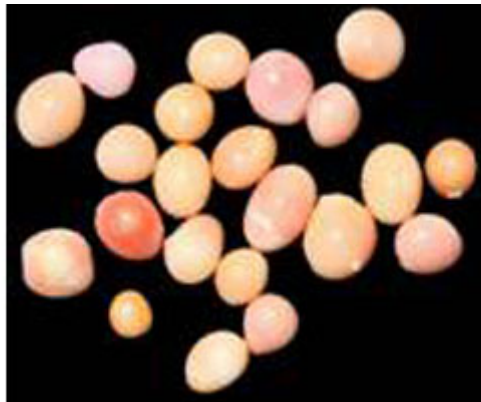


Scientists hail queen conch's cultured pearls

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Conch pearls have a porcelain finish and luster like the interior of the conch shell and come in a wide variety and combination of colors, including white, red, pink, orange, yellow and brown.

Boca Raton, Fla.--Scientists from Florida Atlantic University's Harbor Branch Oceanographic Institute have announced the development of the first-ever technique to produce beaded (nucleated) and non-beaded cultured pearls from the queen conch.

Scientists at the university say their novel and proprietary seeding techniques have successfully coaxied conch pearls from the queen conch--pearls that would be extremely rare if they occurred naturally. Ordinarily, it takes opening about 10,000 queen conch to find one conch pearl, and only one in 100 of those rare finds would be of gem quality, according to a press release from the university.

"Prior to this breakthrough, no high-quality queen conch pearl had been cultured," the release, issued on Nov. 4, said. "This discovery opens up a unique opportunity to introduce a new gem to the industry. This significant accomplishment is comparable to that of the Japanese in the 1920s when they commercially applied the original pearl-culture techniques developed for pearl oysters."

For more than 25 years, all attempts at culturing pearls from the queen conch--also known as *Strombus gigas* and found in the shallow sea grass beds of Florida, the Bahamas, Bermuda, the Caribbean Islands and the northern coasts of Central and South America--have been unsuccessful.

With less than two years of research and experimentation on the queen conch, however, Hector Acosta-Salmon and Megan Davis, co-inventors of the process, were able to produce more than 200 cultured pearls using the techniques they developed.

The Boca Raton, Fla.-based researchers have been working with the Gemological Institute of America (GIA) to conduct extensive laboratory testing of the queen conch cultured pearls. In its independent analysis, the GIA used techniques that included conventional gemological examination, chemical composition, spectroscopy, spectrometry and microscopy, and thus far, gemologists are giving the cultured conch pearls a thumbs up.

"This is a significant development for the pearl industry, and we were very excited to have the opportunity to closely examine these unique conch cultured pearls in our laboratory," Tom Moses, senior vice president of GIA Laboratory and Research, said in the release. "Several of the pearls we examined are truly top-quality gems."

The lab is using its equipment and expertise to compile identification criteria that would separate queen conch cultured pearls from their natural counterparts, he added. The oceanographic institute and the GIA

plan to jointly publish the results of these trials in an upcoming issue of the GIA's scientific journal, *Gems and Gemology*.

Scientists believe that previous efforts to culture queen conch pearls were likely unsuccessful for two reasons: the animal's sensitivity to traditional pearl seeding techniques and its complex, spiral-shaped shell, which makes it virtually impossible to reach the gonad, one of the pearl-forming portions in pearl oysters, without endangering the animal's life.

"Perhaps the most significant outcome from our research is that the technique we have developed does not require sacrificing the conch in the process," Davis said in the release. "The 100 percent survival rate of queen conch after seeding and the fact that it will produce another pearl after the first pearl is harvested will make this culturing process more efficient and environmentally sustainable for commercial application."

Survival of the animal is critical because commercial fishing has depleted the once-abundant wild populations of queen conch, and they are now considered a commercially threatened species in Florida and throughout the Caribbean, according to the release.

There are basically two types of cultured pearls: nucleated (beaded) and non-nucleated (non-beaded). Nucleated cultured pearls are produced by inserting a piece of mantle tissue from a donor mollusk and a nucleus, usually a spherical piece of shell, into the body of a recipient mollusk. Non-nucleated pearls are produced by grafting only a piece or pieces of mantle tissue, and no bead is inserted.

The researchers used two different seeding techniques to induce pearl formation in the queen conch. One was a modification of the conventional technique used to produce cultured pearls in freshwater mussels, and the other was a modification of the conventional technique used in marine pearl oysters.

Conch pearls are formed by concentric layers of fibrous crystals, which create a "flame structure" characteristic of conch pearls. The pearls have a porcelain finish and luster like the interior of the conch shell, and come in a wide variety and combination of colors including white, red, pink, orange, yellow and brown. Queen conch pearls are measured in carats like traditional gemstones.

The size of the cultured pearls produced by Acosta-Salmon and Davis is controlled by the size of the bead and the culture time. The researchers have experimented with culture times from six months to two years; longer culture times might produce larger pearls.

The queen conch is farmed in aquaculture tanks, and the queen conch cultured pearls in the initial harvest were grown in an aquaculture facility at the university. Queen conch achieve their full size at about three years and have a life span of up to 40 years.

To learn more about these queen conch cultured pearls, go to the G and G eBrief electronic newsletter at GIA.edu/gandg or contact Jan Petri at petri@hboi.fau.edu. To view a brief video, go to http://pubweb.fau.edu:16080/Research/Conch_Pearl_Press.wmv.