CHAPTER - 6

6.0.0.0  IN-DEPTH STUDY OF FOUR CASES

Some cases of settlements of Sunderban have been selected here to understand the different aspects of the location, size, shape and pattern of human settlements of Sunderban along with their history of development and processes of colonisation as well as the functional relationship between the settlement forms and social, cultural and economic characteristics. The four cases selected for in-depth study are (i) the large market settlement of Nalua; (ii) river margin villages of Kullerkhoj, Homrapolta, Nagartala, Patikhali, Bibir abad, Chelikati, Chunpuri, Tambuldaha and Maukhali-Kumarkhali; (iii) the island of Sagar as a very atypical example in Sunderban's settlement geography and (iv) the fishing villages of the region in general.

6.1.0.0  REASONS FOR SELECTING THE FOUR CASES

The cases identified as worth studying in detail have different reasons for their selection. These reasons can be understood only if we discuss their distinctive characteristics separately.

The colonisation of Sunderban was meant for a thorough exploitation of its large stretches of land, water and forest resources. This motive needed well managed resource processes in which exchange played a very key role. Sunderban was secluded because of its natural environment but has become open to the outer world due to the process of exchange of men and material. The places of commodity exchange, i.e., hats and markets thus reflect quite distinct conditions of human reaction to the environment conditioned
by their perception and effective participation in resource manipulation. These markets, the outfalls of a basin like Sunderban acted as the entry points of Sunderban and also as the starting points of the evolution of human settlements in this region. All the big as well as old settlements in Sunderban are market-based, exhibiting different economic or demographic characters. A few of these, such as Hingalganj, Barunhat, Hasnabad, Kaliganj, Canning, Nalua, Raidighi and Kakdwip are worth mentioning. A comprehensive research on any of these market-based settlements gives some clues to the evolution of human settlements in Sunderban during its initial stages. Later changes due to the changing relationship between resources and population have had distinct imprints on space in the form of settlements having different shapes and patterns. Nalua, an important old hat in the western margin of Sunderban has evolved as one of the largest villages of Sunderban. Lying in a part of the mature delta this mouza has been suffering from a decaying drainage network. History, however, speaks otherwise as the water channel of the Nalua Gang was very active and played a significant role in the economy through trade and commerce and other occupations. The present settlement owes its origin to the market. Besides, the form and ground layout of the settlement in Nalua exhibit a very distinct character which even following the general tendency of being linear maintains some unique features.

Uncertainty is the most distinguished character of Sunderban considering both the physical as well as economic environment. Changes in any one of the conditioning factors are expected to bring about a total change in the entire settlement system. It has already been observed that throughout Sunderban, settlements have developed along the natural levees or artificial embankments of the rivers. Any change in hydraulic as well as economic significance of rivers results in consequent changes in the adaptation among the
settlers of the riverine territory who may or may not be dependent on such rivers. In the adjoining riverine tract, the size, form and pattern of settlement and also the land-use and occupational opportunities thus tend to get altered. The selected cases, nine mouzas located along the left bank of the river Bidyadhari were very prosperous and populous even during the early 1920s and 1930s. The villages show considerable variation in size and form which can be explained in terms of their physical ecological setting and history of development. These settlements also exhibit some special attributes of changing locations of the foci of activities as a result of shifting river channels, floods and water-logging. The most important point is the remarkable depopulation of two villages, namely Tambuldaha and Chunpuri due to ingress of saline tidal water over an extensive territory causing much distress to not only the displaced population but also others.

Sagar has always been treated as a component of Sunderban because of its apparent similarities in physical and social characteristics. But an in-depth analysis unearths the specific character about its location, shape and its geomorphic complexities. The contemporary history of colonisation and land tenure system show some uniqueness.

In Sagar the upbuilding process of land has ceased though horizontal extension and recession of coastal area has been constantly taking place. Thus Sagar appears as a very unstable area throughout its history. It is a riverine delta still retaining its shape even after so much lateral changes. This geomorphological along with other geological, pedological and phytological distinctiveness suggests that Sagar is not an integral part of Sunderban inspite of being an estuarine island in the mouth of the Hooghly.
This physical setting along with its water front location was much more acceptable by seafarers like the Arakanese, the Mugh, the Dutch and the English who wanted to settle in this island during the initial years of its reclamation.

Sagar has been settled mostly by people coming from the Contai and the Tamluk sub-divisions of Medinipur. These people frequently move between their district of origin and Sunderban across the river Hooghly. As a result the values, behaviour, and other socio-cultural norms which they brought to Sagar during the time of their migration to the island are regularly replenished even today. Yet, these norms have become fused with the ones established by the European interests which centred round Sagar during the early phase of its reclamation and habitation by the English and the Dutch. The notion of collective living and security expressed through very large settlement units characterised even by widely separated hamlets within the same mouza is one of the atypical characteristics of Sagar which forms a sub-region of its own within the otherwise homogeneous region of Sunderban.

The entire area of the cultivated parts of Sunderban lies at the margin of intensive farming both physically and economically. The dense mangrove forests to the south, the dominance of water over land and the frequent incursions of brackish tidal waters as well as the salinity of the subsurface waters - all set physical limits to agriculture. The intensity either of inputs or of cropping cannot be increased in the absence of irrigable fresh water resources and also due to the extremely sluggish communication system. Under such circumstances the extremely rich biological resources of the oceanic and littoral waters in the shape of the enormous size and variety of the fish population which frequently find their way landward through numerous creeks and channels offer not only the means of sustenance
to a large number of persons who are not supported or are only partially supported by agriculture but also exhibit quite strongly the local impact of a global ecological process. It is, therefore, worthwhile to investigate into such aspects as the distribution and size of the village population living directly or indirectly on fishing, the methods of fishing, the economics of fishing, fishing villages, fish trade etc. as a special case to understand the real significance of Sunderban waters in the day to day life of economy of its people.

6.2.0.0 NALUA

Nalua is located at the northern margin of Sunderban in Mathurapur police station. The mouza extends from 88°26'E to 88°30'E longitudes and from 22°5'N to 22°7'30"N latitudes covering an area of 17 sq km in the south of the Joynagar-Mazilpur municipality. It has road connections with the railway station at Mathurapur of the Sealdah - Lakshmikantapur branch, at a distance of about 10 km. A metalled road has passed through the mouza connecting the old settled part with the area further south. The mouza Nalua includes about 10-12 settlement clusters locally known as grams (Map no.14).

6.2.1.0 PHYSICAL ASPECTS

As already mentioned, being a part of the mature delta the landscape shows the decaying channel of the Nalua Gang locally known as Kharir Khal which marks the northern, eastern and southern boundaries of the mouza, though the main branch moves straight towards south from the south-east corner of the mouza. This channel normally remains dry during the dry period; but the monsoon months have moderate amounts of water. This sluggish water channel was very active even in the late 18th and the mid 19th centuries.
According to some historians the Nalua Gang was a part of the Adiganga (Dutta, 1989; Mitra, 1914). Continuous eastward shift of the channel with heavy sedimentation and scarcity of fresh water from the north, have resulted in the present degeneration of the river. Remnants of cut-off channels, series of ponds etc. bear the imprints of the early course of the river. A big embankment almost parallel to the course of the Nalua Gang divides the mouza into two halves. The area located between the present course of the river and the embankment is 3 feet higher than the area located to the inner side of the embankment. This comparatively higher land is recent in origin.

6.2.2.0 HISTORY OF COLONISATION

According to scholars (Mitra, 1914; Hunter, 1877; Dutta, 1989), Nalua as in other parts of Sunderban had been a populous region in the early period. According to Mitra (1914) the name Nalua has been derived from the name of a very old town 'Nalbandi' which occupied the same place during the 15th century. But this view lacks a scientific basis. There are, however, different evidences which prove that Nalua was an important hat in Sunderban even during the early 18th century. The market mainly used to take part in trade in paddy, fish and forest products. Nalua was the only market where deer-meat was sold for the residents of Calcutta (Hunter, 1877). Nalua hat was famous for the transaction of wooden posts and hental leaves (Heining, 1892).

Besides, it was one of the largest local fish markets and used to supply fish to Bishnupur, Magrahat, Baruipur, Joynagar-Mazilpur and even to Calcutta. In the formative stage, just like other hats in Sunderban, Nalua also became crowded only during the bi-weekly hat days (Hunter, 1877). Due to its increasing economic importance at an opportune location Nalua attracted people to settle permanently. A small settlement emerged around the hat as the nucleus of its
MAP NO. 14

A Panoramic view of Nalua Hat.
habitation.

Nalua as a settlement, saw its moorings during the earliest phase of British colonisation in Sunderban. As it was located at the northern margin of Sunderban, just to the south of the permanently settled zone, there was a propensity to encroach upon the land by the neighbouring zamindars. According to Pargiter (1934), the zamindars encroached upon a portion of Nalua by 1820. It was thus never considered a patitabadi taluk. According to Princep's survey, patitabadi mahalls (1822-23) extended from the salt water lakes along the edge of Sunderban forests to the south-west corner of the area below; but broken in four places by katkina or zamindari lands, viz., Bhagabanpur, Nalua, Ranaghata and Khari (Pargiter, 1934). Roychowdhuries, the zamindars of Raidighi who leased out Nalua to Subodh Kumar Basu of Moydah Kalibari, Bahru were the original owners of this entire area. Though the reclamation work started since the later half of the eighteenth century, the initial success was slow. From the mid-nineteenth century onwards the work progressed steadily. Settlement started from in and around the hat located at the northern tip of central Nalua.

6.2.3.0 DEMOGRAPHIC ASPECTS

Nalua exhibits a distinct demographic pattern, characterised by multi-ethnic and occupationally diversified group of people. It is one of the exceptionally populous villages of Sunderban housing more than 10,000 people in 1981 and about 14,000 in the census of 1991. The decadal growth rate has varied from time to time. The decades of 1951-61 and 1981-91 witnessed high growth rate but the rate fell in the intervening decade.
Because of its distinct settlement history, Nalua quite justifiably constitutes of a large number of schedule caste population which shares more than 50 per cent of the mouza's total population. There are very few Brahmins and Kshatriyas who occupy leading positions in the social hierarchy. Besides, seasonal immigration of schedule tribe labourers from Chhotonagpur plateau to the brick industries have added another dimension to the demographic character of the mouza.

