

MINUTES OF SIXTEENTH MEETING OF TECHNICAL AND FINANCIAL APPRAISAL COMMITTEE (TFAC) OF THE R&D SCHEME FOR CONSERVATION & DEVELOPMENT OF THE MoEF&CC HELD ON 7th AUGUST 2020 AT INDIRA PARYAVARAN BHAWAN, MoEFCC, NEW DELHI THROUGH VIDEO CONFERENCING

The **16th meeting of the Technical and Financial Appraisal Committee (TFAC)** of the Scheme on R&D for Conservation & Development of the MoEFCC was held as a VC Meeting under the chairmanship of Prof C.R. Babu on **7th August, 2020** at MoEFCC, Indus Conference Hall, Ground Floor, Jal Wing, Indira Paryavaran Bhawan, New Delhi. Advisor (RE), MoEF&CC and Member-Secretary of the TFAC welcomed the Chairperson and members of the TFAC for the meeting. List of participants is at **Annexure-1. The special TFAC meeting was held to consider 10** projects of Salim Ali Centre for Ornithology and Natural History (SACON) funded by MoEFCC during 2017-2020 under the Scheme on “Centres of Excellence” of the MoEFCC. In addition, the Committee also considered **5 on-going** R&D projects under the old R&D Scheme and **one application** received on-line under the new R&D scheme. The agenda for the meeting is given at **Annexure-2**.

1.0 Confirmation of Minutes of the Fifteenth Meeting of TFAC held on 31.07.2020

The minutes of the Fifteenth meeting of TFAC held on 31.07.2020 were confirmed.

2.0 CONSIDERATION OF TEN PROJECTS OF SALIM ALI CENTRE FOR ORNITHOLOGY AND NATURAL HISTORY (SACON), COIMBATORE:

2.1.1 Project titled “Assessing the population status of synanthropic bird species of India, including House Sparrow and House Crow, and their response to urbanization.”

PI: Dr.Rajah Jayapal, Senior Principal Scientist, SACON

Co-PI: Dr. S. Babu, Senior Scientist

PROJECT DETAILS:

October, 2017 to October, 2020. Total cost of Project: Rs 1,24,02,429 of which an amount of Rs 20,76,945 is available as unspent balance as on 31.03.2020.

Objectives:

- To assess the population size and status of common synanthropic birds of the country, including House Sparrow and House Crow, across different eco-climatic regions
- To study the response of bird populations to urbanization with particular reference to House Sparrows along urban-rural gradients
- To identify management initiatives, needed to conserve the populations of House Sparrows and House Crows at both patch and landscape levels

Methodology:

The study involved survey of the 20 agro-climatic regions of the country. The sampling area was drawn into grids of 2x2km cells totalling 8400 grid cells that covered 1% area of each region. The States selected for the study are Gujarat, Goa, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu, West Bengal. The type of

habitat covered at landscape level included Rural/Semi-urban/Urban human habitation. It also covered wetlands, open country and woodlands. In areas with human habitation, building roof types such as concrete, tile, sheet and thatch were selected. The density of telecom stations, degree of civic sanitation and proximity to food grain markets/granaries were studied. Field surveys have been completed in all the aforesaid States. Data compilation is on in some States.

The PI presented data with respect to the % frequency based on a grid analysis for 4 species namely – House Sparrow (*Passer domesticus*), House Crow (*Corvus splendens*), Common Myna (*Acridotheres tristis*), Large-billed Crow (*Corvus macrorhynchos*), Red-vented Bulbul (*Pycnonotus cafer*). The PI informed that due to COVID issue, field surveys in northern States and Delhi have not been undertaken and the project requires an extension of 4 weeks to complete.

The Committee stated that the progress made in the project is very disappointing. During the 3-year project period, with less than 2 months left, the PI has not even completed the first objective of surveying the specific regions in the country where the bird species, particularly the sparrow is in severe decline. Survey of the most affected States such as Delhi, Haryana, Punjab, etc where the House Sparrow is in its most severe decline should have been surveyed first but has not even begun so far. In Delhi, the sparrow has disappeared and children and teens below 18 years may not even recognise a sparrow.

The Committee stated that survey is not the primary objective of the project. The project is at a preliminary stage even after 2 and ½ years with only 3 months left for its completion. It was noted that SACON as a specialised institution in the country on Ornithology and avian diversity conservation has not carried out any study on the drastic decline of the Sparrow over the past 20-25 years. There have been several hypotheses on the disappearance of sparrow particularly from cities. These include habitat destruction, radiation from mobile towers, change in architecture of buildings to skyscrapers and high rises which are not suitable for nesting, etc. The Committee was informed that the Ministry, while granting this project and in several subsequent meetings held at SACON with Director, SACON and attended by entire faculty, had emphasised that this is a high priority project of the Ministry and a resurgence of the sparrow populations could be showcased both by Ministry and SACON as a very important success story for avian diversity conservation both in national and international fora. Despite this, the project is being implemented in a very business-as-usual mode. The Committee also noted that population survey has been done in a very routine, traditional manner. SACON should have co-opted suitable expertise if it did not have the requisite expertise to examine all the relevant factors. Even if the project is given 3 months extension sought by PI, it is highly unlikely that SACON would come up with specific outcomes and recommendations for resurgence of the sparrow population. SACON has also utilised almost the entire budget of the project without even completing the survey which is the first step. The Committee stated that the project must come up with clear recommendations on the decline and measures for bringing back the populations of sparrow and integrated with urban environment.

2.1.2 Project titled “Conservation plans for Critically Endangered avifauna and biodiversity: Assessing the distribution, population and habitat use of three endangered species to develop conservation plan for species and their habitats”.

PI: **Dr. S. Babu, Seniors Scientist**

Co-PI: Dr. Rajah Jayapal, Senior Principal Scientist; Dr. H. H. Kumara, Senior Scientist, and Dr. S. Shirish, Senior Scientist

PROJECT DETAILS:

Project started in October 2017 and date of Completion: 31.10.2020.

Cost of project: Rs Rs. 75,31,824/- and Balance amount available as on 31.03.2020 is Rs. 13,34,345/-

OBJECTIVES

1. To elucidate the distribution, abundance and habitat use of three globally Endangered species - **Manipur Bush-quail, Swamp Grass-babbler and Black-bellied Tern**, and
2. To identify the factors (including anthropogenic factors) that influence the abundance and habitat use of these species and to develop **conservation plan** for conserving and managing the species in their natural habitats.

PI made a presentation. It was informed that the study on Manipur Bush-quail could not be undertaken due to some inherent problems in conducting field surveys in Manipur. The results are given for the two remaining species - Swamp Grass-babbler and Black-bellied Tern.

Methodology

Selected stretches of rivers that were studied under the project include the Godavari (Telangana), Brahmani (Odisha), Bharathapuzha (I&II) (Kerala), Kollidam (I&II) (Tamil Nadu), Brahmaputra (Assam), Chambal (Rajasthan & UP), Mahanadi (Odisha), Yamuna (UP), Tungabhadra (Karnataka), Krishna (Andhra Pradesh), Vaigai, Tamil Nadu, Thenpennai, Tamil Nadu. Sampling covariates included atmospheric temperature, humidity and time of the day. Site covariates included water quality parameters- pH, DO, Temperature (°C), Turbidity (NTU). River characteristics such as elevation, river width (km), count of islets, vegetation in islets and sand(%), proportion of water spread area(%) and water flow were studied. Analysis was done using Mean abundance – total count method – by pooling all segments of river and Site occupancy was calculated using maximum likelihood estimate -PRESENCE software 2.12.17 - Single-species single-season model

Swamp Grass-Babbler

Potential distribution map of Swamp Grass-babbler has been prepared using **Ecological Niche Model (MAXENT)** – Point count method for survey in Assam and Arunachal Pradesh. About **100 grass dominated river** islets along the Brahmaputra river selected for sampling – excluded converted and sandy islets for sampling. Point count method – 200 m interval. Islets and grass characteristics, fire, grazing, and collection in each islet were assessed. A total of 77 river islets were studied from both States - in Arunachal Pradesh (42)and Assam (35) completed.

Survey indicated that the **Grass-babbler** was not recorded within the predicted areas of Assam, but was recorded in the grasslands of Arunachal Pradesh. Out of 42 river islets (point count stations) surveyed in Arunachal Pradesh, 19 islets were occupied by Swamp Grass-babbler. In Assam, 13 islets. The **Black-bellied Tern** was recorded in eight rivers but breeding population was observed from five rivers (Mahanadi, Chambal, Godavari and

Tungabhadra). Abundance of tern in south Indian rivers (Bharathapuzha, Cauvery and Godavari) were relatively lower than in the central Indian rivers (Mahanadi and Chambal). Moderately flowing river, large river width, downstream areas and low turbid water are the factors influencing the occupancy of tern in Mahanadi and Chambal. First time recorded breeding activity in Godavari, Tungabhadra, and Cauvery. Nest-site selection was studied in Godavari river. Analysis of breeding data is in progress. Few breeding population of Black-bellied Tern recorded for the first time.

