



SÁLIM ALI CENTRE FOR  
ORNITHOLOGY AND  
NATURAL HISTORY

ANNUAL REPORT  
2017-2018

### **Published by**

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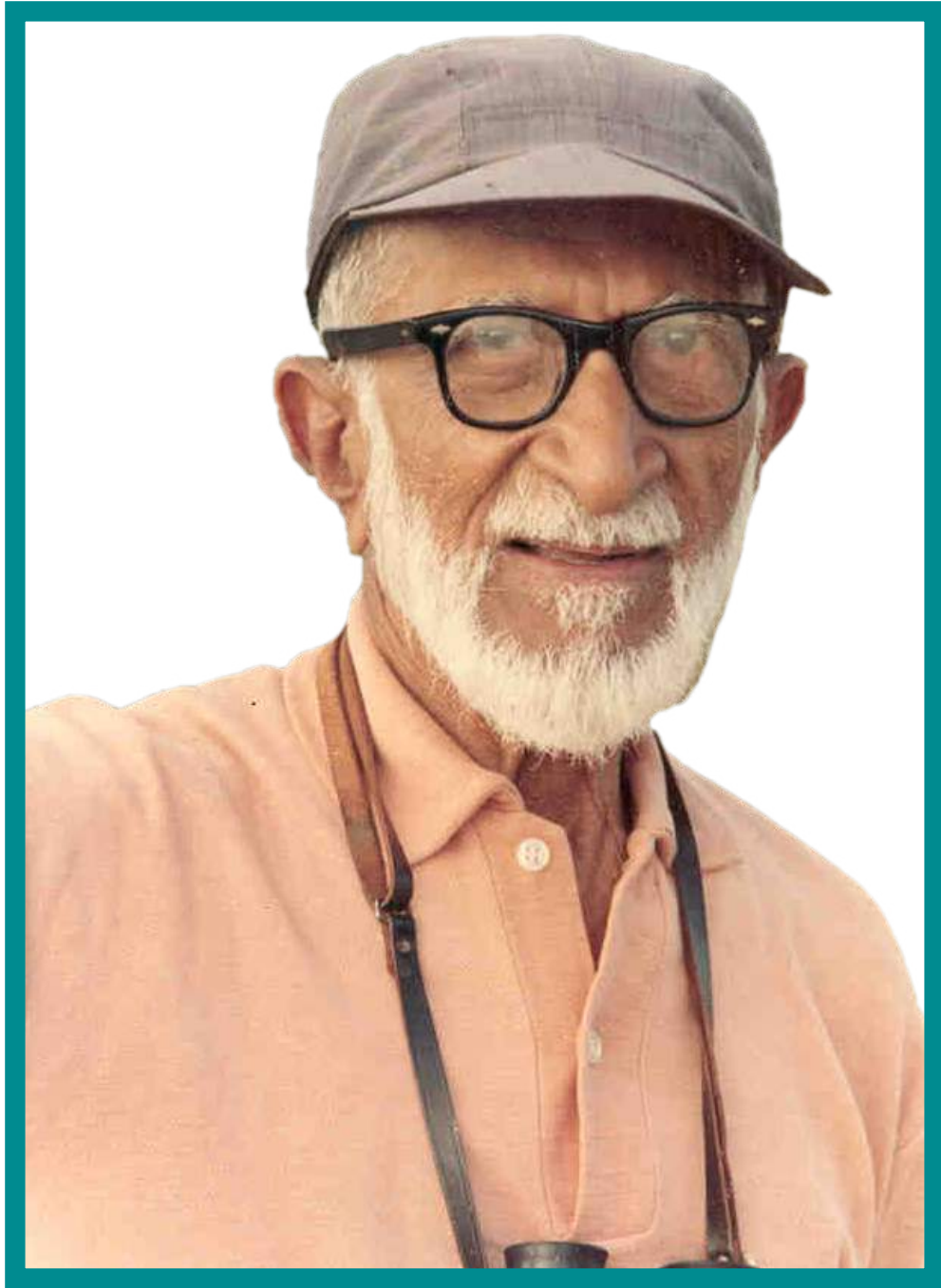
Malabar Trogon (*Harpactes fasciatus*) - Photo Credit: Mr. Subramanian  
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Black-naped Monarch (*Hypothymis azurea*) - Photo Credit: Mr. Subramanian  
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**Sálim Ali Centre for Ornithology and  
Natural History**

**Annual Report  
2017 - 2018**





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**Dr. Sálím Ali**

1896 - 1987

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## Background

**S**alim Ali Centre for Ornithology and Natural History (SACON) was established in 1990, as a Centre of Excellence, under the Ministry of Environment, Forest and Climate Change (MoEF&CC), Government of India. The SACON Society, presided by the Honorable Minister for Environment, Forest and Climate Change (Government of India), is the apex body of SACON and the management of SACON is vested in a Governing Council, chaired by the Secretary to the Government of India, MoEF&CC. Realizing the significance of holistic approach in avian studies and conservation, the major objectives of SACON have been designed to cover the entire field of natural history focusing on Ornithology.

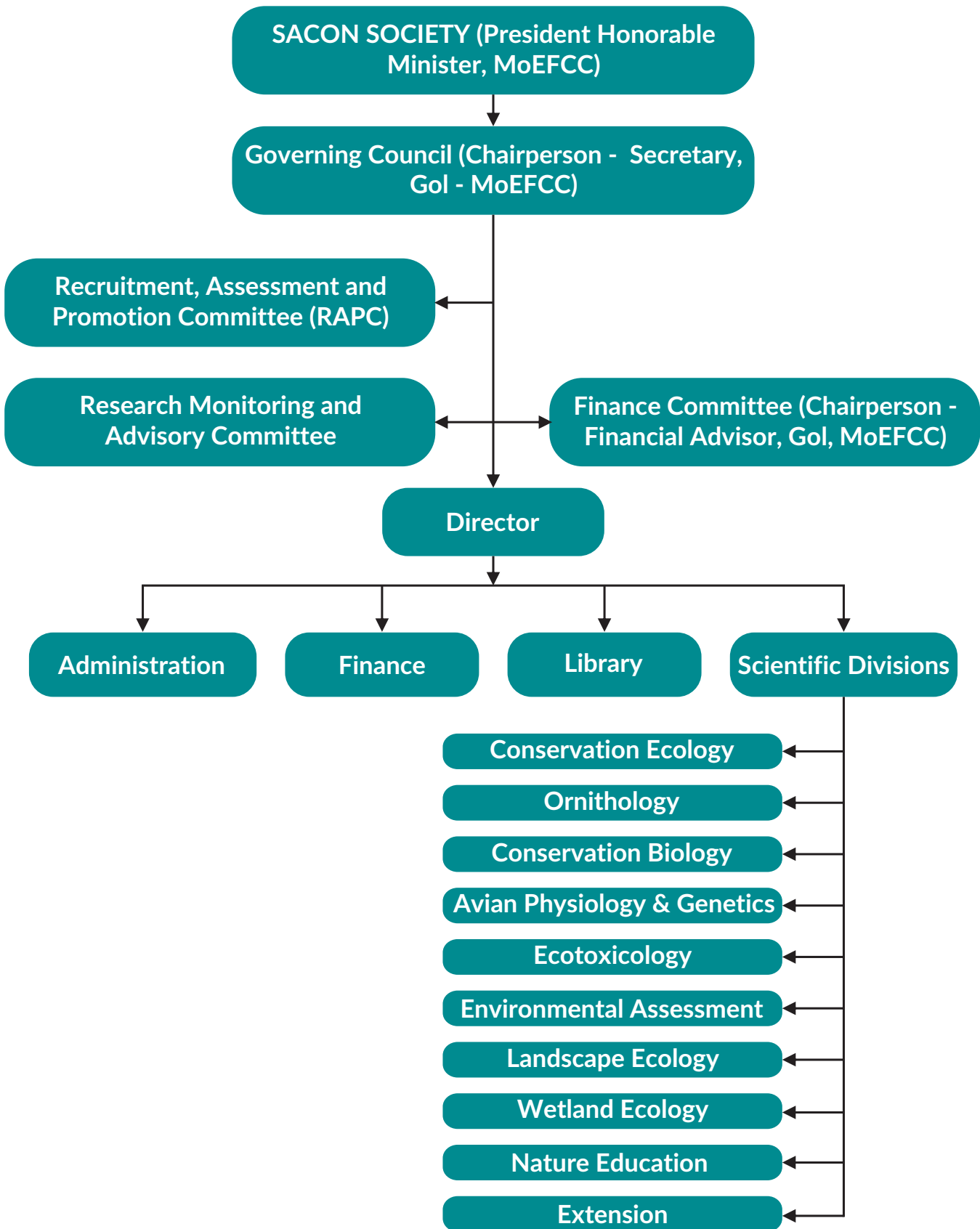
## Mission

“To help conserve India's biodiversity and its sustainable use through research, education and people's participation, with birds at the centre stage”

## Objectives

1. To design and conduct research in ornithology covering all aspects of biodiversity and natural history
2. To develop and conduct regular courses in ornithology and natural history for M.Sc., M.Phil. and Ph.D. and also, short term orientation courses in the above subjects
3. To maintain a data bank on Indian ornithology and natural history
4. To disseminate knowledge relating to ornithology and natural history for the benefit of the community
5. To confer honorary awards and other distinctions to persons who have rendered outstanding services in the fields of ornithology and natural history

## ORGANOGRAM



## SACON Society

The SACON Society comprises the President, the members of the Governing Council and experts in the field of Ornithology, Wildlife Sciences and Management. The Honorable Minister of Environment, Forest and Climate Change is the President of the SACON Society and the Director, SACON is the Member Secretary. The total members in the SACON Society are 27.

## The Members of the SACON Society

S. No.	Members	Status
1.	Hon'ble Minister of Environment, Forest and Climate Change (President – SACON Society) Ministry of Environment, Forest and Climate Change, Govt. of India Indira Paryavaran Bhawan Jorbagh Road, Aliganj, New Delhi – 110 003	Ex-Officio
2.	Secretary to the Government of India (Chairman, Governing Council – SACON) Ministry of Environment, Forest and Climate Change Indira Paryavaran Bhawan Jorbagh Road, Aliganj, New Delhi – 110 003	Ex-Officio
3.	Additional Secretary and Financial Advisor, Govt. of India Ministry of Environment, Forest and Climate Change Indira Paryavaran Bhawan Jorbagh Road, Aliganj, New Delhi – 110 003	Ex-Officio
4.	Advisor Govt. of India Ministry of Environment, Forest and Climate Change Indira Paryavaran Bhawan Jorbagh Road, Aliganj, New Delhi – 110 003	Ex-Officio
5.	Principal Secretary to the Govt. of Tamil Nadu Dept. of Environment and Forests Govt. of Tamil Nadu Fort St. George, Secretariat, Chennai – 9	Ex-Officio
6.	Director Wildlife Institute of India P B No. 18, Chandrabani Dehra Dun – 248 001, Uttarakhand	Ex-Officio
7.	Vice Chancellor, Bharathiar University Maruthamalai Road Coimbatore – 641 003, Tamil Nadu	Ex-Officio
8.	Director, Bombay Natural History Society, Hornbill House, Sálim Ali Chowk Shaheed Bhagat Singh Road Mumbai - 400 001, Maharashtra	Ex-Officio

9.	Chairperson, Centre for Ecological Sciences, Bengaluru – 560 012 Karnataka	Ex-Officio
10.	Dr. Girish Jathar Scientist Bombay Natural History Society Mumbai - 400 001	Ex-Officio
11.	Dr. G. Maheswaran Scientist Zoological Survey of India Kolkata – 700 053	Ex-Officio
12.	Dr. Hilolijyoti Singha Assistant Professor Centre for Biodiversity and Natural Resource Conservation, Assam University, Assam – 788 011	Ex-Officio
13.	Dr. S. Subramanya AICRP on PHET University of Agricultural Sciences GKVK Campus, Bengaluru - 560 065	Ex-Officio
14.	Dr. Bhimraya Metri Director Indian Institute of Management – Trichy – Tiruchirappalli- 620 015, Tamil Nadu	Ex-Officio
15.	The Chairman – cum – Managing Director, Nuclear Power Corporation of India Limited Mumbai - 400 005, Maharashtra	Ex-Officio
16.	One representative of the Research, Monitoring and Advisory Committee on rotational basis	Nominee Vacant
17.	Dr. Rajah Jayapal Principal Scientist Division of Ornithology Sàlim Ali Centre for Ornithology and Natural History (SACON) Coimbatore-641 108, Tamil Nadu	Nominee
18.	The Principal Secretary Department of Environment and Forests Govt. of Gujarat Gandhinagar - 382 010, Gujarat	Nominee
19.	The Principal Chief Conservator of Forests (Wildlife) Maharashtra Forest Department Government of Maharashtra Van Bhawan, Civil Lines Nagpur - 440 001, Maharashtra	Nominee
20.	Director Zoological Survey of India Kolkata – 700 053 West Bengal	Ex-Officio



21.	Director Silent Valley National Park Mannarghat, Palghat -678582, Kerala	Nominee
22.	Director Kaziranga National Park Bokakhat District, Golaghat -785612, Assam	Nominee
23.	Dr. H. Y. Mohan Ram Professor (Retd), Delhi University 174, SFS, DDA Flats Mukherjee Nagar, Delhi - 110 009	Nominee
24.	Dr. S. Balachandran Dy. Director Bombay Natural History Society Hornbill House, Salim Ali Chowk Shaheed Bhagat Singh Road Mumbai - 400 001, Maharashtra	Nominee
25.	Dr. Ritesh Kumar Conservation Programme Manager Wetland International South Asia Second Floor Defence Colony New Delhi - 110 024	Nominee
26.	Dr. R. Sukumar Professor Centre for Ecological Sciences Indian Institute of Science Bengaluru - 560 012, Karnataka	Nominee
27.	Dr. K. Sankar Director, Salim Ali Centre for Ornithology and Natural History (SACON) Coimbatore, Tamil Nadu	Member Secretary

## SACON Governing Council

The Chairperson of the Governing Council (GC) of SACON is the Secretary to the Government of India, Ministry of Environment, Forest and Climate Change (MoEF&CC). The GC has 15 members; Financial Advisor, MoEF&CC, Advisor, MoEF&CC or nominee, four ex-officio members, eight nominees of the Governing Council and the Director, SACON (Member Secretary). The tenure of the Governing Council is three years. The members of the GC are listed below:

## Members of the Governing Council of SACON

S. No.	Members	Status
1.	Secretary to the Government of India, or his/her nominee not below the rank of Additional Secretary. Ministry of Environment, Forest and Climate Change – Chairperson	Ex-Officio
2.	Financial Advisor, MoEF&CC, or his/her nominee from the IFD of the MoEF&CC	Ex-Officio
3.	Advisor, MoEF&CC, dealing with the matters of SACON, or his/her nominee	Ex-Officio
4.	Secretary, Department of Environment and Forests, Tamil Nadu	Ex-Officio
5.	Director, Wildlife Institute of India (WII), Dehra Dun	Ex-Officio
6.	Vice Chancellor, Bharathiar University, Coimbatore	Ex-Officio
7.	The Chairperson, Centre for Ecological Sciences, Indian Institute of Science (IISc), Bengaluru.	Ex-Officio
8.	Dr. Girish Jathar, Scientist, Bombay Natural History Society (BNHS), Mumbai.	Ex-Officio
9.	Dr. G. Maheswaran, Zoological Survey of India (ZSI), Kolkata	Nominee
10.	Dr. Hilloljyoti Singha, Ecologist and Ornithologist, Silchar, Assam	Nominee
11.	Dr. S. Subramanya, Professor, Seed Unit, University of Agricultural Sciences, Bengaluru	Nominee
12.	Dr. Deepak Apte, Director, Bombay Natural History Society (BNHS), Mumbai	Nominee
13.	Director, Indian Institute of Management (IIM), Trichy, Tamil Nadu	Nominee
14.	Chairman Cum Managing Director, Nuclear Power Corporation, Mumbai	Nominee
15.	Dr. K. Sankar, Director, Sàlim Ali Centre for Ornithology and Natural History (SACON)	Member Secretary

## Research, Monitoring and Advisory Committee (RMAC)

The mandate of the RMAC is a) to act as an advisory body to the faculty of SACON, b) review research proposals developed by the Centre, c) review and assess projects being implemented, and monitor the output; dissertations, reports, papers in scientific journals and other publications, and d) conduct a review annually of all research and extension activities of the Centre and advise changes, if any. The panel of the Committee is given below.

## Members of the Research, Monitoring and Advisory Committee

S. No.	Members	Status
1.	Dr. Ramakrishna, (Formerly Director-Zoological Survey of India), No. 169, 4th Main, 2nd cross, ITI Layout, Mallathally, Bangalore - 560 056	Chairman
2.	The Chief Wildlife Warden, No: 1, Jeenis Road, Panagal Building, Saidapet, Chennai - 600 015	Ex-Officio
3.	The Chief Wildlife Warden (WL), Wildlife Circle, Chatham, Port Blair, Andaman and Nicobar Islands - 744 102	Nominee
4.	Sthe Chief Wildlife Warden (WL), Govt. of Gujarat, Aranya Bhavan, Near Central Water Commission, Near CH-3 Circle, CH Rd, Sector 10A, Sector 10, Gandhinagar, Gujarat - 382 010	Nominee
5.	The Dy. Inspector General of Forests (WL), Government of India, Ministry of Environment, Forest and Climate Change, Indira Paryavaran Bhawan, Jorbagh Road, Aliganj, New Delhi - 110 003.	Ex-Officio
6.	Dr. S. Faizi, Ecologist, R2 Saundarya Apartments, Nandavanam, Trivandrum, Kerala - 6905209	Member
7.	Dr. A. B. Shanbhag, (Head and Professor - Retd, Department of Zoology, Goa University), FF 4, Trigunatmica Apartments, Dasankoppa Circle, Haliyal Road, Saptapur, Dharward - 580 001 (Karnataka)	Member
8.	Dr. V. Vijayakumar, Additional Director, Gujarat Institute of Desert Ecology, Post Box No: 83, Mundra Road, Bhuj (Kutch) - 371 001, Gujarat	Member
9.	Prof R. Geeta, Department of Botany, Delhi University (North Campus), Delhi - 110 007	Member
10.	Dr. K. Gurumurthy, (Director - Retd, IFGTB) 62/4, Block - II, Leela Apartment, Ponnaiharajapuram, R S Puram, Coimbatore - 641 002	Member
11.	Prof. S. K. Dutta, (Head - Retd, Department of Zoology, North Orissa University), Plot No: 1573/1; Udyogpuri, Post: Khandagiri, Bhubaneshwar - 751 030	Member
12.	Mr. B. C. Choudhury (Faculty - Retd, Wildlife Institute of India), H. No: 7, Lane No: 7, D Block, Aman Vihar, Sahasradhara Road, Dehra Dun - 248 001	Member
13.	Dr. S. Muralidharan, Senior Principal Scientist, Division of Ecotoxicology, Sàlim Ali Centre for Ornithology and Natural History (SACON), Coimbatore - 641 108	Nominee
14.	Dr. Rajah Jayapal, Principal Scientist, Division of Ornithology, Sàlim Ali Centre for Ornithology and Natural History (SACON), Coimbatore - 641 108	Nominee
15.	Dr. K. Sankar, Director, Sàlim Ali Centre for Ornithology and Natural History (SACON), Coimbatore, - 641 108	Member Secretary

## Staff of SACON

The core scientific staff strength of the year (until March 2016) was 15; Director (1), Senior Principal Scientist – I (1), Senior Principal Scientist - II (2), Principal Scientist (6), Senior Scientist (2) and Scientist (3).

	<b>Director</b>	<b>Dr. K. Sankar</b>
Divisions	Avian Physiology and Genetics	Dr. R. P. Singh, Senior Scientist
	Conservation Biology	Dr. Shomita Mukherjee Principal Scientist Dr. H. N. Kumara Senior Scientist
	Conservation Ecology	Dr. Manchi Shirish, Senior Scientist Dr. T. Ramesh, Scientist
	Ecotoxicology	Dr. S. Muralidharan, Senior Principal Scientist – II
	Environmental Impact Assessment	Dr. Arun P. R., Senior Principal Scientist Dr. Riddhika Ramesh, Scientist
	Extension	Dr. Krishnendu Mondal, Scientist
	Landscape Ecology	Dr. P. Balasubramanian, Senior Principal Scientist – II Dr. P. V. Karunakaran, Principal Scientist
	Nature Education	Dr. P. Pramod, Principal Scientist
	Ornithology	Dr. Rajah Jayapal, Principal Scientist Dr. S. Babu, Senior Scientist
	Wetland Ecology	Dr. Goldin Quadros, Principal Scientist Dr. Mahendiran Mylswamy, Scientist

## Technical Staff

Library and Documentation	Mr. M. Manoharan, Librarian in-charge
---------------------------	---------------------------------------

## Administration and finance staff

Administrative Officer	Mr. R. Jayakumar
Finance Officer	Mr. Aneesh K. Abraham
PA to Director	Mr. V. Vaidyanathan
Accountant	Mr. M. Muthupandi
Administrative Assistant	Mr. S. Patturajan
Office Assistant	Mrs. R. Rajalakshmi
Stenographer	Mr. M. Eanamuthu
Receptionist	Mrs. M. Jayageetha
Site Engineer	Lt. Col. (Retd.) N. Sundararaj (on contract)
Computer Technician	Mr. A. Srinivasan (on contract)
Drivers	Mr. R. Ravi Mr. P. Subramanian
Office Attendants	Mr. A. Devaraj Mrs. V. Santhalakshmi

## Executive Summary

In the year 2017-2018, SACON was productively involved in several research projects towards achieving the mandates laid out by MoEFCC for conservation of avian biodiversity. During the reporting period, we executed 29 projects, of which five have been successfully completed.

The Ornithology Division has three ongoing projects, (1) Assessing the population status of synanthropic bird species of India, including House Sparrow and House Crow, and their response to urbanization for which, the field survey was initiated, and sampling grids in western Maharashtra were covered; (2) Developing Conservation and Management Plans for select Important Bird and Biodiversity Areas (IBAs) of India for which field work was initiated at Jhilmil Jheel Conservation Reserve, Uttarakhand; (3) Assessing the distribution, population and habitat use of three endangered species viz., Manipur Bush-quail *Perdica manipurensis*, Swamp Grass-babbler *Laticilla cinerascens*, and Black-bellied Tern *Sterna acuticauda* to develop conservation plan for species and their habitats. Nine rivers (Cauvery, Bharathapuzha, Tungabhadra, Godavari, Chambal, Yamuna, Mahanadi, Ganges and Brahmaputra) were selected for sampling. In Rajasthan part of River Chambal, of the selected 83 grids, Black-bellied Tern was detected in 12 grids along the downstream areas of the river.

The Division of Conservation Ecology has completed one project 'Conservation of the Andaman Serpent Eagle (*Spilornis elgini*) in the Andaman Islands: Phase I.' Other four ongoing projects include (1) Understanding Dispersal Patterns in the monomorphic Edible-nest Swiftlet of Andaman Islands using biotechnological tools; (2) Identifying Indian cavity nesters most vulnerable to the loss of large trees (3) In-situ and ex-situ conservation of the Endemic Andaman Edible-nest Swiftlet in the Andaman and Nicobar Islands and (4) Assessing anthropogenic threats to large carnivore population in the Western Ghats part of Tamil Nadu. The preliminary results pertaining to large mammal-human conflicts showed that the maximum incidents were recorded for elephant (35%), followed by leopard (32%), sloth bear (7%), dhole (7%) gaur (6%) and tiger (4%). Leopard conflict increased significantly with increase in livestock abundance particularly of medium sized individuals.

The Division of Conservation Biology is engaged in (1) Survey for small cats in Sanjay Gandhi National Park, Mumbai where a training programme was conducted for volunteers and forest staff in wildlife monitoring procedures. Camera traps are installed, and scat samples of small carnivores have been collected and analyzed in the Conservation Genetics laboratory at SACON. (2) Developing a conservation action plan for Forest Owlet (*Heteroglaux blewitti*), a Critically Endangered species endemic to central India. This project aims to formulate a conservation action plan for the species by forming a Forest Owlet Working Group with researchers from other organizations and State Forest Departments. The field work has been initiated at Nandurbar district of Maharashtra. (3) A comprehensive study of the potential ecological impact of windmill farms on wildlife with special emphasis to avifauna in Karnataka. The study is conducted in Chitradurga and Gadag districts of Karnataka to assess the potential risks to animals including direct loss of habitat through construction of wind farms and their associated infrastructures, displacement of birds in response to the construction of wind farms, and collision or interaction with rotor blades and other structures leading to death or injuries to the birds and animals. The preliminary results showed a collision of 10 animals (six bat species and four birds) with a collision rate of 0.23/windmill/year in the study sites. (4) Ecology of elephants (*Elephas maximus*) in South-West Bengal including population dynamics, migratory pattern, feeding habits and human-elephant conflict. A total of 168 human death cases were reported through semi-structured questionnaire in Bankura North, Bankura South, Purulia, Panchet, Midnapore, Kharagpur and Rupnarayan forest divisions. Largely, human deaths occurred near the forests or plantations than the open field or agricultural areas. The data on elephant movement and habitat use are being collected.

The Division of Landscape Ecology has completed a project on 'Habitat Assessment of Mangalavanam Bird Sanctuary (MBS), Kerala'. Results showed that the water spread/open area available within the PA is being reduced to almost 50%, *i.e.*, from 0.92 ha to 0.51 ha compared to the previous assessment in 2014-15. A total of 97 bird species were recorded in MBS, of which two were new records, *viz.*, Painted Stork (*Mycteria leucocephala*) and Asian Openbill (*Anastomus oscitans*). Another research project is being carried on 'Ecological investigations on five selected endemic trees and their conservation strategies in the forests of Tamil Nadu' to investigate the distribution and abundance and suggest future conservation strategies for these species.

The Ecotoxicology Division completed a research project entitled 'Monitoring and Surveillance of Environmental Contaminants in Birds in India' where poisoning was confirmed in seven incidences involving 13 species of birds. Organochlorine pesticide residues were detected in appreciable concentrations in many species of birds studied. Between 2011 and 2014, kidney and liver tissues and gut contents were analysed for diclofenac in 44 dead vulture samples comprising two species, namely Indian White-backed Vulture (n=32) and Himalayan Griffon *Gyps himalayensis* (n=12). Results showed that 68.75% of the White-backed Vulture and 75% of Himalayan Griffon had diclofenac in toxic level. The ongoing projects of the division include (1) National Centre for surveillance and monitoring of the impact of environmental contaminants on ecosystem components with a special focus on birds. During the reporting period, 127 dead birds comprising 30 species were collected from four states, namely Gujarat, Tamil Nadu, Karnataka and Maharashtra for which analyses has been initiated. (2) To assess the 'Polycyclic Aromatic Hydrocarbons (PAHs) contamination in Palikaranai wetland, Chennai; with fish as an indicator.' During the reporting period, three cycles of sample collection (April 2017 – March 2018) have been completed. A total of 210 individuals belonging to six species of fishes were collected. The results obtained so far from the muscle tissue of 48 individuals of the *Oreochromis* sp., belonging to three sub-species (*O. mossambicus*, *O. niloticus* and *O. aureus*) indicate that naphthalene and phenanthrene were present in all individuals.

The Avian Physiology Division is efficiently involved in the 'Establishment of National Avian Forensic Laboratory at SACON'. The new state-of-the-art facility is procuring advanced equipment like DNA sequencers, capillary electrophoresis, RT-qPCR, fluorescent microscope and will have a repository of avian biological samples. SACON will also serve as a National Center for avian forensics. The new laboratory would be capable of identifying bird species using traces of any biological remains including feathers. Such an establishment would also be deterrent for the illegal bird traders for national law-enforcement agencies.

The Environment Impact Assessment Division has completed three projects. (1) 'Rapid Biodiversity study for the Proposed Multi-product SEZ/Industrial Park at Gopalpur, District Ganjam, Odisha state by M/s Tata Steel SEZ Limited'. The study recorded over 500 species of flora and fauna from the area including 376 species of plants, five species of mammals, 74 species of birds, eight species of herpetofauna, seven species of fishes, 33 species of butterflies and six species of dragonflies. (2) 'Faunal diversity documentation study at Chemfab Alkalis Ltd. campus, Puducherry' recorded an overall avian density of 63.96 individuals/ha (25.88/Acre) during the study period. The study showed that Chemfab campus has a well maintained heterogeneous vegetation cover that supported a wide variety of species. (3) 'Impact of Developmental Projects like road widening on the bird population of Gulbarga City, Karnataka'. A total of 114 bird species, belonging to 16 orders and 51 families, were recorded from Gulbarga. Direct impacts such as road kills and indirect impacts such as habitat loss and fragmentation are the major impacts from road projects applicable at Gulbarga for which mitigatory/management measures were suggested. The ongoing projects include 'Additional study of less than 10 MW Hydroelectric Projects under the Cumulative Impact Assessment of Hydroelectric projects in Sutlej river Basin in Himachal Pradesh', and 'Supplementary Environmental Impact Assessment (EIA) study for the proposed High-Level Bridge across Pulicat Lake, Tamil Nadu with a special focus on birds'.



The Wetland Ecology Division is currently engaged in conducting four projects including 'Criteria for wetland prioritization and framework for wetland monitoring in Tamil Nadu', 'Assessment of status, distribution and threats to the population of threatened Sarus Crane (*Antigone antigone*) in Gujarat and in Uttar Pradesh, and 'Ecological exploration and socioeconomic valuation of pit-lakes in eastern coal fields of India: Implications for Conservation and Sustainable use'. During the reporting period 481 and 890 Sarus Cranes were sighted from Anand, Kheda, Ahmedabad and Gandhinagar districts of Gujarat, and Etawah, Mainpuri, Agra, Kanpur, Sitapur, Auraiya districts of Uttar Pradesh, respectively.

The Nature Education Division has always played a pivotal role in inculcating the admiration for nature and wildlife to the younger generations through several awareness programs and competitions. The division conducted 20 single day programs for students in the campus, in which 1169 students along with 84 teachers participated. The division also introduced residential nature awareness camps since August 2017 at SACON campus in which 289 students with 28 teachers participated. The division has been conducting 'Sálim Ali Memorial Lecture' every year. This year, Dr. Karthikeyan Vasudevan, Senior Principal Scientist, and Head, LaCONES, Centre for Cell and Molecular Biology, Hyderabad was invited as a guest speaker, wherein he talked about the threats of microbial diseases to the survival of genetic variants of endemic and endangered amphibian species. Apart from awareness programs, the division is also engaged in conducting two projects, viz., 'A Study on Bird Hazards in selected Indian Civil Airfields' and 'A Study on Bird Hazards and its Mitigation Measures required at the Multi-Sector Special Economic Zone (SEZ) located near Rajiv Gandhi International (RGI) Airport, Hyderabad'.

In 2017-18, faculty members of SACON have been able to contribute academically by publishing 33 research articles, eight popular articles, 13 technical reports, two book chapters, four books, and participations in more than 20 seminars, conferences, meetings and talks at national and international forums.

From the point of Infrastructure development, SACON is steadily progressing in providing state of the art facilities to its researchers/ students. In the reporting year, Avian Forensic laboratory is being established in the Central Instrumentation Laboratory building. For the first time, SACON has now a basketball court and a cricket ground for the recreation of researchers and students. In addition, a new hostel for Post Graduate students was inaugurated by Shri C.K. Mishra, IAS, Secretary, MoEFCC on March 23<sup>rd</sup>, 2018.

In January 2017, SACON had established the National Ornithological Databank (NOD) Cell to create and manage a data-portal on Indian ornithology to achieve the 'last-mile' connectivity between data sources and user community. During the reporting year, 324 Indian ornithological theses that include 238 Ph.D., 11 M.Phil., and 74 M.Sc. dissertations have been sourced, indexed, and incorporated into the NOD database, along with their abstracts. Further, NOD is planning to expand the taxonomic database as a comprehensive portal on ecology and biology of Indian birds.

SACON conducted several training programs including 'Ornithology and Wildlife studies,' 'Green Skill Development Program,' and a two-day regional training program on 'Monitoring and Management of Wetlands' for officers of Southern Indian States Forest Department. SACON also conducted a workshop on occupancy modeling at 'The Symposium of Contemporary Conservation Practice hosted by Ezemvelo KZN Wildlife and the University of KwaZulu-Natal, South Africa for the Protected Area Managers.' In a first, SACON also organized an 'Orientation Programme' between 21<sup>st</sup> December 2017 and 5<sup>th</sup> January 2018 for the 38 newly engaged research personnel in 10 recently launched research projects sponsored by the Ministry of Environment, Forest, and Climate Change.

Like the previous year, this year too SACON conducted as a Nodal Agency of MoEFCC 'Smart India HACKATHON - 2018, (SIH-2018)' under the theme of 'Environment, Forest and Climate Change' in Coimbatore, Tamil Nadu on 30<sup>th</sup>

and 31<sup>st</sup> of March 2018. SIH-2018 is a digital product building competition co-organized by AICTE, Ministry of Human Resources Development, MyGov, NIC, and NASSCOM. This is a Pan India competition wherein more than a lakh engineering students across the country participated, and 10000 of them were selected to participate in the Grand Finale which was conducted in 28 centers across the country representing different ministries of Government of India. The Inaugural Ceremony at Coimbatore was represented by Mr. Sathiyar Durai IFS, Chief Conservator of Forests, from the Regional Office of the MoEFCC, Chennai. At the national level, Mr. Prakash Javdekar, Hon. Union Minister of Human Resource Development inaugurated the event. Hon. Prime Minister of India addressed the participants on the same day and interacted with the participants through video conferencing facility at 10 pm.



Painted Stork (*Mycteria leucocephala*)

*Division of Ornithology*



## Assessing the population status of synanthropic bird species of India, including House Sparrow and House Crow, and their response to urbanization

Principal Investigator	:	Dr. Rajah Jayapal
Co-PI	:	Dr. S. Babu
Research Fellow	:	Ms. Abhisikta Roy, Mr. Darshan Podtar, Ms. Debanjana Basu, Mr. Golusu Babu Rao, Ms. Pallavi Arora and Ms. S. Priyadarshini
Funding Agency	:	Ministry of Environment, Forests and Climate Change, Government of India
Collaborating Agency (if any)	:	Nil
Duration of the project	:	3 years and 6 months
Status of the project	:	Ongoing
Date of Initiation	:	4 <sup>th</sup> October 2017
Date of Completion	:	3 <sup>rd</sup> April 2021
Annual Progress Report Period	:	October 2017 to March 2018
Total Budget	:	Rs. 2,18,18,125/-
Expenditure incurred during the reporting period	:	Rs. 16,05,140/-

**S**ynanthropic birds, living in close association with humans in human-modified environments are regarded as indicators of changes in urban ecosystems and farmlands. It is widely believed that there has been a sharp decline in their populations across the country in recent times, particularly of House Sparrow (*Passer domesticus*) and House Crow (*Corvus splendens*), and this has evoked considerable concern among the public and conservationists. A general decline in House Sparrow population had also been documented across Europe in the last three decades. Although, the decline has been attributed to a variety of causes including loss of nesting habitats and foraging opportunities, increase in scarcity of insect food in urbanized environments, pesticides, vehicular pollution, predation, and EMR radiation from telecommunication towers, studies in Europe have yielded mixed results with no clear evidence for a single factor for the perceived decline in sparrow populations.



In the absence of long-term bird monitoring programmes in India, there is severe paucity of data on trends in bird populations in our urban and rural landscapes. In order to assess the current status of populations of synanthropic birds of India including House Sparrow and to study their responses to urbanization, the present study has recently been initiated across the country. For the study, mainland India is divided into eco-climatic regions and each region

is subdivided into 2 x 2 km grid-cells, out of which a minimum of 1% have been randomly selected for further field sampling. Birds would be censused in each selected grid-cell using five point-count stations. Unbiased estimates of population sizes of birds will be computed in each region using detection probability function to be modelled from landscape and habitat attributes of transects as covariates.

During the reporting period, six Research Biologists were engaged to work in the project and subsequently they underwent orientation course and field training at SACON. The field survey was initiated during March 2018 and sampling grids in western Maharashtra were covered.





## Developing Conservation and Management Plans for Selected Important Bird and Biodiversity Areas (IBAs) of India

Principal Investigator	: Dr. Rajah Jayapal
Co-PI	: Dr. S. Babu and Dr. P. R. Arun
Research Fellow	: Ms. Ankita Das, Mr. Clince P. Jose, Ms. R.K. Niveditha and Ms. Suryamol Sukumaran
Funding Agency	: Ministry of Environment, Forests and Climate Change, Government of India
Collaborating Agency (if any)	: Nil
Duration of the project	: 3 years
Status of the project	: Ongoing
Date of Initiation	: 4 <sup>th</sup> October 2017
Date of Completion	: 3 <sup>rd</sup> April 2020
Annual Progress Report Period	: October 2017 to March 2018
Total Budget	: Rs. 1,09,21,000/-
Expenditure incurred during the reporting period	: Rs. 13,74,266/-



Important Bird and Biodiversity Areas (IBAs) are a network of sites, which are exceptionally rich in birds and other taxa and hold significant populations of rare, endemic, and threatened species. Though they are not entitled to any legal protection status as per the Indian laws, they, however, assume greater conservation significance as strongholds of key biodiversity. In India, there are 554 IBAs out of which 506 sites have globally threatened species. Of these IBAs, 309 are managed and protected by state forest departments and 245 are not protected at all. Although, a small proportion of such non-protected IBAs do enjoy community patronage, almost all do not have any conservation action plan or management prescription for their sustenance. The present study seeks to address this gap by developing comprehensive and participatory management plans for select IBAs in the country, particularly those that remain unprotected or under documented. IBAs are to be selected based on a set of criteria including their protection status, biodiversity significance, geographical area, connectivity, biogeographical attribute, and ecosystem values. The project objective is to be achieved through multiple and simultaneous tasks i.e., documentation of the IBA history, mapping the



land cover and land use patterns, extracting physiographic and environmental parameters, biodiversity survey and status assessment, and quantifying the socio-economic conditions of the local communities and their dependence on IBAs for their livelihood. It is proposed to prepare management plans for two IBAs in each year, so that we can cover six IBAs at the end of the project.

