

# Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7 of the Conference of the Contracting Parties  
[\[Français\]](#) [\[Español\]](#)

**Note:** It is important that you read the accompanying Explanatory Note and Guidelines document before completing this form.

- Date this sheet was completed/updated:** 19<sup>th</sup> August 2002.
- Country:** India
- Name of wetland:** POINT CALIMERE WILDLIFE AND BIRD SANCTUARY (including the existing Point Calimere Wildlife Sanctuary (WLS), Great Vedarnyam Swamp (GVS) and Talaignayar Reserve Forest (TRF)
- Geographical coordinates:** 10<sup>o</sup>17' – 10<sup>o</sup>22' N Latitude , 79<sup>o</sup>25' – 79<sup>o</sup>52' E Longitude.
- Elevation:** (average and/or maximum and minimum): 0-6 m, The highest point is named Ramarpattam
- Area:** (in hectares): 38500 ha.
- Overview:** (general summary, in two or three sentences, of the wetland's principal characteristics)

Situated at the southern end of Nagappattinam District, Tamil Nadu, the Point Calimere region was first identified as an area of high significance in conservation of birds by the late Dr. Salim Ali in 1962. It supports about 30,000 flamingos, 200-300 endangered Grey Pelican *Pelecanus philippensis*, the endangered Asian Dowitcher *Limnodromus semipalmatus*, the rare Spoonbill Sandpiper *Eurynorhynchus pygmaeus*, and tens of thousands of other waterbirds. A total of 119 waterbird species have been recorded from the area. It is the breeding ground or nursery for many species of marine fishes, which are vital to the fisheries of the coast. It provides the locals employment or revenue from its natural resources, especially fish, salt products, firewood, forest produce, and grazing lands for livestock.

8. **Wetland Type:** (please circle the applicable codes for wetland types as listed in Annex I of the Explanatory Note and Guidelines document)

<i>marine-coastal:</i>	<input type="checkbox"/> A	B	C	D	<input type="checkbox"/> E	F	<input type="checkbox"/> G	H	<input type="checkbox"/> I	<input type="checkbox"/> J	K	Zk(a)
<b>Inland:</b>	L	M	N	O	P	Q	R	Sp	Ss	Tp	Ts	
	U	Va	Vt	W	Xf	Xp	Y	Zg	Zk(b)			
<b>Human-made:</b>	1	2	3	4	<input type="checkbox"/> 5	6	7	8	9	Zk(c)		

**Please now rank these wetland types by listing them from the most to the least dominant:**  
 G, E, I, J, A, 5

9. **Ramsar Criteria:** (please circle the applicable criteria; see point 12 below)

1      2      3      4      5      6      7      8

**Please specify the most significant criterion applicable to this site:**

5

10. **Map of site included?** Please tick YES --or-- NO

(Please refer to the *Explanatory Note and Guidelines* document for information regarding desirable map traits.)

Yes

11. **Name and address of the compiler of this form:**

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12. **Justification of the criteria selected under point 9, on previous page.** (Please refer to Annex II in the *Explanatory Note and Guidelines* document).

Point Calimere was first identified as an area of high significance in the conservation of birds by the late Dr. Salim Ali in 1962 (Ali 1963). The GVS is one of the largest waterbodies and major wintering ground for waterbirds in southern India.

The Point Calimere Wildlife Sanctuary easily qualifies as a *Wetland of International Importance* as per the Ramsar Convention, based on the following factors:

**(i) Criterion 2:**

The wetland supports the Vulnerable species Spoonbill Sandpiper *Eurynorhynchus pygmaeus*, and Grey Pelican *Pelecanus philippensis* according to the IUCN Red List.

**(ii) Criterion 5:**

The forests of Point Calimere are also rich in both resident and migratory species of forest birds. A total of 257 species of birds have been recorded from the Sanctuary, of which 119 are waterbirds and 138 landbirds. It supports about 30,000 flamingos, and tens of thousands of other water birds (Asian Waterfowl Count of Point Calimere Sanctuary at Annex 1)

**(iii) Criteria 6:** The wetland supports 200-300 (1% of the population of this species in India is 100) endangered Grey Pelican *Pelecanus philippensis*.

**(iv) Criteria 8:** The wetland is the breeding ground or nursery for many species of marine fishes, which are vital to the fisheries of the coast. GVS is the spawning and / or nursing ground for commercially important prawns, crabs and fishes. Eastern part of the GVS harbours 23 fish

species, mainly mullets, where as the Mullipalam Lagoon at Muthupet has a more direct influence of the sea and harbours more marine species of fish, some 20 species.

13. **General location:** (include the nearest large town and its administrative region)

The Point Calimere Wildlife Sanctuary forms one of the seaward apices of the Cauvery river delta, and is about 52 km south of Nagappattinam (the district headquarter) on the Bay of Bengal, Tamil Nadu.

14. **Physical features:** (e.g. geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth water permanence; fluctuations in water level; tidal variations; catchment area; downstream area; climate)

The proposed Sanctuary may be divided into three divisions: The Point Calimere Forest, The Great Vedaranyam Swamp (GVS), which includes the mangrove forests at Muthupet; and the mangroves of Talainayar Reserve Forest (TRF).

