



## Key to the species of Heterorhabdidae Heterorhabdus occurring in the China Seas

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REVIEW-TAXONOMIC INDEX

# Key to the Species of Heterorhabdidae *Heterorhabdus* Occurring in the China Seas

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*Heterorhabdus abyssalis*(34a/f), *ankylocolus*(7a/26a/f), *clausi*(13b/28a/f), *cohibilis*(16b/34b/f), *confusibilis*(17a/35b/f), *egregious*(19b/37b/f), *fistulosus*(19a/37a/f), *habrosomus*(17b/32a/f), *insukae*(8a/23a/f), *oikoumenikis*(14/32b/f), *pacificus*(16a/35a/f), *papilliger*(18b/36a/f), *prolatus*(18a/36b/f), *quadrilobus*(7b/26b/f), *spinifrons*(8b/25a/f), *subspinifrons*(6a/24a/f), *tanner*(9a/30a/f), *tuberculus*(13a/28b/f) (\*Spinifrons species group: *ankylocolus*, *insukae*, *quadrilobus*, *spinifrons*, *subspinifrons* (5); Papilliger species group: *papilliger*, *prolatus* (2); Fistulosus species group: *egregious*, *fistulosus* (2); Abyssalis species group: *abyssalis*, *clausi*, *cohibilis*, *confusibilis*, *habrosomus*, *oikoumenikis*, *pacificus*, *spinosus*, *tanneri*, *tuberculus* (10))

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*Heterorhabdus abyssalis* (Giesbrecht, 1889) (Size: female, 2.09–3.73 mm; male, 2.00–3.40 mm)

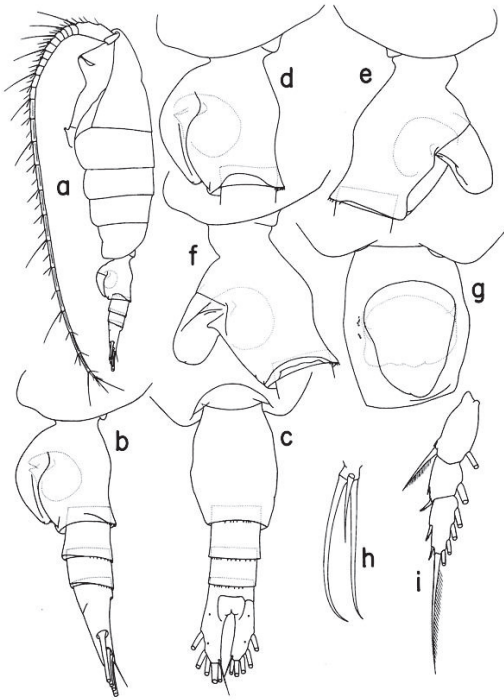


Fig. 106

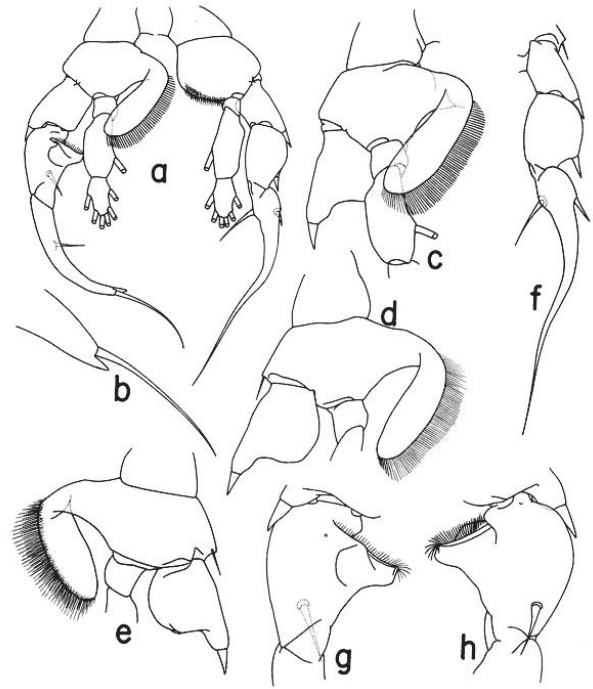


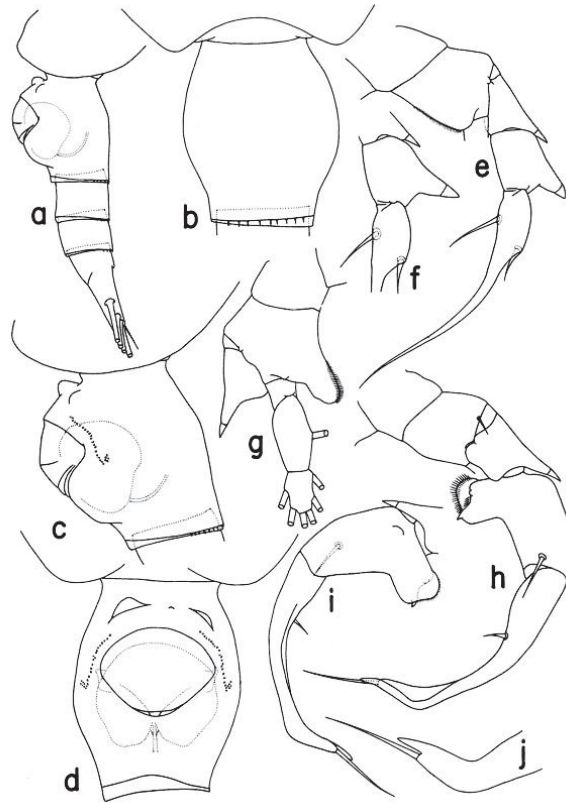
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*Heterorhabdus abyssalis* (Giesbrecht, 1889)

Park, 2000: Fig. 106. Female. a. habitus (lateral); b/c, urosome (lateral/dorsal); d, genital double-somite (left); e/f/g, genital double-somite with operculum open (right/left/ventral); h. maxilla, distal coxal endite; i, leg 1 exopod. Fig. 107. Male. a. leg 5 (anterior); b. right leg 5, distal end of exopod (lateral); c/d/e. right leg 5 basis (anterior/anterior/posterior); f. left leg 5 exopod (anterior); g/h right leg 5 exopod segment 2 (anterior/posterior).

Adapted from Razouls C., de Bovée F., Kouwenberg J. and Desreumaux N., 2005–2020. Diversity and Geographic Distribution of Marine Planktonic Copepods. Sorbonne University, CNRS. Available at <http://copepodes.obs-banyuls.fr/en> [Accessed May 10, 2021].

*Heterorhabdus ankylocolus* Park, 2000 (Size: female, 2.80–3.24 mm; male: 2.72–2.92 mm)



*Heterorhabdus ankylocolus* Park, 2000

Park, 2000: Fig. 67. Female: a. urosome (lateral); b/c/d. genital double-somite (dorsal/left/ventral). Male. e, left leg 5 (anterior, endopod omitted); f. left leg 5, exopod (anterior); g. right leg 5 (anterior, distal exopodal segments omitted); h. right leg 5 (posterior, endopod omitted); i. right leg 5 exopod (anterior); j. right leg 5, distal end of exopod (lateral).

Adapted from Razouls C., de Bovée F., Kouwenberg J. and Desreumaux N., 2005–2020. Diversity and Geographic Distribution of Marine Planktonic Copepods. Sorbonne University, CNRS. Available at <http://copepodes.obs-banyuls.fr/en> [Accessed May 10, 2021].

