

Distribution of nematodes in Karaikkal coastal waters, southeast coast of India

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Abstract

Background/Objectives: Nematodes are considered as most dominant meiofaunal group in marine benthic habitats. They are an account on 70–90% in marine sediments, where they play fundamental ecological roles. Nematodes are particularly sensitive to changes in environmental parameters and thus useful in assessing the environmental disturbances.

Methods/Statistical analysis: Sediment were collected from Karaikkal coastal waters for a period of one year from July' 2016 – June 2017 to collect the nematodes.

Findings: the present study was carried out the distribution and diversity of nematodes in Karaikkal coastal waters during July 2016 – June 2017. The total numbers of 31 nematodes species were recorded during the study period. All the species were recorded in summer and minimum of 16 species were found at monsoon. Among them, 7 species of nematodes were (*Daptonema conicum*, *D. hirsutum*, *D. angulatum*, *Theristus sp.* *T. agillis*, *Vicosia sp.* and *Vicosia viscosia*) dominated in all seasons.

Application/Improvements: They are involved in energy transfer through the ecosystem and are important link between primary producers and higher tropic levels in benthic systems. Even its contributions are very high in the aquatic environment and it is very limited works are available on distribution of marine nematode in Indian sub-continent.

Keywords: Nematodes, Domestic wastages, Water quality.

1. Introduction

The marine environment is a complex system is mainly influenced by Physico-chemical and biological processes [1-3]. In recent years, due to anthropogenic activities, industrial effluents, domestic wastages seriously affect on aquatic system may result in decreased species abundance, diversity and change the biology of the species. The anthropogenic impacts account for considerable ecologic and economic losses worldwide and constantly changing the natural processes which occurred along the coastal systems [4].

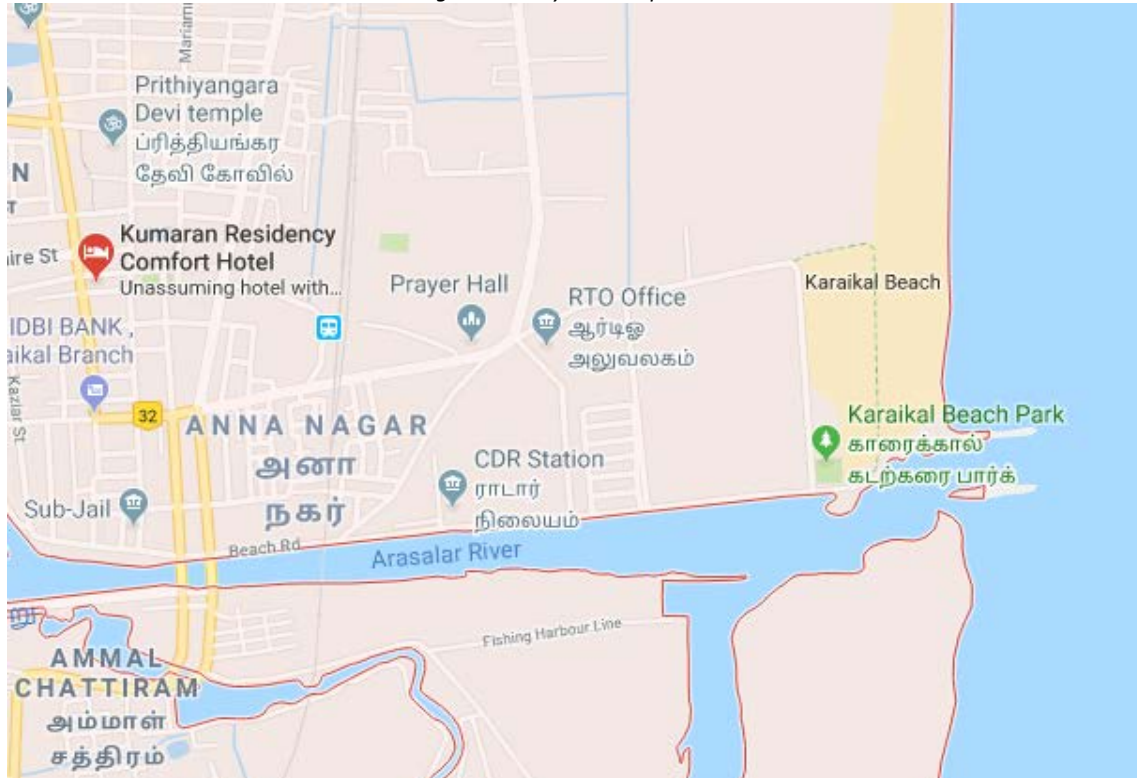
The poor water quality chemical disturbances in the seabed etc [5]. In colliery wastes and fly ash dumping will cause the water to turbid and covers the entire seabed and decrease the reduction potential of the substrate, thus lowering the density of the benthic organisms [6-8]. Oil spills leads to entire eradication of the benthic forms due to insufficient of DO [9]. They remain poorly understood, despite the fact that they are extremely abundant and diverse, often numbering millions per square meter in sediments, and occur in more habitats than any other metazoan group [10-11].

