

**Further record of *Pisionella hancocki* Hartman, 1939
(Annelida: Polychaeta: Pisionidae) in Japan with additional
information on some morphological characters**

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**日本産 *Pisionella hancocki* Hartman, 1939
(環形動物：多毛綱：ピシオネ科) の新産地，および形態学的知見の追加**

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抄録：ペルー沿岸産の標本に基づいて原記載がなされ、その後日本海の丹後半島沖から再発見されていた *Pisionella hancocki* Hartman, 1939 を、琉球列島先島諸島の波照間島の潮間帯から採集した。地理的分布においては、太平洋西岸の亜熱帯海域からの新記録である。得られた標本に対して、走査型電子顕微鏡による観察を含めた外部形態の精査を行なった結果、口前葉触手、足刺、および剛毛の形態に関する新たな形態学的知見を見出した。これらの新知見は、併せて行なった丹後半島沖産の標本の再吟味においても確認された。

Abstract: *Pisionella hancocki* Hartman, 1939 was recorded from a sandy beach of Sakishima Isls., the Ryukyus, south-western Japan. Concerning the geographical distribution, this is the first record in the subtropical region of the west coast of the North Pacific. Close examination of the material, inclusive of SEM observation, has revealed some detailed morphological characters of prostomial antenna, acicula, and setae, all of which are confirmed for the specimens from off the Tango Peninsula, the Sea of Japan.

Key Words: Annelida; Polychaeta; Pisionidae; *Pisionella hancocki*; geographical distribution; Japan; morphological characters; SEM observation.

The genus *Pisionella* Hartman, 1939 is characterized by the possession of prostomial antenna, the elongation of ventral cirri of buccal parapodium, and the serration of the stem of compound setae, in the family Pisionidae. The only species of the genus, *Pisionella hancocki*, was originally described by Hartman (1939) based on the material from intertidal to 8 fathoms of the Peruvian coast. After a considerable period of blank, the succeeding record was brought from a depth of 30 m off the Tango Peninsula, the Sea of Japan (Yamanishi, 1983). Recently, material of the species was obtained from the subtropical region of Japan. Close examination inclusive of SEM observation on the material was carried out, and new information on the morphological characters of prostomial antenna, acicula, and setae was acquired.

Genus *Pisionella* Hartman, 1939

***Pisionella hancocki* Hartman, 1939**

Pisionella hancocki: Hartman 1939, pp. 91-93, pl. 27, fig. 326, pl. 28, figs. 327-333; Yamanishi 1983, pp. 11-16, fig. 1, pl. 1.

Material

One nearly complete individual, and 5 anterior and 5 posterior fragments were collected from the intertidal zone of a coarse sand beach, Bemuchi-hama, Hateruma Is., Sakishima Isls., the Ryukyus, south-western Japan (24° 02' 35" N, 123° 46' 50" E), on 18th April, 1996. At the field, they were extracted from sand by repeated stirring and decantation with sea water, after bathing in formalin in order to immobilize animals; then they were fixed by formalin. After brought to laboratory, they were transferred to 70% ethanol for preservation.

They were observed under light microscope, and their body size, length of parapodia and cephalic appendages were measured.

Among them, 1 anterior and 1 posterior fragments were mounted for SEM observation: after dehydrated in ethanol, they were immersed in iso-Amyl Acetate, and dried by the Critical Point Drier; coating was made with Platinum-Palladium using the Ion Spatter.

These specimens are deposited in the Osaka Museum of Natural History (OMNH) with the registered numbers of Iv 1513 - 1523.

Description

Habitus

The complete specimen (Iv 1513) is 7.1 mm long with 41 setigers. Its body is widest, 0.35 mm excluding parapodia, at about 10th setiger. The body attenuates in posterior segments. The longest specimen, however, is a posterior fragment of 15.4 mm with 66 setigers (Iv 1518).

Colour

The entire body is white in ethanol.

Anterior End (Fig. 1 a; Fig. 2 a)

The median, prostomial antenna is swollen basally and can be distinguished from the following oblong portion by an articulation between them. It is not clear whether this oblong portion is the prostomium itself or the basal part of the antenna. The boundary is distinct laterally, in contact with the buccal segments, though it is obscure posteriorly. The antenna is mobile before the articulation with lengths of 0.10-0.13 mm. The following, oblong portion is 0.08-0.13 mm long and about 0.08 mm wide.

Brain is visible by transmitted light, extending posteriorly into 2nd or 3rd setiger. Two pairs of eyes are located on the brain at the position of 2nd setiger. The anterior pair of eyes are larger than the posterior pair.

Buccal segment is well-developed with lengths of around 0.3 mm exclusive of cirri, and with widths of 0.4-0.5 mm. Its dorsal cirri, 0.2-0.3 mm in length, are provided with thick base and attenuate distally. The ventral cirri are shorter than the former with lengths of 0.07-0.13 mm, and remarkably swollen proximally.

