Chapter Four

COLONIAL SURVEYS IN THE ECOLOGICALLY DOMINANT SUNDARBANS

• Introduction

• James Rennnel and the first regional survey of Bengal (1764-67)

• Survey of Sundarbans and the Morrieson brothers (1786-1818)

• Surveys undertaken by Prinsep, Dampier-Hodges and others (1822-1908)

• Difficulties faced by the Surveyors

• Gazetteers. Handbooks and Reports

• Conclusion
4 COLONIAL SURVEYS IN THE ECOLOGICALLY DOMINANT SUNDARBANS

“Having finished the observation, one of the sepoys said there was a tiger close alongside, that had been creeping up towards us, and for the last minute he and the animal had sat looking at each other; we now heard a slight noise in the jungle, the two sepoys fired, out sprang a tiger and ran off; he was only about 4 yards from us,”

Field Book of Hugh Morrieson, dated 1812.
4.1 Introduction

Imperialism and mapmaking intersect in the most basic manner. Both are fundamentally concerned with territory and knowledge. All the foreign companies which came to India were each a band of “adventurer water gypsies trading in foreign waters” and their success depended largely on their knowledge of the coastal and inland waterways which in the beginning they had very little. They competed among themselves and had a great compulsion to overtake each other. Their initial motive was to protect and promote their trading interests. They had as yet no territorial ambitions. The English merchants established trading centers known as “factories”. By early 18th c they began to meddle seriously in regional politics. So long they were plying in uncharted coastal and inland waterways, now they were taking part in campaigns on land which was equally uncharted and unknown to them. The prize was the immense revenue derived from land taxation, revenue which promised to far surpass the profits which could be realized even by monopoly trade. After the battle of Plassey in 1757 the English East India Company was
first granted a zamindari of 24 Parganas by the grateful Mir Jafar (who assigned 24 Parganas along with Sundarbans to the East India Company as a gift on 20th December 1757) and by 1765 the nominal Delhi emperor granted them the Diwani of the subah of Bengal. Events were moving in a manner which ultimately transformed these kingmakers into kings. And what was most striking was that they knew nothing about their new acquisition. To govern territories, one must know them first. All these made it necessary for the East India Company to undertake surveys of their new possessions. As to surveys undertaken of this region in pre-colonial times, we have reference of the settlement efforts of Todar Mal in 1582. But his work did not take him beyond Hathiagarh, Mednimal (near Canning), Maihati and Dhuliapur, the four southern most mahals (sub-divisions of the districts) recorded in Abul Fazl’s Ain-I-Akbari. (O’ Malley- 24 Parganas, pg26)

In the hundred years after 1750, military and civilian officials of the East India Company undertook a massive intellectual campaign to transform a land of incomprehensible spectacle into an empire of knowledge. At the forefront of this campaign were the geographers who mapped the landscapes
and studied the inhabitants, who collected geological and botanical specimens and who recorded details of economy, society and culture. In fact, the geographers created and defined the spatial image of the Company’s empire. These maps came to define the empire itself, to give it territorial integrity and its basic existence. In short, “the empire exists because it can be mapped.” 6
4.2 James Rennell and the first regional survey of Bengal (1764-1767)

The new conception of the subcontinent as an actual region in and of itself was most apparent in and most effectively disseminated by James Rennell’s (1742-1830) maps of India and their accompanying geographical memoirs. The Company’s interests, which had grown in 1757 to encompass the eastern sea-board of the subcontinent expanded still further.\textsuperscript{7} In fact James Rennell’s map of Bengal (1779) is considered the first
most reliable geographical document of lower Bengal. He is known to have made an exploration of Bengal river basin and mapped them for the first time. Originally, Rennell was just one surveyor among many but he showed such enthusiasm and ability that Robert Clive promoted him to Surveyor-General of Bengal in 1767 (with headquarters at Dacca) at the age of twenty four. Rennell was an expert in marine survey and hydrography, but now he was to conduct land surveys and produce maps. He was himself an avid supporter of the East India Company’s “splendid territorial aggrandizement”. He devoted several paragraphs of his geographical memoirs to the defence of his old patron, Robert Clive and others who supported the Company’s territorial conquests against critics in London.

