

Conch in the Classroom: Integrating Queen Conch Activities into the Curriculum

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ABSTRACT

The Conch Heritage Network (CHN) was established in 2001 and is a leading organization for the exchange and dissemination of queen conch information on biology, fisheries, culture, research and education. The CHN has outreach tools available for educational and public use. They include a video, brochure, poster, educational modules, and an informative website. The Conch Heritage Network also developed "Conch in the Classroom" lesson plans for middle and high school teachers that cover the history, geography, biology, management, and aquaculture of the queen conch. The activities included in each lesson teach a relevant scientific concept using the queen conch as the example specie. For example, the students will learn about the importance of ocean currents for larval dispersal and the relationship of sea grass density and habitat quality for restocking. Students will also be able to participate in a virtual queen conch dissection. Each lesson lists the appropriate national and Florida state science standards that are met, enabling teachers to easily incorporate the lessons into their curriculum. Several teachers in Florida are using the "Conch in the Classroom" lesson plans and activities. All of these lessons are available on the website (www.savetheconch.org) in downloadable form.

KEY WORDS: Conch, education, *Strombus gigas*

El Conch en el Aula: Actividades del conch de la reina que integran en el plan de estudios

El Conch Heritage Network (CHN) fue establecida en 2001 y es una organización principal para el intercambio y la difusión de la información del conch de la reina sobre biología, industrias pesqueras, cultura, la investigación y la educación. El CHN tiene disponibles recursos para el uso educativo y público. Incluyen un vídeo, un folleto, un cartel, módulos educativos, y un Web site. El Conch Heritage Network se ha convertido " El Conch en el Aula" planea para los profesores de escuelas que cubren la historia, la geografía, la biología, la gerencia, y la acuicultura del conch de la reina. Las actividades incluidas en cada lección enseñan un concepto científico relevante usando el conch de la reina como el specie del ejemplo. Por ejemplo, los estudiantes aprenderán sobre la importancia de las corrientes del océano para la dispersión

larval y la relación de la densidad de la hierba del mar y de la calidad del habitat para volver a surtir. Los estudiantes también podrán participar en una disección virtual del conch de la reina. Cada lección enumera los estándares apropiados de la ciencia de los Estados Unidos y del estado de la Florida se resuelven que, permitiendo a profesores incorporar fácilmente las lecciones en su plan de estudios. Varios profesores en la Florida están utilizando " El Conch en el Aula". Todas estas lecciones están disponibles en el website (www.savetheconch.org).

PALABRAS CLAVES: Concha, educacion, *Strombus gigas*

INTRODUCTION

The queen conch, *Strombus gigas*, has been an important fisheries species throughout Florida and the Caribbean region for thousands of years. For the past few decades, queen conch populations have become severely depleted due to overharvesting, and therefore, many countries have taken actions to protect the remaining stocks. Conservation efforts have focused on fisheries management strategies, marine protected areas, aquaculture, stock enhancement, and education and outreach programs.

As part of a Caribbean wide conservation education program, the Conch Heritage Network (CHN) was established in 2001, and is headquartered at Harbor Branch Oceanographic Institution (Harbor Branch) in Ft. Pierce, Florida. The CHN is a leading organization for the exchange and dissemination of queen conch information on biology, fisheries, culture, research, and education. There are several research organizations, academic institutions, and public entities that are active partners in the CHN. The CHN has outreach tools available to the public, which include: a video, brochure, poster, educational modules, and an informative website.

With the aid of the Disney Wildlife Conservation Fund, the CHN has developed a "Conch in the Classroom" program for middle and high school students. This program includes: a collection of lesson plans, educational modules, a virtual queen conch dissection, queen conch Jeopardy, a step-by-step guide to setting up an aquarium, and other games and activities. This program is available online (www.savetheconch.org), on a CD, or in a printed and bound version. In addition to the online(www.savetheconch.org) resources, the CHN has also developed a supplemental teaching packet. This packet can be purchased at a discounted price for teachers and includes: a bound publications book (queen conch publications from Harbor Branch scientists), a "Conch's Life Story" video, a brochure, the Conch Life Cycle poster, the Conch Horn and Queen Conch Sea Stats (developed by Florida Fish and Wildlife), and a handful of juvenile queen conch shells for display in the classroom.

Several middle and high school teachers have adapted the "Conch in the Classroom" program into their marine science and biology classes. The queen conch lesson plans are designed in a way that incorporates state and national science standards so that teachers can easily fit them into their curriculum. Likewise, the lessons are flexible enough that teachers can use the plans as a

guideline and adjust the level of difficulty according to the student's abilities or grade level.