Palpi are long and strong with lengths of 0.6-0.7 mm.

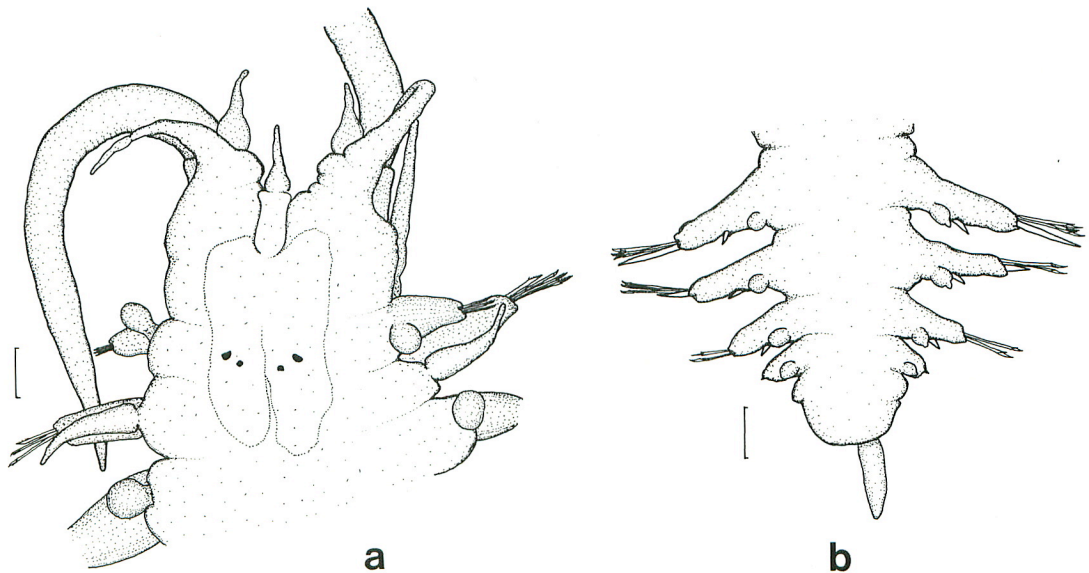


Fig. 1. *Pisionella hancocki* Hartman, 1939 from Hateruma Is., southwestern Japan. a, Anterior end in dorsal view (Iv 1514); b, Posterior end in dorsal view (Iv 1513). Scale: 0.1 mm.

Body Segments

Ventral cirri of 1st setiger are 0.2-0.3 mm long. Dorsal cirri of 2nd setiger are 0.17-0.20 mm long except for an aberrant specimen (Iv 1513), those of which are extremely short, nearly globose, only 0.05 mm long. Both dorsal and ventral cirri of other segments are uniformly small and globose, less than 0.05 mm in diameter, with a minute knob.

Cirriiform projections emerging from the ventral base of the parapodial lobes (nephridial papillae?) are present in three of the five posterior fragments. They are serially located on posterior segments, from 8-10th to 45-48th setigers counted from behind.

Parapodia

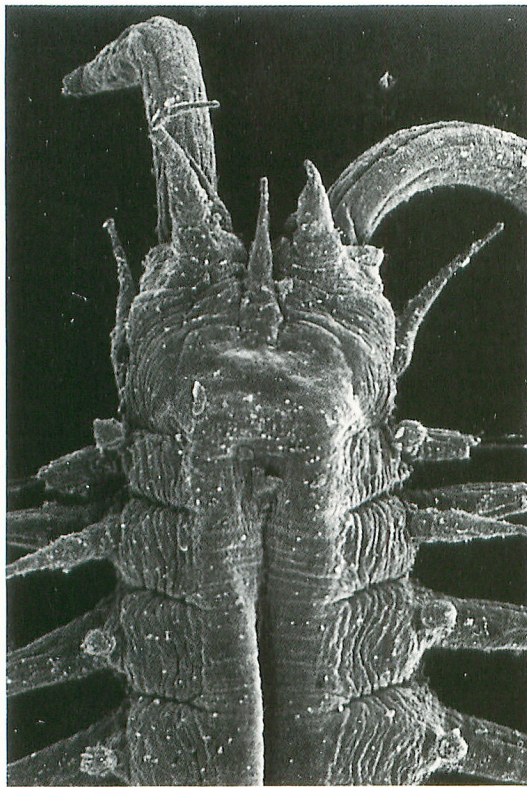
Parapodial lobes are smallest at 1st setiger (0.07-0.10 mm in length), and gradually enlarge posteriorly, attaining its normal size at about 5th setiger (about 0.20 mm).

The pre- and postsetal lobes are poorly developed. The distal portion of the parapodial lobes is provided with many palpcilii; the terminal pores are absent (Fig. 2 b).

