Invertebrate Zoology, 2018, 15(4): 348–365

Redescription of Ampharetidae (Polychaeta) described by Nikita V. Kucheruk with the description of a new *Amphicteis* species from the North Pacific

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ABSTRACT. Three ampharetid species, *Melinantipoda quaterdentata* Kucheruk, 1976, *Amphicteis bifolium* Kucheruk, 1976 and *Amagopsis cirratus* Kucheruk, 1976, are redescribed based on type material. *Melinantipoda quaterdentata* is transferred to *Melinnides* Wesenberg-Lund, 1950; *Amagopsis cirratus* is treated as a junior synonym of *Grubianella antarctica* McIntosh, 1885; the generic diagnosis of *Amphicteis* Grube, 1850 is edited to exclude descriptions of longitudinal prostomial ridges; and *Watatsumi* Reuscher, Fiege et Imajima, 2015 is treated as a junior synonym of *Amphicteis*. A new species of *Amphicteis* is described, from the north-east Pacific (from the Northern Bering Sea to Honshu, at 68–256 m); the new species has one pair of foliose branchiae and well developed paleae with numerous chaetae.
How to cite this article: Jirkov I.A. 2018. Redescription of Ampharetidae (Polychaeta) described by Nikita V. Kucheruk with the description of a new *Amphicteis* species from the North Pacific // Invert. Zool. Vol.15. No.4. P.348–365. doi: 10.15298/invertzool.15.4.04

KEY WORDS: *Amagopsis, Amphicteis, Grubianella*, *Melinantipoda, Melinnides, Watatsumi,* deep water fauna.

Переописание Ampharetidae (Polychaeta), описанных Н.В. Кучеруком, с описанием нового вида *Amphicteis* из Северной Пацифики

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РЕЗЮМЕ. Три вида амфаретид *Melinantipoda quaterdentata* Kucheruk, 1976, *Amphicteis bifolium* Kucheruk, 1976, *Amagopsis cirratus* Kucheruk, 1976 переописаны на основе типового материала. Предложено перевести *Melinantipoda quaterdentata* в *Melinnides* Wesenberg-Lund, 1950, *Amagopsis cirratus* рассматривать как младший синоним *Grubianella antarctica* McIntosh, 1885, исключить из родового диагноза *Amphicteis* Grube, 1850 информацию о продольных валиках простомиума и свести *Watatsumi* Reuscher, Fiege et Imajima, 2015 в синоним *Amphicteis*. Описан новый вид *Amphicteis* из Северо-Восточной Пацифики (севера Берингова моря до Хонсю, на 68–256 м), новый вид имеет одну пару листовидных жабр и хорошо развитые опахала с многочисленными щетинками.
Как цитировать эту статью: Jirkov I.A. 2018. Redescription of Ampharetidae (Polychaeta) described by Nikita V. Kucheruk with the description of a new *Amphicteis* species from the North Pacific // Invert. Zool. Vol.15. No.4. P.348–365. doi: 10.15298/invertzool.15.4.04

КЛЮЧЕВЫЕ СЛОВА: *Amagopsis, Amphicteis, Grubianella*, *Melinantipoda, Melinnides, Watatsumi*, глубоководная фауна.

Fig. 1. Nikita V. Kucheruck (26.05.1949–23.12.2012).
Рис. 1. Никита Валентович Кучерук (26.05.1949–23.12.2012).

Introduction

My late friend Nikita Valentovich Kucheruck (26.05.1949–23.12.2012) (Fig. 1) described three new ampharetid species, before focusing on the study of Onuphidae, in his MS thesis (Kucheruk, 1976), published almost half a century ago. The subsequent taxonomic treatment of these three species has been varied. *Melinantipoda quaterdentata* is not listed on WoRMS (as of 29.09.2018). *Amagopsis cirratus* is considered valid (Read, Fauchald, 2018c), but was moved into *Grubianella* McIntosh, 1885 (Jirkov, 2001), as *Amagopsis* Pergament et Chlebovitsch, 1964 in Chlebovitsch, 1964 (incorrectly spelled in WoRMS (Read, Fauchald, 2018a) as Khlebovich) is accepted as junior synonym of *Grubianella*. *Amphicteis bifolium* is listed as valid in its original combination (Read, Fauchald, 2018b). The descriptions were at the level of descriptive detail typical of that time, but now, all these species should be re-described using modern photographic techniques and their status should be clarified.

Material and methods

Photographs were produced at the PP Shirshov Institute of Oceanology, Russian Academy of Science, Moscow (IORAN), using a Leica DFC490 camera mounted on Leica M165C stereomicroscope; in order to increase contrast, specimens were stained with methylene blue (water solution); at the Department of Invertebrate zoology, Biological Faculty, Moscow State University, using a Leica DFC425C camera mounted on a Leica DMI 5000B compound microscope. The latter microscope was fitted with differential interference contrast (DIC), also known as Nomarski interference contrast (NIC). Collection data for all investigated material are given in Table 1.

Used abbreviations

Taxonomic abbreviations used are as follows: S — segment; TS — thoracic segment; TU — thoracic unciniger; AU — abdominal unciniger.

The number following the abbreviation refers to the number of the segment (e.g. TU1 means the first thoracic uncinigerous segment).

Table 1. Collection data for all investigated material of species described by Dr. N.V.Kucheruk.
Таблица 1. Список станций, на которых были найдены Ampharetidae, описанные Н.В. Кучеруком.

Ship	station	latitude	longitude	depth, m
Vitjaz	3359	51°30,1’ N	172°04,5’ E	5020
Vitjaz	3577	38°40°1’ N	143°29,3’ E	3017
Vitjaz	3594	40°55°2’ N	144°53,3’ E	3880–3900
Vitjaz	4911	1°55’ S	83°05’ E	4790–4810
Vitjaz	6092	57°52,5’ N	149°04,0’ W	1050
Vitjaz	6100	59°14,8’ N	141°59,7’ W	573–574
Vitjaz	6101	59°16,8’ N	142°00,8’ W	756–798
Vitjaz	6102	59°13,8’ N	142°05,2’ W	990–1030
Vitjaz	6105	58°55,0’ N	142°03,0’ W	2970–2980
Vitjaz	6106	58°15,0’ N	142°36,0’ W	3610
Vitjaz	6107	57°35,5’ N	143°01,9’ W	3800
Vitjaz	6143	51°40,0’ N	163°00,0’ W	4820
Vitjaz	6783	5°27’ S	131°39’ E	5700
Vitjaz	7237	7°34’ S	131°06’ E	4800
Vitjaz	7501	37°32’ N	143°22’ E	4650–4800
Akademik Kurchatov	238	23°11’ S	71°39’ W	4880
Akademik Kurchatov	294	8°23,1’ S	81°00,8’ W	6200–6240
Akademik Kurchatov	296	8°10’ S	81°04’ W	6040
Persey	4.149	70°08’ N	56°26’ E	120
Gagara	216	51°10’ N	154°17’ E	591
Gagara	225	52°34’ N	154°59’ E	110–135
Gagara	228	52°34’ N	155°02’ E	664
Gagara	251	55°13’ N	146°52’ E	592
Sokho-Bio 2015	9-9	46°16,282’ – 46°16,514’ N	152°03,333’- 152°04,259’ E	3347–3356

Institutional abbreviations used are as follows: HDMSU — Department of Hydrobiology, Moscow Lomonosov State University, Moscow; NHM — National History Museum, London; IORAN — P.P. Shirshov Institute of Oceanology, at the Russian Academy of Science, Moscow; ZIN — Zoological Institute, St-Petersburg; ZMH — Hamburg Zoological Museum.

