SOME POLYCHAETES (ANNELIDA) ARE NEW DISTRIBUTIONAL RECORDS TO ANDAMAN AND NICOBAR ISLANDS

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ABSTRACT

Species composition, distribution and taxonomic description of polychaete fauna of the Great Nicobar , Andaman And Nicobar Islands, India were studied during 2010 - 2013. In 15 stations, 70 species of polychaetes were identified. Of these 70 species, 29 species of polychaetes, belonging to 23 genera under 15 families, comprise new distributional records from Andaman and Nicobar Islands, and the descriptions of these species are provided.

Key words: Polychaetes, new records, Andaman and Nicobar Islands

INTRODUCTION

Most of the polychaete species have very wide distribution and several of them are cosmopolitan, obscuring their endemic and zoogeographical relationships. Polychaetes have recently gained importance as indicators of various degrees of marine pollution. They play a significant role in turning over the sediments on the sea bottom. Some marine fishes also feed on these organisms. Diversity of polychaetes has been studied from several regions along the Indian peninsula by Southern, 1921; Fauvel, 1930, 1953; Parulekar, 1971; Rao, 1981, 1992, 1993, 1998, 1999 & 2001; Sunder Raj and Sanjeeva Raj, 1987; Misra, 1995; Sunil Kumar, 1997, 1999, 2001 & 2002. There are a few reports from the Andaman & Nicobar Islands (Tampi and Rangarajan, 1963 and 1964; Daniel and Ghosh, 1964;; Soota and Rao, 1977; Soota *et al*., 1980). The polychaete fauna of Great Nicobar, which is unique and extraordinarily diverse, has been assessed by Rajasekaran (Ph.D., thesis, 2005) and Rajasekaran & Fernando (2008).

The Great Nicobar Island exhibits rich biodiversity and includes diverse marine ecosystems like coral reef, mangrove, sea weed and sea grass ecosystem. Great Nicobar Island has a unique and extra ordinarily diverse fauna, which is relatively unknown. In an initial inventory large numbers of polychaetes were collected from various habitats of the Great Nicobar Island. The polychaete diversity of Great Nicobar Island 70 species of polychaetes spread over 42 genera and about 16 families collected and identified from the Great Nicobar Island are new records to the area. 31 are new distributional records for the entire Andaman & Nicobar Islands. This paper also includes an up to date list of polychaetes so far recorded from Andaman and Nicobar Islands (Appendix).

