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Lernanthropid copepods (Siphonostomatoida) parasitic on fishes of the Gulf of Thailand

Ju-shey Ho¹ & Il-Hoi Kim²

¹Department of Biological Sciences, CA State University, Long Beach, CA 90840-3702, USA

²Department of Biology, Kangneung National University, Kangneung, 210-702, Korea

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Abstract

Five species of copepods (Siphonostomatoida: Lernanthropidae) parasitic on fishes of the Gulf of Thailand are reported. They are: *Lernanthropus corniger* Yamaguti, 1954 from *Megalaspis cordyla* (Linnaeus); *L. latis* Yamaguti, 1954 from *Lates calcarifer* (Bloch); *L. nemipteri* Jayasree & Pillai, 1976 from *Scolopsis lineata* Quoy et Gaimard; *L. sillaginis* Pillai, 1963 from *Priacanthus tayenus* Richardson; and *Norion tayenus* n. sp. from *P. tayenus*. Except for *L. sillaginis*, the remaining four species are new to Thailand. *Lernanthropus priacanthi* Kirtisinghe, 1956 is transferred to *Norion* as *N. priacanthi* (Kirtisinghe, 1956) n. comb.

Introduction

In his checklist of parasites of fishes of Thailand, Sirikanchana (1982) listed five species of *Lernanthropus* Blainville, 1822 parasitic on eight species of marine fish. Additionally, an unidentified species of *Lernanthropus* was listed parasitic on six other species of marine fishes. So far as we are aware, this is the only publication containing information on the lernanthropid copepods of Thailand. In this paper we report five species of lernanthropids found on the fishes of the Gulf of Thailand. The parasites were collected by Wantana Yoosukh of Kasetsart University in Bangkok, Thailand. Four of the five species reported below are new to Thailand.

Materials and methods

The preserved specimens were soaked in 85% lactic acid overnight prior to dissection in a drop of lactic acid. The hanging drop method, devised by Humes & Gooding (1964), was employed in the examination of the isolated body parts and appendages under the compound microscope. All drawings were made with the aid of a camera lucida.

Lernanthropus corniger Yamaguti, 1954

Material examined

Two ♀♀ on gill-filaments of *Megalaspis cordyla* (Linnaeus) captured in the Gulf of Thailand in September, 1983.

Remarks

This species is new to Thailand but it has wide distribution in the Indo-west Pacific region. It was first reported by Yamaguti (1954) on an unidentified *Megalaspis* collected off Macassar in the Celebes. Thereafter, it was reported on *M. cordyla* off India (Pillai, 1963), on *Caranx djedaba* (Forsskål) off South Africa (Kensley & Grindley, 1973), on *M. cordyla* and *Decapterus* sp. off Hainan Island in the South China Sea (Song & Chen, 1976) and on *M. cordyla* off Malaysia (Leong, 1986). Pillai (1985) suspected that *Lernanthropus kanagurta* Tripathi, 1962 from India might be conspecific with *L. corniger*; if he is correct, then, *Rastrelliger kanagurta* (Cuvier) is another host of the present species. Pillai (1963, 1985) has provided a good description of *L. corniger*.

Lernanthropus latis* Yamaguti, 1954Material examined*

Seven ♀♀ and 1 ♂ on gill-filaments of *Lates calcarifer* (Bloch) captured in the Gulf of Thailand in April, 1983.

Remarks

As in *Lernanthropus corniger*, this species was first found on *Lates calcarifer* off Macassar, Celebes, by Yamaguti (1954). Then it was reported on the same host from Chilka Lake, India (Tripathi, 1962), off Colombo, Sri Lanka (Kirtisinghe, 1964) and off Kerala, India (Pillai, 1985). Thus finding it on the same fish in the Gulf of Thailand is no surprise. This species is new to Thailand. Pillai (1985) has provided a good description of this species.

Lernanthropus nemipteri* Jayasree & Pillai, 1976Material examined*

Two ♀♀ (1 juvenile and 1 adult) on gill-filaments of *Scolopsis lineata* Quoy & Gaimard captured in the Gulf of Thailand in April, 1983.

