

WILDLIFE INSTITUTE OF INDIA

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ANNUAL REPORT 2017-18





**ANNUAL
REPORT
2017-18**

WILDLIFE INSTITUTE OF INDIA

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डॉ. हर्ष वर्धन
Dr. Harsh Vardhan



भारत सरकार
पर्यावरण, वन एवं जलवायु
परिवर्तन मंत्रालय

GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT,
FOREST & CLIMATE CHANGE
NEW DELHI-110003



Message

It gives me immense pleasure to note that the Wildlife Institute of India (WII), an autonomous institution of the Ministry of Environment, Forest and Climate Change, is publishing its Annual Report for the year 2017-2018 illustrating an account of its varied programmes and activities implemented during this reporting period to achieve its mandate.

The Institute has emerged as a leading institution in the field of wildlife sciences and biodiversity conservation with footprints beyond India in the larger South and Southeast Asian region as well. Over the year 2017-18, the Institute has conducted numerous training programmes, academic courses and has undertaken research in a commendable array of fields, many of which are interdisciplinary in nature and reflect the pivotal role of the Institute in providing rigorous science-based inputs towards improved management of wildlife and their habitats. WII's programmes are field based and seek to integrate biological, socio-economic and human aspects with a landscape approach in addressing today's conservation challenges.

The UNESCO Category 2 Centre for World Natural Heritage Management and Training for Asia and the Pacific Region established at WII, whose new building I had inaugurated not long back on 10th March 2018, has furthered its presence in the field of world natural heritage conservation through its capacity building and outreach programmes and activities for India and the Asia-Pacific region.

I congratulate the Institute for bringing out this Annual Report and I am confident that it will prove very useful in illustrating the entire gamut of work of WII and will be disseminated to a wide network of users and readership.

I wish the Institute all success in its endeavours.

28th -11-2018


Dr. Harsh Vardhan

From the Director's Desk...



I am very pleased to state that the Annual Reporting Period 2017-18 witnessed the continuation of the momentum in the projects and activities undertaken by the Institute for securing and strengthening the natural resource conservation and management in the country. In addition to this, several new initiatives in the form of collaborative activities with national and international agencies were also launched. A braille version of the booklet 'Climate Action: We must not delay' was released by the Secretary, Ministry of Social Justice and Empowerment, Government of India to enhance awareness of the visually challenged students about the effects of climate change on environment.

A new building of the UNESCO Category 2 Centre on 'World Natural Heritage Management and Training for Asia and the Pacific Region' at Wildlife Institute of India was inaugurated by Dr Harsh Vardhan, Hon'ble Minister of Environment, Forest and Climate Change, Government of India.

The Institute continued to build capacity of natural resource professionals in the country and in the region through a wide array of training, research, academic programmes and by providing a range of advisory services to its stakeholders.

I would like to acknowledge the very valuable professional inputs provided by the Institute's governance and administrative committees; stakeholders and faculty colleagues; staff, researchers and students that have enabled us to successfully fulfill the Institute's mandate and responsibilities.

29th November, 2018


(Dr. V.B. Mathur)
Director

ROLE AND MANDATE



ROLE AND MANDATE

Introduction

In the early 80s of the last century, there was a realisation all over the world, including India, that natural resources were diminishing and that the environment was being degraded. At the same time, the understanding of environmental issues was still a little hazy, and the initial remedial responses to complex environmental problems had mixed outcomes, with both successes and failures.

The limitations of the early initiatives also brought into focus the inadequacy of skilled human resources for wildlife management and of wildlife biologists to conduct research and overcome the paucity of researched information for promoting proper conservation planning. A need was felt for establishing an organisation that, through multi-disciplinary research at the field level, could help respond to the challenges of biodiversity conservation and develop holistic approaches for managing wildlife and habitats across the country and the region. This led to the setting up of the Wildlife Institute of India (WII), at Dehradun, in 1982.

In 1986, WII was granted the status of an autonomous institution of the Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India. WII is a premier training and research institution in the field of wildlife and protected area management in South Asia. Since its inception, WII has had the benefit of collaboration with international organisations such as UNDP, FAO, USFWS, IUCN and UNESCO. These partnerships have helped the institute build up a qualified faculty and staff through rigorous training and exposure to modern research and analytical techniques.

The institute's vast array of capacity building programmes provides a practical and realistic direction to the concept and practice of wildlife conservation by seeking the involvement and cooperation of local communities. By learning from its own and others' experiences, WII is traversing a path of hope and aspiration, which will help strengthen it in finding answers in addressing wildlife conservation issues and challenges in the country as well as in the South Asian region.

Our Mission

Our mission is to "nurture the development of wildlife science and promote its application in the field in a manner that accords with our economic and socio-cultural milieu".

Aims and Objectives

- Build up scientific knowledge about wildlife resources.
- Train personnel at various levels for conservation and management of wildlife.
- Carry out research relevant to management, including the development of techniques appropriate to Indian conditions.
- Provide information and advice on specific wildlife management problems.
- Collaborate with international organisations on wildlife research, management and training.
- Develop as a regional centre of international importance for conservation of wildlife and natural resources.

RESEARCH



KAILASH SACRED LANDSCAPE CONSERVATION AND DEVELOPMENT INITIATIVE (KSLCDI) PROJECT: IMPLEMENTATION PROGRAMME IN INDIA

COMPLETED

Funding Source
ICIMOD, Nepal

Investigators
Dr. G.S. Rawat,
Dr. B.S. Achikari,
Dr. S. Sathyakumar,
Dr. V.P. Uniyal,
Dr. K. Sivakumar
Dr. Gopi G.V.

Researchers
Dr. Arti Kala,
Ajaz Hussain,
Sumit K. Arya
Mona Chauhan

Date of Initiation
March 2013

Date of Completion
November 2017

Objective

Conservation and development of the Indian part of the Kailash Sacred Landscape (KSL).

Progress

The research team worked closely with community-based organizations, *viz.*, biodiversity management committees (BMCs) and the village forestry councils or van panchayats (VPs), to implement the programme under KSL-India. During the first year of programme implementation, detailed surveys of the forest resources, the flora and the fauna in the pilot areas were conducted, and questionnaire surveys were conducted in the villages to ascertain the pattern of forest resource use, human-wildlife conflict and status of village pastures. The team followed the participatory natural resource mapping approach to prepare resource availability maps for the pilot sites and the framework for management of ecosystems developed by ICIMOD to prepare integrated ecosystem management (ESM) plans, which is being implemented by the BMC after endorsement by the district administration. The integrated ESM plan for Bans-Maitoli village is currently being implemented. The plan for the Himkhola watershed has been agreed upon, and it will be implemented during the second phase of KSLCDI.

As outlined in the ESM plan, the following activities were successfully implemented by BMC at the pilot site at Bans-Maitoli: (i) establishment of a nursery of local fodder species for planting at eco-restoration sites; (ii) eco-restoration of degraded sites infested with the invasive alien species kala bansa (*Ageratina eupatorium*); (iii) cleaning and recharging stream courses; and (iv) preparation of a site-specific mitigation plan to minimize the human-wildlife conflicts. Improvement of wildlife habitats and bio-fencing were initiated at a few sites by planting



Alka Chaudhary

rambans (*Agave wightii*) around crop fields. Another village, Bhatbhata, near Askot Wildlife Sanctuary, was identified for planting rambans. To reach out to a large number of local people (over 250 persons) within the landscape, WII organized a special event on mitigating human-wildlife conflicts during a trans-boundary trade fair at Jauljibi. This event gave an opportunity to share the experiences of traditional methods of dealing with human-wildlife conflicts.

Following the established protocol for long-term ecological and socio-economic monitoring (LTESM), the team collected baseline information from pre-designed sample plots/trails and transects on the status of the wildlife habitat, abundance of key faunal groups, *viz.*, mammals and birds, and indicator insect taxa insects using various tools and techniques including camera traps. Baseline surveys were also conducted on the distribution and abundance of one of the high-value non-timber forest products, *viz.*, the Indian butter tree or chyura (*Diploknema butyracea*) in the lower parts of Pithoragarh District. Rapid surveys were conducted on this species. Its distribution, abundance and regeneration status were noted.

Outputs and Outcomes

The activities included a series of meetings and dialogues with various stakeholders at local, district, state and trans-boundary scales to generate awareness about the programme and to share wise practices related to natural resource management. Four trans-boundary meetings were organized in the landscape to discuss cooperation in terms of controlling the illegal trade in wildlife parts and products, protected area management and exchange of experiences to minimize human-wildlife conflicts.

Milestone

A regional workshop on harmonization of vegetation type classification and mapping was organized at Dehradun in collaboration with other partners. Considering the outstanding universal values of KSL, two consultation meetings were held, one in the landscape and another at WII, Dehradun. Local, state and national stakeholders participated to discuss different dimensions of KSL as a mixed cultural and natural World Heritage Site.

MONITORING OF REINTRODUCED TIGERS IN SARISKA TIGER RESERVE, RAJASTHAN - PHASE II

COMPLETED

Funding Source
National Tiger
Conservation Authority

Investigators
Dr. Parag Nigam,
Dr. Bilal Habib,
Dr. P.K. Malik (WII)
Dr. K. Sankar,
Director, SACON

Researchers
Dibyendu Mandal
Debaprasad Sengupta

Date of Initiation
April 2015

Date of Completion
March 2018



Objectives

The objectives of the project were to (i) study the home range and dispersal patterns of the re-introduced tigers and cubs with respect to the relocated villages; (ii) assess the use of the habitat by the re-introduced tigers and cubs with respect to the relocated villages; (iii) study the food habits of the re-introduced tigers; (iv) estimate the populations of the prey species; and (v) suggest management recommendations for effective conservation of tigers in the tiger reserve.

Progress

All the tigers were monitored in Sariska Tiger Reserve (STR) through ground-tracking, camera trapping and direct and indirect sightings. The minimum convex polygon (100% MCP) technique was used to estimate home ranges, and habitat variables such as the nature of the terrain, broad vegetation type and distances to nearest water body, road and human settlement were recorded to evaluate the habitat use of each tiger.

A total of 3,557 locations were recorded of all the tigers during the reporting period. A hand-held global positioning system (GPS) was used to record locations. The dietary preferences of tigers were estimated from scat analysis as well as from kills. A total of 78 scat samples were collected from the field and 297 kills recorded during the study period.



Debabrasad Sengupta

Outputs and Outcomes

All the tigers were monitored intensively throughout the reporting hours. A total of 3,557 locations were recorded for the 14 tigers during the study period. The average annual home range of the adult male tigers was $187.7 \pm 49.18 \text{ km}^2$ ($n=2$) and that of the adult female tigers was $60.58 \pm 11.11 \text{ km}^2$ ($n=7$). The remains of eight wildlife species were identified in the tiger scats, namely sambar, chital, nilgai, wild pig, buffalo, cattle, goat and hare. Sambar contributed the maximum to the tigers' diet. In total, 297 tiger kills of six prey species were recorded during the study period. Among the wild prey, the proportion of sambar kills (51.06%) was the highest. Livestock constituted a considerable proportion of the kills. Tiger conservation is a success story in STR, with animals establishing themselves and breeding since 2012. The recent mortality of ST11 (male) and ST5 (female) going missing during February-March 2018 have stressed the need to intensify the conservation efforts in STR.

Milestone

Monitoring of tigers was carried out during the year 2017-18. The study of the home ranges of the tigers in STR 10 years after reintroduction showed that there were differences compared with other tiger reserves (Panna, Pench, Kanha and Sundarbans tiger reserves). Two sub-adult males (ST11 and ST13) that were moving in the periphery of the reserve were radio-collared (VHF) during the study period.

Monitoring of Reintroduced Gaur, *Bos gaurus gaurus* in Bandhavgarh Tiger Reserve, Madhya Pradesh- Phase II

COMPLETED

Funding Source
Madhya Pradesh
Forest Department

Investigators
Dr. Parag Nigam,
Dr. Bilal Habib,
Shri Qamar Qureshi (WII)
Dr. K. Sankar (SACON)

Researchers
Dr. Navaneethan B.
Mariyam Nazir

Date of Initiation
April 2015

Date of Completion
March 2018



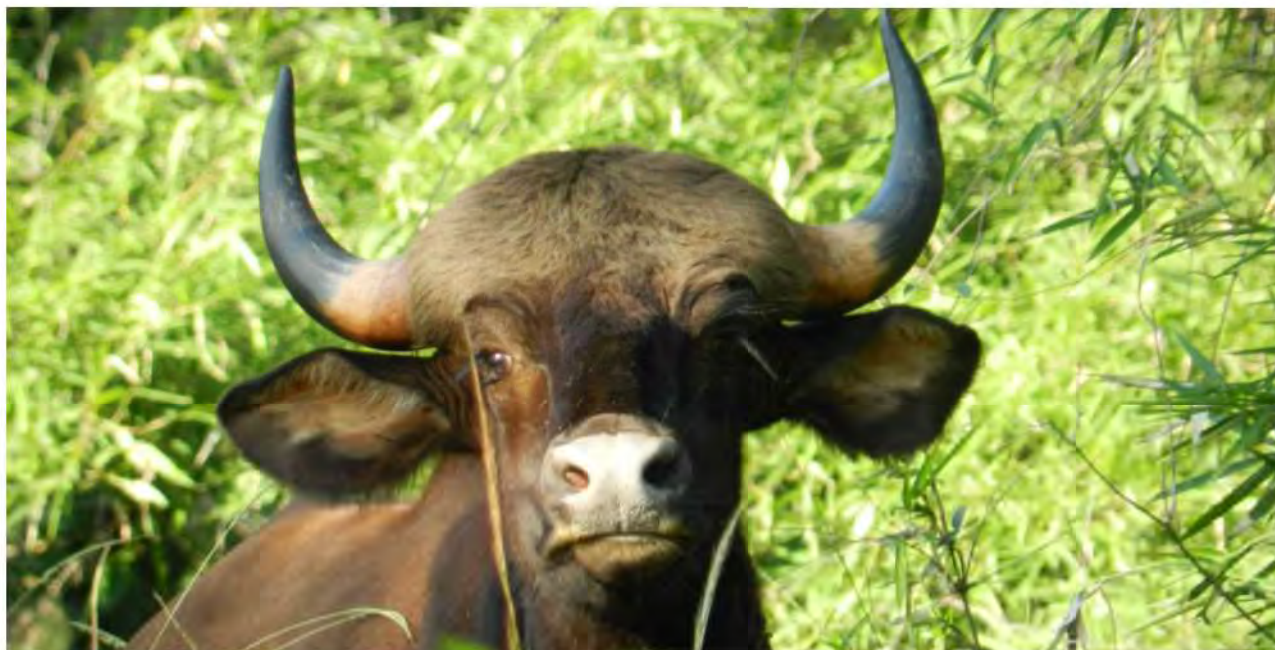
Objectives

The objectives of the project were to (i) study the ranging pattern of the re-introduced gaur in Bandhavgarh Tiger Reserve (BTR); (ii) study the use of the habitat by the re-introduced gaur in BTR; (iii) study the food habits of the re-introduced gaur in BTR; (iv) study the health of the re-introduced gaur in BTR; and (v) study the competition for food resources between the re-introduced gaur and the other ungulates and camp elephants in BTR.

