Abundance, distribution and species diversity essay sample

The distribution and abundance of benthic macro fauna in near shore waters off Karachi is studied for over a period of one year. For this purpose the marine benthic fauna was collected every month from otter trawl catches of “ Hella” fishing trips undertaken by Karachi based commercial shrimp trawlers fishing in depths of about 12 meters. A total of 76 species of invertebrates belonging to 38 families were studied. The distribution and abundance varied with seasons and maximum number of invertebrate species was found during the monsoon season when salinity was low and temperature was high.

With increasing salinity and falling temperature the number of invertebrate species in the study area, seemed to decrease. The diversity of invertebrate species collected was studied using the diversity indices and the seasonal variation in the diversity indices was also discussed. Commercial trawlers along the cost of Karachi are conducting a lot of bottom trawling. One of the supports of the regional economy and fulfill the needs of protein source of the country. Little information is available in the literature on the bottom dwelling macro-faunas of the coast of Pakistan.

There is thus a grate gap in our knowledge about our own marine fauna. The main reason for this paucity of information lies in the fact that scientific bottom trawling studies have not been frequently made, and in the occasional cases where undertaken, not much attention has been given to non-commercial or economically unimportant marine organisms. Hence subtidal fauna remains little stidied. Compared to the subtidal and benthic marine studies, investigation of the intertidal fauna, flora and their biology are many in number as shown in Ataur-Rahim, (1986).

For instance, Ahmed (1977) dealt with the distribution of marine organisms on some rocky, sandy and muddyshores of Karachi region in relation to pollution. Sabsequently, Ahmed (1987) dealt with the marine fisheries resources of Indus delta (Northern Arabian Sea). A research has been conducted in the near shore waters off Karachi, which aims to study the near shore marine benthic fauna, documenting the diversity of the marine fauna. For this purpose the benthic faunas was collected every month for one year. A total of 76 species of invertebrates belonging to 38 families were collected.

The material was collected by means of an otter trawl operated from a commercial trawler during the period of one year from December 1992 to November 1993. During the study period one trip per month was undertaken. During this period the trawler AL-AHMEDI along the near shore waters off Karachi made a total of 36 hauls. The trawling operations were generally a daylong and are locally known by the name of “ Hella” fishery. Random sample from the total catch of the trawl was separated on every trip for subsequent study in laboratory. Identifications of invertebrates were made to species or generic level with the help of available literature.

During the monthly observations temperature was measured by the thermometer and salinity by refractometer in the laboratory. On the fishing grounds off Karachi invertebrate fauna was found abundant. A total of 76 species of invertebrates belonging to 38 families were collected. In (Table 1) the month-wise occurrence of three most abundant invertebrate species in the study area were shown among these Oratosquilla nepa, Charybdis callianassaand and Bulla ampulla were found to be more numerous then

other species in the area, while (Table 2) Shows the dominant number of individuals of invertebrate species in near shore waters off Karachi.

Monthly distribution of invertebrate species shown in (Fig. 1) The Shannon and Wiener diversity index was use for the evaluation of species diversity in each collection of the months (Table 3). Diversity index is a mathematical measure of species diversity in a community. Diversity indices provide more information about community composition than simply species richness (i. e. , the number of species present). Diversity indices provide important information about rarity and commonness of species in a community.

The ability to quantify diversity in this way is an important tool for biologists trying to understand community structure. Diversity commonly depends on the number of species and individuals in the community at a given time and has been mathematically well documented. According to (Fig. 2 & 3). In northeast monsoon season lowest density was observed and higher density in pre monsoon and southwest monsoon seasons (Fig. 4) while in post monsoon season again low density occurred. This pattern shows the diversity of invertebrates high in warmer seasons and low in colder seasons.