

Vol.14 (2): April - June 2017

### **SMART INDIA HACKATHON - 2017**

The Smart India Hackathon-2017, a digital product building competition was co-organised by AICTE, Ministry of Human Resource Development, MyGov, NIC and NASSCOM. This was a pan Indian programme in which 42,000 engineering students from across the country participated and 10,000 of them got selected for Grant Finale. The Grant Finale was conducted in 26 centres across the country representing different ministries of Government of India.

As the Nodal Centre of the MoEFCC, SACON took the responsibility of developing the 'Problem Statements' and providing technical guidance to the participants across the country. We developed 28 `Problem Statements' related to Environment, Wildlife and Climate Change and submitted to coordinating agency. The students from across the country selected 21 Problem Statements and submitted 327 project ideas with details of objectives, methodology and expected output. All these project ideas were scrutinised and 54 projects were identified for Grant Finale held at Sri Krishna College of Engineering and Technology, Kovaipudur, Coimbatore on 1st and 2nd April, 2017.



Dr. K. Sankar, Director, SACON lightening the lamp at SMART India Hackathon event

In total, 51 teams from all over the country comprising 423 students participated. The event was inaugurated by Mr. S.P. Velumani, Hon'ble Minister for Municipal Administration and Rural Development, Tamil Nadu. At the National Level, Mr. Prakash Javadekar, Hon'ble Union Minister of Human's Resource Development inaugurated the event. Hon'ble Prime Minister of India, addressed the participants and also interacted with the participants through video conferencing facility.

A 12-member panel of juries evaluated and mentored the participating team, that includes scientists from SACON, NGOs and computer professionals. During the 36 hrs 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 judgement sessions and a final power mentoring session the following teams were adjudged as winners.

- 1. KCG College of Technology, Kanchipuram, Tamil Nadu Winner Cash Award Rs. 1.0 Lakh for their project titled 'Water surveillance system'.
- 2. Don Bosco Institute of Technology, Bangalore, Karnataka 1<sup>st</sup> Runner Up Cash Award Rs. 75,000/- for their project titled 'Evaluation of health hazards and management of electronic wastes'.
- 3. Maharashtra Academy of Engineering and Educational Research, Pune, Maharashtra 2<sup>nd</sup> Runner Up Cash Award Rs. 50,000/- for their project 'Digital solution to evaluate pollution and pressure on wetlands and other water bodies and its conservation'.
- 4. The Persistent Systems Inspiration award went to Maharashtra Academy of Engineering and Educational Research, Pune- Cash Award Rs. 10,000/- for their project on 'Water usage audit for Smart India'.
- 5. The Deloitte Innovation Award went to Shri S'ad Vidhya Mandal Institute of Technology from Gujarat Cash Award Rs. 10,000/- for their project on 'Air Quality Monitoring System'.

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First three awards were given by MoEFCC and the 4th and 5th were given by private companies. On behalf of MoEFCC, Dr. K. Sankar, Director, SACON distributed the prize money to the award winners. The end products of the winners digital software solutions to the selected environmental problems) were submitted to MoEFCC for its implementation.





Hackathon winners receive awards

**Hackathon participants showcase their projects** 

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## TALK ON COGNITIVE CAPABILITY OF PRIMATES

Dr. Mewa Singh, Professor (Retd), University of Mysore delivered a talk on "Cognitive Capability of Primates" based on his recent work on 4th April 2017 at SACON.

#### M.Sc. COURSE IN ORNITHOLOGY AND CONSERVATION BIOLOGY

Dr. G. C. Bhimani, Dean, Saurashtra University, Rajkot, Gujarat visited SACON from 22<sup>nd</sup> to 26<sup>th</sup> April 2017 in connection with our proposed affiliation with Saurashtra University to conduct the M.Sc. Course in Ornithology and Conservation Biology and award of Ph.D programme.



Presentation by Dr. K. Sankar, Director

Dr. G. C. Bhimani

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#### From the Director's Desk

The current issue of newsletter, April to June which is the beginning of the financial year 2017-2018, outlines several activities of SACON and also includes a popular article on `The Small Cat Brigade in Mumbai' that has come out from a newly initiated research project and a brief report on completed research project `Prioritizing nesting sites of coastal and marine birds along the Indian seaboard for inclusion in Ecologically Sensitive Areas (ESA) network'. It is noteworthy to mention here that we conducted a training programme on `Ornithology and Wildlife Conservation' for wildlife enthusiasts from 15th to 17th June 2017 and a workshop on 'Conservation Genetics' for students/ teachers/ other professionals from 5th to 9th June 2017, which are a landmark beginning for SACON towards its capability in organizing such courses

A new vehicle parking facility on campus has been created during the reporting period and two new buildings, a post-graduate hostel and a Central Instrumentation Facility laboratory are under construction.