OUTPUTS

Black-bellied Tern

- Distribution of Black-bellied Tern in Indian rivers is highly restricted to few rivers and their distribution within these rivers is highly clustered around the optimum microhabitats.
- Preliminary results reveal that sand mining and dam construction are the major threats for terns in non-protected rivers. breeding activity of BBT in seven rivers out of eight rivers.
- Population of Black-bellied Tern appears to be very small.
- Elevation, width of the river, turbidity and water flow influenced the occupancy of Black-bellied Tern.

Swamp Grass-babbler

- The population of Swamp Grass-babbler is highly patchy in Brahmaputra and good population is recorded from Assam part of the river.
- Most of their population is recorded from outside the protected areas. At least 20 grassland patches outside the protected area support grass-babbler and other grassland associated birds.
- Grass-babbler is very abundant in *Sachharum* dominated grass patches

The PI informed that River-wise conservation plan is under preparation as each river has different management issues.

The Committee stated that the third species, namely the Manipur Bush Quail has not been sighted for the past 30-40 years and is an extremely important species for conservation and SACON should have taken the help of the State Government in the field survey and other relevant issues. The Committee noted that Objective No 2 – “To identify the factors (including anthropogenic factors) that influence the abundance and habitat use of these species and to develop a **conservation plan** for conserving and managing the species in their natural habitats”- has not been presented before the Committee. The Committee observed that instead of covering so many rivers/river stretches, the PI should have focussed on Objective 2 also. The Committee suggested that the study on riverine ecology should have been an integral part of the survey. As all the 3 species selected are wetland species, wetland ecology should also have been studied. Presently, the project appears more as a survey rather than as a conservation project, which was the primary objective while granting this project. Breeding season of the species has not been covered under the study. The Committee after deliberations decided that with 3 months to go for project completion, Director SACON must personally oversee the implementation of the project and its completion and in bringing out specific recommendations on management strategies and a Conservation Plan for these species and submit the Report to Ministry

2.1.3 Project titled “Developing Conservation and Management Plans for Select Important Bird and Biodiversity Areas (IBAs) of the Country”.

PI: Dr. Rajah Jayapal, Senior Principal Scientist

Co-PI: Dr. S. Babu, Senior Scientist and Dr. P.R. Arun, Senior Principal Scientist

PROJECT DETAILS

Project started in October 2017 for a period of 3 years. Total cost of the project: Rs. 70,28,479. Balance left (as on 31st March 2020) for completion of project by Dec 2020: Rs. 9,90,000

Objectives

- To survey status and distribution of key flora and fauna - primarily birds, in select IBAs of the country.
- To document biodiversity value of the select IBAs along with their ecosystem function and services to their surrounding human landscapes
- To develop comprehensive 5-year conservation action plans for the select IBAs for their long-term sustenance

The study comprised of 1) Developing plans for Existing IBAs – in the State of Uttarakhand – Jhilmil Jheel Conservation Reserve and in Sikkim - Barsey Rhododendron WLS, Fambong Lho WLS, Maenam WLS, Lowland Forests of South Sikkim, and 2) Identification of New IBAs: i) Kerala - Ponkunnu Hills and Madaripur, ii) Tamil Nadu – Manakudy Estuary, iii) The bird species richness was studied in different habitats –Types of Mixed Forest, Types of Eucalyptus Plantations, types of Riverine forest, types of scrub jungle and grasslands.

Conservation issues in Jhilmil Jheel CR IBA in Uttar Pradesh

Grassland habitat under threat from invasive weeds *Lantana camara*, *Parthenium hysterophorus*, Unregulated cattle grazing, Proposed plantation in grasslands, Revelry tourism, Water bottling plant

Conservation issues in Barsey Rhododendron WLS IBA in Sikkim

Unregulated tourism, Habitat contamination with tourism-generated waste, Illegal livestock rearing and grazing, Rampant soil erosion and landslides are the main conservation issues of concern.

The Committee noted that Jhilmil Jheel is a protected area for the Swamp Deer and State Govt is already implementing protection measures for the ecology of the swamp deer habitat which sustains the swamp deer population. The Committee noted that the main issues regarding the IBAs in non-PAs is changes in landuse such as conversion of habitat of birds into agriculture. The local stakeholder aspirations need to be taken into account while preparing such plans. The Committee sought a specific Conservation –cum-Management Plan for the extension period of upto March 2021 for all the 3 IBAs studied under this project and integrate with Conservation Plan already prepared for Protected Areas, and this work should be completed during the extension period of the project i.e. upto March 2021. The Committee noted with concern that findings on Fambong Lho WLS, and Maenam WLS, Lowland Forests of South Sikkim have not been presented. As per time-lines given by PI, the following activities should have been completed by now, namely; i) Compilation of field data on bird abundance and habitat attributes from all the IBAs under study, ii) Compilation of field data on bird abundance and habitat attributes from potential IBAs, iii) Data analysis of bird-habitat relations and review of stakeholder’s role in management. The

project should achieve all the objectives by now and should have been at the stage of Submission of Final Report to the funding agency and other key stakeholders.

2.1.4 Project titled “National centre for surveillance and monitoring of impact of environmental contaminants on ecosystem components with special focus on birds in India”. PI:

Principle Investigator: Dr. S. Muralidharan, Senior Principal Scientist

PROJECT DETAILS:

Project duration – 3 years. Project commenced in October 2017 and completed in October 2020. Total cost of project: Rs. 5,14,67,912/-. Balance left as on 31.03.2020: Rs. 5,14,67,912/-

Objectives

- Monitor residue levels of problem chemicals in birds in India, and generate a database
- Identify chemicals responsible for mortality of birds across the country
- Assess the effectiveness of acts, guidelines on usage of chemicals in the country
- Set up a state-of-the-art analytical facility at SACON

Methodology:

It was informed that samples of both dead birds – opportunistic and live birds - organised sampling - trapping were analysed. Contaminants included in the study include Pesticides and Pharmaceuticals – NSAIDs, Heavy metals. Organic contaminants such as Pesticides and NSAIDs were analysed by Chromatographic analyses (GC, GCMS & LCMS). Inorganic contaminants such as Heavy metals: were analysed by ICP-MS.

Samples were collected from species such as White-backed Vulture, Indian Peafowl, Demoiselle Crane, Sarus Crane, Blue-rock Pigeon, Common Myna, House Crow, Eurasian Skylark, Northern Pintail and Black Kite during the period from January 2018 to April 2019. From several areas such as Sanand, Gujarat, Wild Ass Sanctuary, Dhrangadhra, Gujarat, Sathyamangalam Tiger Reserve, Tamil Nadu. Mortality had occurred due to specific instances of Nimesulide poisoning, Phorate poisoning. Many species of wetland birds including Sarus Crane had also died due to an incident of monocrotophos poisoning. Other bird species whose samples were analysed include: Northern Pintail & Black Kite, Cotton Teal, Green Bee-eater, Graylag Goose, Eurasian Skylark, Swamp Hen.

Notable mass mortality incidents (other than poisoning) documented (2018-20)

- i) Colonial water birds at Koonthankulam Bird Sanctuary, Tamil Nadu (Apr 2018)
- ii) Water birds in Sambhar Lake, Rajasthan (Nov 2019)
- iii) Spot-billed Pelican at Kokkare Belluru, Karnataka (Jan 2018)
- iv) Several species in and around Ahmedabad, Gujarat (Every January)
- v) Baya Weaver at Suler, Coimbatore (Feb 2018)
- vi) Eurasian Collared-dove at Nausar Village, Jodhpur district, Rajasthan (Jun 2018)

Extensive investigations were carried out to identify the cause of death. Varying levels of the legendary pesticides and heavy metals were detected, but not in toxic range. Information generated was shared with respective State Forest Departments.

Highlights of work carried out so far:

- i) Set up National Centre for Avian Ecotoxicology.
- ii) 21 incidents of poisoning involving 14 species of birds have been confirmed.
- iii) Monocrotophos, carbofuran, phorate, chlorpyrifos, diclorvos and triazophos were the pesticides involved in poisoning. These pesticides are part of the list of pesticides proposed to be banned in India (Banning of insecticides order, 2020).
- iv) Birds continue to succumb to poisoning sporadically across the country.
- v) Residues of legendary chemicals still continue to remain in measurable levels in birds although there is sign of reduction.
- vi) Additionally, it is also understood that disease is yet another threat that has to be addressed more systematically.

Balance work to be completed

- i) Continue surveillance and monitor mortality of birds in India
- ii) Organized trapping of birds from select locations
- iii) Continue sample analyses
- iv) Data compilation, and report writing.

The PI sought an extension till December 2020 with no additional costs. It was stated that due to COVID 19, the field work could not be continued as per original plan. Even sample analyses in the laboratory could not be carried out due to non-availability of manpower and consumable supply. It is to be noted that the objectives of the project are such that the study has to be carried out on long-term basis. With new chemicals entering the market to contain pest and increase crop productivity, managing ill effects on birds remains as a continued concern. The PI informed that user charges are being levied for testing samples. SACON has also standardized protocols for Collection, Preservation and Analyses of samples and also trained manpower on use of equipment and analyses of samples.

