

Species Composition and Mollusc Diversity at the Sandy Beach of Clifton, Karachi, Pakistan

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ABSTRACT

Introduction: The coast line of Pakistan is the most productive areas in the world and is rich in fish and shell fish fauna. Molluscs occupy the leading place among these resources. About 1,100 species of mollusks are known to occur in the Northern Arabian Sea, comprising gastropods, bivalves, cephalopods and others. Only 30 species could be regarded as commercially important. Species which are commercially important include the class Bivalvia (oysters, mussels, clams, cockles, scallops), class Cephalopoda (squids, cuttle fishes and octopi) and some species belonging to the class Gastropoda. Natural stresses include high wave action, high temperature and salinity and seasonal spread of oxygen poor waters. Other stresses include water pollution, marine debris and global change in climate which affect biodiversity directly or indirectly. A checklist of species found in Pakistan, belonging to the classes Gastropoda and Bivalvia has been reported by Khan and Dastagir (1971). However some work have also been studied by other workers, including Barkati and Burney

Objectives: The present study deals with species richness, diversity and evenness in inter-tidal mollusks from sandy beach of Clifton, Karachi with reference to season.

Methodology: Monthly samples were collected during the period for one year from Clifton beach. Clifton is situated in the south of Karachi at 24°47' N longitude and 67° 05' E latitude. The beach is mainly sandy having very fine grained sand (>200 µm). It has a gentle slope with a wide surf zone. Three transects were made from highest to lowest inter-tidal marks (exposed). On each transect quadrat (50×50cm) frame was put. Nine samples per month were taken from three long transect lines and all the sand inside was sieved through 2.0mm mesh size sieve. Large animals were hand picked from each quadrat. All organisms were placed into 5% formalin filled plastic bottles. After 48 hours they were transferred to 75% alcohol. In the lab they were subsequently identified with the help of literature (Bosch¹², Dance¹³, Eisenberg).

Results and Conclusion: It is almost the first investigation of soft sediment sandy beach fauna of Sindh Coast Pakistan which deals with the species richness, diversity, relative abundance and seasonal variation of invertebrates inhabiting the Clifton beach. Present contribution reports the current information on different ecological aspects of marine invertebrates occurring at the Clifton beach, near Sea-View, the area which is used commonly for recreational activities, visited by migratory birds, besides that as it had faced oil pollution in August 2003 after the incident of Tasman Spirit Oil Spill. The study showed macro benthic community at Clifton was numerically dominated by molluscs. Total number of specimen examined were 75. Molluscs contributed 65% of the total species. Diversity of sandy shore fauna is usually lower than diversity of rocky shore communities.

Maximum numbers of species were collected during winter (December – February) season. Gastropods of family Naticidae and Nassariidae were found in great abundance. Besides large size gastropods some small sized micro gastropods were also noticed, these were: *Anachis fauroti*, *Cerithidea cingulata*, *Pupa strigosa strigosa*, *Epitonium scalare*, *Marginella margarita*, *Niso venosa* and *Rissoina pachystoma*. Similarly bivalves of family Donacidae and Veneridae were also found in abundance during the study period. Total

6665 individuals which belong to thirty five families, fifty three genus and seventy five species were examined. Among Gastropods total 1832 individuals which belong to twenty three families, thirty three genus and fourty eight species were examined. Naticidae and Nassariidae were the most dominant families. Total numbers of individuals were 4830 which belonged to twelve families, twenty genus and twenty seven species. Individuals of Family Donacidae were the most abundant bivalves, particularly during winter. During December to March *Donax cuneatus*, *Donax scalpellum* and *Chione imbricata* were dominating the mid-tidal zone. In the month of March the juveniles of the wedge clam, *Donax cuneatus* were in abundance at upper tidal zone, whereas only few individuals of *Donax scalpellum* were found. *Donax townsendii* shells were also sorted out in large numbers during winter season but in lesser number during monsoon season. *Hecuba scortum* another donacid was uncommon, present in samples during nine out of thirteen months of study period.

Keywords: Bivalves, Clifton, Diversity, Gastropods, Sandy Beach.

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