

Polychaetes of Gulf of Mannar, South East Coast of India

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ABSTRACT

Gulf of Mannar is a suitable environment for the study of Polychaetes with special reference to their systematics, spatial and temporal distribution. It has a number of islands and estuaries and a variety of environments such as, mangroves, coral reefs, pearl oyster beds, sea weed and sea grass beds. Hence, a study was conducted for 2 years by collecting samples from 21 stations covering all the ecologically important locations such as, 13 sea bottoms surrounding the islands, 4 estuaries, 3 intertidal regions, and 1 backwater using standard methods. A total of 49 species were identified, out of which 34 are found to be new records to the area. If we take this and the earlier reports in to consideration the total number comes to 144 species and 33 species up to genus level. This is going to be a new information on the distribution of Polychaetes in the Gulf of Mannar region.

KEYWORDS: Polychaetes, Islands, Distribution, Gulf of Mannar

INTRODUCTION

Gulf of Mannar is a place located in the east coast of India starting from Kanyakumari in the south and Pamban in the north between latitude 9°16'34.02" N and longitude 79°11'12.07" E (Fig.1). Gulf of Mannar is ecologically an important area, the macro invertebrates available there provide a baseline information on the standing stock of the area. Polychaetes occur in almost all benthic marine and estuarine sediments (Fauchald, 1977) and are often the dominant components of the macro-benthos both in terms of number of species and individuals (Grassle and Maciolek, 1992 and Ward Hutchings, 1996). Over 10,000 species have been described to date (Minelli, 1993), belonging to 83 families, and various estimates have been made as to the total polychaete fauna ranging from 25,000 to 30,000 (Snelgrove *et al.*, 1997). The ratio of described to undescribed species varies according to habitat and biogeographical region. Intertidal and shallow sub-tidal communities are best known for the abundance of polychaetes. Based on this information the polychaete diversity and abundance in the Gulf of Mannar was surveyed and identified up to species level. Polychaetes of Gulf of Mannar have been described by Fauvel (1930, 1953), Tampi (1959), Mohan Joseph (1978), Rangarajan (1963), Rangarajan and Mahadevan (1961), Achari (1968, 1969 and 1972), Gravely (1927), Prabakaran *et al.*, (2019), Banse (1959), Sivaleela and Venkatraman (2013), Kaja Magdoo *et al.*, (2010), Ponnusamy *et al.*, (2015), and Selvaraj *et al.*, (2019). Polychaete eggs collected from Hare and Manouli islands were described by Koushik Sadhukhan *et al.*, (2019). The present investigation is going to be the first of its kind since the study covers a variety of environments.

MATERIAL AND METHODS

Samples were collected from 1. Sethukkarai estuary, 2. Mandapam intertidal, 3. Kurusadai island sea bottom, 4. Hare island sea bottom, 5. Manouliputti island sea bottom, 6. Manouli island sea bottom, 7. Pullivalas island sea bottom, 8. Muthupetta intertidal, 9. Anaippar island sea bottom, 10. Valimunai island sea bottom, 11. Valinokkam back water, 12. Karaichalli island sea bottom, 13. Koswar island sea bottom, 14. Vaan island sea bottom, 15. Mullikkadu sea bottom, 16. Punnakayal estuary, 17. Kayalpattanam sea bottom, 18. Manappad estuary, 19. Thottavilai estuary, 20. Arockiapuram intertidal and 21. Chinnamuttom sea bottom (Table - I).

Accurate species identification is very much essential as part of biological diversity and ecological health assessments (Hebert *et al.*, 2003). Hence, for the present study polychaetes samples were collected using Peterson's Grab following SCUBA diving technique if the depth of the collection site is more. The benthic samples were collected using Peterson's Grab covering an area of 0.1m². Collected samples were washed over sieves with mesh size 0.5 mm, and the polychaetes were preserved in 7% formalin. The morphological identification depends up on morphological characters such as coloration patterns, the structure of wings, legs, head and mouth-parts arrangement, and genitalia (Yu and Kokko (1992), and Jocque (2002). Hence, the sorted out specimens were counted under Stereomicroscope and identified to the lowest possible taxonomic level following Fauvel (1953), Day (1961), Fabricius (1780), Ehlers (1908), Southern (1921), and Fauchald (1977).

