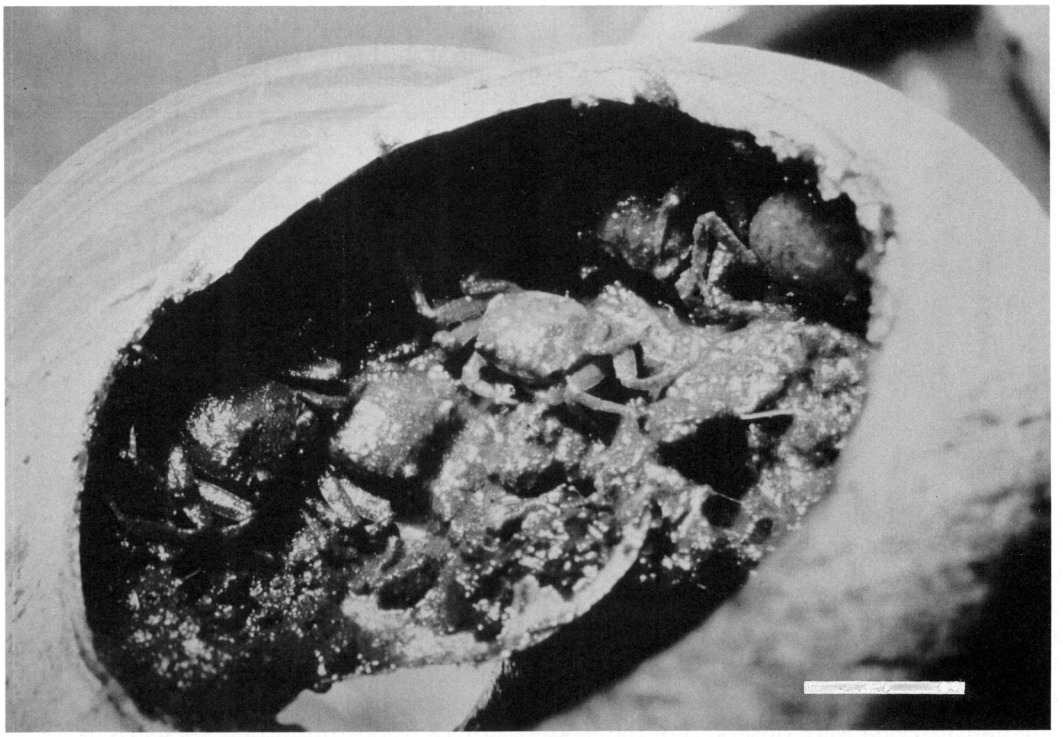

Fig. 12. Juveniles of *Sesarma jarvisi* in opened brood-shell. Scale bar = 10 mm.

very few shells in the crevice system held water after heavy rains, and this dried out after a few days. In 1991 and 1992, small juveniles were found in Windsor before the beginning of the rainy season; that is, larvae had hatched before this time, and in 1992 this period was particularly dry. No water was found in shells, except in brood shells with young smaller than 2-mm CW, which held relatively clear water. With increasing size of the juveniles the water in the brood-shells became a muddy blend of feces and food particles.

In the laboratory, females were observed carrying water into the shells. Shells contained an average of 2.1 ± 0.58 ml of water after three days, 3.8 ± 0.68 ml after six days, and 4.1 ± 0.58 ml after nine days. Water levels remained more or less constant for the next three days.

We observed that once crabs come in contact with water, they draw it up over their

Table 2. Shell-size pattern of species of *Pleurodonte* in different locations in Jamaica within the distribution area of *Sesarma jarvisi*. SW = shell diameter; SH = shell height; AW = aperture width; AH = aperture height; $\bar{x}$ ± SD in mm.

Location	Species	SW	SH	AW	AH	*N*
Windsor	*lucerna*	55.2 ± 4.2	24.1 ± 2.1	23.5 ± 2.1	13.0 ± 1.4	419
	bainbridgi	56.1 ± 4.8	27.2 ± 1.9	22.2 ± 1.7	15.6 ± 1.1	29
	jamaicensis	57.2 ± 2.7	35.3 ± 3.4	29.7 ± 2.3	28.6 ± 2.2	18
Mt. Diablo	*lucerna*	51.6 ± 3.9	21.8 ± 1.4	21.6 ± 2.4	11.0 ± 0.8	255
	bainbridgi	58.2 ± 2.6	27.6 ± 1.3	23.0 ± 1.1	14.9 ± 0.8	19
	jamaicensis	52.3 ± 1.1	31.2 ± 1.5	26.8 ± 0.9	25.7 ± 1.4	18
Heron's Hill	*lucerna*	40.3 ± 1.9	19.9 ± 1.2	16.6 ± 1.1	9.3 ± 0.6	244
	jamaicensis	45.0 ± 3.5	27.1 ± 2.6	23.0 ± 1.7	23.4 ± 2.9	127
	aspera	49.1 ± 1.8	27.3 ± 1.2	21.1 ± 1.0	17.4 ± 1.9	29
Dolphin Head	*lucerna*	44.6 ± 2.2	18.8 ± 1.2	17.9 ± 1.1	8.4 ± 0.7	208
	aspera	52.6 ± 2.2	27.3 ± 1.5	23.6 ± 1.1	19.5 ± 1.1	21