Remarks

It seems *Lernanthropus nemipteri* is a rare species of lernanthropid. Although many species of lernanthropids were reported from India and Sri Lanka in the 1960s, *L. nemipteri* was not discovered until the middle of 1970s. It was found on *Nemipterus furcosus* (Valenciennes) in Trivandrum, India by Jayasree & Pillai (1976). The present record from the Gulf of Thailand constitutes only the second of this species.

Lernanthropus sillaginis* Pillai, 1963Material examined*

One ♀ and 1 ♂ on gill-filaments of *Priacanthus tayenus* Richardson captured in the Gulf of Thailand in April, 1983.

Remarks

This parasite is known to be parasitic on *Sillago sihama* (Forsskål) from off India (Pillai, 1963, 1985) and in the South China Sea (Song & Chen, 1976).

However, off Thailand, Sirikanchana (1982) listed it as a parasite of *S. maculata* (Quoy & Gaimard) and *Pomadasys hasta* (Bloch), in addition to *S. sihama*. This report expands the host range of *L. sillaginis* to another species, *Priacanthus tayenus*. A good description of the female of *L. sillaginis* is found in Pillai (1963, 1985) and, of the male, in Song & Chen (1976).

Norion tayenus* n. sp.Material examined*

Seven ♀♀ and 1 ♂ on gill-filaments of *Priacanthus tayenus* Richardson captured in the Gulf of Thailand during January, 1979. Holotype (USNM 1013729) and 5 paratypes (USNM 1013730) deposited in the National Museum of Natural History, Smithsonian Institution, Washington, DC; dissected female and male in the collection of the second author.

*Description**Female* (Figures 1A-J, 2A)

Body (Figure 1A) short and broad, 2.80×1.92 mm. Head (cephalosome plus first pediger) wider than long, 0.71×0.81 mm, connected to trunk by short but distinct neck (Figure 1B), and with anterolateral region broadly protruded and folded downward (Figure 1C). Trunk carries dorsally single small, subrectangular and single large, semicircular dorsal plates (Figure 1A,C); in dorsal view latter plate entirely conceals posterior parts of trunk and appendages. Somites on urosome (Figure 1D) indistinguishably fused; genital complex with laterally protruded egg-sac attachment area; abdomen with broad anal somite carrying 1 dorsal spinule on either side of anal slit. Caudal ramus (Figure 1D) distinctly longer than wide, $140 \times 54 \mu\text{m}$; armed with 5 naked setae and 1 spiniform seta in distal half. Egg-sac coiled (disintegrated in lactic acid during study).

Antennule (Figure 1E) elongate, indistinctly 6-segmented; these segments armed with 1, 3, 2, 1, 1 and 9 setae. Antenna (Figure 1F) 2-segmented; corpus robust but unarmed; claw-like subchela carries 2 short, spiniform elements on medial surface of swollen basal portion. Oral cone long and tapering distally. Mandible (Figure 1G) 2-segmented, with 7 teeth on terminal blade. Maxillule (Figure 1H) bilobate; outer lobe (exopod) tipped with 1 papilliform seta and inner lobe, with 2 short and 1 long papilliform setae. Maxilla (Figure 1I) 2-segmented and brachiform, with