During the reporting period, four Research Biologists were engaged to work in the project and they later underwent orientation course and field training at SACON. Subsequent to a letter of understanding for collaboration with the Uttarakhand State Forest Department, we have initiated the field work at Jhilmil Jheel Conservation Reserve, Haridwar Forest Division in March 2018. Jhilmil Jheel was designated as an IBA for its role in safeguarding extensive riverine grassland habitat and its avifauna. In the meantime, we await formal research permits for work to be initiated in other IBAs.



## Assessing the distribution, population and habitat use of three endangered bird species to develop conservation plan for species and their habitats

Principal Investigator	:	Dr. S. Babu
Co-PI	:	Dr. R. Jayapal, Dr. H.N. Kumara and Dr. Manchi Shirish S.
Research Fellow	:	Mr. S. Suresh Marimuthu, Mr. D. Tamiliniyan, Mr. Harif Parengal and Mr. Sarbasis Dutta
Funding Agency	:	Ministry of Environment, Forests and Climate Change, Government of India
Collaborating Agency (if any)	:	Nil
Duration of the project	:	3 years
Status of the project	:	Ongoing
Date of Initiation	:	4 <sup>th</sup> October 2017
Date of Completion	:	3 <sup>rd</sup> April 2020
Annual Progress Report Period	:	October 2017 to March 2018
Total Budget	:	Rs. 95,58,250/-
Expenditure incurred during the reporting period	:	Rs. 12,20,980/-

India supports 88 threatened species of birds including 16 Critically Endangered and 21 Endangered species. Despite India's greater proportion of threatened birds (except for few birds viz. vultures, bustard, and florican), species-specific conservation plans are not conceived for most of the RET bird species in India. Draft National Wildlife Action Plan (2017-2031), Government of India necessitates the importance of initiating conservation measures by way of conducting status surveys, preparation of recovery plans, and identification and protection of critical habitats. In this context, as an initiative, a project was launched with the financial support from MoEFCC to develop a conservation plan for three endangered bird species viz., Manipur Bush-quail *Perdica manipurensis*, Swamp Grass-babbler *Laticilla cinerascens*, and Black-bellied Tern *Sterna acuticauda*.

Prior to the field surveys, literature related to their occurrence, population and habitat preference was collated to demarcate the sites for the reconnaissance and to design the intensive sampling. Since basic ecological information for all these species is not available, primary information will be collected from the field. Further the factors including anthropogenic pressures that influence the abundance, habitat use, and breeding of these species will be identified and quantified by employing appropriate sampling protocols.

Based on the available literature on Black-bellied Tern, we selected nine rivers (Cauvery, Bharathapuzha, Tungabhadra, Godavari, Chambal, Yamuna, Mahanadi, Ganges and Brahmaputra) for one-time survey and two rivers (Chambal and Mahanadi) for intensive sampling. We completed the field survey for Black-bellied Tern in two rivers viz., River Bharathapuzha and Rajasthan part of River Chambal. Black-bellied Tern was not sighted in the Bharathapuzha river, but we sighted one individual in Malampuzha dam during the survey. In Rajasthan part of River Chambal, we covered 83 grids of 2 km length. Of the 83 grids, we detected Black-bellied Tern in 12 grids. No nest of Black-bellied Tern was observed during the survey, but courtship displays were observed. Hitherto, 12 nests of River Tern were observed in Chambal. A maximum of 12 Black-bellied Terns were observed on exposed sand

near Dholpur. Preliminary results revealed that the species occupied downstream areas of the river and avoided the upstream areas of the river Chambal. We have recently initiated the field surveys in Assam and Manipur for Manipur Bush-quail and Swamp Grass-babbler.



**River tern (*Sterna aurantia*)**



*Division of  
Conservation Ecology*

Edible-nest Swiftlet (*Collocalia fuciphaga*)





## Conservation of the Andaman Serpent-eagle (*Spilornis elgini*) in the Andaman Islands: Phase - I

Principal Investigator	:	Dr. Manchi Shirish S.
Research Fellow	:	Ms. Shivkumari Patel
Funding Agency	:	Raptor Research and Conservation Foundation, Mumbai
Collaborating Agency (if any)	:	Nil
Duration of the project	:	3 years 6 month
Status of the project	:	Completed
Date of Initiation	:	29 <sup>th</sup> December 2014
Date of Completion	:	30 <sup>th</sup> June 2017
Annual Progress Report Period	:	April 2017 to June 2017
Total Budget	:	Rs. 11,56,500/-
Expenditure incurred during the reporting period	:	Rs. 51,400/-

The study was conducted to estimate the population, abundance and distribution of the endemic Andaman Serpent Eagle (ASE) *Spilornis elgini* and identify potential threats to their population. We selected the islands with >100 km<sup>2</sup> area to conduct the occupancy survey using grid sampling method (5 km X 5 km cell size). Occupancy-Abundance Model estimated Naïve Occupancy ( $\Psi$ ) = 0.83 ± 0.16 SD for ASE with the detection probability (P) = 0.8 ± 0.16 SD indicating that the species occupied more than 80% of the total area surveyed. Also, the model estimated the occupancy-abundance of the species as 4.4 individuals per cell of 25 km<sup>2</sup>, indicating the density of 4 to 5 individuals in each 25 km<sup>2</sup> cell surveyed. The species seem to be more common in the North and Middle Andaman than South Andaman with the estimated abundance of 4.8 and 4 individuals per cell, respectively. The Habitat-Occupancy Model depicted low dependency of ASE on the habitat (R<sup>2</sup> = 0.35). However, this known inland forest species is found to be exclusively nesting (n = 3) in the Mangrove forest.

The Single-Season Two Species Model estimation showed that the crested serpent eagle (CSE) *Spilornis cheela* (Naïve Occupancy = 0.78) occupied 78% of the landscape surveyed and the endemic ASE (Naïve Occupancy = 0.22) occupied the remaining 22% of the area. Both the species were observed co-occurring in the deciduous, semi-evergreen and mangrove forests and agricultural land. While assessing the competition across landscape between these two species, the model estimated their co-occurrence ( $\phi$ ) value of 0.0314, suggesting 30% possibility of these species occurring together.



**Andaman Serpent Eagle (*Spilornis elgini*)**

The frequent killing of the free-ranging poultry of the local people by the raptors resulted in a Raptor-Human Conflict. Around 68.75% (N=112) people, residing in and around the forest, encountered the conflicts either by Changeable Hawk Eagle (CHE) *Nisaetus limnaetus*, CSE or ASE. The Raptor-Human Conflict was the primary reason for people (66.07%) found hunting raptors to save their poultry. Living in the hamlets inside the forest was found to be a suitable condition for hunting activities ( $\chi^2=21.975$ ,  $P<0.05$ ) as people in these areas were more involved in the hunting of raptors. People with good knowledge (20.82%) about raptors were found using all the three methods (Air gun, trap and Catapult) to hunt the raptors. However, they mostly used Air guns (41.69%), followed by the traps (33.33%). An awareness programme for the local people is recommended for the conservation of raptors in the Islands to mitigate the conflicts.



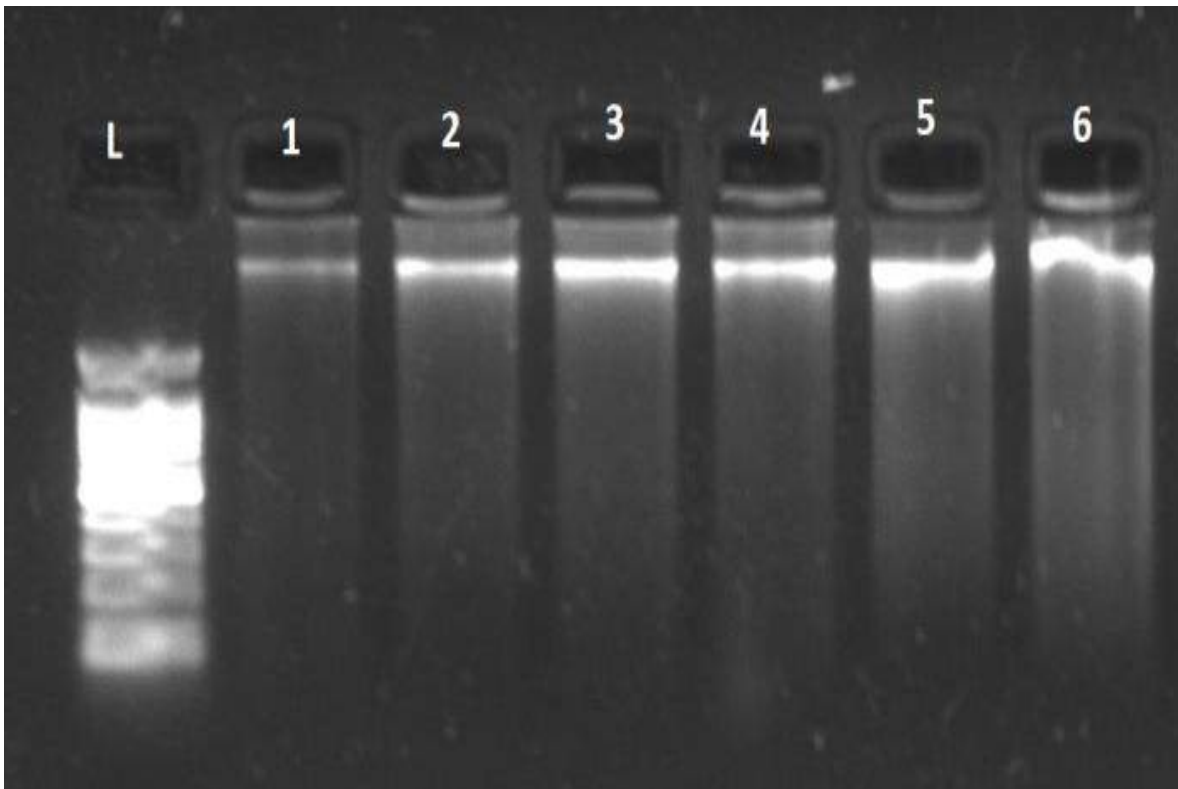
## Understanding Dispersal Patterns in the monomorphic Edible-nest Swiftlet of Andaman Islands using biotechnological tools

Principal Investigator	:	Dr. Manchi Shirish S.
Co-PI	:	Dr. Ram Pratap Singh
Research Fellow	:	Mr. Prathamesh Gujarpadhye
Funding Agency	:	Department of Biotechnology, Government of India
Collaborating Agency (if any)	:	Nil
Duration of the project	:	3 years
Status of the project	:	Ongoing
Date of Initiation	:	04 <sup>th</sup> January 2016
Date of Completion	:	03 <sup>rd</sup> January 2019
Annual Progress Report Period	:	April 2017 to June 2018
Total Budget	:	Rs. 45,78,200/-
Expenditure incurred during the reporting period	:	Rs. 6,11,693/-

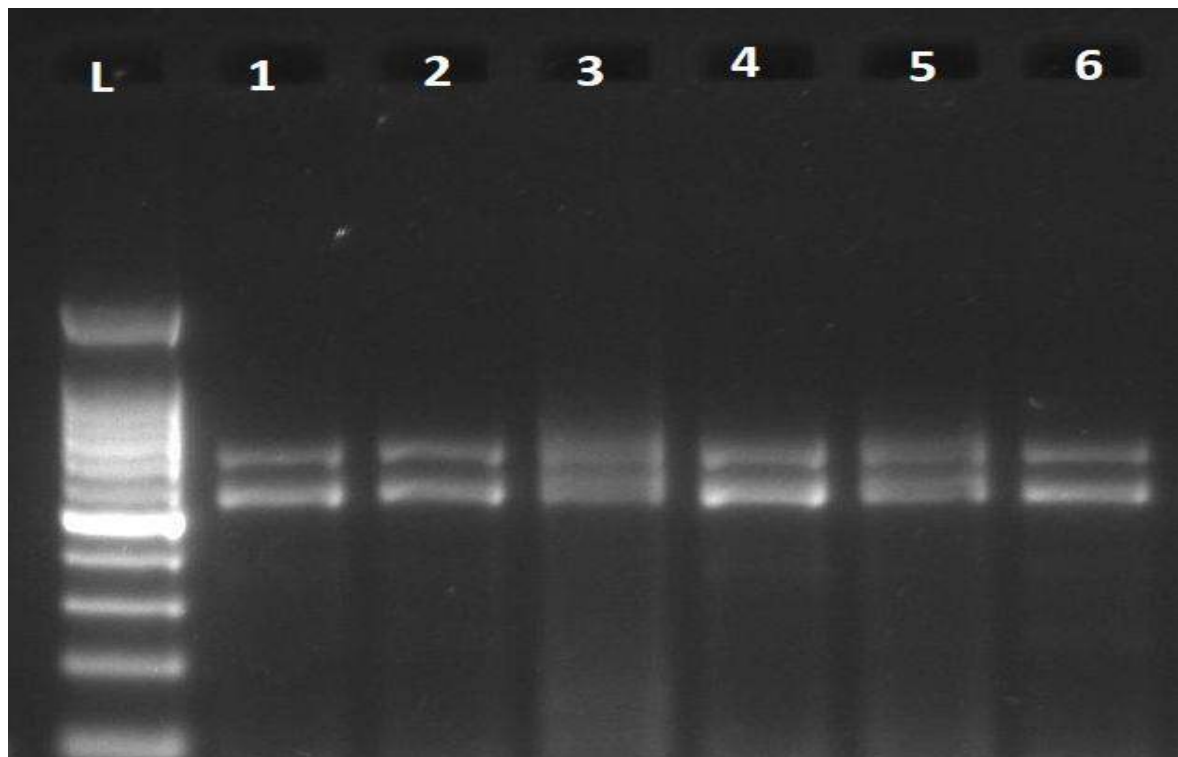
The study was designed to understand dispersal patterns of the Edible-nest Swiftlet *Aerodramus fuciphagus* now recently recognized as Andaman Edible-nest Swiftlet *Aerodramus inexpectatus*. After selection of 12 caves for intensive sampling, we captured all the adult (n=222) edible-nest swiftlets breeding/roosting and released them safely after marking and collecting blood samples. In these selected caves, 42.64% (n=129) of the nests had two chicks and the remaining had a single chick. All the 192 chicks encountered, during the capture, in the selected 12 caves were then captured on the nests, marked using the Aluminium Z-rings and successfully released after collecting blood and feather samples. All the chicks were found successfully fledged. During the 2<sup>nd</sup> season of mist-netting, we could capture the adult immigrants in the colonies inside five selected caves, because of the prolonged rains in the islands. Capturing of the adults in the remaining caves can be completed after the egg-laying period is over. During capture, we encountered 36.67% (n=75) of new birds in the five of the 12 selected caves. These immigrants captured were largely chicks fledged out during the previous alternate season (during 2016), from the same or different colonies of the Edible-nest Swiftlet. We have successfully isolated the genomic DNA from the blood stored on FTA classic card. The OD260/OD280 values of all samples ranged from 1.7 to 1.9 which indicates the purity of genomic DNA. Further, agarose gel electrophoresis showed high-quality DNA. The amplified fragment of CHD gene revealed two bands in each sample which indicates female sex. However, these results need to be further confirmed using sequencing and amplification of CHD gene in confirmed sex identity. Sequencing and other confirmatory work is under process. The prolonged rains are believed to cause a delay in the breeding season and hence some swiftlet pairs were observed nesting even during March, though during the 2<sup>nd</sup> season of sampling (2018) the population in the selected caves varied drastically as compared to the 1<sup>st</sup> season (2017). Drawing any conclusion about the relationship of the colony size and the proportion of the immigrants coming to the particular cave could not be assessed. Similarly, until the end of the 2<sup>nd</sup> season sampling, we could not conclude the results of a function of the distance between the colonies/ caves in dispersal.



Successful release of the Edible-nest Swiftlet



Agarose gel electrophoresis to access the quality of genomic DNA



Amplification of CHD gene to reveal the Identification of the sex of individual birds of edible nest swiftlets

## Identifying Indian cavity nesters most vulnerable to the loss of large trees

Principal Investigator	:	Dr. Mark Stanback
Co-PI	:	Dr. Manchi Shirish S.
Research Fellow	:	-
Funding Agency	:	National Geographic Society, USA through Davidson College, Dept. of Biology, Box 7040 Davidson, NC 28035-7040, USA.
Collaborating Agency (if any)	:	Davidson College, Dept. of Biology, Box7040 Davidson, NC 28035-7040, USA
Duration of the project	:	2 years 6 month
Status of the project	:	Ongoing
Date of Initiation	:	22 <sup>nd</sup> December 2014
Date of Completion	:	30 <sup>th</sup> June 2017
Annual Progress Report Period	:	April 2017 to June 2017
Total Budget	:	Rs. 1,35,900/-
Expenditure incurred during the reporting period	:	Rs. 5,560/-

The study aimed to identify the competitive relationship among the secondary users of the cavities in the large trees with focus on birds. The objective was set to identify the secondary cavity-nesting birds vulnerable to the loss of large trees. To understand the competition, we provided an alternate nesting sites with nest boxes of two different sizes. Keeping the territorial behavior of different cavity-nesting species, we placed the boxes in various combinations (trios = three nest boxes 30 meters away from each other, pairs = two nest boxes 30 meters away from each other and single nest box). All these nest boxes in combinations were placed at least 300 meters away from each other. All these nest boxes were visited once in 15 days to record its status of occupancy by birds.

In addition to that 56 nest boxes were installed during 2016 in and around Anaikatty area of Coimbatore, Tamil Nadu. Three nest boxes were installed in the Anaikatty region and 46 nest boxes in the private lands close to the forested areas in Mannarkkad District of North Kerala during July 2017. Among the 46 nest boxes installed, we lost five boxes due to theft. Totally, 21 boxes were occupied during the theft. Totally, 21 boxes were occupied during the reporting period, of which, 12 (57.14%) boxes were occupied by the honeybee (*Apis* sp.) followed by eight (38.10%) occupied by unidentified bird species and the remaining box was occupied by Indian Palm Squirrel (*Funambulus palmarum*). The boxes began to be occupied by November 2017 and the initial occupants were the Honeybees followed by birds and squirrel.

Twenty-three (41.07%) nest boxes out of fifty-six installed earlier were occupied during the present season. Out of those 23 nest boxes, 11(47.83%) nest boxes were occupied by the Indian Palm Squirrel (*Funambulus palmarum*) followed by birds occupying seven nest boxes (30.43%) and Honeybee (*Apis* sp.). Of the seven nest boxes occupied by birds, two boxes were occupied by the Spotted Owllet (*Athene brama*) and other five were occupied by Common Myna (*Acridotheres tristis*).

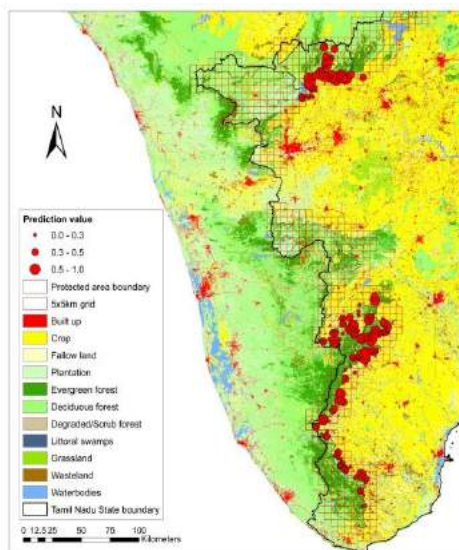


Indian Palm Squirrel in the bird nest box

## Assessing anthropogenic threats to large carnivore population in the Western Ghats part of Tamil Nadu

Principal Investigator	:	Dr. T. Ramesh
Research Fellow	:	Ms. V. Gayathri
Funding Agency	:	Science and Engineering Research Board (SERB), Government of India
Collaborating Agency (if any)	:	Nil
Duration of the project	:	5 years
Status of the project	:	Ongoing
Date of Initiation	:	8 <sup>th</sup> March 2017
Date of Completion	:	7 <sup>th</sup> March 2022
Annual Progress Report Period	:	April 2017 to March 2018
Total Budget	:	Rs. 89,00,000/-
Expenditure incurred during the reporting period	:	Rs. 9,00,000/-

**H**abitat loss due to anthropogenic pressure such as agriculture expansion, grazing and human encroachment often forces large mammals into mosaic landscapes, subsequently resulting in human-wildlife conflict (HWC). Over the past few decades, human large mammal conflict incidents are on a rise in



Sampled grids showing predicted probability of leopard conflict in the fringe areas of Protected areas

Tamil Nadu (TN). Often livestock depredation, crop damage and human injury/death result in retaliation by humans, killing conflict animals by cattle poisoning, electrocution and poaching. Thus, it is imperative to study the drivers of HWC in fringe habitats of Protected Areas of TN. We conducted 297 semi-structured questionnaire surveys on HWC with reference to tiger (*Panthera tigris*), leopard (*Panthera pardus*), dhole (*Cuon alpinus*), sloth bear (*Melursus ursinus*), elephant (*Elephas maximus*) and gaur (*Bos gaurus*) in households situated within 5 km buffer of five Protected Areas. Our preliminary results showed that the maximum conflict incidents were recorded for elephant (35%), followed by leopard (32%), sloth bear (7%), dhole (7%) gaur (6%) and tiger (4%). Human injury/death was caused by sloth bear, elephant and gaur. Through predictive probability analysis it was found that leopard conflict increased significantly with increase in livestock abundance particularly medium sized habitat loss due to anthropogenic pressure such as agriculture expansion, grazing and human encroachment often forces large mammals into mosaic landscapes, subsequently resulting in human-wildlife conflict

(HWC). Over the past few decades, human-large mammal conflict incidents are on a rise in Tamil Nadu (TN). Often livestock depredation, crop damage and human injury/death result in retaliation by humans, killing conflict animals by cattle poisoning, electrocution and poaching. Thus, it is imperative to study the drivers of HWC in fringe habitats of Protected Areas of TN. We conducted 297 semi-structured questionnaire surveys on HWC with reference to tiger (*Panthera tigris*), leopard (*Panthera pardus*), dhole (*Cuon alpinus*), sloth bear (*Melursus ursinus*), elephant (*Elephas*



*maximus*) and gaur (*Bos gaurus*) in households situated within 5 km buffer of five Protected Areas. Our preliminary results showed that the maximum conflict incidents were recorded for elephant (35%), followed by leopard (32%), sloth bear (7%), dhole (7%) gaur (6%) and tiger (4%). Human injury/death was caused by sloth bear, elephant and gaur. Through predictive probability analysis it was found that leopard conflict increased significantly with increase in livestock abundance particularly medium sized livestock as leopard largely prefer medium sized prey species. It was also found that leopard conflict was bound to be much higher in close proximity to PAs in the fringe habitats as large number of livestock share the same water sources as other wildlife and graze illegally. This dependence of local communities on forested areas for grazing might reduce the food source availability and potentially transmit diseases to wild ungulates. We also found that probability of leopard attack was high when livestock unattended. Sampled grids showing predicted probability of leopard conflict in the fringe areas of Protected areas Therefore, the human-large carnivore conflict probability patterns across socio-eco-cultural gradients may help policy makers particularly Forest Managers of Tamil Nadu formulating management plans and develop effective mitigation measures to reduce human-wildlife conflicts. Now, we are in the process of collecting data from more sampling areas across conflict gradients.





Forest Owllet (*Heteroglaux blewiti*)

*Division of Conservation Biology*



## Survey for small cats in Sanjay Gandhi National Park, Mumbai

Principal Investigator	:	Dr. Shomita Mukherjee
Co-PI	:	Mr. Nayan Khanolkar and Dr. P. V. Karunakaran
Funding Agency	:	Maharashtra Forest Department
Collaborating Agency (if any)	:	Nil
Duration of the project	:	18 months
Status of the project	:	Ongoing
Date of Initiation	:	29 <sup>th</sup> March 2017
Date of Completion	:	28 <sup>th</sup> September 2018
Annual Progress Report Period	:	April 2017 to March 2018
Total Budget	:	Rs. 7,72,012/-
Expenditure incurred during the reporting period	:	Rs. 3,45,940/-

**T**he aim of the project is to survey small cats of Sanjay Gandhi National Park (SGNP) and surrounding areas to answer questions regarding their distributions, threats, coexistence and diet through molecular analysis of scats for species identities, camera trapping and scat analysis for diet estimations. In April and May 2017, 40 volunteers from various backgrounds and careers from Mumbai along with 20 forest department staff, joined the training program in field techniques that was held in SGNP, Mumbai.

Training included procedures in scat collection, measuring habitat variables, using GPS and mapping using QGIS. Several trails in various parts of the Park have been identified for scat collection. To date, more than 100 scats have been collected and habitat variables have been recorded for all scat locations. Twenty-two camera traps have been procured in March 2018 and camera trapping work will be initiated in the coming months. Collected scats will be analyzed from May 2018 in the Conservation Genetics laboratory at SACON.



**Demonstration of field techniques to volunteers**



**Demonstration of field techniques to Forest Officials**

## Developing a conservation action plan for Forest Owlet (*Heteroglaux blewitti*), a Critically Endangered species endemic to central India

Principal Investigator	:	Dr. Shomita Mukherjee
Co-PI	:	Dr. Rajah Jayapal and Dr. Robin Vijayan
Research Fellow	:	Mr. Pankaj Koparde, Ms. Srijita Ganguly, Ms. Zainab Khan, Mr. Kaushik Koli and Ms. Aditi Neema
Funding Agency	:	Ministry of Environment, Forests and Climate Change, Government of India
Collaborating Agency (if any)	:	Indian Institute of Science Education and Research, Tirupati
Duration of the project	:	3 years
Status of the project	:	Ongoing
Date of Initiation	:	4 <sup>th</sup> October 2017
Date of Completion	:	3 <sup>rd</sup> October 2020
Annual Progress Report Period	:	October 2017 to March 2018
Total Budget	:	Rs. 3,06,09,781/-
Expenditure incurred during the reporting period	:	Rs. 41,85,233/-

**T**he Forest Owlet (*Heteroglaux blewitti*), is endemic to central India and has been recently categorized as Endangered in the IUCN Red List. Despite several surveys and studies on the species, its geographical range and the factors that govern its distribution remain largely unknown. The species is known to exist in a few pockets of largely dry deciduous teak dominated forests and the connectivity between these pockets of populations is not known. Contemporary studies using modeling approaches to predict its distribution suggest a



**Potential habitat of Forest Owlets comprising rolling hills of dry deciduous forest**

much larger range (and hence putative population connectivity) than previously known. However, these models need to be validated. Further, a recent study that used molecular data to resolve the phylogenetic affinities of Forest Owlet, suggested that the species is positioned within the Athene clade. However, finer relationships within the Athene clade as well as the status of population genetic connectivity in Forest Owlet were not resolved and require a more sophisticated analysis using next generation sequencing tools. This project aims to bridge the existing information gap and ultimately formulate a conservation action plan for

the species by forming a Forest Owlet Working Group with researchers from other organizations working on the species and State Forest Departments within the range of Forest Owlet distribution. Through field surveys in areas predicted by previous models, data on presence of the species as well information on habitat attributes such as tree species, GBH, height of canopy and canopy cover will be gathered. These will be used to further refine the existing models and predict the distribution of Forest Owlet at various spatial scales and model for impacts of future climate change and land use on the persistence of the species. Results will help in identifying high priority conservation areas for the species. Additionally, population connectivity will be determined through collection of feathers and blood samples and DNA analysis using next generation sequencing tools. One senior and two junior Research Biologists have been engaged on the project and permit requests have been sent to various Forest Departments to begin field data collection. Additionally, equipment and chemicals to begin field and laboratory work have been procured. Field work was initiated with a field trip to Nandurbar district of Maharashtra in the month of March where researchers were trained in field techniques and are now collecting required data.



Forest Owlet (*Heteroglaux blewitii*)



## A comprehensive study of the potential ecological impact of windmill farms on wildlife with special emphasis to avifauna in Karnataka

Principal Investigator	: Dr. H. N. Kumara
Co-PI	: Dr. S. Babu
Research Fellow	: Ms. Malyasri Bhattacharya, Mr. Harif Parengal, Mr. Tamiliniyan and Mr. Mahesh D. Bilaskar
Funding Agency	: Karnataka Forest Department, Renewable Energy Development Limited, National Institute of Wind Energy
Collaborating Agency (if any)	: Nil
Duration of the project	: 2 years
Status of the project	: Ongoing
Date of Initiation	: July 2016
Date of Completion	: July 2018
Annual Progress Report Period	: April 2017 to March 2018
Total Budget	: Rs. 39,07,000/-
Expenditure incurred during the reporting period	: Rs. 17,54,970/-

**W**indmills cause three major potential risks to animals *i.e.* (1) direct loss of habitat through construction of wind farms and their associated infrastructures, (2) displacement of birds in response to the construction of wind farms, and (3) collision or interaction with rotor blades and other structures leading to death or injuries to the animals. The state 'Karnataka' has a high potential for wind farms, and many wind farms have already been established. Considering the ecological sensitivity and density of wind farms, we selected



Camera trap image of four-horned antelope near windmills at Kappadagudda, Gadag district

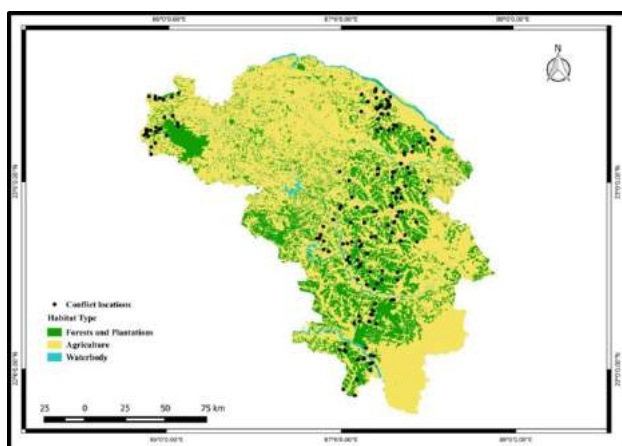
Chitradurga and Gadag districts for intensive sampling. The year-round monitoring of windmills was made to assess the bird diversity and estimate the collision rate of animals. We recorded 208 and 189 species of birds from Chitradurga (three hill ranges - VV Sagar, Jogimatti and Chalkere hills and four wetlands) and Gadag districts respectively (from two hill ranges-Kappadagudda and Kelur, one agriculture fields-Papanasi and four wetlands), which represents nearly 36 - 40% of Karnataka's bird diversity. We recorded collision of 10 species (six bats and four birds) with a collision rate of 0.23/ windmill/ year. Our review suggests that the collision rate in Karnataka is lesser than Satara in Maharashtra and Jangi in Gujarat. Globally, the collision rate calculated for different windmill sites that range from zero in the

cornfield of Friedrich -Wilhelm-Lubke-Koog to two in Zeebrugge, Germany. Although the collision rate in Karnataka appears to be on the lower side, the same cannot be ignored since many of the collisions happened in short span of time that is in post monsoon.

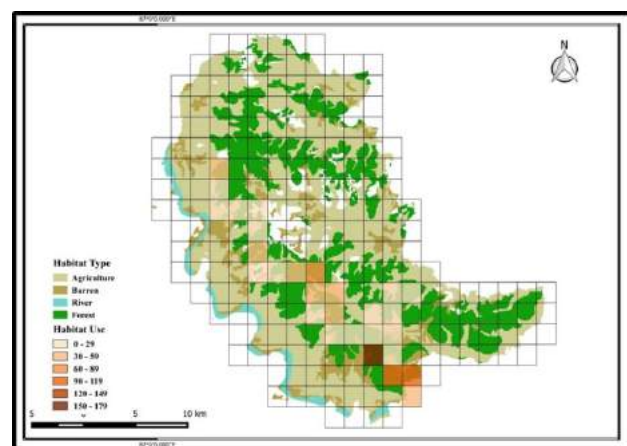
## Ecology of elephants (*Elephas maximus*) in South-West Bengal including population dynamics, migratory pattern, feeding habits and human- elephant conflict

Principal Investigator	: Dr. H. N. Kumara
Co-PI	: Dr. P. A. Azeez
Research Fellow	: Ms. Aakriti Singh
Funding Agency	: West Bengal Forest and Biodiversity Conservation Society
Collaborating Agency (if any)	: Nil
Duration of the project	: 3 years
Status of the project	: Ongoing
Date of Initiation	: April 2016
Date of Completion	: March 2019
Annual Progress Report Period	: April 2017 to March 2018
Total Budget	: Rs. 34,56,000/-
Expenditure incurred during the reporting period	: Rs. 5,80,000/-

**H**uman-elephant conflict refers to a range of direct and indirect interactions between human and elephants that potentially harm both. We recorded 168 death cases in Bankura North, Bankura South, Purulia, Panchet, Midnapore, Kharagpur and Rupnarayan forest divisions. The maximum human casualties were reported due to elephants between 0300 and 0600 hours. Largely human deaths occurred near the forests or plantations, than in the open field or agricultural areas. This indicates that agriculture field or villages next to forest or plantations where the most elephant attacks occurred, when people are in agricultural activities, open defecation, around their houses, protecting their crop fields and during NTFP collection. We overlaid the grid cells of 2 x 2 km on the entire study area and considered these grid cells as a unit of assessment of habitat use by the elephants. We selected an elephant herd with 10 individuals for long-term monitoring for their movement and habitat use. The six months data showed that out of 233 grid cells of the landscape, the study herd intensively used only 23 grid cells. The pattern of habitat use and movement of these elephants are being evaluated.



Depicting the locations of human-elephant conflict in South West Bengal



The intensity of habitat use by an elephant herd in Midnapur division, South West Bengal



Indian Eagle Owl (*Bubo bengalensis*)

*Division of Landscape Ecology*



## Ecological investigations on five selected endemic trees and their conservation strategies in the forests of Tamil Nadu, India

Principal Investigator	: Dr. Chellam Muthumperumal
Co-PI	: Dr. P. Balasubramanian
Funding Agency	: Science and Engineering Research Board (SERB), New Delhi
Collaborating Agency (if any)	: Nil
Duration of the project	: 3 years
Status of the project	: Ongoing
Date of Initiation	: May 2016
Date of Completion	: May 2018
Annual Progress Report Period	: April 2017 to March 2018
Total Budget	: Rs. 32,90,000/-
Expenditure incurred during the reporting period	: Rs. 10,10,000/-

Indian forests cover 22.5% of the country's geographical area and harbour more than 17,000 angiosperms. The Western Ghats that is one of the hot spots of biodiversity in India harbour 0.7% of the global plant species and unique vegetation compositions. About 63% of India's woody evergreen taxa are endemic to the Western Ghats. Several endemic plant species in India are considered threatened and are listed in the IUCN Red List. The present study is carried out to investigate the distribution and abundance of five selected endemic tree species in Tamil Nadu Western Ghats and suggest future conservation strategies for these species. Agasthyamalai Biosphere Reserve and Nilgiri Biosphere Reserve are two important biogeographic regions in Western Ghats. The present study was carried out in Mundanthurai range of Kalakkad-Mundanthurai Tiger Reserve in the Agasthyamalai Biosphere Reserve and Avalanche of Nilgiri South Division in Nilgiri Biosphere Reserve.



Air layering technique adopted to raise saplings of *Wendlandia angustifolia*

The objective of the project is to assess the population status of selected endemic trees, record their phenology and dispersal mechanism, measure the anthropogenic pressures and develop suitable conservation plans. Field surveys were conducted on four endemic tree species namely, *Wendlandia angustifolia* Wight ex Hook.f., *Syzygium microphyllum* Gamble, *Memecylon flavescens* Gamble, and *Syzygium densiflorum* Wall. Ex Wight & Arn to collect data on the population status, regeneration and phenology. A total of 103 plots (each measuring 0.1 ha area) comprising 93 plots in Mundanthurai and 10 plots in Nilgiris were laid to gather data on these focal endemic species. In addition, seeds of focal endemic species were subjected to germination tests and air layering technique was tried to develop saplings.

Hook.f., *Syzygium microphyllum* Gamble, *Memecylon flavescens* Gamble, and *Syzygium densiflorum* Wall. Ex Wight & Arn to collect data on the population status, regeneration and phenology. A total of 103 plots (each measuring 0.1 ha area) comprising 93 plots in Mundanthurai and 10 plots in Nilgiris were laid to gather data on these focal endemic species. In addition, seeds of focal endemic species were subjected to germination tests and air layering technique was tried to develop saplings.

*Wendlandia angustifolia* (Rubiaceae) is a small tree growing on rock crevices in low to medium altitude riparian forests. It is placed in the IUCN 'Extinct' category. The present study recorded the extended distribution of *W. angustifolia* in the stream habitat of Tamirabarani river basin in Karaiyar, Servalar and Manimuthar. A total of 1091 individuals were enumerated. *Syzygium microphyllum* (= *Syzygium gambleanum*) (Myrtaceae) is a medium sized tree distributed along the margin of evergreen forests. This species is endemic to southern Western Ghats which is mainly restricted to the Agasthyamalai hills. This species is placed in the 'Endangered' category of the IUCN Red list. The present study explored and identified the distribution of a sub-population of *S. microphyllum* in Yanai elumbu oodai, Sengalthaeri, Kalakkad and scattered locality in Upper Kodaiyar in Kalakkad Mundanthurai Tiger Reserve, Western Ghats. Flowering of this species was observed in December and January and fruiting was observed during February and March. *Memecylon flavescens* (Melastomataceae) is a small tree distributed in shola patches of Avalanche forests, Nilgiri South Division, Tamil Nadu. It is placed in IUCN 'Endangered' category. A total of 180 individuals were recorded in 1ha in Cauliflower Shola. Flowering of this species was observed during February-March and fruiting during April-May. Seed collection and vegetative germination through air layering is in progress. *Syzygium densiflorum* Wall. Ex Wight & Arn. (= *Syzygium arnottianum* Walp) [Myrtaceae] is a large tree found in high elevation evergreen forests between 1500 m and 2300 m. This species is distributed in scattered localities in the Nilgiri, Anamalai and Palni Hills. This species is placed in the 'Vulnerable' category of the IUCN Red list. A total of 22 individuals were recorded in 1 ha area sampled in the Cauliflower Shola and Nilgiri South Division. Flowering of this species was observed in April-May and fruiting in June. Vegetative germination through air layering has been adopted as a part of the conservation initiative of this project.