We are moving towards getting Autonomous status under the MoEFCC during this year and I am sure that with the active support of my colleagues, we will be able to address the major goal/mandate of MoEFCC towards conservation of biodiversity with a focus on avifauna at its centre stage.

Dr. K. Sankar Director

#### **CONSERVATION GENETICS WORKSHOP**

This year has been very exciting for us the lab-rats. The Conservation Genetics Laboratory was inaugurated on the 27th of January 2017 by Dr. Amita Prasad, Addl. Secretary, MoEFCC, Govt. of India. With all the necessary equipment installed and operational and with a push from Dr. K. Sankar, Director, SACON, we decided to have our first Conservation Genetics workshop from 5th to 9th June 2017. We designed a course for beginners that included the fundamentals of the subject that would be taught in an interactive way with games, tools, practical sessions and discussions. Fourteen participants from various parts of India registered for the course and we were pleasantly surprised to see the range of professional backgrounds that were encompassed, including journalists, researchers, students from colleges, Forest Department staff and photographers. Dr. Vishnupriya Kolipakam, a population geneticist from the Wildlife Institute of India and Mr. Pankaj Koparde a Ph.D scholar from SACON and Manipal University were invited as resource persons to help us with the workshop, since we had planned to have theory and practical sessions in parallel.

The Director, SACON inaugurated the workshop in a function that was attended by the participants, staff and students of SACON. The classroom sessions began with discussions on the relevance of conservation genetics and what it encompasses, ethical considerations in science as well as in field and laboratory setups and handling and collection of biological samples for genetic analysis. Theory classes included topics such as the Hardy-Weinberg Equilibrium, selection, speciation, measuring 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. Case studies were presented and discussed.

We were nervous at the beginning, since the professional experiences of the participants were very varied and we did not want to confuse the ones who did not have a science background and at the same time did not want to tire out the others who knew the basics. However, it all turned out fine and the initial discussions put all of us on the same track. From then on it was exciting, hectic and fun. It was extremely rewarding to see the delight on the participant's faces when they solved a problem during a game or completed their laboratory practicals and saw the DNA bands on the electrophoresis gel. The batch that first completed their final practical session took pictures of the results on their phones and showed it to the others, who then were even more enthused about their session. All in all it was a great learning experience for us, including the resource personnel, as well.

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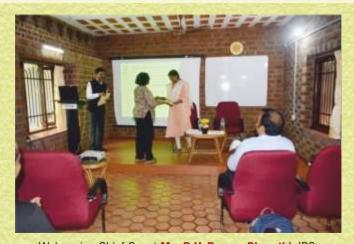


**Dr. R. P. Singh, Scientist,** Explains The Laboratory Protocol to The Course Participants



Presentation by **Dr. Uma Ramakrishnan**, Associate Professor, National Centre for Biological Sciences, Bengaluru

Dr. Uma Ramakrishnan, an Associate Professor at the National Centre for Biological Sciences, Bengaluru was invited to present her research work. The talk titled "Cutting Edge Genomics Technologies and Tiger Conservation" was lucid, invigorating and informative and the participants were very excited about the scope of molecular technology in biodiversity conservation.



Welcoming Chief Guest Ms. R.V. Ramya Bharathi, IPS, Superintendent of Police, Coimbatore for the valedictory function



