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SHORT COMMUNICATION

First record of the benthopelagic aetideid *Pseudeuchaeta acuticornis* (Copepoda: Calanoida: Aetideidae) in the abyss of the Pacific Ocean, the Kurile Kamchatka Trench area

Первая находка бентопелагической этидеиды *Pseudeuchaeta acuticornis* (Copepoda: Calanoida: Aetideidae) в абиссали Тихого океана из района Курило-Камчатского жёлоба

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Abstract. Specimens of the rare benthopelagic deep-water calanoid *Pseudeuchaeta acuticornis* Markhaseva et Schulz, 2006 (Copepoda: Calanoida: Aetideidae) were collected in the Kurile Kamchatka Trench area in the northern Pacific at abyssal depths. The morphology of these individuals aligns well with the diagnosis of the species. This is the first record of the species from the Pacific Ocean.

Резюме. Экземпляры редкого бентопелагического вида каланоид *Pseudeuchaeta acuticornis* Markhaseva et Schulz, 2006 (Copepoda: Calanoida: Aetideidae) были собраны в районе Курило-Камчатского жёлоба в северной Пацифике с абиссальных глубин. Морфология этих экземпляров хорошо соответствует диагнозу вида. Это первая находка вида в Тихом океане.

Key words: Kurile Kamchatka Trench, Pacific Ocean, morphology, Copepoda, fauna, first record

Ключевые слова: Курило-Камчатский жёлоб, Тихий океан, морфология, Copepoda, фауна, новая находка

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The benthopelagic calanoid fauna of the World Ocean is poorly known, and each new material from this environment contributes to the knowledge of the diversity of demersal calanoids and their distributional ranges. Recent studies on the biodiversity of deep-sea near-bottom fauna have demonstrated that the family Aetideidae Giesbrecht, 1892 (Calanoida) is one of the key groups in the demersal community of the World Ocean and the benthopelagic environment of the Pacific Ocean (e.g., Bradford-Grieve, 2003; Othsuka et al., 2005; Markhaseva et al., 2017a, 2017b, 2020, 2021; Markhaseva & Renz, 2019, 2021).

Ten specimens of the aetideid benthopelagic species *Pseudeuchaeta acuticornis* Markhaseva et Schulz, 2006 were collected using an epibenthic sledge near the seabed in the Kurile-Kamchatka Trench. The collection was conducted from the R/Vs “Akademink Lavrentyev” and “Sonne” as part of the Russian-German sampling programme during the KuramBIO 1 (Kurile-Kamchatka Biodiversity Study) and SokhoBIO (Sea of Okhotsk Bi-

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odiversity Studies) expeditions in 2012 and 2015, respectively.

Pseudeuchaeta acuticornis was originally described based on a single specimen (Markhaseva & Schulz, 2006) from the Southern Ocean and has since been recorded at abyssal depths in the South and Equatorial Atlantic (Markhaseva at al., 2017b, fig. 8).

The aim of this study is to report the first record of this species in the Pacific Ocean.

Order **Calanoida** Sars, 1903

Family **Aetideidae** Giesbrecht, 1892

Genus ***Pseudeuchaeta*** Sars, 1905

Pseudeuchaeta acuticornis Markhaseva et Schulz, 2006
(Fig. 1)

Material examined. **Pacific Ocean**, Kurile-Kamchatka Trench, above seabed: SokhoBIO expedition, R/V "Akademik Lavrentyev" cruise 71, Sta. 10–7, 29 July 2015, 46°06′N 155°14′E, depth 4769–4798 m, two adult females; KuramBio expedition, R/V "Sonne" cruise SO 223, eight adult females: Sta. 1–11, 30 July 2012, 43°58′N 157°18′E, depth 5418 m, one female; Sta. 2–10, 46°14′N 155°32′E, 3 Aug. 2012, depth 4859 m, four females; Sta. 5–10, 43°34′N 153°58′E, 11 Aug. 2012, depth 5375 m, three females. The specimens are deposited in the Zoological Institute of the Russian Academy of Sciences, St Petersburg, Russia (ZISP).

