



RANGANATHITTU BIRD SANCTUARY

PART – I- EXISTING SITUATION

CHAPTER – I

Introduction to the area:-

Ranganathittu Bird Sanctuary is situated in Srirangapattana taluk of Mandya district. This sanctuary comprises of 6 (six) Islands and 6 (six) Islets in the river Cauvery. The Islets are the main breeding ground for variety of local and migratory birds. The comparative isolation of the Islets during the monsoons and the abundance of aquatic insects make Ranganathittu a favorite haunt for birds. The sanctuary attracts number of tourists both from India and abroad.

The Islets are surrounded by water of a reservoir formed by the construction of a weir across River Cauvery. It was built between 1645 and 1648, when Kantirava Narasaraja Wodeyar was the Ruler of Mysuru.

Ranganathittu attained the status of a Bird sanctuary at the instance of Dr. Salim Ali during his survey of the birds of Mysuru in 1940. The area of the sanctuary is 0.67 Sq.Km.

The soil along the river is soft and loamy, ideal for aquatic insects. The sanctuary is also surrounded by vast stretch of irrigated agricultural fields where aquatic insects are available in plenty. Abundance of these insects attracts numerous birds to the sanctuary. Ranganathittu island, and the islets surrounded by back water of the weir has been developed and is actively managed as a tourist place.

1.1 Name, Location, Constitution and the Extent of the Area :-

The sanctuary is located 3 KM away from the historical place Srirangapattana, between north latitude 12° 22' to 12° 25' and east longitude 76° 39' to 76° 49' in Mandya District of Karnataka State.

The area is made as two compartments. The area of the Ranganathittu Bird Sanctuary is 0.67 Sq.KM. The developed part of the sanctuary is near the village Palahally and Karimanti of Srirangapattana Taluk. Three islands in the Cauvery river with an extent of 32.46 Ha. is the nuclear portion where the

majority of birds roost. The other portion is near Mandyakoppalu in Gendehosahally and Arakere Village limits. This part is formed by a cluster of four islands in same Srirangapattana Taluk with an extent of 34.65 Ha. An area of 6.51 Ha. has been acquired on the bank of Cauvery near Ranganathittu islands, to develop the sanctuary and promote eco-tourism.

Ranganathittu Bird Sanctuary was declared as a 'Bird sanctuary' on 1st July 1940 No.A.F/19/FT/243/39-40 by General & Revenue Secretariat, Bangalore by the Government of His Highness the Maharaja of Mysuru **(Annexure -I)**. Later final notification as 'Ranganathittu Bird Sanctuary' was issued vide No.FEE 58 FWL 96 dated:1.9.1998 by the Government of Karnataka. **(Annexure - II)**

Table-1:- Extent of area under Ranganathittu Bird Sanctuary.

Distri ct	Talu k	Name of Village	Survey No. and Class	Area Ac. G.	Name and situation of the block included in the Bird Sanctuary.
Mysuru	French Rocks	Puttayyana Koppal	Assessed waste 22	66 . 16	Ranganathittu State Forest an island in the Midst of Cauvery River, about 2 miles west of Srirangapattana
		--	Karab	15 --	Two islands called Devaraja Islands in the Midst of Cauvery river about 6 furlongs East of Krishnarajasagara Dam.
	Srirangapattana	Arakere	Karab 49	24 05	
		Gendehosahalli		15	One big and 2 small islands in the Midst of Cauvery River about 8 miles east of Srirangapattana.
		497		11	
		270		20 13	
271		26 34			
		Total		167 . 39	

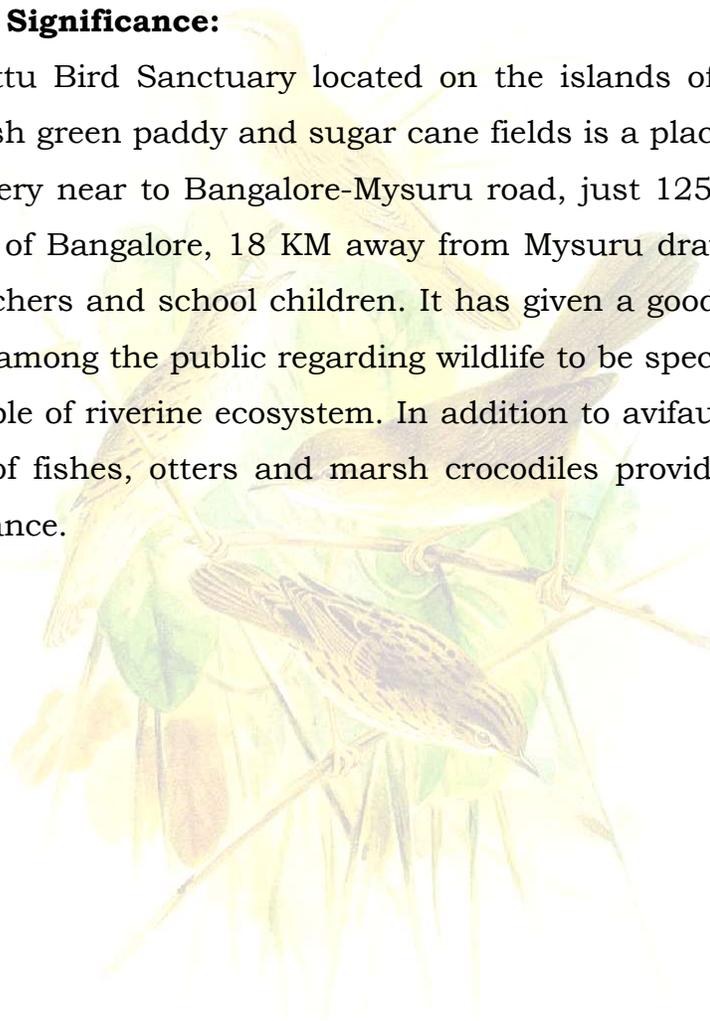
1.2 Approach & Access :

The sanctuary is located 18 KM from Mysuru City and 3 KM away from the historical place of Srirangapattana can be approached by all weather Bangalore – Mysuru road. It is 125 KM away from Bangalore, the Capital city of the State.

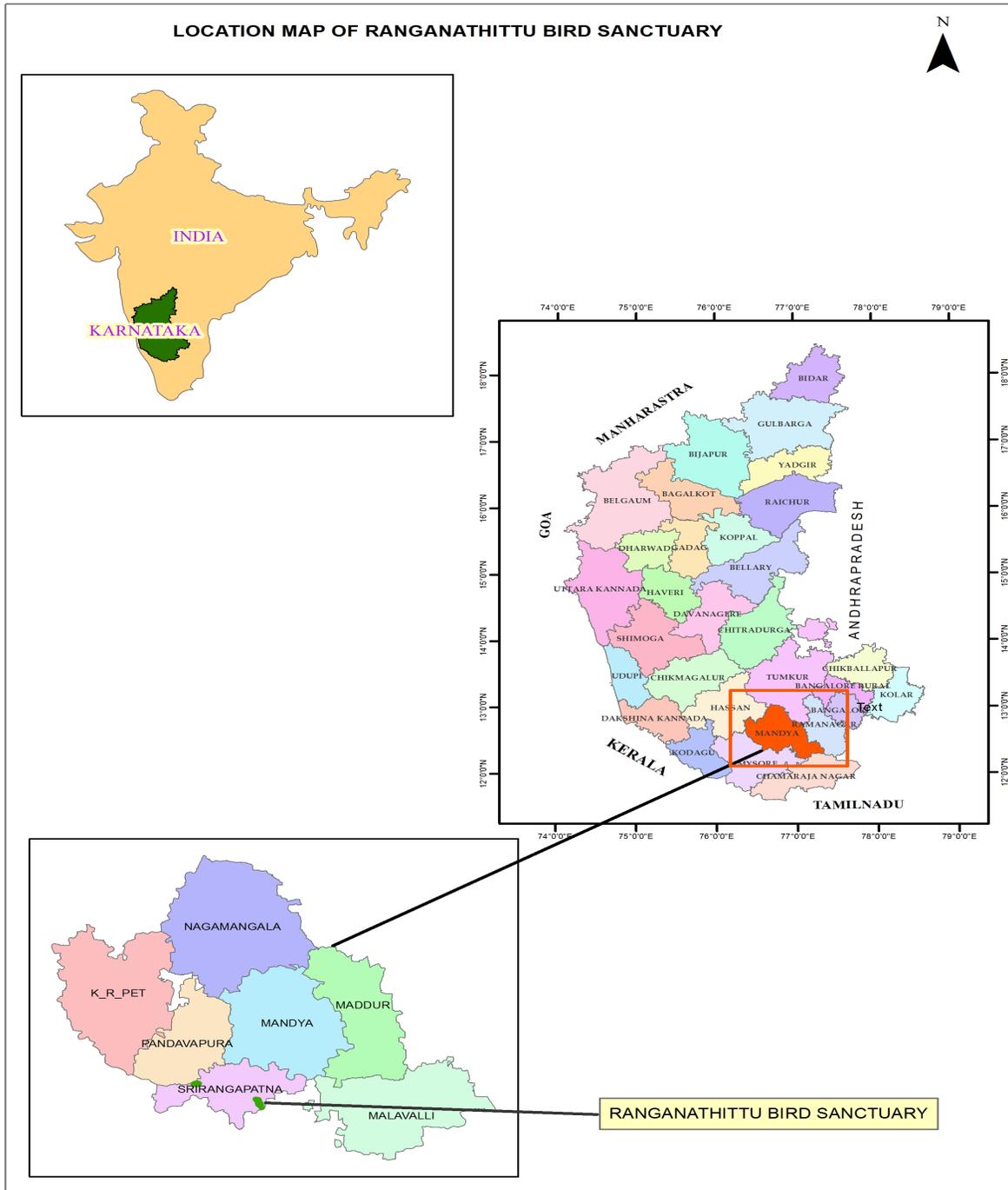
The nearest Railway station is in Srirangapattana which is about 4 KM away from the sanctuary. In Mysuru, as well as in Srirangapattana, all civic amenities are available.

1.3 Statement of Significance:

Ranganathittu Bird Sanctuary located on the islands of river Cauvery, surrounded by lush green paddy and sugar cane fields is a place of high scenic beauty. Located very near to Bangalore-Mysuru road, just 125 KM away from cosmopolitan city of Bangalore, 18 KM away from Mysuru draws hundreds of tourists, bird watchers and school children. It has given a good opportunity to create awareness among the public regarding wildlife to be specific in avifauna. It is a good example of riverine ecosystem. In addition to avifauna, presence of different species of fishes, otters and marsh crocodiles provide an additional ecological significance.



Map no-1 The location map of Ranganathittu Bird Sanctuary





CHAPTER-2

BACKGROUND INFORMATION AND ATTRIBUTES

2.1 Boundaries :

The boundaries are intact, since the area of the sanctuary is well defined by existence of islands. These islands are well protected, but the riverine stretches, up and down streams to few KM has to be protected which is a fishing ground for local fisherman who use small explosives to catch the fish easily, which in turn disturb the other riverine fauna and flora.

2.2 Geology, Rock and Soil :

The surface soil in the central part of the islands is sandy and alkaline and shows salt pans bereft of any vegetation. There are numerous pebble beds on the surface indicative of flash floods. The predominant pebbles are quartz, granite, gneiss, amphibolite, pegmatite and felcite.

The soil along the river margin is soft and loamy. It is made up largely of alluvium - which also forms a good habitat for aquatic insects. We also find altered alluvium called illuvium and these two together with pebbles form a mixture called colluvium.

The other types of soils that we find here are black cotton soil in dolerite rich areas formed due to periodic weathering and red gravelly soil which is formed from granite and calcarite soil with more of calcium.

One of the most interesting findings in these islands is the presence of human artifacts such as stone implements, beads, pieces of pottery, and microliths. These are indicative of the existence of prehistoric human settlement along the river. Such a curious discovery leads one to infer that this part of land was once an ideal 'Firm Ground' where perennial water supply was

assured and adequate food could be procured. Thus this place was suitable and congenial for human habitation.

The sanctuary is a flat piece of land whose underlying rock is igneous in origin and is known as Ring dyke formation similar to that of Srirangapatana island. It is said to extend to a depth of about 75 km. and to be 2.9 billion years old. It belongs to Dharwarian super group. It is composed of several types of rocks such as peninsular gneiss, granite, quartzite, diorite, porphyry, felcite, amphibolite, dolerite and hornblende schist. Gneisses have become canker due to extensive chemical weathering and desiccation as evidenced by the presence of hard canker formations. The gneissic rocks of Gendehosahally show presence of amphibolites and xenoliths as well as pegmatite veins.

In the river highly resistant black colored dolerite projections can be seen giving a prominent profile to the river. Some dolerites on the left bank of the first island in Gendehosahally show periodic weathering as a result of which we find black cotton soil. We can also see older formations of Sargur type of rocks (3.3 **billion** years old) - Banded Ferruginous Garnetiferous Rock (Spassarine) as a marker of horizon rich in manganese.

2.3 Terrain:

The altitude varies from 690 m 715 m, from MSL. The terrain is almost flat. Because of the flood water of river Cauvery, the island bank is susceptible for soil erosion.

2.4 Climatic factors:

2.4.1. Rainfall:

The area receives rain both from south west and north east monsoon. The south west monsoon commences from June with interruption and continues till September. North east monsoon brings rain during October and November. The mean annual rainfall is about 700-800 mm.

2.4.2. Temperature:

Ranganathittu has a moderate climate with 3 seasons.

- a) Summer - March to May.
- b) Monsoon - June to October.
- c) Winter - November to February.

The temperature varies from 15° C to 30° C.

Wind:

The monsoon winds which blow over the sanctuary are:

- i) South westerly wind between June to September.
- ii) North easterly wind between September and December.

2.5 Nature and distribution of sources of water:

The river Cauvery is the main source of water. The Krishnarajasagara dam constructed across river Cauvery on the upstream side, about 8 KM. from Ranganathittu has created a huge reservoir. Water is continuously let out of the dam and as such the water level around Ranganathittu does not go below minimum level. When there is heavy rain in the catchment area of river Cauvery and when the water level in the dam goes above maximum level, water is let out of the dam creating floods in the down streams side. This is the only major threat to the sanctuary. During 1991, few islets were partially eroded and many nests were washed away. The drainage map of the sanctuary is given in map no-3.

