

## ABSTRACT

STUDIES ON SETTLEMENT AND GROWTH OF POSTLARVAL SPINY  
LOBSTERS (*PANULIRUS ARGUS*) FROM BOWDEN HARBOUR, JAMAICA

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Lobsters form the basis for a small but increasingly important sector of Jamaican fisheries. To date, most local research has centred on assessment of adult stocks. However, data on the dynamics of early postlarvae are yet to be gathered. This lack is especially significant in light of the fact that basic settlement data has been established for many territories in the Caribbean region and has proven useful.

The following thesis provides a foundation for the recording of such data, and presents studies of postlarval settlement in a small bay. The settlement of postlarval spiny lobsters (*Panulirus argus*) was studied in Bowden Harbour Bay, Jamaica from March 1989 to July 1990. The study employed a modified version of the Witham-Style collector, which was developed to suit the research needs and resource availability of the study area.

Over the 72 week sampling period, 1529 postlarvae were removed from collectors in Bowden. Approximately 55% of these were collected at new moon, and seasonal peaks were observed in June 1989, September to December, 1989, and February to March, 1990. Spatially, there was a high degree of variability between the thirteen sites chosen. It was difficult to establish a relationship between settlement and a number of physical factors considered, including surface current.

A number of postlarvae were removed from collectors and used in laboratory experiments on growth and survival. Four natural diets (oyster, mysid, sea urchin gonads and crab) were tested on groups and individual postlarvae. Oyster fed lobsters were found to have the best growth and survival rates. The growth rates of oyster fed lobsters were increased when held in groups but the survival was lower than for animals fed the same diet but kept individually. No significant difference was found in growth rates between the sexes.

The four diets were analyzed for chemical components, in particular, fatty acid content. Oyster was found to have the highest n-3 fatty acid content. Mysid was also fairly high. Crab, the worst performing diet, had lower than recommended levels of n-3 fatty acid.

All the preceding results were analyzed in light of the increasing need to manage lobster fisheries and to keep abreast of the renewed interest in spiny lobster culture worldwide.