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Research Paper

Aesthetic Blight of Beach: Chennai Marina in Focus

Environment

KEYWORDS : Aesthetic blight, Chennai Marina, Beach environment, Marine litter , Sandy coast, Tamil nadu coast, Coromandel Coast

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ABSTRACT

Chennai Marina Beach, has been a stop-over in the world tourists' itinerary. Of late, it is deteriorating in quality, which triggered this study. It analyses the factors for its aesthetic blight. In it, also discussed, are restorative measures of its dwindling magnificence. Natural events such as cyclone, drifting wind, precipitation and manmade activities such as tourism, shipping, fishing, recreational, small and large scale trades, dumping, sewage waste disposal etc., by these the coast is being polluted to a visual scale. Coastal litter can be detrimental to tourism of any country as it spoils scenic beauty. Peoples are interested to visit a country that have clean coast with pleasant aesthetic value. There is a worldwide upsurge on coastal cleanup and related awareness program upon the recognition of the need of cleanliness of coast and the exorbitant cost to clean the beach. The status of Chennai marina comes under the category of beaches that have high tourist inflow, which in converse adds litter to the coast.

INTRODUCTION

Beach Environment

The beach is usually defined as an accumulation of unconsolidated sediment (sand, gravel, cobbles and boulders) extending from the mean low-tide line to some physiographic change such as a sea cliff or dune field or to the point where permanent vegetation is established (Komar 1998). It is a landform along the shoreline of an ocean, sea, lake, or river. In general, the shoreline is defined as the area where the land meets the sea. It usually consists of loose particles, which are often composed of rock, such as sand, gravel, shingle, pebbles, or cobblestones. The particles comprising the beach are occasionally biological in origin, such as mollusc shells or coralline algae.

Aesthetics of beach in general

Wind, wave and sand present a feast to the onlookers. People living in all sorts of settlements enjoy the openness of any beach. Sea of sand provides a beautiful scene at first sight. Its loose unconsolidated and texture further the enjoyment. Walking with feet burying in sand is itself a pleasure. Surficial structures on sand such as ripple marks and other wind-generated features are beautiful to look at. During windy days transport of sand is picturesque. The scenic beauty is enhanced with the pounding of waves with thumping sounds. One can endlessly watch ceaselessly advancing and breaking waves. Its purity is yet another factor in deciding the degree of aesthetics. By-passing ships offer visual delight to visitors.

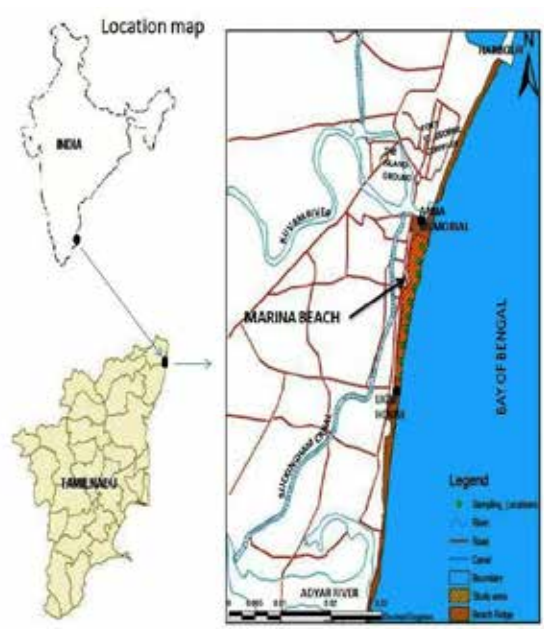
In all these counts, Chennai Marina deserves our attention.

