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Helmutneris vadum, a new species of Lumbrineridae (Annelida) from Lizard Island, Great Barrier Reef, Australia

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Abstract

A new species of Lumbrineridae, *Helmutneris vadum* **n. sp.**, is described from shallow waters near Lizard Island, Great Barrier Reef, Queensland, Australia. The new species differs from two other known species of *Helmutneris* by having bidentate maxillae III and no ventral limbate chaetae. Sequences of the fragments of COI and 16S rDNA for two specimens including the holotype are deposited in GenBank. A key for three species of *Helmutneris* known to date is provided.

Key words: Polychaeta, taxonomy, description, first record

Introduction

Lumbrineridae is a family of marine bristle worms with few external characters but complex jaw apparatus located in the ventral muscular pharynx. Currently, the family comprises over 200 described species grouped in 19 genera with world-wide distribution (Carrera-Parra 2006).

The genus *Helmutneris* Carrera-Parra, 2006 was separated from the genus *Lumbrineris* Blainville, 1828 based on the structure of the maxillary apparatus. *Helmutneris* is mainly characterized by having four pairs of maxillae, maxillae III and IV with whitish central areas, only limbate chaetae and simple multidentate hooded hooks. In addition, this genus possesses forceps-like maxillae I without internal accessory teeth but with wide attachment lamellae; maxillae II as long as maxillae I, with ligament, without connecting plates, and with narrow attachment lamellae along 1/3 of posterior lateral edge. The mandibles of *Helmutneris* are with partly separated shafts (Carrera-Parra 2006).

Helmutneris includes two valid species, both indicated by Carrera-Parra (2006) as symbionts of the deep-water ahermatypic corals. *Helmutneris flabellicola* (Fage, 1936) was originally described from Morocco, as a species of *Lumbrineris* with wide distribution from the southern Ireland to the western Africa (Carrera-Parra 2006). It has been subsequently reported from the Yellow Sea, the East China Sea, the South China Sea and Japan (Cai & Li 2011). *Helmutneris corallicola* Carrera-Parra, 2006 was described from the depth around 200 m near the Philippine Islands. The two species of the genus differ from each other in the shape of the prechaetal and postchaetal lobes: *H. corallicola* has digitiform postchaetal lobes in parapodia 1–25, basally inflated, slightly longer than prechaetal lobes, while *H. flabellicola* bears well-developed postchaetal lobes, digitiform in all parapodia, always twice as long as the prechaetal lobes.

In the present study, we describe a new species of *Helmutneris*, based on material collected at Lizard Islands and stored in the Australian Museum. This finding represents the first record of the genus *Helmutneris* in the Australian waters.

Materials and methods

Material was borrowed from the invertebrate collection of the Australian Museum. The description of the new species is based on 39 specimens, collected in the vicinity of Lizard Island, Great Barrier Reef, Australia.

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Part of the material was fixed in 4% formalin and later transferred into 75% ethanol. Two specimens used for DNA analysis were initially fixed in 96% ethanol. Overall specimen morphology was studied using a Leica MZ16 dissecting microscope. The length and the width of the specimens were measured at the 10th chaetiger (L10 and W10 ±SD in the description, respectively). Slides of parapodia, chaetae and jaw apparatuses were photographed using a Leica DM6000B light microscope equipped with a digital camera. For scanning electron microscopy, specimens were dehydrated in a graded ethanol series, critical-point dried, sputter coated with gold and examined with a ZEISS Supra 55VP scanning electron microscope at the Laboratory for Electron Microscopy, University of Bergen. Materials are deposited in the Australian Museum, Sydney (AM).

