

Marine Harpacticoid Copepods of Chindo Island, Korea

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ABSTRACT

The present faunistic study, on the marine harpacticoids of Chindo Island, Korea was based on the materials collected from various habitats during the periods from October 23-24 in 1993 and July 23-25 in 1994. As a result of examining the specimens, 9 species or subspecies of 6 families were identified, of which 6 species or subspecies were newly recorded from Korea: *Tachidius (Tachidius) discipes* Giesbrecht, 1881; *T. (Neotachidius) triangularis* Shen and Tai, 1963; *Scutellidium longicauda acheloides* Ito, 1976; *Alteutha depressa* (Baird, 1837); *Amonardia normani* (Brady, 1872); *Onychocamptus bengalensis* (Sewell, 1934).

Key words: Taxonomy. marine. Copepoda. Harpacticoida. Chindo Island. Korea

INTRODUCTION

The marine harpacticoid fauna of Korea has been poorly known. At present, 17 species in 7 families have been recorded from Korea (Lee, 1972; Park and Lee, 1982; Shim and Ro, 1982; Kim and Huh, 1983; Shim and Lee, 1986; Ho and Hong, 1988; Chang and Kim, 1991; Yoo and Lee, 1993; Song and Chang, 1993). But no faunistic study on the marine harpacticoids at special region has not been accomplished in Korea until now.

The aim of this study is to clarify the fauna of marine harpacticoids of Chindo Island. Materials of this study were obtained during the period of October 23-24, 1993 and July 23-25, 1994. As a result of examining the materials, 9 species or subspecies of 6 families were identified, of which 6 species or subspecies [*Tachidius (Tachidius) discipes* Giesbrecht, 1881; *T. (Neotachidius) triangularis* Shen and Tai, 1963; *Scutellidium longicauda acheloides* Ito, 1976; *Alteutha depressa* (Baird, 1837); *Amonardia normani* (Brady, 1872); *Onychocamptus bengalensis* (Sewell,

1934)] were newly recorded from Korea and were systematically accounted with illustrations. In addition to the 9 species identified, *Tisbe* sp., *Amphiascus* sp., *Robertsonia* sp., *Enhydrosoma* sp. and *Paralaophonte* sp. were obtained together, but are remaining unidentified.

Collecting was made with a dipnet of no. 10 (or no. 25) mesh aperture or light traps. All the specimens were dissected, drawn and measured in lactophenol. Figures were made with the aid of a drawing tube. All samples examined are deposited in the Department of Biology, Taegu University.

SYSTEMATIC ACCOUNTS

Family Tachidiidae Boeck, 1864

Genus *Tachidius* Lilljeborg, 1853

1. *Tachidius (Tachidius) discipes* Giesbrecht, 1882 (Fig. 1)

Tachidius discipes Giesbrecht, 1882, p. 108, pl. 2, fig. 4, pl. 4, fig. 25, 28, pl. 5, fig. 4, pl. 7, fig. 15, pl. 8, fig. 8, 9, 46, pl. 9, fig. 18, pl. 10, fig. 11, 31, pl. 11, fig. 12, pl. 12, fig. 15 (cited from Lang, 1948); Lang, 1948, p. 292, fig. 143:1; Dussart, 1967, p. 172, fig. 61; Petkovski, 1964, p. 5, figs. 6-8; Mielke, 1975, p. 40, fig. 23.

Tachidius brevicornis Sars, 1909, p. 328, pl. 22, figs. 12-16.

Tachidius (Tachidius) discipes: Shen, 1979, p. 193, fig. 88.

Material examined. 8 ♀ ♀ (2 ovi.), Kagje-ri, 23 July 1994; 1 ♀, Chöndu, 24 July 1994.

Remarks. *Tachidius (Tachidius) discipes* is discernable from its congeners by the armature of the exopod of antenna. Our specimens are well fitted with Shen's (1979) description except that operculum have about 16 marginal setules; the distal margin of leg 5 is sank inwards seriously and bears 3 transverse spinular rows on its surface.

T. (T.) discipes were collected from crab burrows in a mud flat.

Distribution. Norway, Canada, Sweden, Finland, Poland, Germany, Ireland, Netherland, France, Italy, Portugal, China, and Korea.

2. *Tachidius (Neotachidius) triangularis* Shen and Tai, 1963 (Fig. 2)

Tachidius (Neotachidius) triangularis Shen and Tai, 1963, p. 417, figs. 1-15; Shen, 1979, p. 196, figs. 90-91.

Material examined. 10 ♀ ♀ (2 ovi.), 3 ♂ ♂, Kagje-ri, 23 July 1994; 4 ♀ ♀, Chöndu, 24 July 1994; 5 ♀ ♀, 1 ♂, Kahak, 24 July 1994.