Evolution of Chennai Marina Beach

Geographical Setting

The longest stretch of Coromandel Coast is endowed for its natural beauty and aesthetic importance. This coast has several sea trades through the wide spread Bay of Bengal. Among the beaches of this coast Marina is important urban sandy beach. Marina spans between Lat. 13°3'50.4" N - Long. 80°17'9.6" E and Lat. 13°3'34.7" N - Long. 80°17'2.4" E. This north-south trending beach is 13 km long and is about 0.6 km at its widest traverse with an area of 1.11 km2. The area enjoys a semiarid climate with an annual average temperature of 32°C and annual average precipitation of 1300 mm. Wind speed averages to 22 km/ hr. it is microtidal coast, sea level oscillating between 1 and 2 m. The geomorphological classification category is sandy beach. It has the highest number of tourists from all over the country and the world. Evolution

Before the 16th century, there were frequent incidents of inundation of lands near the coast due to rise in sea level. When the sea withdrew, several ridges and lagoons were left behind. In recent days, on the rear side of the ridge was a huge depression on which the flat beach was later developed. The ridge is the site of the present-day beach (ICMDA 2013). Present day's beach is mainly due to the presence of wave breakers laid for the construction of the harbour, although the coast in the northern region has undergone severe erosion. Ever since the harbor was built, the area south of the port has accreted significantly. Eventually, the north-drifting current widened the beach to its present extent. The beach was formed as port's breakwater detain the littoral drift (Dianna 2002). This beach is developed mainly due to the deposition of two rivers Kuvam and Adaiyar. (These two rivers, once pristine, now debouches Chennai Metro wastes and sewerage to the Bay of Bengal.) In addition, the water currents of Bay of Bengal plays role in the formation of this beach. As there are no rock formations, littoral sand drift along the coast occurs freely. Beaches represent a special case wherein erosion, transportation and deposition of sand take place.



On the rear side of the ridge was a huge depression on which present Presidency College grounds got developed. The port harbours on the northern edge are barriers for the block movement of sand and aid the deposition of sand and the growth of

beach. They create massive accretion on one side and severe erosion on the other side of the breakwater (Xavier Lopez & Aloysius, 2012). The swash zone of beach is parallel to coast exposed to rough waves impacting sandy beach of a metre in elevation resulting in high erosion rate.

The beach has been the subject of several geological processes like erosion, transportation and deposition of sediments coupled with run up and retreat of seawater due to varying sea levels all through these years. Present scenario is the outcome of disastrous Indonesian tsunami of December 26, 2004. Tsunami obliterated all geomorphic features such as berms, dunes etc. However, such features still seen on the stretch between Anna memorial to Adaiyar estuary mouth are indicative of tsunami.

Historical Background

There are several historical accounts that describe Marina. The Governor General of Madras Mountstuart Grant Duff, during his reign, constructed the promenade and named 'Marina' in 1884. Chennai Marina had acquired centre stage as Dutch purchased the stretch from the then rulers of Vijayanagar dynasty in 1646. Later, British won the reign of the region. They erected St. George Fort in front of Marina. As bathymetrically sea off Marina is shallower, the British built a pier perpendicular to the coast to navigate their merchant vessels close to the shore to avoid pilferages of their imports.

Aesthetic blight of beach: Chennai Marina in focus

However, the beauty of beach depreciates owing to the man's voluntary and involuntary activities. It thus necessitated a comprehensive program like beach conservation and cleanup in a global perspective. As a case study, Chennai Marina has been taken up. Marina beach is located in the capital city of Tamil Nadu, Chennai (Fig. 1). Tourism is considered as a boon to any country's development. Marina Beach is an important tourist spot in Tamil Nadu. Nearly, 30,000 people visit a day during weekdays and 50,000 visit during weekends and on holidays (Kumar & Praveen 2008). During summer months, about 15,000 to 20,000 people visit the beach daily. (Sreedevi & Pradeep, 2012)

Beach Scenario

The Marina provides a scenic beauty with its sand and breaking waves. However, sand stretch is being masked by market. This is due to the "shop-avenues" in line with the four important feeder roads to marina. Shop keepers has erected their stalls in parallel rows leaving passage in the middle for the movement of people. This arrangement automatically draws people coming through feeder roads into these shops-bound passage. In fact, people are distracted from nature loving to shopping!