Systematic part

Melinnides Wesenberg-Lund, 1950

Type species *Melinnides rostrata* Wesenberg-Lund, 1950.

Synonym: *Melinantipoda* Hartman, 1967 (type species *Melinantipoda antarctica* Hartman, 1967).

Diagnosis. Prostomium not divided into lobes, without nuchal organs. Dorsal crest behind branchiae present, hooks absent. Neuropodia not separated into tori and pinnules: all neuropodia (thoracic and abdominal) are tori. Abdominal uncini do not differ from thoracic uncini.

All known species inhabit deep water.

Remarks. 1. *Melinnides* differs from *Melinna* Malmgren, 1866 by (1) absence of dorsal hooks, (2) neuropodia not divided into tori and pinnules and (3) prostomium not divided into three lobes.

2. *Melinnides* differs from *Melinnopsis* McIntosh, 1885 by (1) presence of a dorsal crest, (2) neuropodia not divided into tori and pinnules and (3) prostomium without nuchal organs. I disagree with Read & Fauchald (2018d), who listed these genera as synonyms.

3. *Melinnides* and *Melinantipoda* are very similar genera; each has been described as mo-

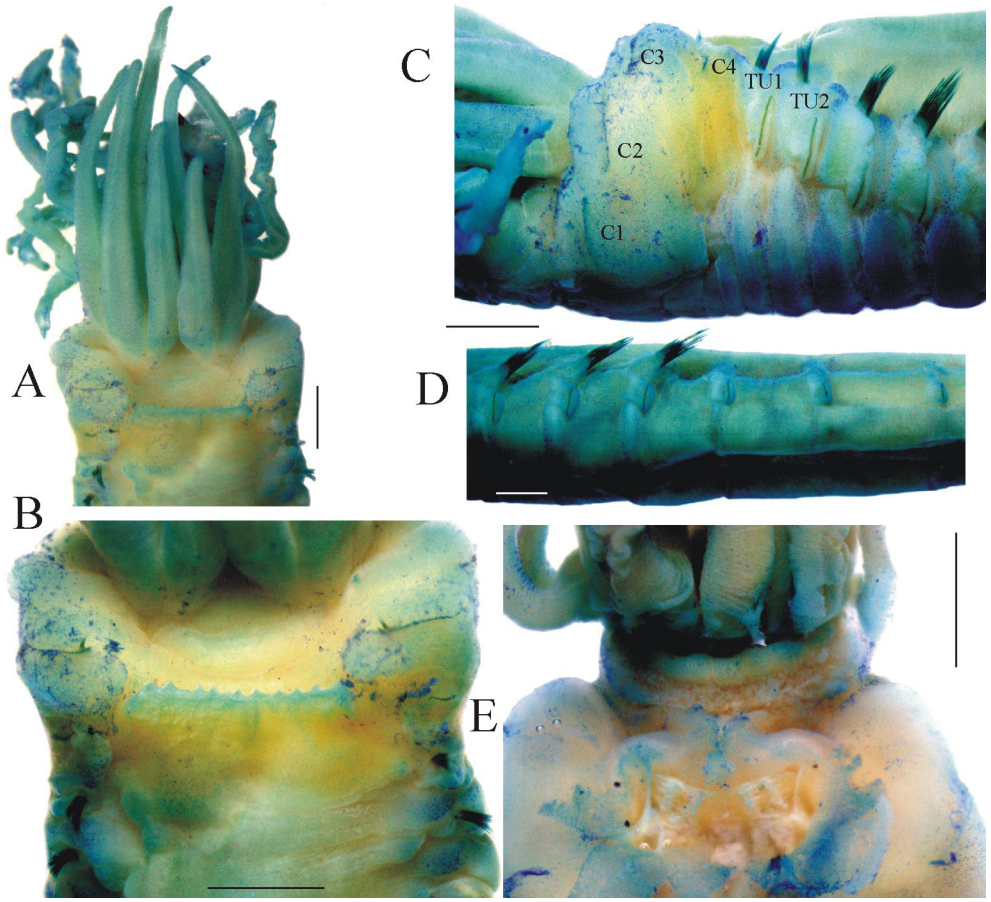

Fig. 2. *Melinnides quaterdentata* external morphology.
A — anterior end, dorsal view; B — dorsal crest; C — anterior end, lateral view; D — three posterior TU and first three AU; E — prostomium. A–D — Sokho-Bio 2015 9-9; E — Vitjaz 3594, paratype. Scale bars 1 mm.
Рис. 2. Наружная морфология *Melinnides quaterdentata*.
A — передний конец, дорсальный вид; B — спинная складка; C — передний конец, вид сбоку; D — три последних TU и три первых AU; E — простомиум. A–D — Sokho-Bio 2015 9-9; E — Витязь 3594, паратип. Все масштабы 1 мм.

notypic. The generic diagnosis of *Melinantipoda* is rather confusing. Hartman (1967) wrote (p. 158): "The thorax consists of 17 setigerous segments of which the first two have transverse rows of minute uncini; the third and fourth segments have similar rows of uncini and minute notosetal fascicles. The next 13 segments have larger fascicles of notosetae, and the first normal uncini are present from the sixth setiger, present on 16 thoracic segments". But below, in the description of the single species, she stated (p. 159): "The 13 more posterior setigers have large notosetal fascicles, and the last 12 have rows of normal uncini". As there is no special description of S5, this suggests that S5 has only notopodia and no uncini; it could also be interpreted to mean that S5 has abnormal uncini, but there is no mention of such uncini in the description. From this description it is possible to count 17 TC only if *M. antarctica* has 12 TU or if uncini start from S5, but the original description states normal uncini from S6. In either case, the generic diagnosis does not fit the species description. Further, she wrote (p. 158) "Thoracic

uncini have three or four teeth in a single row". However, in the description of the single species, she stated (p. 159): "each has three teeth". Unfortunately there are no figures accompanying the description, so the true number of teeth and distribution of uncini remain uncertain.

4. *M. rostrata* Wesenberg-Lund, 1950 is very similar to *M. antarctica*, judging from the original description, and differs only in the number of TC: 17 TC in *M. antarctica*; 16 TC in *M. rostrata.* I do not consider this difference to be enough to accept *Melinantipoda* as a distinct genus. These two species may be synonyms, but this cannot be concluded without re-examination of type material.