The population density of the mouza has been higher than that of Sunderban since 1951. Although the habitational density has been higher than the Sunderban average, it does not maintain parity with the very high density figures of Mathurapur police station of which it is a constituent part. Under the area not available for cultivation, quite a substantial part of the land has been taken up by embankments and ponds. The remaining land for the dwelling sites is thus not very high in this mouza. The figure for the habitational density does not give a proper idea about the nature of clustering and the evolving forms of settlements.

6.2.4.0 OCCUPATIONAL ASPECT

With the changing physical ecology like the absolute decadence of the Nalua Gang in this part, in addition to the emergence of a new cultural landscape mainly as a consequence of population growth, occupation of the people of the area has been changing slowly and steadily.

As a whole, participation of the working force is low consisting of only 23 per cent of the total population. Non-workers and marginal workers share the rest of the 77 per cent. Apart from other factors, this low participation in production is probably related to a higher sex-ratio. With a low labour force, agriculture is the mainstay and employs
about 74 per cent of the total main workers. Agricultural
labourers who find seasonal jobs in agriculture only during
the season of *aman* paddy dominate the occupational
scenario. Rest of the period they have to depend upon
other activities. One interesting feature regarding this
primary occupation is that under most of the cultivated area,
fish-cum-paddy is the common practice observed mainly to the
east of the big embankment. Generally, the western half is
dominated only by *aman* paddy and some amount of vegetables.
The degeneration of the Nalua Gang and its small channels
and the poor condition of sluices even in the furthest south
where the condition of the *Kharir Khal* is much better
(regular flushing of saline water having deteriorated in
recent times), have been the reasons for a slow change from
fish-cum-paddy to only paddy cultivation in the adjoining
areas of the embankment.

A substantial number of workers (22 per cent) engaged in
category III (1981 census) clearly indicate the importance of
fishing, collecting, processing and manufacturing other than
household industries. It is gradually becoming difficult
for fishing, the age old traditional profession of the
villagers, to survive, and at present fishermen have to move
further south to the Moni Nala, the Raidighi Khal, the
Saptamukhi river etc. Apart from these river based fishing
activities, *bheries* also provide employment to a sizeable
number of people. These *bheries* are aligned next to the
paddy fields in the easternmost part.

Nalua has quite a number of brick factories which have been
developed in the eastern half of the mouza, using the new
clayey and muddy deposition of the Nalua Gang. Although
these factories generally hire tribal labourers, mostly
female, from Chhotonagpur, they offer jobs to the local
people for managerial and security work. Construction of
new roads from the main road to the factories involve
significant labour force. As a result, not only the
constructional activities but also transportation has emerged as important sources of employment.

Being one of the biggest fish markets in this part, trading becomes an important occupation. Traders of varied orders tend to concentrate here and further open up new avenues. The proposal of making a super market at Nalua bazar created a lot of interest among the people within and outside the mouza, and is further initiating new forms of secondary and tertiary occupations.

6.2.5.0 EVOLUTION OF THE SETTLEMENT

The evolution of contemporary settlements in Nalua can be categorised under five broad phases of development. (Map No. 14).

PHASE I : The first settlement was developed in the north-central part on the right bank of the Nalua Gang around Nalua hat known as Nalua gram. This settlement extended in different directions mainly towards the east and the south commensurate with population increase and spread of cultivation. The embankment remained as the northern limit of settlement.

PHASE II : In the succeeding period a second nucleus of settlement seems to have come into existence at a distance of 2 kms northwest of Nalua. Quite a member of dwellings were established at Patnighata.

PHASE III : To the south of Patnighata, another small cluster named Datterchak had sprung up. During the same period a new settlement emerged in the central part of the mouza at Kakpukur. This settlement has almost merged with Nalua to the north.
PHASE IV : During this phase two localities were simultaneously attracting people from outside. Musalmanpara located to the west of the present metalled road and a moderate cluster to the south of Kakpukur had emerged.

PHASE V : The most recent habitation has developed within the last 40-50 years in the extreme eastern part between the big embankment and the present course of the river Moni Nadi or Nalua Gang. Natabaria, Gambhirnath, Darirchak are a few among these clusters of settlements which have evolved on the new alluvium.

6.2.6.0 SETTLEMENT FORM

Regarding settlement form, Nalua presents striking similarities as well as contrasts with Sunderban. Nalua exhibits an overwhelming dominance of linearity in its form in the old settled part, i.e. the western part of the big embankment, considering even each cluster of settlement like Nalua, Patnighata, Datterchak, Kakpukur, etc. A cursory look at the map shows three broad parallel rows of linear settlements broadly stretching from north to south. (Map No. 14). The westernmost arm located to the west of the metalled road is again sub-divided into three small rows parallel to each other. On an average they are half a km in length from north to south. Two arms to the east of the main road are very large and traverse the entire mouza starting from the Nalua hat on the north to the bank of the river Kharir Khal on the south.

The shape of settlements in the western half of the mouza Nalua clearly produces an open multiple ended geometric form in which parallel rows are loosely attached to the northern limb and are open towards the south. This particular form can be identified as a complex toothlike form which is a sub-form of the polyhedral group.
Regarding the site and location of settlement in relation to the settlement form, Nalua exhibits some distinctiveness. In Sunderban, in general, through the periods of transformation from bada to abad, settlements have clung to natural levees and man-made embankments even in the case of tooth-like settlement forms, as found in southern Gosaba, southern Basanti and southern Hingalganj. But in the case of Nalua, instead of following the main embankment, the linear form has actually traversed it.

To the east, in the new settled part, the settlements are yet to produce any distinct form. A few loose-knit amorphous clusters have emerged in this area.

6.2.7.0 GENESIS AND PROCESS

Before going into the details of the specific processes related to the evolution of the settlement at Nalua, an analysis regarding the spatial importance of Nalua hat should be made. The particular space, selected for the hat had its own special attributes which resulted in a distinctive cultural landscape. Thus, in the present analysis, we should pay attention to the interrelationship between the hat and its hinterland during the initial stage of its formation. In addition, the nature of people who used to participate in the economic system and the commodities dealt in should also be examined.

Nalua rendered a favourable environment to the people to set up a place of exchange, being located at the transition between the old settled northern part and storehouse of natural resources in the south. Because of an unlimited source of forest products and fishes, a place of exchange was necessary. This place had to be connected by a good transport network with the resource producing region and
the consuming centres to the north. In the south, the means of transportation were only innumerable creeks and small water channels. The zones situated at the closest proximity to the land and riverine transportation emerged as markets and hats all over Sunderban. Nalua hat, thus grew at the point of convergence between land and water routes. Even during the early stage of reclamation two very significant routes were regularly used. The water route through Nalua Gang upto Nalua, and the unmetalled but wide road terminating at Nalua.

The hat was developed on a hump-like relief, a part of the natural levee at a straight side of the river within a broad concavity. This is common for the location of almost all the old hats as well as old villages in Sunderban because of a lesser fluctuation of water level at this side. Along the convex side the emergence of chars is a very common problem. Ebb tides create problems when the water recedes and mudflats become exposed for quite a substantial period of the day.

The earliest settlers who harnessed the land dealt mainly in fish. These settlements thus inevitably developed by water-based communities, generally by the Kaoras and Kaibartas. The Nalua gram, the oldest settlement of the Nalua mouza has always been peopled by large numbers of Kaibartas. This is still clearly evident from the very high concentration of Bagdis (500 families) near the hat, along the big embankments. A distinct east-west stretching linear form has evolved at close proximity to the river. During the earliest period (Phase I) the entire area located to the south and west of Nalua was covered by mangroves.

After a few families of Bagdis had founded a settlement, other families of the same clan or of different clans of the same caste were invited to settle in it. For this purpose,
families who joined in later were given plots close to their own habitational site mainly for the sake of security.

Throughout this early stage, people were directly associated with water-based occupations. Slowly and steadily with increasing population new clusters began to take shape at Patnighata to the northwest. The numerous Adikaibarta residents of Patnighata were also dependent on the Nalua Gang and maintained connection with it through very small feeder creeks. Datterchak was developed partly along the road and people were related to outside business with Joynagar-Mazilpur and Bishnupur.

Gradually, the need for permanency of occupance led to the creation of relations with land. The people initiated the clearing of jungles and reclamation for agricultural activities. In order to keep the saline water out and to reclaim the land properly the big embankment was constructed parallel to the river Nalua. This embankment has exerted considerable impact on the humanised landscape of the mouza. The PWD office and the Kacharibari were also constructed to the east of the hat, the remnants of which are still in existence. With the changing landscape, a section of the population was forced to abandon their ancestral occupation and join agriculture. They were converted into Hele Bagdis from Jele Bagdis. The reclamation work and consequently the cultural landscape was significantly controlled by the action of the river and its changing nature. The cadastral mouza map (Map No. 14) suggests that during the early period, the river was possibly much straighter from north to south, and its western levee attracted the people for early habitation. The squarish plots along this part occupied by the Nalua gram and Kakpukur justified the fact that this tract became inhabited since a long period. The strip like plots, generally
cultivable fields, stretching from the west to the east just beyond the squarish plots, imply that reclamation started from this habitational site.

After successful attempts at reclaiming a good amount of land, agriculture got a further impetus when land-based people like Mahishyas and Poundrakshatriyas began to settle in the extreme southern part, avoiding the so called low caste dominated Bagdipara in and around the hat. The settlement extended from Kakpukur towards the south. Kakpukur is higher in elevation, had fresh water, and was thus occupied by the upper caste people. A few Brahmin families also resided here. This southern hamlet had a good footpath communication with the Kacharibari and Nalua hat during the early days. In due course these footpaths attracted people to settle along them.

