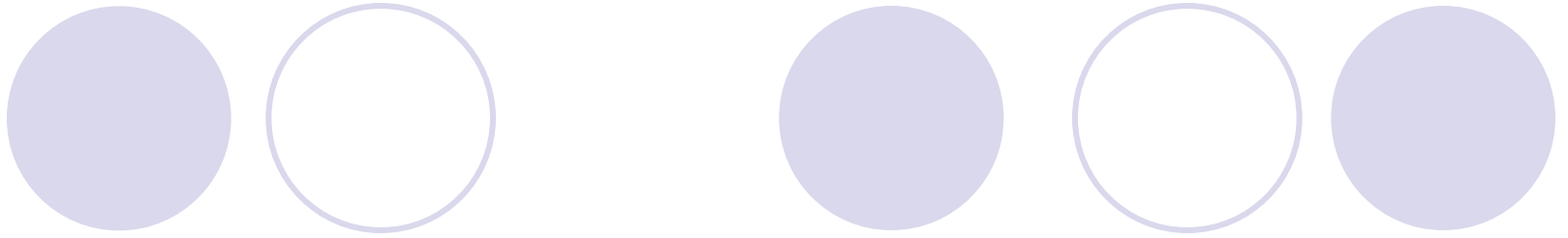




**Management Sustainable –  
Protected - Area in Urban  
Environment: Observations From  
PALLIKARANNAL MARSH LANDS  
of Chennai, India.**

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*To effectively determine, evaluate, and control risks to the environment and the health, safety, and welfare of Pallikaranai Marshland by carrying out cleanup or other response activities at sites of environmental contamination.*



# MARSH LANDS

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Marsh lands are areas that are periodically or permanently inundated by surface or ground water and support vegetation adapted for life in saturated soil.

Marsh lands is wetland types, which also include swamps, bogs and similar areas.

# What do Marsh Land do?

## Marsh Land Functions

- **Habitat** : nesting, spawning, rearing and resting sites for aquatic and land species, food chain production
- **Hydrology** : protection of other areas from wave action and erosion, storage areas for storm water and flood water, ground and surface water aquifer recharge
- **Water Quality** : water quality protection, water filtration and purification, treatment of nonpoint source runoff.



# Why are Marsh Lands important?

## Marsh Lands Values

- ❖ maintain biodiversity
- ❖ provide habitat for animals
- ❖ maintain water quality
- ❖ support commercial fishing, forestry
- ❖ Maintain temperature
- ❖ reduce flood damage
- ❖ hiking, fishing, hunting,
- ❖ bird watching, boating
- ❖ aesthetic value
- ❖ Recreational values



# history

- People considered wetlands as unproductive area and hence destroy or drain them for developmental activities.
- The importance and usefulness of wetlands was first brought to the notice of the world through a convention of wetlands held at the Iranian city Ramsar in 1971.
- To commemorate the date of signing of the convention on wetlands, 2<sup>nd</sup> February of every year is observed as World Wetland Day.
- The Ramsar convention states that, “ *The wetlands are areas of marsh, fen, peat land or water, whether natural or artificial, permanent or temporary, with water that is static or flowing , fresh, brackish or salt, including areas of marine water depth of which at low tide does not exceed six meters.*”
- Recognizing the importance of the protecting such water bodies, the government of India operationalized a wet land conservation programme (National Wetland Conservation and Management Programme-NWCMP) in 1985/86 in close collaboration with concerned State Government.
- Out of the 94 identified wetland under NWCMP, Tamil Nadu has three areas i.e.: - Point Calimere; Kaliveli and Pallikaranai Marsh.

# MARSH LAND (WETLAND) DEGRADATION

A major cause of wetland degradation is precisely the lack of knowledge among the planner, natural resource managers and wetland users.

The ecological process of wetlands provide diverse benefits and the ignorance of these benefits themselves have led to the wetland degradation.

Even in the scientific community, there is a large gap in understanding of the effect of the land and water in wetlands on hydrological process in catchments.

So, there is an urgent need of a public policy aiming at wetland conservation within the broader framework of environmental management.

# PALLIKARANAI MARSH LANDS

**Geographical area-** 80sq.km. with a width of 3 Kms and length of 15 Kms.

## **Location:**

Between 12° 56' 15.72" N,  
80° 12' 55.08" E.

