

A NEW SPECIES OF THE GENUS *OPISTHOTEUTHIS* VERRILL, 1883
(CEPHALOPODA : MOLLUSCA) FROM THE
SOUTHWEST COAST OF INDIA

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ABSTRACT

Three specimens of a new cephalopod of the genus *Opisthoteuthis* were collected off Alleppey, southwest coast of India during the exploratory survey of R.V. VARUNA for demersal fishery resources in 1973. A descriptive account of this new species and a comparative account of 8 species including *O. philippi* are given in this paper.

INTRODUCTION

SO FAR only two species of *Opisthoteuthis*, namely *O. extensa* Thiele 1915, obtained from 'Valdivia' Station No. 189, off west coast of Sumatra, latitude 0°57'S and longitude 99°51'E, in 768 metres and *O. medusoides* Thiele 1915, obtained from 'Valdivia' Station No. 243, off Dar-es-Salaam, East Africa, latitude 06°39'S and longitude 39°50'E, in 400 metres have been described from the Indian Ocean.

Recently R.V. VARUNA of the Integrated Fisheries Project, during her exploratory survey for demersal fishery resources, hauled on board three specimens of *Opisthoteuthis*. The detailed study on the external as well as the internal morphology revealed that these specimens are not belonging to any of the forms described earlier.

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ORDER : OCTOPODA

SUBORDER : CIRROMORPHA

Family : *Opisthoteuthidae*

Opisthoteuthis philippi sp. nov.

Material : One male, dorsal mantle length 140 mm, VARUNA St. 238, off Alleppey, latitude 09°32'N and longitude 75°45'E, in 275 metres, 4-1-1973, Try net. 1 specimen, dorsal mantle length 115 mm, VARUNA St. 274, off Alleppey, latitude 09°30'N and longitude 75°43'E in 320 metres, 8-3-1973, Try net. 1 specimen, dorsal mantle length 45 mm, VARUNA St. 275, off Alleppey, latitude 09°30'N and longitude 75°41'E, in 365 metres, 8-3-1973, Try net. All the specimens were preserved in 4% formalin and are in good condition. All measurements in mm are given in Table 1.

Description : Body very flabby, completely fused with web, posterior end rounded. Body generally gives a discoidal look but mantle and head slightly raised above this disc. Head about as wide as body. Eye bulbs somewhat conspicuous with small openings. Mantle aperture narrower and almost confined to the base of the funnel. Funnel rather slender and elongate with small external orifice. Funnel wall lined with a thin smooth epithelium. Funnel organ simple and with a single inverted V-shaped pad having broad limbs, wide and blunt extremities and with a wide angle (Fig. 1a).

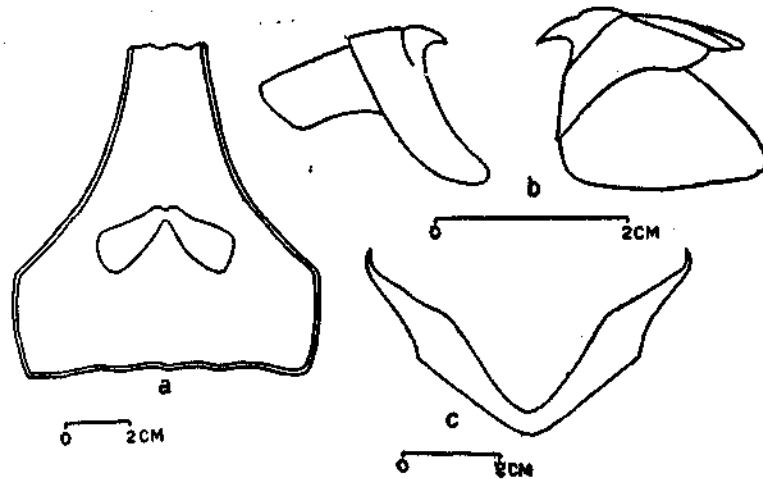


Fig. 1. *Opisthoteuthis phillipi* sp. nov. : a. funnel organ, b. mandibles and c. dorsal cartilage.