A major part of the area located to the west of the metalled road was susceptible to floods because of its low-lying interior location away from the river course. This part was marshy even 70-80 years before. The reclamation started from the eastern side from the road towards the west. Mahishyas and Poundrakshatriyas coming from Medinipur and lower Khulna built their houses almost parallel to the road only after the road was extended towards the south to contact Gillarchhat, another very big village of Sunderban.

At the southern margin of this western arm Musalmanpara was developed by the displaced people who were forced to abandon their ancestral fishing occupation due to the degenerating courses of upper Nalua and some of the other tidal creeks.

The continuous eastward shift of the Nalua river has created new land or char between the big embankments and
present course of the river in the extreme eastern part of the mouza. This char offers multiple activities like agriculture, aquaculture (fish cum paddy) and brick industry.

Apart from its economic significance, the land was lucrative because of its recent origin and was yet to be included under land revenue act and therefore tax-free. Land grabbing by the inhabitants of the surrounding settlements was common. Reclamation started steadily from the old settlements of Nalua from the west. Most of the plots here are strips of about 500 metres in length and are mainly perpendicular to the embankment. In the extreme eastern section also, reclamation started from the bund along the feeder creeks. Apart from Nalua, people from Monirtat, Radhakantapur and some other villages which had regular connection with Nalua hat by river, grabbed different plots. A heterogeneous demographic composition has been observed in the present clusters, namely, Natabaria, Gambhirnath. Bagdis, Mahishyas, Poundraksatriyas have their residences juxtaposed with each other. Initially there was a daily migration. People from the old habitation used to move to the new char early morning, and after a full day's work they would return to their respective villages. This daily migration process helped form a good network of footpaths from different directions and also connecting different villages. There was thus a better and intricate roadway network in the newly reclaimed land than in the old settled part.

During the initial stage very few huts were constructed mainly around the nodes of roads in order to guard crops and the fisheries. These were temporary and seasonal in nature. With increasing population these very small clusters have come to be permanently inhabited.

With the passage of time the eastern part saw the growth of various economic activities as the drainage of this land
became better. But this growth has often been retarded by high salinity and continuous siltation in the river Nalua. Even with high population growth in the east the amount of land per person is low. So with low land-man ratio and habitational density, clusters have developed haphazardly. People still enjoy the facilities for selecting sites for their house. This has restricted the development of any definite form. Rather, ill-defined irregular forms exist in the recently developed colonies.

6.3.0.0 RIVERBANK SETTLEMENTS

The area under study began to be reclaimed since the middle of the nineteenth century. These lands were a part of the lot numbers 55 and 56 and were leased out for reclamation under the rules of 1853.

Most of the settlements sprang up along river margins protected by embankments and natural levees. The locations and forms of the settlements changed depending upon the changes in river courses, as evidenced from the mouza maps. Due to delta-building processes acting upon the western and eastern extremities of the study area, continuous emergence of land has been a very distinguished phenomenon. Construction of successive embankments parallel to the Bidyadhari in Kullerkhoj and Maukhi-Kumarkhali implies a southward shift of the river, transforming interior areas into marshes and causing depopulation (Map No. 15).

6.3.1.0 CADASTRAL MAPS

The methodology of investigations and analysis followed in this is not in total agreement with section generally accepted approach by Indian workers saving a few like the Benaras group of geographers (Singh et al. 1975). However, the
LOCATION OF THE STUDY AREA

MAP NO 15

LOCATION OF THE STUDY AREA (P.S., CANNING)
AN EXAMPLE OF PLOT ALIGNMENTS AND SETTLEMENTS

Map No 15A
present approach has some similarities with those adopted by researchers in Germany and the United States (Dahlmann (1840), Hanssen (1880), Jordan (1977). This author established some relevance of the distribution, size and shape of landed property units to the layout or form of settlements. While they depended primarily on the actual property structure and its spatial distribution as investigated in field, our emphasis in this section is mainly on the maximum inference that can be drawn on the basis of minimum information that have already been mapped by some authorities such as the Survey of India and the Directorate of Land Records. Of particular methodological significance, is the enormous service the cadastral mouza maps can render in analysis of settlement forms. The shape and alignment of plots and the patterns therein offer highly effective clues to the process by which the land was reclaimed and the population arranged itself spatially. It is not our objective to do away with field-work altogether; nor do we propose to say that the inferences derived from these maps are infallible. But we have a double purpose behind selecting such a methodological approach. Firstly, it is extremely difficult for individual researchers to give a full scale coverage of all settlements along with the linkages between their forms, functions and historical process of development for a considerably large region as Sunderban on the basis of field survey. The inferences drawn from mapped data are likely to provide us with all possible variants of settlement forms and minimize the necessity of field work by appropriate sampling. Secondly, methods and tools in geography are supposed to be different from those in other social sciences like history and sociology. The specificity of geographical method, which can also be considered its strength, lies in its capacity to handle and analyse spatial data independent of chronicles and
interviews. It is on this strength that a geographer proceeds to unearth societal norms and behaviour. If he draws supporting evidences from the field of history and sociology or from any other sets of information relating to social or economic structure, it should be considered as a welcome addition to the power of his method but not as its essentials. In our opinion, geographic enquiry into any problem is essentially a visual method, as in visual anthropology, whose efficacy lies in the depth and extent of subjective knowledge derived from systematic learning of the principles of geography.

Coming back to the selected villages, we are yet to come across any existing paradigm except that of the long-lot land survey system found in Texas (Jordan, 1975, 1977). We have also a close parallel of the irregular rectangular survey of Central Texas mentioned by the same author. The examination of toposheets, cadastral mouza maps and district and police station maps of different time points from 1921 onward helps us to formulate a number of statements which, we believe, can serve as the building blocks of some working hypotheses relevant to the objectives stated earlier. We are presenting these building blocks in the subsequent sections of this paper.

6.3.2.0 LINEARITY : FUNCTIONAL RELATIONS

Over the entire region linear forms of settlement predominate over other forms with the exception of a few in which convergence of linearity from multiple directions have given rise to ill-defined clusters. The term form here refers to the shape of an individual settlement. Examples of pure linearity are to be found in the western Homrapolta village. Such linear forms go with several site and situational associations. They are found along embankments as in the extreme northern part of Patikhali; along natural levees,
although of limited occurrence as in north-eastern Patikhali in small and disconnected stretches (since most of the natural levees had been reinforced by embankments before the mouzas were surveyed); and along closely spaced combinations of levees, embankments and channels as in southern Patikhali where a very large settlement is found. Ill-defined non-linear clusters may be found wherever roads or embankments have converged in individual nodal points.

The regional pattern of settlements again is predominantly linear if we consider in some detail the layout of the chief governing factor which is channels lined by levees and embankments, the last named also serving as roads. The term pattern here refers to the broad direction along which strips and clusters are aligned.

It is to be noted that we have made a slight intentional departure in defining form and pattern from the conventional definitions. In defining pattern we have tried to incorporate the driving force behind locations of settlement in general. Here the driving force is the tendency of the settlers to cling to embankments for reasons of reclamation, protection, maintenance and communication.

6.3.2.1 LAND SETTLEMENTS AND HUMAN SETTLEMENTS

There is a close relationship between land settlements and human settlements in so far as the shape and the size of the plots are concerned. The plot layouts are indicative of the nature of clustering of dwellings. Small irregular rectangular plots are associated with dwellings whereas elongated plots are associated presumably with cultivation.
Fish-cum-paddy cultivation, a very common practice at the adjacent plot of houses of villagers.
6.3.2.2 STRIPS

The land settlement pattern is dominated by strips or elongated revenue plots though irregular rectangles also occur over a sizeable area. The western two-thirds of the region covered by the selected villages show a predominance of strips roughly parallel to the river and perpendicular to cross-dykes. In the eastern one-third also the irregular rectangular plots seem to have been mostly derived from the sub-division of primarily elongated plots.

Over the entire region there is a broad uniformity in the spacing of cross-dykes and in the length of the strips. This is more clearly visible in the western half of the region.

6.3.3.0 PROCESS INDICATORS

The relationship between land settlements and human settlements together with uniformities in the spacing of cross-dykes and length of strips are indicative of some processes of natural land building, reclamation and habitation.

6.3.3.1 NATURAL PROCESS

Cross-dykes are not independent of the alignment and spacing of water courses draining through the islands. It means that during the formative stages of the islands there was some kind of a regularity in the number and spacing of cross-channels of definite size. Later on during the reclamation of the land, cross-dykes were raised along these cross-channels leading to regular spacing between them. This on the one hand has a direct control over the length of the plots lying between two cross-dykes.
6.3.3.2. RECLAMATION PROCESS

Between two cross-dykes plots were cleared in strips either one after another starting from a definite point and moving in a definite direction or simultaneously by groups of labourers starting the clearing operation from different points along a cross-dyke and moving in the same direction which is perpendicular to the cross-dyke.

A slightly modified situation may also have prevailed. All cross-dykes were not raised at the same point of time. Naturally in the first stage, the intervening distance between two cross-dykes were greater if two groups of labourers attempt to clear the intervening forests between two cross-dykes from opposite directions then the length of the plots cleared by one group becomes dependent upon two factors. The first one is the total length of space between two cross-dykes and the second one is the capacity of individual groups to advance to a definite distance and to come back to the starting point in the course of a day. We have to remember here that coming back to the starting position much before sun-down was essential for the clearers because of the fear of depredation by wild animals. The process ultimately led to creation of strips of almost even length. This length in this region roughly varies between 400-500 metres, which is also the average distance a cultivator travels today between home and work.

6.3.3.3 HABITATIONAL PROCESS

Once an embankment or a cross-dyke is selected as the first vector to start the clearing operation, the labour force would try to settle along the edge in a linear fashion because every one would like to locate his dwelling at the minimum permissible distance from the furthest point he has to travel to and from within the course of a day. They
would not like to settle in compact clusters because in that case the travelling distances of individuals responsible for maintenance of fixed plots would be highly unequal.

6.3.4.0 RECONSTRUCTION

The plot size is indicative of existing dwelling places, those contemplated for the immediate future and also places from which the dwellings have disappeared due to various changes. At a given point of time, plots may have been sub-divided by sale or part inheritance for the purpose of habitation but the actual existence of the houses may not be found on the survey map since houses were yet to be built during the survey.