Progress

The gaur population was monitored throughout the study period. A total of four gaur herds were identified on the basis of the presence of radio-collared individuals and physically identifiable attributes of selected individuals to study the ranging patterns of the re-introduced gaur. During the study period, a total of 1277 locations were recorded for four identified herds. The estimated overall 100% MCP and 95% and 50% FGD home ranges of the re-introduced gaur were 375.8 km², 225.5 km² and 42.5 km², respectively. The overall annual home range sizes of re-introduced gaur were 322.6 km², 185.8 km² and 281.4 km² in 2015, 2016 and 2017, respectively. The mean values of the home ranges as estimated using the 100% MCP were 91.9±12.8 (SE) km² during summer, 103.7±10.8 (SE) km² during the monsoon and 120.9±8.4 (SE) km² during winter.

Both habitat use and habitat availability were assessed at the herd locations in the study area. Though the availability was greatest for mixed forest, the gaur used grassland most, followed by riparian and open mixed forests. Sal and bamboo forests were used according to their availability all over the home range, but the gaur avoided mixed forest. The overall habitat preference of gaur, determined using Bonferroni analysis, was in the following order: grassland>riverine forest>bamboo forest>open mixed forest>sal forest>mixed forest. This finding was supported by the preference of gaur for grassland, avoidance of mixed forest and use of the other habitats according to their availability ($X^2 = 0.9917$, $df = 1$, $p = 0.05$).



Mariyam Nazir

Data relating to the food plants and parts eaten by the gaur was obtained through scan sampling. During the study period, a total of 112 species of food plant belonging to 39 families were recorded. The food plants comprised 41 tree species, 18 shrub species, 12 herb species, 34 grass species and seven climber species.

Between 2011 and 2015, three villages were relocated from the core area of BTR. The sites from which the villages were relocated have been transformed into grasslands. They have mostly species such as *Saccharum spontaneum* and *Vetiveria zizanioides*. The health of the re-introduced gaur population was evaluated monthly from April 2015 to March 2018, using body condition indices (BCI). A total of 1635 body scores were examined for BCI among gaur of both sexes and all demographic classes during the study period. Of the individuals observed for body condition, 77.9% were found to be in good body condition; 20.2% were in fair condition and 1.7% were in poor condition. It was concluded that, overall, the health of the re-introduced gaur population in Bandhavgarh was good throughout the study period. However, it was a major concern that confirmed cases of tuberculosis (on the basis of post-mortem reports). This concern needs to be addressed adequately for the long-term survival of the gaur in BTR.

The competition for food resources among the re-introduced gaur and other wild ungulates and camp elephants was evaluated through direct observations. The gaur utilized 112 food plant species. The chital

utilized a total of 89 food plant species, and the sambar utilized a total of 68 food plant species. A total of 73 food plant species (16 trees, 19 shrubs, 16 herbs, three climbers and 19 grasses) were utilized by the nilgai. The camp elephants utilized 72 food plant species (37 trees, seven shrubs, 11 herbs, five climbers and 14 grasses). The overlap of the food resources of the gaur and chital was found to be 100%. The gaur had 89% and 81% overlaps with the camp elephants and nilgai, respectively, and the overlap was the minimum (73%) for the sambar.

Outputs and Outcomes

The gaur population of BTR, established from re-introduced animals, was monitored throughout the study period. From an initial number of 50 individuals translocated from Kanha Tiger Reserve during 2011 and 2012, the gaur population in BTR had increased to 127 individuals (excluding 37 mortalities over the 7-year period) by March 2018. It consisted of adult females (n=32), calves (n=27), juveniles (n=26), sub-adult males (n=20), sub-adult females (n=14) and adult males (n=8). The estimated overall gaur sex ratio (adult male: adult female) was 1:3.3, and the adult female: calf ratio was 1:1.4. The population is apparently healthy and faring well.

Milestone

The collaboration between the Madhya Pradesh Forest Department, WII and &Beyond (previously known as CC Africa) to establish a healthy population of gaur in Bandhavgarh has been a successful initiative so far and has demonstrated the effective use of skills and technology in monitoring re-introduced populations. The population has grown over the years.

Evaluation of Prey Availability and Habitat Suitability for Tigers and its Ranging Patterns in Sanjay Tiger Reserve, Madhya Pradesh

COMPLETED

Funding Source
Madhya Pradesh
Forest Department

Investigators
Dr. K. Ramesh,
Dr. K. Sankar,
Mr. Qamar Qureshi
Dr. Parag Nigam

Researchers
R. Rajasekar
Sankarshan Chaudhuri

Date of Initiation
June 2014

Date of Completion
June 2017



Objectives

The objectives of the project were to (i) evaluate the current status of the prey base in Sanjay Tiger Reserve (STR), Madhya Pradesh; (ii) assess the suitability of the habitat for tigers in STR; (iii) study the ranging and dispersal patterns of tigers using radio-telemetry; and (iv) equip the ground-level staff of the forest department with enough knowledge and resources so as to continue the monitoring of tigers in the park after the project is completed.

Progress

Line transects (n=55) were walked once in the morning (6:00 am to 8:00 am) and once in the evening (4:00 pm to 6:00 pm) during winter and summer all across the core area of STR to determine the status of the prey populations. Carnivore sign surveys were carried out in selected beats (n=45) during winter and summer to establish the presence/absence of tigers and other carnivores. Camera traps were deployed in 182 grids (4 km² each) to estimate for the abundance of tigers. On 18 October 2016, one semi-wild sub-adult female tiger (T-011) that was kept in the Kanjra enclosure of Dubri Range was radio-collared (VHF) by the WII and forest department team. It was released in the wild subsequently. On 25 March 2018, another radio-collared sub-adult tigress (P-213-33, also named T-020) was translocated from Panna Tiger Reserve to STR and released in the Kanjra enclosure. The behaviour of the animal was monitored using CCTV cameras deployed inside the enclosure.



Sankarshan Chaudhuri

Outputs and Outcomes

The overall density of wild ungulates was estimated to be low to moderate (15.4 ± 2). There were significant variations in the densities of individual species of wild ungulate: chital (5.69 ± 1.65) were most abundant, followed by wild pigs (3.51 ± 1.25), nilgai (3.1 ± 0.73) and chinkara (1.94 ± 0.48). The densities of langur and rhesus macaque were 25.04 ± 4.56 and 12.50 ± 7.73 , respectively, while the density of livestock was estimated to be 11.6 ± 5.4 . The density of sambar was too low to compute. The encounter rates of carnivore species were calculated for the reporting period. The encounter rate of the tiger (0.04) was higher than those of the leopard (0.03), hyaena (0.01) and sloth bear (0.61). In total, eight tiger individuals were identified using camera traps. One was an adult male (T-005), two were adult females (T-003 and T-011), and three were juvenile cubs (T-017, T-018 and T-019) born to T-011. Two tigers (T-012 and T-016) of unknown sex were detected for the first time during the sampling period. It was reported that T-003 has four cubs of age <1 year, but these cubs were not included in the population estimate.

During this period, the home range of the radio-collared female tiger (T-011) was calculated to be

154.12 km^2 (minimum convex polygon method) from radio-locations ($n=772$) obtained from the field. A tiger habitat suitability map was produced using spatial layers (land use land cover classification, digital elevation model, distances to nearest village and water source and availability of prey) prepared through remote sensing and GIS techniques. Habitat suitability analysis showed that 45.5% of the area (730 km^2) comes under the 'suitable habitat' category if the availability of prey is included. However, a greater extent of the area (61.3%, 1017.4 km^2) was found to be suitable if the prey availability was excluded from the analysis.

Milestone

STR is a low-density tiger area, but the concerted efforts made in the form of prey augmentation and translocation of tigers have resulted in positive outcomes, with the tigers breeding and their population growing. The efforts made through the project represent an important step in a comprehensive tiger recovery programme that will be executed jointly by the Madhya Pradesh Forest Department and WII.

Movement Pattern and Inbreeding Status of Swamp Deer in Uttarakhand, India

COMPLETED

Funding Source

Uttarakhand Forest
Department and
Department of
Science and Technology

Investigators

Dr. Samrat Mondol,
Dr. Bivash Pandav

Researcher

Shrutarshi Paul

Date of Initiation

March 2016

Date of Completion

March 2018

Objectives

The objectives of the project are to (i) determine the swamp deer distribution in the upper Gangetic plains; (ii) study the movement patterns of the swamp deer in this region; and (iii) determine the genetic status and level of inbreeding of the swamp deer in the upper Gangetic plains.



Progress

During the reporting period, the research team started looking into the genetic composition of the swamp deer in the upper Gangetic plains using antler samples recovered from various areas by a pilot survey. The team also radio-collared swamp deer using the drive net technique. The collared swamp deer were intensively monitored to analyse their movement patterns.

Outputs and Outcomes

Genetic analysis of 231 antler samples carried out using a panel of 13 polymorphic microsatellite loci revealed a significant level of connectivity between all the sampled areas, from Jhilmil Jheel Conservation Reserve (JJCR) to the Bijnor Barrage area, of Hastinapur Wildlife Sanctuary. Two lineages were found in the genetic structure, but the spatial distribution of the lineages was not site specific. The

team also found full siblings distributed throughout the landscape, indicating that there is connectivity, which supports the finding about the lineages. Using the drive net technique, two swamp deer females were captured and radio-collared. It was found that the swamp deer moved towards Hastinapur from JJCR, which supports the finding about active connectivity from genetic data.

Milestone

The radio-collaring of swamp deer using drive nets was the first effort of its kind for any species in India. This was exclusively covered in the media, and various newspapers carried reports in June 2018.



Shrutarshi Paul

Establishing Ecological Baselines for Long-term Monitoring of Tigers, Co-Predators and Prey Species in Dibang Wildlife Sanctuary and its Adjoining Landscapes in Arunachal Pradesh, India

COMPLETED

Funding Source

National Tiger Conservation Authority, New Delhi

Investigator

Dr. Gopi G.V.

Researcher

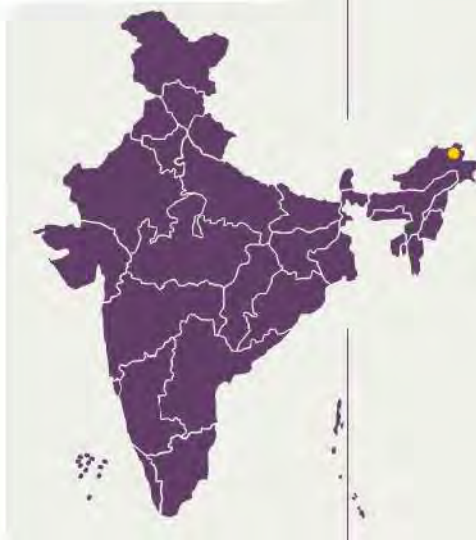
Aisho Sharma Adhikari

Date of Initiation

April 2015

Date of Completion

March 2018



Objectives

The objectives of the project are to (i) determine the distribution and abundance of tigers, co-predators and their prey species in different land use, land cover types and disturbance regimes in and around Dibang Wildlife Sanctuary; (ii) evaluate the effects of environmental features and anthropogenic pressure on the tigers, their co-predators and the occupancy patterns of their prey species; (iii) determine the factors governing the niche differentiation among the tigers, co-predators and their prey species; (iv) assess knowledge, beliefs, attitudes and perceptions of local people about conservation of tigers, co-predators and their prey species; and (v) identify areas that have high conservation value and in which the tigers, co-predators and their prey species are under threat, with the ultimate aim of planning a long-term monitoring and conservation strategy.

Progress

A total of 6,264 traps nights were operated both inside and outside the protected area. So far 28 photographs of tigers have been obtained. Four individuals (one adult male, one adult female and two cubs) have been identified. The photographs of these individuals were captured in different grids at different altitudes. One tiger was photo captured inside the protected area, while three were photo-captured in community-managed lands. The highest occupied areas were at heights of 1,923 m (as determined using camera traps) and at 2,593 m (from signs). The sign survey encounter rates were highest in Dri, followed by the Angi Pani, Malinye and Mithun valleys. The takin, the major prey of the tigers, was captured frequently in Dri and Mathun valleys, where tigers were also photo-captured frequently.



