https://www.doi.org/10.33910/2686-9519-2023-15-1-42-49
http://zoobank.org/References/B7C1A794-D826-435A-983E-45A2FFB7F2B0

UDC 595.371

On a small collection of amphipods (Crustacea, Amphipoda) from the Lesser Kuril Chain

D. A. Sidorov

Federal Scientific Center of the East Asia Terrestrial Biodiversity, Far Eastern Branch of the Russian Academy of Sciences, 159 Stoletiya Vladivostoka Ave., 690022, Vladivostok, Russia

Author
Dmitry A. Sidorov
E-mail: sidorov@biosoil.ru
SPIN: 4103-8806
Scopus Author ID: 56248425400
ResearcherID: L-9664-2016
ORCID: 0000-0003-2635-9129

Abstract. The article provides information on amphipods found on two islands of the Lesser Kuril Chain collected during the period from 4 to 19 August 2013 in the framework of the 49th South Kuril Marine Expedition. A detailed morphological description of prophliantin amphipod *Guernea ezoensis* Ishimaru, 1987 — the species which has not been presented from Russian waters until now — is provided. The South Kuril specimens differ slightly from the original and accumulative descriptions. The article briefly discusses the issues of intraspecific morphological variability.

Keywords: Malacostraca, *Guernea*, Yuri Isl., Zelenyi Isl., first records

О небольшой коллекции амфипод (Crustacea, Amphipoda) с Малой Курильской гряды

Д. А. Сидоров

Федеральный научный центр биоразнообразия наземной биоты Восточной Азии ДВО РАН, проспект 100-летия Владивостока, д. 159, 690022, г. Владивосток, Россия

Сведения об авторе
Сидоров Дмитрий Анатольевич
E-mail: sidorov@biosoil.ru
SPIN-код: 4103-8806
Scopus Author ID: 56248425400
ResearcherID: L-9664-2016
ORCID: 0000-0003-2635-9129

Аннотация. В статье представлена информация об амфиподах, обнаруженных на двух островах Малой Курильской гряды, собранных в период с 4 по 19 августа 2013 года в рамках 49-й Южно-Курильской морской экспедиции. Дано подробное морфологическое описание амфипод-профлиантин *Guernea ezoensis* Ishimaru, 1987, вид до сих пор не был представлен из российских вод. Южнокурильские экземпляры несколько отличаются от первоначального и последующих описаний, поэтому кратко обсуждаются проблемы внутривидовой морфологической изменчивости.

Ключевые слова: Malacostraca, *Guernea*, о. Юрий, о. Зеленый, первое упоминание

Introduction

Some information on amphipods of the Kuril Islands is contained in quite a few works devoted to the study of littoral fauna (Kostina, Tsurpalo 2016). A review of littoral species of the Kuril Islands was made by O. G. Kussakin (Kussakin 1977; Dzhurinskyi 2013). The range of amphipod species and taxonomic reviews for the Kuril Islands are specified in (Kudrjaschov 1972; Tomikawa et al. 2006), and others. Some data on littoral amphipods of the Kuril Islands are contained in various guides (Gurjanova 1951; Tsvetkova 1975).

The aim of this work was to study a small collection of amphipods from Yuri and Zelenyi islands. Of the two species that had not been previously recorded from Russian waters, *Eogammarus itotomikoae* Tomikawa, Morino, Toft et Mawatari, 2006 and *Guernea ezoensis* Ishimaru, 1987 have been recorded from the northern Japan, and the latter species, has been found a little further south in South Korean waters. The other two species of *Guernea*, i.e., *G. quadrispinosa* Stephensen, 1944 is common in the Far Eastern seas, and has been repeatedly recorded earlier from the Russian waters (Gurjanova 1951; Budnikova, Savko 2002; Labay, Labay 2014), while *G. coalita* (Norman, 1868) reported from intertidal zone of the southern coast of Kunashir Island (Kostina, Tsurpalo 2016). A number of characters of *G. ezoensis* of our specimens show distancing from the previous indications, so it was decided to give a description of this species noting these points.