Remarks. This species has been found commonly in brackish waters of estuaries or littoral zones all around Korea. It was collected together with *T. (T.) discipes* in the crab burrows in mud flat. Our specimens from Chindo I. are fitted well with original description, but ours have two minor discrepancies as follows: (1) second exopodal segment of antenna bearing 2 setae and a tiny spinulose seta; (2) the surface of leg 5 in both sexes furnished with lots of setule line.

Distribution. China and Korea.

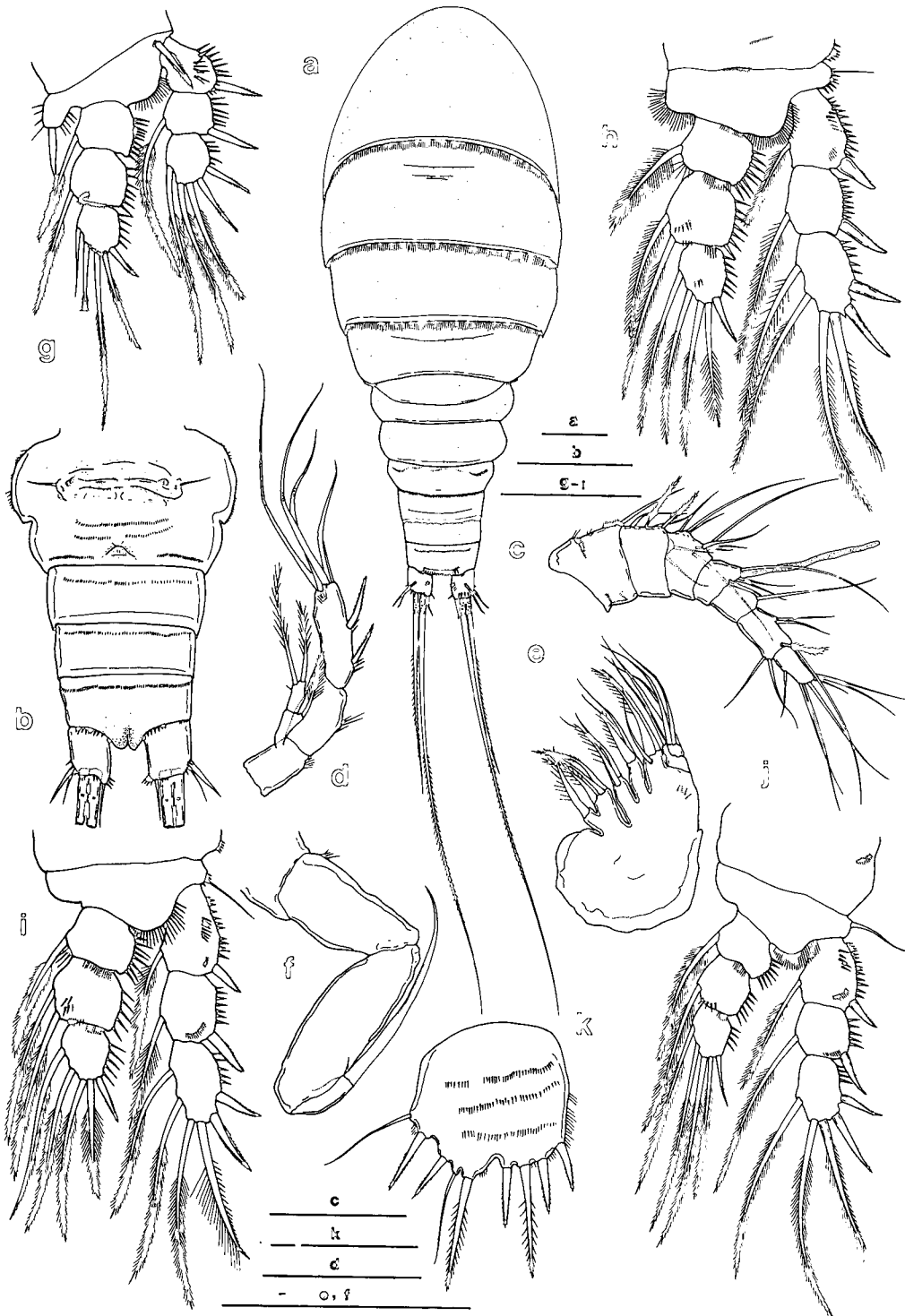


Fig. 1. *Tachidius (Tachidius) discipes* Giesbrecht, female: a, habitus, dorsal; b, abdomen, ventral; c, antennule; d, antenna; e, maxilla; f, maxilliped; g-k, legs 1-5. (unit of scales in 50 μ m)