WII Camera Trap Image

Outputs and Outcomes

The preliminary results of the questionnaire survey suggest that all the respondents were positive about tiger conservation; however they all expressed concerns about mithun depredation by tigers and dhole, which was a major problem.

Milestone

The findings of this study are encouraging, and the NTCA has approved a long-term project to monitor tigers in the Mishmi Hills, Kamlang Tiger Reserve, Manipur, Mizoram and Nagaland. The study will begin in 2019.

Ecological Reconnaissance and Conversation Assessment of Avifauna in Sahyadri Tiger Reserve

COMPLETED

Funding Source

Sahyadri Tiger
Reserve Foundation

Investigators

Dr. Gopi G.V.
Dr. Clement Ben

Researchers

Surabhi Sati
Anurag Vishwakarma

Date of Initiation

October 2016

Date of Completion

March 2018

Objectives

The objectives of the project are to (i) determine the avian species diversity patterns in Sahyadri Tiger Reserve; (ii) identify the determinants of bird species richness in Sahyadri Tiger Reserve; (iii) determine the pattern of habitat utilization by birds and determine the influence of habitat variables on the diversity and composition in Sahyadri Tiger Reserve; (iv) determine the effect of anthropogenic pressure on the avian species richness in Sahyadri Tiger Reserve; and (v) prepare a conservation plan for the avifauna of Sahyadri Tiger Reserve from the information generated from the foregoing objectives.



Progress

The study was conducted in Sahyadri Tiger Reserve, which has an area of 1166 km². The reserve comprises two protected areas, viz. Koyna Wildlife Sanctuary, in the north (423.55 km²), and Chandoli National Park, in the south (317.67 km²), and an adjoining area of extent 424.34 km². In total, 150 points were sampled, spaced nearly 1 km apart, using variable point counts, between 16 October and 17 June to survey the avian diversity. Each point was replicated thrice in autumn, winter and summer. At each point, the birds were counted within a 50 m radius. The surveyors were stationary for 5 minutes before each count. All the birds seen and heard at each point were recorded.



Anurag Vishwakarma

Outputs and Outcomes

A total of 218 species of bird belonging to 66 families were recorded during the study. Seven of these are threatened species. The highest number of recorded species (30) was in the family *Accipitridae*. Seven endemic birds of the Western Ghats were also recorded. The research team found that there is a significant relation between the bird density and diversity within a habitat type across the three sampling seasons. In autumn, the density ranged from 733.75 ± 63.14 to 485.91 ± 46.01 per km^2 . The highest density was recorded in agriculture land and the lowest in forest. In winter the density ranged from 1673.3 ± 90.27 to 519.83 ± 31.43 per km^2 , the highest being in agriculture land and the lowest in forest. In summer the density ranged from 900.59 ± 68.58 to 403.00 ± 39.97 per km^2 , the highest being in shrub land and the lowest in grassland. The study found higher bird densities in autumn and winter in areas with highly intense agricultural activities as such human-disturbed areas provide heterogeneous habitats that attract human-tolerant bird species. It was also observed that during summer, shrub land had the highest density of birds, whereas the lowest density was in grassland and agricultural land. In summer the grasslands and agricultural lands were usually dry. Farmers burn field residues, and hence shrub land provided a more open habitat that supports shrubs that provide food and canopy cover for different bird species. Unlike the bird density, the diversity of the avifauna was high in forest in all three seasons. In autumn, the diversity index values ranged from 3.867 to 3.533, and in winter the diversity index values ranged from 3.895 to 3.551. In summer the

diversity index values ranged from 3.941 to 3.258. The diversity was highest in forest and lowest in grassland in all three seasons.

The research team observed unusual flowering of the dhak (*Butea monosperma* (Lam.) Taub (*Fabaceae*)). The flowering time of the species is March-April though sometimes it also flowers in late February, and the flowering lasts till early May. Notably, during the field surveys, 10 fully grown individuals of *B. monosperma* in full bloom were observed from mid-November to late December in Chandoli National Park and Koyna Wildlife Sanctuary. Through continuous monitoring of these individuals in the tiger reserve, unusual phenological events that have not been reported earlier for this species were confirmed. The change in phenological events of this species could be attributed to climatic change, irregular drought patterns or genetic factors, albeit further research is needed.

Milestone

The study reveals the relationship between avifauna species richness and habitat patterns and addresses the effects of anthropogenic pressure on the avian species richness and distribution patterns. Also, this study provides evidence that settlement areas can serve as refuges for birds. Therefore, conservation efforts should be directed towards making communities view human-occupied areas as habitats for birds and not as lost habitats. Hence, scientific understanding backed by empirical evidence about the process and patterns of avifaunal assemblages in Sahyadri Tiger Reserve can be used to formulate a robust conservation plan for the birds of the reserve.

Studying the Dispersal of Tigers across the Eastern Vidarbha Landscape, Maharashtra, India

ONGOING

Funding Source
Maharashtra Forest
Department

Investigators
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Dr. Parag Nigam

Researchers
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Pallavi Ghaskadbi

Date of Initiation
December 2015

Date of Completion
December 2018

Objectives

The objectives of the project are to (i) understand the movements of tigers that drive population connectivity on a landscape scale and the effect of environmental features on dispersal; (ii) validate the modelled corridors and identify new functional corridors and habitats in a highly dynamic landscape; and (iii) directly help effective conservation and management of tigers beyond the protected area (PA) system using real-time data from radio-collars.

Progress

Four tigers were radio-collared during 2016-17 to understand the movements of dispersed individuals. After getting a good idea of the tiger movements in the heart of the Eastern Vidarbha Landscape (EVL), in 2017-18, a total of four tigers were radio-collared in the southern part of this landscape - in Tadoba-Andhari Tiger Reserve (TATR), which is an important source population of the tigers in EVL. Two sub-adults (one male and one female from the same litter) were collared in the core area of Kolsa Range during March 2017. Subsequently, two more sub-adults (both males from the same litter) were radio-collared in the core Tadoba Range in June 2018. The two sub-adults from Kolsa Range dispersed and established their territories successfully. The two sub-adult males, which were collared later, are yet to disperse and are currently being monitored in their natal area within TATR.





Fig. 1: Dispersal of Kolsa sub-adult female from TATR to Umred-Karhandla Wildlife Sanctuary. Green box in the map is the start location and red box is the end location of the collared individual.

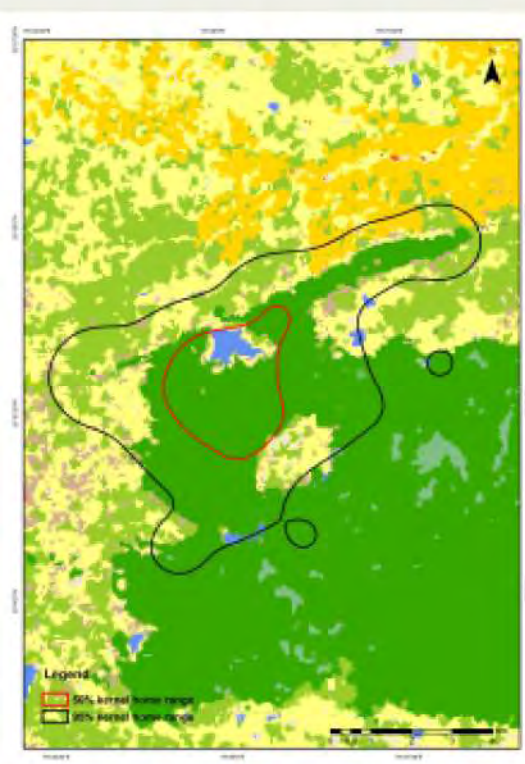


Fig. 2: Home range of tigress in UKWLS (95% kernel)

Outputs and Outcomes

The two Kolsa sub-adults dispersed from their natal area in late November and December 2017 respectively. The sub-adult male started exploring and extended its territory from November onwards and dispersed to the nearby buffer area within TATR. It was found that the home ranges of males are comparatively larger than those of females both within and outside PAs.

Moreover, males and females both have larger home ranges outside PAs than in wildlife sanctuaries or reserves. The sub-adult female dispersed from her natal area and travelled approximately 110 km to reach Umred-Karhandla Wildlife Sanctuary (UKWLS), in December 2017, challenging the known ecological knowledge that females do not display long-range dispersal as males do.

The tigress crossed a highly critical corridor which has canals, nullahs, state highways, power lines, electrified farm fences, human settlements and Wainganga river through different forest ranges and divisions. Currently the tigress had established her territory in the Kuhu range of UKWLS covering an area of 44 km². The dispersal route and home range (post-dispersal) are shown in the map.

Milestone

Following the dispersal routes of radio-collared tigers in the landscape, the research team was able to identify tracts of forest that were selected by the animals to disperse and act as important connecting corridors. The data also helped validate the functional corridors across EVL. The data from the radio-collared tigers also helped identify critical crossing zones of tigers across linear infrastructure such as National and State highways. Four sensitive zones on the highways used by collared tigers for movement in the landscape were identified.

One of the major threats to tigers in this landscape that was identified through the radio-collared individuals is that of electrocution in agricultural fields adjoining forested areas. Villages with high, moderate and low potential for electrocution were identified on the basis of the data from electrocuted tigers. Both long-term and immediate mitigation measures were recommended to curb the death of tigers and other wildlife by electrocution. A report was published and submitted to the Forest Department. These key findings may help the managers and in turn the policy makers in strongly advocating for a legal protection status for critical areas outside PAs.

Ecological Impact Assessment of Existing and Proposed Road Infrastructure in Important Wildlife Corridors in India for Strategic Planning of Smart Green Infrastructure

ONGOING

Funding Source

National Tiger Conservation Authority, New Delhi

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Dr. Bilal Habib

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Adrian W. Lyngdoh

Date of Initiation

December 2015

Date of Completion

December 2018

Objectives

The objectives of the project are to (i) assess ecological impacts (direct, indirect and cumulative) of road infrastructure on select wildlife taxa and their habitats within three landscapes in India; (ii) evaluate the cumulative impacts of existing multiple road developments on conservation values of the landscape and the integrity of the wildlife corridors in these landscapes; (iii) assess the implications of future road development in these landscapes, with special emphasis on the wildlife corridor function; and (iv) provide a regional road development plan based on current and future road development plans to be implemented in the landscape to avoid, reduce and mitigate impacts on areas critical for promoting conservation in the identified landscape.

Progress

A GIS-based multicriteria-spatial decision support system was used to assess the vulnerability of wildlife corridors in Central Indian landscape to road/rail-induced fragmentation. Each corridor segment intersected by such infrastructure was assigned a low, moderate or high vulnerability status. On the basis of these reviews and analyses, focal study sites were chosen.

National Highway 37, passing through Kaziranga National Park and Tiger Reserve, Assam, was visited in October 2017 to carry out follow-up inspection of the pilot project of the Automated Animal Sensor System on the Kanganjuri-Burapahar corridor and to review a proposal to realign National Highway 37, passing through Kaziranga National Park, Assam, which was to have three flyovers across the critical corridor stretches being intersected by the highway.



Akanksha Saxena

Six road stretches intersecting the Kanha-Pench corridor (SH 11, SH 26) were visited during November - December 2017, and three road stretches intersecting the Navegaon-Nagzira-Tadoba-Indravati corridor (SH 367, NH 930, NH 6) were visited during January-March 2018. Data on the presence of ungulate species and their use of the habitat along road stretches, road-induced mortality and road profiling was carried out in the selected road stretches. Vulnerability assessment of these stretches in the Kanha-Pench corridor was carried out using 15 variables to ascertain the integrity of the corridors and their disturbance levels.

Roadkill and use of roadside habitat by animals are currently being monitored in non-upgraded (Madhya Pradesh) and upgraded four-laned (Maharashtra) sections of NH 7 passing through Pench Tiger Reserve, Madhya Pradesh and Maharashtra.

Outputs and Outcomes

The sensors of the Automated Animal Sensor System, installed on National Highway 37, in the Kanchanjuri-Burapahar corridor, in Bagori Range of the park, were assessed in the field in April 2017. An initial report was submitted to the Assam Forest Department in May 2017. There was a field visit to the project site in October 2017, and follow-up report was submitted the same month.

Subsequent to the field visit to NH 37, which passes through Kaziranga National Park, in which corridor stretches were inspected and consultations had with PWD officials, a report titled 'WII's comments on the proposed road/flyover alignment on National Highway 37, passing through Kaziranga National Park, Assam' was submitted to the Assam Forest Department in October 2017. The yearly report for the period from December 2016 to May 2018 was submitted to NTCA in May 2018.

Development and Maintenance of Studbooks for Selected Endangered Species in Indian Zoos

ONGOING

Funding Source
Central Zoo Authority

Investigator
Dr. Parag Nigam

Researchers
Dr. Anupam Srivastav
Neema Sangma Lama

Date of Initiation
July 2012

Date of Completion
June 2018

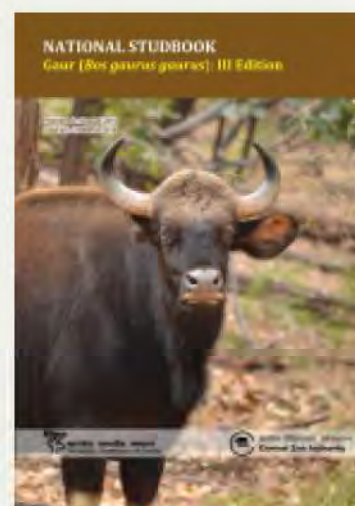
Objectives

To address the continued decline of species in their natural habitats, the Central Zoo Authority, in partnership with Indian zoos, has initiated ex-situ conservation programmes for selected species. The task of development and maintenance of studbooks was assigned to WII with the objective of maintaining and developing studbooks for the 34 species identified (updating studbooks for 14 species and initiating new studbooks for 20 species). The details follow.