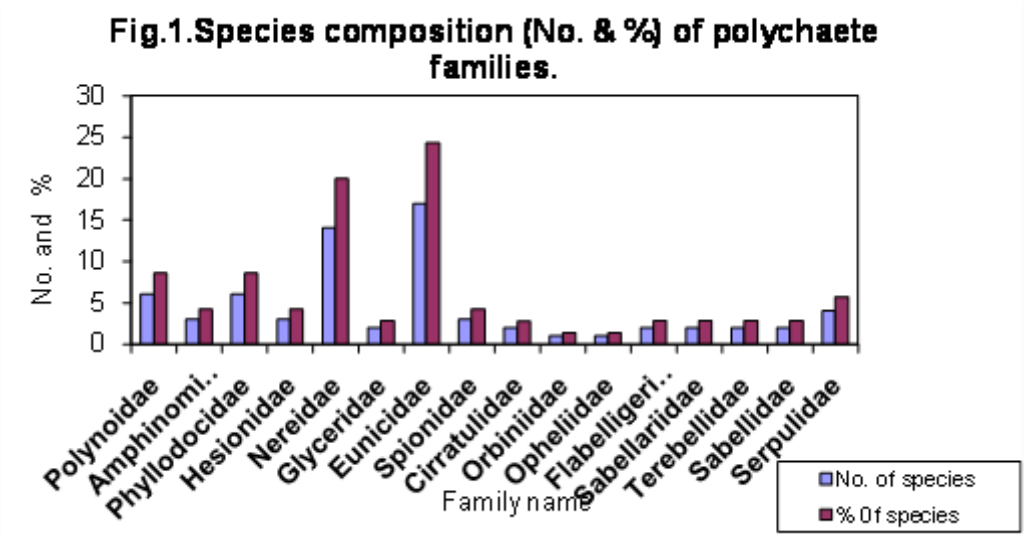
METHODS

Great Nicobar Island, the southern most Island of this archipelago, in fact the southern most land piece of India lies about 482 km. south of Port Blair and 145 km north of the northern tip of Sumatra. The polychaetes were collected from live and, dead corals, beach rocks, seagrass beds and mangrove sediments of the intertidal region. The sediment samples collected were sieved through a 0.5mm sieve. Polychaetes associated with dead corals were

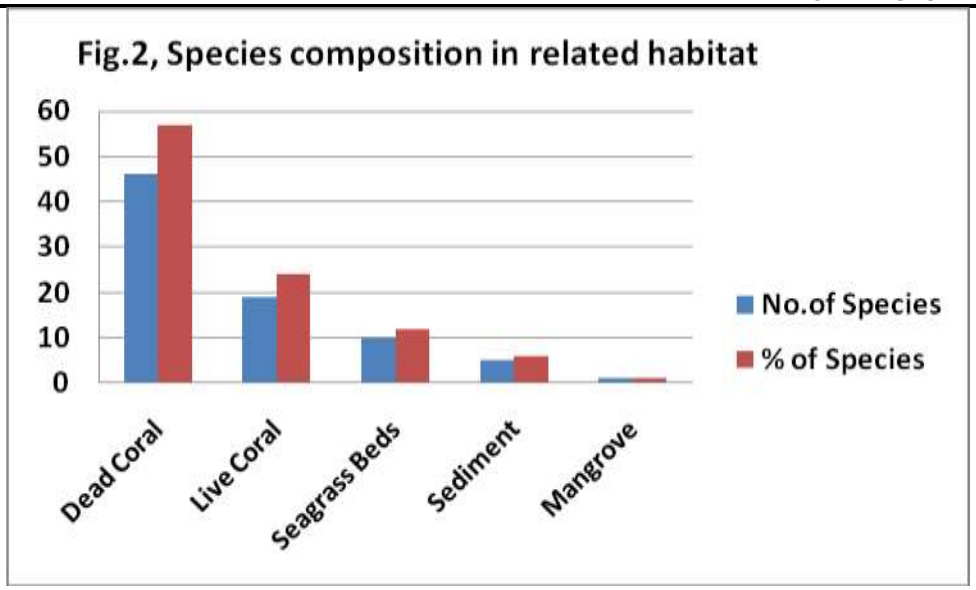
collected by breaking them with a hammer and chisel. Before fixation, polychaetes were dropped into strong alcohol to have their pharynx everted, as it is helpful in identification of this group. They were fixed in 10% formalin diluted with seawater and later transferred to 70% ethanol. The proboscis jaws and other structures of the parapodia were examined under a microscope. The features of the polychaetes studied were drawn with a camera lucida and measured using - occulometer.

RESULT AND DISCUSSION

During this investigation, altogether 70 species from 16 diverse families belonging to the intertidal polychaetes were observed. A large number of polychaetes were collected from Great Nicobar Island from various habitats like coral beds, mangroves, seagrass beds and sandy substrates. Of the 70species of polychaetes observed 51 were errant polychaetes constituting 72.9% and the remaining 19 were sedentary polychaetes representing 27.1%. The errant polychaetes were represents by 7 families of which family Eunicidae was represented by the largest number of species, i. e. 17 as shown in fig.1, followed by Nereidae (14 species) , Phllodocidae and Polynoids were represented by 6 species each. Though 9 sedentary families were observed during the present study all of them were represented by very few species with the maximum of 4 species being observed in the family Serpulidae .



