

OCCURRENCE AND ABUNDANCE OF COMMENSAL POLYCHAETE *HIPPONOE GAUDICHAUDI* AUDOUIN & MILNE EDWARDS, 1830 (FAMILY: AMPHINOMIDAE): AN ASSOCIATE OF GOOSE BARNACLE *LEPAS (ANATIFA) ANSERIFERA* ALONG PAKISTAN COAST

Muhammad Moazzam^{1*} and Naseem Moazzam²

¹WWF-Pakistan, 45-K, PECHS Block 6, Shahrah-e-Faisal, Karachi 75400, Pakistan

²B-205, Block 4-A, Gulshan-e-Iqbal, Karachi 75300, Karachi, Pakistan

*Corresponding author: mmoazzamkhan@gmail.com

ABSTRACT

Polychaete worm *Hipponoe gaudichaudi* Audouin & Milne Edwards, 1830 belonging to Family Amphinomidae was recorded for the first time from Pakistan. This species was found as an associate of *Lepas (Anatifa) anserifera* (goose barnacle), mostly inside the branchial chambers. The host are found attached to floating objects in oceanic waters along the coast of Pakistan. The specimens of *Hipponoe gaudichaudi* were found mostly from continental margin along Pakistan coast but no marked seasonality was noticed.

Keywords: *Hipponoe gaudichaudi*, *Lepas (Anatifa) anserifera*, branchial chamber, flotsam

INTRODUCTION

Polychaete worms from Pakistan have been studied by Aggarwala (1924), Ahmad (1969), Ahmad and Ashraf (1973), Ahmad *et al.* (1982), Ashraf (1968), Aziz (1938), Bhatti and Sufi (1949), Bindra (1923, 1927), Fauvel (1932, 1953), Habib and Mustaqim (1988), Hasan (1960), Ishaq and Mustaqim (1996), Kazmi and Naushaba (2010; 2013), Khanum and Mustaqim (2012), Mushtaq and Mustaqim (2006a; 2006b), Mustaqim (1990, 1991a, 1991b, 1995, 1997, 2000), Rasheed and Mustaqim (2003, 2005), Rehama and Mustaqim (1989), Reuscher and Fiege (2016), Siddiqui and Mustaqim (1988), Swaleh and Mustaqim (1993) and Wehe and Fiege (2002). Although a well-diversified polychaete fauna is known from Pakistan (Kazmi, *et al.* 2019), still new species and new records are frequently being reported from Pakistan. During the present study of the pelagic fauna, a commensal species of polychaete (*Hipponoe gaudichaudi*) was frequently encountered. This species was found to be associated with goose barnacle *Lepas (Anatifa) anserifera* and other floating debris. Present paper reports this species for the first time from Pakistan

MATERIALS AND METHODS

WWF-Pakistan has established data collection system from tuna gillnetting operations along the coast of Pakistan since 2012. Trained crew-based observers have been deputed on tuna gillnet vessels (Moazzam and Khan, 2018) who *inter alia* collect information including photographs of various invertebrates. On a number of occasions, commensal polychaete (*Hipponoe gaudichaudi*) were also observed associated with floating debris which were encrusted with *Lepas (Anatifa) anserifera* and photographed. The present paper reports this species for the first time from Pakistan coast along with its distribution along the coast of Pakistan.

RESULTS

Goose barnacle *Lepas (Anatifa) anserifer* (goose barnacle) is one of the common invertebrate which is found attached to floating object in the coastal and offshore waters. On some occasions, commensal polychaetes (*Hipponoe gaudichaudi*) were found associated with these barnacles (Fig. 1). This polychaete worm was found only when a large number of goose barnacles are present on flotsams including plastic bottles, other plastic objects, wood, ropes, turtles (mainly olive Ridley turtles) that are entangled in derelict fishing nets.

