

New records of two hesionid polychaetes from the Singapore Strait

Subjects: *Hesion* cf. *picta* (Annelida: Polychaeta: Hesionidae),
Hesion *intertexta* (Annelida: Polychaeta: Hesionidae).

Subjects identified by: Lee Yen-ling.

Location, date and time: All records from the Singapore Strait.

Hesion cf. *picta* —

- 1) off Marina Bay Sands (N 01°15.622', E 103°52.746'), at 7.2 – 7.5 m depth; 21 March 2013; 1149 to 1204 hrs.

Hesion *intertexta* —

- 1) Raffles Lighthouse (N 01°09.600', E 103°44.456'), at average tidal height of 0.75 m; 28 May 2013; 0530 to 0930 hrs.
- 2) Pulau Hantu (N 01°13.588', E 103°44.942), at average tidal height of 0.6 m; 30 May 2013; 0700 to 1100 hrs.
- 3) Lazarus Island, southern lagoon, at average tidal height of 0.7 m; 29 August 2015; 0400 to 0700 hrs.

Habitat: Marine. On fine sand/silt with hard substratum.

Observers: Rene Ong & Lee Yen-ling.

Observations: Two examples of *Hesion* *intertexta* and one of *Hesion* cf. *picta* were collected and deposited in the Zoological Reference Collection of the Lee Kong Chian Natural History Museum at the National University of Singapore. The *Hesion* *intertexta* have been catalogued as ZRC.ANN.0107 (Raffles Lighthouse) and ZRC.ANN.0108 (Pulau Hantu), and the *Hesion* cf. *picta* as ZRC.ANN.0106. The specimen from Lazarus Island was not deposited at the museum.

Hesion cf. *picta* - Only one example of this morphospecies has been found in the subtidal area of the Singapore Strait. It was obtained by beam trawl at a depths of between 7.2 and 7.5 m.

Its body length is 33 mm, body width at the 10th chaetiger 3 mm without parapodia (the feet) or 5.5 mm with parapodia. It has a cylindrical body shape that tapers at the tail-end. It has a distinctive dorsal colouration that is purplish-brown, made up of small transverse bands at each segment (Figs. 1 and 2, top left). Spanning across each joint between consecutive segments is an uneven white band, which has a thin black line on both the anterior and posterior edges. The ventral of body is shiny, light pink, with a faint red triangular median spot positioned slightly more posterior compared to the parapodia (Fig. 2, bottom left).

The prostomium is shaped like an apple, has an orange tinge in the live example, four red eyes, two short antennae, and a median tubercle at the anterior (Fig. 2, top left). It has eight pairs of antero-tentacular cirri between the prostomial segment and the first parapodia-bearing segment. There are altogether 16 chaetigers, or chaetae-bearing segments. The parapodia are usually positioned anterior on the segments. They are sub-biramous, lacking notopodia, with two acicula each. The chaetal lobes of the neuropodia are barrel-like, has two papilla-like ligules on the dorsal edge, though one of them is usually retracted and hidden (Fig. 2, bottom right). Dorsal cirri are very long (at least body width) and smooth, while ventral cirri is shorter (about parapodia length). Neurochaetae present are composite serrated bidentate falcigers, with an accessory spine emerging from beneath the secondary tooth and reaching beyond the primary tooth (similar to Fig. 4, right). The pre-pygidial segment has neither parapodia nor chaetae but has a pair of cirri on each side (dorsal pair longer than ventral pair). The anal cirri on the pygidial segment are long and positioned on the ventral side of the anus (Fig. 2, bottom left).



Fig. 1. Live example of *Hesione cf. picta* (ZRC.ANN.0106), dorsal view. Scale bar = 5 mm. Photograph by Rene Ong