There are about 250 shops each of which is mostly run by single person (Mariappan &Julie, 2010), (Panetta 2003). Besides, mobile vendors sell several snack items including Kai murukku, (=made of rice and deep fried) and Chennai Marina famous "Thengai, Mangai Pattani Sundal"(= coconut, mango, yellow split pea mixture). Other varieties of snacks of vegetarian and non-vegetarian items are also available. Shops stock cosmetics, women ornaments, shell items, toys, etc. There are game spots and merry-go-rounds. In Marina, are 17 balloon-shooting spots. Eight merry-go-rounds let children enjoy. Pony rides are available for hire.

The Madras Corporation, took up the Marina Renovation Project with improved landscaping, seating arrangements, walkways, and lighting along the promenade, and architectural elements such as plazas, gazeboes, and pergolas were installed all along the stretch including 4 m-wide non-slippery granite footpaths near the service lane, another 5 m-wide footpath, and 15 m-wide lawns.

Chennai Corporation maintains necessary lighting through their dedicated power supply lines. Other physical fixtures include privately maintained power generators. These illegal power units take care of power supply requirements of shops, game spots and merry-go-rounds. During day time these are covered with polythene sheets. Electric outlet points are there with buried wiring. A few locations have hand pumps for the supply of beach groundwater (saline) to meet the water requirement of eateries.

Sand art is the practice of modeling sand into an artistic form. Researchers and NGO's consider that campaigns, awareness programs are launched on coastal zone will have a wide reach. To create awareness about Renewable Energy, Tamil Nadu Energy Development Agency (TEDA) put up a sand sculpture on the Marina Beach on 9th May 2013 it is considered a great event nationally.

There are two swimming pools along the stretch—the Marina swimming pool and the Anna swimming pool.

The Kite flying and beach cricket are common sports at the beach, and there are also facilities for pony rides. Beach cricket at the Marina dates back several decades. However, Chennai City Police has banned it at different points due to its interference with traffic and beach walkers (Ayyappan 2009). The sea is generally rough and waves are strong. There are fishermen colonies present at both ends of the beach. There are also joy-rides, merry-go-rounds and mini giant wheels along the stretch, although they are installed without permission from any government agency (Preeti & Zachariah, 2012).

Beach POLLUTION

Infrastructure

From the pollution point of view, beach facilities and provisions worsen the environment. Waste materials remaining after shop establishments are strewn here and there. These material include iron, wood, plastic and polythene pieces.

Generators pollute the beach air quality, and make noise pollution. Organic wastes arise from fishing and seafood stalls. Corn horns are significant debris on the beach. Inorganic wastes are from game shooting spots; pieces of blasted balloons litter the beach considerably.

Visitors litter the beach by throwing packagings of water and food items. For examples drinking water bottles, water sachets, ice cream cups, polythene and paper wrappers of various eatables are heavily found on the sand. Contributions of alcoholics deserve special mention as they broke the bottles after consuming drinks. Day by day it makes barefoot walking risky and dangerous.

The solid waste or litter generated by the shops is finally distributed along the coast. Beach litter types are polythene, paper, plastic, rubber, glass fragments and organic waste. These debris hamper the aesthetic value of the beach.

Another source of pollution occurs through the atmosphere. Windblown dust and debris, including plastic bags, are blown seaward from landfills and other areas.

The oceans are normally a natural carbon sink, absorbing carbon dioxide from the atmosphere. Because the levels of atmospheric carbon dioxide are increasing, the oceans are becoming more acidic.(National Institute of Ocean Technology 2013)(United Nations Environment Programme 2011) Parallel to Marina beach is Kamaraj Salai which is one of the arterial roads of Chennai through which vehicles ply throughout the year. Hence the carbon emission is also high in this region. The two main rivers, mentioned earlier, add typical compounds containing nitrogen or phosphorus to the beach and become main source of eutrophication.

Much Land generated debris ends up in the ocean and it is a global challenge to overcome. Coastal plastic wastes are having global impact on the health of marine organisms (Ponnusamy & Mahalingam 2011)

Fishing and Shipping

Fishing industry contributes non decaying and floating debris as new boats and parts of boats come packed in thermacole.

