

A new species of *Epimeria* (Amphipoda, Epimeriidae) from hadal depths in the Aleutian Trench with biogeographic notes of the genus[☆]

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ABSTRACT

The amphipod genus *Epimeria* comprises of hitherto 92 accepted species, of which 19 are known from the Pacific. We here present a new species of *Epimeria*, for the first time from hadal depths, from the Aleutian Trench in the northern part of the North Pacific. Sampled at a depth of 6503 m this is the deepest *Epimeria* to record. The new species is easily recognised both by its large size of over 5 cm, as well as its coxa 4 which has a sharp mid-coxal protrusion, by having carinal bumps starting at pereon segment 1, and sharp drawn out teeth at the epimeron. An updated key to the Pacific species of *Epimeria* is provided.

1. Introduction

Deep-sea trenches are theorized to function as isolating and separating geographical barriers for many benthic and hyperbenthic animals. The Aleutian Trench forms a depth-barrier between the Bering Sea in the north and the northern parts of the North Pacific in the south. Both abyssal plains stretch at 3–5000 m depth, with the Aleutian Trench reaching 7822 m at its deepest. This influences both species distributions and interactions (Saeedi and Brandt, 2020; Saeedi et al., 2020).

Amphipoda is one of the many taxa that are numerous both in biodiversity and in number of specimens in the deep sea, and also in the Aleutian Trench (Brandt et al., 2024). As the other peracarid crustaceans amphipods are brooders with no planktonic larval stage, and the dispersal rate is therefore small for the vast majority of the species. It was therefore no surprise that new species of Amphipoda were discovered during the investigation into the biodiversity of the Aleutian Trench (Brandt et al., 2024).

Epimeria is a large cosmopolitan amphipod-genus presently containing 92 accepted species (Horton et al. 2026), of which 19 are known from the Pacific (Kürzel and Lörz, 2026). The genus was revised in a seminal work by (d'Udekem d'Acoz and Verheye, 2017), who gave an overview of all species then known, describing an unprecedented 27 new species and presenting four new subgenera, making a total of nine subgenera. As many as 31 of the species belonging to *Epimeria* are not

included in any of the present subgenera. Since 2017, eight additional *Epimeria* have been described (Beermann et al., 2018; Verheye et al., 2018; Varela, 2020; Wang et al., 2020; Winfield and Hendrickx, 2020; Souza-Filho et al., 2024, corrected in Souza-Filho et al., 2026; Kürzel and Lörz, 2026). The present species is the deepest registered *Epimeria*, from 6503 m depth, and will be the 20th *Epimeria*-species in the Pacific, and increase the number of species of *Epimeria* in general to 93.

2. Material and methods

Sampling was performed at the AleutBio cruise in 2022 (Brandt et al., 2022) using a Brenke epibenthic sled (EBS, Brenke, 2005) and Agassiz trawl (AGT). Samples were immediately washed in a cold room and kept on a cold working chain through sorting, identification, photography and sampling for molecular data (Riehl et al., 2014).

On board photographs of recently sampled (and «very close to live») specimens were captured using a Canon EOS 5D Mark IV placed on a sliding stand, and removal of background and drawings of scale bars were performed using Adobe Photoshop CC.

Sequenced specimens were examined using a Leica M165C, and subsequent photos were made using a Leica LasX camera with Leica z-stack programming. Drawing of mouthparts were made from “wet-slides” (glycerol mountings) using a Leica microscope fitted with a drawing tube. Penciled drawings were inked and combined to plates

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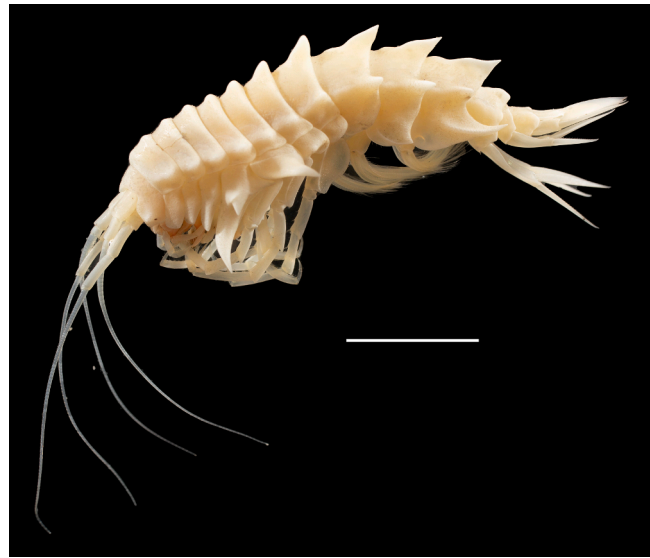


Fig. 1. *Epimeria ollii* sp. nov. Holotype SMF63632. Scale bar is 10 mm. Photographed shortly after collection.

using Adobe Illustrator CC following (Coleman, 2003; 2009).

All specimens are stored at the Senckenberg Museum of Nature in Frankfurt, Germany. Museum registration numbers (SMF) are noted with the material.

The molecular analysis of the species was conducted as part of a general barcoding study of AleutBio amphipods presented in Jazdzewska et al. (2026). The sequences obtained in that study are included here to provide a molecular characterization of the newly described species. Extraction of DNA was carried out using a mixture of 112.5 µl pure H₂O with 0.011 g Chelex (Sigma-Aldrich Co.) and 7.5 µl proteinase K. The digestion at 55 °C lasted for 6 h.

The DNA barcoding fragment of COI (658 bp) was amplified using the degenerate LCO1490-JJ (CHACWAAYCATAAAGATATYGG) and HCO2198-JJ (AWACTTCVGGRTGVCCAAARAATCA) primer pair (Astrin and Stüben, 2008). The polymerase chain reaction was performed with Dream Taq PCR Mastermix (Thermo Scientific) and the reaction conditions following Hou et al. (2007). Sequencing was done in Macrogen Inc. (the Netherlands) on an Applied Biosystems 3730xl capillary sequencer. Electropherograms were viewed in Geneious 10.2.6 and primer sequences and ambiguous positions were trimmed. Sequences were blasted using default parameters on NCBI BLASTn and translated into amino acid sequences to confirm that no stop codons were present. All sequences were deposited in GenBank with the accession numbers: PX719946, PX719986, PX720166, PX720199, PX720224, PX917938. Relevant voucher information, taxonomic classifications and sequences are deposited in the data set “DS-EPIMOLLI” in the Barcode of Life Data System (BOLD) (<https://dx.doi.org/10.5883/DS-EPIMOLLI>) (<https://www.boldsystems.org>) (Ratnasingham and Hebert, 2007). Sequences were subjected to the Barcode Index Number (BIN, Ratnasingham and Hebert, 2013) ascription.

List of abbreviations: A1,2 – Antenna 1; 2; Mx1, 2 – Maxilla 1, 2; Mxp – Maxilliped; P1–7 – Pereopod 1–7; Ep1–3 – Epimeral plate 1–3; U1–3 – Uropod 1–3; T – Telson; art – article; l – left; r – right.

3. Results

Systematics.

Order Amphipoda Latreille, 1816.

Suborder Amphilochidea Boeck, 1871.

Superfamily Iphimedioidea Boeck, 1871.

Family Epimeriidae Boeck, 1871.

Genus *Epimeria* Costa in Hope, 1851.