(i) **Point Calimere Forest:**

- **Geology:** As Point Calimere is the seaward apex of the Cauvery river delta, the soil deposits are essentially of fluvial origin, besides sand dunes. The pedologic horizons are inseparable. The only well individualised horizon is at the surface. It has little organic matter, and is usually clayey sand, with pebbles, gravel or concretions. The average depth of this horizon is 30 to 40 cm. Below 40 cm, the layers are permanently humid, richer in clay, but poorer in organic matter. Below 60 cm, the soil is pale grey, very rich in clay, which is penetrated only by some big roots. The soils are halomorphic with a muddy structure in a moistened state and a compact structure in dry state. A saline efflorescence is often formed at the surface due to the capillary rise of salt (mainly sodium chloride), favoured by the proximity to the sea and the length of the dry season. The sand on the dunes is fine yellowish-white, and is continuously altered by aeolian erosion whenever exposed (Blasco & Legris 1973).
- **Location & Topography:** The northern boundary of the Point Calimere forest starts *ca* 6 km south of Vedaranyam and extends further south for about 4 km till the Palk Strait. It is bounded on the east by the Bay of Bengal and to the west by the Great Vedaranyam Swamp. The forest (*ca* 17 km<sup>2</sup>) is not continuous but interrupted by many tidal inlets and creeks of varying lengths and widths, which get flooded during the monsoon.

(ii) **Great Vedaranyam Swamp (GVS)**

- **Geology and Evolution:** GVS comes under the category of *bar-built* estuaries under the four primary subdivisions of estuaries (Pritchard 1967). Geomorphologically, the GVS is a resultant formation of the interaction between the tidal forces of the sea and the mainland river water currents in the estuarine areas. As this area exists in a low energy zone (due to the presence of the shallow Palk Strait), extensive sand bars reaching a distance of 30-40 km are formed. These sand bars protect the inner lagoon formations from direct sea action, and due to fluvial processes, very large amounts of clayey silt are deposited behind the sand bars. Tissot (1987), from palynological studies at Muthupet region, estimated the mangrove forest and sediments to be about 2000 years old. He cited the existence of ancient sand bars or dunes much further north-west of the present beaches all along the Cauvery delta. Blasco (1975) found that the warping rate of the Muthupet (Mullipallam) Lagoon was very rapid and that over a period of 25 years, an area of nearly 400 ha had been gained.

- **Location & Topography:** The GVS (ca 350 km<sup>2</sup>) lies parallel to the Palk Strait for about 45 km, and is separated from it by a sand bank, breached at a few places. The GVS is flanked on the northern boundary by a number of villages. The GVS can be broadly divided into two parts, which are connected to each other only during the rainy season by a small breach.

The western part has mangrove forests (120.2 km<sup>2</sup>) and a lagoon (17 km<sup>2</sup>), called the Mullipalam Lagoon. The River Korayar is the main source of freshwater. This region is regularly influenced by tidal action due to an opening (ca 1.5 km<sup>2</sup> long) into the Palk Strait. The depth of the lagoon varies seasonally and does not exceed 2m. Salinity of the lagoon varies from 5-15 ppt (gm/litre) during the monsoon to about 45 ppt during summer.

During very dry periods, there is water only in the Seruthalaikkadu Creek. The Seruthalaikkadu Creek is connected to the sea by an opening, called the Chellakanni Aaru. The freshwater input into this area is confined to the rainy season, largely from the small drainage canals connected to the River Cauvery that empty into the swamp. There are several islets in this area, which are formed due to aeolian and fluvial deposition. The depth of water in the Seruthalaikkadu Creek varies seasonally from about 60 to 120 cm. Salinity in the Creek varies from ca 10 ppt (monsoon) to 50 ppt (summer), while in the northern areas prone to drying, salinity goes up to 100 ppt just prior to drying.

### (iii) Talaigayar Reserve Forest (TRF)

- **Geology:** The soil in Talaigayar is clayey due to the estuarine nature of the area and consequent successive deposits of alluvial silt brought down by the River Adappar. These alluvial deposits have risen to the ground level, thereby exposing the soil to inundation only during high tide.
- **Location & Topography:** TRF, which is not contiguous with the Point Calimere forests and the GVS is approximately 18 km north of Point Calimere. It is situated near the estuary of the River Adappar, which flows into the Bay of Bengal near Kallimedu, and is thus covered by extensive lagoons and streams.
- **Climate:** The climate is monsoonal, but is not typical of monsoonal climates due to its asymmetrical rainfall regime. The main contribution to the rainfall is from the North-East Monsoon (October - December), and to a considerably lesser degree, the South-West Monsoon (June - September). There is much variation in the quantum of rainfall from year to year, as the area is vulnerable to cyclonic storms that influence the distribution and quantum of rainfall considerably. The average rainfall ranges from 1000-1500 mm (Meher-Homji 1984). The highest temperatures (ca 34°C) are recorded in May, and the minimum (ca 25°C) in January and February. Humidity remains relatively high and constant throughout the year. A marked feature of the climate of this region is the strong southwesterly winds during May and June.

15. **Hydrological values:** (groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.)

The Mangrove forests of GVS play a key role in protecting the area from tidal surges and the shrub layer on the river banks stabilises it. As this area exists in a low energy zone (due to the presence of the shallow Palk strait) extensive sand bars reaching a distance of 30-40 km are formed. These sand bars protect the inner lagoon formations from direct sea action, and due to fluvial process, very large amounts of clayey silt are deposited behind the sand bars.

Blasco (1975) found that the warping rate of the lagoon was very rapid and that over a period of 25 years, an area of nearly 400 ha had been gained. Several islets in the area have been formed due to fluvial and aeolian depositions.