IDENTIFICATION KEY OF KNOWN *MELINNIDES* SPECIES

1. 12 TU, uncini with three teeth in profile 2
– 13 TU, uncini with four teeth (three teeth + button) in profile .... *M. quaterdentata* (Kucheruk, 1976)
2. 16 TC ..... *M. rostrata* Wesenberg-Lund, 1950
– 17 TC ..... *M. antarctica* (Hartman, 1967)

Melinnides quaterdentata (Kucheruk, 1976) comb.n.

Melinantipoda quaterdentata Kucheruk, 1976: 93–94, Fig. 1, 4 (map).

Material: holotype Vitjaz 6106, paratypes Vitjaz 3577(1), 3594 (numerous), 6105(1), 6106(12), 6107(1).

Description. Prosomium not divided into lobes (not trilobed as written in the original description), without other structures (nuchal organs, ridges) (Fig. 2E). Buccal tentacles numerous, smooth, longer than branchiae (Fig. 2A). Four pairs of branchiae, in two groups, joined at bases, no separation into branchiostyle and branchiophore. The segment from which the branchiae originate is unclear. Dorsal hooks absent. Well developed dorsal crest on S4 (Fig. 2A, B) evenly dentate. Four segments with minute aciculate neurochaetae, numerous in C1 and C2, 2 to3 times fewer than in C1 or C2, in C3, and 2 to 3 fewer than in C3 in C4 (Fig. 2C). Notopodia start from C3, as small bundles of notochaetae without distinct lobes in C3 and C4 (Fig. 2C). From C5, the notopodia have distinct lobes and long and numerous large chaetae (Fig. 2C). Neurochaetae with pectinate uncini start from C5 (Fig. 2C) and present on 13 TU; all neuropodia, both thoracic and abdominal, are tori (Fig. 2D). Thoracic and abdominal uncini are of the same shape (Fig. 3): three teeth of almost equal size (few uncini with four teeth present) in a single row; button (usually counted as the forth tooth) of the same size as teeth, separated at the tip; the only difference between thoracic and abdominal uncini is the tendons: thoracic uncini are enclosed in sacs and only the posterior tendons are developed (Fig 3A), and only slightly; abdominal uncini have no distinct sacs but have two well developed tendons (Fig 3B).

Amphicteis Grube, 1850 emended

Type species: *Amphitrite gunneri* Sars, 1835 (by monotypy)

Synonyms: *Crossostoma* Gosse, 1855 (type species *Crossostoma midas* Gosse, 1855 by monotypy)

Paramphicteis Caullery, 1944 (type species *Paramphicteis angustifolia* (Grube, 1878) by monotypy)

Phyllamphictes Augener, 1918 (type species *Phyllamphicteis collaribranchis* Augener, 1918 by monotypy)

Pseudoamphicteis Hutchings, 1977 (type species *Pseudoamphicteis papillosa* Hutchings, 1977 fixed in the original publication)

Watatsumi Reuscher, Fiege et Imajima, 2015 (type species *Watatsumi grubei* Reuscher, Fiege et Imajima, 2015, defined in the original publication). **Syn.n**.

Diagnosis. Ampharetinae with characteristic prostomium, with prominent, transverse nuchal ridges, and usually with more or less developed longitudinal ridges. Neuropodia of two types: thoracic tori and abdominal pinnules; no abdominal segments with tori. Thoracic and abdominal uncini generally similar, with one row of teeth; heel at centre of uncinus.

Remarks on generic synonymy. Following our previous statements on generic synonymy (Jirkov, 2011; Schiaparelli, Jirkov, 2016), I confirm the synonymy of *Paramphicteis* Caullery, 1944. Reuscher *et al*. (2015) accepted this genus as distinct. The only differences between *Amphicteis* and *Paramphicteis* are stated as: *Amphicteis* "Buccal tentacles smooth. Four pairs of cirriform branchiae" (p. 930); *Paramphicteis* "Majority of buccal tentacles pinnate, few lateral ones smooth. Four pairs of branchiae; usually

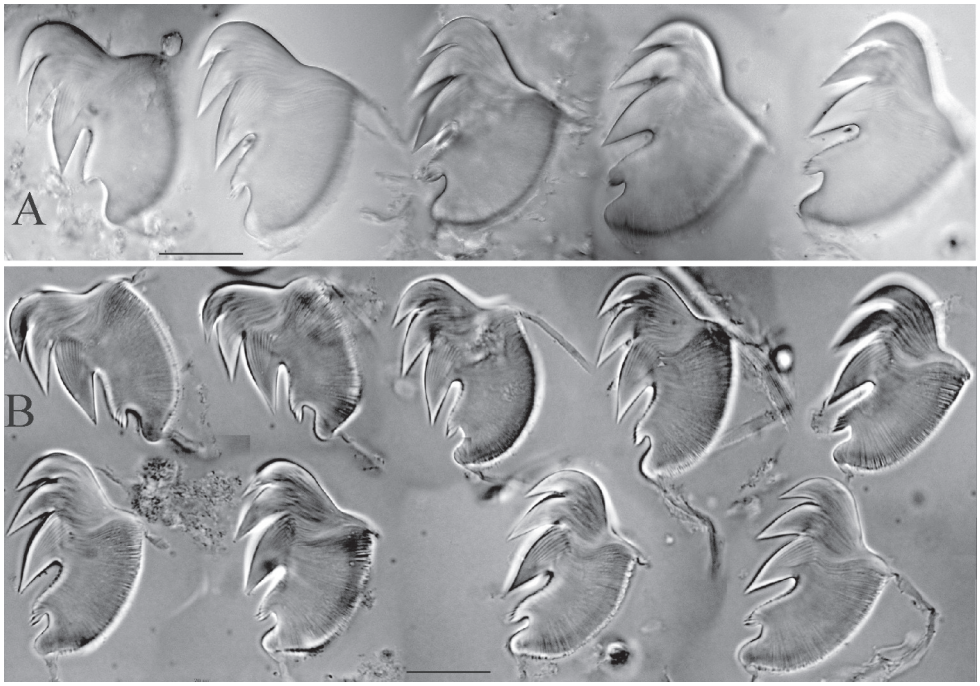

Fig. 3. *Melinnides quaterdentata* uncini.
A — TU5 paratype, Vitjaz 6106; B — AU6 paratype, Vitjaz 3594. Scale bars 20 μm.
Рис. 3. Неврохеты *Melinnides quaterdentata*.
A — TU5 паратип, Витязь 6106; B — AU6 паратип, Витязь 3594. Все масштабы 20 μм.

at least one pair foliose" (p. 934). *Amphicteis bifolium* has two pairs of foliose branchiae and *Amphicteis nikiti* sp.n has one pair of foliose branchiae; both have smooth buccal tentacles, i.e. combined characters of *Amphicteis* and *Paramphicteis*; this eliminates the distinction between these genera. *Paramphicteis* should, therefore, be accepted as a junior synonym of *Amphicteis* as previously proposed (Jirkov, 2011; Schiaparelli, Jirkov, 2016). The presence of species with smooth and pinnate buccal tentacles within the same genus is not unique to Ampharetidae; it is also known in *Anobothrus* Levinsen, 1884 (Jirkov, 2009).

