <http://marinebio.org/species.asp?id=318>

Kemp’s Ridley:

Sea Turtle Inc: <http://www.seaturtleinc.org/turtles/kemps.html>

Green:

MarineBio: <http://marinebio.org/species.asp?id=51>

Loggerhead:

National Geographic:

<http://kids.nationalgeographic.com/Animals/CreatureFeature/Loggerhead>

Hawksbill:

MarineBio: <http://marinebio.org/species.asp?id=164>

Works Cited

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Inter-American Sea Turtle Convention. Web. 06 Sept. 2009.
<http://www.iacseaturtle.org/English/imbricata.htm>

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<http://www.nmfs.noaa.gov/pr/pdfs/education/>

"Olive Ridley sea turtle Fact Sheet." *U.S. Fish and Wildlife Service Home*. Web. 09 Sept. 2009.
<http://www.fws.gov/northflorida/seaturtles/turtle%20factsheets/olive-ridley-sea-turtle.htm>

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