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**POINT CALIMERE WILDLIFE AND BIRD SANCTUARY**



*Bombay Natural History Society*

## Editorial

The Point Calimere Wildlife and Bird Sanctuary (Nagapattinam district, Tamil Nadu) has been one of the major field research stations of the Bombay Natural History Society (BNHS). Identified in 1962 as an area of high significance in conservation of birds by the late Dr. Salim Ali, its avifauna (and other wildlife) has been extensively documented and monitored under various projects of the BNHS, most of them funded by the U.S. Fish and Wildlife Service. Large scale bird banding operations were carried out under some of these projects, and to date, about a lakh (1,00,000) birds have been ringed from the Sanctuary area by the BNHS. These, and other studies, have generated an enormous amount of data on the avifauna of the Sanctuary, and helped trace the migration routes of the wintering migrants from the Palearctic region into the Indian subcontinent. Besides the BNHS, the AVC College, Mayiladuthurai, which offers a wildlife biology course, has been using Point Calimere as its field base for many postgraduate students. The Great Vedaranyam Swamp, which forms part of the Sanctuary, was the site for some doctoral studies of the Centre for Advanced Studies in Marine Biology, Parangipettai (Porto Nova), attached to the Annamalai University. This has made Point Calimere one of the most well documented wildlife sanctuaries in India.

This issue of *Buceros* describes the salient features of Point Calimere Wildlife and Bird Sanctuary, discusses some of the findings of the research projects and dwells on the problems that confront the Sanctuary and the Forest Department. Additionally, it lists the publications that have appeared on the Sanctuary. This issue has been prepared on the lines of an earlier issue (Vol. 2, No. 3) on another important field station of the BNHS, the Keoladeo National Park, Bharatpur, Rajasthan.



## **POINT CALIMERE WILDLIFE AND BIRD SANCTUARY**

### **INTRODUCTION**

The Point Calimere Wildlife and Bird Sanctuary is situated on a low promontory on the Coromandel Coast in Nagapattinam district, Tamil Nadu. The Sanctuary forms one of the seaward apexes of the Cauvery river delta. Point Calimere or Kodikkarai (10° 18' N; 79° 51' E), the headquarters of the Sanctuary, was connected by a branch line of the Southern Railway from 1936, but the train service was discontinued in 1986. It is now accessible only by road from Vedaranyam (11km).

Point Calimere is associated with Hindu religion and mythology. The forests of Point Calimere, earlier known the Vedaranyam forests, mean forests (*aranya*) of the *Vedas* (sacred text of the Hindus). Legend says that Lord Rama visited it enroute to Lanka (Sri Lanka). Ramarpatham (meaning Rama's feet in Tamil), the highest point (4 m above msl) of the Sanctuary, has two foot impressions on a stone slab, and is supposed to be the place from where Rama stood and reconnoitred Ravana's kingdom in Sri Lanka (48 km away). On realising that Point Calimere faced the rear of Ravana's fort, he proceeded to Rameswaram, to observe the propriety of a frontal attack.

In 1967, the forests of Point Calimere with an area of 24.17 km<sup>2</sup>, was declared the Point Calimere Wildlife Sanctuary. 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 (Fig. 1). The new Sanctuary, with a total area of 377 km<sup>2</sup>, will bear the name Point Calimere Wildlife and Bird Sanctuary.

### **GENERAL DESCRIPTION OF THE SANCTUARY**

#### **Climate**

The climate of the area is monsoonal, but it is not typical of monsoonal climates due to its asymmetrical rainfall regimes. The main contribution to the rainfall is from the Northeast Monsoon, and to a lesser degree, the Southwest Monsoon. The average rainfall ranges from 1000-

1500 mm. The highest temperature (34°C) is recorded in May, and the minimum (25°C) in January and February. Relative humidity remains high throughout the year due to coastal influence. Strong winds are prevalent during certain months, especially in May and June.

