

Spawning Induction and Early Larval Development of the Giant Reef Clam *Periglypta multicostata* (Sowerby, 1835) under Controlled Conditions

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Abstract : Ecuador is one of the countries with the greatest aquatic biodiversity worldwide. In particular, there are at least a dozen native marine species with great aquaculture potential locally. This research concerns one of those species. It has proposed to implement experimental protocols in order to induce spawning and to generate the early larval development of the giant reef clam *P. multicostata* under controlled conditions. Bioassays were carried out with one adult batch (n= 8) with an average valvar length of $118,4 \pm 5,8$ mm, which were collected near of the Puerto Santa Rosa ($2^{\circ} 12' 30''$ S, $80^{\circ} 58' 28''$ W), Santa Elena Province. During a short acclimation stage, the eight adults of giant reef clam *P. multicostata* were exposed to thermal stress. Briefly, the experimental protocol for spawning induction was based on the application of 20°C for 1 h and 30°C for 1 h on *P. multicostata* broodstock at least three consecutive times by one day. After spawning, collected sexual material was released for external fertilization process. After the delivery of gametes, it was achieved $3,25 \times 10^6$ viable zygotes. As results, fertilized eggs had $56 \mu\text{m}$ diameter; while first and second cell divisions were observed to 2,5 h post-fertilization, with individual average length of $68 \pm 5 \mu\text{m}$ and polar body. Latter cell divisions, including gastrula stage, appeared at 9 h post-fertilization, with individual average length of $73 \pm 4 \mu\text{m}$ and trochophore stage at 15 h post-fertilization with individual average length of $75 \pm 4 \mu\text{m}$. In addition, veliger stage was registered at 20 h post-fertilization with individual average length of $82 \pm 6 \mu\text{m}$. Umboned larvae appeared at day 8 post-fertilization, with individual average length of $148 \pm 6 \mu\text{m}$. These pioneering results worldwide can strengthen the local conservation process of the overexploited *P. multicostata* and to encourage its production for commercial purposes.

Keywords : Ecuador, larval development, *Periglypta multicostata*, spawning induction

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