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A new species of *Opisthoteuthis*, *O. dongshaensis* sp. nov., from the South China Sea (Octopoda: Cirrata: Opisthoteuthidae)

Chung-Cheng Lu*

Department of Life Sciences, National Chung Hsing University, Taichung, Taiwan

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Chung-Cheng Lu (2010) A new species of *Opisthoteuthis*, *O. dongshaensis* sp. nov., from the South China Sea (Octopoda: Cirrata: Opisthoteuthidae). *Zoological Studies* **49**(3): 405-420. A new species of the cirrate octopod *Opisthoteuthis dongshaensis* sp. nov. is described from the vicinity of the Dong Sha Is., South China Sea. The species is unique in the mature males having enlarged suckers on the distal field only on arms III and IV. Suckers on the distal field of arms I and II of mature males are not enlarged. This is the 2nd nominal species of *Opisthoteuthis* reported from the South China Sea, the other being *O. japonica*. http://zoolstud.sinica.edu.tw/Journals/49.3/405.pdf

Key words: *Opisthoteuthis*, Dong Sha Is., Pratas Is., South China Sea.

The genus *Opisthoteuthis* of the family Opisthoteuthidae is speciose. Many species have been named since erection of the genus by Verrill (1883) for the type species *O. agassizii*. Robson (1932) recognized 6 species in the genus, and Voss (1988) listed 10 species. O'Shea (1999) included 4 more species, bringing the total to 14 species. In the most recent revision, Collins and Villanueva (2006) recognized 19 nominal species: *O. agassizii* Verrill, 1883; *O. depressa* Ijima and Ikeda, 1895; *O. grimaldii* Joubin, 1903; *O. extensa* Thiele, 1915; *O. medusoides* Thiele, 1915; *O. persephone* Berry, 1918; *O. pluto* Berry, 1918; *O. albatrossi* (Sasaki, 1920); *O. massyae* (Grimpe, 1920); *O. californiana* Berry, 1949; *O. japonica* Taki, 1962; *O. philipii* Oommen, 1976; *O. bruuni* Voss, 1982; *O. chathamensis* O'Shea, 1999; *O. mero* O'Shea, 1999; *O. robsoni* O'Shea, 1999; *O. calypso* Villanueva, Collins, Sanchez and Voss, 2002; *O. hardyi* Villanueva, Collins, Sanchez and Voss, 2002; and *O. borealis* Collins, 2005.

During Apr. 1995, a research cruise by the *FRV Fishery Researcher No.1* (*FRV Shui Shi I Hao*) (cruise FR-95-3) of the Taiwan Fisheries Research Institute, Keelung, Taiwan, was conducted to survey the benthic and mid-water faunas in the waters around the Dong-Sha Is. (= Pratas Is.; around 21°N, 116°E). Cephalopods collected during that cruise were summarized in Lu (2000) and Norman and Lu (2000). Among the rich captures of cephalopods collected during that cruise was a species of *Opisthoteuthis* which was previously referred to as *Opisthoteuthis* sp. (Lu 2000, Norman and Lu 2000). That new species is described herein.

MATERIAL AND METHOD

The material examined is housed in the National Museum of Natural Science, Taichung, Taiwan (NMNS). All specimens were fixed in 10% formalin for several days then preserved in 70% alcohol.

All measurements and color descriptions are based on preserved specimens. Mantle

*To whom correspondence and reprint requests should be addressed. Fax: 886-4-2287-4740. E-mail:cclu@dragon.nchu.edu.tw

length was recorded to the nearest millimeter. Abbreviations for measurements, indices and counts follow Roper and Voss (1983): MWI, mantle width index, the width of the mantle calculated as a percentage of mantle length (ML); PAL, pallial aperture index, the width of the pallial aperture (= mantle opening) calculated as a percentage of ML; FuLI, funnel length index, the length of the funnel calculated as a percentage of ML; FLI Out, outer fin length index, the greatest length of the posterior margin of the fin calculated as a percentage of ML; FLI In, inner fin length index, the greatest length of the anterior margin of the fin calculated as a percentage of ML; FWI, fin width index, the greatest width of a single fin as a percentage of ML; EDI, eye diameter index, the diameter of the eyeball as a percentage of ML; Lens DI, lens diameter index, the diameter of the eye lens as a percentage of ML; AL1I, arm 1 length index, the length of the arm 1 (dorsal arm) calculated as a percentage of ML; Arms 1, 2, 3, and 4: dorsal, dorso-lateral, ventro-lateral, and ventral arm, respectively; GLC, gill lamella count, the number of gill lamella on the outer demibranch minus the terminal one; WDI A, web sector A depth index, the depth of web sector A as a percentage of the longest arm; Web sectors A, B, C, D, and E, web between arms 1, arms 1 and 2, arms 2 and 3, arms 3 and 4, and arms 4, respectively; ASC1R, arm sucker count of the right arm 1; CiL1IR, cirrus length index of right arm 1, length of the longest cirrus on right arm 1 calculated as a percentage of ML; AS1I R/L proximal (or distal), arm sucker diameter index of arm 1, the diameter of the largest sucker on the proximal field (or distal field) of arm 1 calculated as a percentage of ML. R/L denotes the right arm/left arm. In tables 1 and 2, both indices for sucker aperture diameter and external sucker diameter are presented, e.g., for AS1I R/L proximal of paratype 2: 3.9/3.9 (12.6/12.9) = aperture diameter index of the largest sucker on the proximal field of right arm 1 (= 3.9)/aperture diameter index of the largest sucker on the proximal field of left arm 1 (= 3.9) (external diameter index of the largest sucker on the proximal field of right arm 1 (= 12.6)/external diameter index of the largest sucker on the proximal field of left arm 1 (= 12.9)).

Specimens of *O. persephone* and *O. pluto* in the collection of the Museum of Victoria were examined for comparison. These are listed under "Comparative materials".

Other abbreviations used include: CSIRO, Commonwealth Scientific and Industrial Research Organisation, Australia; FRV, fishery research vessel; MOV, Museum of Victoria, Melbourne, Victoria, Australia; m, meter; stn, station; NSW, New South Wales; QLD, Queensland; SA, South Australia; TAS, Tasmania; TFDA, Tasmania Fisheries Development Authority; WA, Western Australia.

SYSTEMATICS

Family Opisthoteuthidae Verrill, 1896

Type genus: *Opisthoteuthis* Verrill 1883: 113.

Diagnosis: Moderate-sized cirrate with gelatinous, anterior-posteriorly compressed body, mantle, head and pedal mass bell- to disc-shaped due to fixation artefact. Fins small to long, subterminal. Shell flaring U-shaped, lateral wings tapering to fine points. Optic nerves passing through white body in 2-4 bundles. Two fields of enlarged suckers in mature males. Digestive gland entire or bilobed. Radula and posterior salivary glands absent. Web deep, single. Gills of "half-orange" form. Single genus (after Collins and Villanueva 2006 with modification).

Opisthoteuthis Verrill, 1883

Type species: *Opisthoteuthis agassizii* Verrill, 1883, by original designation.

Diagnosis: With characters of the family.

Opisthoteuthis dongshaensis sp. nov.

(Figs. 1-9, Tables 1, 2)

Holotype: NMNS 511-001, ♂, mature, 38 mm ML, 19°21.3'N, 113°58.6'E-19°24.9'N, 114°02.2'E, 683-693 m, 22 Apr. 1995, 16:10-17:53, *FRV Fishery Researcher No. 1*, FR-95-3, Stn. 26. (Spec. 26-1).

Paratypes: All specimens from *FRV Fishery Researcher No. 1*, FR-95-3.

Paratype 1: NMNS 5511-005, ♀, subadult, 37 mm ML, 19°38.5'N, 114°23.1'E-19°36.8'N, 114°22.9'E, 990-1015 m, 23 Apr. 1995, 16:36-17:36, 30. (30-1). Paratype 2: NMNS 5511-002, ♂, mature, 38 mm ML, 19°26.9'N, 114°03.8'E-19°26.7'N, 114°00.9'E, 650-650 m, 22 Apr. 1995, 07:53-09:23, 23. (23-2). Paratype 3: NMNS 5511-004, ♀, subadult, 28 mm ML, 19°26.8'N, 114°09.8'E-19°23.6'N, 113°59.2'E, 660-663 m, 22 Apr. 1995, 10:34-12:00, 24. (24-2). Paratype 4: NMNS 5511-003, ♂, matured, 35 mm ML, 19°24.0'N, 114°00.3'E-19°21.1'N, 113°

57.8'E, 677-680 m, 22 Apr. 1995, 13:14-14:32, 25. (25-2). Paratype 5: NMNS 5511-006, ♀, subadult, 34 mm ML, 19°26.8'N, 114°09.8'E-19°23.6'N, 113° 59.2'E, 660-663 m, 22 Apr. 1995, 10:34-12:00, 24. (24-5).

Other material: NMNS 002157-00078, 2♀♀, 28-36 mm ML, 23, same station data as for paratype 2. NMNS 002157-00079, 2♂♂, 35-33 mm ML, 24, same station data as for paratypes 3 and 5. NMNS 002157-00087, ♂, 31 mm ML, 25, same station data as for paratype 4. NMNS 002157-00085, 3♂♂, 29-46 mm ML, 1 head only, ♂, (46 mm HW); 1♀, 35 mm ML, 26, same station data as for holotype. NMNS 002157-00084, 2♂♂, 27-30 mm ML, 19°24.9'N, 114°04.5'E-19°29.0'N, 114°07.0'E, 726-716 m, 23 Apr. 1995, 07:53-09:25, 27. NMNS 002157-00070, 2♂♂, 21-28 mm ML; 2♀♀, 14-19 mm ML, 19°30.1'N, 114°09.8'E-19°33.7'N, 114°12.7'E, 754-767 m, 23 Apr. 1995, 10:45-12:10, 28. NMNS 002157-00089, 3♀♀, 21-29 mm ML, 30, same station data as for paratype 1.