About 20km of the south city of Chennai, in the Kancheepuram district, state of Tamil Nadu, South India.

## **Protected Area:**

On February 20,2003, the Kancheepuram district collector issued a gazette notification announcing that 548.14 hectares of the marsh area is classified as Protected Land.







# PALLIKARANAI MARSH LANDS

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Pallikaranai Marsh land is a fresh water swamp adjacent to the Bay of Bengal situated about 20 km south of Chennai city with a geographical area of 80 km<sup>2</sup>.

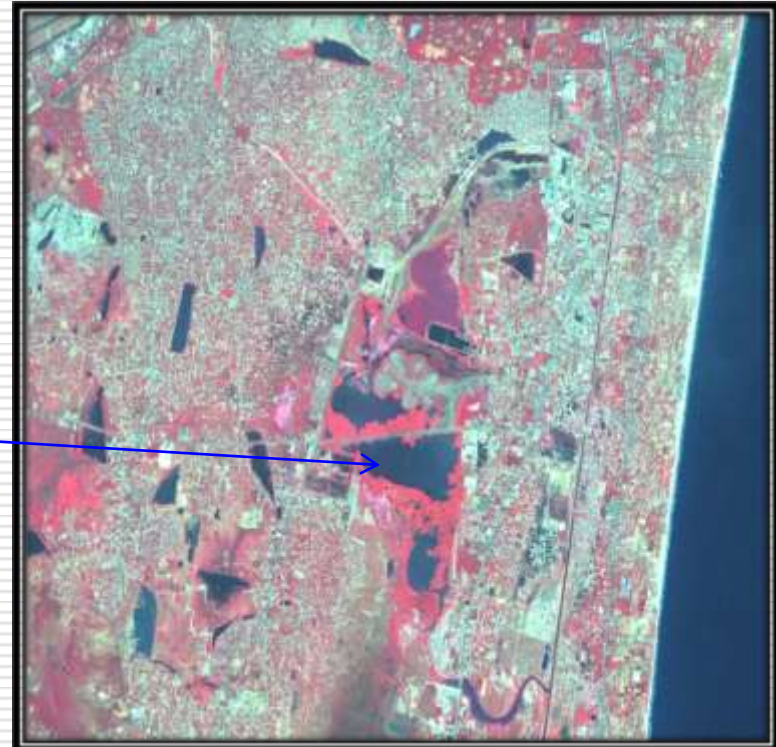
In 2007, a major portion of the Pallikaranai marshland was declared a reserve forest area and brought under the Tambaram range of the Forest department.

The Marsh is helpful in charging the aquifers of the region. It is one of the last few remaining natural ecosystems in the city of Chennai.