Under the Governor-Generalship of Warren Hastings (1773) the mapping project gained a wider scope. One of Hastings first project was to begin a Domesday style reckoning of property, land, people and culture for taxation of revenue. Rennell’s project was thus carried out much like a military survey searching for safe passage through territory, with information gathering a secondary object.
Between 1765-1771 Rennell made the first regional survey in the subcontinent of Bengal.\textsuperscript{11} He surveyed the Ganges delta with the special object of finding a shorter passage suitable for larger vessels from the Ganges to Calcutta, than through the Sundarbans and the Meghna.\textsuperscript{12} Rennell compiled journals of his expedition where he provided a detailed account of his voyage. In these expeditions he surveyed a great part of Northern and Eastern Bengal. During his second expedition he surveyed the Ganges from Soatpour to its confluence with Meghna and from there to Dacca. The third expedition was for surveying the Meghna and Brahmaputra. The fourth expedition was for making
a general map of the Bengal provinces. Instead his first great work was the Bengal Atlas, published in 1779, which contained a map of Bengal. Interestingly, Rennell’s map showed Bakherungue district (east of the Beeskhallee river in the eastern Soonderbuns) as “completely depopulated by the Maghs”.

Hunter in his Gazetteer referred (1878) to the maps of the old surveys, conducted by Major Rennell and others, between 1764-1772 which show a large tract of country between the Jamuna and the lower part of the Ganges as a “morass intersected by deep creeks and water courses”.

For a period of 13 years Rennell completed his difficult, laborious and dangerous task, during which he surveyed an area of about 300,000 sq miles (780,000 km sq) stretching from the eastern boundaries of lower Bengal to Agra, and from the Himalayas to the borders of Bundelkhand and Chotanagpur. Fortunately for him, Abul Fazl’s Ain-i-Akbari, had just been translated. Prepared in the reign of Akbar it contained a thorough description of the empire and its administrative and revenue units. But their boundaries were not precisely demarcated.
nor were other prominent geographical features like rivers and mountains graphically represented in a map or chart. Distances and areas were estimated roughly and not after accurate measurements according to scientific principles of map making.  

It was Rennell who provided the starting point for 18th c style of topographic mapmaking in India. He collected together the geographical data acquired by the British army columns on their campaigns and began to map all of India. He is therefore known as the ‘Father of Indian Geography’. His maps provided the definitive image of India for the British and European public. The new colony was now established as a meaningful, if still ambiguous, geographical entity. Moreover, Rennel’s stupendous surveys helped to relate population to defined territories. Interestingly, according to Curtis, IFS, who wrote the Third Working Plan of Sunderbans Division (1931-32 to 1950-51), the first survey of Sundarbans was done by M/S Titchie, Richards and Martin during 1769-73. In their maps (1 inch= 5 miles), only the largest waterways were recorded.
4.3 Survey of Sundarbans and the Morrieson brothers (1786-1818)

The reclamation of Sundarbans necessitated more specific surveys of rivers and forests. Here one must understand that the process of land reclamation in the Sundarbans moved through several phases and at each phase the colonial government became more aggressive and interventionist. Soon dispute arose between the zamindars and the Government as the former challenged the latter’s right to collect revenue from the newly settled land or to claim the forest as public land. Between 1784 and 1786 Tilman Henckell tried to demarcate a boundary between the zamindari lands and the Sundarban forest. He is known to have defined the boundary of Sundarbans as Bay of Bengal in the South, Haringhata river in the East, Raimangal river in the West and the village of Dulyanpur, Kagrighat, Chingrikhali, Dhaki creek, Serpatlya, Kachua and the rivers Kalinga, Jamuna, Kabadak, Marjatar, Pabdor, Dankhali and Baleswar in the North. Subsequently, surveys were conducted to clearly demarcate all lands brought under cultivation in the Sundarbans from the forest. The years between 1812-1818 a
portion of the Sundarbans lying between the Hooghly and the Bara Punga, was surveyed by two young brothers, Lieutenants in the Honorable Company’s army. Their names were Hugh Morrieson of the 4th Regiment Native Infantry, (who died of Jungle fever at Jessore, contracted while surveying in this unhealthy tract) and W.E. Morrieson in the Bengal Engineers (who was shot dead during an attack on the Goorkhas). They surveyed portions of the Sundarbans adjoining the Jessore district and after much labour and exposure divided that portion into allotments. In fact, W.E. Morrieson carried on his survey between 1811-14 and his results were corrected by his brother Capt. Hugh Morrieson in 1818. This was considered a great work and “most arduous” and has been the basis of all subsequent maps of the region. In the course of his survey Lieutenant Morrieson found that the north-east branch of the Raimangal estuary was within a small distance of the Kalindi. He made a cut joining the two rivers. The stream of the latter soon enlarged the cut and a large quantity of its fresh water was diverted into the Raimangal. At that time cultivation extended much further south on the east bank than on the west bank of the Kalindi, but the diversion of
fresh water deprived that country of its chief advantage and a considerable tract reverted into jungle. This is an instance of far reaching disastrous consequences arising out of a seemingly trifling act. Morrieson’s cut, by opening up a new route, conferred perhaps more than equivalent benefit on the Sundarban traffic.\textsuperscript{22} A Captain Robertson surveyed the main water-routes from the Hooghly as far as the district of Noakhali during 1810’s, and a portion of the sea-coast, east of the Hooghly, was surveyed by L Blane in 1813-14.\textsuperscript{23}