#### 16. **Ecological features:** (main habitats and vegetation types)

As the monsoon recedes, the water gradually dries up and by the end of January most of the water in the forest and low lying areas becomes saline. The water dries up completely by the end of January, leaving behind hardpacked mud, which gradually turns into soft powdery dust as summer advances. The other habitat types include stretches of open grazing lands (*ca* 7 km<sup>2</sup>), especially at the southern and western portions, some mangrove vegetation bordering the Muniappan lake and near the lighthouse, and dune vegetation on the coast.

The habitat varies seasonally in the eastern two-third part of the GVS. It is a continuous sheet of shallow, fresh/brackish/saline water (depending on the season) during the monsoon and during the period of the southwesterly winds (May and June). At other times, the waterspread area dries up gradually north to south up to a few kilometres, creating mudflats and shallow pools.

Due to the diversity of habitats, the vegetation of the Point Calimere Wildlife Sanctuary is equally diverse, ranging from dry evergreen forests, mangrove vegetation, salt marsh to grasslands. The flora of the Point Calimere forest and the Great Vedaranyam Swamp were studied by different workers (Blasco & Legris 1973; Sebastine & Ellis 1967; Meher-Homji 1974, 1984; Balasubramanian 1982 and Rao & Balasubramanian 1994; whereas the vegetation of the Talaignayar has only been investigated by Sebastine and Ellis (1967).

- **Forest Vegetation (Point Calimere):** The forest at Point Calimere is classified as Tropical Dry Evergreen Forest (Champion & Seth 1968), but Meher-Homji (1973) considered it a misnomer as the climatic regime is not typically tropical (but dissymmetric), the region is not particularly dry, and nor is the formation entirely evergreen as almost 50% of the species are deciduous. This forest is a peculiar type that is confined to northern Sri Lanka and the coastal region of the Coromandel.
- **Grassland Vegetation:** A total of 27 species including 11 species of grasses, 4 sedges, 7 forbs and 3 succulents have been reported from the grassland area frequented by Blackbuck (Rao and Balasubramian 1994). These species constitute the major food of the Blackbuck and cattle in the Sanctuary.

In low lying areas of the grasslands subjected to seasonal flooding, most of the species are salt-tolerant. *Sporobolus tremulus* is dominant, followed by *Aeluropus lagopoides* and *Sacciolepis indica*. *Cressa cretica* is mainly recorded in areas with salt encrustation. *S. tremulus* and *A. lagopoides* are amphibious species with high degree of salt tolerance.

- **Shore Vegetation:** The vegetation is scrub jungle.
- **Mangrove Vegetation:** Characteristic mangrove forest is seen at Muthupet, where the River Korayar meets the sea. *Avicennia marina* is the dominant mangrove species in the area.

Fourteen species of mammals have been reported from the Sanctuary. The larger mammals are the Blackbuck *Antelope cervicapra*, Spotted Deer *Axis axis*, Wild Boar *Sus scrofa* and Jackal

*Canis aureus*. The Flying Fox *Pteropus giganteus* roosts in large flocks on trees in the Point Calimere forest and the mangrove forest at Muthupet. The Common Dolphin *Delphinus delphis* is seen near the shore during the monsoon.

Some of the major waterbird species are the Greater Flamingo *Phoenicopterus roseus* and the Lesser Flamingo *P. minor*, Spot-billed Pelican *Pelecanus philippensis*, Spoonbilled Sandpiper *Calidris pygmeus*, Asian Dowitcher *Limnodromus semipalmatus*, White-bellied Sea-Eagle *Haliaeetus leucogaster*, Brahminy Kite *Haliastur indus* and Osprey *Pandion haliaetus*. Landbirds include Paradise Flycatcher *Terpsiphone paradisi*, Indian Pitta *Pitta brachyura*, Rosy Starling *Sturnus roseus*, Blyth's Reed Warbler *Acrocephalus dumetorum*, Crested Serpent Eagle *Spilornis cheela* and Brown Shrike *Lanius cristatus*.

17. **Noteworthy flora:** (indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc.)

- The dominant trees of the forest are *Manilkara hexandra* (locally called Palai, is the most important dry evergreen species) and *Salvadora persica* in the open areas. Insectivorous plants such as *Drosera burmanii* and *D. indica* are also present in the grassland habitat. Dominated by Halophytes such as *Arthrocnemum indicum*, *Salicornia brachiata* and *Sessuvium portulacastrum* are common along the marshy areas of the shore. Patches of *Prosopis chilensis*, *Calotropis gigantea*, *Clerodendrum inerme* and *Pandanus tectorius* occur in elevated areas. *Ipomoea pes-caprae*, *Spinifex littoreus* and *Zoysia matrella* are common on the sand dunes.
- *Avicennia marina* is the dominant mangrove species in the area. The shrub layer is made up of *Suaeda maritima* and *S. monoica*. *Excoecaria agallocha* occurs on the river banks, and *Aegiceras corniculatus* and *Acanthus ilicifolius* at the edges, where the tidal influence is pronounced. *Suaeda maritima* and *Excoecaria agallocha* dominate in the back-mangrove areas. According to Tissot (1987), the mangroves of Muthupet are of recent origin, and some important species such as *Rhizophora* and *Sonneratia* have disappeared in the recent past due to changes in the salinity regimes.
- At Talaignayar, the vegetation is characteristic salt-marsh vegetation with extensive growth of *Suaeda monoica* and *S. nudiflora*. *Acanthus ilicifolius*, *Aegiceras corniculatum*, *Avicennia alba*\* and *Rhizophora candelaria* are dominant on either side of the river Adappar and its tributaries that form the estuary. During the monsoon, aquatics such as *Aponogeton natans*, *Bergia capensis*, *Najas graminea* and *Sphenoclea zeylanica* occur. *Pentatropis microphylla* is a common twiner on many plants.