Diagnosis: There is a thorough diagnosis and a comprehensive list of synonyms in (d’Udekem d’Acoz and Verheye, 2017).

Epimeria ollii sp. nov.

Figs. 1–8.

Material examined.

Holotype. Male, 33 mm, SMF63632, COI: PX720166, Station 9–8, EBS, Aleutian Trench NE Pacific, 6503 m, 52°09.170’N 166°53.494’W, 16.08.2022, dissected, kept in ethanol.

Paratypes: Male, 41 mm, SMF63633, COI: PX719938 same collection data as Holotype, specimen in ethanol.

Ovigerous female, 52 mm, SMF63637, COI: PX720224, Station 13–8, AGT, Aleutian Trench NE Pacific, 6356 m, 53°05.27’N 162°04.66’W, 26.08.2022, specimen in ethanol.

Other material: Male, 32 mm, SMF63634, COI: PX719946, same collection data as Holotype, specimen in ethanol.

Male, 53 mm, SMF63635, COI: PX720199, Station 13–7, EBS, Aleutian Trench NE Pacific, 6338 m, 53°05.419’N 162°03.049’W, 22.08.2022, specimen in ethanol.

Male, 49 mm, SMF63636, COI: PX719986, same collection data as female paratype, specimen in ethanol.

Diagnosis:

Body dorsally carinate from pereonite 1, with increasingly larger and sharper dorsomedial teeth. Rostrum minute and rounded, antennae long. No eyes. Coxae 4 and 5 protracted laterally; coxa 4 very long and pointed with a large projecting tooth middle on the posterior margin. Urosome with dorsal and lateral teeth, telson 30% notched.

Morphological description:

Based on male holotype.

Head: small, smooth, no visible eyes. Rostrum (Figs. 1 and 7) very small, rounded. Antennae (Fig. 1) subequal, also subequal to body length. A1 peduncle article 1 about 1.8x longer than wide, no visible accessory flagellum, flagellum 76-articulate. Antenna 2 peduncle article 4 subequal to article 5, flagellum 98-articulate. Labrum (upper lip) (Fig. 2a) round, smooth and symmetric. Mandibles (Fig. 2c) incisors with 7 teeth, molar triturative, left lacinia mobilis with serrate ridge and projection, accessory setal row with 20 multicuspidate setae, palp 3-articulate, article 2 as long as article 3, both setose. Labium (lower lip) (Fig. 2b) inner and outer margins with few thin setae. Maxilla 1 (Fig. 2d) inner plate rounded with nine plumose setae and 13 simple setae, outer plate with ten robust spine-like serrate setae, palp 2-articulate, tip of article 2 bearing eight robust round-tipped setae. Maxilla 2 (Fig. 2e) inner and outer plate with two marginal rows of setae, inner

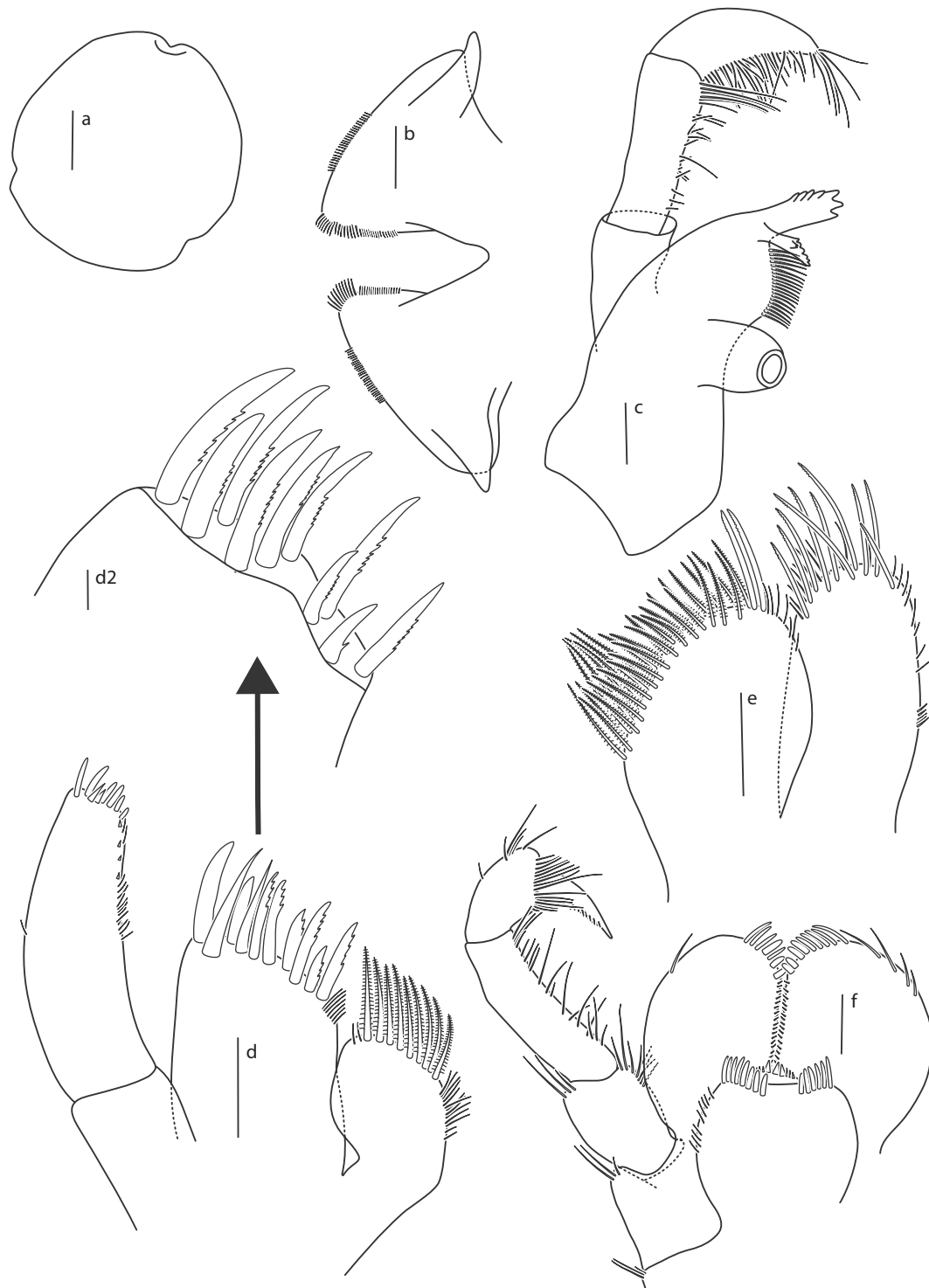


Fig. 2. *Epimeria ollii* sp. nov. Mouthparts: a) labrum b) labium c) left mandible d) left maxilla 1 e) left maxilla 2 f) maxilliped. Holotype SMF63632. All scale bars are 0.5 mm.

plate with setose setae and outer plate with serrate setae. Maxilliped (Fig. 2f) inner plate truncate, entire, reaching $\frac{1}{3}$ of outer plate length, tipped with 14 long and four short stout setae, outer plate broadly rounded distally, internal margin setose, seven distal stout setae and several thin and simple, medial margin of palp setose, tufts of simple setae distally on article 3, dactylus margin serrate.