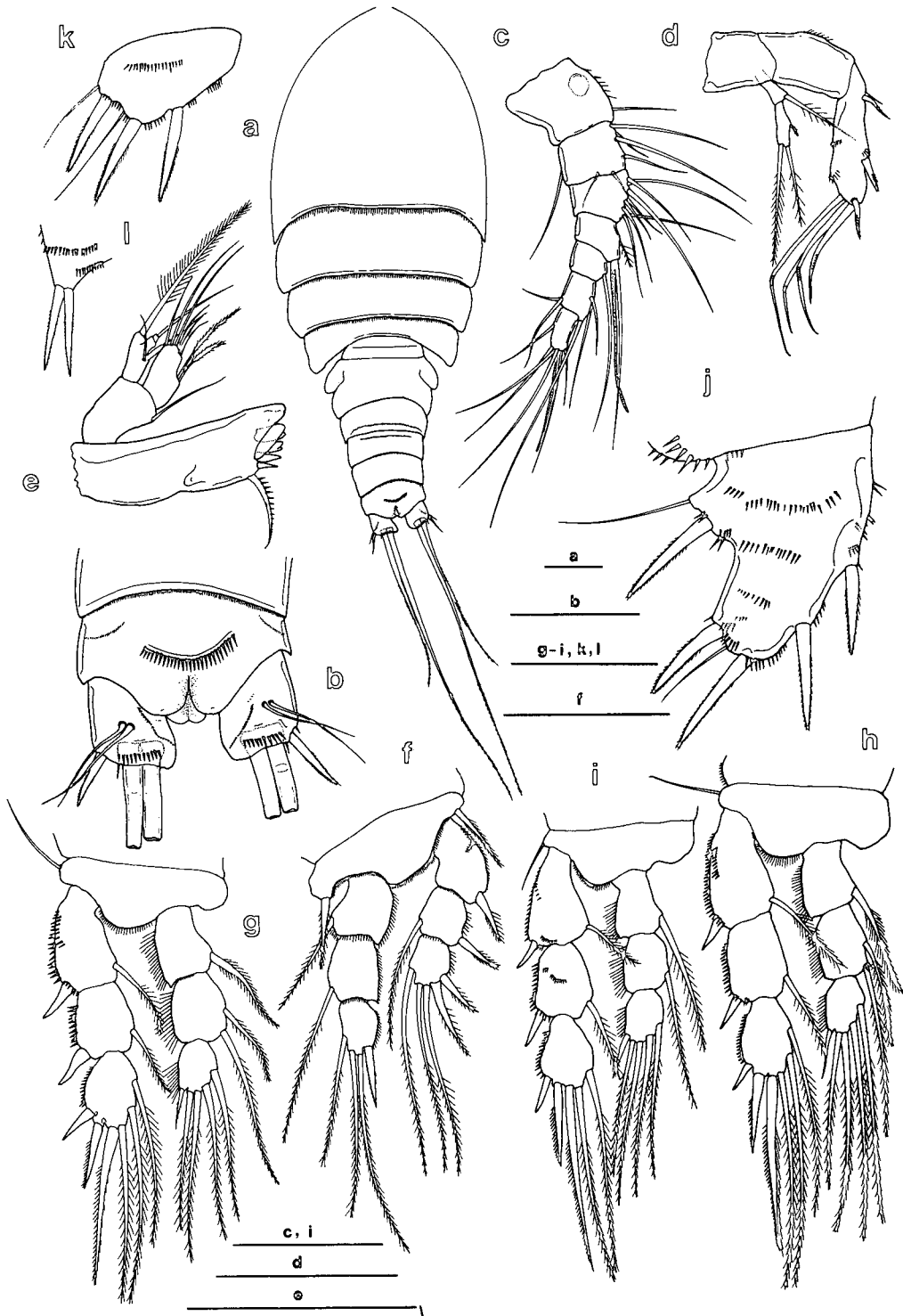


Fig. 2. *Tachidius (Neotachidius) triangularis* Shen and Tai, female: a, habitus, dorsal; b, anal segment and caudal rami, dorsal; c, antennule; d, antenna; e, mandible; f-j, legs 1-5. male: k-l, legs 5-6. (unit of scales in 50 μ m)

Family Harpacticidae Dana, 1846

Genus *Harpacticus* Milne-Edwards, 18403. *Harpacticus nipponicus* Ito, 1976

Harpacticus nipponicus Ito, 1976, p. 448, figs. 1-14; Song and Chang, 1993, p. 204, figs. 2-3.

Material examined. 3 ♀♀, Namdong, 23 Oct. 1993; 1 ♀, 1 ♂, Nokchin, 24 Oct. 1993; 23 ♀♀ (12 ovi.), 12 ♂♂, Chōpdo I., 24 July 1994; 6 ♀♀ (4 ovi.), 3 ♂♂, Kahak, 24 July 1994.

Distribution. Japan and Korea.

Genus *Harpacticella* Sars, 19084. *Harpacticella oceanica* Ito, 1977

Harpacticella oceanica Ito, 1977, p. 61, figs. 1-11; Song and Chang, 1993, p. 211, figs. 5-6.

