

## Lesson 3.1

### Fisheries Management

**Grades:** 9-12

**Integrated Subjects:** Science, Oceanography, Reading

**Essential Skills:** Inferring, Research, Compare/Contrast

**Sunshine State Standards:** SC.H.3.4.1, SC.H.3.4.3, SC.H.1.4.1, SC.H.1.4.3, SC.H.1.4.2, SC.D.1.4.1, SC.G.2.4.5, SC.G.2.4.6, SC.H.3.4.4, SC.H.3.4.2

**National Science Education Standards:** Meets Content Standards: 1) Science in personal and social perspectives; 2) History and nature of science; 3) Science and technology; and 4) Science as inquiry

**Duration:** 1 class period

#### Objectives:

Students will learn how queen conch are being protected today. They will learn the:

- ✿ Importance of Marine Protected Areas
- ✿ Difficulties of conch transplantation and stock recovery
- ✿ Importance of ocean currents

#### Preparation:

##### *Teacher Preparation:*

- ✿ Duplicate appropriate materials

##### *Support materials:*

- ✿ Map of the Caribbean
- ✿ Fisheries Management Lesson Module from website

##### *Information Sheets:*

- ✿ No. 11 – Queen Conch Fisheries Management
- ✿ No. 12 – Marine Protected Areas
- ✿ No. 13 – Time to Move

##### *Activity Sheets:*

- ✿ No. 17 – Caught in the Current

### Lesson Plan

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

Many of the world's fisheries are being depleted today. Ask the students where the seafood they eat comes from? What type of seafood do they eat? How do we manage the production of farm animals (chicken, cows, etc)? How do we manage our fisheries?

### **Activity 2. Queen Conch Management (30 minutes)**

Using queen conch as an example, discuss some of the fisheries management strategies in place today. Distribute Information Sheet No. 11. Have the students research what type of queen conch management is being conducted in their previously chosen (Lesson 1.1) country, and label them on the map. Also have the students go to the map at [www.caribbeanaquaculture.org/map.htm](http://www.caribbeanaquaculture.org/map.htm) as an interactive resource.

Have the students brainstorm and think of other fisheries species, and what type of programs are in place to help conserve the populations.

### **Activity 3. Marine Protected Areas (20 minutes)**

Distribute and discuss Information Sheet No. 12. Have the students research whether or not there are any MPA's in their country. Label the MPA's on your Caribbean map. Discuss how an MPA may be beneficial for protected queen conch.

### **Activity 4. Time to Move (20 minutes)**

Distribute and discuss Information Sheet No. 13. Discuss the new concept, of CHN scientists at Florida Fish and Wildlife, that nearshore adults should be transplanted offshore and thus triggered to spawn. How is this helpful for the population? What may be some negative impacts?

### **Activity 4. Caught in the Current (20 minutes)**

Discuss with the students how the larval stage of conch (from Lesson 2.3) is beneficial. Distribute Activity Sheet No. 17 and have the students examine the ocean currents throughout the world and in the Caribbean (for queen conch).

### **Conclusion**

Discuss the importance of protecting and/or managing the world's fisheries.

### **Bibliography**

Delgado, G. et al. 2004. Translocation as a strategy to rehabilitate the queen conch (*Strombus gigas*) population in the Florida Keys. *Fishery Bulletin*. 102: 278-288.