Pereon: Dorsal and medial humps on each segment growing progressively larger with the dorsal projection of pereon segments 6 and 7 being tooth-like (sharp). Pereopod 1 (Figs. 3a and 4a–b) coxa long and

slender, ventrally truncate, basis curved, margins with long simple setae, ischium short, merus posterior margin setose, carpus longer than propodus, posterior margin with tufts of plumose setae, propodus expanded distally, palmar corner right-angled, palm weakly serrate, dactylus curved, slightly longer than propodus palm, inner margin sharply serrate, unguis $\frac{1}{10}$ of dactylus length. Pereopod 2 (Figs. 3b and 4c) coxa long and slender, ventrally truncate, same length as coxa 1, basis slightly curved, margins with long thin simple setae, ischium short, merus posterior margin setose, carpus longer than propodus, posterior



Fig. 3. *Epimeria ollii* sp. nov. Left side legs: a) pereopod 1 b) pereopod 2 c) pereopod 3 d) pereopod 4. Holotype SMF63632. All scale bars are 1 mm. Photographed in laboratory.

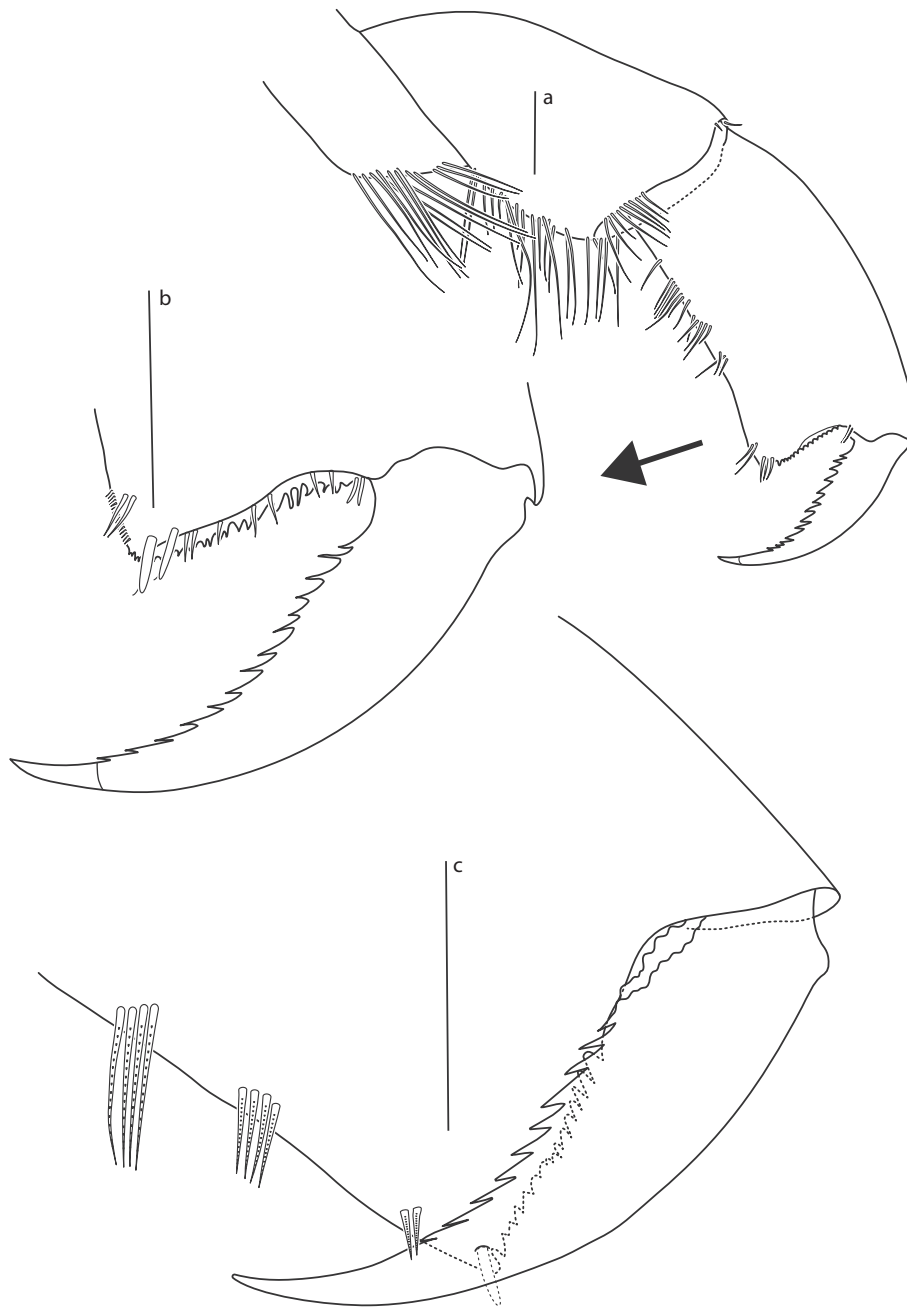


Fig. 4. *Epimeria ollii* sp. nov. Close-up of propodus palm and dactylus of a) and b) pereopod 1 and c) pereopod 2. Holotype SMF63632. All scale bars are 0.5 mm.

margin with tufts of plumose setae, propodus expanded distally, palmar corner marginally sharp-angled, palm weakly serrate, dactylus curved, slightly longer than propodus palm, inner margin sharply serrate, unguis $\frac{1}{10}$ of dactylus length.

Pereopod 3 (Fig. 3c) coxa long and slender, ventrally truncate, slightly longer than coxa 2, basis very weakly curved, ischium short, merus and carpus subequal, propodus slightly longer than carpus, dactylus weakly curved, half length of propodus. Pereopod 4 (Fig. 3d) coxa long, with a forwards projecting ventral curve ending in a sharp curved point, lateral tooth at upper $\frac{1}{3}$ of coxa, directed straight out (seen best from dorsal view, Fig. 6a), basis slightly curved, ischium short, merus and carpus subequal, propodus slightly longer than carpus, dactylus weakly curved, half length of propodus. Pereopod 5 (Fig. 5a) coxa triangular, with a curved long backwards sharp projection (Fig. 6a), not as long as coxa 4, basis elongate with parallel margins, posteroventral corner rounded, ischium short, merus with minimal posteroventral lobe,

carpus subequal length to merus, propodus long and slender, dactylus weakly curved, $\frac{2}{5}$ length of propodus. Pereopod 6 (Fig. 5b) coxa short and rounded truncate with a notch, basis linear with parallel margins, posteroventral corner rounded, ischium short, merus with minimal posteroventral lobe, carpus subequal length to merus, propodus long and slender, dactylus weakly curved, $\frac{2}{5}$ length of propodus. Pereopod 7 (Fig. 5c) coxa small and rounded, basis wide with posterior margin rounded, posteroventral corner straight but weakly rounded, ischium short, merus marginally longer than carpus, both straight and narrow, propodus longer than merus, dactylus weakly curved, $\frac{2}{5}$ length of propodus.

Epimeron: (Figs. 1, 6c, 8) each segment with one large sharp tooth-like dorsal projection and one medial projection that is drawn out to a backwards facing tooth. Epimeral plate 1 posterior margin with one raised medial tooth and rounded posteroventral corner. Epimeral plate 2 posterior margin with one raised medial tooth and acute posteroventral



Fig. 5. *Epimeria ollii* sp. nov. Left side legs: a) pereopod 5 b) pereopod 6 c) pereopod 7 d) dorsal view of urosome with telson. Holotype SMF63632. All scale bars are 1 mm. Photographed in laboratory.