Material examined. 1 ♀, 1 ♂, Namdong, 23 Oct. 1993; 3 ♀♀ (1 ovi.), 1 ♂, Nokchin, 24 Oct. 1993; 4 ♀♀ (1 ovi.), 2 ♂♂, Kaldu, 25 July 1994; 2 ♀♀, Kagje-ri, 25 July 1994.

Distribution. Japan and Korea.

Genus *Zaus* Goodsir, 18455. *Zaus unisetosus* Ito, 1974

Zaus unisetosus Ito, 1974, p. 570, figs. 12-14; Song and Chang, 1993, p. 216, figs. 8.

Material examined. 2 ♀♀ (1 ovi.), Namdong, 23 Oct. 1993; 3 ♀♀ (1 ovi.), 1 ♂, Nokchin, 24 Oct. 1993; 1 ♀, 1 ♂, Chōndu, 24 July 1994.

Distribution. Japan and Korea.

Family Tisbidae Stebbing, 1910

Genus *Scutellidium* Claus, 18666. *Scutellidium longicauda acheloides* Ito, 1976 (Fig. 3)

Scutellidium longicauda acheloides Ito, 1976, p. 545, figs. 71-78.

Material examined. 2 ♀♀, Namdong, 23 Oct. 1993; 1 ♀, Kagje-ri, 23 July 1994.

Remarks. As mentioned in the original description of Ito (1976), this subspecies, *Scutellidium longicauda acheloides* is obviously discriminated from *S. longicauda* s. str. in the appearances of antennule: in *S. longicauda acheloides*, the third and fourth segments much slender, and the last segment much less than twice as long as penultimate segment, while in *S. longicauda* s. str., the third and fourth segments not so slender and the last segment longer than twice penultimate one. Our specimens are well coincided with original description except that female leg 5 exopod is much wider, about 2.8 times as long as wide, while it is about 3.5 times in Ito's (1976).

Distribution. Japan (Hokkaido) and Korea.

Family Peltidiidae Sars, 1904

Genus *Alteutha* Baird, 18457. *Alteutha depressa* (Baird, 1837) (Fig. 4)

Cyclops depressa Baird, 1837, p. 331, pl. 10, figs. 9-12 (cited from Lang, 1948).

Peltidium crenulatum Brady, 1880, p. 163, pl. 72, figs. 6-15.

