



ENVIS

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WETLANDS

A wide-angle photograph of a wetland landscape. In the foreground, two white egrets stand on a patch of green vegetation. The middle ground shows a large body of water with numerous birds, including a large flock of black birds on a small island. The background features a line of trees and several high-voltage power line towers under a clear sky.

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What are wetlands

Wetlands are the ecotones or transitional zones between permanently aquatic and dry terrestrial ecosystems. Ramsar Convention has defined wetlands as “areas of marsh, fen, peatland 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 the depth of which at low tide does not exceed six meters”. A wide variety of wetlands like marshes, swamps, open water bodies, mangroves and tidal flats and salt marshes etc. exists in our country.

Wetlands are integral to a healthy environment. They help to retain water during dry periods, thus keeping the water table high and relatively stable. During periods of flooding, they act to reduce flood levels and to trap suspended solids and nutrients to the lakes than if they flow directly into the lakes. Compared to tropical rain forests and coral reefs, wetlands are remarkable in their biological productivity. With respect to species richness and species diversity, these ecosystems stand higher than most other ecosystems. Wetlands are diverse and unique in structure, characteristics and functions, probably much more than other ecosystems. Wetlands are dynamic and complex and are under the influence of an array of biotic and abiotic factors. Nevertheless, the single most important factor that determines the nature of a wetland is its hydrologic regime. Even for minor changes in the hydrologic regime of wetlands, biota may respond at times markedly in terms of species composition, richness, trophic relations and ecosystem productivity.

Ecological services of wetlands

Ecosystem services offered by wetlands include floodwater storage and control, recharge of aquifers, treatment of waste water and pollution abatement, general water quality improvement, habitats for fish, wildlife and several other animals and plant species, and biological productivity. In addition, wetlands are of high aesthetic and heritage value providing opportunities for recreation, research, and education.

Threats to wetlands

The trade-off between environmental protection and development is most acute in dynamic and complex ecosystems such as wetlands. Wetlands face a range of anthropogenic threats. The chief indirect drivers of change are human population growth around wetlands coupled with growing economic and commercial activities. Major direct threats for inland wetlands are infrastructure development (dams, dykes, road, residential and commercial buildings), land reclamation and over-harvesting. Major indirect ones are aquaculture, agriculture, reduced water flow, depletion of ground and surface water supplies, introduction of invasive alien species, and organic and inorganic pollutants.

In India, momentous losses of wetlands have resulted from conversion to industrial, agricultural and various other developments. These have caused hydrological perturbations and its various reverberations, pollution and several after effects. The above threats can also be distinguished as biotic and abiotic pressures as given below.

Biotic threats

- Uncontrolled siltation and weed infestation
- Uncontrolled discharge of waste water, industrial effluents, surface run-off, etc. resulting in proliferation of aquatic weeds, which adversely affect the flora and fauna
- Tree felling for fuel wood and wood products causes soil loss affecting rainfall pattern,
- Loss of various aquatic species due to water-level fluctuation
- Habitat destruction leading to loss of fish and decrease in number of migratory birds.

Abiotic threats

- Encroachment resulting in shrinkage of area.
- Anthropogenic pressures resulting in habitat destruction and loss of biodiversity.
- Uncontrolled dredging resulting in changes.
- Hydrological intervention resulting in loss of aquifers.

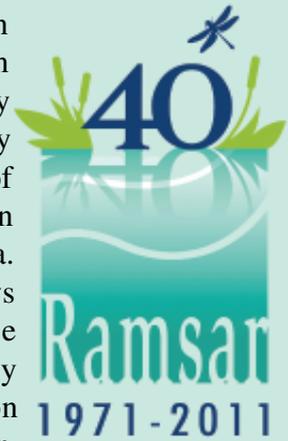
Legal framework for wetland conservation in India

Though there is no separate provision for specific legal instrument for wetland conservation, the legal framework for conservation and management is provided by the following legal instruments:

- Several legislations have been enacted which have relevance to wetland conservation. These include Forest Act, 1927, Forest (Conservation) Act, 1980, the Wildlife (Protection) Act, 1972, the Air (Prevention and Control of Pollution) Act, 1974, the Water Cess Act, 1977 and the umbrella provision of Environment (Protection) Act, 1986.
- The Coastal Regulation Zone Notification 2011 declaring the coastal stretches of seas, bays, estuaries, creeks, rivers and backwaters, which are influenced by tidal action as the Coastal Regulation Zone under the provision of Environment (Protection) Act, 1986. This proposes graded restriction on setting up and expansion of industries, including pressures from human activities.
- The Biodiversity Act, 2002, and the Biodiversity Rules, 2004, are aimed at safeguarding the floral and faunal biodiversity, and regulating their flow from the country to other countries for research and commercial use. Thus, their provisions also contribute towards conserving, maintaining, and augmenting the floral, faunal and avifaunal biodiversity of the country's aquatic bodies.