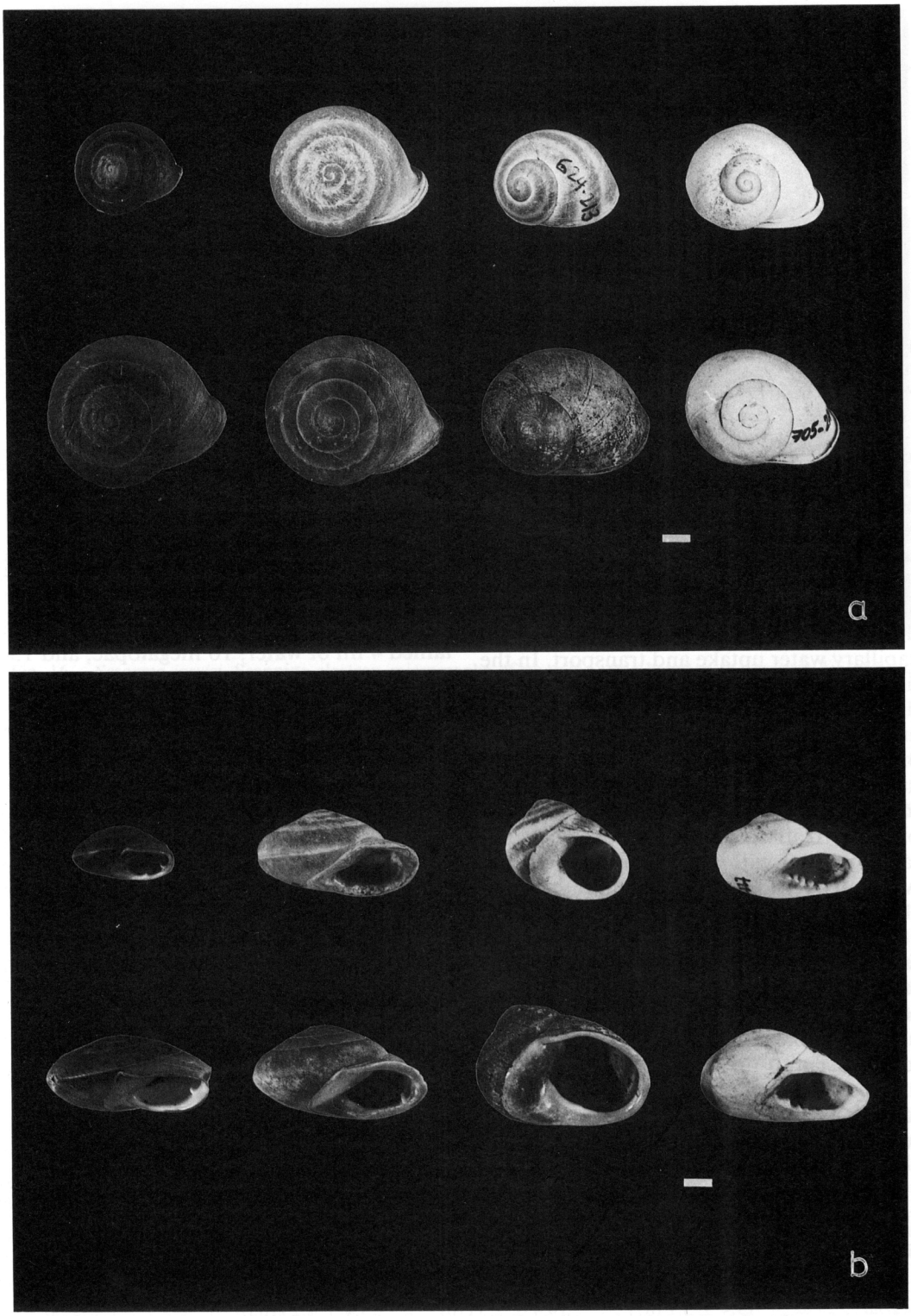

Fig. 13. Shells of the four common species of *Pleurodonte* in which broods of *Sesarma jarvisi* have been found. From left to right, *P. lucerna, P. bainbridgi, P. jamaicensis, P. aspera.* Upper row: shells from Heron's Hill; lower row: shells from Windsor. (a) Dorsal view, (b) frontal view; scale bar = 10 mm.