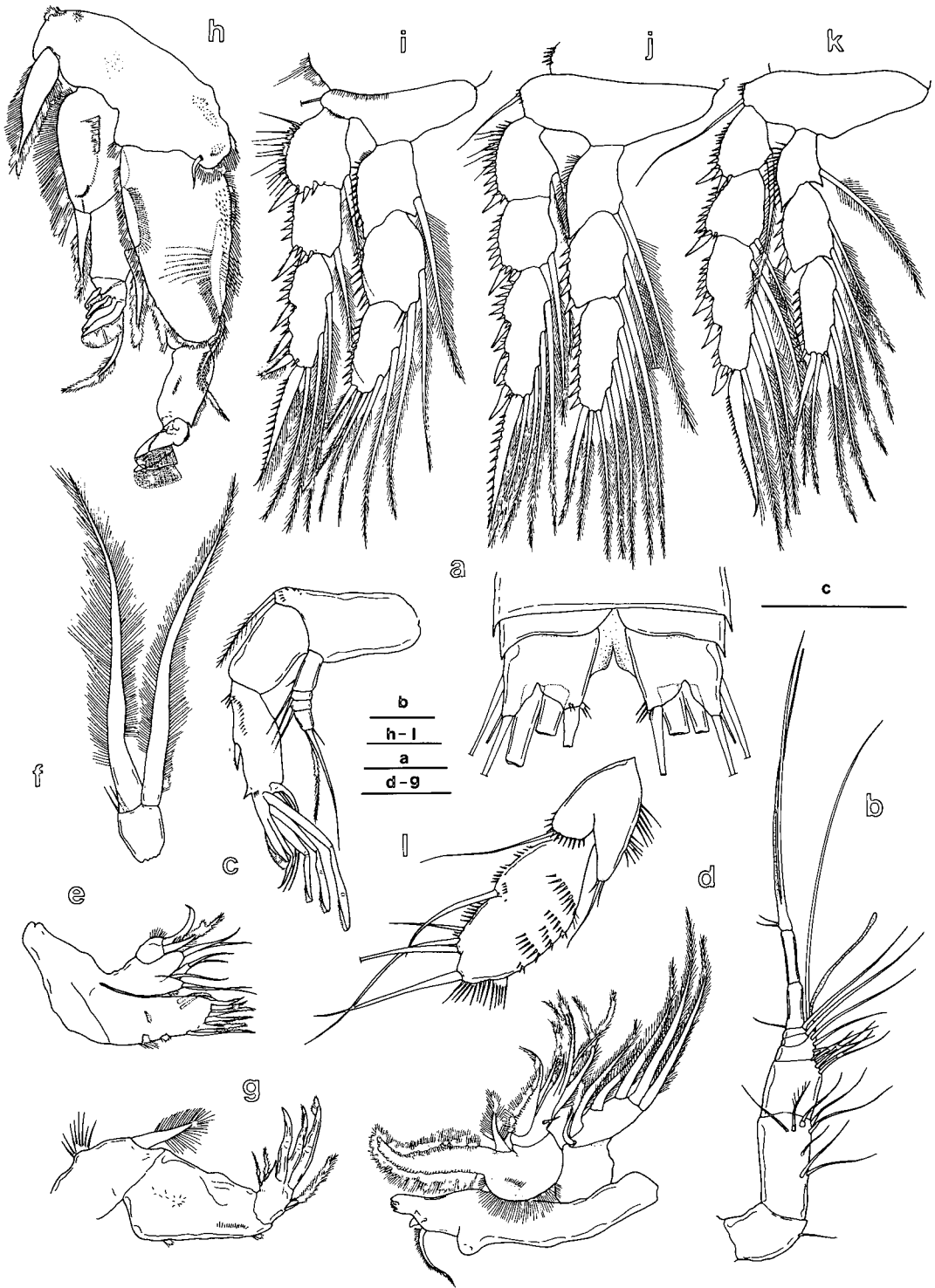


Fig. 3. *Scutellidium longicauda acheloides* Ito, female: a, caudal rami, ventral; b, antennule; c, antenna; d, mandible; e, maxillula; f, exopodal segment of maxillula; g, maxilliped; h-l, legs 1-5. (unit of scales in 50 μm)

