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**ON THE SCARLET SHRIMP *Plesiopenaeus edwardsianus* (JOHNSON)
CAUGHT FROM THE CONTINENTAL SLOPE OFF TRIVANDRUM,
SOUTHWEST COAST OF INDIA - AN INDICATION OF A
POTENTIAL DEEP-SEA PRAWN RESOURCE**

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ABSTRACT

The Scarlet shrimp *Plesiopenaeus edwardsianus* (Johnson) is one of the larger species of the family Aristeidae known to be widely distributed in the continental slopes of the tropical and subtropical belt of the Atlantic and also reported from the Indo-West Pacific oceans. It contributes to commercial fisheries in some areas along the West African coast. The present communication deals with the occurrence of this species in Bobbin Trawl operations off Trivandrum at 876-976 m depth in the latter half of January, 1985. This is the first authentic report of the species from the Indian seas. While the catch in terms of quantity may not be significant, it is felt that it is indicative of the presence of a larger population, which might sustain a commercial fishery of this jumbo sized prawn. Taxonomy, distribution and available information on the existing commercial fisheries of the species are given.

INTRODUCTION

From Indian waters little is known of the fishery potential of continental slope beyond 500 m depth. During one of the deep-sea trawling operations of FORV *Sagar Sampada* a few specimens of prawns, which were unusually large in size, were taken from about 900 m depth off Trivandrum on the southwest coast. The specimens were subsequently identified as the scarlet shrimp *Plesiopenaeus edwardsianus* (Johnson) belonging to the family Aristeidae (Penaeidea). As this is the first authentic record of the species from Indian seas the same is reported here, indicating its fishery potentiality.

SYSTEMATICS

Prawns of the family Aristeidae are all deep-sea forms, which generally occupy the continental slope upto a depth of about 5,400 m. The following characters distinguish the family : Rostrum very long in females and young males but becoming considerably short in adult males, with three or more dorsal teeth; carapace without postorbital spine; eye stalks with a tubercle on inner border; upper antennular flagella very short and flattened almost throughout their length; endopods of second pair of pleopods in males bearing appendix masculina and appendix interna; third and fourth pairs of pleopods biramous; telson armed with 1 or 4

movable spines on each side; two well developed arthrobranchs on penultimate thoracic segment.

In the western Indian Ocean this family is represented by seven genera including *Plesiopenaeus* (Miquel, 1984). Of this, species of the genera *Aristeus* and *Aristaeomorpha* contribute to the deep-sea prawn catches off the southwest coast of India (Suseelan, 1985, 1988).

Plesiopenaeus edwardsianus (Johnson) (Fig. 1)

Penaeus edwardsianus Johnson, 1967, p. 897.

Aristeus edwardsianus Miers, 1878, p. 308, pl. 17, fig. 3.

Plesiopenaeus edwardsianus, Faxon, 1895, p. 199;

Alcock, 1901, p. 36; Barnard, 1950, p. 624; Crosnier and Forest, 1973, p. 292, fig. 98 (with synonymy); Holthuis, 1980, p. 11; Dore and Frimodt, 1987, p. 182.

The species was originally described by Johnson (1867) and subsequently reported on by several authors like Crosnier and Forest (1973), Holthuis (1980), Dore and Frimodt, (1987) to mention a few recent ones.

MATERIAL

Three female specimens ranging in total length from 207 to 245 mm (rostrum partly broken in all specimens) and carapace length from 79 to 96 mm obtained in Bobbin Trawl at 876-976 m depth



Fig. 1. *Plesiopeanaeus edwardsianus* (Johnson), female.

off Trivandrum (Lat. 8° 28' 3" N and Long. 76° 14' 7" E), 24th January, 1985 at 1225 hrs.

