

FIRST RECORD OF *TURRIS CLAUSIFOSSATA*⁷, (GASTROPODA: CONOIDEA, TURRIDAE) FROM GULF OF KHAMBHAT, INDIA

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ABSTRACT

Turris clausifossata, a Conoid, Turrid is being reported for the first time from Gopnath coast, Gulf of Khambhat the state of Gujarat situated on the west coast of India. *Turris clausifossata* was first recorded⁷ from Dwarka, Gulf of Kachchh, Gujarat (21°49'N, 68°55'E), but not brought to light as first record to the west coast of India. Yet, its occurrence was reported only at two coasts of Gujarat. Current research reveals that *Turris clausifossata* is extending its distribution range to the south of Dwarka on the west coast of India. Present study was carried out from April 2015 to March 2016 and in this study, a status of species presented in form of population dynamics and seasonal availability.

Figures : 07

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KEY WORDS : Distribution, Gujarat, Gulf of Khambhat, New record, *Turris clausifossata*.**Introduction**

A rich coastal ecosystem of India supports 2300 species of marine molluscs¹⁶. Shoreline of Gujarat is the longest, about 1650 km among coastal states of India. Whole coastline comprises two gulfs namely Gulf of Kutch, Gulf of Khambhat and a Saurashtra coastline¹.

Family Turridae is the group of marine, predatory sea snails; commonly "turrids" belongs to super family Conoidea and comprises about 24

different genera. There is 2990 species of turrids worldwide⁹. Usually the assemblies of turrids found in shallow waters to sub tidal zone. ⁵ These are found in varies sizes, shapes, and colors. Minute to very large size, 1mm to 170 mm and fusiform with turret spires. Worker⁹ has divided family Turridae into nine subfamilies following their shell morphology. Others improvised it by presenting relationships of some groups of the Conoidea super family with cladistic analysis^{2,15}. The

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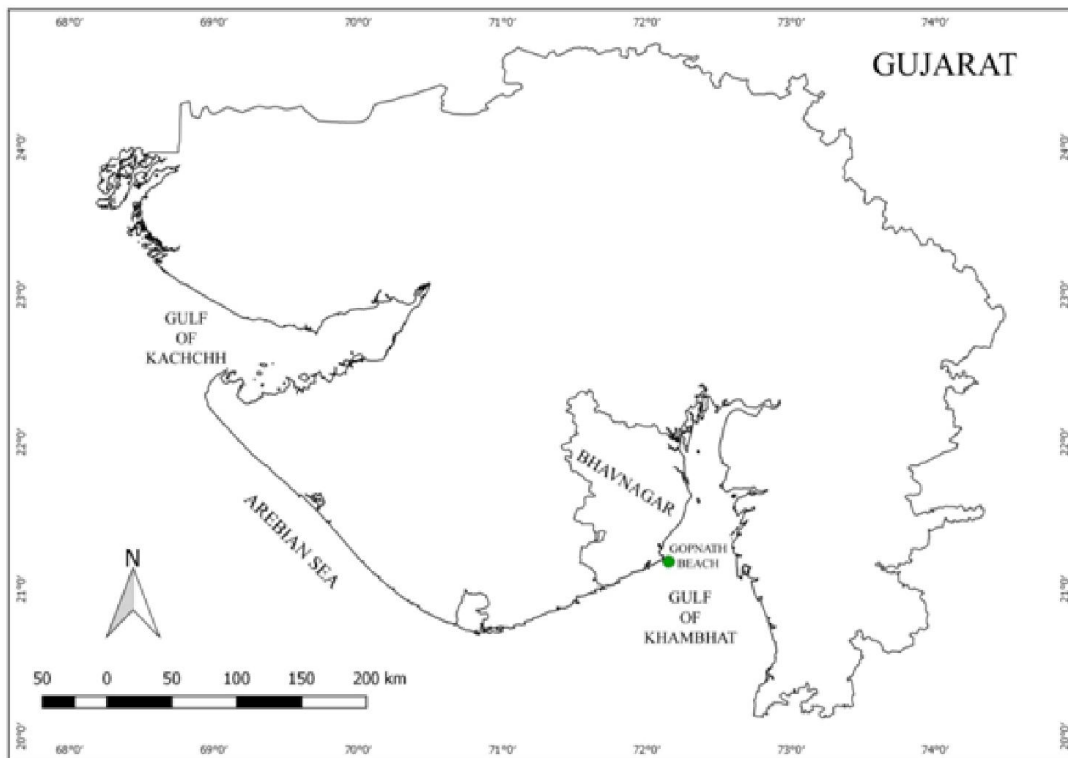


Fig.1: Map of Sampling Site

operculum is corneous and small, which may be leaf-shaped. Turrids are large group of carnivorous snails devoid of jaws and bears venom gland^{5,13}.

