

COP Format for Annual Progress Report

A. Grant Number: NA03NOS4260044 HCRI 6

B. Amount of Grant: \$39,000

C. Project Title: Post-settlement Life History of Key Coral Reef Fishes in a Hawaiian Marine Protected Area Network

D. Grantee: Hawaii Coral Reef Initiative Research Program

E. Award Period: From 10/01/03 To 12/31/04

F. Period Covered by this Report: From 10/01/03 To 6/31/04

G. Summary of Progress and Expenditures to Date:

1. Work Accomplishments:

a. Summary of progress:

In fall 2003 we selected our focal species: yellow tang, (*Zebrasoma flavescens*), kole (*Ctenochaetus strigosus*), and brown surgeonfish (*Acanthurus nigrofuscus*).

This process included initial feasibility checks for annual rings in otoliths & testing our marking technique on the 3 species. Preliminary sectioning of otoliths from all three focal species suggests that ageing by quantifying annual rings is possible. The elastomer marking technique was successful on the yellow tang. In spring we began a study of elastomer mark retention in fish held in pens at Coconut Island, Oahu. So far most marks have lasted at least 60 days and are still visible. At the same time, we have begun the process of validating annual rings in otoliths with these same fish by marking with oxy-tetracycline.

From November 03 to the present we have been making bi-monthly collections of each of the focal species from specific sites in West Hawaii. From these fish we removed samples of otoliths, gonads, and guts and determined their sex.

Preliminary trends from gonad collections indicate a size difference in the sexes during this period for both yellow tang and kole. Changes in gonad size through this time suggest a seasonal pattern consistent with the current ideas about their reproductive timing.

On 15 May we began our summer field season, with staff in full-time residence in Kona, Hawaii. This coverage coincides with the major settlement period of postlarvae of the focal species. We have begun monitoring these settlers on a daily or near-daily basis. We have also performed weekly surveys of transects through different habitats and

depths in order to associate the various species and sizes/ages of focal fish with the various settlement habitats. We have begun to monitor individual yellow tang settlers for interactions with other species for 10-min periods to better understand whether interactions with other species could be affecting the population dynamics of our focal species.

b. Planned work:

Between now and the end of the year we plan to continue settlement monitoring and weekly surveys, and continue with the bi-monthly fish collections. We will also be marking and following individual yellow tang to quantify movement and mortality. Also, after further training at James Cook University in October, we will continue to process collected otoliths for ageing purposes.

2. Applications

- a. Presentation to West Hawaii Fisheries Council in February 04. Public presentations at the quarterly meetings of the Hawaii Coral Reef Initiative Research Program.
- b. Too early to make recommendations for management.
- c. Data to date: size, weight, sex for almost 200 of each of the focal species collected. Beginning 1 Jun 04, weekly survey data of species, numbers and sizes of focal fishes on set transects and daily (or near-daily) data from surveys of newly settled fish at 2 locations in West Hawaii.
- d. Partnerships: Extensive collaboration with Division of Aquatic Resources staff in West Hawaii. Collaboration to provide tissue samples of yellow tang to Dr. Noakes (Washington State University) for DNA analysis. Gut samples to Ryan Okano (UH Manoa, Dept. of Botany) for his diet study of yellow tang.

3. Expenditures

- a. Expenditures scheduled for the period of this report were about 2/3 of the total funds budgeted, and were primarily for labor costs of research assistants plus some logistic support.
- b. Actual expenditures closely match what was scheduled in amount and category.
- c. No special problems or discrepancies have been encountered with expenditures.

Prepared By: _____

Principal Investigator

Date