



# *"Wetland Conservation in the Noyyal and Bhavani River Basins"*

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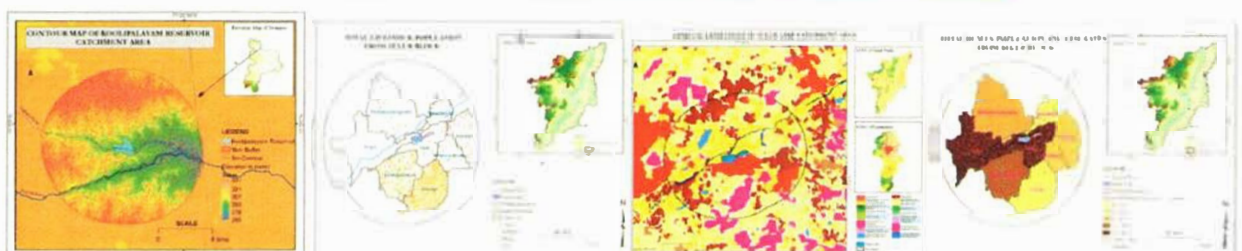
WWF-India

by



**Sálim Ali Centre for Ornithology and Natural History**

A Centre of Excellence under the Ministry of Environment, Forest and Climate Change, Government of India.  
Anaikatti Post, Coimbatore - 641108, Tamil Nadu.



# ***Wetland Conservation in Noyyal and Bhavani River Basins***

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India

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**Final Report**

**June, 2020**



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## *Executive Summary*

Wetlands are considered as important habitat as they contribute to numerous ecosystem services. In India these dynamic ecosystems have gained significance only in the past two to three decades. The WWF-India launched a program for the conservation of the Noyyal and Bhavani River basins and assigned SACON the study of select wetlands from the two river basins. The Noyyal and Bhavani rivers are two major tributaries of river Cauvery. They serve as a water source for many districts of Tamil Nadu and a few districts of Kerala. Of these two, the Bhavani River flows to a distance of about 217 km and the Noyyal flows for a distance of about 180 km. During the 8<sup>th</sup> and 9<sup>th</sup> centuries many interconnected tanks were build in the Noyyal River to store water for the livelihood of people. Treated and untreated wastes from households and industries mix in both the rivers and pollute it (Quadros *et al.*, 2019). With this preamble the objectives proposed were

1. Mapping of wetlands in the Noyyal and Bhavani River basins (One wetland in each district of the river basins)
2. Documentation of Biodiversity from the four selected wetlands in the Noyyal and Bhavani River Basins.
3. Wetland Conservation Plan Development

Based on the project objectives, SACON in consultation with the WWF- India selected Sular Lake, Koolipalayam wetland, Anthiyur Periya Yeri and Marlimund Lake for the present study.

To achieve the first objective of mapping wetlands, we first undertook the field survey and marked the wetlands using the hand held Garmin GPS handset. Subsequently the field data was uploaded on to generate maps using the Google earth pro and ArcGIS tools. The base layers used to prepare a map were extracted or digitized from the various sources such as Toposheets, Google Earth pro and/or Landsat images. The maps for the four Wetlands, Bhavani River, Noyyal River, Streams and District boundaries are projected on GCS, WGS84 and prepared in ArcGIS platform.

The second objective of documenting biodiversity was accomplished by undertaking several field visits to the wetlands and adopting random survey methods in predetermined grids along the wetlands. The boundaries for the four wetlands were decided depending on the occurrence of facultative wetland plants. Within the boundary we documented the terrestrial and aquatic flora, while the fauna comprised of both vertebrates and invertebrates. The water and soil parameters were also assessed at SACON Wetland laboratory as well as some water parameters, pesticides and metals were analysed at the SITRA Laboratory assigned by WWF-India.

During the present study, the flora comprised of about 340 species of angiosperms representing 80 families were recorded across the four wetlands including both obligate and facultative species. Over all 226 species are native plants, six endemic while the others are either introduced, naturalised, invasive and exotic species. Among the four wetlands the

maximum of 147 species representing 40 families were recorded from Sular Lake, while the minimum of 97 species (38 families) were noted along Koolipalayam wetland. The least number of flowering plant diversity was also observed at Koolipalayam wetland, indicating that the disturbance factors are much higher. The Marlimund lake, a high altitude wetland from Nilgiris district has 129 plant species representing 52 families that also includes six endemic species. The number of aquatic plants (Table 2) were also maximum in Marlimund Lake (35 sp.) followed by Sular Lake (14 sp.), Koolipalayam wetland (10) and Anthiyur Periya Yeri (8 sp.). Though wetland flora constitute very less diversity (in number) among the total flora of the world, their economic value and the occurrence of endemic species is much higher. A total of 34 invasive species are recorded across all the selected wetlands. Of these Tropical American plants dominates with 22 species.

The fauna included the invertebrate and vertebrate species, efforts were made to identify the fauna to the maximum possible taxonomic level. The invertebrates comprised representatives of Diplopoda, Insects, Crustacea, Lepidoptera, Odonata and Arachnida while the vertebrates are represented by Amphibians, Reptiles, Fish, Avifauna and Mammals. Over all 285 species were recorded with the invertebrates contributing to 42 % of the diversity. Among the invertebrates the Lepidoptera were dominant with 60 species and among the vertebrates, the avifauna with 133 species were the major contributors. Among the wetlands Sular Lake has the maximum diversity with 183 species formed by 55% vertebrate species. Sular Lake was followed by Koolipalayam wetland, Marlimund Lake and Anthiyur Periya Yeri. The invertebrate diversity recorded was minimum at Koolipalayam wetland (33%) and maximum at Sular Lake (45%).

For the third objective of preparing a Conservation Management Plan (CMP), we followed the guidelines provided by National Plan for Conservation of Aquatic Ecosystems (NPCA). Based on which we have taken into consideration the biodiversity, ecosystem services, livelihood dependance on the wetlands and identified the threats for each of the wetlands. We realised that most of the concerns were common to all the four wetlands hence a common Conservation Management Plan has been evolved. Whereever necessary the problems of the individual wetland are addressed. The CMP has role for several stake holders that include the forest department, Fisheries sector, Agriculture department, PWD, Municipality, Research Institutions, Universities, CSOs, and NGOs. However keeping in mind the Wetland Rules (2017) the coordination and management of the CMP has been assigned to the district wetland Committee with the DFO as the Member secretary. If the CMP is implemented in the four districts it can become an example for integrate wetland management in the country.