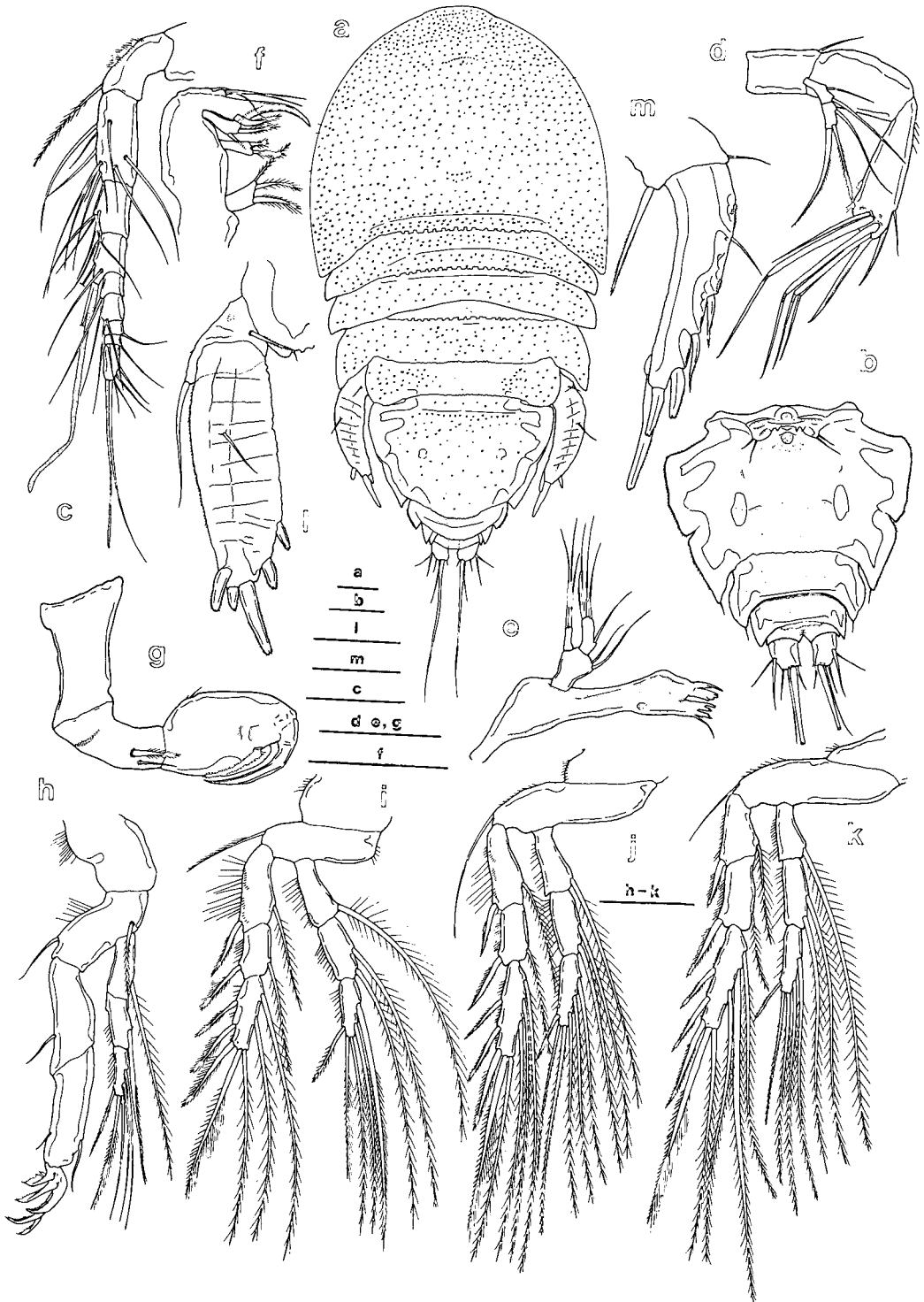


Fig. 4. *Altheutha depressa* (Baird), female: a, habitus, dorsal; b, abdomen, ventral; c, antennule; d, antenna; e, mandible; f, maxilla; g, maxilliped; h-k, legs 1-5. male: m, leg 5. (unit of scales in 50 μ m)

Alteutha langi Monk, 1941, p. 83, pl. 1, figs. 13-19.

Alteutha depressa: Baird, 1850, p. 216, pl. 30, figs. 1-2; Lang, 1948, p. 444, figs. 168; Hicks, 1982, p. 71, figs. 46-47.

Alteutha littoralis Pallares, 1968, p. 248, figs. 3-4.

Material examined. 5 ♀♀ (1 ovi.), 1 ♂, Nokchin, 24 Oct. 1993; 4 ♀♀, 1 ♂, Chŏpdo I., 24 July 1994; 3 ♀♀, 1 ♂, Kagje-ri, 23 July 1994; 3 ♀♀, Chŏndu, 24 July 1994.

Remarks. *Alteutha depressa* shows the wide distribution and somewhat large morphological variation (Hicks, 1982). This species is easily distinguished from its congeners in having the thoracic somites strongly serrated on hind margins. The shape and armature of leg 5 show a little variation as it grows. In female, the specimens are in accord with Monk (1941), even in a seta on the surface of leg 5, while ours bearing 5 unequal, blunt spines edgewise. In male, the shape of seta and spine of leg 5 is well coincided with Hick's (1982) rather than Lang's (1948).

Distribution. Scotland, England, France, Italy, Algeria, Tunisia, Rumania, and Korea.

Family Diosaccidae Sars, 1906

Genus *Amonardia* Lang, 1948

8. *Amonardia normani* (Brady, 1872) (Fig. 5)

Dactylopus normani Brady, 1872, p. 411, pl. 20, figs. 13-17 (cited from Lang, 1948).

Dactylopus similis: Brady, 1880, p. 110, pl. 55, figs. 14-16.

Amphiascus similis: Sars, 1906, p. 151, pl. 94.

Amonardia normani: Lang, 1948, p. 677, figs. 269:4, 273:2; Pinkster, 1968, p. 59, figs. 5-8; Dinet, 1971, p. 750, pl. 2; Apostolov, 1972, p. 224, figs. 118-123.

Material examined. 2 ♀♀, Nokchin, 24 Oct. 1993; 9 ♀♀ (4 ovi.), 1 ♂, Kahak, 24 July 1994; 6 ♀♀, 4 ♂♂, Chŏndu, 24 July 1994; 2 ♀♀, Kaldu, 25 July 1994.

Remarks. The genus *Amonardia* comprises 10 species (Bodin, 1988), and it is divided into two groups, one of which with 4 setae on distal exopodal segment of leg 1 and the other with 5 setae. This species belongs to the *normani*-group which bears 4 setae. The present specimens are similar to Pinkster's (1968) than Lang's (1948), but have some minor discrepancies as follows: (1) baseopod of female leg 5 without chitinous pore on its surface; (2) on the distal endopodal segment of male leg 2, the length ratio of two setae is about 0.17 times, while 0.53 times in Pinkster's; (3) the distal seta on exopod of male leg 5 is measured about 3.10 times as long as exopod.

This species was mainly collected by rinsing algae and it occurs in Korea from all the coasts of Korea including Cheju I. This is the first record of the species from the Northern Pacific.

Distribution. England, Norway, Sweden, France, Argentina, Bulgaria, Russia, and Korea.

Family Laophontidae T. Scott, 1904

Genus *Onychocamptus* Daddy, 1903

9. *Onychocamptus bengalensis* (Sewell, 1934) (Fig. 6)

Laophonte bengalensis Sewell, 1934, p. 98, fig. 10 (cited from Lang, 1948)

Onychocamptus bengalensis: Lang, 1948, p. 1420, figs. 571:9, 578:2; Hamond, 1973, p. 406, figs. 42-65.