18. **Noteworthy fauna:** (indicating, e.g., which species are unique, rare, endangered, abundant or biogeographically important; include count data, etc.)

- Both the species of flamingos that inhabit the Old World viz., the Greater Flamingo *Phoenicopterus roseus* and Lesser Flamingo *P. minor* inhabit the GVS). The origin of flamingo species of the GVS is uncertain. The earlier general presumption that they originate from Kutch is belied by the recovery of Iranian and Russian ringed Greater Flamingos from the GVS. The Lesser Flamingo is presumed to be of African origin since little breeding has been recorded in India. The Greater Flamingo appears to be largely a monsoon visitor to the GVS. The movements of Lesser Flamingo in the GVS are erratic, it is sedentary for some months and then moves to other haunts. Flamingos inhabit highly

alkaline and saline lakes and are considered to be partial to saltworks. The Greater Flamingo is attracted to reservoirs and low salinity condensers of industrial salt works in the GVS during the monsoon, due to increase in food supplies. The Lesser Flamingo avoids salt works all through the year. The main reason for this difference is that the Greater Flamingo is a generalist feeder (plant and animal) and can shift to feeding on different species of food, where and when abundant, while the Lesser Flamingo is a specialist feeder (blue green algae) and cannot shift to such opportunistic feeding.

- The Blackbuck *Antelope cervicapra* of Point Calimere represents one of the three isolated populations of Blackbuck existing in Tamil Nadu, with the other populations in the Guindy National Park (Chennai) and near Satyamangalam (Erode district). The Blackbuck of Point Calimere are unique in that males do not attain the black colouration of adults, as in parts of central and northern India, and remain a dark tan throughout their lives. Locally known as *Velimaan* (open country deer), the Blackbuck inhabits the open stretch of grazing lands (ca 700 ha), south and west of the forest of Point Calimere. This isolated population of Blackbuck at Point Calimere probably survived unmolested throughout the centuries due to the locals' now declining belief that eating its meat causes leprosy. The predators of the Blackbuck at Point Calimere are Jackals, and sometimes village dogs. Competition for food is from domestic and feral cattle. The population estimate of the Blackbuck at Point Calimere over the years carried out by different individuals or organisations are as follows:

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\* The identity of *Avicennia alba* requires confirmation as some botanists are of the view that it does not occur in India, and the records from India are wrong in identification of a pale form of *Avicennia marina* (Almeida *pers.comm.*)

Source	Year	Population Estimate
Daniel (1967)	1967	750-800
Johnson (1975)	1971	970
Nair (1976)	1974	340
Natarajan <i>et al.</i> (1978)	1977	506
Forest Department	1981	1546
Forest Department	1985	1623
Natarajan (1994)	1989	490
		843
		280
		538
Forest Department	1993-94	1725
Forest Department	1997-98	1762
Forest Department	1998-99	1908

- Twenty nine species of reptiles and eight species of amphibians have been reported from the Sanctuary, the Starred Tortoise *Geochelone elegans*, the Olive Ridley Turtle *Lepidochelys olivacea*, Hawksbill Turtle *Eretmochelys imbricata* and the Green Turtle *Chelonia mydas*.
- GVS is the spawning and / or nursing ground for commercially important prawns (mainly White Prawn *Penaeus indicus* and Tiger Prawn *P. monodon*), crabs (Marsh Crab *Scylla serrata*) and fishes. Eastern part of the GVS harbours 23 fish species, mainly mullets, where

as the Mullipalam Lagoon at Muthupet has a more direct influence of the sea and harbours more marine species of fish, some 20 species.

**19. Social and cultural values:** (e.g., fisheries production, forestry, religious importance, archaeological site, etc.)

- Compared to the GVS, reservoirs of industrial salt works have a high diversity of fish species throughout the year. In salt works, the closure of the sluice gates after the monsoon prevents anadromous fish species from returning to the sea, and these shelter in the reservoirs. Species recorded in reservoirs are mullets, *C. chanos*, *E. machnata*, *H. ilisha*, *E. tetradactylum* and *Rhynchorhamphus georgii*, exotic Mozambique Tilapia *Oreochromis mossambica*. The prawn season in the natural habitat is during the North-East Monsoon period, while the peak season in reservoirs of salt works is from October till June. In some years, fishing for prawns in salt works goes on throughout the year (Manakadan 1994).
- A significant portion of the firewood requirements is being illegally obtained from the forest (Daniel & Rao 1994). Legally, only the tribals are allowed to collect dry wood from the forest for their use). Besides firewood and timber, there is illegal collection of forest produce, such as fruits of *Manilkara hexandra*, *Zizyphus oenoplia*, *Carissa carandus*, *Syzigium cumini*, *Sapindus emarginatus*, and rhizomes of *Gloriosa superba* from the Point Calimere forests. Large scale collection of leaf litter from the forest is carried out yearly for use as manure for the tobacco crop, this practice has a long history and dates back to 1938. According to the Forest Department (A.D. Barua, Wildlife Warden, pers. comm.), the collection of fruits, such as *M. hexandra* and *S. cumini* was legally permitted in the past, but has now been stopped, and similar is the case with forest litter collection.
- The GVS has a long history of salt production. A number of domestic and industrial salt works operate in the GVS. There have been demands from certain quarters to establish more salt works, including a huge (24,000 ha) salt complex.

