

The Mangrove Ecosystem

Mangroves are unique, salt tolerant vegetation that are distributed along the tropical and sub-tropical coasts of the world. They mainly occur in the intertidal zone of estuaries, backwaters and sheltered coastal areas. Conditions such as water level, salinity, dissolved oxygen in these environments can vary greatly and mangroves have developed a whole range of adaptations to survive these extremes. Salt-secreting glands on the leaves help mangroves cope with high concentrations of salt, while breathing roots (pneumatophores) help them survive in the oxygen depleted soils. As a way to counter the unstable sediments, many mangroves have developed a viviparous mode of reproduction, wherein the seeds (propagules) begin to grow while still attached to the parent

plant. Being able to take root fast in these dynamic environments is definitely an added advantage.

The mangroves fallen leaves and branches contribute to organic matter and provide nutrients for the marine environment. Their complex root system also functions as sediment traps further augmenting the nutrient load in the area. This high level of productivity supports a high diversity of species that use the mangrove ecosystem as a refuge, feeding area and a nursery.

Dr. Salim Ali Bird Sanctuary

CHORAO, GOA

GOA FOREST DEPARTMENT



Dr. Salim Ali Bird Sanctuary

The Dr. Salim Ali Bird Sanctuary was declared a protected area in 1998. The 1.78 sq.km lush mangrove forest that makes up this sanctuary, was privately owned rice fields less than 50 years ago. Neglect of the fields led to the degradation of the embankments that protected them from saline water of the Mandovi river. The persistent salt water inundation led to the salt-loving mangroves taking root in the soft sediments. Their growth was further aided by the conservation efforts of the Goa Forest Department. Aquatic life was quick to colonize the area, turning it into the thriving mangrove ecosystem it currently is.

A Mangrove Interpretation Facility consisting of a series of outdoor and indoor exhibits was setup in April 2016. This facility provides interesting information on the area's unique ecology and history and is an initiative of the project 'Conservation and Sustainable Management of Coastal and Marine Protected Areas (CMPA)'. This is a technical cooperation project between the Ministry of Environment, Forests and Climate Change, Government of India (MoEFCC) and the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB). In Goa, the project is being jointly implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and the Goa Forest Department.

Visitor Charges

Entry fee per adult	----- ₹ 20/-
Entry fee per child	----- ₹ 10/-
Boat ride (Per person)	----- ₹ 75/- per hour
Boat ride (Full boat)	----- ₹ 900/- per hour
Still camera charges	----- ₹ 30/-
Video camera/ Handy cam	----- ₹ 150/-
Video camera for filming	----- ₹ 7500/- per day
Documentary/ Advertisement	

Brochure Concept & Technical Details
Dr. Aaron S. Lobo - Advisor,
Indo-German Biodiversity Programme, GIZ - India

Dr. A. Anil Kumar, Deputy Conservator of Forests,
Goa Forest Department

Brochure Design
9twenty Creative
Goa



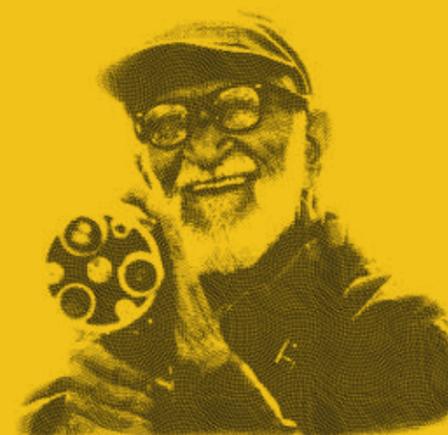
Range Forest Officer
Wildlife Range, Forest Campus Campal
+91 832 2228772

Dy Conservator of Forests
Wildlife and Eco Tourism (North)
1st Lift, IV Floor, Junta house,
Panaji, Goa 403 001
+91 832 2229701(Off) /+91 832 2422864(Fax)
E-mail : dcfwnorth-forest.goa@nic.in

Principal Chief Conservator of Forests
Forest Department
Gomantak Maratha Samaj Building,
Panaji, Goa 403 001
+91 832 2424352(Off) /+91 832 2224747(Fax)
E-mail : pccf-fore.goa@gov.in

Dr. Sálím Ali (12 Nov 1896 – 20 Jun 1987)

Fondly remembered as India's Birdman, Dr. Sálím Ali was a globally renowned ornithologist and conservationist. He produced among the first most comprehensive work on the birds of the Indian subcontinent. His meticulous work resulted in the protection of several of the country's biodiversity hotspots. This sanctuary is named in his honour.





