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ELAPHOGNATHIA KORACHAENSIS SP. NOV., A NEW GNATHIID SPECIES (CRUSTACEA, ISOPODA) FROM THAILAND

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ABSTRACT

Elaphognathia korachaensis sp. nov. is described from Thailand. The species was collected from coral rubble and sponges from the intertidal to 8 m depth. The species is most similar to *E. forceps* (Holdich and Harrison, 1980) from eastern Australia in having a narrow excavation on the frontal margin of the cephalosome and stout mandibles with an indication of a dentate blade. *E. korachaensis* differs from *E. forceps* in lacking lobi laterales on pereonite 6 and in the general shape of the pereopods, which have numerous lateral projections on the anterior face and ventral margin of the carpus, merus and ischium.

INTRODUCTION

Gnathiids isopods are peculiar animals, living during the larval stage (praniza) as parasites of fish, while as adults in cryptic benthic habitats (sponges, coral rubble, bottom cavities; Monod, 1926; Upton, 1987; Klitgaard, 1997; Smit *et al.*, 1999). As the gnathiids are among the most common parasites on fish that live around coral reefs (Grutter, 1996; 1999), their species diversity on coral reefs may be highly underestimated. Furthermore, there is limited information on which species of fish individual gnathiid species parasitise. See Svavarsson (2001, this volume) for general comments the Gnathiidea of Thailand.

MATERIALS AND METHODS

Workshop collections were made at Hi Island and Racha Yai Island and inter-tidally on the coast of Phuket Island. Coral rubble was collected, placed in a plastic bucket, the rubble shaken and then allowed to rest for some time with a drop of formalin, or treated with freshwater; it was then sieved through fine-meshed sieve and the animals sorted out. Sponges were also examined for gnathiids.

Terminology follows Cohen and Poore (1994). The material is deposited at the Reference Collection of the Phuket Marine Biological Center (PMBC), Phuket, Thailand and the Icelandic Museum of Natural History (IMNH), Reykjavík, Iceland.

TAXONOMY

Family Gnathiidae

Elaphognathia Monod

Type species

Anceus ferox Haswell, 1884 (see Cohen and Poore, 1994).

Diagnosis (modified from Cohen and Poore, 1994)

Eyes present. Frontal margin of cephalon transverse, deeply or moderately excavated; with frontal processes which may be emarginate. Mandibles long, cylindrical; often lacking mandibular blade, numerous specialised structures often present. Pereonite 1 reduced. Pylopod 2- or 3-articled; operculate, article 1 enlarged, dense external margin of plumose setae on lateral margin; article 3 small or absent.

Remarks

The genus contains at present 15 species (Table 1), largely confined to the Pacific and the Indian Oceans. The genus is heterogeneous, with species differing considerably in the extent of the excavation of the frontal margin and in presence, size and shape of the frontal processes (see Monod, 1926; Cohen and Poore, 1994) within the excavation. Future studies may result in further splitting of the genus. Some of the species within the genus, such as *E. insolida* and *E. ferox*, are in urgent need of redescription.

Elaphognathia korachaensis sp. nov.
(Figs 1–4)

Material examined

Holotype: PMBC 15800, 1 male, 1.4 mm, Hae Island (southern part), 6–8 m, coral rubble, Andaman Sea, coll. K. Larsen and M. Berggren, 09.12.1998.

Paratypes: PMBC 15801, 2 males, Racha Yai Island, 5 m, unidentified yellow sponge, Andaman Sea, coll. M. Watson, 05.12.1998; IMNH 2001.03.22, 1 male, 1 praniza, Station behind PMBC, dead coral, intertidal, Phuket, 04.12.1998.

Diagnosis

Frontal margin with deep, narrow excavation. Mandibles stout, indication of dentate blade, pronounced internal lobe. Lobi laterales absent on pereonite 6. Pereopods with numerous lateral projections on carpus, merus and ischium.

