**SHORT COMMUNICTION**

# Record of brown paper nautilus *Argonauta hians* Lightfoot, 1786 off Mumbai, northwest coast of India

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**ABSTRACT**

The brown paper nautilus, *Argonauta hians* Lightfoot, 1786 was recorded for the first time from the northwest coast while investigating the biodiversity of cephalopods from Maharashtra waters. One specimen of the said species was collected as an incidental by-catch in the trawl catch off Mumbai, northwest coast of India.

**Keywords:** Argonautidae*, Argonauta hians,* Mumbai, northwest coast of India

## INTRODUCTION

Cephalopods use a range of mechanisms to counter their body mass and maintain vertical position in the water column, including the use of fins, water jets directed through the funnel and shells with partially evacuated closed chambers such as Nautilus, Spirula and Sepia (Voight *et al*., 1994). The Argonauts (Family: Argonautidae) are free-swimming octopuses of open ocean habitats. The unique characteristic of *Argonauta* is that the female produces a brittle white shell commonly known as a 'paper nautilus', while dwarf males lack a shell. Since the study of Naef (1923), the shell has primarily been considered a receptacle for attachment and brooding of egg strings. The shell has an enlarged web of dorsal arms, functioning as an elaborate egg case. The calcareous structured shell is thin and laterally compressed. The egg case is a single chamber with a flat keel fringed with two rows of tubercles. The lateral sides of the shell have radial ribs. The shell provides protection and is used as a flotation device and as a place to attach their eggs (Beesley *et al*., 1998).

Among the six known species of the monotypic family Argonautidae, *A. argo* is the largest with the female attaining a maximum size of nearly 300 mm shell diameter (Heeger *et al.,* 1992; Finn, 2009). Argonauts exhibited extreme sexual dimorphism in size. The male is dwarf and much smaller than female (Roper *et al.,*1984). The hectocotylus of Argonautidae consists of three parts; a basal spermatophore reservoir, a central section bearing suckers and distally, a long lash like 'penis' (Beesley *et al.,* 1998). During copulation, the hectocotylus detaches and forms an active, autonomous spermatophore carrier remaining in the mantle cavity of the female (Hanlon and Messenger, 1996; Iliffe, 1982). It's assumed that the female argonauts may attain neutral buoyancy by way of pockets of air in their shells (Nixon & Young 2003; Julian and Normani, 2014). Sukhsangchana *et al.* (2009) studied the biology of this species from Andaman Sea. Silas *et al.* (1985) described this species from Indian waters. Vaitheeswaran *et al.* (2014) have recorded the occurrence of this species from the Gulf of Mannar, southeast coast of India. The occurrence of *A. hians* off Mumbai waters, northwest coast of India is reported for the first time.

## MATERIALS AND METHODS

A single female specimen of Argonauta was collected on 08-12-14 from the trawl landings at Sasoon Dock, Mumbai, northwest coast of India. The trawlers operated 70-80 km off south of Mumbai at a depth of 40-50 m. The specimen brought to the laboratory for identification and further biological analysis. The dorsal mantle length (DML) was measured using a digital calliper and total body weight (TBW) (± 0.01 g) was determined using an electronic balance after the specimens were dried on blotting paper.

## RESULTS AND DISCUSSION

The specimen was identified as *Argonauta hians* based based on the distinctive and unique shell and the characteristics described by Silas *et al.* (1985). The length of the specimen was 61 mm and weighed 105 gm. *A. hians*, is also known as the muddy argonauta and has calcareous, extremely thin and structured shell (Fig. 1, 2 and 3). The paper nautilus has a slender body, narrow head, and unequal arm length. Paper nautilus has eight arms, each arm with two rows of sucker; the number of suckers on the arm is different among species. Dorsal arms in female are with laterally enlarged membrane. Shells vary from white with brownish black tint on the nodules and adjacent ribs to light brown with sooty brown pigmentation over most of the surface of the shell (Voss and Williamson, 1971).

The description given by Thach (2005) agrees with the present specimen. The keel is wide and

**Fig.1: *Argonauta hians* Lightfoot, 1786.**

bears the characteristic 15 to 23 prominent, large and blunt nodules placed in pairs over the keel. Great variations exist in size and form of the nodules. The brown paper nautilus, *A. hians*, Lightfoot, 1786 is an epipelagic octopod which has been reported from tropical and subtropical oceans (Beesley *et al.,* 1998). *A. hians* is widely distributed in the Indo-Pacific (Thach, 2005; Sukhasangchan and Nabhitabhat, 2007; Sukhsangchan *et al.,* 2009).

The present record of this species is an incidental by-catch in the trawl catch off Mumbai, Northwest coast of India which seems to be the first record from the northwest coast of India. The specimen is deposited in the cephalopod museum collections of the Central Marine Fisheries Research Institute, Mumbai.

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