The Committee observed that the establishment of the National centre for surveillance and monitoring of impact of environmental contaminants on ecosystem components with special focus on birds in India is an important endeavour in strengthening SACON for carrying out its mandate in terms of assessment of contaminants and their impacts on avian diversity and their ecosystems. The Committee was informed that the Centre was established as a National Centre of the MoEFCC to cater to the requirements of South Indian States' Forest Departments and other institutions. The Centre is a National Asset and should be used for all types of species and not restricted for birds alone. The Committee requested Director SACON to take up with all relevant State Departments and institutions to utilise the facility to its maximum capacity. The Committee also desired that the MoEFCC should strengthen this Centre for infrastructure, equipment, manpower so that the Centre becomes self-reliant over a period of time. SACON should also take proactive steps with State Forest and other Departments to ensure prevention of contamination of ecological habitats.

2.1.5 Project titled "**Establishment of National Avian Forensic Laboratory at SACON for National Certification for Illegal Trafficking of Birds**".

Principal Investigator: Dr. R. P. Singh, Senior Scientist (until 12.06.2020), Dr. P. Pramod, Senior Principal Scientist

PROJECT DETAILS

Project was sanctioned in October 2017 for a period of 3 years. Total cost of project: Rs.6,39,59,597/-. Balance amount available as on 31.03.2020 is Rs. 51,83,945/-

OBJECTIVES

Stage 1: Developing in-house analytical and tissue processing facility. This included- Infrastructure development, establishing a Laboratory and other equipment, Consumables and engaging suitable Manpower for O&M of the laboratory.

Stage 2: Developing tissue/blood/feather repository, species-specific DNA data bank and feather barb catalogue for references. This included collection of Reference material and sample collection: Systematic as well as opportunistic sampling.

Stage 3: Develop and test a protocol to identify species from unknown samples.

Stage 4: Get the forensic laboratory accredited by NABL and other related agencies

The PI made a presentation. It was informed that a total of 429 bird species were selected for sampling based on birds in trade (255), CITES list (68), IUCN Red List (181), Wildlife Act (Protection), 1972 schedule list (144). Samples were collected through systematic approach from institutions such as: Central Zoo Authority (CZA), Bombay Natural History Society (BNHS), Zoological Survey of India (ZSI), Mist-netting in SACON campus for select avian species. Status of sample collection:

Central Zoo Authority (CZA) – Collected 44 samples from Arignar Anna Zoological Park and 41 samples from Mysore zoo

Bombay Natural History Society (BNHS) - The permission is awaited

Zoological Survey of India (ZSI) - collected 27 samples from 20 species

Mist-netting in SACON campus for select avian species – Collected samples from 33 species

In addition, through Opportunistic approach: Feathers and/or blood/tissue from bird carcasses, DNA Signature: DNA isolation from various sources, Mitochondrial and nuclear DNA database, Feather Catalogue: Variation in the feather microstructure

Species identification by comparing the data generated for unknown sample with reference species-specific DNA data bank and feather barb catalogue was carried out. DNA isolation from feathers, tissue, blood, claw, egg shell, FTA card, blood stain, skin was standardized and DNA isolation from representative sample of each collected species was done successfully to generate the species specific signatures. These include: Feathers and/or blood/tissue from bird carcasses- collected samples from 129 road killed species, collection of blood/tissue/feather samples from birds at Transit Treatment Centre, Nagpur - collected samples from 30 different species, collection of tissue and feather samples from dead birds during kite festival, Ahmadabad - collected 56 samples from 37 birds belonging to 17 (16 Indian and 1 Exotic) species of birds, Sample collection from Sambhar Lake, Rajasthan: Collected samples from 4 species, Collection of blood samples from bird species at Arignar Anna Zoological Park Vandalur, Chennai – collected 3 samples from 2 species

In addition, surveys to access the wildlife trade were carried out:

- i) Market survey in Assam (January 2019 and July to Oct, 2019)

- ii) Survey in Arunachal Pradesh (January 2019)
- iii) Chennai Pet Birds Market Survey (2018)
- iv) Assessment of bird trade in Bengaluru urban district (2019)
- v) Road-kill Survey in Different Protected Areas of Assam (July-October 2019)
- vi) Survey for identification of select areas for illegal bird trade in Coimbatore, Erode, Salem, Madurai and Pollachi districts of Tamil Nadu (2019)

It was stated that several agencies have sent request for sample analysis: Wildlife Institute of India, Dehradun, DTE of Aerospace Safety, Air HQ RK Puram, New Delhi, Air Force Station, Sullur, Coimbatore, Arignar Anna Zoological Park, Vandalur, Chennai. User charges for an amount of Rs 36,000/- has been levied for a total of 17 samples tested so far at SACON for samples sent by these agencies.

Forensic Laboratory contribution towards training of manpower:

- One day hands-on training workshop for biological sample collection at Sathyamangalam Tiger Reserve, Erode
- Hands-on Training Workshop on Biological sample collection from the carcass, their packaging and transport to the laboratory for investigation
- Field sampling kit demonstration at Sullur Airbase during training cum workshop entitled “bird hazard and aerospace safety”
- Training of officers from CASFOS and TNFA, Coimbatore
- Training provided to Advanced Institute for Wildlife Conservation (AIWC) Researchers - Postponed
- Conservation Genetics Workshop, 21st to 25th January 2019 – Practical Classes and lectures
- Training of SACON M.Sc. students

Stage 4: Accreditation of the forensic laboratory by NABL and other related agencies – this process is on.

The Committee observed that a “State-of-Art” facility has been created at SACON which is an important step in strengthening SACON in terms of its infrastructural facilities for the implementation of its mandate.

The Committee was informed that SACON while seeking approval for the establishment of this Centre had stated that the capacity of the present facility at Wildlife Institute of India has been reached to its full and hence there was a dire necessity for creating a similar facility in a MoEFCC institution for forensic analyses of samples catering to State Forest Departments of southern States, Bombay Natural History and other relevant institutions in the country who could use the facility. The Committee sought details of the extent of use of the Centre’s facility by State Forest Departments. The Committee also desired to know whether the Wildlife Crime Control Bureau has been involved as an important stakeholder in use of the Centre’s facilities, which was one of the primary objectives of this project. The Committee stated that the data collection for species that are high in ranking in illicit trading must be prioritised for establishing forensic data bank. The Committee recommended the development and use of software and a Model that could be used for curbing illicit trade based on parameters such as location of samples collection, trade routes, markets of illicit trade from where samples have been collected, etc to provide a suitable data for the WLCCB to take suitable action. The Committee recommended that this Centre should also be strengthened in terms of its infrastructure and equipment, manpower, etc.

2.1.6 i) Project titled “**Assessment of status, distribution and threats to the population of threatened Sarus Crane *Antigone antigone* in Gujarat, India (Phase 1)**”. PI: **Dr. M. Mahendiran**, Senior Scientist and **Dr. S. Muralidharan**, Senior Principal Scientist, **Co-PI:** Dr. P. Balasubramanian, Senior Principal Scientist; and Dr. P.V. Karunakaran, Principal Scientist

ii) Assessment of status, distribution and threats to the population of Sarus Crane *Antigone antigone* in Gujarat (Part II) – PI: **Dr. S. Muralidharan**, Senior Principal Scientist, Co-PI: Dr. P. Balasubramanian, Senior Principal Scientist; and Dr. P.V. Karunakaran, Principal Scientist -reg

Project Duration- October 2017 – March 2020

Cost of Project: Rs. 76,91,126/-, Balance amount available - Nil

A presentation on PP was made before the TFAC. It was stated that . It was stated that the project was taken up in two phases – the first focussed on survey and the second on pesticide contamination and its implication on the mortality and breeding success of the Sarus Crane. Sarus Crane *Antigone antigone* is the tallest flying bird in the world, and one of the resident crane species in India. In recent years, the population of this species is declining in Southeast Asia. Listed in the globally threatened species category and included in the Vulnerable List. Earlier surveys: estimated its population around 8000 -15,000-15,000 individuals. The Gujarat Ecological Education and Research Foundation estimated the population of Sarus Crane at 1730 individuals. The present study has been taken up after a gap of nearly 15 years, consulting local people, birdwatchers, nature clubs, volunteers during the Sarus Crane Survey at Gujarat. Ecotoxicological aspects were not studied or correlated in the previous surveys, so these were investigated.

Objectives (i) and (ii) combined

1. To assess the current population status and distribution of Sarus Crane in Gujarat
2. To examine the impact of pesticide residues on Sarus Crane
3. To examine the impact of pesticide contamination on Sarus Crane in Gujarat
 - Investigate mortality of Sarus Crane and document pesticide residues in tissue, and
 - Assess the breeding success of Sarus Crane in relation with pesticide contamination.