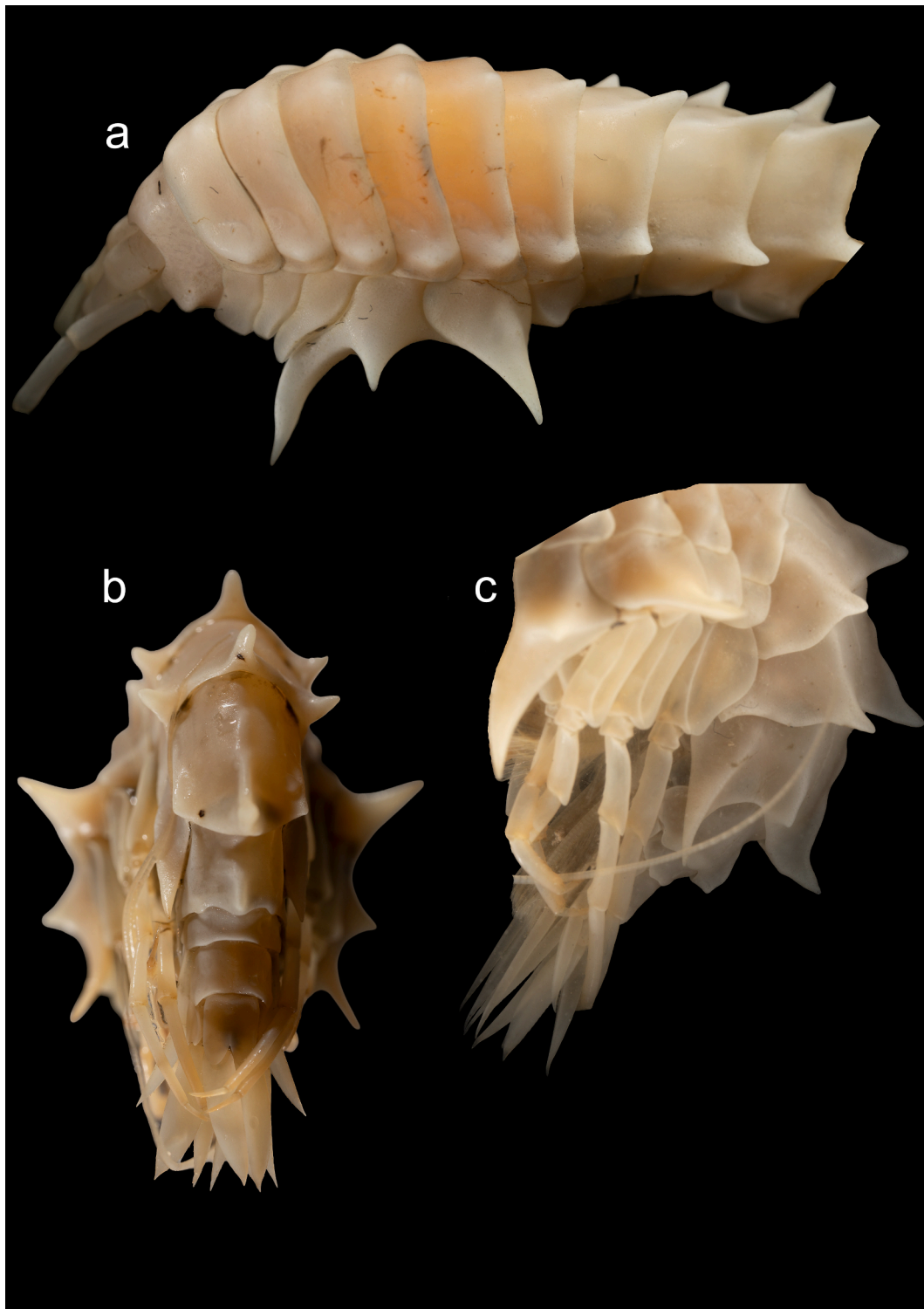


Fig. 6. *Epimeria olli* sp. nov. a) view demonstrating coxae 4 and 5 b) dorsal view of urosome and telson c) lateral view from coxa 5 to urosome. SMF63633 (a), SMF63635 (b and c).

corner. Epimeral plate 3 with one raised medial tooth and a drawn out curved almost lanceolate tooth at posteroventral corner.

Urosome: (Figs. 1, 5d, 6b-c and 8) Uropod 1 peduncle subequal to rami in length, rami leaf-shaped and subequal. Uropod 2 peduncle subequal in length to outer ramus, inner ramus $\frac{1}{3}$ longer than outer ramus. Uropod 3 peduncle short $\frac{1}{3}$ of rami length, rami leaf-shaped and equal of length. Telson (Figs. 5d and 6b) width $\frac{2}{3}$ of length, notched 30%, tips rounded.

There is no observed sexual dimorphism in this species.

Colouration: Freshly sampled specimens were uniformly off-white in colour.

Etymology: This species is named in honour of our good friend and colleague Charles Oliver Coleman (“Olli”) – who was retiring from his position as curator at the Natural History Museum in Berlin while we were aboard the R/V Sonne discovering this new and beautiful species. It is a (somewhat late) retirement gift to a man who has been a mentor,



Fig. 7. *Epimeria ollii* sp. nov. Front view. Paratype SMF63635. Scale bar is 5 mm. Photographed shortly after collection.

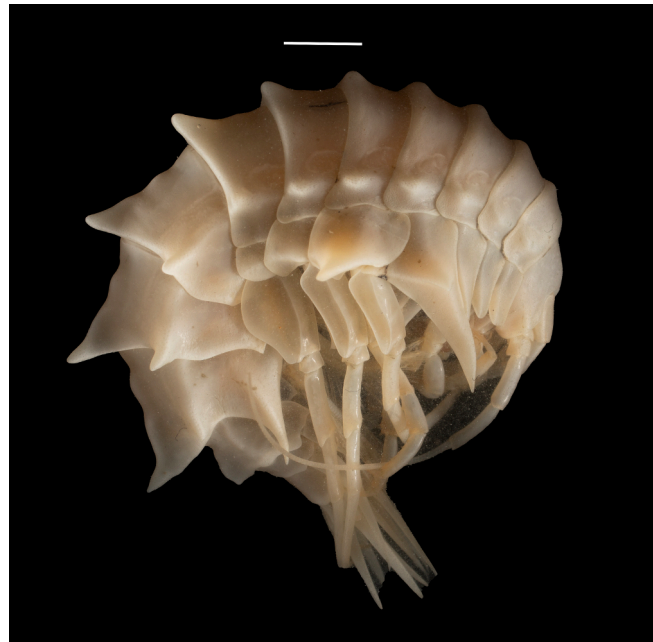


Fig. 8. *Epimeria ollii* sp. nov. SMF63635. Scale bar is 5 mm. Photographed shortly after collection.

colleague and friend through both authors start as amphipod researchers, and a good colleague of the cruise leader Angelika Brandt. Ollis many publications of nice, spiky amphipods should be completed with this big and beautiful spiked friend. The name is a noun in apposition.