2.6 Range of Wildlife, Status Distribution and Habitat :

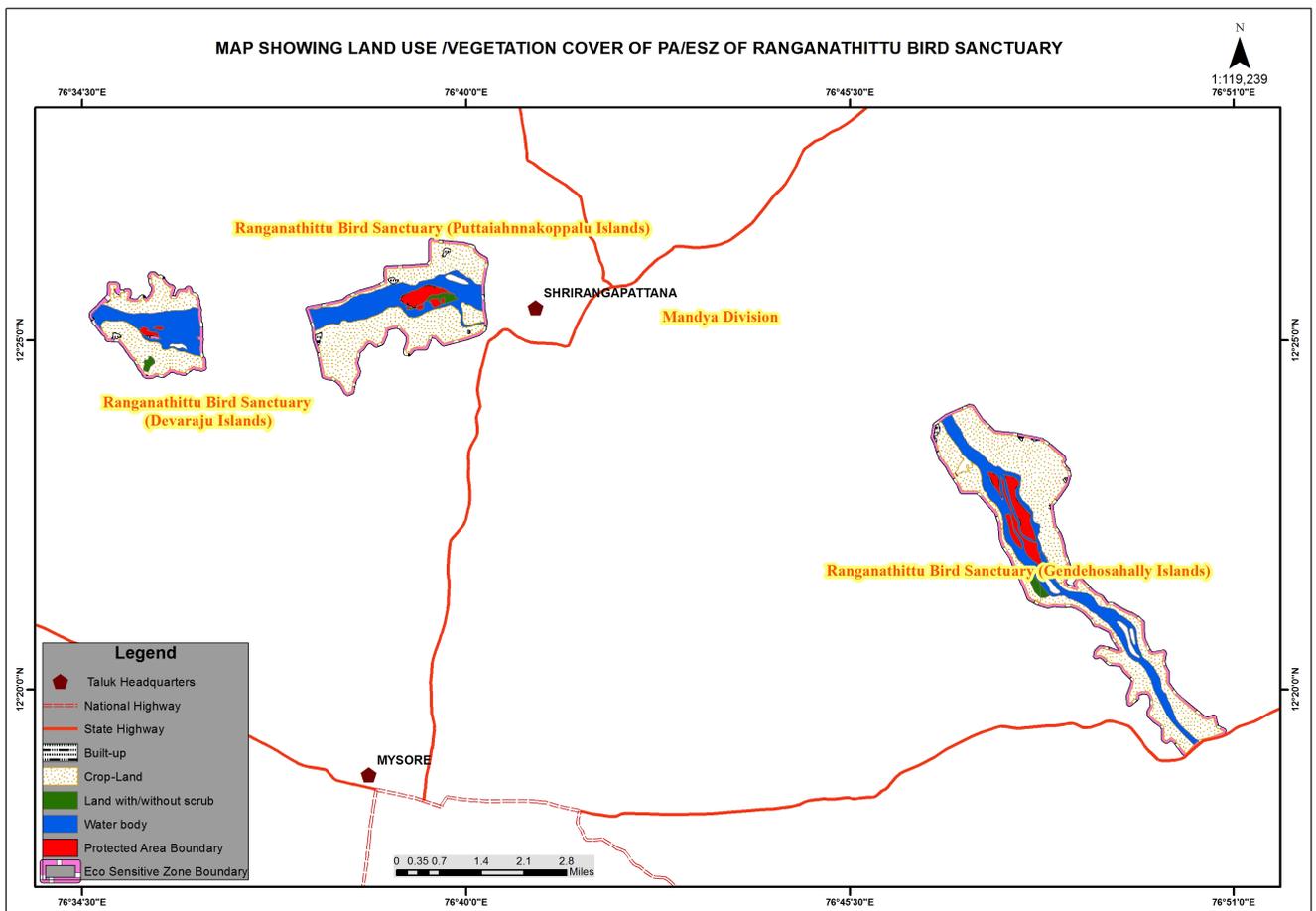
Ranganathittu, a riverine island, surrounded on all sides by the branches of the river Cauvery has developed into an interesting habitat, offering proper shelter for a vast assemblage of plants, both flowering and non flowering as well as to birds and other animals.

2.6.1 Vegetation:-

The area consists of **(i)** Deciduous Scrub Forests (5DSI – champion & seth classification) in the central part of the islands. Because of Alkaline soil, large gaps exists in the area. **(ii)** Riverine Forest exists on the edges of the islands

The flora of Ranganathittu Bird Sanctuary consists of two types of vegetation : 1) Thorny Scrub Jungle in the central part of the islands where desert conditions prevail and 2) Broadleaved deciduous forest in the margins where the soil is fertile and water is plenty.

Map no-2: The drainage map Ranganathittu Bird Sanctuary.



2.6.1.1 Flowering Plants :

Among the plants, the flowering ones take the pride of place both in number and variety of species. There are 400 species of dicotyledonous plants belonging to 79 families. Of these the family Fabaceae (Leguminosae) with 69 species stands first. The families Asteraceae (Compositae) and Euphorbiaceae, with 28 species each, stand second and the family Acanthaceae with 20 species takes the third place. The monocotyledonous plants belong to 114 species distributed among 14 families. Poaceae (Graminae) with 55 species and Cyperaceae with 27 species stand first and second among the monocotyledons.

The scrubby vegetation is made up of thorny plants such as:-

Sl. No	Scientific Name	Family Name	Common Name
1.	<i>Capparis</i> sp.,	Capparaceae	Caper, Caperbush, Common caperbush,
2.	<i>Dichrostachys cinerea</i> ,	Mimosaceae	Sickle Bush
3	<i>terolobium hexapetalum</i>	Caesalpiniaceae	Indian Redwing
4	<i>Flacourtia indica</i>	Salicaceae	Governor's Plum, Batoka Plum, Indian plum
5	<i>Plecosperrum spinosum</i>	Moraceae	Trecul
6	<i>Zizyphus</i> sp.	Rhamnaceae	Jujube
7	<i>Toddalia asiatica</i>	Rutaceae	Orange Climber
8	<i>Acacia</i> sp	Mimosaceae	Acacia

There are also plants and the bushes and trees are festooned with several types of climbers such as:-

Sl. No	Scientific Name	Family	Common Name
Plants			
1	<i>Dodonaea viscosa</i>	Sapindaceae	Hop Bush, Hopseed
2	<i>Cassia auriculata</i>	Fabaceae	Tanners cassia, Avaram
3	<i>Hardwickia binata</i>	Fabaceae	Indian Black Wood, Indian Blackwood
4	<i>Maytenus emarginata</i>	Celastraceae	Ding Hou
5	<i>Grewia tiliaefolia</i>	Malvaceae	Dhaman
Climbers			
1	<i>Ichnocarpus frutescens</i>	Apocynaceae	Black Creeper
2	<i>Gymnema sylvestre</i>	Apocynaceae	Gurmar, Cowplant,

3	<i>Secamone emetica</i>	Apocynaceae	Emetic Secamone
4	<i>Marsdenia volubilis</i>	Apocynaceae	Rajmahal Hemp,
5	<i>Argyreia speciosa</i>	Convolvulaceae	Elephant Creeper,
6	<i>Ipomea sp.</i> ,	Convolvulaceae	Morning glory, water convolvulus
7	<i>Diplocyclos palmatus</i>	Cucurbitaceae	Lollipop Climber, Marble Vine
8	<i>Cassytha filiformis</i>	Lauraceae	Love-vine
9	<i>Cocculus hirsutus</i>	Menispermaceae	Ink berry, Broom creeper
10	<i>Cissampelos pareira</i>	Menispermaceae	Velvet Leaf, Abuta
11	<i>Passiflora foetida</i>	Passifloraceae	Wild maracuja, Bush passion fruit,
12	<i>Cissus quadrangularis</i>	Vitaceae	Veldt Grape, Devil's Backbone
13	<i>Sarcostemma intermedium(leafless)</i>	Apocynaceae	Leafless East-Indian Vine

Special mention must be made of an interesting Plant from this area - *Iphigenia Mysurunsis* belonging to Liliaceae. This is an entirely new species described for the first time in 1972. However it escapes notice because of its inconspicuous appearance.

Other plants of interest that are found here include *Hydrocotyle conferta* (Apiaceae) which appears to be a new addition to the flora of Karnataka and *Heliotropium subulatum* (Boraginaceae) which looks like *Oldenlandia* of Rubiaceae.

The alluvium rich marginal areas of the islands harbor broad leaved trees like

Sl. No	Scientific Name	Family	Common Name
1	<i>Syzigium cumini</i> ,	Myrtaceae	Java plum, Jamun
2	<i>Terminalia arjuna</i>	Combretaceae	Arjun tree
3	<i>Vitex leucoxyton</i>	Verbenaceae	White-Wood Chaste Tree, water peacock's foot tree
4	<i>Commiphora caudate</i>	Burseraceae	Hill mango
5	<i>Bauhinia racemosa</i>	Fabaceae	Bidi leaf tree
6	<i>Samanea saman</i>	Fabaceae	Acacia
7	<i>Ailanthus excelsa</i>	Simaroubaceae	Indian Tree of Heaven,
8	<i>Holoptelea integrifolia</i>	Ulmaceae	Indian Elm, south Indian elm tree
9	<i>Pithecellobium dulce</i>	Fabaceae	Manilla Tamarind, Madras Thorn, Sweet tamarind
10	<i>Albizia amara</i>	Fabaceae	Krishna Siris, Oil cake tree

Pandanus fascicularis (Screwpine) is a very common plant and forms impenetrable thickets along the water margins. It is interspersed with *Combretum albidum* (Buffalo calf plant), *Crateva magna* (Tree leaved caper, Garlic pear tree), *Caesalpinia bonduc* (Yellow Nicker, Bondue nut) and *Acacia sinuat* (Piquant Sappan).

Here and there one may find *Aegle marmelos* (Bael), *Limonia acidissima* (Elephant Apple), *Atalantia monophylla* (Indian Atalantia), *Salix tetrasperma* (Indian Willow), *Guazuma ulmifolia* (West Indian Elm), *Phoenix sylvestris* (Wild Date Palm).

While the open ground is covered with different types of grasses, grow under the bushes and trees such as

Sl. No	Scientific Name	Family	Common Name
1	<i>Bryophyllum sps</i>	Crassulaceae	Couelus, Miracle Leaf,
2	<i>Kalanchoe</i>	Crassulaceae	Kalanchoe
3	<i>Caralluma</i>	Aescelpiadaceae	Caralluma
4	<i>Opuntia</i>	Cactaceae	Prickly Pear

The marshy inlets which are periodically flooded with water harbour plants such as

Sl. No	Scientific Name	Family	Common Name
1	<i>Alternanthera sessilis</i>	Amaranthaceae	Sessile Joyweed
2	<i>Centella asiatica</i>	Apiaceae	Indian Pennywort
3	<i>Eclipta alba,</i>	Asteraceae	False Daisy, Trailing eclipta
4	<i>Spilanthes calva</i>	Asteraceae	Toothache Plant, Para cress
5	<i>Aeschynomeme aspera</i>	Fabaceae	Pith Plant
6	<i>Enicostemma hyssopifolium</i>	Gentianaceae	Chhota Chirayata, Indian gentian
7	<i>Portulaca oleracea</i>	Portulacaceae	Purslane
8	<i>Gonostegia pentandra</i>	Urticaceae	Melastome Pouzol's Bush
9	<i>Scoparia dulcis</i>	Plantaginaceae	Sweet Broom Weed, Sweet Broom Wort
10	<i>Ammannia sp</i>	Lythraceae	Purple ammannia, redstem
11	<i>Polygonum sp.,</i>	Polygonaceae	Knotweed
12	<i>Rotala sp</i>	Lythraceae	Rotala Vietnam
13	<i>Commelina sp</i>	Commelinaceae	Bengal Dayflower

Several species of medicinal plants are also seen in the sanctuary such as

Sl. No	Scientific Name	Family	Common Name
1	<i>Hemidesmus indicus</i>	Apocynaceae	Indian Sarsaparilla
2	<i>Asparagus racemosus</i>	Asparagaceae	Buttermilk root, Wild carrot
3	<i>Trichodesma indicum</i>	Boraginaceae	Indian Borage •
4	<i>Hybanthus enneaspermus</i>	Violaceae	Spade Flower, Pink ladies slipper
5	<i>Evolvulus alsinoides</i>	Convulvulaceae	Dwarf Morning Glory,
6	<i>Tinospora cordifolia</i>	Menispermaceae	Gulbel, Indian Tinospora
7	<i>Trianthema portulacastrum</i>	Aizoaceae	Desert Horse Purslane
8	<i>Alangium salvifolium</i>	Alangiaceae	Sage Leaved Alangium
9	<i>Gymnema sylvestre</i>	Apocynaceae	Gurmar, Cowplant, Small Indian ipecacuanha
10	<i>Acalypha indica</i>	Euphorbiaceae	Indian Copperleaf
11	<i>Phyllanthus fraternus</i>	Euphorbiaceae	Gulf Leaf-Flower
12	<i>Tephrosia purpurea</i>	Fabaceae	Wild Indigo, Fish Poison,
13	<i>Boerhavia diffusa,</i>	Nyctaginaceae	Pigweed, Spreading hogweed, Common Hogweed,
14	<i>Bacopa monnieri</i>	Plantaginaceae	Brahmi, herb of grace, Indian pennywort,
15	<i>Scilla hyacinthina</i>	Asparagaceae	Gitar
16	<i>Cynodon dactylon</i>	Poaceae	Bermuda Grass

The water plants include

Sl. No	Scientific Name	Family Name	Common Name
1	<i>Hydrilla verticillat</i>	Hydrocharitaceae	Hydrilla, Indian Stargrass
2	<i>Ottelia alismoides</i>	Hydrocharitaceae	Duck-Lettuce, Waterplantain Ottelia
3	<i>Vallisneria spiralis</i>	Hydrocharitaceae	Tapegrass French
4	<i>Lemna perpusilla</i>	Lemnaceae	Duckweed
5	<i>Najas graminea</i>	Hydrocharitaceae	Ricefield Waternymph French

The riverbank is covered with *Crinum defixum* - Milk and Wine Lily and several types of sedges.

2.6.1.2 Non-Flowering Plants :

The non-angiospermous plants are few in numbers. But still one can see a rare and curious plant called *Equisetum ramosissimum* – (Branched Horsetail) belonging to Equisetaceae. It grows under the Bamboo clumps and along the bunds of the adjoining paddy fields. Other common ferns are *Pteris*

sp. (Brake Fern) *Azolla pinnata* (Freny Azolla) and *Marsilea minuta* (Dwarf water clover) which favour marshy areas. Bryophytes such as *Riccia* sp. (Floating crystalwort) And *Funaria* sp.(cord moss) are also seen.

Among the lower groups of plants *lichens* (Lichens), *morels* (Common more) and *mushrooms* (Mushrooms) are the more prominent ones. These become more conspicuous during rainy season.

2.6.1.3 Rare plants

Sl. No	Scientific Name	Family	Common Name
1	<i>Barringtonia racemosa</i>	Lecythidaceae	Powderpuff Mangrove, Fish-killer tree,
2	<i>Coix lachryma</i>	Poaceae	Job's Tears
3	<i>Cryptocoryne retrospiralis</i>	Araceae	Crypt Retrospiralis
4	<i>Iphigenia indica</i>	Colchicaceae	Indian Grass Lily
5	<i>Scilla hyacinthina</i>	Asparagaceae	LILIACEAE (Family name)
6	<i>Vitex leucoxylong</i>	Verbenaceae	White-Wood Chaste Tree
7	<i>Zeuxine strateumatica</i>	Orchidaceae	Lawn orchid, Soldier's Orchid
8	<i>Equisium ramosissimum</i>	Equisitaceae	Branched Horsetail

2.6.1.4 Endemic plants

Iphigenia Mysurunsis - LILIACEAE

No common names have been associated with Plants.