Material and methods

Amphipod collections were made in the following points (numbers in parentheses correspond to stations designation in Sidorov (2020)): — YURI ISLAND. Shirokaya (12.08.2013), environs of the Shirokaya Bay (k28–31). — ZELIONYI ISLAND. Glushnevskiy (13.08.2013), Srednee Lake not far from the Glushnevskiy Cape in south part of the island (k34). List of localities with identified taxa (for more information, see Sidorov (2020)):

k28: seashore, 43.4255°N, 146.0810°E, Karaman-Chappuis pits, small pebbles (*Guernea ezoensis* Ishimaru, 1987, unidentifiable closer juveniles of *Paramoera* sp.);

k29: seashore, 43.4255°N, 146.0810°E, small brook trickling down a cliff (contained only unidentifiable juveniles of *Paramoera* sp. and unmatured population of Talitridae);

k30: stream flowing down the slope from upper marsh, 43.4243°N, 146.0821°E, rocks, coarse sand, detritus, fast mowing water (*Eogammarus itotomikoae* Tomikawa, Morino, Toft et Mawatari, 2006, unidentifiable closer juveniles of *Paramoera* sp.);

k31: 500 m from k30, 43.4243°N, 146.0842°E, same environmental conditions (*E. itotomikoae* Tomikawa, Morino, Toft et Mawatari, 2006);

k34: lake, 43.4897°N, 146.1244°E, silt, detritus (*E. itotomikoae* Tomikawa, Morino, Toft et Mawatari, 2006).

Specimens were dissected using a dissecting microscope Lomo MBS-9, mounted on microscope slides in polyvinyl lactophenol (PVL) and stained with methylene blue (Sigma-Aldrich Company, Inc.); dissected appendages were then covered with a coverslip and edged by clear nail polish. Prior to dissection, body length (BL) was measured as the distance from the anterodorsal apex of the pereonite I to the posterodorsal corner of the pleonite III in a straight line (Ariyama 2021). All pertinent morphological structures were drawn using a Carl Zeiss NU-2 compound microscope equipped with a drawing device as modified by Gorodkov (1961). The description given here is based on the type series which is deposited in the private collection of D. A. Sidorov (prefix DAS).

Taxonomic description

Subphylum **Crustacea** Brünnich, 1772
Class **Malacostraca L**atreille, 1802
Subclass **Eumalacostraca** Grobben, 1892
Superorder **Peracarida** Calman, 1904
Order **Amphipoda** Latreille, 1816
Suborder **Gammaridea** Latreille, 1803
Family **Dexaminidae** Leach, 1814
Subfamily **Prophliantinae** Nicholls, 1939

Genus ***Guernea*** Chevreux, 1887

Guernea ezoensis Ishimaru, 1987 (Figs. 1–3)
Guernea ezoensis Ishimaru, 1987: p. 1404, Figs. 7–11 (original description). — Hirayama,