*Heterorhabdus caribbeanensis* Park, 1970 (Size:female, 1.74–2.52 mm; male, 1.92–2.40 mm)

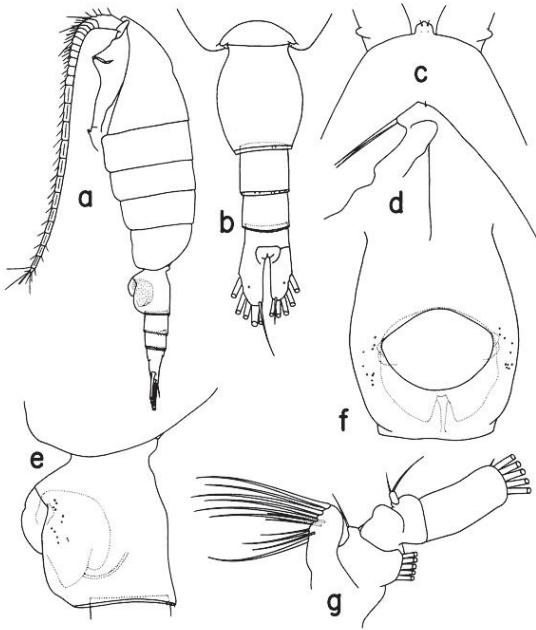


Fig. 68

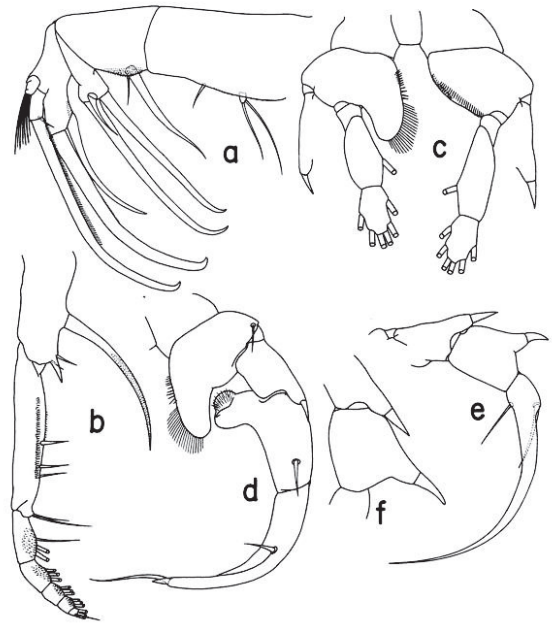


Fig. 69

*Heterorhabdus caribbeanensis* Park, 1970

T. Park, 2000, Fig. 68. Female: a, habitus (left side); b, urosome (dorsal); c/d, forehead (dorsal/Lateral); e/f, genital double-somite (lateral/ventral); g, left Maxillule (posterior) Fig. 69. Female: a, left maxilla (posterior); b, right maxilliped (anterior). Male: c, leg 5 (distal exopodal segments omitted), anterior; d, right leg 5 (endopod omitted), posterior; e, exopod of left P5 (anterior); f, first 2 exopodal segments of left P5 (anterior). Female: a, left maxilla (posterior); b, right maxilliped (anterior). Male: c, leg 5 (distal exopodal segments omitted), anterior; d, right leg 5 (endopod omitted), posterior; e, exopod of left leg 5 (anterior); f, first 2 exopodal segments of left leg 5 (anterior)

*Heterorhabdus clausi* (Giesbrecht, 1889) (Size: female, 2.00–2.70 mm; male: 2.00–2.50 mm)

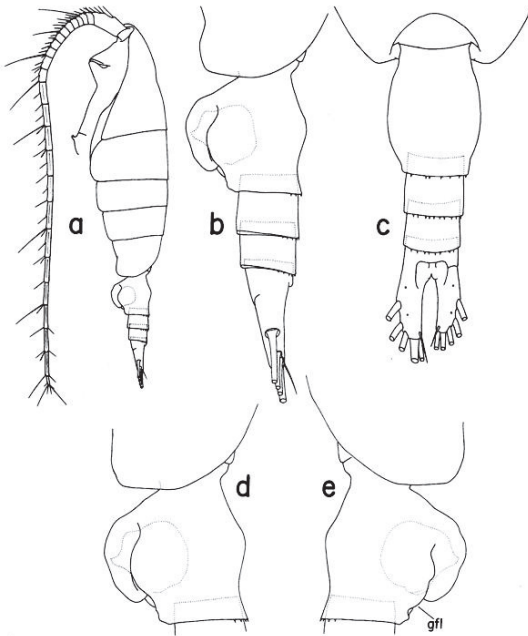


Fig. 88

*Heterorhabdus clausi* (Giesbrecht, 1889)

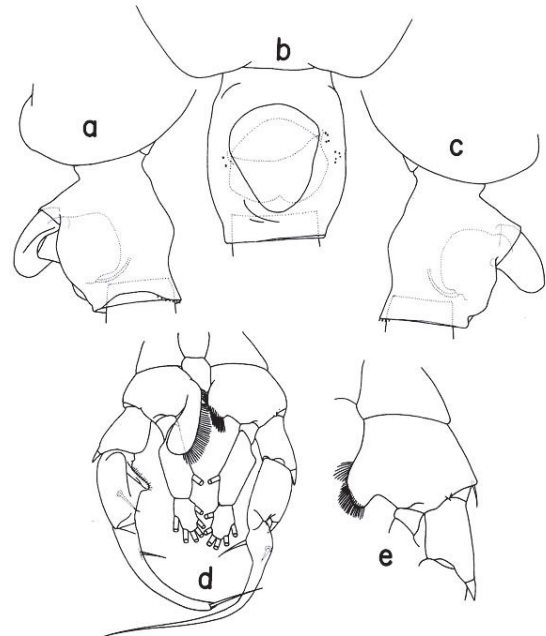


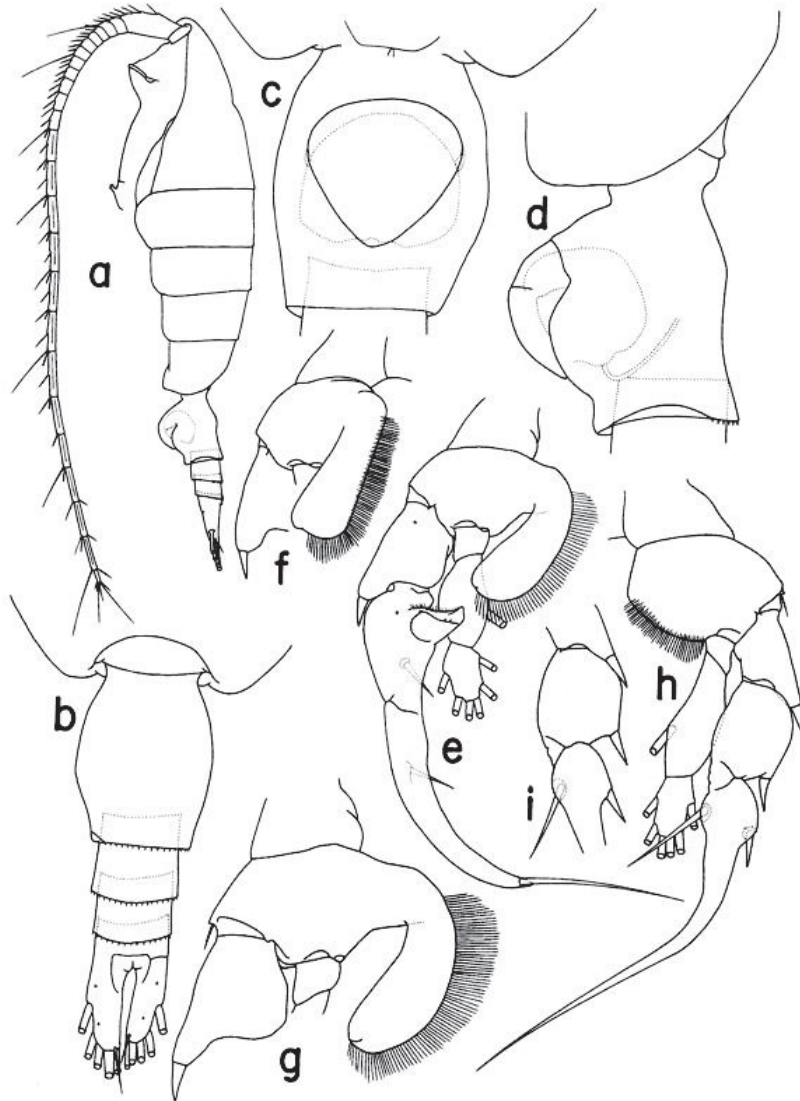
Fig. 89

Park, 2000: Fig. 88. Female. a, habitus (lateral); b/c. urosome (lateral/dorsal. d/e. genital double-somite (left/right). gfl = genital flange. Fig. 89. Female: a, genital somite with operculum open (left side); b, genital somite (ventral); c, genital somite with operculum open (right). Male: d, leg 5 (anterior); e, basipod of left leg 5 (anterior).

Adapted from Razouls C., de Bovée F., Kouwenberg J. and Desreumaux N., 2005–2020. Diversity and Geographic Distribution of Marine Planktonic Copepods. Sorbonne University, CNRS. Available at <http://copepodes.obs-banyuls.fr/en> [Accessed May 07, 2021].



