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To Cite:
Pradhan J, Balakrishnan S. First Report of *Hesione paulayi* Salazar-Vallejo, 2018 (Phyllodocida: Hesionidae) from the Indian Ocean with a Note and key to identification of Indian waters species of the genus *Hesione* Lamarck, 1818. *Species* 2024; 25: e4s1623
doi: https://doi.org/10.54905/disssi.v25i75.e4s1623

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Peer-Review History
Received: 21 November 2023
Reviewed & Revised: 25/November/2023 to 27/January/2024
Accepted: 31 January 2024
Published: 03 February 2024

Peer-Review Model
External peer-review was done through double-blind method.

Species
pISSN 2319–5746; eISSN 2319–5754

DISCOVERY
SCIENTIFIC SOCIETY

First Report of *Hesione paulayi* Salazar-Vallejo, 2018 (Phyllodocida: Hesionidae) from the Indian Ocean with a Note and key to identification of Indian waters species of the genus *Hesione* Lamarck, 1818

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ABSTRACT

The present paper on Hesionid polychaete *Hesione paulayi* Salazar-Vellejo, 2018 is reported from India for the first time and the specimen was collected from Kavaravati, Lakshadweep. The diagnostic characters include the presence of numerous dorsal discontinuous longitudinal bands; prostomium curved; dorsal cirriphore twice; large acicula blackish and acicular lobe double; absence of palp; neurochaetal blades bidentate and parapodia with dorsal cirri. The genus inhabits soft and hard bottoms, in intertidal and infra coastal zones of the Indian coast. A key to Hesione species from India is also included.

Keywords: Hesionid, Pigmentation pattern, Taxonomy, New Record, India.

1. INTRODUCTION

The members of Hesionidae family are very small bodies, besides in rocky or sandy bottoms, and are rarely common. The characteristics of the family have significant cephalization, and at least many anterior segments possess long cirri. Tiny lateral antennae may also be present. There are often two pairs of eyes, with anterior eyes being larger and farther apart than the posterior eyes (Jumars et al., 2015). The body has a pigmentation pattern that may be used to distinguish between species; however, this is not possible since once kept in ethanol, their colors quickly deteriorate. *Hesione* species have a height pair of long anterior cirri, 16 chaetigers, and sesquiramous parapodia with dorsal cirri but notochaeta missing. The body has a

pigmentation pattern that may be used to distinguish between species, however, this is not possible since once kept in ethanol, their colors quickly deteriorate (Salazar-Vallejo, 2018).

Hesione includes 23 species reported worldwide i.e. *H. beneliahuae* Salazar-Vallejo, 2018; *H. ceylonica* Grube; *H. eugeniae* Kinberg, 1866; *H. fithughi* Salazar-Vaallejo, 2018; *H. genetta*Grube; *H. hartmanae* Salazar-Vallejo, 2018; *H. horsti* Salazar-Vallejo, 2018; *H. intertexta* Grube, 1878; *H. keablei* Salazar-Vallejo, 2018; *H. mooreae* Salazar-Vallejo, 2018; *H. osobornae* Salazar-Vallejo, 2018; *H. pacifica* McIntosh, 1885; *H. panamena* Chamberlin, 1919; *H. pantherina* Risso, 1826; *H. paulayi* Salazar-Vallejo, 2018; *H. picta* Müller, 1858; *H. praetexta* Ehlers, 1887; *H. proctochona* Schmarda, 1861; *H. reticulate* Von Marenzeller, 1879; *H. sicula* DelleChiaje, 1830; *H. splendid* Savigny in Lamarck, 1818; *H. uchidai* Salazar-Vallejo, 2018; *H. vittigera* (Ehlers, 1887) (Salazar-Vallejo, 2018; Fauvel, 1919). In Indian waters, few studies carried out on polychaete are very limited. In India only five species i.e. *H. genetta*, *H. pantherina*, *H. picta, H. splendida*, and *H. intertexta* are reported of the genus have been reported (Fauvel, 1953; Hartman, 1974; Sivaleela and Venkataram, 2020; Murugesan et al., 2018; Sivadas and Carvalho, 2020).

