

SOME ASPECTS OF THE FEEDING BEHAVIOR OF
THE CTENOPHORE PLEUROBRACHIA PILEUS

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By

Michael Deen Rowe

Thesis Committee:

Garth I. Murphy, Chairman
John Caperon
Thomas Clarke

ABSTRACT

Oikopleura longicauda and barnacle nauplii seem to be the major food of Pleurobrachia pileus in Kaneohe Bay, Oahu. Both of these prey animals have contagious distributions in the guts of the ctenophores indicating the presence of nonrandom processes. Three such processes are observed: (1) differences in vertical movements between predator and prey; (2) clumping of predator and prey; and (3) nonrandom feeding by the ctenophores.

Pleurobrachia regulates its feeding rate by changing the average size of its tentacles. Four types of feeding result from different concentrations of Artemia salina nauplii.

In high concentrations of nauplii the ctenophore feeds at a constant, maximum rate which is a linear function of the diameter of the animal. In intermediate concentrations, tentacle size remains constant and a constant volume of water is cleared of prey per unit time. The instantaneous volume cleared of prey per unit time is a linear function of ctenophore diameter to the fourth power. In low concentrations of nauplii, tentacle size is regulated so that a constant rate of feeding is maintained until the tentacles reach their maximum size. It is suggested that this rate of feeding is close to that to which the animals are adapted under natural conditions