The Field Books kept by the Morrieson brothers showed the dangers and difficulties encountered by these two brave men, “who were frequently upto their knees in mud with no secure foundation for their theodolites”. Infact, their field books were full of accounts referring to the depredations caused by the tigers. In one such account we find that “just as the theodolite was rectified and we were about to take the first angle, a tiger made a great spring from somewhere into a bush, about six yards from us, and there we lost sight of him”. Moreover, these surveyors had no tiger charmers in their retinue as their field books record numerous attacks made by the tiger
on the attendants. In the most dangerous tigerish parts of the Sundarbans, Lieutenant Morrieson met charcoal-burners and wood-cutters who had been located there for ten days in one place. These surveyors also encountered alligators and other wild beasts as they wrote, “the country at the mouths of the Mollincheu and Roymungal rivers is infested by rhinoceroses and deer, the whole ground being cut up by their feet”. It has been pointed out that description of the wild beasts as extracted from the Field Books of the Morrieson brothers, bearing the date 1812-1818, is actually applicable to the state of the Sundarbans in 1859.
4.4 Surveys undertaken by Prinsep, Dampier- Hodges and others (1822-1908)

In 1821 The Sundarban office was reconstituted under Mr Dale, and was reinforced by a survey-party, with the wider object of demarcating the state lands from private estates. The enquiries began in the district of 24 Parganas and it was found that the zamindars claimed all the forest that abutted on their estates down to the sea-coast, and yet declined to point out their lands. The only course, therefore, was to survey all the lands that had been brought under cultivation during the previous 30 years and that was done. In 1822-23, Captain Thomas Ensign Prinsep was deputed to demarcate and survey the boundary of the Sundarbans with the district of Twenty Four pargannahs. He accordingly surveyed the boundary from the Hooghly river at Belpookoreah to the Badeadhuree river; and subsequently on the petition of certain zamindars; the boundary between the Bedeahdhuree and Paranpore, also dividing the Sundarbans to the west of the Kaburtuk river, into allotments. He thus surveyed
the line of dense forests from the river Jamuna to the Hooghly. With the help of Morrieson’s map, he divided all the forest lands concerned (between Jamuna and Hooghly) into blocks and numbered them. This was the beginning of the ‘Sundarbans Lots’.

Thus a boundary between cultivation and forest in the east was fixed by Prinsep when he surveyed the region.

The last remaining step was the completion of the Sundarbans boundary from the Hugli river to the Meghna. In 1829 Lieutenant Alexander Hodges, Surveyor for Sundarbans, demarcated and surveyed the forest boundary as it existed at that time under the order of William Dampier, Commissioner, who was appointed specially to this duty and who laid down the boundary from Paranpore to the island of Rungaballee on the mouths of the Ganges and Meghna. Morrieson’s map of 1814 was made the basis of this survey. They thus defined and surveyed the line of dense forests from the Jamuna to the eastern limit. The boundary was mapped and recorded in the revenue records. In fact the passing of the 1828 regulation related to land reclamation and the demarcation of the Dampier-Hodges
line represented the close of the first phase in Sundarban’s settlement history. 28 “Princep’s line” and “Hodges’ line” formed the authoritative limits of the then Sundarban forest. Eventually, in 1831 Captain Hodges published a map of the Sundarbans, compiled from Major Rennell’s, Captain Princep’s and Morrieson’s, and his own surveys, and also showing the different routes through the Sundarbans. Following Princep’s method, he divided all the forest as far as the river Passar into blocks, and revising the numbering, reduced the whole of his and Princep’s blocks into a series numbered from 1 to 236. The aggregate area of these 236 “Sundarban lots” was computed at 1,702,420 acres or 2,660 square miles. 29 An article published in Calcutta Review in 1857 noted that this map, a most valuable document, “is now out of print, only a few copies are to be found in the public offices, and in the hands of older grantees.” 30 Thus a need was felt for a new map compiled from recent surveys. On comparing Major Rennell’s map of the Sundarbans, published in 1781 A.D, with Lieutenant Hodges’ map published in 1831, it will be evident that the forest boundary extended further north in 1781. The space between the two lines
shows the encroachments of the adjoining landholders on the forest.\textsuperscript{31} Since 1830, 3737 sqkm of the region to the South of D-H line had been cleared for cultivation and settlement. This line denoting the then forest limit extended from Kulpi to Basirhat and comprised a (a) deforested colonized area and (b) the residual forested land. \textsuperscript{32}