While few studies have been carried out on nematodes in and around the Indian waters, nematode communities of the Indian shelf sediments received cursory attention [12]. Nematofaunal studies done in the Indian subcontinent covered mostly the Western continental shelf [13-14], shallow coastal waters [4]. Very few works are available on nematodes in Southeast coast of India [12]. Hence, the present investigation was undertaken on the meiobenthos especially on nematodes in Nagapattinam coast, southeast coast of India [14-15].

2. Study area

Karaikkal coast (Lat.10046 N., Long. 79051E) is situated in the Bay of Bengal. This coastal area is actively functioning harbor and also consider as an important fish landing centre (Figure 1).

Figure 1. Study area map



3. Materials and methods

3.1 Sediments for animal collection

The sediments were collected from Karikkal coastal waters to collect the animal from July' 2016 – June 2017 (Figure 1). Three replicate samples were collected for animal analysis and using Peterson grab (0.0256m²) and gently sieved 0.063mm mesh. The organisms retained by the sieve and the specimens were preserved with 5% formalin. The preserved animals were identified to species level with the available literatures.

4. Results

4.1 Nematodes distribution

The distribution of nematodes minimum recorded in monsoon (Dec.' 2016) and maximum were observed in the month of May' 2017 (summer) (Figure 2).

4.2 Species diversity

The total numbers of 31 nematodes species were recorded during the study period [13] [16]. All the species were recorded in summer and minimum of 16 species were found at monsoon. Among them 7 species of nematodes (*Daptonema conicum*, *D. hirsutum*, *D. angulatum*, *Theristus sp.* *T. agillis*, *Vicosia sp.* and *Vicosia viscosia*) were dominated in all the four seasons (Figure 3).

Figure 2. Monthly distribution (Nos/m²) of nematodes in Karaikkal coastal water from June'2016 -July' 2017

