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PUBLIC PERCEPTION OF WETLANDS: A CASE STUDY OF PALLIKARANAI WETLANDS

Dr. Sunil Kumar Singh A*

*Central University of Karnataka, Kadaganchi, Kalaburagi, Karnataka, India

Abstract:

Wetlands are ecosystems or habitats for specific plants and animals that are saturated with water, the presence or absence of water determines their formation, processes and characteristics. Wetlands are of great importance to man and nature as it purifies water, reduces flood, stores water, prevents soil erosion and supports varied biodiversities. Starting about thousands of years in urban areas of the world and typically a few hundred years ago in most of the coastal areas, humanity has profoundly impacted, degraded or destroyed many coastal wetlands worldwide by direct physical degradation, pollution or dumping them for settlement purpose. The present study tries to evaluate the public perception about the wetlands. Stratified sampling method is adopted to select the sample from the population through questionnaire having 24 basic questions on the reality and myths associated with the wetlands.

Introduction:

The Millennium Ecosystem Assessment conceptual framework for ecosystems and human well-being has recognized the importance of wetlands not only in the context of human wellbeing but also in terms of provides a framework that supports the promotion and delivery of the Ramsar Convention's "wise use" concept. This enables the existing guidance provided by the Convention for the wise use of all wetlands to be expressed within the context of human wellbeing and poverty alleviation. The adverse effects of climate change, such as sea level rise, coral bleaching, and changes in hydrology and in the temperature of water bodies, will lead to a reduction in the services provided by wetlands. Removing the existing pressures on wetlands and improving their resiliency is

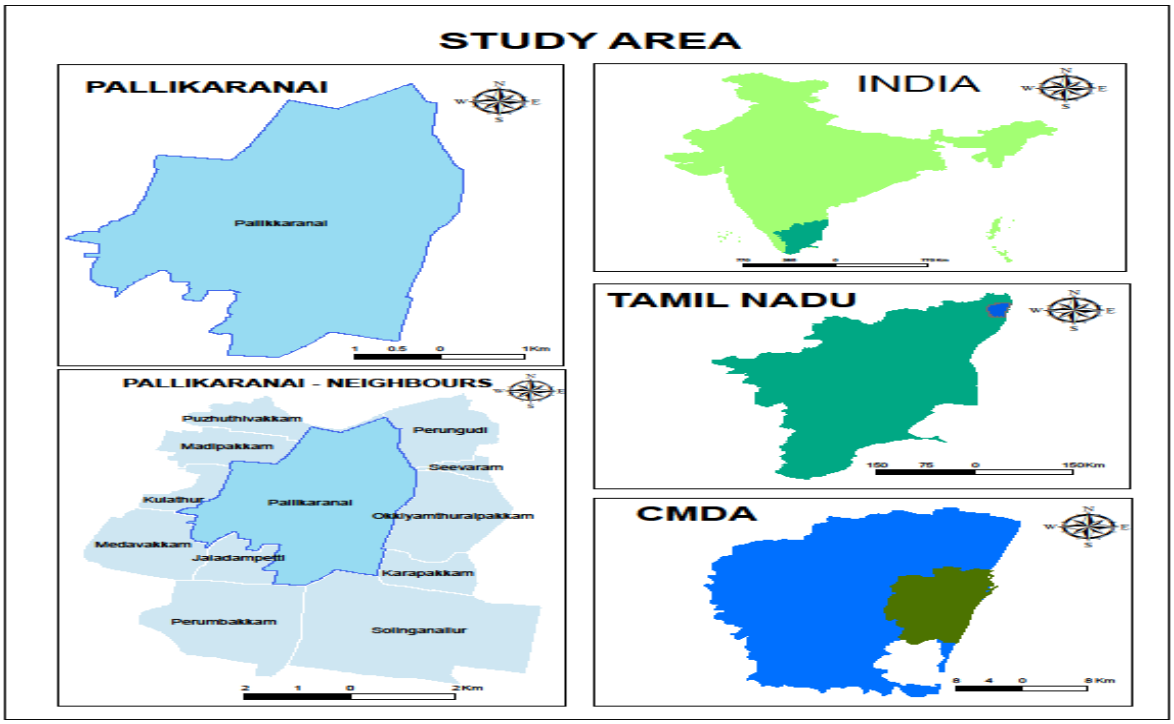
the most effective method of coping with the adverse effects of climate change. Conserving, maintaining, or rehabilitating wetland ecosystems can be a viable element to an overall climate change mitigation strategy (MEA, 2005).