Excluding *Turris faleiroi* all the species of this genus recorded from tropical Indo-West Pacific seas. 54 species of turrids from Indian oceans^{5,7,13}, which comprises 7 subfamilies, where maximum number from subfamily Turrinae followed by Clathurellinae, Turriculinae, Raphitominae, etc. Many researchers^{4,6,12,14} on *Turridae*, worked on the west coast of India.

Tropical west coast of India, sustains about 707 species of gastropods, which is less compare to east coast of India, there 1046 species of gastropod fauna recorded, but in contest of endemism there is 32 species of gastropods in west coast of India, while 25 species from east coast of India. Study of diversity of marine molluscs of Indian oceans is still not adequate due to survey difficulties in muddy habitats, mangrove forests and

deeper water so there is a possibility of more species of molluscs in the coastline of India.¹⁶

Study Site

The sampling site was the Gopnath Beach (21° 12' 35.3" N, 72° 62' 28.3" E) (Fig.1). The Gopnath coast along the Arabian Sea showed unique characteristics. The intertidal zone was totally rocky except some interruption of sandy patches. The surface of rocks was very much sharp edged with plentiful pools and puddles. Selected sites are muddy, stony and calcareous eruptions. The upper zone of the intertidal belt is generally covered with pieces of broken shells and an admixture of silt and sand. About 600-700 m covered by an intertidal zone during low tides. The lower and middle littoral zones merely share same features of substratum and available macro invertebrate at the sampling site. The intertidal zone is dominated by variety of algae.



Fig.2 : *T. clausifossata* in different forms

TABLE- 1 : Average Density, Abundance and Frequency of *T. clausifossata* throughout the year at Gopnath coast

Seasons	Density	Abundance	Frequency%
Summer	0.23	1.305	17.5
Winter	0.41	1.93	21.66
Monsoon	0.21	1.2	17.5

Footnote: Mentioned numbers are the averages of densities, abundance and frequencies of *T. clausifossata* during April 2015 to March 2016

Method

Study is based on monthly observations of species *T. clausifossata* through lowest low tides at Gopnath coast during April 2015 to March 2016. During every visit turrids were examined for

population by quadrat sampling (1m²) in oblique manner. Few shells were preserved in 4% formaldehyde and carried to the lab for identification^{3,7}. The collected data was analyzed for calculating the density, abundance and frequency of *T. clausifossata* per quadrat using standard formulae. Approximate coastline distance from Dwarka to Gopnath was measured by Google earth.

Results and Discussion

T. clausifossata is the first record for the Gulf of Khambhat and second record for the Gujarat coastline.

Systematics

Super family : Conoidea,
 Family : Turridae,
 Genus : *Turris*
 Species : *Turris clausifossata*

Species Description

Under natural circumstances, the



Fig.3 : Habitat conditions of Gopnath coast

assemblages of *T. clausifossata* are reported in the lower intertidal zone of rocky shores or at the junction of lower intertidal zone and sub tidal zone. The live species always encountered submerged in rocky pools and puddles along with thin layer of mud and algal cover. The presence of *Clibanarius infraspinus*¹⁵ in dead shell was noted with large colonies under rocks. Externally *Turris clausifossata* is pale brown or reddish-brown spotted spires⁷. The shells from Gopnath are merely morphologically similar to the previously recorded specimens from Dwarka. Slight variation in

measurements like Shell length: 40.05 ± 36.02 mm; shell width: 14 ± 9.3 mm.

Distribution

The species *T. clausifossata* recorded only from two localities. First from Dwarka (west coast), Gujarat and second was approximately 417 km (259 miles) from Gopnath (east coast), Bhavnagar, Gulf of Khambhat, Gujarat. No electronic records of *T. clausifossata* from other sites of India as well as the world. This species might be endemic to western coast of India.