Results

Survey effort (i)

A total of 336 observations of Sarus Cranes (250 adults and 86 juveniles) were observed from 19 districts. The highest numbers of observations of Sarus Cranes were recorded in the districts of Ahmedabad (39.9%) followed by Anand (36%), Kheda (11%), Surendranagar (1.8%), and Vadodara (1.5%). Found in agricultural land, marshy wetlands, irrigation canals, and barren land Sarus Cranes consumed both animal and vegetable matter. A total of 22 food plant species belonging to 8 families were recorded during the present study/

Based on information on the distribution of Sarus Crane in Gujarat, it was decided to focus the pesticide study in three districts, namely Kheda, Anand and Ahmedabad

OUTCOME (i)

- Long-term monitoring of Sarus Crane population in its entire distributional range in the state of Gujarat is recommended.

- A similar survey once in four years to estimate the population density of Sarus Crane across the state is recommended.
- Along with this, two yearly surveys (winter and summer) of Sarus Crane across state using 'Total Count Method' for effective monitoring the population is recommended.
- Causal deaths were included electrocution, injury due to kite flying, visceral gout

(ii) Finding of Pesticide Study

Three pesticides, namely chlorpyrifos, β -HCH, and carbofuran were found beyond safe limits in food and soil. Presence of residues of banned pesticides, namely β -HCH, heptachlor and endosulfan in the components studied, warrants further monitoring. 11 pesticides (profenofos, phorate, chlorpyrifos, transfluthrin, thiamethoxam, imidacloprid, ethion, pretilachlor, heptachlor, DDT, lambda cyhalothrin) detected in soil/food have the potential to further decrease the food base of Sarus Crane. Detection of high levels of carbofuran in food materials of Sarus Crane is a matter of concern. Detection of chlorpyrifos in eggs of Sarus Crane found.

Recommendations of of both i) and ii)

Area specific and crop specific Integrated Pest Management Programmes (IPM) could be put into practice. Good Agricultural Practice is yet another tool that is available to lessen reliance on pesticides while organic farming might be the eventual need. Insulate exposed conductors and install armoured cables to protect Sarus Crane from electrocution. Install appropriate flight diverters in specific locations. Suggestion is made to put in place a monitoring mechanism to record poisoning and electrocution in Sarus Crane. Treatment protocol to be followed to attend to any casualty in Sarus Crane is yet another suggestion.

The Committee desired to know whether the decline in population can be attributed to destruction of their habitats of Sarus Crane or due to pesticide contamination. The PIs should clearly bring out specific recommendations that could be given to the State Government for taking necessary action to slow down the decline in their numbers. The Committee desired that the PIs must integrate their findings into one single report with specific outcome of their findings and recommendations for the conservation Plan for the Sarus Crane and its habitats in Gujarat.

2.1.7 Project titled "Assessment of status, distribution and threats to the population of threatened Sarus Crane *Antigone antigone* in Uttar Pradesh, India (Phase 1 & 2).

A) Principal Investigators: Dr. M. Mahendiran, Senior Scientist and Dr. S. Muralidharan, Senior Principal Scientist

Co-PI: Dr. P. Balasubramanian, Senior Principal Scientist and Dr. P.V. Karunakaran, Principal Scientist

B)

Project Duration- October 2017 – March 2020

Cost of Project: Rs. 81,36,656/-. Balance available as on 31.03.2020 - Nil

Objectives

PI made a presentation.

It was stated that the study comprises of 2 parts – **A)** survey and **B)** Assessment of Pesticide contamination.

(A) 1.To assess the current population status and distribution of Sarus Crane in Uttar Pradesh

SURVEY: The study area is ~ 2,43,290 km² and is divided into nine different Agro-climatic Zone - 1) Bundelkhand, 2) Central Plain, 3) Central Western Plain, 4) Eastern Plain, 5) North-Eastern Plain, 6) Tarai Bhabar, 7) Western Plain, 8) South-Western Semi-Arid Plain, and 9) Vindhyan zones. the entire breeding and non-breeding ranges of Sarus Crane throughout the state of Uttar Pradesh were studied. 'Grid based sampling approach' using 'Distance Sampling Technique' was used. Around 2500 Grids in Uttar Pradesh with size of 10km x10km were studied. Further, a species distribution model using 'Maxent algorit was studied.

Results

A total of 1642 observations of Sarus Cranes (1485 adults and 157 juveniles) were observed in 42 districts of Uttar Pradesh. The highest numbers of observations of Sarus Cranes were recorded in the districts of Etawah (27.6%) followed by Mainpuri (19.5%), Shahjahanpur (8.2%), Maharajganj (6.9%), and Auraiya (6.3%). Sarus Cranes consumed both animal and vegetable matter. A total of 64 food plant species belonging to 23 families were recorded during the present study.

OUTCOME

- Long-term monitoring of Sarus Crane population in its entire distributional range in the state of Uttar Pradesh is recommended.
- A similar survey once in four years to estimate the population density of Sarus Crane across the state is recommended.
- Along with this, two yearly surveys (winter and summer) of Sarus Crane across the state using 'Total Count Method' for effective monitoring of the population is recommended.

(B) To examine the impact of pesticide contamination on Sarus Crane in Uttar Pradesh.

- Analyse tissues of dead birds and eggs of Sarus Crane for pesticide residues and
- Assess the breeding success of Sarus Crane and relate it with pesticide contamination.

Pesticide usage - Use of 109 pesticides was documented. Widely used pesticides : chlorpyrifos, carbofuran and monocrotophos. Annual pesticide consumption - 11,116 MT (2018-2019). The field work was performed in four districts, namely Etawah, Mainpuri, Maharajganj and Gorakhpur in Uttar Pradesh between 2018 and 2020. Pests 23 different pests on major crops. Breeding performance- Egg success, hatchling success and breeding success were studied. In addition, Cropping pattern, pest and pesticide usage was studied. Chemical analysis- GC-MSMS and LC-MSMS. Totally, 22 incidents of mortality involving 24 individuals were recorded from three districts. While 21 Sarus Cranes died due to electrocution, three died due to suspected monocrotophos poisoning.

Highlights

- Detection of chlorpyrifos in all the components particularly, eggs is a matter of concern.
- Residues of seven pesticides, namely monocrotophos, quinalphos, carbendazim, profenofos, β -HCH, acetamiprid and dieldrin were found beyond safe limits in food and soil.
- DDT, β -HCH, heptachlor and endosulfan which are currently banned in India were detected in most of the components. This warrants continued monitoring.
- Detection of carbofuran in soil and monocrotophos in food (highly toxic to birds) is a matter of serious concern.
- Ten pesticides (profenofos, monocrotophos, phorate, sulfosulfuron, cypermethrin, cyhalothrin, chlorpyrifos, fipronil, 2,4-D and pretilachlor) detected in soil/ food have the potential to further reduce the food base of Sarus Crane.
- In addition to pesticides, electrocution is yet another threat for the survival of Sarus Crane in Uttar Pradesh

Recommendations

Area-specific and crop-specific Integrated Pest Management Programmes (IPM), Good Agricultural Practices (GAP) and eventually organic farming are recommended. Farmers have to be trained regularly and effectively to manage crop pests more scientifically. Proper treatment and first aid protocol in place to attend to poisoned or electrocuted Sarus should be adopted and implemented, which veterinarian could access. An organized monitoring mechanism to record poisoning and electrocution in the entire UP for effective intervention and eventual conservation of Sarus Crane. More viable solutions to avoid electrocution have to be worked out in collaboration with State Electricity Board and power generation and distribution companies.

The Committee desired to know whether the decline in population can be attributed to destruction of their habitats of Sarus Crane or due to pesticide contamination. The PIs should clearly bring out specific recommendations that could be given to the State Government for taking necessary action to slow down the decline in their numbers. The Committee desired that both the PIs must integrate their findings into one single report with specific outcome of their findings and recommendations for the conservation Plan for the Sarus Crane and its habitats in Uttar Pradesh.

The Committee suggested that, it is important to undertake surveys over larger landscapes to avoid duplication of work.

2.1.8 Project titled **“Developing a conservation action plan for Forest Owlet (*Heteroglaux blewitti*), a Critically Endangered species endemic to Central India.”** PI:

Principal Investigators: Dr. Shomita Mukherjee, Senior Principal Scientist, Dr. Jayapal Rajah, Principal Scientist and Dr. Robin Vijayan, Assistant Professor, Indian Institute of Science Education & Research (IISER)- Tirupati

PROJECT DETAILS

Total cost of project: Rs 1,57,67,556, balance available as on 31.03.2020: Rs 29,56,945.00

Duration: 3 years (October 2017 to October 2020). Extension sought till December 2020 with no additional cost.

OBJECTIVES

- To update the distribution range of the Forest Owlet using a hierarchical approach through regional Species Distribution Models (SDM), and field surveys.
- To conduct an occupancy-based sampling with presence and habitat covariate data in grids short-listed from SDMs (to test and refine existing SDM's).
- To examine if populations of the species are genetically connected, using Next Generation Sequencing (NGS) techniques.
- To explore if habitat connectivity might have influenced genetic connectivity among populations, using GIS techniques.
- To prepare a Forest Owlet Conservation Action Plan collaboratively with stakeholders including the Forest Departments, researchers and organisations involved in Forest Owlet research.