Previously, all authors (Fauvel, 1927; Fauchald, 1977; Jirkov, 2001, 2011; Parapar *et al*., 2011; Reuscher *et al*., 2015; and others) included the presence of a pair of longitudinal ridges in their diagnoses. Most species of *Amphicteis* have these ridges (Figs 4A, B; 5A, B; 7B–H), see also photos of prostomia of other *Amphicteis* species: *A. atlantica* McIntosh, 1885 (holotype); *A. gunneri* (M. Sars, 1835) (topotype); *A. japonica* McIntosh, 1885 (holotype); *A. mederi* Annenkova, 1929; *A. midas* (Gosse, 1855); *A. ninonae* Jirkov, 1985; *A. teresae* Schiaparelli et Jirkov, 2016 (types) in Schiaparelli & Jirkov (2016). In the original description of *A. wesenbergae* Parapar *et al*., 2011, we stated "Prostomium... with a pair of dorsal longitudinal ridges, less obvious than in *A. gunneri*" (Parapar *et al*., 2011: 1493), but later, based on re-examination of specimens used in the original description, but not types, I came to the conclusion that longitudinal ridges are totally absent (Fig. 4C). *A.* sp.n. from the Sea of Okhotsk is very similar to *A. wesenbergae*. Both have the same branchial formula (including origin of each branchia), shape of uncini, number of TU (all tori) and AU (all pinnules), notopodia with tuberculate ventral cirri without elevated or modified notopodia. Although not

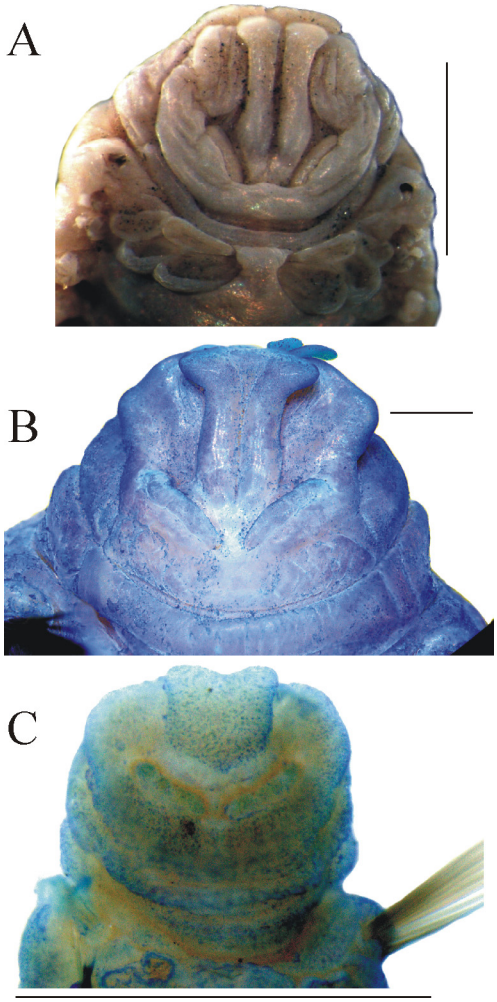

Fig. 4. Prostomium of several *Amphicteis* species. A — *A. phillippinarum*, ZMH V-9729; B — *A. sundevalli*, Persey 4.149 70°08' N 56°26' E 120 m; C — *A. wesenbergae*, Tunetz 6 (left paleae removed). Scale bars 1 mm.

Рис. 4. Простомиум некоторых видов *Amphicteis*. A — *A. phillippinarum*, ZMH V-9729; B — *A. sundevalli*, Персей 4.149 70°08' N 56°26' E 120 м; C — *A. wesenbergae*, Тунец 6 (левая опахала удалена). Все масштабы 1 мм.

generic level characters, the numbers of TC, TU and AU are very constant within *Amphicteis* (only *A. sundevalli* Malmgren, 1866 has a different number of AU). Also, both lack longitudinal ridges. As the species without longitudinal ridges share the most important characters of the genus, and even the number of TC, TU and AU, with those that have them, I consider the exclusion of longitudinal ridges as an obligate generic character to be much more acceptable than to establish a new genus.

Watatsumi Reuscher, Fiege et Imajima, 2015 has the same branchial formula and shape of uncini as *Amphicteis*, and well developed, paired transverse nuchal ridges. Also, it has the same number of TC, TU (all tori) and AU (all pinnules). *Watatsumi* differs from *Amphicteis* only in the absence of longitudinal ridges, exactly as *A. wesenbergae* and *A.* sp.n. from the Sea of Okhotsk. I propose that *Watatsumi* should be accepted as a junior synonym of *Amphicteis*.

Amphicteis bifolium Kucheruk, 1976

Amphicteis bifolium Kucheruk, 1976: 95–96, Fig.2.
Amphicteis scaphobranchiata — Uschakov, 1955: 376 — non Moore, 1906.

Material: holotype Vitjaz st. 6100; paratypes Vitjaz st. 6092(5), 6100(29), 6101(6), 6102(1). Non type specimens: Vitjaz st. 6092 (16), ZIN: 1/30410 Gagara st. 216 (7), 2/ 30411 Gagara st. 225 (2), 3/30412 Gagara st. 228 (22), 4/30413 Gagara st. 251 (3).

Description. Length up to 40 mm, holotype 25 mm (not 40 mm as in original description). Prostomium with two well-developed longitudinal ridges and two prominent transverse nuchal ridges (Fig. 5A, B). Eyes absent. Buccal tentacles smooth, numerous. S2 with large paleae (10–15 chaetae each), evenly tapering to elongated hair-like tips. Four pairs of branchiae in two groups separated mid-dorsally by a wide gap. Outer branchiostyles cirriform, inner branchiostyles broadly, evenly flattened (Fig. 5C), anterior (Fig. 8B) slightly more so than posterior (Fig. 8A, C). Margins of both foliose branchiae are not scalloped. Outermost posterior branchiae originate from S6 (=C4=TC3), origin of other branchiae not clear. Notopodia start from S3 and are present in 17 S; all of them, even the smallest notopodia of S3, with globular cirri above. Elevated or modified notopodia absent. Neuropodia start from C4 (=S6); tori in thorax, pinnules in all 15 AU. Rudimentary abdominal notopodia well developed, neuropodial cirri absent. Pygidium with two lateral cirri. Uncini with single row of similar teeth: six in thorax (Fig. 6A), five or six in abdomen (Fig. 6B).