2. MATERIALS AND METHODS

The specimen was collected from Kavaravatii, (10°32.995"N; 72°37.448"E) Lakshadweep on October 18, 2019 (Figure 1). The specimen was relaxed in MgCl2, fixed in 4% formaldehyde in filtered seawater for one to two days, rinsed in tap water, and transferred to ethanol for preservation. Measurements were taken by digital caliper and the numbers of segments were counted stereo zoom microscope. The studied specimen was deposited in the National Zoological Collection of Marine Aquarium and Regional Centre (MARC), Zoological Survey of India (ZSI), Digha, West Bengal for future reference with registration no. ZSI/MARC/P10797. Species determination was following Salazar-Vallejo, (2018) and related literature. Species identification was done based on the head morphology, body color pattern, and chaeta structure.

3. RESULTS

***Hesione paulayi* Salazar-Vallejo, 2018**

Material examined

ZSI/MARC/P10797, 01 ex., 32.48 mm TL, Kavaravatii, Lakshadweep Island, India, S. Balakrishnan & Party members, 18/x/2019.

Diagnostic characters

The body length is 32.48 mm and its width is 1.77 mm (without setae) and 4.43 mm (with setae). Body segments 17. Brownish dorsal transverse bands and irregular spots are present on the dorsal side of the body (Figure 2). Transverse band is well defined along the anterior chaetigers but none in chaetigers 1, discontinuous band in chaetigers 3; chaetigers 2 with a wide band, well defined, straight along with the anterior margin, posterior margin irregular, 3-4 times longer than a band in chaetiger 4. Parapodia with chaetal lobes tapered, truncate. Neurochaetae blades are bidentate (Figure 3B), 3-4 times longer than wide, oriented at an angle from the handle, teeth of equal length, sub-distal tooth typically wider, guard thick, approaching sub-distal tooth. The prostomium is slightly wider than it is long, the anterior margin is truncated, the lateral margins rounded, and the posterior with a shallow notch. Digitate antennae that are longer than the space between the eyes or four times as long as they are wide. Eyes brown, with the front one being twice as big as the back one. Tentacular cirri thin. The longest ones reaching the chaetigers 5. Ventral cirri irregularly contracted, reaching chaetal tips.

Distribution

Widely distributed along the Papua New, Mariana Islands, Northern Marshall Islands, Philippines, and Australia Salazar-Vallejo, (2018) the present study reports this species first time in Indian waters (Figure 1).