Comparative material

Opisthoteuthis persephone Berry, 1918

MOV F52347, ♂, immature, 29 mm ML, 37° 52'S, 139°47'E-37°47'S, 139°42'E, 550-545 m, 31 Oct. 1984, by TFDA. MOV F164064, ♂, mature, 36 mm ML, ♀, subadult, 32 mm, WNW of Tasmania, 41°02.30'S, 143°53.06'E, 518-520 m, 27 Jan. 1985, *FRV Soela*, SO1/85, 17. Engels high-lift demersal trawl, by CSIRO. MOV F51088, ♀, mature, 37 mm ML, SW Cape Grim, Tasmania, 595 m, 01 Sept. 1983, by TFDA. MOV F51086, ♂, mature, 40 mm ML, Cape Grim, Tasmania, 550 m, 31 May 1983, by TFDA.

Opisthoteuthis pluto Berry, 1918

MOV F80330, ♀, mature, 18 mm ML, 42 km SSE of Bremer Bay, WA, 34°45.0'S, 119° 32.4'E-34°45.9'S, 119°29.4'E, 550-525 m, 18 Aug. 1988, *RV Saxon Progress*, Engels high-lift demersal trawl, by CSIRO. MOV F80337, ♂, mature, 24 mm ML, 35°29.74'S, 150°50.87'E-35° 26.13'S, 150°54.17'E, 960 m, 17 May 1988, *RV Soela*, SO3/88, 29. 40 km ESE of Ulladulla, NSW, Engels high-lift demersal trawl, by CSIRO. MOV F97376, ♂, mature, 38 mm ML, 35°29.74'S, 150° 50.87'E-35°26.13'S, 150°54.17'E, 960 m, 17 May 1988, *RV Soela*, SO3/88, 29. 40 km ESE of Ulladulla, NSW, Engels high-lift demersal trawl, by CSIRO. MOV F80331, ♀, mature, 53 mm ML, 47°32'S, 148°16'E-47°33'S, 148°10'E , 1100 m, 17 Mar. 1986, *RV Soela*, SO2/86, 03. Tasman Plateau, Engels high-lift demersal trawl, by CSIRO. MOV F164054, ♂, mature, 61 mm ML, 36°58.69'S, 137°25.08'E-36°58.69'S, 137°22.95'E, 990-1010 m, 24 Jan. 1988, *RV Soela*, SO1/88, 08, Engels high-lift demersal trawl, by CSIRO.

Diagnosis: Small species with moderate antero-posterior compression of cephalopodal mass (bell-shaped); mantle, head, and aboral surface of arms without areolar spots. Fins flap-like, relatively long (FLI Out 87.4-177.3 in male, 76.1-154.2 in female; FLI In 87.4-159.0 in male, 60.4-111.1 in female); mantle and nuchal constriction poorly developed; arms long, deeply invested in web; web deep; male with sucker enlargement in proximal field of all arms and distal fields of only arms III and IV, those in distal field at vicinity of web edge enormous in size; suckers on distal field of arms I and II of mature males not enlarged. Sucker number in both sexes high, ASC to 88.

Description: All measurements, indices and counts of all specimens examined are listed in tables 1 and 2.

Small-bodied species, ML to 46 mm. Mantle, head, and web extensively gelatinous; arms semi-gelatinous; cephalopodal mass moderately compressed along anteroposterior axis, bell-shaped (Figs. 1, 2). Head wider than mantle; eyes large, bulbous, oriented laterally. Areolar spots on surfaces of mantle, head, and arms absent.

Fins (Figs. 1, 2) relatively long for *Opisthoteuthis* genus (FLI Out 76.1%-172.7% of ML), peddle-shaped, moderately broad (fin width 17.5%-33.4% of outer fin length), laterally oriented, deeply invested in mantle tissues; inner and outer margins of fins weakly convex; distal margin of fin rounded; fin margins delicate; basal constriction poorly developed; muscular portion of exposed fin extending approximately 2/3 fin length.

Mantle aperture reduced, enveloping base of funnel; mantle attached to ventral arm bases at level of 6th sucker; funnel length moderate to long (46.4%-101.6% of ML), free portion about 1/2 of funnel length. Funnel organ unknown as all specimens dissected show poor fixation. Interpallial septum short, (e.g., about 3 mm in paratype 2), thin, attached to viscera adjacent to genital aperture, attached to ventral mantle at about 1/4 ventral mantle length from ventral mantle margin. Anus on raised portion of rectum, opening at base of funnel.

Table 1. Measurements, indices and counts of male specimens of *Opisthoteuthis dongshaensis* sp. nov. studied. [a]damaged condition, data may be missing or inaccurate; n.a.: not applicable

NMNS no.	002157-00085	5511-002	5511-001	002157-00079	5511-003	002157-00079	002157-00085
Specimen no.	26-5	23-2	26-1	24-1	25-2	24-3	26-3
Type Status		Paratype 2	Holotype		Paratype 4		
Sex	M	M	M	M	M	M	M
TL	214	214	221	208	197	204	204
ML	**46**	**38**	**38**	**35**	**35**	**33**	**31**
MWI	46.2	81.6	132.4	86.6	132.1	84.6	115.3
HWI	88.5	186.6	162.6	126.1	184.4	165.27	151.8
PAI	37.5	42.3	35.3	34.9	30.1	47.7	48.6
FuLI	62.7	61.9	71.6	68.5	70.8	60.3	71.2
FLI Out	87.4	140.4	151.8	172.7	130.1	167.7	155.0
FLI In	87.6	114.2	150.8	147.2	91.3	121.8	135.5
FWI	20.2	37.8	53.2	39.8	32.4	37.5	40.3
EDI	48.8	68.8	80.0	[a]	74.9	80.3	62.9
Lens DI	29.9	39.1	42.9	47.4	40.8	49.5	46.0
AL1I R/L	327.5/349.2	430.4/459.3	331.6/381.6	463.1/420.5	494.2/485.5	418.5/458.5	450.5/444.1
AL2I R/L	316.7/329.7	291.3/475.1	350.0/400.0	383.5/406.3	465.3/436.4	480.0/433.8	444.1/377.0
AL3I R/L	318.9/203.9	391.1/456.7	363.2/376.3	448.9/323.9	453.8/445.1	480.0/418.5	453.7/418.5
AL4I R/L	321.0/269.0	412.1/409.4	410.5/384.2	429.0/386.4	465.3/427.7	412.3/393.8	440.9/492.0
WDI A	[a]	56.9	52.3	69.9	60.2	69.9	56.5
WDI B R/L	[a]/[a]	50.3/54.1	47.6/44.6	73.6/71.8	55.0/57.3	57.7/59.6	49.4/50
WDI C R/L	[a]/84.5	47.5/35.4	47.3/62.5	[a]/63.2	50.9/54.4	43.6/ [a]	49.4/44.2
WDI D R/L	[a]/[a]	[a]/53.0	52.6/63.7	62.6/[a]	43.9/53.8	47.4/ [a]	47.4/48.1
WDI E	[a]	[a]	42.8	47.2	50.9	[a]	57.8
ASC1 R/L	56/59	81/74	51/73	44/40	73/65	32/36	57/37
ASC2 R/L	57/24	43/76	50/70	36/40	69/73	37/33	56/40
ASC3 R/L	58/58	78/55	48/61	41/31	64/67	50/39	47/44
ASC4 R/L	64/61	64/72	70/74	40/29	61/66	34/39	43/53
AS(enlarged suckers)C1 R/L proximal	3/3	4/3	3/3	3/3	2/3	3/3	2/2
AS(enlarged suckers)C1 R/L distal	0	0	0	0	0	0	0
AS(enlarged suckers)C2 R/L proximal	3/2	5/4	2/3	3/3	2/3	4/4	2/2
AS(enlarged suckers)C2 R/L distal	0	0	0	0	0	0	0
AS(enlarged suckers)C3 R/L proximal	3/4	4/3	4/3	4/3	4/3	4/4	4/3
AS(enlarged suckers)C3 R/L distal	0[a]/1[a]	4/0[a]	4/3	0[a]/2[a]	0[a]/3	0[a]/0[a]	0[a]/1[a]
AS(enlarged suckers)C4 R/L proximal	3/4	3/5	3/4	3/3	3/4	4/4	3/3
AS(enlarged suckers)C4 R/L distal	0[a]/0[a]	5/4	3/0[a]	1[a]/2[a]	1[a]/3	3[a]/0[a]	1[a]/1[a]
CiL1I R	[a]	7.9	9.2	4.5	8.9	4.9	12.5
CiL2I R	[a]	6.0	11.1	5.4	8.7	[a]	11.2
CiL3I R	[a]	7.1	12.1	5.1	9.2	[a]	10.5
CiL4I R	[a]	8.4	12.6	7.4	10.1	[a]	7.0
AS1I R/L proximal	4.6/3.9 (10.8/10.4)	3.9/3.9 (12.6/12.9)	4.7/5.0 (14.5/13.4)	4.3/4.0 (11.4/10.5)	5.5/4.9 (11.6/11.6)	5.5/6.2 (16.0/17.5)	3.8/5.1 (11.5/12.8)
AS1I R/L distal	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
AS2I R/L proximal	5.4/4.8 (11.1/10.4)	3.7/4.5 (13.1/13.4)	3.9/3.9 (13.4/12.6)	4.3/5.7 (9.4/11.6)	[a]	5.8/5.8 (15.1/14.5)	4.5/6.1 (15.3/15.0)
AS2I R/L distal	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
AS3I R/L proximal	3.7/4.1 (10.4/10.8)	4.2/5.2 (12.6/13.6)	6.1/4.7 (12.6/11.1)	5.7/6.0 (11.6/15.3)	4.6/4.9 (11.6/12.1)	7.4/6.2 (15.7/16.6)	7.0/5.1 (15.0/12.1)
AS3I R/L distal	[a]	10.5/[a] (29.7/[a])	10.9/9.5 (27.6/31.6)	7.7/[a] (29.3/[a])	10.1/[a] (32.4/[a])	[a]	7.3/[a] (25.2/[a])
AS4I R/L proximal	4.8/5.0 (10.6/9.8)	4.2/6.0 (14.7/13.6)	5.5/3.9 (11.1/12.1)	5.1/6.8 (13.1/15.6)	4.6/3.8 (11.0/12.4)	7.1/5.8 (17.5/18.2)	5.4/5.8 (15.7/15.7)
AS4I R/L distal	[a]	13.6/10.8 (30.4/31.0)	[a]/8.9 ([a]/31.6)	6.8/6.3 (16.5/16.5)	11.0/9.2 (30.9/30.1)	12.0/[a] (37.8/[a])	10.9/9.9 (34.2/31.6)
GLC	6	6	6	6	6	6	7