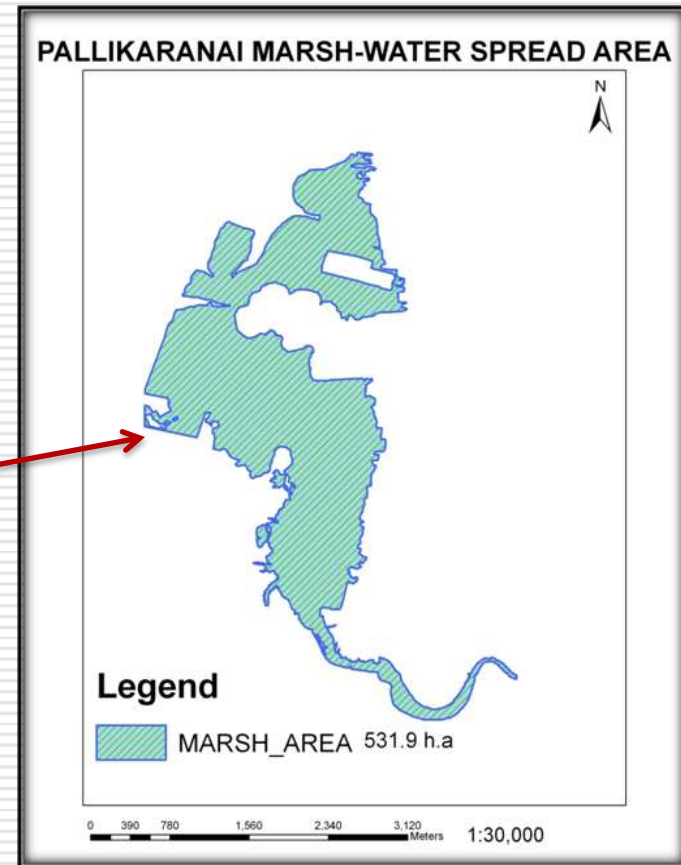
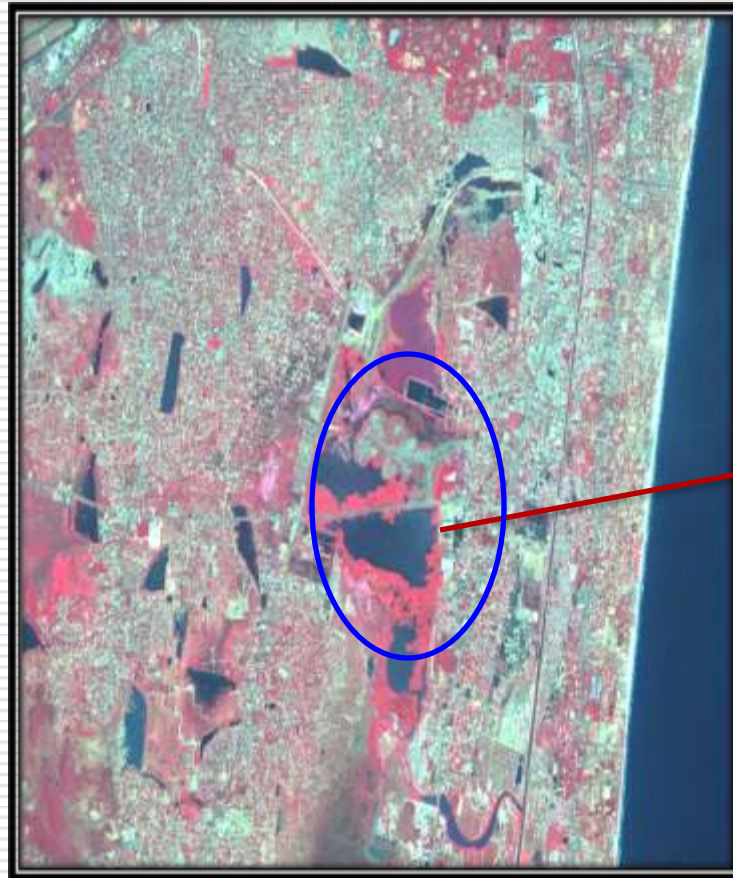
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# PALLIKARANNAI MARSH LANDS OF CHENNAI,INDIA

