ECOLOGY OF PALLIKARANAI WETLAND: AN ANTIDOTE FOR WATER SCARCITY IN CHENNAI CITY

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ABSTRACT

Background of study:

Wetlands are the link between land and water, and one of most productive ecosystems in the world. It contributes by enormous services to the society such as recharging ground water, recycling nutrients, attenuating floods and as natural habitat for supporting different kinds of species biodiversity. Because of rapid urbanization and industrialization, the only available rain water harvesting wetland of Chennai city, the Pallikaranai marsh land which has been designated as a reserve forest area has been reduced to one-tenth of its original extent due to anthropogenic stresses. The presence of a major dump yard and sewage treatment plant operated in the ecologically sensitive locations of Pallikaranai marsh projects great threat to the biodiversity population of the wetland.

Objectives of the study:

- To document about prominence of wetlands in Pallikaranai and its role in water conservation methods.
- To troubleshoot the reasons behind the exploitation of water resources in Pallikaranai and its surrounded localities.
- To overcome the threatening condition of Pallikaranai and its impact towards extensive water scarcity.
- To develop appropriate strategies to solve issues related to pollution and contamination of solid wastes dumping in Pallikaranai region.
- To suggest policy guidelines for conservation and management of wetlands in Pallikaranai.
- To suggest suitable measures to eradicate barriers of water crisis and to intensify proficiency of naturally available water resource of Chennai.

Research Methodology:

The research methodology is based on descriptive study. The data collected for the research is based on information available in various articles, newspapers, journals and magazines. In this study, rank and percentage analysis are used as tools to identify the ecological imbalance in Pallikaranai and which reflects in water scarcity throughout Chennai area. Hence, the status of information produced in this study from the findings will provide a pre-requisite baseline data on Pallikaranai marsh land and Perungudi solid waste facility. The research also recommends the steps to be taken for protection and restoration of Pallikaranai marsh paving a way as an antidote to water scarcity in Chennai City, Tamil Nadu.

Keywords: Corporate Social Responsibility, Wetlands, Marsh, Water Scarcity, Chennai, biodiversity harm, solid waste, pollution.

ANALYSIS AND INTREPRETATIONS

Table 1: Identified Marsh lands in Tamil Nadu

S.No	Marshlands	District	Attained Status
1.	Pallikaranai	Chennai	Non Ramsar site
2.	Kaliveli	Villupuram	Non Ramsar site
3.	Point Calimere	Nagapattinam	Ramsar site

Source: **Primary Data**

Table 2: Services of Pallikaranai Wetland, Chennai

S.No	Services	Specific Exemplars
1.	Food	Production of fish, molluscs, fruits, cereals, other crops
2.	Freshwater	Storage and retention of water for domestic, agricultural and industrial use
3.	Fibre and fuel	Products of fuel wood, grasses, fibre, peat, fodder for cattle, wood for huts etc.
4.	Genetic Material	Genes for resistance to pathogens, ornamental species etc.

5.	Climate Regulation	Source of and sink for greenhouse gases; influence of local and regional temperature, precipitation and other climatic processes
6.	Hydrological flows	Ground water recharge and discharge
7.	Water purification and waste treatment	Retention, recovery, and removal of excess nutrients and other pollutants
8.	Erosion regulation	Retention of soils and sediments
9.	Natural hazard regulation	Flood control, protection from storms
10.	Pollination	Habitat for pollinators

Source: **Millennium Ecosystem Assessment, 2005**

Table 3 Criteria of Pallikaranai Marshland for Ramsar site

S.No	Ramsar Criterion	Yes/Not Known
1.	A wetland should be considered internationally important if it contains a representative, rare, or unique example of a natural or near – natural wetland type found within the appropriate biogeographic region	Yes; a rare example of a coastal wetland that is partly of freshwater; it is found in the Coromandel Biogeographic Province of India where no such wetland exists.
2.	A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities	Yes; birds
3.	A wetland should be considered internationally important if it supports populations of plant and/or animal species important for maintaining the biological diversity of a biographic region	Yes; bird, fish and amphibians
4.	A wetland should be considered internationally important if it supports populations of plant and/or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions	Yes; bird, fish and amphibians
5.	A wetland should be considered internationally important if it supports a significant proportion of	Yes; fish including species of

	indigenous fish subspecies, species or families, life history stages, species interactions and/or populations that are representative of wetland benefits and/or values and thereby contributes to global biological diversity	eels and other food - fish
6.	A wetland should be considered internationally important if it is an important source of food for fishes, spawning ground, nursery and/or migration path on which fish stocks, either within the wetland or elsewhere	Yes; species of mullets and other brackish water fish migrate from estuaries for spawning during certain seasons
7.	A wetland should be considered internationally important if it regularly supports 1% of individuals in population of one species or subspecies of wetland dependent non - avian animal species	Not Known; there is very little information on aquatic invertebrates some of which might qualify in this
8.	Play a major role in the natural control, amelioration or prevention of flooding	Yes
9.	Be important for the recharge of aquifers	Yes
10.	Be major natural floodplain systems	Yes