(i) Updating studbooks for the Asiatic lion, Bengal tiger, Lion-tailed macaque and Indian one-horned rhinoceros, red panda, snow leopard, Tibetan wolf, clouded leopard, hoolock gibbon, Nilgiri langur, gaur (Indian bison), Indian wild ass, dhole (wild dog) and Bhutan grey peacock pheasant. (ii) Initiating new studbooks for the Indian gazelle (chinkara), brow-antlered deer (sangai), swamp deer (barasingha), four-horned antelope (chowsingha), mouse deer, serow, blue sheep (bharal), golden langur, pig-tailed macaque, stump-tailed macaque, Phayre's leaf monkey (spectacled leaf monkey), Indian wolf, Indian pangolin, white-backed Bengal vulture, long-billed vulture, slender-billed vulture, Nicobar pigeon, cheer pheasant, Himalayan monal and western tragopan. (iii) Development of population management plans for the foregoing 34 species on the basis of the available pedigree records.

Progress

During the reporting period, the studbook for the Bengal tiger (*Panthera tigris tigris*) was updated. New studbooks were initiated for the Indian wolf (*Canis lupus pallipes*), swamp deer (*Rucervus duvaucelii*), mouse deer (*Moschiola indica*), four-horned antelope (*Tetracerus quadricornis*), chinkara (*Gazella bennettii*), brow-antlered deer (*Rucervus eldii eldii*), white-backed vulture, (*Gyps bengalensis*), slender-billed vulture (*Gyps tenuirostris*), long-billed vulture (*Gyps indicus*) and Nicobar pigeon (*Caloenas nicobarica*) were initiated. The databases of the studbooks that have already been developed under the project were updated on the basis of pedigree information received from zoos housing the species.



WII Photo Library

Outputs and Outcomes

A comparative assessment of the studbooks developed/initiated under the project revealed that for most of the populations identified for *ex-situ* conservation in Indian zoos the conservation goals have not been achieved. A large part of these populations originates from a small founder base and remains demographically unstable. These populations further retain limited genetic diversity because of the small founder size used to establish them. The over-representation of only a few lineages at the expense of other wild-origin animals, which remained unrepresented or under-represented, was an additional cause of concern.

Milestone

During the reporting period, new studbooks were initiated for 10 species, and one existing studbook was updated. These studbooks include population management plans developed on the basis of a review of the literature to understand the natural history of the species and the threats faced by them in their natural habitats and the data made available by holding zoos. A total of 34 species (26 mammals and eight birds) were identified. The national studbooks for 11 species were prepared during the reporting period. Besides, databases for 20 species have been updated on the basis of information received from holding zoos.

Long-Term Monitoring of Antarctic Wildlife and Their Habitats in Antarctica

ONGOING

Funding Source

National Centre for Antarctic
and Ocean Research
(NCAOR), Goa, Ministry
of Earth Sciences and
WII Grants-in-aid

Investigators

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Date of Initiation

September 2013

Date of Completion

May 2018

Objectives

The main aim of this programme is long-term monitoring of selected animal species that are indicators of Antarctic and Southern Ocean ecosystems in connection with climate change and therefore strengthening the biological database of NCAOR. The objectives of this programme are to (i) monitor indicator species such as penguins and birds in the Indian sector of operation in Antarctica using satellite telemetry; (ii) understand the movement of birds in and around the Indian sector of operation in Antarctica; (iii) assess habitat use by tagged individuals and determine key habitats of the species; and (iv) monitor any changes in the movement patterns over the years that are correlated with climate change.

Progress

WII had participated in the XIV, XV and XVI Indian Scientific Expeditions to Antarctica (1994-95 to 1996-97) to initiate and implement the monitoring programme 'Developing a Long-Term Monitoring Programme for Birds and Mammals in the Indian Ocean and Antarctica'. During the 3-year participation, WII could collect baseline data on the status and distribution of mammals and birds of India Bay, Antarctica and standardized a methodology for long-term wildlife monitoring. During the 28th, 29th, 33rd, 34th, 35th and 36th In SEA, WII could collect baseline data on the status and distribution patterns of birds and mammals in the Larsemann Hills area and continued a wildlife survey along the Princess Astrid Coast.



Priyanka Datta.

Outputs and Outcomes

During the last expedition (38th In SEA), the nesting ecology, behaviour and habitats of certain birds were studied at Larsemann Hills. Genetic samples of birds (feathers) were also collected during the last expedition. These will be analysed for the site fidelity and population genetics. Apart from Antarctica, WII is also monitoring the changes in abundance and distribution of wildlife in the Southern Oceans, both Indian and Atlantic.

Milestones

In its last seven expeditions, WII collected valuable data on birds and mammals in the Indian Southern Ocean. These may be used as baseline data to detect changes in the wildlife populations in this region in relation to climate change. Some of the research findings have been published as papers and chapters in books.



Annat Pande

Human-Wildlife Conflict Resolution Mechanism in the Indian Himalayan Region: Risk Assessment, Prediction and Management through Research and Community Engagement

ONGOING

Funding Source

MoEFCC under National Mission on Himalayan Studies (NMHS)

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Date of Initiation

April 2016

Date of Completion

March 2019



Objectives

The objectives of the project are to (i) develop risk assessment tools and processes for identifying negative human-wildlife interaction (HWI) in the Indian Himalayan Region (IHR) through investigations and predict potential hotspots of conflict for regular monitoring and development of site-specific mitigation efforts; (ii) understand the biological factors and ranging patterns of selected wildlife species involved in livestock/crop depredation and attacks on people in the IHR; and (iii) develop and implement adaptive management strategies in some of the vulnerable areas identified through community engagement and the use of modern science and technological tools and approaches.

Progress

Negative HWI or conflict is a major management issue in the IHR, where large expanses of human habitations and agricultural land areas are either interspersed with fragmented wildlife habitats or located in close proximity to forest reserves, leading to frequent livestock depredation, crop damage and attacks on humans. Species such as the snow leopard, Himalayan brown bear, Asiatic black bear, common leopard, wild pig and rhesus macaque are primarily involved in negative HWI and were the target species for the project. After reviewing the extensive literature on available information on conflicts, the research team started gathering data from the state forest/wildlife departments of Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Sikkim and West Bengal. On the basis of analysis of department records and consultations with senior officials of the state forest departments, the team initiated field investigations and actions at Pauri District (Uttarakhand), Kugti and Tundah, in Chamba District (Himachal Pradesh), and Darjeeling and Kalimpong districts (West Bengal). The team is investigating the level of human



Diparjan Naha

macaque interaction within a 2 km radius around the WII, Dehradun campus. So far, the team has found the macaque presence to be greatest at the edges of forest and least in areas far away from the forest. The research team has identified human-macaque conflict hotspots and four major troops at the study site.

The team camera-trapped an area of 315 km² in Pauri District and estimated the leopard density to be 4.6 (SE 1.5) per 100 km². On the basis of the field surveys, the team also identified hotspots of conflict for Central Dooars, North West Bengal. The team radio-collared three common leopards and closely followed their movement patterns in North West Bengal during the period from December 2017 to February 2018. The average home range of male leopards was estimated to be 146 km² (SE 39) and that of female leopards was estimated to be 71 km². The team also continued field investigations on bear-human conflicts in and around Kugti Wildlife Sanctuary, Chamba (Himachal Pradesh). Using line transects, the population of rhesus macaques in the Chandrabani area was estimated to be in the range between 250 and 450 individuals. Roost counts gave a much lower number (138), and according to a grid

count the estimate was 108. The team has started planning and preparing for radio-tagging macaques and for testing reproductive control methods.

Outputs and Outcomes

Human-wildlife conflict intensity maps showing predicted vulnerable zones in the study sites have been prepared and shared with the state forest departments concerned for use in management. The team has deployed radio-collars on three leopards in north Bengal, and the information on their activity and movement patterns is shared with the West Bengal Forest Department for use in management.

Milestones

The team has initiated testing of fladry and fox lights in conflict areas to assess their efficacy as wildlife deterrents. The forest/wildlife departments of the study states are partners in this project, and their role will be crucial in devising and implementing an appropriate mitigation strategy to deal with human-wildlife conflict.

Assessment and Monitoring of Climate Change Effects on Wildlife Species and Ecosystems for Developing Adaptation and Mitigation Strategies in the Indian Himalayan Region

ONGOING

Funding Source

Department of Science
Technology under the National
Mission on Sustaining the
Himalayan Ecosystem
(NMSHE) Programme

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Date of Initiation

August 2014

Date of Completion

July 2019



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Objectives

The main goal of the project is to develop strategies to mitigate climate change effects on wild animal species and ecosystems in the Indian Himalayan Region (IHR).

To achieve the goal, the following research/task components have been identified under the theme 'Fauna and Ecosystems': (i) Identify the drivers of landscape change (climatic and anthropogenic) in the IHR (Ganges River Basin) and their effects on the ecological and social systems. (ii) Conduct focussed research on wildlife aspects (terrestrial and aquatic fauna, micro flora and habitats) and human dimensions in the IHR (Ganges River Basin) to frame evidence-based policy measures. (iii) Develop monitoring and decision support systems (DSS) for indicator species in the IHR (Ganges River Basin). (iv)

Undertake climate change scenario analyses and visualization to predict potential effects on the fauna and ecosystems as a strategy to communicate with stakeholders and to influence policy and decision making. (v) Develop spatial and inter-operable databases to facilitate and policy decision making. (vi) Build capacities within WII and those of other stakeholders for sensitization, for development of action plans for climate change impact mitigation and for enhancing capabilities for negotiations at the national and international forums.



Tapajit Bhattacharya

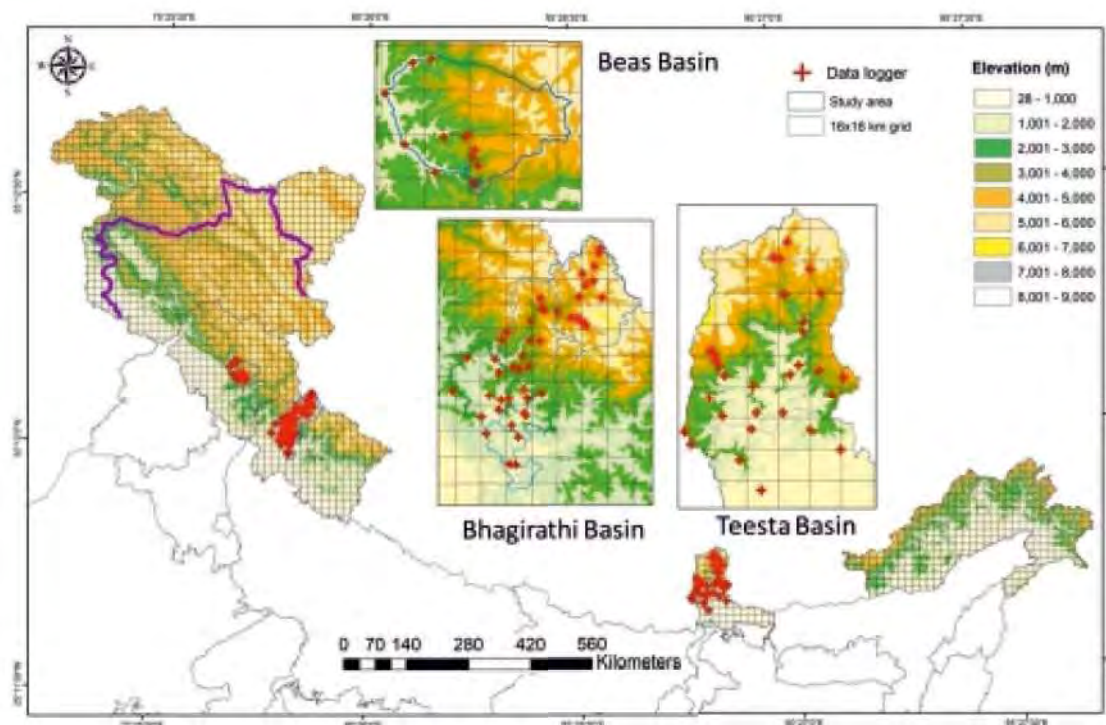
Progress

As a task force under the National Mission for Sustaining the Himalayan Ecosystem (NMSHE), the aim of the project team is to develop strategies to mitigate climate change effects on wild animal species and ecosystems in the IHR. A detailed reconnaissance survey was conducted in 2015, and primary data collection is being carried out. The elevation extent covered is from 500 m to 5000m in the three Himalayan landscapes, viz., the Bhagirathi Basin (Uttarakhand), the Beas Basin (Himachal Pradesh) and the Teesta Basin (Sikkim). The project objectives have been divided into four thematic groups: (1) terrestrial ecology, which includes soil micro flora, soil micro fauna, invertebrates, herpetofauna, birds and mammals, (2) aquatic ecology, (3) human ecology (socio-economic aspects), and (4) spatial ecology for (i) development of a spatial database and identification of the drivers of landscape change; (ii) modelling and scenario analysis and development of a support system for indicator species; (iii) 2D and 3D visualization; and (iv) capacity building/training/professional inputs including an internship and exchange programme.

The landscapes are subdivided into cells of 256 km² (16 km × 16 km), considering the average home range of the largest mammal found in the area, the

Himalayan brown bear, *Ursus arctos isabellinus* to generate baseline data on species richness. Each of these cells is sub-divided into 4 km × 4 km grids, and sampling is going on in 3 to 4 grids in each cell. Thematic group-specific standard methodologies have been developed and followed. Secondary data collection has been completed for both the terrestrial and aquatic themes. Preliminary analysis of species distribution and inventory preparation have been carried out. Research trend and knowledge gap analyses have been completed for all the terrestrial and aquatic themes. Capacity building of the scientific community within the institute and of other stakeholders outside has also been carried out and is continuing.