Molecular description:

Following the definition given by Pleijel et al. (2008), the sequence of the holotype of *E. ollii* (SMF 63632, GenBank accession number PX720166) is designated as a hologenophore of all obtained sequences. The sequences of the paratypes and additional individuals of the species are also deposited in GenBank with the following accession numbers:

PX719946, PX719986, PX720199, PX720224, PX917938. The species has also received a Barcode Index Number from Barcode of Life Data Systems BOLD:AGV6962 (<https://dx.doi.org/10.5883/BOLD:AGV6962>)

All sequences obtained appeared to represent a single haplotype. The molecular comparison of the sequences of *Epimeria ollii* sp. nov. revealed that the closest relative of this taxon, showing 91.8% similarity, is *Epimeria abyssalis* Shimomura & Tomikawa, 2016.

To help with identification of Pacific *Epimeria*, we present an updated key based on the recently published key by Kürzel and Lörz (2026).

Updated key to the *Epimeria* species of the Pacific

1a. Pereon segments lacking strong dorsal carinae	2
1b. Pereon segments bearing strong dorsal carinae	13
2a. Eyes present	3
2b. Eyes absent.....	9
3a. Urosomite 1 bearing dorsally pointed tooth; rostrum extending beyond first peduncle article of antenna 1	4
3b. Urosomite 1 lacking dorsally pointed tooth; rostrum not extending beyond first peduncle article of antenna 1.....	7
4a. Coxa 5 projection not reaching to epimeral plate 1	<i>E. cora</i> J.L. Barnard, 1971
4b. Coxa 5 projection reaching to epimeral plate 1.....	5
5a. Head ventral lobe not produced.....	6
5b. Head ventral lobe produced.....	<i>E. pacifica</i> Gurjanova, 1955
6a. Eyes oval; carina of pleonite 3 rounded; coxa of pereopod 5 reaching approximately halfway along pleonite 1	<i>E. ortizi</i> Varela & García-Gómez, 2015
6b. Eyes kidney-shaped; carina of pleonite 3 acute; coxa of pereopod 5 extending beyond the distal margin of pleonite 1	<i>E. karamani</i> Winfield & Hendrickx, 2020
7a. Coxa 5 with protrusion reaching posterior margin of epimeral plate 2; telson not cleft	<i>E. norfanzi</i> Lörz, 2011
7b. Coxa 5 without protrusion, telson cleft	8
8a. Telson with deep and broad V-shaped excavation	<i>E. pelagica</i> Birstein and M. Vinogradov, 1958
8b. Telson with deep and narrow Y-shaped excavation	<i>E. abyssalis</i> Shimomura & Tomikawa, 2016
9a. Coxa 5 produced	10
9b. Coxa 5 not produced.....	<i>E. yaquinae</i> McCain, 1971
10a. Pleonites 1–3 with dorsal carinae; coxae 1–3 ventrally rounded.....	11
10b. Pleonites 1–2 smooth; coxae 1–3 ventrally pointed	<i>E. subcarinata</i> Nagata, 1963
11a. Rostrum not extending beyond first peduncle article of antenna 1	<i>E. glaucosa</i> J.L. Barnard, 1961
11b. Rostrum extending beyond second peduncle article of antenna 1.....	12
12a. Pereon 6 without dorsal carinae	<i>E. morronei</i> Winfield, Ortiz & Hendrickx, 2012
12b. Pereon 4–7 with dorsal carina.....	<i>E. panamensis</i> Varela, 2020
13a. Coxa 5 strongly produced	14
13b. Coxa 5 not or weakly produced	19

14a Dorsal carinae starting from pereonite 1, more pronounced (dragged into peaks) from pereonite 5	<i>E. ollii</i> sp. nov.
14b Pereonite 1-4 dorsally smooth.....	15
15a. Dorsal carinae starting on pereon 4 or 5	16
15b. Dorsal carinae starting on pereon 6 or 7; posterolateral corners of epimeral plates 1 and 2 rounded or weakly produced	17
16a. pereonite 4 smooth, pereonite 5–7 with acute dorsolateral spines; first antenna with at least 40 articles, second antenna with at least 45 articles.....	<i>E. victoria</i> Hurley, 1957
16b. pereonite 4–7 with subacute dorsolateral spines; first antenna with 27 articles, second antenna with 34 articles	<i>E. freiwalderi</i> Kürzel & Lörz, 2026
17a. Pereonites 6 and 7 dorsolaterally smooth; coxa 1 ventrally rounded.....	18
17b. Pereonites 6 and 7 dorsolaterally bearing projections; coxa 1 ventrally subquadrate	<i>E. emma</i> Lörz and Coleman, 2014
18a. Rostrum not extending to distal margin of first peduncular article of antenna 1... ..	<i>E. liui</i> Wang, Zhu, Sha & Ren, 2020
18b. Rostrum beyond distal margin of first peduncular article of antenna 1	<i>E. horsti</i> Lörz, 2008
19a. Double dorsal carinae present on pleonites 1–3.....	20
19b. Single dorsal carinae present on pleonites 1–3	<i>E. bruuni</i> J.L. Barnard, 1961
20a. Pleonites dorsolaterally smooth	<i>E. sophie</i> Lörz & Coleman, 2014
20b. Pleonites dorsolaterally bearing several projections	<i>E. (Metepimeria) ashleyi</i> Lörz, 2012

Table 1
Character comparison of close *Epimeria*.

	<i>Epimeria ollii</i> sp. nov	<i>Epimeria abyssalis</i> Shimomura & Tomikawa, 2016	<i>Epimeria freiwaldi</i> Kürzel & Lörz, 2026	<i>Epimeria potiguarensis</i> Souza-Filho, Guedes-Silva & Andrade, 2026	<i>Epimeria pelagica</i> Birstein & Vinogradov, 1958	<i>Epimeria pacifica</i> Gurjanova, 1955
Size	53 mm	53 mm	12 mm	34 mm	23 mm	21 mm
Depth range (m)	6503–6338	5473–5695	227–287	955–1006	0–8000 (pelagic)	1271–1530
Ocean	NE Pacific	NW Pacific	S Pacific	S Atlantic	NW Pacific	N Pacific
Eyes	No eye	No visible eye, but swelling in eye region	Large, round (most of head), bulging	Round, ¼ of head	Round, ¼ head	Round, 1/3 head
Antennae	Subequal in length. Subequal to body length	Subequal in length, 2/3 of body length	Antenna 2 slightly longer than antenna 1, half body length	Antenna 2 longer than antenna 1, ¼ of body length	Subequal in length, 2/3 of body length	Subequal in length, 1/4 of body length
Rostrum	Very short, rounded	Short, 1/3 of antenna 1 article	Long, curved, end of peduncle antenna 1	Long and sharp, reaching end of peduncle antenna 1	Small, 1/4 antenna 1 article 1	Long and sharp, reaching end of peduncle antenna 1
Dorsal carination start	Pereonite 1	Pleonite 1	Pereonite 4	Pleonite 1	No carination	Pleonite 1
Coxa 4	Strong sharp projection, 2x length of coxa 3, posterior margin with sharp tooth approximately size of coxa 3	Strong sharp anterior projection, 1.5 x length of coxa 3	Broad, curved with blunt tip, 1.5x length of coxa 3	Curved with sharp protracted tooth, 1.5x length of coxa 3	Curved with sharp protracted tooth, as long as coxa 3	Curved with sharp protracted tooth, 1.5x length of coxa 3
Coxa 5	Sharp straight laterally projection, shorter than coxa 4	Small and subrectangular	Sharp straight posterior projection, crossing pereonites 6 and 7	Longer than coxa 4, tooth sharp, posteriorly protracted and dorsally curved	Small and subrectangular	As long as coxa 4, sharp straight posterior projection
Epimeral plate 2: dorsal dentation, posteroventral corner	Sharp dorsal tooth, sharp lateral tooth projected dorsally, posteroventral corner with right angle	Small dorsal tooth, posterior margin with lateral carina stretching to tooth, posteroventral corner not protracted	Large, sharp dorsal tooth, posterior margin with medial blunt tooth and posteroventral small sharp tooth	Large sharp dorsal tooth, posterior margin with median sinuation, posteroventral corner small tooth	Slightly sharp angle at posterodistal corner	Medium sized backward pointing tooth, right angle on corner
Epimeral plate 3: dorsal dentation, posteroventral corner	Sharp upwardstrusted dorsal tooth, lateral carination stretching to tooth, posteroventral corner protracted to long sharp tooth	Dorsal tooth, posterior margin with lateral larina stretching to tooth, posteroventral corner protracted to sharp tooth	Large sharp dorsal tooth, posterior margin with medial sharp protracted tooth and sharp posteroventral tooth	Sharp ventrally protracted tooth, small posteroventral tooth	Sharp long ventrally protracted tooth at posteroventral corner	Medium sized sharp backwardspointing tooth, posteroventral corner with minute rounded tooth
Telson	V-shaped notch 30%, apices rounded	Cleft 40%, apices rounded	U-shaped notch 25%, apices pointed	Notch 10%, apices rounded	V-shaped notch 20%, apices rounded	Notch 10%, apices rounded