**20. Land tenure/ownership of:** (a) site (b) surrounding area

**(a) Site:**

- The entire forest of Point Calimere was notified as reserve forest in two stages, in 1892 (Kodikkadu Reserve Forests) and in 1938 (Kodikkadu Extension Reserve Forest). It was declared as Point Calimere Sanctuary in June 1967.

**(b) Surrounding area:**

- The Muthupet Reserve Forest (mangroves) starts about 40 km to the west of Point Calimere. From 1853 to 1912, the Muthupet forest was under the 'Chatram Department', (rest houses for pilgrims and travellers constructed by the Raja of Tanjore) a branch of the then District Board of Tanjore. After that, the charge of the forests was shared by the Revenue Department and the Chatram Department. In 1937, the forests were declared as a reserve forest, and taken over by the Forest Department. The Talainayar Reserve Forest (mangroves) is situated about 25 km to the north of Vedaranyam and was notified as a reserve forest in 1931.
- In 1988, a proposal was sent to the Tamil Nadu Government to extend the area of the Sanctuary to include GVS and TRF. The new Sanctuary, with a total area of ca 385.3 km<sup>2</sup>,



will bear the name Point Calimere Wildlife and Bird Sanctuary. The promulgation of this new sanctuary is still in process.

21. **Current land use:** (a) site (b) surroundings/catchment

**(a) Site:**

- The Sanctuary is bordered in many areas by villages and an estimated 35,000 fishermen and agriculturists live at the borders of the Sanctuary (Varatharaj 1988). The Great Vedaranyam Swamp (GVS) has a long history of salt production. A number of domestic and industrial salt works operate in the GVS.
- Depending on the time of the year, between 500 to 900 cattle (domestic, abandoned and semi-feral) graze in the open areas of the Sanctuary inhabited by the Blackbuck at Point Calimere.

**(b) Surrounding area:**

- A number of villages dot the northern bank of the Swamp, and fishing is an important occupation of many villagers. It goes on throughout the year without any restrictions on the fishing gear, resulting in fishes of small size and non-target species being caught. It is estimated that around 35,000 fishermen and agriculturalists live around the borders of the Sanctuary.

22. **Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land use and development projects:** (a) at the site (b) around the site

The estuarine ecosystem is regarded as one of the most productive of all ecosystems. In spite of its multiple values and the fact that it is a self-sustaining unit, needing no fertilizers, pesticides or maintenance, the estuarine ecosystem has been largely regarded as a wasteland to be put to other uses (Maltby 1986, Odum 1971). The situation is the same in Point Calimere Wildlife Sanctuary. The Sanctuary is bordered in many areas by villages and an estimated 35,000 fishermen and agriculturists live at the borders of the Sanctuary (Varatharaj 1988), thereby exerting tremendous pressures on the Sanctuary's resources. In spite of the multiple benefits accruing to the locals from the Sanctuary, little thought is given to judicious or sustainable use of the resources. Thus, the tranquil exterior of the Point Calimere Wildlife Sanctuary is deceptive – it is beset by problems as follows:

**(a) Site:**

- **Forest Destruction:** A significant portion of the firewood requirements of Kodikkarai and Kodikkadu is being illegally obtained from the forest (Daniel & Rao 1994). Legally, only the tribals are allowed to collect dry wood from the forest for their use. The tribals, known as the *Cheendi Valayars*, now number around 450 individuals (source: Village Panchayat), an increase from a population of 151 in 1961 (Sarma 1976). With the increasing demand for firewood, the tribals have started to cut green wood for their own use and for sale to the villagers. The demand for firewood (and timber) further increases during the fishing season (December to February), when there is an influx of around 5,000 fishermen from other areas. Tree cutting also occurs in the islets in the GVS. When most parts of the GVS dry up during the dry season, people go in bullock-carts to cut the trees in the islets. In Muthupet, Selvam *et al.* (1994) reported that only 15% of the mangroves is 'healthy', and a total of 103 families depend on the forests for their livelihood. The wood is mainly sold as firewood to tea shops. Each bundle of wood fetches approximately 40 to 50 rupees, and is preferred over *Prosopis*,

the other most common alternative, as it fetches a higher price. According to recent Forest Department sources (A.D. Barua, Wildlife Warden), there has been concerted efforts in the past few years both at Point Calimere and Muthupet to check tree cutting, and the situation is much better now.