Thermacole packaging greatly litter the coast. . There are thirty fibre boats moored on shore. Only a few boats are meant for regular fishing; others are parked. These boats become large size debris that becomes an obstacle for the visual quality. South bound ships sail from Chennai harbor parallel to beach and take part in pollution by littering and oil spilling.

Tourism

Tourists encourage beach trade; they become ultimate source of beach litter. Many of beach visitors/ tourists prefer to buy and eat from beach vendors. But they directly dispose the debris on the beach where they were at that time. They do not bother littering. And those who want to put debris into bins are not doing it properly; litter can be around the garbage bins.

Leisure Activities

The sand artists and sculptors complained about litter-laden sand; they need to sift sand to get rid of plastic wrappers and water bottles, etc. for their clean sand requirement.

Floating plastics challenge divers.

Beach Cleaning

Chennai Corporation cleans the beach through its personnel and modern equipments. Beach sifter is used to clean the top layer of sand. It combs and collects debris leaving sand. Servants collect and sort debris into decaying and non decaying types before they are sent to dumping yards. The following study was made after the cleaning. Marine Litter (Table.1)

Effects of pollution

Aesthetic Blight

Beach environment is pleasant until man disturbs and modifies it. People disturb the habitat of shore dependent organisms through commercialization. General natural beach setting is transformed into mini township-like layout. Observation from this beach reveals the impact of human behaviors over the natural beauty. It is being littered throughout and the time taken for the removal is minimum. Table 2 presents beach land use details. 250 shops hide the beach vision. Each shop occupies an area of 100m2 (10m x10m), in total 25,000 sq.m area of the beach is covered by shops.

Beach is like a huge open garbage bin strewn with polythene bags, bottles, papers etc. Chennai is losing its charm. As mentioned above this beach has highest tourist inflow, around 15,000 to 20,000 visitors visit daily.12 Only 30 corporation employees and 20 daily wagers are employed for collecting the debris from roughly 1sq.km area of beach. Obviously, 50 persons cannot clean the pollution caused by such a large population.

Beach visitors' pleasant mood is spoiled by the generator sound and diesel smoke and smell, quashing their purpose of visit. Although power cables are buried at one foot depth of sand shock hazards threaten the visitor. Open beach hotels and shops dispose their organic waste like seafood waste, fruit peels, corn husk, sugarcane bagasse etc., on the beach sand. It creates foul odour and blight the beach.

Table 2. Indicates Beach land use details

Marina Beach	Area in sq km
Total area of beach	1.11
Shops and game spots	0.015
Swimming Pool	0.003867
Civil (Roads, Promenade, Platforms, Stage, Statues, etc.,)	0.0019
Artificial Falls	0.000108
Total occupied	0.02
Available area for public (Open sandy space)	1.09

Withering of Ecosystem

Being densely populated, increasing recreational activities along the beach it becomes an unsuitable environment for living habitats. Marina Beach lies on the stretch of coast where olive ridley sea turtles, a species classified as Schedule 1 of the Indian Wildlife Protection Act of 1972 (critically endangered), nest during mating season, chiefly between late October and April peaking from mid-January to mid-February (National Institute of Ocean Technology 2013). The eggs laid by the females along the beach are also sold in the local market by the fishermen and traders.http://en.wikipedia.org/wiki/Marina_Beach - cite_note-CMFRIBul_RecoveryProgramme-25 In 1977, a recovery programme was started by the Central Marine Fisheries Research Institute.9 Many volunteer organisations in the city, such as the Students' Sea Turtle Conservation Network and the Sea Turtle Protection Force of the TREE Foundation, get involved in conservation of the species along the coast. (Hemalatha, Karthikeyan 2013)(Singh 2003).

Meiofaunal composition at the Marina Beach chiefly includes turbellarians, nematodes, polychaetes, oligochaetes, and harpacticoids .19 Species of gastrotrichs are also found in the region. In recent years, many voluntary organisations have taken up the task of cleaning up the Marina and protecting the ecosystem.