There are definite evidences of considerable shifts in the location of the settlements as reconstructed through maps from the locations and alignment of plots. For instance, from the size and the survey pattern of the land in Maukhali and Kumarkhali, it is clearly evident that there were settlements in southern Maukhali. Presence of quite a sizeable number of clustered tiny squarish to rectangular plots, with tanks or roads beside an embankment parallel to the river Bidyadhari but quite inland and further south two parallel embankments along with loosely marked plots are observed. The obvious indications are that the area was inhabited in the past but the settlement shifted away to other places during the time of the survey. The emergence of newlands or chars due to heavy sedimentation and southward shift of the Bidyadhari were the ostensible causes behind this shift. The old settlement locus became a part of a depression away from the southward shifting river, making it susceptible to floods and tidal ingression. This in turn forced the people to shift their dwellings from this once favourable zone to other parts.
In the delta-building process, a significant role is played by repeated shifting of river courses and heavy sedimentation. This has given rise to emergence of land in one place and submergence in another. Thus growth of settlement in one place and complete depopulation in another are simultaneous phenomena in delta areas. The entire area between Tambuldaha Khal and Karati Nala has enormously degenerated due to shifting of river courses, huge silt deposition and frequent tidal ingestion. Almost the entire area has been converted into a marshy land, covered with mud. Thus the inhabitants of the two mouzas of Tambuldaha and Chunpuri are forced to leave their original homeland and the area becomes depopulated and deserted. Only the high embankments break the monotony of swamps and muddy land and remain as the sole traces of the past occupancy of the area. The need for problem oriented applied research, as demanded by the case of Tambuldaha and Chunpuri, thus becomes a major sub-area of settlement studies.

6.3.5.0 LAND USE AND CHANGING SETTLEMENT

The contemporary settlement history over the last sixty years has undergone considerable changes. Owing much to the changing physical landscape due to devastating floods by the Bidyadhari, the cultural landscape had changed. This landscape has again been altered when the external forces, socio-cultural determinants intervened to change the landuse and habitational layout of the study area. A broad understanding relating to this changing character has been attempted through in-depth study of two mouzas, viz. Cheli-kati and Bibir abad.

6.3.5.1 CHELIKATI

About hundred years back, people from adjoining areas like
LAND USE MAP
1992
MOUZA CHELIKATI

MAP NO. 17
Changdona, Bibir abad, Sarengabad and also from Joynagar and Baruipur came to reclaim the northern part of Cheli­kati. The entire southern half remained under forests infested with wild animals upto the first quarter of the present century. Reclamation started from the northern boundary of the mouza after the construction of the embankments along the Dhanyaghara khal was completed. The first human settlement developed in the north-eastern corner along the right embankment of the khal. Sixty to seventy families formed the village almost entirely consisting of Poundrakshatriyas and Muslim cultivators. Due to strictly social reasons, three to four families of Jele-Bagdis settled in the extreme eastern part keeping a distance from the main village.

In the located just to the south of the linear settlement, stretched vast aman paddy fields. The land used to produce fruits and vegetables. The surplus agricultural production would move through the Bidyadhari to outside areas. The area adjoining the Bidyadhari was not reclaimed. Thus the Dhanyaghara and a cross-channel which connected the Dhanyaghara and the Bidyadhari were considered to be the main transportation routes. Canning played an important part as a market. A bi-weekly hat was located at the eastern corner on the bank of the Bidyadhari. The zamindar of this area excavated one large tank which was famous for sweet water and used to provide drinking water to the population around. Till 1920s Chelikati had a prosperous village environment with a surplus agricultural production. The area was well protected by embankments. Apart from the waterways, a long and wide District Board road was constructed along the embankments. So the communication also was reasonably good.

The factors behind such prosperity of this area were hidden in its physical environment. The village shows a typical
inverted spoon like topography bounded by the levees and embankments of the Dhanyaghara and the Bidyadhari. The Dhanyaghara khal and its embankments were a little higher than that of the Bidyadhari. The original settlers selected this part as the first area to be reclaimed. The work progressed fast due to the sweet water of the Dhanyaghara khal and the neutral soil. Thus the common problems faced by the early labourers during the reclamation of other parts of Sunderban were absent in Chelikati. Due to the availability of fresh water agriculture flourished quickly and the region became an abode of a rich agrarian community.

The two successive devastating floods of 1935 and 1942, due to breaching of the Bidyadhari embankments covered a huge area extending upto the Bhangar police station. The entire region was submerged under water for a few months. The result was extreme salinity of water and soil. The region was depopulated. The impact was so intense that the area is yet to recover fully from that salinised state. Experiments have started during the last twenty years for some paddy cultivation with the help of salt-resistant high yielding varieties.

The entire area was turned into a marshy wasteland devoid of any sign of settlement. Slowly a few families tried to resettle in the original locations. But the landuse of the area eventually changed into a new type, dominated by bheries or fisheries of different size. The Paramaniks who took long term leases from the Basus, the original lotdars turned this wasteland into bheries, recognised by the government in 1955. Five or six families (Gaens ) stay at the north-eastern part. They are neither cultivators nor fishermen and dependent mostly on collecting activities for their livelihood.
The cadastral map (Map No. 16) surveyed during 1962 clearly shows the preponderence of fisheries or bheries. Only three or four plots were marked as shali or lowlands suited to paddy (Map No. 16).

Later, with a changing political regime, the land policies also changed. Recently since 1977, the land reforms implemented by the Left Front Government has again changed the entire land use structure. Firstly, about eighty families of agricultural labourers were given free land. Their basti has developed along the old District Board road which remained unused for years. People from different caste, clan and religious groups have together formed a long straight linear settlement along the western boundary of the mouza (Map No. 17). The northern built space enlarges with increasing population. Secondly, the agricultural land use pattern has abruptly changed. Most of the bheries have turned again into shali lands (Map No. 17). The bheries which are still operating are controlled by cooperative farms. Thirdly, high yielding paddy varieties have been introduced to raise the production. But the scarcity of fresh water, capital and uncertainty of production restrict the prospects of agriculture.

6.3.5.2 BIBIR ABAD

Bibir abad is one of the oldest villages in this region where reclamation started even before 125-130 years. The ownership of land changed hands several times. The reclamation work started from the east and was done not only by people from adjoining areas but also from Kamarpukur of Hooghly and Uluberia of Howrah. Different groups of people settled along the embankments forming small hamlets selecting different sites for their habitation. Thus small clusters developed to form Singhipara, Bagdipara or Shilkhalipara,
Halderpara and Adibasipara. Segregated small uni-ethnic hamlets were the most important cultural features in Bibir abad during the initial stage. Contiguous linear forms did not develop. (Map No. 18). The village was a very prosperous region as both the Dhanyaghara khal to the south and Bibir khal to the east used to supply fresh water. The fertile silty loam with low salinity also helped high yields from paddy. The surplus was exported to Calcutta. During the infamous floods the entire area was submerged and depopulated. After 1950, the creeks were reembanked and new settlements started. At present five settlement clusters locally known as paras exist in the mouza, (i) Singhipara to the east with a secondary cluster of Bagdipara, (ii) centrally located Halderpara, (iii) Nolgora, (iv) Jhaltala and (v) Kapatkhali in the west. About 200 families reside in Singhipara. Due to extensions from both sides (Singhipara and Bagdipara), these two clusters have coalesced with each other. Thus social stigma has diminished significantly. In the west, in and around Adibasipara in Nolgora and Jhaltala fifty new families have settled after 1981. (Map No. 19). The Panchayat sanctioned about 1 beegha of land to each family of these landless and marginal workers. This concentration has produced a contiguous linear settlement reducing the intervening open spaces between the original uni-ethnic clusters.

6.4.0.0 SAGAR

Sagar island lies at the extreme south-western part of Sunderban. It consists of about ten islands of different size separated by small creeks. The northern outlier (Ghoramara and Khasimara) is separated from the main block by a channel connecting the Hooghly and the Baratala.
The island is separated from the district of Medinipur by the Hooghly river on the west and from rest of Sunderban by the river Baratala or Muriganga or Channel Creek on the east and is bounded by the Bay of Bengal on the south. It is a police station of the Diamond Harbour subdivision and has forty five mouzas within its jurisdiction. The island is situated within the latitudes of 21°37'N and 21°52'N and the longitudes of 88°10'E and 88°02'E covering an area of 580.9 sq km and is inhabited by 1,54,172 persons (Census of India, 1991). It is wellknown for Gangasagar, a very important religious centre where the famous 'Makar Sankranti' festival takes place.

6.4.1.0 PHYSICAL SETTING OF SAGAR

Even being a part of Sunderban, Sagar exhibits some special geomorphic, pedologic and vegetational conditions which are not always typical of Sunderban.

6.4.1.1 PHYSIOGRAPHIC ASPECTS

Sagar is a typical riverine delta, an island located at the mouth of the Hooghly river. With a continuous changing coast, Sagar still retains its typical deltaic shape.

Though the vertical accretion of land has ceased, lateral landbuilding or destruction is very much common. Mostly in the southern part, along the south-eastern and the south-western coast line, alternate land accretion and reduction has been continuously changing the coastal topography. The presence of shoals or chars is common in different rivers of Sunderban in addition to long mud-flats on the bed of the rivers near levees and artificial embankments. In case of Sagar, embankments have developed directly from the bed of the rivers. Deposition or
sedimentation on the river beds are frequently washed away by running water. Mud-flats as a result of erosional activities are observed in places like Beguakhali, Bisalakshipur and some other places. The sediments are recent in origin. These sediments are typically dark and loosely compacted with a high content of water and organic material.

The Hooghly estuary at the sea-face near Sagar, has broadened upto 20 km. This wide estuary has divided itself into four channels separated by sands and shoals. These sands and shoals often act to change the coastal topography of Sagar particularly during cyclones, gales and bores.