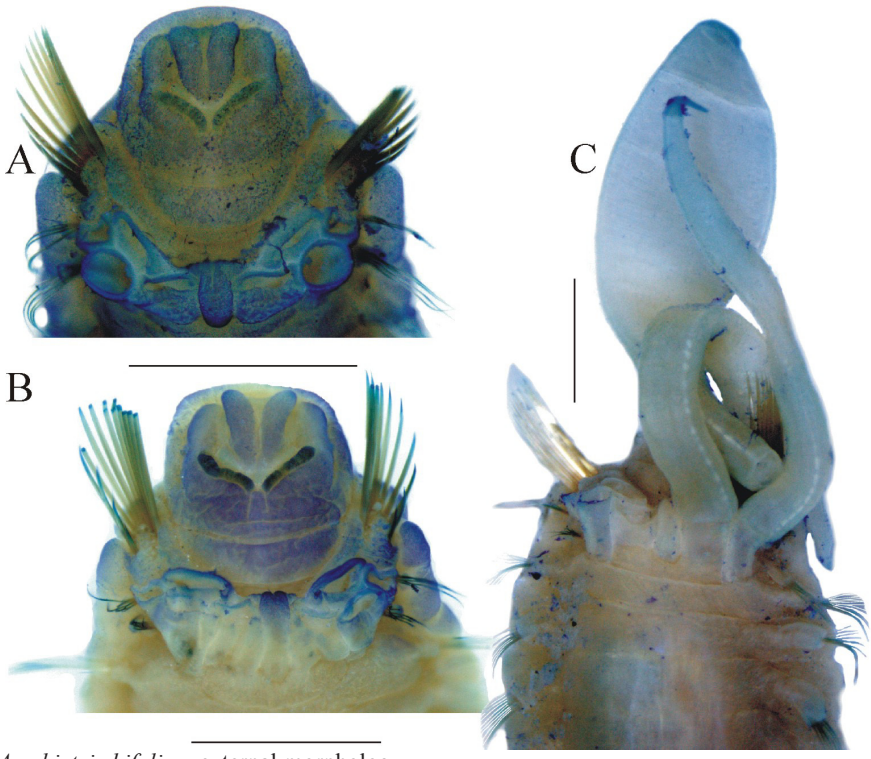

Fig. 5. *Amphicteis bifolium* external morphology.
A, B — prostomium; C — anterior end, dorsal view. A, B — paratypes, C — holotype. All specimens from Vitjaz 6100. Scale bars 1 mm.
Рис. 5. Наружная морфология *Amphicteis bifolium*.
A, B — простомиум; C — передний конец со спины. A, B — паратипы, C — голотип. Все экземпляры со станции Витязь 6100. Все масштабы 1 мм.

Fig. 6. *Amphicteis bifolium* uncini.
A — TU2; B — AU6. Vitjaz 6092, paratype. Scale bars 20 μm.
Рис. 6. Неврохеты *Amphicteis bifolium*.
A — TU2; B — AU6. Витязь 6092, паратип. Все масштабы 20 μм.

Tubes muddy, solid; Kucheruk (1976) reported their length up to 65 mm and width up to 11 mm.

Remark. All material from collection ZIN, previously identified by P.V.Uschakov as *A. scaphobranchiata* have two pairs of flattened branchostyles and thus should be identified as *A. bifolium.*

Amphicteis nikiti **sp.n.**
Figs 7, 8K–P, 9A, 11A,B.

Material. 57 specimens from 36 stations (Table 2). Holotype from st. Vitjaz 600. All materials are deposited in the HDMSU collection.

Table 2. Collection data for *Amphicteis nikiti* sp.n.
Таблица 2. Список станций, на которых были найдены *Amphicteis nikiti* sp.n.

Ship	Cruise	Station	No. of specimens	latitude, N	longitude	depth, m	Date DD.MM.YYYY
Nazarovsk	1988	0	3	52°34′	158°35′ E	–	08.05.1988
Nazarovsk	1988	2	1	52°54,5′	159°27,2′ E	92	27.05.1988
Nazarovsk	1988	18	1	52°53′	158°46′ E	68	21.05.1988
Nazarovsk	1988	46	3	52°54,6′	159°23′ E	88	27.05.1988
Nazarovsk	1988	57	1	52°59,2′	159°53,4′ E	92	28.05.1988
Nazarovsk	1988	82	5	52°53,5′	159°13′ E	107	04.05.1988
Nazarovsk	1988	85	1	52°52,3′	159°27,2′ E	108	27.05.1988
Nazarovsk	1988	101	1	52°52,4′	159°17′ E	111	27.05.1988
Nazarovsk	1988	103	2	52°50,3′	159°35,1′ E	–	27.05.1988
Nazarovsk	1988	170	1	53°22,5′	160°07,3′ E	136	09.05.1988
Nazarovsk	1988	186	1	54°24,8′	161°39,3′ E	110	14.05.1988
Nazarovsk	1988	219	1	55°57′	162°10,5′ E	75	24.06.1988
Nazarovsk	1988	235	1	56°00′	162°19′ E	110	24.06.1988
Vitjaz	2	57	1	57°57,9′	151°43′ E	216	27.08.1948
Vitjaz	5	523	1	56°10′	163°32′ E	106	16.08.1950
Vitjaz	5	543	2	60°58′	178°33′ W	180	27.08.1950
Vitjaz	5	585	2	61°32′	179°36′ W	135	11.09.1950
Vitjaz	5	600	1	60°14′	168°36′ E	77	15.09.1950
Vitjaz	5	605	1	59°48′	166°59′ E	188	17.09.1950
Vitjaz	8	1006	1	63°59′	177°38′ W	85	12.10.1951
Vitjaz	10	1521	1	63°40′	178°46′ W	92	14.06.1952
Vitjaz	10	1525	1	63°24′	179°13′ W	87	15.06.1952
Vitjaz	10	1534	1	61°55′	177°53′ W	122	18.06.1952
Vitjaz	10	1543	1	61°44′	179°54′ W	143	18.06.1952
Vitjaz	10	1546	1	61°09′	181°15′ E	172	19.06.1952
Vitjaz	10	1568	2	59°56′	169°40′ E	115	24.06.1952
Vitjaz	10	1579	1	60°08′	168°23′ E	154	25.06.1952
Vitjaz	10	1595	1	59°45′	166°53′ E	221	26.06.1952
Vitjaz	12	1730	3	51°16′	156°19′ E	249	25.09.1952
Vitjaz	12	1749	1	53°13′	155°25′ E	101	29.09.1952
Vitjaz	12	1778	1	–	–	80	03.10.1952
Vitjaz	12	1819	1	58°44′	150°22′ E	111	09.10.1952
Vitjaz	19	3127	7	52°08,8′	158°30,7′ E	123	08.09.1954
Vitjaz	20	3344	2	55°34′	162°00′ E	200	03.06.1955
Vitjaz	24	3598	1	41°50′	142°49′ E	144	24.05.1957
Zhemchug		169\20	1	–	–	150	–