Need for conservation of natural beach environment

It is a pride to the country to have the world's second largest beach. This is the reason for the tourists visiting Marina, in large numbers. Also, the revenue of the state is being supported by tourism. The impact of litter is equally on all the lives at ocean and land. It is our wholehearted duty to conserve the natural resources for future generation without spoiling it. Marina beach slowly loses its beauty and undergoes aesthetic blight. The beach is spoiled by increasing litter accumulation.

Beach is a zone of natural beauty. It gives pleasant joy to a beach walker. Also it is the zone where lives of land and ocean live together. Conservation of marine flora and fauna against beach waste turns a must. So local bodies, like NGOs should take responsibilities in keeping the coast clean. Violators of the local rules should be punished. Marine protected areas declarations provide protection to the ecologically important areas. India has initiated action through the state governments to create Network of Marine Protected areas under Wild life protection act 1972 (Jenssen 2003).

Local Attempts

According to an environmentalist, political and ethical association will help improve and protect the quality of the natural environment. Some NGOs, research organizations, researchers, NSS and NCC Students and volunteers take their responsibilities in cleaning the coast. volunteers from Indian Coast Guard Region (East), Tree Foundation's Sea Turtle Protection Force in association with South Asia's Co-operative Environment Programme (SACEP), a United Nations Environment Programme, and Loyola College, came together to clean up the Marina Beach to mark the 'International Coastal Clean-up Day' on Sept. 15 2012. Apart from these the Indian Maritime Organization, and ExNoRa (Excellent Novel and Radical) also have their part in conservation and cleaning of coast.

The Hindu, English daily, in association with the Chennai Trekking Club organized the Chennai Coastal Cleanup, an initiative to clean up our beaches. Volunteers cleaned up a 15 km stretch of the beach from Marina to Injambakkam. Indian Maritime Foundation and a group of 677 volunteers and 120 NCC cadets together collected 950 kg of garbage at the launch of International Coastal Clean Up 2011.

Despite the Corporation's ban on usage of plastic bags, usage of plastics is not reduced.

Summary

The above study reveals the need of cleanliness of coast, also the impact of marine litter by different sources like tourist, fishing, and other activities. Withering of ecosystem should be properly studied. Unwanted construction along the coastal zone is also considered one of the forms of conservation of coast. Aesthetic blight is a crisis to the cultural development of Marina. As per present state, about 1 sq. km of beach is available for visitors. It

is high time that Chennai Corporation is to come out with rules and regulations to keep the beach sandy area structure free. There are two ways that the overall level of pollution can be mitigated: either the visiting human population is reduced or humans themselves forced to pollute less. Authors opine that the beach, "Marina" shall be devoid of any shops and recreational activities for enhancing the natural beauty.

Table 1: Presented the marine debris data accumulated from the study in marina for four seasons of 2012. The items are given in standard classified 8 major type

Litter type	Winter		Premonsoon		Monsoon		Post Monsoon		Total	Average	Total	Average
	Count (%)	Weight (%)	Count (%)	Weight (%)	Count (%)	Weight (%)	Count (%)	Weight (%)	Count (%)		Weight (%)	
Cloth	11.5	10.7	11.8	9.8	11.6	10.5	13.0	6.0	47.9	12.0	37.0	9.3
Glass	8.4	8.5	6.2	7.5	5.0	13.0	5.3	3.3	24.9	6.2	32.3	8.1
Metal	6.0	9.7	6.5	14.4	4.3	21.8	7.9	17.7	24.7	6.2	63.6	15.9
Paper	16.9	15.0	18.7	8.0	21.9	16.0	16.0	14.7	73.5	18.4	53.7	13.4
Polythene	18.7	17.2	19.4	18.0	19.6	11.1	19.9	20.1	77.6	19.4	66.4	16.6
Plastics	23.5	17.7	20.1	13.9	22.2	15.7	24.0	11.1	89.8	22.5	58.4	14.6
Rubber	6.1	17.9	9.2	23.9	7.2	11.6	4.2	22.6	26.7	6.7	76.0	19.0
Wood	8.9	3.3	8.2	4.4	8.2	0.2	9.7	4.5	35.0	8.8	12.4	3.1

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