Years ago Mudpoint was attached to the main island and the island had land connection with the mainland. The main arm of the Ganga used to flow through the Adiganga which passed Sagar island to enter the Bay of Bengal near Gangasagar which determined the location of Kapil Muni's temple. The course shifted later on. About 150 years ago a channel of the Hooghly estuary entered into the channel creek. But in course of time the thalweg moved away by eroding the neck which connected Mudpoint (Ghoramara and Khasimara) island to Sagar island. Continuous deterioration caused the formation of sand flats on the south-eastern part of Sagar island. Recently erosional activity has increased to a significant extent washing away different parts of the island such as Lohachara, eastern Bisalakshipur and Khasimara. Erosion has started in western Ghoramara on the north and western Beguakhali on the south.

From the deep sea, two tidal waves, one from the south-east and another from the south-west stretching. The tides show semi-diurnal pattern having periodicity of 12.42 hrs. (Inst. of Port Management, 1976). Approaching the estuary,
waves' slope gets steepened and the trailing slope flattened during its passage over shallow waters. Thus, the duration of flood is reduced and that of the ebb is lengthened. The range and timing of waves are dependent on astronomical and meteorological causes. In summer, generally, day tide ranges are higher than high tide ranges and on the corresponding day high waters are still higher. During the winter months the sequence is reversed. The intensity of tide is influenced by the upland discharge and the seasonal winds. In the estuary, inflow and outflow of tide is so high that upland discharge has insignificant effect on the levels; though in the upper tidal reaches the effect is noticeable. The southerly wind starts blowing from March and attains peak in the monsoon. Thus, the mean sea level at the sea face gets elevated during the prevalence of southerly wind and during winter the effect of tide is minimum.

6.4.1.2 SALINITY

The water that surrounds Sagar on all sides remains saline for most of the year. The only fresh water discharge through the Hooghly reduces the salinity below Sagar. The rate of upland discharge varies from year to year and from season to season. Normal fresh discharge of 3400 m 3/Sec (1,20,000 cusecs) lowers the salinity of water around Sagar but fails to make it potable. Only when the discharge exceeds 1,50,000 cusecs, the water becomes sweet. Thus, in certain years when the fresh water discharge is high the water remains potable for 40 days (Inst. of Port Management, 1975). The salinity rises since the supply of fresh water reduces and it reaches a peak by the end of March.

It is thus observed that Sagar on the one hand suffers from acute shortage of fresh water and on the other hand is
deprived of such opportunities as salt manufacturing sea-fishing etc. because the sea salinity does not remain high throughout the year.

6.4.1.3 CLIMATIC CHARACTERISTICS

The climate is same as described earlier in chapter 2. The only difference is due to its sea-front location. The range of temperature rarely rises above 30°C. During monsoon months, the average rainfall is 300 mm. Some years rainfall exceeds 800 mm. During August and September cyclones and storms are more frequent. The frequency of occurrence of Nor'westers around Sagar island is about twelve per year. Quite frequently these storms persist for a few days without any interval.

6.4.1.4 SOIL CHARACTERISTICS

Sagar island is a typical riverine delta where land building is augmented by various processes, viz. upland sediments, and estuarine offshore sediments. The grain size of these various sediments is not same. As a result, a complicated process of sedimentation produces an erratic occurrence of strata in the sub-soil.

The Bore-hole data analysis indicates the presence of five types of soil in Sagar, viz. clay, silty loam, loam, sandy loam and sand.

6.4.2.0 RATIONALE BEHIND COLONISATION OF SAGAR ISLAND

The view to promote clearance of jungle, reclamation and cultivation of land and human settlement constitutes an important chapter in the social history and evolution of
settlement of Sagar island.

In the year 1707, the first survey, conducted by Mr. Rennell was prepared to make a map of the island. The assumptions that these lands were devoid of human habitation proved incorrect as some villages and huts were discovered inside the jungles. In the year 1810 the next survey was made by Capt. Robertson from the Bhagirathi to Noakhali and it was then that Sagar island came into prominence (Bhattacharya, 1976).

The project of clearing the island was started by the government in 1811, with the intention of benefitting the navigation of the river Hooghly but the project failed. The island was again surveyed by Lt. Blane in 1813-14 and its area was estimated at 580.92 sq km (1,43,550 acres) (Inst. of Port Management, 1975). One Mr Jones got a lease with a free period of ten years in the previous year (1812) to clear and cultivate, but failed; so also did Mr Beaumont, who appears to have got a similar lease in 1813 (Pargiter, 1934). He selected Sagar island to establish a factory for drying raw hide with the intention to export the finished products. He approached the Board of Revenue for the allotment of 4.0468 sq km (100 acres) of land. The request was granted.

Meanwhile, a lot of calculation was going on as to the future prospects of Sagar island. The British considered that reclamation should be started because a large tract like this could not be allowed to lie fallow and cotton might be grown. Damaged ships could be repaired here instead of dragging them to Calcutta. The animals which were exported to Britain might be brought here by instalments and can be despatched after the collection is complete. A sanitorium or health resort could be built in such a beautiful place. After much consideration the then
government decided to lease out the land free of charge for the purpose of cultivation and residential use.

Thus Sagar attracted the government's attention for distinctly different motives. The intention to be directly attached with the land by participating in the reclamation activities was prevalent.

6.4.3.0 HISTORY OF LAND SETTLEMENT AND TENURE SYSTEM

In 1817-18, the Collector Mr. Trower was instructed to reclaim the island. He began clearing in a central portion, later named as 'Trowerland'. A joint stock company consisting of the Europeans and Indians was established with a capital of 2.5 lakhs of rupees to carry out reclamation work.

The Collector proposed to lease the lands free of revenue for 30 years and thereafter at an ultimate rate of (paisa 25/.405 annas 4/bigha hectare). The company was then started in 1819 under the name of the 'Saugor Island Society' and the lease was executed on 10th June, 1819. (Lahiri, 1934). The capital consisted of Rs.2,50,000 in 250 shares of Rs.1000/- each and the management was to be in the hands of a committee of at least thirteen trustees. The whole island was leased out to the Society by the government. The reclamation was started by constructing embankments, clearing the land, digging tanks and settling cultivators in five different portions, namely, Mudpoint, Perintosh, Trowerland, Shikarpur and Dhobelat. The progress was quite good until May, 1833 when the great gale and subsequent flood destroyed almost everything. The Society was compelled to abandon the scheme in despair. Afterwards, four gentlemen, namely Messrs Hare, Macpherson, Hunter and Campbell bought the four northern portions; Shikarpur, Trowerland, Mudpoint and Perintosh and
the government had assisted medical, military and post office establishments there to protect and support the immigrants and inhabitants (Map No. 21). In 1834-35, the grantees started production of salt in the island. Though the scheme was looking successful at the beginning, but faced a set back due to damages caused by cyclones and gales in 1842 and 1848. In 1849, the manufacture of salt was prohibited by the government. To compensate the loss of grantees rent free period was extended upto 30 years from the date of purchase of the grants.

In 1863, the revenue free period expired. Mr. Gomez surveyed the island with a view to proper assessment. It contained six blocks, partially and wholly cleared and cultivated, viz. Mudpoint (totally cleared), Ferintosh (partly cleared), Bamankhali 2,096 bighas (2.825 sq km); Trowerland (partly cleared) and Shikarpur 2579 bighas (3.479 sq km). The total reclaimed area was 31,190 bighas (42.08 sq km) (Pargiter, 1934). Rest of the island was under dense jungle, except the spot occupied by the Light House. Successive gales and inundations in 1864 and 1867 reduced the cultivation to 2750 bighas (3.71 sq km) only. Attention was drawn to the urgency of providing protective measures for cultivation and human life. Government then offered two alternative terms; either to settle the cultivable lands at 4 annas/bighas, or to allow the grantees to continue in possession revenue free lands for ever, subject to the maintenance of protective works by the grantees. Grantees accepted the second offer under a few specific conditions:

1) that three seasons be allowed for the construction of the protective works,

ii) that yearly inspection of the grants be made by the Sunderban Commissioner,
that additional protective works should be constructed with extension of cultivation, and

that on failure of the maintenance of the protective works, the grants would be liable to resumption (Pargiter, 1934). Under this rule, intensive protective measures had been prescribed. These are as follows:

1) a place of refuge consisting of a tank and an embankment terraced inside surrounding it was to be constructed on a specific spot;

2) the area of the tank should be 200 (60.96m) by 150 feet (45.62m), the embankment 16.5 feet (5.03m) high with a crest of 5 feet (1.524m) broad and a slope of 3.5 to 1 outside and 2 to 1 inside;

3) the embankment was to be properly rammed and turfed and there was to be a sward of 50 feet (15.24m) width between it and the tank;

4) no habitation should be erected more than 2.5 km from the place of refuge, unless its basement were raised 16.5 feet (5.029 m) above the grounds; and good bund roads were to be constructed connecting the place of refuge with the habitations on the estate;

5) as cultivation extended beyond the prescribed distance fresh protective works should be constructed.

Six portions of the island viz. Mudpoint, Perintosh, Shikarpur (1st portion), Trowerland, Bamankhali and Dholbat
were granted in 1875. Afterwards, these six portions lost their importance due to different reasons. Under the rules of 1897, 14 grants were available for settlement. Of these 5 grants were settled strictly.

The following are the chief noticeable conditions:

i) that the grantees should have the right of a tenure holder for the settlement of 20 yrs. in place of 40 yrs,

ii) that 1/5th of the area should be left unassessed in place of 1/6th,

iii) that provisions for the construction of protective works be omitted,

iv) that the initial revenue free period be reduced from 15 to 5 years,

v) that the ultimate rate of assessment be annas 12 per bigha in place of annas 4 per bigha,

vi) that 4/5th of the area must be reclaimed by the end of the 10th year

vii) that the preferential right to resettlement would remain with the grantees on their full compliance with the conditions of the lease, and

viii) that a penalty of annas 4 per bigha would be inflicted for non-clearance.

The following grants were made under special terms extracted from the leases under the rules of 1879 and 1897.
The remaining 3 portions of Sagar Island (tauzi nos. 2928 and 2968) Ramkarerchar (E) and Manasadwip (2nd portion) were kept under the khas management of the government which had already been settled under the colonization Rules sanctioned under the government artification in February 1919. (Lahiri, 1934).

