

FISH FARMING NEWS

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Conch in cages: An innovative queen conch ranching project in Colombia, South America

by Amber Shawl

HBOI REPORT

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At Harbor Branch Oceanographic Institution

FT. PIERCE, FL — The queen conch, *Strombus gigas*, is the largest molluscan gastropod — at 18-23 cm, 7"-9" shell length — of the six conch species found in the shallow seagrass beds of Florida and at least 36 countries and dependent territories in the Caribbean region.

Queen conch is considered one of the most important benthic fisheries, second only to spiny lobsters, but the increased demand for conch has severely depleted many of the wild queen conch populations.

In 1992 as a response to over-harvesting, queen conch was listed in CITES Appendix II (Convention for the International Trade of Endangered Species of Wild Fauna and Flora) and became the first large-scale fishery to be regulated by CITES.

Harbor Branch Oceanographic Institution (HBOI) established its queen conch research program in 2000. Since that time, scientists have focused on developing aquaculture techniques for growing juvenile queen conch for stock enhancement; using queen conch larvae to examine water quality; and have established an internationally recognized education program called the Conch Heritage Network (<www.savetheconch.org>).

With the aid of the Disney Wildlife Conservation Fund and the Sheila Johnson Brutsch Charitable Trust, conch research scientists from HBOI, Blue Dream Ltd., Secretaria de Agricultura y Pesca of Colombia (SAP), and CORALINA (Colombian marine protected area agency) teamed up and created a novel queen conch ranching project in the Caribbean Archipelago of Colombia (Old Providence and Saint Catalina).

The commercial queen conch fishery in Colombia has been closed for two years, although illegal poaching by nearby countries continues.

During the 2005 Gulf and Caribbean Fisheries Institute meeting in San Andres Island, Colombia, local fishermen along with HBOI and Blue Dream Ltd. scientists, discussed a desire to participate in queen conch aquaculture projects in the archipelago that would test the concept of conch ranching as an alternative to fishing.