- **Collection Of Non-Timber Forest Produce:** Besides firewood and timber, there is illegal collection of forest produce, such as fruits of *Manilkara hexandra*, *Zizyphus oenoplia*, *Carissa carandus*, *Syzigium cumini*, *Sapindus emarginatus*, and rhizomes of *Gloriosa superba* from the Point Calimere forests. Trees are destroyed during collection of *Manilkara* fruits, as branches are chopped off to collect the fruits. Large scale collection of leaf litter from the forest is carried out yearly for use as manure for the tobacco crop, this practice has a long history and dates back to 1938. According to the Forest Department (A.D. Barua, Wildlife Warden, pers. comm.), the collection of fruits, such as *M. hexandra* and *S. cumini* was legally permitted in the past, but has now been stopped, and similar is the case with forest litter collection. A recent problem is that fruiting of trees in the forest is poor, which is attributed to the 'increasing pollution' of the ground water (A.D. Barua, Wildlife Warden, pers. comm.). Ali & Sugathan (1985) had earlier pointed out instances of withering of Palmyra trees *Borassus flabelifer* in Kodikkarai and Kodikkadu villages.
- **Spread of Prosopis:** *Prosopis chilensis* was planted in Point Calimere Sanctuary during the 1950s near Muniappan Eri and some areas bordering the GVS, to serve as wind barriers (Natarajan *et al.* 1984). Since then, the species has spread to many areas in the forest. Natarajan (1994) found cattle to be one of the main dispersal agents of the species by consuming its pods. The spread of *Prosopis* is restricted to the open areas (e.g., Peralam and Periyanduru Pallam), grazing lands, or where the forest has been heavily disturbed, such as near villages and in the islets in the GVS. However, the species has a positive role in that it reduces by 40-50% the demand for firewood and fence material from the forest (Daniel & Rao 1994). The Forest Department had made some efforts to check the spread of *Prosopis* in the blackbuck area by uprooting and burning in the past, but this is presently being carried out (A.D. Barua, Wildlife Warden, pers. comm.).
- **Salt Works:** GVS has a long history of salt production. A number of domestic and industrial salt works operate in the GVS. There have been demands from certain quarters to establish more salt works, including a huge (24,000 ha) salt complex. Environmentalists and locals have opposed the proposal, recognising the importance of the Swamp for waterbirds, and concern about the groundwater being affected. Kodikkarai has scarcity of good drinking water, and an increasing number of wells turn brackish every few years, attributed to the presence of salt works by the villagers. The overall impact of a salt complex of such a magnitude will definitely alter the ecosystem, affecting the biodiversity of the GVS, besides having probable repercussions on the fisheries on the coast (Manakadan 1994). Additionally, as discussed earlier, there is poor fruiting of trees in recent years, suspected to be due to the increasing salinity of the ground water.
- **Grazing:** Depending on the time of the year, between 500 to 900 cattle (domestic, abandoned and semi-feral) graze in the open areas of the Sanctuary, inhabited by the Blackbuck at Point Calimere. The Forest Department's efforts to ban grazing by stopping the issue of grazing permits have met with stiff resistance from the locals. However, the role of cattle in the control of spread of shrubs and trees and maintaining the grassland through grazing and browsing needs to be studied in detail, before a decision can be taken on stoppage or control of grazing for the benefit of blackbuck (Daniel and Rao 1994), though cattle have also been

identified as major dispersal agents for seed of *Prosopis* (Natarajan 1994). It is also suggested that the grasslands have been maintained 'naturally', due to periodic submergence by water as the grassland stretches occur in low lying areas (A.D. Barua, Wildlife Warden, pers. comm.). At Muthupet, about 150-200 abandoned aged or dry cattle graze in the reserve forest (Selvam *et al.* 1988). According to the Forest Department's records, around 5,000 head of cattle graze in the Sanctuary (Varatharaj 1988).

**(b) Surroundings:**

- **Decreased Freshwater Inflow:** The River Cauvery, the source of the freshwater inflow into the GVS, has its origins in the Western Ghats ranges of Karnataka state. It traverses nearly 850 km, draining an area of *ca* 89,600 km<sup>2</sup> en route. The Cauvery is considered to be the best utilised river system in southern India. There are seven major dams and a number of smaller dams all along its length. These seven dams can store in total, 232 tmc ft (35%) of the estimated 671 tmc ft of water available in the Cauvery (Jayaraman *et al.* 1982, 'The Hindu', Madras: 28-07-1991 and 7-12-1991). Though the Cauvery receives water during both the monsoons, freshwater inflow into the central and eastern part of the GVS is only during the North-East Monsoon period due to the impoundments on its course. This factor accounts for extensive drying of the GVS during certain months. Though the Mullipallam Lagoon receives water throughout the year from the River Korayar, the inflow has declined over the years. Tissot (1987) attributes this reason for the natural replacement of true mangrove species with more salt tolerant forms at Muthupet. Thus the GVS is now estuarine in character mainly during the monsoon period. Old people recall the days when the northern parts of the Swamp had extensive reed beds, instead of the present bare saline mudflats. The reduced freshwater inflow (and the presence of salt works) must have altered the water chemistry, affecting the biodiversity.
- **Pollution:** Anbazhgan (1988) found the waters of the GVS to have high concentrations of calcium, magnesium (attributed to salt works) and faecal coliform (attributed to waterbirds). He also found a high concentration of heavy metals, nickel, lead and zinc in the sediments. As the GVS is downstream from cities and crop lands, it faces the threats of domestic, industrial and farm pollutants brought by the Cauvery. The belt between Mettur-Bhavani-Erode, through which the Cauvery flows, is highly industrialised, with large and small scale chemical, distillery, textile and tannery units (Frontline magazine: 27/4/1991).
- **Oil/Gas Exploration:** In 1982, the Oil and Natural Gas Commission (ONGC), surveyed the area for oil/gas exploration. The results of the survey and future plans of the ONGC in this area are unknown. It is reported that the Cauvery basin has a reserve of 370 million tonnes of oil and oil equivalent gas (both on-and-offshore) - 'The Hindu', Madras: 5/10/1990.
- **Over-Fishing:** A number of villages dot the northern bank of the Swamp, and fishing is an important occupation of many villagers. It goes on throughout the year without any restrictions on the fishing gear, resulting in fishes of small size and non-target species being caught. It is estimated that around 35,000 fishermen and agriculturalists live around the borders of the Sanctuary.
- **Poaching Of Waterbirds:** A study by the Salim Ali Wild Wings Trust (Daniel *et al.* 1999) found that certain families in the villages that border the GVS depend on bird trapping for their livelihood and the number of birds being trapped is significant (see box).

