4. DESCRIPTION OF THE STUDY AREA

Pallikaranai wetland is a freshwater swamp in the city of Chennai, India. It is situated adjacent to the Bay of Bengal, about 20 kilometres (12 mi) south of the city centre, and has a geographical area of 80 square kilometres (31 sq mi). Catchment area 235 km² (91 sq mi), Coordinates 12°56′15.72″N 80°12′55.08″E. Pallikaranai marshland is the only surviving wetland ecosystem of the city and is among the few and last remaining natural wetlands of South India.

The Pallikaranai dumpsite is located south of Velachery, lies between the old Mahabalipuram road in the east, Velachery-Tambaram road on the west, Sittalappakkam on the south and Alandur on the north. It is a large topographic depression termed as the Pallikaranai Depression, stretching approximately 10 km from north to south and is about to 3 km wide from west to east Photo 2. The area is low lying marshy land, covered by a mosaic of aquatic grass species, scrub, marsh, and water logged depressions and is connected to the sea via the Buckingham canal and the Kovalam Estuary at the southern end of the depression. The dumpsite lies between 2 to 3 km west of the Buckingham Canal and is at 3.5 to 4.5 km west of the Bay of Bengal coastline.

A study conducted by Care Earth in 2002, supported by the Tamil Nadu Pollution Control Board (TNPCB) found that the area has reduced to about 600ha from an earlier extend of 4000-5000 ha (Care Earth 2002; Joint Committee Report 2003; The Hindu, 2006). Further it has reduced to 420ha (Care Earth, 2005).
Photo -2. Shows the sampling locations
A fall of about 30% in the wetland area within a span of three years is indeed alarming. The Chennai metropolis waste dump yard occupies a part of these wetlands, and it has effectively choked over 250 acres of prime marsh lands. In spite of the legalized and illicit encroachments, fast developing real estate ventures and various other developments including information technology parks on the banks of the marsh lands has aggravated the wetland depletion (Azeez et al., 2007).

The Pallikaranai Marsh is amongst the few and last remaining natural wetlands of South India. The Marsh that was till about 30 years ago spread over an area of more than 5000 ha has been reduced to around one-tenth of its original extent due to anthropogenic pressures. The free flow of water within the entire Marsh has been totally disrupted due to mega construction activities and consequent road lying. A garbage dump that extended over an area of 50 ha in 2003 has since spread substantially and at present covers and impacts 132 ha. Additionally, there exist a growing number of encroachments along the periphery of the marsh (Care Earth, 2005).

It is one of the 94 identified wetlands under National Wetland Conservation and Management Programme (NWCMP) operationalised by the Government of India in 1985-86 and one of the three in the state of Tamil Nadu, the other two being Point Calimere and Kazhuveli. It is also one of the prioritized wetlands of Tamil Nadu.
Max. length | 15 km (9.3 mi)
Max. width | 3 km (1.9 mi)
Surface area | 80 km² (31 sq mi)
Water volume | 9 km³ (2.2 cu mi)
Surface elevation | 5 m (16 ft)

Fig. 3. Sampling locations

The topography of the swamp is such that it always retains some storage, thus forming an aquatic ecosystem. It has been a home for naturally occurring plants (61 species), fish (46 species), birds (106 species), butterflies (7 species), reptiles (21 species) and some exotic floating vegetation such as water hyacinth and water lettuce, which are less extensive now and highly localized.
Recent reports of the appearance of the white-spotted garden skink (*Lygosoma albobunctata*), for the first time in Tamilnadu, and Russell’s viper, the largest and the most widespread among Asian vipers, confirm its invaluable ecological status. Fishes such as dwarf gourami and chromides that are widely bred and traded worldwide for aquaria occur in Pallikaranai. Besides, the windowpane oyster, mud crab, mullet, half beak and green chromide are some of the estuarine fauna present in the marsh.

Dumping of solid waste, discharge of sewage, construction of buildings, construction of a railway station and lying of new road connecting old Mahabhalipuram road and Pallavaram are causing the Pallikaranai marsh to shrink.