How to cite this paper: S. Lazarus | A. Renu | S. Balasubramanian "Polychaetes of Gulf of Mannar, South East Coast of India" Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-4 | Issue-5, August 2020, pp.855-858,
URL: www.ijtsrd.com/papers/ijtsrd33010.pdf



IJTSRD33010

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Table - I. Depth and Location of the Sampling Sites

S. No.	Name of the stations	Depth (m)	Latitude (N)	Longitude (E)
1.	Chinnamuttom –Sea bottom	7.00	08° 05' 47"	77° 33' 31"
2.	Arockiapuram -Intertidal	0.40	08° 07'01"	77° 33' 34"
3.	Thottavilai-Estuary	0.13	08°15'07"	77° 48' 10"
4.	Manappad -Estuary	0.18	08°22' 43"	78° 03'08"
5.	Kayalpattanam-Sea bottom	7.00	08° 35' 33"	78° 09' 32"
6.	Punnakayal-Estuary	0.22	08° 38'18"	78° 07' 43"
7.	Mullikkadu-Sea bottom	10.00	08° 44'22"	78° 10' 06"
8.	Vaan Island-Sea bottom	9.00	08° 50' 12"	78° 12' 58"
9.	Koswar Island-Sea bottom	2.00	08° 52' 13"	78° 13'32"
10.	Karaichalli Island-Sea bottom	2.50	08° 57' 19"	78° 15' 07"
11.	Valinokkam-Back Water	0.60	09° 09' 53"	78° 38' 52"
12.	Valimunai Island-sea bottom	1.00	09° 09' 11"	78° 43' 53"
13.	Anaippar Island-Sea bottom	7.00	09° 08' 50"	78° 41' 45"
14.	Muthupettai-Intertidal	0.25	09° 15' 48"	78° 55' 18"
15.	Pullivasal Island-Sea bottom	2.00	09° 13' 52"	79° 11' 44"
16.	Manouli Island-Sea bottom	3.00	09° 13' 09"	79° 07' 09"
17.	Manouliputti Island-Sea bottom	5.00	09° 12' 19"	79° 08' 39"
18.	Hare Island –Sea bottom	4.00	09° 11' 52"	79° 03' 31"
19.	Kurusadai Island –Sea bottom	7.00	09° 14' 32"	79° 12' 56"
20.	Mandapam- Intertidal	0.60	09° 16' 48"	79° 10' 25"
21.	Sethukkarai-Estuary	0.50	09°14' 42"	78° 50' 04"

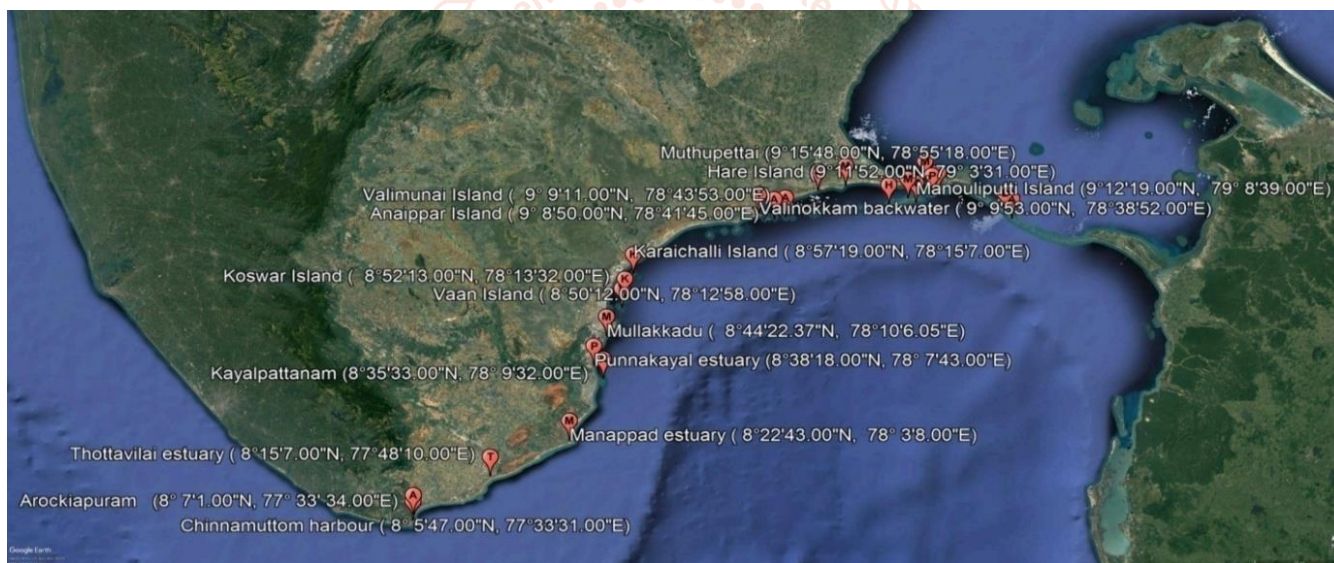


Fig.1. Map of the study area showing the sampling stations in Gulf of Mannar.