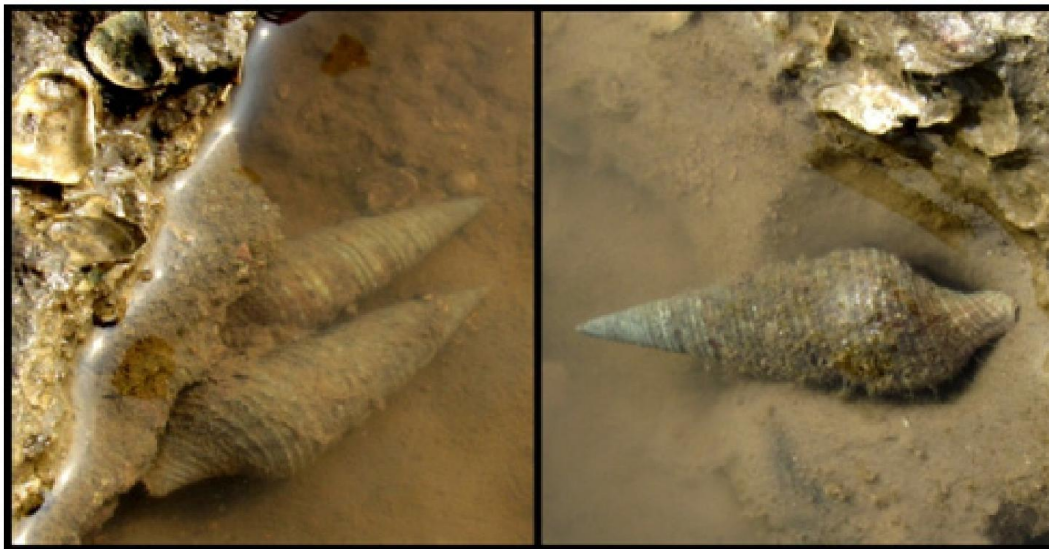


Fig.4 : Photographs of *T. clausifossata* in natural condition

Seasonal availability

T. clausifossata observed throughout the year at Gopnath coast. The spatial-temporal distribution vary season wise. Highest density and abundance of *T. clausifossata* have been reported during post monsoon and in winter especially in

the month of February. While the lowest number encountered during pre-monsoon and monsoon seasons (Figs. 5 & 6). Frequency of this species in quadrates is more in winter and less in pre-monsoon and monsoon, during this seasons distribution observe scattered, while in post monsoon and winter it seen in groups (Fig- 7).