Group photo session with the Chief Guest,

Ms. R.V. Ramya Bharathi, IPS, Superintendent of Police, Coimbatore

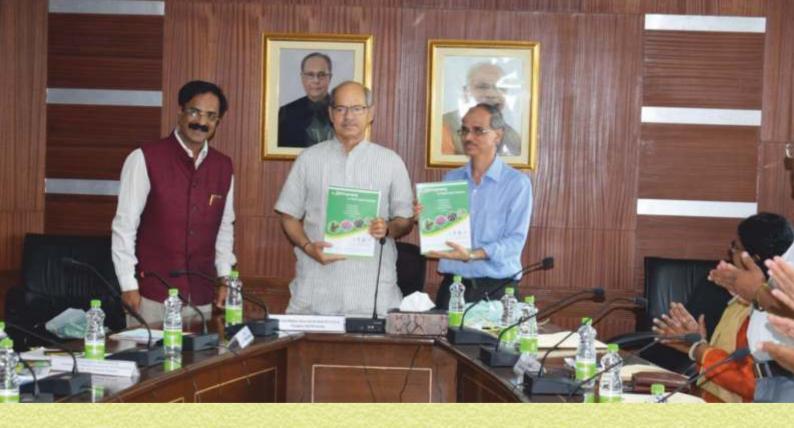
We had a valedictory function on the 9<sup>th</sup> of June and Ms. R.V. Ramya Bharathi, IPS, Superintendent of Police, Coimbatore was invited as the Chief Guest. The function began with a welcome address by the Director, SACON and was followed by the presentation of the course report. The Chief Guest, during her address, praised the initiative of having the workshop and also complimented SACON for its beautiful and serene campus. The participants also expressed their satisfaction with the course as well as their joy for being able to visit SACON.

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## 25th ANNUAL GENERAL MEETING OF SACON SOCIETY

The 25<sup>th</sup> Annual General Meeting (AGM) of SACON Society was held on 16<sup>th</sup> May 2017 at the MoEFCC, New Delhi under the Presidentship of Late Shri Anil Madhav Dave, Hon'ble Minister for MoEFCC, Govt. of India. During the event, "A Bibliography of Tamil Nadu Wetlands" prepared by the ENVIS centre of SACON and authored by Dr. Goldin Quadros, Dr. B. Hemambika, Ms. A. Julffia Begam, Mr. N. Mohamed Ibrahim and Dr. K. Sankar was released by Late Shri Anil Madhav Dave, MoEFCC, Govt. of India.





Release of book "A Bibliography of Tamil Nadu Wetlands" by Late Shri Anil Madhav Dave, MoEFCC, Govt. of India

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## TRAINING PROGRAMME ON ORNITHOLOGY AND WILDLIFE CONSERVATION

SACON conducted a Training programme on "Ornithology and Wildlife Conservation" for wildlife enthusiasts between 15<sup>th</sup> and 17<sup>th</sup> June 2017. On 15<sup>th</sup> morning, Dr. K. Sankar, Director, SACON inaugurated the programme. Ten participants from Karnataka, Kerala, Tamil Nadu and Andaman Nicobar Islands participated in the training programme. Programme included classroom sessions and field training. The two days of class room sessions included 11 lectures on different topics such as Introduction to Indian wildlife and Ornithology, Bird migration, Plant-bird interactions, Wildlife study techniques, Contaminants in Nature, Trends in conservation Practices,



**Dr. Pramod P**, Principal Scientist, SACON addressing the course participants

Bioacoustics, Conservation Photography and Human-Elephant Conflict that were delivered by SACON faculty and invited experts from other institutions. On each day, bird watching programme session was conducted on campus along the nature trail. Wildlife films were screened in the evening hours. On 16<sup>th</sup> June evening after the class room sessions, Mr. I. Anwardeen, IFS, Chief Conservator of Forests and Field Director, Sathyamangalam Tiger Reserve, Tamil Nadu, distributed the certificates to the participants. On 17<sup>th</sup> June, field training was conducted in Silent Valley National Park, Kerala, wherein the course participants were exposed to various signs and tracks of wild animals/birds, behavioural observations of primates and forest management practices.

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#### SACON-ENVIS ACTIVITIES DURING THE SECAS EXHIBITION

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



School students in SECAS Exhibition



School students in SECAS Exhibition

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 the concept of ENVIS, various ENVIS Centres under MoEFCC focal point, uses of wetlands and importance of conserving 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 questions related to wetlands. As part of platform activity, students were asked to express their ideas about, Water, Environment & Nature. School teachers and students from colleges were provided with ENVIS newsletters and awareness posters.



School students in SECAS event



School students in a poster session



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#### **WORLD ENVIRONMENT DAY 2017**

On 5th June 2017, the ENVIS Centre of SACON designed the poster for the World Environment Day carrying

the UN message "Connect with Nature". The poster was released during two events, the first by Dr. Vishnupriya, WII, Dehra Dun during the inaugural ceremony of the "Conservation Genetics Workshop" at SACON.

