

Percey Sladen Trust Expedition to the Indian Ocean (Tesch, 1910) could collect only five specimens. However, the Siboga Expedition (Tesch, 1906) and the Dana Expedition with the assistance of Danish merchant vessels (Tesch, 1949) were able to obtain them in fairly good numbers.

A study of the distribution of the genus *Cardiapoda* in the Indian Ocean shows that the species *C. richardi* is reported only rarely, whereas the species *C. placenta* has been collected a few times from the Indo-Malayan waters, and from the West Coast of Sumatra to the waters neighbouring the Amirante group of islands and Madagascar. The present record extends the distribution of *C. placenta* to northern waters and to the Arabian Sea.

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ON THE ASSOCIATION BETWEEN THE FISH, *CARANX MALABARICUS* CUV. & VAL. AND THE SIPHONOPHORE, *PORPITA PACIFICA* LESSON

Several instances of association between young fish and jellyfish are found in the literature. In India, Panikkar and Prasad (1952) reported on an association between the young of *Caranx kalla* Cuv. & Val. and *Rhopilema hispidum* Maas. Jones (1960) reported about the young *Seleroides leptolepis* (Cuv. & Val.) forming a vanguard with *Acromitus flagellatus* (Stiasny). The present instance, however, depicts the association of young caranx with a siphonophore.

The specimens were collected about twenty-five miles off Karwar while on board the Research Vessel *VARUNA* on 30-3-1962, at about 2.30 p.m. Many round, disc-like, biscuit coloured organisms were found floating near the vessel and they were recognized as siphonophores. A closer observation revealed that each of the siphonophores had a small fish moving with it (Fig. I). Instances where more than one fish associated with a siphonophore or *vice versa* were not found. Two siphonophores which came very close to the vessel were taken on board. They were

identified as *Porpita pacifica* Lesson and were 31.0 and 27.0 mm. in diameter including the soft marginal rim. Unfortunately the fish of one siphonophore managed to escape. The other which was caught, measured 27.0 mm. in length. It was light yellow in colour with black first dorsal and ventral fins and black vertical bands. This was found to be the young one of *Caranx malabaricus* Cuv. & Val.

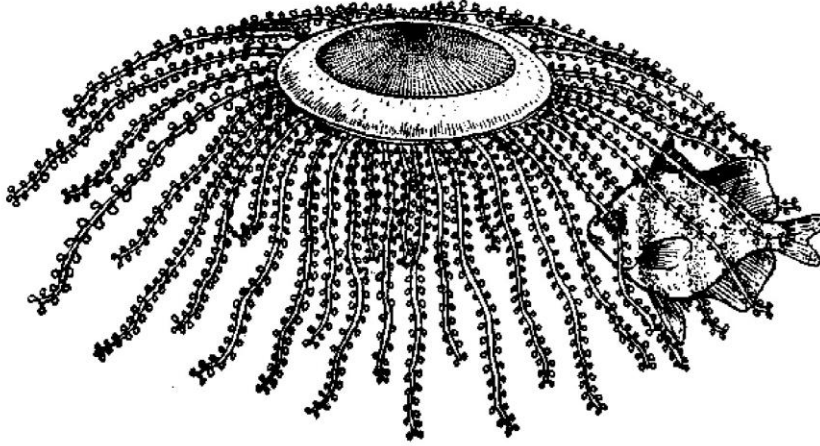


FIG. 1. A diagrammatic representation of the association between *Porpita pacifica* and *Caranx malabaricus*.

The siphonophores (one with the young fish and the other without the fish) were kept alive in separate jars, for observation. The fish was found taking shelter underneath the siphonophore often gently brushing the tentacles and coming to no harm from it. The fish was also observed swimming round the siphonophore and when alarmed darting underneath for shelter. The fish was then removed from its partner and kept alone in a jar. It was completely restless, violently dashing against the sides of the jar in its frantic search for the siphonophore. This continued even when the fish was kept free from outside disturbances. But when released to the jar in which the siphonophore was floating, it rushed and found refuge under the float. The two siphonophores were then kept together in the same jar to see whether the fish will choose the other one as its associate. Surprisingly enough, the fish showed strong affinity to its existing ally and refused to take refuge under the other even when forced away from it.

The significance of this association seems to be protection to the fish. But how the siphonophore is benefited by it has to be found.

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