*Syzygium densiflorum*



## Habitat Assessment of Mangalavanam Bird Sanctuary, Kerala

Principal Investigator	:	Dr. P. V. Karunakaran
Co-PI	:	Dr. Goldin Quadros and Dr. S. Babu
Research Fellow	:	Mr. Kuldeep J. M.
Funding Agency	:	Forest and Wildlife Department, Kerala
Collaborating Agency (if any)	:	Nil
Duration of the project	:	3 Months
Status of the project	:	Completed
Date of Initiation	:	May 2017
Date of Completion	:	March 2017
Annual Progress Report Period	:	April 2017 to May 2017
Total Budget	:	Rs. 75,000/-
Expenditure incurred during the reporting period	:	Rs. 75,000/-

**T**he Mangalavanam Bird Sanctuary (MBS), Kerala with an area of 2.74 ha of wetlands with mangrove vegetation is an excellent habitat for many resident and migratory birds over the years. Geographically, it is located at 9°59' 13" North and of 76°16' 26" East very close to sea level with flat topography and located very near to the Vembanad lake, one of the Ramsar sites in the state. SACON, during the year 2014-15 assessed the habitat of MBS and suggested certain management interventions for improving the habitat quality of the Sanctuary. The PA Management implemented some of the recommendations and requested the Centre to conduct a review on the impact of interventions. The following tasks were conducted in the assessment (i) physical and chemical properties of water and sediment, (ii) vegetation profile and (iii) the bird population with special reference to wetland birds. The data collection was carried out during the month of March 2017. Primary data was collected for the environmental parameters such as water and sediment and on birds, secondary information (both published and unpublished) along with primary data were used. Regarding vegetation profile, species list (mangrove and non-mangrove) was prepared and general observations on vegetation profile were also made. The ongoing management interventions such as construction of walkway inside the Sanctuary and small dyke to impound water were also studied for its impact. The physical and chemical analysis of sediment and water was carried in our laboratory during April and May 2017.



During the present study it was found that the water spread/open area available within the PA is being reduced compared to the previous study. As per the available data the open area has been reduced to almost 50%, i.e., from 0.92 ha to 0.51 ha. This reduction will negatively impact the habitat use of many wetland birds. Luxuriant canopy of both mangroves and non-mangroves will restrict even the visibility of the open habitat from a distance, hence the visit of birds will be affected.

On birds, during the present survey two more species viz., Painted Stork (*Mycteria leucocephala*) and Asian Openbill (*Anastomus oscitans*) could be added to the list of species thus making the total bird species pool of MBS to 97 species. Nevertheless, it is noticed that the habitat of MBS is becoming more towards woodland than wetland. Even the general composition of bird species recorded over the years indicated diminishing number in wetland bird species and increase in woodland species. This may be due to the natural alteration of the habitat in and around the PA.

The deposition of sediments from the Vembanad lake, tidal influx and sewage water from the neighbouring commercial and other establishment made drastic impact to the physical and chemical properties of the water and sediment. The litter from the nearby area increased the organic matter load (10.39 %), plying of motor boats in the nearby lake and heavy vehicular movement in the immediate surroundings of the PA contributed to the high level of oil and other hydrocarbons in the water samples which may cause death of aquatic fauna as well as they may cover the pores of pneumatophores (breathing roots) of mangroves which can cause death of mangrove plants. In the present study, lower values of nutrients were observed due to tidal flush in the Sanctuary. When water returns to flood the sediment, a high concentration of various substances/chemicals/pollutants may be brought into the PA and absorbed by the substratum. The higher level of COD, Nitrate, Nitrite etc. will harm the normal hematology of any organism and causes fatality. The plankton data shows that there is majority of rotifers which is a clear indication of organic and nitrogenous based pollution found in the water body.

Among the three major management interventions carried out by the PA management, the installation of PVC mesh was effective for checking the flow of garbage into the PA and other initiatives such as desilting the pond and construction of walk-way and dyke did not yield any positive impact to the quality of the habitat.



Habitat of Mangalavanam Bird Sanctuary





*Division of Ecotoxicology*

## Monitoring and Surveillance of Environmental Contaminants in Birds in India

Principal Investigator	: Dr. S. Muralidharan
Research Fellows	: Mr. K. Nambirajan and Ms. V. Kirubhananthini
Funding Agency	: Ministry of Environment, Forest and Climate Change, Government of India
Collaborating Agency (if any)	: Nil
Duration of the project	: 7 years
Status of the project	: Completed
Date of Initiation	: April 2010
Date of Completion	: June 2017
Annual Progress Report Period	: April 2017 to June 2017
Total Budget	: Rs. 48,36,375/-
Expenditure incurred during the reporting period	: Nil

**E**normous quantities of man-made chemicals are being used in modern agriculture to increase productivity to meet the ever-increasing food demand. Despite obvious benefits, their indiscriminate use has resulted in long-term environmental and ecological impacts. Birds are one of the major victims of environmental contaminants as they occupy a wide range of trophic levels in different food chains. The ill effects of pesticides on wildlife, particularly on birds have been an ongoing concern. Towards understanding the impact of contaminants on ecosystem components using bird as an indicator, a study was carried out with the following objectives; 1). Monitor residue levels of persistent chemicals in birds and generate a database, 2). Identify chemicals responsible for mass mortality of birds across the country, and 3). Assess the effectiveness of guidelines on usage of major chemical pesticides in the country. We measured the levels of heavy metals, diclofenac and esterase activities in addition to pesticides in several species of birds.

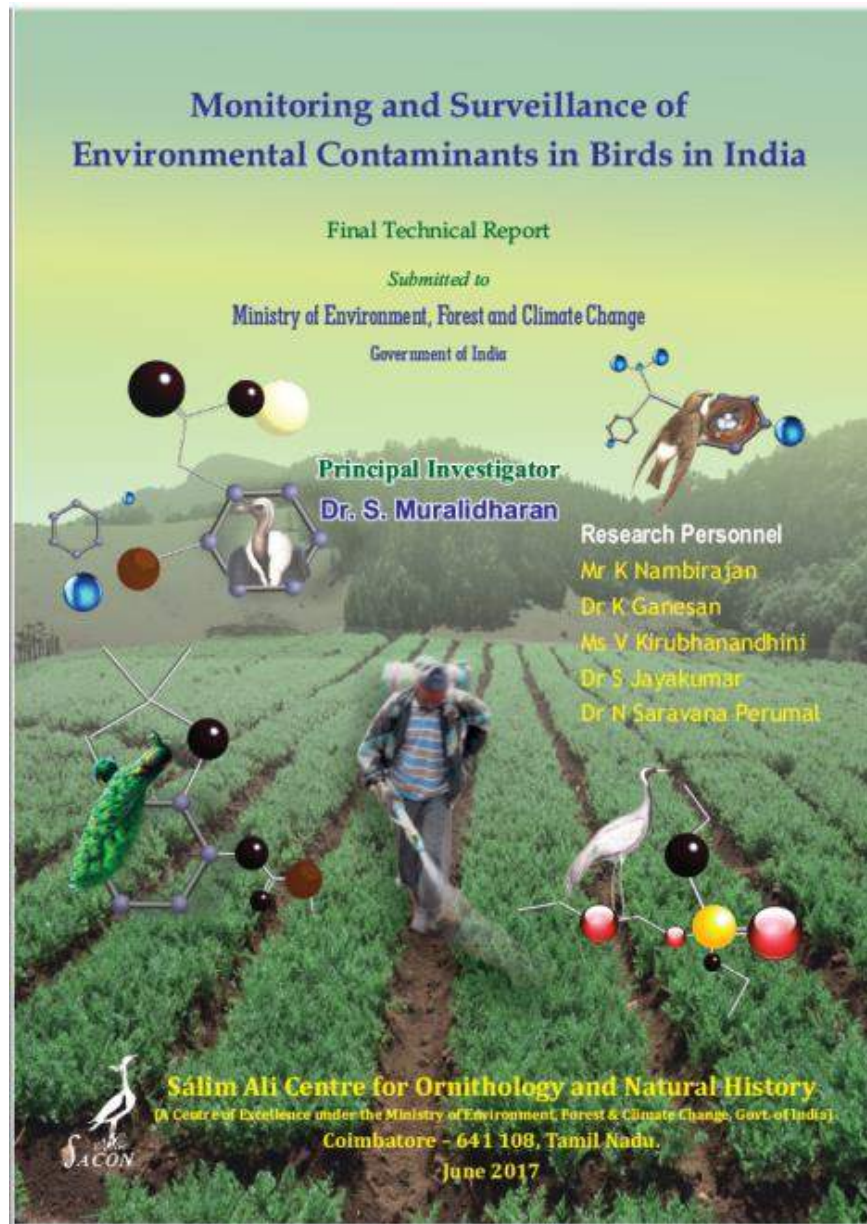
Efforts were made to collect dead birds from all over India. Opportunistic sampling strategy and organized field visits were followed to collect samples of dead birds. During the study period (2010 and 2014), 777 birds belonging to 90 species were received dead from nine states of India, namely Assam, Gujarat, Jharkhand, Kerala, Karnataka, Maharashtra, Tamil Nadu, Uttar Pradesh and Uttarakhand. While incidences of poisoning among birds have been dealt separately, data on pesticide residues have been compiled to check the overall load, variation among species, tissues and between sexes. Spatio-temporal variations over the years and variations based on feeding habits have also been investigated to understand the implications with reference to usage patterns of the pesticides or policies of the government that are in existence. In addition to pesticides, levels of heavy metals and diclofenac were also studied.

Based on circumstantial evidences, poisoning was suspected in the mortality of many species of birds. Subsequent laboratory analyses confirmed poisoning in seven incidences involving 13 species of birds. Residues of the set of organochlorine pesticide were determined in 90 species of birds collected between 2010 and 2014. Organochlorine pesticide residues were detected in appreciable concentrations in many species of birds studied. These residues can harm the birds if exposure continues. As the OC pesticides cause adverse effects not only on birds and aquatic life forms, but also on man, regular monitoring of their residue levels in selected environmental components is strongly advised.



Between 2011 and 2014, 44 vultures comprising two species, namely Indian white-backed vulture (32) and Himalayan griffon *Gyps himalayensis* (12) were collected dead from Gujarat, Assam, and Tamil Nadu based on an opportunistic sampling. Kidney and liver tissues and gut contents were analysed for diclofenac. Sixty-eight percentage of White-backed Vulture and 75% of Himalayan griffon had diclofenac in toxic level. Results have indicated that diclofenac can continue to kill vultures even after its ban for veterinary use in India.

Birds are again the major victims of metal contamination too as they occupy a wide range of trophic levels. The present study documented the levels of metals such as Cu, Pb and Cd in 139 individuals comprising 18 species of birds in selected states in India. It is obvious that the effects of heavy metals on birds will vary based on several parameters. In India many species of birds are not clearly studied even from ecological point of view. Although, none of the metals studied were high enough to indicate any serious threat, detailed study is needed to understand the ill effects.



## National centre for surveillance and monitoring of impact of environmental contaminants on ecosystem components with special focus on birds

Principal Investigator	:	Dr. S. Muralidharan
Research Fellows	:	Mr. Nambirajan K, Ms. V. Bhagyasree, Ms. Kirubhanandhini V., and Mr. Kaja Maideen A.
Funding Agency	:	Ministry of Environment, Forest and Climate Change, Government of India
Collaborating Agency (if any)	:	Nil
Duration of the project	:	3 years
Status of the project	:	Ongoing
Date of Initiation	:	4 <sup>th</sup> October 2017
Date of Completion	:	3 <sup>rd</sup> October 2020
Annual Progress Report Period	:	October 2017 to March 2018
Total Budget	:	Rs. 6,69,81,010/-
Expenditure incurred during the reporting period	:	Rs. 29,66,521/-

**P**opulation of many species of birds has declined over the world. In India, several species of birds have either almost disappeared in totality or their populations plummeted drastically. The Spot-Billed Pelican *Pelecanus phillippensis*, whose population plummeted from 2000 to 330 within a span of 30 years in Karnataka, the Sarus Crane *Grus antigone*, whose breeding population declined from 27 pairs in 1973 to six pairs in 1990 and two pairs in 2012 in Keoladeo National Park, Bharatpur, Rajasthan, the Himalayan Grey-Headed Fish Eagle *Ichthyophaga nana*, which was not successful in breeding at Corbett National Park, in Uttarakhand, and the Gyps vultures, whose populations across South Asia declined catastrophically are a few examples. These records give credence to the concerns of ornithologists. Environmental contamination is one of the potential reasons for the population decline. Death of birds due to pesticide poisoning has become rampant of late across the agricultural landscapes in India. Many instances go unrecorded unless they attract the attention of the media and public. Based on this background, this project was initiated with the following objectives; a) Monitor residue levels of problem chemicals in selected species of birds in India and generate a database, b) Identify chemicals responsible for mortality of birds across the country and c) Assess the effectiveness of acts, guidelines on usage of chemicals in the country. This project will document residues of problem pesticides (OC, OP, SP, Cb, weedicides, herbicide and fungicides), toxic metals in birds and veterinary drugs exclusively in vultures and generate a database. Standardized methods will be followed for each contaminant using instruments, namely GC-MS/MS, HPLC-MS/MS and ICP-MS.

One of the major tasks of this project is to establish a state-of-art analytical facility to qualify and quantify contaminants in different environmental matrices. Between October 2017 and March 2018, the process of purchasing instruments was initiated. Research personnel were recruited in December 2017. Between January and March 2018, 127 birds comprising 30 species were collected dead from four states, namely Gujarat, Tamil Nadu, Karnataka and Maharashtra. Further, information on mortality of vultures in Assam, Kites in West Bengal and Demoiselle Cranes in Gujarat have also been reported due to suspected poisoning. People of Gujarat, especially in Ahmedabad and nearby places celebrate the sport of flying kites during an annual festival called Uthrayan (Makar Sankranti), in January. Unfortunately, thousands of birds fall victims to kite flying during this period. A team of two junior research biologists and a veterinarian visited Ahmedabad and joined hands with an NGO (Jivdaya Charitable Trust) and tried to save the injured birds. However, many birds did not survive and were collected for measuring the background levels of environmental contaminants.



## Polycyclic Aromatic Hydrocarbons (PAHs) contamination in Palikaranai wetland, Chennai; fish as an indicator

Principal Investigator	:	Dr. S. Muralidharan
Research Fellows	:	Ms. Mythreyi Devarajan
Funding Agency	:	DST Inspire Fellowship
Collaborating Agency (if any)	:	Nil
Duration of the project	:	5 years
Status of the project	:	Ongoing
Date of Initiation	:	February 2015
Date of Completion	:	February 2020
Annual Progress Report Period	:	April 2017 to March 2018
Total Budget	:	Rs. 19,00,000/-
Expenditure incurred during the reporting period	:	Rs. 3,80,000/-

**D**evelopment of human activities has always been closely associated with different water resources but, unfortunately anthropogenic activity has often resulted in chemical contamination of these resources. Pallikaranai wetland in south Chennai provides habitat for many organisms particularly waders, fishes and amphibians. But this also happens to be the drain basin of waste for the entire south Chennai. Impact of urban waste on the organisms inhabiting this wetland is pertinent. Of all the contaminants, PAHs are ubiquitous and are persistent organic pollutants of the aquatic environment. They are also known for their carcinogenic and teratogenic properties. Their hydrophobic character and low biodegradability cause accumulation in organisms. Hence a study has been initiated with the following objectives: 1) Assess the PAH residues and document the variation in magnitude of contamination in sediment and selected species of fishes in the Pallikaranai wetland, 2) assess the suitability of fishes for human consumption, and 3) evaluate the genetic impacts caused in fishes and try correlate with PAH. Samples of fishes are being collected with the help of local fishermen adopting suitable methods based on species to be caught and taking habitat into consideration. Method prescribed by Larry and Capel (1994) was followed for sediment sample collection. QuEChERS method adopted by Ramalhosa et al., (2009) is followed for extraction of PAHs. HPLC fitted with fluorescence detector is used for analysis of samples.

During the period under report, three cycles of sample collection (April 2017 – March 2018) have been completed. A total of 210 individuals belonging to six species of fishes were also collected. Fish samples were necropsied and the tissues namely muscle, liver, kidney, gills, reproductive organs and intestinal contents were preserved for further analysis. The results obtained so far from the muscle tissue of 48 individuals of the *Oreochromis sp.* belonging to 3 sub-species (*O. mossambicus*, *O. niloticus* and *O. aureus*) indicate that Naphthalene and phenanthrene is detected in all individuals. Anthracene, Fluorene, Pyrene and Chrysene were detected in low concentrations in a few individuals. The absence or rather low detection of certain PAHs (Benzo(a)anthracene, chrysene, benzo(a)pyrene, benzo(e)acenaphthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, indeno (1,2,3-cd)pyrene and benzo(g,h,i)pyrene) in the fish muscles may be attributed to their rapid depuration or biotransformation. Preliminary results indicate that the indiscriminate exploitation of the wetland has contaminated the wetland.

Great tit (*Parus major*)

*Division of Avian Physiology*



## Establishment of National Avian Forensic Laboratory at SACON

Principal Investigator	: Dr. R. P. Singh
Co-PI	: Dr. P. Pramod
Project Scientist	: Dr. Sanjeev Kumar Sharma
Research Fellow	: Ms. Swapna Devi Ray and Mr. Prateek Day
Funding Agency	: Ministry of Environment, Forests and Climate Change, Government of India
Collaborating Agency (if any)	: Nil
Duration of the project	: 3 Years
Status of the project	: Ongoing
Date of Initiation	: 4 <sup>th</sup> October 2017
Date of Completion	: 3 <sup>rd</sup> October 2020
Annual Progress Report Period	: October 2017 to March 2018
Total Budget	: Rs. 8,10,40,000/-
Expenditure incurred during the reporting period	: Rs. 39,80,787/-

**W**orld over crime related to wildlife is huge and numerous wild species or their body parts are put on sale illegally, and globally this illegal trade is of an estimated profit of \$8 – \$10 billion US dollars per annum. Of the over 1200 bird species seen in India, over 37% species have been reported in international and domestic trade. However, the conviction rate in this illegal business is dismal, barely 1-10%. Furthermore, most of these cases are closed with no conviction / punishment for the lack of legally standing evidences. Among the evidences, the most important is definite species identification of confiscated samples to frame charges on people involved in the trade, the accused. Despite this being the most crucial aspect for rightly convicting the persons involved and punishing them accordingly, it is the most challenging task to be satisfactorily and scientifically done because of lack of modern facility and reference materials specific to the country. SACON being a premier Centre working on ornithology, the MOEFCC has sanctioned a grant to establish a modern avian forensic laboratory at SACON. The new state-of-the art facility is about to procure advanced equipment like DNA sequencers, capillary electrophoresis, RT-qPCR, fluorescent microscope and will have a repository of avian biological samples that would eventually include almost all species in the sub-continent and would serve as National Centre for avian forensics to be used and referred by all law enforcing agencies in the country. The new laboratory would be capable of identifying bird species using traces of any biological remains including feathers. Such an establishment would also be deterrent for the illegal traders since that is expected to raise the conviction rates in wildlife trafficking in the country. The laboratory would be most useful for national law-enforcement agencies such as Wildlife Crime Control Bureau and the international organizations such as IUCN (International Union for Conservation of Nature) and other agencies concerned with international treaties such as CITES (Convention on International Trade in Endangered Species of Wild Flora and Fauna).

A photograph showing a wide, calm body of water in the middle ground. In the background, a city skyline is visible under a grey, overcast sky. The foreground is dominated by tall, green grasses. The text 'Division of Environmental Impact Assessment' is written in a white, cursive font at the bottom of the image.

*Division of Environmental  
Impact Assessment*



## Additional study of less than 10 mw Hydroelectric Projects under the Cumulative Impact Assessment of Hydroelectric projects in Sutlej river Basin in Himachal Pradesh

Principal Investigator	: Dr. Arun P. R.
Co-PI	: Dr. Rajah Jayapal
Research Fellow	: Mr. Anoop V and Mr. Jins V. J.
Funding Agency	: Ministry of Environment, Forests and Climate Change, Government of India
Collaborating Agency (if any)	: ICFRE, Dehradun
Duration of the project	: 15 months
Status of the project	: Ongoing
Date of Initiation	: June 2017
Date of Completion	: September 2018
Annual Progress Report Period	: June 2017 to March 2018
Total Budget	: Rs. 18,22,000/-
Expenditure incurred during the reporting period	: Rs. 7,78,395/-



Griffon Vulture (*Gyps fulvus*)

**A**s a continuation of the earlier study “Cumulative Environment Impact Assessment Studies for Sutlej basin, Himachal Pradesh” on the hydroelectric projects (above 10 MW), a multi institutional study coordinated by the Indian Council of Forestry Research and Education (ICFRE), Dehradun; the Department of Energy, Government of Himachal Pradesh and Ministry of Environment, Forest and Climate Change (MoEFCC) requested for an additional study on on the cumulative environmental impact assessment (CEIA) of small hydroelectric projects in Sutlej basin. The CEIA study covers geological, floral, faunal and socio-economic aspects of the study area to understand the cumulative impacts of these small projects.

Among these, SACON was entrusted with the terrestrial faunal component to assess the possible cumulative impacts to the terrestrial fauna emphasizing on birds as one of the indicator taxa and VEC (Values Ecosystem Component).

We also documented other faunal groups including mammals, amphibians, reptiles and butterflies to account for the potential impacts of the projects to these ecologically sensitive taxa. The field data collection for the initial 88 hydro projects considered for the study has been completed and the draft report is under revision. Presently an additional 27 Small Hydro projects are also being included into the scope of this study with reference to their proximity to the protected areas and the timeline for final report submission has been extended till September 2018.



Common Yellow Swallowtail (*Papilio machaon*)

## Faunal diversity documentation study at Chemfab Alkalis Ltd. campus, Puducherry

Principal Investigator	:	Dr. Arun P. R.
Co-PI	:	Dr. Riddhika Ramesh and Dr. Rajah Jayapal
Research Fellow	:	Mr. Dibyendu Biswas
Funding Agency	:	M/s Chemfab Alkalies Ltd.
Collaborating Agency (if any)	:	Nil
Duration of the project	:	6 month
Status of the project	:	Completed
Date of Initiation	:	September 2017
Date of Completion	:	March 2018
Annual Progress Report Period	:	September 2017 to March 2018
Total Budget	:	Rs. 5,81,000/-
Expenditure incurred during the reporting period	:	Rs. 2,15,188/-

**S**ACON conducted a six-month study at Chemfab Alkali Ltd. campus at Kalapet, in Puducherry to systematically document the faunal diversity in the vegetated land area of the campus surrounding the chemical industry. The total campus area is 37 acres, of which, 9 acres is occupied by the chemical plant. Various faunal groups such as mammals, birds, reptiles, amphibians, butterflies, dragonflies, spiders, and ants were recorded. Fixed radius point count method was followed for quantitative sampling of birds and butterflies while, other faunal groups were recorded using opportunistic surveys.

Overall, we recorded 108 faunal species (41 birds, four mammals, four reptiles, two amphibians, 37 butterflies, six dragonflies, eight spiders, six species of other insect groups). The Chemfab's industrial campus had an overall avian density of 63.96 individuals/ha (25.88/acre) during the study period with a Shannon diversity index ( $H'$ ) of 2.51. The Shannon diversity index ( $H'$ ) for butterflies was 2.87. The bird assemblage of the Chemfab campus also included rare and uncommon species which generally prefer less disturbed areas (eg:- Blyth's Reed Warbler, Pale-billed Flowerpecker, Asian Brown Flycatcher etc.). The butterfly assemblage of the campus also had rare and protected species. Five species of butterflies recorded belonged to Schedule I and Schedule II (Part II) of the Indian Wildlife Protection Act (1972). All the avian species belonged to Schedule IV except Shikra and Black Kite. Among the mammals, Bonnet Macaque and Indian Grey Mongoose belonged to Schedule II of Part I (WPA, 1972). The study showed that Chemfab campus has a well maintained heterogeneous vegetation cover that supported a wide variety of avian species of different feeding guilds. For further improvement of the campus, plantation of suitable bird-friendly tree species and creation of a waterbody and setting up of a butterfly garden are suggested.



Green vine snake (*Ahaetulla nasuta*) with its Prey at Chemfab campus

## Rapid Biodiversity study for the Proposed Multi-product SEZ/ Industrial Park at Gopalpur, District Ganjam, Odisha state by M/s Tata Steel SEZ Limited.

Principal Investigator	:	Dr. Arun P. R.
Co-PI	:	Dr. Riddhika Ramesh and Dr. Karunakaran, P. V.
Research Fellow	:	Mr. Prakash, L and Mr. Dibyendu Biswas
Funding Agency	:	M/s TATA Steel SEZ Ltd.
Collaborating Agency (if any)	:	Nil
Duration of the project	:	3 month
Status of the project	:	Completed
Date of Initiation	:	June 2017
Date of Completion	:	August 2017
Annual Progress Report Period	:	June 2017 to August 2017
Total Budget	:	Rs. 13,34,000/-
Expenditure incurred during the reporting period	:	Rs. 5,17,879/-

**T**he rapid biodiversity study for the Proposed Multi-product Industrial Park area of M/s Tata Steel Special Economic Zone Limited (TSSEZL) at Gopalpur in Ganjam district of Odisha involved systematic field surveys for plants and major faunal groups such as mammals, birds, and butterflies. The proposed Industrial Park area is owned by M/s Tata Steel Special Economic Zone Ltd., which is clearly demarcated and protected by concrete boundary walls. The field survey was conducted during July 2017. The study recorded over 500 species of flora and fauna from the area. This included 376 species of plants, five species of mammals, 74 species of birds, eight species of herpetofauna, seven species of fishes, 33 species of butterflies and six species of dragonflies. There were also a few Protected (under Wildlife protection act 1972) and Conservation priority (under IUCN red list) species such as Pale capped pigeon, Common monitor lizard, Indian cobra and Palm civet that were recorded during the study.



Field studies at the proposed SEZ at Gopalpur



The Garden Lizard (*Calotes versicolor*)

There were also a few Protected (under Wildlife protection act 1972) and Conservation priority (under IUCN red list) species such as Pale capped pigeon, Common monitor lizard, Indian cobra and Palm civet that were recorded during the study. Careful planning in consultation with an expert institution in the field of ecology and wildlife during the conversion of this landscape into the proposed Multi-product SEZ/ Industrial Park area is suggested for minimizing the negative impact of the proposed development on the local biodiversity. Certain specific recommendations for the conservation and sustainable management of the biodiversity of this industrial park area are also suggested. Measures such as green belt development should also involve leaving adequate green patches with native plant species along the site boundaries and around the natural waterbodies and the portion of creek within the study area for effective conservation of biodiversity.



## Impact of Developmental Projects like road widening on the bird population of Gulbarga City, Karnataka

Principal Investigator	:	Dr. Arun P. R.
Co-PI	:	Dr. Babu, S.
Research Fellow	:	Ms. Divyapriya, C.
Funding Agency	:	Forest Department, Karnataka
Collaborating Agency (if any)	:	Nil
Duration of the project	:	1 month
Status of the project	:	Completed
Date of Initiation	:	October 2017
Date of Completion	:	November 2017
Annual Progress Report Period	:	October 2017 to November 2017
Total Budget	:	Rs. 2,00,000/-
Expenditure incurred during the reporting period	:	Rs. 86,356/-

Impact of developmental activities on urban biodiversity is an important aspect of urban ecology that often gets neglected. Negative ecological impacts of linear intrusions, such as roads are increasingly being recognized and reported from different parts of the world. At the request of the Karnataka Forest Department, SACON undertook this study to evaluate avifauna in the proposed area of road widening, along the ring road around Gulbarga city, Karnataka. During November 2017, we documented the avifauna through extensive bird surveys along the ring road as well as from other major green areas of the city.

The study documented the avifauna composition of the overall Gulbarga city with special reference to evaluation of the role of roadside trees along the proposed stretch of road widening in supporting the avifauna. With a total of 162 bird species (including secondary information) Gulbarga city is rich in its avifaunal community. During the surveys as part of the present study, 114 bird species, belonging to 16 orders and 51 families, were recorded from Gulbarga. The present study was limited to a single season survey and the past records of additional bird species reported from the city were also collated from authentic secondary sources for the generation of final checklist for the city.



Indian Silverbill (*Euodice malabarica*) nesting on a street lamp

Road widenings do impact the environment especially when there is wilderness and associated biodiversity along the road edges. Direct impacts such as road kills and indirect impacts such as habitat loss and fragmentation are the major impacts from road projects. The potential impacts applicable at Gulbarga are discussed and mitigatory/management measures are suggested. The present study also established the baseline information on avian composition and diversity of Gulbarga city. Further detailed systematic studies with regular bird surveys covering all seasons of the year would provide complete checklist of Gulbarga city birds.



## Supplementary Environmental Impact Assessment (EIA) for the proposed High Level Bridge across Pulicat Lake, Tamil Nadu with special focus on birds

Principal Investigator	:	Dr. Riddhika Ramesh
Co-PI	:	Dr. T. Ramesh and Dr. P. R. Arun
Research Fellow	:	Mr. V. Muthukrishnan
Funding Agency	:	Enviro Care Private Ltd.
Collaborating Agency (if any)	:	Nil
Duration of the project	:	2 month
Status of the project	:	Ongoing
Date of Initiation	:	7 <sup>th</sup> March 2018
Date of Completion	:	6 <sup>th</sup> May 2018
Annual Progress Report Period	:	March 2018
Total Budget	:	Rs. 4,86,000/-
Expenditure incurred during the reporting period	:	Rs. 1,45,254/-

SACON is conducting a supplementary EIA study on the impact of the proposed High-Level Bridge (HLB, 430 m) with special focus on birds in Pulicat Lake, Tamil Nadu. The bridge will connect many fishermen hamlets and is expected to serve as life line for fishermen in Tsunami Affected areas. The proposed bridge is an escape route for those residing in the Pasiyavaram island (18,000 people) as well as transporting emergency response operations required for humanitarian aid, personnel and equipment to the affected site from the island to the main Pulicat road. Our objectives are 1) to document the avifauna of the Pulicat lake area and 2) to study the impacts of the proposed HLB on the avifauna and suggest suitable management plans to minimize the impacts. We downloaded the land cover data for the study site from Bhuvan (<http://bhuvan.nrsc.gov.in/gis/thematic/index.php>), an Indian Geo-platform of the Indian Space Research Organization (ISRO). We accessed the raster data of the land cover in ArcGIS (ESRI, 2012) and placed a 7 km



radius over the study site to locate various landscape features for our field surveys. We then laid 81 vantage points of variable radius to record avian species, and their attributes (weather, time of survey, total count, habitat, tidal zone, disturbances, flight orientation, behavior, and proximity to linear man-made structures). These vantage



Greater flamingo (*Phoenicopterus roseus*) in Annamalaicheri, Pulicat Lake sighted 7 km from the proposed site of HLB

points were visited twice between March and April. In addition, we also recorded avifauna and other taxa from opportunistic surveys. We conducted boat surveys to record avifauna for those sites which were inaccessible from land masses. Based on our preliminary findings we have recorded 80 bird species. For our comprehensive study we will also be collecting avifaunal data from secondary sources of available literature. We are still in the process of synthesizing the data and findings.





*Division of Wetland Ecology*



## Criteria for wetland prioritization and framework for wetland monitoring in Tamil Nadu

Principal Investigator	:	Dr. Goldin Quadros
Co-PI	:	Dr. Mahendiran M.
Research Fellow	:	Mr. T. Siva and Mr. Sathyamoorthy S.
Funding Agency	:	Tamil Nadu State Land Use Board and Tamil Nadu Forest Department
Collaborating Agency (if any)	:	Nil
Duration of the project	:	1 Year
Status of the project	:	Ongoing
Date of Initiation	:	1 <sup>st</sup> November 2017
Date of Completion	:	31 <sup>st</sup> October 2018
Annual Progress Report Period	:	March 2018
Total Budget	:	Rs. 19,89,500/-
Expenditure incurred during the reporting period	:	Rs. 5,39,302/-

The Tamil Nadu Forest Department approached SACON to help them in identifying the wetlands in the State of Tamil Nadu and prepare criteria for wetland prioritization and develop a framework for wetland monitoring in Tamil Nadu. The Wetland Rules as specified in Rule 3 require the State Governments/UT administrations to prepare a wetland inventory within their jurisdiction and identify/prioritize wetlands for notification by the Central Government. Further, the State Governments/UT administrations are required to submit a brief document for each of the identified/prioritized wetlands. The Tamil Nadu Forest Department approached SACON to help them in identifying the wetlands in the State of Tamil Nadu and prepare criteria for wetland prioritization and develop a framework for wetland monitoring in Tamil Nadu. The primary objective of the framework is to identify/prioritize wetlands for conservation. This will have to be supported by a brief document on each of the wetlands giving the information as specified in Rule 6 as follows.

- (i) Broad geographic delineation of the wetland;
- (ii) its zone of influence along with a map (accurate and to scale)
- (iii) the size of wetland

The project is divided into two phases of six months each. Until now the research team has visited 80 wetlands across Tamil Nadu covering 32 districts. The maximum number of wetlands identified are in the Kanchipuram district followed by Tiruvalur. During the field visit the team has collected data on the following:

1. Identification, Location and Jurisdiction
2. Site Characteristics (including physico-chemical characteristics)
3. Biodiversity
4. Ecosystem services
5. Present and potential threats
6. Notification Category
7. Activities proposed to be prohibited as per Wetland Rules 2010
8. Activities proposed to be regulated as per Wetland Rules 2010
9. Available literature on the specific wetland.

During the second phase the team will further identify 40 more wetlands on the basis of the area, biodiversity, ecological services and importance of the wetland to the local community.

## Assessment of status, distribution and threats to the population of threatened Sarus Crane (*Antigone antigone*) in Gujarat

Principal Investigator	:	Dr. M. Mahendiran and Dr. S. Muralidharan
Co-PI	:	Dr. P. Balasubramanian and Dr. P.V. Karunakaran
Research Fellow	:	Ms. Sreya Bhattacharya, Ms. Apurva Patil, Mr. Tejas Karmarkar and Mr. Nikunj Jambu
Funding Agency	:	Ministry of Environment, Forests and Climate Change, Government of India
Collaborating Agency (if any)	:	Nil
Duration of the project	:	2 Years
Status of the project	:	Ongoing
Date of Initiation	:	4 <sup>th</sup> October 2017
Date of Completion	:	3 <sup>rd</sup> October 2019
Annual Progress Report Period	:	October 2017 to March 2018
Total Budget	:	Rs. 1,24,01,000/-
Expenditure incurred during the reporting period	:	Rs. 13,97,397/-

**S**arus Crane *Antigone antigone*, a resident crane in India, is the tallest flying bird in the world and has been classified as Vulnerable by IUCN. It is found in a variety of habitats from wetlands to wet and dry agricultural fields. In the recent past, the population of this species is reportedly to be declining in South-east Asia including its breeding locations. Although India has almost phased out persistent organochlorine group of pesticides including DDT, a few are still being used either for agriculture or civic health. Due to slow decomposition rate and their long half-life, pesticides remain in the environment for many years and continue to exert deleterious effects on living forms, and Sarus Crane is no exception.

Gujarat is one of the stronghold states of Sarus population. The first state wide Sarus Crane census conducted in January 1984 by the State Forest Department of Gujarat, reported population to be around 19,659 individuals. Gole (1989) reported the population to be 1283 individuals. In 2000, Gujarat Ecological Education and Research Foundation estimated the population at 1730 individuals. Of these 84% of Sarus Crane were sighted on the intensively cultivated plains of Kheda, Ahmedabad districts of Central and Northern Gujarat. More than one and half decades have passed since the first survey was conducted. Owing to the changes in land-use and land-cover in the region, a study on population status and the issues involving the ecology and conservation of Sarus Crane at this landscape assumes significance.



Sarus Crane (*Antigone antigone*) in the agricultural fields

Therefore, the present study is initiated to assess Sarus Crane population, status, distribution, and effects of environmental contaminants, particularly the effects of pesticides on them across their breeding areas in Gujarat. Field surveys, using grid-based sampling method, information on pesticide usage and cropping pattern are being collected. Using field data, species distribution maps will be developed that would be useful for monitoring of population of Sarus Crane in the years to come.

During the reporting period 23 grids of 10 x 10 km were covered, and 481 Sarus Cranes were sighted from Anand, Kheda, Ahmedabad and Gandhinagar districts of Gujarat. Eight Sarus congregating wetlands were identified namely, Matar wetland, Vastana marshes, Limbasi wetlands and agricultural fields, Vanak Weland, Traj village pond, Bhandera lake and Rohini wetland. Field surveys in remaining districts are in progress. Although no mortality of Sarus was observed, on 15th March 2018, around 20 Demoiselle cranes (*Grus virgo*) were died due to suspected pesticide poisoning in Mansar Lake, Sayla, Surendranagar, Gujarat.



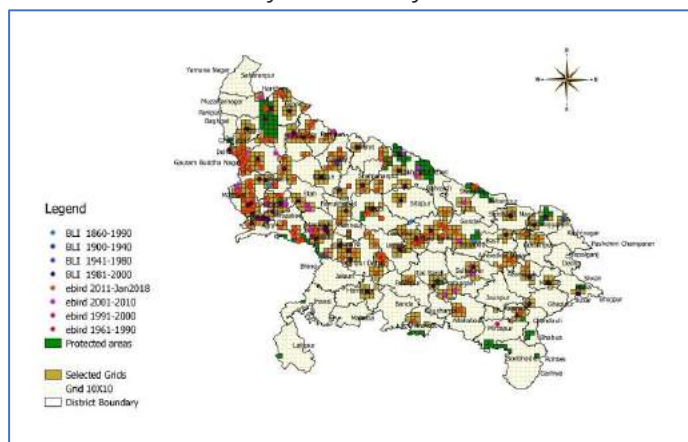


## Assessment of status, distribution and threats to the population of threatened Sarus Crane (*Antigone antigone*) in Uttar Pradesh.