Morphology of the female specimens from the Pacific Ocean. Total length 7.05–7.90 mm, prosome 2.32–2.66 times as long as urosome. Habitus, shape of posterior corners of prosome, genital double-somite (Fig. 1A–F), caudal rami and rostrum as described for holotype (Markhaseva & Schulz, 2006, fig. 6A–C). Spermatheca in lateral view narrow ventrally and oblong-globular dorsally; however, its shape varying from nearly rounded to nearly oval in different specimens (Fig. 1C–F). Antennule as long as prosome, reaching posterior part of pedigerous somite 3 or 4. Armament of antennule, oral parts, and P1–P4 as described for holotype (Markhaseva & Schulz, 2006, figs 6G–F, 7–8).

Specimens collected in the Pacific Ocean, the Kurile Kamchatka Trench, exhibit all the key diagnostic characters outlined in the original description of the species (Markhaseva & Schulz, 2006, figs 6–8) and are as follows: (1) the presence of a lateral spine on the P1 (leg 1) exopod segment 1 (Fig. 1K); (2) five setae on the mandible endopod segment 2 (Fig. 1H); (3) ten setae on the maxillule praecoxal arthrite (Fig. 1I) and three setae on the maxillule coxal endite; (4) the most primitive, incompletely nine-segmented antenna exopod (Fig. 1G); and (5) the length of the sensory appendage on the coxal endite of the maxilliped syncoxa (Fig. 1J).

Remarks. The aetideid genus *Pseudeuchaeta* Sars, 1905 shows a cosmopolitan distribution (Renz & Markhaseva, 2015) and includes eight species. The widely distributed *Pseudeuchaeta brevicauda* Sars, 1905 is the only pelagic species of the genus, recorded in the Atlantic (from 62°N to the Gulf of Guinea), Indian (from 17°N to 35°S), and Southern (63°–65°S) oceans.

All seven congeners of *P. brevicauda* are rare benthopelagic species. Five species of the genus have only been recorded from their respective type localities. These are *P. flexuosa* Bradford, 1969 and *P. magna* Bradford, 1969 from the waters of New Zealand (34°38′S 174°34–36′E), *P. major* (Wolfenden, 1906) from the Equatorial Atlantic, *P. spinata* Markhaseva, 1986 from the Kurile Kamchatka Trench (43°42′N 149°39′E), and *P. vulgaris* Markhaseva, Mohrbeck et Renz, 2017 from the Tropical Pacific (13°49′N 116°34′W). The species *P. arctica* Markhaseva, 1986 was recorded twice in the Arctic Ocean, at 81°42′N 126°70′W in its type locality and at 79°26′N 137°39′W in adjacent waters (Markhaseva, 1996; Markhaseva et al., 2017b).

To date, the only benthopelagic species of *Pseudeuchaeta* registered far from its type locality (Southern Ocean, 67°31′S 00°00′E) is *P. acuticornis* recorded in the South (at about 36°S 49°W) and Equatorial Atlantic (00°S and 02°–05°W) (Markhaseva et al., 2017b), and its first record from the Pacific Ocean is provided herein.

As a result of my study, I can conclude that *P. acuticornis* is the fourth benthopelagic representative of the genus found in the near-bottom abyssal environment of the Pacific Ocean (Markhaseva et al., 2017b) and the second benthopelagic species of the genus (in addition to *P. spinata*) now recorded in the Northern Pacific.

Information on the biogeography of deep-water benthopelagic calanoids is limited due to sampling challenges near the seabed. The recent de-