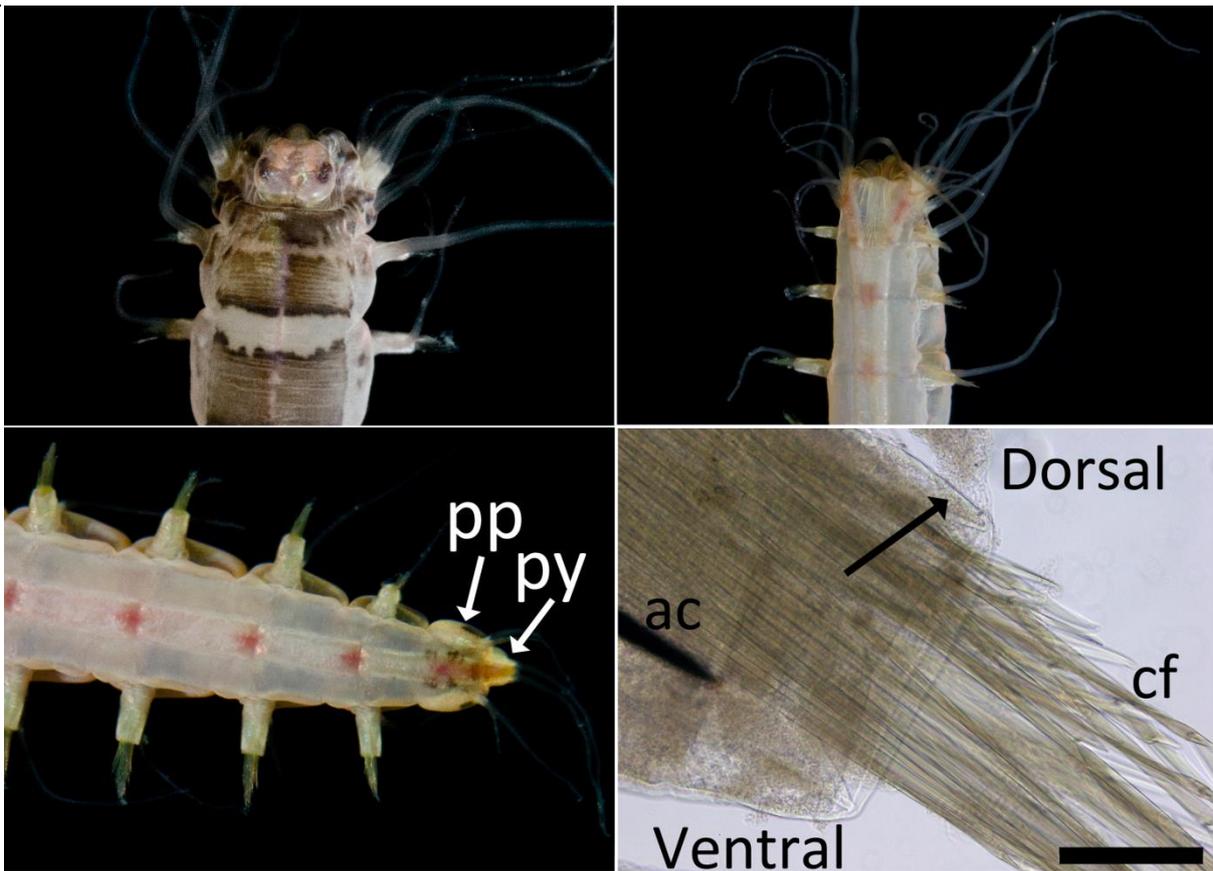


Fig. 2. Close up views of *Hesione cf. picta* (ZRC.ANN.0106). Top left: dorsal view, prostomium and anterior segments; top right: ventral view of anterior segments; bottom left: ventral view of the posterior segments, pre-pygidial segment (pp), and pygidium (py); bottom right: ventral view of neuropodia, showing the acicula (ac), composite falcigers (cf) and the papillae-like superior ligule (arrow). Scale bar = 200 μ m. All photographs by Rene Ong, except for bottom right by Lee Yen-ling



Fig. 3. A live example of *Hesione intertexta* from Lazarus Island. Scale bar = 10 mm. Photograph by Rene Ong

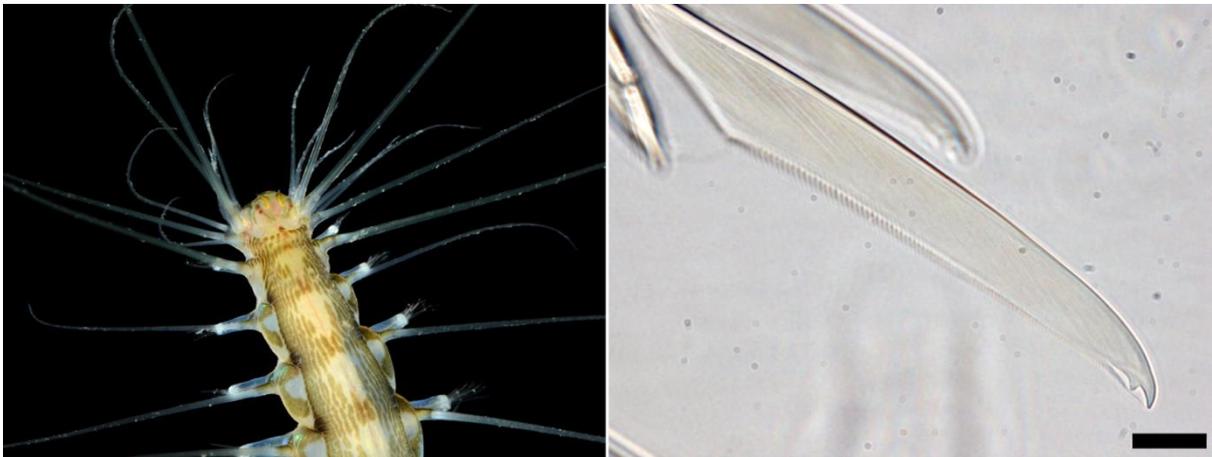


Fig. 4. (Left) Close up dorsal view of the prostomium and anterior segments of *Hesione intertexta*, ZRC.ANN.0108. Photograph by Rene Ong. (Right) An example of the blade of the neuropodial falcigers in *Hesione intertexta*. Scale bar = 20 μ m. Photograph by Lee Yen-ling