Simultaneously, the SACON ENVIS team released the World Environment Day poster during the inauguration of "Green Skill Development Programme (GSDP)", under the MoEFCC at Botanical Survey of India (BSI), Coimbatore. Dr. Goldin Quadros, Senior Scientist at SACON delivered a talk on "Conservation of Wetlands" to school students who participated in the World Environment Day celebrations at BSI, Coimbatore. This was followed by a tree plantation drive participated by the teachers and



**Dr. Vishnupriya Kolipakam,** Wildlife Institute of India releases the World Environment Day poster

students from several schools and colleges as well as the BSI faculty and SACON ENVIS team. The program culminated with a prize distribution ceremony to the students who had participated in the drawing and poetry writing competitions.





Tree plantation at BSI, Coimbatore

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## THE SMALL CAT BRIGADE OF MUMBAI

The image that one conjures up when thinking of Mumbai is of a bustling, insomniac metropolis with high rise buildings, a clockwork schedule and Bollywood movies. Nothing from this image could possibly connect to tranquillity. Yet, in stark contrast and unknown to many from outside Mumbai, lies a portion of the city which is wild, serene, green and magical. Strangely, Bollywood is the connecting point between these two worlds, with Film City being located within this green patch. Hence in this natural wild paradise artificial dreams are manufactured to be sold to the denizens of the "civilised" part, in order to relieve the pressures from their everyday grind.





Jungle Cat at an artificial water hole in Sanjay Gandhi National Park, Mumbai

From being such opposites there is often conflict between these two worlds of Mumbai and sometimes this is so severe that it threatens survival. Unfortunately the threat of extermination is one sided - from the larger bustling part against the smaller serene part. Everything in our logical mind would tell us that this is not how it should be. After all most of Mumbai's water (for drinking and industrial use) comes from within this corner and this green patch is also popularly known as "Mumbai's lungs". Ecologists and conservationists are forever trying to come up with convincing arguments for people to understand the value of forests and natural habitats. Humans, it seems, would only save what is of measurable benefit to them and so phrases such as "ecosystems services" were coined. These are vital services provided free of cost by nature, including all plants and animals, to humans and include provisioning

of water, clean air, recreation, biological controls, nutrient cycling, among others. With this in mind we decided to measure the services of some of the little known inhabitants of these forests - small cats. Currently, for most Mumbaikars the hero and the villain of the forests is the Leopard. Hero when the Leopard stays inside and villain when it ventures out of the human-made boundaries. There are two other small cousins of the Leopard both inside and outside the forest that few know of.

Year after year the Forest Department from the Sanjay Gandhi National Park (SGNP), Mumbai receives kittens found in crop-fields surrounding the forests. These are largely brought by well-meaning farmers who chance upon them while harvesting their crops. Many are Jungle Cat kittens but a few are of Rusty-spotted Cat, a species endemic to India, Sri-Lanka and Nepal and thought to be very rare. It came as a bit of a surprise to many that a rare wild cat is found so close to human habitation when there is a forest nearby. Are they spilling out because there are many inside the forests or are the plentiful rodents in the crop-fields beckoning them?

Are crop fields more suitable as habitats forthem and if so what is theirfuture in such strongly human dominated landscapes? How do humans view them or are they at all aware of them? If these cats eat rodents, then are they benefiting the crops and hence the farmers and by how much? Could this be a service they provide farmers and hence could this be used for conserving them outside the boundaries of the National Park? Cats are surely betterthan chemical pesticides. One might say that the House Cat provides the same services so why conserve the wild ones only because of their rodent hunting skills? Interestingly, cats (various species) come in various sizes corresponding with their prey sizes. What we know is that the Tiger hunts large body size wild ungulates, the Leopard hunts medium size wild ungulates and small cats hunt rodents. We do not make size



Sampling protocol for scat collection

distinctions between the small cats or their prey. But rodents also come in various sizes from mice to bandicoots. Is there a similar trend in small cats, as seen in large cats, where the Jungle Cat (the largest among the small cats in this landscape) would eat larger rodents, the House Cat relatively smaller rodents and the Rusty-spotted Cat (weighing on an average around 1 - 2 kg, the smallest cat in the world) would hunt the smallest rodents?