*Heterorhabdus cohibilis* Park, 2000 (Size: female, 2.80–3.60 mm; male: 2.68–3.32 mm)

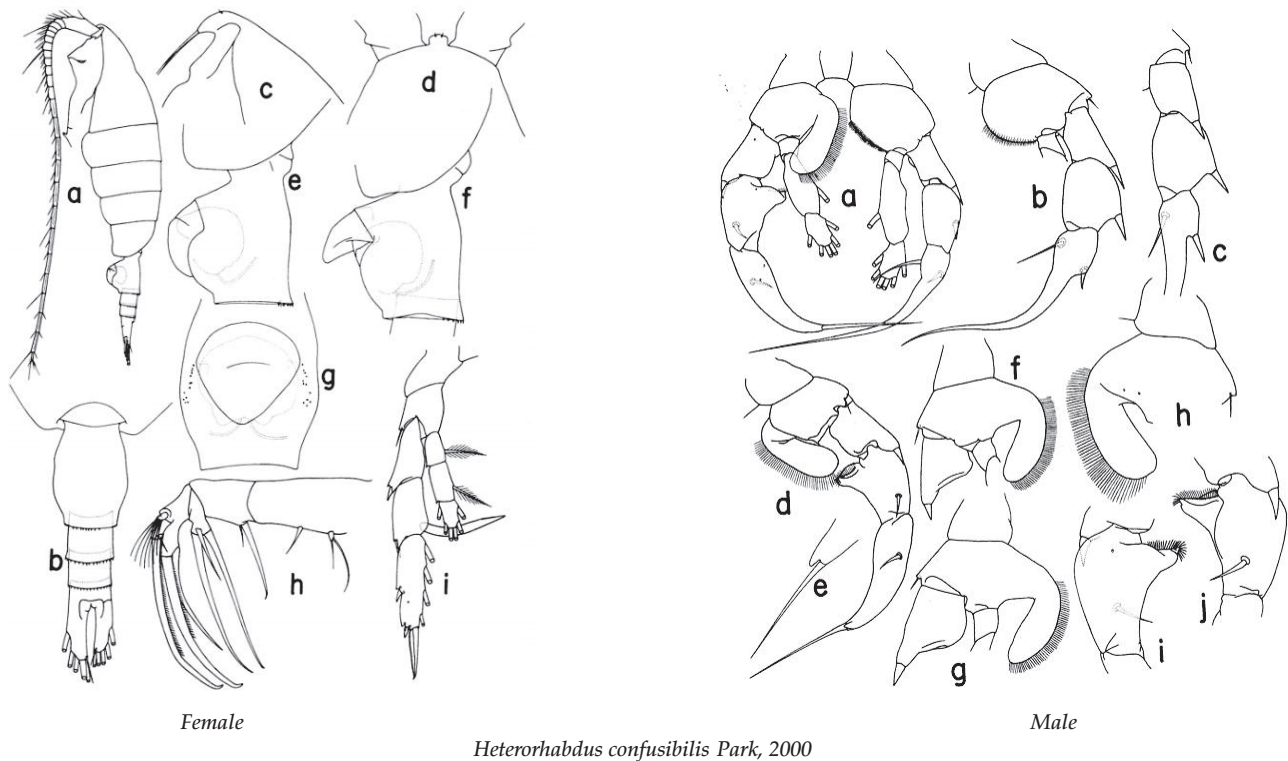


*Heterorhabdus cohibilis* Park, 2000

Park, 2000: Fig. 99. *Heterorhabdus cohibilis* Park, 2000, Female. a. habitus (lateral); b. urosome (dorsal); c/d. genital double-somite (ventral/lateral). Male. e. right leg 5 (anterior); f/g. right leg 5 basis (anterior); h. left leg 5 (anterior); i. left leg 5 exopod (anterior).

Adapted from Razouls C., de Bovée F., Kouwenberg J. and Desreumaux N., 2005–2020. Diversity and Geographic Distribution of Marine Planktonic Copepods. Sorbonne University, CNRS. Available at <http://copepodes.obs-banyuls.fr/en> [Accessed May 8, 2021].

*Heterorhabdus confusibilis* Park, 2000 (Size: female, 2.52–3.44 mm; male, 2.56–3.08 mm)



Park, 2000: Fig. 110. *Heterorhabdus confusibilis* Park, 2000, Female. a. habitus (lateral); b. urosome (dorsal); c/d. forehead (lateral/dorsal); e. genital double-somite (lateral); f. genital double-somite (with operculum open); g. genital double-somite (ventral); h. left maxilla (posterior); i. leg 5 (anterior). Fig. 111. Male. a. leg 5 (anterior); b. left leg 5 (anterior, endopod omitted); c. left leg 5 exopod (anterior); d. right leg 5 (posterior, endopod omitted); e. right leg 5, distal end of exopod (lateral); f/g/h. right leg 5, basis (anterior/anterior/posterior); i/j. right leg 5, exopod segment 2 (anterior/posterior).

Adapted from Razouls C., de Bovée F., Kouwenberg J. and Desreumaux N., 2005–2020. Diversity and Geographic Distribution of Marine Planktonic Copepods. Sorbonne University, CNRS. Available at <http://copepodes.obs-banyuls.fr/en> [Accessed May 10, 2021].

*Heterorhabdus egregious* Heptner, 1972 (Size: female, 2.24–3.40 mm; male: 2.28–3.70 mm)

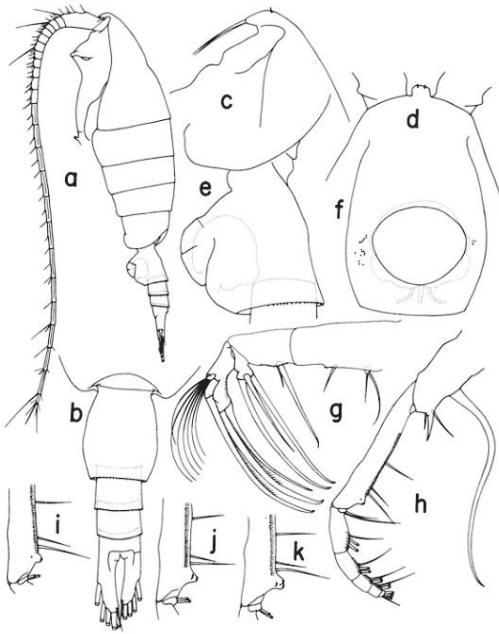


Fig. 82

*Heterorhabdus egregious* Heptner, 1972

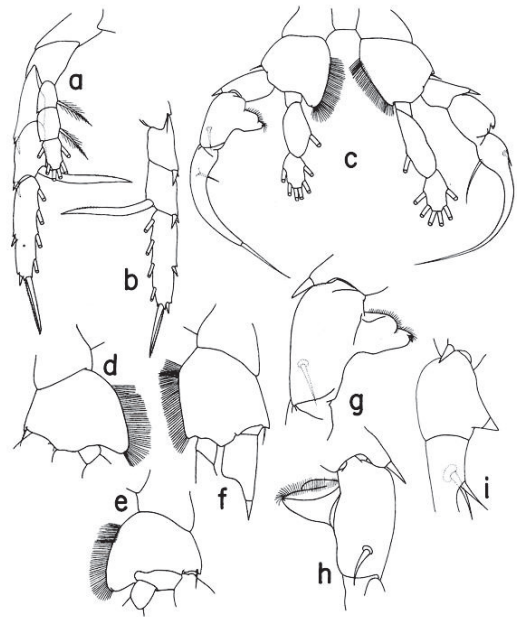
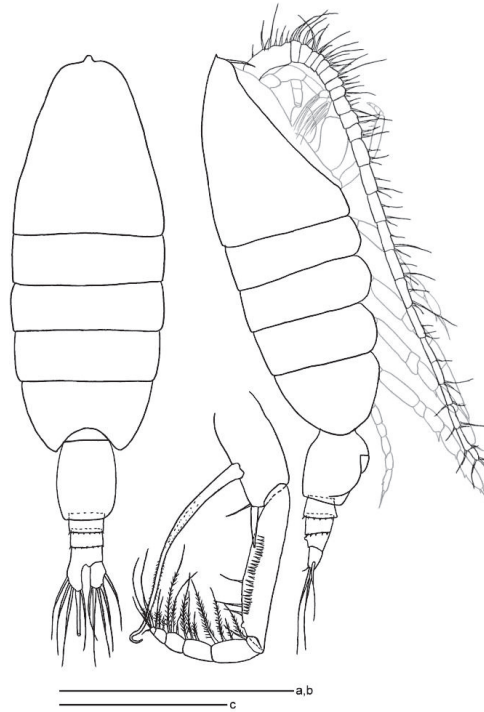


Fig. 83

Park, 2000: Fig. 82. *Heterorhabdus egregious* Heptner, 1972, Female. a. habitus (lateral); b. urosome (dorsal); c/ d, forehead (lateral/dorsal); e/f. genital double-somite (lateral/ventral); g. left maxilla (posterior); h. right maxilliped (anterior); i/j/k. right maxilliped, basis (anterior, from 3 different specimens). Fig. 83. Female. a. leg 5 (anterior); b. leg 5 exopod (posterior). Male. c. leg 5 (anterior); d/e. right leg 5, basis (anterior/posterior); f. left leg 5, basis (anterior); g/h. right leg 5 exopod segment 2 (anterior/posterior); i. left leg 5 exopod (anterior)

Adapted from Razouls C., de Bovée F., Kouwenberg J. and Desreumaux N., 2005–2020. Diversity and Geographic Distribution of Marine Planktonic Copepods. Sorbonne University, CNRS. Available at <http://copepodes.obs-banyuls.fr/en> [Accessed May 10, 2021].