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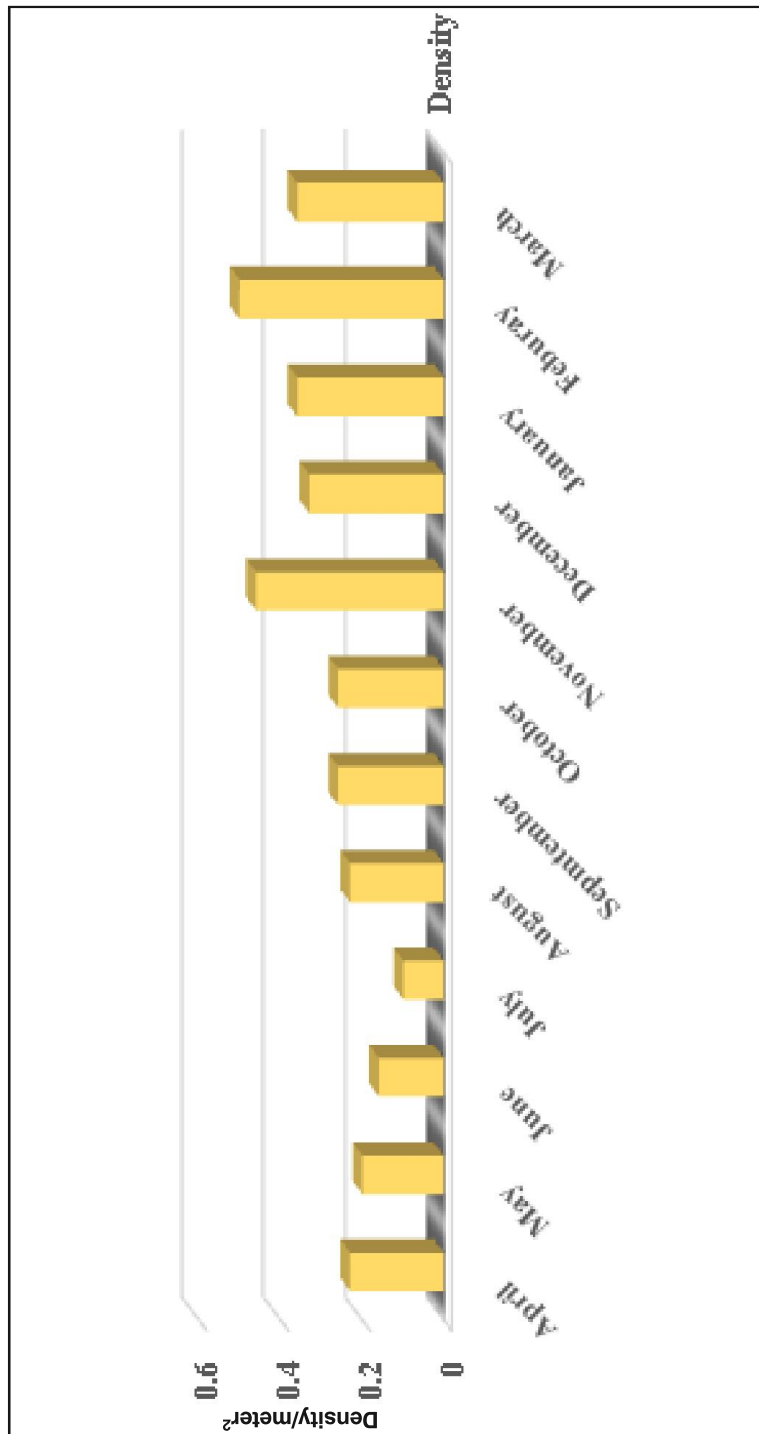
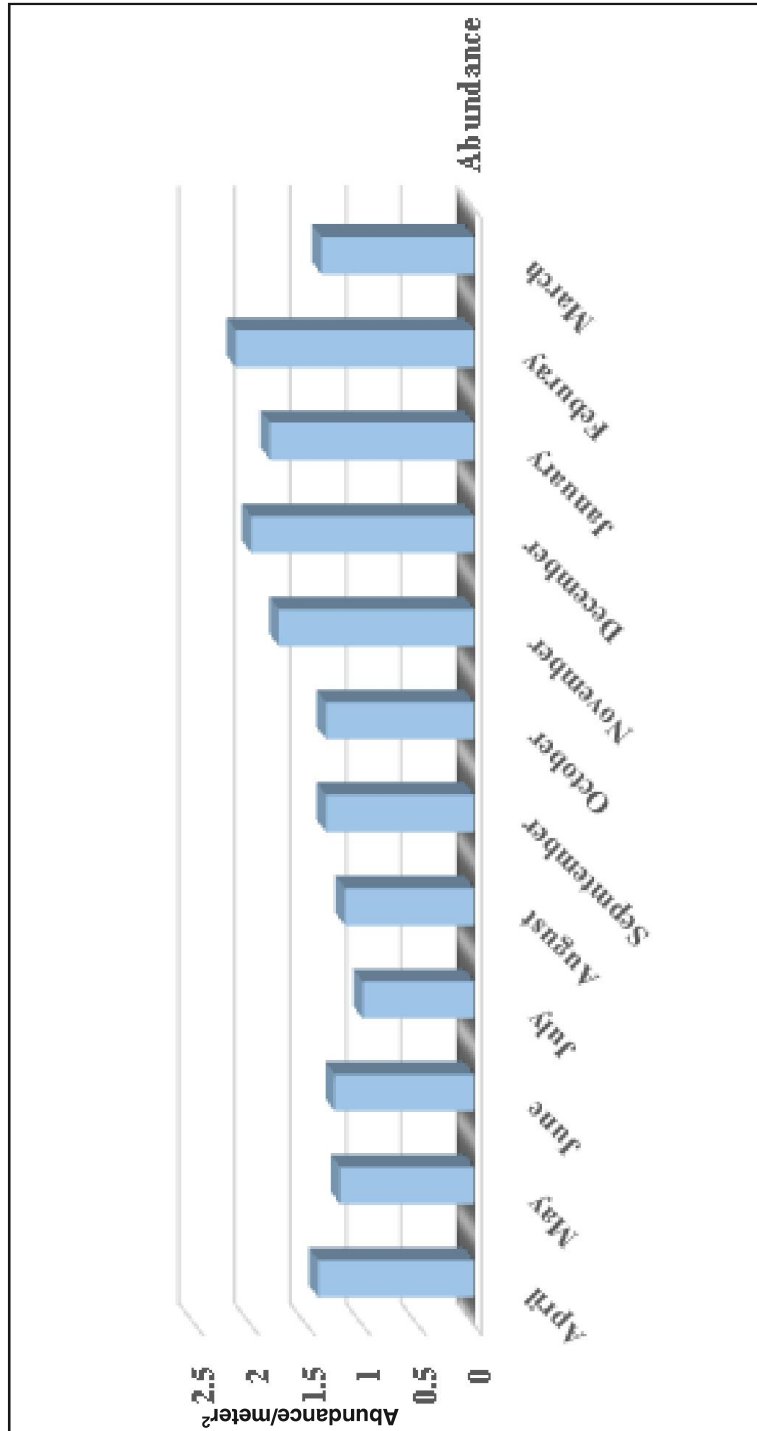