In the present study 46 species were collected from dead corals (57%) followed by 19 species from live corals (24%), 10 species from seagrass bed (12%), 5 species from sediments (6%) and only one species from mangrove environment (1%) (Table 6). The number of species and their percentage contribution in relation to habitat in given in fig. 2. Maximum numbers of species were recorded in coral habitats; more species in dead corals compared to live coral habitats. Polychaetes collected from Great Nicobar Island shows a distinct distribution based on the kind of substrate like coral reefs, mangroves, sandy substrate and sea grass beds. The substrate play an important role in determining the species composition of various habitats (Sanders, 1953).



Systematic Account

Phylum: Annelida

Class: Polychaeta

Order: Errantia

Family: Polynoidae Malmgren, 1867

1. *Iphione muricata* (Savigny, 1818)
2. *Gastrolepidia clavigera* (Schmarda, 1861)
3. *Harmothoe aequiseta* (Kinberg, 1855).**
4. *Lepidonotus (Thormora) jukesi* (Baird, 1865)
5. *Lepidonotus tenuisetosus* (Gravier, 1901)
6. *Lepidonotus cristatus* (Grube, 1876)

Family: Amphinomidae Savigny, 1818

7. *Amphinome rostrata* (Pallas, 1766)
8. *Eurythoe complanata* (Pallas, 1766)
9. *Pherecardia striata* (Kinberg, 1857)**

Family: Phyllodocidae Williams, 1851

10. *Phyllodoce quadraticeps* Grube, 1878
11. *Phyllodoce fristedti* Bergatrom, 1914
12. *Phyllodoce castanae* (Marenzeller, 1879)**
13. *Notophyllum splendens* (Schmarda, 1861)**
14. *Eulalia trilineata* Saint Joseph, 1888 **
15. *Eulalia* capensis *Schmarda*, 1861**

Family: Hesionidae Malmgren, 1867

16. *Hesione splendida Savigny*, 1818
17. *Hesione intertexta* Grube, 1878.
18. *Leocratides ehlersi* Horst, 1921

Family: Nereidae Johnston , 1865

19. *Tylonereis bogoyawlenskyi* Fauvel,1911
20. *Platynereis dumerilii* (Aud. and M. Edwards, 1883)
21. *Ceratonereis mirabilis* Kinberg, 1866
22. *Neanthes glandicinata* (Southern, 1921)**
23. *Perinereis nigropunctata* (Horst, 1889)
24. *Perinereis nuntia brevicirrus* (Grube, 1876)
25. *Perinereis nuntia caeruleis* (Hoagland, 1920)**
26. *Perinereis weijhousensis* Wu Boaling, 1984 **
27. *Perinereis obfuscata* (Grube, 1878)**
28. *Perinereis vancaurica* (Ehlers, 1868)
29. *Perinereis cultrifera* (Grube, 1840)
30. *Perinereis cultrifera* typica Grube, 1840
31. *Pseudonereis anomala* Gravier, 1901
32. *Pseudonereis variegata* (Grube, 1857)

Family: Glyceridae Grube, 1850

33. *Glycera longipinnis* Grube, 1878**
34. *Glycera capitata* Oersted, 1843**

Family: Eunicidae, Savigny, 1818

35. *Eunice (Palola) siciliensis* (Grube, 1840)
36. *Eunice antennata* (Savigny, 1820)
37. *Eunice indica* Kinberg, 1865
38. *Eunice vittata* (Delle Chiaje, 1825) **
39. *Eunice savigny* Grube, 1878
40. *Eunice tubifex* Crossland, 1904**
41. *Eunice coccinea* Grube, 1878 **
42. *Eunice afra punctata* (Peters,1854)
43. *Eunice afra paupera* (Grube,1878)
44. *Marphysa mossambica* (Peters, 1854)
45. *Marphysa macintoshi* Crossland, 1903**
46. *Marphysa corallina* (Kinberg, 1865)
47. *Lysidice collaris* Grube, 1870

48. *Lysidice ninetta* Aud. and M. Edwards, 1833
49. *Nematonereis unicornis*(Grube 1840)**
50. *Lumbrineris tetraura* (Schmarda, 1861)
51. *Arabella iricolor iricolor* (Montagu,1804*)*

