

# A new distributional record of the marine gastropod, *Tonna zonata* (Green, 1830) from the Andaman Islands, India

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## Abstract

This study documents the marine gastropod, *Tonna zonata* (Green, 1830), belonging to the family Tonnidae, for the first time from the Andaman Islands. The characteristic features of the shell, habitat, illustration and list of Tonnidae species so far reported from India are provided.

**Keywords:** Tun shell, Tonnidae, Gastropod, new record, Andaman Islands

## Introduction

The family Tonnidae comprises medium to large (up to 200 mm) sized sea snails, commonly called tun shells, belonging to the order Littorinimorpha (Palomares & Pauly, 2021). Tun shells are thin, lightweight, and large with a low spire (Dey, 2016). Tonnidae shells are inflated and globular, contain large body whorls and a wide aperture with a large anterior siphonal canal. The sculpture consists of mainly of raised spiral ribs separated by grooves and true varices. Axial sculpture and operculum are absent (Rao, 2003). They occur in tropical seas, inhabiting offshore coral reefs, bays, and coves, and preferring sandy habitats from sub-tidal to deep waters. Tonnids prey on echinoderms including sea cucumbers, sea urchins, starfish, and other animals such as crustaceans, bivalves, and fishes (Morton, 1991; Rao, 2003). Globally, 35 species belonging to three genera are classified under the family Tonnidae (MolluscaBase, 2019), of which ten species are recorded from Indian waters (Dey, 2016; Edward *et al.*, 2022), and eight species have been reported from the Andaman and Nicobar Islands (Dey, 2016). This study reports *Tonna zonata* for the first time from the Andaman Islands.

## Material and Methods

The specimen of oil lamp tun shell was collected as a by-catch product from Baratang fishing jetty (Lat: 12°10.270'N; Long: 92°50.539'E) in the Middle Andaman

Islands. The fishing activities were carried out around Ariel Island in June 2018 (Figure 1). The occurrence of the species is mapped using Arc GIS software 10.4.1 version. An updated checklist of the family Tonnidae from India and their known distribution from India is presented (Rao, 2003; Palomares and Pauly, 2021; Dey, 2016; Edward *et al.*, 2022) (Table 1). Species identification was conducted using standard literature (Vos, 2007, 2013; Edward *et al.*, 2022). Upon completion of the taxonomical study, the specimen was deposited in the National Zoological Collections of the Zoological Survey of India, Andaman and Nicobar Regional Centre, Port Blair (Voucher number- ZSI/ANRC-20553).

