

PRIMARY PRODUCTION IN A SMALL

TROPICAL ESTUARY

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

SEPTEMBER 1972

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ABSTRACT

The primary production of a small tropical estuary, the Ala Wai Canal, located in the City of Honolulu, State of Hawaii was studied over a 13-month period. Quantities measured included production as determined by the carbon-14 method, pigment concentrations, weights of suspended particulate material, particulate carbon and nitrogen, light attenuation and nitrate and phosphate concentrations.

Primary production averaged $5.26 \text{ g C/m}^2\text{-day}$. Chlorophyll a concentrations averaged 9 to 48 mg/m^3 . Both production and biomass increased with distance into the Canal. Production was greatest during April through July while productivity indices were highest during December through March. Nutrients were found to be non-limiting. Primary production was light limited due to large concentrations of suspended particulate matter. Average productivity indices ranged from 5.8 to 17; values were enhanced in an area having a high turnover rate.