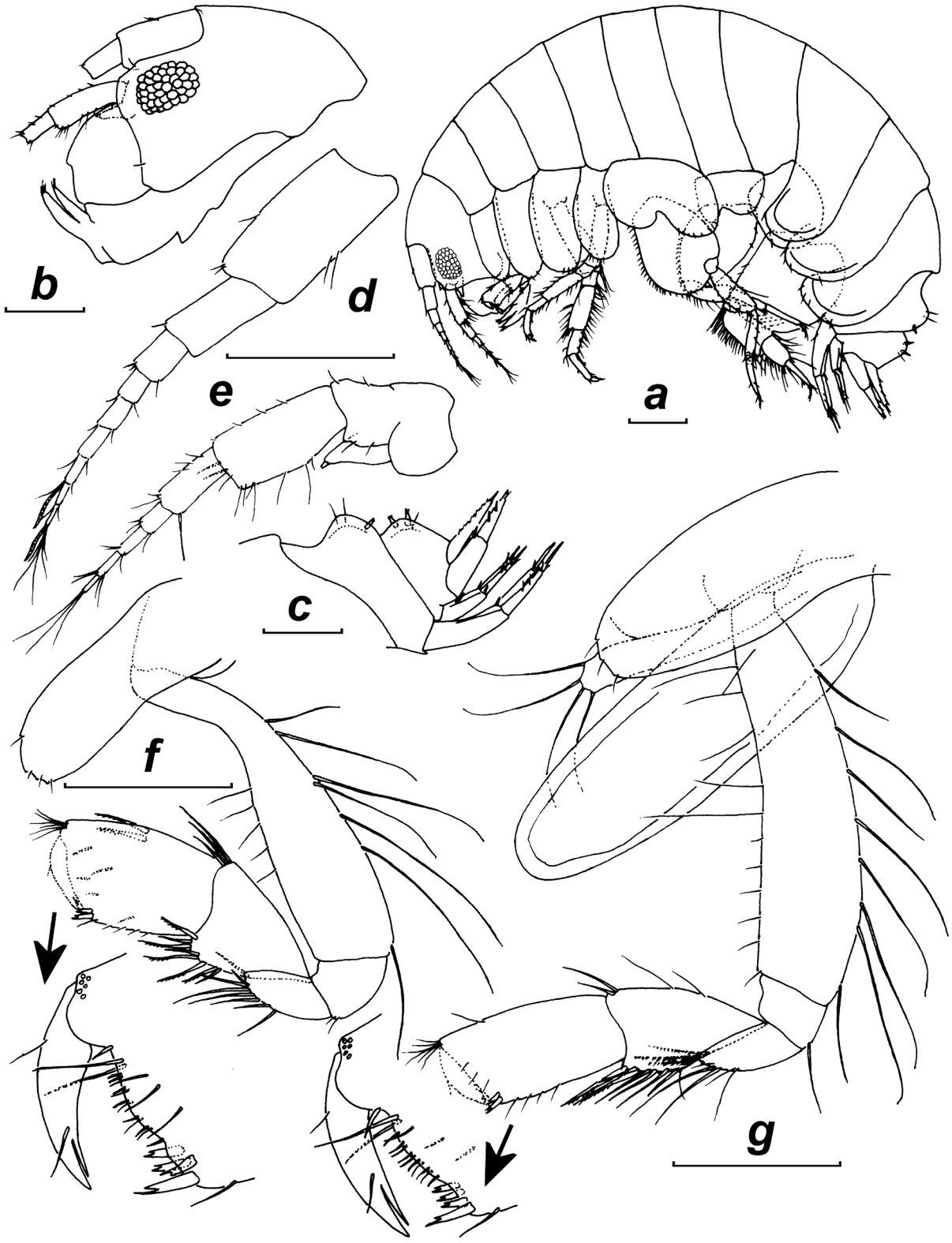

Fig. 1. *Guernea ezoensis* Ishimaru, 1987, female, 2.25 mm: *a* — habitus (left side view); *b* — head; *c* — urosome (left side view); *d* — antenna I; *e* — antenna II; *f* — gnathopod I; *g* — gnathopod II. Scale bars: 0.2 mm

Рис. 1. *Guernea ezoensis* Ishimaru, 1987, самка, 2.25 мм: *a* — габитус (вид сбоку); *b* — голова; *c* — уросома (вид сбоку); *d* — антенна I; *e* — антенна II; *f* — гнатопод I; *g* — гнатопод II. Линейки 0.2 мм