To create a fine scale temperature and precipitation surface model for the entire two basins, Data loggers has been deployed in different habitats along the elevation gradient. The above-mentioned grid structure was followed to deploy at least one data logger in a 256 km² grid, and the number of data loggers in a particular grid was chosen according to the habitat diversity and the number of elevation classes in that grid. HOBO U23 Pro V2, which can accurately measure the temperature (accuracy level $\pm 0.2^{\circ}\text{C}$) and relative humidity (accuracy level $\pm 0.2\%$), is being used.



Outputs and Outcomes

Terrestrial ecology. Analysis of information retrieved from the data loggers deployed in the Bhagirathi Basin ($n=46$) showed that there is high variability in the high altitudes during autumn and winter. This trend was common to both temperature and precipitation. The soil texture of Gangotri National Park was found to be typically sandy. The soil in the park consisted of sand (93.21%), clay (5.99%) and a negligible amount of silt (0.005%).

So far, the team has collected more than 1500 samples of lichen from different elevation zones and vegetation types in the Bhagirathi Basin. Around 105 species (42 genera, 23 families) have been identified. The specimens are preserved in the herbarium of WII, Dehradun. The family Parmeliaceae was the largest family, with 33 species recorded in the study area, followed by Physciaceae (11), Lecanoraceae (10) and Cladoniaceae (9). The majority of species of the family Parmeliaceae have a foliose, fruticose or subfruticose growth form and grow abundantly in the soil, on rocks or as epiphytes. This family was dominant in the region because of its adaptability and ability to grow in different substrates. The maximum diversity of species was recorded in the montane and subalpine forests. A total of 56 soil samples have been collected from Gangotri Valley and Nelang Valley (3000–5000m). A total of 17 soil nematode genera belonging

to seven families and six orders has been recorded so far.

Preliminary assessment led to a listing of 85 odonate species belonging to 45 genera and 12 families. During transect sampling, a total of 64 species were recorded. Twenty-one species were recorded through opportunistic sampling. The preliminary findings show decreasing diversity with increasing altitude. Morphometric analysis and historical data show that seven of the species were being recorded for the first time from Uttarakhand. Molecular taxonomy can confirm this.

Six families, 16 genera and 18 species of reptiles and four families, eight genera and 12 species of amphibian, including one new record, were documented during the study. The species richness decreases with increasing elevation. Assessment of the distribution of different amphibian species in relation to micro-climatic features showed that *Nanorana vicina* occurs in the lower barometric pressure zone and that its presence is independent of stream flow. *Amolops formosus* occurs in the mid-barometric pressure zone. *Duttaphrynus melanostictus* and *Amolops jaunsari* occur in the high barometric pressure zone. The body temperature of amphibians is positively correlated with the surface temperature.

The surveys found 303 bird species belonging to 61 families in the Bhagirathi Basin. The family Muscicapidae had the highest number of species (31), followed by Accipitridae (22) and Timaliidae (17). There were 12 species of the focal group (Phasianidae) in the Bhagirathi Basin. A total of 1489 photographs of 11 phasianid species were captured in 104 camera traps.

The camera traps in 135 out of 209 locations were functional continuously for more than 100 camera trap days (total 3057 trap days; average 108 ± 3 effective trap days). The camera-trapping efforts confirmed the occurrence of 37 non-volant mammals belonging to five orders and 14 families in the Bhagirathi Basin. The order Carnivora was the most diverse order, with 18 species, followed by the orders Artiodactyla (9), Rodentia (4), Lagomorpha (4) and Primates (2). Out of the 37 species recorded, eight are ranked as threatened (Endangered 4; Vulnerable 4), five as Near Threatened and 25 as Least Concern in the IUCN Red List 3.1 (IUCN 2017-3).

Aquatic ecology: A total of 14 species of fish were found in the preliminary survey conducted in the Teesta. These include species from the genera Salmo, Schizothorax, Garra, Botia, Schistura, Pseudecheneis and Parauchenoglanis. The study area in Tirthan, Beas, was dominated by Salmo trutta fario and Schizothorax richardsonii and other species were absent due to the high elevation. A Glyptothorax species was recorded from isolated lower-order streams of the study area that is new to science. This species is being described. The physico-chemical parameters of all the streams were noted, and the habitat suitability indices will be analysed for modeling in the future.

Human ecology: A total of 1096 villages in the Bhagirathi Basin were identified from 2011 census India dataset, and two-step cluster analysis was carried out to classify the villages in different clusters according to altitude, population, village area, disaster severity and remoteness index. A total of 11 sub-clusters were found in three clusters, and 33 villages representing all the clusters were selected for a household-level survey. A semi-structured questionnaire was formed according to the household economy approach, and stratified random sampling was carried out to select households for a detailed survey. A total of 307 households of 13 villages of Uttarkashi and 279 households of 12 villages of Tehri Garhwal District were surveyed to document the impact of climate change on ecosystem services.

Spatial ecology. The existing spatial database was currently updated with 1 km Global Land Cover data (land use/land cover), 0.5 km MODIS-driven USGS LCI data (land cover) and HydroSHED data (global river and drainage systems). Compilation of the field data is in progress. Analysis of the spatial drivers of landscape change in Uttarakhand has been completed. New methodological frameworks for identifying the drivers of land change at multiple spatial scales and a regression model for different climatic and anthropogenic variables affecting the change have been developed.

Spatial ecology: The climate change projections for all six Indian Himalayan states, viz., Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Arunachal Pradesh, Sikkim and West Bengal, have been completed. Data on their populations and socio-economic parameters from the Census of India have been collected. The relationship between human well-being and ecosystem services in the Bhagirathi catchment, of Uttarakhand, has been modelled. A combination of spatial analyses and generalized linear modelling was employed to explore the key drivers of vegetation change and identify the scale-specific climatic and anthropogenic drivers. The results demonstrated that there has been a significant increase in the vegetation over the last 15 years in most of the landscape (63%).

Milestones

The team recorded four mammals that were hitherto not known to be found in Uttarakhand. These species are the argali, *Ovis ammon*, sand fox, *Vulpes ferrilata*, woolly hare, *Lepus oiostolus* and Eurasian lynx, *Lynx lynx*. The noteworthy observations apart from these new records are camera-trap photographs of two endangered carnivores, the Asiatic wild dog, *Cuon alpinus* and tiger, *Panthera tigris*. The presence of wild dogs was recently reported from sub-alpine and temperate habitats of Uttarkashi District, in Uttarakhand. A tiger was photographed just once, in February 2017 (at an elevation of 2910 m), in a Quercus semecarpifolia-dominated sub-alpine broadleaved forest in Bhilangana Valley, Tehri Forest Division.

Ecology of Clouded Leopard, *Neofelis nebulosa* in an East Himalayan Biodiversity Hotspot

ONGOING

Funding Source
Department of Science
and Technology,
Government of India,
New Delhi

Investigators
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Researcher
Urjit Bhatt

Date of Initiation
November 2016

Date of Completion
November 2019

Objectives

The objectives of the project are to (i) estimate the abundance of the clouded leopard and other carnivore species within selected areas of Manas National Park; (ii) determine the prey choice and foraging habits of the clouded leopard in the reserve; and (iii) assess the temporal activity and space use of the clouded leopard and other sympatric carnivores.

Progress

A total of 213 camera traps were deployed systematically in $1 \times 1 \text{ km}^2$ grids in all three ranges of the park, covering an area of 190 km^2 . The relative abundance index (RAI) was calculated for all the photo-captured species. The spatial and temporal overlaps among the sympatric carnivores and associated prey were assessed using Pianka's niche overlap index and kernel density estimation, respectively. The influences of various habitat parameters (forest type, terrain type, canopy cover, disturbances, prey availability, etc.) on the relative abundances of the carnivore species were assessed using a generalized linear model.





WII Camera Trap Image

Outputs and Outcomes

Camera trapping found 16 carnivore species and 14 other species in the park. Among the 16 photo-captured carnivore species, there are five felids (*Neofelis nebulosa*, *Panthera tigris*, *Panthera pardus*, *Prionailurus bengalensis* and *Felis chaus*), one canid (*Cuon alpinus*), one ursid (*Ursus thibetanus*), three viverrids (*Viverra zibetha*, *Viverricula indica* and *Paradoxurus hermaphroditus*), three herpestids (*Herpestes urva*, *Herpestes auropunctatus* and *Herpestes edwardsi*) and three mustelids (*Lutrogale perspicillata*, *Melogale moschata* and *Martes flavigula*). The number of photos per carnivore species ranged from one, for *Melogale moschata* (RAI=0.00028), to 298, for *Panthera pardus* (RAI=0.042). *Panthera tigris* (n=269) was the second most common carnivore species photo-captured.

A nocturnal pattern was found in the clouded leopard and leopard cat. Civets are active during the dark hours of the day whereas mongooses are active during daytime. A 60% overlap was found among the tiger and leopard, but they remained segregated from each other by different activity peaks; in contrast, most of the photo-captures of the dhole

were made during the daytime and crepuscular hours. The results obtained for the large carnivores suggest a higher spatial overlap of the tiger with the gaur (50%) compared with the sambar (0.41%) and buffalo (0.37%). In the case of the leopard, there was a higher spatial overlap with the wild boar (54%) as compared with the sambar (52%) and barking deer (46%). The camera trapping also provides the first ever scientific evidence of the presence of the chital, as there has been no documentary evidence of the presence of the species in the last two decades.

Milestones

In the coming years, intensive fieldwork will be carried out to collect multi-season data. The densities of the clouded leopard and other carnivores will be calculated. The prey choice and foraging habits will be determined using scatological techniques and by examining carcasses of the prey killed in the field. The activity patterns of clouded leopards and their temporal overlap with other sympatric carnivores will be calculated with respect to the seasons.

Distribution Pattern, Habitat Use and Movement of Breeding Water Birds with Respect to Black-Necked Cranes and Bar-Headed Geese Using Telemetry in Changthang Cold Desert Sanctuary, Ladakh, and Gharana Wetland Conservation Reserve, Jammu (Jammu and Kashmir)

ONGOING

Funding Source
Department of Wildlife
Protection, Jammu and
Kashmir

Investigators
Dr. S. A. Hussain,
Dr. Bilal Habib,
Mr. Jigmet Takpa

Researcher
Neeraj Mahar

Date of Initiation
July 2012

Date of Completion
August 2018

Objectives

The objectives of the project are to (i) quantify the current status of water birds with special reference to Black necked crane and Bar headed goose in the Changthang Cold Desert Sanctuary in Ladakh and Gharana Wetland Conservation Reserve in Jammu (90%); (ii) examine the habitat use and movement patterns of black-necked cranes and bar-headed geese in the Changthang Cold Desert Sanctuary, in Ladakh, and Gharana Wetland Conservation Reserve, in Jammu; and (iii) use this information to devise an effective management strategy for wetlands in the wintering grounds of the cranes and bar-headed geese as well as their nesting or feeding and roosting sites (50%).

Progress

Abundance of water birds in Changthang Wildlife Sanctuary (CWLS): Counts were conducted in Changthang between 0700 and 1300 hours. A sampling protocol was followed wherein a minimum distance of 600 m was maintained between two points. This was feasible in small wetlands. Considering the logistic constraints, when sampling large lakes, the minimum distance maintained was 1200-2000 m. These distances were selected on the basis of the previous reconnaissance surveys of the team. The birds were photographed systematically instead of being counted. Later, the birds were identified and counted from the photographs. The counts were replicated in three seasons (spring, summer and autumn). The exercise was conducted during May, July and October 2017.





Neeraj Mahar

Flight initiation distance: An FID exercise was carried out with the help of two observers to quantify the predation risk. FIDs of different water birds were measured in three consecutive years (2015–2017) during May–October each year ($n=290$ FID observations). Different wetlands were visited on different days of the week and at different times of the day between 0700 and 1900 hours (Ikuta and Blumstein 2003). The first observer walked towards the target bird individual at a speed of 0.5–1.0 m/second till the bird was flushed out from its location. This observer used a range finder to record the initial distance (ID) and FID. The second observer monitored the bird activity using a spotting scope (Nikon Field Scope ED50). To avoid repeated sampling of the same individual or any possible bias, the sampling location or individual bird was changed. Species- and site-wise mean FIDs were calculated and the minimum approach distance (MAD) was calculated using the standardized formula $MAD=1.5 \times \text{mean FID}$ (Fox and Madsen 1997). We performed two-way ANOVA to test if the FID was a species-specific and site-specific trait or not.

Outputs and Outcomes

Water bird abundance in CWLS: Over three seasons, 37 species of water bird and a total of 2389 water bird individuals were recorded in spring, 2881 in summer and 5658 in autumn in CWLS. The Bar-headed goose (1038.66 SE 94.82), ruddy shelduck (845 SE 324.29), brown-headed gull (425 SE 84.39),

common goosander (112.33 SE 15.38) and Eurasian coot (91 SE 60.78) were the key water bird species in Changthang.

FID measurement: The mean FID varied between 27 and 229.15 m among the 16 species of water bird, the minimum was for LSP and maximum for BNC, respectively, while the mean MAD varied between 40.5 and 343.72 m. The greatest FID were those of RSD ($n=113$), and the least were those of CT and BS ($n=1$ each). FID was found to be a species-specific trait, there was a significant difference in FID between species ($P<0.001$). Also, the mean FID varied with the site ($P<0.05$). The species and site both explained the significant variation in FID ($P<0.001$).

