A New Species, *Lamispina ammophila* sp. nov. (Annelida: Flabelligeridae), from Shimoda, Japan

Naoto Jimi¹,² and Hiroshi Kajihara¹

¹ Department of Natural History Sciences, Graduate School of Science, Hokkaido University, Kita 10 Nishi 8 Kitaku, Sapporo, Hokkaido 060-0810, Japan
E-mail: beniimo7010@gmail.com
² Corresponding author

(Received 3 November 2017; Accepted 28 February 2018)

http://zoobank.org/8C1D3C7A-15A5-4DF1-86FB-4D5C1252B9FF

A new species of flabelligerid polychaete, *Lamispina ammophila* sp. nov., is described from off the coast of Shimoda, Japan. The species can be discriminated from the other congeners by the following features: (i) dorsal region of body being adhered to by sediment particles, (ii) lamispines without accessory tooth, present from chaetiger 4 and succeeding chaetigers, and (iii) cephalic cage 1.5–2.0 times as long as body width. A partial mitochondrial cytochrome *c* oxidase subunit I (COI) gene sequence from the paratype is provided as a DNA barcode for the new species.

**Key Words:** Marine invertebrates, new species, Polychaeta, polychaetes, taxonomy.

**Introduction**

*Lamispina* Salazar-Vallejo, 2014 is one of the 25 genera in the polychaete family Flabelligeridae, consisting of nine species reported from intertidal to deep sea sediment in subtropical to cold-temperature waters (Salazar-Vallejo 2014). The genus was proposed so that it accommodates species formerly placed in *Pherusa* Oken, 1807 having special neurochaetae (Grube 1877; Haswell 1892; Annenkova-Chlopina 1924; Støp-Bowitz 1948; Hartmann-Schröder 1965; Salazar-Vallejo 2014). Members in *Lamispina* possess special neurochaetae, called "lamispines", in which their distal area is thin and broad. This is one of the main features that distinguishes them from other flabelligerids.

Around Japan, a sole species of the genus, *L. schmidtii* (Annenkova-Chlopina, 1924), has been known from the Japan Sea and Okhotsk Sea (Annenkova-Chlopina 1924; Salazar-Vallejo 2014). During the 8th Japanese Association for Marine Biology (JAMBIO) Coastal Organism Joint Survey held at Shimoda, the first author found some specimens of *Lamispina*. We describe the specimens as a new species and provide COI sequences as a DNA barcode of the species.

**Materials and Methods**

Fresh specimens were collected by dredging from off the coast of Shimoda, Japan (34°39.217’N, 138°57.106’E to 34°39.071’N, 138°56.977’E). The specimens were fixed in 70% ethanol. After preservation, these specimens were observed with a Nikon SMZ1500 dissecting microscope and an OLYMPUS BX51 compound light microscope, and then photographed with a Nikon D5200 digital camera. All the material has been deposited in the National Museum of Nature and Science, Tsukuba (NSMT).

DNA extraction and sequencing of part of the COI were carried out following the method of Jimi and Fujiwara (2016). The newly obtained sequence has been deposited in the DNA Data Bank of Japan.

**Systematics**

**Genus Lamispina** Salazar-Vallejo, 2014  
[New Japanese name: sasano-habouki-zoku]  
* Lamispina ammophila* sp. nov.  
[New Japanese name: suna-sasano-habouki]  
(Figs 1, 2)

**Material examined.** Holotype: NMST-Pol H-663, anterior fragment, 4 mm long, 1 mm wide (widest chaetiger), sex unknown, off Shimoda, 45–46 m depth, 13 November 2015, collected by NJ; although the last two chaetigers were removed for observation and DNA extraction, any gene sequences could not be determined from those chaetigers. Paratypes: NSMT-Pol P-664, 10 specimens, anterior fragments, 2–6 mm long, 1 mm wide (widest chaetiger), 8–20 chaetigers, sex unknown, off Shimoda, 45–46 m depth, 13 November 2015, collected by NJ; the last two chaetigers and palps of one specimen were removed for DNA extraction.

**Sequence.** LC363891, COI gene, 651 bp, determined from the paratype (NSMT-Pol P-664).

**Description.** Holotype 4 mm long, 1 mm wide (widest chaetiger), 17 chaetigers (not complete). Body cylindrical, tapered in posterior region, greenish in life, yellowish after...
fixation (Fig. 1A). Dorsal body surface with sparse sand particles (Fig. 1B), ventral side without sand particles (Fig. 1A). Body papillae long, thin, digitate, sediment particles attached on base, 1/2 times as long as parapodial papillae. Gonopodial lobes not seen. Gonopores not seen.