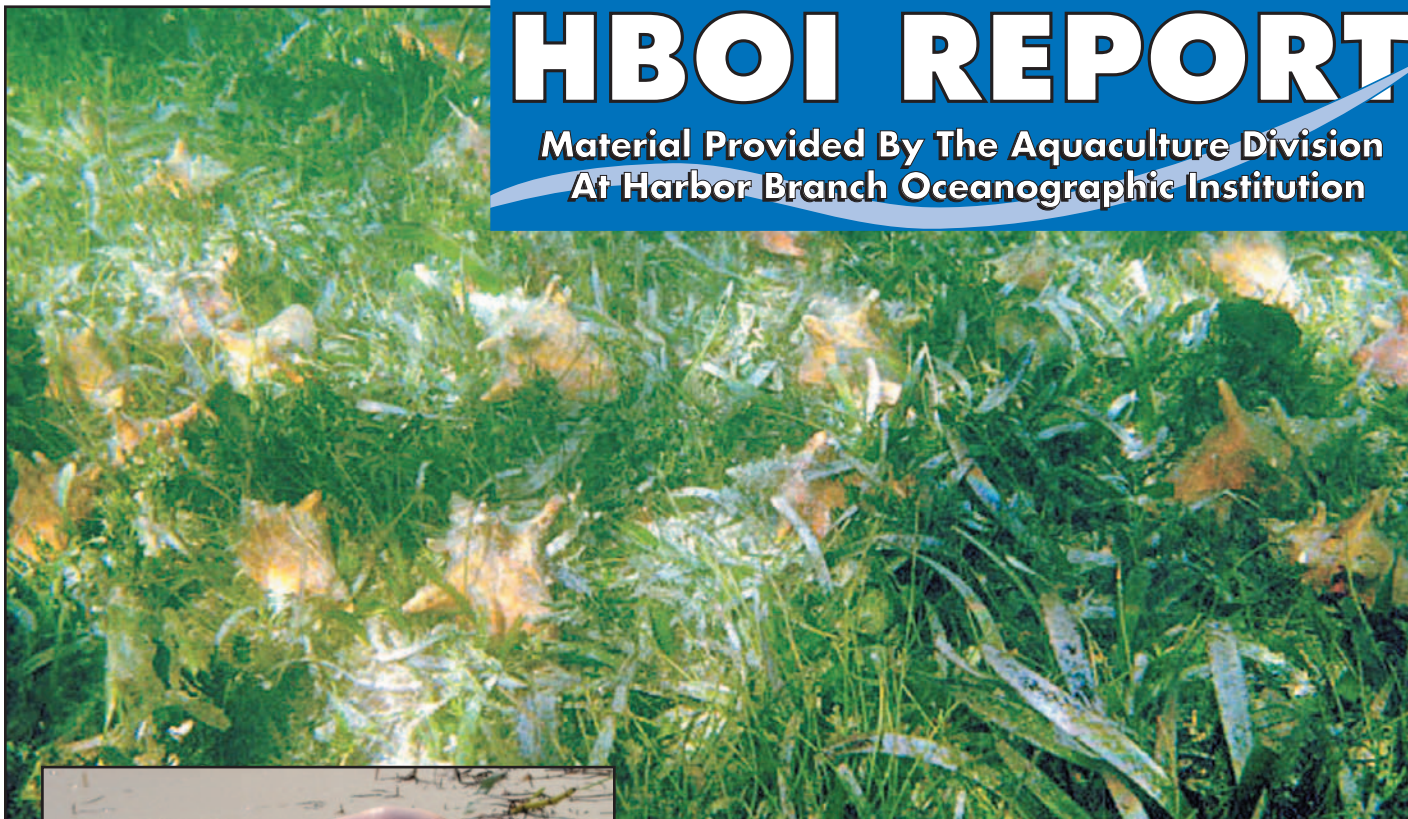
This past October, scientists from the collaborating institutions (CORALINA, SAP, and local fishermen), along with the Colombian navy, collected juvenile queen conch from the offshore banks of Serrana Reef about 150 miles north of Old Providence Island.

The conch were held in temporary underwater cages in Saint Catalina for five days.

HBOI scientists, fishermen, and biologists from CORALINA, SAP, and Blue Dream Ltd. built two ranching cages. Each cage was 64' in diameter and 5' in height. The cage design is similar to the growout cages operated by the Caicos Conch Farm in the Turks and Caicos Islands.

See HBOI REPORT, next page

Harvey Robinson photo



Juvenile queen conch in ranching cage. At left, adult queen conch.



Claudia Padilla photo



CORALINA biologist Renato Robinson securing the wire mesh to the rebar/PVC anchors.

Collaborating scientists building the first queen conch ranching cage in Colombia.

Harvey Robinson photos



HBOI Report —

Wire PVC coated mesh (4" x 4" openings) was used for the bulk of the cage, and a smaller (3/4" x 3/4" openings) plastic mesh was wrapped along the bottom of the cage to prevent the conch from escaping. Rebar pieces sleeved with PVC were used to anchor the structures.

The cages were placed in a protected cove off the shoreline of Saint Catalina within a no-take zone of the SEAFLOWER Biosphere Reserve.

The habitat consists of seagrass beds and slopes from 1' to almost 5' deep, leaving the cages just above the water surface at high tide. The ranching site is conveniently located near the boating channel, so local fishermen can easily monitor the site for poachers and check the cages and juvenile conch.

This area is also protected from the strong currents that run along the northern tip of the island, but it still receives a current up to 0.5 knots.

The 1,140 juvenile queen conch were separated into two size classes – under 12 cm (4.7") shell length, and over 12 cm shell length – and were stocked into the cages on October 12.