Principal Investigator	: Dr. M. Mahendiran and Dr. S. Muralidharan
Co-PI	: Dr. P. Balasubramanian and Dr. P. V. Karunakaran
Research Fellow	: Ms. Astha Chaudhary, Mr. Prakash L., Ms. Madhumitha R. and Mr. Karthikeyan, P.
Funding Agency	: Ministry of Environment, Forests and Climate Change, Government of India
Collaborating Agency (if any)	: Nil
Duration of the project	: 2 Years
Status of the project	: Ongoing
Date of Initiation	: 4 <sup>th</sup> October 2017
Date of Completion	: 3 <sup>rd</sup> October 2019
Annual Progress Report Period	: October 2017 to March 2018
Total Budget	: Rs. 88,72,000/-
Expenditure incurred during the reporting period	: Rs. 9,94,151/-

**S**arus Crane *Antigone antigone*, a resident crane in India, is the tallest flying bird in the world. It is distributed from Sind (Pakistan) in the west to Assam in the east; Himalayas (Kashmir valley and Nepal) in the north to Godhavari delta (Andhra Pradesh) in the south. The first country-wide survey in India estimated the population of Sarus Crane to be about 13,000 individuals. According to the 1980's Asian Waterfowl Census, maximum population of this species was recorded in the state of Uttar Pradesh. Intensively cultivated plains of Uttar Pradesh were the strongholds of the Sarus Crane.

Usage of pesticides for crop protection has been a major concern in the recent past. Evidently birds are one of the worst affected taxa due to environmental pollution and Sarus Crane is no exception. Pesticide residues, particularly organochlorines have been reported to get accumulated in bird tissues worldwide including Sarus Crane in India. These compounds are long lived in the environment and tend to accumulate at higher trophic levels.



Distribution of Sarus crane (*Antigone antigone*) based on available historic and online data.

Therefore, the present study is conducted, to assess Sarus Crane population, status, distribution, and effects of environmental contaminants, particularly the effects of pesticides on them across their breeding areas. The entire distribution range of Sarus Crane in Uttar Pradesh will be considered as study area for collecting dead Sarus Crane. In addition, for estimation of pesticide residues in soil/sediment and food material, and assessing impact on breeding success of Sarus Crane, representative sites such as wetlands in and around Protected Areas and agricultural fields will be studied.

At present, field surveys are conducted across the known distribution range of Sarus Crane in the state of Uttar Pradesh. Historic records based on questionnaire surveys, secondary data from published and online sources are being collected. Using primary and secondary data sets, appropriate species distribution maps will be developed. The distribution map would be useful for monitoring of population of Sarus Crane in the future. During the reporting period 38 grids of 10X10 Km were covered, and 890 Sarus Cranes were sighted from Etawah, Mainpuri, Agra, Kanpur, Sitapur and Auraiya districts of Uttar Pradesh. Five important Sarus crane congregating wetlands were identified namely, Wetland near Samanpur bird sanctuary, Ghamira wetland, Sarsai Navor wetland, Sahas wetland, and Sarangjheel. Field surveys in remaining districts are in progress.



## Ecological exploration and socioeconomic valuation of pit-lakes in eastern coal fields of India: Implications for Conservation and Sustainable use

Principal Investigator	:	Dr. Santanu Gupta
Research Fellow	:	Ms. Aparajita Mukherjee and Mr. Akshyay, B. Naik
Funding Agency	:	INSPIRE Division, Department of Science and Technology, Government of India
Collaborating Agency (if any)	:	Nil
Duration of the project	:	5 Years
Status of the project	:	Ongoing
Date of Initiation	:	September 2016
Date of Completion	:	September 2021
Annual Progress Report Period	:	April 2017 to March 2018
Total Budget	:	Rs. 35,00,000/-
Expenditure incurred during the reporting period	:	Rs. 5,20,000/-

Lakes are an imperative feature of this planet however recent investigations on aquatic systems have demonstrated continual decline in aquatic species and habitat loss across the world.

Open Cast surface mining process creates a unique aquatic ecosystem – Pit-lakes which have unique bathymetries, are often strongly wind sheltered and have very small catchments. Ecological restoration and ecosystem management is an essential component of any habitat conservation. Pit-lake ecosystems are not only ecologically threatened and critical aquatic landscapes but also a source of potential biological resources for the future. The lack of knowledge on pit-lakes continues to hinder their proper management and conservation.

The inventory of pit-lakes in Eastern Coal Fields region of the country thus prepared by the present investigator to amass relevant data (after MoEF 2009, RAMSAR 2010); includes a total of 62 of pit-lakes which were identified from 11 coal mining areas distributed over West Bengal (48, 77.4%) and Jharkhand (14, 22.6%). Total area (open water) occupied by these pit-lakes are estimated as 354 ha during the present study. The total number of pit-lakes of the size 2.25 ha and above are 45, and it covers 331 ha. Based on multiple criteria, 30 sites (TPLs = Target Pit Lakes) were prioritized where studies on ecosystem services (n = 44) were investigated. Cultural services (231 observations) followed by Provisioning services (206 observations) were represented most in the TPLs. Our database also includes geographic coordinates, age classification, information on geomorphology, depth, water regime, plant succession, assemblage of water birds, nutrient Pit-lake in Eastern Coal Fields, West Bengal profile and land-use pattern of these pit-lakes.



Pit-lake in Eastern Coal Fields, West Bengal, India

It is also observed that in 5 pit-lakes 'The Wetlands (Conservation and Management) Rules 2010' have been violated, more specifically section 4 subsection 1(v) by unregulated coal ash waste dumping from nearby thermal power plants / industries which will palpably impact the existence, waterfowls and natural ecosystem function of these pit-lakes.





*Division of Nature Education*



## A Study on Bird Hazards in selected Indian Civil Airfields

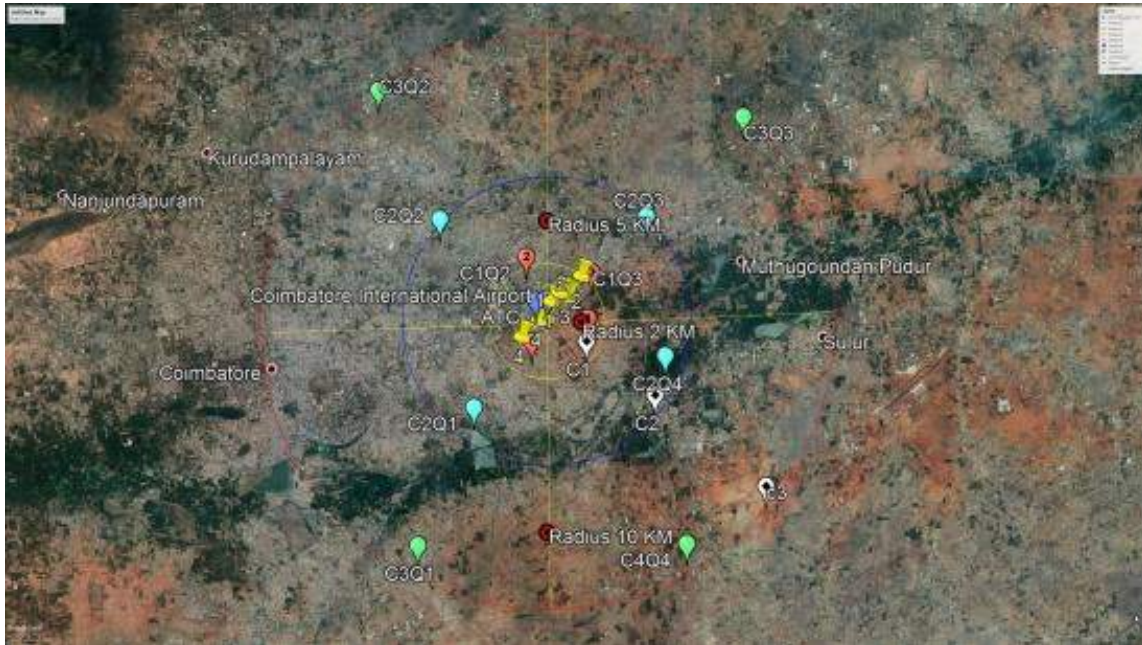
Principal Investigator	: Dr. P. Pramod
Co-PI	: Dr. P. V. Karunakaran
Research Fellow	: Mr. Jeevith S, Ms. Angel Joy and Mr. Anees Khan
Funding Agency	: Ministry of Environment, Forests and Climate Change, Government of India
Collaborating Agency (if any)	: Nil
Duration of the project	: 2 Years
Status of the project	: Ongoing
Date of Initiation	: 4 <sup>th</sup> October 2017
Date of Completion	: 3 <sup>rd</sup> October 2019
Annual Progress Report Period	: October 2017 to March 2018
Total Budget	: Rs. 88,72,000/-
Expenditure incurred during the reporting period	: Rs. 9,94,151/-

**B**ird strike to the aircraft is a management and ecological issue and its control can be done through better understanding of the ecology of the birds and ecosystem. It is also an issue of bird strike to the aircraft is a management and ecological issue and its control can be done through better understanding of the ecology of the birds and ecosystem. It is also an issue of health of the managed/modified ecosystems. In general, the reasons for bird strikes to the aircrafts have been attributed to increased urbanization, waste disposal and enhanced air traffic and bird activities in and around airports. Hence the study was initiated to address the following queries: (i) What are the factors attracting birds to the airfields, (ii) Which are the bird species involved in conflicts with aircrafts? (iii) How are macro-environment and species habits (behaviour) related to bird strike? and (iv) What are the options available for habitat/ecosystem management to prevent the birds from air fields? The study areas are airfields viz. Coimbatore International Airport, Tamil Nadu, Kannur International Greenfield Airport, Kerala, and Sardar Vallabhbhai Patel International Airport (SVPIA), Ahmadabad. The emphasizes of the study is to identify crucial bird species in bird hits to aircrafts, their ecology with special focus on movement pattern and habitat (airfield) use. The land use and land cover outside the airfield are also being studied to develop a comprehensive strategy for minimizing bird strike. Three Junior Research Biologists were selected, trained and deployed in the field for observations and data collection. The study was initiated in all the three airports. Basic study maps and field data collection protocols were made, and field tested. Initial checklist of birds in the two-



Coimbatore civil airfield

kilometer radius of airport was prepared. Documentation of other bird attractants like butcher shops, fish markets and water bodies around airfields are under progress. Bird community of the three study locations were distinctly different in response to the larger matrix where the airport was situated. The bird community of Kannur airport was a subset of woodland bird communities, near Ahmedabad airport, wetland birds dominated due to the proximity to River Sabarmati and the Coimbatore Airport had typical records of only urban birds.



The Coimbatore airfield with the locations of bird hazards



## A Study on Bird Hazards and its Mitigation Measures required at the Multi Sector Special Economic Zone (SEZ) located near Rajiv Gandhi International (RGI) Airport, Hyderabad

Principal Investigator	: Dr. P. Pramod
Co-PI	: Dr. P. V. Karunakaran
Research Fellow	: Mr. Yogesh Waghmare and Mr. Shanthanu Nagpure
Funding Agency	: GMR Hyderabad Aviation SEZ Limit
Collaborating Agency (if any)	: Nil
Duration of the project	: 6 months
Status of the project	: Ongoing
Date of Initiation	: 1 <sup>st</sup> February 2018
Date of Completion	: 31 <sup>st</sup> July 2018
Annual Progress Report Period	: February 2018 to March 2018
Total Budget	: Rs. 12,50,000/-
Expenditure incurred during the reporting period	: Rs. 1,28,003/-

**G**MR Hyderabad Aviation SEZ Limited approached SACON with a request to study the bird community of the Multi Sector SEZ located near RGI Airport Hyderabad to comprehensively study the potential threat to the aircraft movement. As the Environment Appraisal Committee (EAC) of Ministry of Environment, Forest and Climate Change observed that the “bird hazard is a grave concern for aviation sector a comprehensive study must be conducted by a reputed institution such as SACON, not just for the airport, but also for SEZ areas, especially due the fact that multi-sector SEZ can become heaven for birds and if not planned well, can have serious risks to aircrafts”.

The expansion project involves conversion of Aviation SEZ to Multi sector SEZ at RGI Airport. The proposed conversion is within the approved aviation SEZ and land has already been in possession and converted to industrial use. The said project is an upgradation of the existing sector specific SEZ to Multi Sector SEZ to meet the business feasibility and industrial interests received from prospective SEZ customers. The proposal is for the change of Aviation SEZ to Multi Sector SEZ that will have industrial units/activities relating to aviation, Pharma, Gems and Jewelry, Electronics, etc.



A view of Multi Sector SEZ at RGI Airport

The scope of the study is limited to the following terms of reference agreed upon:

- Documentation of baseline avifauna data of the RGI Airport including the SEZ area
- Assessment of bird hazard at the Hyderabad airport from the perspective of proposed multi sector SEZ and suggest bird hazard mitigation and management options for the RGI Airport and SEZ covering the following

aspects:

- 1) General bird species composition at project site.
- 2) Local bird movement patterns between SEZ and Runway areas.
- 3) Record movement of migratory birds (if any).
- 4) Identification of important roosting and nesting sites within project areas.
- 5) Clearly Identify how additional infrastructure of SEZ affects bird composition and presence will lead to aviation risk.
- 6) Provide bird presence and movement pattern on a map clearly showing SEZ and Runway areas.
- 7) If found any significant bird movement/presence suggest mitigation measures.

Basic and first check list of birds and plants from the area focusing on SEZ was completed. Overall study plan and data collection protocol was tested in the field and the data collection is under progress.



Avian study locations in the Multi Sector SEZ area at R.G.I. Airport.

## Nature Education Activities in SACON Campus

Principal Investigator	:	Dr. P. Pramod
Senior Nature Education Assistant	:	Ms. Chaithra Shree, J.
Funding Agency	:	SACON
Collaborating Agency (if any)	:	Nil
Duration of the project	:	Long term
Status of the project	:	Ongoing
Date of Initiation	:	4 <sup>th</sup> December 2000
Date of Completion	:	-
Annual Progress Report Period	:	April 2017 to March 2018
Total Budget	:	-
Expenditure incurred during the reporting period	:	Rs. 4,02,000/-

### One day Nature Awareness Programme at SACON

During the reporting period 20 single day, nature awareness programmes for the school students were conducted on SACON campus. In total 1169 students along with 84 teachers participated in these programmes. Each programme contained a nature trek, lectures in field, slideshows and interactive sessions with scientists.



### Residential Nature Awareness Camps at SACON

Two and three days residential nature awareness camps for school children were conducted from August 2017 at SACON campus. The camp introduced the participants to a wide variety of ecological concepts and environmental issues through games, activities, lectures, discussions and experience of wilderness. Ten two-days camps were conducted in which 289 students with 28 teachers participated. In the three-day camps conducted, 106 students participated along with six teachers. The children were also given SACON publications and books as part of their camp kit.



### Wildlife Week Celebrations - 2017

As part of the wildlife week celebrations, single day nature awareness camp was conducted for students of Sankara College of Science and Commerce on 6th October 2017. The programme included lectures on wildlife conservation, trekking and seeding of native trees. Over 2500 seeds of indigenous trees were dispersed in the open areas in and around SACON campus. The students were divided into teams and walked in different areas of the campus and dispersed the seed balls.



## Coimbatore Bird Race

We conducted (along with HSBC and The Yuhina Canopy, Mumbai) the 7<sup>th</sup> Edition of Coimbatore Bird Race on 28<sup>th</sup> January 2018. This was a dawn to dusk bird watching programme in which the competing bird watching teams travelled all around Coimbatore to record different bird species. At the end of the day, all bird watchers were assembled at Hotel CAG Pride, Gandhipuram, where they exchanged their experiences, received a memento and had dinner together. More than a hundred bird watchers participated this year and together they have identified around 250 bird species in a day.

## Sálim Ali Memorial Lecture - 2018

Sálim Ali Memorial Lecture was conducted on 5<sup>th</sup> March 2018 at the Champion Hall of Central Academy of State Forest Service (CASFOS), Forest Campus, R.S. Puram Coimbatore. The lecture was delivered by Dr. Karthikeyan Vasudhevan, Senior Principal Scientist and Head, LaCONES, Centre for Cell and Molecular Biology, Hyderabad. Many eminent scientists, nature enthusiasts and students of various schools and colleges attended the lecture. Dr. Kathikeyan Vasudhevan spoke about the threats of microbial diseases on the survival of genetic variants of endemic and endangered amphibian species. He elucidated this in simple language using examples of genetic variants of a frog species in the Western Ghats region, their phylogeny and effects of the exposure to disease causing microbial strains. After his presentation a lively question and answer session took place with audience particularly students asking pertinent questions.



## Sálim Ali Trophy Nature Competitions 2017-18

Around 2500 students from more than 50 schools had participated in Sálim Ali Trophy Nature competitions 2017-18 which was conducted on 21<sup>st</sup> January 2018 in GD Matriculation Higher Secondary School, Coimbatore. The prize distribution for the conducted event was held along with the Sálim Ali Memorial Lecture on 5<sup>th</sup> March 2018 at Central Academy of State Forest Service (CASFOS), Forest Campus, R. S. Puram Coimbatore. The 120 prize winners in various competitions and categories from 21 schools were honoured during the award ceremony. Dr. T. Ashok Kumar, Principal, CASFOS, Coimbatore distributed the prizes and certificates to the winners. The overall championship was won by Bharathi Matriculation Higher Secondary School, Coimbatore. The Kongu Vellalar Matriculation Higher Secondary School, Karumathampatti and GD Matriculation Higher Secondary School, Coimbatore won the next two positions respectively.



## ACADEMIC PROGRAMMES

### Status of Ph.D. scholars during the year 2017-18

ZOOLOGY				
Name of the Supervisor	Name of the Research Scholar	Degree	Topic	Status
Dr. P. Pramod	L. Joseph Reginald	Ph.D.	Diversity and habitat preference of bats (Order Chiroptera) of Coimbatore	Ongoing
	A. P. Zaibin	Ph.D.	Insular biogeography of Nicobar Islands from a bird community perspective	PhD awarded
	M. Suhirta Muhil	Ph.D.	Ecology of Odonates in Coimbatore	Thesis Submitted
	S. Srinidhi	Ph.D.	Assessment of management strategies of the bird hazards to aircraft in selected Indian Air Force airfields.	Ongoing
	J. Chaithra Shree	Ph.D.	Study of paddy field biodiversity with reference to indicator taxa	Ongoing
	C. Divyapriya	Ph.D.	Acoustic analysis of coexisting birds in Anaikatty Hills.	Ongoing
	Anoop Raj	Ph.D.	Bird diversity of Bharathapuzha river basin	Ongoing
Dr. Shomita Mukherjee	Pankaj Koparde	Ph.D.	Molecular phylogeny and comparative phylogeography of owlets of India	Thesis submitted
Dr. Shirish Manchi	Akshaya Mane	Ph.D.	Population dispersal studies of Edible nest Swiftlet in Andaman and Nicobar Islands, India	Thesis submitted
	S. P. Sankar	Ph.D.	Life history strategies of two socially distinct birds of Western Ghats, India	Ongoing
	Prathamesh Gurjerpadye	Ph.D.	Inter-colonial dispersal patterns of the endemic Andaman Edible-nest Swiftlet	Ongoing
	Arijit Pal	Ph.D.	A study on the reproductive behavior of Nicobar long-tailed macaque ( <i>Macaca fascicularis umbrosa</i> ) in Nicobar Islands, India	Ongoing

Dr. H. N. Kumara	Aditi Mukherjee	Ph.D.	Burrow use patterns by terrestrial vertebrates in Keoladeo National Park, Bharatpur, India	Ongoing
	Avadhoot D. Velankar	Ph.D.	Population status and resource utilization of Nicobar long-tailed macaque ( <i>Macaca fascicularis umbrosa</i> ) in Nicobar Islands, India	Ongoing
	Partha Sarathi Mishra	Ph.D.	A study on the aggression and post-conflict affiliation in Nicobar long-tailed macaque ( <i>Macaca fascicularis umbrosa</i> )	Ongoing
	Joydeep Shil	Ph.D.	Feeding ecology and social structure of golden langur ( <i>Trachypitecus geei</i> ) in secondary forests of Chakrashila Wildlife Sanctuary, India.	Ongoing
	Aakriti Singh	Ph.D.	Ecology of elephants ( <i>Elephas maximus</i> ) and their interactions with humans in south West Bengal, India	Ongoing
<b>BOTANY</b>				
Dr. P. Balasubramanian	P. Manikandan	Ph.D.	Study on nest tree preferences by cavity-nesting birds in the riverine forests of Athikadavu Valley, Western Ghats	Ongoing
	L. Prakash	Ph.D.	A study on the flora of Sathyamangalam Tiger Reserve, Eastern Ghats.	Ongoing
<b>ENVIRONMENTAL SCIENCES</b>				
Dr. S. Muralidharan	V. Kirubhanandhini	Ph.D.	Levels of metal contamination in selected species of birds	Ongoing
	Mythreyi Devarajan	Ph.D.	Polycyclic Aromatic Hydrocarbon contamination in Pallikarnai Wetland, Chennai; Fish as an indicator	Ongoing
	Aditya Roy Ashimkumar	Ph.D.	Effects of environmental contaminants on the ecology and breeding biology of <i>Gyps</i> vultures in Gujarat	Ongoing
	S.Ramesh Kumar	Ph.D.	Environmental Impacts of Wind power generation with special reference to birds in Kutch District, Gujarat	Ongoing
	S.B.Santhakumar	Ph.D.	Impact of developmental activities on bird communities along Sutlej river basin, Himachal Pradesh	Ongoing
	M. Samsoor Ali	Ph.D.	Water bird assemblage of human-made wetlands in Bhachau Taluk, Kutch District, Gujarat, India	Ongoing



Dr. P. R. Arun	V. Anoop	Ph.D.	Impacts of wind power generation on select faunal components of a dry deciduous forest at Harpanahalli, Davangere	Ongoing
	V. A. Jins	Ph.D.	Reptile communities of Agasthyamalai Hills, Kerala, with emphasis on the distribution along elevational gradient.	Ongoing
	S. Suresh Marimuthu	Ph.D.	Occupancy and distribution pattern of owls in Andaman Islands with special reference to community assembly rules	Ongoing
Dr. S. Babu	G. Babu Rao	Ph.D.	Assemblage of shorebirds in the Sindhudurg District, Maharashtra	Ongoing

## PUBLICATIONS 2017-2018

### Research Papers

Aruna R and Balasubramanian P (2017). Studies on avifauna of Attappady and Anaikatty Western Ghats, southern India. *International Journal of Fauna and Biological Studies* 4(1):45-48.

Erinjery JJ, Kumara HN, Mohan K and Singh M (2017). Interactions of lion-tailed macaque (*Macaca silenus*) with non-primates in the Western Ghats, India. *Current Science* 112:2129-2134.

Aruna R and Balasubramanian P (2017). Studies on avifauna of Attappady and Anaikatty Western Ghats, southern India. *International Journal of Fauna and Biological Studies* 4(1):45-48.

Erinjery JJ, Kumara HN, Mohan K and Singh M (2017). Interactions of lion-tailed macaque (*Macaca silenus*) with non-primates in the Western Ghats, India. *Current Science* 112:2129-2134.

Erinjery JJ, Kumar S, Kumara HN, Mohan K, Dhananjaya T, Sundararaj P, Kent R and Singh M (2017). Losing its ground: A case study of fast declining populations of a 'least-concern' species, the bonnet macaque (*Macaca radiata*). *PLoS ONE* 12(8):e0182140.

Jayapal R and Praveen J (2017). Sichuan Leaf Warbler *Phylloscopus forresti* missing in the 'India Checklist': Response. *Indian BIRDS* 13:140.

Kalle R, Ramesh T and Downs CT (2018). When and where to move: Dynamic occupancy models explain the range dynamics of a food nomadic bird under climate and land cover change. *Global Change Biology* 24:e27-e39.

Kheswa EZ, Ramesh T, Kalle R and Downs CT (2018). Habitat use by honey badgers and the influence of predators in iSimangaliso Wetland Park, South Africa. *Mammalian Biology* 90:22-29.

Koparde P, Mehta P, Reddy S, Ramakrishnan U, Mukherjee S and Robin VV (2018). The Critically Endangered forest owlet *Heteroglaux blewitti* is nested within the currently recognized *Athene* clade: A century-old debate addressed. *PLoS ONE* 13(2):e0192359.

Mahendiran M, Parthiban M, Azeez P A, and Nagarajan R (2017). In situ measurements of animal morphological features: A non-invasive method. *Methods in Ecology and Evolution* 9(2):1-11.

Mane AM, and Manchi SS (2017). Roosting patterns of the edible-nest swiftlet *Aerodramus fuciphagus* of the Andaman Islands: effects of lunar phase and breeding chronology. *Emu* 117 (4): 325-332.

- Mane AM, and Manchi SS (2017). Physical and Environmental Characteristics based Classification of the Caves of the Andaman Islands. *Ambient Science*, 14(1): 82-87.
- Manikandan P and Balasubramanian P (2018). Diversity and composition of woody vegetation in a riparian forest of Western Ghats, southern India. *International Journal of Ecology and Environmental Sciences* 44(1):1-9.
- Mhlanga M, Ramesh T, Kalle R, Ngosi ED and Downs CT (2018). Comparison of spotted hyena (*Crocuta crocuta*) prey in a hunting area and a protected area in western Zimbabwe. *African Journal of Ecology*. DOI: 10.1111/aje.12499.
- Mukherjee A, Kumara H N and Bhupathy S (2017). Determinants of occupancy and burrow site selection by Indian Crested Porcupine in Keoladeo National Park, Bharatpur, India. *Current Science* 112:2440-2448.
- Mukherjee A, Pilakandy R, Kumara HN, Manchi SS and Bhupathy S (2017). Burrow characteristics and its importance in occupancy of burrow dwelling vertebrates in semiarid area of Keoladeo National Park, Rajasthan, India. *Journal of Arid Environments* 141:7-15.
- Mukherjee A, Velankar AD and Kumara HN (2017). Invasive *Prosopis juliflora* replacing the Native Floral Community over three decades: a case study of a World Heritage Site, Keoladeo National Park, India. *Biodiversity and Conservation* 26:2839-2856.
- Mukherjee S and Ramkrishnan U (2018). Molecular Tools for Biodiversity Conservation: Unravelling Cat Mysteries. *Resonance* 23(3):309-324.
- Nambirajan K, Muralidharan S, Manonmani S, Kirubhanandhini V and Ganesan K. (2018). Incidences of mortality of Indian peafowl *Pavo cristatus* due to pesticide poisoning in India and accumulation pattern of chlorinated pesticides in tissues of the same species collected from Ahmedabad and Coimbatore. *Environmental Science and Pollution Research* 1-9. <https://doi.org/10.1007/s11356-018-1750-7>
- Nambirajan K, Muralidharan S, Roy AA and Manonmani S (2018). Residues of Diclofenac in Tissues of Vultures in India: A Post-ban Scenario. *Archives of Environmental Contamination and Toxicology* 74(2):292-297.
- Patterson L, Kalle R and Downs CT (2017). A novel application of citizen science in understanding the spatiotemporal drivers of vervet monkey troops in a suburban matrix in KwaZulu-Natal, South Africa. *Landscape and Urban Planning* 169:220-228.
- Prakash L, Balasubramanian P and Manikandan P (2018). Abnormal flowering of *Achyranthes aspera* L. *Indian Forester* 144(3):121.
- Prakash L., Anbarasu C and Balasubramanian P (2017). List of endemic Flowering plants from Gudalur Forest Division, Western Ghats, Tamil Nadu. *Indian Journal of Forestry*, 40(4): 409-412.
- Praveen J, Jayapal R and Pittie A (2018). Taxonomic updates to the checklist of birds of India and the South Asian region-2018. *Indian BIRDS* 14:37-42.
- Praveen J, Jayapal R, Inskipp T, Warakagoda D, Thompson P M, Anderson R C, and Pittie A (2017). Birds of the Indian subcontinent: Species not recorded from India. *Indian BIRDS* 13:93-101.
- Ramesh T, Downs C T and O'Brien G C (2018). Movement response of Orange-Vaal largemouth yellowfish (*Labeobarbus kimberleyensis*) to water quality and habitat features in the Vaal River, South Africa. *Environmental Biology of Fishes*. DOI: 10.1007/s10641-018-0754-y.
- Ramesh T, Kalle R and Downs CT (2017). Staying safe from top predators: patterns of co-occurrence and inter-predator interactions. *Behavioral Ecology and Sociobiology* 71:1-14.
- Ramesh T, Kalle R, Rosenlund H and Downs C T (2017). Low leopard populations in protected areas of Maputaland: a consequence of poaching, habitat condition, abundance of prey and a top predator. *Ecology and Evolution* 7:1964-1973.

- Rao GB, Babu S, Kumara HN and Bilaskar M (2018). Ceylon Kentish Plover *Charadrius alexandrinus seebohmi* breeding in Vani Vilasa Sagara, Hiriyur Taluka, Karnataka, India. *Journal of Threatened Taxa* 10(1):11237–11239.
- Singh A, Mukherjee A, Dookia S and Kumara H N (2017). An updated mammal account and population dynamics of ungulates in Keoladeo National Park, Bharatpur, Rajasthan. *Current Science* 113:103-111.
- Smith DAE, Smith YCE, Ramesh T and Downs CT (2017). Camera-trap data elucidate habitat requirements and conservation threats to an endangered forest specialist, the Spotted Ground Thrush (*Zoothera guttata*). *Forest Ecology and Management* 400:523–530.
- Smith YCE, Smith DAE, Ramesh T and Downs CT (2017). Forest habitats in a mixed urban-agriculture mosaic landscape: patterns of mammal occupancy. *Landscape Ecology* 33:59–7.
- Smith YCE, Smith DAE, Ramesh T and Downs CT (2017). The importance of microhabitat structure in maintaining forest mammal diversity and abundance in a mixed land-use mosaic. *Biodiversity and Conservation* 26:2361-2382.
- Smith YCE, Smith DAE, Si X, Kalle R, Ramesh T and Downs CT (2018). Patterns of avian diversity across a decreasing patch-size gradient in a critically endangered sub-tropical forest system. *Journal of Biogeography*. DOI: 10.1111/jbi.13245.
- Tamiliniyan D D, Babu S and Kumara HN (2018). Sighting of the Common Shelduck *Tadorna tadorna* (Linnaeus, 1758) (Aves: Anseriformes: Anaidae) in Shettikeri Tank, Karnataka, India. *Journal of Threatened Taxa* 10(1):11234–11236.
- Thirunaranan K, Jayakumar S, Sivaramam S and Babu S (2017). Sightings of the Great White Pelican *Pelecanus onocrotalus* (Linn. 1758) (Aves: Pelicaniformes: Pelicanidae) in Pallikaranai Marshlands, Tamil Nadu, India. *Journal of Threatened Taxa* 9(9):10729–10732.

## Abstracts, Posters and Papers presented in Conferences, Seminars, Proceedings, and Edited Volumes

### National

- Athira SV, Babu S, Smija MK, Ajayan PA and Prasadank PK (2017). Functional composition of birds in shaded and open canopy coffee plantations of Wayanad Plateau, Western Ghats. Proceedings of 29<sup>th</sup> Kerala Science Congress.
- Balasubramanian, P and Manikandan, P (2017). Breeding season diet and nest tree utilization by Great and Malabar Pied hornbills in a riparian forest of southern India. "Annual Wildlife Research Meeting", Tamil Nadu Forest Department, Chennai, Tamil Nadu, 27<sup>th</sup> October 2017.
- Mehta P, Reddy S, Ramakrishnan U, Mukherjee S, Robin VV and Koparde P (2017). The Critically Endangered Forest Owlet *Heteroglaux blewitti* is nested within the currently recognized *Athene* clade: a Century-old debate addressed. Paper presented at the Biogeography-India Meeting, 26<sup>th</sup> to 28<sup>th</sup> September 2017, Bengaluru.
- Singh RP and Manchi SS (2017). Ornithology in India – Its growth from poetic to scientific. Proceedings of the 5<sup>th</sup> Bharatiya Vignyan Sammelan: Confluence of traditional and modern science. Pune.

### International

- Balasubramanian, P and Manikandan, P (2017). Breeding season diet and nest tree utilization by Great and Malabar Pied hornbills in a riparian forest of southern India. 7<sup>th</sup> International Hornbill Conference at Kuching, Sarawak, Malaysia, 16<sup>th</sup> to 18<sup>th</sup> May 2017.



- Gayathri V, Ramesh T, Kalle, R and Giordano, AJ (2018). Conservation issues of large mammals along the fringe habitats of Protected Areas of Tamil Nadu, India. Conference of The Society for Conservation Biology (SCB) Asia Section. The Society for Conservation Biology Asia Section and Amity University, Noida, India, 19<sup>th</sup> to 20<sup>th</sup> March 2018.
- Kalle R, Combrink L, Ramesh T and Downs CT (2017). Predicting suitable habitats for the reintroduction of red-billed oxpeckers in South Africa. The Symposium of Contemporary Conservation Practice by Ezemvelo KZN Wildlife and University of KwaZulu-Natal, South Africa, 6<sup>th</sup> to 10<sup>th</sup> November 2017.
- Kheswa EZY, Ramesh T, Kalle R and Downs CT (2017). Habitat use by honey badgers and the influence of predators in iSimangaliso Wetland Park, South Africa. Combined Congress of the Entomological and Zoological Societies of Southern Africa, CSIR International Convention Centre, Pretoria, South Africa, 3<sup>rd</sup> to 7<sup>th</sup> July 2017.
- Maseko MST, Ramesh T, Kalle R and Downs CT (2017). Response of crested guinea-fowl (*Guttera edouardi*) to land-use change in iSimangaliso Wetland Park, South Africa. The Symposium of Contemporary Conservation Practice by Ezemvelo KZN Wildlife and University of KwaZulu-Natal, KwaZulu-Natal South Africa, 6<sup>th</sup> to 10<sup>th</sup> November 2017.
- Maseko MST, Zungu M M, Ramesh T, Kalle R and Downs C T (2017). Response of crested Guinea-fowl (*Guttera edouardi*), a forest specialist, to spatial variation in land use in iSimangaliso Wetland Park, South Africa. Combined Congress of the Entomological and Zoological Societies of Southern Africa, CSIR International Convention Centre, Pretoria, South Africa, 3<sup>rd</sup> to 7<sup>th</sup> July 2017.
- Mukherjee S, Choudhury P, Athreya R and Karunakaran P V (2017). A tale of tails – an attempt to decipher small cat distributions by tail lengths. Paper presented at the First International Small Cat Conservation Summit, United Kingdom, 11<sup>th</sup> to 14<sup>th</sup> September 2017.
- Ngcobo S, Ramesh T, Wilson AL and Downs CT (2017). Home range size and movement patterns of Cape porcupines in KwaZulu-Natal, South Africa. Combined Congress of the Entomological and Zoological Societies of Southern Africa, CSIR International Convention Centre, Pretoria, South Africa, 3<sup>rd</sup> to 7<sup>th</sup> July 2017.
- Panigrahi M, Jins VJ, and Jayapal R (2017). Influence of abiotic and biotic variables on the elevational patterns of bird communities in Agasthyamalai Hills, Western Ghats, Kerala, India. Paper presented in International Biogeography Society Meeting held at Bengaluru, 25<sup>th</sup> to 28<sup>th</sup> September, 2017.
- Ramesh T, Kalle R, Rosenlund H and Downs CT (2017). Predictors of low leopard populations in protected areas of Maputaland landscape. The Symposium of Contemporary Conservation Practice by Ezemvelo KZN Wildlife and University of KwaZulu-Natal, South Africa, 6<sup>th</sup> to 10<sup>th</sup> November 2017.
- Smith DAE, Smith YCE, Ramesh T and Downs CT (2017). Camera-trap data elucidate habitat requirements and conservation threats to an endangered forest specialist, the Spotted Ground Thrush (*Zoothera guttata*). The Symposium of Contemporary Conservation Practice by Ezemvelo KZN Wildlife and University of KwaZulu-Natal, South Africa, 6<sup>th</sup> to 10<sup>th</sup> November 2017.
- Smith YCE, Smith DAE, Ramesh T and Downs CT (2017). Forest habitats in a mixed urban-agriculture mosaic landscape: patterns of mammal occupancy. The Symposium of Contemporary Conservation Practice by Ezemvelo KZN Wildlife and University of KwaZulu-Natal, South Africa, 6<sup>th</sup> to 10<sup>th</sup> November 2017.
- Smith YCE, Smith DAE, Ramesh T and Downs CT (2017). Predators and anthropogenic disturbance influence spatio-temporal distribution of forest antelope species. The Symposium of Contemporary Conservation Practice by Ezemvelo KZN Wildlife and University of KwaZulu-Natal, South Africa, 6<sup>th</sup> to 10<sup>th</sup> November 2017.
- Smith YCE, Smith DAE, Ramesh T and Downs CT (2017). The importance of microhabitat structure in maintaining forest mammal diversity and abundance in a mixed land-use mosaic. The Symposium of Contemporary Conservation Practice by Ezemvelo KZN Wildlife and University of KwaZulu-Natal, South Africa, 6<sup>th</sup> to 10<sup>th</sup> November 2017.

Smith YCE, Smith DAE, Ramesh T and Downs CT (2017). The importance of microhabitat structure in maintaining forest mammal diversity and abundance in a mixed land-use mosaic. Combined Congress of the Entomological and Zoological Societies of Southern Africa, CSIR International Convention Centre, Pretoria, South Africa, 3<sup>rd</sup> to 7<sup>th</sup> July 2017.

Streicher J, Ramesh T and Downs C T (2017). Effects of differing land use on the presence and habitat use of various mongoose species. Combined Congress of the Entomological and Zoological Societies of Southern Africa, CSIR International Convention Centre, Pretoria, South Africa, 6<sup>th</sup> to 10<sup>th</sup> November 2017.

Zungu MM, Maseko MST, Kalle R, Ramesh T and Downs CT (2017). Impact of habitat fragmentation and habitat structure on the occupancy of forest mammals in eThekweni Municipality. Combined Congress of the Entomological and Zoological Societies of Southern Africa, CSIR International Convention Centre, Pretoria, South Africa, 3<sup>rd</sup> to 7<sup>th</sup> July 2017.

Zungu M, Maseko M, Kalle R, Ramesh T and Downs CT (2017). Impacts of habitat structure on the occupancy of forest mammal in eThekweni Municipality. The Symposium of Contemporary Conservation Practice by Ezemvelo KZN Wildlife and University of KwaZulu-Natal, KwaZulu-Natal South Africa, 6<sup>th</sup> to 10<sup>th</sup> November 2017.