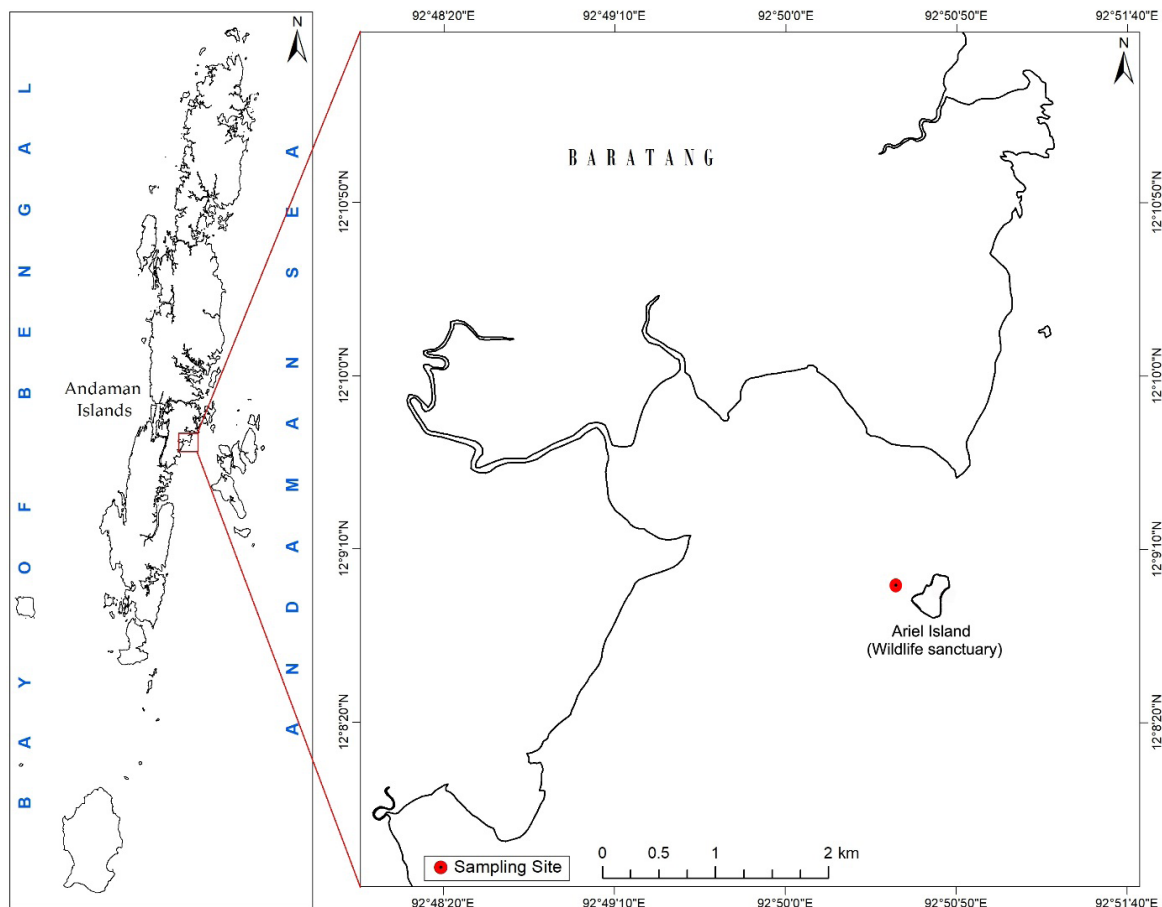
## Results

The present study reports the occurrence of *Tonna zonata* (Green, 1830) in the Andaman Islands.

## Systematics

Phylum	Mollusca
Class	Gastropoda Cuvier, 1795
Subclass	Caenogastropoda Cox, 1960
Order	Littorinimorpha Golikov & Starobogatov, 1975
Superfamily	Tonnoidea Suter, 1913 (1825)
Family	Tonnoidea Suter, 1913 (1825)
Genus	<i>Tonna</i> Brünnich, 1771
Species	<i>Tonna zonata</i> (Green, 1830)

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**Figure 1.** Map showing the specimen collected location at Ariel Island of Andaman Islands.

**Table 1.** List of species of the family Tonnidae reported from distribution in India

Sl. No	Name of the species	Distribution in India
	Family Tonnidae Suter, 1913 (1825)	
1.	Genus <i>Tonna</i> Brunnich, 1772	
2.	<i>T. allium</i> (Dillwyn, 1817)	Andaman Islands; Lakshadweep (Minicoy); Maharashtra
3.	<i>T. canaliculata</i> (Linnaeus, 1758)	Andaman and Nicobar Islands; Lakshadweep; Tamil Nadu
4.	<i>T. cumingii</i> (Reeve, 1849)	Puducherry; Tamil Nadu
5.	<i>T. dolium</i> (Linnaeus, 1758)	Andaman and Nicobar Islands; Andhra Pradesh; Gujarat; Maharashtra; Odisha; Tamil Nadu; West Bengal
6.	<i>T. galea</i> (Linnaeus, 1758)	Puducherry; Lakshadweep
7.	<i>T. perdix</i> (Linnaeus, 1758)	Andaman and Nicobar Islands; Lakshadweep; Tamil Nadu
8.	<i>T. sulcosa</i> (Born, 1778)	Andaman and Nicobar Islands; Andhra Pradesh; Odisha; Tamil Nadu; West Bengal
9.	<i>T. tessellata</i> (Lamarck, 1816)	Andaman and Nicobar Islands; Tamil Nadu
	<i>Tonna zonata</i> (Green, 1830)	Tamil Nadu; Andaman Islands
10.	Genus <i>Malea</i> Valenciennes, 1832	
	<i>M. pomum</i> (Linnaeus, 1758)	Andaman and Nicobar Island; Lakshadweep; Tamil Nadu

**Common name:** Oil Lamp Tun

**Synonyms:**

*Dolium (Dolium) zonatum* Green, 1830;

*Dolium (Eudolium) zonatum* Green, 1830;

*Dolium crenulatum* Philippi, 1845;

*Dolium zonatum* Green, 1830;

*Tonna (Tonna) zonata* (Green, 1830),

*Tonna olearium* (Linnaeus, 1758) (unnecessary recombination of an unrelated taxon).