Sequences of fragments of two mitochondrial genes, COI (~650 bp) and 16S rDNA (~480 bp) were generated using the polyLCO/polyHCO (Carr *et al.* 2011); 16SarL/16SbrH (Palumbi *et al.* 1991) primers. Genomic DNA was extracted from 96% ethanol fixed samples using silica gel (glass milk). The total volume of PCR was 20 µl. PCR were performed using commercial Evrogen™ kits following the instructions provided by the producer: Encyclo Plus PCR kit (0.1 µl 50X Encyclo DNA Polymerase; ddH_2O; 4 µl 5X Encyclo Red buffer; 0.4 µl 50X dNTP; 0.2–0.5 µl (10 Pmol/µl) of each primer) with 1–2 µl of DNA template. PCR thermal conditions for COI were: 1 cycle: 94˚C/3 min; 5 cycles: 94˚C /40 s, 45˚C/40 s, 72˚C/60 s; 35 cycle: 94˚C /40 s, 51˚C/40 s, 72˚C/60 s; 1 cycle: 72˚C/300 s. PCR thermal conditions for 16S rDNA were: 1 cycle: 94˚C/3 min; 40 cycles: 94˚C /40 s, 51˚C—0.2˚C per cycle/30 s, 72˚C/70 s; 1 cycle: 72˚C/430 s. The results of PCR were verified using 1% agarose gel electrophoresis with ethidium bromide. Purification of the PCR products was done using Ethanol/EDTA/Sodium Acetate Precipitation. Sequencing reactions for both strands of the amplified genes were performed using BigDye Terminator v3.1 Cycle Sequencing Kit (Applied Biosystems) using the same primers as for PCR. Products were sequenced using Applied Biosystems automated sequencer ABI 3500. Obtained sequences were deposited in GenBank.

Taxonomic account

Family: Lumbrineridae Schmarda, 1861

Genus: *Helmutneris* Carrera-Parra, 2006

Diagnosis. Prostomium without antennae and eyes; branchiae absent; simple multidentate hooded hooks present; pygidium with anal cirri; maxillary apparatus with four pairs of maxillae, carriers dark, as long as MI; MI without internal accessory teeth, with wide base and attachment lamella; MII as long as MI, with ligament, without connecting plates, with attachment lamella; MIII and MIV with whitish central area; mandibles with shafts partly separated (modified from Carrera-Parra 2006).

Helmutneris vadum n. sp.

(Figs 1, 2; Appendix 1)

Type material. Holotype: AM W.43952 coral rubble, 14.694º S 145.466º E, 1–1.5 m, 14.08.2013, collected by: J.M. Nogueira, collecting method: by hand during snorkeling (incomplete wet specimen dissected dorsally at jaw region, DNA voucher). Paratypes: AM W.44341(1 wet specimen); W.44399 (1 wet specimen, DNA voucher); W.46013 (4 wet specimens); W.46031 (1 wet specimen); W.46032 (3 wet specimens plus 1 on SEM stub, jaw apparatuses dissected from three specimens); W.46034 (1 wet specimen, jaw apparatus dissected); W.46035 (3 wet specimens plus 1 on SEM stub); W.46040 (3 wet specimens, jaw apparatus dissected from one specimen) (for details on paratype localities see Appendix 1).

Other material examined. AM W.40740 (2), W.40742 (1, jaw apparatus dissected), W.40743 (1, jaw apparatus dissected), W.40849 (1, jaw apparatus dissected), W.40851 (1, jaw apparatus dissected), W.44150 (1), W.46019 (1, jaw apparatus dissected), W.46020 (1, jaw apparatus dissected), W.46021 (1), W.46023 (1), W.46033 (1, jaw apparatus dissected), W.46036 (2, jaw apparatus dissected from two specimens), W.46037 (1), W.46038 (1), W.46039 (1), W.46041 (1, jaw apparatus dissected), W.46042 (1, jaw apparatus dissected) (for details on localities see Appendix 1).

Diagnosis. Prostomium rounded, as long as wide. Prechaetal lobes inconspicuous, rounded, always shorter than postchaetal lobes; postchaetal lobes digitiform. Dorsal limbate chaetae present from chaetiger 1 to chaetiger 13–20. No ventral limbate chaetae. Simple multidentate hooded hooks on all chaetigers. MII as long as MI, pale with 6 (5–8) dark brown teeth of similar shape. MIII bidentate, with whitish central area, attachment lamella wide along whole posterior lateral edge. MIV with whitish central area, unidentate. Poorly sclerotized MV present in some specimens.

