Lingula reevii Propagation Project: Report #1, May 30, 2007

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Background

The inarticulate brachiopod, *Lingula reevii*, is believed to be endemic to Kaneohe Bay, Oahu, Hawaii, where they were once abundant throughout the southern end of the bay. A study done in December 1969 documented the areas and abundance in selected areas of the bay, and recorded average densities of 5-25 *Lingula*/m^2. Since that time, no extensive quantitative surveys on this species have been done. Recent efforts to find populations have turned up only small pockets of individuals (C. Hunter, pers. com) and it was therefore decided to explore the potential of captive husbandry as one means of conserving the declining population. *Lingula* are filter feeders, they have separate sexes, they are broadcast spawners, the population sex ratio was 1:1, and the planktonic stages are non-metamorphic. No long term, captive husbandry has been attempted to close the life cycle.

Husbandry system

A custom acrylic tank, of dimensions 91.5cm L x 91.5 cm W x 30.5 cm H (254 liters), was built exclusively for the *Lingula* husbandry. The system is open, with only a trickle of incoming new natural seawater. A pump forces water up through the sand bed resulting in a reverse flow under the sand. The substrate where *Lingula* has been found consists of fine sand. Reverse flow was chosen in order that the sand stay aerated and not become anaerobic.

On May 25, 2007, approximately 68 liters of sand were collected by scooping the upper 7-10 cm of surface substrate at Kaneohe Bay, immediately to the left of the Hawaii Institute of Marine Biology pier. Collection and transport of sand to the Waikiki Aquarium took no more than 2 ½ hours. Upon arrival, the sand was placed into the tank and allowed to settle. In about 45 minutes the sediment had settled down, and water flows were then adjusted. By the next day, many of the benthic invertebrates had also settled in and were tunneling through the sediment. Three feather duster worms (*Sabellestarte* sp.), a few pieces of rubble, and two 2.5cm strands of sea grass (*Halophila* sp.) were added to simulate the natural environment and to see if husbandry methods could be adjusted to support these benthic fauna and flora.

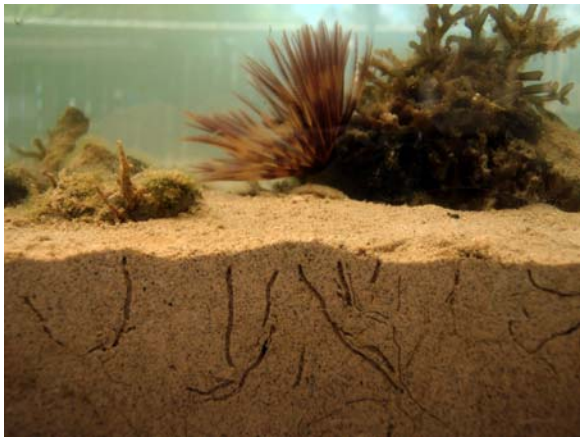
Objective

The Waikiki Aquarium will be investigating basic husbandry aspects for the long-term maintenance of *Lingula*. If this proves successful, captive breeding will then be attempted.

Budget

Custom acrylic tank	$627.00
Plumbing supplies	$180.85
Two pumps with thermometer	$250.00
Total	**$1,042.46**

Lingula reevii husbandry tank



Benthic fauna burrows visible in sediment

Algae and copepods suspended for filter feeders

New *Halophila* sea grass shoots