Lesson 2.2

Life Cycle

Grades: 9-12
Integrated Subjects: Science, Biology, Reading
Essential Skills: Compare/contrast, Identification
Sunshine State Standards: SC.F.1.4.2, SC.G.2.4.3, SC.F.1.4.7
National Science Education Standards: Meets Content Standards: 1) Life science; and 2) Unifying concepts and processes
Duration: 1 class period

Objectives:

Students will learn how some animals have different life stages, and it varies depending on where they live. Students will be able to:

- illustrate the conch life cycle
- observe larval cycles of different animals

Preparation:

Teacher Preparation:

- Duplicate appropriate materials

Support materials:

- Lecture modules

Other materials:

- Sieve or seine that can be used to collect larvae samples.

Information Sheet:

- No. 7 – The Queen Conch Life Cycle

Activity Sheets:

- No. 8 – Life Cycle Diagram
- No. 9 – Frog Life Cycle
- No. 10 – Mosquito Life Cycle
- No. 11 – Salmon Life Cycle
- No. 12 – Butterfly Life Cycle

Lesson Plan

Activity 1. Introduction (15 minutes)

Distribute Information Sheet No. 7 on the conch's life cycle. Have the students discuss the life stages of animals on land versus animals in the ocean. Discuss how it is important for an ocean animal to have a pelagic life stage so they can inhabit other areas. Also discuss the disadvantages to this type of life cycle.

Activity 2. A Conch's Life (25 minutes)

Distribute Activity Sheet No. 8. Show the Conch Heritage Network video, which documents the life cycle of a conch from conception through juvenile stage. Have the students label the food sources and predators the conch will have at the various stages of their life cycle. Discuss that a chemical cue (algae from a nearby nursery ground) is necessary to trigger the larval conch to metamorphose and settle out of the water column.

Activity 3. Why Change? (20 minutes)

Distribute Activity Sheets No. 9, 10, 11, 12 and have the students compare and contrast the life cycle of queen conch to other animals. Discuss why it is advantageous for these animals to have different life stages. Talk about predators, food sources, and habitat.

Activity 4. (Optional) The Search for Larvae (45 minutes)

If possible, have the students go to a local water source (a freshwater pond/lake will suffice), and have them collect larvae from the water. Bring them back to the lab and look at the various specimens under the microscope and try to identify.

Conclusion

Discuss how there are many species in the animal kingdom that do not look like the adult form when they are born. Many animals undergo several life stage changes before becoming an adult. Discuss how this mechanism is used as protection.

Bibliography

Appeldoorn, R.S. 1988. Age determination, growth, mortality, and age of first reproduction in adult queen conch, *Strombus gigas*, off Puerto Rico. Fisheries Research. 6: 363-378.

Davis, M. 2000. The combined effects of temperature and salinity on growth, development and survival for tropical gastropod veligers of *Strombus gigas*. Journal of Shellfish Research. 19: 883-889.

Davis, M. and A.L. Shawl. In press. A guide for culturing queen conch, *Strombus gigas*. Manual of Fish Culture. American Fisheries Society, Vol. 2.