– — absence of data

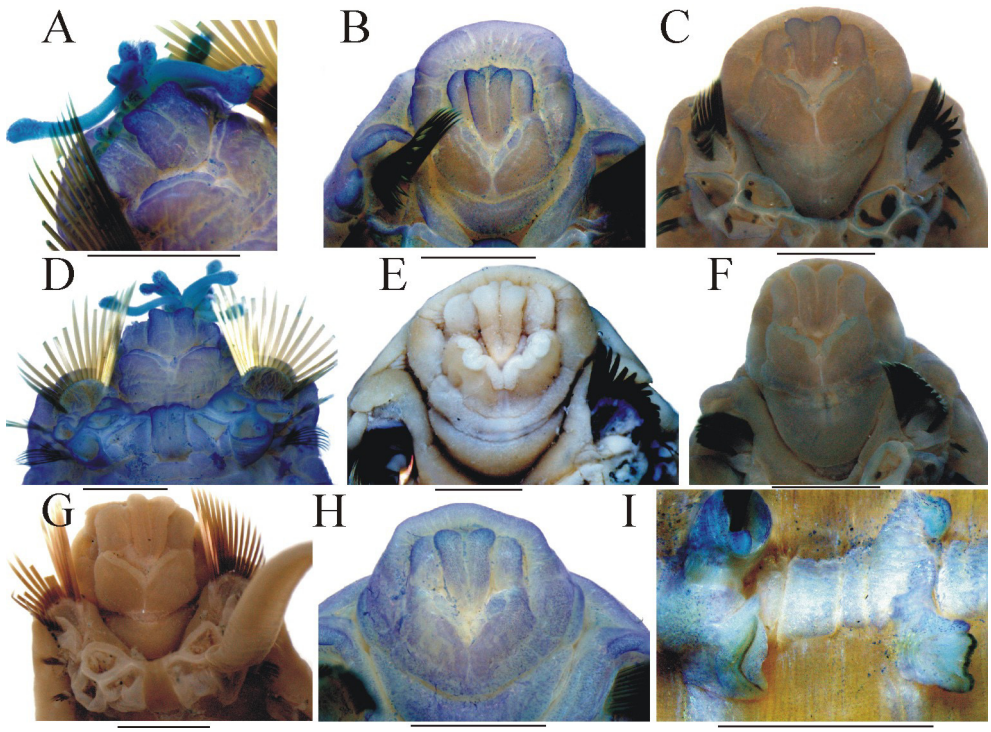

Fig. 7. *Amphicteis nikiti* sp.n. external morphology.
A — buccal tentacles; B–H — prostomia; I — last TC and first AU. A, D — Vitjaz 57, B, H, I — Vitjaz 543, C — Nazarovsk 85, E — Nazarovsk 170, F — Nazarovsk 46, G — Nazarovsk 219. Scale bars 1 mm.
Рис. 7. Наружная морфология *Amphicteis nikiti* sp.n.
A — ротовые щупальца; B–H — простомиумы; I — последний TC и AU1. A, D — Витязь 57, B, H, I — Витязь 543, C — Назаровск 85, E — Назаровск 170, F — Назаровск 46, G — Назаровск 219. Все масштабы 1 мм.

Additional material. *Amphicteis collaribranchis* (Augener, 1918) holotype ZMH V-1644; *Amphicteis phillippinarum* Grube, 1878 ZMH V-9729 (1), *Amphicteis scaphobranchiata* Moore, 1906 Vitjaz st. 1578 60°10′ N 168°21′ E 741 m (1).

Description. Length up to 65 mm, holotype 40 mm. Prostomium (Fig. 7B–H) with two well-developed longitudinal ridges and two prominent transverse nuchal ridges. Eyes absent. Buccal tentacles numerous, mainly smooth, with dorsal papillae (Fig. 7A). S2 with large paleae, abruptly tapering to elongated hair-like tips (Fig. 9A). The number of paleal chaetae depends on worm's size: smallest specimens (14–15 mm length) have 13–18 chaetae, intermediate worms (30–45 mm) have 22–24 chaetae, the largest worms (50–65 mm) have 26–30 chaetae. Four pairs of branchiae in two groups, separated mid-dorsally by a wide gap (Fig. 7C, D, G). Almost all specimens were without branchiostyles, but occasional intact branchiostyles show that the anterior innermost branchiostyle is foliaceous, with a scalloped lateral margin and distally pointed (Fig. 8M, O); other branchiostyles cirriform (Fig. 8K, L, N, P). Outermost posterior branchiae originating from S6 (=C4=TC3), origin of other branchiae not clear. Notopodia start from S3 and are present in 17 S; all of them, even smallest notopodia of S3, with globular cirri above. Elevated or modified notopodia absent. Neuropodia start from C4=S6, tori in thorax and pinnules in abdomen (Fig. 7I). Abdominal segments 15 (rarely 16 — one specimen from Vitjaz 3127). Rudimentary abdominal notopodia well-developed, neuropodial cir-

Fig. 8. Branchiae of *Amphicteis* with foliose branchiae.
A–E — *A. bifolium*, Vitjaz 6092: A — inner posterior paratype 1; B — inner anterior paratype 2; C — inner posterior paratype 2; D — outer anterior non type; E — outer posterior paratype 1; F–I — *A. scaphobranchiata*, Vitjaz 1578: F, G — inner anterior; H — outer anterior; I — outer posterior; K–P — *A. nikiti* sp.n.: K–M — Holotype, N–P — paratypes, Vitjaz 1521: K — anterior outermost; L — posterior outermost; M — anterior inner; N — postrior outermost; O — anterior inner; P — anterior outermost. Scale bars 1 mm.

Рис. 8. Жабры *Amphicteis* с листовидными жабрами.
A–E — *A. bifolium*, Витязь 6092: A — внутренняя задняя паратипа 1; B — внутренняя передняя паратипа 2; C — внутренняя задняя паратипа 2; D — наружная передняя не типового экземпляра; E — наружная задняя паратипа 1; F–I — *A. scaphobranchiata*, Витязь 1578: F, G — внутренняя передняя; H — наружная передняя; I — наружная задняя; K–P — *A. nikiti* sp.n.: K–M — голотип, N–P — паратипы, Витязь 1521: K — передняя наружная; L — задняя наружная; M — передняя внутренняя; N — задняя наружная; O — передняя внутренняя; P — передняя наружная. Все масштабы 1 мм.