*Heterorhabdus egregious* Heptner, 1972*Heterorhabdus egregious* Heptner, 1972

Original. *Heterorhabdus egregious* Heptner, 1972, female, 2.86 mm, east of Taiwan, habitus (dorsal/lateral), maxilliped.

*Heterorhabdus fistulosus* Tanaka, 1964 (Size: female, 3.39–3.95; male, 3.40–3.85 mm)

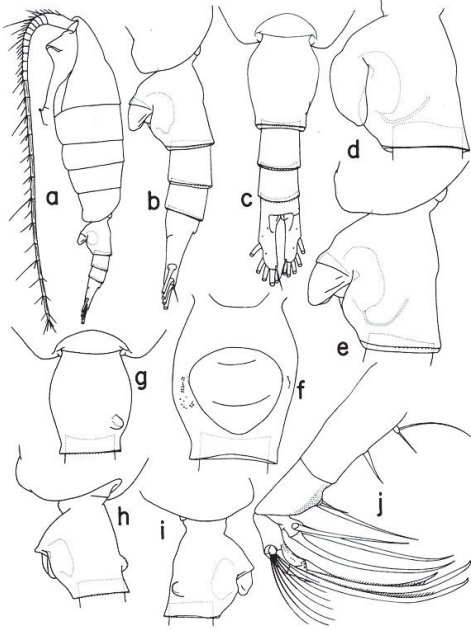


Fig. 80

*Heterorhabdus fistulosus* Tanaka, 1964

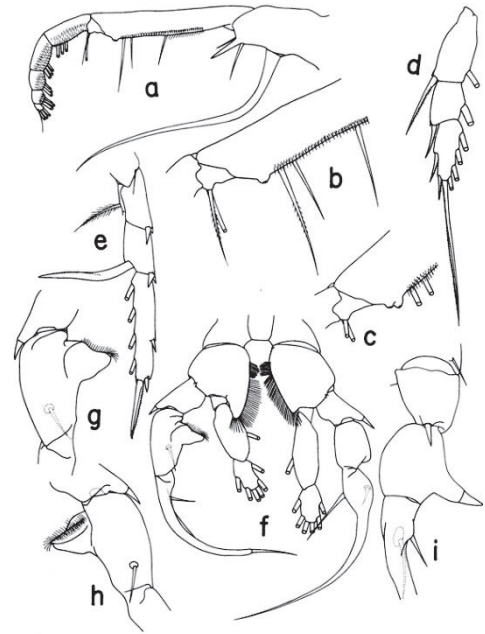


Fig. 81

Park, 2000: Fig. 80. Female. a. habitus (lateral); b/c. urosome (lateral/dorsal); d. genital double-somite (lateral); e. genital double-somite with operculum open (lateral); f. genital double-somite (ventral); g/h/i. genital double-somite with a tubercular outgrowth (dorsal/left/right); j. left maxilla (posterior). Fig. 81. Female: a, right maxilliped (anterior); b/c, distal part of basis of right maxilliped (anterior, from 2 specimens); d, leg 1 exopod (anterior); e, leg 5 exopod (posterior). Male: f, leg 5 (anterior); g/h, right leg 5 exopod segment 2 (anterior/posterior); i, left leg 5 exopod (anterior).

Adapted from Razouls C., de Bovée F., Kouwenberg J. and Desreumaux N., 2005–2020. Diversity and Geographic Distribution of Marine Planktonic Copepods. Sorbonne University, CNRS. Available at <http://copepodes.obs-banyuls.fr/en> [Accessed May 08, 2021].

*Heterorhabdus habrosomus* Parak, 2000 (Size: female, 2.16–2.56; male, 2.14–3.08 mm)

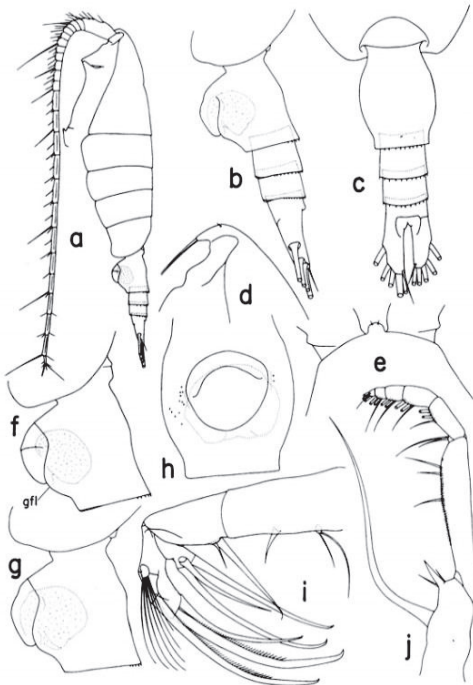


Fig. 84

*Heterorhabdus habrosomus* Parak, 2000

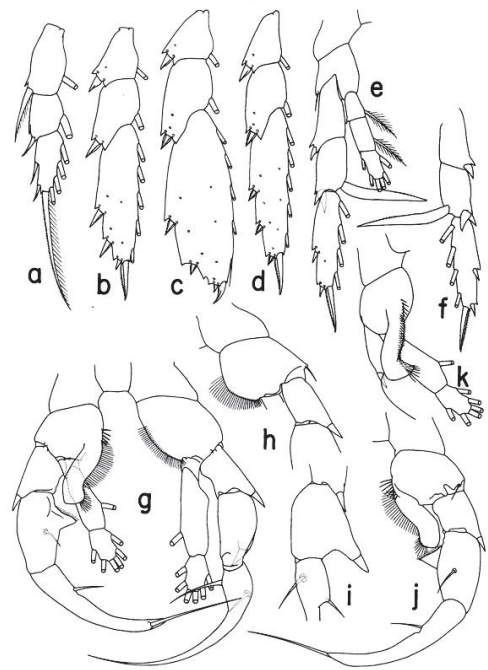


Fig. 85

Park, 2000: Fig. 84. As *Heterorhabdus egregius* Heptner, 1972, Female. a. habitus (lateral); b/c. urosome (lateral/dorsal); d/e. forehead (lateral/dorsal); f/g. genital double-somite (lateral, from 2 specimens); h. genital double-somite (ventral); i. left maxilla (posterior); j. right maxilliped (anterior). Fig. 85. Female. a/b/c/d/e. leg 1/2/3/4/5 exopod (anterior); f. leg 5 exopod (posterior). Male. g. leg 5 (anterior); h. left leg 5 basis (anterior); i. left leg 5 exopod (anterior); j. right leg 5 (posterior, endopod omitted); k. right leg 5 (anterior, distal exopod segments omitted).

Adapted from Razouls C., de Bovée F., Kouwenberg J. and Desreumaux N., 2005–2020. Diversity and Geographic Distribution of Marine Planktonic Copepods. Sorbonne University, CNRS. Available at <http://copepodes.obs-banyuls.fr/en> [Accessed May 07, 2021].