2.6.1.5 Endangered plants

Sl. No	Scientific Name	Family Name	Common Name
1	<i>Santalum album</i>	Santalaceae	Sandal tree
2	<i>Euphorbia spp.</i>	Euphorbiaceae	Crown of Thorns red-green

2.6.2 Animals:

The diverse vegetation of the sanctuary naturally offers a wide variety of habitats for different types of animals. Among the animals, the birds are the most abundant and varied. In fact the sanctuary has gained importance because of its avian fauna.

2.6.2.1 Birds :

There are 221 species of birds belonging to 61 families. They include both resident and migratory birds.

Sl. No	Scientific Name	Family	Common Name
Migratory Birds			
1	<i>Platalea leucorodia</i>	Threskiornithidae	Eurasian Spoonbill
2	<i>Anastomus oscitans</i>	Ciconiidae	Open billed stork
3	<i>Sterna aurantia</i>	Sternidae	River tern
4	<i>Mycteria Lenococephala</i>	Ciconiidae	Painted stork
5	<i>Esacus magnirostris</i>	Burhinidae	Great Stone Plover
6	<i>Ardea purpurea</i>	Ardeidae	Purple heron
7	<i>Phalacrocorax nigar</i>	Phalacrocoracidae	Little Cormorant
8	<i>Phalacrocorax carbo</i>	Phalacrocoracidae	Large Cormorant
9	<i>Nycticorax nycticorax</i>	Ardeidae	Night Heron
10	<i>Hirundinidae</i>	<i>Hirundinidae</i>	Swallows
11	<i>Ceryle rudis</i>	Alcedinidae	Pied King fisher
12	<i>Egetta alba</i>	Ardeidae	Large egret
13	<i>Egretta intermedia</i>	Ardeidae	Median egret
14	<i>Bubulcus ibis</i>	Ardeidae	Cattle egret
15	<i>Threskiornis aethiopica</i>	Threskiornithidae	White Ibis
16	<i>Pelecanus philipensis</i>	Pelicanidae	Spotted billed pelican
Indigenous Birds			
1	<i>Anhinga rufa</i>	Anhingidae	Darter
2	<i>Ciconia episcopus</i>	Ciconiidae	White necked stork
3	<i>Hirunds fluvicola</i>	Hirudinidae	Indian Cliff swallow
4	<i>Dendrocvgna javanica</i>	Anatidae	Lesser Whistling Teal
5	<i>Egretta garzetta</i>	Ardeidae	Little egret
6	<i>Andeola grayii</i>	Ardeidae	Pond Heron
7	<i>Pelecanus philipensis</i>	Pelicanidae	Spotted-billed pelican
8	<i>Ardea cinerea</i>	Ardeidae	Grey heron
9	<i>Haliastur indus</i>	Accipitridae	Brahminy kite
10	<i>Milvus migrave</i>	Accipitridae	Common Pariah Kite
11	<i>Anas poecilorhyncha</i>	Anatidae	Grey duck
12	<i>Pavo Cristatus</i>	Phasianidae	Common Peafowl

13	<i>Amaurornis phoenicurus</i>	Rallidae	White breasted water hen
14	<i>Vanellus indicus</i>	Charadriidae	Red wattled lapwing
15	<i>Perdicula asiatica</i>	Phasianidae	Jungle bush quail
16	<i>Alcedo atthis</i>	Alcedinidae	Small blue King fisher
17	<i>Dicrurus adsimilis</i>	Dicruridae	Black drongo
18	<i>Corvus splendens</i>	Corvidae	House Crow
19	<i>Pycnonotus cafer</i>	Pycnonotidae	Redvented bulbul
20	<i>Pycnonotus Jocosus</i>	Pycnonotidae	Red whiskered bulbul
21	<i>Pycnonotus leucogenys</i>	Pycnonotidae	White checked bulbul
22	<i>Ploceus philippinus</i>	Ploceidae	Baya Weaver bird
23	<i>Ploceus manyar</i>	Ploceidae	Streaked Weaver bird
24	<i>Corvus brachyrhynchos</i>	Corvidae	Common crow

2.6.2.2 Other Animals :

The sanctuary is also home for other types of animals such as mammals, reptiles, fishes and arthropods.

Sl. No	Scientific Name	Family	Common Names
Mammals			
1	<i>Macaca radiata</i>	Cercopithecidae	Bonnet Macaque,
2	<i>Herpestes edwardsii</i>	Herpestidae	Common Mongoose
3	<i>Lutra lutra</i>	Mustelidae	Common Otter
4	<i>Paradoxurus hermaphroditus</i>	Viverridae	Palm Civet
5	<i>Pteropus giganteus</i>	Pteropodidae	Fruit Bat
Reptiles			
1	<i>Crocodylus palustris</i>	Crocodylidae	Marsh Crocodile
2	<i>Python molurus</i>	Pythonidae	Indian Rock Python
3	<i>Naja naja</i>	Elapidae	Common Cobra
4	<i>Atretium schistosum</i>	Colubridae	Olive Keelback

The nutrient rich waters of Cauvery river naturally constitute the most favorable feeding and breeding ground for 30 species of fishes. Some of them are commercially important.

The arthropod fauna of the islands comprises different kind of insects. There are 61 species of butterflies (*Lepidoptera*) which range in size from the largest - Southern Bird Wing - to one of the smallest - Gram Blue (*Euchrysops cnejus*). They are

Sl. No	Scientific Name	Common Names
1	<i>Odonata</i>	Dragonflies and Damselflies
2	<i>Gryllidae</i>	Crickets
3	<i>Caelifera</i>	Grasshoppers
4	<i>Mantodea</i>	Mantids
5	<i>Orthoptera</i>	Walking sticks
6	<i>Isoptera</i>)	Termites
7	<i>Dermaptera</i>	Earwigs
8	<i>Insecta</i>	Bugs
9	<i>Corixidae</i>)	Waterboatmen
10	<i>Hemiptera</i>	Waterscorpions
11	<i>Cicadidae</i>	Cicadas
12	<i>Membracidae</i>	Treehoppers
13	<i>Homoptera</i>	Aphids
14	<i>Neuroptera</i>	Ant lions
15	<i>Coleoptera</i>	Beetles
16	<i>Diptera</i>	Flies and Mosquitoes
17	<i>Ichneumonidae</i>	Ichneumons
18	<i>Anthophila</i>	Bees
19	<i>Hymenoptera</i>	Wasps
20	<i>Hymenoptera</i>	Ants

Arthropods other than insects are also well represented and include

Sl. No	Scientific Name	Common Names
1	<i>Brachyura</i>	Crabs
2	<i>Diplopoda</i>	Millipedes
3	<i>Chilopoda</i>	Centipedes
4	<i>Scorpiones</i>	Scorpions
5	<i>Araneae</i>	Spiders
6	<i>Acari</i>	Mites

This is only a basic survey and the list of plants and animals are neither complete nor final. A more thorough field survey would certainly bring to light many more species and would also add more information.

In conclusion it may be stated that Ranganathittu Bird Sanctuary represents a unique riverine ecosystem wherein different species of plants and animals live in complete harmony maintaining a delicate natural balance. It needs scientifically sound protection and any interference will definitely upset this balance and cause irreparable loss to the biodiversity of the area.



CHAPTER-3

HISTORY OF MANAGEMENT & PRESENT PRACTICES

3.1 General:

The sanctuary area is very small and consists of 67.49 Ha. as in the notification. Ranganathittu bird sanctuary was initially notified under Section 4 of Mysuru Game & Fish Preservation Act 1901 vide No. AF 19 FT. 243-39-40 dated 1.7.1940 and the same was confirmed vide Government Notification No. FEE 58 FWL 96 dated 1.9.1998 under Wildlife Protection Act 1972. The intense Management which is in practice suggest the planting of fruit yielding trees and creation of woodlots in the acquired lands around the sanctuary and to maintain and develop the existing Eco-Tourism zone.

The sanctuary is more or less surrounded by agricultural field irrigated by water from Krishnarajasagara dam. The safety of islands is given top priority because the trees there, are the main perching and roosting area for majority of migratory birds. Stabilization of the edges of island with packing of sand bags are done regularly to prevent erosion. (photos enclosed). Many developmental works such as creation of new gardens, woodlots, view point at maharaja tower, installation of stone benches, boating facilities , new bamboo barricade structures, renovation of rest rooms , purchase of new boats, establishment of interpretation centre, parking facilities, canteen facilities , availability of wheel chairs, installation of CCTV cameras, creation of small wetland garden, lotus ponds, are carried out to promote tourism (photos enclosed) . The boating facilities are provided for bird watching from nearest point.

Devaraja islands of the sanctuary require adequate water throughout the season to be isolated from the main land. No developmental works are carried out in this part of the sanctuary Gendehosahally island portion of Ranganathittu Bird Sanctuary is 20 KM away from the existing tourism area of the sanctuary. Extensive planting of trees on this islands were done. It has given a forest ambience to this sanctuary. With proposal to develop this part

as another tourism zone of this sanctuary to reduce the pressure on the existing tourism part, few development works like construction of paragolas, and watch tower were taken up in the past management plan period.

3.2 Other programmes and activities:

Boating is the only activity provided for visiting tourists for bird watching.

3.3 Forest Protection :

3.3.1 Legal status:

Ranganathittu Bird Sanctuary was initially notified under Section 4 of Mysuru Game & Fish Preservation Act 1901 vide No. AF 19 PT. 243-39-40 dated 1.7.1940 and the same was confirmed vide Government Notification No. FEE 58 FWL 96 dated 1.9.1998 under Wildlife Protection Act 1972.

3.3.2 Hunting :

No hunting of birds is noticed in the sanctuary.

3.3.3 Illegal activities :

3.3.3.1 Poaching:

No poaching activities are noticed. But adequate caution has been taken to prevent illegal fishing by using small explosives in the river which may also threat the population of otters in the downstream.

3.3.3.2 Illegal cutting of trees :-

In Gendehosahally part of the sanctuary, illegal cutting and smuggling of sandal wood trees, and lifting of sand in the sanctuary area were noticed in previous years. Appropriate legal action has been taken to counter such activities. Surrounding villagers rarely sneak into the Gendehosahally portion of the Ranganathittu Bird Sanctuary to collect small fire wood and for grazing purpose. But legal and control measures such as repeated patrolling in the island areas, night patrolling were done to counter such activities.

3.3.3.3 Illegal removal of NWFP :

There is no any illegal removal of Non Wood Forest Produce (NWFP) from this sanctuary as noticed.

3.3.4 Domestic livestock grazing :

The sanctuary is surrounded by river Cauvery. The sanctuary is also surrounded by 24 villages and towns (**Annexure- III**) and the lands adjacent to the sanctuary are irrigated, where paddy and sugarcane are extensively grown with coconut and Arecanut grown in pockets. Though there is no direct access to the islands, when the water is low, straying of cattle in to the Island are not uncommon.

In Puttaiahnakoppalu Island there are few cattle which inhabited this Island long back. There is a custom of leaving cattle to God out of sentimental values. These cattle have become wild and rarely cross the island during summer to the near agricultural fields for grazing. It has been suggested to translocate them. But by and large this big island is free from nesting of migratory birds except bats.

3.3.5 Wild fires :-

There are no fire incidents so far. But adequate precaution has been taken to prevent any such fires during summer.

3.3.6 Insect attack and pathological problems :

Until now no epidemics have been noticed in resident or migratory birds.

Ranganathittu bird sanctuary has a colorful variety of birds. Because of the protection, availability of shelter, ideal condition for roosting and availability of abundant aquatic insects, the local and migratory birds visit Ranganathittu bird sanctuary for breeding.

3.4 Tourism and Tourism Development:

At present tourist facility has been provided at Ranganathittu which includes light and heavy vehicle parking places, paragolas, gardens, wet land garden, drinking water facility, toilet, canteen and boating facility to go round the islets and islands. Since the sanctuary is very close to Mysuru city and historical place of Srirangapattana which are also tourist places themselves and lie close to Mysuru – Bangalore highway, lot of tourists visit the sanctuary.

The details of number of tourists visited the sanctuary and the revenue realized for the past 5 years are as per

Table No-2:- Details of Visitors and Revenue of five years in Ranganathittu Bird Sanctuary

Sl. No	Year	Number of Visitors		Total Visitors	Total Revenue
		Indians	Foreigner		
1	2016-17	299493	4544	304037	2,96,69,375.00
2	2017-18	340632	4509	345141	3,65,78,621.00
3	2018-19	325985	4381	330366	4,07,72,735.00
4	2019-20	347164	4207	351371	4,26,82,601.00
5	2020-21	124235	52	124287	1,61,32,341.00

The graphical and chart representations were made in order to observe the gradual increase in the flow of tourist and revenue in the sanctuary for the past five years .

Chart- 1: The graphical chart of tourist in the sanctuary for the past five years