The Ramsar Convention on Wetlands.

The Convention on Wetlands is an intergovernmental treaty adopted on 2 February 1971 in the Iranian city of Ramsar, on the southern shore of the Caspian Sea. Thus, though nowadays the name of the Convention is usually written "Convention on Wetlands (Ramsar, Iran, 1971)", it has come to be known popularly as the "Ramsar Convention". Ramsar is the first of the modern global intergovernmental treaties on the conservation and sustainable use of natural resources, but, compared with more recent ones, its provisions are relatively straightforward and general. Over the years, the Conference of the Contracting Parties has further developed and interpreted the basic tenets of the treaty text and succeeded in keeping the work of the Convention abreast of changing world perceptions, priorities, and trends in environmental thinking.



The official name of the treaty, The Convention on Wetlands of International Importance especially as Waterfowl Habitat, reflects the original emphasis upon the conservation and wise use of wetlands primarily as habitat for waterbirds. Over the years, however, the Convention has broadened its scope of implementation to cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation and for the well-being of human communities.

The Convention entered into force in 1975 and now (March 2011) has 160 Contracting Parties, or member States, in all parts of the world. Though the central Ramsar message is the need for the sustainable use of all wetlands, the "flagship" of the Convention is the List of Wetlands of International Importance (the "Ramsar List") – presently, the Parties have designated for this List more than 1,923 wetlands for special protection as "Ramsar sites", covering more than 187 million hectares.



Wetlands in Tamil Nadu

The wetlands in Tamil Nadu comprise lakes, ponds, reservoirs and seasonally waterlogged areas. It may be noted that the land use statistics of the state does not indicate wetlands which are possibly classified under some other categories. Studies by SACON show that the wetland area of the state was 1.24% of the total area in 1991. The total number of wetlands of the size 56.25 ha and above for the whole state was estimated at 1,175 covering an area of 1,615.12 sq km.

Table 1. Categories of inland wetlands in Tamil Nadu

Wetland Type	Area (sq km)	No. of wetlands
Lakes/ponds	938.67	773
Oxbow lakes	5.48	1
Waterlogged	74.41	31
Reservoirs	220.73	29
Tanks	375.92	341
Total	1,615.12	1,175

Source: SACON 1998

Plants most widely represented in the wetlands of Tamil Nadu are non-native introductions. The exotic plant *Ipomoea fistulosa* is one among them. No species of plant reported from the wetlands in the present study can be treated as rare or endangered except *Oryza rufipogon*, which is an important genetic resource. This species, present in extensive patches in the Mapedu Peria Eri, is not widely known in the state.

125 species of birds including both migratory and resident that depend on wetlands fully or partly and 28 other species found in the vicinity of wetlands are known in Tamil Nadu. Of these, the Pintail, Shoveller and Cotton Teal are the three most numerous waterfowl. While the first two are winter migrants to the state, the third is a common resident. At least nine species of birds, namely the Pond Heron, Little Cormorant, Little Egret, Cattle Egret, Little Grebe, Coot, Grey Heron, Large Egret, and Whitebreasted Kingfisher occur in 50% of the wetlands.

Fourty-seven wetlands have been evaluated and prioritized, size of the wetland, earlier bird counts, records of breeding and roosting colonies were considered for priority.