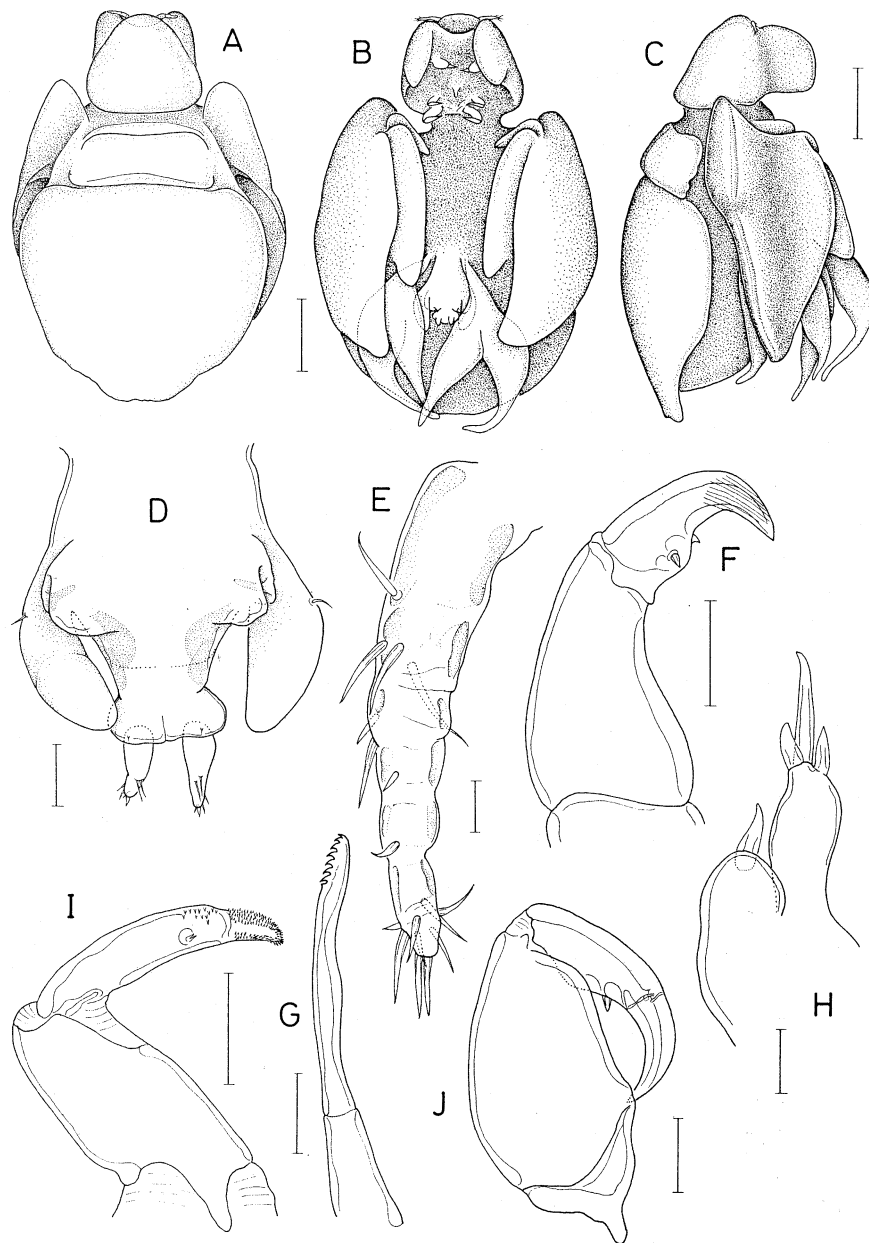


Figure 1. *Norion tayenus* n. sp., female. A. habitus, dorsal; B. same, ventral; C. same, lateral; D. urosome, dorsal; E. antennule; F. antenna; G. mandible; H. maxillule; I. maxilla; J. maxilliped. Scale-bars: A,B,C, 0.5 mm; D,F, 0.1 mm; E,G,H, 20 μ m; I,J, 50 μ m.

unarmed lacertus larger and longer than brachium; subterminally brachium bears small patch of denticles and short, bifid spine; terminal claw covered with denticles. Maxilliped (Fig. 1J) 2-segmented and with unarmed, robust corpus; subchela bears spiniform, medial seta in subterminal region of shaft.

Leg 1 (Figure 2A) greatly reduced, with inflated protopod carrying large, unarmed lobe. Leg 2 absent.