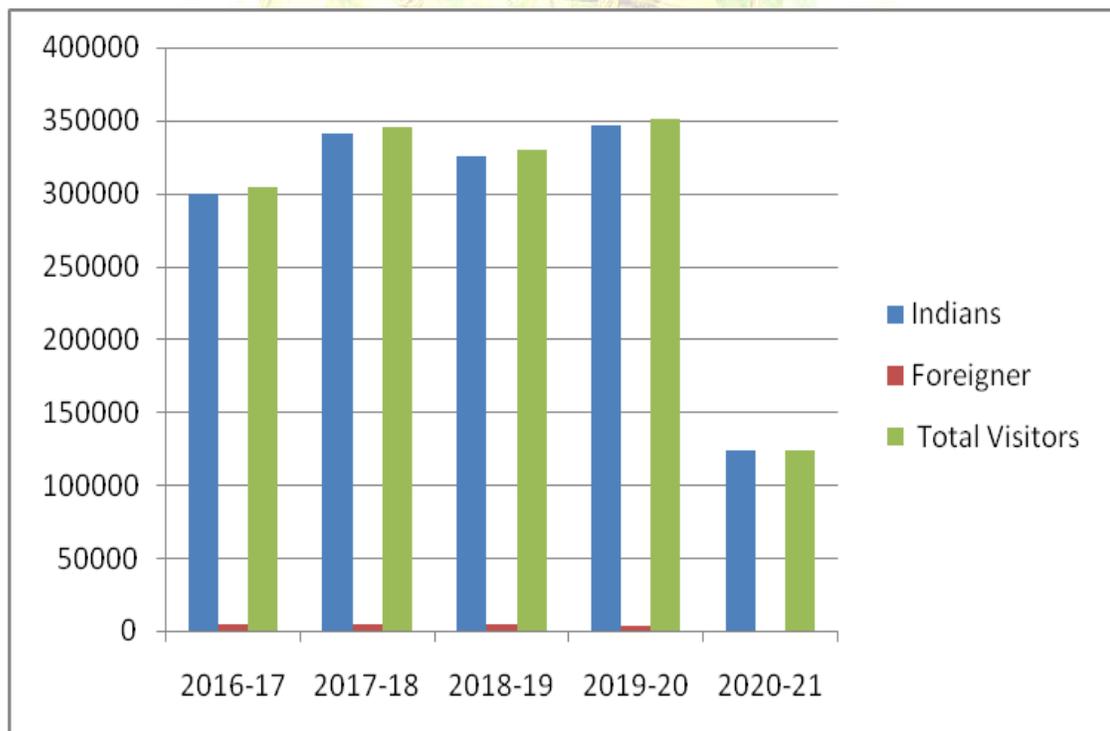
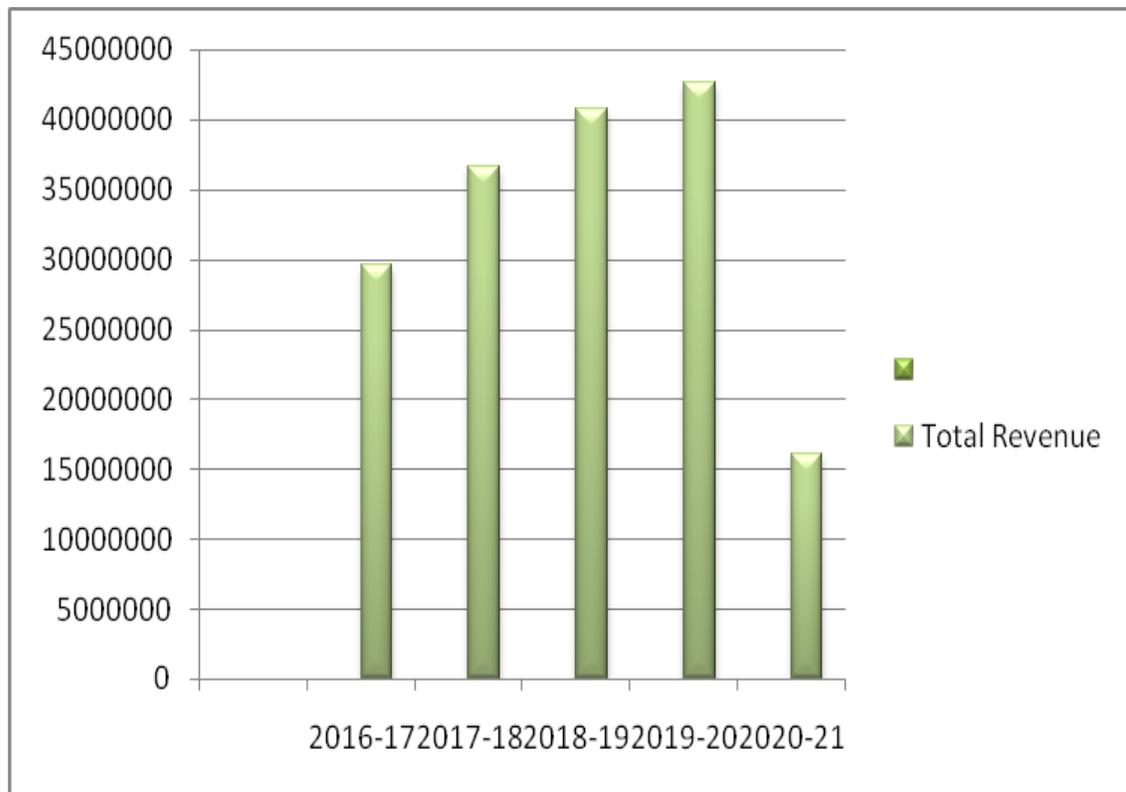


Chart-2: The graphical chart of revenue in the sanctuary for the past five years



Gendehosally islands which are part of Ranganathittu Sanctuary has not been developed as tourist centre. Three temporary Pargolas, three permanent Paragolas have been constructed in the past to provide resting place to the bird watchers. It is proposed to develop it as Eco-tourism place along with accommodation facilities in order to experience the stay in wilderness, and to educate and create awareness among school children and public through nature education.

The details of activities undertaken in the sanctuary is appended in the form of control forms as prescribed in “Manual for Planning Wildlife Management in Protected Areas and Managed Forests by V.B. Sawarkar , Wildlife Institute of India, Dehra Dun (1995)” from **Annexure no IV to XII**

3.5 Research, Monitoring & Training :

3.5.1 Research, Monitoring

Research work on “The flora of Ranganathittu Bird Sanctuary” has been carried out by Shri K B Sadananda and the work has been published in ‘Mysuru Nature’. However a detailed research on flora and fauna with special reference to changing climatic regime has to be carried out to explore the nativity and other behavioral changes of migratory birds without disturbing the habitation.

Ranganathittu Bird Sanctuary is more or less surrounded by irrigated agricultural fields. The agricultural activities depend upon the release of water from the Krishnarajsagar Dam. The effect of usage of chemical fertilizers & pesticides on avian fauna is not studied. Adequate knowledge may be imparted to farmers regarding use of bio-fertilizers like vermy Compost etc. But in recent years 3 compost pit has been constructed for the disposal of the wastes. Few pits were proposed for vermicompost pits and the compost may used as bio fertilizers to the garden area

3.5.2 Census : Flora:-

This sanctuary has a rich wealth of wild flora and fauna . The flora of Ranganathittu Bird Sanctuary consists of two types of vegetation :

Thorny Scrub Jungle in the central part of the islands where desert conditions prevail.

Broadleaved deciduous forest in the margins where the soil is fertile and water is plenty.

The flora census conducted on 14-2-2018 at Ranganathittu Bird Sanctuary . The details of flora distributed in Islands as shown in **Table No**

Sl. No	Scientific name	Common name	Kannada name	Notes
1	<i>Acacia pennata</i>	-	Kadu seege	Thorny climber with small leaflets
2	<i>Acacia polyantha</i>	-	Bili jali	Thorny tree with papery peeling bark
3	<i>Albizia amara</i>	Bitter albizia/Krishna siris	ಚುಜ್ಜಲು, Chujjalu	Small tree with strap shaped pods

Sl. No	Scientific name	Common name	Kannada name	Notes
4	<i>Alternanthera paronichioides</i>		Kadu honagonne soppu	Hairy herbaceous weed bearing white flowers
5	<i>Alternanthera philoxeroides</i>	Alligator weed	ಬಳ್ಳೆ ಸೊಪ್ಪು	Hydrophytic plant with small flowers to form single globose head on axils of leaves. Generally used as a fodder plant
6	<i>Apluda mutica</i>			Common grass looks like citrus grass
7	<i>Azadirachta indica</i>	Neem	Bevina mara	Tree with pinnate bitter leaves
8	<i>Azolla pinnata</i>	Azolla, water fern		Free floating green-reddish tinged water fern
9	<i>Bambusa arundinacea</i>	Spiny bamboo	Bidiru	Common bamboo species
10	<i>Bambusa vulgaris</i>	Colored bamboo	Bannada bidiru	Yellow colored bamboo
11	<i>Barringtonia acutangula</i>	Indian oak	Neeru halasin mara	Large leaved tree, leaves clustered at apex of branches
12	<i>Breynia vitis-idaea</i>	Coral berry	Kempu hooli	Small shrub with red fruits
13	<i>Caesalpinia bonduc</i>	Bonduc/Physic nut	ಗಜಗ Gajjuga	Spinescent climber with spinescent pods. Leaves pinnate and shiny
14	<i>Cansjera rheedii</i>			Woody climber with yellow-reddish drupes
15	<i>Canthium parviflorum</i>		Kaare	Spiny bush with opposite shiny leaves
16	<i>Carissa paucinervia</i>		Kavale kayi	Spiny shub with zig-zag branches. Fruits are sour in taste
17	<i>Caryota urens</i>	Toddy palm	ಬಗನಿ	Large palm, produces large drooping inflorescence from which toddy is extracted
18	<i>Celastrus paniculatus</i>	Black oil plant	ಜ್ಯೋತಿಷ್ಮತಿ	Lenticulate climber with serrate leaves
19	<i>Ceratopteris thalictroides</i>	Water sprite		Finely dissected leaved fern
20	<i>Coccinia grandis</i>	Little gourd	Thonde kayi	Wiry climber with tendrils, fruits are green with white ribs and later completely turns to red
21	<i>Colocasia esculenta</i>	Taro	Kesuve	Large arrow-shaped leaves and very common marshy herb
22	<i>Combretum ovalifolium</i>			Woody climber preferred by birds to build the nest. Fruits are winged
23	<i>Conyza japonica</i>			Aromatic herb with purplish head inflorescence
24	<i>Crateva mgana</i>	3-leaved creeper	varuna	Small tree with 3-foliolate leaves

Sl. No	Scientific name	Common name	Kannada name	Notes
25	<i>Crinum defixum</i>	Poison bulb	ವಿಷ ಮೂಲೆ	Small herb in rock crevices and marshy areas which produces lily-like white flowers
26	<i>Cuscuta reflexa</i>	Yellow dodder	Beluballi/bandan ike	Leafless yellow colored parasitic twiner
27	<i>Cyperus corymbosus</i>	Sedges		Common sedge with 3-leaved apex
28	<i>Dichrostachys cinerea</i>	Ashy babool	Yeda thuri	Small tree with characteristic pink & yellow colored flowers in spikes
29	<i>Diplazium esculentum</i>	Fern		Fronde (leaf) dissected, common in water margins
30	<i>Dodonaea viscosa</i>	Jamaica switch	Bandarike	Shiny-leaved shrub with inflated fruits
31	<i>Ficus amplissima</i>		Bili Basari	Long petioled Ficus
32	<i>Ficus benghalensis</i>	Banyan tree	Aalada mara	Huge tree with aerial roots hanging from branches, fruits reddish and are likened by birds
33	<i>Ficus heterophylla</i>	Indian Ivy Fig	Bili atthi	Shrub having two types of leaves (simple and lobed)
34	<i>Ficus microcarpa</i>		ಕಲ್ಲು ಆಲ	Branches with small green fruits
35	<i>Ficus racemosa</i>	Cluster fig	Atthi mara	Shiny-leaved fig with fruits clustered on main stem and branches
36	<i>Ficus religiosa</i>		ಅರಳಿ ಮರ	
37	<i>Flacourtia indica</i>			Spinescent bush with sour fruits
38	<i>Flueggea leucopyrus</i>		Bili hooli	Small-leaved shrub with cream-colored fruits
39	<i>Gymnosporia emarginata</i>			Spinescent bush similar to Flacourtia indica, but having inflated fruit
40	<i>Homonoia riparia</i>	River croton	Neeru ganigale	Shiny lanceolate leaved shrub, common on river beds
41	<i>Hygrophila salicifolia</i>	Willow leaf hygro		Shiny opposite leaved spineless bush
42	<i>Ichnocarpus frutescens</i>	Dog bane	ಕಲ್ಲು ಹೂವ ಬಳ್ಳಿ	Large climber with opposite leaves and cream colored inflorescence
43	<i>Ipomea alba</i>	Moon flower	ಚಂದ್ರ ಪುಷ್ಪ	Heart-leaved climber with large white flowers which blooms in night and opens only upto 9 AM
44	<i>Ipomea carnea</i>			Shrubby Ipomea with pink flowers and very common in marshes
45	<i>Ipomea sp</i>			Climber having heart-shaped leaves
46	<i>Ipomea staphylina</i>	Clustered morning glory	Ugani hambu	Huge straggler/climber with alternate broad leaves

Sl. No	Scientific name	Common name	Kannada name	Notes
47	<i>Ischemum indicum</i>			Common grass with V-shaped spikes (only two spikes)
48	<i>Justicia betonica</i>			Gregarious shrub with white flowers having prominent papery bracts
49	<i>Lantana camara</i>	Lantana	Lantani	Spinescent shrub
50	<i>Ludwigia octovalvis</i>		Kadu lavanga	Yellow flowered hairy bush
51	<i>Maerua oblongifolia</i>		Nelasakkare gadde	Large climber with semisucculent oblong leaves.
52	<i>Mangifera indica</i>	Mango tree	Mavina mara	Tree with aromatic leaves
53	<i>Merremia chryseides</i>			Climber with small heart-shaped leaves and small yellow flowers
54	<i>Mikania micrantha</i>	Bitter vine		Aromatic opposite leaved gregarious climbing weed with white flower heads
55	<i>Mimosa pudica</i>	Touch me not	Naachike mullu	Spinescent diffuse herb with pinnate leaves and pink flower heads, when we touch leaves it folds inwards
56	<i>Muntingia calabura</i>	Singapur cherry	Gasa gase mara	Shade tree with edible cherry like fruits
57	<i>Oxystelma secamone</i>	Sycamore	ಸೋಮ ಲತೆ , ನೀರಿನ ಸೋಮ ಲತೆ	Common twiner with grass like opposite leaves
58	<i>Pachygone ovata</i>	Fish berry		Bushy climber with small ovate leaves
59	<i>Pandanus odoratissimus</i>	Screw pine	Kedige	Thorny leaved bush, fruit looks like jack fruit
60	<i>Panicum repens</i>			Common grass on river banks and water margins
61	<i>Peltophorum pterocarpum</i>	Yellow gul-mohar		Ornamental tree with attractive yellow colored flowers
62	<i>Pennisetum purpureum</i>	Napier grass		Fodder grass with cylindrical long inflorescence
63	<i>Phaseolus atropurpureus</i>			Twiner with trifoliolate-leaves and purple colored flowers
64	<i>Phoenix sylvestris</i>	Mysore toddy palm	ಈಚಲು	Small palm like tree with crowded leaves at apex, stem with prominent leaf bases
65	<i>Phragmites karka</i>	Tall Reed	Hulugila hullu	Common grass at water margins, with creamy-silky large inflorescence
66	<i>Phyllanthus lawii</i>		Mullu nelli	Spinescent small leaved shrub, common in rocky river beds
67	<i>Phyllanthus reticulatus</i>		Sanna kage soppu	Small shiny leaved bush with black fruits
68	<i>Pithecellobium dulce</i>	Curl brush bean	Seeme hunise	Medium sized tree with curled pods

Sl. No	Scientific name	Common name	Kannada name	Notes
69	<i>Plecosperrum spinosum</i>		Bendaka	Only climber in Moraceae
70	<i>Polygonum barbatum</i>	Knot weed	Konde Malle	White flowered spikes, small herbaceous hydrophyte
71	<i>Pongamia pinnata</i>	Pongam	Honge	Common shade tree
72	<i>Prosopis juliflora</i>	Mesquite	Bellari jali	Fast growing exotic tree with prominent thorns, flowers in long cylindrical spike (yellow clored) with prominent green-yellow colored pods
73	<i>Pteris vittata</i>	Pteris		Small fern in shades
74	<i>Saccharum arundinaceum</i>		ಕಾಡು ಕಬ್ಬು	Looks like sugar cane, but not tasty.
75	<i>Saccharum spontaneum</i>	sacred grass	ದರ್ಬೆ	Sacred grass with sharp blade and white long inflorescence
76	<i>Salix tetrasperma</i>	Swallow willow	ನೀರಂಜಿ	Small tree, under surface of the leaves ashy
77	<i>Samanea saman</i>	Rain tree	Male mara	Large shade tree
78	<i>Scutia myrtina</i>	Small jujube	Kurudi	Thorny shrub having black-colored fruits
79	<i>Senna auriculata</i>	Tanner's Cassia	Aavarike	Yellow flowered shrubby Cassia with characteristic ear-shaped stipules at the base of leaves
80	<i>Senna spectabilis</i>	Spectacular Cassia	Seeme thangadi	Small tree with shiny leaflets and yellow flowers
81	<i>Sida cuneifolia</i>			Glabrous shrub, having small cuneate leaves and yellow flowers
82	<i>Solanum laeve</i>			Small shrub with white flowers and green-yellow berries
83	<i>Streblus asper</i>	Siamese rough-bush	Mitle mara	Rough leaved small tree
84	<i>Stylosanthes fruticosa</i>	Wild Lucerene		3-foliolate small leguminous shrub with small yellow flowers
85	<i>Synostemon bacciforme</i>			small prostate herb with small succulent leaves and fruits at the back of leaves
86	<i>Syzygium cumini</i>	Jamun	Nerale mara	Opposite leaved tree with purple edible drupes
87	<i>Terminalia arjuna</i>	Arjun myrobalan	ಹೋಳೆ ಮತ್ತಿ	White peeling barked tree
88	<i>Themeda triandra</i>		Bettanchi hullu	Long fodder grass with tufts of spikes at regular intervals
89	<i>Thunbergia alata</i>	Black eyed susan		Small twiner with winged petiole and flower yellow with dark mouth

Sl. No	Scientific name	Common name	Kannada name	Notes
90	<i>Tinospora cordifolia</i>	Moon creeper	ಅಮೃತ ಬಳ್ಳಿ	Heart-leaved climber, when in flower plant defoliated and plant produces thin aerial hanging roots
91	<i>Trewia nudiflora</i>	False-white teak	Kumbala mara	Common riverine tree with broad ovate leaves
92	<i>Urena lobata</i>	Bur mallow	Kaadu thutthi	Pink-flowered small shrub with lobed leaves
93	<i>Ventilago madraspatana</i>	Red creeper	Haruge	Huge climber with winged fruits
94	<i>Wedelia trilobata</i>	Yellow Daisy		Yellow flowered, 3-lobed leafy runner
95	<i>Ziziphus oenoplia</i>	Wild jujube	Mullu hannu	Thorny wild jujube straggler
96	<i>Leucaena leucocephala</i>	Subabul	Subabul	Tree with minute pinnate leaves, white flower heads. Flat green-pink pods.