LESSON PLANS

There are eight lesson plans that cover queen conch history, socioeconomics, geography, habitat, biology, aquaculture, and research. At the beginning of each lesson is a list of relevant information that the teachers can use as a quick reference for curriculum design. With the focus of school districts shifting to a more integrated approach, the essential skills and integrated subjects covered in each lesson are listed. For teachers who have access to projectors, a downloadable education module in Powerpoint form is available on the website. These modules coincide with one to three lessons, and are a great source for pictures and more information.

The following is a sample lesson plan on queen conch history and socioeconomics. The information and activity sheets are not included, however they are available on the CHN website.

LESSON 1.1 HISTORY AND SOCIO-ECONOMICS

Grades: 9-12

Integrated Subjects: History, Science, Reading, Geography, Language Arts

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

Sunshine State Standards: SC.G.2.4.5, SC.G.2.4.6, SC.D.2.4.1, SC.H.3.4.5

National Science Education Standards: Meets Content Standards in 1)

Science in personal and social perspectives; 2) History and nature of science; and 3) Science and technology

Duration: 1 – 2 class periods

Objectives:

Students will be introduced to the ways queen conch were used and how the fishery impacted Caribbean countries throughout history. In particular, students will learn:

- i) How Indians utilized conch for their everyday activities,
- ii) About the history of the queen conch,
- iii) About today's conch market, and
- iv) About the different ways to fish for conch

Preparation:

Teacher Preparation:

Duplicate appropriate materials

Support materials:

Tribal tool pictures

Lecture module with pictures/slides

Map of the Caribbean

Information Sheets:

- No. 1 – Queen Conch Vocabulary List
- No. 2 – The Arawak Indians
- No. 3 – History of the Queen Conch Fishery
- No. 4 – How are Queen Conch Used

Activity Sheets:

- No. 1 – Queen Conch Pre-test
- No. 2 – Animals as Tools
- No. 3 – Fishing Methods

Lesson Plan:**Activity 1. Introduction (20 minutes)**

Give the students the pre-test (Activity Sheet No. 1) in order to evaluate their understanding and knowledge of queen conch. Collect the tests and do not return them to the students until the end of lesson plans.

Ask the students to define some of the vocabulary words prior to distributing the list. Ask the students what other words they think are associated with queen conch. Hand out Information Sheet No. 1, the list of vocabulary words relevant to the queen conch lessons. Discuss the vocabulary words in class. You may choose to quiz them at the end of the lessons.

Activity 2. The Arawak Indians (30 minutes)

Long before Christopher Columbus discovered the West Indies, native Arawak Indians resided in many of the Caribbean islands. They were the first people to utilize queen conch for their every day needs.

Distribute and discuss Information Sheet No. 2 about the Arawak Indians. Discuss what native Indians were once present where the school is located. Have the students make a list of other animals that had been used as tools or food in other native Indian cultures throughout the world and compare to Activity Sheet No. 2.

Activity 3. Queen Conch Fishery Economics (45 – 60 minutes)

Distribute and discuss Information Sheet No. 3, about the queen conch fishery. Hang up a map of the Caribbean islands in your classroom. You may choose to have the students make the map themselves. Discuss what other species are fished throughout the world.

Ask the students to make a list of fishing methods that are used today or have been used in history. Distribute Activity Sheet No. 3 and compare. Distribute and discuss Information Sheet No. 4. Discuss what methods are used when fishing for queen conch and why some methods have been banned.

Assign students (groups or individual) a Caribbean country and have them research the status of the queen conch fishery. Have them examine the annual catch, quotas, regulations, and problems the fishery may be facing. Have the students put this info on an index card and attach it to the appropriate country

on the map.

Activity 4. What are Queen Conch used for? (20 minutes)

Have the students list products that come from queen conch. Distribute Information Sheet No. 4 and discuss. Have students bring in pictures or objects that were made from queen conch.

Conclusion for Lesson 1.1

Discuss the importance of queen conch throughout history, and why this is such an important fisheries specie today.

Bibliography for Lesson 1.1

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CONCLUSION

The queen conch is one of Florida's most precious natural resources. The CHN strongly supports the use of queen conch conservation education as a fisheries management tool. The "Conch in the Classroom" activities are available for anyone with access to the internet, and will soon be translated in Spanish and French. Using these lessons and growing queen conch in the classroom is fun and suitable for students of all ages. For more information, please visit the CHN website (www.savetheconch.org).

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