*Heterorhabdus insukae* Park, 2000 (Size: female, 1.78–2.56; male, 2.12–2.48 mm)

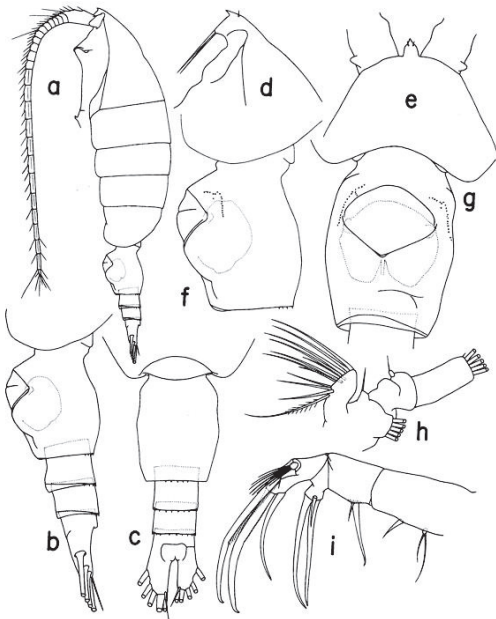


Fig. 70

*Heterorhabdus insukae* Park, 2000

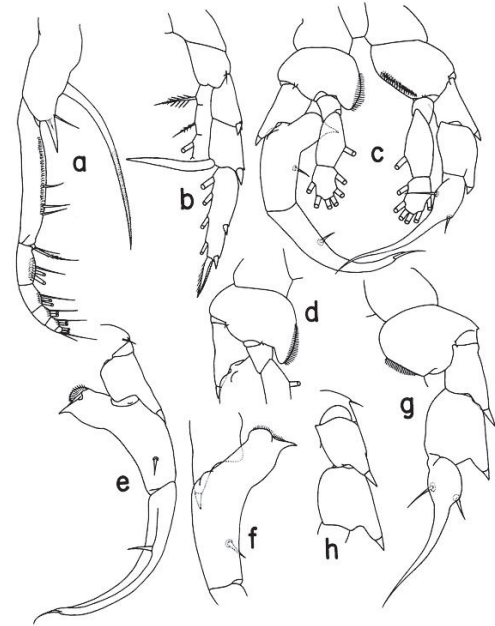


Fig. 71

Park, 2000: Fig. 70. *Heterorhabdus insukae* Park, 2000, Female. a. habitus (lateral); b/c. urosome (lateral/dorsal); d/e, forehead (lateral/dorsal); f/g, genital double-somite (lateral/ventral); h. left maxillule (posterior); i. left maxilla (posterior). Fig. 71. Female. a. right maxilliped (anterior); b. leg 5 (posterior). Male. c. leg 5 (anterior); d. right leg 5 basis (anterior); e. right leg 5 exopod (posterior); f. right leg 5, exopod segment 2 (anterior); g. left leg 5 (anterior, endopod omitted); h. left leg 5, exopod segments 1–2 (anterior).

Adapted from Razouls C., de Bovée F., Kouwenberg J. and Desreumaux N., 2005–2020. Diversity and Geographic Distribution of Marine Planktonic Copepods. Sorbonne University, CNRS. Available at <http://copepodes.obs-banyuls.fr/en> [Accessed May 08, 2021].

*Heterorhabdus oikoumenikis* Park, 2000 (Size: female, 2.60–3.52; male, 2.40–3.28 mm)

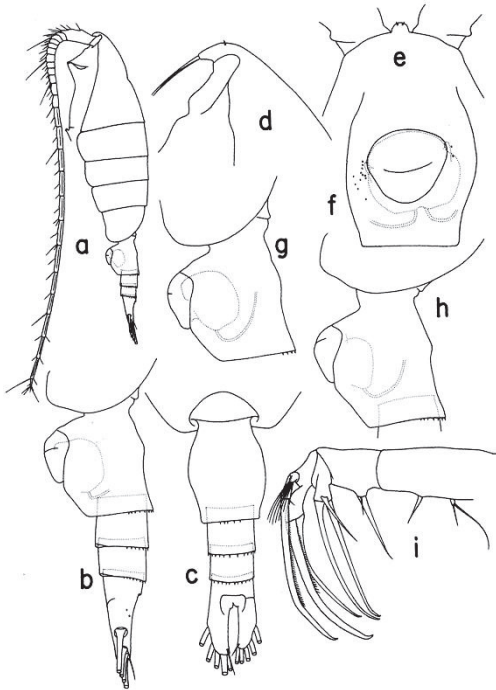


Fig. 94

*Heterorhabdus oikoumenikis* Park, 2000

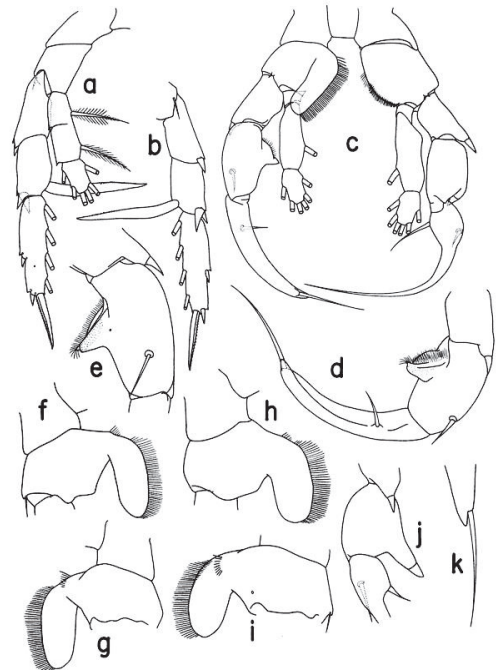


Fig. 95

Park, 2000: Fig. 94. *Heterorhabdus oikoumenikis* Park, 2000, Female. a. habitus (lateral); b/c. urosome (lateral/dorsal) d/e. forehead (lateral/dorsal); f/g. genital double-somite (ventral/lateral); h. genital double-somite (lateral, from another specimen); i. left maxilla (posterior). Fig. 95. Female. a/b. leg 5 (anterior/posterior). Male. c. leg 5 (anterior); d. right leg 5 exopod (anterior); e. right leg 5, exopod segment 2; f/g. right leg 5, basis (anterior/posterior); h/i. right leg 5, basis (anterior/posterior, from another specimen); j. left leg 5, exopod (anterior); k. right leg 5, distal end of exopod (lateral).

Adapted from Razouls C., de Bovée F., Kouwenberg J. and Desreumaux N., 2005–2020. Diversity and Geographic Distribution of Marine Planktonic Copepods. Sorbonne University, CNRS. Available at <http://copepodes.obs-banyuls.fr/en> [Accessed May 07, 2021].



*Heterorhabdus pacificus* Brodsky, 1950 (Size: female, 1.92–3.84; male, 2.90–3.96 mm)

