FEEDING CHRONOLOGY AND DAILY RATION OF FIRST-FEEDING LARVAL HAWAIIAN ANCHOVY, *STOLEPHORUS PURPUREUS*

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ABSTRACT

Feeding chronologies of three size classes of larval *Stolephorus purpureus*, a tropical engraulid, from two dates were determined by enumerating the digestive tract contents of specimens taken in hourly plankton tows over periods of 24 hours. The larvae fed only during the daylight hours on both dates. There were no unequivocal trends in digestive tract fullness during the daytime on either date; aside from very rapid increases and decreases at sunrise and sunset, respectively, there was no correlation between digestive tract fullness and incident light measurements. The rapid decline in digestive tract fullness at sunset agreed with laboratory observations that food items passed through the digestive tracts of reared larvae in less than one hour. The length of time required to pass a food item through the digestive tract (transit time) appeared inversely related to feeding activity. Comparison with other studies suggests that rapid transit of food items may be typical of clupeoid larvae inhabiting warm waters.

There was greater apparent feeding success among the smallest field-caught larvae on the date with the greater (ca. 3 times) mean food concentration. Changes in mean food concentration of this relatively small magnitude at the levels present during the sampling may be important in larval survival of *S. purpureus*.

Daily rations, based on calculated volumes of the food items consumed, did not increase appreciably with larval size, and comparisons of assumed caloric intake with available estimates of catabolism indicate energetic deficits for all but the smallest size class of

larvae examined. The growth rate of the average 2.9 mm larva, given calculated daily rations, would have been less than 0.1 mm per day on both dates. Growth of average surviving *S. purpureus* larvae may be less than 0.2 mm day^{-1} during the first few days after initiation of feeding.