The PI made a presentation. It was stated that the study consists of three layers – i) field on actual ecological processes and ecological habitats, ii) climatic layer and iii) phylogeny aspect. The Climatic study includes Climate Modelling using data from mid-Holocene era until present day. Based on the results of all the 3 aspects, a specific Conservation Action Plan is to be prepared.

Methodology

Survey for Forest Owlet in Maharashtra, Gujarat, Madhya Pradesh, based on previous Species Distribution Model results. Adaptive Cluster Sampling in Tansa Wildlife Sanctuary, Maharashtra (2018). Occupancy surveys (November 2018 – March 2020) whereby 1% grids sampled. Call Playback - Three minutes of playback followed by five minutes response time (repeated once). Morning (5.30 am – 11.00 am) and evening (4.00 pm – 7.00 pm). Several habitat covariates measured. Acoustic Surveys - Automated Recorders. -Can be deployed for long periods, But large data; manual examination may not work, Needs detection algorithms, How well can they work for specific species?

Preliminary Analysis (2018-19)

Forest Owlet:

Around human-use landscapes and Not very dense habitats. Avg. tree GBH (+ve); % ground litter (-ve); % forest cover (-ve)

RESULTS

Acoustic survey:

- Collected ~500 hours of data from several months.
- Raven and Kaleidoscope showed good detection of Forest Owlet in the presence of Jungle Owlet and Spotted Owlet.

Molecular analysis:

- Forest Owlet feather samples of poor quality for genomic analysis.
- Analysis ongoing with 2462, 3614 and 4211 UCE loci for Forest Owlet, Jungle Owlet and Spotted Owlet respectively.

TASKS TO BE COMPLETED

- Occupancy analysis and distribution models: ongoing
- Genomic analysis for Spotted and Jungle Owlets projected over climatic models and UCE analysis for resolving phylogenetic ambiguities in the Athene clade: ongoing
- Conservation Action Plan meeting: Planned for October
- Publications: Manuscripts in preparation
- Final Report

The Committee sought details of the work on another project done with DBT fund support and specific differences between the project funded by DBT and the present project, particularly on the molecular analyses and climate changes aspects. The Committee also sought the rationale for inclusion of the Climate Change aspect for the three species studied in Central India into this project. The Committee sought a specific Conservation-cum-Management Plan for the conservation of the Forest Owlet which can be implemented by the State Government.

2.1.9 Project titled “In-situ and Ex-situ conservation of Endemic Andaman Edible-nest Swiftlet in the Andaman and Nicobar Islands.” PI:

Principal Investigator: Dr. Manchi Shirish S., Principal Scientist and Co-PI: DFO (WL)/DCF (Mayabunder, South Andaman, Havelock and Nicobar Divisions)

PROJECT DETAILS:

4th October 2017, Date of Completion: 4th October 2020

Approved Budget: ₹ 2,04,95,053 Available funds: ₹ 50,75,000 as on 31.3.2020, No cost extension requested from 01/10/2020 to 31/12/2020

OBJECTIVES

I. Conservation implementation

- Consolidation and expansion of *in-situ* conservation/protection of the species to the Nicobar Islands
- Development and expansion of the number of houses in which the Edible-nest Swiftlet breeds

II. Marketing and Sharing

- Establishment of a Swiftlet Co-operative to market the harvested nests
- Establishment of a mechanism for systematic benefit/incentive sharing from marketing the product
- Make the program self-sustaining by the end of the project tenure

III. Research, development, and monitoring

- To continue scientific supervision of the in-situ and ex-situ populations of the species
- To continue ongoing studies on the breeding ecology, population dynamics, longevity, breeding and roosting habits and habitat of the Edible-nest and Glossy Swiftlets to strengthen the knowledge base

- To improve an existing population of the Edible-nest Swiftlet in human habitations by fine-tuning the methodology to attract and induce Edible-nest Swiftlet to breed extensively in human habitations

The PI made a presentation.

Activities undertaken so far:

***In-situ* Conservation**

- Necessary permissions obtained
- In-situ population survey
- Longevity study using capture-mark-recapture
- Morphometric study of cave structure as habitat of AENS, using laser equipment (Distometer)
- Systematic survey of fauna in caves (bird and bat guano)

It was stated that the AENS is presently distributed all over Andaman Islands. The most suitable areas for AENS are in the North and Middle Andamans. A total of 120 caves (with and without AENS) have been mapped. AENS avoids smaller caves, prefers caves with high surface area. Cave inclination and direction influences the cave selection of AENS. Cave structure also affects the breeding success. Wall angle, Height of the colony and Width of the colony influence the nest-site selection.

***Ex-situ* Conservation**

- Necessary permissions obtained
- Ex-situ swiftlet house population survey
- Ex-situ swiftlet habitat inspection and improvement
- Monitoring of urban populations
- Foraging surveys for identifying suitable sites available for *ex-situ* house construction

A total of 14 urban colonies recorded. Cellular Jail colony is the biggest urban colony recorded in the Andaman Islands (n=873 nest). Community involvement in Mayabunder to protect the *ex-situ* populations of AENS. Present urban population is 2128 birds (1043 nests) approximately 22.84% of the total AENS population in the Andaman Islands. Protection and regular monitoring will ensure the survival of birds in the urban setting. Renovation of the existing swiftlet house.

Suitable Sites for construction of the Swiftlet houses

- Four potential sites were short-listed for the *ex-situ* house construction
- The birds quickly replied to the calls in the Kadamtala area
- Kadamtala chosen for the new *ex-situ* house construction
- Swiftlet house design was prepared by the ANFD and swiftlet team

Major Outcomes of the project

- Exponential growth of AENS population at the *in-situ* conservation sites
- AENS plays an important role in cave ecosystem functioning, umbrella species.
- >80 invertebrate species have been documented with various endemics.
- Cave structure and AENS habitat preference used for improving the *ex-situ* house design
- It has taken 20 years of conservation efforts to recover the damage done in 4 years
- If conservation efforts are stopped, the present populations would extinct by year 2128.

- The existing swiftlet house at Tugapur taken up for renovation, others 3 houses not recommended
- Total 14 urban colonies of AENS are now documented
- Urban people encouraged and involved in ex-situ swiftlet ranching

Plan ahead

- Renovation of the existing *ex-situ* house at Tugapur
- Monitoring of urban populations and documentation of new colonies
- Improving existing urban colonies and *ex-situ* houses by installing humidifiers, thermo-hygrometers and others
- Identify/describe the unknown invertebrate fauna collected from swiftlet guano and caves
- Initiate the population survey in the Nicobar Islands

The Committee was informed that a major project was funded by the MoEFCC on the AENS, their habitats and measures for their in-situ conservation in caves of A&N Islands. That project was showcased by SACON as a success story for in-situ conservation of AENS. Based on the outcome of that project SACON had informed that it is proposing to take up ex-situ conservation, as many AENS have been found to nest outside the caves in abandoned buildings, houses, huts and also observed in the Cellular Jail. The present project was therefore funded by Ministry to focus on the **ex-situ conservation** of AENS involving local communities for enhancing their economic livelihood through sale of the nests of AENS **after the breeding is over**. The Committee noted that many of the details presented in the earlier project have been repeated in the presentation. The Committee sought details both from the PI and from Director SACON on how the specific objectives and the work carried in this project on in-situ conservation is different from that already completed in the earlier project funded by MoEFCC. The Committee also noted that specific details on how the ex-situ conservation has been successfully done, particularly by the involvement of the local communities as set out in the objectives has not been explained clearly by the PI. The Committee noted that Objective II and part of Objective III have not been presented and sought details of the same.

2.1.10 Project titled “Bird Hazards in select Indian Civil Airfields”

PI: Dr. P. Pramod, Principal Scientist, Co-PI: Dr. P. V. Karunakaran, Principal Scientist

PROJECT DETAILS:

Duration : October 2017- March 2020

Project cost: Rs 62,18,224/-. Balance amount available as on 31.03.2020 -Nil

Objectives

1. To study the community structure of birds in the airfield and neighbouring areas and identify the prominent species involved in the conflict
2. Evaluate the land use in the neighborhood of the airfield (10 km radius), community structure of plants in the airfield as the habitat for the birds of the area
3. To study the factors affecting bird movements and other behavioral aspects (feeding, roosting, and nesting) of birds to identify the factors responsible if any, for the bird strike.

4. Develop comprehensive and integrated strategies to mitigate the bird strike in the airfields.

The PI made a presentation.

It was informed that three airports-airfield were studied – i) **Coimbatore International Airport**, ii) **Sardar Vallabhbhai Patel, International Airport, Ahmedabad**, iii) **Kannur International Airport**, and of these, Kannur Airport is a newly built airport and hence baseline data was collected.

The airports were studied with respect to the following:

- To document the bird populations and their activity patterns in the airport, immediate surroundings of the airport and the entire landscape around the airport (10 km radius) area.
- Analyze the land use and land cover of the landscape and document the anthropogenic/economic activities that may affect the bird populations and movements studied through GIS techniques.
- To study the population and movements of ‘problem’ birds in the location, influencing factors and the ongoing management measures undertaken by the airport authorities.