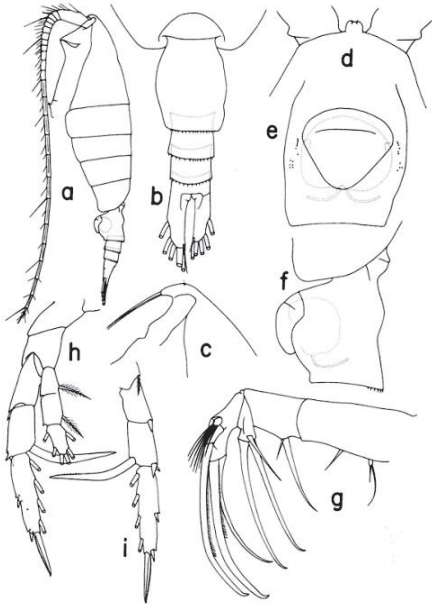


Fig. 108

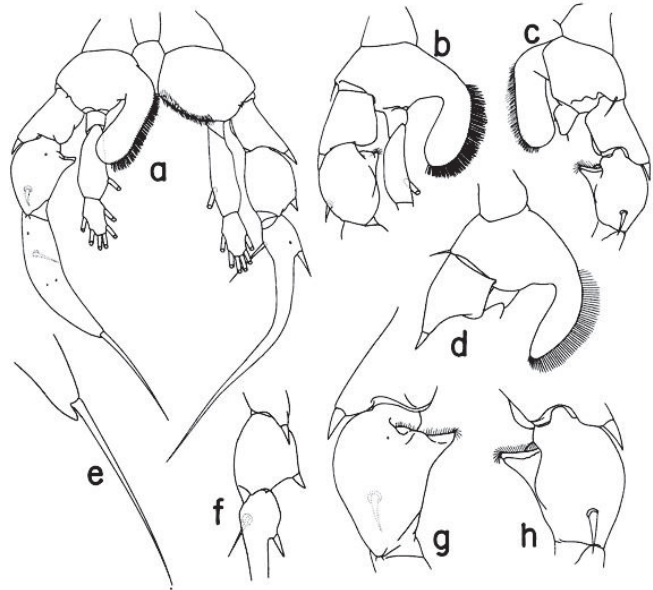


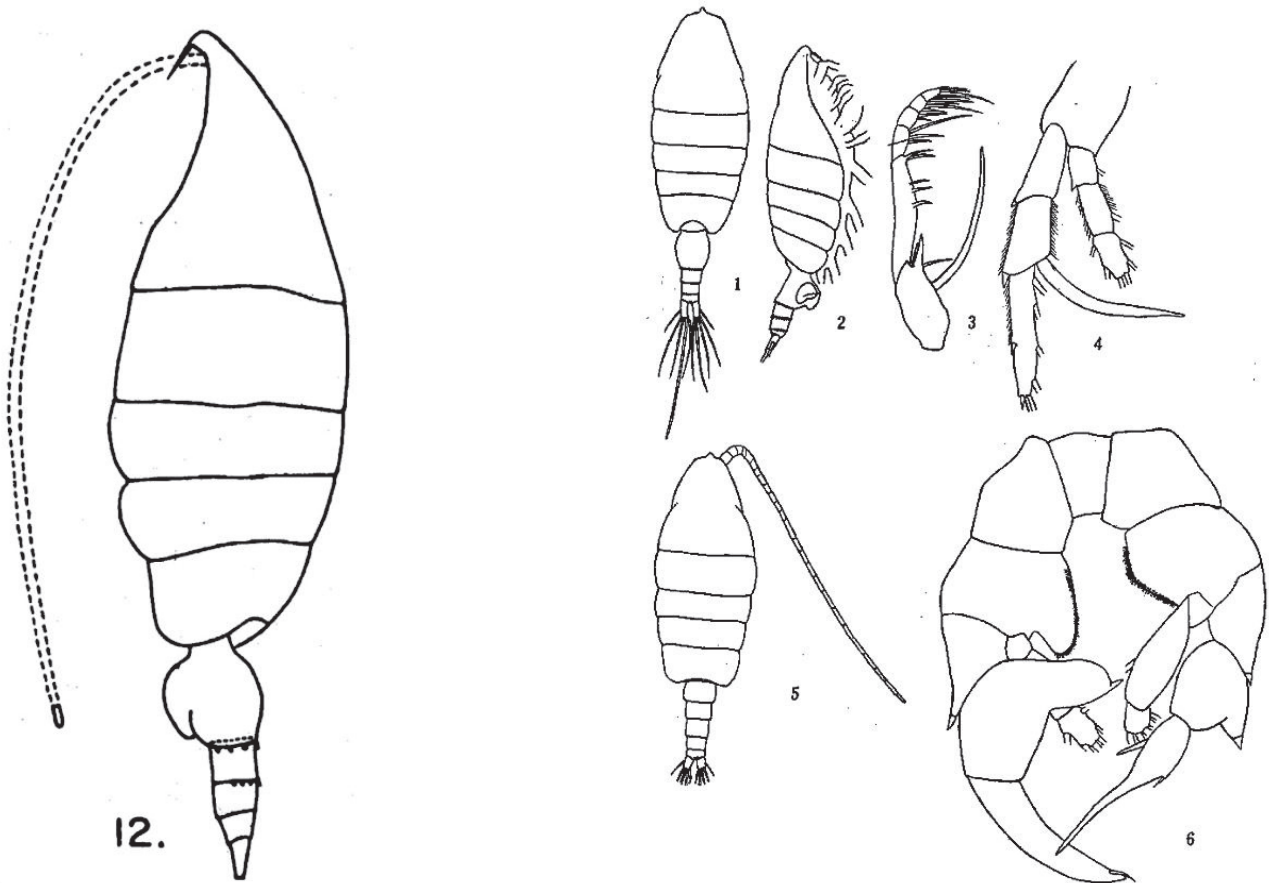
Fig. 109

*Heterorhabdus pacificus* Brodsky, 1950

Park, 2000: **Fig. 108.** *Heterorhabdus pacificus* Brodsky, 1950, Female. a. habitus (lateral); b. urosome (dorsal); c/d. forehead (lateral/dorsal); e/f. genital double-somite (ventral/lateral); g. left maxilla (posterior); h. leg 5 (anterior); i. leg 5 exopod (posterior). **Fig. 109.** Male. a. leg 5 (anterior); b/c. right leg 5 (anterior/posterior, distal segments of rami omitted); d. right leg 5, basis (anterior); e. right leg 5, distal end of exopod (lateral); f. left leg 5 exopod (anterior); g/h. right leg 5, exopod segment 2 (anterior/posterior).

Adapted from Razouls C., de Bovée F., Kouwenberg J. and Desreumaux N., 2005–2020. Diversity and Geographic Distribution of Marine Planktonic Copepods. Sorbonne University, CNRS. Available at <http://copepodes.obs-banyuls.fr/en> [Accessed May 07, 2021].

*Heterorhabdus papilliger* Claus, 1863 (Size: female, 1.60–2.66; male, 1.60–2.65 mm)



Grice, 1962

*Heterorhabdus papilliger* Claus, 1863

Chen & Zhang, 1965

Grice, 1962: pl. 24. *Heterorhabdus papilliger* Claus, 1863, Female. 12. habitus (lateral)

Chen & Zhang, 1965: pl. 34. *Heterorhabdus papilliger* Claus, 1863, Female. 1/2. habitus (dorsal/lateral); 3. maxilliped; 4. right leg 5 (anterior). Male. 5. habitus (dorsal); 6. leg 5 (anterior).

Adapted from Razouls C., de Bovée F., Kouwenberg J. and Desreumaux N., 2005–2020. Diversity and Geographic Distribution of Marine Planktonic Copepods. Sorbonne University, CNRS. Available at <http://copepodes.obs-banyuls.fr/en> [Accessed May 07, 2021].

*Heterorhabdus prolatus* Park, 2000 (Size: female, 1.68–2.14; male, 1.36–2.14 mm)

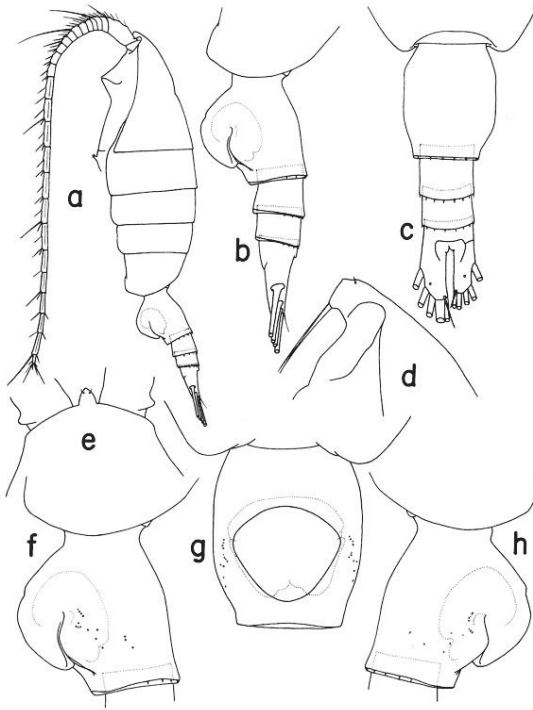


Fig. 78

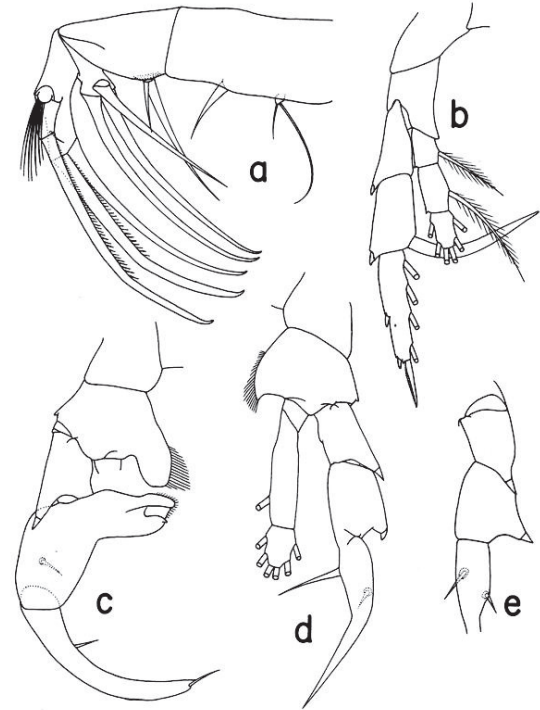


Fig. 79

*Heterorhabdus prolatus* Park, 2000

Park, 2000: Fig. 78. *Heterorhabdus prolatus* Park, 2000, Female. a. habitus (lateral); b/c. urosome (lateral/dorsal); d/e. forehead (lateral/dorsal); f/g/h. genital double-somite (left/ventral/right). Fig. 79. Female. a. left maxilla (posterior); b. leg 5 (anterior). Male. c. right leg 5 (anterior, endopod omitted); d. left leg 5 (anterior); e. leg 5 exopod (anterior).

Adapted from Razouls C., de Bovée F., Kouwenberg J. and Desreumaux N., 2005–2020. Diversity and Geographic Distribution of Marine Planktonic Copepods. Sorbonne University, CNRS. Available at <http://copepodes.obs-banyuls.fr/en> [Accessed May 05, 2021].