https://www.doi.org/10.33910/2686-9519-2023-15-1-42-49

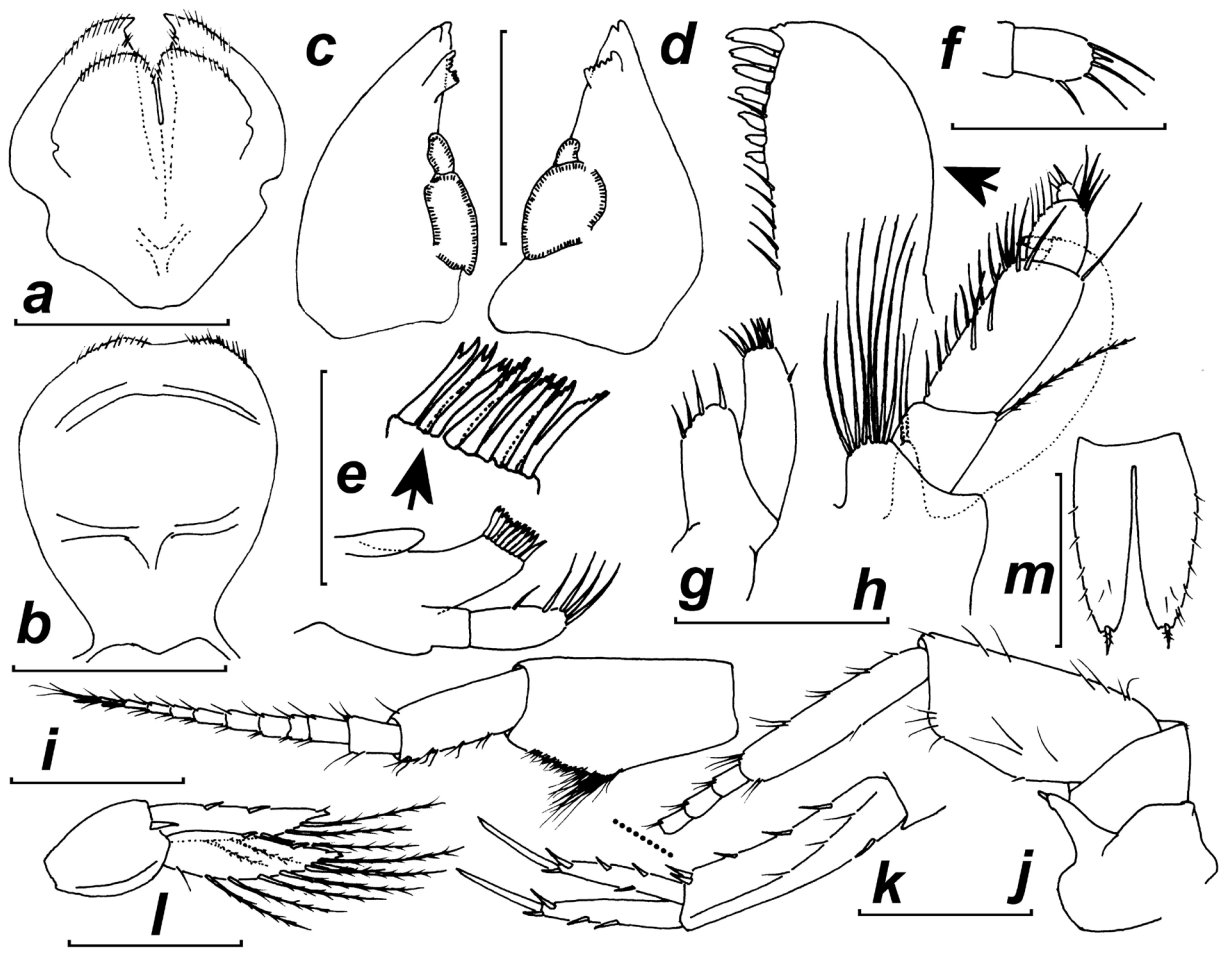

Fig. 2. *Guernea ezoensis* Ishimaru, 1987, female, 2.25 mm (a-h): *a* — lower lip; *b* — upper lip; *c, d* — mandibles; *e* — maxilla I (right); *f* — palp of maxilla I (left); *g* — maxilla II; *h* — maxilliped; male, 2.2 mm (i-m): *i* — antenna I; *j* — antenna II; *k* — uropod I; *l* — uropod III; m — telson. Scale bars: 0.2 mm

Рис. 2. *Guernea ezoensis* Ishimaru, 1987, самка, 2.25 мм (a-h): *a* — нижняя губа; *b* — верхняя губа; *c, d* — мандибулы; *e* — максилла I (правая); *f* — щупик максиллы I (левый); *g* — максилла II; *h* — ногочелюсть; самец, 2.2 мм (i-m): *i* — антенна I; *j* — антенна II; *k* — уропод I; *l* — уропод III; m — тельсон. Линейки 0.2 мм

Takeuchi 1993: p. 142. — Kim et al. 2011: p. 5, Figs. 2A, 3-5.

Material examined (new record). Russia, Yuri Is. (sta. k28), 16♀ (oostegites developed, some brooding 15-22 eggs), 2♂ (BL = up to 2.8 mm), Shirokaya Bay, 12.08.2013, coll. Sidorov D. A., seashore, Karaman-Chappuis pits in finely rolled pebbles, DAS 1-14/01.