DESCRIPTION

Integument glabrous; rostrum long, about 0.6 times as long as carapace, armed dorsally with three teeth, middle one placed directly above orbital margin; hepatic and postantennal spines absent, antennal spine small, pterygostomial spine well developed; cervical groove moderately distinct; postrostral carina sharp, extending to end of gastric region and thereafter becoming obtuse; a strong and sharp longitudinal ridge from orbit to cervical groove, and other ridges and longitudinal grooves distinct; third to sixth abdominal terga strongly carinated, each carina ending in a spine posteriorly; posteroventral corners of pleurae of 3rd to 5th segments rounded bearing a small spine; telson acute, shorter than inner rami of uropod, dorsally flattened, feebly channelled, sides armed with 3 or 4 pairs of movable spinules (not clearly visible as they were all broken); third thoracic sternite unarmed, fourth one carrying a triangular tooth with anteriorly directed sharp point, fifth sternite with an ovoid tubercle or shield-shaped plate inclined anteroventrally and covered with stiff setae (the above two structures represent parts of thelycum); third maxilliped stouter than all pereopods and much longer than first and second pereopods, third pereopod largest carrying a podobranch, fourth pereopod with a large epipod; exopods of all pleopods very long.

COLOUR

All the three specimens in fresh condition were uniformly pink in colour.

DISTRIBUTION AND REMARKS

The general distribution of *P. edwardsianus* as given in the FAO Species Catalogue on Shrimps and Prawns of the World (Holthuis, 1980) is as follows: "Eastern Atlantic: Portugal to South Africa, not in the Mediterranean; Western Atlantic: Grand Bank (43° 42' S) to the Gulf of Mexico, Caribbean Sea and north coast of South America. Also reported from the Indo-West Pacific region, but it is not certain whether this is really the same species".

Alcock (1910) in his descriptive catalogue of the Indian deep-sea crustacea collected by "Investigator" reported on *Aristaeus* (*Plesiopeanaeus*) *edwardsianus* and gave a description of the species. He mentioned the species having been recorded from the Arabian Sea near the Malabar coast (430 fathom), Gulf of Mannar (507 f and 457-589 f) Bay of Bengal (475 f) and Andaman Sea (188-220 f and 271 f). However, Holthuis (1980) doubted the species identity of Alcock (1910).

Dore and Frimodt (1987) in their illustrated guide to shrimps of the world, state that the scarlet shrimp is found in the eastern Atlantic from Portugal to South Africa, western Atlantic from the Grand Banks to the Gulf of Mexico and the north coast of South America, east coast of Australia, New South Wales, south coast of Africa, Madagascar and from the Arabian Gulf (Fig. 2). According to them all reported quantities have been very small and caught from muddy bottoms ranging in depth from 275 to 1,850 m and most are found between 400-900 m. They report the colour as bright red and like many other deep water shrimps the species has rather soft sweet flesh. Crosnier and Forest (1973) while giving distribution of the species also include the Andaman Sea and Sumatra. Graham and Gorman (1985) mention about catch of several specimens of the 'Scarlet prawn' *Plesiopeanaeus edwardsianus* from 550-900 m depth, especially between lat. 27° -28° and 33°-34° off New South Wales in Australia.

The maximum total length of the species, according to Holthuis (1980), is 193 mm for male and 334 mm for female. It is also mentioned that the species is fished commercially by Spanish trawlers, off Senegal, Guinea, Congo and Angola (4° to 10° S). Crosnier and Jouannic (1973) reported on a shrimp assigned to the species as a potential resource on the continental shelf of Madagascar. The commercial catches from West Africa are reportedly frozen whole for sale mainly in Spain and France.