Table 1. (continued)

NMNS no.	002157-00087	002157-00084	002157-00085	002157-00070	002157-00084	002157-00070	002157-00085
Specimen no.	25-1	27-2	26-2	28-2	27-1	28-4	26-6
Type Status							
Sex	M	M	M	M	M	M	M
TL	226.5	204	156	124	134	120	[a]
ML	**31**	**30**	**29**	**28**	**27**	**21**	[a]
MWI	123.7	108.1	149.7	76.4	150.8	79.1	[a]
HWI	197.4	158.3	156.3	124.7	197.0	108.5	45.7 HW measurement
PAI	49.7	31.9	51.7	25.8	57.5	37.0	[a]
FuLI	86.7	46.4	80.2	53.5	70.7	71.1	[a]
FLI Out	169.5	177.3	154.2	115.6	140.2	111.4	51.8FL Out measurement
FLI In	127.6	159.0	105.2	101.5	101.1	91.0	46.5FL In measurement
FWI	41.9	31.9	30.6	29.1	36.8	27.0	16.7 FW
EDI	78.6	94.9	68.8	46.2	86.1	58.8	21.6 ED
Lens DI	49.0	52.2	39.6	32.7	42.5	45.0	13.4 Lens D
AL1I R/L	564.9/548.7	515.3/528.8	406.3/371.5	316.4/320.0	436.1/406.0	421.8/402.8	164/178 AL1 R/L
AL2I R/L	551.9/545.5	528.8/535.6	375.0/347.2	330.9/374.5	391.0/462.4	407.6/251.2	162/173 AL2 R/L
AL3I R/L	519.5/587.7	566.1/498.3	430.6/427.1	345.5/356.4	387.2/398.5	388.6/407.6	164/160 AL3 R/L
AL4I R/L	435.1/526.0	535.6/498.3	392.4/465.3	334.5/323.6	432.3/447.4	440.8/431.3	165/160 AL4 R/L
WDI A	10.8[a]	[a]	47.4	31.1	43.5	[a]	[a]96.3 WDA
WDI B R/L	48.8/[a]	65.2/[a]	47.8/51.0	43.7/[a]	49.2/53.3	[a]/[a]	[a]/[a] WDB R/L
WDI C R/L	47.0/[a]	34.3/50.4	51.9/48.9	[a]/[a]	44.6/47.6	[a]/[a]	[a]/[a] WDC R/L
WDI D R/L	26.9/52.7	56.1/[a]	47.8/54.7	51.5/44.7	44.2/43.5	[a]/[a]	53/[a] WDD R/L
WDI E	29.3	[a]	54.1	33	26.8	[a]	[a] WDE
ASC1 R/L	73/47	42/41	67/64	48/51	44/42	23/27	[a]/[a]
ASC2 R/L	68/77	36/62	71/51	57/34	51/41	35/7	[a]/[a]
ASC3 R/L	57/68	40/56	70/72	56/31	55/24	22/14	[a]/[a]
ASC4 R/L	50/62	57/46	72/66	49/36	34/32	8/9	[a]/[a]
AS(enlarged suckers)C1 R/L proximal	3/3	5/5	2/2	3/3	2/2	1[a]/3	[a]/[a]
AS(enlarged suckers)C1 R/L distal	0	0	0	0	0	0	[a]/[a]
AS(enlarged suckers)C2 R/L proximal	2[a]/3	5/4	3/3	2/2	3/3	0[a]/1[a]	[a]/[a]
AS(enlarged suckers)C2 R/L distal	0	0	0	0	0	0	[a]/[a]
AS(enlarged suckers)C3 R/L proximal	5/5	5/5	3/3	3/3	3/3	2[a]/2[a]	[a]/[a]
AS(enlarged suckers)C3 R/L distal	2[a]/2[a]	0[a]/0[a]	3/3	0/0	0[a]/2[a]	0/0	[a]/[a]
AS(enlarged suckers)C4 R/L proximal	3/4	4/4	3/3	2/3	4/3	3/3	[a]/[a]
AS(enlarged suckers)C4 R/L distal	1[a]/3	0[a]/0[a]	3/2	0/0	0[a]/0[a]	0/0	[a]/[a]
CiL1I R	22.0	13.2	8.3	8.7	11.7	[a]	[a]
CiL2I R	18.8	13.6	9.7	6.9	7.9	[a]	[a]
CiL3I R	16.6	15.6	5.6	8.0	7.9	[a]	[a]
CiL4I R	14.0	15.9	8.7	8.7	10.2	[a]	[a]
AS1I R/L proximal	5.8/6.2 (14.9/17.2)	11.8/7.8 (21.0/21.0)	5.2/5.6 (15.3/13.5)	4.4/3.6 (10.5/12.0)	4.5/5.6 (12.4/12.4)	2.8/2.4 (10.0/9.5)	2.16/1.27 AS1 R/L (4.89/4.56)
AS1I R/L distal	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
AS2I R/L proximal	5.2/5.2 (16.9/14.9)	9.5/9.8 (21.7/20.7)	4.9/4.9 (14.6/12.8)	5.5/5.5 (10.5/12.4)	6.4/4.9 (12.0/10.9)	3.3/ [a] (10.4/ [a])	2.05/1.95 AS2 R/L (5.41/4.59)
AS2I R/L distal	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
AS3I R/L proximal	5.5/5.8 (15.6/17.5)	9.8/9.2 (18.6/20.7)	4.5/5.6 (13.5/13.5)	5.5/4.4 (11.6/11.6)	5.6/5.6 (10.2/13.2)	4.3/[a] (10.9/[a])	2.10/1.79 AS3 R/L (5.42/5.06)
AS3I R/L distal	9.7/12.0 (34.1/37.7)	[a]	9.4/9.0 (29.5/27.8)	[a]	5.3/[a] (27.1/[a])	[a]	[a]
AS4I R/L proximal	5.5/5.5 (15.6/16.6)	10.8/10.8 (23.1/20.7)	6.9/4.9 (15.3/15.6)	6.5/6.2 (11.3/13.8)	4.5/4.1 (9.0/10.2)	3.8/4.7 (10.0/10.9)	2.26/2.25 AS4 R/L (5.90/5.78)
AS4I R/L distal	10.4/9.1 (36.4/29.5)	[a]	8.3/9.4 (34.2/31.9)	[a]	[a]	[a]	[a]
GLC	6	6	6	6	6	7	7