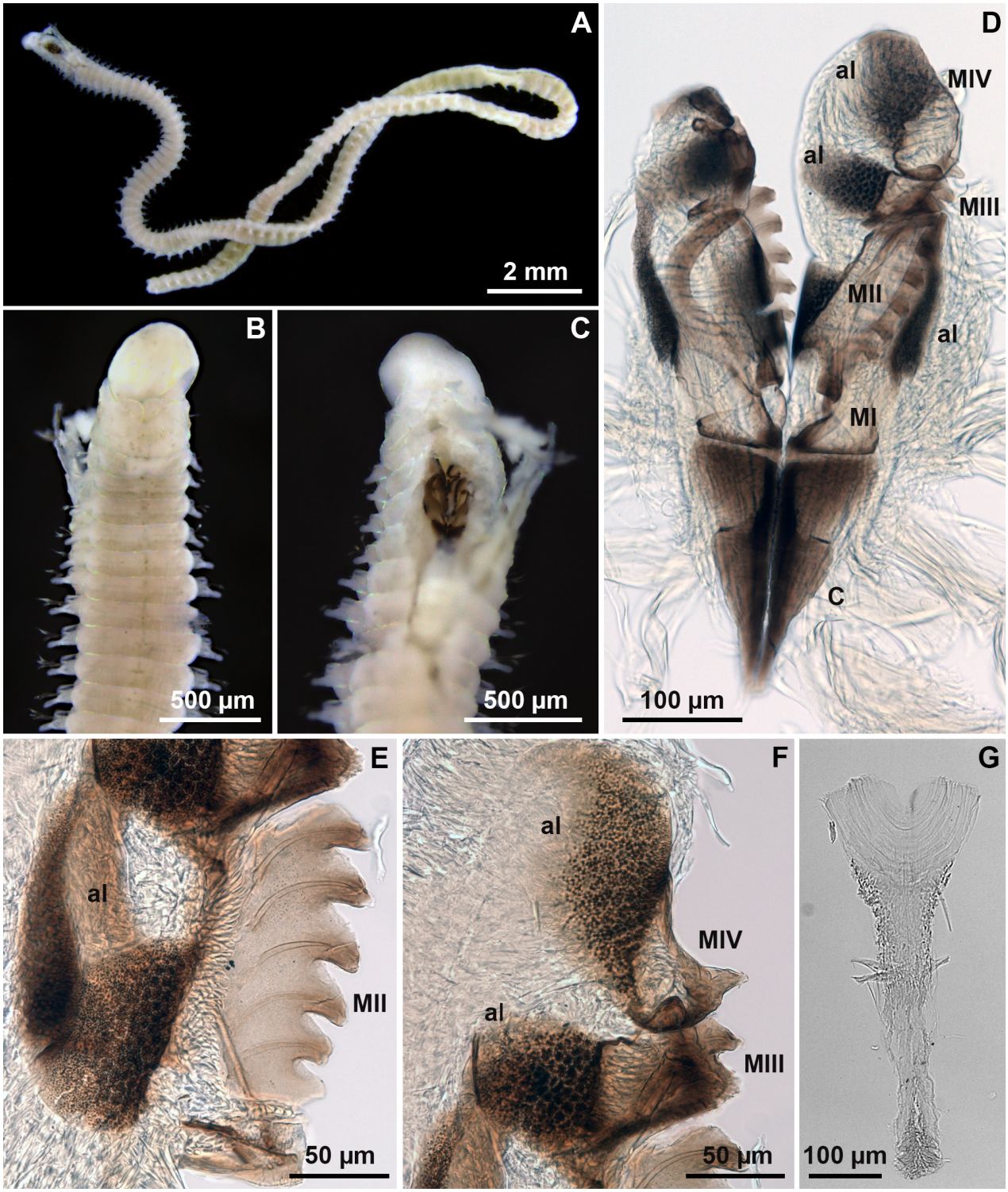

FIGURE 1. ***Helmutneris vadum*** **n. sp.** A. Holotype AM W.43952, general view; B. the same, anterior part, ventral view; C. the same, dorsal view; D. Paratype W.46032, maxillary apparatus, dorsal view; E. W.40849, maxilla II, dorsal view; F, the same, maxillae III and IV, dorsal view; G. W.46042, mandibles. Abbreviations: MI—maxilla I, MII—maxilla II, MIII—maxilla III, MIV—maxilla IV, al—attachment lamella, C—maxillary carriers.

Description. Holotype (W.43952, DNA-voucher) incomplete with 126 chaetigers, L10=1.9 mm, W10=0.55 mm; single complete specimen (W.44150, non-type material) 15 mm long with 98 chaetigers (L10=1.5 mm, W10=0.45 mm); all other examined specimens incomplete anterior fragments; size variation in studied material: L10=1.68±0.22 mm, W10=0.5±0.07 mm. Preserved specimens whitish, without any distinct colour pattern (Fig. 1A–C).

Prostomium rounded, 0.33±0.06 mm long, 0.32±0.05 mm wide, without nuchal antennae, without eyes or visible eyespots (Figs 1B–C, 2A). Peristomium shorter than prostomium, 0.2±0.05 mm long, consisting of two rings of similar size. All parapodia well developed, first 4–6 pairs of parapodia smaller than the following ones. Prechaetal lobes in anterior parapodia inconspicuous (Fig. 2B), in posterior parapodia small, rounded, always smaller than postchaetal lobes (Fig. 2D). Postchaetal lobes well developed in all parapodia, digitiform, with narrow base, always longer than prechaetal lobes, longer in anterior parapodia than in posterior (Fig. 2B–D).