Hesione intertexta Grube, 1878 - Three examples were found, each from a different locality within the Singapore Strait. Based on ex-situ observations of the example from Lazarus Island, it tended to be rather inactive and hid under rocks or shells. It had an undulating swimming motion, which was caused by alternating paddling between the two parapodia of each segment. The animal was fed with small pieces of fish meat over four months but only on two occasions was feeding observed. It used a very fast snapping motion by everting and extending its pharynx. The act occurred under one second.

For examples 1, 2, and 3 respectively, their body lengths and widths at the 10th chaetiger, without and with parapodia, are (53.5, 4, 7 mm), (28, 1.5, 5 mm) and (66.5, 8.5, 12.5 mm). They are cylindrically-shaped, with short brown longitudinal ridges on the dorsums, conferring texture and colour to the animals. Both sides of the dorsum have extended lateral segments where these ridges are also present. Along the median of each segment is a bald, ridgeless patch, whereupon the body colour gives it an appearance of a large white spot (Fig. 3). The shape of the patch varies along the segments, but is generally diamond/oval. The lateral segments also have such a patch, which is rectangular. Dark creases can be seen at the joints between the segments. Cirratophores of the dorsal cirri in the posterior segments are yellow.

The prostomium is horseshoe-shaped with a deeply-grooved bilobed posterior edge, and has yellow pigment in the live example (Fig. 4, left). It comprises two short antennae, a median anterior tubercle, and two pairs of red eyes, in which the posterior pair is nearer to each other than the anterior pair. It has eight pairs of antero-tentacular cirri between the prostomial segment and the first parapodia-bearing segment. There are altogether 16 chaetigers. The parapodia are sub-biramous, lacking notopodia, and positioned along the anterior end of each segment. Dorsal cirri have short annulations and are very long (at least twice of body widths), while ventral cirri are shorter (almost equal to neuropodia length). Each neuropodia has one papillae-like ligule on the dorsal edge. Chaetae are composite serrated bidentate falcigers, with an accessory spine emerging from beneath the secondary tooth reaching up till the primary tooth (Fig. 4, right). The pre-pygidial segment and pygidial segments are similar to our example of *Hesione* cf. *picta*.

Remarks: Within the South China Sea region, species of *Hesione* have been reported from China, the Philippines and Thailand (Paxton & Chou, 2000; Ngamniyom et al., 2014), and herein for the first time in Singapore.

The *Hesione* cf. *picta* reported by Ngamniyom et al. (2014) is very similar to the specimen herein featured in body colouration and prostomial features, but differs in the number of pre-pygidial cirri (they reported only one pair), falciger dentiture (unidentate), neuropodia shape (mucronate) and size of ventral cirri (1/3 of parapodia length based on drawing).

Representatives of the genus *Hesione* appear to be relatively uncommon in the waters around Singapore compared to other hesionid genera such as *Leocrates* and *Oxydromus* (personal observations). *Hesione picta* has been reported to be in a species-specific association with the brittle star *Ophionereis reticulata*, but this association was not observed with the example herein featured.

References:

- De Assis, J. E., E. de A.S. Bezerra, R. J. de Brito, A. I. Gondim & M. L. Christoffersen, 2012. An association between *Hesione picta* (Polychaeta: Hesionidae) and *Ophionereis reticulata* (Ophioroidea: Ophionereididae) from the Brazilian Coast. *Zoological Studies*. 51(6): 762–767.
- Grube, A.E., 1858. Einiges über die Annelidenfauna der Insel Santa Catharina an der brasilianischen Küste. *Archiv für Naturgeschichte*. 24(1): 211–220.
- Grube, A. E., 1878. Annulata Semperiana. Beiträge zur Kenntniss der Annelidenfauna der Philippinen. *Memoires de L'Academie Imperiale des Sciences de St.Petersbourg*. Serial 7, 25(8): 1–300.
- Ngamniyom, A., K. Silprasit & T. Sriyapai, 2014. Morphological and molecular evidence for a new record of *Hesione* cf. *picta* (Polychaeta: Hesionida) from the Western Coast of the Gulf of Thailand. *Kasetsart Journal (Natural Science)*. 48: 719–728.
- Paxton, H. & L.M. Chou, 2000. Polychaetous annelids from the South China Sea. *The Raffles Bulletin of Zoology*. Supplement No. 8: 209–232.

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