Fins smaller in size, almost wide as it is long and attached almost to the posterior end of body and below the openings of mantle and eyes. Area of attachment of fins to the dorsal cartilage is thick while it becomes thinner as goes distally. Area adjacent to this attachment is widest portion. Fins end in rounded edges.

Arms subequal, moderately elongate, not at all evident outwardly or inwardly except for the thickening in the umbrella for suckers. Arms with formula of 1234. Suckers relatively firm, hard, moderate in size, somewhat elevated and uniserially arranged. 1st to 4th suckers from mouth opening comparatively small, 5th to 11th usually largest and then gradually diminishes in size towards the distal end of arms and becomes very minute which cannot be distinguishable with naked eyes. Number of suckers can be counted readily with naked eyes on each arm in the type specimen upto 92 to 97. Cirri arranged biserially on either side and alternatively to suckers. Both cirri and suckers retractile in nature, which can be retracted completely to pouches formed at their bases.

Web subequal with formula CBADE. E being shallowest. Web extends to about 68 to 75% of arm length. Maximum diameter observed for umbrella in type specimen is 675 mm. A slightly hard, 33-35 mm long, 3-4 mm wide and 3-5 mm thick muscular strip projects from the arm from the base of the 24th sucker in a 45°

angle towards the umbrella. This strip innervated by a strong supply of nerves from the basal region of the 24th sucker. This project towards right on the arms of right side while towards left on the arms of left side. This strip appears to give some sort of support to umbrella, but ends in the umbrella margin with a faint protuberance.

TABLE 1. *Measurements of the Specimens in mm*

	..	Holotype	Paratype	
			I	II
Total length	..	470	440	175
Total width	..	152	125	63
Inter ocular distance	..	182	150	67
Dorsal mantle length	..	140	115	45
Width across fins	..	220	190	100
Length of funnel	..	65	55	22
Maximum expansion (tip of right dorsal arm to tip of left ventral arm)	..	675	555	232
Arms length				
Right I	..	319	290	—
II	..	300	285	—
III	..	280	276	—
IV	..	254	245	125
Left I	..	320	320	—
II	..	315	295	—
III	..	295	287	—
IV	..	285	257	115
Web formula	..	CB - ADE	CBADE	CBADE
Gill filaments	..	4	—	—
Fin length				
Right	..	38	35	28
Left	..	39	37	29
Fin width				
Right	..	34	32	21
Left	..	35	34	21
Depth of habitat (metres)	..	275	320	365

Gills have got the typical appearance as Ijima and Ikeda (1895) described. Each demibranch bears 4 numbers of filaments. No reduction is noted for the inner filaments.

Mandibles black and dark brown in colour. Upper jaw with well developed rostrum which protruded into a pointed cusp. Hood with a slightly thickened anterior area. Rostral wings somewhat large with two ridges near the upper margin. These ridges start from the posterior end of the thickened area, one below the other and end with the margin of the wings posteriorly. Lower margin of lateral walls nearly straight. Lower jaw with a short, strong pointed cusp. As in upper jaw the anterior portion of the hood slightly elevated and thickened. Rostral wings wide and thin (Fig. 1b). Lateral walls relatively small. Radula absent.

Dorsal cartilage U-shaped, like a horse-shoe, with somewhat thick limbs and rounded angles. Extremities of limbs highly pointed. Cartilage got a flat outer contour and a convex inner contour on the angular region. Outer flat surface got a very shallow groove (Fig. 1c).

Colour of the aboral side of animal purple in living condition while after preservation it turned into a fleshy colour. The oral surface dark brown but after preservation it becomes more deeper. Very few, small areolar spots scattered on the body surface.

Holotype : Deposited at the Integrated Fisheries Project Marine Research Laboratory, Cochin.

Type Locality : 09°32'N, 75°45'E. 275 metres.

Distribution : Arabian Sea, Indian Ocean.

DISCUSSION

Voss (1956) disregarded the subgeneric division, *teuthidiscus* of Berry (1918) after examining the specimens of *O. agassizii* obtained from the Gulf of Mexico. So, as Taki (1963) stated, *Opisthoteuthis* need not be divided sub-generically. The present material is the third species described from the Indian Ocean and first record of an *Opisthoteuthis* from the Arabian Sea, especially from the Northern Indian Ocean.