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These are some guestions we are addressing in the small cat project that has recently been initiated in SGNP along with the Maharashtra Forest Department who have funded us for the first phase which is within the National Park. For determining the presence of Jungle Cat and Rusty-spotted Cat within the Park, we will be deploying camera-traps and also collecting scats (faecal matter of cats). Scats will be analysed in the newly established Conservation Genetics Laboratory at SACON for assigning them to the cat species, using molecular tools. We will also measure some characteristics of the forest such as canopy cover, water sources, rodent abundance and proximity to human habitation, in order to correlate presence of cats to these habitat characteristics.

Laboratory at SACON for assigning them to the cat species, using molecular tools. We will also measure some characteristics of the forest such as canopy cover, water sources, rodent abundance and proximity to human habitation. in order to correlate presence of cats to these habitat characteristics.

A very special feature of the project is that all field data will be collected by volunteers from Mumbai. Around 40 dedicated volunteers from various walks of life - students from colleges in Mumbai, journalists, teachers, people from the travel business, a dairy owner from an area surrounding the forest, people from animal rescue organizations are part of this project. In April and May they were trained in various field techniques including scat collection, camera trapping. measuring habitat variables with various android applications on mobile phones, using Geographical Positioning System (GPS) units and connecting that to Geographical Information System (GIS) tools. Several staff from the Forest Department also attended these workshops. These training sessions were conducted in various parts of the National Park and generated a lot of enthusiasm, energy and hope amongst varied stake holders. The month of May was a reconnaissance period where volunteers formed organized groups and used their newly learned skills to collect data. In a fortnight more than 50 scats have been collected from various parts of the National Park. Some of the participants of the project also attended the Conservation Genetics workshop held at SACON in June and they will soon volunteer to analyse the scats at SACON to determine predator identity and also diet. Some among them want to pursue their Master's dissertations through this project while others are planning even further, to continue this as their PhD work. The project is a tiny beginning and an attempt at understanding the most important part of Mumbai and we are in the hope that this small spark will generate the right amount of light for Mumbaikar's to value this rich piece of green land.

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#### IMPORTANT NESTING SITES OF COASTAL AND MARINE BIRDS ALONG THE INDIAN SEABOARD FOR INCLUSION IN ESA NETWORK

India, including its islands, has a coastline of more than 7500 km long and the intertidal zones along its seaboard harbour an exceptionally rich avifaunal diversity. Given the fact that there are very few coastal and marine Protected Areas in the country, a large stretch of its coastline is heavily under pressure from different quarters including industrial and infrastructural development, severely jeopardizing the coastal ecosystem and the livelihood of fishing communities.

In order to streamline coastal development economic sustainability, MoEFCC, Coastal Regulation Zone (CRZ) the Environment (Protection) Act 1986. It Sensitive Areas (ESA) under CRZ-I activities would be regulated; for the identifying ESAs, 11 criteria that include sand dunes, seagrass communities, coral

activities to ensure ecological and Government of India, issued a revised Notification in 2011 under the aegis of sets out to identify Ecologically category in which all development purpose of assessing sites and mangrove cover, extent of mudflats and reefs, and turtle nesting sites, have been



Mangroves & littoral forests

21%

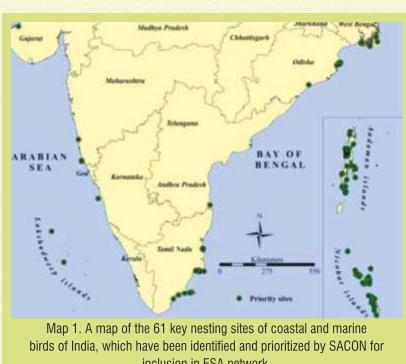
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developed. Nesting grounds of coastal and marine birds that are of ecologically significant value are also one among the key criteria and SACON was assigned the task of identifying and prioritizing nesting sites of birds, to be considered for inclusion in the final ESA network. This entire exercise was coordinated by the National Centre for Sustainable Coastal Management (NCSCM), Chennai.

In total, 1269 species of birds are known to occur in India (Praveen et al. 2016, Indian BIRDS 11:113-172) of which about 75% breed in the country. Among them, 56 species of birds are primarily known to nest along the coastline, though a large number of inland freshwater and scrub jungle species are also found to nest occasionally along the Indian seaboard. Of these 56 species that nest either exclusively or facultatively along the coastal habitats, 36 species are colonial breeders with 19 solitary and one communal nesting species.