Materials Examined

- 24 November 2016. One specimen present on plastic shoe sole drifting at 24°23.000'N; 65°45.000'E; Photographed by Mohabat Khan, Observer

- 01 May 2017. Six specimens present on plastic bottle drifting at 25°59.000'N; 65°10.000'E; photographed by Norul Wahid (Late), Observer
- 14 December 2017. Many specimens present on plastic drum, net, andropes drifting at 24°57.076'N; 62°57.636'E; Photographed by Mehar Gul, Observer. An olive Ridley turtle was also found entangled in the flotsam.
- 25 February 2018. Six specimens present on a pile of *Lepas (Anatifa) anserifera* attached to a rope drifting at 24°29.000'N; 65°40.000'E; photographed by Momin Khan, Observer
- 21 April 2018. Many specimens present on two floats and ropes drifting at 24°22.000'N; 65°41.000'E; Photographed by Israr Badshah, Observer.
- 18 September 2018. One specimen present on wood drifting at 22°52.000'N; 66°40.000'E; Photographed by Noor Muhammad, Observer
- 19 January 2019. Many specimens present on two floats and ropes drifting at 24°14.372'N; 66°40.660'E; photographed by Muhammad Ismail, Observer.

Description

***Hipponoe gaudichaudi* Audouin and Milne Edwards, 1830 (Fig. 1-3)**

Body small, size of adult is 9.7 cm, fusiform and quadrangular in cross-section with 25-40 segments. Three antennae and two digitiform palps. Prostomium bluntly triangular with four well separated eyes in a rectangle. Mouthventral. Parapodia biramous; notopodium with a tapered cirrus and a bundle of capillary setae; neuropodium reduced, and retractile with a papilliform ventral cirrus and a few hooked acicular setae. Branchiae bushy, one per notopodium. Neuropodial hooks with the minor tooth straight. Notosetae include some with bifid tips.



Fig. 1. *Hipponoe gaudichaudi* clinging to *Lepas (Anatifa) anserifera* growing on a rope.



Fig. 2. *Hipponoe gaudichaudi* showing setae.



Fig. 3. *Hipponoe gaudichaudi* showing bushy branchiae (one per notopodium).

Pakistani specimens come in conformity of description given by Kudenov (1183). According to Audouin and Milne-Edwards (1830) the type specimen was collected from Port Jackson, Sydney, Australia and type was deposited in the collections of the Muséum national d'Histoire naturelle, Paris (MNHN). However, Solis-Weiss *et al.* (2004) were unable to find this type in MHHN.

Distribution

Adult *Hipponoe gaudichaudi* is found inside the branchial chambers of its goose barnacle (*Lepas* spp.), whereas the juveniles may be located between the mantle and the calcareous plates of the host attached to the adult symbionts (Britayev and Memmy 1989, Núñez *et al.* 1991). The species has a cosmopolitan distribution, being found in the Bay of Biscay, at the Azores, Ireland, the Antilles, the North Pacific and Australia. The present paper extends its distribution to Northern Arabian Sea. This polychaetes was collected between November 2016 and January 2019 on 7 occasions. The species is found widely distributed all along the coastal and offshore waters of Sindh and Balochistan and no marked seasonality was noticeable.

DISCUSSION

Hipponoe gaudichaudi Audouin & Milne Edwards, 1830 belong to Family Amphinomidae which is an errant polychaete. This species is a commensal associated with cirriped crustacean mainly *Lepas* spp. (Martin and Britayev, 1998; 2018). Goose barnacles (*Lepas* spp.) are found attached to floating and drifting objects in the oceanic environment. On some occasions the *Hipponoe gaudichaudi* are found living in the branchial chamber of these goose barnacles (Paris, 1955; Day, 1967; Okuda, 1950; Britayev and Memmy, 1989, Núñez *et al.* 1991). According to Martin and Britayev (1998), the adult specimens of *Hipponoe gaudichaudi* occurs in the branchial

chamber of goose barnacles whereas juveniles may be found between mantle and calcareous plates of the host or attached to adult *Hipponoe gaudicaudi*.

Along the coast of Pakistan, two species of goose barnacles *Lepas (Anatifa) anatifera* Linnaeus, 1758 and *Lepas (Anatifa) anserifera* Linnaeus, 1767 are found, however, the former is of rare occurrence (Moazzam and Niaz-Rizvi, 1978, 1982). Member of genus *Lepas* are mostly pelagic and found attached to floating objects along with a number of other species among them sometime polychaete *Hipponoe gaudicaudi* is also found. No seasonal or spatial preference for the species was noted, however, most of the records from continental shelf area or along the continental margin.

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