Area studied included inside and outside airports, near airport (2km radius), smaller landscapes (5km radius), larger landscapes (10km radius). Mapping the airfield and buffer of 10 km radius involved: i) Characterization of landcover/landuse - extent, ownership (public/private), existing land use, ii) Data source - Survey of India (SOI) topo sheets (1:50,000 scale), Google earth images and open source satellite images (Landsat/LISS imageries) and iii) Tools and Techniques – qGIS/Arc Info; ERDAS Imagine/Grass/ENVIS. Study of Plant Community was limited to airfield only. Grids or quadrats (1mx1m) covering all season were studied for variables such as– species, phenology, percentage cover of total stand (%), bare ground (%), litter (%), and dominant species.

Mapping of Anthropogenic pressures: The butchereries and garbage areas on the surrounding the airports were mapped. The critical areas where birds are found were mapped.

OUTPUTS

A) Coimbatore International Airport

Number of Bird species identified

In the total area : 79

Inside the airport : 44

Potentially hazardous : 8

Major Hazardous species - Lapwings, Pigeons, Black Kites, Peafowls, Crows, egrets and Rollers

B) Sardar Vallabhbhai Patel, International Airport, Ahmedabad

No of Bird species identified

In the area : 77

Inside the airport : 47

Potentially hazardous : 7

Major Hazardous species

Pigeons, Black Kites, Crows, Ibis

The main attraction for pigeons inside the airport were the seeds from grass sp - *Dichanthium* growing within the airfield.

C) Kannur International Airport

<u>No of Bird species identified</u>	
In the area	: 129
Inside the airport	: 51
Potentially hazardous	: 8

Major Hazardous species

Crows, Harriers, Kites, Eagles, Buzzard

In regard to Kannur airport being a newly constructed airport, baseline bird data of a new airport was feasible. Unusual numbers of migratory raptors in Kannur International Airport is a potential threat as the location falls in the migratory pathway

The PI stated that Draft Best Practice Guide was released on 14th February 2020, in New Delhi by Shri Aravind Singh IAS, Chairman, Airport Authority of India

Recommendations

- Implementation of basic best practice strategies strictly.
- Identify the location specific issues and address it effectively.
- Develop a system in place to record systematic data on the bird hits with more scientific details for the adaptive modification of strategies in future.
- Ecological history of the location, imprinted memory of the birds, and sporadic weather events etc., can create unexpected bird congregations and associated problems. Evidence based real-time management is more crucial for mitigating the Bird Hazard problem in future.

The Committee observed that the presentation did not provide details of the rationale for the selection of the 3 airports. No data was presented on the number and type of bird hits in the three airports chosen for the study. Airport specific strategy for reducing bird hazards should be based on the data collection with respect to bird species, their ecology and behaviour. The Committee was informed that when this project was presented by SACON before the Ministry, the following suggestions were made to SACON for incorporation in the project report:

- To discourage growth of grass within the airfields across the country. Tall grass within airfields leads to presence of a large number of species such as lizards, snakes, frogs, insects, worms, and even small mammals such as field rats, rabbits, etc which are potential prey for birds, especially raptors. The seeds of many grass species are also fed upon by many species of birds. Therefore, it was suggested that the Airport Authority of India should maintain the height of grass not exceeding 2-3 inches. This would also take care of the Lapwing problem, which appears when there is no grass. An advisory must also be issued to the AAI with a copy to DGCA for maintaining grass height of to be no more than 2-3 inches.
- To integrate garbage management and disposal plan of urban habitats within 10km radius of airports with the Swatch Bharat Abhiyan Mission activities to reduce open garbage disposal within 10km radius of airports (especially along flight path or cone). The AAI in collaboration with State Governments must make the 10km radius around airports into an “open-garbage dump-free zone”.

- iii) Wastes from restaurants and kitchens within airports must not be disposed within airport premises or in its vicinity but instead should be transported to nearby facility for converting to organic manure which can then be sold by the Airports Authority of India or given away with AAI label to Government nurseries, Horticulture dept, etc.
- iv) Most importantly, bird species such as pigeons use airport buildings, warehouse in cargo terminal, etc for roosting. Specific recommendations on the architectural changes required in all existing airport buildings to ensure that bird species do not use airport buildings must be prepared and sent to AAI for implementation. SACON may engage a suitable architect as an expert for this purpose. In case of new airports, this aspect should be mandated and included in Guidelines for construction of new airport buildings so that no new airports provide a habitat suitable for birds to roost.

The Committee noted that these broad recommendations made by Ministry have not been presented by PI and all the aforesaid details should be included in the Final Technical Report and submitted to MoEFCC. The Committee also requested Director, SACON to issue an advisory to the AAI with a copy to DGCA for maintaining height of grasses to be no more than 5-8 cms.

SUMMARY OF OBSERVATIONS MADE BY TFAC ON THE 10 PROJECTS OF SACON

- 1) Work done on the two infrastructure projects for setting up of National Centres is very good. Both Centres would, however, require strengthening in terms of infrastructure and equipment, manpower and training. The Ministry must continue to support SACON through sustained funding until both Centres become self sufficient and self-reliant through collection of user charges, etc.
- 2) The project on Bird Hazards and on the Bird Hazards in Civil Airports and projects on Conservation of Sarus Crane are good. The specific issues raised by the TFAC need to be incorporated in the Final Technical Reports.
- 3) With regard to all projects involving field surveys a detailed Conservation-cum-Management Plan needs to be given, as set out in the Objectives of the project with specific recommendations for State Forest Departments and other relevant departments and institutions.
- 4) The on-going projects need to be sharply focussed with specific outcomes.
- 5) All on-going projects should be extended upto 31st March 2021, as requested by Director, SACON. However, in case of many of the projects presented, it does not appear that the objectives set out in the studies will be met by that date. Director, SACON must personally monitor the implementation and progress made by the PIs to ensure that the objectives set out in the project have been met in the Final Technical Reports.
- 6) Director, SACON must ensure that there is no duplication. Earlier/similar work conducted by the PIs needs to be clearly brought out in the Final Technical Reports. Detailed justification must be provided as to why the project was taken up and how the present study is an off take or dissimilar from the earlier ones.
- 7) The ecological aspects/component of most of the field projects are weak. This needs to be strengthened. SACON also needs to co-opt experts in areas where it does not have the requisite expertise.

2.2 ROAD MAP FOR Implementation of a **“Visionary perspective Plan (VPP) (2010-2020) for Conservation of Avian Diversity, their Ecosystems, habitats and Landscapes in the Country”**

This agenda item was deferred to the next TFAC meeting due to paucity of time.

2.3 **INTERNAL CONSIDERATION OF ON-GOING PROJECTS OF OLD R&D SCHEME**

2.3.1 14/8/2014-RE- Project titled **“Exploration of Biodiversity and Conservation issues of Talley Valley Wildlife Sanctuary, Arunachal Pradesh with reference to wildlife species distribution along climate and topographical gradients”**. PI: Dr. (Mrs.) Ashalata Devi, Assistant Professor, Dept. of Environment Science, Tezpur University, Napaam, Tezpur, Assam 784028.

MS, TFAC informed that an email dated 05.08.2020 has been received from PI stating that that an amount of Rs 11,44,413/- has been released to PI as second instalment during FY 2019-2020 on 21.03.2020. However, due to COVID, this amount remains unutilised as no field study could be undertaken. PI also sought permission to carry forward the entire amount to this FY. PI also stated that UC, ES etc will be submitted in due course after which the third and final instalment may be released.

The TFAC agreed and requested RE Division to quickly process the matter for granting carry-forward permission to the PI.

2.3.2 19-142/2014-RE - Project titled **“Evaluation of Toxic Agrochemicals Effect on Recurrence of Algal Biodiversity”**. PI: Dr. Ramakant, Department of Botany, Ramakrishna Mahavidyalaya, Unakoti-799277, Tripura

Project Details: Date of start of Project: 28.06.16. Duration: 3 Years. Total project cost – Rs 21,24,500/-. Tenure of the project was over in June, 2019. A total of Rs 8,93,750/- has been released so far out of approved project cost of Rs 21,24,500/-.

This case was listed for considered in 4th Meeting of SC held on 28.09.2018 for APR 2016-2017 presentation. The PI did not attend the meeting. A letter dated 16.10.2018 was sent to PI followed by emails to submit audited UC, ES, GFR 12, GFR 19, APR etc., which are awaited. He was also asked to register on the PFMS-EAT Portal but there was no response. A letter dated 27.09.2018 from PI (received by Director (RE) on 25.10.2018) stating that he has joined the Choudhary Charan Singh University, Meerut in the post of Associate Professor. The letter further states that as there was no other faculty member with specialisation on Algae in his earlier institution, namely Ramakrishna Mahavidyalaya, Kailashnagar, Tripura, the project could not be transferred to any faculty member of his earlier institution. The PI has sought transfer of his project from Ramakrishna Mahavidyalaya, Kailashnagar, Tripura to Botany Department, Choudhary Charan Singh University, Meerut without changing the project site (Tripura) for successful completion of the project. Thereafter, another letter dated 12.12.2018 was issued by Ministry seeking all the documents and to register on the PFMS-EAT portal and for consideration of the project in the next meeting of Steering Committee, but there was no response from PI.

