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INTRODUCTION

Descriptions of complete larval development based on laboratory rearing are available for only two species of burrowing sand crabs within the family Albuneidae, *Blepharipoda doelloi* Schmitt (Boschi, Goldstein & Scelzo, 1968) and *B. occidentalis* Randall (Knight, 1968). Some of the larval stages of a few additional members of the family, *Blepharipoda fauriana* Bouvier and *B. liberata* Shen (Kurata, 1965), *B. spinimana* (Philippi) (Knight, 1968) and *Albunea symmista* (Linnaeus) (Menon, 1937), have been described from the plankton and the first zoeas of *B. occidentalis* and *Lepidopa myops* Stimpson were described from laboratory hatchings by Johnson & Lewis (1942).

During the present study, larvae of *Lepidopa myops* were hatched and reared in the laboratory, and a survey of larvae of the species in the plankton of coastal waters of southern California and Baja California was undertaken to compare the developmental stages in nature with those observed in the laboratory. *L. myops* is reported to be found from San Pedro, California to Cape San Lucas, Baja California, and to be the only species of the genus within this range (Schmitt, 1921; Gordon, 1938). The results of the study of *Lepidopa* larvae in the plankton, however, were not consistent with the literature, either with respect to the range of *Lepidopa myops* or the number of species of the genus to be found within this area.

The purpose of this paper is: (1) to complete the description of the larval development of *Lepidopa myops* based on larvae reared from egg to first crab in the laboratory and on larvae from the plankton; (2) to report and differentiate the larval stages presumed to be those of another species of the genus, referred to herein as *Lepidopa* species B, which were found together with larvae of *L. myops* in the plankton; and (3) to note the observed latitudinal range of the larvae and its relation to the status of *L. myops*. 
METHODS

Three ovigerous females of *Lepidopa myops* were collected during a -1.6 tide on 24 February 1967, just north of the pier on the beach below Scripps Institution of Oceanography, La Jolla, California. They were found close to the water line about 10 to 15 cm below the surface of the sand. Each crab was placed in a 3-gallon aquarium containing sand which sloped to a depth of approximately 7 to 8 cm at one end, and the aquaria were kept under slowly running sea water until hatching of the eggs was imminent. During the last weeks of incubation the water was changed daily. The sand was changed weekly and the eggs were sampled during transfer of the crabs to check their degree of development. The sand change was discontinued for the female designated ?3 on 18 March 1967 because large numbers of eggs were dropped when she was disturbed. The crabs were offered *Artemia*, both nauplii and adults, and chopped mussel but they were not observed feeding.

Two of the crabs, ?1 and ?3, survived to hatch their eggs; ?2 died four days after capture. The eggs of ?3 hatched in 73 days on 7 May 1967 and those of ?1 after 77 days on 11 May 1967. The hatch, which took place only at night and in the dark, was completed in one night by ?3 and in two nights by ?1. The females were never seen on the surface of the sand. The larvae of ?3 were not discovered until the morning after hatching had taken place but the newly-hatched larvae of ?1 were placed in culture immediately. The larvae of ?1 are referred to as brood 1 and those of ?3 as brood 3.

A strong light was used to concentrate the active photopositive first zoeas which were then transferred individually with a large-bore pipette to the compartmented plastic trays and plastic boxes used as culture containers. They were distributed as follows: brood 3, 53 larvae — 1/50 cc compartment; brood 1, 108 larvae — 1/50 cc compartment, 108 larvae, 2/50 cc compartment, and 25 larvae — 1/500 cc box. Additional larvae of brood 1 were maintained in mass cultures.

The zoeas were transferred every day and the megalopas every other day to clean containers of fresh sea water and all were fed newly-hatched *Artemia* nauplii. Twelve of 24 megalopas reared in 500 cc boxes were given sand in which to burrow and in these cultures the water was drained and replaced but the sand was not changed. The containers were placed on a water table in running sea water of about 2.5 cm depth, and during the culture period the temperature of the standing cultures increased from 15 to 19°C due to seasonal warming with daily fluctuations of about 1°C or less. The salinity ranged from 33 to 34°/oo. No attempt was made to control the illumination.

Molting and mortality in all cultures were recorded daily. Specimens of each developmental stage and the exuviae from all larvae cultured individually were preserved in 5% formaldehyde buffered with sodium borate. The larvae and exuviae were dissected in glycerine for study of appendages. Drawings were prepared with the Wild M5 and M20 microscopes with drawing attachments and an ocular micrometer was used for all measurements. The descriptions of appendages