

西部北太平洋における深層性オキアミの一種Thysanopoda spinicaudataの記録

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New Record of a Rare Giant Bathypelagic Euphausiid *Thysanopoda spinicaudata* from the Western North Pacific^{1), 2)}

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Abstract

Two adult females of *Thysanopoda spinicaudata* Brinton were collected from the western North Pacific. This is the first record in this region. These specimens, 141 mm and 144 mm in total length, were collected by an oblique tow down to a depth below 2,000 m. Present and previous records suggest that *T. spinicaudata* is bathypelagic and lives in deep waters below 2,000 m and has a wide distribution from the Indian to the Pacific Oceans. The taxonomic characteristics of the species are re-described.

Since 1830, when H. MILNE-EDWARDS established the new genus *Thysanopoda* with *T. tricuspidata* as the type species, twelve species have been described. Three of them, *T. cornuta* Illig, 1905, *T. egregia* Hansen, 1905, and *T. spinicaudata* Brinton, 1953, are known to be bathypelagic. The first two species have a wide range in the Pacific and are also known from several stations in the Atlantic Ocean.

On the other hand, as for *T. spinicaudata* only four adults and six juveniles have been caught from the eastern part of the Pacific (BRINTON 1953, BODEN et al. 1955) and from the Indian Ocean (BRINTON & GOPALAKRISHNAN 1973). Up to the present, the morphology of this species was examined only on a young female, 84.0 mm in total length.

In 1984 two adult females of *T. spinicaudata* were collected during a cruise of R/V Kaiyo-Maru of the Fisheries Agency of Japan in the area of Shatsky Rise. This is the first record from the western North Pacific.

