I. INTRODUCTION

“An estuary is a semi enclosed coastal body of water which has a free connection with the open sea and within which the sea water is measurably diluted with the fresh water derived from land drainage”. Estuaries are highly variable and interacting natural ecosystems, where a strong transition exists between the marine and freshwater. These act as natural laboratories to study the dynamics of terrigenous chemical constituents borne by the river waters on their way into the sea. Estuaries are the focal point of the maritime studies and activities. They are semi-enclosed, providing natural harbour for trade and commerce. They are also effective nutrient traps and provide a vital source of natural resources to man and are used for commercial, industrial and recreational purposes.

The estuarine water bodies are highly characterised by tidal action and ingestion of freshwater. Their properties are unique worldwide. No two estuaries are similar and they are different in their geography, morphology, topography, fresh water influx and tidal amplitude. The productivity of these estuaries are comparatively and chiefly determined by factors like abundant nutrients; conservative retention and efficient recycling of nutrients, inter dependence of phytoplankton, zooplankton, benthos, benthic micro-and macroalgae, sea grasses, mangroves and fringing salt marsh vegetation that maximises the availability of light and space, tidal energy and circulation of water in the estuaries.

Estuaries and back waters in India occupy 1.44 million hectares water spread area (Anon., 2006). Both east and west coasts are interspersed with several estuaries and back waters of varying length. Each one of them are different from another mainly due to river inflow tidal ingress and basin topography.

During the last three decades, estuaries have assumed immense importance not only because of their potential for living and nonliving resources but also to their unique
location between land and sea. The population explosion coupled with shortage of food on the land have been forcing people to search for food resources.

Benthic substrate of estuaries provides a residence for many sessile, burrowing, crawling and even swimming organisms and it acts as a storage house of organic matter and inorganic nutrients. In most aquatic ecosystem the benthic organism play an important role in trophic network as all forms of available food in the sediment and forms an important trophic link for the transfer of energy. Organisms living in or on and those are occasionally associated with sediment are collectively referred to as benthos. Benthic fauna are considered to be an important indicator of water quality and are best used in monitoring programmes to assess overall health and to follow long term trends in estuarine communities related to anthropogenic impacts.

Studies on estuarine benthic communities have strongly emphasized the role of physical, chemical and biological indicators. Benthic organisms comprised a broad occurrence, distribution and assemblage of diverse forms in space and time, rather than by phylogeny or exclusive functional attributes. Within estuaries, sediment composition and salinity could influence benthic community structure and functions and hence the occurrence and distribution of benthic communities and their variations in space and time.

Rao et al. (1989) estimated clams and oyster resources for India to be 6700 tonnes/yr. In the estuaries of Karnataka, the finfish and shellfish resources of Netravathi-Gurpur, Sita-swarna and Mulki estuaries were 2593 tonnes.

Among the molluscan resources, clams are by far the most widely distributed and abundant and extensively exploited natural biological resources. Large quantities of clams are being exploited for food, as bait and are also being used for industrial purposes in manufacturing of cement, poultry feeds, lime extraction etc. Several species belonging to a
number of families constitute clam resources and they are exploited widely all along the Indian coast. A number of species belonging to the families such as *Arcidae, Veneridae, Tellinidae, Donacidae, Mesodoneciade, Corbiculidae, Tridacannidae* are exploited along the Indian coast. Venerid clams are the most sought for the clam fisheries of India viz., *Meretrix casta, Meretrix meretrix, Marcia opima*, and *Paphia malabarica*. forms 30.49% of the total clam production in India of 14,052 tons (Rao et al., 1989). These clams are widely distributed and form good fishery in all most all maritime states where clams are currently exploited. Blood clam, *Anadara granosa* accounts for 4.4% of total landings and black clam, *Villorita cyprinoides* which forms 64% in the clam fisheries of India.

Survey conducted by Rao et al., (1985) indicated high bivalve resources in Mulki estuary in addition to high finfish and other shell fish resources. Commercial exploitation accounted for the greater reduction of molluscan population. From the past two decades estuaries of Dakshina Kannada and Udupi are in greater stress due to pollution and environmental-hazards shell and sand mining activities which caused the death and depletion of molluscan population. An investigation on the ecology of clams, thus, would serve as model for establishing baseline information in understanding the state which could be used for identifying the major deviations due to natural calamities and anthropogenic disturbances by examining the interrelationship between parameters and with other benthic community and hence the present investigation has been undertaken to elucidate information on the distribution of clams and their seed resources, associated macrofauna, to study physico-chemical characters of soil and water in relation to clam distribution and to assess the optimum conditions required for the clams and to identify the clam beds.