## Popular Articles

Arun, P R (2017). Advanced technologies illustrated by nature; Dispelling the illusion of "Conquering nature." *Papilio* 4:2-4.

Arun, P R (2017). Wildlife Painting Exhibition. *SACON News* 14:2-3.

Biswas D, Arun P R, Kalle R and Jayapal R. (2017). Faunal diversity in a greenbelt of a Chemical Industry, Puducherry. *SACON News* 14(4):6.

Kalle, R, Arun P R, Biswas D and Prakash L (2017). Rapid biodiversity survey at the Multi-Product Special Economic Zone (SEZ)/Industrial Park at M/s Tata Steel SEZ Limited, Gopalpur, Odisha. *SACON News* 14(3):5.

Karunakaran PV (2017). "Kaalavasthayum Vanavam". *Sasthrakeralam*, Popular Science Magazine in Malayalam. June 2017.

Manchi SS (2017). The Edible-nest Swiftlet and its participatory conservation in the Andaman and Nicobar Islands. Souvenir of the 50 years of Indian Forest Service. Department of Environment and Forests, Andaman and Nicobar Islands. Port Blair, India. 142-148pp.

Mukherjee S, Karunakaran PV and Khanolkar N (2017). The small cat brigade of Mumbai. *SACON News* 14(2):7-9.

Ramesh T and Kalle R (2017). Participation in the Symposium of Contemporary Conservation Practice held in South Africa. *SACON News* 14(4):3.

## Technical Reports

Arun PR, Babu S, Divyapriya C and Niveditha RK (2018). Impact of developmental projects like road widening on the bird population of Gulbarga city. *SACON*, Technical Report 72pp.

Arun PR, Kalle R, Jayapal R and Biswas D (2018). Faunal diversity documentation study at Chemfab Alkalis Pvt. Ltd. campus, Kalapet, Puducherry. Final report submitted to Chemfab Alkalis Ltd. Kalapet, Puducherry.

Arun PR, Kalle R, Karunakaran P V, Prakash L and Biswas D (2017). Rapid Biodiversity Study for the proposed Multi-Product SEZ Limited at Gopalpur, Ganjam, Odisha. Report submitted to M/s TATA Steel SEZ Limited, Gopalpur.

- Arun PR, Kalle R, Karunakaran PV, Prakash L and Dibyendu B (2017). Rapid Biodiversity study for the Proposed Multi-product SEZ/Industrial Park of M/s Tata Steel SEZ Limited at Gopalpur, Ganjam, Odisha. SACON Technical Report- 82pp.
- Babu S, Kumara HN, Marimuthu S and Kumar NR (2017). Owl assemblage and occupancy in Andaman archipelago, India. SACON Technical Report - PR-188, 85pp.
- Babu S, Quadros G, Rao BG, Anoop V and Patil AJ (2017). Assessing the status and distribution of avifauna within the coastal talukas of Sindhudurg district, Maharashtra. SACON Technical Report-191, 103pp.
- Bhupathy S, Kumara HN, Manchi SS and Mukherjee A (2017). Spatio-temporal burrow use patterns by vertebrates in Keoladeo National Park, Bharatpur, Rajasthan, India. SACON Technical Report -PR-185, 132pp, submitted to SERB-DST, Government of India.
- Jayapal R, Babu S, Azeed P A, Quadros G, Ibrahim N M, Gayathri V and Panigrahi M (2017). Mapping key nesting sites of coastal and marine birds for identification of Ecologically Sensitive Areas along Indian coasts. SACON Technical Report PR-186, 46pp.
- Karunakaran PV, Quadros G, Babu S and Kuldeep JM (2017). Habitat Assessment of Mangalavanam Bird Sanctuary, Kerala. Report submitted to Forests and Wildlife Department, Kerala. Technical Report PR-190, 43pp.
- Manchi SS and Patel S (2017). Conservation of the Andaman Serpent Eagle *Spilornis elgini* in the Andaman Islands: Phase-I. Technical Report No. 192 submitted by Sálím Ali Centre for Ornithology and Natural History (SACON), Anaikatty P. O., Coimbatore, India to Raptor Research and Conservation Foundation, Mumbai, India, 38 pp.
- Manchi S S (2017). Status, Ecology and Conservation of the Narcondam Hornbill *Aceros narcondami* on Narcondam Island, India. Technical Report No. 189 submitted by Sálím Ali Centre for Ornithology and Natural History (SACON), Anaikatty P. O., Coimbatore, India to the Ministry of Environment, Forest and Climate Change, Government of India, 66pp.
- Muralidharan S, Nambirajan K, Ganesan K, Kirubhanandhini V, Jayakumar S. and Saravana P N (2017). Monitoring and surveillance of environmental contaminants in birds in India. SACON Technical Report No- 184, 202pp.
- Zungu MM, Maseko MST, Kalle R, Ramesh T and Downs CT (2017). The impacts of habitat fragmentation on forest mammal occupancy and ecological connectivity in eThekweni Municipality. Report submitted to eThekweni Municipality, Durban, South Africa, 9pp.

## Book Chapter

- Karunakaran P V (2017). Nilgiri tahr (*Nilgiritrachus hylocrius*). In: The State Flower, Tree, Bird and Animal of Tamil Nadu. Published by Sálím Ali Centre for Ornithology and Natural History, Anaikatty, Coimbatore. pp 13-17.

## Books

- Appel A, Mukherjee S and Cheyne SM (2018). Proceedings of the First International Small Wild Cat Conservation Summit, 11th to 14th September 2017, United Kingdom. Wild Cat Network, Bad Marienberg, Germany, Sálím Ali Centre for Ornithology and Natural History, Coimbatore, India and Borneo Nature Foundation, Oxford, United Kingdom.
- Jayapal R and Sankar K (2017). State Birds of India. Sálím Ali Centre for Ornithology and Natural History, Coimbatore. 26pp.
- Sebastian MK, Balasubramanian P, Jayapal R and Karunakaran PV (2017). The state flower, tree, bird and animal of Tamil Nadu. Sálím Ali Centre for Ornithology and Natural History, Coimbatore, Tamil Nadu. 17pp.



Vasudevan N, Babu S, Rao GB and Quadros G (2017). The Field Guide to Birds in Sindhudurg. Published by Gol-UNDP-GEF Sindhudurg Project, from the office of the APCCF, Mangrove Cell, Maharashtra Forest Department. 82pp.

### **Seminars, Conferences, Workshops and Meetings participated**

Kalle R, Combrink L, Ramesh T and Downs CT (2017). Predicting suitable habitats for the reintroduction of red-billed oxpeckers in South Africa. Oral Presentation at The Symposium of Contemporary Conservation Practice by Ezemvelo KZN Wildlife and University of KwaZulu-Natal, South Africa, 6<sup>th</sup> to 10<sup>th</sup> November 2017.

Karunakaran PV (2017). Attended a 'Consultation Workshop on preparation of India's sixth National Report to the Conventional Biological Diversity (CBD) to be submitted to CBD, Secretariat, held at Government Guest House Thycaud, Thiruvananthapuram, Kerala on 20<sup>th</sup> October, 2017.

Kumara HN (2017). Three day workshop on "Ecological Census Technique conducted for State Forest Service officer trainees of 2016-18th batch for CASFOS at Parambikulam Tiger Reserve from 4<sup>th</sup> to 6<sup>th</sup> December 2017.

Mahendiran M (2017). As a resource person on the inauguration of Ecoclub in the Department of Zoology, Nirmala College, Coimbatore, and give a talk on the topic "How birds perceive the world; to walk in their shoes" on 19<sup>th</sup> July 2017.

Mahendiran M (2017). Attended the 28<sup>th</sup> Eco-sensitive Zone (ESZ) meeting at Ministry of Environment and Forest and Climate Change, New Delhi on 18<sup>th</sup> December 2017.

Mahendiran M (2018). Involved in the coordination of the Two-day Training Programme on "Monitoring and Management of Wetlands" conducted by SACON for Uttarakhand Forest Officers at Wildlife Institute of India, Dehra Dun, 11<sup>th</sup> and 12<sup>th</sup> January 2018.

Mukherjee S (2017). Attended the Annual Research Meet and the Advisory Board meeting of the Nature Conservation Foundation, Mysore. 31<sup>st</sup> July to 3<sup>rd</sup> August 2017.

Mukherjee S (2017). Attended the Annual Research Meet and the Advisory Board meeting of the Nature Conservation Foundation, Mysore. 31<sup>st</sup> July to 3<sup>rd</sup> August 2017.

Mukherjee, S. (2017). Attended the Biogeography-India meeting, 26<sup>th</sup> to 28<sup>th</sup> September, Bengaluru.

Mukherjee, S. (2017). Attended the First International Small Cat Conservation Summit. 11<sup>th</sup> to 14<sup>th</sup> September 2017, United Kingdom.

Ramesh T, Kalle R, Rosenlund H and Downs CT (2017). Predictors of low leopard populations in protected areas of Maputaland landscape. Oral presentation at The Symposium of Contemporary Conservation Practice by Ezemvelo KZN Wildlife and University of KwaZulu-Natal, South Africa, 6<sup>th</sup> to 10<sup>th</sup> November 2017.

### **Talks delivered**

Arun PR (2017). Environmental impact assessment in the context of wetland conservation" Lecture delivered at the Workshop on "Monitoring and Management of Wetlands" at SACON on 27<sup>th</sup> March 2017.

Arun, PR (2017). "Environmental Impact Assessment as a tool for Bioconservation" Lecture delivered at the National Seminar organized by Dept. of Zoology, Brennen College, Tellicherry, Kerala on 23<sup>rd</sup> November 2017.

Arun PR (2018). "Environmental Impact mitigation; Role of Biodiversity and Butterflies" Lecture delivered at National Seminar on Bioprospecting and Conservation of Bioresources held at Kanganadu Arts and Science College, Coimbatore on 19<sup>th</sup> February 2018.

- Arun PR (2018). "Minimizing Environmental Impacts, Lessons from Biodiversity" Lecture delivered at National Seminar on Western Ghats, A treasure house of biodiversity (Sahya-2K18) on 13<sup>th</sup> March 2018.
- Arun, PR (2018). "Environmental Impact Assessment". Lecture delivered at SACON for the newly recruited batch of JRBs' as part of Orientation programme on 28<sup>th</sup> December 2018.
- Arun, PR (2018). "Minimizing Environmental Impacts, Lessons from Biodiversity and Butterflies" Lecture delivered at Dept. of Geography, at Nirmala College on 19<sup>th</sup> January 2018.
- Karunakaran PV (2017). "Designing Protected Areas". Talk delivered to Forestry (BSc) students for College of Forestry, Nagpur on 17<sup>th</sup> May 2017.
- Karunakaran PV (2018). "Impact of Tourism on Biodiversity". Invited Talk delivered to PG Students of Tourism Management at Avinashilingam Institute of Higher Education on 9<sup>th</sup> January 2018.
- Mahendiran M (2018). "Importance of Monitoring the Wetland and Heronry Birds" at the Two-day Training Programme on "Monitoring and Management of Wetlands" conducted by SACON for Uttarakhand Forest Officers at Wildlife Institute of India, Dehra Dun on 11<sup>th</sup> January 2018.
- Pramod P (2017). Guest lecture on "Biodiversity Conservation and Management (Art and Science of Bird Watching)" for State forest Service Officer Course in CASFOS, Coimbatore on 31<sup>st</sup> October 2017.
- Pramod P (2017). Guest lecture on "Birds as a keystone species in ecosystem", for State Forest Service and Range Officer Trainees in connection with World Bird's day in CASFOS, Coimbatore on 13<sup>th</sup> November 2017.
- Pramod P (2017). Guest lecture on "Conservation Education and Tools in conservation" in Department of Zoology, Bharathiar University, Coimbatore on 21<sup>st</sup> October 2017.
- Pramod P (2017). Invited lecture on "Faunal biodiversity of Kerala" during the seminar "Cognizance on biome heterogeneity" organized by Dept. of Botany, Little flower College, Guruvayoor on 26<sup>th</sup> October 2017.
- Pramod P (2017). Invited Lecture on "National Seminar on Advanced Zoology Research" at Adhiyaman Arts and Science College for Women, Krishnagiri, Coimbatore on 22<sup>nd</sup> September 2017.
- Pramod P (2017). Invited Lecture on "Nature Awareness and Conservation" in Robert Bosch Engineering and Business Solutions Pvt. Ltd., Coimbatore on 25<sup>th</sup> October 2017.
- Pramod P (2017). Lead lecture on "Reaching the Unreached through Science and Technology Concepts, Principles and Application of Science in Nation Building" Conference organized by Kongunadu Arts and Science College, Coimbatore on the topic "Citizen science in Ecological Research – Models of public participation in scientific research" on 10<sup>th</sup> October 2017.
- Pramod P (2017). Valedictory Address for the Seminar "Clean Environment- the Investment for Sustainable Tourism- A tool for development" conducted by Department of Tourism Management, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore on 26<sup>th</sup> September 2017.
- Pramod P (2018). Guest Lecture on "Nature Conservation" in Sri Ramakrishna College of Arts and Science, Coimbatore on 10<sup>th</sup> January 2018.
- Pramod P (2018). Invited lecture on "Bharathapuzha River Basin" during the National Summit on revival and rejuvenation of Bharathapuzha River Basin organized by Jawaharlal Nehru University, New Delhi on 24<sup>th</sup> March 2018.
- Pramod P (2018). Invited lecture on "Bird hazards to Aircrafts" a National Bird Control Committee meeting in the Director General of Aircrafts Office, New Delhi on 12<sup>th</sup> February 2018.
- Ramesh T (2017). "Threats to serval and leopard population" Talk delivered at the Department of Zoology, PSGR Krishnammal College for Women, Coimbatore, India, 6<sup>th</sup> October 2017.
- Ramesh T (2017). Conservation Importance of serval and leopard in South Africa. Nalanda University, Rajgir, India on 15<sup>th</sup> May 2017.

## TRAINING PROGRAMMES / WORKSHOPS / MEETINGS

### Training in Ornithology and Wildlife Conservation

A training programme on 'Ornithology and Wildlife Conservation' for wildlife enthusiasts was conducted at SACON from 15<sup>th</sup> to 17<sup>th</sup> June 2017. Nine people from five different states participated in the said training. The training included lectures by SACON faculty and invited resource persons on basics of Ornithology, Identification of birds, Communication in the wild, Indian wildlife and its conservation, Wildlife study methodology and challenges faced across the country in the field of conservation. The trainees were taken on a field visit to Silent Valley National Park for on-field training in ornithology and wildlife studies.



### Smart India Hackathon - 2018

Smart India Hackathon - 2018, (SIH-2018) was conducted under the theme of "Environment, Forest and Climate Change" in Coimbatore, Tamil Nadu on 30<sup>th</sup> and 31<sup>st</sup> of March 2018. SIH-2018 is a digital product building competition co-organised by AICTE, Ministry of Human Resources Development, MyGov, NIC and NASSCOM. This is a Pan India event where more than a lakh of engineering students across the country participated and 10000 of them were selected for Grand Finale. Grand Finale was conducted in 28 centres across the country representing different ministries of Government of India. As the Nodal Centre of MoEFCC, SACON took up the responsibility of developing Problem Statements, project proposals and all the technical responsibility of evaluation process pertaining to Environment, Forest and Climate Change. This year a total of 41 projects were selected for the Grand Finale in Coimbatore. The venue of the programme was Sri Krishna College of Engineering and Technology, Kovaipudur, Coimbatore, Tamil Nadu. Forty-one teams from all over the country comprising 246 students and 82 mentors participated in the programme. The competition at the Coimbatore centre was inaugurated by Ms. Meera Sreekumar, Asst. Vice President of Cognizant Technology Solutions, Coimbatore. The Inaugural Ceremony, MoEFCC was represented by Mr. Sathiyar Durai IFS, Chief Conservator of Forests, from the Regional Office of the Ministry of Environment, Forest and Climate Change, Chennai. At the national level, Mr. Prakash Javadekar, Hon. Union Minister of Human's Resource Development inaugurated the event. Hon. Prime Minister of India addressed the participants on the same day and also interacted with the participants through video conferencing facility at 10 pm. Dr. C. Vijay Bhaskar, Minister of Health and Family Welfare, Government of Tamil Nadu and Mr. S. P Velumani, Hon. Minister for





Municipal Administration and Rural Development, Tamil Nadu were the chief guests and Guest of Honour and they distributed the prizes on 31<sup>st</sup> March 2018. The event was live, streaming throughout the two days along with other centres.

SACON identified an 18-member team of judges to evaluate and mentor the participating teams. The team of judges included scientists from SACON, knowledgeable individuals from Non-Governmental bodies and computer professionals. During the 36 hrs of non-stop computer programming competition, students received three rounds of mentoring support from the juries to come up with a meaningful product. After three meticulous judgment sessions and a final power mentoring session, eight teams were adjudged as winners and received a cash prize and a memento: First three positions received a cash prize from Ministry of Environment, Forest and Climate Change, and others by private agencies.

### **Training programme on "Monitoring and Management of Wetlands"**

The Ministry of Environment Forest and Climate Change (MoEFCC), Govt. of India assigned SACON to conduct a two-day regional training program on "Monitoring and Management of Wetlands" for officers of Southern Indian States Forest Department during the month of March 2017. Based on the successful conduct of the workshop, the MoEFCC during November, 2017 requested that SACON may organize another workshop for the forest officials from Uttarakhand state at Dehradun.

The inauguration was held on January 11<sup>th</sup>, 2018 at Wild life Institute of India, Dehradun. The training program was inaugurated by Mr. D.V.S. Khati, IFS, PCCF and Chief Wildlife Warden Uttarakhand Forest Department in the presence of Mr. Samir Sinha, IFS, APCCF Uttarakhand Forest Department, Dr. G.S. Rawat, Dean, WII and Mr. Chandan Singh, Dy. Director, MoEF&CC, Govt. of India, New Delhi. Dr. K. Sankar, Director SACON, welcomed the Chief Guest, Resource persons, participants, invited guest and faculty. He further thanked MoEFCC for requesting SACON to conduct the workshop for the southern states. In his inaugural address the Chief Guest Mr. Khati highlighted the importance of the program and the need to build capacities of the forest officials to better conserve and manage the wetlands especially in the Himalayan terrain. Mr. Chandan Singh put forth the view of the MoEFCC while addressing the conservation issues that needed interventions from the forest officials.

The technical sessions followed the inaugural function, in all there were nine sessions with five delivered by eminent scientist and policy makers and the remaining sessions conducted by in-house faculty from SACON. The participants were introduced to wetlands, ecosystem services, rules and regulations for monitoring wetlands. In addition, there were sessions on importance of wetlands as habitat for birds and other fauna and the pollution aspects. National and International Wetland Management practices were also dealt upon before taking the participants to Asan Barrage Conservation Reserve for the field trip.

### **Pilot Program on Green Skill Development Program (Wetland Module and Nature Guide Training)**

The ENVIS secretariat from MoEFCC invited SACON ENVIS Centre to frame the syllabus to conduct its pilot program on the Green Skill Development Program (GSDP). The other Centres involved in the development of the basic course of the program were BSI, ZSI and FRLHT. The ministry intended to conduct the pilot program across India covering all the bio geographic zones. SACON was the nodal Centre for the Coimbatore southern division and in association with BSI Coimbatore conducted the basic course of GSDP during June to September 2017. SACON ENVIS team conducted all the sessions on Wetlands, GIS training and Computer module. The ENVIS team in collaboration with the SACON Nature Education Division also imparted training on Nature interpretation to the

participants. The training program involved theory, practical and field visits that were spread over three months. The programme also involved field visit to various eco-tourism centres like Parambikulam Tiger Reserve and Silent Valley National Park. The candidates were mainly 12<sup>th</sup> class pass individuals with interest in environment and ecosystem.



Field Session on water quality test with GSDP trainees



Field Session on nature interpretation with GSDP trainees

## Laboratory Procedures on Ecotoxicological Studies

Four Summer Training course on “Laboratory Procedures on Ecotoxicological Studies” was organized by the Division of Ecotoxicology between April to December 2017. Seven UG and PG Students from various institutions (Rajalakshmi engineering college, Coimbatore, Western University Canada, Bharthidhasan University, Coimbatore) attended this programme. During the programme they were given hands-on-training on analytical instruments and were also taught laboratory procedures, basic principles and general working protocols adopted in Ecotoxicological studies.

## Workshop on 'Occupancy Modelling' In Pietermartizburg, South Africa

A workshop was organized on occupancy modeling at The Symposium of Contemporary Conservation Practice hosted by Ezemvelo KZN Wildlife and University of KwaZulu-Natal, South Africa for the Protected Area Managers and researchers on the 8<sup>th</sup> November 2017 by Dr. Riddhika and Dr. T. Ramesh, faculty members, SACON.

The Symposium of Contemporary Conservation Practice was opened by Dr. Andy Blackmore, CEO of Ezemvelo KZN Wildlife, South Africa, followed by various scientific sessions and plenary lectures. Mr. Craig Mulqueeny, Manager Ecological Advice, Ezemvelo Representative on the Scientific Authority Scientific Services, Ezemvelo KZN



Wildlife, South Africa, dealt with occupancy modeling. Our workshop covered the basic methods for modelling species occurrence using simple presence/absence data. We focused on the practical use of field data in the freely available programs PRESENCE and R. The workshop has begun with a lecture followed by practical exercises on how to estimate species occupancy and detection probability using program PRESENCE and R taking real field data, followed by the selection of appropriate models, and interpreting results. The workshop has focused only on the basic occupancy model i.e. single-season model and demonstrated how to analyze detection/non-detection data to determine occupancy and detection probability. We then modeled the impact of environmental parameters (categorical as well as continuous factors) on species detection and occupancy. By the end of the course, participants were comfortable in identifying their scientific questions applicable to this technique. Participants were able to analyze their own data sets from point counts, camera-trap surveys, transects, trail walks, call counts and many more in an occupancy modeling framework. Over 35 participants from different institutions such as University of Cape Town, University Pretoria, University of Venda, University of Zululand, University of KwaZulu-Natal, Eastern Cape Park Board, Ezemvelo KZN Wildlife and South African National Biodiversity Institute, participated in the workshop. Overall, the participants appreciated us in conducting the workshop and its usefulness in wildlife management in Protected Areas. They have requested us to conduct it again in the next Symposium as it was very useful for Park Managers and Researchers.

## Orientation Programme for SACON Research Personnel

An Orientation Programme was organized for the research personnel of SACON between 21<sup>st</sup> December 2017 and 5<sup>th</sup> January 2018 at SACON. A total of 38 research personnel engaged for SACON's 10 recently launched ecological research projects sponsored by the Ministry of Environment, Forest and Climate Change, Government of India attended the orientation programme. The programme included classroom lectures, demonstration of field techniques, orientation to laboratory equipment and field tour. The lectures were handled by Director and Faculty members of SACON and were organized under the two major categories namely, field techniques and ecological concepts. Lectures on field techniques included bird census methods, mammal census methods, vegetation quantification techniques, Geographical Information System and Remote Sensing and Conservation Genetics-theory and techniques. Hands on training of handling various basic field equipment were imparted to researchers. Lectures on concepts included evolutionary and ecological sampling techniques, population ecology, comparative physiology, avian migration and avian acoustics, basic statistics in R platform and introduction to modelling. In addition, field tours were organized to Singanallur Wetland in Coimbatore, Tamil Nadu and Parambikulam Tiger Reserve, Kerala.





## Post-Graduate Programme in Ornithology and Conservation Biology

SACON proposes to conduct, from the academic year 2018-19, a residential and regular M.Sc. programme in 'Ornithology and Conservation Biology', which would cover, besides ornithology as its core programme, all aspects of wildlife biology and conservation. The overarching goal of this programme is to produce highly qualified and motivated generations of young ornithologists and wildlife scientists so that they continue to contribute to the conservation research and training in India.

The proposed M.Sc. course will be of two-year duration with admission on every alternate year. This is to ensure better logistics and coordination since the course is largely field-oriented and would involve extensive study tours to Protected Areas and natural landscapes, besides enlisting of teaching faculty from outside. The admission process will be rigorous, based on a nationwide online entrance test followed by personal interviews. It is proposed to take in a maximum of 10 Indian students per batch, of which six top contenders would be given full fellowship. The course will comprise four semesters, with the final one earmarked for dissertation.

During the reporting period, SACON undertook all the necessary preparatory tasks that included seeking affiliation with Saurashtra University, Rajkot for the MSc course, developing course curriculum and structure, and developing physical infrastructure like class-rooms, computer laboratory, and post-graduate students' hostel. A high-level Local Inquiry Committee headed by Dr. G. C. Bhimani, Dean, Faculty of Science, Saurashtra University, Rajkot visited SACON on 13<sup>th</sup> November 2017 to conduct a feasibility study and to inspect facilities at the campus. After their report, the Vice-Chancellor, Saurashtra University with the approval of the Board of University Teaching and the Syndicate has accorded recognition to the proposed M.Sc. course in Ornithology and Conservation Biology by SACON from the academic year 2018-19. Preparations are currently under way to conduct nation-wide online entrance examination for admission to the course.

## Workshop on Conservation Genetics

A Conservation Genetics Workshop was held at SACON from the 5<sup>th</sup> to the 9<sup>th</sup> of June 2017. Dr. K. Sankar, Director, SACON inaugurated the workshop that was attended by the participants and staff and students of SACON. The coordinators of the workshop were Dr. Shomita Mukherjee, Principal Scientist and Dr. R. P. Singh, Scientist. Dr. Vishnupriya Kolipakam a population geneticist from the Wildlife Institute of India and Mr. Pankaj Koparde, PhD student from SACON served as resource persons for the course.

Fourteen participants registered for the workshop hailing from various regions of India and from a wide range of backgrounds. Two participants were journalists from Hindustan Times and DNA, two from Sanctuary Asia, a

biologist from Nandankanan Zoo in Orissa, a professional photographer and several independent researchers in the field of biodiversity conservation in various stages of their career.

The workshop covered theoretical and practical aspects of Conservation Genetics. classroom sessions covered discussions on the applications of genetics in conservation, the Hardy-Weinberg Equilibrium, selection, speciation, population structure and genetic distances, genetic markers and a hands-on introduction to various software used in analysis. Laboratory sessions included an introduction to instrumentation, hands-on introduction to DNA extraction, PCR and electrophoresis, a discussion on handling and collection of biological samples for genetic analysis and important field and laboratory ethics. Case studies were presented and discussed. Dr. Uma Ramakrishnan from the National Centre for Biological Sciences, Bengaluru delivered a talk titled “Cutting Edge Genomics Technologies and Tiger Conservation”.

At the valedictory function Ms. R.V. Ramya Bharathi, IPS, Superintendent of Police, Coimbatore was the Chief Guest. The function began with a welcome address by Dr. K. Sankar, Director, SACON. The feedback from participants was positive and they expressed their appreciation of the course and stay on campus. The Chief Guest distributed Certificates to the participants.

## Science Express exhibition at Karur Railway Station

The Science Express Climate Action Special (SECAS) was stationed at the Karur Railway Station in Tamil Nadu from 20.06.2017 to 22.06.2017. During the three-day exhibition, team members from SACON ENVIS Centre on “Wetland Ecosystems including Inland Wetlands” participated and associated with the event organizers as part of creating awareness among school, college students and public. Posters and Newsletters were displayed on the platform highlighting the following major components:



- General activity of ENVIS Centre.
- Awareness posters related to wetlands.
- Information on publications/knowledge products released.

The SACON ENVIS exhibition had more than 50,000 visitors during the three-day exhibition including students from various schools, colleges, teachers, railway employees and general public. Ms. A. Julffia Begam, Information Officer explained about the concept of ENVIS, various ENVIS Centres under MoEF&CC focal point, uses of wetlands and importance of conserving the wetlands. Mr. N. Mohamed Ibrahim, IT Assistant briefed the various outreach

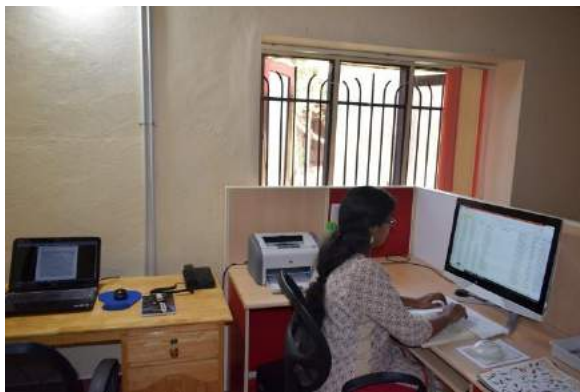


activities carried out by SACON-ENVIS. A wetland game “Way through Wetland” attracted many school students who actively participated and answered the questions related to wetlands. As part of platform activity, the students were asked to express their ideas about, Water, Environment and Nature. School teachers and students from colleges were provided with ENVIS newsletters and awareness posters.

## ACTIVITIES OF CELLS/ FACILITIES and INFRASTRUCTURE

### National Ornithological Databank (NOD) Cell

One of the key challenges to biodiversity conservation in the country pertains to paucity of information. Even for well-documented taxa like birds, information on their distribution, ecology and status remains scattered in scientific literature, most of which are inaccessible to general users. To address this issue, SACON established the National Ornithological Databank (NOD) Cell in January 2017 to create and manage a data-portal on Indian ornithology to achieve the 'last-mile' connectivity between data sources and user community.



During the reporting period, works on three databases have been initiated. The first vertical pertains to searchable keywords-based databank of ornithological theses and dissertations from across the institutions in the country. In total, 324 Indian ornithological theses that include 238 Ph.D., 11 M.Phil., and 74 M.Sc. dissertations have been

sourced, indexed, and incorporated into the NOD database, along with their abstracts. The second databank relates to spatial information on distribution and status of all the Indian birds with respect to 40 major biogeographical and landscape units. Curation and validation of this data are currently under way. More recently, NOD Cell has launched a third vertical on taxonomic database for Indian birds with an objective to expand this into a more comprehensive portal on ecology and biology of Indian birds. We plan to make the entire datasets freely available for user community through an open-access portal soon.

As an offshoot, NOD Cell has also collaborated with ornithologists from the journal Indian BIRDS to develop and maintain India's first definitive 'Checklist of the Birds of India', which is being updated at regular intervals for species additions and taxonomy, and an authentic list of the 'Threatened Birds of India' in line with IUCN Red List updates.

### Avian Forensic Laboratory

Avian Forensic laboratory is being established in the Central Instrumentation Laboratory building, which is coming up between the library block and old laboratory block. Two rooms approximately 880 ft<sup>2</sup> have been allotted to the Avian Forensic lab in the new building. The rooms are being modified as per our requirement. Equipment such as deep freezer (-80°C), normal refrigerator, PCR, centrifuge, horizontal and vertical gel-electrophoresis have been procured. Other sophisticated equipment purchase is under process.

### Ecotoxicology Laboratory

Ecotoxicology division focuses on integrating ecology and toxicology to understand the ill effects of contaminants on ecosystem components with special emphasis on birds. The group of contaminants that are tested include pesticides, PAHs, PCBs, pharmaceuticals and heavy metals. The division is equipped with analytical instruments such as Atomic Absorption Spectrophotometer, Graphite Furnace AAS, Gas Chromatograph, High Performance Liquid Chromatograph, UV-Vis Spectrophotometer, Ultra centrifuge and minor supporting instruments for



environmental analysis. Facilities such as ultra-deep freezer, walk-in cold room and ample working space offer a wonderful research environment for research scholars and students to work in. We are in the process of upgrading our existing analytical facility with state-of-art instruments, namely GC-MS/MS, LC-MS/MS and ICP-MS to keep track of the impact of contaminants on ecosystem components with special focus on birds.

## Environmental Information System (ENVIS)

The Environmental Information plays a vital role not only in formulating environmental management policies but also in the decision-making process aiming at environmental protection and improvement of environment for sustaining good quality of life for the living beings. Realizing such need, the Ministry of Environment and Forests, Govt. of India set up an Environmental Information System (ENVIS) in 1983 as a plan programme for a comprehensive network in environmental information collection, collation, storage, retrieval and dissemination to varying users, which include decision-makers, researchers, academicians, policy planners and research scientists. ENVIS was conceived as a distributed information network with the subject-specific centers to carry out the mandates and to provide the relevant and timely information to all concerned.

The ENVIS Centre was established at SACON in the year 2004 with the theme "Wetland Ecosystems including Inland Wetlands". The Centre collects, collates, and disseminates information on various facets of Wetland Ecosystems including Inland Wetlands of India. The SACON ENVIS publication "Lakes of Coimbatore City" has crossed 2263 reads in Research Gate. While the book "A Bibliography of Tamil Nadu Wetlands" published in 2017 has also crossed 671 reads. The Centre was awarded 'A' grade for the years 2014-2015 and 2015-2016. Apart from secondary data collection, the Centre also comes out with knowledge products such as newsletters, posters, pamphlets and calendars. The Centre also conducts awareness activities about the importance of wetlands in schools and colleges on various environmental days. Based on the performance, the ENVIS Secretariat involved SACON ENVIS in its pilot programme of Green Skill Development which was successfully completed during September 2017.

## Library and Documentation

Facility for literature searches has been provided to all the Faculty and Research Scholars. As in the previous years, the library facilities were utilized by students, scholars and scientists from other institutions, from all over India. Total holding of the SACON library is 3668 Books, 3188 Back Volumes, 2706 Survey Maps, 117CD/DVDs, 193 Project Technical Reports, 70 Theses and Dissertations (Ph.D-56, M.Phil-14), and 54 current Periodicals (National -35, International -19). Online subscriptions of JSTOR Archive and Biological Science and BioOne complete package. Seventy-five books, 1 International Periodical, 5 Theses and Dissertations and 10 Technical reports were added to the library during 2017-2018. SACON Technical Reports published by Faculty members of SACON were collected and updated at SACON website for open access (<http://www.sacon.in/publications/reports/>).



## Computers and Wi-Fi Connectivity

Four latest models of computers are placed at SACON Library for online reference access. Internet connectivity is also provided through Wi-Fi networking facility at SACON Library premises.



## Bookshelves and Furniture



Bookshelves (5), SACON Publication Display Rack (5) and Single face Steel Book Rack (2) were added to the Library.



## Reading Room

For the benefit of Ph.D. Scholars, a separate reading room facility has been provided at SACON Library.

## Post Graduate Students Hostel

During the 70th meeting of the Governing Council of SACON held on 23rd March 2018 at SACON, Shri C.K. Mishra, IAS, Secretary, Ministry of Environment, Forest and Climate Change (MoEFCC), Govt. of India inaugurated the newly constructed Post Graduate (PG) Students Hostel on SACON campus. The Secretary, MoEFCC appreciated the architecture of the new PG Hostel and was impressed with its elegance and eco-friendly construction. The PG Hostel can accommodate 12 students of M.Sc. course on "Ornithology and Conservation Biology" which will be initiated during June 2018.



This new building was constructed by M/s Centre of Science and Technology for Rural Development, Thrissur, Kerala, a non-profit organization, recognized by the Kerala Government, with a total Rs. 31/- Lakhs funding support from the MoEFCC, Govt. of India.

As part of the inaugural function, tree saplings were planted around the new building by C.K. Mishra, IAS, Secretary; Shri Praveen Garg, IAS, Additional Secretary and Financial Advisor and Dr. T. Chandini, Advisor, MoEFCC, Govt. of India.