SUMMARY AND DISCUSSION

A total of 49 species (Table – II) such as 1. *Dendronereis arborifera*, 2. *Glycera unicornis*, 3. *Pseudonereis anamola*, 4. *Nothria mannarensis*, 5. *Lysidice ninetta*, 6. *Pileolaria militaris*, 7. *Fabricia bansei*, 8. *F. capensis*, 9. *Cabira rangarajini*, 10. *Polydora ongawaensis*, 11. *P. capensis*, 12. *Capitella capitata*, 13. *Marphysa corallina*, 14. *Neanthes oxypoda*, 15. *N. bongcoi*, 16. *Nephtys dibranchis*, 16. *Laeonereis ankyloseta*, 17. *Armandia intermedia*, 18. *Syllis gracilis*, 19. *Goniada emerita*, 20. *Axiothella obockensis*, 21. *Pisione africana*, 22. *Scololepis squamata*, 23. *Scolaricia dubia*, 24. *Ancistrosyllis constricta*, 25. *A. robusta*, 26. *Euclymene lumbricoides*, 27. *Amphitrite cirrata*, 28. *Eurythoe complanata*, 29. *Aricidea curviseta*, 30. *Protodorvillea biarticulata*, 31. *Perinereis cultrifera*, 32. *Eunice pennata*, 33. *E. schaemacephala*, 34. *E. afra punctata*, 35. *E. siciliensis*, 36. *Polycirrus rosea*, 37. *Oenone fulgida*, 38. *Gastrolepidia clavigera*, 39. *Paralacydonia paradoxa*, 41. *Schroederella pauliani*, 42. *Paraprionospio cordifolia*, 43. *Namanereis gesae*, 44. *Harmothoe charlottae*, 45. *Ceratonereis hircinicola*, 46. *Magelona capensis*, 47. *Branchiomma violaceae*, 48. *Orbinia monroi* and 49. *Scalibregma inflatum*, belonging to 42 genera under 26 families were found in the present study at Gulf of Mannar. Out of these 49 species, 34 species are new to the study area. In the earlier reports 95 species were reported by earlier authors namely Gravely (1927), Fauvel (1953), Tampi (1959), Banse (1959), Rangarajan and Mahadevan (1961), Rangarajan (1963), Achari (1968 & 1972), Mohan Joseph (1978), Kaja Magdood *et al.*, (2010), Ponnusamy *et al.*, (2015), Selvaraj *et al.*, (2019) and Prabakaran *et al.*, (2019) from Gulf of Mannar up to species level and 33 up to genus level. If we take in to account the earlier reports also the polychaete total number comes to 144 up to species level and 33 up to genus level. Among the total number of species recorded, *Capitella capitata*, *Glycera alba*, *Pseudonereis anamola* and *Perinereis cultrifera* are found in most of the earlier reports also.

Table II List of Ploychaete species recorded from Gulf of Mannar, during the present study