Given the length of the India's coastline and our limitations on time and other resources, we adopted a multipronged approach to collect information on coastal nesting sites of birds. A major source of data was secondary information from both published and unpublished works on nesting birds of Indian coasts; this was followed up with personal observations from expert birdwatchers and local conservation groups. On the basis of this information pool, we developed a comprehensive database of known and traditional nesting sites of coastal and marine birds along the Indian seaboard. In total, 719 nesting records from 242 sites were documented, after we removed several reports which were either suspected or whose exact geographic coordinates could not be ascertained.



inclusion in ESA network.

Among the 56 species of target birds, most published nesting records were on Nicobar Megapode, followed by White-bellied Sea Eagle, Edible Nest Swiftlet, and heronry species like Grey Heron, Little Egret, Little Cormorant, and Black-crowned Night Heron. It is pertinent to mention here that the highest number of nesting records as documented for such rarer species as Nicobar Megapode and Edible Nest Swiftlet was largely attributed to long-term research projects undertaken by SACON over the last two decades in the Andaman and Nicobar Islands. Among the nesting habitats, most nesting reports were from coastal heronries followed by mangroves & littoral forests, trees and palms on seaboard, and seashore & sand banks (Fig. 1).

When all the 242 sites were re-analyzed for

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prioritization using our working algorithm, 61 sites were identified and are being recommended for inclusion in ESA network (Map 1). These sites are predominantly from the Andaman and Nicobar Islands (44) followed by Tamil Nadu and West Bengal (4 each), Lakshadweep, Maharashtra, and Odisha (2 each), and Andhra Pradesh, Gujarat, and Karnataka (1 each). We, then, demarcated the boundaries for each of the 61 recommended sites and the resultant polygons have been integrated into the master spatial database maintained at NCSCM for further identification of ESAs.

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Vol.14 (2) **SACON NEWS** 

# PARTICIPATION IN THE INTERNATIONAL HORNBILL CONFERENCE BY DR. P. BALASUBRAMANIAN, SENIOR PRINCIPAL SCIENTIST

Dr. P. Balasubramanian, Senior Principal Scientist, Division of Landscape Ecology participated in the "7<sup>th</sup> International Hornbill Conference" held at Kuching, Sarawak state in Malaysia. The conference was held for three days from 16<sup>th</sup> to 18<sup>th</sup> May 2017and organized by Sarawak Forestry Corporation, Malaysia. Around 150 participants from several countries attended the conference. Papers were presented under various themes, namely i. Conservation status of Hornbills, ii. Hornbill Biology and Husbandry, iii. Habitat Fragmentation and Connectivity and iv. Importance of hornbills-Ecosystem and Culture. Dr. Balasubramanian



Dr. P. Balasubramanian presenting his paper at the "7th International Hornbill Conference"

made an oral presentation on "Breeding season diet and nest tree utilization by Great and Malabar Pied hornbills in a riparian forest of southern India" that formed part of SACON's research project. As a part of the post-conference tour, he visited Matang Wildlife Centre, a rehabilitation centre of Orangutans in Malaysia.

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#### **INTERNATIONAL YOGA DAY**

In association with M/s Axis Bank and Isha Foundation, Coimbatore, SACON celebrated the International Yoga Day on  $21^{st}$  June 2017 on Campus. Around 45 persons; Faculty Members, Research / PhD scholars and Staff participated in the event and practiced Yoga. Dr. K. Sankar, Director of SACON inaugurated the programme. One of the volunteers from the Isha Foundation was the instructor for the 1hr (4:30 – 5:30 pm) yoga practical.





Participants in the yoga session on International Yoga Day



#### **VEHICLE PARKING FACILITY**

A new vehicle parking facility on SACON campus was inaugurated by Dr. P. Balasubramanian, Senior Principal Scientist, on 19th April 2017. The facility, with a total area of 2024 sq.ft., can accommodate staff cars and two-wheelers.

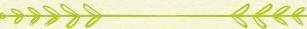


**Inauguration of Vehicle Parking facility** 



Vehicle parking facility at SACON





## सालिम अली पक्षिविज्ञान एवं प्रकृति विज्ञान केन्द्र Sálim Ali Centre for Ornithology and Natural History

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Views expressed in this newsletter are not necessarily those of the Editors or the Sálim Ali Centre for Ornithology and Natural History

#### April - June 2017

Printed & Published by the Director, Sálim Ali Centre for Ornithology and Natural History, Anaikatty (Post), Coimbatore - 641 108, Tamil Nadu, India.



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