**Review of Literature**

**Emerhi (2012)** This study was carried out for searching mangrove i.e alternative of tree for pulp and paper manufacturing. The study was find out the difference between anatomical properties of the two most prominent species (*Rhizophora racemosa* and *R. Harrisonii*) in Nigerian mangrove forest ecosystem. This was done with the aim of assessing their appropriateness for pulp and paper manufacturing. The trees samples were obtained from Stubbs Creek forest reserve, in Delta State. From the anatomical studied they were compare these two species to other species. The results of this work indicate that the anatomical properties of these two species compared positively with other species like *Gmelina arborea*, *Pinus caribaea* and *Eucalyptus* popularly grown for pulp and paper in Nigeria. The values indicate the suitability of this mangrove genus for pulp and paper production in a place where there is shortage of wood material for this purpose.  

**Luzhen.C.(2009)** In this paper, they highlighted some key progresses in mangrove conservation, restoration and research in China during last two decades Methods Based on intensive literature review, they compared the distribution and areas of existing mangroves among selected provinces of China, discussed the issues associated with mangrove conservation and restoration and highlighted major progresses on mangrove research conducted by key institution or universities in mainland China, Hong Kong and Macao. Because of the population increased and rapid economic developments have reduced mangrove areas in china. Chinese government has launched a series of programs to protect mangroves. A great deal of research papers on Chinese mangroves has been published in international journals. However, more systematic protection strategies and active restoration measurements are still urgently needed in order to preserve these valuable resources in China.

**NikamV.S.etal.,(2008).** This paper presents the details of an integrated approach Incorporating different conservation measures such as sewerage and sewage treatment urban drainage management, solid waste management, mangrove plantation and dredging. There has been a steady decrease in the area occupied by wetlands in Creeks & Estuaries adjacent urban areas due to unprecedented urban growth in coastal cities, for example Thane Creek& UlhasRiver Estuary near Mumbai, India. Urban cities serve as centres of employment & attract a large number of migrants from other places. In
case of coastal cities, due to inadequate infrastructure, wastewater and solid waste is disposed into wetlands and Estuary. Discharge of sediments and solid waste into the Creeks from drains and construction activities have resulted in decreased current velocity and depth in the coastal waters of Thane Creek and Ulhas River Estuary. Various researchers have studied individual elements of Thane Creek and Ulhas River Estuary at micro level. However a holistic approach for restoration and conservation of the Creek and Estuary is required.

**Sedayu and Isyadinyati (2011)** The paper is ging the details about propagation of propagules. Adult mangrove stand does not reflect the dispersal they potential of mangrove propagules: Case study of small islets in Lampung, Sumatra. Nusantara Bioscience 4: 57-61. Most mangrove species are dispersed by water current with distance being a major constraint. We tried to demonstrate that distance is indeed the dispersal limiting factor in mangrove, and perhaps other marine plant species. Secondly, we also tried to clarify whether landmass is a real blockade for mangrove dispersal. Lastly, we argued that in order to study plant dispersal potential, one should not study the later stage of plant population, as normally plant ecologist would do, rather at their early life stage. Cluster analyses were used to test those hypotheses and confirmed our research hypotheses.

**Krishnakumar et al., (2012).** They observed that in recent decades mangrove forest have swiftly degraded because of intensified human activities. Author analyse the mangrove cover. The Mangrove forest is globally important for the productivity of the coastal environment and is a good nursery site for aquatic organisms. The objective of the present paper was to create thematic maps of the wetland ecosystem and to analyse its changes, while making Remote Sensing and GIS techniques contributions to the Mullipallam region. Remotely sensed satellite data were used to detect changes in the mangrove cover for a period of 16 years (1991-2007). They found that an area of about 165.4 ha of dense mangrove degraded from 1999 to 2007 due to anthropogenic and shoreline erosion but sparse mangroves area significantly increased during this period due conservation and restoration activities.
**Wan (2012).** The study was specially conducted for making the framework for mangrove biodiversity management and conservation in Malaysia. The pertinent roles of mangroves have been clearly recognised particularly after the 2004 tsunami. Lots of interests have been created on the importance of sustainable management of mangrove biodiversity, which plays an important role to the environment as well as in the socio-economic growth in coastal zones. As the world’s fifth largest, Malaysian mangroves are facing threats from anthropogenic activities such as deforestation, aquaculture, pollution run off and land development. A signatory to both the Convention of Biological Diversity and UNCLOS, Malaysia has to develop national strategies, plans and programmes by taking legislative, administrative and policy (LAP) measures for the conservation and sustainable use of mangrove biodiversity outlined by these two conventions. Sustainable management of mangrove biodiversity requires proper and effective LAP framework including clear allotment of jurisdictional boundaries between the various departments involved. The existing LAP framework in the management of mangrove biodiversity was examined where three problems were found to hinder the sustainable management of mangrove biodiversity in Malaysia namely the unclear policies, segmented laws and overlapping administrative jurisdictions. These problems collectively contribute to the insufficiency of the existing LAP framework to provide for the sustainable management of mangrove biodiversity in Malaysia.