During the present trawling operations of

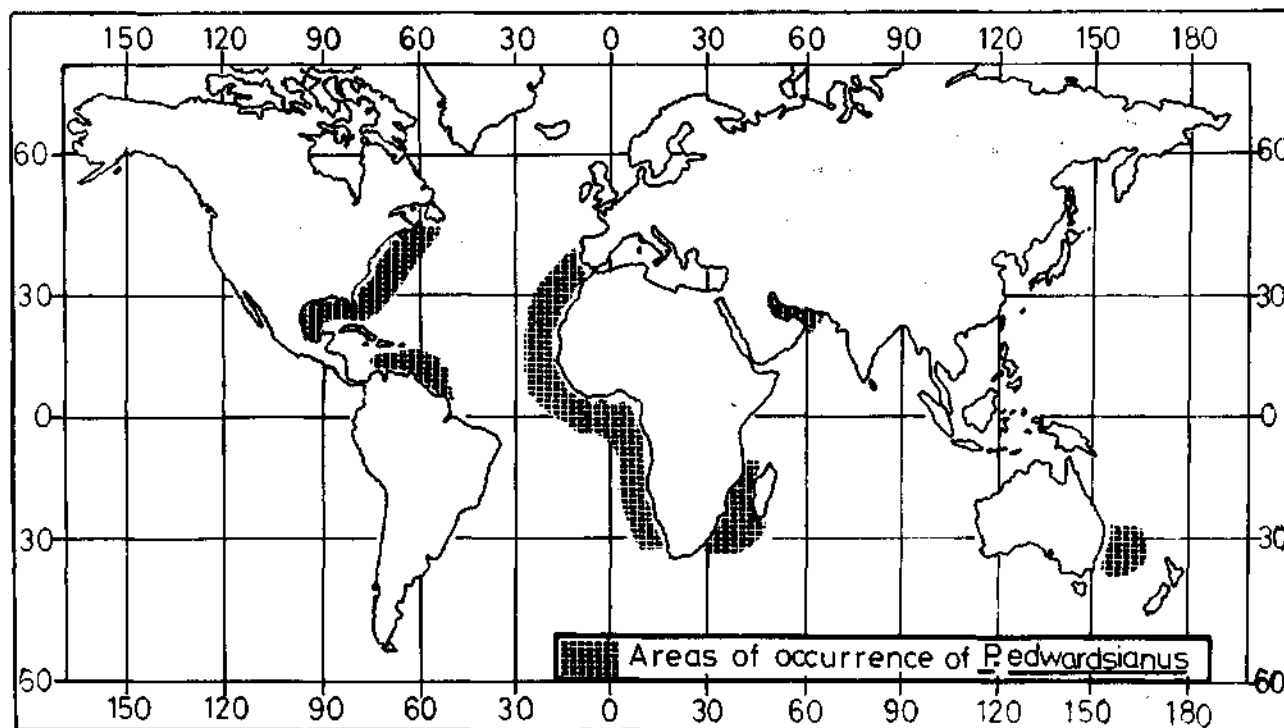


Fig. 2. Distribution of the scarlet shrimp *P. edwardsianus* - after Dore and Frimodt (1987).

Sagar Sampada, the one hour haul at 876-976 m depth yielded a total catch of only 8.6 kg of fish and prawns including the 3 specimens of *P. edwardsianus* and 5 specimens of *Acanthoephyra* sp. All the three specimens of *P. edwardsianus* were females with fully mature ovary, which was reddish pink in colour. Alcock (1901) stated that the male of the species he assigned as *P. edwardsianus* was of the same size as the female, the rostrum being smaller in the females.

The fish components consisted of 4 chimaeras, 1 skate, 9 rat tails (*Macruridae*), one squaloid shark and few small flat fishes, medusae and a starfish. The present observations, while confirming the occurrence of the pink shrimp *P. edwardsianus* in the Indian waters indicate the possibility of its wider occurrence in the area. It may be recalled here that the observations of a few numbers of the deep-sea lobster *Puerulus sewelli* later led to the discovery of trawling grounds for the species now being exploited commercially. In the context of commercial exploitation of the scarlet shrimp in West African waters it is not unlikely that this species can form a potential resource for commercial exploitation in the Indian Exclusive Economic Zone.

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