## Details of ongoing and completed research projects/activities during the financial year 2017-18

Sl. No.	Project Title	Investigator	Collabo- rating agency	Research Fellows	Duration	Budget (INR)	Funding source	Date of commen- cement	Date of comple- tion	Current Status
1.	Assessing the population status of synanthropic bird species of India, including House Sparrow and House Crow, and their response to urbanization	Dr. Rajah Jayapal and Dr. S. Babu	Nil	Ms. Abhisikta Roy, Mr. Darshan Podtar, Ms. Debanjana Basu, Mr. Golusu Babu Rao, Ms. Pallavi Arora and Ms. S. Priyadarshini	3 years and 6 months	2,18,18,125/-	MoEFCC, Govt. of India	4 <sup>th</sup> October 2017	28 <sup>th</sup> March 2021	Ongoing
2.	Developing Conservation and Management Plans for Selected Important Bird and Biodiversity Areas (IBAs) of the Country	Dr. Rajah Jayapal, Dr. S. Babu and Dr. P. R. Arun	Nil	Ms. Ankita Das, Mr. Clinice P., Jose, Ms. R.K. Niveditha and Ms. Suryamol Sukumaran	3 years	1,09,21,000/-	MoEFCC, Govt. of India	4 <sup>th</sup> October 2017	28 <sup>th</sup> September 2020	Ongoing
3.	Assessing the distribution, population and habitat use of three endangered species to develop conservation plan for species and their habitats	Dr. S. Babu, Dr. R. Jayapal, Dr. H. N. Kumara and Manchi Shirish S.	Nil	Mr. S. Suresh Marimuthu, Mr. D. Tamiliniyan, Mr. Harif Parengal and Mr. Sarbasis Dutta	36 months	95,58,250/-	MoEFCC, Govt. of India	4 <sup>th</sup> October 2017	October 2020	Ongoing



4.	Conservation of the Andaman Serpent-eagle <i>Spilornis elgini</i> in the Andaman Islands:Phase – I	Dr. Manchi Shirish S.	Nil	Ms. Shivkumari Patel	2 years 6 months	11,56,500/-	Raptor Research and Conservation Foundation, Mumbai	29 <sup>th</sup> Decemb er 2014	30 <sup>th</sup> June 2017	Completed
5.	Understanding Dispersal Patterns in the monomorphic Edible-nest Swiftlet of Andaman Islands using biotechnological tools	Dr. Manchi Shirish S. and Dr. Ram Pratap Singh	Nil	Mr. Prathamesh Gujarpadhye	3 years	45,78,200/-	Department of Biotechnology, Government of India	4 <sup>th</sup> January 2016	03 <sup>rd</sup> January 2019	Ongoing
6.	Identifying Indian cavity nesters most vulnerable to the loss of large trees	Dr. Mark Stanback, Dr. Manchi Shirish S.	Davidson College, Dept. of Biology	NA	2 years 6 months	12,000 USD	National Geographic Society, USA	22 <sup>nd</sup> Decemb er 2014	30 <sup>th</sup> June 2017	Ongoing
7.	In-situ and Ex-situ Conservation of the Endemic Andaman Edible-nest Swiftlet in the Andaman and Nicobar Islands, India	Dr. Manchi Shirish S., DFO (WL) and DCF (South Andaman, Mayabunder, Havelock and Nicobar Divisions)	Wildlife Division, Department of Environment and Forests, Andaman and Nicobar Islands	Ms. Amruta Dhamorikar, Ms. Dhanusha Kawalkar and Ms. Pallavi	5 years	7,45,13,600/-	MoEFCC, Govt. of India	4 <sup>th</sup> October 2017	28 <sup>th</sup> September 2022	Ongoing
8.	Assessing anthropogenic threats to large carnivore population in the Western Ghats part of Tamil Nadu	Dr. T. Ramesh	Nil	Ms. V. Gayathri	5 years	89,00,000/-	Science and Engineering Research Board, Government of India	8 <sup>th</sup> March 2017	7 <sup>th</sup> March 2022	Ongoing

9.	Survey for small cats in Sanjay Gandhi National Park, Mumbai	Dr. Shomita Mukherjee, Mr. Nayan Khanolkar and Dr. P. V. Karunakaran	Maharashtra Forest Department	Nil	1 year and 6 months	7,72,012/-	Maharashtra Forest Department	29 <sup>th</sup> March 2017	28 <sup>th</sup> September 2018	Ongoing
10.	Developing a conservation action plan for Forest Owlet ( <i>Heteroglaux blewitti</i> ), a Critically Endangered species endemic to central India	Dr. Shomita Mukherjee, Dr. Rajah Jayapal and Dr. V. V. Robin	Indian Institute of Science Education and Research, Tirupati	Mr. Pankaj Koparde, Ms. Aditi Neema, Mr. Kaushik Koli and Ms. Zainab Khan	3 years	1.3,06,09,781/-	MoEFCC, Govt. of India	4 <sup>th</sup> October 2017	November 2020	Ongoing
11.	A comprehensive study of the potential ecological impact of windmill farms on wildlife with special emphasis to avifauna in Karnataka	Dr. H. N. Kumara	Nil	Ms. Malyasri Bhattacharya, Mr. Harif Parengal, Mr. Tamiliniyan, and Mr. Mahesh D. Bilaskar	2 years	39,07,000/-	Karnataka Forest Department, Renewable Energy Development Limited, National Institute of Wind Energy	July 2016	June 2018	Ongoing
12.	Ecology of elephants ( <i>Elephas maximus</i> ) in South-West Bengal including population dynamics, migratory pattern, feeding habits and human-elephant conflict	Dr. H. N. Kumara and Dr. P. A. Azeez	Nil	Ms. Aakriti Singh	3 years	34,56,000/-	West Bengal Forest and Biodiversity Conservation Society	April 2016	March 2019	Ongoing

13.	Ecological investigations on five selected endemic trees and their conservation strategies in the forests of Tamil Nadu, India.	Dr. Chellam Muthumperumal and Dr. P. Balasubramanian	Nil	NA	3 years	32,90,000/-	Science and Engineering Research Board (SERB), New Delhi.	May 2016	May 2019	Ongoing
14.	Habitat assessment of Mangalavanam Bird Sanctuary	Dr. P. V. Karunakaran, Dr. Goldin Quadros and Dr. S. Babu	Nil	Kuldeep J. Mhatre	3 Month	75000/-	Forest and Wildlife Department, Kerala	March 2017	May 2017	Completed
15.	Monitoring and Surveillance of Environmental Contaminants in Birds in India	Dr. S. Muralidharan	Nil	K. Nambirajan and V. Kirubhananthini	7 years	48,36,375/-	MoEFCC, Govt. of India	April 2010	June 2017	Completed
16.	National centre for surveillance and monitoring of impact of environmental contaminants on ecosystem components with special focus on birds	Dr. S. Muralidharan	Nil	K Nambirajan, V. Kirubhananthini, V. Bhagyasree, and A. Kaja Maideen	3 years	6,69,81,010/-	MoEFCC, Govt. of India	4 <sup>th</sup> October 2018	September 2021	Ongoing



17.	Polycyclic Aromatic Hydrocarbons (PAHs) contamination in Palikaranai wetland, Chennai; fish as an indicator	Dr. S. Muralidharan	Nil	Ms. Mythreyi Deverajan	5 years	19,00,000/-	DST Inspire Fellowship	February 2015	February 2020	Ongoing
18.	Establishment of National Avian Forensic Laboratory at SACON for National Certification for Illegal Trafficking of Birds	Dr. R. P. Singh and Dr. P. Pramod	Nil	Ms. Swapna Devi Ray and Mr. Prateek Day	3 years	8,10,40,000/-	MoEFCC, Govt. of India	4 <sup>th</sup> October 2017	5 <sup>th</sup> October 2020	Ongoing
19.	Additional study of less than 10 mw Hydroelectric Projects under the Cumulative Impact Assessment of Hydroelectric projects in Sutlej river Basin in Himachal Pradesh	Dr. Arun P. R. and Dr. Rajah Jayapal	ICFRE, Dehradun	Mr. Anoop, V and Mr. Jins, V.J.	5 months	18,22,000/-	MoEFCC, Govt. of India	June 2017	September 2018	Ongoing
20.	Faunal diversity documentation study at Chemfab Alkalies Ltd. campus, Puducherry	Dr. Arun P. R., Dr. Riddhika Ramesh and Dr. Rajah Jayapal	Nil	Mr. Dibyendu Biswas	6 months	5,81,000/-	M/s Chemfab Alkalies Ltd.	September 2017	March 2018	Ongoing

21.	Rapid Biodiversity study for the Proposed Multi-product SEZ/Industrial Park at Gopalpur, District Ganjam, Odisha state by M/s Tata Steel SEZ Limited.	Dr. P. R. Arun Dr. Riddhika Ramesh and Dr. Karunakaran P. V.	Nil	Mr. Prakash,L and Mr.Dibyendu Biswas	3 months	13,34,000/-	TATA Steel SEZ Ltd.	June 2017	August 2017	Completed
22.	Impact of Developmental Projects like road widening on the bird population of Gulbarga City	Dr. P. R. Arun and Dr. Babu S.	Nil	Ms. Divyapriya,C.	1 month	2,00,000/-	Forest Department, Karnataka	October 2017	November 2017	Completed
23.	Supplementary Environmental Impact Assessment (EIA) for the proposed High Level Bridge across Pulicat Lake with special focus on birds	Dr. Riddhika Ramesh, Dr. T. Ramesh and Dr. P. R. Arun	Nil	Mr.V.Muthu krishnan	2 months	4,86,000/-	Enviro Care Private Ltd.	7 <sup>th</sup> March 2018	6 <sup>th</sup> May 2018	Ongoing
24.	Criteria for wetland prioritization and framework for wetland monitoring in Tamil Nadu	Dr. Goldin Quadros, Dr. Mahendiran M.	Nil	Mr. Sathyamoorthy S and Mr. T. Siva,	1 year	19,89,500/-	TNSLURB and TNFD	1 <sup>st</sup> November 2017	31 <sup>st</sup> October 2018	Ongoing
25.	Assessment of status, distribution and threats to the population of threatened Sarus Crane ( <i>Antigone antigone</i> ) in Gujarat.	Dr. M. Mahendiran, Dr. S. Muralidharan, Dr. P. Balasubramanian and Dr. P. V. Karunakaran.	Nil	Ms. Sreya Bhattacharya, Ms. Apurva Patil, Mr. Tejas Karmarkar and Mr. Nikunj Jambu	2 years	1,24,01,000/-	MoEFCC, Govt. of India	4 <sup>th</sup> October 2017	5 <sup>th</sup> October 2019	Ongoing

26.	Assessment of status, distribution and threats to the population of threatened Sarus Crane ( <i>Antigone antigone</i> ) in Uttar Pradesh.	Dr. M. Mahendiran and Dr. S. Muralidharan, Dr. P. Balasubramanian and Dr. P. V. Karunakaran	Nil	Ms. Astha Chaudhary, Mr. Prakash L., Ms. Madhumitha R. and Mr. Karthikeyan, P.	2 years	88,72,000/-	MoEFCC, Govt. of India	4 <sup>th</sup> October 2017	5 <sup>th</sup> October 2019	Ongoing
27.	Ecological exploration and Socioeconomic Valuation of Pit lakes in Eastern Coal Fields, India: Implications for conservation and sustainable use.	Dr. Santanu Gupta, INSPIRE Faculty (DST)	Nil	Dr. Aparajita Mukherjee and Mr. Akshay B. Naik	5 years	35,00,000/-	INSPIRE Division, Govt. of India	September 2016	September 2021	Ongoing
28.	A Study on Bird Hazards in selected Indian Civil Airfields	Dr. P. Pramod and Dr. P. V. Karunakaran	Nil	Mr. Jeevith S, Ms. Angel Joy and Mr. Anees Khan	2 years	84,93,500/-	MoEFCC, Govt. of India	4 <sup>th</sup> October 2017	December 2019	Ongoing
29.	A Study on Bird Hazards and its Mitigation Measures required at the Multi Sector Special Economic Zone (SEZ) located near Rajiv Gandhi International (RGI) Airport, Hyderabad	Dr. P. Pramod and Dr. P. V. Karunakaran	Nil	Mr. Yogesh Waghmare and Mr. Shanthanu Nagpure	6 months	12,50,000/-	GMR Hyderabad Aviation SEZ Limit	1 <sup>st</sup> February 2018	31 <sup>st</sup> July 2018	Ongoing
30.	Nature Education Activities in SACON Campus	Dr. P. Pramod	Nil	Ms. Chaithra Shree J.	Long term	4,02,000/-	SACON/ MOEFCC	4 <sup>th</sup> December 2000	Continuous activity	Ongoing



31.	ENVIS centre on wetland ecosystems including inland wetlands	Dr. Goldin Quadros	Nil	Ms.B. Hemambika, Ms. A. Julffia Begam and Mr. Mohammed Ibrahim	Long term	17,25,512/-	MoEFCC, Govt. of India	2004	-	Ongoing
32.	Pilot Program on Green Skill Development Program (Wetland Module and Nature Guide Training)	Dr. Goldin Quadros	(Nature Education Division, SACON)	Ms.B. Hemambika, Ms. A. Julffia Begam and Mr. Mohammed Ibrahim	-	3,36,000/-	MoEFCC, Govt. of India	June 2017	September 2017	Completed
33.	Training Program on the Monitoring and Management of Wetlands for Forest officials from Uttarakhand State.	Dr. Goldin Quadros and Dr. Mahendiran M.	-	-	-	5,46,311/-	MoEFCC, Govt. of India	January 2018	-	Completed
33.	Criteria for wetland prioritization and framework for wetland monitoring in Tamil Nadu	Dr. Goldin Quadros and Dr. Mahendiran M.	Nil	Mr. Sathyamoorthy S, Mr. T. Siva,	1 year	19,89,500/-	TNSLURB and TNFD	November 2017	October 2018	Ongoing



# Audit Report

10.89
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S	M

**Ramanathan & Krishnakumar**  
CHARTERED ACCOUNTANTS

ASHIRVAD'  
22-A, RR.Samy Lane,  
Coimbatore - 641009  
4380999, 2236394

Date:

## AUDIT REPORT

**W**e have examined the attached Balance Sheet of **SÁLIM ALI CENTRE FOR ORNITHOLOGY AND NATURAL HISTORY, ANAIKATTY P.O., COIMBATORE-641108**, as on 31.03.2018, the Income and Expenditure Account and Receipts and Payments account for the year ended on the date, annexed hereto. These financial statements are the responsibility of the Society's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We have conducted our audit in accordance with the accounting standards generally accepted in India. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by the management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

We have obtained all the information and explanations, which to the best of our knowledge and belief were necessary for the purpose of our audit.

In our opinion, proper books of accounts have been kept by the society so it appears from our examination of those books.

The Balance Sheet, Income and Expenditure and Receipts and Payments account dealt with by this report comply with the Accounting Standards recommended by the Institute of Chartered Accountants of India and to the extent applicable to the Society:

## Emphasis of Matters

1. The SACON CPF maintained by SACON for the benefit of its staff is not a recognized Fund. It is not a separate entity also. Neither separate Income Tax Return is filed for SACON CPF nor the interest income earned from bank deposits is included in the computation of total income of SACON. The accounts of SACON CPF are not consolidated with SACON accounts. The accounts do not appear to have been audited as required under any Acts, regulating the Provident Funds.
2. A sum of Rs 60.32 lacs has been settled by SACON CPF without deduction of TDS to two employees who retired during the year.
3. There is an excess contribution by SACON to SACON CPF to the tune of Rs 46.14 lacs when compared with the actual liability to be settled to SACON staff members as on 31.03.2018.(as per Note No 8)
4. TDS has not been deducted by SACON for settlement of leave encashment to the retiring employees in excess of Rs 3.00 lacs each. SACON claims that it is a Central Government organization and hence full amount is exempt.
5. The petty cash expenses incurred at SACON as well as at various project sites are not routed through SACON cash book but booked through journal entries only.

In our opinion and to the best of our information and according to the explanations given to us the said accounts give a true and fair view:





**Ramanathan & Krishnakumar**  
CHARTERED ACCOUNTANTS

ASHIRVAD'  
22-A, RR.Samy Lane,  
Coimbatore - 641009  
4380999, 2236394

Date:

- i) In case of Balance Sheet, of the state of affairs of the above named Institution as on 31.03.2018.
- ii) In case of Income and Expenditure Account, of the Excess of Income over Expenditure/ Expenditure over Income for the accounting year ending on 31.03.2018.
- iii) In case of Receipts and Payments accounts, of receipts and payments during the accounting year ending on 31.03.2018.

Place: Coimbatore  
Date :22.06.2018

## Schedule 15

### Notes to Accounts for the year ended 31<sup>st</sup> March 2018

#### 1. SIGNIFICANT ACCOUNTING POLICIES

##### 1. Accounting Convention:

The financial statements for the year are prepared on the basis of historical cost Convention with Generally Accepted Accounting Principles (“GAAP”) on the accrual/cash basis except bonus payable. The information is furnished in the format prescribed by the Ministry of Finance vide.O.M.No.MDS/PA/176/739.

##### 2. Fixed Assets:

2.1 All fixed assets are stated at cost less accumulated depreciation. The cost of fixed assets comprises the purchase price and any other directly attributable costs incurred in bringing the assets to their working condition for intended use.

2.2 Equipment received as capital grant from the government of India have been recognized in the books of account at a nominal value of Re. 1

##### 3. Depreciation:

3.1 As per the above referred guidelines of the Ministry of Finance, depreciation is provided during the year on the straight line basis as per the following rates

3.2 In respect of additions to fixed assets during the year, depreciation is charged on a pro-rate basis from the date of making payment for acquisition of such assets.

##### 4. Revenue Recognition:

Asset Group	Rate of Depreciation
Building	1.63 %
Plant and Machinery	4.75 %
Vehicle	9.50 %
Furniture and Fixtures	6.33 %
Office Equipment	13.91 %
Computers	16.21 %
Electric Installations	7.07 %

4.1 Income is recognized in the books of Accounts on Hybrid System.

4.2 Income from Fixed Deposits:

Interest income is recognized on a time proportion basis taking into account the amount outstanding and rates applicable.

##### 5. Valuation of Inventories:

There are no inventories held as on the last date of the financial year.

## 6. Retirement Benefits:

### Gratuity:

In accordance with the Gratuity Rules applicable to Government of India, the SACON provides for gratuity, defined benefit retirement plan (the "Gratuity plan") covering all regular employees. The plan, subject to the provisions of the above Act, provides a lump sum payment to vested employee at retirement, death, incapacitation of an amount based on rules for the respective employment. The SACON estimates its liability as of each balance sheet date based on an actuarial valuation. The Present Value of Obligation (PVO) has been worked out from the year 2017-18 onwards after reckoning the DA portion also in the monthly relevant salary component. Till last year, PVO working was based on the Basic Salary only, without including the DA component. The increase in the gratuity liability on account of this, as advised by the Actuary, is Rs 49.00 lacs.

### Leave encashment:

Liability on account of leave entitlement has been provided in accordance with the rules applicable to Government of India at current encashable rates for the unavailed balances of leave. The SACON estimates its liability as of each balance sheet date based on an actuarial valuation and reduced by actual disbursement made to retired employees.

## 7. Taxation:

7.1 No provision for income-tax and deferred tax has been considered since SACON has been accorded registration u/s 12AA of the Income Tax Act 1961 and the surplus of SACON is exempted under section 11 of the Income-tax Act, 1961.

7.2 The donation to SACON is eligible for deduction under section 80G of the I.T. Act, 1961.

7.3 The SACON has been approved by the Central Government for the purpose of clause (iii) of sub section 35 of the Income tax Act, 1961 read with Rules 5C and 5D of the Income-tax Rules, 1962 from the assessment year 2013-14 onwards in the category of "Scientific Research Association".

## 8. Provisions, Contingent Liabilities and Contingent Assets:

Provision is recognized only when there is a present obligation as a result of Past event and it is probable that there will be an outflow of resources. Contingent liabilities are not recognized but are disclosed in the notes. Contingent assets are neither recognized nor disclosed in the financial Statements.

## 1. NOTES FORMING PART OF ACCOUNTS:

### 1. Government grants / subsidies:

#### Recurring Grant:

1.1 The total grant received (including advance grant for FY 2018-19 ) during the financial year 2017-18 from the MOEF & CC was Rs.12,00,00,000 /-(Rs Twelve Crores only).

### 2. Inflow and Expenditure in foreign currency:

S.NO.	PARTICULARS	CURRENCY	INR VALUE
1	PLOS ONE PUBLICATION	USD 500	31,915.00
2	BIO ONE-JOURNALS	USD 3915.03	2,53,618.80
3	SUBSCRIPTION OF JOURNALS-JSTOR	USD 787	52,812.00
4	EPPENDORF	EURO 5000	4,05,500.00
5	IR TECHNOLOGY SERVICE PVT LTD	EURO 14012	10,14,749.00
	TOTAL		<b>17,58,594.80</b>



### 3. Details of Audit fees to Statutory Auditors:

Statutory Audit Fees	Rs.90,000/- + GST
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### 4. Details of Prior Year Income/ Expenses: ( Rs)

Expenditure Incurred under SACON Projects	Institutional Charges 16,00,000/-
Income Earned under SACON Projects	Nil
Expenditure Incurred under SACON	Gratuity provision 49,00,000/-
Income Earned under SACON	Institutional Charges 16,00,000/-

5. All payments towards advances and deposits for which value by way of supply / service to be received are carried over in the Balance Sheet.
6. (i) The consolidated Balance Sheet along with the Receipts and Payments Account of the projects duly certified also form part of the Accounts of the Institution and the Audit Report covers the Accounts of the Project also. The Statements relating to SACON Donation, SACON FCRA Account, SACON CORPUS, SACON Hostel have been shown separately.  
(ii) SACON CPF accounts are maintained separately and not consolidated with SACON accounts since the funds have been invested as per the Contributory Provident Fund Scheme framed for the benefit of the regular employees of SACON. The SACON CPF is not a notified provident fund.
7. The Institution maintains Stock Registers for the movement of assets, stores, Vehicles and consumables and the same is updated up to 31.03.2018.
8. As advised by Comptroller & Auditor General of India during July 2015, the interest on Employer & Employee contribution was made by SACON, without adjusting of the interest earned in Fixed Deposits and this has resulted in excess contribution of Rs 46,14,004/- over the amount payable to the individual staff members . SACON intends to seek clarification again from C&AG in this regard and pending a decision to be taken, SACON has not booked interest of Rs 8,14,518/- payable to SACON CPF relating to settlement made to a retired employee Dr Mathew Sebastian.
9. There are no obsolete or unusable assets as on 31.03.2018.
10. No case of fraud has been reported during the year of Audit.
11. The Physical verification of the assets has been carried out by SACON and no discrepancy was reported.
12. No Insurance cover has been taken in respect of fixed assets including Building (except vehicle).
13. SACON started updating entries from Oct 2017 onwards in Public Financial Management System (PFMS) Portal introduced by Ministry of Finance and the data entry updation is being done in an ongoing manner.
14. Provision for Gratuity of Rs.74,41,249/- for year ended 31.03.2018 has been charged in the books of accounts. The provision for the year is made as per actuarial valuation after factoring the impact in change in assumptions, discontinuance gratuity liability and change in gratuity limit. The copy of actuarial valuation is enclosed with this report.

### **In accordance with the revised AS-15, as certified by the actuary and Relied upon by the auditors:**

<b>I. PRINCIPAL ACTUARIAL ASSUMPTIONS</b> [Expressed as weighted averages]	<b>31 03 2017</b>	<b>31 03 2018</b>
Discount Rate	<b>7.20%</b>	<b>7.70%</b>
Salary escalation rate	<b>3.00%</b>	<b>5.00%</b>
Attrition rate	<b>1.00%</b>	<b>1.00%</b>
Expected rate of return on Plan Assets	<b>0.00%</b>	<b>0.00%</b>

<b>II. CHANGES IN THE PRESENT VALUE OF THE OBLIGATION (PVO) - RECONCILIATION OF OPENING AND CLOSING BALANCES:</b>		
		<b>All amounts are in Rupees</b>
<b>PVO as at the beginning of the period</b>	<b>45,60,158</b>	<b>54,00,111</b>
Interest Cost	3,55,692	3,16,808
Current service cost	3,19,360	3,30,791
Past service cost - (non vested benefits)	0	0
Past service cost - (vested benefits)	0	20,58,963
Benefits paid	0	-20,00,000
Actuarial loss/(gain) on obligation (balancing figure)	1,64,901	47,34,687
<b>PVO as at the end of the period</b>	<b>54,00,111</b>	<b>1,08,41,360</b>

<b>III. CHANGES IN THE FAIR VALUE OF PLAN ASSETS - RECONCILIATION OF OPENING AND CLOSING BALANCES:</b>		
<b>Fair value of plan assets as at the beginning of the period</b>	<b>0</b>	<b>0</b>
Expected return on plan assets	0	0
Contributions	0	20,00,000
Benefits paid	0	-20,00,000
Actuarial gain/(loss) on plan assets [balancing figure]	0	0
<b>Fair value of plan assets as at the end of the period</b>	<b>0</b>	<b>0</b>

<b>IV. ACTUAL RETURN ON PLAN ASSETS</b>		
<b>Expected return on plan assets</b>	<b>0</b>	<b>0</b>
<b>Actuarial gain (loss) on plan assets</b>	<b>0</b>	<b>0</b>
<b>Actual return on plan assets</b>	<b>0</b>	<b>0</b>

<b>V. ACTUARIAL GAIN / LOSS RECOGNIZED</b>		
Actuarial gain / (loss) for the period - Obligation	(1,64,901)	(47,34,687)
Actuarial gain / (loss) for the period - Plan Assets	0	0
<b>Total (gain) / loss for the period</b>	<b>1,64,901</b>	<b>47,34,687</b>

<b>Actuarial (gain) / loss recognized in the period</b>	1,64,901	47,34,687
Unrecognized actuarial (gain) / loss at the end of the year	0	0

<b>VI. AMOUNTS RECOGNISED IN THE BALANCE SHEET AND RELATED ANALYSES</b>		
Present value of the obligation	54,00,111	1,08,41,360
Fair value of plan assets	0	0
Difference	54,00,111	1,08,41,360
Unrecognised transitional liability	0	0
Unrecognised past service cost - non vested benefits	0	0
<b>Liability recognized in the balance sheet</b>	<b>54,00,111</b>	<b>1,08,41,360</b>

<b>VII. EXPENSES RECOGNISED IN THE STATEMENT OF PROFIT AND LOSS:</b>		
Current service cost	3,19,360	3,30,791
Interest Cost	3,55,692	3,16,808
Expected return on plan assets	0	0
Net actuarial (gain)/loss recognised in the year	1,64,901	47,34,687
Transitional Liability recognised in the year	0	0
Past service cost - non-vested benefits	0	0
Past service cost - vested benefits	0	20,58,963
<b>Expenses recognized in the statement of profit and loss</b>	<b>8,39,953</b>	<b>74,41,249</b>

<b>VIII. MOVEMENTS IN THE LIABILITY RECOGNIZED IN THE BALANCE SHEET</b>		
Opening net liability	45,60,158	54,00,111
Expense as above	8,39,953	74,41,249
Contribution paid	0	(20,00,000)
<b>Closing net liability</b>	<b>54,00,111</b>	<b>1,08,41,360</b>

<b>IX. AMOUNT FOR THE CURRENT PERIOD</b>		
Present Value of obligation	54,00,111	1,08,41,360
Plan Assets	0	0
Surplus (Deficit)	(54,00,111)	(1,08,41,360)



Experience adjustments on plan liabilities -(loss)/gain	20,747	(36,61,315)
Experience adjustments on plan assets -(loss)/gain	0	0
<b>X. MAJOR CATEGORIES OF PLAN ASSETS (AS PERCENTAGE OF TOTAL PLAN ASSETS)</b>		
Government of India Securities	0.00%	0.00%
State Government Securities	0.00%	0.00%
High Quality Corporate Bonds	0.00%	0.00%
Equity shares of listed companies	0.00%	0.00%
Property	0.00%	0.00%
Special Deposit Scheme	0.00%	0.00%
Funds managed by Insurer	0.00%	0.00%
Others (to specify)	0.00%	0.00%
Total	0.00%	0.00%

<b>XI. ENTERPRISE'S BEST ESTIMATE OF CONTRIBUTION DURING NEXT YEAR</b>	0	0
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15. Provision for Leave encashment has been calculated on the actuarial valuation Rs.26,55,874/- for the year ended 31.03.2018

<b>I. PRINCIPAL ACTUARIAL ASSUMPTIONS</b> [Expressed as weighted averages]	<b>31 03 201 7</b>	<b>31 03 201 8</b>
Discount Rate	<b>7.20%</b>	<b>7.70%</b>
Salary escalation rate	<b>3.00%</b>	<b>5.00%</b>
Attrition rate	<b>1.00%</b>	<b>1.00%</b>
Expected rate of return on Plan Assets	<b>0.00%</b>	<b>0.00%</b>

**All amounts are in Rupees**

<b>II. CHANGES IN THE PRESENT VALUE OF THE OBLIGATION (PVO) - RECONCILIATION OF OPENING AND CLOSING BALANCES:</b>		
<b>PVO as at the beginning of the period</b>	97,58,282	<b>1,18,77,355</b>
Interest Cost	7,61,146	7,37,553
Current service cost	4,40,330	5,16,243
Past service cost - (non vested benefits)	0	0
Past service cost - (vested benefits)	0	0
Benefits paid	0	-32,67,140

Actuarial loss/(gain) on obligation (balancing figure)	9,17,597	14,02,078
<b>PVO as at the end of the period</b>	<b>1,18,77,355</b>	<b>1,12,66,089</b>

<b>III. CHANGES IN THE FAIR VALUE OF PLAN ASSETS - RECONCILIATION OF OPENING AND CLOSING BALANCES:</b>		
<b>Fair value of plan assets as at the beginning of the period</b>	0	<b>0</b>
Expected return on plan assets	0	0
Contributions	0	32,67,140
Benefits paid	0	(32,67,140)
Actuarial gain/(loss) on plan assets [balancing figure]	0	0
<b>Fair value of plan assets as at the end of the period</b>	<b>0</b>	<b>0</b>

<b>IV. ACTUAL RETURN ON PLAN ASSETS</b>		
<b>Expected return on plan assets</b>	0	0
<b>Actuarial gain (loss) on plan assets</b>	0	0
<b>Actual return on plan assets</b>	<b>0</b>	<b>0</b>

<b>V. ACTUARIAL GAIN / LOSS RECOGNIZED</b>		
Actuarial gain / (loss) for the period - Obligation	(9,17,597)	(14,02,078)
Actuarial gain / (loss) for the period - Plan Assets	0	0
Total (gain) / loss for the period	9,17,597	14,02,078
<b>Actuarial (gain) / loss recognized in the period</b>	<b>9,17,597</b>	<b>14,02,078</b>
Unrecognized actuarial (gain) / loss at the end of the year	0	0

<b>VI. AMOUNTS RECOGNIZED IN THE BALANCE SHEET AND RELATED ANALYSES</b>		
Present value of the obligation	1,18,77,355	1,12,66,089
Fair value of plan assets	0	0
Difference	1,18,77,355	1,12,66,089
Unrecognised transitional liability	0	0
Unrecognised past service cost - non vested benefits	0	0
<b>Liability recognized in the balance sheet</b>	<b>1,18,77,355</b>	<b>1,12,66,089</b>

<b>VII. EXPENSES RECOGNISED IN THE STATEMENT OF PROFIT AND LOSS:</b>		
Current service cost	4,40,330	5,16,243
Interest Cost	7,61,146	7,37,553
Expected return on plan assets	0	0
Net actuarial (gain)/loss recognised in the year	9,17,597	14,02,078
Transitional Liability recognised in the year	0	0
Past service cost - non - vested benefits	0	0
Past service cost - vested benefits	0	0
<b>Expenses recognized in the statement of profit and loss</b>	<b>21,19,073</b>	<b>26,55,874</b>

<b>VIII. MOVEMENTS IN THE LIABILITY RECOGNIZED IN THE BALANCE SHEET</b>		
Opening net liability	97,58,282	1,18,77,355
Expense as above	21,19,073	26,55,874
Contribution paid	0	(32,67,140)
<b>Closing net liability</b>	<b>1,18,77,355</b>	<b>1,12,66,089</b>

<b>IX. AMOUNT FOR THE CURRENT PERIOD</b>		
Present Value of obligation	1,18,77,355	1,12,66,089
Plan Assets	0	0
Surplus (Deficit)	(1,18,77,355)	(1,12,66,089)
Experience adjustments on plan liabilities -(loss)/gain	(4,97,535)	(1,45,139)
Experience adjustments on plan assets -(loss)/gain	0	0

<b>X. MAJOR CATEGORIES OF PLAN ASSETS (AS PERCENTAGE OF TOTAL PLAN ASSETS)</b>		
Government of India Securities	0.00%	0.00%
State Government Securities	0.00%	0.00%
High Quality Corporate Bonds	0.00%	0.00%
Equity shares of listed companies	0.00%	0.00%
Property	0.00%	0.00%
Special Deposit Scheme	0.00%	0.00%
Funds managed by Insurer	0.00%	0.00%



Funds managed by Insurer	0.00%	0.00%
Others (to specify)	0.00%	0.00%
Total	0.00%	0.00%

<b>XI. ENTERPRISE'S BEST ESTIMATE OF CONTRIBUTION DURING NEXT YEAR</b>	0	0
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- 16.** The 6th Pay Commission arrears paid prior to 05.08.2010 for Rs 14,158/- has to be recovered from one employee, who had resigned in July 2009 and is shown under Schedule 6.d.2.a.
- 17.** An amount of Rs10,110/- made to M/s Kasturi and Sons Ltd (KSL) is being shown as Advance to KSL. The recovery made from concerned officer (since resigned) and from KSL are also shown as other payable under Current Liabilities .
- 18.** One of the Scientists, Dr.S.Bhupathy met with a fatal accident in April-14 .The Gratuity, CPF and Earned leave encashment eligible have been determined by SACON. Gratuity and CPF balance was released to the nominee namely wife of Dr.Bhupathy. The release of the Earned leave encashment was delayed due to budget constraints.

Meanwhile, the mother of the deceased has filed a writ in Honorable High Court, Madras to stay any disbursement of benefits to the nominee of the deceased. The decision is pending with the Honorable High Court and SACON is awaiting suitable directions from the Honorable High Court.

Therefore, the eligible Earned Leave encashment after adjustment of all dues amounting to Rs.9, 77,416/- has been shown as expenditure for the concerned period and SACON has withheld the payment. SACON will release the amount on disposal of the case by the Honorable High Court and execute the orders of the court. Till such time, the amount has been deposited as Term deposit in M/S Central Bank of India, Nanjundapuram Branch.

- 19.** SACON being a Centre of Excellence under Ministry of Environment, Forests & Climate Change, Government of India is a Charitable Trust duly registered u/s 12AA of Income Tax Act 1961. Since it is engaged in Preservation of Environment, it has not been registered under GST.
- 20.** SACON is registered with the DSIR for the purpose of availing customs duty in terms of Government Notification No. 51/96, dated the 23 July 1996 and the Central Excise Duty exemption in terms of Government Notification No. 10/97 dated the 1st March 1997, and the registration is valid up to 31.03.2019.
- 21.** Corresponding figures for the previous year have been regrouped / rearranged, wherever necessary.

**3. CONTINGENT LIABILITIES:**

Two of the scientific staff whose services were terminated during the year 1996, have taken the matter to the Court and the court has allowed the writ petition by ordering reinstatement with service benefits while rejecting the request for back wages. The appellants had preferred writ appeals to challenge the order passed. The single bench order has been upheld by the Division Bench and one scientist was reinstated with service benefits without back wages and he has retired from the services of SACON with effect from 30.11.2017. An appeal for back wages has been placed. The outcome of the legal issues involved in these cases is not known and no provision has been made on this account.