Table 2. Prioritized wetlands in Tamil Nadu

Wetlands	District
Arapakkam tanks	Kanchipuram
Ariyakulam	Tirunelveli
Aval poondarai	Erode
Chathirampudukulam	Thirunelveli
Chemabarambakkam	Kanchipuram
Chitrangudi	Ramanathapuram
Dusimamandoor	Kanchipuram
Govindavadi	Kanchipuram
Gundur big tank	Thiruchirappalli
Kaliveli	Villupuram
Kallaperamber	Thanjavur
Kappalur	Tiruvannamali
Koonthankulam sanctuary	Tirunelveli
Kooram	Vellore
Koothapar big tank	Tiruchirappalli
Kovaipudur	Coimbatore
Kunnathur	Madurai
Magarel	Kanchipuram
Manavalakurichi kulam	Kanniyakumari
Mapedu periaeri	Tiruvallur
Melakulam	Tirunelveli
Pallikarnai	Kanchipuram
Parandur	Kanchipuram
Periakanmoi & Sakkarakottai	Ramanathapuram
Point Calimere	Nagapattinam
Ponnur	Nagapattinam
Poondi reservoir	Tiruvallur
R S Mangalam	Ramanathapuram
Seidunganallur kulam	Thoothukudi
Singanallur	Coimbatore
Suchindram kulam	Kanyakumari
Sulur	Coimbatore
Thennampattu	Tiruvannamalai
Theroor wetland	Kanniyakumari
Thirupulivanam	Kanchipuram
Udayamarthandapuram	Thiruvarur
Uthirakosamangai	Ramanathapuram
Uthiramerur	Kanchipuram
Uthukadu	Thanjavur
Vaduvoor lake	Thiruvarur
Vakkadai	Kanchipuram
Vandiyoor	Madurai
Veeranam tank	Cuddalore
Vellode	Erode
Vembanur wetland	Kanniyakumari
Vetangudi	Sivagangai
Wellington lake	Cuddalore

Source: SACON 1998

Point Calimere Wildlife & Bird Sanctuary: A Ramsar Site

Point Calimere Wildlife & Bird Sanctuary is located along the Palk Strait in three districts of Tamil Nadu: Nagapattinam, Tiruvarur and Thanjavur. It lies in between 79.399 E & 79.884 E longitudes and 10.276 E & 10.826 N latitudes, covering an area of 38,500 hectares from Point Calimere in the east to Adirampattinam in the west. The Ramsar Site comprises of Point Calimere Sanctuary, Panchanadikulam Wetland, Thalainayar Reserved Forest and Muthupet Mangroves. Except the Thalainayar Reserved Forest, the remaining constituents are parts of the Great Vedaranyam Swamp. Bio-geographically, the Ramsar Site is a mix of salt swamps, mangroves, backwaters, mudflats, grasslands and Tropical Dry Evergreen Forest. It has recorded the largest congregation of migratory waterbirds in the country with a peak population exceeding 1,00,000.

Point Calimere Wildlife Sanctuary (2147 hectares) forms the eastern limit of the Ramsar Site. It is the most well known constituent of the site and is famous for the large congregations of waterbirds, particularly the Greater Flamingo. The sanctuary is home to the largest population of the endemic Blackbuck (*Antelope cervicapra*) in South India. 364 species of flowering plants including 198 species of medicinal plants have been recorded in the sanctuary. In terms of biodiversity, Point Calimere Wildlife Sanctuary is

the richest component of the Ramsar Site. The sanctuary has also been listed as one of the Important Bird Areas of the country by the Bombay Natural History Society.

Muthupet is the largest mangrove wetland in Tamil Nadu covering an area of 11,900 hectares. It constitutes the western limit of the Ramsar Site and is located 50 km to the west of Point Calimere Wildlife Sanctuary. The wetland comprises of mangroves, creeks, a lagoon and mudflats. *Avicennia marina* is the dominant mangrove species in Muthupet and accounts for about 95% of the vegetative cover. Other mangroves species found in Muthupet are: *Aegiceras corniculatum*, *Excoecaria agallocha*, *Lumnitzera racemosa* and *Acanthus ilicifolius*. The associated halophytes include species such as *Suaeda monoica*, *Suaeda maritima*, *Salicornia brachiata* and *Sesuvium portulacastrum*. The wetlands of Muthupet are frequented by most of the waterbirds visiting the Ramsar Site.

Panchanadikulam Wetland (8097 hectares) and the Salt Swamp (15,120 hectares) are expanses of mudflats and backwater that are located between Point Calimere Wildlife Sanctuary and Muthupet mangroves. These are contiguous areas and are frequented by the entire spectrum of waterbirds visiting the Ramsar Site. The mudflats remain dry for most part of the year. However, during the rainy months from October to January, these mudflats get inundated with flood water and abound with more than a hundred species of migratory waterbirds.