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# PALLIKARANAI MARSH LANDS OF CHENNAI,INDIA

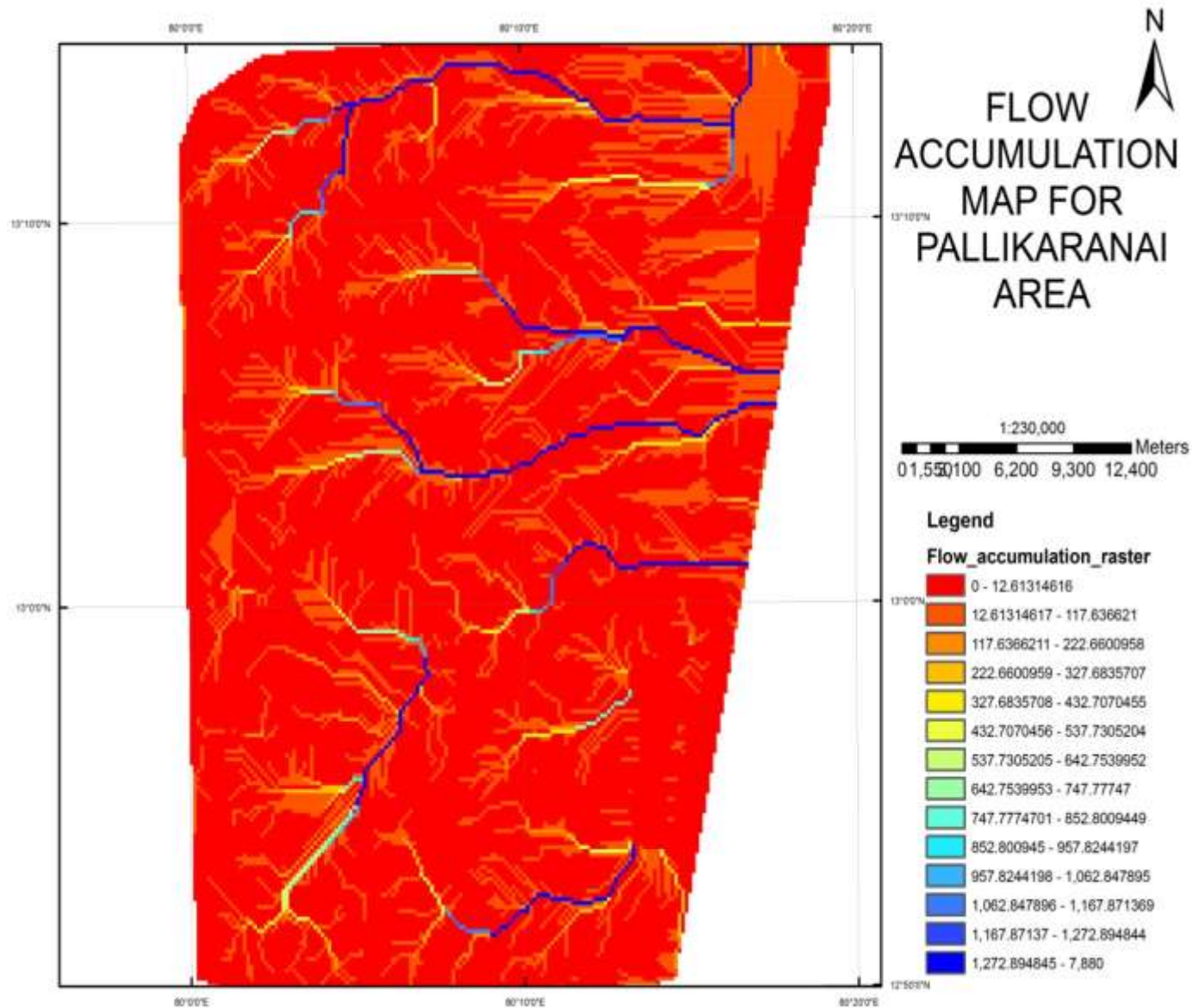


# Species distribution of Flora and Fauna in Pallikaranai Marsh

<b>S.No</b>	<b>Plant / animal groups</b>	<b>Number of species</b>
<b>1</b>	Plants	<b>114</b>
<b>2</b>	Butterflies	<b>7</b>
<b>3</b>	Crustaceans (crabs and prawns)	<b>5</b>
<b>4</b>	Molluscs ( snail and clams)	<b>9</b>
<b>5</b>	Fishes	<b>46</b>
<b>6</b>	Amphibians ( frogs and toads)	<b>10</b>
<b>7</b>	Reptiles	<b>21</b>
<b>8</b>	Birds	<b>115</b>
<b>9</b>	Mammals	<b>10</b>
<b>Total</b>		<b>337</b>

The marsh was being destroyed by the factors such as reclamation to establish institutions, using a large portion the marsh as garbage dump and disposal of partially treated sewage.