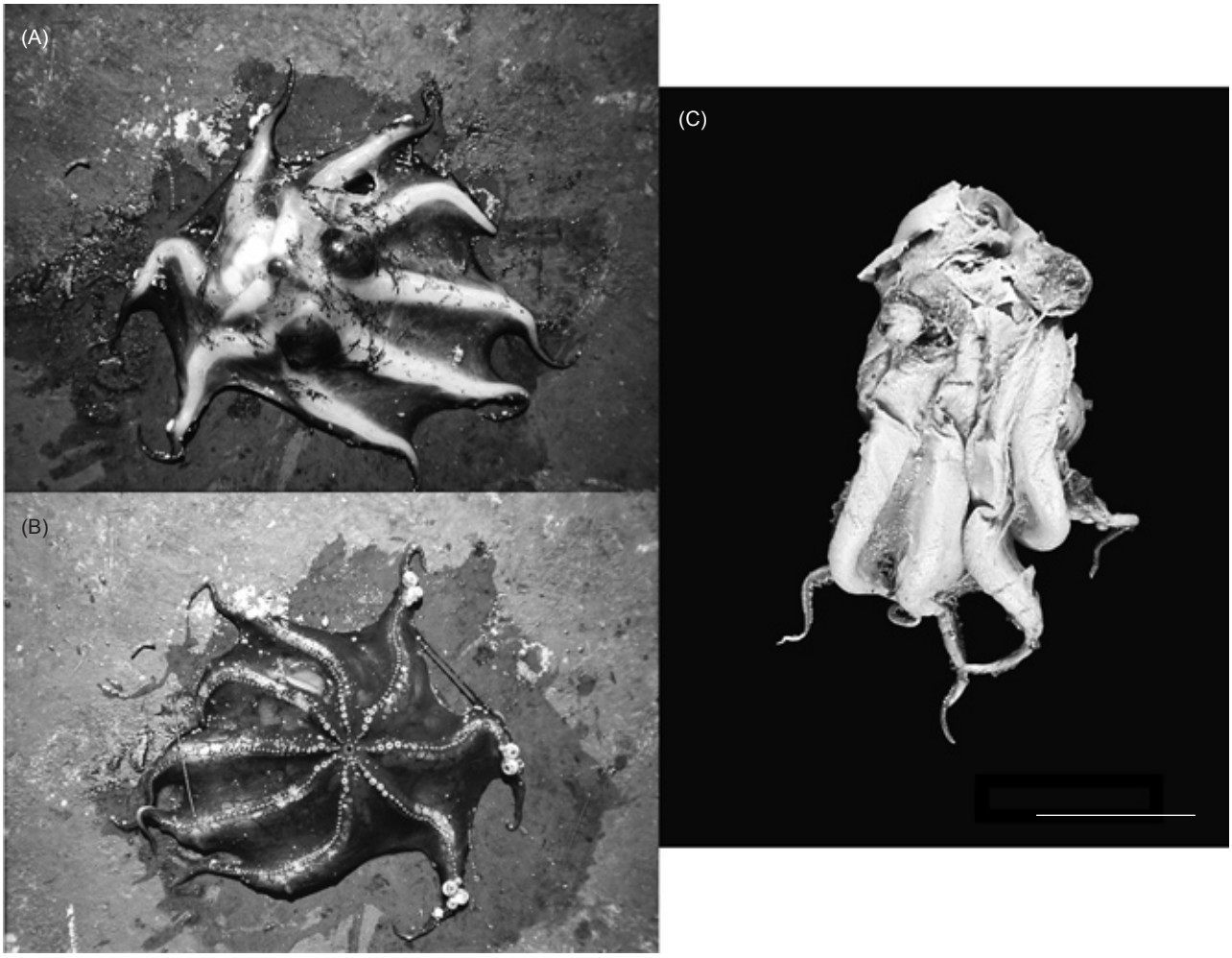

Fig. 1. *Opisthoteuthis dongshaensis* sp. nov., paratype 2, NMNS 5511-002. (A) Dorsal view of freshly caught specimen; (B) ventral view of freshly caught specimen; (C) dorsal view of preserved specimen. Scale bar = 50 mm.

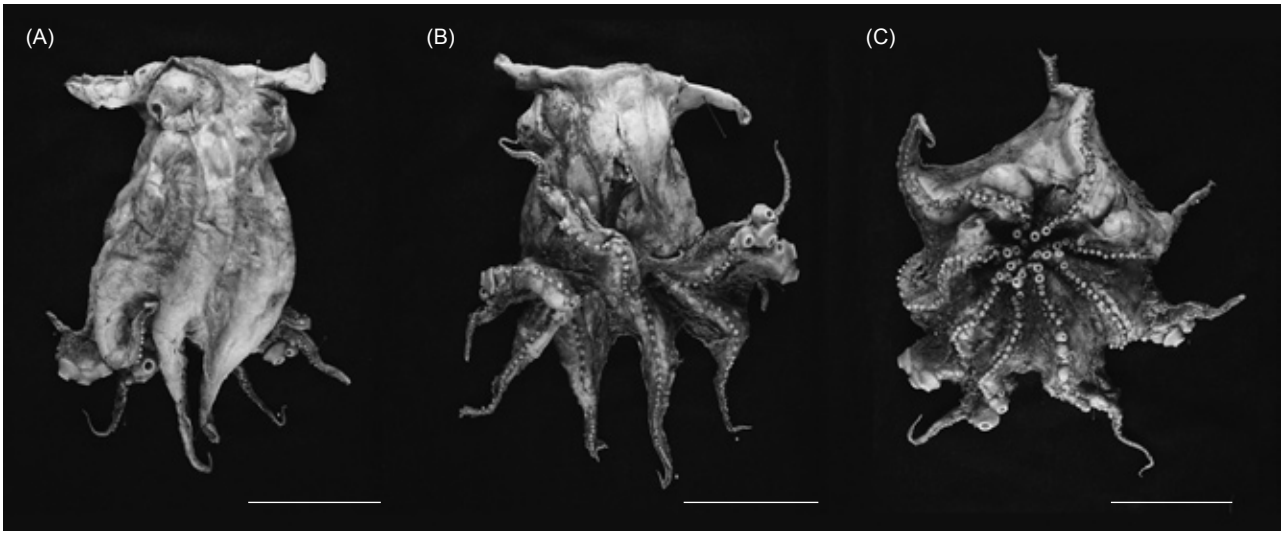

Fig. 2. *Opisthoteuthis dongshaensis* sp. nov., holotype, NMNS 5511-001. (A) Dorsal view of preserved specimen. Scale bar = 50 mm. (B) Ventral view of preserved specimen. Scale bar = 50 mm. (C) Oral view of preserved specimen. Scale bar = 50 mm.

Arm formula variable, no consistent disparity in length or apparent pattern between right and left arm pairs; arms long, thick; longest arm length 349%-541% of ML, shortest arm length 216%-436% of ML. Web formula variable, no consistent disparity in depth or apparent pattern between right and left sectors; nodules at junction of web and arm sectors absent. Web deep, thick, extensively gelatinous; deepest web sector 84.5% of longest arm length; shallowest web sector 19.9% of longest arm length. Cirrus length short to moderate, approximately 3%-13% of ML; cirri commencing between suckers 3 and 4 or between 4 and 5 on all arms, abruptly increasing in length between suckers 8 and 9 along each arm; cirri present to at least 6th distal suckers; however, due to damaged nature of all specimens, exact morphology unknown.

Sucker size sexually dimorphic, distinctly enlarged in male (ASI aperture 3.7%-13.6% of ML, external diameter 9.4%-32.4% of ML), sucker enlargement absent in females (ASI aperture 1.6%-3.8% of ML, external diameter 3.5%-7.8% of ML) (Fig. 3). In mature males (Figs. 1B, 3A, C), abrupt sucker enlargement occurring in proximal sucker field of all arms and distal sucker field of only arms III and IV; enlarged suckers on distal field of arms I and II absent. In mature males, 1st 3 or 4 suckers of all arms of moderate size, gradually increasing in size distally, followed by 3 or 4 abruptly enlarged bulbous suckers, 2nd or 3rd sucker of which usually the largest, suckers

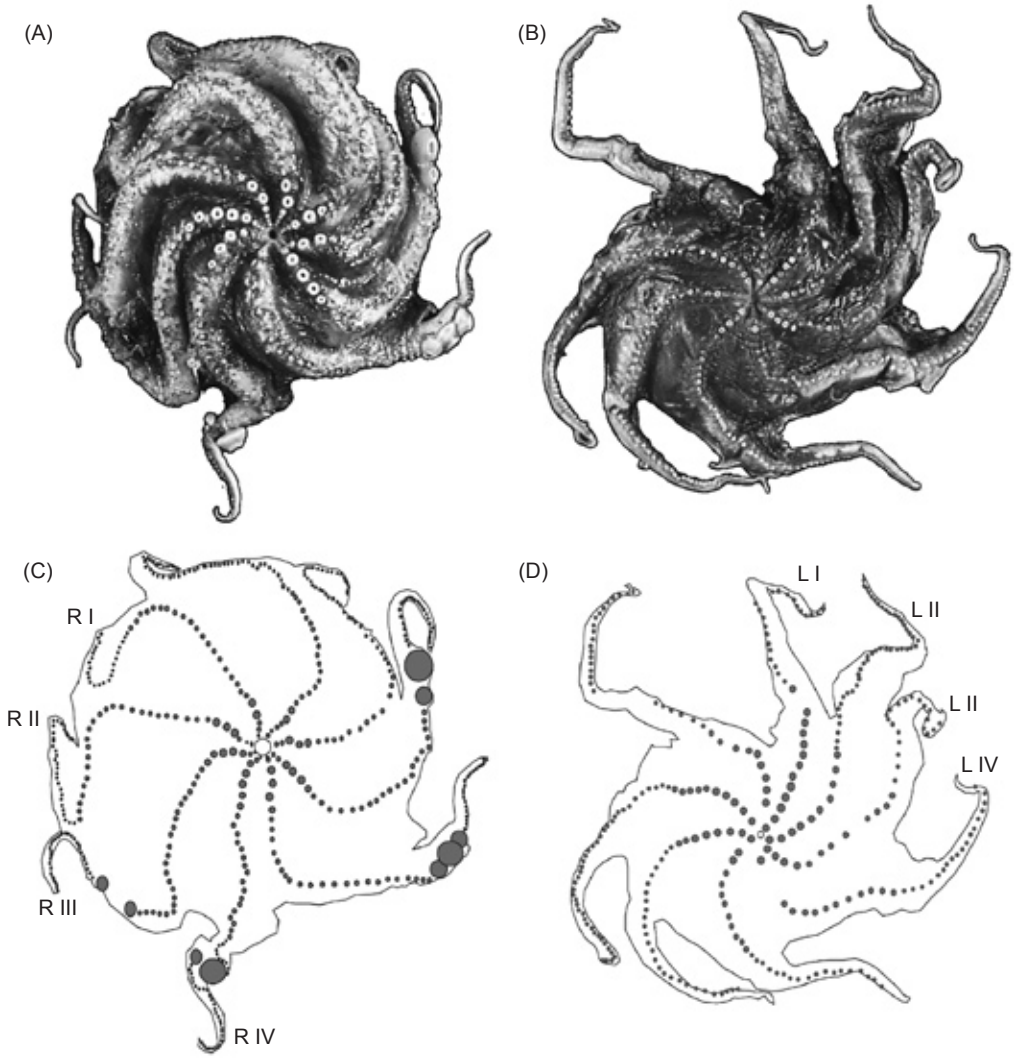

Fig. 3. *Opisthoteuthis dongshaensis* sp. nov. Photographs and drawings of oral views of arms showing sexual dimorphism of presence and absence of enlarged suckers. (A, C) NMNS 5511-003, paratype 4, male, mature, 35 mm ML; (B, D) NMNS 5511-006, paratype 5; female, subadult, 34 mm ML.

abruptly decreasing in size after field of enlarged suckers, then gradually decreasing in size to arm tip on arms I and II. On arms III and IV of mature males, from proximal to distal field of enlarged suckers, up to 25 suckers (in holotype) of reduced diameter extending to web margin, thereafter 3 or 4 greatly enlarged and somewhat flattened button-shaped suckers, followed by about 40 suckers on each arm tip abruptly decreasing in size from greatly enlarged suckers, then gradually decreasing in size distally to arm tip. In females, proximal 2 or 3 suckers on all arms slightly smaller, then subequal-sized suckers on remainder of arm to web margin, suckers on arm tip beyond web margin smaller than preceding ones and gradually decreasing in size toward arm tip (Figs. 3B, D).