6.4.4.0 GROWTH OF POPULATION

Depending on the success of reclamation and subsequent land settlement, growth of population has differed in different parts of the island. The Census sources of population only give the total number for Sagar. The spatial pattern of population growth during pre-independence period can be only inferred from archival documents by the content of the letters between the lotdars or chakdars and government.

The early growth was very slow and was frequently chequered by natural calamities. During the early 1820s about 500 families from Arakan settled in the land. In 1822, construction of a road started from Kalagachi to Gangasagar. By 1833 there were, it appears, about 7000 inhabitants on the
island (Chapman, 1867). But the cyclone of May 1833, along with a high tide having a height of 12 feet (3.66m) above its ordinary level destroyed embankments and buildings of every kind. Only a few people could escape.

By the end of 1863, the work of reclamation and cultivation made substantial improvement in six blocks. From this, it is evident that the two northern blocks, Mudpoint and Ferintosh had almost entirely been reclaimed from the marshy wasteland and rendered fit for cultivation. Quite a number of small hamlets were developed to look after agricultural activities in these parts of Sagar. Growth of population was maximum in Ferintosh followed by Mudpoint, Trowerland and Shikarpur. The population of these areas varied from 550 to about 2000. It also indicates the absolute dominance of aman paddy which was extensively grown at that time. There was a direct relation between the cultivated land and the ryots in different parts. Old records related to the history of the island during early stages, never gave any impression about any other occupations. Forestry, fishing or any other activities were presumably just supplementary activities of the inhabitants. Inspite of great cyclones and inundation in May 1833, June 1842, October 1848 and June 1852, (Pargiter 1934) which destroyed the entire settlement and cultivated land, the northern part recovered rapidly from the disastrous condition.

The cyclone and gales of 1864 and 1867 made a clean sweep of the island leaving only 1,488 people alive. A study had been done to ascertain how far it had suffered from the cyclone of 1867. The cultivation decreased from 25,000 bighas (33.73 sq km) in 1862-63 to only 2750 bighas (3.71 sq km) in 1867. It was seen that Mudpoint and Bamankhali had been apparently wholly abandoned and Ferintosh, Trowerland and Shikarpur were probably about to follow suit.
The only grant which exhibited signs of vitality was that of Dholebat. Besides, the inhabitants suffered severely from the famine of 1866.

It thus appears that even being one of the oldest foci of the contemporary history of settlement in Sunderban, throughout the early period, growth of population was restricted in Sagar. With a slow growth rate in the early stage, population rose rapidly from the second quarter of the present century. Since 1921 population growth accelerated rapidly and steadily. It has further enhanced since independence with a rise of more than one lakh between 1951 and 1991 (Table 30).

For a convenient analysis of spatial growth of population, the population data for mouzas have been grouped under different islands which were also the lots, chaks and chars as classified during lot distribution (6.4.3.0). During the entire census periods proportions of population contained by the islands to the total population of Sagar have remained almost the same. Manasadwip, Ramkarerchar - Goalia chak and Ferintosh contain about 50 per cent of the total population followed by Shikarpur, Trowerland, Gangasagar and Dholebat together having about 35 per cent of the total (Table 30). The relative position of different constituent islands do not change significantly.
### TABLE

**PROPORTION OF SMALL ISLAND POPULATION TO THE TOTAL OF SAGAR**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name</th>
<th>Total Population</th>
<th>Proportion to the total population in per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Manasadwip</td>
<td>10277</td>
<td>27114</td>
</tr>
<tr>
<td>2.</td>
<td>Ramkererchar-</td>
<td>8630</td>
<td>25935</td>
</tr>
<tr>
<td></td>
<td>Goaliachak I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Perintosh*</td>
<td>7249</td>
<td>25839</td>
</tr>
<tr>
<td>4.</td>
<td>Shikarpur</td>
<td>6031</td>
<td>22213</td>
</tr>
<tr>
<td>5.</td>
<td>Trowerland</td>
<td>4087</td>
<td>14496</td>
</tr>
<tr>
<td>6.</td>
<td>Gangasagar*</td>
<td>3708</td>
<td>12143</td>
</tr>
<tr>
<td>7.</td>
<td>Dhoitel*</td>
<td>3934</td>
<td>11523</td>
</tr>
<tr>
<td>8.</td>
<td>Goaliachak II</td>
<td>3177</td>
<td>8978</td>
</tr>
<tr>
<td>9.</td>
<td>Mudpoint</td>
<td>2526</td>
<td>4971</td>
</tr>
</tbody>
</table>

*Source: Census of India, District Census Handbook, 24 Parganas 1951

*There are minor changes of ranks from 1951 to 1991.*

6.4.5.0 **EVOLUTION OF SETTLEMENT**

Regarding the early distribution of settlements, their site and location, the documents are scarce. The only inferences that can be made are based on archival sources. The records of schemes proposed by the government for the protection of the island throw some clues to sites and locations of early settlements. The sites of refuge houses probably guided the early settlements at the central part of the different smaller islands.

The basic information on the spatial aspects of settlements in Sagar are contained in the topographic sheets (1 inch to
1 mile) surveyed during 1920-21 by the Survey of India. By the early part of the present century the northern part containing Ghoramara island (Mudpoint), Perintosh and Bamankhali became well settled. Settlement extended to the furthest part of south occupying the space located to the west of the Gangasagar road. A few villages, such as, Manasadwip and Chemagari showed few scattered huts and hamlets. The southern part of Trowerland, Shikarpur, Ramkarerchar and Dhobelat were hardly inhabited. Southern Trowerland (Banstala Jungle) and northern Shikarpur were still occupied by forests. Phulbari, Shibpur, Kachhuberia, Patharpratima, Silpara, Iswaripara were the villages settled in Perintosh. This region was found to be the most thickly settled part during the first quarter of the present century.

Moving towards the south in the western half of the island, few villages like Mandirtala, Goyamara, Goaliachak, Radhakrishnapur, Rudranagar, Magrahat, Chemagari hat, Beguakhali and Sagar contained few scattered huts. These were definitely more recent in origin than Mudpoint, Perintosh and northern Trowerland (Map No. 24).

Thus the early settlement growth in Sagar upto 1920 exhibited some noticeable phenomena;

i) northern and north-western parts contained most of the settlement clusters,

ii) the eastern part lagged much behind,

iii) except a few cases, settlements did not produce any distinct form; dispersed settlements were common; and

iv) a substantial area still remained under forested or marshy conditions.
Information relating to changes in the spatial distribution of settlements come 50 years later. The source again is topographic maps surveyed during 1959-60 (R.F 1:50,000). Within these 50 years the cultural landscape changed a lot. The old villages grew in size and in some cases the village outlines changed drastically. In some areas new villages were also formed.

The most important change is the growth of a large number of settlements in the eastern half. Though the western part shows a denser settlement, yet the rate of growth was much higher in the eastern portion which had a low population in earlier periods. Two small islands, Ramkarerchar and Dhobelat are good examples. Though the attempts to reclaim these two sections started since 1819, it was not successful. Dhobelat island never showed any significant settlement growth (Map No. 23). A single cluster in Dhobelat village was found with the presence of few huts irregularly distributed in the entire island. Even the refuge house, the most favoured part of the island was devoid of huts. But within fifty years the island became densely settled. All the major embankments along the rivers attracted huge settlement growth. Overcrowding in this part forced the people to move inwards encroaching the central paddy fields. Some development has taken place in Banstala (mouzas Mahendra ganj and Nagendra ganj) and Ramkarerchar which were absolutely dense forests even a few years back. Successful reclamation helped the growth of new settlements. The second stage of evolution of settlement in Sagar also shows some spatial specificities. These are,

i) settlements grew at a faster rate in the east than in the west,

ii) old villages in the west enlarged in size strikingly,
GROWTH OF SETTLEMENTS (SAGAR)

1920-21

1959-60
iii) reclamation continued in the eastern and southern parts to provide place for additional population, and

iv) settlements started gaining distinct forms.

6.4.6.0 FORMS OF SETTLEMENT

Over the entire region linear forms of settlement predominate over other forms.

Different geometric shapes of linear settlements like straight, arcuate, meandering, comb-like and radial forms are identifiable. The most distinct settlement pattern in Sagar is radial, developed around the refuge houses. The island can be divided into two broad zones as far as settlement form is concerned:

i) the northern part producing moderately thick and perfectly defined settlement forms; all types of geometric shapes are easily discernible in this part; and

ii) the southern part in which settlements have failed to produce distinct shapes; the linear forms with all possible variations are very thin; generally characterised by single rows of houses; large or medium clusters are very infrequent.

6.4.7.0 PROCESSES

The contemporary history of human settlement of Sagar experiences frequent disruptions due to natural hazards, both meteorological and hydrologic. Though over the last hundred years settlements emerged steadily, yet
people have to desert their homes due to coastal erosion or sudden visits by cyclones and tidal ingression. Thus the process of habitational growth is unstable just like the island's active geomorphic processes. This unstable nature is very much observed where the entire mouza of Khasimara and Lohachara of northern Sagar, and Bisalakshmipur in the extreme south-east and also the western part of Beguakhali located in the south-west have been washed away within a couple of years. Erosion still continues inwards threatening the present coastal settlements.

During the early stages of reclamation, the northern part definitely contained the maximum number of settlements, even after repeated ravages caused by cyclones and gales. These were the early lots owned either by the Europeans or Indian zamindars of Calcutta and adjoining areas. Thus the main entry point was Kachhuberia which was readily connected by the long unmetalled road with the interior south since 1822. The necessary manpower and goods required for reclamation and subsequent human habitation were transported through this part of the island. Mudpoint, the northern most part was attached to the main island. Apart from the interest of the lotdars or chakdars who tried to improve their land in order to earn profit, the shape and location of this northern part of the island offered some other facilities also. The narrow triangular shape favoured the reclamation work from either side. Besides, this part is the closest point from the main land. The European and the Indian lotdars appointed contractors who brought labourers mainly from the Tamluk sub-division of Medinipur to the north and from Contai sub-division to the southern part of Sagar. Upto 1860 Sagar's links with the outer world were restricted. The island became the home of migrant labourers who subsequently followed their ancestral occupation of agriculture. These settlements were entirely destroyed by the great gales and
tidal ingressions of 1860s. Seeing the tremendous loss incurred due to natural hazards of 1863 and 1867, some precautionary measures were taken of which the construction of the refuge houses were the most important (Map No. 22).