Wetlands are ecosystems or habitats for specific plants and animals that are saturated with water, the presence or absence of water determines their formation, processes and characteristics (Shaw and Fredine, 1956; Cowardin et al., 1979; Zoltai, 1988; Finlayson and Moser, 1991). Wetlands are of great importance to man and nature as it purifies water, reduces flood, stores water, prevents soil erosion and supports varied biodiversities (Smith et al., 1994; Massel et al., 1999 Katharesan and Rajendran, 2005). Starting about thousands of years in urban areas of the world and typically a few hundred years ago in most of the coastal areas, humanity has profoundly impacted, degraded or destroyed many coastal wetlands worldwide by direct physical degradation and pollution (Streever, 2001; Zong et al., 2007; Wolanski, 2007). Ironically, reduced coastal wetland increases threat to human safety at the same time that shoreline development exposes populations to coastal hazards such as tsunamis, erosion, flooding, storm and waves surges (Katharesan and Rajendran, 2005). Added to this, these wetlands are store house of vivid biodiversity (Neill, 1958). Numerous waterfowl live in the wetlands (Goss-Custard et al., 1977; Erwin, 1996). Wetlands are habit of some rare species which play a vital role in the ecosystem and the food chain (Mitsch and Gosselink, 2007). Destruction of wetlands will destroy the habitat of numerous species of flora and fauna that live in the Wetlands. Though wetlands have numerous advantages, wetlands are perceived as a breeding ground for mosquitoes that transmits disease to humans (Dale and Knight, 2008). Some disease can be life threatening such as malaria, yellow fever, dengue, and forms of encephalitis. Wetlands have often been blamed by the public for the proliferation of *Vibrio cholera*, the etiological agent of cholera that, despite progresses in medicine, still exists in over 90 countries (WHO, 1998). Cholera epidemics can also be linked to plankton booms, rise in temperature, and El Nino southern oscillation. Outbreaks can occur after natural disasters (Colwell,

1996).Wetlands are major sources of Methane one of the major gases which contributes to Global Warming (van der Nat and Middelburg, 2000; Bridgham et al., 2006). In the above context it becomes imperative to assess the opinion of the public about the wetland eco system.

Study Area:

The Pallikaranai Town Panchayat is located between (12° 54' 29"N to 12° 58'13" N latitude and 80° 11' 32" E to 80° 13' 59" E longitude). It is one among the few remaining wetlands located near the Chennai metropolis. It falls under Perungudi and Pallikaranai villages in the Kancheepuram district of Tamil Nadu, which is present just south from the Chennai Metropolitan City south of Velachery, and is around 20 km away from Chennai Central Railway Station. The total area of Pallikaranai Town Panchayat is 17.35 sq.km and it houses the famous Pallikkaranai Wetland which has numerous varieties of flora and fauna. Major Part of the Wetland 3.17 sq.km is declared as Reserve forest and is under Tambaram Range. The marsh land is occupied by Perungudi, Seevaram, Okkiyamthuraipakkam, Karapakkam in the East, Shollinganallur and Jaladampatti in the south, Medavakkam, Kulathur, Madipakkam, Puzhuthivakkam in the West and Vellachery and Chennai in the North. The wetland runs along the old Mahabalipuram road parallel to the Buckingnam Canal throughout its length. The aquifer originating from the south of Thiruvanmiyur extends upto the Kovalam Creek on the South (Patnaik, 2002). The general terrain of the area is plain with an average altitude of about 0 to 10 m above the mean sea level. The substrate in the entire region is made up to the weathered Charnokite rock bed (Patnaik, 2002), covered with a layer of alluvial soil of varying thickness.



Methodology:

Questionnaire was prepared for 24 basic concepts about the benefits of the wetlands and the myths related to the wetlands, and the samples were selected in and around the Pallikaranai wetlands. Stratified random sampling method was adopted to cover the whole population to have a holistic view of the public about the wetlands. The perception of the public has been compared with the scientific reality about the wetlands. A total of 298 samples were collected for the study.