BIRD SURVEY METHODOLOGY

1. DIRECT SIGHT METHOD

Please take care to avoid disturbing the birds during the survey. Flushing birds from nests or away from young could be very detrimental. During periods of prolonged cold weather any disturbance which causes the birds to expend additional energy places stress on them at a time when they may find it difficult to survive the cold conditions. Survey the whole of a predefined area recording numbers of all bird species. Counts of gulls and terns are optional. Also include escaped birds and hybrids which should be recorded as hybrid duck or hybrid goose. Birds flying overhead e.g. Pink-footed Geese should be excluded from the main count unless they are obviously using the site (i.e. flying from one part of the water body to another area). However, do note overflying birds in the additional information box, recording the species, number, direction of flight and time.

If a bird is heard but not seen, it can be recorded as present but no count number should be allocated. No estimates should be made for secretive birds which are not detected during the count; only birds seen or heard should be recorded. If you consider that the count is (e.g. obscured by fog or wind-blown waves), this can be indicated on the survey form.

Record the total number of individuals of a species and where possible, the number of males and females. Where it is not possible to differentiate between the sexes, or if you are unsure of the sex (e.g. during eclipse plumage or when birds are immature), the sex ratio counts can be omitted. It is not necessary to assign a sex to every bird which is counted e.g. a flock of 50 Goldeneye which contains 20 males would be entered as 50 in the Total Count box and 20 in the Male Count box. The female count may be left blank if you are unsure about the numbers of females and immature birds. In addition to recording the numbers of birds, breeding codes should also be recorded when applicable.

The number of birds in large flocks is generally estimated by initially counting the individuals within a block (e.g. 10 or 20 birds) and then by counting the numbers of such blocks in the flock. Groups of 50 or 100 can be used if the flocks are very large and an allowance made for the varying densities of birds.

2. NEST COUNT METHOD

Nest monitoring is essential for measuring the reproductive success of a population, which is important for identifying changes in a population's birth rate. Nests can be found either through systematic searching of the birds' preferred habitat or by watching birds for behavioural clues. A researcher can then track the success of each nest by regularly checking nests for signs of hatching, fledging, or predation.

Nest monitoring can also provide extremely valuable information about nesting behaviour, habitat selection, and nest predation. Cameras can be used to study bird nesting behaviours, or even to catch nest predators in the act. The timing of breeding in relation to weather variables can be studied, as well as the size of eggs and chicks in relation to food quality and abundance. Records of habitat variables at each nest provide helpful information on the birds' nest site selection criteria, and maps of all nests found in a study area allow for examination of how territories are distributed through the habitat.

3.ROOST COUNT METHOD

In some circumstances, supplementary counts of selected species may provide useful additional information when assessing the importance of sites. This may include, for example, roost counts of cormorants, goosanders, gulls or snipe that are absent from the site when the Core Counts are made. Such counts can also be made on a monthly basis, ideally on the same date as the core count, using another copy of the form, marked 'Roost Count' and recording the start and end times. Cormorants, goosanders and gulls are best counted flying into their roost during the hour before sunset and for up to 30 minutes afterwards. Snipe which can be difficult to count accurately during the daytime without disturbing them fly out from their roost after dusk to feed during the night. Their calls and habit of flying high up into the sky, making their silhouettes clearly visible, present an ideal opportunity to obtain an accurate count of roost numbers

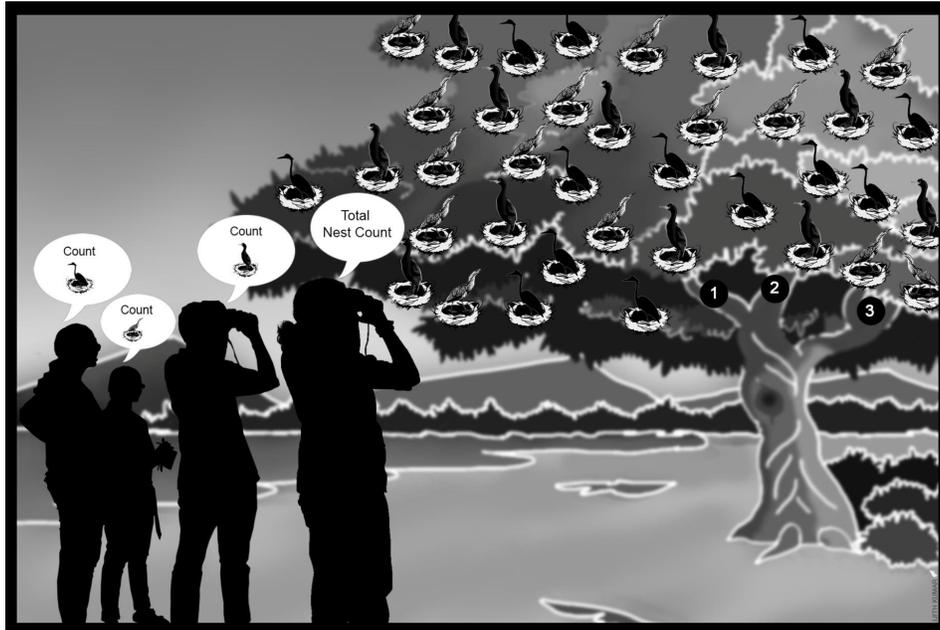
4.PHOTOGRAPHIC METHOD

A photograph can also be useful for retrospectively counting the individuals in a flock. If large numbers of birds are moving, or are thought likely to leave (e.g. because of impending disturbance), the following should allow at least an approximate count: Make a quick total count (don't separate species); then make a quick assessment of proportions of species, starting with the most common species; then re-scan slowly for less common species; finally, scan slowly through the whole flock recording accurate counts of separate species. A tally counter and note book may be useful in addition to the recording form.

FIELD TECHNIQUE

Counts in small heronries can be recorded by a single observer but in large heronries in trees with >100 nests are very difficult to count. There is high chance of error while counting a large heronry by a single observed hence **multiple-observer methods** are advised. It is also advised to have a same survey team because when **same**

observer(team) is involved in counting from year to year there is much less variation that when counted by different individual.



TIME OF DAY AND COUNT CONDITIONS

Morning is usually the most suitable time as many species are most active at that time. Counts should be completed within four hours at the most. Sites requiring more time should ideally be divided into sub-sections, with two or more counters used to cover the site. Ensure that the weather is safe and suitable for surveying and avoid conditions which present a hazard to surveyors or the birds. If necessary, avoid surveying during severe spells of cold weather in order to prevent disturbance to birds.

DATES

Counts are made once in three month, on or as near as possible to the predetermined priority count dates.(Nov/Feb/May/ Aug).

USEFUL / ESSENTIAL EQUIPMENT

- ✓ Binoculars / telescope
- ✓ HD cameras
- ✓ Bird ID guide
- ✓ Flora ID guide

- ✓ A tally counter may be useful where large numbers of birds are present
- ✓ Protected area map
- ✓ Bird count forms

Do's and Dont's:-

- ✓ Don't make loud noise close to birds.
- ✓ Don't go too much nearest to islands
- ✓ Don't wear bright clothes.
- ✓ Keep the mobiles Airplane mode ..
- ✓ Don't make any photography other than the census.
- ✓ No guess works and record only seen.
- ✓ Be a team player .

Summary of Bird Census:

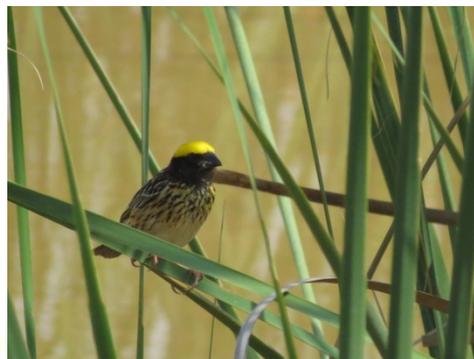
The sanctuary is a very popular bird watching destination in the south visits annually more than 35,500 visitors including Indian and foreigners generates good amount of government revenue. The sanctuary has small deciduous scrub forests habitat includes thorny scrub jungle on the islands and broad leaved deciduous forest on the margins support good diversity of terrestrial avifauna as recorded 45 species during the preliminary bird census in 2018.



Already acquired additional land along the periphery of the sanctuary to expand its terrestrial forests area for eco-development for the habitat of more species of terrestrial avifauna and other animals. Having it's enough potential the overall habitat can be developed on environmental & ecological perspective as a diverse bird sanctuary through a long term eco-development cum conservation project in consultation & guidance of ecologists/ wildlife field

biologists/ ornithologists, to make it an unique international standard bird sanctuary as well to get it designated as a world class Ramsar Site in near future.

Ranganathittu Bird Sanctuary is re-enlisted as one of 467 IBA (Important Bird & Biodiversity Area) Sites in India by the Birdlife International in partnership with BNHS on the **IBA Criteria: A1, A4i** (Threatened Species: Spot-billed Pelican, Painted Stork, Oriental Darter, Black-headed Ibis, Greater Spotted Eagle and $\geq 1\%$ Biogeographic population of Painted Stork).



As per bird census records of the sanctuary in 2018, 2019 and 2020-21 total 87 avifaunal species (37 species of water birds + 50 species of terrestrial birds have been recorded although it's not the complete avifaunal diversity in one season and the census was mainly focused on breeding water birds and partial coverage of terrestrial birds too. The compiled census data attached with this summary report for information. After analysis of the census data it confirms regular breeding colony of the following 30 species of water birds successfully breed here and their population gradually increases:-

Sl. No	Bird's English Name	Scientific Name	Common Status	WPA Status	IUCN Status	IBA Status
WATER & WATER DEPENDANT BIRDS:-						
1	Indian Pond Heron	<i>Ardeola grayii</i>	R	Sch-IV	LC	-
2	Grey Heron	<i>Ardeola cinerea</i>	R	Sch-IV	LC	-
3	Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	R	Sch-IV	LC	-
4	Cattle Egret	<i>Bulbulcus ibis</i>	R	Sch-IV	LC	-
5	Little Egret	<i>Egretta garzetta</i>	R	Sch-IV	LC	-
6	Large Egret	<i>Casmerodius albus</i>	R	Sch-IV	LC	-
7	Intermediate egret	<i>Ardea intermedia</i>	R	Sch-IV	LC	-
8	Eurasian Spoonbill	<i>Platalea leucorodia</i>	W	Sch I (Part III)	LC	-
9	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	R	-	LC	-
10	Red-wattled Lapwing	<i>Vanellus indicus</i>	R	-	LC	-
11	Great Stone Curlew/ Thick-knee	<i>Esacus recurvirostris</i>	R	Sch-IV	NT	-
12	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	R	Sch-IV	LC	-

13	Stork-billed Kingfisher	<i>Pelargopsis capensis</i>	R	Sch-IV	LC	-
14	Lesser Pied Kingfisher	<i>Ceryle rudis</i>	R	Sch-IV	LC	-
15	Common Kingfisher	<i>Alcedo atthis</i>	R	Sch-IV	LC	-
16	Little Cormorant	<i>Phalacrocorax niger</i>	R	Sch-IV	LC	-
17	Indian Cormorant	<i>Phalacrocorax fuscicollis</i>	R	Sch-IV	LC	-
18	Great Cormorant	<i>Phalacrocorax carbo</i>	W	Sch-IV	LC	-
19	Red-rumped swallow	<i>Cecropis daurica</i>	M	-	LC	-
20	Streak-throated Swallow	<i>Petrochelidon fluvicola</i>	R	-	LC	-
21	Barn Swallow	<i>Hirundo rustica</i>	W	-	LC	-
22	Asian Openbill	<i>Anastomus oscitans</i>	W	Sch-IV	LC	-
23	Oriental Darter	<i>Anhinga melanogaster</i>	R	Sch-IV	NT	-
24	Black-headed Ibis	<i>Threskiornis Melanocephalus</i>	M	Sch-IV	NT	-
25	River tern	<i>Sterna aurantia</i>	R	Sch-IV	NT	-
26	Indian Moorhen	<i>Gallinula chloropus</i>	R	-	LC	-
27	Black Bittern	<i>Ixobrychus flavicollis</i>	M	-		-
28	White-browed Wagtail	<i>Motacilla maderaspatensis</i>	R	-	LC	-
29	Brahmini Kite	<i>Haliastur indus</i>	R	-	LC	-
30	Lesser Fish Eagle	<i>Ichthyophaga humilis</i>	R	-	NT	-
TERRESTRIAL BIRDS:-						
1	Indian Peafowl	<i>Pavo cristatus</i>	R	Sch-I (Prt-III)	LC	B11
2	House Crow	<i>Corvus splendens</i>	R	Sch-V	LC	-
3	Indian Jungle Crow	<i>Corvus culminatus</i>	R	-	LC	-
4	Eurasian Collared Dove	<i>Streptopelia decaocto</i>	R	Sch-IV	LC	-
5	Spotted Dove	<i>Stigmatopelia chinensis</i>	R	Sch-IV	LC	-
6	Laughing Dove	<i>Spilopelia senegalensis</i>	R	Sch-IV	LC	-
7	Rose-ringed Parakeet	<i>Psittaculata krameri</i>	R	Sch-IV	LC	-
8	Blue-tailed Bee-eater	<i>Merops philippinus</i>	M	Sch-IV	LC	-
9	Green Bee-eater	<i>Merops orientalis</i>	R	Sch-IV	LC	-
10	Red-vented Bulbul	<i>Pycnonotus cafer</i>	R	Sch-IV	LC	-
11	Red-whiskered Bulbul	<i>Pycnonotus</i>	R	Sch-IV	LC	-
12	Common Tailorbird	<i>Orthotomus sutorius</i>	R	-	LC	-
13	Ashy Prinia	<i>Prinia socialis</i>	R	-	LC	B11
14	Common Myna	<i>Acridotheres tristis</i>	R	Sch-IV	LC	-
15	Jungle Myna	<i>Acridotheres fuscus</i>	M	Sch-IV	LC	-
16	Oriental Magpie Robin	<i>Copsychus saularis</i>	R	-	LC	-
17	Indian Robin	<i>Saxicoloides fulicatus</i>	R	-	LC	B11
18	Pale-billed Flowerpecker	<i>Dicaeum erythrorhynchos</i>	R	Sch-IV	LC	-
19	Purple-rumped Sunbird	<i>Leptocoma zeylonica</i>	R	Sch-IV	LC	-
20	Tickle's Blue Flycatcher	<i>Cyornis tickelliae</i>	R	Sch-IV	LC	-
21	White-spotted Fantail	<i>Rhipidura albogularis</i>	R	-	LC	-
22	Great Tit	<i>Parus major</i>	R	Sch-IV	LC	-