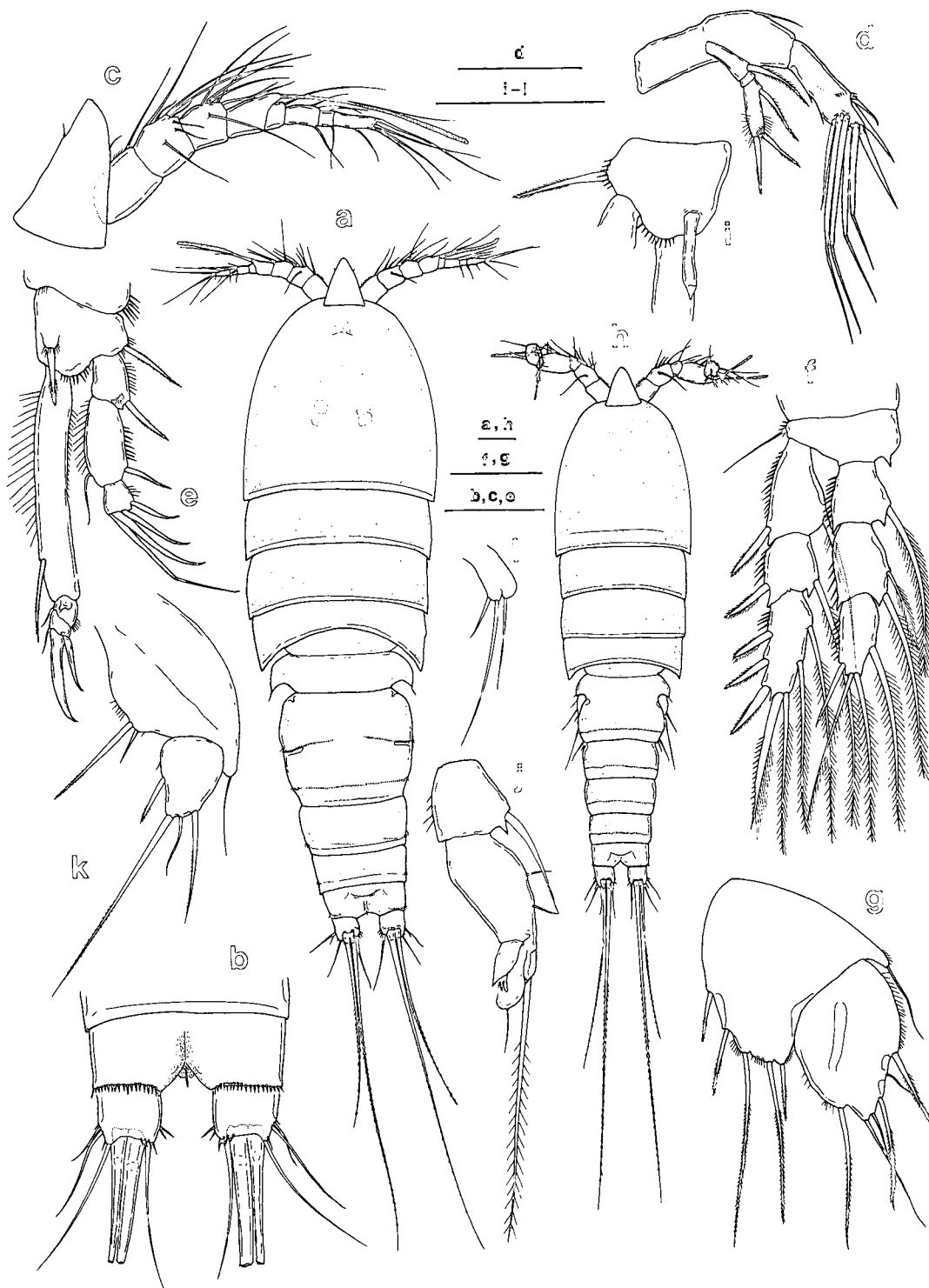


Fig. 5. *Amonardia normani* (Brady), female: a, habitus, dorsal; b, caudal rami, ventral; c, rostrum and antennule; d, antenna; e, leg 1; f, leg 2; g, leg 5. male: h, habitus, dorsal; i, basis of leg 1; j, endopod of leg 2; k, leg 5; l, leg 6. (unit of scales in 50 μ m)

