THE PRODUCTION OF MICROCOPEPODS IN

KANEOHE BAY, OAHU, HAWAII

A THESIS SUBMITTED TO THE GRADUATE DIVISION OF THE
UNIVERSITY OF HAWAII IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE

IN OCEANOGRAPHY

MAY 1973

By

Edwin F. Bartholomew

Thesis Committee:

John Caperon, Chairman
Thomas A. Clarke
Thomas K. Newbury

ABSTRACT

Paracalanus sp. nov., *Oithona nana* Giesbrecht and *O. simplex* Farran were found to be the most abundant microcopepods during the year in south Kaneohe Bay. Total microcopepod densities ranged from 220,000/m^3 during the warmer months to 16,000/m^3 during the colder months. The populations of these three species tended to fluctuate concurrently even while showing wide temporal variability over the study period. Production of *Paracalanus* was measured as the rate that biomass is added to the population (growth) in terms of dry weight, carbon and nitrogen. *Oithona* species production was determined by multiplying its estimated biomass by the respective *Paracalanus* production/biomass (P/B) ratio.

Growth of *Paracalanus* from nauplius stage I to adult required 7 days in containers of Kaneohe Bay water incubated *in situ*. This growth rate gives a daily summer production of all three species as 181.83 mg dry weight/m^2, 61.27 mg C/m^2 and 14.63 mg N/m^2. *Paracalanus* production was 64, 65, and 69% of these values, respectively. These production estimates are somewhat conservative since only the upper 80% of the 14 m water column was sampled.

About half of the planktonic primary production in south Kaneohe Bay was consumed by *Paracalanus*, *O. nana* and *O. simplex* during the summer months.