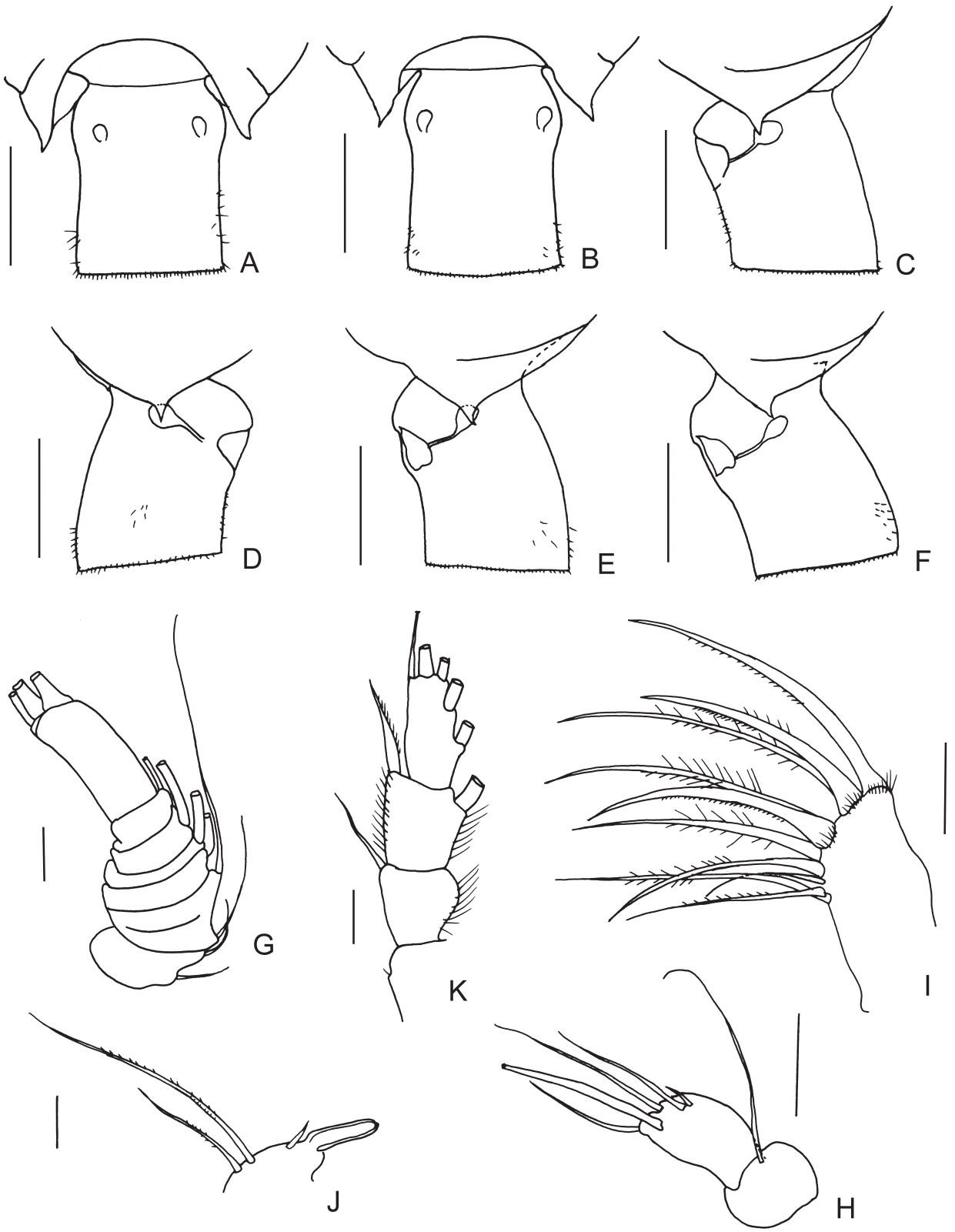


Fig. 1. *Pseudeuchaeta acuticornis* Markhaseva et Schulz, 2006, female. **A**, **B**, genital double somite, dorsal view, different specimens; **C**–**F**, genital double somite, lateral view, different specimens; **G**, antenna, exopod; **H**, mandible palp, endopod segments 1 and 2; **I**, maxillule, praecoxal arthrite; **J**, maxilliped, coxa terminal setae and sensory appendage; **K**, P1, exopod. Scale bars: 0.5 mm (A–F); 0.1 mm (G–K).

velopment of advanced devices for near-bottom research has increased opportunities to enhance our knowledge of the biogeography of rare benthopelagic calanoid species. This includes the first record of *P. acuticornis* in the Pacific Ocean, as reported herein.

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