Description

Body length 1.4–1.5 mm. Body approximately 3.7 times as long as wide (Fig. 1A). Cephalosome (Fig. 1B, C) lateral margins evenly convex, about 1.8 times as long as wide. Frontal margin transverse, deeply excavated, width of excavation around 0.3 of anterior cephalon border; narrow dorsal sulcus on cephalon; eyes large, lateral and sessile.

Pereonite 3 widest, subequal in width to cephalosome (Fig. 1A). Pereonites 2 and 3 subequal; pereonite 4 anterolaterally slightly produced; pereonite 6 longest; pereonite 7 almost as wide as pleonite 1. Pleonites 1 and 2 subequal in width (Fig. 1D), posterior pleonites decrease in width towards posterior end; pair of setae posteriorly on all pleonites.

Mandible fairly straight (Fig. 1B–C, E), stout, approximately 0.9 times as long as cephalon, with dentate blade, unarmed carina, pronounced mandibular incisor, internal lobe present, mandibular seta around one third from distal end.

Antenna 1 (Fig. 1C) short, slightly shorter than antenna 2; peduncle articles 1 and 2 with few plumose setae distally; flagellum with 3 articles; approximately 1.1 times as long as peduncle article 3; articles 2 and 3 with few aesthetascs distally.

Antenna 2 (Fig. 1C) peduncle articles 3 and 4 with several long, plumose setae distally; flagellum with 8 articles.

Maxilliped (Fig. 2A) with 5 articles; external margin of article 1 fringed with fine, small setae; external margins of articles 2–5 with stout plumose setae, 3 on article 2, 4 on article 3, 5 on article 4, 8 on external margin and distally on article 5.

Pylopod (Fig. 2B) with 2 articles, external and internal margins fringed with fine setae; lateral margin of article 1 with about 17 plumose setae, simple seta present on distal end; article 2 fringed with fine setae, simple seta distally; article 3 absent (Fig. 2C).

Pereopods 2–6 (Fig. 3A–C and 4A–B) stout, similar in shape. Propodus of pereopods 2–6 with robust seta medioventrally and ventrodistally, ventrodistal seta larger than medioventral one; slender seta and plumose seta dorsodistally; propodus of pereopod 2 with cuticular extensions ventrally (Fig. 3A). Numerous lateral projections on anterior face and ventral margin on carpus, merus and ischium of all pereopods; ischium with long dorsodistal spine on pereopods 2 and 6 (Fig. 3A and 4B).

Pleotelson (Fig. 4C) about as long as wide; several setae on dorsal surface; distally with 2 setae.

Uropodal (Fig. 4D) endopod approximately as long as exopod, approximately 2.3 times as long as wide, fringed with about 6 plumose setae on distomedial margin and on apex, longest plumose setae about 1.8 times endopod length, one long simple seta laterodistally, few plumose setae on dorsal surface. Exopod approximately 2.8 times

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as long as wide, fringed with few plumose setae mediodistally and distally, few simple setae laterally and laterodistally.

Etymology

The name refers to Racha Yai Island (= Ko Racha Yai), where some of the specimens were collected.

Remarks

Fifteen species of the genus *Elaphognathia* have been described world-wide (Cohen and Poore, 1994). Of these only three have been recorded from the Indian Ocean: *E. insolita* (Stebbing, 1905) from Sri Lanka, *E. wolffi* (Müller, 1989) from Kenya and *E. rangifer* (Monod, 1926) from Thailand and Singapore (Table 1).

