

## Lesson 2.1

### Geography and Habitat

**Grades:** 9-12

**Integrated Subjects:** Marine Science, Oceanography, Geography, Mathematics

**Essential Skills:** Research, Identification, Writing

**Sunshine State Standards:** SC.E.1.4.3, SC.G.1.4.1, SC.F.1.4.2, SC.G.2.4.4, SC.G.2.4.3, SC.H.1.4.1

**National Science Education Standards:** Meets Content Standards in: 1) Unifying concepts and processes; 2) Physical science; 3) Life science; and 4) Science as inquiry

**Duration:** 1 – 2 class periods

#### **Objectives:**

Students will be able to:

- ✿ Locate the major bodies of water in the world
- ✿ Construct the food web for conch
- ✿ Perform basic water quality tests
- ✿ Observe different life forms in the seagrass beds (if utilizing Activity 4)

#### **Preparation:**

##### ***Teacher Preparation:***

- ✿ Duplicate appropriate materials
- ✿ Water samples with various salinities

##### ***Support materials:***

- ✿ Lecture module with pictures/slides
- ✿ Survey grid (made from PVC or rope) of a known surface area
- ✿ Thermometer, refractometer, pH meter (if available)

##### ***Other materials:***

- ✿ Map of the Caribbean

##### ***Information Sheets:***

- ✿ No. 5 – Where are the Conch?
- ✿ No. 6 – Habitat Requirements

##### ***Activity Sheets:***

- ✿ No. 4 – The World's Oceans
- ✿ No. 5 - Conch Family Tree
- ✿ No. 6 – What's for Dinner?
- ✿ No. 7 – Water Quality

## **Lesson Plan**

### **Activity 1. Introduction (10 minutes)**

Ask the students to identify the parts of the world where conch may be found. Discuss what latitudes and parts of the ocean/continental shelf are suitable for tropical animals and why.

### **Activity 2. Geography (20 minutes)**

Distribute Activity Sheet No. 4 and discuss the vastness of the world's oceans. Have the students label the oceans. Our planet is unique in that we have liquid oceans. Life first evolved in the oceans, and they continue to serve many functions that affect the weather and temperature.

Distribute and discuss Information Sheet No. 5. Show the students the conch family tree (Activity Sheet No. 5), and look at the pictures of *Strombus* conch. Point out on your Caribbean map where queen conch can be found.

### **Activity 3. What's for Dinner? (10 minutes)**

Ask the students to make a list of the food queen conch may eat, along with a separate list of animals that may eat the queen conch. You may want to point out that queen conch are susceptible to more types of predators while they are young. Once your list is complete, distribute Activity Sheet No. 6 and see how well the students did.

### **Activity 4. Where the Conch Are (45 – 60 minutes)**

Distribute and discuss Information Sheet No. 6 on queen conch habitat requirements. Ask the students if they have seen conch in the wild before and point out the locations on the map. Read about the importance of water quality and seagrass density to the adult conch on the Information Sheet.

Distribute Activity Sheet No. 7. If the equipment is available, have the students test different water samples for temperature, salinity, and pH as practice for the fieldwork. Discuss the water quality parameters that are important for queen conch health and survival.

Have the students take a trip to a local seagrass bed or choose a couple of sites at the school. Using your grids, have the students count the number of seagrass blades that lay within a known surface area. Calculate the grass/seagrass density per m<sup>2</sup>. You may want to examine several sites for comparison. Have the students count at least two times at

each location. When you return, discuss whether or not queen conch would be present at these sites if they were in a different (ocean) location. Refer to Information Sheet No. 6.

### **Conclusion**

Discuss the importance of protecting queen conch habitat (seagrass beds, tropical reefs, etc.).

### **Bibliography**

Berg, C. 1975. Behavior and ecology of conch (Superfamily Strombidacea) on a deep subtidal algal plain. *Bulletin of Marine Science* 25:307-317.

Brownell, W. N. 1977. Reproduction, laboratory culture, and growth of *Strombus gigas*, *S. costatus* and *S. pugilus* in Los Roques, Venezuela. *Bulletin of Marine Science* 2:668-680.

Jones, R.L. and A.W. Stoner. 1997. The integration of GIS and remote sensing in an ecological study of queen conch, *Strombus gigas*, nursery habitats. *Proceedings of the Gulf and Caribbean Fisheries Institute* 49:523-530.

Randall, J.E. 1964. Contributions to the biology of the "queen conch" *Strombus gigas*. *Bulletin of Marine Science of the Gulf and Caribbean* 14:246-295.

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