During this stage the entire settlement growth, form, pattern was controlled by these places of refuge. We can say that the entire settlement system of Sagar in the nineteenth and early twentieth century was a planned one whose design and layout were exclusively controlled by the protective measures. The places of refuge locally known as Gherpukurs determined the built space and land use pattern of the island. All the dwellings were constructed in the innermost circle around the tank within a definite distance. After the sites of settlement became fixed, roads were developed radiating from the heart of the villages towards different directions so that in times of danger people could come readily to their shelter. Residential spaces were controlled by the roads. All the houses were developed along the roads radiating from the focus, the tank. One small chamber called ghantaghar (bell-room) was always attached to the tank in order to send signals to all people.

The most interesting thing about Sagar is that here embankments started from the central portions of the islands. The larger embankments which now encircle the entire island of Sagar were constructed much later. After their completion the refuge house oriented radial pattern of settlements lost their importance as various linear forms started coming up following the peripheral embankments. With increase in population, the outer margin of villages failed to provide space for additional people and settlement clusters extended inwards forming comb or toothlike shapes in different parts.
The immigrant settlers from Medinipur belong to the Mahishya ethnic community. They are generally cultivators with high professional efficiency. Their traditional culture along with the characteristics of the land of Sagar give a distinct dimension to the cultural landscape of the island.

Because of its distinct land tenure system most of the inhabitants own at least a small piece of land. The psychology of being a landowner creates a special interest for further improvement of land. In addition to that their age-old professional culture made them specially skilled to develop agriculture. This is expressed through the multiple crop-combination in Sagar. This is further facilitated by a high land-man ratio. People could easily be absorbed in the land and also sustained by agriculture. This in turn restricted the scope for occupational diversification.

The recent geomorphic changes in different parts are threatening the inhabitants. The displaced population from Khasimara and Lohachara have resettled in the extreme southern part of Gangasagar mouza. The people from western Beguakhali had to resettle inside the ring embankments. This resettlement process has created problems of land utilisation and employment.

6.5.0.0 THE HIDDEN ECONOMY

Sunderban's favourable estuarine ecosystem, the meeting place of fresh water from the north and saline water from the south creates a playground for huge varieties of fish. Such an abundance of fish attracted people from years back and led to the development of a large number of fishing settlements. This activity has become more important
because agriculture does not offer a bright prospect. Almost all modes of fishing excluding deep-sea fishing are practised in Sunderban with sufficient economic viability. In recent years due to tremendous overseas demand for prawns (black tiger variety), fishing has taken a new look. Like any other monsoon Asian society, fishing in Sunderban should primarily be understood as a mode of life for peasant-fishermen (Yabuuchi, 1975).

6.5.1.0 FISHING AS A RESOURCE PROCESS

Fishing is a resource process which has forward as well as backward linkages which should be viewed from two angles: one is ecological and the other is economic.

6.5.1.1 ECOLOGICAL SIGNIFICANCE OF FISHING

Ecologically, the fish population of the world has a special significance to mankind. It has been more or less accepted (Mather, 1986; Simons, 1981) today that the availability of food energy for human consumption, is almost six times greater in cereal based agricultural ecosystems than in mixed farming characterised by cattle and pig fatting or in grazing systems.

Yet, because of nutritional requirements and cultural conditioning man needs animal protein. For this it is better to depend on any other source of animal protein without disturbing the energy ecosystem based on land. If man has to maintain his rate of consumption of animal food then he may have to depend more and more on the animal resources coming from water. The coastal and upwelling zones have higher productivity because of its proximity to the sources of mineral nutrients. Tidal
estuaries and mud-flats are among the most productive eco-
system of the world (Simmons, 1981). The rate of energy
fixation in an aquatic ecosystem is much less than on
land but since the water resources are three times larger
than land resources they have got enormous potentials
to supply food to man.

Most of the energy sources in the form of minerals and
organic matter remaining within silt are washed out from
the land by surface run-off to be deposited into the conti-
nental shelf of the oceans. By phyto-and zoo planktons
this energy waste from land is transferred to fishes and
comes back to the human food chain. From the outer ocean
to the rivers draining on to the sea this is a global
circulation of animal life and the resources of the outer
ocean can also be tapped from coastal, littoral and river-
ine ecosystems.

6.5.1.2 ECONOMIC SIGNIFICANCE OF FISHING

The dominance of water increases seaward from the interior
of landmasses and so increases the abundance of fish
resources seaward. On the other hand the availability of
land based resources becomes limited at the sea-front in
coastal backwaters, in active deltas and in lowlying
marshes. Therefore, in such areas the carrying capacity
of land may not be high unless it is supplement by the
carrying capacity of water. As a consequence, a large
number of people in such areas will have to depend on
fishing directly or indirectly, wholly or partially. In
other words fishing has to be considered as one of the
principal economies of the people of coastal and estuarine
territories. Its importance in the interior areas can not
be very high except in specific locations like areas of
internal drainage, flood prone river valleys, lakes and
reservoirs.

6.5.2.0 DISTRIBUTION OF FISHING POPULATION

Fishing obviously is a very important occupation in south 24-Parganas. The reason is that with mounting demographic pressure, not only the land-man ratio has decreased but also unequal competition has led to transfer of land from the smaller holders to the larger ones since after the middle part of the nineteenth century. During these years the small peasantry could not flourish because there were various environmental problems along with the regular hazards that strike the estuarine economic activities regularly at given intervals. Many of the smallest holders of the land had to sell away their lands to the larger land holders and to depend on collecting activities for sustenance. These collecting activities included fishing in the main and at present practically all marginal workers have fishing as one of the most important secondary occupation that sustains the lives of their members of family. However, fishing does not find a very significant place in census enumeration. This is mainly because the psychological bias of the census enumerator for not considering fishing as a principal occupation. Coupled with this is the bias of the census respondent who rarely declares himself as a fisherman if he has got a bigha or two of cultivable lands under his possession. Fishing has always remained a secondary occupation in the ethos of the census enumerator and the census respondent because the location of this activity is not fixed in space. As a result, the census enumerations of 1981 show a very small incidence of fishermen in the police stations of southern 24-Parganas. The statistics are given in table
### TABLE
POLICE STATIONWISE DISTRIBUTION OF WORKERS IN LIVESTOCK, FORESTRY, FISHING AND PLANTATION: 1981

<table>
<thead>
<tr>
<th>Police Stations</th>
<th>Livestock, Forestry, Fishing Plantation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haroa</td>
<td>620</td>
</tr>
<tr>
<td>Minakhan</td>
<td>74</td>
</tr>
<tr>
<td>Hasnabad</td>
<td>786</td>
</tr>
<tr>
<td>Sandeshkhali</td>
<td>216</td>
</tr>
<tr>
<td>Hingalganj</td>
<td>209</td>
</tr>
<tr>
<td>Gosaba</td>
<td>420</td>
</tr>
<tr>
<td>Canning</td>
<td>1,082</td>
</tr>
<tr>
<td>Basanti</td>
<td>933</td>
</tr>
<tr>
<td>Joynagar</td>
<td>213</td>
</tr>
<tr>
<td>Kultali</td>
<td>629</td>
</tr>
<tr>
<td>Mathurapur</td>
<td>357</td>
</tr>
<tr>
<td>Patharpratima</td>
<td>303</td>
</tr>
<tr>
<td>Kakdwip</td>
<td>434</td>
</tr>
<tr>
<td>Sagar</td>
<td>51</td>
</tr>
<tr>
<td>Namkhana</td>
<td>156</td>
</tr>
</tbody>
</table>

Source: Census of India, District Census Handbook 1981 Series 23 Part XIIIB

But this table is an extreme case of underestimation of the number of fishermen that one can expect to encounter in the police stations of southern 24-Parganas. The actual number of fishermen is much larger than the census statistics could show. Even without venturing into a statistical estimate, we can refer to our experience of Maukhali-Kumarkhali to indicate the real importance that fishing holds in the economy of the smaller marginal farmers of the southern parts of 24-Parganas.
6.5.3.0 MODES OF FISHING

Fishing in Sunderban has several modes. They are either practised by groups or by individuals.

6.5.3.1 BHERI

Bheri fishing is a comparatively stable mode generally located in close proximity to markets. The vast demand from Calcutta and the recently developed foreign market for the bagda (prawns Pueraricus) and galda (lobsters) varieties has opened up a new development of bheri fishing in Sunderban. Bheri needs groups of skilled fishermen whose skills in controlled flushing in or flushing out of saline tidal water through sluices are far more important than the art of catching fish. The nets are cast against the outlets when the water is flushed out and the fish swarm into these, being dragged along the outrising water. Large scale catches from the bheris conducted once in a fortnight depending on the tidal flow. Bheries are very common in Haroa, Minakhan, Hasnabad, Canning, Basanti, Kultali and Namkhana. With the improvement of certain infrastructural facilities particularly the development of transport, refrigeration and storage, etc., the bheri in Sunderban is developing rapidly. Quite a number of large bheries at Henry island at Jharkhali and at Mahisani island have developed under the supervision of the Fishery Development Corporation of Government of West Bengal.

6.5.3.2 FISH-CUM PADDY CULTURE

The fish-cum paddy culture a very common practice of Sunderban. Fish are rared along with the paddy cultivation in some cases. In some other places, pisci-culture takes place only after the harvesting is over. This fishing generally caters to the local markets.
6.5.3.3 FISHING IN DISTANT RIVERS

This mode is generally carried on as a group venture. Each boat has a capacity of seven persons along with nets, daily provisions, ice and baskets to carry the fish. The finance is mostly provided by wholesalers against the assurance of getting the catch for trading. A single operation generally extends up to seven days, unless any unforeseen circumstances prevail. In many cases fishermen suffer fatal or near-fatal injuries while fishing in the estuaries of Sunderban.