### **Physical Features**

The Sanctuary may be divided into three divisions: the Tropical Dry Evergreen Forest at Point Calimere (24.2 km<sup>2</sup>), the Great Vedaranyam Swamp (349 km<sup>2</sup>), and the mangrove forests of Talaigayar Reserve Forest (12.4 km<sup>2</sup>) – see map.

The northern boundary of the Point Calimere forest starts about six kilometres 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 the Great Vedaranyam Swamp on the west. The forest is not continuous but interrupted by many tidal inlets and creeks of varying lengths and widths, which are flooded during the monsoon and in May and June with the coming of the westerly winds. The forest is classified as a Tropical Dry Evergreen Forest. It harbours many species of medicinal plants, which find use in the Indian systems of medicine. There are also broken stretches of open grazing lands, especially at the southern and western portions; mangroves along the Muniappan lake and near the the lighthouse; and dune vegetation on the coast. There are two villages, Kodikkarai and Kodikkadu, at the south-western outskirts of the forest. The major occupations of the locals are fishing and tobacco cultivation.

The Great Vedaranyam Swamp (GVS) comes under the category of ‘bar-built’ estuaries and is estimated to be around 2000 years old (Tissot 1987). The GVS lies parallel to the Palk Strait and is separated from it by a sand bank, breached at a few places. Five irrigation channels connected to the River Cauvery empty into the Swamp. The GVS is flanked on the northern boundary by a number of villages. The habitat of the Swamp is varied. It has a mangrove lined lagoon (Mullipalam Lagoon) in about one-third of its western portion. The other two-thirds is a continuous sheet of shallow, fresh/brackish/saline (depending on the season) water during the monsoon and during the period of the south westerly winds (May and June). At other times, the waterspread dries up, creating mudflats, and during very dry periods, there is water only in the Seruthalaikkadu Creek.

The GVS has a number of uninhabited islets, which are now predominantly covered by the exotic *Prosopis juliflora*.

The Talaignayar Reserve Forest, which is not contiguous with Point Calimere Forests and the Great Vedaranyam Swamp, 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. The region has characteristic salt-marsh vegetation – see Sebastine and Ellis (1967) for details.

## WILDLIFE

Most of the accounts of the wildlife in the Sanctuary given below pertain to the forest and the area of the Great Vedaranyam Swamp around Point Calimere. These areas have been more in focus by researchers, tourists and the Forest Department than the western portion of the Swamp and the Talaignayar Reserve Forest.

**Mammals:** Eighteen 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 Spotted Deer, and the Bonnet Macaque *Macaca radiata*, were introduced into the Sanctuary in 1965. The other major mammals are Jungle Cat *Felis chaus*, Small Indian Civet *Viverricula indica*, Toddy Cat *Paradoxurus hermaphroditus* and Black-naped Hare *Lepus nigricollis*. The Common Mongoose *Herpestes edwardsi* and the Three-striped Palm Squirrel *Funambulus palmarum* are seen both in the forest and the villages. The Flying Fox *Pteropus giganteus* roosts in large flocks on trees in the interior parts of the forest of Point Calimere and the mangrove forest in the extreme western part of the Great Vedaranyam Swamp. The Short-nosed Fruit Bat *Cynopterus sphinx* has also been recorded. Feral ponies and cattle frequent the grazing lands along with Blackbuck. The Common Dolphin *Delphinus delphis* is seen near the shore during the monsoon.

## THE BLACKBUCK OF POINT CALIMERE

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. The population fluctuates at around 400 to 500 animals (see Natarajan 1994) and there is hardly any possibility for further increase in numbers due to the limited habitat. The ratio of males to females at Point Calimere is about 1:5. 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.

An intensive study was conducted on the blackbuck by the BNHS between 1988-1991 looking into the population structure, movements, activity pattern, feeding ecology and threats facing the species, such as competition for forage from cattle and predation by jackals and village dogs (Natarajan 1994).