Table 2. Measurements, indices, and counts of female specimens of *Opisthoteuthis dongshaensis* sp. nov. studied. [a]damaged condition, data may be missing or inaccurate; n.a.: not applicable

NMNS no.	NMNS 5511-005	NMNS 002157-00085	NMNS 5511-006	NMNS 002157-00078	NMNS 002157-00089	NMNS 002157-00078
Specimen no.	30-1	26-4	24-4	23-3	30-3	23-1
Type Status	Paratype 1		Paratype 5			
Sex	F	F	F	F	F	F
TL	177	218	206	199	142	184
ML	**37**	**35**	**34**	**31**	**29**	**28**
MWI	118.5	83.5	77.3	122.6	84.8	141.2
HWI	198.1	100.6	151.2	173.1	148.1	189.1
PAI	62.4	41.2	29.4	42.6	39.1	26.8
FunLI	64.0	53.7	61.9	101.6	75.8	63.4
FLI Out	117.7	101.4	90.1	129.5	76.1	132.4
FLI In	81.2	92.6	75.9	106.9	65.7	78.2
FWI	23.7	21.9	28.8	43.3	24.6	34.5
EDI	74.7	59.9	66.6	71.8	64.4	71.5
Lens DI	37.9	34.7	37.2	42.3	32.9	41.2
AL1IR/L	403.3/406.0	215.9/448.9	398.3/415.7	495.1/485.2	328.7/349.5	468.3/450.7
AL2IR/L	392.4/452.3	485.8/392.0	412.8/386.6	521.3/541.0	249.1/335.6	514.1/447.2
AL3IR/L	397.8/419.6	375.0/304.0	343.0/366.3	482.0/531.1	256.1/318.3	440.1/426.1
AL4IR/L	408.7/468.7	403.4/434.7	337.2/354.7	472.1/436.1	273.3/276.8	454.2/436.6
WDI A	44.2	27.0	43.4	49.1	64.4	49.3
WDI B R/L	35.5/48.8	[a]/[a]	32.9/44.8	50.9/45.5	41.6/57.4	56.2/46.6
WDI C R/L	41.9/41.9	[a]/[a]	48.3/[a]	47.3/55.8	38.6/52.5	64.4/51.4
WDI D R/L	40.1/32.6	[a]/[a]	42.7/[a]	43.0/61.2	40.6/45.5	46.6/42.5
WDI E	33.1	[a]	[a]	44.8	[a]	45.2
ASC1R/L	78/77	21/65	35/30	65/76	64/61	65/64
ASC2R/L	79/77	61/48	51/33	69/72	47/60	71/69
ASC3R/L	76/83	47/35	39/67	69/70	54/54	58/62
ASC4R/L	85/88	55/60	30/37	64/65	51/51	63/68
CiL1IR	5.7	8.8	2.9	7.9	11.4	[a]
CiL2IR	8.4	6.8	4.4	6.6	3.8	4.6
CiL3IR	7.1	[a]	[a]	7.9	8.3	5.3
CiL4IR	6.0	[a]	4.4	5.6	10.0	[a]
AS1I R/L proximal	2.7/3.3(6.3/6.3)	2.0/3.1(5.7/5.7)	3.8/3.5(7.0/7.6)	3.6/3.3(6.9/6.6)	1.7/2.1(3.5/4.2)	3.9/3.2(4.9/5.6)
AS1I R/L distal	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
AS2I R/L proximal	3.0/2.7(5.7/6.3)	3.1/2.6(5.7/5.1)	2.9/2.9(6.7/6.7)	3.3/2.3(6.6/6.6)	2.1/1.7(4.5/4.9)	2.1/3.2(4.6/5.6)
AS2I R/L distal	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
AS3I R/L proximal	2.7/2.7(5.7/6.0)	3.1/3.4(6.3/5.4)	2.9/3.5(7.0/7.8)	3.0/1.6(6.6/6.2)	2.8/2.1(5.2/4.8)	2.1/2.1(5.3/4.6)
AS3I R/L distal	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
AS4I R/L proximal	2.7/3.0(5.4/7.1)	3.1/3.1(5.4/5.4)	2.0/2.9(6.4/7.6)	3.0/3.0(7.2/7.5)	1.7/2.4(4.5/5.2)	1.8/2.1(5.3/6.3)
AS4I R/L distal	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
GLC	7	7	6	7	6	7

Suckers with a moderate-sized suction chamber, well-developed muscular suction pad and wall ring, and small, simple aperture. Mature or nearly mature specimen arm sucker counts high in both sexes, slightly higher in female (up to 81 in males, up to 88 in females). Normal suckers recessed into oral surface of arms, closely spaced within web sectors, packed at web margin; suckers extending to arm tips.

Gills half-orange-type, with 6 or 7 tightly compacted lamellae; innermost and outermost ones reduced in size, lamellae 3 and 4 with common arterial base.

Shell simple U-shaped, solid (non-vacuolated), amber-colored in preserved specimens, easily fragmented, surface smooth (Figs. 4, 5). Saddle well developed, thickened relative to wings, with single shallow outer groove,

Table 2. (continued)

NMNS No.	NMNS 5511-004	NMNS 002157-00089	NMNS 002157-00089	NMNS 002157-00070	NMNS 002157-00070
Specimen no	24-2	30-2	30-4	28-1	28-3
Type Status	Paratype 3				
Sex	F	F	F	F	F
TL	177	97	98	123	86
ML	**28**	**25**	**21**	**19**	**14**
MWI	110.3	79.7	96.7	98.9	138.9
HWI	171.2	139.0	150.5	145.3	159.0
PAI	44.8	35.5	42.0	33.7	58.3
FunLI	72.2	50.6	45.3	78.9	104.2
FLI Out	114.9	89.2	92.9	150.0	154.2
FLI In	82.8	65.3	60.4	126.8	111.1
FWI	25.3	19.9	26.4	26.3	27.1
EDI	69.0	65.3	67.9	90.0	90.2
Lens DI	42.0	31.9	42.0	78.9	58.3
AL1IR/L	462.6/416.4	274.9/346.6	358.5/353.8	410.5/426.3	368.1/472.2
AL2IR/L	416.4/412.8	310.8/326.7	358.5/344.3	426.3/436.8	326.3/458.3
AL3IR/L	405.7/419.9	330.7/255.0	325.5/320.8	384.2/442.1	354.2/444.4
AL4IR/L	402.1/398.6	330.7/270.9	297.2/311.3	400.0/394.7	437.5/395.8
WDI A	55.4	52.9	52.6	[a]	19.9
WDI B R/L	56.9/54.6	36.8/55.2	44.7/47.4	45.2/[a]	48.8/51.6
WDI C R/L	57.7/53.1	49.4/44.8	52.6/[a]	56.0/61.9	37.8/45.3
WDI D R/L	44.6/44.6	44.8/52.9	48.7/47.4	[a]/[a]	37.2/51.5
WDI E	48.5	48.3	43.4	50.0	24.6
ASC1R/L	69/70	50/57	54/59	39/26	19/28
ASC2R/L	65/71	43/61	62/49	48/42	44/31
ASC3R/L	67/71	52/58	58/32	32/42	29/35
ASC4R/L	67/65	54/52	47/60	47/35	29/36
CiL1IR	3.6	5.6	9.4	6.8	9.0
CiL2IR	6.8	6.8	11.8	[a]	10.4
CiL3IR	8.9	4.8	8.5	3.7	[a]
CiL4IR	10.0	4.8	4.7	13.7	[a]
AS1I R/L proximal	3.9/3.9(6.4/6.0)	2.4/2.8(4.8/5.2)	1.9/2.4(4.2/5.2)	3.7/3.7(8.4/8.9)	3.5/3.5(10.4/9.0)
AS1I R/L distal	n.a.	n.a.	n.a.	n.a.	n.a.
AS2I R/L proximal	3.9/3.6(6.8/6.8)	2.0/2.4(5.2/4.8)	2.4/1.4(5.2/4.7)	2.6/6.3(6.8/11.1)	4.2/4.8(8.3/9.7)
AS2I R/L distal	n.a.	n.a.	n.a.	n.a.	n.a.
AS3I R/L proximal	2.8/3.9(7.1/7.1)	2.8/2.4(5.2/4.8)	1.9/2.4(5.2/5.7)	3.7/5.3(10.0/11.6)	4.2/3.5(10.4/11.1)
AS3I R/L distal	n.a.	n.a.	n.a.	n.a.	n.a.
AS4I R/L proximal	4.3/3.6(7.5/6.8)	2.4/2.4(5.2/4.4)	1.9/1.4(4.7/4.7)	2.6/3.7(6.3/10.0)	4.9/4.2(10.4/9.7)
AS4I R/L distal	n.a.	n.a.	n.a.	n.a.	n.a.
GLC	7	6	6	7	6

and convex inner margins; lateral wings long, tapering to acute points. Lateral wings (Figs. 4D, 5D) well developed, laminar, without inrolled margins, wings continuing from saddle without divergence; muscle insertion points marked by 2 small prominences. No obvious sexual dimorphism in shape of shell.