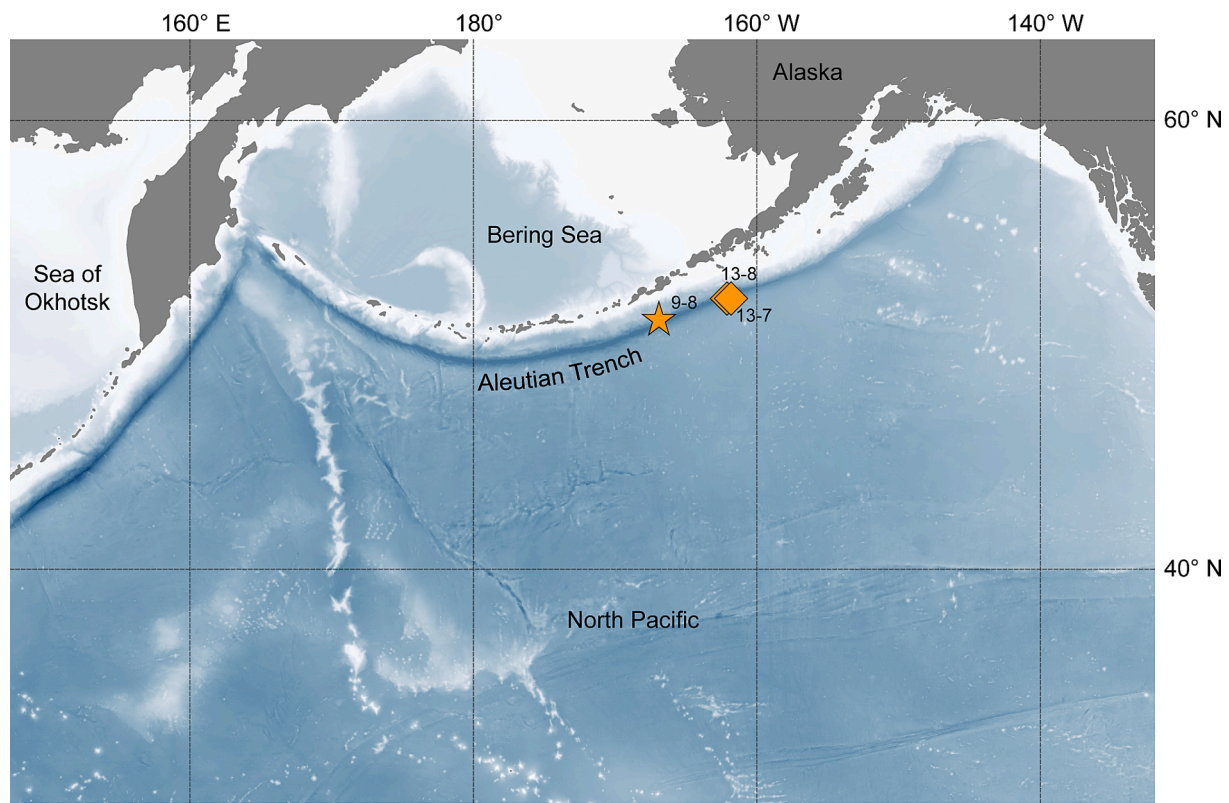


Fig. 9. Type locality (star) and distribution of *Epimeria olli* sp. nov.