The **White-collared Kingfisher** (*Todiramphus chloris*) is among the seven species of kingfisher that has been recorded from the sanctuary. Although this species has a widespread global distribution, the sub-species (*T. chloris vidali*) found here is restricted to the mangrove areas on the west coast of India, with Goa being a particularly good place to spot this bird.

The sanctuary is a good place to spot the **Lesser Adjutant** (*Leptoptilos javanicus*). This large stork is easily recognized by its characteristic bald, featherless head and neck. It is often seen wading in the mudflats at low tide and feeds on a range of prey including fish, snakes and large invertebrates.



The **Smooth-coated Otter** (*Lutrogale perspicillata*) gets its name from its unusually short glossy fur coat. It is the more common of the two species found in Goa, the other being the Asian small-clawed otter. It is a social species and is commonly seen in groups ranging from 4-9 individuals. They live in dens and a single family can have 4 to 5 dens.



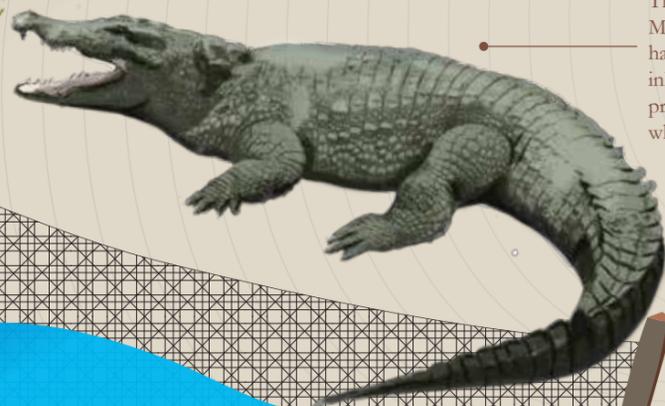
The **Indian Flying Fox** (*Pteropus giganteus*) is a large fruit bat that roost in colonies, numbering in hundreds in the the sanctuary. They can be seen setting out at dusk, on the lookout for flowers and fruit and are reported to travel as much as 150 km to and from their roosting site.



The **Glossy marsh snake** (*Gerarda prevostiana*) is a unique species that is perfectly adapted to living in this mangrove ecosystem. This species feeds exclusively on crabs and that too on ones that have molted their hard shells (soft-shelled crabs). It is among the only two snakes in the world known to tear its food into pieces, which it then swallows bit by bit!



The **Blue-spotted Mudskipper** (*Boleophthalmus boddarti*) is an unusual fish that spends more time on land than in water and can even breathe using its skin while on land! Its front (pectoral) fins serve as limbs, allowing it to crawl, skip and even jump on land as it goes about its daily life foraging and defending its territory.

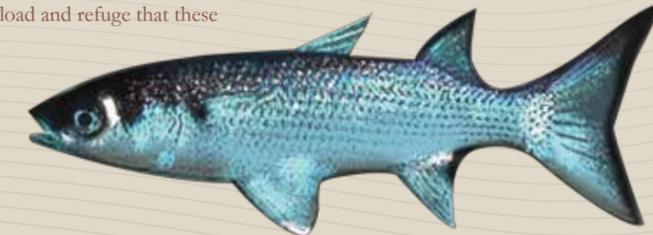


The **Mugger** (*Crocodylus palustris*), also called the Marsh Crocodile is typically found in freshwater habitats, however in Goa it is primarily known to inhabit the estuaries and their backwaters. This top predator is best spotted at low-tide and on sunny days, where they can be seen basking on exposed mud flats.



The male **Fiddler Crab** (*Uca sp.*) has one claw much larger than the other. Moving the small claw to the mouth resembles the moving of a bow across a fiddle!

The **Flathead Grey Mullet** (*Mugil cephalus*) locally called *Sherito* is Goa's state fish and is commonly caught in the vicinity of the sanctuary. This fish like many others benefit from the high nutrient load and refuge that these mangroves provide.



Fish, shrimp and crab thrive within the creeks that network this mangrove sanctuary. Eventually, they migrate into surrounding areas. Fishers in the vicinity of the sanctuary catch them employing a variety of artisanal techniques, including stake nets (*Cuttanni*) depicted here, bag nets (*Hari*) and circular crab nets (*Cablem*). Healthy mangroves are crucial to our sea food production.



The **Mud Clam** (*Polymesoda erosa*) is exclusively found in mangrove areas and is hand collected during low tide in the vicinity of the sanctuary. This clam along with large number of other bivalves (clams, oysters and mussels) support a thriving artisanal fishery in Goa's estuaries and backwaters.