Order: Sedentaria

Family: Spionidae, Grube 1850

52. *Malacoceros indicus* (Fauvel,1928) **
53. *Scolelepis squamata* (Muller, 1806)**
54. *Prionospio ehlersi* (Fauvel, 1936) **

Family: Cirratulidae Carus, 1863

55. *Dodecaceria pulchra* Day, 1955**
56. *Cirriformia filigera* (Delle Chije, 1825)

Family: Orbiniidae Hartman, 1942

57. *Scolaricia capensis* Day, 1961**

Family: Opheliidae Malmgren, 1867

58. *Armandia leptocirrus* Grube, 1878

Family: Flabelligeridae Saint Joseph, 1894

59. *Pherusa parmata* (Grube, 1878)**
60. *Piromis arenosus*, Kinberg, 1867**

Family: Sabellariidae, Johnston, 1894

61. *Idanthyrsus pennatus* (Peters, 1855)
62. *Idanthyrsus bihamatus* (Caullery, 1944)**

Family: Terebellidae Grube, 1867

63. *Lanice conchilega* (Pallas, 1766)**
64. *Terebella ehrenbergi* Grube,1870

Family: Sabellidae Malmgren, 1867

65. *Megalomma quadrioculatum* (Willey, 1905)**
66. *Hypsicomus phaeotaenia* (Schmarda,1861)

Family: Serpulidae Savigny, 1818

67. *Spirobranchus giganteus* (Pallas, 1766)
68. *Spirobranchus tetraceros* (Schmarda, 1861)**
69. *Pomatostegus stellatus* (Abildgaard,1789)
70. *Hydroides externispina* Straughan, 1967**

** new record from Andaman & Nicobar Islands

In the present study polychaetes collected from the Great Nicobar Island is described of which 29 species are new distributional records to Andaman and Nicobar Islands. Earlier studies on polychaetes of Andaman and Nicobar

Islands, (except for the Great Nicobar Island) has been compiled by Soota *et al.* (1980). Of the 161 species listed by him only 39 species has been collected during the present study. Observations based on substratum preference by polychaetes revealed that dead corals harbored the largest number of polychaetes. This is probably because corals are hard, stable substrates that are elevated from the sea bottom avoiding the loose sandy silty particles entering inside the tubes. Corals also provide a good protection from predators. Lesser number of polychaete species observed in live corals may be due to the reason that live corals prevent the settlement of polychaete larvae by various efficient antifouling activities like chemical secretion and mechanical clearing by the tentacles present in the coral polyp. It is quite interesting to note that most of the chemical borers managed to settle on live corals whereas most mechanical bores preferred dead corals as they are unable to cope with antifouling activities shown by live corals.

At the time of settlement, the larvae are very much susceptible to predation and to being dislodged by water currents. Algae that are present on the dead coral also provide protection against water current and predators to the pelagic larvae of polychaetes at the time of settlement and initial penetration into coral. As these Algae are found only on the surface of dead coral, polychaetes give more preference to dead coral rather than live coral. Hutchings (1981) also observed most polychaetes in dead corals from Great Barrier reef.

Taxonomy helps to know the diversity of living organisms and a better knowledge in taxonomy, leads to better understanding and utilization of bioresources globally. Biological diversity is at present receiving increasing attention. Proper identification of organisms is necessary to monitor biodiversity at any levels (Vecchione and Collette, 1996). Furthermore if decisions are to be made with regard to preserving species, then relationship among species must be known to determine the evolutionary uniqueness of the species. The present study on polychaetes taxonomy is important as there are no detailed earlier studies in Great Nicobar Island, which is one of the Biosphere Reserves in India.

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Plate.1. Study area (Great Nicobar Island)

Well exposed sandy beach

Well exposed coral reef

Wealth mangrove

Polychaetes collected from sediment region

Polychaetes collected from algae rock region