**23. Conservation measures taken:** (national category and legal status of protected areas - including any boundary changes which have been made: management practices; whether an officially approved management plan exists and whether it has been implemented)

Situated at the southern end of Nagappattinam district, Tamil Nadu, the Point Calimere region was first identified as an area of high significance in conservation of birds by the late Dr. Salim Ali in 1962. Through several stages, the forest areas were declared as the Point Calimere Wildlife Sanctuary (22.5 km<sup>2</sup>).

- **Management practices:** In the absence of the management plan ( one plan submitted for approval) few practices that are being followed are:
- To conserve the black buck and other wild animals an innovative freshwater source, has been created. In the watchtower over head tanks have been constructed, to supply water (fresh) during the drought period (April, May, June) and under ground pipeline is laid up to 3 kms. to connect the overhead tank for the supply of water. The water source is from the bore-well equipped with motor.
- Along the coast olive ridely turtles are come to the shore for egg laying. During 1999-2000, an attempt had been made to collect the eggs, about 1500 eggs were collected and the eggs hatched in the artificial hatchery. (14 clutches about 85-90 eggs/ clutch). 80 to 82% succeed in the attempt to prevent the predation by the jackals, the hatchery was fenced with Bamboo racks, and the fishing nets was used to prevent the predation by raptors.

**24. Conservation measures proposed but not yet implemented:** (e.g, management plan in preparation; officially proposed as a protected area, etc.)

In 1988, a proposal was sent to the Tamil Nadu Government to extend the area of the Sanctuary to include the Great Vedaranyam Swamp and the Talaignayar Reserve Forest, and rename the sanctuary as the Point Calimere Wildlife and Bird Sanctuary. The promulgation of this new sanctuary is still in process. The potential for designation of the sanctuary as a Ramsar Site is largely on account of the Great Vedaranyam Swamp (*ca* 350 km<sup>2</sup>), which is one of the largest wetlands of southern India and is a major wintering refuge for a multitude of migratory waterbirds.

The earlier management plan expired in 1997. And a new one is submitted for the approval. In this the removal of the weed prosopis is recommended (inside the sanctuary), under eco-development.

**25. Current scientific research and facilities:** (e.g., details of current projects; existence of field station, etc.)

The Point Calimere Wildlife Sanctuary was identified as an area of high significance in conservation of birds from the time the late Dr. Salim Ali made an exploratory visit to the area in 1962. From 1980 for nearly a decade, the Bombay Natural History Society (BNHS) had been monitoring the avifauna and other wildlife (and their habitats) of the forests of Point Calimere and GVS, under two U.S. Fish and Wildlife Service sponsored projects. However, the TRF, which is part of the proposed Sanctuary, has largely been overlooked as it is at some distance from Point Calimere, the headquarters of the Sanctuary. Besides the BNHS, the AVC College Mayiladuthurai, which offers a wildlife biology course, has used the Point Calimere Wildlife Sanctuary as a field base for many postgraduate students. Students of the Centre for Advanced

Studies in Marine Biology, Parangipettai (Porto Novo) have also undertaken a few research projects in the GVS. The M.S. Swaminathan Foundation, Chennai has recently (1997) established a station at Muthupet to evaluate the resources of the Muthupet ecosystem, with special reference to the benefits to the locals.

**26. Current conservation education:** (e.g., visitors centre, hides, information booklet, facilities for school visits, etc.)

- A Visitor Centre has been proposed, subject to approval.
- Information booklet on the sanctuary, exists
- Currently the infrastructure facilities do not exist for organised school visits to the sanctuary.
- An interpretation center is present, that shows the diagrammatic representation of the sanctuary, and the distribution of animals and birds and their habitat shown in the map.

**27. Current recreation and tourism:** (state if wetland is used for recreation/tourism; indicate type and frequency/intensity)

Especially during December to March about 85% people come for the recreation purpose, as well as for pilgrimage. (Reason: A belief that, Lord Rama had come to this place, and had bathed in the Bay of Bengal before, he reached Srilanka to kill Ravana. During the time January - April the frequency of people visiting the sanctuary is high.

**Table 1: Yearwise details of visitors to the Sanctuary:**

Year	Adults	Students/Children	Foreigners
1988-89	5510	2003	147
1989-90	5097	793	190
1990-91	2725	874	112
1991-92	2559	1519	85
1992-93	4056	274	72
1993-94	3574	361	61
1994-95	5132	955	147
1995-96	5057	1907	182
1996-97	4358	1141	204
1997-98	4674	2177	188
1998-99	6610	2137	37
1999-2000	5749	1141	98

**Table 2: Monthwise breakup of visitors to the Sanctuary for year 199 & 2000:**

Month	Category	Local Tourists				Foreign Tourists	
		Students/Children		Adults			
	Year	1999	2000	1999	2000	1999	2000
January		92	92	477	477	40	40
February		262	262	887	887	19	19
March		510	510	863	863	06	06
April		24	367	595	694	-	-
May		-	61	620	919	-	-
June		16	91	495	401	2	-
July		75	135	197	985	3	8
August		21	167	446	504	-	9
September		58	90	500	316	4	10
October		10	26	87	400	-	5
November		24	87	285	265	11	15
December		53	98	280	698	13	20

28. **Jurisdiction:** (territorial, e.g., state/region and functional, e.g., Dept. of Agriculture/Dept. of Environment etc.)