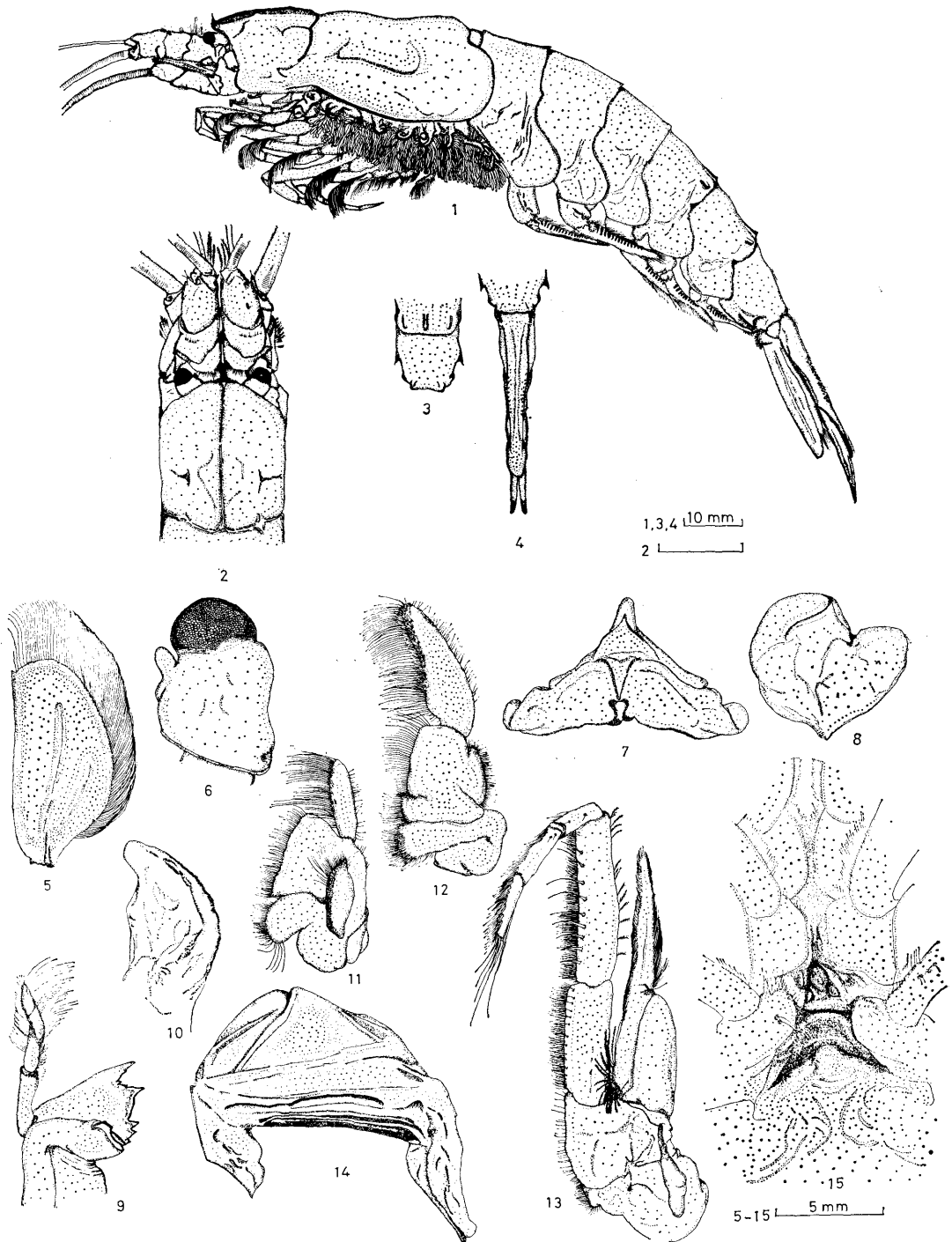
Materials and Methods

Two adult females, one specimen 141.0 mm in total length, 27.2 g in wet weight and the other one 144.0 mm in total length, 27.1 g in wet weight were collected at Station E-1 in the area of the Shatsky Rise (31°46'N, 157°43'E), during a cruise aboard R/V Kaiyo-Maru of the Fisheries Agency of Japan. Samples were collected on June 1, 1984 using a KMT-sampler, an otter trawl of 450 m mouth area and 65.5 m length. The mean sampling speed was 5.1 m per sec. when the sampler was towed horizontally.

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²⁾ 西部北太平洋における深層性オキアミの一種 *Thysanopoda spinicaudata* の記録

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Figs. 1-15. *Thysanopoda spinicaudata* Brinton

1. Adult female in lateral view; 2. Anterior end of adult female in dorsal view; 3. Sixth abdominal somite in dorsal view; 4. Telson in dorsal view; 5. Antennal scale; 6. Eye; 7. Labrum in dorsal view; 8. Labrum in lateral view; 9. Mandible; 10. Labium; 11. First maxilla; 12. Second maxilla; 13. First thoracic limb; 14. Stomach in lateral view; 15. Thelycum of adult female.

Descriptive Notes

Thysanopoda spinicaudata Brinton

(Plate 1 and Figures 1-16)

BRINTON 1953, 408-412, figs. 1, 3, 6, 10, 11; BODEN et al. 1955, 316-317, figs. 16a-c; BRINTON 1962, 77-80, figs. 9a, e, h, k; MAUCLINE & FISHER 1969, 52; BRINTON 1975, 158, figs. 83a-b, 119c; NEMOTO 1977, figs. 4-6.

Cervical groove of carapace distinct, anterior margin of carapace slightly convex. Dorsal anterior end of frontal plate with a distinct vertical spine (Pl. 1 and Fig. 1). Mid-dorsal keel present on carapace, extending from vertical spine to cervical groove (Figs. 1, 2). No lateral denticles on carapace. Fourth and fifth abdominal somites keeled posteriorly at the median line. Sixth abdominal somite with a heavy backward- and outward-pointing spine on each side, shorter than fifth (Fig. 3). Telson very long, apex forked, armed with small spines on dorso-lateral

TABLE 1. LIST OF *Thysanopoda spinicaudata* CAPTURED TO DATE.

Date	Body length (mm)	Sex ¹⁾	Location		Depth towed (mm)	Net used	Ship	Author
			Lat.	Long.				
Mar. 22, 1951	84	F	25°52'N	114°40'W	0-2200	IKMT	S.F. Baird	BRINTON 1953
Feb., 1960	104	M	29° N	118° W	.....	.....	S.F. Baird	MAUCLINE & FISHER 1969
Mar. 30, 1962	150	F	33°38'N	131°54'W	0-2250	IKMT	Horizon	BRINTON 1962
Mar., 1961	25	Y	25°52'S	155°44'W	0-2250	IKMT	Argo	BRINTON 1962
July 9, 1960	40	Y	12°07'N	148°35'W	0-2100	IKMT	Horizon	BRINTON 1962
Apr. 13, 1962	50	Y	29°55'N	120°12'W	0-2000	IKMT	Horizon	BRINTON 1962
Jan. 16, 1966	62	M	43°01'S	85°58'W	0-2900	IKMT	Anton Bruun	BRINTON & ANTEZANA (per. comm.)
Jan. 16, 1966	13.9	Y	43°01'S	85°58'W	0-2900	IKMT	Anton Bruun	BRINTON & ANTEZANA (per. comm.)
June 1, 1984	141	F	31°53'N	157°42'E	0-2542	Otter trawl	Kaiyo-Maru	Present study
June 1, 1984	144	F	31°46'N	157°43'E	0-2320	Otter trawl	Kaiyo-Maru	Present study
.....	132	F	.....	.....	.....	.....	.....	.....
1962	...	—	13°36'N	65°03'E	.....	IKMT	Anton Bruun	BRINTON & GOPALAKRISHNAN 1973