23	Indian Silverbill	<i>Euodice malabarica</i>	R	Sch-IV	LC	-
24	Red Avadavad	<i>Amandava amandava</i>	M	Sch-IV	LC	-
25	Black-headed/Tricolor Munia	<i>Lonchura malacca</i>	M	Sch-IV	LC	-
26	Crested Serpent Eagle	<i>Spilornis cheela</i>	M	-	LC	-
27	Asian Koel	<i>Eudynamys scolopaceus</i>	R	-	LC	-
28	Indian Grey Hornbill	<i>Ocyceros birostris</i>	R	-	LC	B11
29	White-cheeked Barbet	<i>Psilopogon viridis</i>	R	Sch-IV	LC	-
30	Greater Coucal	<i>Centropus sinensis</i>	R	-	LC	-
31	Baya Weaver	<i>Ploceus philippinus</i>	M	Sch-IV	LC	-
32	Greenish Warbler	<i>Phylloscopus trochiloides</i>	P	-	LC	-
33	Oriental White-eye	<i>Zosterops palpebrosus</i>	R	-	LC	-
34	Ashy-crowned Sparrow-Lark	<i>Eremopterix griseus</i>	M	-	LC	B11
35	Pied Bushchat	<i>Saxicola caprata</i>	R	-	LC	-
36	Common Iora	<i>Aegithina tiphia</i>	R	Sch-IV	LC	-
37	White-naped Woodpecker	<i>Chrysocolaptes festivus</i>	R	Sch-IV	LC	B11

ABBREVIATIONS

<W=Winter Migrant, P=Passage Migrant, S=Summer Migrant, M=Local Migrant, R=Resident, O= Occasional Species>

[WPA Status=Wildlife Protection Act, 1972 Scheduled Bird Species Status: (Schedule I, IV, V); IUCN Status= Threatened Bird Species Status: (NT =Near Threatened Species, LC =Least Concern Species; IBA Status = Important Bird & Biodiversity Area Species Status: (B11 =Biome 11: Indo-Malayan Tropical Dry Zone Species; B10: = Biome 10: Indian Peninsula Tropical Moist Forest Species)]

Apart from overall species of Indian scheduled avifauna (Sch-I, IV, V) and 07 species of IUCN Red-listed threatened avifauna (NT category) and other major 03 species of IUCN Red-listed threatened aquatic animals are resident in the sanctuary:-

Sl. No	Common Name	Scientific Name	Common Status	WPA Status	IUCN Status
AQUATIC MAMMAL:-					
1	Smooth-coated Otter	<i>Lutrogale perspicillata</i>	R	Sch II (Part I)	VU
AQUATIC REPTILE:-					
2	Mugger or Marsh Crocodile	<i>Crocodylus palustris</i>	R	Sch I (Part II)	VU
RIVER FISH:-					
3	Blue-finned Masheer	<i>Tor khudree</i>	R	x	EN
ABBREVIATIONS					
[WPA=Wildlife Protection Act, 1972 Scheduled Sp (Schedule I, IV, V) IUCN Status= (VU =Vulnerable Sp, EN =Endangered Sp)]					

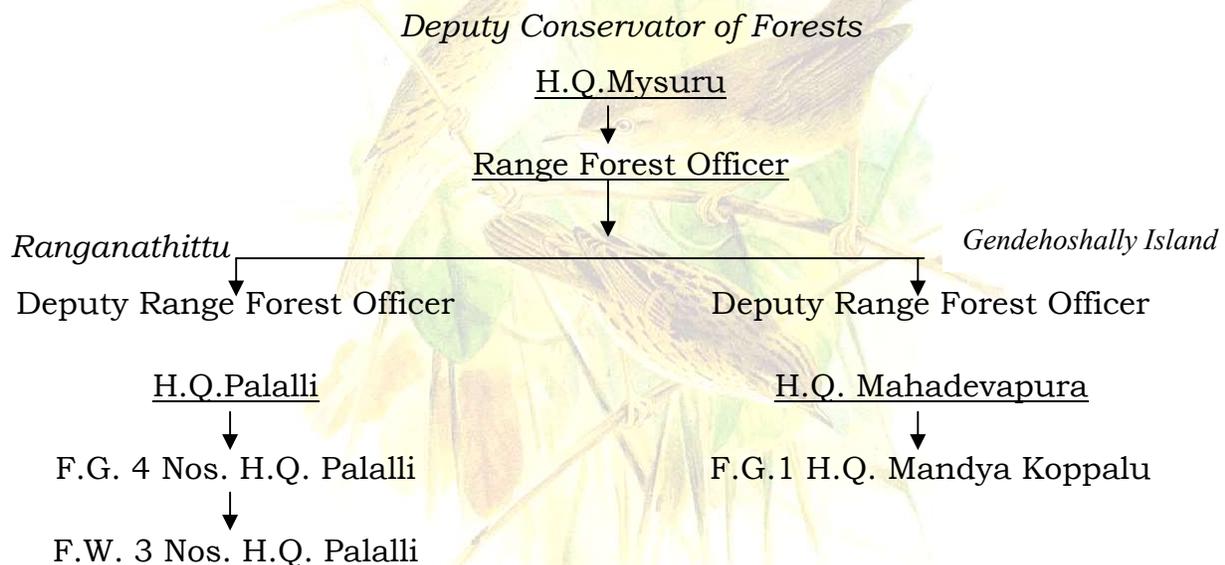
3.5.2 Training :-

The field staff are not well versed in identification of all resident and migratory birds, their behavioral pattern, roosting and breeding details.

No short term training course by Ornithologists has been conducted for the field staff including boatmen accompanying tourists, previously. It is required to update the field staff regarding details of resident and migratory birds.

3.5.3 Administrative set up :-

This bird sanctuary is under the administrative control of Principal Chief Conservator of Forests, (Wildlife), Bangalore and Conservator of Forests, Mysuru Circle, Mysuru. Range Forest Officer stationed at Mysuru is in charge of this sanctuary who works under Deputy Conservator of Forests, Wildlife Division, Mysuru. The Organization Chart is as under:



3.5.4 Communication :

Tourism part of Ranganathittu bird Sanctuary is provided telephone facilities with internet service. Since the sanctuary is located adjacent to Mysuru-Bangalore highway and very near to Mysuru city, it is easily approachable.

3.5.5 Summary of threats to Wildlife:-

The major threat to wildlife in this sanctuary is the release of excess water during monsoon from Krishnaraj sagar dam located upstream side. Release of water increases the water level around the islands causing damage to the eggs and young ones of roosting birds.

In Gendehosahally portion of this sanctuary, cattle grazing is the major problem since the area is surrounded by irrigated agricultural fields. During summer season, there will be no virtual isolation of islands from adjacent fields due to very low of water.



4.1 The existing situation in the Zone of influence:

The people residing around the sanctuary are not using this area directly for any purpose. Since there is no dependency on the protected area, people around the protected area are much co-operative. Because of the round the year irrigation facilities, farming is the major occupation.

Farmers are actually benefited by birds, because to certain extent they feed on the insects in these fields and control the pest population.

But usage of chemicals and fertilizers and pesticides by farmers to protect the agricultural crop may influence the population of insects and other amphibians and fishes, which are the feeding grounds of some migratory birds. The after effects are not yet studied. But these activities have no influence on the population of the migratory birds as per the census. Even then the farmers may be educated and encouraged in using bio fertilizers and other less harmful pesticides.

PROPOSED MANAGEMENT

5. Plan Objectives and Problems :

Ranganathittu is Karnataka's famous water bird sanctuary. There is ample scope for developing this sanctuary. Only a small portion of the sanctuary is opened for tourist. Hence this plan is drawn for opening the rest of the sanctuary area including the Gendehosally portion for the Eco tourism purpose for a period of Ten years from 2021-22 to 2030-31

5.1. Objectives:

- a) To protect eco-system and conserve the Floral and Faunal diversity.
- b) To restore the existing islands by consolidation of bund and recouping by filling with external soil and planting with site specific species of the islands.
- c) To develop eco-tourism for recreation, education and scientific exploration.
- d) To involve the local people in the implementations of conservation and developmental programmes so that a balanced relationship is developed between man and nature.
- e) To develop eco-tourism for recreation, education and scientific exploration in Gendehosally portion of sanctuary.
- f) To develop woodlots mainly comprising of fruit yielding tree species which attract more birds to the sanctuary.

5.2 Problems in achieving objectives:

Flood is the major threat. During monsoon Krishnarajasagar Dam constructed on upper side of the stream poses threat. To maintain the safety of the reservoir excess water will be released periodically in monsoon season. If

the release of water crosses one lakh cusecs, certainly it damages the nesting trees and nests may be washed away by the water current.

In Gendehosahally part of the sanctuary, since the inflow of water is very low during summer and virtually no barrier for the illegal entry of cattle, cattle grazing by adjacent farmers is posing a serious problems.

The profuse regeneration of exotic plants like subabul found in Gendehosahally islands is hindering the growth of fruit yielding and other trees suitable for nesting of birds.



6.1 Boundaries:

The Eco tourism part of Ranganathittu is Ranganathittu state forest, an island amidst of Cauvery river with an extent of 26.6 Ha. Other two islands are called Devaraja islands in river Cauvery located near Krishnarajsagar dam, with an extent of 6 Ha. Gendehosahally part of the sanctuary comprises of four islands and islets in the midst of river Cauvery with an extent of 34.25 Ha. But survey conducted by Working Plan, Mysuru reveals the area is about 86.28 Ha.

Since all these islands of the sanctuary are encircled by river Cauvery, the external boundaries are well defined.

6.2 Zonation :

As such the habitat is restricted to islands. These area can be treated as core zone which is having a zero disturbance. Fishing activities are banned in these premises. Hence absolutely, the area is free from threat of illegal hunting. Adding to this, the population of marsh crocodiles is in a mutual symbiotic existence with birds. No fisherman dares to come for fishing within the sanctuary limits. Crocodiles also pose no threat either to birds or to tourists. Since the area is provided round the clock protection, the increase in fish population provides food for crocodiles.

The acquired area at Ranganathittu which is outside the protected area can be treated as eco-tourism zone. One fully furnished canteen and pargolas, pay and use toilet, parking areas have been constructed. The remaining area is beautified by landscaping. Already proposed area existing near Ranganathittu were acquired and woodlots were established and further acquisition are proposed for the area existing near Ranganathithu and Gendehosahally, which will ease the congestion of tourists during vacation season.

There are number of villages surrounding the sanctuary where most of the fields are irrigated by Krishnarajasagar dam. The crop pattern is very much favorable to be good bird forage grounds. This area can be treated as buffer area. Paddy and sugarcane fields are suitable for birds to prey on insects, frogs etc for themselves and to feed their chicks.

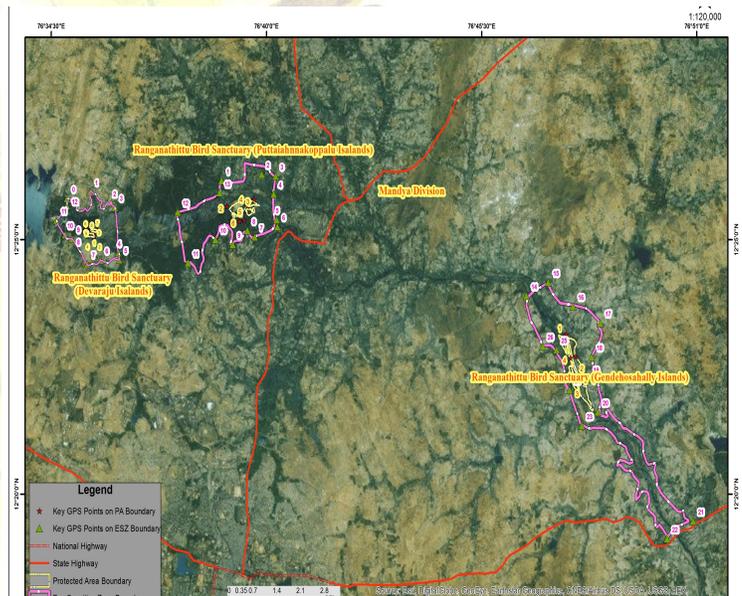
Restoration Zone:

Birds in this sanctuary have selected the islands which are totally isolated and covered by deep water for nesting activities. Hence small islets have to be created and consolidated mechanically and planted with suitable vegetation which will improve the habitat for nesting and breeding of birds. An area of 2 Ha. near Ranganathittu and 4 Ha. near Gendehosahally has to be purchased for further development of the sanctuary and use it as administrative zone.

Eco Sensitive Zone

Eco Sensitive Zone of Ranganathittu Bird Sanctuary declared vide notification No S.O. 3577 (E) [9th November 2017] by Ministry of Environment, Forests And Climate Change, New Delhi .