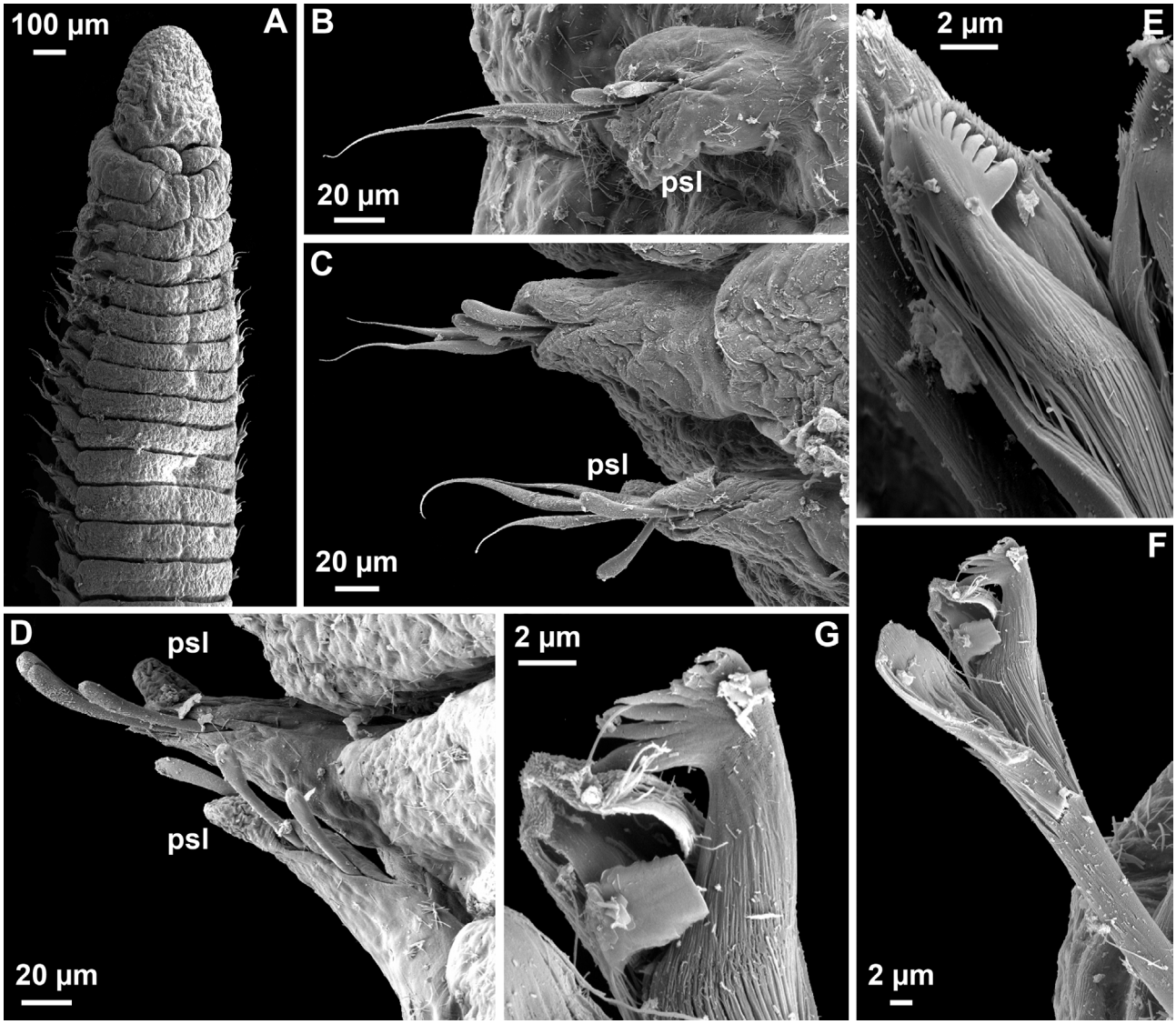

FIGURE 2. ***Helmutneris vadum*** **n. sp.** Paratype W.46035. A. Anterior part, ventral view; B. Parapodium 1; C. Parapodia 14–15; D. Parapodia 31–32; E. Simple multidentate hooded hook, parapodium 12; F. Simple multidentate hooded hook, parapodium 17. G. The same, enlarged. Abbreviations: psl—postchaetal lobe.

Simple multidentate hooded hooks from chaetiger 1 to posterior end, with short hood and up to 10 teeth (Fig. 2E–G). Limbate chaetae from chaetiger 1 to chaetiger 13–20 (in smaller specimens to chaetiger 8), only dorsal limbate chaetae present (Fig. 2B, C). Usually anterior parapodia with 2–3 limbate chaetae and 2–3 simple multidentate hooded hooks. Aciculae yellow, up to two in anterior chaetigers and one in posterior ones. Pygidium with two anal cirri.

Mandibles translucent, with wide distal end narrowing posteriorly, fused up to 4/5 of length (Fig. 1G). Maxillary apparatus with four pairs of maxillae, small poorly sclerotizes MV present in some specimens. Carriers as long as MI or slightly shorter, brown. MI pale, forceps-like, without internal teeth, with attachment lamella (Fig. 1D). MII as long as MI, pale with 5–8 (usually 6, including holotype) dark brown teeth of similar shape; right and left maxillae in some specimens with different number of teeth (5+6, 7+8); with dark narrow (slightly narrower than MII) attachment lamella along 1/2–1/3 of posterior lateral edge (Fig. 1E). MIII with whitish central area close to triangular shape, clearly bidentate, with two teeth subequal in size, with wide attachment lamella along posterior lateral edge. MIV with whitish central area close to oval-triangular shape, unidentate, with wide oval dark attachment lamella (Fig. 1F). Several specimens (including holotype) with small pale poorly sclerotized MV.

Remarks. ***Helmutneris vadum* n. sp.** differs from the other species of the genus by having bidentate MIII with wide attachment lamella along whole posterior lateral edge and lacking ventral limbate chaetae while *H. corallicola* and *H. flabellicola* have unidentate MIII with attachment lamella along 1/4 of posterior lateral edge and dorsal and ventral limbate chaetae (Table 1).