Questionnaire:

SI. No.	Opinion	Response		Established scientific view
		Yes %	No %	
1	Wetlands trap pollutants and purify water.	23.83	76.17	Yes
2	Vegetation in wetlands helps to reduce flooding.	22.15	77.85	Yes
3	Wetland functions as a sponge releasing water throughout the year.	77.85	22.15	Yes
4	Wetlands recharge ground water supplies.	83.56	16.44	Yes
5	The vegetation in wetlands reduces soil erosion.	22.15	77.85	Yes

6	Wetlands provide habitat for a wide variety of species.	89.93	10.07	Yes
7	Wetlands are biologically productive as it allows for nutrient recycling.	85.23	14.77	Yes
8	Wetlands support a variety of fish and birds which can be a source of food.	92.28	7.72	Yes
9	Wetlands provide different types of reeds for building materials and crafts.	24.83	75.17	Yes
10	Wetlands provide with thick grass for livestock grazing.	31.88	68.12	Yes
11	Wet lands provide for bird watching, aesthetic beauty.	88.93	11.07	Yes
12	Destruction of wetlands will lead to less pure water.	17.45	82.55	Yes
13	Destruction of wetlands will lead to lower agricultural productivity.	11.74	88.26	Yes
14	Destruction of wetlands will lead to less reliable water supplies.	9.73	90.27	Yes
15	Destruction of wetlands will lead to increased downstream flooding.	7.38	92.62	Yes
16	Destruction of wetlands will lead to extinction of many endangered species.	13.42	86.58	Yes
17	Wetlands are a store house of diseases.	13.76	86.24	Myth
18	The migratory birds are carriers of many harmful viruses.	13.09	86.91	Myth
19	The wetlands are source for poisonous snake and insects.	80.54	19.46	Myth
20	Wetlands have dirty water and have peculiar bad odors.	18.12	81.88	Myth
21	Wetland leads to flooding.	9.73	90.27	No
22	Wetlands are a nuisance to the aesthetic beauty.	12.75	87.25	Myth
23	Wetlands should be reclaimed for developmental purpose.	69.80	30.20	No
24	Wetlands are a source for mosquito breeding.	77.52	22.48	Myth

Result and Discussion:

Wetlands are known to trap pollutants and purify water, but 76 % of the people in the study area believed that wetlands do not trap pollutants and purify water, only a small portion of the people 24% believed that wetlands trap pollutants and purify water. So,

only 23% of the people of the study area went with the established scientific view about the wetlands. It is an established fact that wetlands vegetation help in reduce the impact of floods and tsunamis in coastal areas, but 78% of the respondents did not agree to the established fact and only 22% of the people believed that vegetation in the wetlands helped in reducing floods, though about 78% of the population believed that wetlands acts as a source of water and releases water during the dry season which is in agreement with scientific view. Almost 84% of them also agreed with the scientific fact that wetlands recharge ground water, but the majority did not believe the established scientific fact that vegetation in wetlands reduces soil erosion, though this question may be a bit misleading since wetlands themselves are known to reduce soil erosion. Almost 90% people agreed that wetlands are home to wide variety of species as they see numerous birds and amphibians living in the wetlands. Most of the people almost 85% agreed that wetlands are biologically productive areas and provide for nutrient recycling. When question was asked regarding the support of wetlands to variety of fish and birds which can be a source of food, almost 92% agreed to it, but about 8% people believed that the birds and fish are not source of food, some believed that the fish is a good source of food but the birds are not good source of food. Most of the people about 89% agreed that wetlands provide for bird watching and aesthetic beauty though 11% did not agree that wetlands add to the aesthetic beauty of the place. The fact regarding the aesthetic beauty of wetlands depends upon different types of wetlands and their location and from person to person, there is no strong scientific evidence that wetlands add to aesthetic beauty of the place. Generally wetlands are source of different variety of grass and reeds which can be used for building material and craft work, but in the study area 75% of the population did not agree to this as the grass in the wetlands under investigation is not being economically used. About 68% of the population also did not agree to the fact that wetlands provide grass for livestock grazing as most of the city dwellers have not observed the same, but 32% did agree to the fact as some cattle's have been occasionally sighted to be grazing in the wetlands under investigation. Scientists have established the