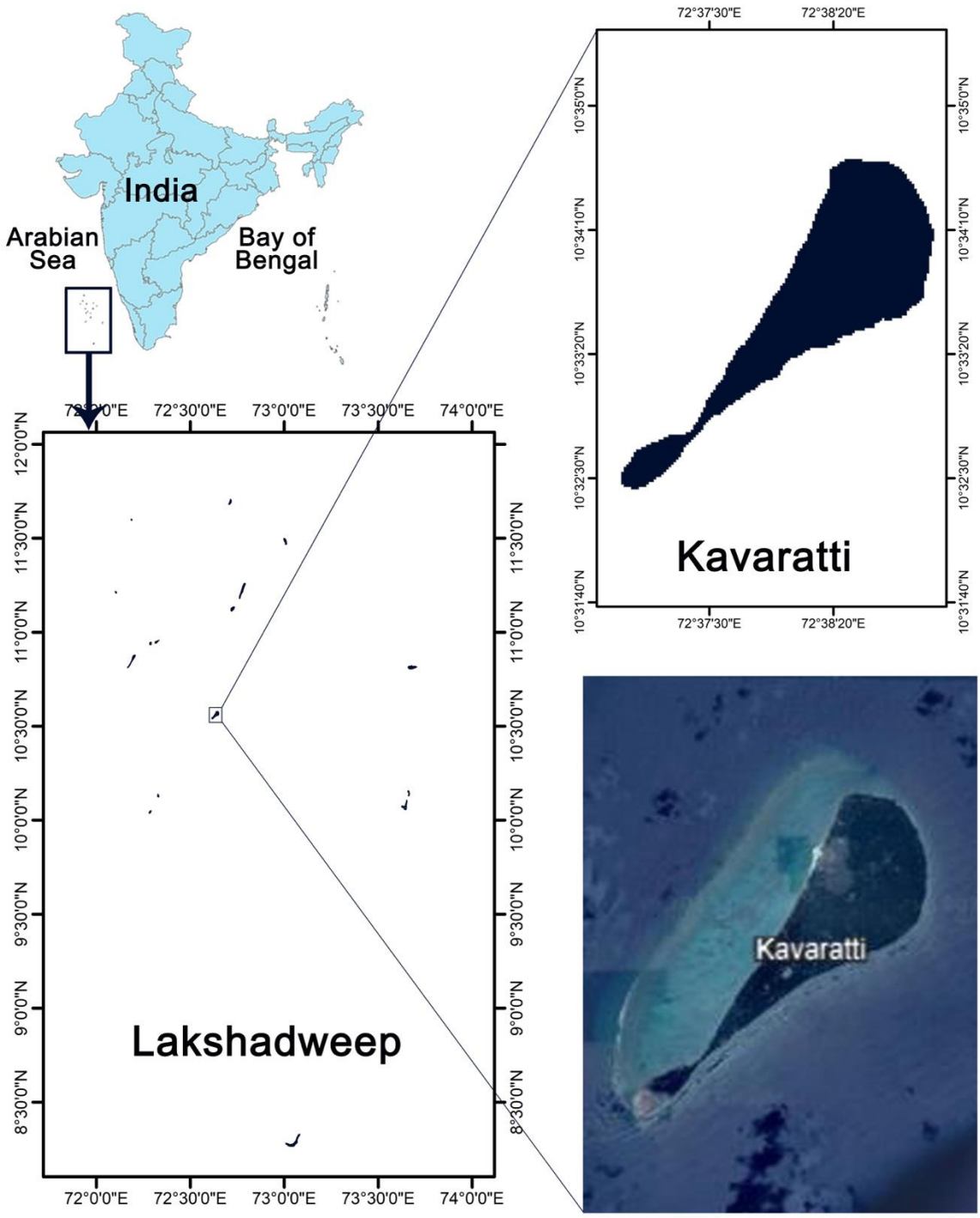
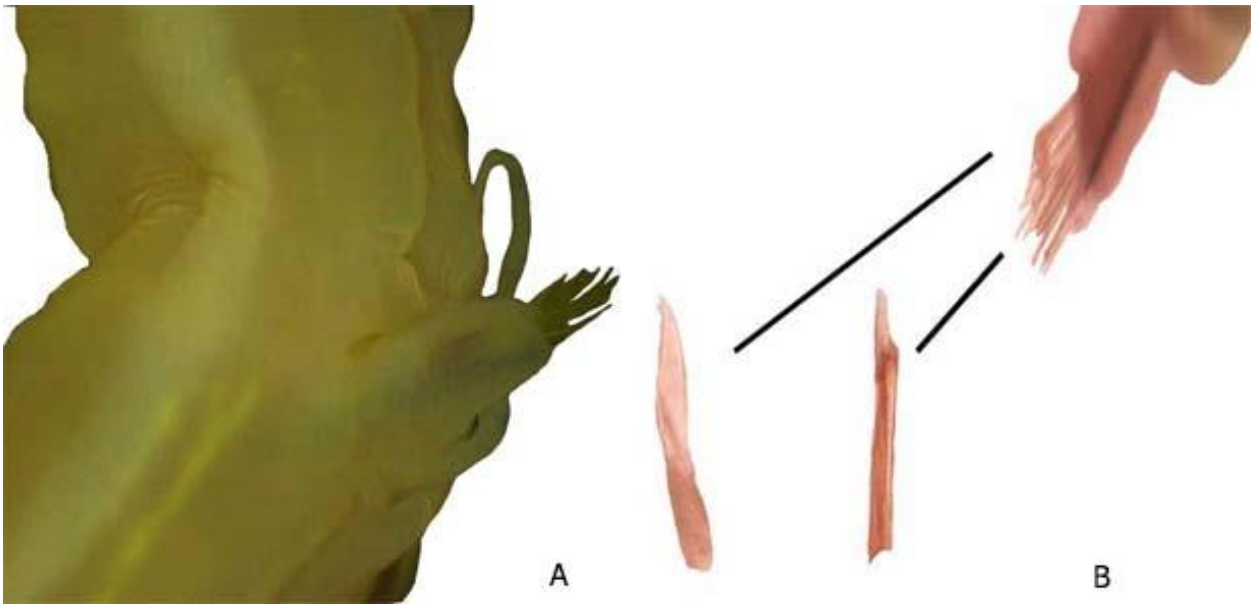


Figure 1 Distribution of *Hesione paulayi* Salazar-Vallejo, (2018) in India

Figure 2 *Hesione paulayi* Salazar-Vallejo, (2018), Dorsal view of the whole specimen.