In fresh specimens, oral surface of arms and web vermilion-colored; suckers, sucker apertures paler, cream-colored; dorsal surface of mantle,

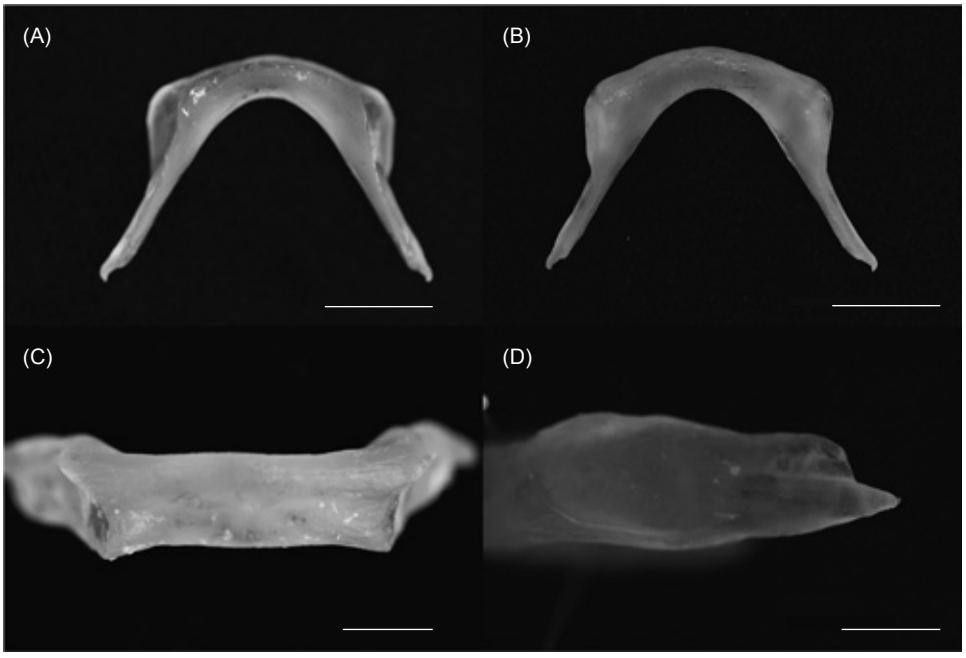

Fig. 4. *Opisthoteuthis dongshaensis* sp. nov., shell of spec. 25-1, male, NMNS 002157-00087. (A) Dorsal view. Scale bar = 10 mm. (B) Ventral view. Scale bar = 10 mm. (C) Posterior view. Scale bar = 5 mm. (D) Lateral view of left limb. Scale bar = 5 mm.

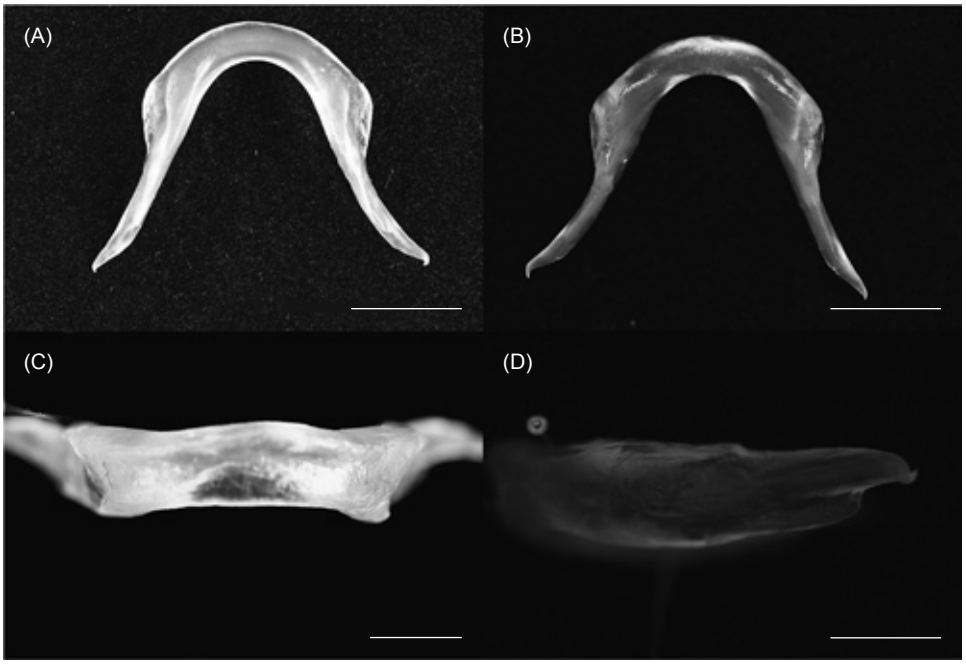

Fig. 5. *Opisthoteuthis dongshaensis* sp. nov., shell of spec. 26-4, female, NMNS 002157-00085. (A) Dorsal view. Scale bar = 10 mm. (B) Ventral view. Scale bar = 10 mm. (C) Posterior view. Scale bar = 5 mm. (D) Lateral view of left limb. Scale bar = 5 mm.

head, and arms, reddish-purple; ventral surface of mantle, dorsal surface of fins, orbit, web margin, and portion of arm free from web, paler, cream-colored. Skin delicate, most specimens having lost most of their skin. In preserved specimens, pigmented skin having turned maroon-colored.

Optic lobe large, kidney-shaped (Figs. 6C, D). Optic nerve branching into 4 large nerve bundles, each undergoing minor branching into rear of eyeball. White bodies disc-shaped, dark brown.

Digestive system (Figs. 6A, B) with moderate-sized buccal bulb; anterior salivary glands, radular and palatine teeth absent; crop diverticulum absent, crop poorly developed. Stomach without external demarcation. Cecum poorly developed, spiral coiling absent. Intestine shorter than esophagus, thin-walled, distended in 2 parts, proximally and distally with weak central constriction; anal flaps absent. Digestive gland large, bilobed; pancreas well developed.

Upper beak (Figs. 7A, B) tall, height 70% of beak length (= crest length), darkly pigmented; margins of hood and lateral wall translucent; hood moderately deep, 68% of beak length; jaw without teeth; rostrum strongly deflected down, acutely angled, with sharp point. Lateral walls parallel-sided, with slightly rounded crest and strong lateral wall fold. Lower beak (Figs. 7C, D) tall, height 86% of base length, darkly pigmented; lateral wing, hood, and wall margins translucent. Weak notch at jaw angle, crest broad, convex. Hood long, 65% of beak length, projecting forward, without notch at posterior margin; rostrum slightly rounded; wings moderately long, length 60% of beak length. Lateral wall long, length 110% of beak length, posterior margin of crest without notch.

Male reproductive system (Figs. 8A, B) with great development of seminal vesicles and