¹⁾ M: adult male; F: adult female; Y: immature

edge (Fig. 4). Upper distal margin of first antennal peduncle extremely setose. Antennal scale broad, spine terminating outer margin of scale set behind the apex (Fig. 5). Small tubercle projects from the inner corner of eyestalks. Eyes slightly narrower than eyestalks (Fig. 6), reaching to middle of first antennular peduncle segment. Labrum, anterior to mouth, triangular in ventral view (Figs. 7, 8). Pars incisiva of mandibles with large acute tooth. Pars molaris, a grinding surface, finely serrate on its edge. Combined lengths of the second

and third segments of mandibular palp as long as the width of jaw (Fig. 9). Labium concaved in anterior surface fits against the posterior face of mandibles (Fig. 10). Endopod of first maxilla slightly longer than that of pseudoexopod (Fig. 11), Endopod of second maxilla very elongate (Fig. 12). Dactylus of first thoracic limb armed with series of spines, especially five long spines present on distal margin (Fig. 13). Posterior part of stomach just above pyloric region of intestine not inflated (Fig. 14). Coxal plates and a sternite of thelycum slightly convex in posterior area (Fig. 15).

Remarks

In terms of the total length, these two specimens are the second and the third largest euphausiids ever reported.

Unlike Brinton's description, endopod of the first maxilla inflated laterally in the present specimens. Lateral shape of the stomach is similar to *T. egregia*, a typical carnivorous euphausiid (NEMOTO 1977). Stomach contents of the present specimens have not yet been examined, however, the stomach contents observed through the stomach wall appear to contain oil globules which probably have originated from deep-sea zooplankton on which the euphausiid has fed.

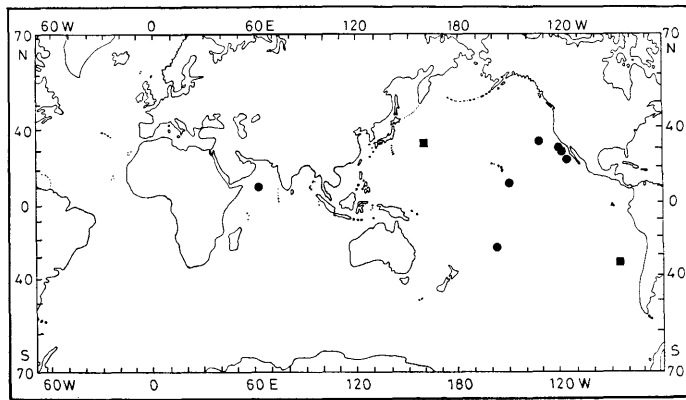


Fig. 16. Records of *Thysanopoda spinicaudata*.

● - one specimen collected, ■ - two specimens collected.

Sampling records of *T. spinicaudata* are listed in Table 1. Sampling records of *T. spinicaudata* have hitherto been restricted to the eastern part of the Pacific i.e., off California (BRINTON 1953), off Chile (BRINTON & ANTEZANA, per. comm.), off Hawaii (BRINTON 1962) and off Tahiti Islands (BRINTON 1962). The present two specimens are the first record from the western North Pacific. In addition to these records, *T. spinicaudata* has also been found in the Arabian Sea (13°36'N, 65°03'E) (BRINTON & GOPALAKRISHNAN 1973). These records suggest that *T. spinicaudata* is widely distributed in the Indian to the Pacific Oceans (Fig. 16).

All the specimens had been captured when nets sank below 2000 m. It is, therefore, suggested that *T. spinicaudata* is non-migrant and generally stays in deep water below 2000 m through day and night.

Acknowledgements

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PLATE 1



Thysanopoda spinicaudata Brinton, adult female of 141 mm.