Description. Female, ovigerous with 19 eggs (B = 2.25 mm). GENERAL BODY MORPHOLOGY (Figs. 1: *a–c*, 3: *a–g*, 3: *l*). Body stout, strongly calcified; alive coloration whitish, translucent. Head subtriangular, rostrum indistinct; lateral cephalic lobe broadly rounded, inferior antennal sinus moderate; eyes pigmented, relatively small, composed of 28 ommatidia. Urosomite I with weak triple dorsal crest, bearing upper group of setae and lower group of 2 spines, urosomites II–III (coalesced) with double dorsal crest, almost evenly rounded and sloping forwards, bearing 4 spines accompanied with setae. Coxa IV curved; coxa V broad, posterior lobe evenly rounded; coxa VII deep, anterior lobe absent. Gills of coxae II–V large sacs, of coxa VI smaller, absent on coxa VII. Oostegites II–V (brood plates) well-developed, narrow, plate V the smallest.

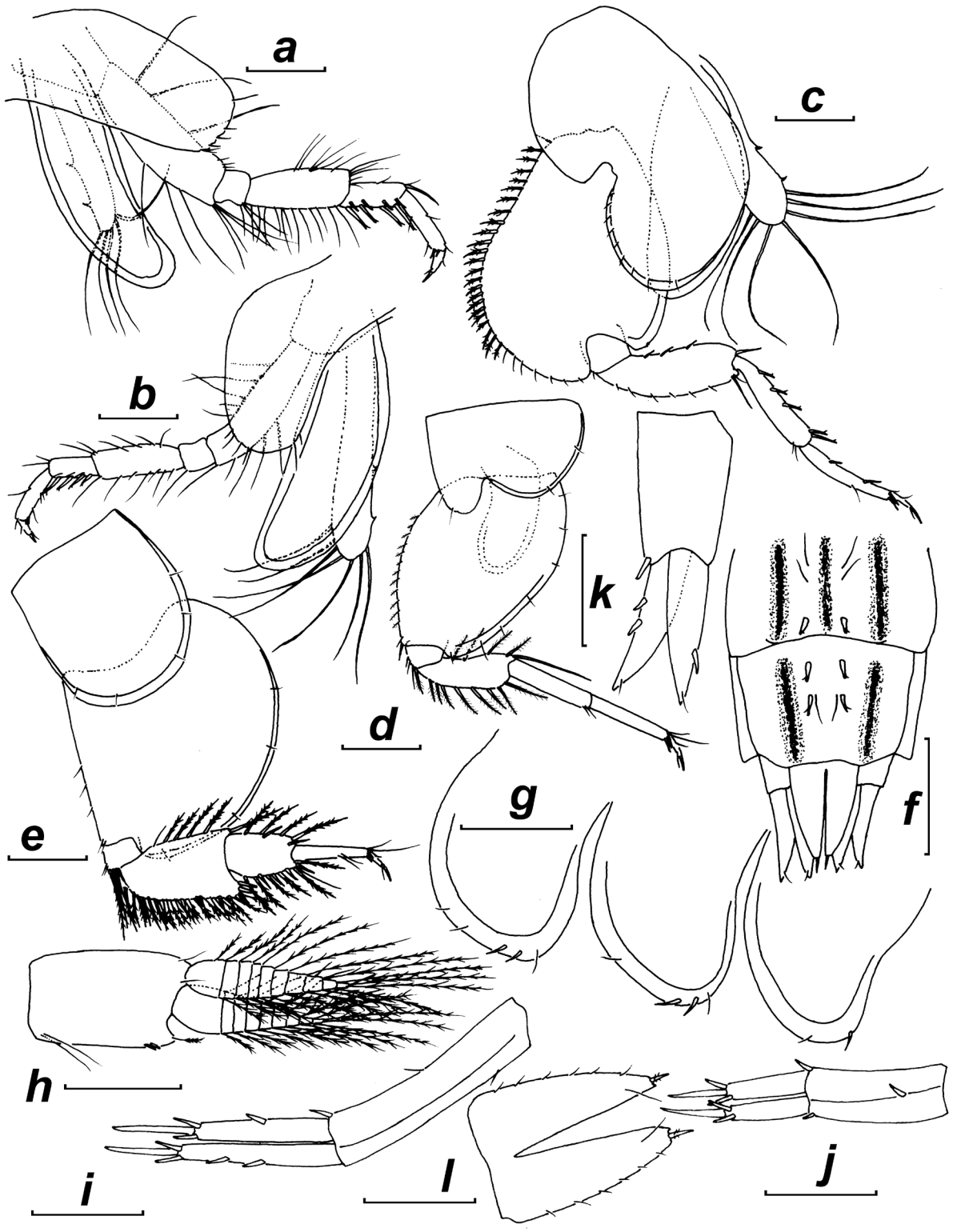

Fig. 3. *Guernea ezoensis* Ishimaru, 1987, female, 2.25 mm: *a* — pereopod III; *b* — pereopod IV; *c* — pereopod V; *d* — pereopod VI; *e* — pereopod VII; *f* — urosome (dorsally); *g* — epimeral plates; *h* — pleopod II; *i* — uropod I; *j* — uropod II; *k* — uropod III; *l* — telson. Scale bars: 0.2 mm

Рис. 3. *Guernea ezoensis* Ishimaru, 1987, самка, 2.25 мм: *a* — переопод III; *b* — переопод IV; *c* — переопод V; *d* — переопод VI; *e* — переопод VII; *f* — уросома (вид сверху); *g* — эпимеральные пластинки; *h* — плеопод II; *i* — уропод I; *j* — уропод II; *k* — уропод III; *l* — тельсон. Линейки 0.2 мм

https://www.doi.org/10.33910/2686-9519-2023-15-1-42-49

Table 1

Distribution and habitat preferences of *Guernea ezoensis*, (n) — number of collected specimens

Таблица 1

Распространение и местообитания *Guernea ezoensis*, (n) — количество собранных экземпляров

Locality	(n)	Method of capture	Depth range (m)	Substrate	References
Hokkaido, Japanese Archipelago	10	light trap	0–40	sand, mud, gravel, oyster beds	Ishimaru (1987)