Tourists and water birds arrive concurrently in Ladakh in summer. Apparently, the tourism activities disturb the water birds and their habitats. The MAD information can be used in effective protected area management.

Milestone

MADs could be used for delineating buffers around wetlands for different water bird species.

Understanding the Amur falcon, *Falco amurensis* its Stop-over Sites in Nagaland and Its Migratory Routes for Better Conservation Planning

ONGOING

Funding Source

Ministry of Environment,
Forest and Climate Change

Investigators

Dr. R. Suresh Kumar
and Dr. V.B. Mathur

Researcher

Deven Mehta

Date of Initiation

October 2016

Date of Completion

October 2019

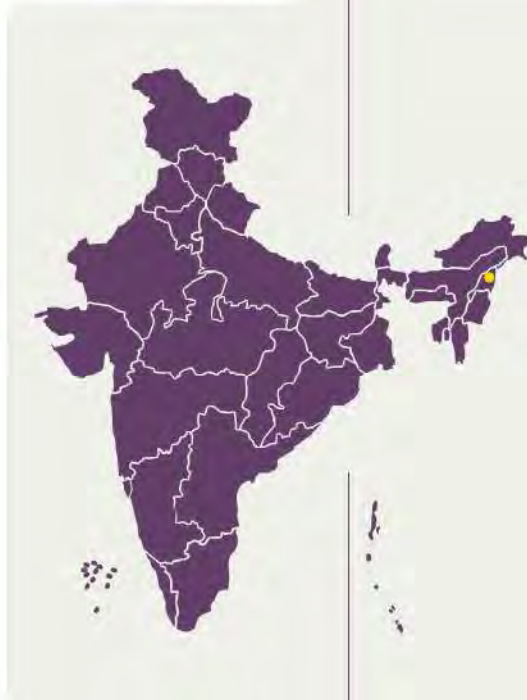
Objectives

The objectives of the project are to (i) deploy modern technology in the form of lightweight satellite tags fitted to five Amur falcons in Nagaland to track their amazing migration journeys; (ii) carry out a state-wide survey to locate and identify Amur falcon roost sites; and (iii) identify and document prey species from regurgitated pellets of the Amur falcons in Nagaland, India.

Progress

Extensive surveys were carried out across the state of Nagaland from November 2017 to February 2018 to collect information on the roost sites of Amur falcons, both active roosts and historical sites. More than 3000 regurgitated pellets of Amur falcons were collected from the three major roost sites, Pangti, Yaongyimchen and Hakhizhe, for diet analysis. One

of the five Amur falcons satellite-tagged in November 2016 continues to be active and is being tracked at its roost site in Nagaland. It continues to transmit data. It returned to Nagaland from its breeding area in November 2017. Another falcon, a male named Hakhizhe, flew past Nagaland in May 2017 and reached its breeding ground in northern China in June 2017. The two falcons migrated to southern Africa, once again following the same routes, and have now returned to their breeding areas in northern China. Surveys conducted in Nagaland in November 2014 resulted in the discovery of two new roost sites of the species.





WII Photo Library

Outputs and Outcomes

A total of seven historical and five active roost sites of Amur falcons were located in six districts in the state. The five active roost sites were mapped, and they ranged in area from 2.0 to 6.7 km². The pellets are currently being examined in the lab for prey remains that represent the diet of the falcons. The preliminary findings suggest that termites are the major contributor to the diet of falcons in Nagaland.

Milestone

During the second week of May 2017, two of the tagged falcons, Longleng and Hakhizhe, flew across India *en route* to their breeding grounds in northern China. Interestingly, Longleng, the female Amur, returned once again to southern India on its return migration *en route* to its breeding grounds. This is unlike all other the other Amur falcons tracked, which cross India by flying along the Gangetic plains. Longleng has returned yet again to precisely the same breeding site as the previous year and is expected to continue to transmit locations detailing its movements.



WII Photo Library

Meta-population Dynamics of Tigers in the Terai Arc Landscape, India

ONGOING

Funding Source

WCT-Panthera Global Cat Alliance, Department of Science and Technology, Government of India

Investigators

Dr. Samrat Mondol,
Dr. Bivash Pandav
Dr. Gautam Talukdar

Researchers

Suvankar Biswas
Supriya Bhatt

Date of Initiation

January 2015

Date of Completion

December 2018

Objectives

The objectives of the project are to (i) understand the extent to which tigers occupy unprotected areas within this landscape; (ii) investigate what the source and sink populations are; (iii) assess the population connectivity by estimating the rates and direction of tiger dispersal at the meta-population scale; and (iv) evaluate what landscape features, if any, affect the connectivity in this landscape.



Progress

During the reporting period, the research team collected a total of 769 large-carnivore faecal samples in the states of Uttarakhand, Uttar Pradesh and Bihar during the period from February 2017 to May 2018. The team sampled Rajaji and Corbett tiger reserves and the Lansdowne, Ramnagar, Haldwani, Champawat, Terai West, Terai Central and Terai East forest divisions (Uttarakhand); Amangarh and Pilibhit tiger reserves, Dudhwa National Park, Kishanpur, Katarniaghat, Suhelwa, Sohagibarwa Wildlife Sanctuaries and the North Kheri, South Kheri, Shahjahanpur, Pilibhit Social and Najibabad forest divisions (Uttar Pradesh); and Valmiki Tiger Reserve (Bihar). The team identified 695 positive tiger scats and 490 positive leopard scats from the total of 1,608 samples collected during the project period.



Suvankar Biswas

Outputs and Outcomes

The team used 13 micro-satellite data and identified 127 individual tigers from 464 positive tiger scats during the reporting period. The sampling and genetic data clearly showed two genetic clusters or sub-populations in this landscape, indicating a potential barrier to gene flow in this landscape. The Gola River corridor seems to be the barrier between these two genetic clusters, which is in accordance with the findings of an earlier study, which indicate that the tiger occupancy along the two banks of the Gola River is low. Anthropogenic activities (human settlements, urbanization and sand/boulder mining) in the Gola River corridor could be the major reasons behind this barrier.

Milestone

This was the first time that such extensive genetic sampling had been conducted to understand the functionality of a tiger corridor in the Terai Arc Landscape. The genetic data clearly showed that one of the known tiger corridors (the Gola River corridor) is dysfunctional now.

A manuscript on the universal faecal sampling approach in wildlife research has been submitted to the journal *Current Science*.

Influence of Micro-climatic Variables on Herbaceous Plant Communities in Treeline Ecotone in the Himalaya

ONGOING

Funding Source

Ministry of Environment,
Forest and Climate Change,
New Delhi

Investigator

Dr. B.S. Adhikari

Researcher

Rahul Kumar

Date of Initiation

April 2016

Date of Completion

March 2019



Objectives

The objective of the project is to understand the impact of depletion of snow-melt water on the growth of grassland species and selected functional processes.

Progress

A zone in the Tungnath region with an elevation range of 3,200-3,300 m was selected to understand the impact of snow water melt on the herbaceous community in early snow melt (ESM) and late snow melt (LSM) micro-sites. At each micro-site (size 50 m × 50 m), three permanent quadrats were laid to record the abundance and phenology of plants. A total of 86 species were found in the quadrats. Of the total species, maximum contribution was by forbs (90%) among growth forms, perennials (91%) as per their survival, hemi-cryptophytes (84%) among life forms and 70% species were native to Himalayan region. The species richness and diversity were higher in the ESM areas than in the LSM areas. In general, *Ranunculus* formed the community in ESM micro-sites and *Fragaria* formed the community in LSM micro-sites. *Anaphalis*, *Anemone*, *Danthonia*, *Geranium*, *Oxygraphis*, *Pedicularis*, *Selinum* and *Potentilla* were observed in the flowering phase immediately after the snow-melt, and 11 species were in the bud-development phase in May. Species such as *Oxygraphis*, *Fragaria*, *Gentiana*, *Lycimachia* and *Ranunculus* entered two distinct pheno-periods (reproductive and fruiting/seed maturation) within a single growing period at the site. Although there was seed setting in both cycles, these species reproduce vegetatively.



B.S. Adhikari

Outputs and Outcomes

The seasonal changes in the abundance and phenology of plants over the growth period *i.e.*, May–October, were studied in five major communities, *viz.*, the *Trachydium*, *mixed herbaceous*, *Polygonum*, *mixed Danthonia* and *Danthonia* communities, in the study area. The species richness was very similar in all the communities, and the diversity was highest in the *mixed Danthonia* community (2.860 ± 0.14) and lowest in the *Trachydium* community (1.958 ± 0.08). The density was highest in the *Trachydium* community (469.9 ± 67.9 individuals/m²), which was followed by the *mixed herbaceous* community (393.1 ± 42.9 individuals/m²).

Milestone

In most of the species the reproductive phenophase started in June and peaked during August–September. The fruiting phenophase was between July and September. Efforts are being made to collect data, which will be correlated with snow-melt water, temperature, soil nutrients, *etc.* in the future.

Developing Genetic Database to Understand Meta-population Dynamics and Connectivity of Tigers and Other Large Predators across Tiger Landscape of Maharashtra, India

ONGOING

Funding Source

Maharashtra Forest Department,
Council for Scientific and Industrial Research, NTCA

Investigators

Dr. Bilal Habib
Dr. Samrat Mondol

Researchers

Shrushti Modi

Date of Initiation

March 2016

Date of Completion

February 2019

Objectives

The objectives of the project are to (i) develop an exhaustive genetic database of individual tigers, leopards, dholes and sloth bears; (ii) determine the population structure, relatedness and sex ratio of these large carnivores; (iii) assess the population connectivity rates and direction of gene flow at the meta-population scale; (iv) identify the landscape features, if any, affecting the connectivity in this landscape; and (v) understand the social dynamics of all these species within this landscape.



Progress

The first round of sampling and data generation has been completed for three species, i.e., the tiger, leopard and Asiatic wild dog. Nuclear markers for both molecular sexing and individual identification have been developed for dholes and standardized for tiger and leopard. Data generation from the first round of sampling for the tiger, leopard and dhole in five protected areas, i.e., Tadoba Andhari Tiger Reserve, Melghat Tiger Reserve, Navegaon Nagzira Tiger Reserve, Pench Tiger Reserve and Umred Karandhla Wildlife Sanctuary, has been completed.



Shrushti Modi

Outputs and Outcomes

A paper titled "Non-invasive DNA-based species and sex identification of Asiatic wild dog, *Cuon alpinus*" was published. A new micro-satellite panel has been developed for conducting a population-level study of the Asiatic wild dog.

Milestone

In the next year, the second round of sampling will be carried out from October to February. Data generation and population genetic analysis will be performed for the entire landscape.

Intensive Monitoring of Tiger and Study of Dispersal in Kanha Tiger Reserve (Phase IV)

ONGOING

Funding Source
National Tiger Conservation Authority

Investigators
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Mr. Qamar Qureshi

Researchers
Neha Awasthi,
Jayanta Kumar Bora
Shravana Goswami

Date of Initiation
June 2009

Date of Completion
December 2019

Objectives

The project objectives are to (i) monitor the source population of tigers in Kanha Tiger Reserve by (a) estimating the tiger populations within selected areas of the reserve and (b) obtaining survival and mortality information through a mark-recapture study; (ii) monitor prey and co-predator populations and the condition of the habitat in the tiger reserve; and (iii) gain an understanding of tiger dispersal patterns.



Progress

The research team sampled the 777 km² core area and 502 km² buffer area of Kanha Tiger Reserve with an effort of 19,710 camera trap nights in this sampling session. The team gathered 3337 tiger images of a total of 106 tigers, among which 81 were adults (40 females and 41 males) and 25 were cubs.



WII Camera Trap Image

Outputs and Outcomes

The tiger density was computed to be 3.76 (SE 0.45)/100 km², and the leopard density was 8.4 (SE 0.70)/100 km² in Kanha Tiger Reserve in 2017. Line transect-based distance sampling was used to estimate the prey status in Kanha Tiger Reserve. Sampling had been conducted in both summer and winter. A total effort of 1200 km was invested in sampling 200 spatial transects with three temporal replicates of each. The results are shown in the table below. The density of chital was the highest amongst all the ungulate species, followed by those of sambar and gaur.

Ungulate density (SE) in 2017

Species	Winter	Summer
Chital	31.68 (7.07)	31.12 (4.81)
Sambar	9.8(1.25)	8.55 (1.05)
Gaur	5.42 (1.24)	6.79 (1.21)
Wild pig	7.93 (1.55)	5.65 (1.29)
Barking deer	2.48 (0.35)	2.3 (0.27)

Milestone

The research team gathered information on the distribution patterns of a few rare and elusive mammals such as the rusty spotted cat, Asiatic wild cat, mouse deer, otter, hyaena and four-horned antelope from the camera-trap survey. This information provided insights on the rich mammalian diversity of the Kanha landscape. The camera trapping effort has also resulted in the first photographic record of the wolf in Kanha Tiger Reserve.

MSTripES - Monitoring System for Tigers: Intensive Protection and Ecological Status

ONGOING

Funding Source

National Tiger Conservation Authority

Investigators

Dr. Y.V. Jhala
Mr. Qamar Qureshi

Researchers

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Ahana Dutt,
Anup Kumar Pradhan,
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Kainat Latafat,
Ninad Mungi,
Papori Khatonier
Krishna Mishra

Date of Initiation

March 2012

Date of Completion

July 2019



Objectives

The objectives of the project are to (i) refurbish the older version of MSTripES and design a new version of the software to include user-friendly protocols, applications, modules and data-archiving features; and (ii) implement MSTripES in different tiger landscapes of the country and orient frontline staff members and officials, enabling them to perform technology-aided smart patrolling and collect information on ecological parameters.

