

Project Completion Report

**Impacts of nutrient loading from droppings of nesting migratory waterfowl
in the wetland ecosystem of *Nelapattu* Bird Sanctuary, Andhra Pradesh**

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Name of the Co-Principal Investigator: Dr. G.R.S. Reddy, Scientist-G

Project Period: 01 April, 2016 – 31 March, 2019

Total Budget: Rs. 16.52 Lakhs

**Institute of Forest Biodiversity, Hyderabad
September, 2019**

Project Profile

1. Project No: OG-39

2. Project (Title): Impacts of nutrient loading from droppings of nesting migratory waterfowl in the wetland ecosystem of *Nelapattu* Bird Sanctuary, Andhra Pradesh

3. Principal investigator and other associates

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Co PI: Dr. G.R.S Reddy, Scientist-G, IFB, Hyderabad

Associates: Smt. R. Asha Kumari, Assistant Chief Technical Officer, IFB, Hyderabad

4. Project approval date by

i) RAG: 2015

ii) RPC: 2016

iii) ICFRE: 2016

5. Date of commencement of the project: 01st April, 2016 (2016-17)

6. Date of Completion of the project: 30th March, 2019 (2018-19)

7. Total Budget of the project: Rs. 16.52 Lakhs

i) List of equipment procured under the project (with cost):

ii) Total expenditure on the project: Rs 16.52 Lakhs

8. Other institutional support in terms of equipment and infrastructure

Equipments available in the Institute/Division

1. Electrical Conductivity Meter,
2. Hot plate,
3. Hot-Air Oven,
4. Kjeldahl apparatus,
5. pH Meter,
6. Spectrophotometer,

Overview

The vast majority of Indian population, being dependant on agriculture and allied activities are mostly concentrated near wetlands and owing to incessant biotic pressure, the quality wetland ecosystem are getting rapidly depleted and the survival of these ecosystems depends upon the attitudes and awareness of the people. The Nelapattu Bird Sanctuary is a well known Heronry/Pelicanry located near Pulicat Lake, in SPSR Nellore district of Andhra Pradesh. The sanctuary was established in the year 1976 and is a noted breeding ground for Grey Pelicans, Open Bill Storks and White Ibis. The tree species mainly *Barringtonia acutangula* and *Prosopis juliflora* located in the midst of the tanks offer nesting ground for the migratory birds. The Nelapattu water tanks are most often getting replenished with water during winter and dried out during summer. It is estimated that as many as 1500 pelicans breed every year in the sanctuary during their wintering migration which usually starts from September and lasts up to April. The water birds when forming aggregations for feeding, breeding and roosting, can import nutrients to cause significant changes in trophic level of wetlands. The scope of the study is to assess the importance of these winter migratory waterfowl in influencing the nutrient dynamics of the wetland ecosystem. The aim of the study encompasses estimation of important nutrient level variation and the consequent physico-chemical and biological water quality changes in the aquatic ecosystem of the sanctuary due to input of faecal droppings from nesting wintering migratory birds. It was observed that rainfall and consequent availability of water in the tanks control on the arrival of birds in the Sanctuary and due to acute rain deficit in the area (annual average 28.73 mm), no bird migration happened during 2016. As per the bird census data, after Little Cormorant, Open billed Stork, White Ibis and Grey Pelicans were the most abundant birds in the Sanctuary. The results of the study revealed that the important physico-chemical parameters viz., pH, Electrical Conductivity (EC), Organic Carbon (OC), Nitrogen (N), Phosphorous (P) and Potassium (K) of soil/sediment of the wetland ecosystem significantly varied between seven sampling months (Sept., 2016 - Sept., 2018), while the significance in variance between three sampling locations (Pond, Influenced and control fields) was observed only in case of four (OC, N, P and K) out of six parameters. Among the physico-chemical parameters of water, nitrite did not show any observable seasonal variation, while orthophosphate and dissolved oxygen respectively were high and low during summer immediately subsequent to bird migration in winter. All the biological parameters viz., phytoplankton, chlorophyll, zooplankton and benthos were quite evidently varied between seasons i.e., relatively high in summer samples compared to that of the winter. Overall, the results based on the studies conducted earlier indicate possible impacts of bird driven nutrient loading in the ecosystem. The results of the study may be useful in devising suitable strategies for better management of the area. It is apparent that more holistic studies required for understanding the functional roles played as well as ecosystem services provided by the birds in the ecosystem and that such approach offer positive force for management and conservation of the area.

Director

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