S. No	Name of the species	Family	Place of collection																			
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1.	<i>Dendronereis arborifera*</i>	Nereidae	-	-	-	-	+	-	-	-	-	-	+	-	+	-	-	-	+	-	-	+
2.	<i>Glycera unicornis*</i>	Glyceridae	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-	+
3.	<i>Pseudonereis anamola</i>	Nereidae	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	+	+
4.	<i>Nothria mannarensis</i>	Onuphidae	-	-	-	-	+	-	-	-	-	+	-	-	-	-	+	-	-	-	-	-
5.	<i>Lysidice ninetta*</i>	Eunicidae	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	+	-	-	-	-
6.	<i>Pileolaria militaris*</i>	Serpulidae	-	-	-	-	-	+	-	+	+	-	-	-	-	-	+	-	-	-	-	-
7.	<i>Fabricia bansei*</i>	Sabellidae	-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	+	+	-
8.	<i>Cabira rangarajini*</i>	Pilargidae	-	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-
9.	<i>Polydora onagawaensis*</i>	Spionidae	-	-	-	-	-	-	+	-	-	-	-	+	-	+	-	-	-	-	-	-
10.	<i>Capitella capitata</i>	Capitellidae	-	-	-	+	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	+
11.	<i>Polydora capensis*</i>	Spionidae	-	-	+	+	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
12.	<i>Eunice siciliensis</i>	Eunicidae	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	+	-	+	-	-
13.	<i>Marphysa corallina*</i>	Eunicidae	-	-	-	-	-	-	-	-	-	+	-	-	+	-	+	-	-	-	-	-
14.	<i>Neanthes oxypoda*</i>	Nereidae	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15.	<i>Nephtys dibranchis</i>	Nephtyidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
16.	<i>Laeonereis ankyloseta*</i>	Nereidae	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-
17.	<i>Armandia intermedia</i>	Opehliidae	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	+	-
18.	<i>Syllis gracilis</i>	Syllidae	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-
19.	<i>Goniada emerita</i>	Goniadidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-
20.	<i>Axiothella obockensis</i>	Maldanidae	-	-	-	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-
21.	<i>Pisione africana</i>	Pisionidae	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-
22.	<i>Scololepis squamata</i>	Spionidae	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-
23.	<i>Scolaricia dubia*</i>	Orbiniidae	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
24.	<i>Ancistrosyllis cf constricta*</i>	Pilargidae	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	+
25.	<i>Euclymene lumbricoides*</i>	Maldanidae	-	-	-	-	+	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-
26.	<i>Amphitrite cirrata*</i>	Terebellidae	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	+
27.	<i>Eurythoe complanata</i>	Amphinomidae	-	-	-	-	-	+	-	-	+	-	-	+	-	-	-	-	-	-	+	-
28.	<i>Aricidea curviseta*</i>	Paraonidae	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-
29.	<i>Protodorvillea biarticulata*</i>	Dorvilleidae	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-
30.	<i>Perinereis cultrifera</i>	Nereidae	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-
31.	<i>Eunice pennata*</i>	Eunicidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
32.	<i>Polycirrus rosea*</i>	Terebellidae	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
33.	<i>Oenone fulgida*</i>	Lysaretidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+
34.	<i>Ancistrosyllis robusta*</i>	Pilargidae	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-
35.	<i>Gastrolepidia clavigera</i>	Polynoidae	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	+	+
36.	<i>Neanthes bongcoi*</i>	Nereidae	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	+	-
37.	<i>Paralacydonia paradoxa*</i>	Lacydoniidae	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
38.	<i>Schroederella pauliani*</i>	Orbiniidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
39.	<i>Eunice schaemacephala*</i>	Eunicidae	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-
40.	<i>Paraprionospio cordifolia*</i>	Spionidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-
41.	<i>Namanereis gesae*</i>	Nereidae	-	-	-	-	-	-	-	-	-	+	-	-	-	+	+	-	-	-	-	-
42.	<i>Harmothoe charlottae*</i>	Aphroditidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
43.	<i>Ceratonereis hircinicola*</i>	Nereidae	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	+	-	-
44.	<i>Eunice afra punctata</i>	Eunicidae	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	+	-	-	-	+
45.	<i>Magelona capensis*</i>	Magelonidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
46.	<i>Branchiomma violaceae*</i>	Sabellidae	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-
47.	<i>Fabricia capensis*</i>	Sabellidae	-	-	-	-	+	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-
48.	<i>Orbinia monroi*</i>	Orbiniidae	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49.	<i>Scalibregma inflatum*</i>	Scalibregmidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-

*New Records

1- Chinnamuttom Sea bottom, 2-Arockiapuram Intertidal, 3-Thottavilai Estuary, 4-Manappad Estuary, 5-Kayalpattanam Sea bottom, 6-Punnakayal Estuary, 7-Mullikkadu Sea bottom, 8- Vaan Island Sea bottom, 9-Koswar Island Sea bottom, 10-Karaichalli Island Sea bottom, 11-Valinokkam Back Water,12- Valimunai Island Sea bottom,13- Anaippar Island Sea bottom, 14-Muthupettai Intertidal,15-Pullivasal Island Sea bottom, 16- Manouli Island Sea bottom,17- Manouliputti Island Sea bottom, 18-Hare Island Sea bottom, 19-Kurusadai Island Sea bottom, 20-Mandapam Intertidal, 21-Sethukkarai Estuary.

ACKNOWLEDGEMENT

The authors wish to express their deep sense of gratitude to the Ministry of Environment, Forests and Climate Change, Government of India for the grant issued under All India Coordinated Project on Taxonomy (AICOPTAX) to undertake this research project.

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