**Type locality:** Taiwanese Exclusive Economic Zone (Green, 1830)

**Material examined:** One empty shell, India, North and Middle Andaman, Baratang, Ariel Island (Lat: 12°9.009'N; Long: 92°50.539'E), 3-ix-2018; depth range 20-30 m, (ZSI/ANRC-20553).

**Shell description:** Shell is large, up to 115 mm in length and width 95 mm, lightweight, less ovate and more elongate in shape, sutures moderately deep (Figure 2). The

body whorl and spire are separated by a deep channelled suture. The apex is cream-coloured, and the tip is pointed and dark brown. The aperture is white, round and wide and transverse ribs are seen through, the outer lip is thin and simple; the inner lip inwardly thickened. Sculptured with numerous close-set, flat transverse spiral ribs are round and broad, widely spaced primary cords, with secondary and tertiary cords in the interspaces, four in the upper bends or penultimate whorl, seventeen in the last; the upper triple stripe interspaces, the median double passage, and the bottom single groove divided by grooved sutures. The canal is straight and long, with some calluses occasionally partially covering the umbilicus. The lip is sharp and simple, with only a slight curve. The shell is cream or light brown, with a white band formed along the suture and brown transverse ribs.

**Distribution:** This species is distributed in the Indo-Pacific region, from South Africa to the Philippines north to Honshu, Japan, and southwards to New Zealand (Vos,



**Figure 2.** Different views (ventral, dorsal, back and front view) of Oil lamp tun, *Tonna zonata* (Green, 1830) from the Andaman Islands.

2013). In mainland India, this species was recorded from the Gulf of Mannar (Edward *et al.*, 2022). This is the first report on the range extension of this species from the Andaman Islands.

**Remarks:** The holotype of *Dolium zonata*, described by Dr. Green in 1830, is thought to be lost. Vos (2007) designated a specimen from the Muséum National d'Histoire naturelle, Paris (MNHN 9508) collected during the Taiwan expedition. As a result, the type locality for this species is Taiwan, by neotype designation (Vos, 2013).

**Distribution of Tonnidae species in India:** A total of 10 species which include 9 *Tonna* species and 1 *Malea* species of family Tonnidae were reported in India. The species list and distribution are given in Table 1.

## Discussion

Andaman and Nicobar Islands are a group of 572 islands, islets, and rocky outcrops that geographically extend over 800 km with a coastline that covers over 1,962 km. The Andaman Islands emerge as a part of a mountain chain and lie on a ridge that extends southward from the Irrawaddy Delta area of Burma (Tikader *et al.*, 1986). Marine molluscs are one of the major benthic components of the marine biota of the Andaman and Nicobar Islands. They are numerically abundant as individuals and as species (Rao, 2003). The study area of Aerial Island is located in North and Middle Andaman Island, characterized by a fringing reef and coast dominated by pristine mangrove forests. Molluscs show high adaptation to varied habitats intertidal regions, and littoral regions of the ocean to greater depths (Dey, 2006). They live in diverse habitats of sea environments including the mangroves, sandy shores, coral reefs, rocky beaches, and seagrasses of these islands (Ramakrishna & Dey, 2010). They play a crucial role in ecological sustainability as

well as pharmaceutical and economic perceptions. The certainty of species numbers may vary because several new additions are being reported every year from India as well as the Andaman and Nicobar Islands. According to the recent catalogue, a total of 1673 species of marine gastropods were known from India, whereas 1130 species were recorded from the Andaman and Nicobar Islands (Dey, 2016). The biodiversity of these islands shares affinities with neighbouring countries and is home to many endemic species (Chandra & Raghunathan, 2018).

Tonnidae species are uncommon and prefer muddy or sandy habitats with seagrass beds. As they are distributed in subtidal environments, most of the shells were caught by bottom trawl nets and trammel nets (Rogelja & Lipej, 2019). However, artisanal fishing is the main threat to the population of tun shells due to many accidental collections (Tunési *et al.*, 2006). Most of the shells are being collected for food and decorative purposes. Most of the *Tonna* species are reef-associated, distributed from intertidal up to a depth of 2359 m (Palomares & Pauly, 2021; Rosenberg *et al.*, 2009). In the present report, the specimen was collected by fishing net at Aerial Island from a depth of up to 30m. Andaman and Nicobar Archipelagos constitute one of the major coral reef ecosystems in India. Most of the islands in the archipelago are untouched and unexplored from scientific faunal collections. Thus, the probability of the documentation of new records from islands remains high. More intensive exploratory surveys on molluscs in the Andaman and Nicobar Islands, especially unexplored islands, may bring out several new records as well as new species in the Indian context.

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