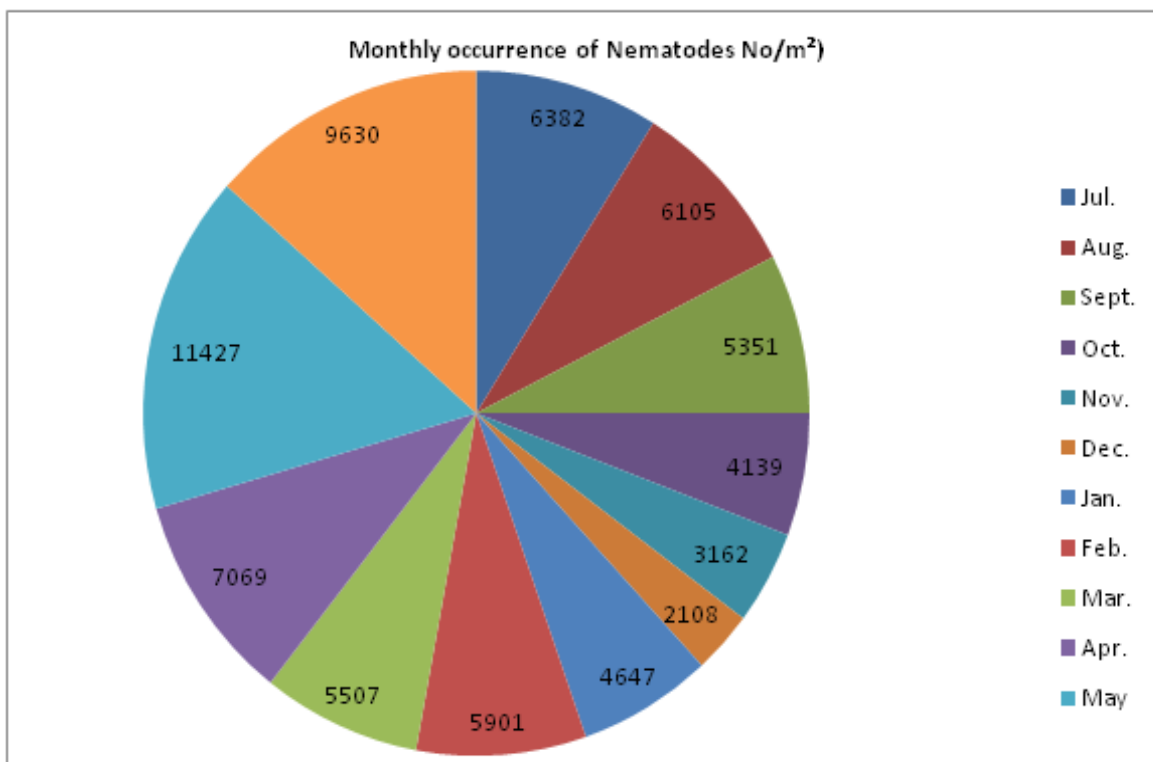
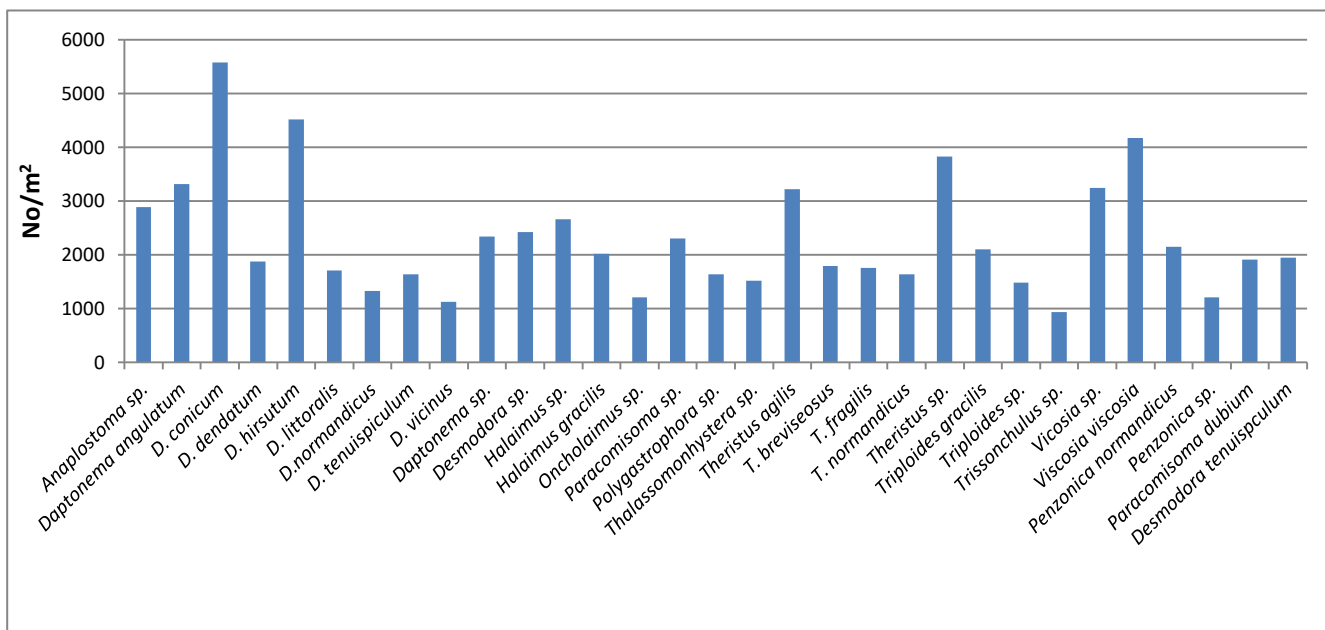


Figure 3. Annual diversity of nematode species (No/m²) in Karaikal coastal waters from July'2016 -June' 2017



5. Discussion

Nematodes help in breakdown of detrital organic matter and recycling of nutrients, thereby enriching the coastal waters to support marine benthic production [17-18]. They also participate in energy transfer through the ecosystem and are important link between primary producers and higher trophic levels in benthic systems. Even its contributions are very high in the aquatic environment and thus very few works are available on distribution of marine nematode in Indian coast.

The total number of 31 nematodes species were recorded in this station. All the species were recorded in summer and 16 species only were seen at monsoon. Among them 7 species of nematodes (*Daptonema conicum*, *D. hirsutum*, *D. littoralis*, *Theristus paranormandicus*, *T. gracilis*, *Desmodora (Desmodorella) tenuispiculum* and *Vicosia viscosia*) were dominated in all seasons. So far, around 225 nematode species were reported for various regions including backwater, lagoon, mangroves [19], estuaries and coastal waters in east and west coast of India [12] [20]. The factors such as sediment types, salinity regimes, organic content, microbial association and food availability are greatly influenced number of species composition [2], [21].

6. Conclusion

Nematodes are involved in energy transfer through the ecosystem and are important link between primary producers and higher trophic levels in benthic systems. Even its contributions are very high in the aquatic environment and thus very limited works are available on distribution and diversity of marine nematode in Indian sub-continent. Hence, this work will support to the nematodes studies.

7. References

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