As reclamation progressed the work of redefining the boundaries was carried out in a more determined manner in the Sundarbans. The colonial government had already decided to establish the boundary from the Hugli river to the Meghna, at the break between cultivation and the forest as of the current date. In the 1820’s Princep had fixed this line in the east, and in the west the line would be that of the forest-field interface as of 1828. When completed in 1830 by a public process of demarcation, the boundary was mapped and recorded on the revenue records.\textsuperscript{33} In 1841 Captain Llyed surveyed the sea face areas of the Sundarban forest. Around 1850 Captain Ralph Smyth conducted another survey to authenticate the Princep-Hodges line. This line which was declared as the authentic limit of the
then Sundarban forest, was shown in Major Ralph Smyth’s map of 24 Parganas published in 1852.34 Besides, Captain Gastrel was engaged in defining boundary of Captain Hodges, during the revenue survey in progress in the districts of Jessore and Backergunge during this period. In 1873 Ellison surveyed the Sundarbans and drew up a map, under the Surveyor General Colonel H.I. Thuillier. This map of Sundarbans is regarded by many as most authentic. The last survey of the Sundarban forest under colonial rule was conducted by A.W. Stuart, who drew a map of Sundarban forest around 1904-1908.35 Infact, during 1905-08 the forests were surveyed in details by the Bengal Provincial Survey Department, the cost being borne by the Forest Department and maps on 1” =1 mile scale was published and made available by the Survey of India. The latest revised sheets of these areas were published in 1924, incorporating the accretion and erosion that had taken place meanwhile.
4.5 Difficulties faced by the Surveyors

Mapping the Sundarbans involved grave dangers and difficulties. The most challenging task was to navigate through the dense unknown marshy terrain full of unexpected dangers. When Rennell started on his project of mapping the province of Bengal, only a skeleton staff was placed at his disposal and the equipments were often very crude. Besides, the anarchical conditions and the primitive state of communications made their travels hazardous. The people were suspicious of the surveyors and often resisted them by force. Thus inadequately equipped, he was attacked by tigers, reptiles, dacoits and hostile people many times as he completed the survey within a span of three years (1764-67) with the help of only four associates. Besides, the unfavorable climatic conditions and occurrence of jungle fever made the task more hazardous. But inspite of so many difficulties his expeditions were so satisfactorily made that later the Survey of India found his identifications remarkably accurate. These surveyors were all brave and courageous men who overcame the terrors and prejudices of a harsh environment, narrow-minded bureaucrats and often hostile natives in order to create useful
and essential knowledge of the world itself.\textsuperscript{37} The fear of the tiger and other wild beasts was always present during their surveys, as is proved by the field books maintained by the surveyors. But what remains remarkable is that they often overcame the dangerous challenges and succeeded in surveying an unknown and mysterious land for the first time. Here one must note that knowledge about the Sundarbans was collected not only by surveying the forests and rivers. Writing of gazetteers and district handbooks by the colonial administrators was another important project in understanding the land better.
4.6 Gazetteers, Handbooks and Reports