Honshu, Japanese Archipelago	—	plankton net	—	—	Hirayama, Takeuchi (1993)
Korean Peninsula	>500	light trap / sieving	1–12	sand, mud	Kim et al. (2011)
Southern Kurils	18	Karaman-Chappuis pits	littoral	pebbles	Present study

Epimera I–III with distinctly inward forward anteroventral lobe. Telson 1.4 times as long as broad, deeply cleft, with a few minute setae along lateral margins, lobes apically with 1 spine each. ANTENNAE (Figs 1a, 1d, 1e). Antenna I about 15% of body length, peduncle articles in relation 1:0.6:0.3, flagellum of 6 articles, a couple of terminal flagellar articles with oblong aesthetasc each; accessory flagellum 1-segmented, reduced. Antenna II 90% of antenna I length, peduncle articles (4 + 5) about twice longer than flagellum, bearing rare long setae on ventral face; flagellum of 4 articles, modestly equipped with short setae; gland cone reaches one-third of article 4. MOUTH PARTS (Figs. 2: *a–h*). Mandibular incisors with 2 weak teeth, molar without a seta. Maxilla I outer lobe with 9 pectinate (or bifid) spines, palp 2-segmented, slightly asymmetric, distally with group of setae. GNATHOPODS (Figs 1f, 1g). Gnathopod II longer than gnathopod I; propodi (article 6) of both gnathopods with palmar angle defined and armed with 4 distally-notched spines. PEREOPODS (Figs. 1: *a*, 3: *a–e*), without peculiarities. PLEOPODS AND UROPODS (Figs. 1: *a*, 3: *h–l*), ordinary, shaped and setose like in the original description.

Sexual dimorphism. Pronounced, expressed in the larger body size in females, in contrast with two male specimens of 2.2 mm body length (Figs. 2: *i–m*). Sexually dimorphic appendages as antenna II long, flagellum with 20 articles; among other features females differ by lacking long plumose setae on uropod III rami and first peduncular article of antenna I richer setose on ventral margin.

Variation. Not observed.

