

POPULATION BIOLOGY OF THE LITTLE-NECK CLAM,
TAPES PHILIPPINARUM, IN KANEOHE BAY, HAWAII

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INTRODUCTION

The stock of Japanese littleneck clam, Tapes philippinarum Adams and Reeve 1867, in Oahu started with the introduction of ten barrels of the clam in 1920. The original stock was planted in Kalihi Basin, Pearl Harbor and Kaneohe Bay. The clams grew exceptionally well in all localities except Kaneohe Bay (Edmondson and Wilson, 1939).

The clams have since disappeared from both Pearl Harbor and Kalihi Basin but have become established in Kaneohe Bay where an extensive population was officially discovered by the Hawaii State Fish and Game Division in 1964. The distribution was patchy but occurred on all mudflats along the southeastern coast of Kaneohe Bay. Higgins (1969) reported seven beds during the 1967-68 period; now only one bed can be considered to have a thriving population. Efforts were made by the State Fish and Game Division to establish new beds by transplanting seed clams to various parts of the island but such efforts have not been successful, except in the Hawaii Kai area where a small population is reported to exist.

Heavy harvesting in Kaneohe Bay during a succession of open seasons from 1965 to 1968 probably triggered the littleneck clam's decline. The State Fish and Game Division reported 10,000 clam diggers during the 1965 season and

41,000 in 1967. The only remaining bed has been officially closed to harvest since 1969. This remaining bed was studied with the following objectives:

1. To determine whether the bed is declining or recovering;
2. To assess the amount of predation by crabs and its role as a potential regulatory factor.

THE STUDY AREA

Substrate

The study area is a 1.35-hectare mudflat located off Kaneohe Beach Park at the mouth of Kaneohe Stream (Figure 1). This bed differs from the depleted beds by having a terrigenous rather than bioclastic substrate.

Substrate samples of 1,000 cc taken to a depth of 10 cm across transect X (Figure 2) at seven different levels were wet-sieved, dried and analyzed for particle size distribution. Shells were removed by hand from each size component and pooled together. The result is shown on Table 1. Further discussion of the substrate characteristics of the whole bed is included in the section on total population survey.