William W. Hunter, India’s first Director General of Statistics, was charged in the early 1870’s with preparing a “statistical account” for each of the districts of Bengal, Bihar and Orissa. In 1875-77 Hunter compiled a 20 volume of Statistical Account of Bengal. It was clearly modeled on Sir James Sinclair’s Statistical Account of Scotland (1791-98). Hunter’s project was the forerunner of a series of local and regional handbooks that culminated in 1881 in the Imperial Gazetteer of India. These accounts should be, like other large compendia such as the censuses, anthropological and archaeological surveys, best understood as orientalist props to 19th c administration. In 1875 Hunter published a lengthy essay on the Sundarbans in the first volume of his Statistical Account of Bengal. This became the official and imperial account of the area. Infact Hunter’s work, Statistical Account of the Sundarbans, is still regarded as the most reliable and authentic monumental work and constitutes the basis of all subsequent studies in this area. His work captured the essential features of the Sundarbans at a time when human settlement was still so sparse and native flora and fauna still so
abundant. Hunter wrote on the general aspect of the country, subsidence of the country, the river system and traffic, markets, jungle products, free nature, population, occupation, material condition of the people, Sundarban reclamation and land tenure system, natural calamities as well as means of communication and condition of commerce found in the region. 39 Describing the region, Hunter writes that the general aspect of the Sundarbans gradually changes as one travels from west to east, from the Hugli towards the Meghna. Thus “the superficial aspect of the three divisions is what might be expected from their physical character”. The three divisions of Sundarbans were the belt of cultivated land from the Hugli to the Jamuna” or the western division of the Sundarbans, “the marshy tract of the middle Sundarbans, between the Jamuna and Baleswar” or the middle section of Sundarbans and “the third division or the Bakarganj Sundarbans, between the Baleswar or Haringhata and the Meghna rivers”. The Bakarganj Sundarbans was a pleasant change from the hot and dry lands of the 24 Parganas, and the depressing and swampy atmosphere of the Jessore Sundarbans. Here the river water is comparatively sweet and the
soil richer than in the first two sections of Sundarbans. Hunter’s effort was followed by other colonial officers and soon we have a number of gazetteers and handbooks written on the Sundarbans which covered three districts of the Bengal province - Jessore, 24 Parganas and Bakargunj. These included H. Beveridge’s “The District of Backergunj- Its History and Statistics” (1876); L.S.S. O’ Malley’s “Bengal District Gazetteer: 24 Parganas” (1914) and J. Westland’s “A Report of District of Jessore, Its Antiquities” (1871). Apart from these gazetteers we also have revenue and geographical reports compiled on the Sundarbans. These included F.E. Pargiter’s “A Revenue History of the Sundarbans 1765-1870” (1885); F.D. Ascoli’s “A Revenue History of the Sundarbans 1870-1920” (1921); Ralph Smith’s “Statistical and Geographical Report of the 24 Parganas District” (1857) and G.P. Gastrell’s “Revenue Survey Report” (1864). These records explained the process of reclamation, the history of the region as well as physical terrain of the area. In other words, for the first time in the history of Sundarbans, attempts were made by the
colonial government to document important processes, general conditions and history of this region. In fact, the British now made themselves the intellectual masters of Sundarban landscape.

In 1869 Hunter was appointed as Director General of Statistical Survey. An experimental census of the Lower Province of Bengal was organized in 1869 by H. Beverly, Registrar General. In 1871 attempt was made to carry out a census of British India. The first complete census of population was, however, conducted in 1881, on a uniform basis throughout India. What is interesting is that in the General Report on the Census of India for 1871, 1881 and 1891, “the deltaic wastelands of the Sundarbans, which fall within the province of Bengal, were apparently excluded”. Its limits, too, were being gradually restricted by the encroachment of the estuaries of the Ganges and Brahmaputra to the eastwards. Thus in 1911, Sundarbans was described as a tract of waste country which had never been surveyed, nor had the census been extended to it. It then stretched for about 165 miles (266km) from the mouth of the Hugli to the mouth of the Meghna and was bordered
inland by the 3 settled districts of 24 Parganas, Khulna and Backergunje. The total area (including water) was estimated at 6526sq miles (16,902kmsq).
4.7 Conclusion

The mapping projects, surveys, gazetteer writings conducted in the Sundarbans by the colonial government was unprecedented in the history of India. Never before anything like it had been carried out by a ruling authority in the Bengal province as well as in the Indian subcontinent as a whole. Although during Akbar’s time Todar Mal had surveyed the forest of Sundarbans, nothing on the scale of the British had ever been carried out in the region. One must understand the motive behind such activities. In order to administer a region, knowledge was of great value. Besides, Sundarban region soon came to be perceived as a revenue earning area. As a writer in 1857 wrote in the journal Calcutta Review that “in a revenue point of view the Soonderbuns are profitable to the state, the cost of the present agency for the management, not exceeding nine per cent of the collections”. The same writer notes that “every map of India, published since Major Rennell compiled his atlas, shews the Soonderbuns most conspicuously. We are all familiar with that patch of green at the ‘mouths of the Ganges’ intersected by numberless rivers; and we have all
wondered how such dense forests have stood on the sea-coast of a country, correctly reckoned to be the most populous in the world; and how it comes to pass, that the teeming millions of Bengal have not long ago converted its jungle wastes into productive rice fields."

