NOTES ON THE INFESTATION OF KAPIS (PLACUNA PLACENTA LINNAEUS) WITH THE PEA CRAB PINNOTHERES SP.

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Kapis, popularly known as the "window-pane shell" or pearl oyster, is commercially propagated in the mud-choked tidal flats of Bacoor Bay at sitios Binakayan, Kawit, and Panamitan, Noveleta, Cavite Province. The practice has been carried on for a number of years as part time industry for the principal purpose of raising good quality shells for the window sash factories, and novelty shops in Manila and its environs. The meat content of the kapis, considered only as a by-product of the industry is used for table preparations or dishes such as guinamos, adobo, chowder, and omelet.

Window pane shells are sedentary bivalves, favorably raised in shallow estuarine lagoons, coves and small bays with water salinity ranging from 10 to 35 per mille and with a bottom of blue mud sediments.

Gathering kapis seeds from nearby spawning grounds and spreading them in shallow estuarine areas are the usual technique of cultivation. The bivalve feeds on microscopic plants and animals by opening its shell, sucking and expelling water with its siphon. The process also provides oxygen for absorption by its gills.

Kapis seeds planted in November or December have a size range of from 25 to 40 millimeters in diameter. The rate of growth is quite rapid. In six months they reach an average size of 144 millimeters in diameter, and are ready to be harvested. (1)

Window pane shells cultivated at Bacoor Bay are generally parasitized with minute pea crabs and nematodes in their mantles. Two or three pea crabs that may be found in one shell is a common observation of oyster farmers when they shuck the kapis. In sitio Binakayan, Kawit, Cavite, about 30 to 40 per cent of the cultivated pearl oysters are infested with pea crabs. There is, however, no evidence of mortality resulting from such parasitism but those heavily afflicted appeared to have lean meat content. The pea crab was formerly regarded as

commensally related to the oyster, neither inflicting harm to or being harmed by the host. It is now regarded as a parasite due to the damage inflicted on the gills and mantle of the mollusk. It is believed to feed upon the food streams which become tangled in its legs or trapped on the gills of the pearl oyster during the pumping activities of the latter. Very little is known of the life history of this parasitic crab. How it gets into the kapis, oysters, and other mollusks is explained as follows:

The crab spawns, the larvae hatching from eggs inside the oyster pass out into the water or zoea, turn into free swimming animals and form part of the zooplankton population, passing through several developmental stages common to all crabs. They develop into magalops or second larval stage and finally into the first crab stage. It is at this stage that the crab begins to settle inside the pearl oyster and is believed to feed on the food normally sucked in by the mollusk.(3)

Specimens used in the present study consisted of 130 females and 41 males. The males were very rarely found associated with the females in one window pane shell. There were considerably much fewer male than female crabs, the ratio being 1:3.

Table 1 shows measurement of the carapaces of the 12 females and 12 males collected from shucked kapis meat and indicates that the females are larger than the males. The males have an average length of 5.705 millimeters and an average width of 5.33 millimeters. The females have an average length of 7.660 and an average width of 6.125 millimeters.

TABLE 1.—*Measurements of the carapaces of male and female oyster crabs.*

Male specimens	Length	Width	Female specimens	Length of carapace	Width of carapace
	mm.	*mm.*		*mm.*	*mm.*
1	6.0	5.5	1	9.0	7.0
2	6.5	5.5	2	7.5	6.0
3	6.0	5.5	3	7.0	5.5
4	5.5	5.5	4	6.0	6.0
5	6.0	5.5	5	7.5	6.0
6	6.0	5.5	6	7.5	6.5
7	5.5	5.5	7	7.5	6.0
8	5.5	5.0	8	8.5	6.0
9	5.5	5.0	9	7.5	6.0
10	6.0	5.5	10	8.5	6.0
11	5.0	5.0	11	7.5	6.0
12	5.0	5.0	12	8.0	6.5
Average	5.705	5.33	----------	7.66	6.125

The male has a squarish to oblong carapace which is grayish when alive and brownish when preserved in alcohol. A gravid female crab has an oblong carapace, also gray when alive but translucent yellowish pink when preserved in alcohol.

In its parasitic stage in the pearl oyster the pea crab undergoes structural degeneration. The eyes become very small; the chitinous shell is soft and the limbs and claws are soft and weak. The crab has adjusted itself to a parasitic life, weak and inactive in the protective envelope in the kapis.

In spite of extensive parasitisms, there is no apparent danger in eating the cooked meat with pea crabs. In fact they can be prepared in stews with a delicate and sweetish flavor, but because of their small size and limited number there is not enough for extensive use.

This parasite crab in kapis is tentatively placed under the genus *Pinnotheres* pending the availability of complete key to identify it to the species.

Thirteen species of pea crabs so far described by Burger, Simpson, Semper and Nauck in 1880 and 1895 collected from mollusk and holothurians inhabiting brackish and marine waters of Bohol, Samar, Zamboanga Province, and Burias Island are as follows: *Pinnotheres affinis* Burger, *P. glaberrimus* Burger, *P. cardili* Burger, *P. coarctatus* Burger, *P. modiolicola* Burger, *P. palaensis* Burger, *P. latissimus* Burger, *P. latus* Burger, *P. parvulus* Simpson, *P. exiguus* Burger, *P. rotundatus* Burger, *P. holothuriae* Semper, and *P. flavus* Nauck.(2)

At Solomons, Maryland, Chesapeake Bay, the oyster crab *P. osterum* had been reported as parasitic in the mantle of oysters.(3)

LITERATURE CITED

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3. Anonymous. Oyster crabs in Chesapeake Bay. Maryland Tidewater News, November, 1954.

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