The PI has now vide email dated 04.08.2020 stated that due to COVID, the JPF engaged in the project has been facing difficulty in collection of data. Keeping in view the critical situation due to COVID pandemic, the project may be granted an extension for one year, i.e.

from 01.11.2019 to 31.10.2020 with the following additional budget of Rs 5.30 lakhs as per break-up given in the table below:

Additional Budget sought for extension of one year (w.e.f. 01-11-2019 to 31-10-2020).

S. No.	Heads	Budget for Extended period (Rs.)
1.	Salary	2,11,200/-
2.	Expendables /Consumables	1,00,000/-
3.	Travel	60,000/-
4.	Contingencies	30,000/-
5.	Other Project Costs, if any (Workshop)	35,000/-
6.	Dissemination of project outcome	25,000/-
7.	Institutional Charges	69,180/-
	Total	5,30,380/-

The Committee after discussions recommended that the PI should submit the Progress Report of the work done so far in the Project and thereafter the project should be closed after settling the accounts and payment to JRFs if it is due. The Ministry should write to Vice-Chancellor of the CCS University, Meerut for settling the accounts by PI when he was at his earlier Institute, Tripura. A copy of this letter should be sent to Head of Ramakrishna Mahavidyalaya, Tripura with request to facilitate in closure of the project after settling the accounts.

2.3.3 19-56/2013-RE – Project titled **“Impact of Environmental Bioaerosol Pollution on Human Health: A “case-control study for Exacerbation of COPD in North Indian Population”**. Dr. Chirashree Ghosh, Department of Environmental Studies, University of Delhi 110007

Project Details: This is an on-going project started on 1st November, 2015 for a period of 3 years with a total cost of Rs. 37,72,216/-. The tenure of the project’s term will be over on 30th October, 2018. A total of Rs. 31,06,644/- has been released so far out of approved project cost of Rs 37,72,216/-. Original documents such as UC, ES are awaited

Objectives: The objective of the approved project is to establish relationship between environmental pollutant Bio-aerosol exposure and exacerbation of Chronic Obstructive Pulmonary Disease (COPD), to analyze and categorize the concentration of different fractions of Bio-aerosol in indoor and outdoor environment and conduct epidemiological study to evaluate respiratory dysfunction with reference to bioaerosol exposure and development of COPD etc.

The Steering Committee in its 3rd meeting held on 30.08.2018 had sought details on the composition of bio-aerosols (fungi and bacteria) found in PM10 and PM2.5 in the geographical area of study. The Committee had requested PI to furnish documents such as APR to be sent to Ministry at the earliest along with other documents. An Interim Report for FY 2019 has been submitted vide e-mail dated 18.11.2019 and documents such as UC, ES, etc also have been sent vide email dated 14.11.2019.

The project was further considered by the TFAC in its 9th meeting held on 18.11.2019. The PI had made a presentation. It was stated that as the project got delayed in terms of release

of funds, certain equipment could not be purchased and alternate equipment had to be purchased.

The PI had informed the TFAC that the work relating to **Objective 4 given below** has not been completed:

Objective 4: To evaluate correlation among (i) seasonal and temporal bio-aerosols enumeration, (ii) inflammatory cytokine levels, (iii) respiratory dysfunction in order to identify the role of Gene Environment interaction in COPD in association with ambient bio-aerosols.

The PI sought an extension upto May 2020 for completion of the study and for the submission of FTR. The Committee had noted that the composition of bio-aerosols (fungi and bacteria) found in PM10 and PM2.5 in the geographical area of study as sought by Steering Committee is yet to be provided. The Committee after deliberations agreed for another extension of the project until May 2020 for completion and submission of FTR with no additional budget. The Committee decided that no further extension should be provided to the PI for completion of the project. The Committee agreed for release of next instalment as per GFR 2017, subject to receipt of Hard copy of the Interim Report and hard copies of documents submitted to be complete and in order.

The TFAC was informed that the PI has not submitted any document after the 9th TFAC meeting held on 18.11.2019. The Committee was informed that an amount of Rs 31,06,644/- (82.23%) has been already released of the total cost of Rs. 37,72,216/- of the project. As per the (old) R&D Scheme Guidelines of 2012, a maximum of 90% can be released and the PI is thereafter required to submit the FTR, and Consolidated audited UC, ES, bills & receipts, photographs of permanent equipment, etc for consideration and acceptance of FTR for final release of balance payment of 10% after acceptance of FTR. The Committee after deliberations decided to release an amount of Rs 2,88,351/- totalling 90% of the total project cost. The Committee requested RE Division to follow up with the PI for early submission of the FTR for consideration of the TFAC and the Consolidated audited UC, ES etc as per check list without any further delay.

2.3.4 14/8/2013-RE – Project titled “**Genetic Diversity analysis and conservation of Threatened *Salvadora oleoides*.**” PI: Dr. Maneesh Singh Bhandari, Division of Genetics and Tree propagation, Forest Research Institute, Dehradun 248006

The Committee was informed that the Ministry had released Rs 8,71,540/- vide letter dated 29.11.2019. The PI has also as requested by RE Division refunded an amount of Rs 1515/- as interest accrued over two years. The PI has sought extension of the project for one year (upto March 2021) with no additional cost.

The Committee noted that the project should have ended March 2019 but was extended by a year upto March 2020. Now the PI has sought an additional one year (upto March 2021). The Committee noted that money was released in end of November 2019. The Committee after discussions decided that excluding COVID period, the PI could be granted extension upto March 2021 whereby the PI should submit the FTR and all other requisite documents for closure of projects and for final settlement. The Committee also decided that this is the second extension and no further extension should be granted to the PI for completing the balance work.

- 2.3.5 19-150/2014-RE – Project titled **“Phytoremedial Assessment of Metal Tolerant Flora in the Vicinity of Metal Based Industrial Clusters of Western Tamil Nadu”**. PI: Dr. P. Thangavel, Department of Environmental Science, Periyar University, Salem, Tamil Nadu 636011.

The Committee was informed that sanction of Rs 13,56,050/- was realised on 04.09.2019 as second instalment. The PI has informed vide email dated 09.07,2020 that an amount of Rs 7,29,821/- is lying unutilised. The project duration ends on 31.03.2020. The PI has sought an extension of one year upto 31.03.2021. Of the total project cost of Rs 50,67,710/-, a total amount of Rs 39,09,150/- has been released so far.

The Committee observed that the Annual Progress Report received from PI is for FY 2017-18. Thereafter no Technical Report has been received. The Committee after discussions sought justification for seeking extension, as the project tenure expired in March 2020 (before COVID lockdown began). The Committee also decided that the PI should submit the UC, ES, etc for FY 2019-2020 with Carry forward permission along with detailed justification for one year extension to be placed which will be considered by TFAC in its next meeting. The PI should also make a presentation to the TFAC of the work carried out so far and balance work to be completed with specific time-lines for taking final decision on the grant of extension.

- 2.3.6 F.No. 19/45/2010-RE: **“Reduction of chromium toxicity using nano particles laboratory and field scale study”**, PI: Dr. Debajyoti Paul, IIT Kanpur, Uttar Pradesh

The proposal was last considered in the 12th TFAC meeting held on 14.07.2020, wherein it was decided that the comments sought from CPCB may urgently be provided by the Member, TFAC from CPCB. In this regard, MS informed that all relevant documents such as FTR, response of PI vide letter dated 11.10.2018 to issues raised by the Steering Committee in the 2nd meeting held on 18.07.2018 and minutes of the Steering committee meeting were sent to the Member of TFAC from CPCB.

The TFAC considered the response of PI dated 18.07.2018. The Committee noted that the study had shown that majority of Cr (about 82%), after the removal process, is present on the biochar as Cr+3, and only a small fraction is found as Cr+6. There are many desorbing agents, which are non-toxic. Some of the processes involved in the technology are regeneration of sorbent for next sorption-desorption cycle, recovery of metal from solution and easy sludge generation of biochar which when incinerated can be used in preparation of concrete blocks, bricks, ceramics, etc. In regard to the Steering Committee’s suggestion to set up a “Demo project to determine the efficacy of the technology in field trials from techno-economic considerations, the PI had stated that it is beyond the scope of this study.

The TFAC after deliberations agreed with the response provided by the PI and accepted the FTR and for release of balance amount to be settled to the PI. The Committee recommended RE Division to release the balance amount at the earliest subject to receipt of all requisite documents from PI.

3.0 Any other business with permission of Chair

- 3.1 Member-Secretary, TFAC informed that two applications have been received on-line with the same title but by two different PIs as given below:

- a) 210/2020/RE- Project titled “*Ecological Evaluation of Spider (Arachnida: Araneae) Community from Lonar Crater Sanctuary, India: Building a Conceptual Restoration Model*”. PI: Dr. S. Maria Packiam, Loyola College, PB 3301, Sterling Road, Nungambakkam, Chennai, Tamil Nadu

- b) 210/2020/RE- Project titled “*Ecological Evaluation of Spider (Arachnida: Araneae) Community from Lonar Crater Sanctuary, India: Building a Conceptual Restoration Model*”. PI: Dr. Atul Keshaorao Bodkhe, J. D. Patil Sangludkar Mahavidyalaya, Daryapur, district Amravati, Maharashtra.