# Pallikaranai Marshland Appropriation



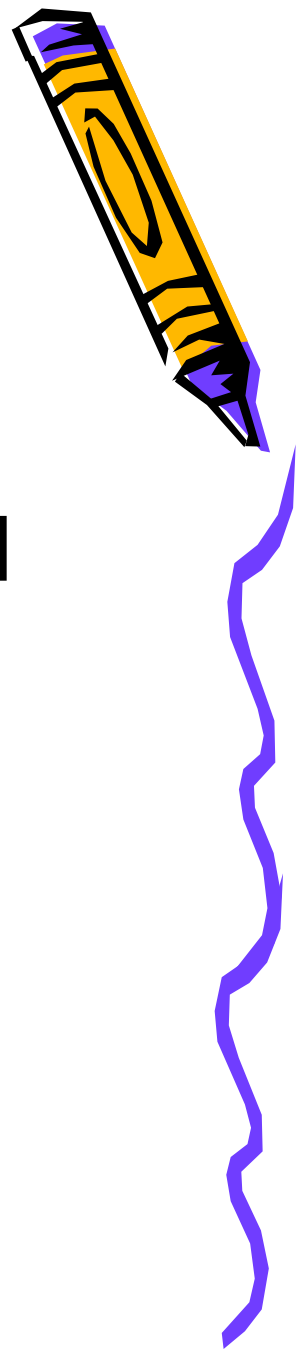
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- Every single day, Chennai city dumps an enormous amount of garbage into the environmentally sensitive Pallikarnai marshlands. Dumping of solid waste, discharge of sewage, construction of buildings, dumping of chemical waste by private industries, construction of a railway station and a new road to connect old Mahabalipuram road and Pallavaram are causing the Pallikarnai marsh to shrink. This waste is often burnt by agencies in-charge of its safe and sustainable disposal, aggravating the damage.
- While health risks due to pollution of water and burning of waste have been severely aggravated, poorer residents around the area have been denied a source of drinking water due to the dumping.
- Pallikaranai's ground water is extremely polluted. The public garbage dump near it is responsible for the pollution. The effluents from this dump has leached into ground water and has adversely affected it to an extent that consumption is possible only when strict rules are enforced to protect the Marsh from dumping the garbage.



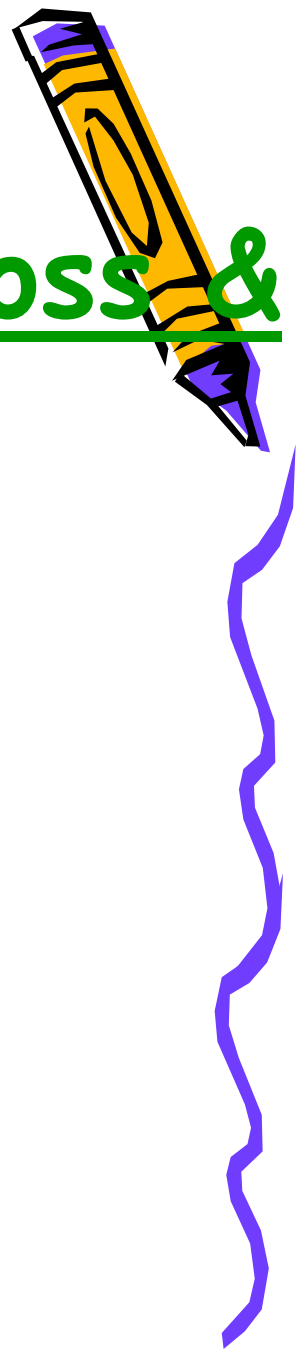
# Why So Much Marsh Land (Wetland) Loss?

- Perception of Marsh Land (wetlands) as “wastelands” and “swamps”  
(= ignorance)
- Economic incentives for development and urban sprawl



# Major Causes of Marsh Land (Wetland) Loss & Degradation

- A) Biological Alterations
- B) Chemical Alterations
- C) Physical Destruction or Degradation



## **A) Biological Alterations**

1. Removal of Marsh Land (wetland) or riparian vegetation
2. Introduction of non-native/exotic species

# **Chemical Alterations**

1. Release of pollutants & toxic chemicals
2. Change in nutrient levels

The encroachments in the Pallikaranai Marshland which is legally accepted by the government of Tamil Nadu. Most of the Marsh area was diverted for developmental activities like,



1	Metropolitan Rapid Transport System (MRTS)	92.405 ha
2	Film Employees Federation of South India (FEFSI)	34.410 ha
3	Ashram Latha Rajnikanth Trust	5.000 ha
4	Tamil Nadu Agricultural Marketing Board	12.150 ha
5	Dr. Ambedkar Law University	8.100 ha
6	Judicial Academy	6.070 ha
7	MMRD Road 200' width	13.600 ha
8	IIT, Chennai	17.810 ha
9	National Institute of Ocean Technology (NIOT)	20.250 ha
10	Government Free Pattas	2.000 ha
11	Land allotted for Ex-servicemen	61.765 ha
<b>Total</b>		<b>273.560 ha</b>

# Physical Destruction or Degradation

1. Filling
2. Draining
3. Dredging & Stream Channelization
4. Peat Mining
5. Flooding & Changes in Sediment Deposition Patterns due to Constructions.
6. Recreational Uses



- Besides the above, an area about 19.00 ha has been allotted for solid waste disposal if the Corporation of Chennai. The area of 100 ha is occupied by an Engineering college, an arts college, Tamil Nadu hospitals, firewood wholesale market, Perungudi sewage treatment plant etc.
- The unauthorized occupation for residential purpose and area allotted for slum clearance board may be around 100 ha. Thus the total area of about 474 ha. of the marsh has already been allotted/ occupied.