Prostomium low cone, red eyes present, caruncle developed, lateral lip expanded, dorsal and ventral lips not well developed (Fig. 1C). Palps short, thick, digitate, as long as branchiae (Fig. 1D). Branchiae arranged in a continuous dorsal series, eight in number, digitate, microcilia present on surface (Fig. 1E). Nephridial lobes present.

Cephalic cage well developed, 1.5–2.0 times as long as
and backward, they occur from chaetiger 2 in Lamispina ammophila sp. nov., it is as long as body in L. amoureuxi. The species also resembles L. gymnopapillata (Hartmann-Schröder, 1965) in that lamispines occur from chaetiger 4, but it differs from the latter in that sand particles adhere dorsally in L. ammophila sp. nov., whereas L. gymnopapillata does not carry sand particles.

**Key to Species of the Genus Lamispina [Modified from Salazar-Vallejo (2014)]**

1. Body papillae without sand or large sediment particles ........................................ 2
   — Body with sand or larger particles, at least dorsally; lamispines falcate .................. 9
2. Body papillae stiff, tapered or conical ...................................................... 3
   — Body papillae delicate, filiform, often eroded leaving bare surfaces ........................................ 7
3. Lamispines tapered, tips acuminate ...................................................... 4
   — Lamispines subdistally widened, tips falcate ............... 5
4. Lamispines from chaetiger 3; notochaetae abundant (9–12 per bundle); four transverse series of papillae on medial segments ........................................ L. kergueleniae (Grube, 1877): Southern Indian Ocean
   — Lamispines from chaetiger 4; notochaetae sparse (5 per bundle); two transverse series of papillae on medial segments ........................................ L. chilensis Salazar-Vallejo, 2014: SE Pacific (Chile)
5. Cephalic cage 6× longer than body width; medial parapodia with 8 notochaetae per bundle ......... L. carrerai Salazar-Vallejo, 2014: NE Pacific (Mexico)
   — Cephalic cage 2–3× longer than body width ............ 6
6. Medial parapodia with 5–6 notochaetae per bundle; body with 3–5 transverse series of papillae per segment ..... L. horsti (Haswell, 1892): Southern Australia
   — Medial parapodia with 10 notochaetae; body with 4–6 transverse series of papillae per segment .......... L. gymnopapillata (Hartmann-Schröder, 1965): SE Pacific (Chile)
7. Notochaetae longer than body width ...................... 8
   — Notochaetae 1/3 as long as body width; 7–8 lamispines per bundle, tips with fibers exposed; body with 2 transverse series of papillae per segment .......... L. milligani Salazar-Vallejo, 2014: NE Atlantic (Florida)
   — Medial segments with 4–5 lamispines per bundle, tips entire, smooth; body with 8–10 transverse series of papillae per segment ........................................ L. falcata (Stop-Bowitz, 1948): Norwegian Sea
8. Medial segments with 5–7 lamispines per bundle, tips hooded, appearing bidentate; body with 5–6 transverse series of papillae per segment .......... L. Schmidtii (Annenkova-Chlopina, 1924): Japan Sea
   — Medial segments with 4–5 lamispines per bundle, tips entire, smooth; body with 8–10 transverse series of papillae per segment ........................................ L. falcata (Stop-Bowitz, 1948): Norwegian Sea
9. accessory tooth in neurochaetae absent ............... 10
   — accessory tooth in neurochaetae present

**Fig. 2.** Photomicrographs of chaetae (chaetiger 17) in Lamispina ammophila sp. nov., holotype, NSMT-Pol H-663. A, Notochaetae; B, neurochaetae; C, tip of neurochaeta. Scale bars: A, B, 100 µm; C, 50 µm.
Acknowledgments

We thank Dr. Hiroaki Nakano, Mr. Yasutaka Tsuchiya, and the members of Shimoda Marine Research Center, University of Tsukuba. Messrs. Hisanori Kohtsuka and Mamoru Sekifuji and all the other participants in the 8th JAMBIO Coastal Organism Joint Survey held at Shimoda for generous help in collecting the samples. We are also grateful to Drs. Sergio I. Salazar-Vallejo, Alexandra Rizzo, Takafumi Nakano for providing informative comments; and Dr. Kevin Wakeman for correcting the English. This study was supported by JAMBIO and JSPS KAKENHI (No. JP17J05066) to NJ.