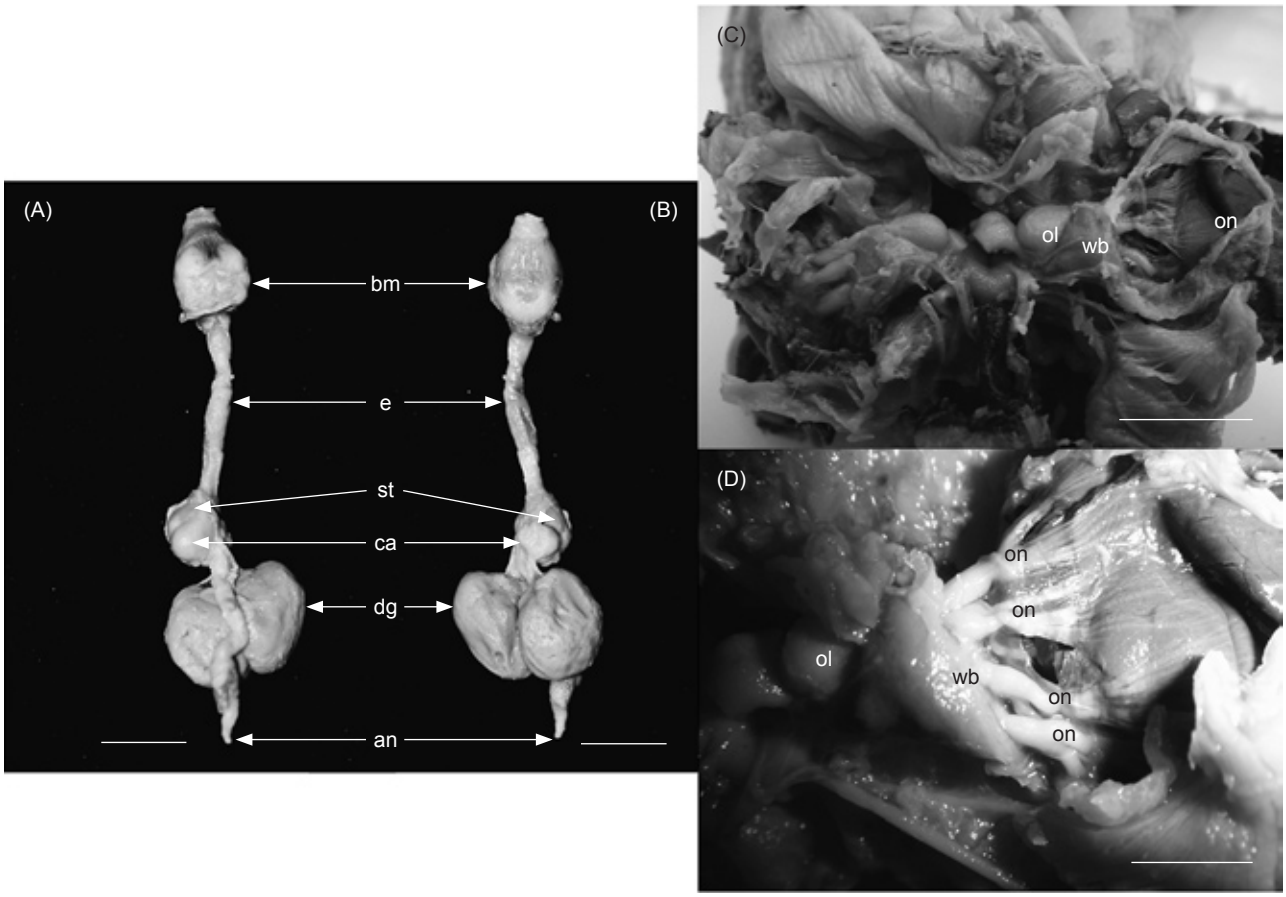

Fig. 6. *Opisthoteuthis dongshaensis* sp. nov. (A, B) Digestive Tract. an, anus; bm, buccal mass; ca, cecum; dg, digestive gland; e, esophagus; ol, optic lobe; on, optic nerve; st, stomach; wb, white body. (A) Dorsal view of digestive tract of spec. 24-1, NMNS 002157-00079. Scale bar = 10 mm. (B) Ventral view of digestive tract of spec. 24-1, NMNS 002157-00079. Scale bar: 10 mm. (C, D) Optic Lobe. (C) Optic lobe, white body, optic nerve bundles, eye of spec. 26-6, NMNS 002157-00085. Scale bar = 10mm. (D) Close-up view of right optic lobe, white body, optic nerve bundles and eye of spec. 26-6, NMNS 002157-00085. Scale bar = 5 mm.

accessory glands; complex of accessory gland structures larger than seminal vesicle complex; terminal organ well developed. Spermatophore not described as no spermatophore was found.

Female reproductive system (Fig. 9) with single oviduct and large ovary sac; proximal oviduct long, containing few (to 4) oocytes in dissected female. Oviducal gland 2-chambered; distal chamber light grayish-brown, striated, about 1.35 times size of proximal chamber; proximal chamber white, with weak striations. Distal oviduct short, containing a single oval egg in dissected female, 8 mm long, 5 mm wide**,** egg shell light honey-colored, with longitudinal striations. Some oocytes in proximal oviduct similar to eggs in distal oviduct, majority of remaining oocytes smaller, smooth. Ovary with numerous oocytes of various developmental stages (paratype 5 contains 163 free oocytes plus numerous undeveloped oocytes in bunches).

Distribution: Known only from the South China Sea in the vicinity of the Dong Sha Is. (the Pratas Islands, around 21°N, 116°E) at depths of 660-1015 m.

Etymology: The specific epithet is derived from the Chinese name of the islands, Dong Sha Is., the source of all known specimens of this new species.

DISCUSSION

O'Shea (1999) in describing several new species from New Zealand reviewed the family and divided it into 3 groups. The diagnostic characters of group 1, typified by *O. agassizii*, are: cirri commencing between suckers 1 and 2; male sucker enlargement greatest in proximal field, weak in distal field; shell non-vacuolated; muscle insertion points marked by 2 well-developed prominences, lateral wings laminar, with terminal prolongation into fine-pointed tips; digestive gland bilobed; male accessory gland 3 dominating accessory gland complex, terminal organ poorly developed. Diagnostic characters of group 2 are: cirri commencing between suckers 2-4; male with

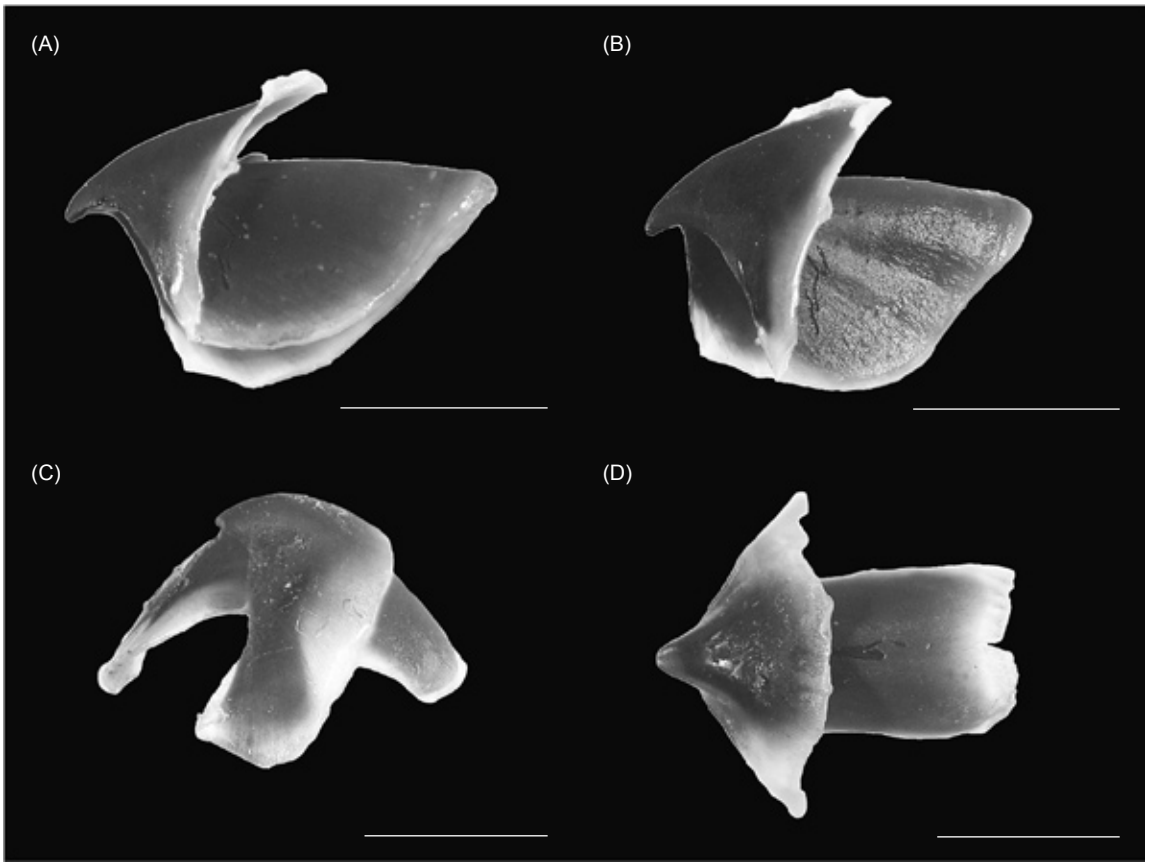

Fig. 7. *Opisthoteuthis dongshaensis* sp. nov., beak of paratype 2, NMNS 5511-002. (A, B) Upper beak. Scale bar = 5 mm. (C, D) Lower beak. Scale bar = 5 mm.

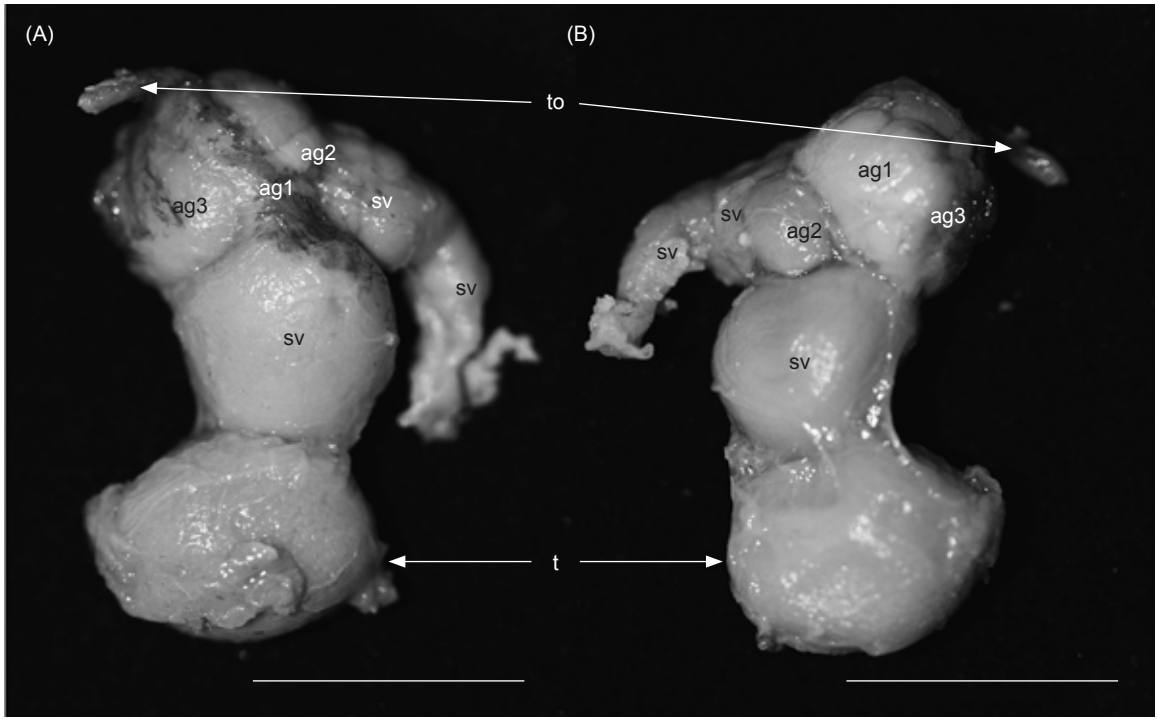

Fig. 8. *Opisthoteuthis dongshaensis* sp. nov., male reproductive system of spec. 25-2, paratype 4, NMNS 5511-003. ag1-3, accessory glands 1-3, respectively; to, terminal organ; sv, seminal vesicle; t, testes. (A) Outer view. Scale bar = 5 mm. (B) Inner view. Scale bar = 5 mm.