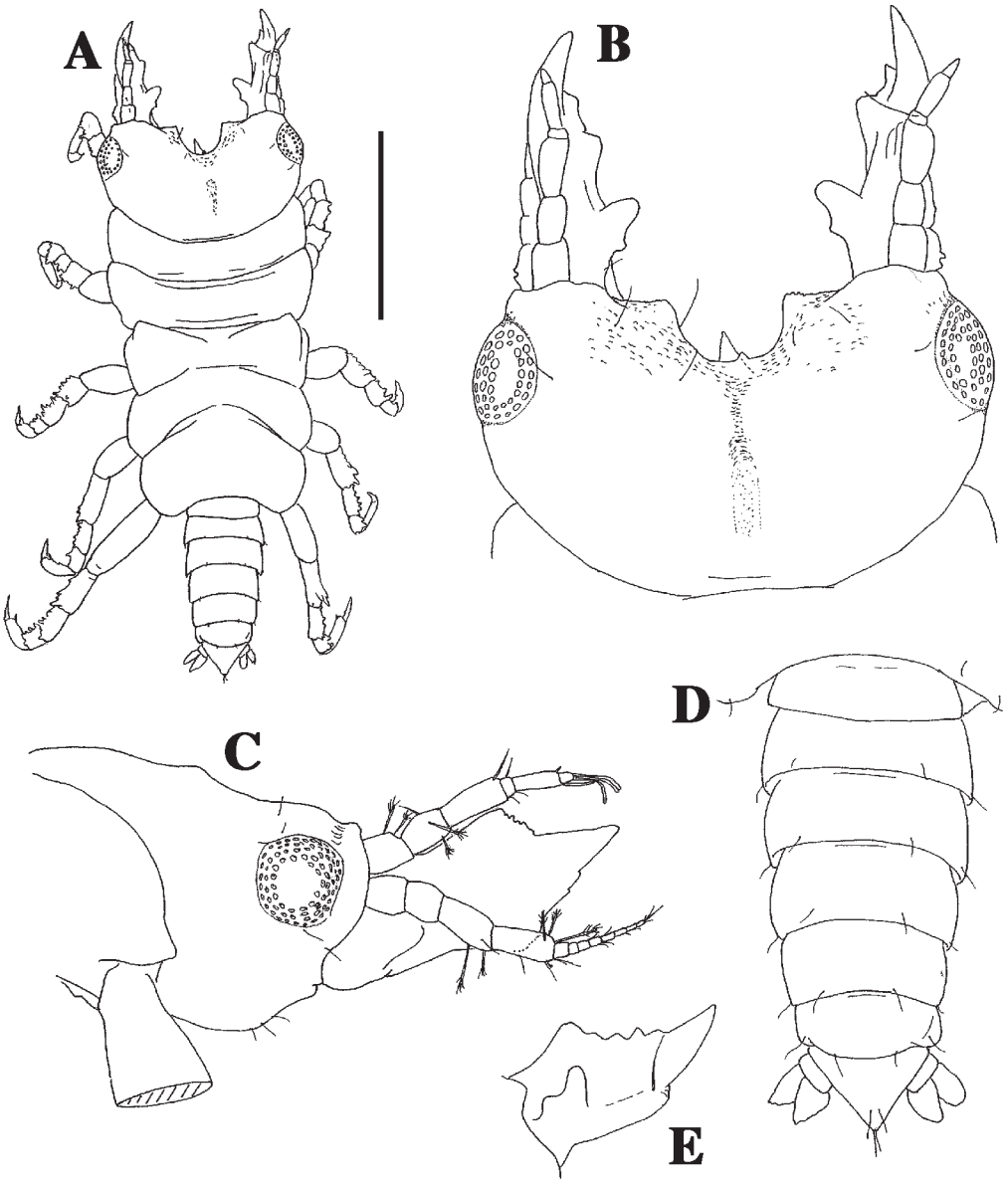

Figure 1 *Elaphognathia korachaensis* sp. nov. A–D. Male paratype, 1.5 mm, Station behind PMBC. E, Holotype, male, 1.4 mm, off Hi Island. A, body; B, cephalosome, dorsal view; C, cephalosome, lateral view; D, Pleonites and pleotelson; E, Mandible, dorsomedial view. Scale: 0.5 mm.