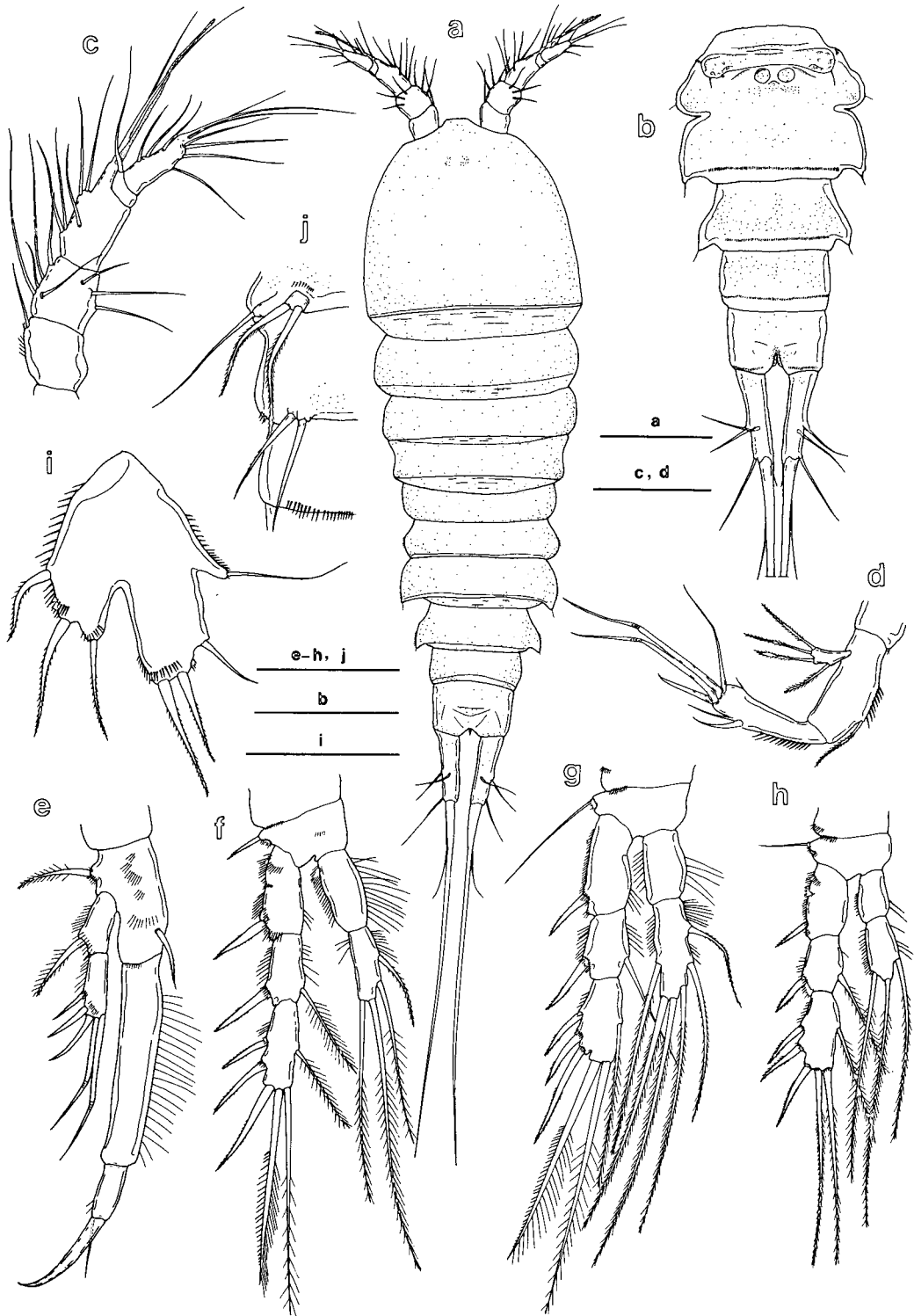


Fig. 6. *Onychocamptus bengalensis* (Sewell), female: a, habitus, dorsal; b, abdomen, ventral; c, antennule; d, antenna; e-i, legs 1-5. male: j, leg 5 and leg 6. (unit of scales in 50 μm)

Material examined. 25 ♀♀ (10 ovi.), 9 ♂♂, Namdong, 23 Oct. 1993; 5 ♀♀, 4 ♂♂, Hoidong, 23 July 1994; 2 ♀♀ (1 ovi.), Chöndu, 24 July 1994.

Remarks. This species has a conspicuous character, the fused rami of female leg 5 (Hamond, 1973). Our specimens are in good agreements with Hamond's elaborated redescription, even in minute details. However, the materials examined have some minor discrepancies with Hamond's (1973) as follows: (1) the average ratio of length to width in caudal ramus is 3.03 in 10 females and 2.82 in 10 males, while it was measured about 4.50 judging from his figure though he referred 6.0; (2) the posterior margin of anal segment in male bears setule line.

The specimens were collected from crab burrows in a mud flat, a little apart from shore line.

Distribution. India, Australia, Japan, and Korea.

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진도의 해양 하르팍티쿠스류

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요 약

1993년 10월 23-24일과 1994년 7월 23-25일의 2회에 걸쳐 진도의 7개 지소에서 채집한 해양 하르팍티쿠스류를 검토한 결과 6과 8속 9종 및 아종이 동정되었다. 이 중 6종 [*Tachidius* (*Tachidius*) *discipes* Giesbrecht, 1881; *T.* (*Neotachidius*) *triangularis* Shen and Tai, 1963; *Scutellidium longicauda acheloides* Ito, 1976; *Alteutha depressa* (Baird, 1837); *Amonardia normani* (Brady, 1872); *Onychocamptus bengalensis* (Sewell, 1934)]은 한국에서 처음으로 보고되는 종으로, 분류학적으로 고찰하는 한편 도판을 작성하였다.