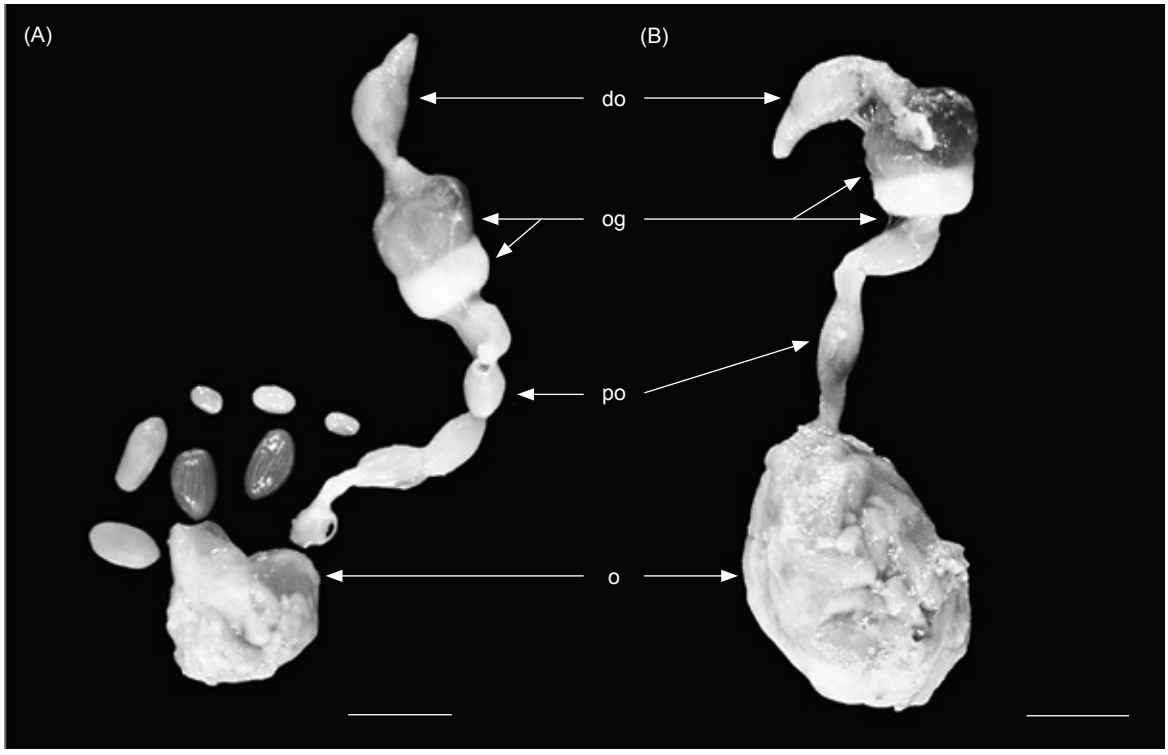

Fig. 9. *Opisthoteuthis dongshaensis* sp. nov., female reproductive system. do, distal oviduct; o, ovary; og, oviducal gland; po, proximal oviduct. (A) Female reproductive system, with ovarian sac ruptured, of paratype 5, NMNS 5511-006. Scale bar = 10 mm. (B) Female reproductive system, intact, of spec. 23-3, NMNS 002157-00078. Scale bar = 10 mm.

Table 3. Comparison of *Opisthoteuthis* species (following Villanueva et al. 2002 and Villanueva et al. 2008 with information on *O. persephone*, *O. pluto*, and *O. dongshaensis* sp. nov. added). [a]From illustration. [b]DESD distal field enlarged sucker diameter; PESD proximal field enlarged sucker diameter. For the purposes of this table, a distal field was considered to be absent if suckers there did not show a distinct enlargement

	Mature males					
Species	Arm I more robust	Prox. field: No. of suckers	Distal field: No. of suckers	Prox. field: Arm no.	Distal field: Arm no.	Distal field: Largest sucker, mean position
O. agassizii	No	5	7 or 8	I - IV	I - IV	34 - 36
O. albatrossi	No	0	3	None	I	?
O. borealis	Slight	5	9 - 14	I - IV	I - IV	27 - 30
O. bruuni	No	3	2 or 3	I - IV	I - IV	24 - 27[a]
O. californiana	No	8 - 10	3 - 8	I - IV	I	~ 27
O. calypso	No	2 - 6	2 - 3	III	I - IV	26 or 27
O. chathamensis	No	5 - 7	6 - 8	I - IV	I - IV	~ 22
O. depressa	No	16	0	I - IV	None	-
O. extensa	?	?	?	?	?	?
O. grimaldii	No	4 - 11	9 - 10	I - IV	I - IV	29 - 31
O. hardyi	Slight	4 - 9	9 - 14	I - IV	I - IV	22 - 24
O. japonica	No	9	?	I - IV	?	-
O. massyae	Yes	7 - 8	9 - 11	I - IV	II - IV	40 - 41
O. medusoides	?	?	?	?	IV	?
O. mero	No	5 - 8	?	I - IV	None	-
O. persephone	No	3 - 8	4 - 7	I - IV	I and II	31 - 34
O. philipii	?	5 - 11	?	?	?	?
O. pluto	Yes	3 - 6	2 - 4	I - IV	II - IV	29 - 34
O. robsoni	No	7 - 8	?	I - IV	None	-
O. dongshaensis	No	3 - 4	3 - 4	I - IV	III and IV	33 - 42

	Both sexes					
Species	DESD> PESD[b]	Arm sucker Counts	Funnel organ	Web supports	Digest. Gland bilobed	Geographical region
O. agassizii	No, except in older males	58 - 80	V-shaped	Multiple	No	NW Atlantic
O. albatrossi	Yes	80	?	Single?	Yes	N Pacific
O. borealis	Equal	75 - 82	?	No	No	N Atlantic
O. bruuni	No	?	2 pads	?	?	SE Pacific
O. californiana	Yes	?	2 pads	?	?	N Pacific
O. calypso	Yes	47 - 58	2 pads	Single	No	E Atlantic
O. chathamensis	Equal?	41 - 55	V-shaped	?	Yes	SW Pacific
O. depressa	No	50	?	Absent?	?	NW Pacific
O. extensa	?	?	?	?	?	E Indian
O. grimaldii	No	73 - 80	2 pads	Single	Yes	E Atlantic
O. hardyi	Equal	60 - 67	?	Absent	No	high S Atlantic
O. japonica	No	?	2 pads	?	?	NW Pacific
O. massyae	No	81 - 106	2 pads	Multiple	Yes	E Atlantic
O. medusoides	?	?	?	?	?	W Indian
O. mero	No	54 - 71	V-shaped	?	Yes	SW Pacific
O. persephone	No	68 - 81	V-shaped	Absent	Yes	Off S. Aust. From NSW to SA, including TAS
O. philipii	?	?	V-shaped	Single	?	NW Indian
O. pluto	Yes in male/ No in female	59 - 88	V-shaped	Absent	Yes	Off S. Aust. From QLD to WA, including TAS
O. robsoni	No	74 - 89	V-shaped	?	No	SW Pacific
O. dongshaensis	Yes	74 - 88	V-shaped	Absent	Yes	NW Pacific (South China Sea)

gross sucker enlargement in both proximal and distal fields; shell solid, muscle insertion points marked by 2 small prominences; lateral wings laminar, tapering to acute points; digestive gland bilobed; accessory gland 1 dominating accessory gland complex; terminal organ well developed. Diagnostic characters of group 3 are: cirri commencing between suckers 2 and 4; males with grossly enlarged suckers in proximal field, weakly enlarged suckers in distal field; shell vacuolated (not solid); muscle insertion points marked by 2 well-developed prominences, lateral wings laminar, tapering to acute points; digestive gland entire (not bilobed); accessory glands 2 and 3 dominating gland complex, terminal organ well developed.

Sucker enlargement in males of the present species places it in group 2 of O'Shea (1999), which includes *O. pluto*, *O. californiana*, *O. chathamensis* and possibly *O. medusoides*. The present species differs from all described species of *Opisthoteuthis* in having enlarged suckers of the distal field in mature males only on arms III and IV. Villanueva et al. (2002) in reviewing the genus, presented a table comparing various characters of the genus. This table, with minor modifications, is reproduced as table 3 with the addition of data for *O. persephone*, *O. pluto*, and the present species.

Of the 19 nominal species recognized by Collins and Villanueva (2006), only *O. depressa*, *O. albatrossi*, and *O. japonica* were reported from the Northwest Pacific, i.e., *O. depressa* from Japan (Ijima and Ikeda 1895, Sasaki 1929), East China Sea and South China Sea (Dong 1988); *O. albatrossi* from Japan (Sasaki 1920 1929), and *O. japonica* from Japan (Taki 1962 1963) and Taiwan (Lu unpubl. data). The record of *O. depressa* from the continental slope of the South China Sea reported by Dong (1988) and represented by a female specimen may represent the present species. With the addition of the present species, 4 species of *Opisthoteuthis* have now been reported from the Northwest Pacific Ocean.

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