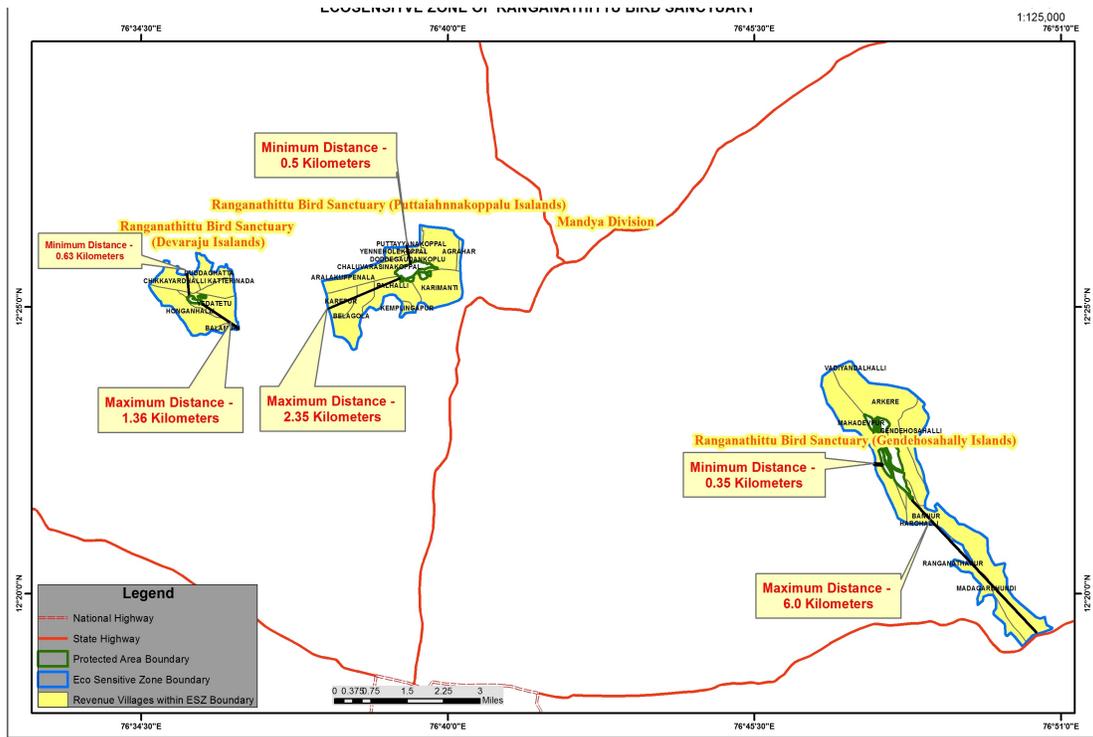
The total geographical area of the Eco-sensitive Zone is 28.04 square kilometers with an extent varying from 0.63 KM



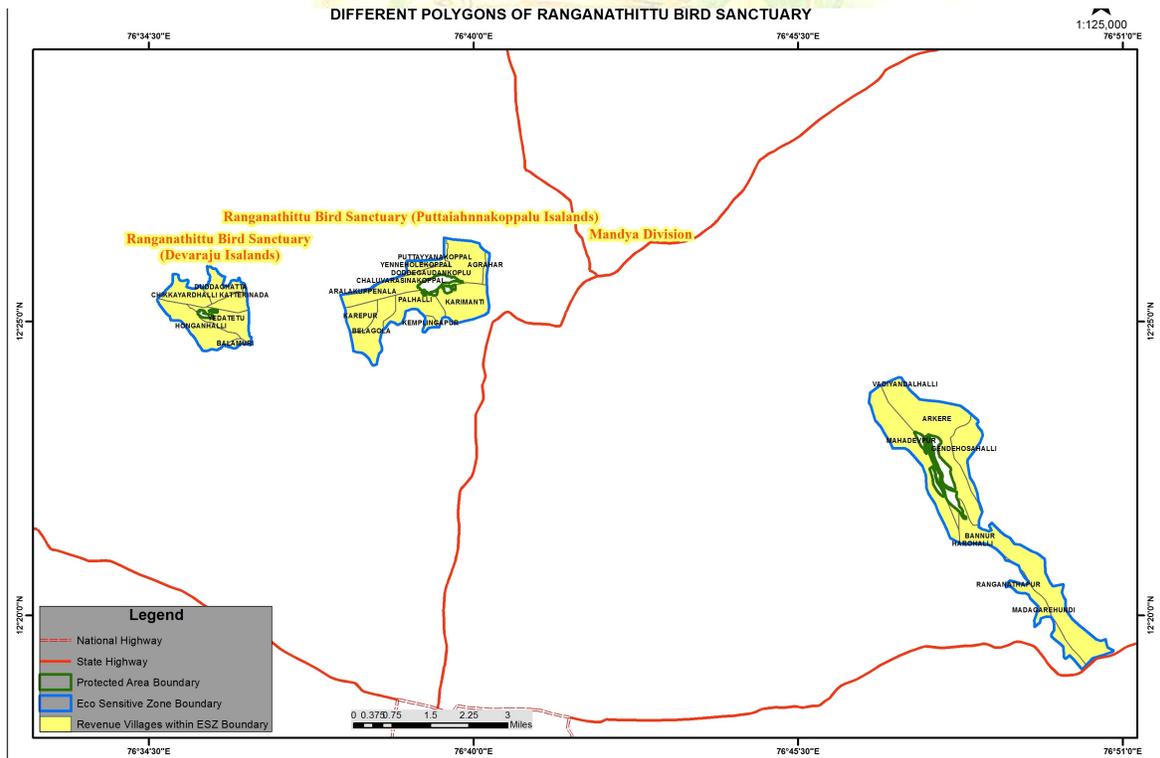
MAP No-4: The PA & ESZ Boundary on Google map

to 1.36 kilometers from the boundary of Devaraja islands of the Sanctuary; 0.50 kilometers to 2.35 kilometers from the boundary of Puttaihakkoppalu islands of the Sanctuary and 0.35 kilometers to 6.0 kilometers from the boundary of the Gendehosahally islands of the Sanctuary and included 26 villages .

MAP No-5 :- The Map showing the details of Minimum and Maximum distance ESZ from PA boundary of Ranganathittu Bird Sanctuary



MAP No-6 :- The Map showing PA/ESZ Boundaries with Forest/village boundary on different polygons of Ranganathittu Bird Sanctuary



RAMSAR SITE

Ranganathittu Bird Sanctuary covers the following Ramsar Criteria with regular bird census, field monitoring in different seasons in a year and analysis of recorded data from time to time as well monitoring of other aquatic animals to record their status including population estimate.

Criteria. Sites containing representative, rare or unique wetland types

Criteria: 1A: A wetland should be considered internationally important if it contains a representative, rare, or unique example of a natural or near-natural wetland type found within the appropriate biogeography region.

Remarks: Ranganathittu Bird Sanctuary wetland is a unique example of near-natural wetland type found within the appropriate biogeographic region i.e. Deccan Plateau in South India

Group B: of the Criteria. Sites of international importance for conserving biological diversity

Remarks: This wetland has international importance for conserving rich biological diversity contains 96 species of flora includes endemic species, more than 78 species of avifauna includes IUCN Red-listed 07 threatened species, VU category of aquatic reptile species, aquatic mammal species and EN category of fish species.

Criteria based on species and ecological communities

Criterion 2: A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities.

Remarks: The wetland may support vulnerable and endangered species of aquatic animals as Mammal: Smooth-Coated Otter and Reptile: Marsh Crocodile.

Criterion 3: A wetland should be considered internationally important if it supports populations of plant and/or animal species important for maintaining the biological diversity of a particular biogeographic region

Remarks: The wetland may support population of water bird species like Spot-billed Pelican, Painted Stork, Oriental Darter, Black-headed Ibis for maintaining the biological diversity of a particular biogeographic region: Deccan Plateau and already supports $\geq 1\%$ biogeographic population of Painted Stork as confirms IBA criteria A4i.

Specific criteria based on water birds

Criterion 6: A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of water bird

Remarks: The wetland may support 1% of the individuals in a population of each species of water birds as Spot-billed Pelican, Painted Stork, Asian Open bill, Black-headed Ibis but need consecutive census in different seasons of a year to record their population to compare their percentage of global population.

Specific criteria based on fish

Criterion 7: A wetland should be considered internationally important if it supports a significant proportion of indigenous fish subspecies, species or families, life-history stages, species interactions and/or populations that are representative of wetland benefits and/or values and thereby contributes to global biological diversity.

Remarks: The wetland may support this criteria having indigenous fish species (EN) Blue-finned Masheer (*Tor khudree*) is resident in the Ranganathittu Sanctuary wetland but needs regular census to record its abundance of significant proportion can contribute to global biological diversity.

Specific criteria based on other taxa

Criterion 9: A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of wetland-dependent non avian animal species.

Remarks: The wetland may support this criterion having 02 IUCN Red-listed threatened species (VU) of aquatic non avian animal i.e. aquatic Reptile: Mugger or Marsh Crocodile (*Crocodylus palustris*) and aquatic Mammal: Smooth-coated Otter (*Lutrogale perspicillata*) are resident species of Ranganathittu wetland. Regular census is required to record their population to compare the percentage of global population.

6.3 Theme Plans :

The following strategies are proposed for meeting the objectives of management.

6.3.1 Habitat improvement :

Habitat improvement will be based on the following considerations.

- a) Protecting area against biotic degradation.
- b) Improving the habitat for birds and other fauna.
- c) Conserving, protecting and increasing the bio diversity.
- d) Extensive planting of Neeranji cuttings in the islands during November and December.
- e) The trees presently being used by birds for nesting should be protected from flood waters, duly strengthening the islets by constructing rubble stone revetment.
- f) Tree planting with suitable species should be taken up to ensure the future availability of good nesting sites. The barren patches in the island because of alkaline soil need be planted with trees after suitably treating the soil. Exotic weeds found in the islands especially at Gendehosally need to be replaced with fruit species and species suitable for roosting.
- g) Measures for controlling predators like monkeys, to be taken up by catching and translocating them to elsewhere.

6.3.2. Strategies to overcome protection problems:

6.3.2.1 Control of illegal fishing:

Fishing is totally banned within the sanctuary area. Day and night patrolling is done to prevent illegal fishing. Boats used for tourism are being used for night patrolling.

6.3.2.2 Control of illegal grazing :

Since the sanctuary is surrounded by villages and irrigated fields, in summer when there is very inflow of water, cattle are driven inside the sanctuary for illegal grazing. To control this, the following strategies have been proposed

1. Erection of chainlink mesh all along the boundary of the Gendehosally island should be done mainly for boundary demarcation and to prevent illegal entry, cattle grazing and sand lifting in the sanctuary area.

6.3.2.3 Control of illegal removal of timber, fuel wood and NTFP:

As such there is no big problem of illegal removal of timber, fuel wood and NTFP in the sanctuary area, strict vigil and patrolling is done by the staff and employing watchers to contain this problem.

6.3.2.4 Fire Protection:

Since the Islands of the sanctuary is comprised of deciduous scrub forest with lot of grass, the islands are vulnerable for fire. Hence clearing of Fire line along the road side and other vulnerable places needs to be taken up in advance during the summer. Fire patrol watchers need to be engaged to put off any accidental fire.

6.3.2.5 Publicity to create awareness:

To spread the message of conservation of wildlife, publicity material like brochures, handbills should be prepared and distributed freely among the tourists. Nature camps , trainings and awareness programmes should be conducted to the general public, school children and the people surrounding villages to educate and create awareness regarding the importance of conserving wildlife.

7. General:-

Ranganathittu Bird Sanctuary happens to be a famous eco-tourism spot for watching birds. Srirangapattana, Mysuru Palace, Chamundihills, Krishnarajasagara Dam, Zoo etc are other linked places of attraction. Boating all along the side of the islands closely watching various resident and migratory birds is a wonderful experience to the tourists. The Rowing boats which are not at all disturbing the peaceful existence of birds is a unique feature. In future, also motor boats should not be used for this purpose. This is a good example for riverine eco system. Presence of marshy crocodiles, otters, various species of fishes, and abundant water plants and algae is a unique feature. From point of view of conservation education Ranganathittu Bird Sanctuary is adjudged a best spot.

7.1 Objectives:

- a) To develop eco-tourism for recreation, education and scientific exploration.
- b) To provide wilderness experience to genuine enthusiasts in particular and to the public in general.
- c) To educate the people especially living nearby the sanctuary areas regarding the need to maintain such sanctuary and their by enlisting their co-operation.
- d) To develop love for all forms of birds, wild life and plants and to inculcate the idea of conservation of bio diversity in the minds of the public in general and children in particular.

7.2 The Strategies:

The sanctuary has got good approach from Bangalore, Mysuru and Mandya. Only Raganathittu portion of Raganathittu bird sanctuary has been opened for tourists. But now it's time to open the Gendehosally part for the tourist in order to avoid huge pressure at Ranganathithu.

Four large Islands situated at Gendehosally about 14 KM. south east of Srirangapattana, which are also part of Raganathittu bird sanctuary, are yet to be developed as eco-tourist centre. Due to the effort of the Forest Department, the Islands, which were once almost barren are now covered with tree growth. A weir (Ramaswamy Anicut) constructed across river Cauvery by His Highness the Maharaja of Mysuru, the then ruler, has created a reservoir close to the islands. This area also attracts variety of aquatic birds. Temporary paragolas & permanent pergolas constructed in the past to provide resting place for picnic goers and bird watchers. This area, if developed, has got tremendous potential as tourist centre. It is planned to develop eco-tourism in this area with the facility of Hanging Bridge connecting the islands, Drinking Water facility, Toilet, Resting places, Parking Area, Staff Quarters, Boating, Library, Watch towers, Nature Camp with audio-Video facility etc., can be developed in this area. A pickup dam was already constructed down stream at Gendehosahally Island. which will really isolate the islands even during summer attracting more birds. Then boating facilities may be provided to watch the birds from the close distance.

Ranganathittu Bird Sanctuary is open to tourist throughout the year. Tourists are allowed inside at 8.30 A.M. and sanctuary is closed at 5.45 P.M. Thus the regulation of visitors is planned to minimize the disturbance during sensitive periods. Boat rides are restricted for 15-20 minutes per ride strictly. Boat men are strictly warned to keep the visitors silent during the ride not disturbing the roosting birds. Life jackets are made compulsory for the visitors. Instructions have been given to boatmen to maintain the routine restricted movements. The canteen is considerably away from river bank which is leased out for providing refreshments to the tourists. The number of dustbins has to be increased, to avoid the litter in refreshment area. The use of plastic inside

the sanctuary area is strictly banned. Adequate number of caution boards area displayed.

To create awareness and educate the visitors, laminated boards are displayed regarding migratory birds. This has been updated by constructing a interpretation centre with audio visual equipments. To generate resource for management of park there should be a periodical change in fees. At present following is the pattern of fees charged

Sl No	Particulars	Rates
I	ENTRANCE FEE	
1	Adult- Indian	70.00
2	Children- Indian 5 to 12 years	10.00
3	Adult -Foreigner	400.00
4	Children- Foreigner 5 to 12 years	400.00
5	High School/ College Students - 50% of Adult Rate	35.00
6	Primary School Students - 25% of Adult Rate	18.00
7	Teachers accompanying the students - 50% of Adult Rate	35.00
II	PARKING FEE	
1	Cycles	5.00
2	Motor Cycle/ Scooter	15.00
3	Auto Rikshaw	20.00
4	Car/ Jeep	50.00
5	LCV/Van	100.00
6	Bus/ Truck	150.00
III	CAMERA FEE	
1	Amateur Photography fee Digital SLR-Below 200mm Lens	100.00
2	Digital SLR-above 200mm Lens	500.00
IV	BOATING FEE	
1	Adult- Indian	70.00
2	Children- Indian 5 to 12 years	30.00
3	Adult -Foreigner	400.00
4	Children- Foreigner 5 to 12 years	400.00
5	High School/ College Students - 50% of Adult Rate	35.00
6	Primary School Students - 25% of Adult Rate	18.00
7	Teachers accompanying the students - 50% of Adult Rate	35.00

V	SPECIAL BOAT FEE:- (Only on Advance Booking and limited for 4 people in a boat.) 1st Batch:- 6.30 am to 7.30 am 2nd Batch:- 7.30 am to 8.30 am	
8	For Indian	1500.00/trip
9	For Foreigners	3000.00/trip
	Photographers boat ride	
10	For Indians	1500.00/trip
11	For Foreigner	3000.00/trip

It is also proposed to make wide publicity by displaying information's about the sanctuary at suitable places. It is also planned to bring brochures with valid information's regarding the history and birds visiting the sanctuary. Barricades has already been raised round the garden area, repairs to existing ponds and paragolas is being done frequently and sitting benches already provided in old and new garden area. The approach road from Entrance Gate-Ranganathittu Bird Sanctuary which needs to widen and reasphalting. And also the light vehicle parking area has to be remettaled and asphalted. The boatmen are to be given proper training as guides by resource persons.