Etymology. The species epithet refers to Latin *vadum* meaning "shallow water". Unlike its congeners, this species was reported from shallow depths, from one to twelve meters.

Type locality. Australia, Queensland, Lizard Island, south of lagoon entrance, reef near Bird Islet, 14.694° S, 145.466° E**.**

Distribution and habitat. This species is only known from Lizard Island, depth range 1–12 m. The species, although often reported from the old coral reef rocks, did not show association with a particular species of corals, and was also reported from fine sediments.

Genetic information. The 16S rDNA and COI fragments were sequenced for two specimens: W.43952 (holotype) and W.44399 (paratype). Sequences are deposited in GenBank under accession numbers MT763200–MT763203.

TABLE 1. Comparison of the species of the genus *Helmutneris*.

Character	***H. flabellicola***	***H. corallicola***	***H. vadum* n. sp.**
Shape of prostomium	Conical, slightly longer than wide	Short, slightly wider than long	Rounded, as long as wide
Prechaetal lobe	Inconspicuous, rounded	Inconspicuous, rounded	Inconspicuous, rounded
Postchaetal lobe, anterior body	Digitiform, twice as long as prechaetal lobe (2:1)	Digitiform, basally inflated, slightly longer than prechaetal lobe	Digitiform, longer than prechaetal lobe
Dorsal limbate chaetae until chaetiger	28	21	13–20
Ventral limbate chaetae until chaetiger	15	15	0
Simple multidentate hooded hooks	From chaetiger 1, with short hood	From chaetiger 1, with short hood	From chaetiger 1, with short hood
MII teeth	5	5+6	6 (5–8)
MIII teeth	1	1	2
MIII attachment lamella	1/4 of posterior lateral edge	1/4 of posterior lateral edge	Whole posterior lateral edge
MIV teeth	1	1	1
Mandible fused	Slightly divided posteriorly	About half its length	Slightly divided posteriorly
Type locality	Morocco	Philippine Islands	Lizard Island, Australia
Depth range	450–630	192–224	1–12
Reported distribution	Southern Ireland to Western Africa, Yellow Sea, East China Sea, South China Sea and Japan	Philippine Islands	Lizard Island, Australia

Key to species of *Helmutneris*

1	MIII bidentate; no ventral limbate chaetae (below multidentate hooks)	***H. vadum* n.sp.**
-	MIII unidentate; both dorsal and ventral limbate chaetae present	2
2	Postchaetal lobes digitiform, always clearly longer than prechaetal lobes (2:1)	*H. flabellicola*
-	Postchaetal lobes digitiform, basally inflated, slightly longer than prechaetal lobes.	*H. corallicola*

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References

Blainville, de H. (1828) Mollusques, Vers et Zoophytes. *In*: Leuvrant, F.G. (Ed.), *Dictionnaire des Sciences Naturelles, dans lequel on traite mthodiquement des diffrens tres de la nature, considers soit en eux-mêmes, d'après l'état actuel de nos connaissances, soit relativement à l'utilité qu'en peuvent retirer la médicine, l'agriculture, le comerse et les arts. Suivi d'une biographie de plus célèbres naturalistes. Vol. 57. F*. G. Levrault, Strasbourg and Le Normant, Paris, pp. 1–628.