*Heterorhabdus quadrilobus* Park, 2000 (Size: female, 2.88–3.84; male, 2.48–3.68 mm)

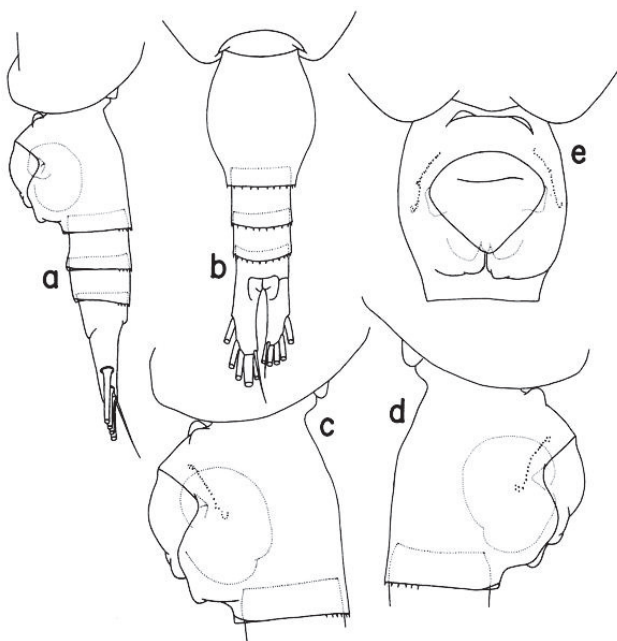


Fig. 65

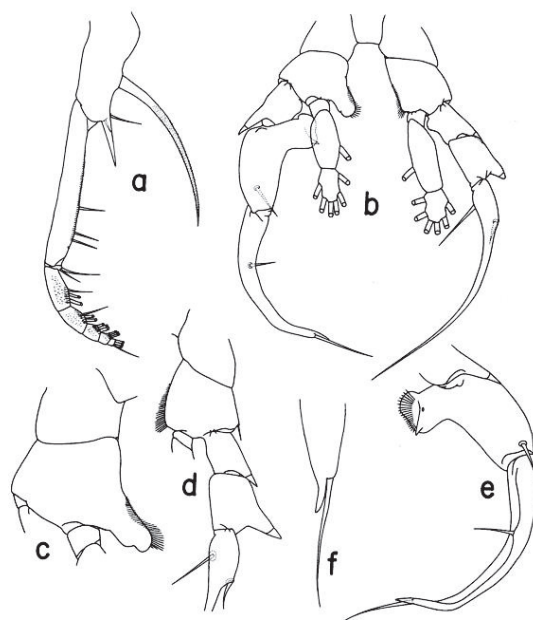


Fig. 66

*Heterorhabdus quadrilobus* Park, 2000

Park, 2000: Fig. 65. *Heterorhabdus quadrilobus* Park, 2000, Female. a/b. urosome (lateral/dorsal); c/d/e. genital double-somite (left/right/ventral). Fig. 66. Female. a. right maxilliped (anterior). Male. b. leg 5 (anterior); c. right leg 5, basis (anterior); d. left leg 5 (anterior, endopod omitted); e. right leg 5 exopod (posterior); f. right leg 5, distal end of exopod (lateral).

Adapted from Razouls C., de Bovée F., Kouwenberg J. and Desreumaux N., 2005–2020. Diversity and Geographic Distribution of Marine Planktonic Copepods. Sorbonne University, CNRS. Available at <http://copepodes.obs-banyuls.fr/en> [Accessed May 07, 2021].

*Heterorhabdus spinifrons* Claus, 1863 (Size: female, 2.86–4.20; male, 2.20–3.84 mm)

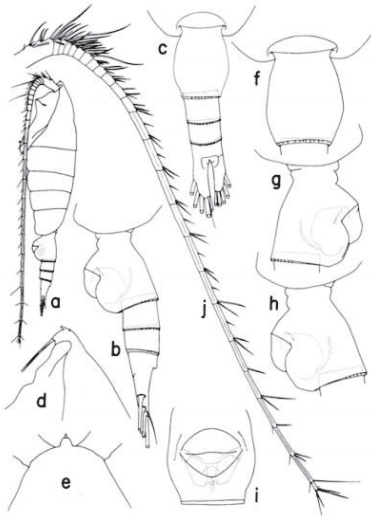


Fig. 59

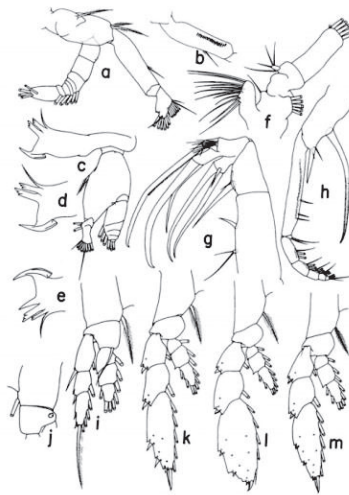


Fig. 60

*Heterorhabdus spinifrons* Claus, 1863

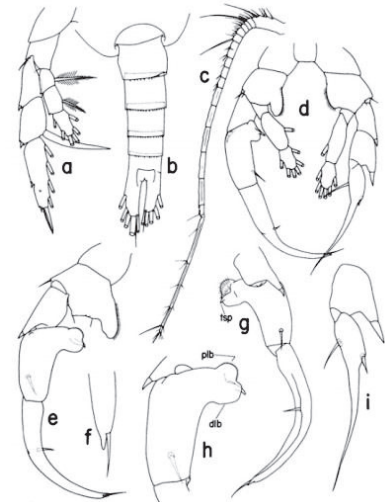
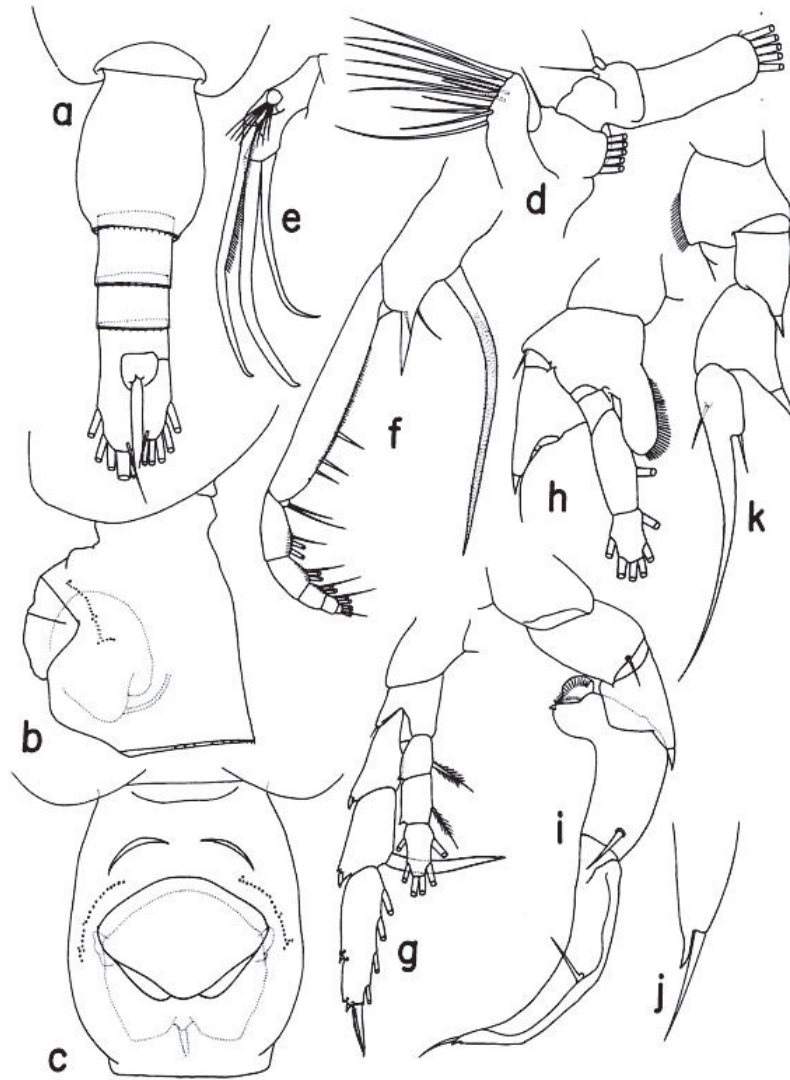


Fig. 61

Park, 2000: Fig. 59. Female. a. habitus (lateral); b/c. urosome (lateral/dorsal); d/e. forehead (lateral/dorsal); f/g/h/i. genital double-somite (dorsal/right/left/ventral); j. left antennule (ventral). Fig. 60. Female. a. left antenna (posterior); b. left antenna, endopod segment 1 (anterior); c. left mandible (posterior); d. left mandible gnathobase (posterior); e. right mandible, cutting edge (posterior); f. left maxillule (posterior); g. left maxilla (posterior); h. right maxilliped (anterior); i. leg 1; j. leg 1, basis; k/l/m. leg 2/3/4 (anterior). Fig. 61. Female. a. leg 5 (anterior). Male. b. urosome (dorsal); c. left antennule (dorsal); d. leg 5 (anterior); e. right leg 5 (anterior, endopod omitted); f. right leg 5, distal end of exopod (lateral); g. right leg 5, exopod (posterior); h. right leg 5 exopod segment 2 (anterior); i. left leg 5, distal exopod segments (anterior).