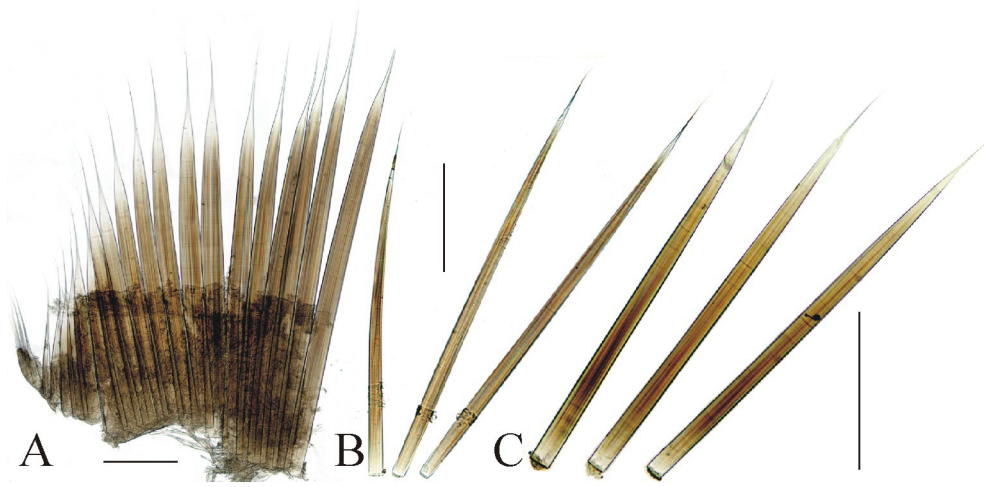

Fig. 9. Paleal chaetae.
A — paleae *Amphicteis nikiti* sp.n. (not all chaetae of this tuft are on the photo), Nazarovsk 46; B — *A. bifolium*, Vitjaz 6092 (paratype); C — *A. scaphobranchiata*, Vitjaz 1578. Scale bars 0.5 mm.
Рис. 9. Щетинки опахал.
А — опахала *Amphicteis nikiti* sp.n. (не все щетинки пучка на этом фото), Назаровск 46; В — *A. bifolium*, Витязь 6092 (паратип); С — *A. scaphobranchiata*, Витязь 1578. Все масштабы 0,5 мм.

ri totally absent. Pygidium with two lateral cirri. Thoracic and abdominal uncini with single row of similar teeth: six in thorax (Fig. 11A), five to six in abdomen (Fig. 11B). Tube muddy.

Etymology. The species in named after Nikita Kucheruk.

Differential diagnosis. There are three species with foliose branchiae in the North Pacific: *Amphicteis scaphobranchiata*, *Amphicteis bifolium* and *Amphicteis nikiti* sp.n. They differ in their branchiae, paleae and uncini.

Branchiae (Fig. 8): *A. scaphobranchiata* and *A. nikiti* sp.n. differ from *A. bifolium* by the presence of only one foliose pair of branchiae (innermost anterior); these branchiae have scalloped anterior margins and filiform tips (Fig. 8G, H, M, O), while *A. bifolium* has evenly tapering foliose branchiae (Fig. 8A–C).

Shape of paleal chaetae: *A. nikiti* sp.n. has abruptly tapering paleal chaetae (Fig. 9A), while the chaetae of *A. bifolium* are evenly tapering (Fig. 9B). Our specimen of *A. scaphobranchiata* has intermediate paleae Fig. 9C. Published drawings are not definitive. Note: shape of paleal chaetae depends on angle of view; photos in Fig. 9 were made at an angle in the plane of the maximal chaetal width.

Fig. 10. *Amphicteis collaribranchis*.
Holotype ZMH V-1644. Scale 5 mm.
Рис. 10. *Amphicteis collaribranchis*.
Голотип ZMH V-1644. Масштаб 5 мм.

Paleal chaetae number. As the number of paleal chaetae in Ampharetidae increases with

Fig. 11. *Amphicteis* uncini.
A, B — *Amphicteis nikiti* sp.n., Nazarovsk 46: A — TU2; B — AU1; C–F — *A. scaphobranchiata*, Vitjaz 1578: C, D — TU4, E, F — AU6. Scale bars 20 μm.
Рис. 11. Неврохеты *Amphicteis*.
A, B — *Amphicteis nikiti* sp.n., Назаровск 46: A — TU2; B — AU1; C–F — *A. scaphobranchiata*, Витязь 1578: C, D — TU4, E, F — AU6. Все масштабы 20 μм.

body size, it is important to state a number together with a size of worm. *A. scaphobranchiata* has 7–17 paleal chaetae and length up to 54 mm. *A. bifolium* has 10–15 paleal and length up to 40 mm. Specimens of *A. nikiti* sp.n. of the same size have more than 20 chaetae.

Uncini: *A. bifolium* and *A. nikiti* sp.n. have abdominal uncini with teeth in one row, but *A. scaphobranchiata* (according to Uebelacker, 1984) has abdominal uncini with several rows of teeth. This information was repeated by Hilbig (2000) and she copied Uebelacker's (1984) drawings of uncini. Uncini with teeth in several rows are very unusual for the genus. Unfortunately other authors did not provide any information. Our specimen of *A. scaphobranchiata* has both thoracic (Fig. 11D) and abdominal (Fig. 11F) uncini, with different numbers of rows in the same neuropodia: smaller with up to three rows, larger with single rows; uncini of intermediate size have single upper and lower teeth and middle teeth in double rows. As the smallest uncini are located at the margin of the uncinal row, uncini with different arrangements

of rows are probably different stages of development and the number of rows reduces during the development of uncini. I reported (Jirkov, 2011) similar variation in the number of rows within a single neuropodium for *Lysippe sexcirrata*.

Also, according to the original description, *A. scaphobranchiata* has 13 AU, an unusual number for *Amphicteis*. All other species of this large genus (37 valid species according to Schiaparelli & Jirkov (2016) have 15 AU with the sole exception of *Amphicteis sundevalli* Malmgren, 1866, which has 18–20 AU (Jirkov, 2001). However, Banse (1979) and Hilbig (2000) clearly state that *A. scaphobranchiata* has 15 AU, Banse (1979) studied worms from the type locality.

Five other *Amphicteis* have foliose branchiae and they differ by following characters. *Amphicteis angustifolia* (Grube, 1878) has no paleae. *A. philippinarum* Grube, 1878 has poorly-developed paleae (Fig. 4A). *A. foliata* Haswell, 1883 has one pair of foliaceous branchiae with several short cylindrical processes at their base. *A. weberi* Caullery, 1944 has four foliose branchiae; *A. collaribranchis* (Augener, 1918) has some branchiae that are much more complex: some (one to four pairs) carry pinnae on their median face and at least the anterior inner pair is foliose (Fig. 10).

Distribution of *Amphicteis nikiti* sp.n. and comparison of its distribution with similar North Pacific species. *A. nikiti* sp.n. is common from the northern Bering Sea to Honshu, at 68–256 m, usually shallower than 150 m.

Amphicteis bifolium is known from the Gulf of Alaska, 534–1050 m (the type locality) and from the Sea of Okhotsk, 110–664 m.

Amphicteis scaphobranchiata is widely distributed along the Pacific coast of North America, from British Columbia to southern California at 185–2012 m depth (Moore, 1906, 1923; Reish, 1968; Hartman, 1969; Banse, 1979; Fauchald, 1972; Hilbig, 2000); also reported from the western Gulf of Mexico at 14–69 m depth (Uebelacker, 1984). Judging from the depth ranges, Pacific and Atlantic specimens probably belong to different species. The shallowest Pacific records of *A. scaphobranchiata* may, in reality, belong to *A. nikiti* sp.n. Our specimen of *A. scaphobranchiata* was found at 741 m in the eastern Bering Sea (which greatly extends its range but falls within previously known depth limits).

So, all three North Pacific species have different ranges and depth preferences; *Amphicteis nikiti* sp.n. is a distinctly more shallow water species than the other two.

The ranges of other species with foliose branchiae are far from the North Pacific.