However, on opening both applications it was apparent that both applications are of Dr. Atul Keshaorao Bodkhe. The error has been taken up with NIC. In this regard, Member-Secretary stated that a very similar project No. “F.No.14/122/2013-RE- titled “*Diversity and Microhabitat Utilization Pattern of Spiders in Satpuda Landscape*” was sanctioned earlier. The project was completed and the Ministry accepted the FTR and final settlement of accounts was done and the project was closed. The Final Technical Report was also forwarded to ZSI and to the State Biodiversity Board for their information and use. The proposal now submitted by the PI is a generic project of the same taxa in another site – namely, study on spiders in Lonar Crater Sanctuary. There is no innovation in the present proposal and the Committee did not recommend the project for funding in the present form. Further, the PI will simply inventorise the spiders, many of which may be common to Satpura landscape. However, the PI can develop in joint collaboration with the Field Director of Lonar Crater Sanctuary and ZSI and BSI regional circles of Pune to formulate an integrate proposal for the assessment and conservation of Biodiversity of the Sanctuary and this may be submitted to TFAC for consideration.

The Meeting ended with a Vote of Thanks to the Chair.

ANNEXURE-1**LIST OF PARTICIPANTS OF FOURTEENTH MEETING OF TECHNICAL & FINANCIAL APPRAISAL COMMITTEE (TFAC) OF R&D SCHEME FOR CONSERVATION & DEVELOPMENT HELD AS VC ON 30.07.2020 IN MoEFCC**

- | | | | | |
|----|--|-----|------|------------------|
| 1. | Prof. C. R. Babu (Retd.), Prof Emeritus and former Pro-VC, University of Delhi | ... | | Chairperson |
| 2. | Shri G.Rambabu, Scientist, CPCB | ... | | Member |
| 4. | Dr.M.Dwarkanath | ... | | Member |
| 5. | Dr. Advait Edgaonkar, representing Director, Indian Institute of Forest Management (IIFM), Bhopal | | | Member |
| 6. | Dr.K.Chandra Sekar, Scientist, representing Director, GBPNHE | ... | | Member |
| 7. | Dr.Syed Hussain, Scientist, Wildlife Institute of India | | | Member |
| 7. | Shri Venkatrama Sharma representing Director, National Centre for Coastal Research (NCCR), Mo Earth Sciences | ... | | Member |
| 8. | Shri V.P. Yadav, Scientist, CPCB, | ... | | Member |
| 9. | Dr.T.Chandini, Advisor, MoEFCC & | ... | | Member-Secretary |

SPECIAL INVITEES

10. Dr.K.Sankar, Director, Salim Ali Centre for Ornithology and Natural History, Coimbatore
11. Shri Pratap Singh, Ex-PCCF, Department of Forest, Government of Mizoram.
12. Dr R. Suresh Kumar, Scientist E representing Dr.Dhananjai Mohan, Director, Wildlife Institute of India, Dehradun

MOEFCC

1. Shri Pankaj Ahlawat, ASO
2. Shri Rabindra Sah,
3. Shri Goldie, Office Assistant

LIST OF PROJECT INVESTIGATORS (PIs), OF SALIM ALI CENTRE FOR ORNITHOLOGY AND NATURAL HISTORY (SACON), COIMBATORE, WHO PARTICIPATED IN THE 16th TFAC MEETING

1. Dr. Rajah Jayapal, Senior Principal Scientist
2. Dr.S.Babu, Senior Scientist
3. Dr. P.R. Arun, Senior Principal Scientist
4. Dr. S. Muralidharan, Senior Principal Scientist
5. Dr. P. Pramod, Principal Scientist
6. Dr. M. Mahendiran, Senior Scientist
7. Dr. P. Balasubramanian, Senior Principal Scientist
8. Dr. P.V. Karunakaran, Principal Scientist
9. Dr. Shomita Mukherjee, Senior Principal Scientist
10. Dr. Manchi Shirish, S, Principal Scientist

ANNEXURE-2

I PROJECTS OF Salim Ali Centre for Ornithology and Natural History (SACON), Coimbatore

S.N.	Thematic Area	Title of project	Name of PI & Designation
1.	Biodiversity Conservation	Assessing the population status of synanthropic bird species of India, including House Sparrow and House Crow, and their response to urbanization.	Dr. Rajah Jayapal, Senior Principal Scientist
2.	Biodiversity Conservation (RET)	Conservation plans for Critically Endangered avifauna and biodiversity: Assessing the distribution, population and habitat use of three endangered species to develop conservation plan for species and their habitats.	Dr.S.Babu, Senior Scientist
3.	Conservation of Avian Ecosystems and Habitats	Developing Conservation and Management Plans for Select Important Bird and Biodiversity Areas (IBAs) of the Country.	Dr. Rajah Jayapal, Senior Principal Scientist
4.	Conservation Avian Ecosystems and Habitats	National Centre for surveillance and monitoring of impact of environmental contaminants on ecosystem components with special focus on birds in India.	Dr. S. Muralidharan, Senior Principal Scientist
5.	Conservation of Avian Biodiversity	Establishment of National Avian Forensic Laboratory at SACON for National Certification for Illegal Trafficking of Birds.	Dr.R.P.Singh, Senior Scientist, and Dr. P. Pramod, Principal Scientist
6.	Conservation of Avian Biodiversity	(i) Assessment of status, distribution and threats to the population of threatened Sarus Crane <i>Antigone antigone</i> in Gujarat, India (Phase 1) and Ph-2	Dr. M. Mahendiran, Senior Scientist (Ph.1) Ph.2 Dr. S. Muralidharan, Senior Principal Scientist
7.	Conservation of Avian Biodiversity (RET)	(ii) Assessment of status, distribution and threats to the population of threatened Sarus Crane <i>Antigone antigone</i> in Uttar Pradesh, India (Phase 2).	Dr. M. Mahendiran, Senior Scientist (Ph.1) Ph.2 Dr. S. Muralidharan, Senior Principal Scientist
8.	Conservation of Avian Biodiversity (RET)	Developing a conservation action plan for Forest Owlet (<i>Heteroglaux blewitti</i>), a Critically Endangered species endemic to central India.	Dr. Shomita Mukherjee, Senior Principal Scientist
9.	Conservation of Avian Biodiversity (RET)	In-situ and Ex-situ conservation of Endemic Andaman Edible-nest Swiftlet in the Andaman and Nicobar Islands.	Dr. Manchi Shirish, S, Principal Scientist
10.	Sustainable Development	A study on bird hazards in select Indian civil airfields.	Dr. P. Pramod, Principal Scientist

2.2 ROAD MAP FOR Implementation of a “Visionary perspective Plan (VPP) (2010-2020) for Conservation of Avian Diversity, their Ecosystems, habitats and Landscapes in the Country”

2.3 RECONSIDERATION OF R&D PROJECTS OF OLD R&D SCHEME:

S.N.	File No	Thematic Area	Title of project	Name of PI and Institution Address
1.	14/8/2014-RE	Ecosystem & Landscape Conservation	Exploration of Biodiversity and Conservation issues of Talley Valley Wildlife Sanctuary, Arunachal Pradesh with reference to wildlife species distribution along climate and topographical gradients	Dr. (Mrs.) Ashalata Devi Assistant Professor, Dept. of Environment Science, Tezpur University, Napaam, Tezpur, Assam 784028
2.	19-142/2014-RE	Hazardous Substances	“Evaluation of Toxic Agrochemicals Effect on Recurrence of Algal Biodiversity”	Dr. Ramakant, Department of Botany, Ramakrishna Mahavidyalaya, Unakoti-799277, Tripura
3.	19-56/2013-RE	Air Pollution	“Impact of Environmental Bioaerosol Pollution on Human Health: A “case-control study”for Exacerbation of COPD in North Indian Population”	Dr. Chirashree Ghosh, Department of Environmental Studies, University of Delhi 110007
4.	14/8/2013-RE	Biodiversity	Genetic Diversity analysis and conservation of Threatened <i>Salvadoraoleoides</i>	Dr. Maneesh Singh Bhandari, Division of Genetics and Tree propagation, Forest Research Institute, Dehradun 248006
5.	19-150/2014-RE	Pollution/Waste Minimisation	“Phytoremedial Assessment of Metal Tolerant Flora in the Vicinity of Metal Based Industrial Clusters of Western Tamil Nadu”	Dr. P. Thangavel, Department of Environmental Science, PeriyarUniversity,Salem Tamil Nadu 636011
6.	F.No. 19/45/2010-RE:	Pollution/Waste Minimisation	Reduction of chromium toxicity using nano particles laboratory and field scale study”	Dr. Debajyoti Paul, IIT Kanpur, Uttar Pradesh

3.0 Any Other Matter with the Permission of the Chair