Cai, W. & Li, X. (2011) Three new records of Lumbrineridae Schmarda, 1861 (Annelida: Polychaeta) species in China. *Chinese Journal of Oceanology and Limnology*, 29 (6), 1297–1301. https://doi.org/10.1007/s00343-011-1001-y

Carr, C.M., Hardy, S.M., Brown, T.M., Macdonald, T.A. & Hebert, P.D. (2011) A tri-oceanic perspective: DNA barcoding reveals geographic structure and cryptic diversity in Canadian polychaetes. *PLoS One*, 6, e22232. https://doi.org/10.1371/journal.pone.0022232

Carrera-Parra, L.F. (2006) Phylogenetic analysis of Lumbrineridae Schmarda, 1861 (Annelida: Polychaeta). *Zootaxa*, 1332 (1), 1–36. https://doi.org/10.11646/zootaxa.1332.1.1

Fage, L. (1936) Sur l'association d'un annélide polychète, *Lumbriconereis flabellicola* n. sp. et d'un madrépore *Flabellum pavoninum distinctum* E. et H. *XII Congres Internationale de Zoologie, Lisbonne*, 2, 941–945.

Palumbi, S., Martin, A., Romano, S., McMillan, W.O., Stice, L. & Grabowski, G. (1991) *The Simple Fool's Guide to PCR. Version 2 Edition*. Department of Zoology, University of Hawaii, Honolulu, 46 pp.

Schmarda, L.K. (1861) Neue Wirbellose Thiere: Beobachtet und Gesammelt auf einer Reise um die Erdr 1853 bis 1857.Vol. 1. *Turbellarien, Rotatorien und Anneliden*, 2, 1–164.

APPENDIX 1. Locality and habitat data of ***Helmutneris vadum* n. sp.** specimens examined in this study.

AM catalogue number	Specimen count	Specimen status	Preparation	Original fixation	Latitude, degrees S	Longitude, degrees E
W.43952	1	Holotype	Wet specimen, DNA voucher	96% ethanol	14.694	145.466
W.44341	1	Paratype	Wet specimen	Formalin	14.744	145.506
W.44399	1	Paratype	Wet specimen, DNA voucher	96% ethanol	14.573	145.615
W.46013	4	Paratype	Wet specimens	Formalin	14.667	145.450
W.46031	1	Paratype	Wet specimen	Formalin	14.667	145.450
W.46032	4	Paratype	3 wet specimens, 1 on SEM stub	Formalin	14.600	145.467
W.46034	1	Paratype	Wet specimen	Formalin	14.600	145.467
W.46035	4	Paratype	3 wet specimens, 1 on SEM stub	Formalin	14.600	145.467
W.46040	3	Paratype	Wet specimens	Formalin	14.700	145.467
W.40740	2	Non-type	Wet specimens	Formalin	14.667	145.467
W.40742	1	Non-type	Wet specimen	Formalin	14.667	145.450
W.40743	1	Non-type	Wet specimen	Formalin	14.667	145.467
W.40849	1	Non-type	Wet specimen	Formalin	14.667	145.450
W.40851	1	Non-type	Wet specimen	Formalin	14.667	145.450
W.44150	1	Non-type	Wet specimen	96% ethanol	14.695	145.466
W.46019	1	Non-type	Wet specimen	Formalin	14.650	145.450
W.46020	1	Non-type	Wet specimen	Formalin	14.650	145.450
W.46021	1	Non-type	Wet specimen	Formalin	14.667	145.467
W.46023	1	Non-type	Wet specimen	Formalin	14.682	145.460
W.46033	1	Non-type	Wet specimens	Formalin	14.600	145.467
W.46036	2	Non-type	Wet specimens	Formalin	14.684	145.467
W.46037	1	Non-type	Wet specimen	Formalin	14.700	145.467
W.46038	1	Non-type	Wet specimen	Formalin	14.700	145.467
W.46039	1	Non-type	Wet specimen	Formalin	14.700	145.467
W.46041	1	Non-type	Wet specimen	Formalin	14.700	145.467
W.46042	1	Non-type	Wet specimen	Formalin	14.700	145.467

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APPENDIX 1. (Continued)