Progress

Data collection for patrolling and ecological monitoring using Android-based mobile applications is possible now. These apps are freely available and are multilingual (Assamese, Bengali, Hindi, Kannada, Malayalam, Marathi, Odiya, Tamil and Telugu). They have been customized for each tiger reserve. The program MSTripES is versatile as it caters to the demands of diverse technological requirements and can be used for effective data collection. A field staff member can collect data using mobile applications; GPS track logs and/or conventionally (manually filling data sheets). The mobile applications can be used in both online and offline modes, depending upon the availability of Internet connections. No mobile network is needed for running these applications. Photographs recorded using the apps are geo-tagged and stand valid in a court of law.

Data collected using the patrol app include track logs, crime waypoints, animal signs and sightings, animal mortality, waterhole status and management activities. The ecological module not only serves as a monitoring tool for the tiger and its habitats but also forests, their extent, threats, prey species, other endangered species, etc. In effect it is a resource for monitoring the entire wilderness for which the tiger serves as a flagship. All the tiger reserves are currently using the ecological module for carrying out the Phase I exercise of the ongoing fourth cycle of the all-India tiger estimation.

The presence of a panic button on both the patrol and ecological mobile apps helps in case of medical emergencies by sending an alert message to the range and division offices. It can also be used as SOS (Save our Species) during an animal rescue to send an alert message to avail the assistance of the rapid response unit. Visualization of the park protection can be done at any time period at any spatial scale in the GIS domain. Users may map the coverage and trends along patrol tracks, illegal activities, species presence, intensity of patrolling, etc. with just a click. Thus the program



WWII Photo Library

enables two-way communication in taking managerial decisions as real-time visualizing of a patrol can provide an opportunity to intervene.

In 2017, the research team trained more than 2300 forest officials from 17 states in mobile app-assisted smart patrolling and ecological surveys. The team organized five regional workshops (at Mudumalai, Pench, Kanha, Valmiki and Kaziranga) and site-specific training sessions (in the north-eastern states and in Corbett, Rajaji, Pilibhit, Mukundra, Palamau, Simlipal, Bandipur and Mudumalai). Forest officials from different tiger reserves and the National Tiger Conservation Authority (NTCA) participated in these workshops to initiate the implementation of MStrIPES in their areas. Three training workshops were also conducted at WII for computer technicians and GIS personnel from all the tiger reserves of the country. Additionally, the team standardized the administrative boundary files provided by the 18 tiger ranging states, which are now available online (www.mstripes.in).

Outputs and Outcomes

MSTripES has brought about a cultural change in the forest department's attitude of reporting illegal activities. A daily patrol record similar to the log-book maintained at each forest chowky is compiled systematically at various administrative divisions. The use of mobile apps was readily welcomed and appreciated by the frontline forest staff members during the regional workshops because of their ease of use. The program is generating interpretable reports and maps that are useful for management and making policy decisions to assess the health of

the park quantitatively instead of subjective rating. The changes in field conditions can be integrated in decision making, thus channelizing adaptive management. A database of the species distribution and occupancy, human impact intensity, and patrol coverage at each site is being prepared.

Milestone

The initial investment and effort seem formidable, but once developed, the system will pay dividends and will require minimal resources that need to be updated at regular intervals. MSTRIPES will not only serve as a tool for monitoring wilderness resources but could in effect be used for diverse needs such as land use planning.

MSTrIPES will watch the pulse of the tiger population and its habitat for future generations. The system will collect and compile information in a scientifically structured manner. The system will enable us to detect site-specific changes in time to address them through timely intervention by management and policy decisions. The system will permit comprehensive analysis at micro-levels such as small patches of forest or at macro-scales, *e.g.*, conservation units. Analyses can be at mega-scales, *e.g.*, country-wide analyses. With this system, information will be readily available to managers, scientists and policy makers, enabling them to make decisions on the basis of actual facts available from the field and not educated guesses, unreliable information or expert opinion. If implemented as designed, MSTrIPES can probably facilitate a cultural shift in the management of the protected areas of India.

Tiger Re-introduction and Recovery Programme in Panna Tiger Reserve and the Landscape Complex, Madhya Pradesh - Phase II

ONGOING

Funding Source

Madhya Pradesh Forest Department

Investigators

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Mr. Subharanjan Sen and
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TR (Collaborator)

Researchers

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Dyanesh Rathod,
Supratim Dutta,
Deepti Gupta
Kamna Pokhariya

Date of Initiation

February 2015

Date of Completion

March 2020

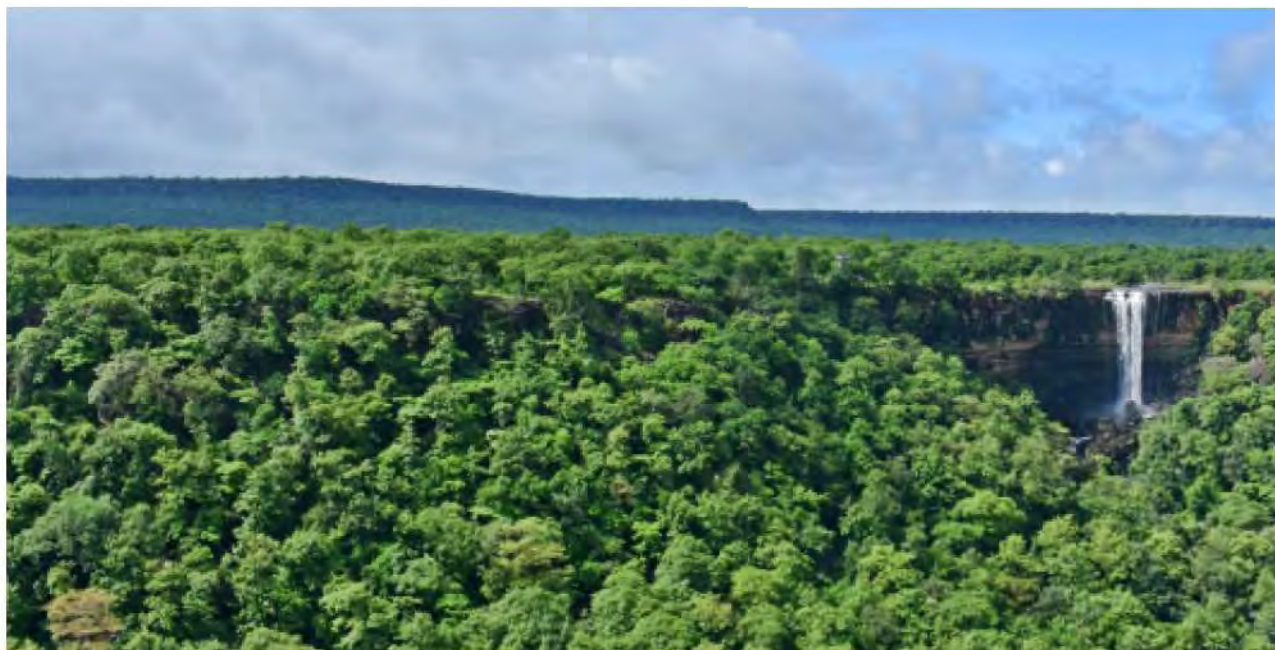


Objectives

The objectives of the project are to (i) monitor and study the population growth of the translocated/re-established tiger population in Panna Tiger Reserve (PTR), including the genetic variation and physiological profile; (ii) understand the dynamics of co-predator and prey populations in relation to the tiger occupancy pattern, food habits, habitat association and management interventions; (iii) study the landscape ecology of the tiger and ranging patterns, incorporating human interface issues such as human use of the core and buffer, poaching pressures and ecological correlates linked to economics and system services, including sources of water and stream ecology; and (iv) upgrade the skills of the PTR staff to execute independently the Phase IV monitoring of tigers in the next 2 years.

Progress

The re-introduced tigers and their offspring were regularly monitored using radio-telemetry and camera trapping. Phase IV activities, i.e., prey population abundance estimation using line transect and carnivore abundance estimation using camera traps, were carried out within PTR. An occupancy survey based on signs of carnivores, herbivores and humans was carried out across the entire reserve, inclusive of buffer areas. Tiger and leopard scat samples were collected and analysed to understand the food habits. Vegetation sampling was done to understand the tiger habitat parameters and the vegetation community structure and assemblages. A village questionnaire survey was carried out to understand the human-tiger interface and forest resource use. Training programmes were organized for members of the forest staff to enhance their capacity to carry out phase IV monitoring activities independently.



Supratim Dutta

Outputs and Outcomes

A home range map of all the radio-collared tigers was generated and the minimum convex polygon (MCP) area calculated. The home range analyses revealed that the mean home range size of the collared tigers in Panna was 84.62 km² (SD=83.57) during 2017-18. The home range sizes of males and females differed considerably, with males having a mean home range of 200.36 km² (SD=40.81) and females having a mean home range size of 35.01 km² (SD=18.76). The second male founder, T7, had the largest MCP (244.62 km²). The prey density within the core during summer was estimated using the program Distance 6.2 as 64.39/km² (SE=7.3; CV=11.48). Among the major tiger prey species, the highest density was that of chital ($X=15.9 \pm 4.4$; CV=27.8), followed by those of sambar ($X=9.20 \pm 1.5$; CV=16.82), wild pig ($X=7.50 \pm 2.2$; CV=29.61) and nilgai ($X=4.4 \pm 0.92$; CV=20.98).

The sign survey showed that the hyaena and leopard were widely distributed in the and buffer. Among the herbivores, the nilgai occupied the largest number of grids. Its signs were observed on every survey track. The cattle occupancy was also high as there were lots of feral cattle inside the reserve. Of the 330 households sampled during the village questionnaire survey, 269 stated that they depend upon the reserve forest for some forest resource, 60 said that they did not collect any forest products, and one said that they collected fuelwood only sometimes. Most of the

households (n=268) reported that they collected fuelwood from the forest. Other forest products collected were mahua (*Madhuca indica*), amla (*Phyllanthus emblica*), achar/chironji (*Buchanania lanzan*) and wood and bamboo (for construction purposes). Ninety out of the 330 households sampled reported that they had lost livestock to re-introduced tigers, while 235 households reported that they did not have any conflict with tigers. Of the livestock lost, the largest number was that of cattle (n=69), followed by buffaloes (n=19) and goats (n=2). The largest number of instances of cattle depredation took place inside the reserve forest (n=58), followed by forest edge/boundary (n=13), inside villages or agricultural fields (n=12) and between villages and forests (n=6). The season in which the largest number of depredation events occurred was the monsoon (n=29), closely followed by summer (27) and winter (n=25).

Milestone

The project has achieved significant accomplishments to the extent that over a dozen tigers have dispersed out of the reserve, reflecting the fact that the carrying capacity may have been reached. A few tigers have been shifted to other reserves to support tiger recovery efforts in those reserves. The current status has triggered a conservation approach that looks beyond the reserve boundary and focuses on landscape management strategies.

Documentation of Traditional Ecological Knowledge among Indigenous Ethnic Communities of Pithoragarh District, Uttarakhand

ONGOING

Funding Source

Department of Science and Technology, Climate Change, Programme (CCP), Ministry of Science and Technology, Government of India

Coordinating Institution

Department of Environmental Sciences, Jawaharlal Nehru University, New Delhi

Investigators

Dr. G.S. Rawat
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Researcher

Dr. Naveen Chandra Joshi

Date of Initiation

June 2015

Date of Completion

July 2020



Objectives

The project aims to document the existing and publicly available traditional ecological knowledge (TEK) among the two indigenous ethnic communities (IECs), viz., Van Rajis and Barpatiyas, of Pithoragarh District, Uttarakhand. The major objectives of the study are to (i) document the TEK pertaining to the use of bio-resources and their management among the two communities, (ii) study traditional farming practices and (iii) study the extent of TEK transfer from older to younger generations. The two communities selected for the study are Van Rajis and Barpatiyas.

Progress

The field work and household surveys pertaining to all the three objectives were completed. A total of 512 interviews were conducted. These covered both *Barpatiyas* (N=285, 12 villages) and *Rajis* (N=227, nine hamlets). In addition, special efforts were made to document the traditional architecture of the *Barpatiya* villages and the methods used to prepare local beverages. Since the *Van Rajis* were reported to be cave dwellers until the 1960s and 1970s, the research team conducted a detailed survey of the caves used by the ancestors in the remote pockets of the district. A total of 83 caves were located, and these were characterized. Data related to the traditional agricultural practices of the *Barpatiyas* and *Rajis*' knowledge of the use of wild plants and



Gaurav Sirola

animal parts were compiled. Analysis of the data related to the knowledge of agricultural practices, coping strategies in response to extreme climatic events and management of bioresources (age- and gender-wise) is in progress. Preliminary analysis reveals that the Barpatiya community cultivates as many as 101 varieties of food crops, of which vegetables constitute the greatest percentage (45%), followed by pulses (25%), cereals (19%) and others. *Van Rajis*, primarily hunter-gatherers till recent decades, have undergone a rapid socio-economic transformation. One of the major changes in their lifestyle has been the adoption of agriculture. Presently, the *Van Rajis* grow a total of 31 different crops.

Outputs and Outcomes

The study has resulted in documentation of the detailed ethno-ecological knowledge of the *Barpatiyas* and *Van Rajis* of Pithoragarh District. A comprehensive document on the current state of the traditional knowledge relating to the use and management of bio-resources among these communities is another expected output of the project. The baseline information will be fed to the Traditional Knowledge Digital Library (TKDL), which is being developed by the Government of India.