Figures 3 *Hesione paulayi* Salazar-Vallejo, (2018), A: Chaetigers 8th and B: Neuropodial blades.

4. DISCUSSION

The literature Horst, (1924) suggests the species identification of morphological features and dorsal pigmentation of the body can be roughly separated into three patterns i.e. bright grayish in *H. splendid* Savigny in Lamark, 1818, transverse as in *H. genetta* Grube, 1867 and *H. picta* Müller, 1858, but in the former, there are also round spots along the body and longitudinal lines such in *H. intertexta* Grube, 1878, *H. pantherina* Risso, 1826, *H. reticulate* von Marenzeller, 187914. *H. picta* features a triangular papilliform fold and a fringed proboscis tip, but in other specimens, the proboscis is smooth. *H. paulayi* with long-lasting pigmentation, including transverse brownish bands, together with *H. genetta* Grube, 1867 restricted *H. mooreae* (Salazar-Vallejo, 2018). *H. genetta* has its larger transverse band in chaetiger 1, whereas both *H. paulayi* and *H. mooreae* on chaetiger 215. However, in *H. paulayi* transverse bands are better defined,

usually with a larger darker band over chaetiger 2, but no bands over chaetigers 1 and 3. Whereas *H. genetta* transverse bands are present on chaetigers 1 and 3 (Salazar-Vallejo, 2018). The study confirms the first record of *H. paulayi* from the coastal region of Lakshadweep, which shows the distribution of the species to the Indian waters.

Keys to species occurring in Indian waters

1a. Neurochaetal blades guards approaching distal tooth……..…….2
1b. Neurochaetal blades guards surpassing distal tooth ……..……..…*H. picta*
2a. Neurochaetal blades 3-4 times as long as wide and dorsal surface usually shiny……..…….*H. splendida*
2b. On each dorsal segment a transverse row of brown broad spot or stripe……3
3a. Numerous narrow longitudinal irregular brown bands in each chaetigers and extending towards lateral cushions……..……*H. intertexta*
3b. Transverse or longitudinal brown bands or spot present on chaetigers ……4
4a. Dorsum with brown rounded or elongate dots…….…… *H. patherina*
4b. Dorsum with transverse dark bands……5
5a. Transverse row of brown spot or bands are present on chaetigers 1 and 3 ……..…. *H. genetta*
5b. Irregular or discontinuous larger bands over chaetigers 2…….……. *H. paulayi.*

Acknowledgments

The authors are thankful to Dr. Dhriti Banerjee, Director, ZSI, India, Kolkata for providing the necessary facilities and permission. The authors are also thankful to the Ministry of Environment, Forest and Climate Change, Government of India for financial support. SB would like to thank the Lakshadweep Administration and Dr. N Marimuthu, Scientist-E & Officer-in-Charge, ZSI, FPS Building, Indian Museum complex, Kolkata – 700016, West Bengal, India for the permit and logistic support to carry out the study.

Significant statement

The paper is original research representing the first ever confirmed report of *Hesione paulayi* Salazar-Vallejo, (2018), from India collected from Lakshadweep.

Author's contribution

Identification and manuscript preparation: JP, Collection, critical analysis, and manuscript editing: SB.

Ethical approval

The species belonging to the family Hesionidae from Kavarattii, Lakshadweep Island was observed in the study. The animal ethical guidelines are followed by the study for species identification.

Informed consent

Not applicable.

Conflicts of interests: The authors declare that there are no conflicts of interests.

Funding: The study has not received any external funding.

Data and materials availability

All data associated with this study are present in the paper.

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