**Fasona (2011).** In this study they utilized remote sensing and spatial-statistical geostatistics to model future land degradation in the mud-beach coast of southwest Nigeria. Current land cover was derived from Landsat ETM+ data. Model input data consists of 12 predictor variables. Attribution of weights to variables was done through multi-criteria evaluation. These weights were used to develop logistic regression function for simulating probability surface maps. Degraded lands accounted for about 30.2% of the total land cover with permanently inundated lands and bare surfaces contributing 22.4%. The results suggest soil, geology, elevation, distance to ocean, and location of old bitumen wells as the most important predictor variables. Simulated composite probabilities for transiting into degraded lands range between 0.4184 and 0.4871 in the next 20 years (from 2001) to between 0.4284 and 0.4973 in the next 100 years. Mangrove, scrub/coastal grassland, farmland/fallow and built-up areas appear to have higher probabilities, while the palm swamp ecosystems have the least.
Eludoyin et al. (2011). The study assesses the spatio-temporal land use and land cover changes between 1986 and 2000. The land use types include farmland, built up area, water, sparse vegetation, primary forest, secondary forest and mangrove. The area in square kilometers of each land use type in each year was calculated and thereafter the change was determined by subtracting the area of the same land use type in 1986 from 2000 and the percentage of change is therefore calculated. In addition, the probability of change of twenty years was also determined from one land use type to another using Markovian Transition Estimator (MTE) from IDRISI Andes. The study reveals that farmland, mangrove, primary forest and sparse vegetation reduced, while secondary forest, built up area and water increased. It is recommended among others that laws should be promulgated to prevent unlawful expansion of construction of any form and that the people in the communities in the study area should be enlightened and educated on the effects of deforestation on the environment.

Jordan and Chandra (2011) This study, part of a global assessment of mangrove dynamics, mapped the spatial distribution and areal extent of the Philippines’ mangroves circa 2000. They used publicly available Landsat data acquired primarily from the Global Land Survey to map the total extent and spatial distribution. ISODATA clustering, an unsupervised classification technique, was applied to 61 Landsat images. Statistical analysis indicates the total area of mangrove forest cover was approximately 256,185 hectares circa 2000 with overall classification accuracy of 96.6% and a kappa coefficient of 0.926. These results differ substantially from most recent estimates of mangrove area in the Philippines. The results of this study may assist the decision making processes for rehabilitation and conservation efforts that are currently needed to protect and restore the Philippines’ degraded mangrove forests.

Tavi (2011). The objective of this study is to analyze social-economic aspects of coastal community that influence mangrove forest degradation. Analysis is conducted for coastal community members who earn their living thru mangrove tree cutting activities. Method used is multiple linear regression analysis. The result shows that social factors (educational level, environmental knowledge level and cosmopolitan level) seem to have a significant effect on the degradation of mangrove forest. Increasing educational level and cosmopolitan level can reduce the level of mangrove deforestation. Economic factors (income and number of dependants) also have a significant role on the loss of mangrove forest. Thus, income improvement can reduce deforestation. Implications of this study are: (1) in order to reduce degree of mangrove forest degradation. (2) to increase awareness of the importance of role and function of mangrove forest. (3) to manage
regulation and monitoring system by regency government to mangrove forest product industry.

**Remote (2011).** The aim of this review paper is to provide a comprehensive overview and sound summary of all of the work undertaken, addressing the variety of remotely sensed data applied for mangrove ecosystem mapping, as well as the numerous methods and techniques used for data analyses, and to further discuss their potential and limitations. At the same time, mangroves belong to the most threatened and vulnerable ecosystems worldwide and experienced a dramatic decline during the last half century. They are giving advice to mangrove conservation. In this context, remote sensing is the tool of choice to provide spatio-temporal information on mangrove ecosystem distribution. Also, climate change-related remote-sensing studies in coastal zones have increased drastically in recent years.

**Luis (2011).** In the present study, They used these more advanced techniques to discriminate between mangrove and other vegetation in the Gulf of California of northwestern Mexico. A maximum likelihood algorithm was used to obtain a spectral distance map of the vegetation signature characteristic of mangrove areas. Receiver operating characteristic (ROC) curve analysis was applied to this map to improve classification. The surface area of the mangrove category obtained by maximum likelihood classification was slightly higher than that obtained from the land cover map generated by the ROC curve, but with the difference of these areas to have a high level of accuracy in the prediction of the model. This suggests a considerable degree of uncertainty in the spectral signatures of pixels that distinguish mangrove forest from other land cover categories.