Fishing expeditions in the estuarine parts of Sunderban are organised principally during the drier half of the year not only because agricultural operations come to a low ebb but also due to the prevalence of stable climatic character. The leadership is provided by one who owns a boat and a long net. At least six other participants are drawn from the same locality.

After arranging for the provisions (including rice, pulses, some vegetables, spices, salt, cooking oil, some kerosene, clothings, baskets, ropes, nets and ice) the party sets out on the expedition. Initially a convenient spot is identified generally within a manageable distance from the markets so that the catch can be brought in fresh. Some expeditions may prove to be complete failures, but if successful the main problem is to manage the enormous catch and bring it safely to the market.

The first night is generally spent in sailing the boat to the proper destination. The next day may also be required for travelling. Fishing starts from the third morning. The third, fourth and fifth days are generally occupied in fishing while the sixth and the seventh are spent in travelling with the fish.
The nights are the time of worry because it is really difficult to find a secured shelter amidst. The forests infested with man-eating tigers, snakes and crocodiles. There is generally a job division among the participants outside fishing. Some collect fuelwood, some cook while some keep a constant vigil. Such is the worry that almost every expedition party starts its operation, irrespective of religion by paying homage to the demigods like Dakshinrai, Bambibi and Gazipir and includes a specialist (Gunin) trained in the art of hypnotising the fierce animals.

Cyclones and storms create great problem for fishing particularly in the months of April and May (kalbaискh) and at the end to the monsoon period between September and November. Thus seasonality of operation risks and uncertainties are the most important characteristics of the fishing occupation in Sunderban.

After the catch arrives, weighing is done at the wholesaler's place which is called the Kanta. The accounts are kept pending because immediately after the weighing is done, the fish traders are busy in selecting the fish and making it for transportation to various markets. Wholesalers employed fixed labourers or monthly wage earners for the purpose of grading, icing and packing. These operations are completed by midnight. Between 4.00 and 4.30 a.m. The accounts for the purchasers are settled and then the fish moves towards final markets. After the fish is exported out, settlements of accounts between wholesalers and the fishermen takes place.

Over periods, the nature of different collecting centres have change significantly. Due to the change in the amount of catch from certain parts, some kantas gain further importance while some other have considerably
declined their relative significance. Quite a number of new Kantas have emerged as very important collecting centres like Champahati, Sarberia, Malancha, Dhemakhali because of speedy communication through recently roadways connecting (upto) Calcutta. Rising significance of these centres exerts adverse impact upon the old ones, viz. Canning, Raidighi, etc. However, the primary collecting centres of Sunderban are:

(a) Diamond Harbour (h) Sandeshkhali
(b) Kakdwip (i) Basanti
(c) Namkhana (j) Gosaba
(d) Raidighi (k) Masjidbari
(e) Canning (l) Basanti
(f) Sarberia (m) Jharkhali
(g) Malancha (n) Nalua

Primary as well as secondary collecting centres receiving fish from smaller collecting points are:

a) Canning : from Basanti, Gosaba, Jharkhali, Masjidbari
b) Sarberia : from Dhamakhali
c) Diamond Harbour : from Sagar, Namkhana, Patharpratima
d) Champahati : from Sarberia, Malancha
e) Nalua : from Kultali, Raidighi, Patharpratima

Tertiary or final collecting centres are:

a) Gariahat Market
b) Lake Market
c) Sealdah Market
d) Manicktala Market
6.5.3.4 SEASONAL FISHING FROM TEMPORARY VILLAGES

A comparatively recent development in some parts of south-western Sunderban is the emergence of Khunties or temporary fishing settlements during winter months on char lands for fishing operations in the adjoining shallow waters. One such example has been cited in some details in the discussions on Beguakhali.

6.5.4.0 FIELD INVESTIGATIONS IN TWO MOUZAS

Two mouzas namely Maukhali-Kumarkhali and Beguakhali located in the police stations of Canning and Sagar respectively were visited with the motive of ascertaining the actual place of fishing in the economy, of fishermen in the work force and of the fishing settlements in the cultural landscape of the region.

6.5.4.1 MAUKHALI-KUMARKHALI

The mouza Maukhali-Kumarkhali of Canning police station does not appear outstanding on the map of fishermen concentration. But the assumption that the highly unstable nature of its lands, characterised by destructive floods and shifting of rivers mentioned in the case of the Bidyadhari earlier, discourages agriculture has proved positive during the field visit.

The field investigations reveal that there are forty five entrepreneurs with boats and nets suitable for fishing operations stretching over seven to fifteen days together in the estuarine part of southern 24-Parganas. At least seven persons are necessary for one such fishing operation with a single boat. Moreover, there are at least 200 families with nets which can be operated by two
Fishermen relaxing on boat over the river Matla. Boats are the most important means of communication in Sunderban.
persons each and another 135 families have nets which can be used by a single individual.

Thus one can easily estimate that at least three hundred and fifteen \((45 \times 7)\) persons are engaged in major fishing operations, four hundred \((200 \times 2)\) persons with small-medium nets and hundred and thirty five persons with small nets making a total of eight hundred and fifty persons out of a village population of about three thousand and fifty of which around twelve hundred persons constitute the working force. Therefore, nearly 71 per cent of the work force in this village derive their livelihood either wholly or at least partly from fishing. The above information were gathered from detailed interviews of very senior fishermen of the village. The results reconfirm the anomalies in the census data in terms of the number of workers engaged in fishing. It is also known from the interviews that the recovery of this mouza from its depopulated state was more or less fully achieved by 1976. Even in 1981 the population could not have been anything less than 4000 allowing for a growth rate of 25 per cent during the decade of 1981-1991.

During the mid-seventies a series of fishing villages have sprang up as isolated clusters along the embankments in the southern part of the mouza.

6.5.4.2 BEGUAKHALI

The mouza Beguakhali is located in the south-western corner of Sagar island. For years a few families have been taking part in fishing occupation with native techniques. They generally start their journey at dawn with their native watercrafts (dingi) to catch fish from
shallow waters on shoals and sand banks during tides and also collect fish from estuaries and interior creeks and return in the evening. Four or five fishermen per boat normally participate in this riverine or coastal fishing. Fishing is also done by dragnets used by two persons. This fishing provides a secondary occupation to small and marginal farmers. Individuals also ply nets in shallow waters.

The enormous changes both in economic (fishing has opened up a new avenue as the demand for fish, both domestic and foreign, has increased enormously) and geomorphic environment bring a new form of coastal and deep sea fishing. There are no less than 400 families who own native (dingi) boats. They generally collect fish near the coastal fringe. Their catch amounts to about 40 kg per day. The catch is generally locally marketed at Sreedham-gangasagar. Apart from this, there are some other small kantas or wholesale dealers. Small trawlers generally catch fish from the interior sea-fishing grounds. They operate in a daily basis collecting about 50-60 kg per trip. Some use local kantas and the Kakdwip market while others move to Diamond Harbour. Big trawlers (8-10 in number) catch fish in the deep-sea fishing grounds. One big trawler needs at least 18 fishermen on board for fifteen days together. Generally the trawlers move in a group in deep sea areas because there is always some danger from natural hazards and piracy.

One trip by a big trawler collects about 8000-10,000 kg of fish. Big trawlers directly reach Diamond Harbour for marketing their catch.

The increasing population in fishing in Beguakhali is partially controlled by continuous erosion of its western coast. Interestingly a vast land which contained about
200 Mahishya peasant families even fifteen years back has been eaten up by the Hooghly. The displaced population have become unemployed and have joined fishing which they once considered as inferior to their traditional farming profession. Apart from this regular fishing activity, a big temporary fishing busti (locally known as khunti) develops each year during the winter months (peak season for fishing) with sheds built of bamboo frames and matgrass on the char land located south of Beguakhali. People from the adjoining area mainly from Medinipur, Howrah, Hooghly and northern 24-Parganas flock here with their tools and accessories. For the four months, this part becomes the busiest part of the neighbourhood. After the season is over they all return to their native villages deserting the place. As this mode of fishing is highly paying a few other parts of western Sunderban are also developing similar seasonal activities. Permanent fishing settlements of Beguakhali have developed along the embankment which skirts the mouza on the south and the south-west (Map No. ).

6.5.5.0 SOCIAL STATUS OF FISHING COMMUNITIES

It has been observed by scholars (O'Malley, 1911; Yasabuchhi, 1975) that in some parts of monsoon India and particularly in lower Bengal, a cultural distance prevails between the people who depend upon land-based occupations and the people whose sustenance comes mainly from aquatic resources. The emergence of this distance, in deltaic Bengal, between peasants and fishermen for all practical purpose, was rooted in the history of a period when enormous land areas surfaced from under water and were occupied and cultivated by a section of the Kaibartas, the major fishermen caste of the area. This section of the Kaibartas was given a higher social status by the landed
gentry through establishment of jalchal. The term refers to the convention of accepting water from a caste belonging to a lower rung of the society (O'Malley, 1911). A new division was created separating the Mele or peasant. Kaibartas who in course of time came to be known as Mahishyas from the jele-Kaibartas or fishermen who later on became closer to other fishermen communities like the Rajbangshis hailing from more northern areas of deltaic Bengal. This occupational-cum socio-cultural separatism existed in south 24-Parganas markedly during the early phase of reclamation and settlement of the tract and still persists in areas where the population pressure is here to be over-bearing leading to create separate fishing hamlets at a distance from the living quarters of peasants.

Apart from this fishermen caste belonging to the lowest rung of the Hindu caste hierarchy, it should be remembered that there is a substantial Muslim population who depend largely on occupations connected with fishing. It is difficult to say whether they were drawn from Hindu fishermen caste by way of conversion or took up fishing after they lost their hold on agricultural lands. It is quite possible that, were already connected with fishing in their native lands prior to migration. Or a particular band of this people were associated with sea fairies through the Sunderban routes since the sixteenth century onwards and later on settled in the area as fishermen during the initial period of Sunderban's recent settlement history.