**4. CAPITAL COMMITMENTS:**

Nil

Place: Coimbatore

Date : 22.06.2018

## SALIM ALI CENTRE FOR ORNITHOLOGY AND NATURAL HISTORY, ANAIKATTY PO, COIMBATORE 641 108

### RECEIPTS AND PAYMENTS ACCOUNT FOR THE YEAR ENDED 31.03.2018

As at 31.03.2017	Receipts		Current Year ended 31.03.2018		As at 31.03.2017	Receipts		Current Year ended 31.03.2018
Rs. Ps.			Rs. Ps.		Rs. Ps.			Rs. Ps.
	<b>To Opening Balance</b>					<b>A) By Revenue Expenditure</b>		
113,295.21	SBI Coimbatore SB A/c.10566815483	106,783.21			33,887,268.00	<b>I.Salaries and Establishment</b>		
20,000.00	Cash on Hand - Imprest	20,000.00				Salaries & Establishment (Sch.I)	43,451,814.00	
5,177,701.09	CBI Coimbatore SB A/c. 2110453804	21,290,392.26	21,417,175.47			Fellowship Projects	3,883,679.00	47,335,493.00
						<b>II.Office Expenses</b>		
	Fixed Deposit Closed	35,073.00			572,987.00	Wages	1,026,332.00	
68,500,000.00	To Grant received from MoEF	120,000,000.00			789,157.00	Amount paid towards house keeping staff	897,241.00	
10,100,000.00	To Grant receivable from MoEF for FY 2017-18		120,035,073.00		1,231,239.00	Watch & ward Expenses	1,368,797.00	
	<b>To Revenue Income</b>				961,788.00	Travelling Expenses	2,939,102.00	
484,768.00	Interest received on FD and SB	1,195,615.00			568,784.00	Postage & Telephones (Sch.II)	621,751.00	
108,355.00	Miscellaneous receipt	301,777.00			502,656.00	Electricity charges	460,556.00	
423,706.00	Fees / Subscription (sch.IX)	462,825.00	1,960,217.00		25,284.00	Printing & Stationery	95,225.00	
	<b>To Refund of Advances/ Recoveries</b>				688,785.00	Vehicle Maintenance (Sch.III)	605,227.00	
428,741.00	Recoveries of Advances / Deposits (sch.X)	4,325,611.00			94,463.00	Audit fees	103,500.00	
34,000.00	Festival Advance	33,500.00			110,586.00	Professional charges (Sch.IV)	61,540.00	
			4,359,111.00		4,605,423.83	Administrative Expenditure (Sch.V)	4,744,805.29	
					789,911.00	Vehicle Hire Charges	497,483.00	
					32,500.00	Honorarium Sitting fees	47,000.00	
					18,149.00	Insurance Premium	22,729.00	
					25,021.00	Membership Fees	44,000.00	
					1,454,653.00	Prepaid Expenses (Sch.VI)	1,783,447.00	
					6,437.00	Website Maintenance & Upgradation	10,437.00	



## SALIM ALI CENTRE FOR ORNITHOLOGY AND NATURAL HISTORY, ANAIKATTY PO, COIMBATORE 641 108

### RECEIPTS AND PAYMENTS ACCOUNT FOR THE YEAR ENDED 31.03.2018

As at 31.03.2017		Receipts	Current Year ended 31.03.2018		As at 31.03.2017		Receipts	Current Year ended 31.03.2018	
Rs.	Ps.		Rs.	Ps.	Rs.	Ps.		Rs.	Ps.
		<b>To Recoveries from Employees</b>			16,436.00	Annual report translation charges	44,754.00		
66,861.00		Professional Tax	72,726.00		186,872.00	Equipment Maintenance	111,780.00		
1,620,757.00		Contributory Provident Fund	1,484,771.00		151,325.00	Recruitment Expenses	318,351.00		
781,287.00		Contributory Provident Fund- Advance	878,531.00		245,115.00	Printing & Binding charges	122,981.00		
308,087.00		Group Insurance	298,674.00		3,909.00	Printing of Annual Report Charges	467,010.50		
191,496.00		Amount collected from employees for payment to HDFC	191,496.00		27,869.00	Printing of News letter	35,011.00		16,429,059.79
						<b>B) Capital Expenditure</b>			
3,213,551.00		TDS on salaries	3,312,356.00		80,857.00	Library Books	2,25,028.00		
220,504.00		TDS on Contract	230,490.00		1,593,425.00	Furnitures & Fixtures	194,806.00		
30,835.00		TDS on Professional Fees	79,030.00		1,808,425.00	Computer Peripherals	1,226,000.00		
-		Work Welfare Fund	56,976.00		206,513.00	Office Equipment	28,690.00		
52,409.00		VAT	-	6,605,050.00	133,769.00	Minor Equipments	337,823.00		
					4,191,290.00	Equipments	13,944,120.04		
116,905.00		<b>To Others</b>			506,044.00	Solar Steet Light	106,377.00		
10,126,205.00		Medical fund recovered	123,652.00		779,359.00	Vehicle	2,434,496.00		
		Receipts towards Workshops/ Projects (Sch.XI)	7,537,307.50		3,180,585.00	Campus Developments	670,006.00		
19,563,542.00		Loan received from Corpus	18,020,738.00		-	Building - Work in Progress	6,410,189.00		25,577,535.04
-		Income Tax Refund	167,883.00						
-		Interest on Income Tax Refund	22,427.00						
20.00		RTI Receipts	288.00	25,872,295.50	11,264,665.00	<b>C) Others</b>			
					2,942,415.00	Expenditure under projects(Sch.VII)	7,475,493.50		
						Advance / Deposit (Sch.VIII)	35,670,900.00		

## SALIM ALI CENTRE FOR ORNITHOLOGY AND NATURAL HISTORY, ANAIKATTY PO, COIMBATORE 641 108

### RECEIPTS AND PAYMENTS ACCOUNT FOR THE YEAR ENDED 31.03.2018

As at 31.03.2017 Rs. Ps.	Receipts	Current Year ended 31.03.2018 Rs. Ps.		As at 31.03.2017 Rs. Ps.	Receipts	Current Year ended 31.03.2018 Rs. Ps.	
				36,000.00	Festival Advance	31,500.00	
				15,822,679.00	Loan refunded to SACON Corpus fund	27,976,212.00	
				35,073.00	Fixed Deposit Created	-	
				4,200,000.00	SACON Over head Charges	49,986.00	
					<b>D) Remittances &amp; Recoveries</b>		71,204,091.50
				1,620,757.00	Contributory Provident Fund	1,484,771.00	
				781,287.00	Contributory Provident Fund- Advance	878,531.00	
				69,207.00	Professional Tax	38,709.00	
				191,496.00	Remittance to HDFC of employees Group	191,496.00	
				308,087.00	Insurance	298,674.00	
				3,213,551.00	TDS on Salaries	3,312,356.00	
				52,409.00	VAT Tax	-	
				220,504.00	TDS on contract	230,490.00	
				30,835.00	TDS on Professional Fees	79,030.00	6,514,057.00
					<b>By Closing Balance</b>		
					In Savings Bank A/c.		
				106,783.21	State Bank of India A/c.No.10566815483	-	
				-	Indian Overseas bank A/c No.	17,029.00	
				20,000.00	Cash on Hand - Imprest Balance	20,000.00	
				21,290,392.26	Central Bank of India A/c No.2110453804	13,151,656.64	
							13,188,685.64
<b>121,683,025.30</b>	<b>Total</b>		<b>180,248,921.97</b>	<b>121,683,025.30</b>	<b>Total</b>		<b>180,248,921.97</b>

## Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore Schedule to Receipts & Payments for the Year ended 31.03.2018

### Schedule I - Salaries and Establishment Expenses

As at 31.03.2017 Rs. Ps.	Particulars	Current Year ended 31.03.2018 Rs. Ps.
11,688,945.00	Pay of Officers/Establishment	12,360,481.00
14,835,105.00	Dearness Allowance	16,879,149.00
436,976.00	Arrears of Dearness Allowance	258,207.00
2,337,789.00	House Rent Allowance	2,461,869.00
151,976.00	Bonus	92,172.00
317,504.00	Medical Reimbursement	524,224.00
269,849.00	Childrens Education Allowance	276,894.00
43,552.00	Transport Allowance	44,688.00
7,920.00	Sterilisation Allowance	7,920.00
1,080.00	Washing Allowance	1,080.00
155,814.00	LTC	95,186.00
109,837.00	EL Encashment	3,334,802.00
-	Gratuity	2,000,000.00
558,904.00	Salary - Consolidated Pay	1,580,070.00
<b>30,915,251.00</b>	<b>Total</b>	<b>39,916,742.00</b>
2,972,017.00	<b>CPF</b> SACON's Contribution for the year 2017-2018	3,535,072.00
<b>33,887,268.00</b>	<b>Total Salaries &amp; Establishments</b>	<b>43,451,814.00</b>
<b>Schedule II - Postage and Telephone</b>		
67,268.00	Postage Expenses	100,681.00
501,516.00	Telephone Charges	521,070.00
<b>568,784.00</b>	<b>Total</b>	<b>621,751.00</b>
<b>Schedule III - Vehicle Maintenance</b>		
256,029.00	Fuel to Vehicle	386,184.00
432,756.00	Vehicle Repair & Maintenance	219,043.00
<b>688,785.00</b>	<b>Total</b>	<b>605,227.00</b>
<b>Schedule IV - Professional Charges</b>		
22,900.00	Actuary Fees	23,000.00
87,686.00	Professional Fees	38,540.00
<b>110,586.00</b>	<b>Total</b>	<b>61,540.00</b>
<b>Schedule V - Administrative Expenditure</b>		
3,983.00	Local Travel	3,155.00
9,121.00	Subscription to Newspapers	8,580.00
23,240.00	Water Charges	40,420.00
86,083.00	Working Lunch Expenses	181,138.00
-	Salary & Wages to Filed Assistant	83,331.00

Sd/-

Aneesh K Abraham  
Finance Officer  
Salim Ali Centre for Ornithology  
and Natural History, Anaikatty,  
Coimbatore

Sd/-

S. Krishnakumar (025146)  
Partner  
Ramanathan & Krishnakumar  
Chartered Accountants

Sd/-

Dr. K. Sankar  
Director  
Salim Ali Centre for Ornithology  
and Natural History, Anaikatty,  
Coimbatore

758,244.00	Other Miscellaneous Consumables	2,133,072.90
-	Other Project Cost	8,164.00
2,869,228.00	Repairs & maintenance Of Buildings	719,555.00
55,931.00	Electrical repair & maintenance	45,298.00
49,800.00	Land & Building Tax	49,800.00
5,500.00	Legal Fees	-
34,341.00	Fuel for Generator	61,733.00
23,084.00	Misc. expenses	41,798.00
498,206.33	Library Periodicals	645,697.80
23,250.00	Computer Maintenance	17,350.00
120,000.00	Canteen Subsidy	50,000.00
22,678.00	Transportation Charges	14,400.00
14,300.00	Training & Development-(Nature Education)	48,159.00
8,434.50	Bank Charges	21,814.59
-	Contingencies	571,339.00
<b>4,605,423.83</b>	<b>Total</b>	<b>4,744,805.29</b>
	<b>Schedule VI - Prepaid Expenses</b>	
1,209,278.00	Library Periodicals	1,249,733.00
8,339.00	Insurance - Vehicle	22,851.00
22,063.00	Website maitnenance	22,063.00
-	Road Tax	64,000.00
175,912.00	Telephone charges	424,800.00
39,061.00	IUCN Membership Fee	-
<b>1,454,653.00</b>	<b>Total</b>	<b>1,783,447.00</b>
	<b>Schedule VII - Advances / Expenditure under Projects / Workshops</b>	
18,142.00	Doctoral Committee Meeting	2,960.00
1,416.00	Distribution of Slender Lorris	-
169,853.00	Agasthiamalai Hills Project	-
208,080.00	Andaman Serpent Eagle	104,040.00
353,989.00	Avion Biology Project - MNTP	-
72,561.00	Agriculture Pesticides project- APP	-
1,057,375.00	Baseline studies for Thane Creek Project Conservation	-
-	Genetic Workshop	120,000.00
1,200,000.00	Ecological Investigation of Trees	900,000.00
-	Edible nest Swiftlet Project	971,817.00
-	EIA Project	584,930.50
281,058.00	Forest Owlet Project	-
2,674,747.00	Inspire Fellowship	792,224.00
-	Lab Minor Project	20,000.00
-	SACON HOSTEL A/C	354,637.00
-	HACKOTHAN National	257,500.00
432,000.00	Nature Camping Program	37,405.00
40,000.00	Mangalavanam Project	35,000.00
77,103.00	Athikadavu Valley Project	-
700,000.00	Owl Assemblage Project	-
25,000.00	Security Deposit- JBS Construction Released	-
5,000.00	Security Deposit- Canteen Cook Released	-
267,772.00	Palkbay Project	-



577,978.00	Padayatti Project	-
50,000.00	SACON Small Cat	355,735.00
-	Sacon Survey of Small Cat	400,000.00
-	Training on Ornithology Program	54,000.00
-	Determination of Spatio Project	73,000.00
48,079.00	Assessment of Peafowl and conflicts	12,710.00
983,250.00	SACON Conference Account	-
-	Sindhudurg Project	313,200.00
315,594.00	Social Organisation Behaviour	-
900,000.00	Small Cat Egle Nest Wild Life Sanctuary Project	-
100,000.00	Ramanujam Fellowship Project	926,200.00
61,793.00	Real Time Air Pollution Project	-
-	Wetland Monitoring in Tamilnadu	716,219.00
-	WWF A/C	23,196.00
631,080.00	Wetland of Forest Area	420,720.00
12,795.00	Monitor Birds Diversity & Abundance	-
<b>11,264,665.00</b>	<b>Total</b>	<b>7,475,493.50</b>
	<b>Schedule VIII - Advance / Deposit</b>	
-	Dr Pramod	12,500.00
-	Mr R jayakumar	9,000.00
-	Deposit for Accomodation Project	10,000.00
-	Deposit for Water Connection	14,400.00
10,110.00	M/s. Kasthuri & Son Ltd	-
60.00	M/s. Ace Data Solution P Ltd	-
1,100,000.00	M/s. Deposit for LC Payment	35,625,000.00
1,812,245.00	M/s. COST FORD	-
20,000.00	M/s. SACON Canteen	-
-	M/s. Agilant Technology P Ltd -TDS payment	-
<b>2,942,415.00</b>	<b>Total</b>	<b>35,670,900.00</b>
	<b>Schedule IX - Fees / Subscription</b>	
311,306.00	Phd Fees	220,000.00
3,000.00	Msc project fees	12,500.00
51,400.00	Guest House Income	44,325.00
16,000.00	Registration Fees	37,500.00
14,000.00	Training Fees	-
28,000.00	Tendor Document Fee	148,500.00
<b>423,706.00</b>	<b>Total</b>	<b>462,825.00</b>
	<b>Schedule X - Recoveries of Advances / Deposits</b>	
90,612.00	Retention Money - Costford	317,142.00
181,225.00	Security Deposit - Costford	-
60,000.00	Security Deposit - Mr Antony Vimal	-
26,290.00	Central Bank of India	-
48,515.00	Work Welfare Fund	-
4,099.00	M/s. Agilant Technology India Pvt ltd-EMD	1,680,000.00
-	M/s. Balaji Security Service-EMD	75,000.00
-	M/s. GDA Security Service-EMD	60,000.00
-	Mr Kanakaraj- EMD	20,000.00

-	M/s. Spinco Biotech Pvt Ltd-EMD	1,050,000.00
-	LC of Import	1,100,000.00
-	Canteen Advance Refund	20,000.00
-	M/s. VTS Company - SD	2,238.00
18,000.00	Interest recovery on Staff loan	1,231.00
<b>4,28,741.00</b>	<b>Total</b>	<b>43,25,611.00</b>
	<b>Schedule XI - Receipt towards Projects / Workshops</b>	
19,972.00	Doctoral Committee Meeting	6,000.00
208,080.00	Andaman Serpent Eagle	104,040.00
169,853.00	Agasthiamalai Hills Project	-
353,989.00	Avion Biology Project -MNTTP	-
72,561.00	Agriculture Pesticides project - APP	-
1,057,375.00	Baseline studies for Thane Creek Project	-
102,000.00	Determination of Spatio Project	-
-	Edible nest Swiftlet project	971,817.00
-	EIA Project	584,930.50
-	Conservation Genetics Workshop	120,000.00
281,058.00	Forest Owlet Project	-
2,674,747.00	Inspire Fellowship	792,224.00
-	Lab Minor Project	20,000.00
-	HACKTHON	535,000.00
-	SACON HOSTEL A/C.	354,637.00
700,000.00	Owl Assemblage	-
77,103.00	Athikadavu Valley Project	-
50,000.00	Assessment of Peafowl and conflicts Mangalavanam	-
40,000.00	Project	35,000.00
432,000.00	National Nature Camping Program	60,585.00
267,772.00	Palk Bay Project	-
900,000.00	Small Cat Eagle Nest Wild Life Sanctuary Project	-
100,000.00	Ramanujam Fellowship	926,200.00
61,793.00	Real Time Air Pollution Project	-
983,250.00	SACON Conference Account	-
577,978.00	Padayatti Project	-
-	Training on Indian Ornithology	54,000.00
-	SACON-Ecological Investigation on Tree	900,000.00
50,000.00	SACON Survey of Small Cat	400,000.00
-	Small Cat Guild eagle nest Project	222,735.00
315,594.00	Social Organisation Behaviour	-
-	Wetland Monitoring in Tamilnadu	716,219.00
631,080.00	Wetland of Forest Area	420,720.00
-	Sindhudurg Project	313,200.00
<b>1,01,26,205.00</b>	<b>Total</b>	<b>75,37,307.50</b>

Sd/-

**Aneesh K Abraham**  
Finance Officer  
Sálim Ali Centre for Ornithology  
and Natural History, Anaikatty,  
Coimbatore

Sd/-

**S. Krishnakumar (025146)**  
Partner  
Ramanathan & Krishnakumar  
Chartered Accountants

Sd/-

**Dr. K. Sankar**  
Director  
Sálim Ali Centre for Ornithology  
and Natural History, Anaikatty,  
Coimbatore

## Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore

### INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31.03.2018

	Schedule	Current Year ended 31.03.2018		Previous Year ended 31.03.2018	
		Rs.	Ps.	Rs.	Ps.
<b>INCOME</b>					
Income from Sales / Services	8	-	-	-	-
Grants/ Subsidies	9	94,361,000.00		59,439,000.00	
Fees/Subscriptions	10	232,788.00		314,326.00	
Interest Earned	11	1,215,090.00		545,417.00	
Other Income	12	555,369.00		217,755.00	
<b>Total</b>		<b>96,364,247.00</b>		<b>60,516,498.00</b>	
<b>EXPENDITURE</b>					
Establishment Expenses	13	52,078,172.00		37,135,903.00	
Other Administrative Expenses etc.	14	16,158,444.79		17,410,090.83	
Depreciation (Net Total for the year-end - corresponding to Schedule 8)		4,586,109.00		3,588,529.00	
<b>Total</b>		<b>72,822,725.79</b>		<b>58,134,522.83</b>	
<b>Balance being excess of Income over Expenditure (A-B)</b>		<b>23,541,521.21</b>		<b>2,381,975.17</b>	
<b>BALANCE SURPLUS/DEFICIT CARRIED TO CAPITAL FUND</b>		<b>23,541,521.21</b>		<b>2,381,975.17</b>	

Schedules 15 Significant Accounting Policies and Notes forming part of the Accounts

Schedules 1 to 14 form an integral part of the financial statements

Sd/-

Aneesh K Abraham  
Finance Officer  
Salim Ali Centre for Ornithology  
and Natural History, Anaikatty,  
Coimbatore

Sd/-

S. Krishnakumar (025146)  
Partner  
Ramanathan & Krishnakumar  
Chartered Accountants

Sd/-

Dr. K. Sankar  
Director  
Salim Ali Centre for Ornithology  
and Natural History, Anaikatty,  
Coimbatore

## Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore

### Schedules forming part of the Income & Expenditure for the year ended 31.03.2018

	Current Year Rs.	Previous Year Rs.
<b>Schedule 8 - Income from Sales / Services</b>		
Income from Services		
Professional / Consultancy Services	-	-
<b>Total</b>	-	-
<b>Schedule 9 - Grants / Subsidies</b>		
(Irrevocable Grants & Subsidies Received)		
1. Central Government(MOEF&CC, GOI)	94,361,000.00	59,439,000.00
<b>Total</b>	<b>94,361,000.00</b>	<b>59,439,000.00</b>
<b>Schedule 10 - Fees / Subscriptions</b>		
Others (Specify)		
Phd Fees	220,000.00	311,306.00
Msc project fees	12,500.00	3,000.00
RTI	288.00	20.00
<b>Total</b>	<b>232,788.00</b>	<b>314,326.00</b>

Sd/-

**Aneesh K Abraham**  
Finance Officer  
Salim Ali Centre for Ornithology  
and Natural History, Anaikatty,  
Coimbatore

Sd/-

**S. Krishnakumar (025146)**  
Partner  
Ramanathan & Krishnakumar  
Chartered Accountants

Sd/-

**Dr. K. Sankar**  
Director  
Salim Ali Centre for Ornithology  
and Natural History, Anaikatty,  
Coimbatore



**Salim Ali Centre for Ornithology and Natural History, Anaikatty PO, Coimbatore**  
**Schedules forming part of the Income & Expenditure for the year ended 31.03.2018**

	<b>Current Year Rs.</b>	<b>Previous Year Rs.</b>
<b>Schedule 11 - Interest Earned</b>		
1) On Term Deposits:		
a) With Scheduled Banks	113,290.00	289,416.00
2) On Savings Accounts:		
a) With Scheduled Banks	1,094,800.00	256,001.00
3) On Loans:		
a) Employees / Staff / Others( IT)	7,000.00	-
<b>Total</b>	<b>1,215,090.00</b>	<b>5,45,417.00</b>
<b>Schedule 12 - Other Income</b>		
Miscellaneous Income	302,617.00	108,355.00
Training Fees	-	14,000.00
Vendor Registration Fees	37,500.00	16,000.00
Interest on Income Tax Refund	22,427.00	-
Guest House Income	44,325.00	51,400.00
Tender Document Fees	148,500.00	28,000.00
<b>Total</b>	<b>5,55,369.00</b>	<b>217,755.00</b>
<b>Schedule 13 - Establishment Expenses</b>		
a) Salaries and Wages	31,684,646.00	29,210,501.00
b) Allowances, Bonus, Medical reimbursement and LTC	942,475.00	887,379.00
c) Contribution to Provident Fund	3,535,072.00	2,972,017.00
d) DA Arrears	258,207.00	436,976.00
e) Expenses on Employees' Retirement and Terminal Benefits	1,00,97,143.00	2,959,026.00
f) Consolidated salary to Contract staff/Fellowship	5,560,649.00	670,004.00
<b>Total</b>	<b>5,20,78,172.00</b>	<b>37,135,903.00</b>

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Coimbatore

**Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore**  
**Schedules forming part of the Income & Expenditure for the year ended 31.03.2018**

**Schedule 14 - Other Administrative Expenses**

	<b>Current Year Rs.</b>	<b>Previous Year Rs.</b>
Misc. consumable stores	2,133,072.90	758,244.00
Electricity and power	509,740.00	502,386.00
Water charges	41,460.00	23,300.00
Insurance	16,729.00	25,510.00
Repairs and Maintenance of Buildings	719,555.00	2,869,228.00
Rent, Rates and Taxes	49,800.00	49,800.00
Vehicles Running and Maintenance	613,566.00	688,785.00
Postage, Telephone and Communication Charges	796,653.00	644,596.00
Printing and Stationery	720,227.50	302,177.00
Travelling and Conveyance Expenses	2,942,257.00	941,112.00
Subscription to News papers	8,580.00	9,121.00
Statutory Audit fee	1,03,500.00	103,500.00
Actuary fees	23,000.00	22,900.00
Fuel for Generator and Repairs	58,986.00	34,432.00
Field Assistant Wages paid	83,331.00	-
Other Misc. Exp	41,798.00	23,084.00
Watch and Ward	3,325,096.00	2,714,340.00
Equipment Maintenance	111,780.00	186,872.00
Honorarium	47,000.00	32,500.00
Bank Charges	21,814.59	8,434.50
Vehicle Hire Charges	442,483.00	783,311.00
Computer Maintenance	17,350.00	23,250.00
Contingencies	571,339.00	-
Website Maintenance Expenses	25,000.00	21,300.00
Translation Charges	44,754.00	16,436.00
Training & Development ( NE)	48,159.00	14,300.00
Working lunch expenses	181,138.00	86,083.00
Transport Charges	14,400.00	22,678.00
Subscription to Periodicals (Library)	1,854,975.80	1,797,717.33
Overhead Charges	49,986.00	4,200,000.00
Other Project Cost	8,164.00	-
Professional fees	38,540.00	87,686.00
Electrical Maintenance	45,298.00	55,931.00
Membership fees (IUCN)	83,061.00	64,052.00
Legal Fees	-	5,500.00
Advertisement Expenses	318,351.00	151,325.00
Website Upgradation	7,500.00	-
Written Off/Round off	-	20,200.00
Canteen Subsidy	40,000.00	120,000.00
<b>Total</b>	<b>16,158,444.79</b>	<b>17,410,090.83</b>

Sd/-

**Aneesh K Abraham**  
 Finance Officer  
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 and Natural History, Anaikatty,  
 Coimbatore

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 Partner  
 Ramanathan & Krishnakumar  
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 Director  
 Salim Ali Centre for Ornithology  
 and Natural History, Anaikatty,  
 Coimbatore

## Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore

### BALANCE SHEET AS AT 31.03.2018

	Schedule	Current Year ended 31.03.2018		Previous Year ended 31.03.2018	
		Rs.	Ps.	Rs.	Ps.
<b>SOURCE OF FUNDS</b>					
Capital Fund	1		0.00		0.00
Reserve and Surplus	2	56,282,825.16		32,553,420.95	
Earmarked / Endowment Funds	3	306,500.00		157,906.00	
Unsecured Loans and Borrowings	4		0.00		9,955,474.00
<b>Total</b>			<b>56,589,325.16</b>		<b>42,666,800.95</b>
<b>APPLICATION FUNDS</b>					
<i>Fixed Assets</i>					
Gross Block	5	12,09,23,527.52		93,545,847.48	
Less: Accumulated Depreciation		51,852,886.00		47,266,777.00	
Net Block			<b>69,070,641.52</b>		<b>46,279,070.48</b>
<i>Current Assets, Loans and Advances</i>					
a.Current Assets, Loans and Advances	6	52,214,119.64		27,158,947.47	
b.Less: Current Liabilities and Provisions	7	64,695,436.00		30,771,217.00	
Net Current Assets (a-b)			<b>(12,481,316.36)</b>		<b>(3,612,269.53)</b>
<b>Total</b>			<b>56,589,325.16</b>		<b>42,666,800.95</b>

Schedules 15 Significant Accounting Policies and Notes forming part of the Accounts

Schedules 1 to14 form an integral part of the financial statements

Sd/-

Aneesh K Abraham  
Finance Officer  
Salim Ali Centre for Ornithology  
and Natural History, Anaikatty,  
Coimbatore

Sd/-

S. Krishnakumar (025146)  
Partner  
Ramanathan & Krishnakumar  
Chartered Accountants

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Dr. K. Sankar  
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Salim Ali Centre for Ornithology  
and Natural History, Anaikatty,  
Coimbatore

## Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore Schedules forming part of Balance Sheet as at 31.03.2018

	Current Year		Previous Year	
	Rs.	Rs.	Rs.	Rs.
<b>Schedule 1 - Corpus / Capital Fund:</b>				
Balance as at the beginning of the year	-	-	-	-
<b>Balance as at the end of the year</b>				
<b>Schedule 2 - Reserves and Surplus:</b>				
1. <u>Capital Reserve:</u>				
As per last Account	28,413,406.48		26,848,943.00	
Add: Additions during the year		<b>28,413,406.48</b>	1,564,463.48	<b>28,413,406.48</b>
Less: Deduction during the year			-	
2. <u>General Reserve:</u>				
As per last Account	4,140,014.47		1,758,039.30	
Add: Net Addition during the year	187,883.00		-	
Add/Less: Excess/(Deficit) during the year	23,541,521.21		2,381,975.17	
Less: Amount withdrawn during the year		<b>27,869,418.68</b>		<b>4,140,014.47</b>
<b>Total</b>		<b>56,282,825.16</b>		<b>32,553,420.95</b>

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Coimbatore



Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore  
Schedules forming part of Balance Sheet as at 31.03.2018

Schedule 3 - Earmarked / Endowment Fund

Earmarked / Endowment Fund	FUND-WISE BREAK UP					
	WWF Project	Assesement of Conflicts In Peafowls	Determination of Spation Project	HACKATHON -2017 & 2018	Current Year	Previous Year
<b>a) Opening balance of the funds</b>	43,196.00	12,710.00	102,000.00	-	<b>157,906.00</b>	68,196.00
<b>b) Additions to the Funds:</b>						
i. Donations/ grants				535,000.00	<b>535,000.00</b>	152,000.00
ii. Interest received					-	-
iii. Other additions (specify nature)					-	-
1. Loan received from SACON Corpus/SACON					-	-
<b>Total (a+b)</b>	<b>43,196.00</b>	<b>12,710.00</b>	<b>102,000.00</b>	<b>535,000.00</b>	<b>692,906.00</b>	<b>220,196.00</b>
<b>c) Utilisation / Expenditure towards objectives of funds</b>						
<b>i. Capital Expenditure</b>						
- Fixed Assets (at cost)	-	-	-	-	-	-
- Advances	-	-	-	-	-	-
<b>Total</b>	-	-	-	-	-	-
<b>ii. Revenue Expenditure</b>						
- Salaries, Wages and allowance etc.	-	-	-	-	-	<b>18,000.00</b>
- Rent	-	-	-	-	-	-
- Other Administrative expenses	43,196.00	12,710.00			<b>55,906.00</b>	44,290.00
- Other Expn	-	-	73,000.00	257,500.00	<b>330,500.00</b>	-
1. Loan repaid to SACON Corpus/SACON	-	-	-	-	-	-
2. Amount refunded to Funding agency/corpus	-	-	-	-	-	-
<b>Total (c)</b>	<b>43,196.00</b>	<b>12,710.00</b>	<b>73,000.00</b>	<b>257,500.00</b>	<b>386,406.00</b>	<b>62,290.00</b>
<b>© NET BALANCE AS AT THE YEAR-END (a+b-c)</b>	-	-	<b>29,000.00</b>	<b>277,500.00</b>	<b>306,500.00</b>	<b>157,906.00</b>
Less: Excess expendtiure incurred earlier year transferred to receivables					-	-
					-	-
<b>Grand Total</b>	-	-	<b>29,000.00</b>	<b>277,500.00</b>	<b>306,500.00</b>	<b>157,906.00</b>

## Salim Ali Centre for Ornithology and Natural History, Anaikatty PO, Coimbatore

### Schedules forming part of Balance Sheet as at 31.03.2018

#### Schedule 4 - Unsecured Loans and Borrowings

	Current Year Rs.	Previous Year Rs.
Others (Specify) Loan from SACON Corpus fund	0.00	9,955,474.00
<b>Total</b>	<b>0.00</b>	<b>9,955,474.00</b>

Sd/-

**Aneesh K Abraham**  
Finance Officer  
Salim Ali Centre for Ornithology  
and Natural History, Anaikatty,  
Coimbatore

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Coimbatore

## Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore

### SCHEDULE 8 - FIXED ASSETS

### SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31.03.2018

	Cost/valuation As at beginning of the year	Additions/ transfers during the year	Cost/value at the year-end	Depn rate	As at the beginning of the year	Withdrawn during the year	For the year	Total up to the Year-end	WDV as on 31.03.2018
<b>A. SACON</b>	01.04.2017		31.03.2018		01.04.2017			31.03.2018	
1. <u>LAND:</u>									
a) Freehold	4,168,840.00	-	4,168,840.00		-	-	-	-	4,168,840.00
2. <u>BUILDINGS at</u>									
a) Freehold Land	17,196,171.00	-	17,196,171.00	1.63%	5,279,711.00	-	280,298.00	5,560,009.00	11,636,162.00
b) Campus Development	4,856,531.00	670,006.00	5,526,537.00	1.63%	467,867.00	-	79,868.00	547,7735.00	4,978,802.00
c) Drinking water supply	364,036.00	-	364,036.00	1.63%	47,472.00	-	5,934.00	53,406.00	310,630.00
d) Directors Quarters	1,998,090.00	-	1,998,090.00	1.63%	250,737.00	-	32,569.00	283,306.00	1,714,784.00
e) Building Constructions	-	8,222,434.00	8,222,434.00	1.63%	-	-	-	-	8,222,434.00
<b>Sub-Total</b>	<b>24,414,828.00</b>	<b>8,892,440.00</b>	<b>33,307,268.00</b>	-	<b>6,045,787.00</b>	-	<b>398,669.00</b>	<b>6,444,456.00</b>	<b>26,862,812.00</b>
3. <u>PLANT, MACHINERY &amp; EQUIPMENT</u>	22,223,112.00	13,944,120.04	36,167,232.04	4.75%	13,552,555.00	-	1,134,081.00	14,686,636.00	21,480,596.04
3.1 Minor Equipment	287,028.00	337,823.00	624,851.00	4.75%	65,580.00	-	15,693.00	81,273.00	543,578.00
3.2. Kitchen Equipment	73,354.00	-	73,354.00	4.75%	52,065.00	-	3,484.00	55,549.00	17,805.00
3.3. Equipment of completed projects	6,763,884.48	-	6,763,884.48	4.75%	2,332,520.00	-	321,285.00	2,653,805.00	4,110,079.48
3.4. Solar Power fencing	546,724.00	-	546,724.00	4.75%	293,716.00	-	25,969.00	319,685.00	227,039.00
3.5. Solar power plant	10,223.00	-	10,223.00	4.75%	5,829.00	-	486.00	6,315.00	3,908.00
3.6. Solar Power fencing - Silicon	373,256.00	-	373,256.00	4.75%	141,889.00	-	17,730.00	159,619.00	213,637.00
3.7. Leaseline Connection	547,345.00	-	547,345.00	4.75%	547,344.00	-	-	547,344.00	1.00
3.8. Solar Street Lights	506,044.00	106,377.00	612,421.00	4.75%	9,110.00	-	24,098.00	33,208.00	579,213.00
<b>Sub-Total</b>	<b>31,330,970.48</b>	<b>14,388,320.04</b>	<b>45,719,290.52</b>	-	<b>17,000,608.00</b>	-	<b>15,42,826.00</b>	<b>18,543,434.00</b>	<b>27,175,856.00</b>
4. <u>VEHICLES</u>	2,011,142.00	2,422,396.00	4,433,538.00	9.50%	1,232,187.00	-	3,32,967.00	1,565,154.00	2,868,384.00
4.1. Vehicle of completed projects	372,431.00	-	372,431.00	9.50%	70,762.00	-	35,381.00	106,143.00	266,288.00
5. <u>FURNITURE, FIXTURES.</u>	4,358,176.00	194,806.00	4,552,982.00	6.33%	2,604,976.00	-	278,872.00	2,883,848.00	1,669,134.00
6. <u>OFFICE EQUIPMENT</u>	942,686.00	28,690.00	971,376.00	13.91%	495,444.00	-	135,118.00	630,562.00	340,814.00
7. <u>COMPUTER/PERIPHERALS</u>	6,508,991.00	1,226,000.00	7,734,991.00	16.21%	5,507,013.00	-	1,061,948.00	6,568,961.00	1,166,030.00
a) Purchased under Egovernance grant	2,014,055.00	-	2,014,055.00	16.21%	2,014,054.00	-	-	2,014,054.00	1.00
b) Received under Egovernance grant	1.00	-	1.00		-	-	-	-	1.00
c) Computer of Completed Project	176,807.00	-	176,807.00	16.21%	51,388.00	-	28,660.00	80,048.00	96,759.00
<b>Sub-Total</b>	<b>8,699,854.00</b>	<b>1,226,000.00</b>	<b>9,925,854.00</b>	-	<b>7,572,455.00</b>	-	<b>1,090,608.00</b>	<b>8,663,063.00</b>	<b>1,262,791.00</b>
8. <u>ELECTRIC INSTALLATIONS</u>	950,360.00	-	950,360.00	7.07%	950,359.00	-	-	950,359.00	1.00
9. <u>LIBRARY BOOKS</u>	16,242,560.00	225,028.00	16,467,588.00	4.75%	11,294,199.00	-	771,668.00	12,065,867.00	4,401,721.00
10. <u>TREE PLANTATION</u>	54,000.00	-	54,000.00		-	-	-	-	54,000.00
<b>TOTAL</b>	<b>93,545,847.48</b>	<b>27,377,680.04</b>	<b>120,923,527.52</b>		<b>47,266,777.00</b>	-	<b>4,586,109.00</b>	<b>51,852,886.00</b>	<b>69,070,641.52</b>

**Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore**
**Schedules forming part of Balance Sheet as at 31.03.2018**
**Schedule 6 - Current Assets and Loans and Advances**

	Current Year		Previous Year	
	Rs.	Rs.	Rs.	Rs.
<b>a.Inventories</b>				
Closing Stock of Diesel	3,250.00	3,250.00	503.00	503.00
<b>Total (a)</b>		<b>3,250.00</b>		<b>503.00</b>
<b>b.Cash and Bank Balances</b>				
Cash balances in hand (including cheques/drafts, postage advance and imprest)	20,000.00 1,300.00	21,300.00	20,000.00 184.00	20,184.00
Bank Balances with Scheduled banks:	13,151,656.64			
- On Savings Accounts -CBI-A/c .2110453804			21,290,392.26	
Indian Over Seas bank	17,029.00		0.00	
SBI A/c-10566815483	0.00	13,168,685.64	106,783.21	21,397,175.47
-On Fixed Deposits				
Fixed Deposit for LC	35,625,000.00		1,100,000.00	
Fixed Deposit for- Others	977,416.00	36,602,416.00	1,012,489.00	2,112,489.00
<b>Total (b)</b>		<b>49,792,401.64</b>		<b>23,529,848.47</b>

**Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore**
**Schedules forming part of Balance Sheet as at 31.03.2017**

Schedule 6 - Current Assets and Loans and Advances (Contd.)	Current Year		Previous Year	
	Rs.	Rs.	Rs.	Rs.
<b>c. Income Receivables</b>				
Accrued Interest on Investments / FD - Others	4,722.00		68,479.00	
MoEF Grant Receivables			0.00	
Accrued Interest on staff Loans and Advances			0.00	
Accrued Interest on EB Deposit (includes income due unrealised)	74,779.00	79,501.00	60,649.00	<b>129,128.00</b>
<b>Total (d)</b>		<b>79,501.00</b>		<b>129,128.00</b>
<b>d. Loans and Advances</b>				
1.Advances and other amounts recoverable in cash or in kind or for value to be received:				
a) Prepayments	1,789,447.00		1,454,653.00	
b) Security Deposits	113,420.00		89,020.00	
c) Others	202,015.00	2,104,882.00	1,842,415.00	<b>3,386,088.00</b>
2.Loans:				
a) Staff	29,908.00		28,258.00	
b) Other (specify) - Insitu -Exsitu	72,857.00	102,765.00	72,857.00	<b>101,115.00</b>
Edible Nest				
3.Claims Receivable - IT Refund Receivable - TDS on Contract		131,320.00		<b>12,265.00</b>
<b>Total (e)</b>		<b>2,338,967.00</b>		<b>3,499,468.00</b>
<b>Total (a+b+c+d+e)</b>		<b>52,214,119.64</b>		<b>27,158,947.47</b>



**Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore**
**Schedules forming part of Balance Sheet as at 31.03.2018**
**Schedule 6.d. - Current Assets and Loans and Advances**

	<b>Current Year Rs.</b>	<b>Previous Year Rs.</b>
<b>6.d.1.a. Prepayments</b>		
Insurance	28,851.00	8,339.00
Subscription to Library periodicals	1,249,733.00	1,209,278.00
Website Maintenance	22,063.00	22,063.00
Telephone Charges	424,800.00	175,912.00
Membership Fee	0.00	39,061.00
Road Tax	64,000.00	0.00
<b>Total 6.d.1.a.</b>	<b>1,789,447.00</b>	<b>1,454,653.00</b>
<b>6.d.1.b. Security and Other Deposits</b>		
M/s Balaji Gas Agencies (Deposit for Primaus gas)	250.00	250.00
Gas connection deposit - SACON	4,350.00	4,350.00
Gas connection deposit - SACON HOSTEL	3,000.00	3,000.00
Telephone Deposit (OYT)	13,215.00	13,215.00
Deposit for Broadband	5,000.00	5,000.00
Deposit for Cylinder (IOL)	8,600.00	8,600.00
Deposit for water connection	15,150.00	750.00
Deposit for Accomodation	5,000.00	0.00
Deposit for Research Study	5,000.00	0.00
Electricity Deposit	53,855.00	53,855.00
<b>Total 6.d.1.b.</b>	<b>113,420.00</b>	<b>89,020.00</b>
<b>6.d.1.c. Others</b>		
Central Bank of India TDS claim	0.00	0.00
Advance to Kasturi & Sons Ltd	10,110.00	10,110.00
Advance to Venkitachalam	0.00	0.00
Ace Data Solution Pvt Ltd	0.00	60.00
Advance to COSTFORD	0.00	1,812,245.00
Advance to P Pramod	12,500.00	0.00
Advance to R Jayakumar	9,000.00	0.00
Advance to SACON Canteen	0.00	20,000.00
Advance to Small Cat Project	133,000.00	0.00
Advance to NNCP Project	37,405.00	0.00
Agilent Technology	0.00	0.00
<b>Total 6.d.1.c.</b>	<b>202,015.00</b>	<b>1,842,415.00</b>
<b>Schedule 6.d.2.a. - Staff Loans</b>		
Festival Advance	15,750.00	14,100.00
6 CPC Salary Recoverable	14,158.00	14,158.00
<b>Total 6.d.2.a</b>	<b>29,908.00</b>	<b>28,258.00</b>

Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore

Schedules forming part of Balance Sheet as at 31.03.2018

## Schedule 7 - Current Liabilities and Provisions

	Current Year		Previous Year	
	Rs.	Rs.	Rs.	Rs.
<b>a. Current Liabilities</b>				
Sundry Creditors:				
Others (Schedule 7.a.1)	42,587,987.00		13,493,751.00	
<b>Total (a)</b>		<b>42,587,987.00</b>		<b>13,493,751.00</b>
<b>b. Provisions</b>				
Gratuity	10,841,360.00		5,400,111.00	
Accumulated Leave Encashment	11,266,089.00		11,877,355.00	
<b>Total (b)</b>		<b>22,107,449.00</b>		<b>17,277,466.00</b>
<b>Total (a+b)</b>		<b>64,695,436.00</b>		<b>30,771,217.00</b>

Sd/-

Aneesh K Abraham  
Finance Officer  
Salim Ali Centre for Ornithology  
and Natural History, Anaikatty,  
Coimbatore

Sd/-

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Partner  
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Dr. K. Sankar  
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Coimbatore

**Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore  
Schedules forming part of Balance Sheet as at 31.03.2018**

**Schedule 7 - Current Liabilities and Provisions**

	<b>Current Year Rs.</b>	<b>Previous Year Rs.</b>
<b>a.1. Current Liabilities</b>		
a1. Unspent amount	60,585.00	
a2. Other Payables	42,527,402.00	13,493,751.00
<b>Total 7.a.1</b>	<b>42,587,987.00</b>	<b>13,493,751.00</b>
<b>7.a.2. Unspent amount</b>		
1. SACON-National Nature Camping Project	60,585.00	-
<b>Total 7.a.2</b>	<b>60,585.00</b>	-
<b>7.a.3. Other Payables</b>		
Salary payable	2,450,746.00	2,231,967.00
CPF Contribution Payable	37,853.00	198,876.00
Audit fees payable	103,500.00	103,500.00
Telephone charges payable	14,172.00	14,066.00
TDS On Contract Payable	5,728.00	6,174.00
Workwelfare Fund	105,491.00	48,515.00
Consolidated Salary Payable	224,500.00	127,600.00
Wages payable	100,259.00	51,693.00
Bus hire charges payable	-	53,900.00
Watch and ward expenditure payable	111,947.00	114,657.00
Wages for house keeping staff Payable	68,468.00	82,252.00
Wages to Canteen Cook Payable	-	10,000.00
Electricity charges payable	49,184.00	-
Water Charges payable	2,000.00	960.00
HDFC Loan Payable	-	15,958.00
LIC Payable	-	25,599.00
Grant Received for FY 2018-19	34,700,000.00	9,061,000.00
Security Deposit from Sri Sathguru Epoxy Coating	5,000.00	5,000.00
Security Deposit from Costford	181,225.00	181,225.00
Retention Money Cost Ford	407,754.00	90,612.00
Security Deposit from Vimal Antony	60,000.00	60,000.00
Security Deposit from V T S Company	2,238.00	-
Security Deposit from Agilant Technology	1,200,000.00	-
Security Deposit from Spicno Biotech	750,000.00	-
EMD From Agilant Technology-India	480,000.00	-
EMD From Balaji Security Service	75,000.00	-
EMD From GDA Security Service	60,000.00	-
EMD From Mr Kanakaraj Road work	20,000.00	-
EMD From Spico Biotech Ltd	300,000.00	-
Kerala State Biodiversity Board	-	900.00
Doctoral Committee Meeting	14,701.00	11,661.00
Withheld of Dr S Bhupathy's Settlement	977,416.00	977,416.00
Withheld from Mrs Jayasri Muralidharan	10,110.00	10,110.00
Withheld from M/s. Kasturi & Sons Ltd	10,110.00	10,110.00
<b>Total 7.a.3</b>	<b>42,527,402.00</b>	<b>13,493,751.00</b>

## SALIM ALI CENTRE FOR ORNITHOLOGY AND NATURAL HISTORY, ANAIKATTY PO, COIMBATORE 641 108

### Consolidated Receipts and Payments Account of Projects for the period ended 31.03.2018

As at 31.03.2017 Rs. Ps.	Receipts	Current Year ended 31.03.2018 Rs. Ps.		As at 31.03.2017 Rs. Ps.	Receipts	Current Year ended 31.03.2018 Rs. Ps.	
	<b>To Opening Balance</b>				<b>By Revenue Expenditure</b>		
12,756,691.52	Bank Balance in CBI, Coimbatore	8,064,758.00		2,378,323.00	Salaries & Wages A/c		3,097,028.50
43,770.00	Bank Balance in SBI, Coimbatore	115,253.00		5,011,279.00	Stipend to Research Scholars A/c		3,313,873.00
-	Imprest Cash Balance in Hand	15,000.00		2,525,254.00	Travelling Expenditure A/c		2,511,206.00
	<b>To Grant Reced during the year</b>			2,653,476.00	Consumables A/c		1,084,950.00
1,423,250.00	EIA - A/c No.2110453906	4,390,010.00		161,785.00	Other Miscellaneous Project Cost A/c		73,639.00
72,561.00	Agriculture pesticides -2110454070	-		677,985.00	Contingency A/c		335,094.00
426,300.00	CSIR - A/c No. 2110453984	-		178,209.00	Boat and Vehicle Hiring Charges A/c		-
315,594.00	Social Organizational Behaviour 3193882331	-		2,085,169.00	Administrative Overhead Charges A/c		100,000.00
281,058.00	Forest Owlet -3288848047	-		24,441.00	Database Development A/c		-
1,447,972.00	Envis Centre. 2110385219	2,915,684.00		154,143.00	Reporting and Printing A/c		32,955.00
1,200,000.00	Ecological Investigation on Trees -3532548020	900,000.00		618,361.25	Institutional Charges A/c		3,156,906.00
100,000.00	Ramanujam Fellowship -3601213926	900,000.00		15,594.00	Postage and Communication A/c		-
208,080.00	Andaman serpent eagle -3416008418	104,040.00		30,000.00	Website A/c		8,600.00
169,853.00	Agasthiarmalai Hills Project - 31818209685	-		2,191.00	Bank Charges A/c		1,718.00
77,103.00	Athikadavu Valley Project 32291723994	-		120,476.00	Capacity Building and Training		99,856.00
900,000.00	Small cat guild for Eagle Nest 3303214645	-		2,810.00	Camp Maintenance A/c		-
983,250.00	Conference Account - 3132799001	-		36,504.00	Glassware & Chemicals A/c		2,861.00
49,074.00	Colonial Water Birds- 3181537105	-		176,448.00	Manday cost A/c		22,500.00
432,000.00	National Nature Camping 3322293658	-		1,114,555.00	Seminar and Conference A/c		117,260.00
700,000.00	Owl assemblage and occupancy 3263382895	-		3,000.00	Departmental Assistance A/c		-
-	Wetlands of Tamilnadu Project -3642397062	716,219.00		36,750.00	Honorarium A/c		15,300.00
2,674,747.00	Inspire Fellowship 3280775135	792,224.00		1,149,748.00	Refund of Accrued Expenditure A/c		-
50,000.00	Survey of Small Cat Borivali -3605659240	400,000.00					
-	Sindhudurg coast-3393150842	313,200.00			<b>By Capital Expenditure</b>		
29,185.00	Nature Education 2110415676	732,550.00		44,490.00	Computer Purchase		204,669.00
1,057,375.00	Baseline study of Thanecreek I & II-3493132400	-		1,089,846.00	Equipment Purchase		1,424,245.00



## SALIM ALI CENTRE FOR ORNITHOLOGY AND NATURAL HISTORY, ANAIKATTY PO, COIMBATORE 641 108

### Consolidated Receipts and Payments Account of Projects for the period ended 31.03.2018

As at 31.03.2017		Current Year ended 31.03.2018		As at 31.03.2017		Current Year ended 31.03.2018	
Rs.	Ps.	Rs.	Ps.	Rs.	Ps.	Rs.	Ps.
	Receipts				Receipts		
-	Dispersal Pattern in Monomorphic Edible - 3520469810	971,817.00			<b>BY Others (Advance and Settlement)</b>		
845,750.00	Ecological Assessment of Palk Bay -3500000114	-		-	Refund of Loan from Corpus Fund	650,000.00	
353,989.00	Avian biology -3241903201	-		10,000.00	Advance to JRF/SRF/PI/	-	
312,326.00	West Bengal Elephant -3503758075	780,814.00		51,197.00	Refund of Unspent Balance to funding agency	156,126.00	
631,080.00	Wetlands in Forest Area Maharashtra -3553095436	420,720.00			Refund to Creditors	607,720.00	
	<b>To Others</b>				Refund of Caution Deposit/EMD	800.00	
-	Misc Income	733.00					
159,000.00	Training fees	49,000.00			<b>By Recoveries &amp; Remittance</b>		
64,600.00	Sample analysis recd.	83,112.00			TDS on Contract	9,506.00	
627,756.73	Bank Interest - SB A/c.	340,426.00		24,831.00	TDS on Salary and Wages	74,545.00	
177,980.00	Refund of Unspent advance from PI/SRF/JRF/RP	10,000.00		45,476.00	Professional Charges	2,346.00	
-	SACON Corpus/ SACON Loan	720,405.00		1,173.00	Deposit for Projects Operations	25,000.00	
	<b>To Deposit</b>			25,000.00			
1,700.00	Fixed Deposit in Post Office / Forest Office	-			<b>By Closing Balance</b>		
-	Caution Deposit/EMD	10,000.00		8,064,758.00	Bank Balance in CBI, Coimbatore	6,683,111.50	
	<b>To Recoveries &amp; Remittance</b>			115,253.00	Bank Balance in SBI, Coimbatore	5,547.00	
24,831.00	TDS on Contract	9,506.00		15,000.00	Imprest Cash Balance	15,000.00	
45,476.00	TDS on Salary and Wages	74,545.00					
1,173.00	Professional Charges	2,346.00					
<b>28,643,525.25</b>	<b>Total</b>	<b>23,832,362.00</b>		<b>28,643,525.25</b>	<b>Total</b>	<b>23,832,362.00</b>	

## Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore

### Consolidated Income and Expenditure Account of Projects for the year ended 31.03.2018

	Schedule	Current Year ended 31.03.2018		Previous Year ended 31.03.2017	
		Rs.	Ps.	Rs.	Ps.
<b>INCOME</b>					
Grants/ Subsidies	7	15,222,501.00		13,540,914.00	
Fees/Subscriptions	8	132,112.00		223,600.00	
Interest Earned	9	340,426.00		627,756.73	
Other Income	10	733.00		22,500.00	
<b>Total (a)</b>		<b>15,695,772.00</b>		<b>14,414,770.73</b>	
<b>EXPENDITURE</b>					
Establishment and other related Expenses	11	14,238,327.50		18,969,682.25	
Depreciation (Net Total for the year-end Sch 5)		400,819.00		353,916.00	
<b>Total (b)</b>		<b>14,639,146.50</b>		<b>19,323,598.25</b>	
<b>Balance being excess of Income over Expenditure(a-b)</b>		<b>1,056,625.50</b>		<b>(4,908,827.52)</b>	
<b>BALANCE SURPLUS CARRIED TO CAPITAL FUND</b>		<b>1,056,625.50</b>		<b>(4,908,827.52)</b>	

Schedules 1 to 14 form an integral part of the financial statements

Sd/-

Aneesh K Abraham  
Finance Officer  
Salim Ali Centre for Ornithology  
and Natural History, Anaikatty,  
Coimbatore

Sd/-

S. Krishnakumar (025146)  
Partner  
Ramanathan & Krishnakumar  
Chartered Accountants

Sd/-

Dr. K. Sankar  
Director  
Salim Ali Centre for Ornithology  
and Natural History, Anaikatty,  
Coimbatore

**Salim Ali Centre for Ornithology and Natural History, Anaikatty PO, Coimbatore  
Schedules forming part of Consolidated Income and Expenditure of Projects for  
the year ended 31.03.2018**

### Schedule 7 - Grants / Subsidies

	<b>Current Year Rs.</b>	<b>Previous Year Rs.</b>
1. Central Government	7,333,810.00	8,896,293.00
2. State Government	2,397,291.00	2,160,484.00
3. Private Institutions/Welfare Bodies/PSU	5,491,400.00	2,484,137.00
<b>Total</b>	<b>15,222,501.00</b>	<b>13,540,914.00</b>

### Schedule 8 - Fees / Subscriptions

1. M.Sc Dissertation Fees	-	-
2. Training fees	49,000.00	159,000.00
3. Sample Analysis and others	83,112.00	64,600.00
<b>Total</b>	<b>132,112.00</b>	<b>223,600.00</b>

### Schedule 9 - Interest Earned

1. On Post office Deposit		
a) With Indian Post office	-	-
2. On Savings Accounts:		
a) With Scheduled Banks	340,426.00	627,756.73
<b>Total</b>	<b>340,426.00</b>	<b>627,756.73</b>

### Schedule 10 - Other Income

1. Misc. Income	733.00	22,500.00
<b>Total</b>	<b>733.00</b>	<b>22,500.00</b>

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Director  
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and Natural History, Anaikatty,  
Coimbatore

## Schedule 11 - Establishment and Other Expenses

	Current Year Rs.	Previous Year Rs.
Salaries & Wages A/c (Field Assistant)	3,097,028.50	2,450,593.00
Stipend A/c	3,313,873.00	5,035,279.00
Travelling Expenditure A/c	2,477,156.00	2,754,769.00
Consumables A/c	999,284.00	3,066,007.00
Other Project Cost A/c	62,234.00	161,785.00
Contingency A/c	353,546.00	749,439.00
Course Materials	39,445.00	-
Boat and Vehicle Hiring Charges A/c	-	178,209.00
Database A/c	-	24,441.00
Administrative Over Head Charges A/c	100,000.00	2,149,339.00
Institutional Charges A/c	3,208,306.00	656,153.25
Postage and Stationery A/c	11,405.00	15,594.00
Chemicals and Glasswares A/c	2,861.00	36,504.00
Capacity Building	-	120,476.00
Website Maintenance A/c	8,600.00	30,000.00
Departmental Assistance A/c	-	3,000.00
Bank Charges A/c	1,718.00	2,191.00
Reporting/Printing charges A/c	32,955.00	154,143.00
Honorarium A/c	15,300.00	36,750.00
Manday cost A/c	22,500.00	176,448.00
Seminar And Conference A/c	163,481.00	1,114,555.00
Refund of Unspent amount to Funding agency A/c	156,126.00	51,197.00
Camp Maintenance A/c	72,653.00	2,810.00
Faculty Charges	99,856.00	-
<b>Total</b>	<b>14,238,327.50</b>	<b>18,969,682.25</b>

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Coimbatore



**Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore**  
**Consolidated Balance Sheet of Projects as at 31.03.2018**

	Schedule	Current Year ended 31.03.2018		Previous Year ended 31.03.2017	
		Rs.	Ps.	Rs.	Ps.
<b>SOURCES OF FUND</b>					
Corpus / Capital Fund	1		-		-
Reserve and Surplus	2	14,366,103.50		13,468,545.00	
Unsecured Loans and Borrowings	3	1,193,129.00		1,686,629.00	
Current Liabilities and Provisions	4	811,007.00		1,191,252.00	
<b>Total</b>		<b>16,370,239.50</b>		<b>16,346,426.00</b>	
<b>APPLICATION OF FUNDS</b>					
Fixed Assets	5	8,464,979.00		7,236,884.00	
Current Assets and Loans and Advances	6	7,905,260.50		9,109,542.00	
<b>Total</b>		<b>16,370,239.50</b>		<b>16,346,426.00</b>	

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 Coimbatore

**Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore**  
**Schedules forming part of Consolidated Balance Sheet of Projects as at 31.03.2018**

**Schedule 1 -Corpus / Capital Fund:**

	<b>Current Year Rs.</b>	<b>Previous Year Rs.</b>
Balance as at the beginning of the year	-	-
transferred from the Income and Expenditure A/c	-	-
<b>Total</b>	<b>-</b>	<b>-</b>

**Schedule 2 - Reserve and Surplus:**

1. Capital Reserve:		
As per last Account	-	-
Addition during the year	-	-
Less: Deductions during the year	-	-
	-	-
2. General Reserve:		
As per last Account	13,468,545.00	19,941,836.00
Less : Withdrawn / Transfer during the year	159,067.00	1,564,463.48
	<b>13,309,478.00</b>	<b>18,377,372.52</b>
Add / (Less) : Surplus / (Deficit) during the year	1,056,625.50	(4,908,827.52)
	<b>14,366,103.50</b>	<b>13,468,545.00</b>
<b>Total</b>	<b>14,366,103.50</b>	<b>13,468,545.00</b>

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**Salim Ali Centre for Ornithology and Natural History, Anaikatty PO, Coimbatore**  
**Schedules forming part of Consolidated Balance Sheet of Projects as at 31.03.2018**

### Schedule 3 - Unsecured Loans and Borrowings

	Current Year Rs.	Previous Year Rs.
Others (Specify)		
Received from SACON Corpus Fund	237,629.00	337,629.00
Grants Received in Advance for FY 2018-19	955,500.00	1,349,000.00
<b>Total</b>	<b>1,193,129.00</b>	<b>1,686,629.00</b>

### Schedule 4 - Current Liabilities and Provisions

<b>a. Current liabilities</b>		
<b>Sundry Creditors:</b>		
Payable to Sundry Parties	476,643.00	592,511.00
Provisions for Payable	126,602.00	75,202.00
Payable to JRF/ PI & Others	170,397.00	485,374.00
EMD Received	37,365.00	38,165.00
<b>Total</b>	<b>811,007.00</b>	<b>1,191,252.00</b>

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**Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore**  
**Schedules forming part of Consolidated Balance Sheet of Projects as at 31.03.2018**

**Schedule 5 - Fixed Assets**

DESCRIPTION	GROSS BLOCK				DEPRECIATION				NET BLOCK	
	Cost/valuation As at beginning of the year	Additions during the year	Deductions /Transfers during the year	Cost/value at the year-end	As at the beginning of the year	For the year	Depreciation withdrawn during the year	Total up to the Year-end	As at the Current year -end	As at the Previous year -end
1. Equipment	12,267,354.00	1,424,245.00	-	13,691,599.00	5,334,596.00	350,630.00	-	5,685,226.00	8,006,373.00	6,932,758.00
2. Computers	963,948.00	204,669.00	-	1,168,617.00	718,792.00	44,551.00	-	763,343.00	405,274.00	245,156.00
3. Vehicles	831,745.00	-	-	831,745.00	772,775.00	5,638.00	-	778,413.00	53,332.00	58,970.00
<b>Total</b>	<b>14,063,047.00</b>	<b>1,628,914.00</b>	<b>-</b>	<b>15,691,961.00</b>	<b>6,826,163.00</b>	<b>400,819.00</b>	<b>-</b>	<b>7,226,982.00</b>	<b>8,464,979.00</b>	<b>7,236,884.00</b>
<i>Previous Year</i>	<i>14,455,769.48</i>	<i>1,171,741.00</i>	<i>1,564,463.48</i>	<i>14,063,047.00</i>	<i>6,472,247.00</i>	<i>353,916.00</i>	<i>-</i>	<i>6,826,163.00</i>	<i>7,236,884.00</i>	

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Coimbatore



**Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore**  
**Schedules forming part of Consolidated Balance Sheet of Projects as at 31.03.2018**

**Schedule 6 - Current Assets and Loans and Advances**

	<b>Current Year Rs.</b>	<b>Previous Year Rs.</b>
<b>a) Cash and Bank Balances</b>		
Cash Imprest	15,000.00	15,000.00
- On Gas Deposit Accounts (includes margin money)	-	-
Deposit for project Operations	155,000.00	130,000.00
- On Savings Accounts		
Central Bank of India	6,683,111.50	8,064,758.00
State Bank of India	5,547.00	115,253.00
<b>Total (a)</b>	<b>6,858,658.50</b>	<b>8,325,011.00</b>
<b>b. Loans and Advances</b>		
Advances and other amounts recoverable in cash or in kind or value to be received:		
a) On Capital Account	-	-
b) Others (Specify)		
TDS Receivables	1,046,602.00	774,531.00
Advance to Staff	-	10,000.00
<b>Total (b)</b>	<b>1,046,602.00</b>	<b>784,531.00</b>
<b>c. Income Receivables</b>		
Accrued Interest on Investments / FD	-	-
Financial Assistance receivable	-	-
<b>Total (c)</b>	<b>-</b>	<b>-</b>
<b>Total (a+b+c)</b>	<b>7,905,260.50</b>	<b>9,109,542.00</b>

Sd/-

Aneesh K Abraham  
Finance Officer  
Salim Ali Centre for Ornithology  
and Natural History, Anaikatty,  
Coimbatore

Sd/-

S. Krishnakumar (025146)  
Partner  
Ramanathan & Krishnakumar  
Chartered Accountants

Sd/-

Dr. K. Sankar  
Director  
Salim Ali Centre for Ornithology  
and Natural History, Anaikatty,  
Coimbatore

## Salim Ali Centre for Ornithology and Natural History, Anaikatty, Coimbatore Receipts and Payments account for the year ended 31.03.2018

### Account : SACON Hostel

As at 31.03.2017		Current Year ended 31.03.2018		As at 31.03.2017		Current Year ended 31.03.2018	
Rs.	Ps.	Rs.	Ps.	Rs.	Ps.	Rs.	Ps.
261,844.00				69.00			
176,434.00		83,672.00		117,535.00		213,085.50	
11,622.00		606,588.00		-		3,450.00	
55,847.00		19,371.00		295.00		-	
15,000.00		21,514.00		4,200.00		5,190.00	
-		106,000.00		57,620.00		259,020.00	
159,600.00		755,847.00		180.00		-	
		-		1,647.00		3,212.00	
				-		2,800.00	
				181,682.00			486,757.50
				159,600.00			766,025.00
				18,000.00			-
				-			7,000.00
				55,847.00			240,000.00
				-			-
				83,672.00			93,209.50
<b>680,347.00</b>		<b>1,592,992.00</b>		<b>680,347.00</b>			<b>1,592,992.00</b>

Sd/-

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Finance Officer  
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and Natural History, Anaikatty,  
Coimbatore

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Director  
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and Natural History, Anaikatty,  
Coimbatore

## Salim Ali Centre for Ornithology and Natural History, Anaikatty, Coimbatore Income and Expenditure account for the period ended 31.03.2018

### Account : SACON Hostel

As at 31.03.2017		Expenditure	Current Year ended 31.03.2018		As at 31.03.2017		Income	Current Year ended 31.03.2018	
Rs.	Ps.		Rs.	Ps.	Rs.	Ps.		Rs.	Ps.
1,647.00		To Travelling Expenses	3,212.00		176,434.00		By Hostel Fees	606,588.00	
57,620.00		To Repair of Equip & Building Maintenance	261,620.00		11,622.00		By Bank interest	19,371.00	
180.00		To Electrical Maintenance	-		56,488.00		By Interest on FD	8,354.00	
69.00		To Bank charges	-						
295.00		To Contingencies	3,450.00						
117,535.00		To Misc. cons. Store	213,085.50						
4,200.00		To Subscription to Tatasky	5,190.00						
-		To Transportation Charges	2,800.00						
20,405.00		To Depreciation			<b>489,357.50</b>				
42,593.00		To Excess of income over expenditure			32,963.00				
					111,992.50				
<b>244,544.00</b>					<b>634,313.00</b>				<b>6,34,313.00</b>

Sd/-

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and Natural History, Anaikatty,  
Coimbatore

## Salim Ali Centre for Ornithology and Natural History, Anaikatty, Coimbatore Balance sheet as at 31.03.2018

### Account : SACON Hostel

As at 31.03.2017 Rs. Ps.	Receipts		Current Year ended 31.03.2018 Rs. Ps.	As at 31.03.2017 Rs. Ps.	Receipts		Current Year ended 31.03.2018 Rs. Ps.
1,272,662.00 42,593.00	Project Fund Add: Excess of income over expenditure	1,315,255.00 111,992.50		308,599.00 181,682.00	Equipment & Furniture Add:Addition during the year	469,876.00 766,025.00	
<b>1,315,255.00</b>			<b>1,427,247.50</b>	<b>490,281.00</b>	Less: Depreciation	<b>1,235,901.00</b> 32,963.00	<b>1,202,938.00</b>
9,000.00 - -	Hostel Fee Advance from students TDS Payable Caution Deposit for Hostel		6,000.00 2,600.00 102,000.00	<b>469,876.00</b> 13,160.00 1,700.00 755,847.00 -	Interest Accured on FD Deposit for BPCL Fixed Deposit - CBI Rental Advance	- 1,700.00 -	
				83,672.00	<u>Cash and Bank Balance</u> CBI A/c. No.2110453837	240,000.00	<b>241,700.00</b> 93,209.50
<b>1,324,255.00</b>			<b>1,537,847.50</b>	<b>1,324,255.00</b>			<b>1,537,847.50</b>

Sd/-

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Coimbatore



**Salim Ali Centre for Ornithology and Natural History, Anaikatty, Coimbatore**  
**Receipts and Payments account for the year ended 31.03.2018**

**Account : SACON Corpus Fund A/c**

As at 31.03.2017	Receipts	Current Year ended 31.03.2018		As at 31.03.2017		Payments	Current Year ended 31.03.2018	
		Rs.	Ps.	Rs.	Ps.		Rs.	Ps.
	Opening Balance							
2,539,022.01	To CBI A/c. No.2110453893	840,226.26		19,563,542.00		By Loan Given to SACON	18,020,738.00	
2,077,715.00	To Bank interest received(SB+FD)	2,467,289.00		250,000.00		By Envis Centre	550,000.00	
250,000.00	To Envis Centre	550,000.00		41,579,969.00		By Fixed Deposits Created	57,993,532.00	
34,182,827.00	To Fixed Deposit Matured & Foreclosed	43,397,142.00						
6,375,169.00	To Overhead Charges reced	149,986.00						
15,822,679.00	To Loan refunded by SACON	27,976,212.00						
198,948.00	To Manday Cost	22,500.00						
3,000.00	To Departmental Cost	-						
138.00	To Bank Charges - Reversed	-						
-	To Ecology of Elephant in West Bengal Project	100,000.00				By Closing Balance		
784,239.25	To Institutional Charges reced from Projects	3,216,415.00		840,226.26		By CBI A/c. No.2110453893	2,155,500.26	
<b>62,233,737.26</b>		<b>78,719,770.26</b>		<b>62,233,737.26</b>			<b>78,719,770.26</b>	

Sd/-

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Coimbatore

## Salim Ali Centre for Ornithology and Natural History, Anaikatty, Coimbatore

### Balance sheet as at 31.03.2018

#### Account : SACON Corpus Fund A/c

As at 31.03.2017 Rs. Ps.	Liabilities	Current Year ended 31.03.2018		As at 31.03.2017		Assets	Current Year ended 31.03.2018	
		Rs.	Ps.	Rs.	Ps.		Rs.	Ps.
35,941,455.01	PROJECT FUND Opening Balance as per the last year Balance sheet	45,735,658.26		53,127.00		By Grey Head Bul bul.	53,127.00	
686,364.25	To Institutional Charges Transferred from Projects	3,267,815.00		9,955,474.00		By SACON Loan A/c		-
6,349,339.00	To Overhead Charges reced	149,986.00		137,629.00		By Monitoring Surveillance Project	137,629.00	
2,468,823.00	To Bank Interest - Fixed Deposit	2,277,371.00		200,000.00		By Ecology of Elephant West Bengal	100,000.00	
3,000.00	To Departmental Assistance	-		1,087,890.00		By Interest on FD- Accrued	899,868.00	
176,448.00	To Manday Cost	22,500.00		-		By Institutional Charges Receivables	51,400.00	
110,091.00	To Bank Interest - SB	102,677.00		64,170.00		By Overhead Charges Receivables	64,170.00	
45,735,520.26		51,556,007.26		33,397,142.00		<u>Bank Balances</u>		
(138.00)	Less:Bank Charges	-				<u>In Deposit with Banks</u>		
45,735,658.26		51,556,007.26		840,226.26		CBI - Nanjundapuram	47,993,532.00	
						<u>In SB-A/c</u>		
						By CBI A/c. No.2110453893	2,155,500.26	
<b>45,735,658.26</b>		<b>51,556,007.26</b>		<b>45,735,658.26</b>				<b>51,556,007.26</b>

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Coimbatore

**Salim Ali Centre for Ornithology and Natural History, Anaikatty, Coimbatore**  
**Receipts and Payments account for the year ended 31.03.2018**

**Project: SACON FERA**

As at 31.03.2017 Rs. Ps.	Receipts	Current Year ended 31.03.2018		As at 31.03.2017		Payments	Current Year ended 31.03.2018	
		Rs.	Ps.	Rs.	Ps.		Rs.	Ps.
1,275,414.00	Opening Balance	1,100,468.50		2.50		By Bank Charges	2.50	
61,212.00	To CBI SB A/c.No.2110453962	38,812.00		6,000.00		By Camp Maintenance	-	
500.00	To Bank interest received			133,670.00		By Consumables	5,583.00	
	To Registration Fees			12,500.00		By Professional Fee	15,000.00	
				54,250.00		By Salary & Wages	17,650.00	
				30,235.00		By Travelling Expenses	62,084.00	
						By Advance to Dr.Manchi Shirish	6,660.00	
						By Publication charges	31,915.00	
						By Closing Balance		
						CBI SB A/c.No.2110453962	1,000,386.00	
<b>1,337,126.00</b>		<b>1,139,280.50</b>		<b>1,337,126.00</b>			<b>1,139,280.50</b>	

Sd/-

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Coimbatore

**Salim Ali Centre for Ornithology and Natural History, Anaikatty, Coimbatore**  
**Income and Expenditure account for the period ended 31.03.2018**

**Project: SACON FERA**

As at 31.03.2017	Expenditure	Current Year ended 31.03.2018		As at 31.03.2017	Income	Current Year ended 31.03.2018	
		Rs.	Ps.			Rs.	Ps.
2.50	To Bank Charges	2.50		61,212.00	By Interest Received	38,812.00	
6,000.00	To Camp Maintenance	-					
133,670.00	To Consumables	5,583.00					
346.00	To Depreciation for the year	346.00					
12,000.00	To Professional Fee	15,000.00					
54,250.00	To Salary & Wages	17,650.00					
30,235.00	To Travelling Expenses	62,084.00					
-	To Publication Charges	31,915.00					
				175,291.50	To Excess of Expenditure over Income	93,768.50	
<b>236,503.50</b>		<b>132,580.50</b>		<b>236,503.50</b>		<b>132,580.50</b>	

Sd/-

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Finance Officer  
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and Natural History, Anaikatty,  
Coimbatore

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**Dr. K. Sankar**  
Director  
Salim Ali Centre for Ornithology  
and Natural History, Anaikatty,  
Coimbatore



## Salim Ali Centre for Ornithology and Natural History, Anaikatty, Coimbatore Balance sheet as at 31.03.2018

### Project: SACON FERA

As at 31.03.2017 Rs. Ps.	Liabilities		Current Year ended 31.03.2018 Rs. Ps.		As at 31.03.2017 Rs. Ps.	Assets		Current Year ended 31.03.2018 Rs. Ps.	
1,280,145.00 (175,291.50)	<u>Project Fund</u> <u>Less: Excess of Expenditure over Income</u>	1,104,853.50 (93,768.50)			4,731.00 346.00	Equipment Less: Depreciation	4,385.00 346.00		
1,104,853.50			1,011,085.00		4,385.00 -	Loans & Advances		4,039.00 6,660.00	
					1,100,468.50	<u>Bank Balance</u> CBI SB A/c.No.2110453962			1,000,386.00
<b>1,104,853.50</b>			<b>1,011,085.00</b>		<b>1,104,853.50</b>				<b>1,011,085.00</b>

Sd/-

Aneesh K Abraham  
Finance Officer  
Salim Ali Centre for Ornithology  
and Natural History, Anaikatty,  
Coimbatore

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Dr. K. Sankar  
Director  
Salim Ali Centre for Ornithology  
and Natural History, Anaikatty,  
Coimbatore

**Salim Ali Centre for Ornithology and Natural History, Anaikatty, Coimbatore**  
**Receipts and Payments account for the year ended 31.03.2018**

**Project: SACON Donation**

As at 31.03.2017 Rs. Ps.	Receipts	Current Year ended 31.03.2018		As at 31.03.2017		Payments	Current Year ended 31.03.2018	
		Rs.	Ps.	Rs.	Ps.		Rs.	Ps.
199,940.00	Opening Balance	288,814.00	-	-	-	By Bank Charges	2,655.00	
15,414.00	To CBI SB A/c.No.2110453973	11,079.00	1,900.00	1,900.00	-	By Building Maintenance	-	
21,649.00	To Bank interest received-SB	19,593.00	-	-	-	By Security Deposit - Costford	45,103.00	
-	To Bank interest received-FD	1,562.00	-	-	-			
53,711.00	To Interest accrued on FD	-	-	-	-	By Closing Balance		
	To Donation Reced			288,814.00		CBI SB A/c.No.2110453973	273,290.00	
<b>290,714.00</b>		<b>321,048.00</b>		<b>290,714.00</b>			<b>321,048.00</b>	

Sd/-

**Aneesh K Abraham**  
Finance Officer  
Salim Ali Centre for Ornithology  
and Natural History, Anaikatty,  
Coimbatore

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and Natural History, Anaikatty,  
Coimbatore

## Salim Ali Centre for Ornithology and Natural History, Anaikatty, Coimbatore Income and Expenditure account for the period ended 31.03.2018

### Project: SACON Donation

As at 31.03.2017		Expenditure	Current Year ended 31.03.2018		As at 31.03.2017		Income	Current Year ended 31.03.2018	
Rs.	Ps.		Rs.	Ps.	Rs.	Ps.		Rs.	Ps.
1,900.00	-	To Building Maintenance	-	-	53,711.00	-	By Donation Received	-	-
-	-	To Bank Charges	2,655.00	-	15,414.00	-	By Interest received	11,079.00	11,079.00
38,407.00	-	To Depreciation	38,407.00	-	21,459.00	-	By Interest on Fixed Deposit	20,949.00	20,949.00
50,277.00	-	To Excess of income over Expenditure	-	-	-	-	By Excess of Expenditure over income	9,034.00	9,034.00
<b>90,584.00</b>	-		<b>41,062.00</b>	-	<b>90,584.00</b>	-		<b>41,062.00</b>	-

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Coimbatore

## Salim Ali Centre for Ornithology and Natural History, Anaikatty, Coimbatore Balance sheet as at 31.03.2018

### Project: SACON Donation

As at 31.03.2017 Rs. Ps.	Liabilities	Current Year ended 31.03.2018 Rs. Ps.		As at 31.03.2017 Rs. Ps.		Assets		Current Year ended 31.03.2018 Rs. Ps.	
2,806,261.00 50,277.00	Project Fund Less: Excess of Expenditure over Income	2,856,538.00 (9,034.00)	2,353,732.00 38,407.00	2,315,325.00 38,407.00	2,315,325.00 38,407.00	Building-Hostel Less: Depreciation		2,276,918.00	
2,856,538.00		2,847,504.00	2,315,325.00 1,562.00	2,315,325.00 1,562.00	2,315,325.00 1,562.00	Interest Accrued on FD		1,054.00	
45,103.00 4,060.00	Current Liability Security Deposit Workers Welfare Fund	- 4,060.00	- 300,000.00	- 300,000.00	- 300,000.00	TDS Receivable <u>Bank Balance</u>		302.00	
			288,814.00	288,814.00	288,814.00	CBI Fixed Deposit A/c CBI SB A/c.No.2110453973		300,000.00 273,290.00	
<b>2,905,701.00</b>		<b>2,851,564.00</b>	<b>2,905,701.00</b>	<b>2,905,701.00</b>	<b>2,905,701.00</b>			<b>2,851,564.00</b>	

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**Salim Ali Centre for Ornithology and Natural History, Anaikatty, Coimbatore**  
**SACON Employees Contributory Provident Fund**  
**Receipts and Payments account for the year ended 31.03.2018**

**Account : SACON CPF A/c**

As at 31.03.2017 Rs. Ps.	Receipts	Current Year ended 31.03.2018 Rs. Ps.		As at 31.03.2017 Rs. Ps.		Payments	Current Year ended 31.03.2018 Rs. Ps.	
222,384.73	Opening Balance	4,580,915.73	1,064,000.00			By Advances / Withdrawal	1,095,000.00	
1,620,757.00	To CBI A/c. No.2110453917	1,868,340.00	-			By Full & Final Settlement	6,032,658.00	
781,287.00	To Subscription made by the members	-	-			By Permanent Withdrawal	86,400.00	
2,972,017.00	To Refund of Advance	3,535,072.00	7,578,535.00			By Fixed Deposits Created	23,752,417.00	
916,123.00	To SACON Contribution for 2017-18	3,815,728.00						
45,652.00	To Interest on Fixed Deposit	70,431.00				By Closing Balance		
-	To Interest on Saving Bank	964,931.00	4,580,915.73			CBI A/c. No.2110453917	5,147,477.73	
6,665,230.00	To Refund Received	21,278,535.00						
	To Fixed Deposit Matured							
<b>13,223,450.73</b>		<b>36,113,952.73</b>	<b>13,223,450.73</b>				<b>36,113,952.73</b>	

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**Salim Ali Centre for Ornithology and Natural History, Anaikatty, Coimbatore**  
**SACON Employees Contributory Provident Fund**  
**Balance Sheet as at 31.03.2018**

**Account : SACON CPF A/c**

As at 31.03.2017 Rs. Ps.	Liabilities	Current Year ended 31.03.2018 Rs. Ps.		As at 31.03.2017 Rs. Ps.		Assets	Current Year ended 31.03.2018 Rs. Ps.	
23,745,346.73	Opening Balance as per Balance sheet	30,143,359.73				<u>Current Assets and Advances</u>		
1,616,058.00	Add: Subscription by the members	1,732,165.00		3,165,535.00		Interest Accrued but not received	944,336.00	
45,652.00	Bank Interest received-SB	70,431.00		919,498.00		Refundable Advance	1,112,268.00	
1,886,146.00	Bank Interest received-FD	1,632,382.00		136,175.00		Subscription Receivables	-	
2,972,017.00	Contribution From SACON	3,535,072.00		62,701.00		Advance/Refund Receivables	-	
30,265,219.73		37,113,409.73		-		Sacon - TDS Account	37,853.00	
-	Permenant Withdrawal	86,400.00				<u>Bank balances</u>		
121,860.00	Full & Final Settlement	6,032,658.00		21,278,535.00		<u>In Deposit A/c</u>		
30,143,359.73		30,994,351.73		4,580,915.73		Fixed Deposit With CBI	23,752,417.00	
						<u>In SB A/c</u>		
						CBI A/c. No.2110453917	5,147,477.73	
<b>30,143,359.73</b>		<b>30,994,351.73</b>		<b>30,143,359.73</b>			<b>30,994,351.73</b>	

Sd/-

Aneesh K Abraham  
Finance Officer  
Salim Ali Centre for Ornithology  
and Natural History, Anaikatty,  
Coimbatore

Sd/-

S. Krishnakumar (025146)  
Partner  
Ramanathan & Krishnakumar  
Chartered Accountants

Sd/-

Dr. K. Sankar  
Director  
Salim Ali Centre for Ornithology  
and Natural History, Anaikatty,  
Coimbatore



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