

Benthic Faunal Composition along Princess Astrid Coast, East Antarctica

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Abstract

179 species, representing 9 major benthic faunal groups encountered at 200 m depth off the Princess Astrid coast (Lat. 69°54'S; Long. 12°49'E) in the Eastern Antarctica, are described here. Estimated benthic biomass was 68 gm⁻². Echinoderms (35%) followed by sponges (22%), molluscs (15%), ascidians (8%), coelenterates (5%), crustaceans (5%), bryozoans (4%) and annelids (3%) were the major faunal taxa.

Introduction

Antarctic Ocean, a biologically rich region, is characterized by few species with large populations (Nienhuis, 1981). In recent years some information on the quantitative distribution of fauna and production in different benthic regions of Antarctic waters is available (Broch, 1961; Belayav, 1964; Holmes, 1964; Tressler, 1964; Vinogradova, 1964; Gallardo and Castillo, 1970; Dell, 1972; Lowry, 1977; Richardson and Hedgepeth, 1977; Oliver, 1978; Everitt, *et al*, 1980; Parulekar *et al*, 1983). Relatively, few reports are available on the benthos of the eastern Antarctic ocean.

The present communication deals with the species composition and standing crop estimates of benthic fauna collected during the Xth Indian Scientific Expedition to Antarctica (1990-1991) along the Princess Astrid coast (Lat. 69°54'S ; Long. 12°49'E).

Materials and Methods

The material was trawled from 200 m depth and weighed 120 kg (wet weight). It mainly comprised shells, coral fragments, sponge spicules, sand and the diverse fauna harbouring a rich assemblage of both epi-fauna and infauna. All the material was sorted into different faunal groups, washed and used for taxonomic studies. The identification was done mostly up to species level and type specimens are preserved

and displayed in the Marine Biology & Taxonomy Reference Centre of National Institute of Oceanography, Goa, India.

The biomass was represented on wet weight basis and the list of the species is given according to percentage abundance.

Results and Discussion

The bottom fauna of the Antarctic coast is a heterogenous mixture containing representatives of benthic taxa associated with different bottom habitats. It has been reported that the coastal waters below 500 m depth, show relatively dense standing crop of benthos in the western Antarctica and it is due to proliferation of much taxa that are not food types, and accordingly, their distribution and abundance depends

Table 1: The Benthic Species Composition of the Princess Astrid Kryst

Phylum	Species	Percentage of Abundance
Porifera	<i>Rosella antarctica</i> , <i>Rosella recovitzae</i> , <i>Scylothrastra joubini</i> (Topsent), <i>Tethya antarctica</i>	22%
Coelenterata	<i>Utricinopsis antarctica</i> , <i>Isotealia</i> sp., <i>Primnoella antarctica</i> , <i>Thourella variabilis</i>	5%
Bryozoa	<i>Pseudoflustra solida</i> (Stimpson), <i>Desmarestia</i> sp.	4%
Mollusca	<i>Dentalium (Fissidentalium) majorinum</i> , <i>Thracia meridionalis</i> (Smith), <i>Limopsis marionenesis</i> (Smith), <i>Latemula eltiptica</i> (King and Broderip), <i>Cyclodia astaroides</i> (Martens), <i>Yoldia (Aequiyoldia), eightsi</i> (Couthouyinjay), <i>Limatula hodgson</i> (Smyth), <i>Adamussium colbecki</i> , <i>Phylobrya sublaevis</i> , <i>Aforia magnifica</i> (Strebel), <i>Puncturella conica</i> (Orbigny), <i>Paraphorella mawsoni</i>	15%
Pantapoda	<i>Austredecus glaciata</i> (Hodgson), <i>Ecleipsotherma spinosa</i> (Hodgson), <i>Ammothea gigantea</i>	3%
Crustacea	<i>Glyptonotus antarcticus</i> , <i>Bathylasma coralliforme</i> (Hoek), <i>Orchomanella franklini</i> (Walker)	5%
Annelida	<i>Lepidonotinae</i> sp., <i>Teribellidae</i> sp.	3%
Echinodermata	Unidentified <i>Ophiopartae gigas</i> , <i>Ophiuraolepsis martensi</i> , <i>Ophiura meridionalis</i> , <i>Sterechinus neumayeri</i> , <i>Abatus schackeletoni</i> (Koehler), <i>Cucumaria antarctica</i> , <i>Psolus</i> sp., <i>Odontaster validus</i> (Koehler), <i>Odontaster meridionalis</i> (Clark), <i>Acondontaster capitatus</i>	35%
Ascidiacea	<i>Cnemidocarpa verrucosa</i> , <i>Cnemidocarpa zenkevitchi</i> (Vinogradova)	8%

upon the distance from the coast. It is very much abundant, closer to the shore line and at relatively shallow depths, but decreases in the abyss of the open ocean.

Vob (1988) has described the eastern shelf community and its species numbers, diversity and evenness indices of the benthos, which are high in the eastern Antarctic sector. Similarly, a very high biomass of benthos, from 183 to 1,383 gm⁻² was found at depths of 200-300 m along the regions off the coast of East Antarctica Ushkov, 1964. The benthic fauna of the present station at Princess Astrid coast shows the similar findings (Table 1) and the benthic biomass was found to be high, i.e. 68 gm⁻².

Ecology of the Antarctic region is governed by the topography and hydrology of the region. For example, in the present station the sediment is mainly sand, sponge spicule mats, bryozoans hash and stones, coral fragments suggesting the different modes of attachments which are necessary for the given species available at this station. The ecological findings of the present study also suggests the diverse biologically accommodative communities present there (Dayton *et al.*, 1991). The higher biomass of this area could be attributed to the available food resources, and the suitable necessary substratum type and relatively stable environmental conditions in the study area. It has also been reported that physico-chemical and biological features of the oceans vary with the latitudes and longitudes and these factors play a vital role in the distribution of living organism of the oceans (Srinivasan and Mathew, 1988).

The chief faunistic representatives in this area (Table 1) confirms, that the most striking feature is the great diversity of the bottom fauna with its own assorted forms. As it was earlier reported associations at depths from 50-700 m are highly intermixed, consisting in most cases of representatives of very different ecological groups (Ushkov, 1964; 1963). The diversity is related to the varied distribution of the sediments, which creates a variety of ecological environments and most of the species belong to sluggish or sessile sestonophages (Gusev and Pasternak, 1958).

The present study concludes that the quantitative data obtained from this area, is in close agreement with the qualitative composition described by Bilayev and Ushkov, 1959).

Acknowledgements

The authors wish to thank Dr. B.N. Desai, Director, National Institute of Oceanography (N.I.O.), Goa for his encouragement and facilities. Thanks are also due to the Department of Ocean Development, New Delhi for participation of first author in the Antarctic Expedition. V.J.S. was supported by Pool Scientist's fellowship of C.S.I.R., New Delhi.

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