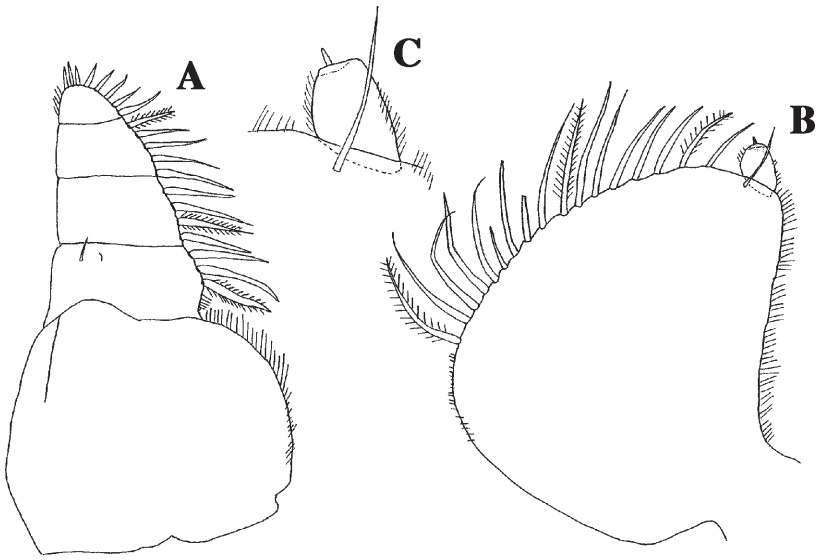

Figure 2 *Elaphognathia korachaensis* sp. nov. Male paratype, 1.5 mm, station behind PMBC. A, maxilliped (fine setulose omitted from large setae); B, pylopod (fine setulose on large setae omitted); C, second article of pylopod.

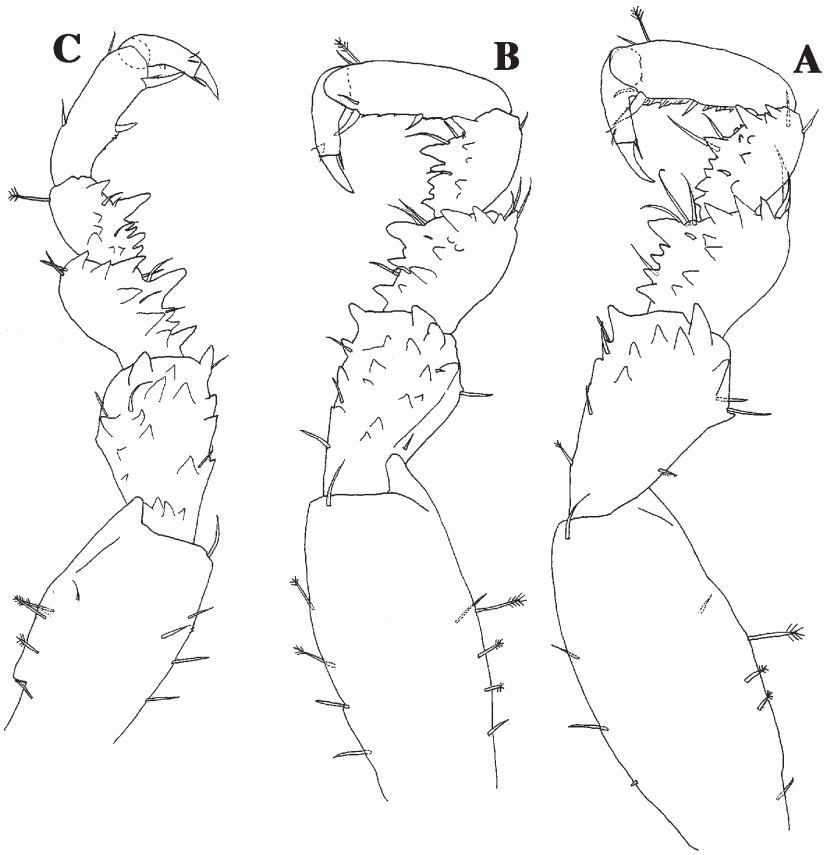

Figure 3 *Elaphognathia korachaensis* sp. nov. Male paratype, 1.5 mm, Station behind PMBC. A, pereopod 2; B, pereopod 3; C, pereopod 4.

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Table 1 Species of the genus *Elaphognathia* and their distribution.