The stocking densities are 2.3 conch per m² and 1.6 conch per m², respectively, both of which are similar to natural stocking densities recorded in the archipelago. These low densities were chosen so that supplemental feed would not have to be added.

Two fishermen from Old Providence have been contracted by HBOI to examine each cage daily for escaped animals, holes or fouling, and predators. On a monthly basis, fishermen and SAP biologists will measure a subsample of the population to assess growth rates and mortalities.

The cages will be monitored for seven months, after which time half of the conch will be released into artisanal fishing areas and the other half will be released into no-take zones of the SEAFLOWER Biosphere Reserve.

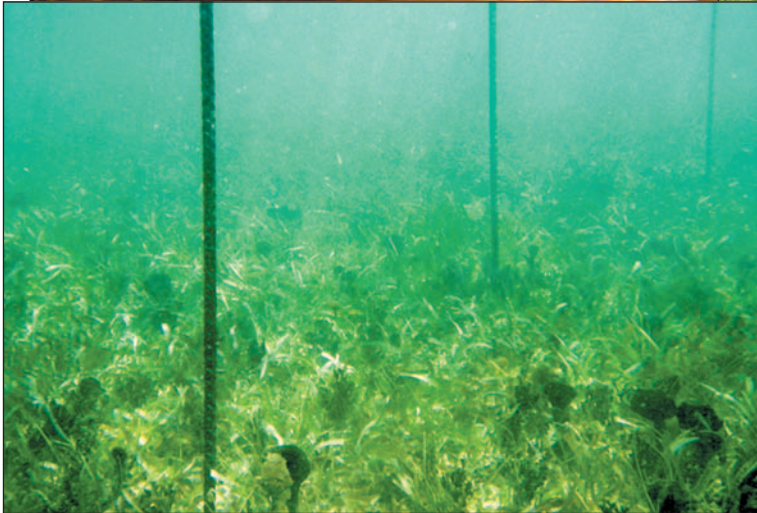
Of the 570 conch released into the no-take zone, we anticipate that 285 of them will be female, based on a 1:1 ratio of males:females. Each female will lay an average of nine egg masses per season (summer months), which potentially increases the egg production by 1.2 trillion during the reproductive months.

HBOI developed a *Conch in the Classroom* curriculum in 2003, which is available on the <www.savetheconch.org>



Harvey Robinson photo

Juvenile queen conch being separated into two size classes prior to stocking the cages.



Harvey Robinson photo



Bryan Garr photo

Rebar stakes used as anchors for the conch cages. At left, underwater view of rebar stakes.

website and has been used by national and international educators for several years. With the aid of CORALINA biologists and educators, this curriculum will be translated to Spanish as part of this project.

HBOI, CORALINA, and Blue Dream Ltd. will host two teacher workshops in Old Providence and San Andres Island in 2007, to train teachers on how to integrate the curriculum into their classroom. Results from the workshop and the newly translated material will be posted on the website for common use.

The queen conch ranching project in Colombia is just the beginning for similar projects to take place throughout

the Caribbean. As a model study, this project will show the feasibility of conch ranching, and the socioeconomics and social aspects behind establishing community support and awareness for ranching projects.

HBOI scientists have great hope that future queen conch ranching projects will support an alternative livelihood for fishermen displaced by the declining wild conch populations. There are opportunities for the establishment of small queen conch hatcheries throughout the Caribbean, which could supply seed-stock queen conch for fishermen to ranch in private cages until the conch reach a harvestable size.

Collaborative efforts, such as these, could restore the over-fished queen conch populations in the Caribbean by using conch ranching, conservation education, and the restocking of marine protected areas with reproductive stock.

Amber Shawl is a research associate for the Center for Coastal Research at Harbor Branch Oceanographic Institution. Her research focus includes queen conch conservation and outreach, as well as aquaculture education. For more information about the queen conch research program e-mail Amber Shawl, <ashawl@hboi.edu>; or phone (772) 465-2400 ext. 578.