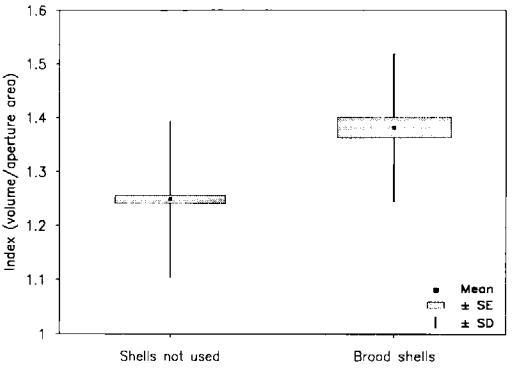

Fig. 14. Ratio of calculated volume to aperture area of shells without broods of *Sesarma jarvisi* and shells with broods ($\bar{x}$ ± SE ± SD).

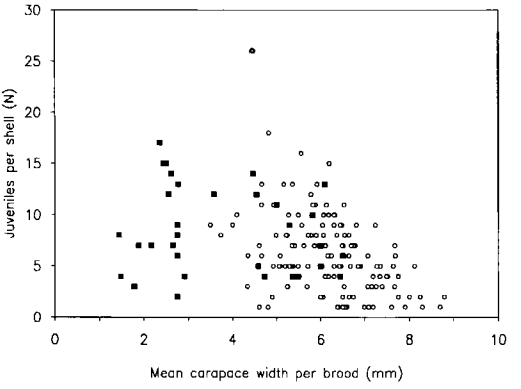

Fig. 15. Number and mean body size of juveniles of *Sesarma jarvisi* that coinhabited brood-shells. ○: only juveniles found in shell; ■: mother and juveniles in shell.

legs and lateral body surface, particularly at the ventral carapace ridge and at the bases of the pereiopods (see Greenaway, 1988, for review). In the scanning electron microscope, a dense field of plumose setae is visible at the lower edge of the branchiostegites and the bases of the coxae (Fig. 16). These densely feathered setae appear to facilitate capillary water uptake and transport. In the field, crabs may take up dew, which even during the dry periods accumulates on rocks and plants in the early morning hours but evaporates quickly after sunrise.

Transport of water was also observed in males and nonbreeding females in the laboratory: 10 adults emptied a Petri dish containing 40 ml within a day and spread the water all over the terrarium and into empty shells. In the field, however, only 33% (N = 15) of the males, but 60% (N = 77) of the females, were collected from shells. Of these females, 70% were brooding. Thus, adult *S. jarvisi* seem to use snail shells predominantly for breeding and only sporadically for shelter.

These observations strongly suggest that females carry water into shells before they release their larvae into this miniature aquarium. This conclusion is further supported by the observation of an ovigerous female at the DBML. The female was placed in a terrarium with a small dish of water and in the opposite corner a dry shell of *Pleurodonte*. Four days later, the shell contained 4 ml of water, 16 megalopae, and 13 exuviae.

Shells with broods up to 2-mm CW held small green and brown pieces of leaves and segments of small diplopods. Shells with larger juveniles up to 5-mm CW contained a mixture of water, decomposing leaf matter, and feces. In food preference experiments in the laboratory, crabs ate animal tissue within five min after the food items were placed in the terrarium, cleaning the millepede segments to the exoskeleton. On the following day, green leaf material was eaten, and dry leaves were accepted after three to four days, when they had become moist.

Breeding Season.—Ovigerous females were observed in Windsor in December, March, April, and July (N = 5), and broods with juveniles smaller than 3-mm CW (N = 21)

Table 3. Mean volumes of shells of species of *Pleurodonte* from different locations in Jamaica; $\bar{x}$ ± SD.

Species	Windsor $\bar{x}$ ± SD (N)	Mt. Diablo $\bar{x}$ ± SD (N)	Heron's Hill $\bar{x}$ ± SD (N)	Dolphin Head $\bar{x}$ ± SD (N)
lucerna	19.4 ± 3.1 (87)	14.4 ± 2.3 (76)	9.4 ± 1.2 (105)	9.9 ± 1.4 (128)
bainbridgi	27.1 ± 2.7 (9)	24.8 ± 4.6 (5)	22.0 (1)	—
jamaicensis	35.1 ± 4.1 (6)	26.7 ± 1.2 (6)	16.9 ± 3.7 (61)	20.0 (1)
aspera	—	20.5 (1)	17.1 ± 1.8 (9)	20.9 ± 2.6 (11)