

FIRST RECORD OF OCCURRENCE OF THE OPISTHOBRANCH *KALINGA ORNATA* ALDER AND HANCOCK, 1864 FROM THE COAST OF PAKISTAN

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ABSTRACT

An opisthobranch *Kalinga ornata* Alder and Hancock, 1864 is reported for the first time from Pakistan coast. This species is reported widely from Indo-Pacific area.

Keywords: *Kalinga ornata*, Pakistan, Arabian Sea, opisthobranch, trawling.

INTRODUCTION

Opisthobranch fauna of Pakistan is not well studied. It was Eliot (1905) who reported seven species of opisthobranchs from Karachi. Later on Moazzam (1987) reported a few more species from Balochistan and Sindh coast. Kazmi *et al.* (1996) published a checklist of opisthobranch from Pakistan reporting 44 species. Kazmi and Tirmizi (1997) added two species of *Armina* from Pakistan. The present paper records the occurrence of *Kalinga ornata* Alder and Hancock, 1864 for the first time from Pakistan coast.

MATERIALS AND METHODS

A specimen of opisthobranch was collected from Karachi Fish Harbour, Pakistan on July 9, 2004. In addition, three specimens were collected from exploratory shrimp trawling made in the inshore waters during 2010. Two specimens of this opisthobranch were also collected during the cruise of R/V Firdous in offshore waters of Pakistan in 2015. One specimen was collected from Damb (Sonmiani) Balochistan in 2009. These animals were photographed using digital camera and are now housed in the Museum of the Marine Fisheries Department.

RESULTS

Specimens of opisthobranchs are now identified as *Kalinga ornata* Alder & Hancock, 1864 which belong to Family Polyceridae and are recorded for the first time from Pakistan.

Family Polyceridae Alder & Hancock, 1845

Subfamily Kalinginae Pruvot-Fol, 1956

Genus *Kalinga* Alder & Hancock, 1864

Kalinga ornata Alder & Hancock, 1864

(Fig. 1-2)

Material examined:

- One specimen collected from offshore waters of Pakistan; landed with bycatch of shrimp trawler at Karachi Fish Harbour, Pakistan on July 9, 2004 (MOLL/OPIST-011/2004/MFD; (8.7 cm mantle length).
- One specimen collected from mud flat at Damb (Sonmiani) on July 3, 2004 (MOLL/OPIST-029/2009/MFD; (7.7 cm mantle length).
- Two specimens from offshore waters of Karachi (67°41.377'N; 67°02.448'E) at a depth of 45 m on 22 May, 2010 (MOLL/OPIST-065-066/2010/MFD; (9.1 and 8.7 cm mantle length).
- Two specimens from offshore waters of Balochistan collected using trawl net onboard cruise of R/V Firdous in offshore waters of Pakistan at station No. 32 dated February 13, 2015 (MOLL/OPIST-112-113/2015/MFD; (5.2, 5.9 cm mantle length).



Fig. 1. *Kalinga ornata* Alder and Hancock, 1864 collected from Karachi Fisheries Harbour (8.7 cm mantle length).

Description:

Morphological characters of this opisthobranch are similar to the specimens described by Alder and Hancock (1864), Rao (1936) and Sethi and Pattnaik (2012) from various parts of India. Its body is generally broad and has a rough dorsal side. The tubercles on the body are often arborescent and complex. The rhinophores are lamellate and have low simple sheath. Oral tentacles form semicircular lobes. The bipinnate or tripinnate gills form an arch in front of the anal papilla. The outer part of the mouth is red (Fig. 2) and inner part of the mouth is a white tube-like structure that project beyond the red part while feeding. Its dorsal side is beautifully coloured with red spots and whitish background while the ventral side is whitish (Fig. 1-2).



Fig. 2. *Kalinga ornata* from offshore waters of Pakistan collected onboard R/V Firdous Cruise on February 13, 2015 (5.2 cm mantle length).

DISCUSSION

Kalinga ornata was originally described by Alder and Hancock (1864) from Coromandel, India. Since then it is reported from various parts of Indo-Pacific area extending from South Africa to Thailand, China, Japan and the Hawaiian Islands (Rao, 1936; Rudman, 1999; Gosliner *et al.*, 2008; Sethi and Pattnaik, 2012). Along the Pakistan coast its distribution is extended from intertidal area to subtidal waters upto a depth of 45 m. It is occasionally found on the trawling ground, as already observed in India (Sethi and Pattnaik, 2012). Shrinivaasu *et al.* (2012) reported

this species from Chennai coast, India where they possibly accumulate in the littoral region for breeding and spawning purposes in August (monsoon period) and their absence after that period shows the end of spawning migration. Their presence in the intertidal area in Damb (Sonmiani) tends to indicate a similar migration which requires further study to verify.

Kalinga ornata is reported to feed on animals including sponges, mollusks (bivalves and gastropods) and echinoderms (Rao, 1936) whereas Jensen (2007) and Nakano *et al.* (2011) reported that *Kalinga ornata* feeds on ophiurids based on field observation and faecal analysis. Stomach contents were not analyzed during the present study.

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