

The Duration of the Inshore Postlarval Stage of Spiny Lobster *Panulirus argus*: Implications to Recruitment

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ABSTRACT

Pueruli (postlarvae) of Caribbean spiny lobster (*Panulirus argus*) captured as they enter Florida Bay metamorphose after about eight days during summer (28°C). Metamorphosis is not hastened by the physical presence of chemical exudate of red algae (*Laurencia* spp.) a preferred settlement substrate, nor by seagrass or artificial materials. In summer, pigmentation of the body begins three to six days after capture, suggesting that settlement may occur after only a few nights of transport in the bay. Benthic collectors set from 1 to 10 km from inlets confirm that substantial settlement occurs soon after postlarvae arrive inshore during June-August. In contrast, postlarvae arriving in winter can potentially reach much farther into the bay. Such a determinate, seasonally varying postlarval period has important ramifications for recruitment.

Hypothetically, back bay juveniles may derive largely from winter arrivals while summer arrivals contribute mainly to juveniles near the Keys. Winter postlarvae and newly settled juveniles in shallow, backbay habitats may be subject to high mortality from extreme cold spells. In addition, some may be carried into more estuarine areas or other poor postsettlement habitat. Summer postlarvae may be physiologically forced to settle on inappropriate substrate in some areas (dominated by particulate sediment, sparse seagrass or heavily silted algae). Accurate predictions of fishing stock from postlarval collections will require understanding the relationships among seasonal patterns of settlement, distribution of early juvenile habitat and sources of mortality affecting the settlement period.

KEY WORDS: postlarva, settlement, dispersal, recruitment, mortality, seasonality.