fact that wetlands are one of the natural agent to purify water, but 83% of the people surveyed did not believe so, only 18% of the people agreed to this fact. Destruction of wetlands can indirectly effect agricultural productive as it has great potential to recharge groundwater and absorb surplus water during flood which can have some impact on agriculture too, but 83% of the people surveyed did not agree that destruction of wetlands can have any impact on agricultural productivity, in fact many argued that destruction of wetlands will provide for more land for agriculture, but 12% of the people agreed that destruction of wetlands can lead to diminishing agricultural productivity. Majority of people, approximately 90% did not agree to the fact that destruction of wetlands can have impact on reliable water supply, though many studies has shown that wetlands are one of the greatest source of water and it recharges groundwater during dry season, only 10% of the people agreed to the fact that wetlands are important for reliable water supply. Similar was the view regarding the capacity of the wetlands to control downstream flooding as 93% did not agree to the fact that wetlands play a major role in controlling downstream flooding by reducing the flow velocity and by sucking the water like a sponge. Wetlands are habitat of many endangered species, but 87% of the population surveyed did not agree that destruction of wetlands can lead to the extinction of species; only 13% of the people were concerned about the loss of wetlands and its direct impact on the survival of the endangered species.

In the past wetlands were considered as haunted place and numerous myths about wetlands led to the destruction of many wetlands. When question were asked about the role of wetlands and diseases about 86% people agreed that wetlands are store house of diseases, only 14% people did not agree to this fact. The relation of wetlands to some diseases cannot be ruled out completely as they help in mosquito breeding, though 78% of the people in the present area under study did not agree that wetlands are source of mosquito breeding which is a true fact in the wetland under investigation. This wetland has good number of fish which feed on the lava of mosquito thus controlling the spread of mosquitoes. The spread of avian flu has let to people believe that all migratory birds

are carrier of harmful viruses and 87% of the people surveyed also belied so, though we do not have any scientific evidence to prove that all migratory birds carry harmful virus, and this notion is just a myth. Majority of people approximately 81% of the surveyed population believe that wetlands are source for poisonous snake and insects, though snakes are found in wetlands but poisonous snakes and insects are also found elsewhere, and wetlands to be the source of poisonous snakes and insects are only myth. Wetlands are source of methane and many plants decay in wetlands thus some wetlands have a peculiar bad odor, but all wetlands do not have bad odor and dirty water, and it was a heartening fact that 82% of the people also did not agree that all wetlands have dirty water and have peculiar bad odor. Around 90% of the people also believed that wetlands do not lead to flooding, and that they are not a nuisance to aesthetic beauty, but the most disturbing surveyed opinion about the wetlands was the fact that 70% of the people surveyed believed that wetlands should be reclaimed for development purpose. The results of the questionnaire are listed in (table 2).

Conclusion:

The result of the survey clearly points to the fact that people are not well aware about the benefits associated with the wetlands. Its more because of ignorance about the wetlands, that many people are not support the cause for the protection and preservation of wetlands. The best suggestion for the environmentalist and lovers of wetlands is that they should spread the awareness about the benefits of wetlands to the common people and clear the myths associated with the wetlands.

Result of the Questions (Table 2)

Question	Yes		No		Total	
	Count	%	Count	%	Count	%
1.	71	23.83	227	76.17	298	100.00
2.	66	22.15	232	77.85	298	100.00
3.	232	77.85	66	22.15	298	100.00
4.	249	83.56	49	16.44	298	100.00
5.	66	22.15	232	77.85	298	100.00
6.	268	89.93	30	10.07	298	100.00

7.	254	85.23	44	14.77	298	100.00
8.	275	92.28	23	7.72	298	100.00
9.	74	24.83	224	75.17	298	100.00
10.	95	31.88	203	68.12	298	100.00
11.	265	88.93	33	11.07	298	100.00
12.	52	17.45	246	82.55	298	100.00
13.	35	11.74	263	88.26	298	100.00
14.	29	9.73	269	90.27	298	100.00
15.	22	7.38	276	92.62	298	100.00
16.	40	13.42	258	86.58	298	100.00
17.	41	13.76	257	86.24	298	100.00
18.	39	13.09	259	86.91	298	100.00
19.	240	80.54	58	19.46	298	100.00
20.	54	18.12	244	81.88	298	100.00
21.	29	9.73	269	90.27	298	100.00
22.	38	12.75	260	87.25	298	100.00
23.	208	69.80	90	30.20	298	100.00
24.	231	77.52	67	22.48	298	100.00

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