Leg 3 (Figure 1B,C) fleshy, bilobate lamella protruded ventrally from trunk; protopod projecting upward and forward (Figure 1A,B,C) on either side of trunk; outer lamella (exopod) much larger than inner lamella (endopod) and occupying major portion of lateral part of trunk (Figure 1B,C). Leg 4 (Figure 1B) foliaceous and bilobate; protopod short and narrow; both rami highly flattened and divisible into lamellate, broad basal part

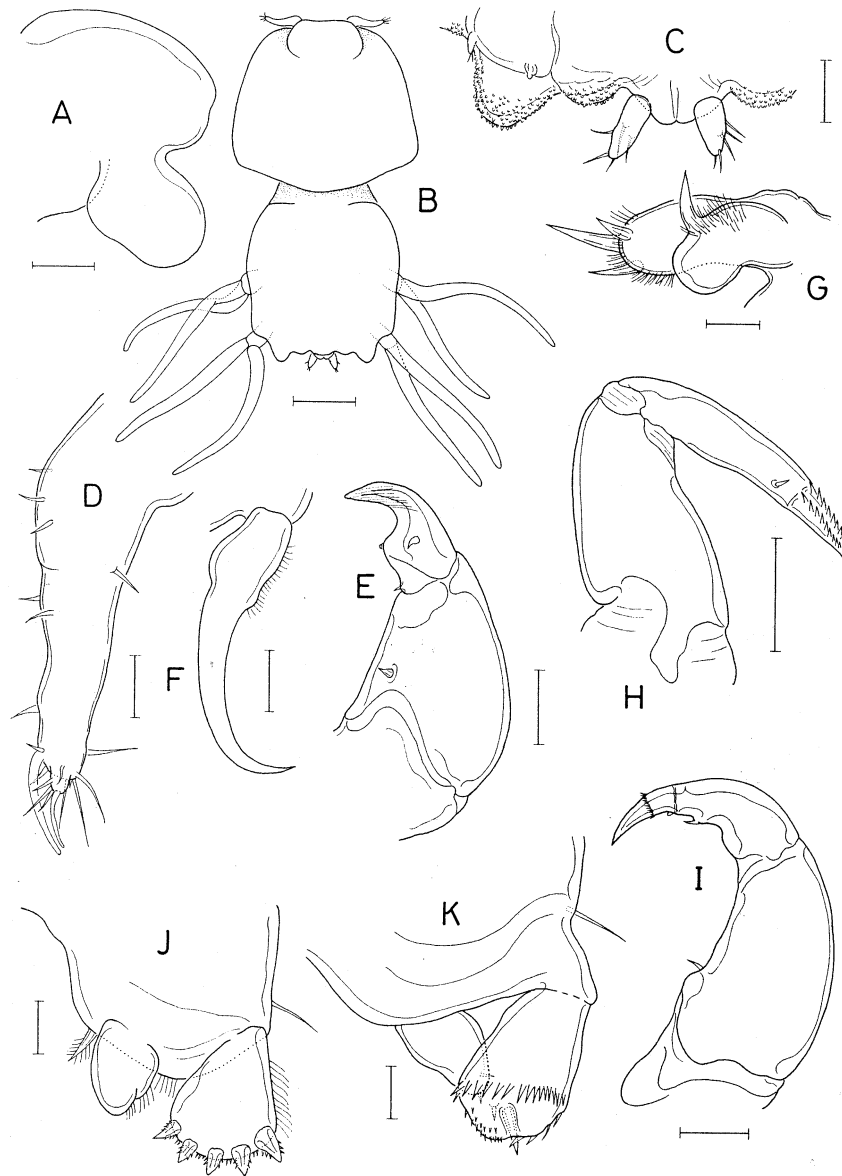


Figure 2. *Norion tayenus* n. sp. Female: A. leg 1. Male: B. habitus, dorsal; C. posterior part of body, ventral; D. antennule; E. antenna; F. parabasal antennular element; G. maxillule; H. maxilla; I. maxilliped; J. leg 1; K. leg 2. Scale-bars: A, 0.1 mm; B, 0.2 mm; C,E,H,I, 50 μ m; D,F,G,J,K, 20 μ m.

and filiform, narrow distal part. Leg 5 (Figure 1D) a spatula-like lamella bearing 1 outer seta in proximal region.