Remarks. The examined specimens correspond well with the earlier descriptions of *G. ezoensis* by (Ishimaru 1987) and (Kim et al. 2011), however, it differ in a number of minor characters: the lower edge of head without a pronounced cheek, the posterior lobe of coxa V is distinctly shallow, gland cone of antenna II noticeably exceeding article 3 in both sexes, telson lacking sub-apical spines on dorsal surface (replaced with setae), both gnathopods with 4 spines at palmar angle, male antenna II weakly setose, mouthparts slightly differ in the armament pattern.

Distribution and ecology. *Guernea ezoensis* is a common gammaridean amphipod inhabiting predominantly intertidal biotopes (recorded at depths from 0 to 40 m) in the Far Eastern marine region (Table 1). Previously recorded from the northern Japan (Ishimaru 1987) and around the Korean Peninsula and Jejudo Isl. (Kim et al. 2011), the finding of the species in the Matsukawa-ura Lagoon (Hirayama, Takeuchi 1993) deserves attention. Besides

the above-mentioned locations, the species was observed in tide pools among finely rolled pebbles from Yuri Isl., Southern Kurils, where it occurs together with unidentified pontogeneiid amphipod juveniles *Paramoera* sp.

Acknowledgments

The author is thankful to A. A. Balanov (NSCMB FEBRAS, Vladivostok) and the aboard crew of the r/v Professor Gagarinsky for professional support during the research expedition.

References

Ariyama, H. (2021) Five species of the family Odiidae (Crustacea: Amphipoda) collected from Japan, with descriptions of a new genus and four new species. *Zootaxa*, vol. 5067, no. 4, pp. 485–516. https://doi.org/10.11646/zootaxa.5067.4.2 (In English)

Budnikova, L. L., Savko, T. Yu. (2002) Sostav i raspredelenie amfipod (Amphipoda: Gammaridea) na myagkikh gruntakh vozle o. Furugel'ma (Yaponskoe more, zal. Petra Velikogo) [Composition and distribution of amphipods (Amphipoda: Gammaridea) on the soft grounds near the Furugelm Island (the Sea of Japan, the Peter the Great Gulf)]. *Izvestia Tikhookeanskogo nauchno-issledovatel'skogo rybokhozajstvennogo tsentra*, pp. 481–494. (In Russian)

Dzhurinskij, V. L. (2013) Suborder Gammaridea. In: B. I. Sirenko (ed.). Spisok vidov svobodnozhivushchikh bespozvonochnykh Dal'nevostochnykh morej Rossii *[Check-list of species of free-living invertebrates of the Russian Far Eastern seas. Vol. 75(83). Explorations of the fauna of the seas]*. Saint Petersburg: Zoological Institute Publ., pp. 123–139. (In Russian)

Gorodkov, K. B. (1961) Prostejshij mikroproektor dlya risovaniya nasekomykh [The simplest microprojector for drawing insects]. *Entomologicheskoe obozrenie*, vol. 40, pp. 936–939. (In Russian)

Gurjanova, E. (1951) *Bokoplavy morej SSSR i sopredel'nykh vod (Amphipoda, Gammaridea). [Amphipods of the seas of USSR and adjacent waters (Amphipoda, Gammaridea)]*. Moscow: Opredeliteli po faune USSR Publ., 1029 p. (In Russian)

Hirayama, A., Takeuchi, I. (1993) New species and new Japanese records of the Gammaridea (Crustacea: Amphipoda) from Matsukawa-ura Inlet, Fukushima Prefecture, Japan. *Publications of the Seto Marine Biological Laboratory*, vol. 36, pp. 141–178. (In English)

Ishimaru, Sh.-I. (1987) Description of two new species of *Guernea* (Crustacea, Amphipoda, Dexaminidae) from Japan, with tentative revision of subfamily Prophliantinae. *Journal of Natural History*, vol. 21, no. 6, pp. 1395–1414. (In English) https://doi.org/10.1080/00222938700770881

Kim, Y.-H., Hendrycks, E. A., Lee, K.-S. (2011) The genus *Guernea* Chevreux, 1887 from Korean waters (Crustacea: Amphipoda: Dexaminidae). *Zootaxa*, vol. 3104, no. 1, pp. 1–25. https://doi.org/10.11646/zootaxa.3104.1.1 (In English)