Hence, information about the forest boundary, forest resources, river routes, as well as reclamation boundaries, its population and culture were of vital importance. In colonial diaries, Sundarban was viewed as a mysterious region of dense forests of mangrove. It was as if the British encountered the Sundarbans with an attitude which was a mixture of fear-curiosity-amazement. But for the first time in the history of Sundarbans, the region witnessed such an organized and coordinated intervention (in the form of mapping projects, surveys, gazetteer writings) by the British administration which eventually resulted in changing its history forever.

The Colonial Survey history of Sundarbans draws our attention to the ecological constraints and challenges under which the British surveyors worked. The journals, diaries and field books of all the surveyors are full of accounts of the difficulties encountered in a marshy terrain with intertwining dense mangrove
vegetation, as well as the constant fear of the tiger, the crocodile,
the alligator and other dangerous wild animals of the jungle. Rennell wrote in his journal that “We find the depths of water
from 34 to 8 cubits, the Banks being mostly covered with Jungle
we have very troublesome work to survey them”. Besides, the
harsh climatic conditions often caused jungle fevers, which killed
many colonial officers working in this unfavorable terrain. We
come to know from the notes kept by the surveyors many
unknown species of plants and animals found in the Sundarbans
eco-system, some of which have disappeared for ever. The maps
drawn by them also help to compare the aggradation pattern
along the sea shores of the delta with later maps of the region
as well as any changes in the river courses or changes in the
branches of rivers at later stages. Hence one can say that the
work done by Rennell, Morrieson brothers, Prinsep, Dampier-
Hodges and others was an example of a positive form of
colonial intervention as it helped to open up a mysterious,
unknown dangerous terrain for the first time. It is also closely
related to the reclamation history of colonial Sundarbans, as the
surveys were primarily initiated to settle the boundary disputes.
between the state and the zamindars. Therefore, it is of utmost importance to chronologically organize the Surveys in colonial Sundarbans, which can serve as a reference point in understanding the history of colonial expansion in the ecologically sensitive Sundarbans.
4.8 References


3. Ibid - Edney pg 4; Ibid- K. Biswas


5. Ibid - Biswas

6. Ibid - Edney pg 2

7. Ibid - Edney pg 9, 15


9. Ibid- Edney pg12

10. Ibid- Wikipedia

11. Ibid- Edney pg17

12. La Touche T.H.D (ed)- The Journals of Major James Rennell, Geological Survey of India; published by the Asiatic Society of
Bengal 1910; pg3

13. Ibid- Journal pg 10,26,44,51

14. The Soonderbuns- Their Commercial Importance; published in Calcutta Review journal 1857. (vol 31) pg 393


17. Ibid- Biswas

18. Ibid- Edney pg 9

19. Pargiter .F.E- A Revenue History of the Sundarbans(1765-1870), Calcutta, 1885 ; pg 2

20. The Calcutta Review- Vol- XXXII , March 1859, Calcutta ; pg 15


22. Pargiter.F.E- Cameos of Indian Districts: The Sundarbans , published in Calcutta Review 1889 Vol LXXX1X, pg287 ; Also see The Sundarbans by Rathindranath De . (Oxford India Paperbacks). Pg 15

23. Ibid- Cameos of Indian Districts , Pargiter pg 287
24. Ibid - Calcutta Review, March 1859 ; pg 15,16

25. Ibid- Cameos of Indian Districts ; pg 288

26. Ibid- Calcutta Review, 1858 ; pg 394

27. Ibid- Calcutta Review, 1858 ; pg 395

28. Sarkar Chatterjee Sutapa -The Sundarbans: Folk Dieties, Monsters and Mortal ; pg77

29. Banerjee Anuradha- Environment, Population and Human Settlements of Sundarban Delta ; pg 47

30. Ibid- Calcutta Review, 1858 ; pg 395

31. Ibid- Calcutta Review, 1858 pg 394-395 ; also see Cameos of Indian Districts; pg 289

32. Ibid- Anuradha Banerjee pg48

33. Ibid- Cameos of Indian District; pg 289

34. Das Amal, S. Mukherjee,M.K. Chaudhuri- A Focus on Sundarbans Calcutta 1981; pg 12


36. Ibid- Kumud Biswas
37. Ibid- Edney pg 23


39. Ibid- W.W Hunter


41. General Report on the Census of India- 1891- 1901; also see H.H. Risley and E.A. Gait (1903) - Report on the Census of India.

42. Ibid - Calcutta Review 1858 ; pg 385