Species	Type locality	Distribution
E. korachaensis sp. nov.	Hae Island, Phuket	Andaman Sea, Thailand
E. ferox (Haswell, 1884)	Port Jackson, Sydney, NSW	South-eastern Australia
E. insolita (Stebbing, 1905)	Gulf of Mannar	Sri Lanka
E. lucanoides (Monod, 1926)	Misaki	Southern Japan
E. rangifer (Monod, 1926)	Gulf of Thailand	Thailand, Singapore
E. monodi (Gurjanova, 1936)	Petrowinsel	Sea of Japan
E. bacescoi (Bãcescu, 1960)	Near Bosphorus	Black Sea
E. amboinensis (Cals, 1978)	Margura, South Moluccas	Indonesia
E. bifurcilla (Holdich and Harrison, 1980)	Bowling Green Bay, Townsville	North-eastern Australia
E. forceps (Holdich and Harrison, 1980)	Rowes Bay, Townsville	North-eastern Australia
E. rimifrons (Holdich and Harrison, 1980)	Halifax Bay, Townsville	Eastern Australia
E. sugashimaensis (Nunomura, 1981)	Sugashima	Central Japan
E. discolor (Nunomura, 1988)	Ibaraki Sea	Central Japan
E. wolffi (Müller, 1989)	Tiwi Beach	Kenya
E. cornigera (Nunomura, 1992)	Kumamoto	Japan
E. froygattella Cohen and Poore, 1994	Western Bass Strait	South-eastern Australia

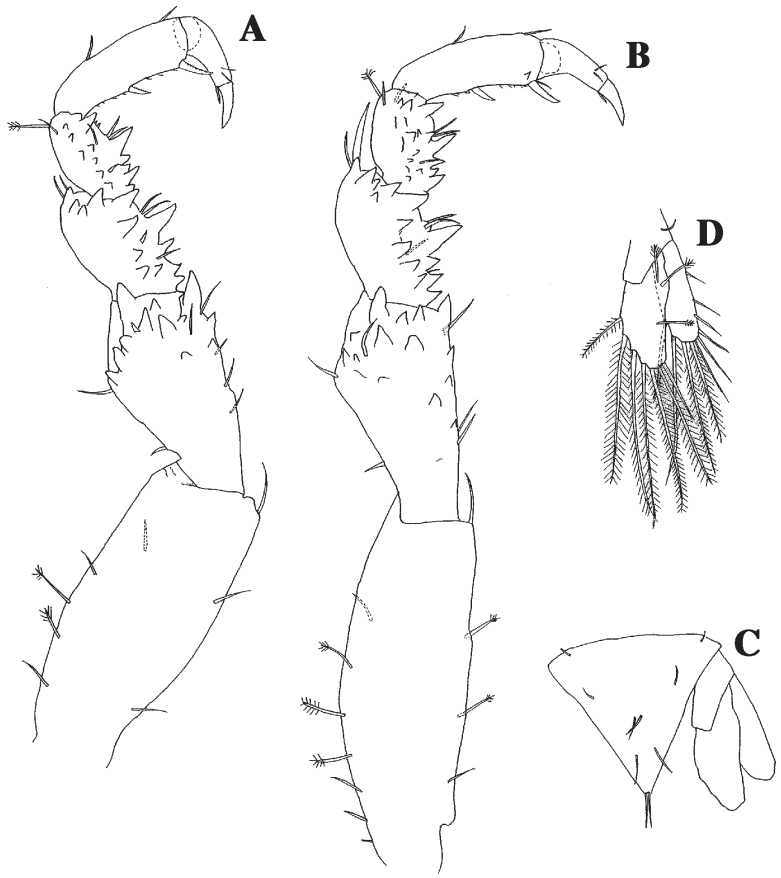

Figure 4 *Elaphognathia korachaensis* sp. nov. Male paratype, 1.5 mm, Station behind PMBC. A, pereopod 5; B, Pereopod 6; C, Pleotelson; D, Uropod.