Territorial : Indian State of Tamil Nadu

Functional : Tamil Nadu Forest Department, State Govt. of Tamil Nadu.

29. **Management authority:** (name and address of local body directly responsible for managing the wetland)

**Local Body:**

The Range Officer  
Kodiakari Wildlife Range  
Kodiakari 614 807  
Vedarguyam (T.K)  
Nagapattinam (Dt.)

**Headed by:**

Wildlife Warden  
Room No. 329  
IIIrd Floor  
Collector Building  
Nagapattinam 611 002

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**ASIAN WATERFOWL COUNT OF POINT CALIMERE WILDLIFE SANCTUARY**

<b>Species</b>		<b>1987</b>	<b>1988</b>	<b>1989</b>	<b>1990</b>	<b>1991</b>	<b>2000</b>
1	Little Grebe	-	-	-	-	-	6
2	Spotbilled Pelican	74	127	127	124	5	431
3	Little Cormorant	-	-	-	-	-	2
4	Little Egret	274	518	1239	899	647	1
5	Indian Reef Heron	6	3	44	126	22	19
6	Grey Heron	6	3	44	126	22	19
7	Large Egret	125	146	325	163	83	304
8	Median Egret	25	5	-	-	2	1
9	Cattle Egret	37	-	-	4	165	1
10	Pond Heron	25	25	61	31	20	5
11	Night Heon	-	-	-	-	-	2
12	Painted Stok	237	253	138	169	3	79
13	Spoonbill	402	135	148	465	60	509
14	Greater Flamingo	27953	3595	949	1082	100	10133
15	Lesser Flamingo	150	-	210	400	-	355
16	Bar-headed Goose	61	-	36	16	-	9
17	Gadwall	500	-	-	-	-	-
18	Wigeon		-	-	-	-	400
19	Mallard	150	-	-	-	-	-
20	Spotbill Duck	160	-	-	-	-	-
21	Shoveller	4054	600	513	-	154	300
22	Pintail	14210	4864	1514	3620	6795	24910
23	Garganey	1060	200	500	-	-	530
24	Common Teal	1690	460	100	-	-	-
25	White-breasted Waterhen	-	-	-	-	-	6
26	Fantail Snipe	-	-	-	-	-	1
27	Black-tailed Godwit	-	700	1279	651	622	1265
28	Bar-tailed Godwit	-	-	-	-	-	2
29	Whimbrel	-	-	-	6	-	-
30	Curlew	12	4	12	5	22	16
31	Spotted Redshank	-	-	3	-	-	-
32	Redshank	97	91	290	129	19	29
33	Marsh Sandpiper	235	548	480	887	14757	695
34	Greenshank	102	8	61	169	495	225
35	Green Sandpiper	34	10	-	-	-	3
36	Wood Sandpiper	20	-	-	-	11	1
37	Terek Sandpiper	2	530	-	-	1	-
38	Common Sandpiper	-	-	-	2	13	2
39	Turnstone	-	-	1	-	17	21
40	Eastern Knot	-	-	-	-	-	9
41	Red Knot	-	-	-	-	-	2
42	Little Stint	15530	4701	13511	12791	27917	3910
43	Temminck's Stint	-	-	1	-	2	-
44	Dunlin	650	-	-	-	-	1

45	Curlew Sandpiper	3485	777	1672	1960	6902	20
46	Broad-billed Sandpiper	-	-	-	-	-	20
47	Ruff	-	60	528	485	839	15
48	Red-necked Phalarope	-	-	-	-	-	8
49	Blackwinged Stilt	3	7	2096	865	-	4
50	Avocet	-	-	90	3000	-	-
51	Grey Plover	-	11	3	19	9	-
52	Pacific Golden Plover	26	-	-	-	159	100
53	Little Ringed Plover	51	20	77	145	443	343
54	Kentish Plover	11	30	12	50	2570	700
55	Lesser Sand Plover	187	69	821	150	5551	3877
56	Redwattled Lapwing	-	-	-	-	2	2
57	Yellow-legged Gull	34	-	508	1220	594	267
58	Black-headed Gull	-	-	-	-	-	53
59	Brownheaded Gull	354	702	816	190	437	268
60	Whiskered Tern	165	82	192	272	157	268
61	Black Tern	-	-	3	-	-	29
62	Gullbilled Tern	3	23	28	80	43	76
63	Caspian Tern	9	18	63	121	510	10
64	Lesser Crested Tern	-	-	-	25	-	-
65	Large Crested Tern	-	-	-	9	-	7
66	Common Tern	137	53	31	23	14	17
67	Little Tern	230	31	170	536	103	19
68	Unidentified Ducks	-	197	-	790	550	-
69	Unidentified Waders	-	-	3250	-	-	-
70	Unidentified Gulls & Terns	-	-	10	196	-	-

*Note*

*The counts were carried out from the extreme eastern part of the Sanctuary: Kodikkararai, Kodiakkadu, Muniappan Eri and areas around the lighthouse.*

*The counts were not conducted between 1992 to 1999.*