**Birds:** Point Calimere is one of the major wintering grounds for many species of migratory birds in southern India. More than 250 species of birds, representing both waterbirds and land birds, have been recorded from the Sanctuary. Some of the major species are the Greater Flamingo *Phoenicopterus roseus*, Lesser Flamingo *Phoenicopterus (=Phoeniconaias) minor*, the Spot-billed Pelican *Pelecanus philippensis*, Spoon-billed Sandpiper *Calidris (=Eurynorhynchus) pygmeus*, Asian Dowitcher *Limnodromus semipalmatus* and White-bellied Sea-Eagle *Haliaeetus leucogaster*.

The BNHS has undertaken large scale banding or ringing of birds in Point Calimere. Bird banding was first carried out during 1969-1972, in a project funded by the World Health Organisation, investigating the role of migratory birds as vectors for certain tick-borne human diseases. Then, during the course of two U.S. Fish & Wildlife Service sponsored projects, bird banding (and other studies) continued almost uninterrupted for more than a decade (1980-1991). A total of one lakh (1,00,000) land and waterbirds have been ringed during these projects at Point Calimere. These studies have generated an enormous amount of data on the avifauna of the Sanctuary, and helped trace the migration routes of the wintering migrants into the Indian subcontinent.

### **Waterbirds and Salt Works**

Three industrial salt works and a number of small and large scale edible salt works operate in the Great Vedaranyam Swamp (GVS). Industrial salt works are heterogeneous in nature, with a system of reservoirs (for storage and partial condensation of brine), condensers (condensation of brine) and crystallizers (harvest pans). Edible salt works are composed almost entirely of crystallizers, with a well to store the brine.

The impact of salt works on waterbirds in the GVS was investigated by the Bombay Natural History Society (BNHS) during 1980-1981 (Ali 1981) and 1988-1990 (Manakadan 1992). The findings of Manakadan's study suggest the following: The impacts of salt works on waterbirds are either negative or positive depending on the species or guilds of birds, season (monsoon, early and peak salt season), and microhabitats within salt works. The impacts could vary depending on the location of a salt work in a swamp, the terrain and the management practices adopted by the salt company. Industrial salt works, with their system of reservoirs, condensers and crystallizers, have less adverse impacts on waterbirds than edible salt works. The latter are almost entirely composed of crystallizers, resulting in an almost total loss of habitat for waterbirds during the salt season. They support some bird populations during the monsoon (off-season for salt works). Species that are adversely affected by salt works are the ducks,



plovers and sandpipers, while fish eating birds are generally benefited.

The results of the study are applicable only to salt works on the east coast of India, where the migratory season of birds coincides with the monsoon (the off-season for salt works). The impacts of salt works on waterbirds on the west coast is expected to be more adverse, as the salt season there coincides with the migratory season of birds.

**Reptiles:** Twenty five species of reptiles have been recorded, among them are the Starred Tortoise *Geochelone elegans*, Indian Pond Terrapin *Melanochelys trijuga*, Indian Chameleon *Chameleon zeylanicus*, Common Indian Monitor *Varanus bengalensis*, Common Indian Tree Snake *Dendrelaphis tristis*, Common Green Whip Snake *Ahaetulla nasutus*, Indian Cobra *Naja naja*, Common Rat Snake *Ptyas mucosus*, Dumeril's Blackheaded Snake *Sibynophis subpunctatus* and Saw-scaled Viper *Echis carinatus*. The Olive Ridley Turtle *Lepidochelys olivacea* nests in the shore near the lighthouse.

**Fishes:** The Great Vedaranyam Swamp is the spawning and nursing ground for commercially important maritime prawns and fishes, such as *Penaeus indicus*, *P. monodon*, *Hilsa ilisha* and *Chanos chanos*. Other than these anadromous species, the fish fauna of the Swamp is mainly represented by mullet species. The Marsh Crab *Scylla serrata* is a commercially important species from the Swamp. The exotic *Oreochromis mossambicus* (= *Tilapia mossambica*) is abundant in the reservoirs and low salinity condensers of industrial salt works, and in inundated areas of the Sanctuary during the monsoon. The coast of Point Calimere is an important fish landing site for fishes and prawns from November to February.