**Rao (2010)** They were studied the mangrove and mangrove associates species. They use the quadrate method for same study. Mangroves are highly productive ecosystems occurs intertidal regions only. Mangroves and associated flora occurring in two major estuaries of Godavari river (India) were studied using transect with 4x4 m2 quadrats and the quadrat samples were analyzed. In the present study three mangrove species and nine associated species were reported. Transect studies in these two estuaries showed that mangrove and halophytes occurred up to 40 meters from water front region. In some places mangrove vegetation was in the form of long strips only. In Vainateyam estuary, the species with the highest density was *Suaeda monoica* whereas the species with lowest
density was Avicennia officinalis. In Vashista estuary, maximum density was reported for *Suaeda maritima* and minimum density for Avicennia officinalis. The maximum height in these two stations varied from 5 to 8 meters only. Percentage frequencies of DBH (Density at Breast Height) classes were estimated. In the present study only two diameter classes were reported. Human interference, urban settlements and aqua industry play a critical impact on the survival of these tropical ecosystems. If management and conservation programmes are not undertaken, these ecosystems may be depleted.

**Fasona (2011)**. This study utilized remote sensing and spatial-statistical geostatistics to model future land degradation in the mud-beach coast of southwest Nigeria. The results suggest soil, geology, elevation, distance to ocean, and location of old bitumen wells as the most important predictor variables. Simulated composite probabilities for transiting into degraded lands range between 0.4184 and 0.4871 in the next 20 years (from 2001) to between 0.4284 and 0.4973 in the next 100 years. Mangrove, scrub/coastal grassland, farmland/fallow and built-up areas appear to have higher probabilities, while the palm swamp ecosystems have the least.

This paper investigates how common property institutional arrangements contribute to sustainable mangrove fisheries in coastal Ecuador, focusing on the fishery for the mangrove cockle (*Anadara tuberculosa* and *A. similis*), a bivalve mollusk harvested from the roots of mangrove trees and of particular social, economic, and cultural importance for the communities that depend on it. Specifically, this study examines the emergence of new civil society institutions within the historical context of extensive mangrove deforestation for the expansion of shrimp farming, policy changes in the late 1990s that recognized “ancestral” rights of local communities to mangrove resources, and how custodias, community-managed mangrove concessions, affect the cockle fishery. The study aim was the role of common property arrangements in the ecological sustainability of mangrove Fisheries on the Ecuadorian Coast. **Beitl (2011)**

**Muhammad K and Stuart P (2011)**. This article was studied for mangrove species. Visual image interpretation and digital image classification have been used to map and monitor mangrove extent and composition for decades. The presence of a high-spatial resolution hyper spectral sensor can potentially improve our ability to differentiate mangrove species. However, little research has explored the use of pixel-based and object-based approaches on high-spatial hyper spectral datasets for this purpose. This study assessed the ability of CASI-2 data for mangrove species mapping using pixel-
based and object-based approaches at the mouth of the Brisbane River area, southeast Queensland, Australia. Three mapping techniques used in this study: spectral angle mapper (SAM) and linear spectral unmixing (LSU) for the pixel-based approaches, and multi-scale segmentation for the object-based image analysis (OBIA). The endmembers for the pixel-based approach were collected based on existing vegetation community map. Nine targeted classes were mapped in the study area from each approach, including three mangrove species: *Avicennia marina*, *Rhizophora stylosa*, and *Ceriops australis*. The mapping results showed that SAM produced accurate class polygons with only few unclassified pixels (overall accuracy 69%, Kappa 0.57), the LSU resulted in a patchy polygon pattern with many unclassified pixels (overall accuracy 56%, Kappa 0.41), and the object-based mapping produced the most accurate results (overall accuracy 76%, Kappa 0.67). Our results demonstrated that the object-based approach, which combined a rule-based and nearest-neighbor classification method, was the best classifier to map mangrove species and its adjacent environments.

Chen et al., (2012) In this paper, They highlighted some key progresses in mangrove conservation, restoration and research in China during last two decades. During last three decades, a total of 34 natural mangrove conservation areas have been established, which accounts for 80% of the total existing mangroves areas in China. Mangrove restoration areas in Mainland China accounted for <7% of the total mangroves areas in 2002. A great deal of research papers on Chinese mangroves has been published in international journals. However, more systematic protection strategies and active restoration measurements are still urgently needed in order to preserve these valuable resources in China.

Kun et al., (2010) It is a case study of Evaluation of Ecological Function of Mangrove Soil on Absorbing Heavy Metals conducted in the Dongshaigang Mangrove in China. They examined the levels of heavy metals in the soil of mangroves in the Dongshaigang Mangrove National Nature Reserve. Dongshaigang, the first mangrove nature reserve established in China, is located south of Haikou in Hainan Island and encompasses 33.37 km2, of which mangroves comprise 20.56km2. The heavy metal concentrations in the soil collected from different sample plots are related not only to the physical and chemical properties of the soil, but also to the heavy metal emitted by nearby pollution sources. The analysis indicates that tourist boats are the main pollution sources in the study area.
Pollen fertility status of 30 species including mangroves, mangrove associated species and coastal flora of Maharashtra and Goa states of India is studied. Three different groups of plants are considered on the basis of population size. The results obtain from study is slight decrease in pollen fertility from large sized population to small sized population. Gohkale et al.,(2012).