Grubianella McIntosh, 1885

Type species *Grubianella antarctica* McIntosh, 1885 by monotypy.

Synonym *Amagopsis* Pergament et Chlebovitsch in Chlebovitsch, 1964 (type species *Amagopsis klugei* Pergament et Chlebovitsch in Chlebovitsch, 1964 by monotypy).

Ampharetinae with trilobed prostomium; middle lobe with two frontal horns or papillae. Thoracic and AU1 neuropodia tori, abdominal starting from AU2, pinnules.

Two valid species. A third species, *Grubianella brevicirrata* Wu, Wu et Qian, 1987 is so poorly described that it is not possible to understand even its generic affiliation; judging from the high number of TU (sixteen) and low number of AU (seven) *Grubianella brevicirrata* is very likely not *Grubianella*, and until re-examination of type material, must be considered as *nomen dubium*.

Grubianella antarctica McIntosh, 1885

Grubianella antarctica McIntosh, 1885: 432–434, Pl.48 1, 2; Pl. 27A 6.

Amagopsis cirratus Kucheruk, 1976: 97–98, Fig.3, 4 (map); 1981: 43, Fig 4 (map).

Material: Holotype Vitjaz 6143. Paratypes Vitjaz 3359(2), 6783(1) Akademik Kurchatov 294(14). Non-type specimens Vitjaz 491l(1), 7237(4), 7501(2); Akademik Kurchatov 296(8).

Additional material: *Grubianella antarctica* holotype NHM 1885.12.1.324.

Amagopsis klugei Pergament et Chlebovich in Chlebovich, 1964, holotype ZIN 5/41894, paratype 2/4972.

Description. Holotype of *Amagopsis cirratus* length 46 m, width 7 mm. Prostomium (Fig. 12A) trilobed, medial lobe with a pair of frontal papillae (not glandular, contrary to original description). Buccal tentacles smooth. Paleae very small, several times less well-developed than notochaetae. Four pairs of branchiae in two groups separated mid-dorsally by a wide gap. Inner anterior branchiae originate from S2 (paleal); outer anterior from S3 (TC1); anterior branchiae in a transverse line. Third branchiae behind anterior, originating from S4; fourth branchiae behind third, originating from S5. 14 TC the first three TC with poorly developed notopodia from TU1(=S6=TC4) are several times larger, with small glandular cirri above (Fig. 12B, pointed). All thoracic and AU1 neuropodia are tori, abdominal neuropodia starting from AU2 are pinnules (Fig. 12B). Holotype has 23 AU. Pygidium with two long lateral cirri, often inflated. Thoracic and abdominal uncini of the same shape (Fig. 13): teeth in double rows, size of teeth decreases towards tip of uncinus; button poorly-developed, tapering with filament. These filaments have been described in Ampharetidae only for *Neosabellides uschakovi* (Kuznetsov et Levenstein, 1988) (Jirkov, 2018), probably because they can only be observed using DIC. They are probably part of the sacs that enclose each uncinus; the uncini of tori and pinnules differ only by the tendons: tendon weakly-developed in the uncini of the tori (Fig. 13A–C) and well-developed in the uncini of the pinnules (Fig. 13D). No geographical variation in uncini: specimens from stations Vitjaz 3359 (Fig. 13A) and Akademik Kurchatov 238 (Fig. 13B) were collected in different oceans and hemispheres, but the differences between them does not exceed the variation within single neuropopodia.

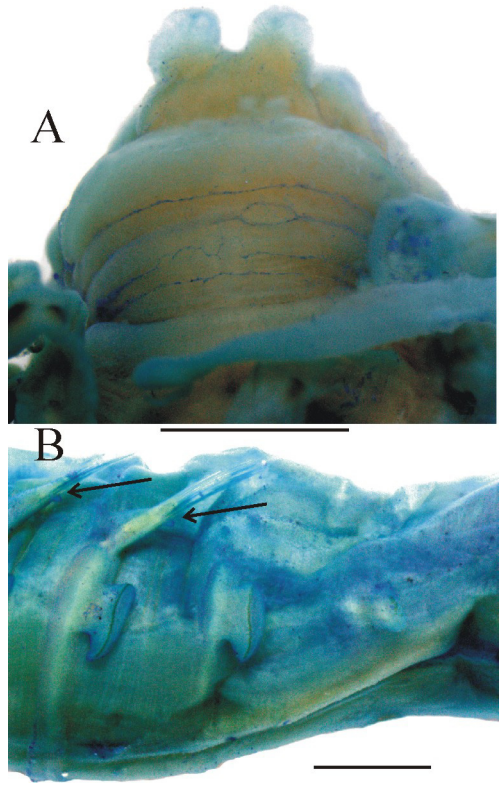

Fig. 12. *Grubianella antarctica* external morphology. A — prostomium; B — last TU and two first AU, globular papillae arrowed. Holotype. Scale bars 1 mm.

Рис. 12. Наружная морфология *Grubianella antarctica*.

А — простомиум; В — последний TU и два первых AU, шаровидные папиллы показана стрелкой. Голотип. Все масштабы 1 мм.

Remark. The types of *Amagopsis cirratus* do not differ from the holotype of *Grubianella antarctica.* McIntosh (1885) overlooked the small paleae in his species, which resulted in *Amagopsis* later being described as a separate genus. *Amagopsis* should now be accepted as a junior synonym of *Grubianella* (Jirkov, 2001). Thus, *Grubianella* includes two valid species: *Grubianella antarctica* and *G. klugei*. *G. klugei* differs from *G. antarctica* by the absence of dorsal papillae on the notopodia. The range of *G. klugei* is limited to the deep part of North Polar Basin (including the Norwegian Sea). Thus the whole genus *Grubianella* can be characterised as deep water.

Distribution. Widely distributed in the Pacific, Indian, and Southern Oceans, can be expected in the Atlantic Ocean, everywhere at abyssal depths.

Fig. 13. *Grubianella antarctica* uncini.
A — TU2; B — TU2; C — AU1; D — AU2. A, C, D — paratype Vitjaz 3359; B — Akademik Kurchatov 238. Scale bars 20 μm.
Рис. 13. Неврохеты *Grubianella antarctica*.
A — TU2; B — TU2; C — AU1; D — AU2. A, C, D — паратип Витязь 3359; B — Академик Курчатов 238. Все масштабы 20 μм.

Acknowledgements

The author thanks Prof. V.V. Malachov (Moscow State University) and Dr. A.F. Sazhin (IORAN) for the use of equipment for preparing photographs. Thanks also to Dr T.M. Worsfold (APEM Ltd. UK) for edits to the English, Dr. A.L. Alalykina (National Scientific Center of Marine Biology, Far Eastern Branch of the Russian Academy of Sciences, Vladivostok) for Sokho-Bio 2015 material, Dr. S.Yu. Gagaev and S.V. Potin for possibility to study ZIN collection.

This work was supported by the Russian Science Foundation (grant number 14-50-00029).

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Responsible editor E.N. Temereva