

CROSS-REEF TRANSPORT OF INVASIVE MACROALGAE ON THE
NORTHERN REEF FLAT OF COCONUT ISLAND IN KANE'OHE BAY, HAWAII

A THESIS SUBMITTED TO
THE GLOBAL ENVIRONMENTAL SCIENCE
UNDERGRADUATE DIVISION IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF

BACHELOR OF SCIENCE

IN

GLOBAL ENVIRONMENTAL SCIENCE

DECEMBER 2007

By
Joseph J. Weston Jr.

Thesis Advisor

John Stimson

ABSTRACT

Cross-reef transport of invasive macroscopic algae may be significant to algal accumulation at downstream sites. On the northern reef flat of Coconut Island in Kane'ohe Bay, Hawai'i there is a substantial population of *Gracilaria salicornia* and *Acanthophora spicifera*, with algal accumulation on the leeward reef slope. The goal of this project was to study possible modes of algal transport across the reef flat. Algae were measured at several sites along the leeward edge of the reef flat and compared to weather data from Coconut Island. There is no linear correlation between algal biomass and wind speed, and seasonality appears to be the best predictor for algal transport. However, multiple regression analysis shows that maximum wind speed and water temperature are significant ($P < 0.05$). This suggests that algal accumulation is dependent on productivity and wind events.