Source: **Comprehensive Management Plan for Pallikaranai Marsh 2014 - 2019**

5.FINDINGS

- Uncontrolled discharge of waste water, industrial effluents results in proliferation of aquatic weeds, which adversely affect both plant and animal life existing in the marsh lands.
- Habitat destruction has created a loss of aquatic species, resulting in decrease of migratory birds.
- Increased encroachment in Pallikaranai due to excessive construction of IT companies, has led to shrinkage of this area.
- Anthropogenic pressures by continual infringement, enforces habitat destruction and loss of bio diversity in these areas.
- Improper dredging has made Pallikaranai a polluted environment for livelihood of migratory birds.
- Hydrological interventions such as frequent floods in and around Velachery locality has created an enormous loss of aquifers.
- Pollution arising from point and non-point sources affects the fresh water land area and therefore deteriorates the quality of water.

6.SUGGESTIONS

- Government of Tamil Nadu need to find an alternative to re- locate solid waste management functioning at Perungudi, which harms marsh lands of Pallikaranai.
- Minimization of the impact of agricultural run-off/insecticides/fungicides in the wetland areas is found to be essential.
- Amalgamation of traditional wisdom with latest conservation techniques must be planned intensively.
- Activities in terms of vegetative control, gully plugging, stream bank erosion, water harvesting structures, raising of nurseries, propagation of plant material, and tree planting are to be carried out effectively.
- Survey of human settlements and other human activities in the catchment, including encroachments must be taken on regular basis.
- Manual and mechanical de-silting and dredging should be practiced simultaneously to remove effluents harming the marshlands.
- Involvement of local people in decision-making on alternate/supplementary livelihoods need to be implemented.
- Evaluation of progress through independent agencies or consortia of agencies must be conducted on consistent time gaps.
- Both Central and State government should take effective initiatives in adding Pallikaranai marshlands in the Ramsar site list to attain international predominance.
- Launching various environmental awareness campaigns about marshlands could bring awareness among emerging population of the city.

CONCLUSION

It is found that many countries like United States of America could designate wetlands as Ramsar sites, India being a huge diversified country, so far managed to delineate only 26 sites till date. There is obviously much ground to be covered in our conservation efforts of Pallikaranai wetlands which is yet to be announced under Ramsar sites. In addition, a paradigm shift in conservation ethic is also a strong need for people in Chennai. This shift is necessary and perhaps mandatory due to the very nature of resource being conserved and protected. Since wetlands are a common property resource, it is an essential task to protect or conserve the ecosystems. The dynamic nature of wetlands of Pallikaranai should be monitored properly and need to be utilized with immense care.

REFERENCES

- **Balakrishnan Mundanthra (1993**). *Wetlands of India: Their unique potential for Quality life improvement Environmental Problems and Prospects in India*, Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi, pp 21-22

- **Dr. Chandramohan (2007).** *Role of Public Governance in the Conservation of Urban Wetlands.* pp: 14 – 22.

- **Jayshree Vencatesan, Ranjit Daniel (2014***). Comprehensive Management Plan for Pallikaranai Marsh*. Conservation Authority for Pallikaranai Marshland - TNFD and Care Earth Trust, Govt. of Tamil Nadu, pp: 70 - 82.

- **Juniet, John Milton (2016).***Current Status of Pallikaranai Wetland: A Review.* International Journal of Development Research Vol. 06, Issue, 08, pp: 9002-9007.

- **Sethuram (2014).***Case Study: Water Management Issues in Chennai, India*. Universal Journal of Environmental Research and Technology, Volume 4, Issue 6. pp: 300 – 302.

- **Millennium Ecosystem Assessment(2005).***Ecosystems and Human well-being: wetlands and water synthesis*. World Resources Institute, Washington, DC

- **Murugesan (2015).***Drinking Water Supply And Demand Management In Chennai City- A Literature Survey.* International Journal of Innovative Science, Engineering & Technology,Vol. 2 Issue 3 pp: 717 – 719.

- **Nitin Bassi** (2014). *Status of wetlands in India: A review of extent, ecosystem benefits, threats and management strategies.* Volume 2, pp: 1 – 19.