7.2.1. The following strategies have been proposed for promoting Eco-tourism

- a) Development of acquired land
- b) Maintenance of existing Garden area.
- c) Purchase of boats for tourism activities
- d) Maintenance of existing boat including wages of Boatmen.
- e) Maintenance of existing Boards and signage's
- f) Installation of new sign boards
- g) Purchase of UPS
- h) Opening of Gendehosally Island to tourists

8.1 Objectives :

- a) To involve the fringe villagers, in and around the sanctuary in PA planning, protection and conservation, by educating them on the values of the protected area.
- b) Developing, site specific eco-development micro-plans, with the participation of the villagers.
- c) Develop alternate sources of bio-mass and income to divert pressure on the protected area, by strengthening the economic condition of the villagers.
- d) To build up awareness among the villagers towards conservation, by appropriate education programmes.

8.2 Broad Strategies:

Dependence of villagers for small timber, fuel wood, grazing grounds on protected area has to be addressed properly. Ranganathittu Bird Sanctuary surrounded by about 24 villages with nearly 1 lakh population. Following activities may be taken up as a strategy for lessening the dependency of neighboring village community on park area and ensure cordial relationship with them.

- a) To reduce the dependency on firewood, LPG have to be provided.
- b) Providing safe drinking water by digging borewells to improve hygiene and health of the villagers.
- c) To supply fruit yielding, medicinal and agro forestry species of plants to attain self sustainability and generate income in course of time.
- d) Rejuvenation of village cattle ponds

8.3 Monitoring and evaluation:

The monitoring of eco-development activities are important to achieve the annual physical and financial targets, the output and effects until the beneficiaries reach a position of maintaining and continuing the programmed activities.

The evaluation of the impact of eco-development on the sanctuary area and on surrounding area help in further planning.



9.1 Research and Monitoring :

As mentioned earlier, research has had a very low priority in the PAs of the State. Higher order investigations can be developed through consultancy programmes with Universities, specialist Institutions and through contractual arrangements. A portion of the land may be utilized to study population dynamics, seasonal migration and also bio-diversity etc., The documentation of all their process is a must.

9.1.2 Objectives :

- a) To reduce progressively, the extent and degree of uncertainty on which management decisions and strategies are based.
- b) To develop the consultative process and mechanism to ensure that research, addresses information needs that are critical to this project and to the long term management of the sanctuary.
- c) To develop, interest in research and expertise in local institutions around the sanctuary.
- d) To ensure that sanctuary supports and attracts sustained research that would meet the information needs from time to time.

9.1.4 Topics for Research:

The following topics can be considered for research in the sanctuary, priority wise :

- a) Assessment of bio-diversity of lesser known and functionally important groups.
- b) Floristic diversity and regeneration studies.
- c) Communicable disease and health monitoring in both migratory birds and surrounding village and commercial poultry birds.
- d) Monitoring the impact of fire occurrence and fire prevention activities on habitat and species distribution.

- e) Eco-tourism strategy, visitor management, interpretation centre, publicity and propaganda.
- f) Assessment of bird diversity in the sanctuary.
- g) Human impact due to grazing, collection of fuel wood, bamboo and small timber.
- h) Habitat degradation and infestation of exotic weeds
- i) Migration and seasonal movement patterns of birds.
- j) Carrying capacity of the sanctuary for migratory birds.
- k) Impact of seasonal flood on bio-diversity.
- l) Monitoring prey population in the forage grounds.

9.1.5 Monitoring:

Monitoring through a consistent set of measures would periodically do the following:

- a) Provide an integrated view of the present status of bio-diversity in the sanctuary.
- b) Provide a view of socio-economic conditions and interactions between PA and people around the PA that are relevant to the project.
- c) Evaluate whether the project activities have had the desired effect.
- d) Identify inadequacy, ineffectiveness which cause non-compliance with expected values.

It is not necessary that all monitoring and research is to be carried out by the researchers. Monitoring can also be done by the field staff on a day to day basis of:

- a) Birds health and diseases by the departmental veterinarian.
- b) Impact of Tourism.
- c) Feeding behavior of Avian fauna.
- d) Migration pattern of birds.
- e) Changes in vegetation to be monitored as per ecologists advice.
- f) Thinning, removing of exotic species like subabul.
- g) Interaction between people inside & outside the PA.
- h) Whether project activities have had the desired effect.

9.2 Training:

Generally, all the staff posted in the sanctuary, should have undergone professional training in forestry before joining the department. But as Wildlife management has, over the years encompassed many disciplines like ecology, tourism, public relations, Wildlife management, land use planning etc, it is very necessary to carry out refresher courses for all the staff at various level and bring them abreast of the day to day requirements.

9.2.1 Study tours :

It is worthwhile if study tours are conducted for the staff of PA to visit other PAs within and outside the State to learn how other PAs are managed.

9.2.2 Training programmes of Wildlife Institute - Dehradun:

Wildlife Institute of India runs many refresher courses and workshops in different PAs all over the Country. This should be taken advantage of and officers from the PAs sent regularly to attend these courses.

9.2.3 Strengthening Prosecution capabilities of the staff:

Several of our offence cases, fail in courts of law due to improper recording, inadequate processing and wrong interpretation of legal provisions. Prosecution capabilities of the staff are required to be strengthened. A few sample cases of both success and failure can be selected by the officers of the Forest Department and with the assistance of a Legal Advisor, discussed with other lower staff periodically, so that a set of guidelines are prepared as to how a case is to be dealt with. A week training at ATI, Mysuru by legal experts will be an advantage.

CHAPTER-10

ORGANISATION AND ADMINISTRATION

10.1 Structure and Responsibilities:-

This sanctuary is under the administrative control of Principal Chief Conservator of Forests, Wildlife, Bangalore and Conservator of Forests, Mysuru Circle, Mysuru.

Range Forest Officer Mysuru Wildlife Range is in charge of Ranganathittu sanctuary functioning under Deputy Conservator of Forests, Wildlife Division, Mysuru. There are two Foresters in this sanctuary. One is in charge of Ranganathittu area which is managed as tourist centre and the other is in charge of Gendehosally Islands. For proper management and protection of the sanctuary, existing staff is inadequate.

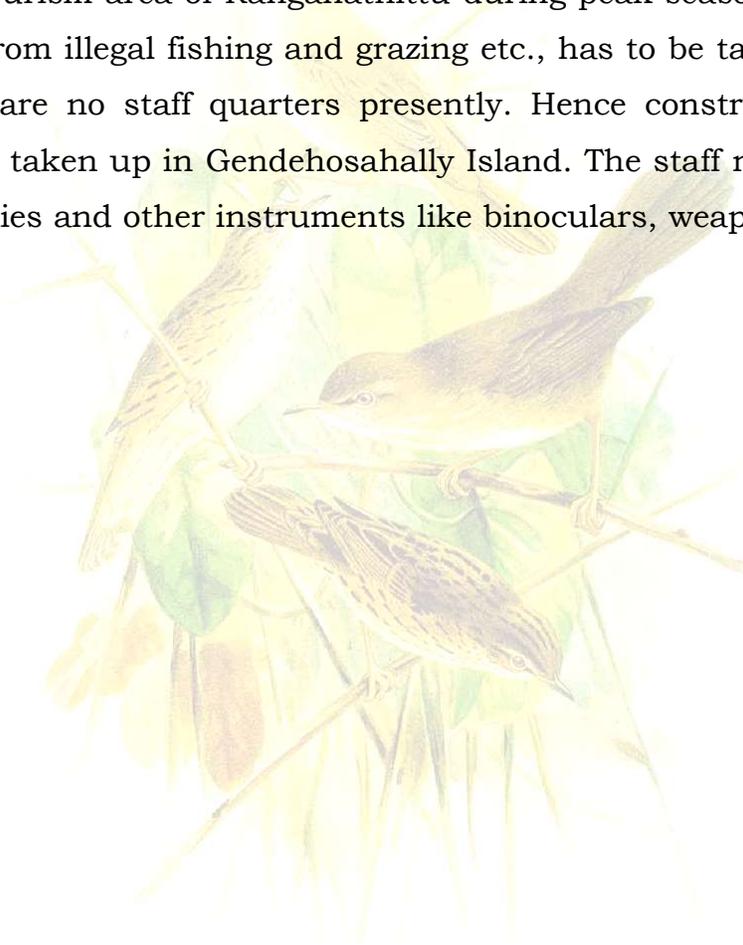
The proposed organisation pattern is as under including daily wage, PCP employees and MR permanent employees.

Sl.No.	Designation	Proposed	Existing	Required
1.	Range Forest Officer	1	1	-
2.	Forester	4	3	1
3.	Forest Guards	10	6	4
4.	Forest Watchers	10	4	6
5.	Boat man	20	12	8
6	Gate Lifter	2	2	-
7	Battery Operated Vehicle Driver	2	2	-
8	Sweeper	2	2	-
9	Watcher	5	5	-
10	Meti / Caretaker	1	1	-

10.2 Staff amenities :-

Even though the sanctuary is small, construction of residential quarters and construction of cottages can be considered by acquiring sufficient land away from the sanctuary area. Existing structures can be converted to watchman sheds.

In Gendehosahally part of the sanctuary adjacent agricultural field has to be acquired to facilitate for Eco-Tourism activities. This will ease out the congestion at tourism area of Ranganathittu during peak season. Protection of the sanctuary from illegal fishing and grazing etc., has to be taken on priority. As such there are no staff quarters presently. Hence construction of staff quarters can be taken up in Gendehosahally Island. The staff may be provided with walkie-talkies and other instruments like binoculars, weapons for effective patrolling.



CHAPTER-11

THE BUDGET

11.1 The Plan Budget:-

Proposed budgetary provisions for operations of management plan strategies are given in **TABLE No- 3**



Annexure - I

Government of His Highness the Maharaja of Mysuru

No. A.F. 19/FT/243.39-4

General & Revenue Secretariat,
Dated: Bangalore the 1st July 1940

NOTIFICATION

The Government of His Highness the Maharaja of Mysuru are Pleased to declare under the Provisions of Section 4 (b) of the Mysuru Games and Fish Preservation Act (II of 1901) that the areas, the boundaries of which are set forth in the Schedule annexed hereto shall be deemed to be a "Bird Sanctuary" under the Provisions of the said Act.

SCHEDULE

District	Taluk	Name of Village	of Survey No. and Class	Area Ac. G.	Name and situation of the block included in the Bird Sanctuary.	
Mysuru	French Rocks	Puttayyana	Assessed	66 . 16	Ranganathittu State Forest an island in the Midst of Cauvery River, about 2 miles west of Seringapatam	
		Koppal	waste 22			
			--	Karab	15 --	Two islands called Devaraja Islands in the Midst of Cauvery river about 6 furlongs East of KrishnarajasagaraDam.
	Seringapatam	Arakere	Karab	496	24 05	
				497	15 11	One big and 2 small islands in the Midst of Cauvery River about 8 miles east of Seringapatanam.
		Gendehosahalli		270	20 13	
			271	26 34		
				86 . 23		
			Total	167 . 39		

Boundaries:

North –east

South-west

} Cauvery River

} All the above six islands are surrounded by the Cauvery River on all sides

Remarks:

In the above islands, grazing of cattle, killing or capture of birds and removal of eggs of birds are prohibited.

By Order,
Sd/-
J. Appaji Gowda,
Scretary to Government.
General Department

Annexure - II

Government of Karnataka

No. FEE 58 FWL 96

Karnataka Government Secretariat,
Sachivalaya – II,
Bangalore dated 1.9.1998.

NOTIFICATION

Whereas the Government of his Highness the Maharaja of Mysuru in exercise of the powers vested in it by clause (b) of Sec. 4 of the Mysuru Game and Fish Preservation Act, 1901 (Act No. 11 of 1901), declared the area fully described in the schedule to the said Government's Notification No. AF 19 FT 243-39-4 dated 1.7.1940, as a Bird Sanctuary.

And whereas the Assistant Commissioner, Pandavapura Sub-Division, Pandavapura, in exercise of the powers conferred on him by Sec. 21 of the Wildlife (Protection) Act, 1972 (Central Act No. 53 of 1972) (herein after referred to as 'The Act') issued a proclamation vide his Notification No. MAG.CR. 35/90.91 dated 25.8.1990 requiring any person claiming any right mentioned in Section 19 of the Act to prefer such claims before him.

And whereas, the aforesaid Assistant Commissioner has reported that he has not received any claim in pursuance of the aforesaid proclamation issued by him;

And whereas the Deputy Commissioner, Mandya district, Mandya has recommended that the State Government may declare the area described in the aforesaid Government Notification dated 1.7.1940 as "Ranganathittu Bird Sanctuary."

And whereas, the Chief Wildlife Warden, Karnataka has concurred with the aforesaid recommendations of the Deputy Commissioner;

Now, therefore in exercise of the powers vested in it by clause (a) of sub-section (1) of Sec. 26-A of the Wildlife (Protection) Act, 1972 (Central Act No. 53 of 1972), the Government of Karnataka hereby declare the area fully described in the schedule to Government Notification dated 1.7.1940 aforesaid, as "Ranganathittu Bird Sanctuary" with effect from the date of this Notification.

BY ORDER AND IN THE NAME OF
THE GOVERNOR OF KARNATAKA
(W.Joseph),
Desk Officer, (Forest.A),
Forest, Environment & Ecology Dept.,

Annexure - III
List of Villages around Ranganathittu Bird Sanctuary

Sl. No.	Name of the Village
1	Yennekoppalu
2	Doddagowdana Kopplu
3	Srirangapattana
4	Karimanti
5	Palahalli
6	Hosally
7	Karepura
8	Rampura
9	Bidrahallyhundi
10	Chennahalli hundi
11	Mahadevapura
12	Arakere
13	Shanttu kopl
14	Kodagally
15	Gendehosally
16	Mandyakoppal
17	Chinnegowdanakoppal
18	Hondahalli
19	Shanthi koppalu
20	Gobbaragala
21	Moodrahalli
22	Magegowdana hundi
23	Hangarahalli
24	Belagola