Fig.5 : Yearly density of *T. clausifossata* at Gopnath coast

Fig.6 : Yearly abundance of *T. clausifossata* at Gopnath coast

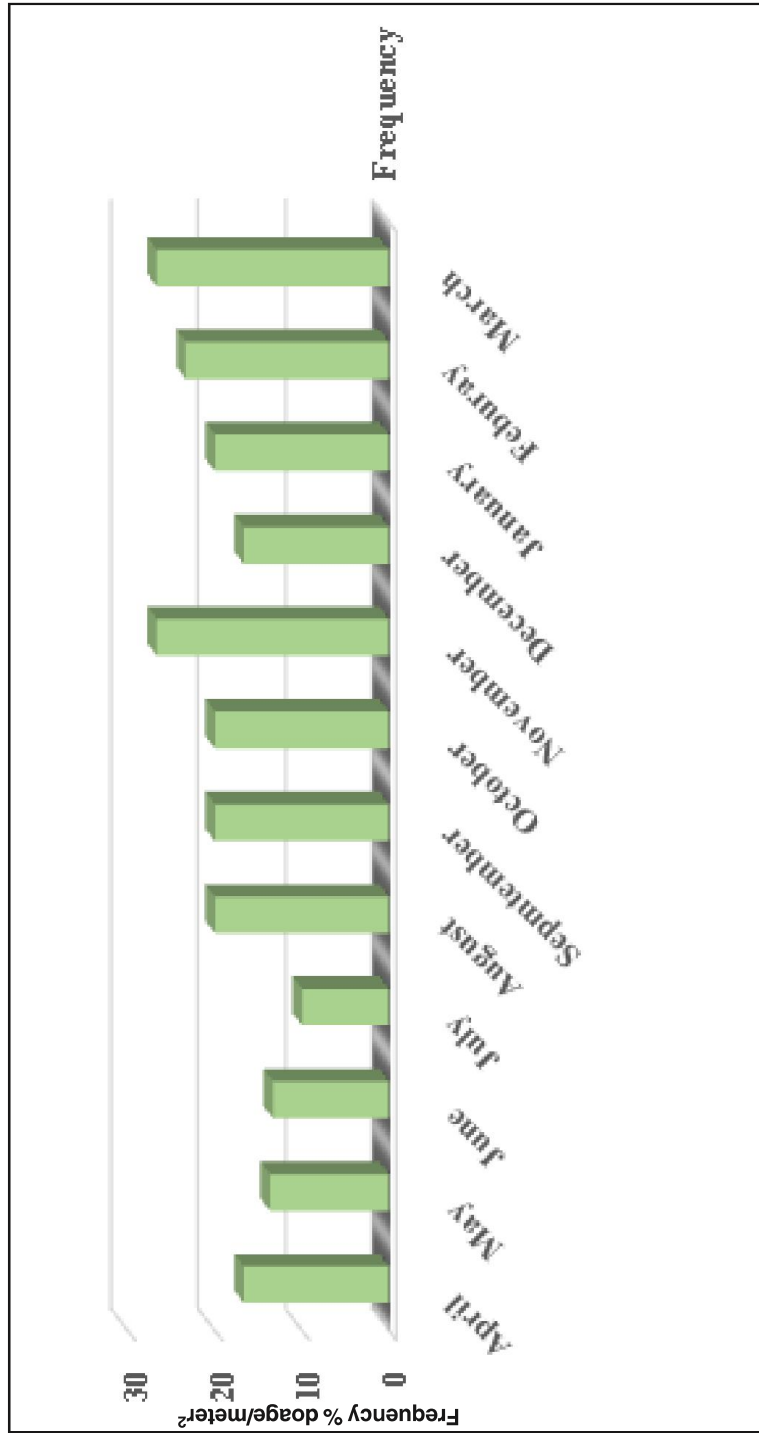


Fig. 7: Yearly frequency of *T. clausifossata* at Gopnath coast

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