

## **Physical Properties of the Milk Conch *Strombus costatus* (Mollusca Gastropoda) and its Consequences on the Shell Growth Development**

The thermal, thermoelastic, mechanical and structural properties of the shell of the Queen conch (*Strombus gigas*) and is presented. The evolution of these properties as a function of the shell growth in mollusks. Thermal properties show a typical high conductivity behavior of the aragonite materials, thermoelastic properties show the interaction of the organic with the inorganic matrix, mechanical properties show the high toughness of the aragonite biogenic material and X-ray diffraction study is used to monitor the texturization.

The consequences of our results on the development and susceptibility to thermal and mechanical stress is discussed and proposed an adequate rapport: Shell size versus different properties of the conch shells (thermal properties, thermoelastic properties, mechanical properties and texturization) in order to propose an adequate size for the rehabilitation programs

KEY WORDS: Milk conch, *Strombus costatus*, shell properties

## **Potencial para el Transporte y Retención de Larvas de *Strombus gigas* en el Parque Nacional Archipiélago de Los Roques, Venezuela**

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### **RESUMEN**

Se examinó el potencial para transporte y retención de larvas de *Strombus gigas* en el Parque Nacional Archipiélago de Los Roques. Los muestreos se realizaron entre el 22 y el 28 de agosto de 1998. Las muestras se colectaron en 18 estaciones, 10 dentro del archipiélago y 8 en las aguas exteriores a su plataforma (5 y 10 millas, en dirección de cada uno de los puntos cardinales). Las colecciones se hicieron por duplicado y superficiales (2 m), usando mallas de plancton de 202  $\mu$ m de abertura. Se detectaron un total de 84 veliger, en 11 de las estaciones evaluadas. Las mayores concentraciones se observaron en las localidades interiores del archipiélago (entre 3.78 y 6.32 ind./100 m<sup>3</sup>), encontrándose una importante representación de larvas en estaciones oceánicas ubicadas al este y al suroccidente del archipiélago. Fueron pocas las larvas encontradas al norte de la laguna interna, así como al sur del archipiélago. El 47.6% de los individuos se encontró en el intervalo de talla correspondiente a las larvas recién eclosionadas (entre 150 y 450  $\mu$ m), ubicándose

la mayoría de estos en aguas interiores, al oeste del archipiélago. Un 34.5 % de las larvas, también en aguas interiores, midió entre 451 y 700  $\mu\text{m}$ , estimándose que las mismas podrían tener aproximadamente 5 días de vida. Las larvas de mayor tamaño, algunas cercanas al reclutamiento se observaron en las estaciones oceánicas. Obviamente, existe un patrón interesante de distribución y abundancia de larvas de *S. gigas* en el archipiélago, el cual debe estar directamente relacionado con la ubicación de los bancos donde se depositan las masas de huevo y los patrones de corrientes y contracorrientes locales, que en definitiva se encargan de dispersar y retener las larvas dentro de la plataforma.

**PALABRAS CLAVES:** *Strombus gigas*, transporte y retención, Parque Nacional Archipiélago de Los Roques

### **Potential for *Strombus gigas* Larval Transportation and Retention in the Los Roques Archipelago National Park, Venezuela**

The potential for *Strombus gigas* larval transportation and retention was studied in the Los Roques Archipelago National Park. Sampling was conducted in August 1998 (22 to 28). Samples were collected at 18 sites, 10 within the archipelago and 8 outside of its platform (5 and 10 nm off, in the direction of each cardinal point). Duplicate and superficial plankton tows were collected using a net with 202  $\mu\text{m}$  mesh. A total of 84 veligers were detected, in 11 of the evaluated stations. The highest concentrations were observed within the archipelago (between 3.78 and 6.32 ind./100  $\text{m}^3$ ), being an important representation of larvae in the oceanic stations located to the east and southwest of the archipelago. Few larvae were found to the north of the internal lagoon, nor to the south of the archipelago. A 47.6% of the observed individuals were in the size interval corresponding to recent hatch larvae (between 150 and 450  $\mu\text{m}$ ), being most of these located in the internal stations. A 34.5% of the larvae, also within the archipelago, measured between 451 and 700  $\mu\text{m}$ , being considered to be 5 days old. The larger veligers, some of them near to recruitment, were observed in the oceanic stations. Obviously, an interesting pattern exists for the distribution and abundance of *S. gigas* in the archipelago, which should be directly related with the location where egg masses are being laid, and the patterns of currents and countercurrents that are responsible to disperse or retain the larvae within the platform.

**KEY WORDS:** *Strombus gigas*, larval transportation and retention, Los Roques Archipelago National Park