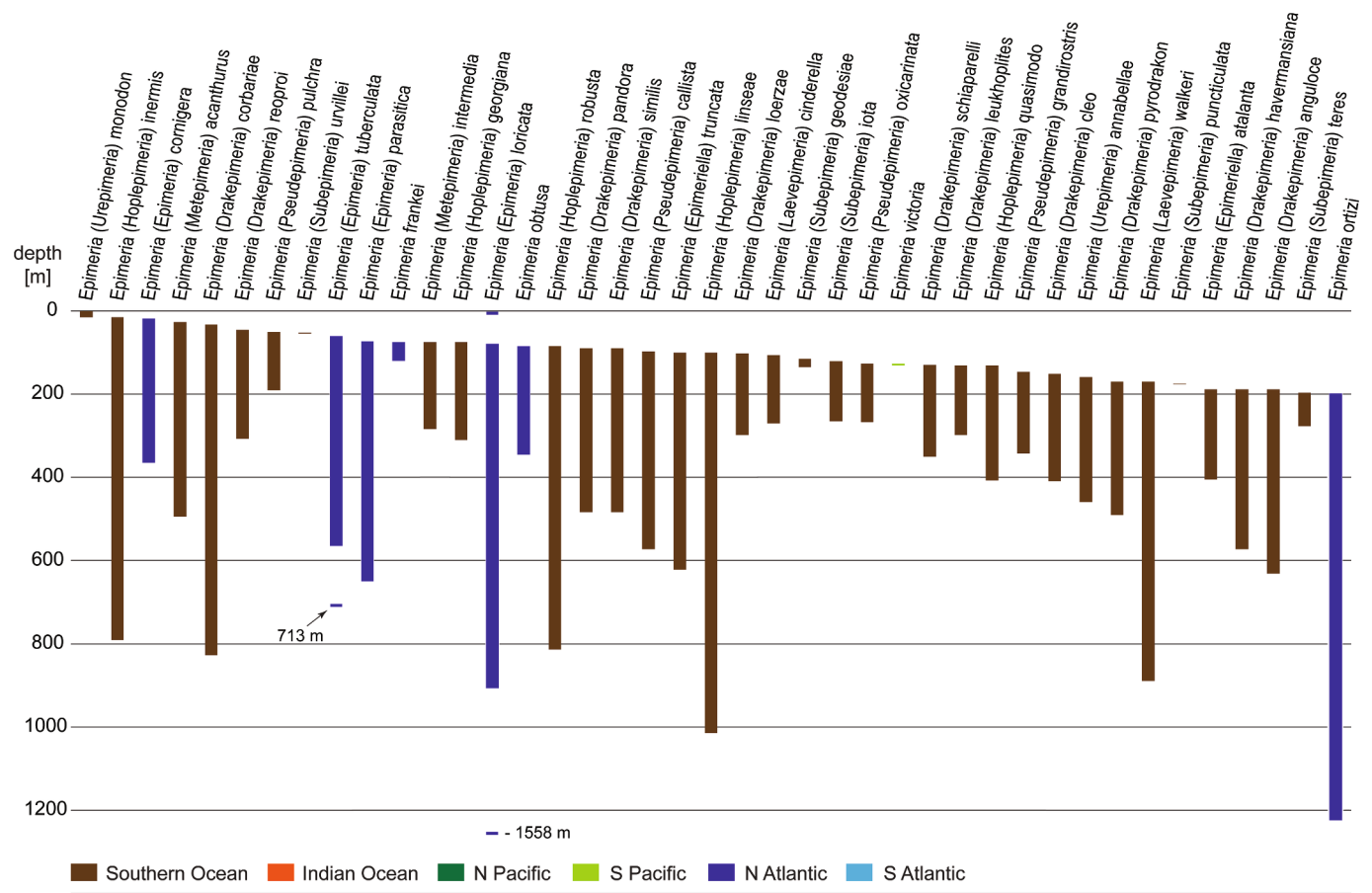


Fig. 10. Depth ranges of *Epimeria* species with shallowest record not exceeding 200 m. Species organized by their shallowest trusted record. Colours indicate the geographic origin. Pelagic species omitted. Details of the depth and geographic distribution as well as associated references available in Supplementary Table S1.

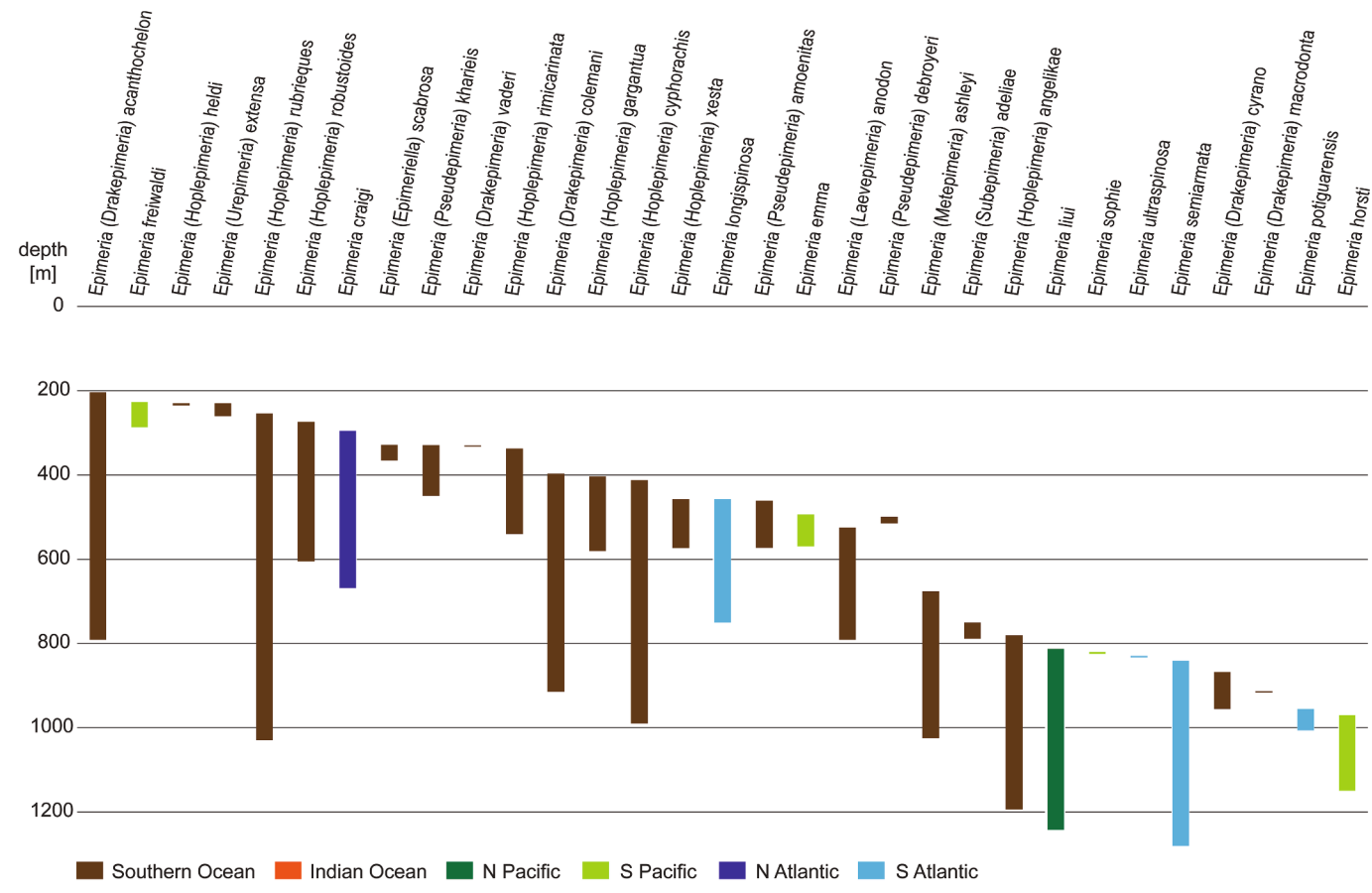


Fig. 11. Depth ranges of *Epimeria* species with shallowest record between 200 and 1000 m. Species organized by their shallowest trusted record. Colours indicate the geographic origin. Pelagic species omitted. Details of the depth and geographic distribution as well as associated references available in Supplementary Table S1.

4. Discussion

There are many reasons we suggest this to be a new species. Morphologically it is easy to distinguish from all other species by its medial teeth on coxa 4, as well as the fact that the dorsal sculpturation starts at the first pleon segment and the rostrum is minuscule. It is the only hadal species, with the second deepest known species being *Epimeria abyssalis* (Shimomura and Tomikawa, 2016) which interestingly enough comes from the neighbouring Kuril-Kamchatka Trench, but is 1000 m shallower. *Epimeria ollii* sp. nov. differs clearly from this species in the mentioned dorsal and medial sculpturation, as can be seen from Table 1. We have, for the sake of comparison, included the pelagic species *Epimeria pelagica* Birstein & Vinogradov 1958 in Table 1. This species comes from a vertical tow that was noted from 8000–1 m. When we still claim the presently described *Epimeria ollii* sp. nov. to be the deepest known *Epimeria* it is because this is a true benthic species, and as there is no certain knowledge where in the water column *E. pelagica* was caught, we omit it from further depth discussions.