### Flamingos - The *prima donnas* of the Sanctuary

Both the species of flamingoes that inhabit the Old World viz., the Greater Flamingo *Phoenicopterus roseus* and Lesser Flamingo *Phoenicopterus (=Phoeniconaias) minor* inhabit the Great Vedaranyam Swamp (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 Flamingoes 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.



Flamingoes 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. For more information, see Manakadan (1992, 1995).

## A POINT TO PONDER

The tranquil exterior of the Point Calimere Sanctuary is deceptive – it is beset by problems. One major contributory factor is the burgeoning human population bordering the Sanctuary, which exerts pressures on the Sanctuary. Almost the entire firewood requirement of Kodikkarai and Kodikkadu is being illegally obtained from the forest. Traditionally, the tribals, called *Seenthikodi Valaiyars*, (who live around the forest boundary in Kodikkadu), are allowed to collect dry twigs from the forest for their own use. With the increasing demand for firewood, the tribals now lop trees to supply wood to the villages. The burden increases during the fishing season (December to February), when there is an influx of five to six thousand fishermen from other areas. Besides firewood, there is illegal collection of forest produce, such as fruits of *Manilkara hexandra*, *Zizyphus mauritiana*, *Carissa carandus*, *Syzigium cumini*, *Sapindus emarginatus*, rhizomes of *Gloriosa superba* and leaf litter for use as manure for the tobacco crop. Illegal extraction of wood also occurs in the mangrove forests in the Sanctuary.

The Great Vedaranyam Swamp (GVS) has a long history of salt works. A number of domestic and industrial salt works operate in the Swamp. There have been demands from different quarters for setting-up of more salt works, including a huge (24,000 ha) salt complex. Though a BNHS study (Manakadan 1992) showed that the impacts of salt works on waterbirds depend on many factors and can be beneficial for some species, the overall impact of a salt complex of such a magnitude will definitely alter the ecosystem, affecting the flora and fauna of the GVS, besides having possible repercussions on the fisheries of the coast.

The flow of freshwater from the River Cauvery is now restricted to the monsoon period due to the presence of dams all along the river's course. Elderly people recall the days when the northern parts of the Swamp had extensive reed beds, which have now been transformed into mudflats or mangroves. The reduced freshwater flow (and the setting-up of salt works) must have altered the water chemistry, affecting the flora and fauna. Inflow of pollutants with the waters of the Cauvery, which traverses nearly 850 km, as it flows across towns, agricultural areas and industrial zones, is another cause of concern.

The other two major problems are over-fishing and poaching. There are no restrictions on fishing, as a result of which fishes of small size and non-target species are also caught. Poaching of waterbirds in the GVS is a serious problem that confronts the Forest Department. 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.

To sum up, there are a multitude of problems that confront the Sanctuary and the Forest Department. Solutions to some of these problems are complex and cannot be tackled by the Forest Department alone. It will require the cooperation of different government departments, non-governmental organisations, social workers and environmentalists to set things right.

## STUDIES UNDERTAKEN

The Point Calimere Wildlife and Bird 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 the Great Vedaranyam Swamp, under two U.S. Fish and Wildlife Service sponsored projects. However, the Talaignayar Reserve Forest, which is part of the proposed Sanctuary, has largely been overlooked, probably since it is at some distance from Point Calimere. Besides the BNHS, the AVC College Mayiladuthurai, which offers a wildlife biology course, has used the Point Calimere Wildlife and Bird Sanctuary as a field base for many postgraduate students. Students of the Centre for Advanced Studies in Marine Biology, Parangipettai (Porto Nova) have also undertaken a few research projects in the Great Vedaranyam Swamp. Listed below are the publications that have appeared on the Sanctuary.

### Theses

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