EVENTS - NGC training programme

The training programme was conducted at Forestry Extension Centre in all the 30 district. The programmes were organised by NGC state co-ordinator Mr. A.B. Thiruvengadam (ACF Retd.), and Range Officer Mr. C. Murugesan. In certain districts, Mr. V. Irandi, I.F.S. Chief Conservator of Forests, Forestry Extension took part in the training programme. Forest Extension Officers and other forest officials took part and explained in detail the various aspects of the forests and the uses of the trees, the need for afforestation and extension activities carried out by the Forest Department.

The technical session on the topic “Environment -An Overview” was dealt by ENVIS staff Mr. J.D. Marcus Knight, Senior Programme Officer, Mr. K. Muthukumar, Programme Officer, and Mr. A.B. Thiruvengadam NGC State coordinator. The subject was dealt using visuals and videos to help the students understand the importance of conserving the environment, impact of pollution and the advantage of renewable energy.

A quiz programme was also conducted and prizes were distributed. During the field visit in the afternoon the students had an opportunity to learn about the green house, the mist chamber, vermi composting, VAM, economic importance of various trees and raising medicinal plants. A total of 30 NGC training programme were conducted in all the 30 districts of Tamil Nadu involving around 3,000 NGC students and 300 teacher co-ordinators from 300 schools. The feed back from the students and teacher coordinators was encouraging and more such programmes were requested in future.



Chennai Science Festival 2011 - “Science in Everyday Life”

The Chennai Science Festival – 2011 “Science in Everyday Life” was organized from 29th January - 2nd February 2011. The mega science exhibition consisted of a total of 150 stalls exhibiting various items on the above mentioned theme. Several Governmental and Non-Governmental Organisations, Schools, Colleges and various Universities from Tamil Nadu participated and exhibited posters and working models related to their scope of work. Competitions like quiz, elocution, essay writing, drawing competitions were conducted for the school students from Chennai City. A panel discussion with experts was also conducted on the last day.

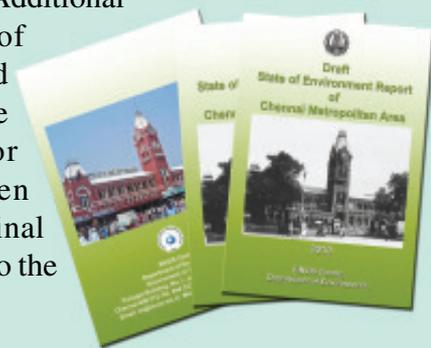
ENVIS Centre, Department of Environment exhibited a model showing how temperature rise affects the coral reef ecosystem. Posters related to “Climate change” were exhibited and explained in detail to school students, college students and the public. Students from R.K.M Saradha Vidhyalaya, Girls Higher Secondary School also exhibited a model in the ENVIS stall.



Second Brainstorming meeting for the preparation of SoER Chennai.

The State of Environment Report for the Chennai Metropolitan area is being prepared by the ENVIS Centre with the funding of the Ministry of Environment and Forest, Government of India. The first brainstorming meeting was conducted on 31st May 2010 during which the various Government departments gave their valuable inputs and the various chapters of the SoE report were finalized. The draft report was compiled by with the data provided by the various departments and was circulated among the department for further correction and modifications.

The second brain storming meeting with the departments was held on 4th March 2011 at the Department of Environment. Thiru T.S. Srinivasamurthy, I.F.S., Director and Thiru Yogesh Dwivedi, I.F.S., Additional Director, Department of Environment presided over the meeting. The various comments for modification have been incorporated and the final draft report will be sent to the MoEF.





World Wetlands Day 2011

2nd February is observed as World Wetlands Day each year. It marks the date of the adoption of the Convention on Wetlands on 2 February 1971. Each year since 1997, government agencies, non-governmental organizations, and groups of citizens undertake actions aimed at raising public awareness of wetland values.

“Wetlands and Forests” is the theme for World Wetlands Day 2011, especially chosen because 2011 is the UN International Year of Forests. The Slogan is – “*Forests for water and wetlands*” highlighting the importance of Forested wetlands and why looking after them matters.

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