Kostina, E. E., Tsurpalo, A. P. (2016) Species composition and distribution of macrobenthos in the intertidal zone of Kunashir Island (South Kurile Islands), Russia. *Publications of the Seto Marine Biological Laboratory*, vol. 44, pp. 53–133. https://doi.org/10.5134/217553 (In English)

Kudryashov, V. A. (1972) K faune i ekologii bokoplavov (Amphipoda — Gammaridea) prilivo-otlivnoj zony Kuril'skikh ostrovov (litoral' ostrovov Iturup, Urup, Simushir, Paramushir) [On the fauna and ecology of amphipods (Amphipoda-Gammaridea) from the tidal zone of the Kurill Islands (the littoral of Iturup, Urup, Simushir, Paramushir)]. In: B. N. Kazanskij (ed.). *Fauna i rybokhozyajstvennoe znachenie pribrezhnykh vod severo-zapadnoj chasti Tikhogo okeana [Fauna and fishery significance of the coastal waters of the Northwest Pacific Ocean]*. Vladivostok: [s. n.], pp. 79–116. (In Russian)

Kussakin, O. G. (1977) Intertidal ecosystems of the seas of the USSR. *Helgoländer Wissenschaftliche Meeresuntersuchungen*, vol. 30, pp. 243–262. https://doi.org/10.1007/BF02207839 (In English)

Labaj, V. S., Labaj, S. V. (2014) Sutochnye vertikal'nye migratsii vysshikh rakoobraznykh (Crustacea: Malacostraca) v lagunnom ozere Ptich'e (Yuzhnyj Sakhalin) [Daily vertical migrations of Malacostraca (Crustacea) in lagoon lake Ptich'ye (Southern Sakhalin)]. *Chteniya pamyati Vladimira Yakovlevicha Levanidova — Vladimir Ya. Levanidov's Biennial Memorial Meetings*, vol. 6, pp. 369–379. (In Russian)

Norman, A. M. (1868) On Crustacea Amphipoda new to science or to Britain. *Annals and Magazine of Natural History, Series 4*, vol. 2, pp. 411–421. (In English)

Sidorov, D. A. (2020) Groundwater dependent fauna of coastal rivers and springs of the South Kuril Islands: First evidence on subterranean amphipods (Crustacea: Amphipoda). *Proceedings of the Section of Natural Sciences the Montenegrin Academy of Sciences and Arts*, vol. 23, pp. 209–221. (In English)

Stephensen, K. (1944) Some Japanese amphipods. *Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening*, vol. 108, pp. 25–88. (In English)

Tomikawa, K., Morino, H., Toft, J., Mawatari, S. (2006) A revision of *Eogammarus* Birstein, 1933 (Crustacea, Amphipoda, Anisogammaridae), with a description of a new species. *Journal of Natural History*, vol. 40, no. 17-18, pp. 1083–1148. https://doi.org/10.1080/00222930600828859 (In English)

Tsvetkova, N. (1975) *Pribrezhnye gammaridy severnykh i dal'nevostochnykh morej SSSR i sopredel'nykh vod: Rody Gammarus, Marinogammarus, Anisogammarus, Mesogammarus (Amphipoda, Gammaridae) [Coastal gammarids northern and Far East seas USSR and adjacent waters: Gammarus, Marinogammarus, Anisogammarus, Mesogammarus (Amphipoda, Gammaridae)]*. Leningrad: Nauka Publ., 257 p. (In Russian)

For citation: Sidorov, D. A. (2023) A small collection of amphipods (Crustacea, Amphipoda) from the Lesser Kuril Chain. *Amurian Zoological Journal*, vol. XV, no. 1, pp. 42–49. https://www.doi.org/10.33910/2686-9519-2023-15-1-42-49

Received 5 May 2022; reviewed 15 December 2022; accepted 27 December 2022.

Для цитирования: Сидоров, Д. А. (2023) О небольшой коллекции амфипод (Crustacea, Amphipoda) с Малой Курильской гряды. *Амурский зоологический журнал*, т. XV, № 1, с. 42–49. https://www.doi.org/10.33910/2686-9519-2023-15-1-42-49

Получена 5 мая 2022; прошла рецензирование 15 декабря 2022; принята 27 декабря 2022.