
Culturing the Harlequin Shrimp (*Hymenocera picta*) for the Marine Aquarium Industry, Year 1

General Information

Reporting Period August 1, 2007–September 30, 2007

Funding Level

Year	Amount
1	\$38,340

Participants

Shaun M. Moss, Ph.D., Director
Shrimp Department, Oceanic Institute

Clyde S. Tamaru, Ph.D., Extension Specialist
Sea Grant College Program, University of Hawaii at Manoa

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Nutrition Department, Oceanic Institute

Objectives

Year 1

1. Collect and disseminate information about the culture of *H. picta*.
 - 1.1. Conduct a workshop to identify and document techniques used for the captive reproduction and culture of *H. picta*.
2. Evaluate alternative diets for *H. picta*.
 - 2.1. Live echinoderm feeding trial.
 - 2.2. Prepared feeds trial.

Years 1 and 2

3. Improve culture techniques for *H. picta*.
 - 3.1. Broodstock maturation and reproduction.
 - 3.2. Larval rearing.
4. Explore potential genetic and environmental effects on post-settlement dietary preference for *H. picta*.
 - 4.1. Evaluate diets for F₂ generation shrimp.

Anticipated Benefits

Results from this project will help expand the aquaculture of harlequin shrimp by providing information to current and prospective farmers, as well as potentially eliminate or reduce the need for live *Linkia* sea stars as feed for this ornamental shrimp.

Work Progress and Principal Accomplishments

Objective 1.1. Conduct a workshop to identify and document techniques used for the captive reproduction and culture of H. picta.

Shaun Moss, Ph.D., principal investigator, and Clyde Tamaru, Ph.D., project work group member, have contacted local harlequin shrimp experts (Syd Kraul, Karen Brittain, and Frank Baensch) about participating in a one-day workshop. Karen Brittain and Frank Baensch have agreed to participate, and we are in the process of scheduling this workshop. It is anticipated that the workshop will be held in November or early-December 2007. Several candidates for the budgeted research technician position have been interviewed. A highly qualified person with ornamental shrimp culture experience has been selected, and the hiring process has been initiated. We hope to have this person officially hired prior to this workshop so that this candidate can participate.

Objective 2.1. Live echinoderm feeding trial.

Oceanic Institute (OI) applied for State of Hawaii import permits for live harlequin shrimp and live *Linkia* spp. sea stars. The harlequin shrimp permit has been given conditional approval awaiting a formal site inspection of the facilities (by a state agriculture official) that will be used to house the shrimp at OI. However, the importation of harlequin shrimp may not be necessary, since Syd Kraul and Karen Brittain are now producing sufficient numbers locally. Shaun Moss, Ph.D., and Clyde Tamaru, Ph.D., have contacted local producers about supplying the harlequin shrimp needed for this project. The permit for *Linkia* spp. sea stars was rejected, so sea stars will need to be collected from local waters or purchased from local tropical fish distributors/retailers. Other live echinoderms will also be collected from local waters, and the collection of these animals is covered under OI's marine collection permit.

Objective 2.2. Prepared feeds trial.

Moss has identified a source of sea stars from Rhode Island. These sea stars (various species) are considered pest species on shellfish farms and are routinely harvested in large numbers and discarded. The use of these sea stars as a preserved (dried or frozen) feed or as a protein source for an artificial diet represents a unique opportunity to utilize this often wasted marine resource. Furthermore, the use of these sea stars is likely more sustainable and cheaper than the use of *Linkia* spp. sea stars, which are valuable aquarium species.

Objective 3.1. Broodstock maturation and reproduction.

No progress to date.

Objective 3.2. Larval rearing.

No progress to date.

Objective 4.1. Evaluate diets for F₂ generation shrimp.

No progress to date.

Work Planned

Over the next year, November 1, 2007 through September 30, 2008, the following objectives will be completed:

Objective 1.1. Conduct a workshop to identify and document techniques used for the captive reproduction and culture of *H. picta*.

Objective 2.1. Live echinoderm feeding trial.

Objective 2.2. Prepared feeds trial.

Over this same period, the following objectives will be initiated:

Objectives 3.1. Broodstock maturation and reproduction.

Objective 3.2. Larval rearing.

Objective 4.1. Evaluate diets for F₂ generation shrimp.

Impacts

The successful completion of this project will result in the following for harlequin shrimp: (1) dissemination of “state-of-the-art” culture techniques, including improved techniques for broodstock maturation and larval rearing; (2) identification of alternative prey items, both live and preserved; (3) knowledge on the role of genetic and environmental effects on diet preference; and (4) evaluation of an artificial, formulated diet. These results will help expand the aquaculture of harlequin shrimp by providing information to current and prospective farmers, as well as potentially help to eliminate or reduce the need for live *Linkia* sea stars as feed. There are no research results to date.

Publications in Print, Manuscripts, and Papers Presented

No publications, manuscripts, or papers to date.