The new species was recorded in two hadal sampling areas within the Aleutian Trench (namely stations 9–8 as well as 13–7 and 13–8) (Fig. 9), situated at a distance of over 380 km from each other. Even with such distance, it is worth noting that the COI sequences from all six specimens were identical. This might indicate that the population in the Aleutian Trench is well connected and maintain gene flow following horizontal migration of the species along the trench axis. Further studies could reveal if the species inhabit also other trenches of the North Pacific as is

the case of other hadal species like: *Bathycallisoma schellenbergi* (Birstein & Vinogradov, 1958), *Halice quarta* Birstein & Vinogradov, 1955, *Hirondellea gigas* (Birsetin & M. Vinogradov, 1955), *Metaceradocoides vitjazi* Birstein & Vinogradova, 1960, *Oedicerina lesci* Jazdzewska et al., 2021, *Princaxelia abyssalis* Dahl, 1959, *Princaxelia jamiesoni* Lörz, 2010, *Rhachotropis saskia* Lörz et al., 2018 (Jazdzewska et al., 2020; Weston et al., 2022; Jazdzewska et al., 2026).

After the inclusion of the presently described species, the genus *Epimeria* comprises 93 species, more than half of which (57 spp.) inhabit the cold waters of the Antarctic and Subantarctic regions (Figs. 10–12, Supplementary Table S1). Interestingly, all Southern Ocean representatives of the genus are known from shelf depths (reaching up to 1000 m in Antarctica) and the bathyal zone, whereas species recorded from other regions of the world's oceans are predominantly confined to the deep sea. This raises the question of whether this pattern reflects a genuine preference of the genus for cold-water environments, or whether it instead results from limited study effort in the Northern Hemisphere. The high species richness in the Southern Ocean may suggest that this region is a centre of diversification for *Epimeria*; however, it may equally well stem from the intensive integrative taxonomic research conducted there (d'Udekem d'Acoz and Verheye, 2017; Verheye et al., 2017). Additionally, many Antarctic and Subantarctic species, as well as some North Atlantic ones, exhibit broad bathymetric ranges spanning several hundred meters (Figs. 10–12, Supplementary Table S1). In the Southern Ocean, these wide depth distributions have often been corroborated by molecular data and may be related to the unusual depth extension of the Antarctic shelf to 800–1000 m. By contrast, the wide vertical ranges reported for many North Atlantic

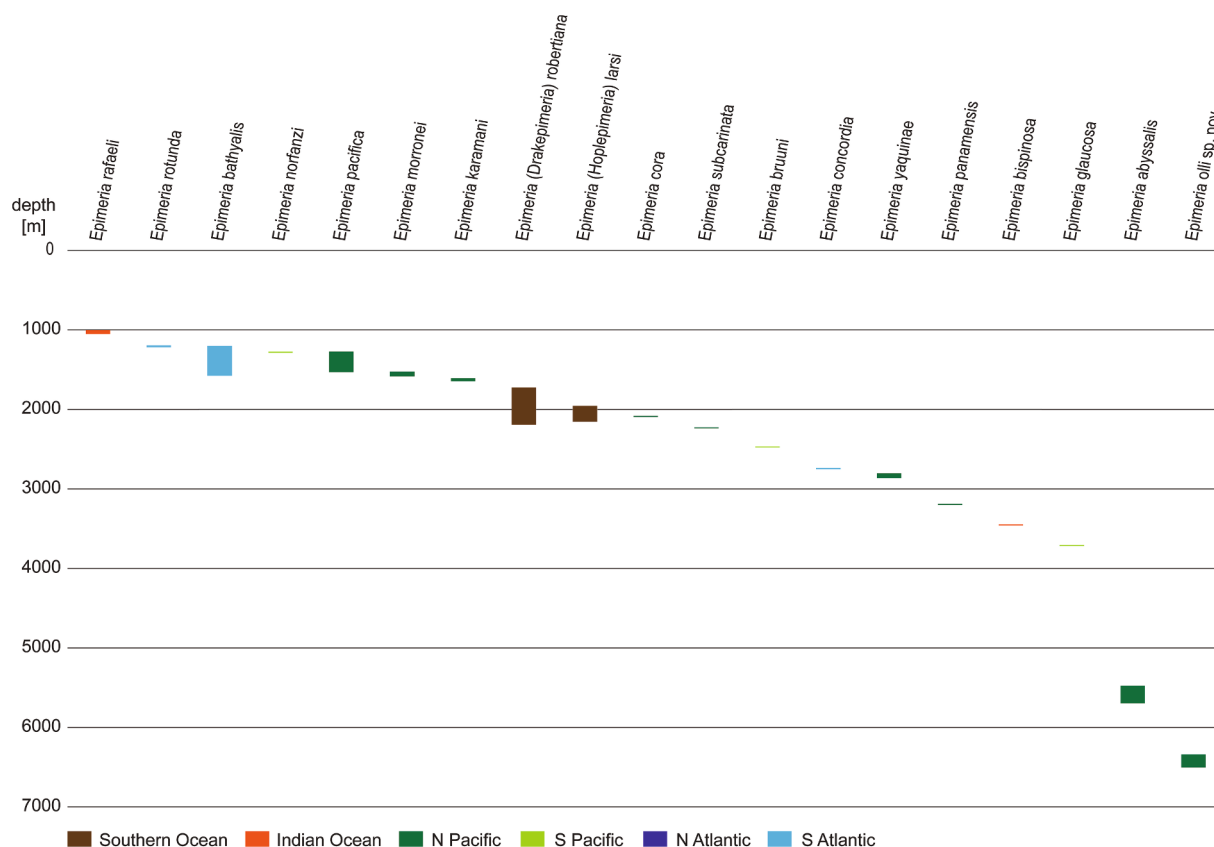


Fig. 12. Depth ranges of *Epimeria* species with shallowest record deeper than 1000 m. Species organized by their shallowest trusted record. Colours indicate the geographic origin. Pelagic species omitted. Details of the depth and geographic distribution as well as associated references available in Supplementary Table S1.

species—studied predominantly by morphological methods alone—may be partly attributable to overlooked diversity. Only recently was *Epimeria frankei* Beermann & Raupach, 2018 distinguished from its sister species *Epimeria* (*E.*) *cornigera* (Fabricius, 1779). Although the two species co-occur in part of their ranges, the newly described species exhibits a much narrower confirmed depth distribution (75–120 m), compared with *E.* (*E.*) *cornigera* recorded from 18 to 365 m (Beermann et al., 2018). In light of this, several additional North Atlantic species—namely *Epimeria* (*E.*) *tuberculata*, *E.* (*E.*) *parasitica*, and *E.* (*E.*) *loricata* (Fig. 10)—would clearly benefit from molecular studies that include specimens from different geographic locations and depth zones. This is particularly relevant for *E.* (*E.*) *loricata*, which has extreme depths records given as 0 m and 1558 m (GBIF.org). Of the ten described North Pacific *Epimeria* species, none has been recorded from the shelf, and only two—*Epimeria abyssalis* and *Epimeria ollii* sp. nov.—have been found deeper than 4000 m. Given that deep Pacific waters are increasingly attracting scientific attention, it is likely that additional new species of *Epimeria* will be discovered in the future.

5. Conclusion

This study presents the tenth *Epimeria* from the North Pacific, and the twentieth in the Pacific altogether. It is also the deepest record for the genus at 6503 m. It is easily separated morphologically though its dorsal and medial sculpturation combined with a very small rostrum.

CRediT authorship contribution statement

Anne Helene S. Tandberg: Writing – review & editing, Writing – original draft, Visualization, Validation, Project administration, Methodology, Investigation, Formal analysis, Data curation,

Conceptualization. **Anna M. Jazdzewska:** Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.pocan.2026.103725>.

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