As seen in *Pisione subulata* Yamanishi, 1992, some notoacacula are developed so thickly that they pierce the body wall of the parapodial lobes and emerge outwards postero-dorsally (Fig. 1 b). In the present material, such notoacacula are located rather limitedly to posterior segments, starting from 15-27th and continuing to the last setiger.

Setae

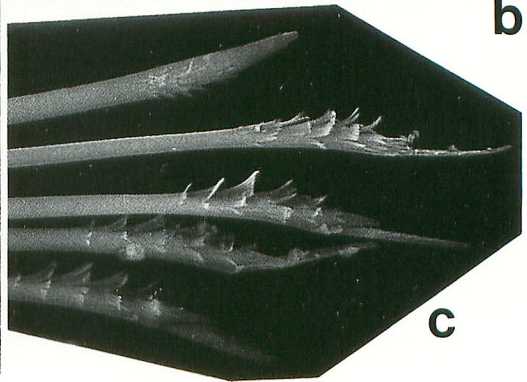
A bundle of setae usually consists of an acicular seta and four or five falcigers (Fig. 2 c). The



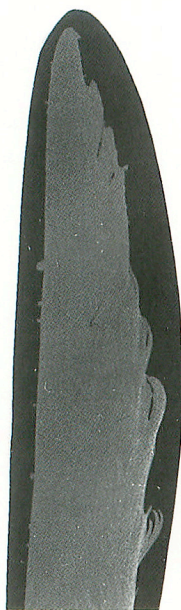
a



b



c



d



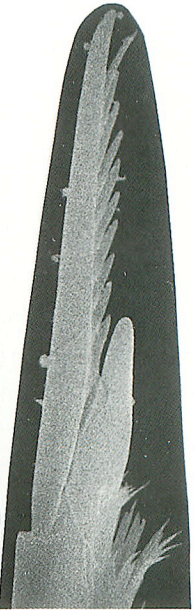
e



f



g



h

acicular setae arise from 2nd setiger, and in several anterior segments (to 7-9th setiger in the present material) they are serrated distally (Fig. 2 d), while others are smooth and continue to the posterior end.

Among the falcigers, the uppermost one is apparently different in shape from others (Fig. 2 e-h): the distal ends of its shaft projects poorly, only about one-sixth as long as the blade, whereas they project obliquely more than one-third as long as the blade in the lower falcigers.

As a result of the SEM observation, the sub-terminal serrations of the shafts of the falcigers, as well as those of the distal part of the acicular setae on anterior segments, are proved to be composed of transverse, comb-like rows of spines (Fig. 2 c).

Posterior End

The posterior end of a specimen (Iv 1513) is provided with an anal cirrus on the right with length of 0.16 mm (Fig. 1 b); that of the opposite side is considered to have been detached. All other specimens lack the anal cirri.

Remarks

As shown in the previous paper, *Pisionella* from the Sea of Japan is identified with *Pisionella hancocki* Hartman, 1939, though there are some differences in the number of the serration of the shafts of falcigers, and the location of the serrated acicular setae. These differences were regarded as "might be due to geographical variations" (Yamanishi, 1983, p.14).

Morphological characters revealed in the present study are summarized as follows:

- 1) The prostomial antenna is articulated and followed by oblong portion.
- 2) Notoacicula of posterior segments pierce the body wall of its parapodial lobes.
- 3) The uppermost falcigers can be discriminated from others by the poorly projected distal ends of the shafts.
- 4) The serrations of the shafts of falcigers, and those of the distal part of the acicular setae on anterior segments, are composed of transverse, comb-like rows of spines. They were described as "2 longitudinal rows of spinelets" (Hartman, 1939, p.93), or "terminal spinelets" (Yamanishi, 1983, p.14).

These characters are confirmed for the population of the Sea of Japan by re-examination, inclusive of SEM observation, of the material from off the Tango Peninsula (OMNH-Iv 924). Thus the two populations of *Pisionella hancocki* in Japan are proved to be strictly identical with each other in morphological features. The geographical distribution of the species, therefore, widely ranges from the temperate to the subtropical region in the west coast of the North Pacific.

Fig. 2. SEM microphotos of *Pisionella hancocki* Hartman, 1939 from Hateruma Is., south-western Japan (Iv 1522). a, Anterior end in dorsal view, $\times 120$; b, Parapodia of 7-9th setigers, $\times 170$; c, Bundle of setae of 8th setiger, $\times 800$; d, Acicular seta of an anterior segment, $\times 3280$; e, Uppermost falciger of anterior segment, $\times 3280$; f, 2nd falciger of an anterior segment, $\times 3280$; g, 3rd falciger of an anterior segment, $\times 3280$; h, Lowermost falciger of an anterior segment, $\times 3280$.

Literature Cited

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