Adapted from Razouls C., de Bovée F., Kouwenberg J. and Desreumaux N., 2005–2020. Diversity and Geographic Distribution of Marine Planktonic Copepods. Sorbonne University, CNRS. Available at <http://copepodes.obs-banyuls.fr/en> [Accessed May 07, 2021].

*Heterorhabdus subspinifrons* Tanaka, 1964 (Size: female, 2.27–3.20; male, 2.11–3.16 mm)



*Heterorhabdus subspinifrons* Tanaka, 1964

Park, 2000: Fig. 64. *Heterorhabdus subspinifrons* Tanaka, 1964, Female. a. urosome (dorsal); b/c. genital double-somite (lateral/ventral); d. left maxillule (posterior); e. left maxilla, distal end (posterior); f. right maxilliped (anterior); g. leg 5 (anterior). Male. h. right leg 5 (anterior, distal exopod segments omitted); i. right leg 5 (posterior, endopod omitted); j. right leg 5, distal end of exopod (lateral); k. left leg 5 (anterior, endopod omitted).

Adapted from Razouls C., de Bovée F., Kouwenberg J. and Desreumaux N., 2005–2020. Diversity and Geographic Distribution of Marine Planktonic Copepods. Sorbonne University, CNRS. Available at <http://copepodes.obs-banyuls.fr/en> [Accessed May 07, 2021].

*Heterorhabdus tanneri* Giesbrecht, 1895 (Size: female, 3.08–4.90; male, 3.00–4.25 mm)

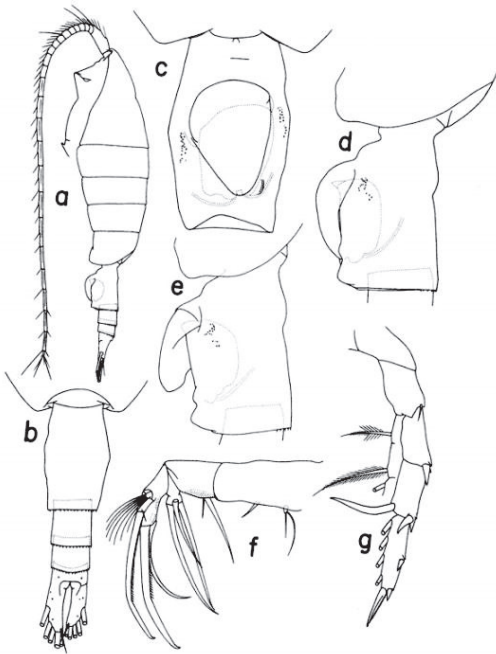


Fig. 112

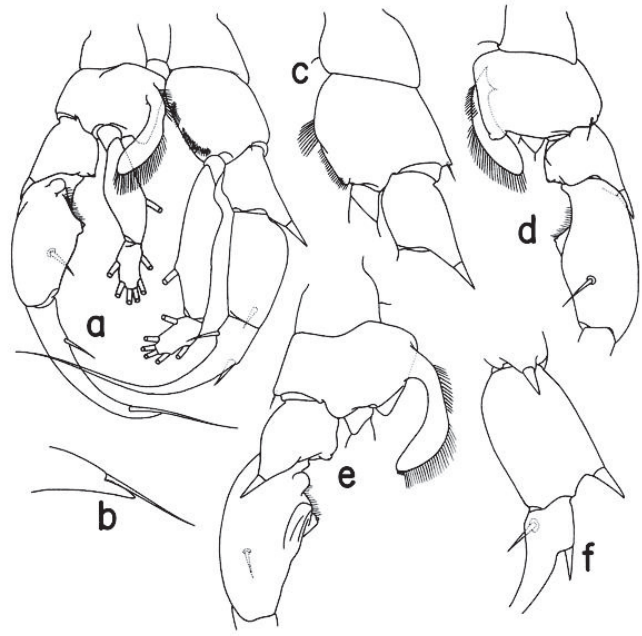


Fig. 113

*Heterorhabdus tanneri* Giesbrecht, 1895

Park, 2000: Fig. 112. *Heterorhabdus tanneri* Giesbrecht, 1895, Female. a. habitus (lateral); b. urosome (dorsal); c/d. genital double-somite (ventral/lateral); e. genital double-somite with operculum partially open (lateral); f. left maxilla (posterior); g. leg 5 (posterior). Fig. 113. Male. a. leg 5 (anterior); b. right leg 5, distal end of exopod (lateral); c. left leg 5, basis (anterior); d/e. right leg 5 (posterior/anterior, endopod omitted); f. left leg 5, exopod (anterior).

Adapted from Razouls C., de Bovée F., Kouwenberg J. and Desreumaux N., 2005–2020. Diversity and Geographic Distribution of Marine Planktonic Copepods. Sorbonne University, CNRS. Available at <http://copepodes.obs-banyuls.fr/en> [Accessed May 07, 2021].

*Heterorhabdus tuberculus* Park, 2000 (Size: female, 2.24–2.84; male, 2.24–2.68 mm)

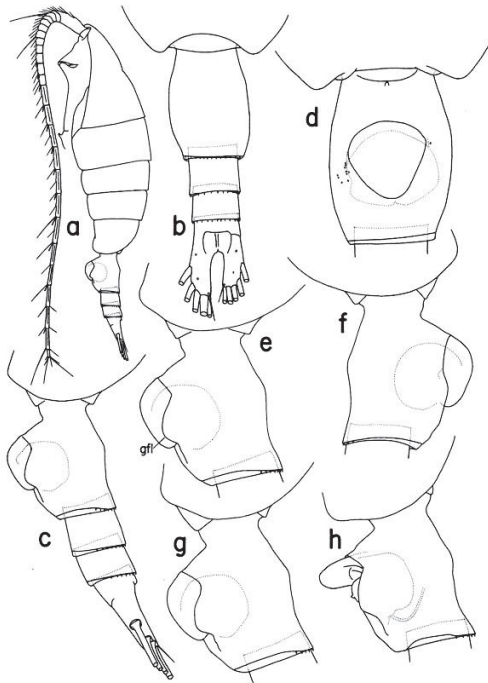


Fig. 90

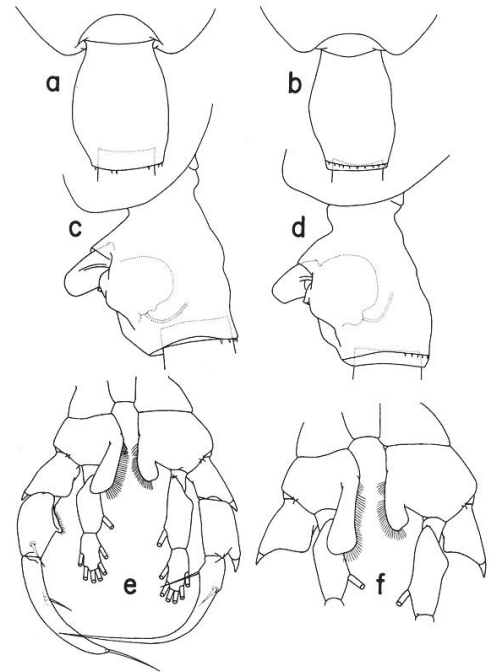


Fig. 91

*Heterorhabdus tuberculus* Park, 2000

Park, 2000: Fig. 90. *Heterorhabdus tuberculus* Park, 2000, Female. a. habitus (lateral); b/c. urosome (dorsal/lateral); d/e/f. genital double-somite (ventral/left/right); g. genital double-somite (lateral); h. genital double-somite with operculum open (lateral). Fig. 91. Female. a. genital double-somite (dorsal); b. genital double-somite from another specimen (dorsal); c/d. abnormal genital double-somite (lateral). Male. e. leg 5 (anterior); f. leg 5 (anterior, distal segments omitted).

Adapted from Razouls C., de Bovée F., Kouwenberg J. and Desreumaux N., 2005–2020. Diversity and Geographic Distribution of Marine Planktonic Copepods. Sorbonne University, CNRS. Available at <http://copepodes.obs-banyuls.fr/en> [Accessed May 07, 2021].