AM catalogue number	Depth, m	Precise Location	Date	Collection Participant	Collection Method	Substrate
W.43952	1–1.5	Lizard Island, south of lagoon entrance, reef near Bird Islet	14 Aug 2013	J.M. Nogueira	By hand on snorkel	Coral rubble
W.44341	6–12	South east of Lizard Island, reef on north west side of North Direction Island	15 Aug 2013	M. Capa	By hand on SCUBA	Coral rubble
W.44399	2–4	Great Barrier Reef, Yonge Reef	18 Aug 2013	K. Meissner & J.M. Nogueira	By hand on snorkel	Coral rubble
W.46013	7	Lizard Island, off Chinamans Head	08 Apr 1977	P.B. Weate	?	Coral reef rock
W.46031	?	Lizard Island lagoon	?	M. Peyrot-Clausade	?	?
W.46032	10	Northeast of Lizard Island, Outer Yonge Reef	25 Jan 1977	P.A. Hutchings & P.B. Weate	?	Dead coral
W.46034	10	Northeast of Lizard Island, Outer Yonge Reef	21 Jan 1977	P.A. Hutchings & P.B. Weate	?	Dead coral
W.46035	10	Northeast of Lizard Island, Outer Yonge Reef	25 Jan 1977	P.A. Hutchings & P.B. Weate	?	Dead coral
W.46040	12	Lizard Island, lagoon drop off between Bird Islet and South Island	Oct 1978	P.B. Weate	By hand on SCUBA	Dead coral block
W.40740	12	Lizard Island, fringing reef between Bird Islet and South Island	11 Jan 1977	P.A. Hutchings	?	Reef rock
W.40742	?	Near Bird Islet, Lizard Island	10 Apr 1977	P.B. Berents & P.A. Hutchings	?	Reef rock
W.40743	12	Lizard Island, fringing reef between Bird Islet and South Island	10 Apr 1977	P.B. Berents & P.A. Hutchings	?	Reef rock
W.40849	?	Lizard Island lagoon	?	M. Peyrot-Clausade	?	?
W.40851	?	Lizard Island lagoon	?	M. Peyrot-Clausade	?	?
W.44150	3–5	Lizard Island, south of lagoon entrance, outside reef near Bird Islet	14 Aug 2013	K. Meissner, T. Alvestad & C.J. Glasby	By hand on snorkel	Coral rubble
W.46019	7	Lizard Island, North Point	11 Nov 1976	P.A. Hutchings	Hand collected on SCUBA	Thin plates of dead coral
W.46020	6	Lizard Island, North Point	01 Sep 1976	P.A. Hutchings & P.B. Weate	Hand collected on SCUBA	Reef rock
W.46021	?	Lizard Island, off Research Point	03 Dec 1985	P.A. Hutchings & A. Reid	Dipnet and nightlight	?

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APPENDIX 1. (Continued)

AM catalogue number	Depth, m	Precise Location	Date	Collection Participant	Collection Method	Substrate
W.46023	?	Lizard Island, mangroves at east end of Mangrove Beach	26 Mar 1995	K. Fauchald	?	Loose detritus mat, just off mangroves
W.46033	10	Northeast of Lizard Island, Outer Yonge Reef	25 Jan 1977	P.A. Hutchings & P.B. Weate	?	Dead coral
W.46036	6	Lizard Island, between Bird Islet and South Island	11 Apr 1977	P.A. Hutchings & P.B. Weate	By hand on SCUBA	Reef rock
W.46037	12	Lizard Island, lagoon drop off between Bird Islet and South Island	Apr 1978	P.B. Weate	By hand on SCUBA	Prepared coral block
W.46038	12	Lizard Island, lagoon drop off between Bird Islet and South Island	Apr 1978	P.B. Weate	By hand on SCUBA	Dead coral block
W.46039	12	Lizard Island, lagoon drop off between Bird Islet and South Island	Oct 1978	P.B. Weate	By hand on SCUBA	Dead coral block
W.46041	12	Lizard Island, lagoon drop off between Bird Islet and South Island	Jan 1979	P.B. Weate	By hand on SCUBA	Dead coral block
W.46042	12	Lizard Island, lagoon drop off between Bird Islet and South Island	Jul 1978	P.B. Weate	By hand on SCUBA	Dead coral block