The new species *O. philipii* described here shows certain morphological differences from other forms described earlier. Table 2 gives a comparative account of 8 species of *Opisthoteuthis* including *O. philipii*. In the case of mandibles none of the described forms of *Opisthoteuthis* got thickening on the hood as well as ridges and grooves on the rostral wall. In the present form funnel end is much more protruded and the funnel organ is a simple, inverted V-shaped pad and it has got some resemblance to *O. medusoides* (Thiele, 1915). The dorsal cartilage is typical in this form, a horse shoe shaped organ. The depth of the web is more in this species, about 68-75% of the arm. The 'web support' is present, which is not to be seen in any of the other forms except in *O. agassizii* described by Verrill (1885). There is no evidence of regular pigmentation as seen in *O. depressa* except for some few irregular areolar spots on the body surface. The name *philipii* is given in honour of late Mr. P. O. Philip, whose sincere and constant encouragement before his untimely death brought the author into the field of Biology.

TABLE 2. Comparison of characters of eight species of *Opisthoteuthis*

	<i>Opisthoteuthis agassizii</i> Verrill	<i>O. depressa</i> Ijima & Ikeda	<i>O. persephone</i> Berry	<i>O. pluta</i> Berry	<i>O. japonica</i> Taki	<i>O. californiana</i> Berry	<i>O. extensa</i> Thiele	<i>O. philippi</i> sp. nov.
Arm formula	1=42=3	3421	..	..	1432	341=2	..	1234
Web formula	..	3=421	..	..	4321	A=B=C=DE	..	CBADE
Web extension (in % of arms)	57	in one below 50, in others above 50	65-67	61-66	..	..	..	68-75
Eyes	very large	moderate to large	rather small and inconspicuous	moderately large	very large	extremely large	small	somewhat conspicuous
Fins	fairly long, $\frac{1}{2}$ the interocular width sides parallel 'oblong ovate'.	very small, $\frac{1}{4}$ the interocular width, breadth is about $\frac{1}{3}$ of its length.	Minute, tenuous, more or less median in position, twice as broad as long.	rather large, flabby, oblong, about twice as broad as long, tip pointed situated near the eye.	slender and long oblong in shape with pointed end, situated near the eye.	large oblong with rounded end, situated at about the anterior third of the distance between the eye and palial aperture.	small, pointed at the extremity situated at half way between the eyes and the funnel.	smaller in size, almost wide as it is long, attached at the posterior end of body, below the funnel and eye openings.
Cirrus sheath	..	..	present	present	no sheath	..	..	present

Funnel organ	..	four patches, two large anterior and two small posterior.	a pair of small oval pads.	a pair of small well separated oblique oval pads.	two oblique slender pads.	two small thin transparent longitudinal pads.	two closely set V-formed plates.	simple, single inverted V-shaped pad.
Gill filaments	..	4	6, 6+1	8 (4 a side?)	4	3 (inner) 4 (outer)	6	4
Dorsal cartilage.	..	very wide V, made of six section each lying at a slightly different angle.	broadly V, concave arc.	broadly V, concave arc.	A slender very gently arcuate rod, fine needle like extension on each side.	A flat, gently arcuate rod, with a very shallow longitudinal groove on the dorsal side.	..	V shaped with thick limbs and rounded angles.
Colour-Aboral	chocolate brown with sheltered roundish spots.	light brown deep drap.	dirty grey	chocolate with dark staty grey.	light old lilac.	oxblood red	light brown	fleshy colour
Oral	dark chocolate brown.	dark reddish violet, dull purple or brown.	dark bluish state.	chocolate brown and dark stay purple.	venonina	blood red, but darker than the aboral side.	dark brown	dark brown
Areola in dorsal surface	present	present	present	present	present	..	..	present
Locality	Off Grenada, W. Indies.	Okinose, near Misaki, Japan.	Great Australian Bight.	Great Australian Bight.	Off Minabe, Wakayama Prefecture.	Off Eureka Bar, California.	Off East Coast of Sumatra.	Off Alleppey, Arabian sea, Indian Ocean.
Depth of habitat (mts)	532	457	275-549	275-824	152	343-512	769	275-365

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