The species is assigned to *Elaphognathia* on the basis of its deeply excavated frontal margin, the major diagnostic character for this somewhat heterogeneous genus. *E. korachaensis* is most similar to *E. forceps* (eastern Australia), in having a narrow but deep excavation to the frontal margin, and in having stout mandibles, with an indication of a dentate blade (see Holdich and Harrison 1980, fig. 7l, n). *Elaphognathia korachaensis* differs, however, in the absence of lobi laterales on pereonite 6 and in the general shape of the pereopods. Holdich and Harrison (1980) did not illustrate the pereopods of *E. forceps* in detail, but these apparently lack numerous lateral projections that are present on the carpus, merus and ischium of the pereopods of *E. korachaensis*.

Previously only four species of gnathiids have been recorded from Thailand: *Gnathia alces* Monod, 1926, *G. mortenseni* Monod, 1926, *Caecognathia andamanensis* Svavarsson (Svavarsson, 2001) and *Elaphognathia rangifer*. *E. korachaensis* is easily distinguished from the other *Elaphognathia* species occurring in Thailand, *i.e. E. rangifer*, in having much stouter mandibles, with more pronounced internal lobe.

Key to the males of *Elaphognathia*

1. Frontal margin with a distinct narrow (≤ 0.4 times cephalon width), shallow or deep excavation ……..2
– Frontal margin with a wide (≥0.5 times cephalon width), shallow or deep excavation 10
2. Frontal margin with no distinct superior or inferior frontolateral processes, though minute processes may be present (*i.e.* on *E. insolita*).....3
– Frontal margin with distinct superior or inferior frontolateral processes.....8
3. Mandible length > 0.7 times cephalon width…….....*E. rangifer*
– Mandible length < 0.7 times cephalon width…….....4
4. Frontal excavation shallow, width around 4 times maximum depth..... *E. insolita*
– Frontal excavation deep, width < 3 times maximum depth…....5
5. Lobi laterales present on pereonite 6.....6
– Lobi laterales absent on pereonite 6.....7
6. Mandible stout, frontal excavation narrow……..... *E. forceps*
– Mandible slender, frontal excavation somewhat wide……..……..…….....*E. ferox*
7. Dorsal sulcus present on pereonite 5.....…….....…….. *E. amboinensis*
– Dorsal sulcus absent on pereonite 5.....…….....……..... *E. korachaensis* sp. nov.
8. Frontolateral processes extending well beyond all of the frontal margin ……..…..*E. bacescoi*
– Frontolateral pprocesses not extending beyond all parts of the frontal margin….....…9
9. Pereonite 1 visible dorsally……..…..…….*E. sugashimaensis*
– Pereonite 1 not visible dorsally…….....……..……*E. discolor*
10. Frontal excavation wide and deep, evenly concave; small or inconspicuous frontolateral or mediofrontal processes….....….11
– Frontal excavation wide; shallow or deep; if deep then with large frontolateral or mediofrontal proces…….....…12
11. Pereonite 1 visible dorsally, pereonite 4 without anterolateral constriction…….....*E. rimifrons*
– Pereonite 1 not visible dorsally, pereonite 4 with anterolateral constriction…….……..…….....*E. wolffi*

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12. Frontal excavation wide and shallow; a small rounded mediofrontal process present, frontolateral process absent……*E. cornigera*
– Frontal excavation wide, shallow or deep, with bilobed mediolateral process or both frontolateral and mediofrontal processes……13
13. Only a large *bilobed* mediofrontal process present (resembling frontolateral process)……*E. lucanoides*
– Laterofrontal and mediofrontal processes present……14
14. Frontolateral processes bilobed, mediofrontal process small and rounded……*E. monodi*
– Mediofrontal process bilobed……15
15. Mediofrontal process small, separated from frontolateral process, frontolateral process small; no notch near the tip of the mandible……*E. froygattella*
– Mediofrontal and frontolateral processes united on a large single bilobed process, frontolateral process larger than mediofrontal process; notch near the tip of the mandible ……*E. bifurcilla*

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