

# Lesson 4.1

## Queen Conch Aquaculture

**Grades:** 9-12

**Integrated Subjects:** Science, Biology

**Essential Skills:** Research, Inferring, Writing

**Sunshine State Standards:** SC.G.1.4.1, SC.G.1.4.2, SC.D.2.4.1, SC.H.1.4.4, SC.H.1.4.5, SC.F.1.4.7, SC.F.2.4.3, SC.G.2.4.3, SC.F.1.4.2, SC.F.1.4.6, SC.H.3.4.3, SC.H.3.4.4

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

**Duration:** 1 –2 class periods

### Objectives:

Students will:

- ✦ Illustrate how one organism can benefit from another
- ✦ Understand the conch aquaculture process
- ✦ Understand why people turn to aquaculture

### Preparation:

#### *Teacher Preparation:*

- ✦ Duplicate appropriate materials

#### *Support materials:*

- ✦ Aquaculture lesson module
- ✦ Aquarium and materials (if setting up for hydroponics)
- ✦ Schedule a field trip to a local aquaculture facility

#### *Information Sheets:*

- ✦ No. 14 - Aquaculture in the World

#### *Activity Sheets:*

- ✦ No. 18 - Aquaculture and Hydroponics

## Lesson Plan

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

Discuss that aquaculture is the farming of marine and freshwater animals, and is another form of farming. Have your students list marine and freshwater species that are being cultured in the world today. Distribute Information Sheet No. 14 and compare.

### **Activity 2. Aquaculture and Hydroponics (45 – 60 minutes)**

Many farmers use aquaculture as a way of extra income when their regular crop is out of season. Usually a small-scale operation with fresh water fish, such as tilapia or a low salinity shrimp in a pond or small tank, is used. Farmers utilize the nutrient rich culture water as “fertilizer” for other crops that are able to withstand the off-season temperatures. For this activity, a small aquarium can be purchased and made into a hydroponics system to illustrate. Distribute Activity Sheet No. 18 and set up a small hydroponics garden in your classroom.

### **Activity 3. (Optional) Road Trip (1 class period)**

Take a field trip to Harbor Branch Oceanographic Inst. for an in-depth look at the aquaculture facilities and the different ways species are cultured.

Please contact Monica Naranjo ([mnaranjo@hboi.edu](mailto:mnaranjo@hboi.edu), 772-465-2400 x416) for pricing and scheduling.

### **Activity 4. Time–Out! (20 minutes)**

Review the aquaculture teaching module with the students. Have the students construct a timeline of events when culturing queen conch. At each major event, have the students write a small description of the event and discuss it in class. Refer to Davis and Shawl (in press) or Davis (2000) conch culture chapters.

### **Conclusion**

Discuss the important role of aquaculture as a conservation tool and as the future of fishing.

### **Bibliography**

Davis, M. and A. L. Shawl. In Press. A Guide for Culturing Queen Conch, *Strombus gigas*. American Fisheries Society. Vol. 3.

Davis, M. 2000. Queen Conch (*Strombus gigas*) Culture Techniques for Research, Stock Enhancement and Grow Out Markets. *In*: Fingerman, M. and Nagabhushanam, R. (eds.) Recent Advances in Marine Biotechnology, Vol.4, Aquaculture, Science Publishers, Inc. New Hampshire USA, pp.127-159.