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- Chandramohan and Bharathi, (2009) consider that, among various abiotic factors for a strong and healthy habitat in the marshland, sustainable land use development is very important which requires planning for ecological integrity and it can be achieved through public management of common property resources.

- He emphasizes a combination of government, society and experts act in allocation and use of natural resources in order to get optimum benefit. For the protection and preservation of PML there are various governmental agencies involved like Chennai Corporation, CMWSSB, CMDA, Forest Department, TNPCB, Local Panchayat etc.

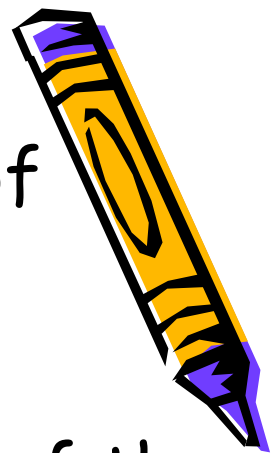
- Due to the ignorance in the part of the government about the treasure house of the Marsh Land (wetland), last Marsh Land (wetland) died in Chennai was the Koyambedu Marshland. This was taken over by the government for the purpose of housing , bus terminus and vegetables and fruit markets.

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- At present Pallikaranai Marshland and its associated water bodies have been polluted and converted into waste water drains resulting in the loss of habitats.
  - Evidence reveals that not only the marshland has shrunk, but also the 31 tanks located in the catchment area of the marsh .
  - For instance, the Adambakkam Tank, one of the water source of the swamp has reduced its original size of 70 ha to 20 ha due to encroachments. Velicharry Tank also reduced drastically due to urbanization and infrastructure development.

# ■ Conservation

- Dumping of solid waste, discharge of sewage, construction of buildings, construction of a railway station and a new road to connect old Mahabhalipuram road and Pallavaram are causing the Pallikaranai marsh to shrink. Cognizant Chennai is located here now
- A major portion of the Pallikaranai marshland in south Chennai has been declared a reserve forest area and brought under the Tambaram range of the Forest department, according to a draft notification issued on April 9, 2007.
- The notification says: "The proposal of the Principal Chief Conservator of Forests sent in his letter for publication of the notification under Section 4 of the Tamil Nadu Forest Act, 1882 is approved".
- Senior department officials said a special tahsildar had been appointed to specify the boundaries and the extent of the marshland to be brought under their control. From now on, it would be known as '*Pallikaranai Swamp Forest Block.*'
- They said 3.17 square kilometres (780 acres) of the marshland had been classified as reserve forest area.
- Earlier, it was classified under the Revenue records of the Kancheepuram district administration. For several years, nature lovers, environmentalists and civic groups had been pressing for protecting the area, as it was a natural habitat with rich flora and fauna.
- With the department taking over the marshland, it would be possible to take stringent action against trespassers and those dumping and burning garbage there, the officials said. Provisions of the Tamil Nadu Forest Act and Wildlife Protection Act could be invoked against them. Pallikaranai is the 17th reserve forest area in the Tambaram Range, whose reserve forest area goes up to 56.27 square kilometers (21.7 sq mi).



- This study aims at making the public and the city planners aware of the importance of the marsh as part of dreaming of the sustainable city.

The present and the flood holding capacity of the marshlands would be compared with that of earlier decades.

Satellite imagery and survey if India Toposheets provide ample information for this assessment.

And attempt is made to understand the social and economic impact of flooding in those areas of flooding because of the reduction in the marsh area.

Hence an attempt is made to assess the status of  
**THE PALLIKARANAI MARSHLAND.**





**Nature is the best artist and engineer.**

**THANK YOU.....**