Male (Figure 2B-K)

Body (Figure 2B) 1.14 mm long and without dorsal plate on trunk. Head (cephalosome plus first pediger) wider than long, $540 \times 600 \mu\text{m}$, but trunk longer than wide, $595 \times 490 \mu\text{m}$. Genital complex incorporated into trunk and recognisable as protrusions

covered with denticles on posterior surface of trunk (Figure 2C). Abdomen reduced to central protrusion on posterior rim of trunk (Figure 2C). Caudal ramus (Figure 2C) small, $58 \times 24 \mu\text{m}$, armed as in females except with short terminal spiniform seta.

Antennule (Figure 2D) filiform and carrying prominent parabasal element fringed with row of setules on swollen base (Figure 2F); segmentation indistinct as in female; armature as in female except addition of 2 aesthetes on terminal segment. Antenna (Figure 2E)

as in female except for bearing medial seta on corpus. Maxillule (Figure 2G) essentially as in female except for bearing setules on both lobes. Maxilla (Figure 2H) different from female in lacking subterminal patch of denticles on brachium and in ornamentation of terminal claw. Maxilliped (Figure 2I) with seta in myxal region and circle of setules on terminal claw.

Leg 1 (Figure 2J) a protopod carrying naked outer seta and pinnate inner seta; both rami 1-segmented and fringed with row of setules on outer margin; exopod larger than endopod and armed with 5 stout, pinnate spines on distal margin. Leg 2 (Figure 2K) protopod with naked outer seta only; exopod larger than endopod, fringed subterminally with circle of spinules and tipped with 2 unequal spiniform setae; endopod armed with 1 terminal and 1 subterminal setae. Leg 3 and leg 4 identically constructed (see Figure 2B), with short protopod bearing long, cylindrical exopod and endopod about 540 μm long. Leg 5 represented by small lobe located in genital area bearing 3 setules and leg 6 by papilla tipped with tiny lobe (see Figure 2C).

Remarks

This species bears the closest resemblance to *Aethon priacanthi* (Kirtisinghe, 1956). When Kirtisinghe (1956) reported the latter from *Priacanthus hamrur* (Forsskål) taken off Sri Lanka, he called it "*Lernanthropus pricanthi* n. sp." and only a brief description was given of both sexes. Later, the parasite was found on the same host by Pillai (1985) off Kerala, India and a full set of illustrations for the female was supplemented. However, instead of keeping it in *Lernanthropus*, Pillai (1985) transferred the parasite to *Aethon* Krøyer, 1837, as *Aethon priacanthi* (Kirtisinghe, 1956), because of the possession of the coiled egg tubes. However, with the absence of leg 2, "*Lernanthropus priacanthi*" cannot be placed in *Aethon*. It should be pointed out here that *Norion globosus* Pillai, 1968 was also transferred to *Aethon* in Pillai's (1985) monograph on the parasitic copepods of the fishes of India.

So far as we are aware, three genera of lernanthropids are known to bear coiled egg-sacs, namely *Aethon*, *Norion* von Nordmann, 1864 and *Sagum* Wilson, 1913. *Norion* is the only one of these three taxa that has lost leg 2. Accordingly, in contrast to Pillai (1985), "*Lernanthropus priacanthi* Kirtisinghe" is herein transferred to *Norion*. With this change, there are now four species of *Norion*; namely *N. expansus* von Nordmann, 1864, *N. globosus* Pillai, 1968, *N. pri-*

acanthi (Kirtisinghe, 1956) n. comb. and *N. tayenus* n. sp. The type-species of the genus, *N. expansus*, differs from the present species in having a pair of large, elytra-like plates extending forward from the trunk and reaching well beyond the anterior rim of the head. *N. globosus* differs from *N. tayenus* in having a pair of large fifth legs reaching well beyond the tips of the caudal rami, and from the new species in the structure of leg 1 and the shape of the dorsal plate on the trunk. Another difference between the last two species is the structures of legs 3 and 4 in the male. These two legs in *N. priacanthi* are uniramous, but they are biramous with equally long rami in *N. tayenus* (see Figure 2B).

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