Habitat Improvement and Conservation Breeding of Great Indian Bustard: An Integrated approach

ONGOING

Funding Source

National Compensatory
Afforestation Fund
Management and Planning
Advisory Council (NCAC),
Rajasthan Pollution
Control Board

Investigators

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Researcher

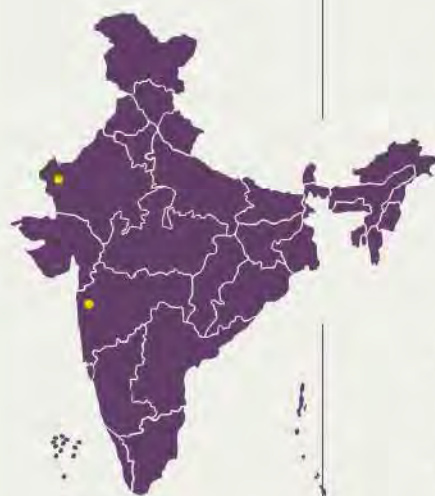
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Date of Initiation

2016

Date of Completion

2021



Objectives

The objectives of the project are the following: (i) **Conservation breeding.** To secure captive populations of the great Indian bustard (GIB) and lesser florican as insurance against extinction and (if possible) re-introduce captive birds in the wild. (ii) **Applied research.** To prioritize conservation areas, characterizing threats, assess population and habitat status, assess the effectiveness of management actions, understand local communities' livelihood concerns to balance land use and conservation goals and understand population genetics to inform conservation management. (iii) **Capacity building and awareness.** To improve protection enforcement, sensitize stakeholders to the importance and requirements of bustard conservation and incentivize local land users to adopt bustard-friendly land uses. (iv) **Pilot implementation for surgical habitat management.** To demonstrate best habitat-improvement practices through experimental interventions that can be replicated by state forest departments.

Progress

The staff was hired for *in situ* and *ex situ* conservation efforts. The project team travelled to various successful conservation breeding centres across India and to the houbara bustard breeding centre in Abu Dhabi for exposure to breeding techniques. A memorandum of understanding (MoU) for the establishment of a conservation breeding centre was finalized and signed. Deliberations aimed at designing the facility have commenced.

The annual GIB survey was conducted in Thar, including an intensive survey in the Desert National Park and Pokhran Field Firing Range and in Maharashtra. The national lesser florican survey was jointly conducted by the project team with partner agencies during July-September 2017. Surveys of carcasses under power lines were carried out in Thar. The research team carried out field activities to determine the ranging patterns and resource utilization of dogs using biotelemetry in Thar to understand the impacts of free-ranging dogs on wildlife. The team deployed camera traps according to the random encounter model sampling framework inside and outside those enclosures in Thar that had previous GIB breeding records to assess the abundance of potential nest/chick predators in and around the enclosures so that subsequently their population could be controlled to improve the GIB recruitment rate. Two GIBs were radio-tagged in Kutch, of which one died due to a power line collision. GIB samples were

collected from Rajasthan and Gujarat for genetic analysis when the birds were tagged. Samples were also collected during the last



Bipin C.M.

year from birds that died due to electrocution or natural causes during. Behavioural observations were made on GIBs at the interface of anthropogenic disturbances to inform the management.

The team met representatives of power agencies as well as senior government officials in several villages of Jaisalmer District to sensitize them to the critical issue of power line mitigation for GIB conservation. The eco-sensitive zone of Thar landscape was delineated in consultation with the Director, Desert National Park. Meetings were held with the Rajasthan State Government and with local communities in Kutch to institutionalize the GIB conservation breeding programme. The population of free-ranging dogs was assessed to understand the level of the problem. Sterilization programmes to control their population have been planned with Humane Society International (HSI) and the Corbett Foundation (TCF) in the coming months. The research team also conducted training workshops on the population, habitat and threat surveys. Forest department staff members and volunteers in bustard range states were involved. An additional training programme on quantitative conservation methods was conducted for the project staff and partner agencies at WII.

Outputs and Outcomes

On the basis of a 3053 km survey effort in 361 cells (cell size, 36 km²) spread in an area of 9252 km², the team estimated the current population size of the GIB in Thar to be 128 (SE 19) individuals. The national lesser florican survey yielded a conservative estimate of 264 male territories across the range, highlighting the critical status of this species. Carcass surveys conducted under power lines in

Thar found a mortality of three GIB. The estimated annual mortality of GIB in Thar is 18. The estimated annual mortality of birds of all species is ~1 lakh in the ~4000 km² priority GIB habitat. Radio-tagging of free-ranging dogs showed that an unsustainable 33% of the chinkara population is cropped annually and indicates potential negative impacts on the associated GIB. The telemetry information generated from the radio-tagged GIBs in Kutch helping prioritize power lines (the main threat) for mitigation. No new haplotypes were found from genetic analysis apart from three existing haplotypes in GIB-positive samples. Photo-capture data from camera traps are being analysed. Publicity material in the form of brochures, for example, for power agencies and other stakeholders has been prepared and widely disseminated. The project has procured bird diverters for power lines and arranged to have them deployed in a pilot implementation with the help of power agencies in Thar and is continuing advocacy to scale the effort up to prevent bird mortality. The eco-sensitive zone of the Thar landscape was disseminated to Rajasthan Forest Department and National Green Tribunal for necessary actions.

Milestone

A memorandum of understanding (MoU) between the Ministry of Environment, Forest and Climate Change (MoEFCC), the Government of Rajasthan and WII was approved and signed. The project team established contacts with personnel of the Indian armed forces. These contacts will be beneficial for long-term GIB conservation efforts in the Pokhran Field Firing Range and other army- and Border Security Force (BSF)-controlled areas.

Tiger Recovery Strategy and Long-Term Monitoring in Sahyadri Tiger Reserve, Maharashtra

ONGOING

Funding Source
Sahyadri Tiger Conservation
Foundation

Investigators
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Researcher
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Date of Initiation
2016

Date of Completion
2021

Objectives

The objectives of the project are to (i) undertake a feasibility study for habitat recovery and prey augmentation towards preparing an inviolate core area with adequate prey for tiger reinforcement, if needed; (ii) ensure that the population of tigers is demographically, genetically and physically (health-wise) optimal by managing it by strengthening the existing connectivity options and, if natural colonization is absolutely not possible, by translocation of tigers from other suitable sites; (iii) devise and execute a strategy of monitoring the founder individuals (prey species and tiger if translocated) that involves radio telemetry and GPS-satellite/GSM tracking technology; (iv) study the prey-predator relationships and undertake population estimation and monitoring in accordance with the NTCA Phase IV monitoring protocol; and (v) conduct conservation education programmes for local people and capacity building training programmes for field staff members for social acceptability and technical skill development, respectively, for effective implementation of the tiger recovery programme.



Progress

In continuation of the team's efforts to understand the feasibility of tiger recovery in Sahyadri Tiger Reserve (STR), their standard field surveys (camera traps, sign surveys, transect monitoring) were conducted during winter in 2017 and summer in 2018. The feasibility report has been submitted to the respective forest departments for review and comments. The data collected through the surveys (from October 2017 to June 2018) are being compiled. Once all the data are gathered, the team will proceed with further data analyses.



WII Photo Library

Outputs and Outcomes

A site-suitability analysis showed that 451 km² of STR is suitable for tigers. The research team has prepared a corridor map of the region between the tiger reserve and the adjacent Radhanagri Wildlife Sanctuary. A population viability analysis was carried out using Vortex 10. It was estimated that eight founder individuals would be required to maintain a minimum viable population of tigers in the reserve. Camera images revealed the presence of a total of 23 species of mammal in this tiger reserve.

Milestone

Camera images revealed the presence of tigers in Chandoli National Park, in the southern part of STR. This is the first report after 8 long years; the last image was captured in 2011. Since 2011, no tiger was recorded until May 2018. Six images of a tiger were captured from four locations in the Helwak and Chandoli ranges of STR. This finding has confirmed that the STR landscape does can hold tigers. There are tigers in these ranges, albeit in small numbers. This is an encouraging finding from the perspective of tiger recovery.

Genetic Connectivity at Landscape Scales for Large Carnivore Populations in Tiger Habitats

ONGOING

Funding Source

National Tiger Conservation Authority, Delhi

Investigators

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Mr. Qamar Qureshi
Dr. V. Kolipakam

Researcher

Shweta Singh

Date of Initiation

January 2016

Date of Completion

August 2019

Objectives

The objectives of the project are to (i) carry out genetic identification of leopards (*Panthera pardus*), dholes (*Canis lupus*) and sloth bears (*Ursus ursinus*) in the study area from faecal DNA extracts; (ii) investigate the meta-population structure of large carnivores in the country using micro-satellite loci genotypic data; (iii) investigate the level of genetic structuring in local populations and across the country; and (iv) identify any ESUs or isolated populations that merit special conservation attention.



Progress

Wild dog: A species-specific primer (SS2) based on the cytochrome b region of mitochondrial DNA was designed to amplify a region of 310 bp, as with leopard- and tiger-specific primers. A total of 391 putative wild dog faecal samples were chosen for extraction of DNA. Out of these, 310 faecal samples were successfully amplified and identified as wild dog samples. On the basis of the distribution of the wild dog-positive samples and the quantity of DNA present in the extracts, a total of 240 wild dog-positive faecal samples were chosen for genotyping with a set of 12 micro-satellite markers. Genotyping and scoring of samples were performed. Out of 240 genotyped positive samples, 224 individual were identified. The panel of 12 micro-satellite loci that was used for individual discrimination had a probability of identity (PID) of 2.09×10^{-20} .



WII Camera Trap Image

Leopard: A leopard-specific primer was designed, and the results were subsequently published. A total of 1,147 putative leopard/tiger faecal samples were chosen for extraction of DNA. Out of these, 718 faecal samples were successfully amplified with tiger- and leopard-specific primers. They yielded a total of 432 leopard-positive faecal samples. On the basis of the distribution, a total of 178 leopard-positive samples were chosen for genotyping with a set of 11 micro-satellite loci. Genotyping and scoring of the samples were performed.

Sloth bear: DNA was extracted from 442 sloth bear faecal samples. Out of these, 387 faecal samples were successfully amplified with a sloth bear-specific primer. Genotyping of the samples is going on.

Outputs and Outcomes

The leopard-specific primer that was designed (LSP) is the first non-cross-amplifying leopard-specific primer to be designed in India. The previous primers designed are known to cross-amplify with other sympatric carnivores. Maroju and Yadav *et al.* (2016) have shown that there is a visual misidentification rate of about 61% between tiger and leopard faecal samples. Therefore, by using LSP the research team would be able to unambiguously identify leopard faecal samples from those of tigers.

The wild dog-specific marker designed (SS2) in the study is the first wild dog-specific primer available to date. SS2 can differentiate wild dog faecal samples from those of domestic dogs and other sympatric carnivores through gel-based electrophoresis. The minimum number of dholes in protected areas across India was also generated.

Conservation Action Plan for Manipur's Brow-Antlered Deer or Sangai: An Integrated Approach

ONGOING

Funding Source

Compensatory Afforestation
Fund and Planning Authority
(CAMPA)

Investigators

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Ullah Ghazi
Rohikanta Sijagurumayum
Sharma

Date of Initiation

March 2016

Date of Completion

March 2021



Objectives

The sangai conservation programme aims to (i) secure the population in Keibul Lamjao National Park (KLNP); (ii) create a second population at the selected site; (iii) improved the habitat conditions and protection measures; (iv) involve local communities in the sangai conservation process at both KLNP and the re-introduction site; and (v) conduct applied research on the ecology of the sangai. The total outlay of the project is Rs.19.9 crores.

Progress

The WII had surveyed five possible sites for re-introduction of the sangai. Pumlen Pat and Thongam Mondum Reserve Forest was identified as the proposed site for re-introduction. During the sixth meeting of the State Board for Wildlife, held in May 2017, the Manipur Government had in principle agreed to establish a second population of the sangai at Pumlen Pat and Thongam Mondum Reserve Forest. This area has an extent of around 68 km² and has been set aside for declaring the first conservation reserve in Manipur for sangai conservation and for sustainable development.

A series of consultation meetings and workshops involving multiple stakeholders were conducted. Sixteen village-level meetings and two site-level meetings were conducted in the 36 villages around KLNP. Nine village-level meetings and one site-level meeting covering 19 villages around the proposed second home were also conducted. After the village- and site-level meetings, two state-level consultative workshops were held for wider engagement of stakeholders. Several trust-building activities (veterinary camps, eye camps, health camps, supply of clean drinking water during floods and cleanliness and plantation drives) were conducted in KLNP and in the proposed Pumlen Pat and Thongam Mondum Conservation Reserve



KBS Foto

from September 2017 to garner support for sangai conservation and the establishment of a second home for the sangai.

A livelihood training camp was organized for women groups from the peripheral villages of KLNP and the re-introduction site. The participants were trained by experts from Women's Initiative for Self-Empowerment (WISE), Dehradun, to develop alternate livelihood skills and use locally available materials. A few of the participants were sent to Dehradun for advanced training. Following these training programmes and activities, four self-help groups (SHGs) of women were formed. The SHG members were taken for exposure visits to various established livelihood centres in Imphal. Training in food processing and book keeping is being organized. A 2-day training eco-tourism workshop was conducted in November 2017 at KLNP for capacity building of the local community and to promote eco-tourism.

Outputs and Outcomes

Brochures, posters, banners and notebooks containing information on the local flora, fauna and socio-economy and material designed to promote general awareness were prepared in English and

Manipuri for distribution. Scarves and ties with sangai embroidery were also designed and made. Information standees were placed at Imphal International Airport and important traffic points in Imphal. Posters were displayed at the base camp of KLNP as well as at tourist spots inside the park. Hoardings on "IWPA 1972 and Wildlife Conservation" were placed at seven locations in the park. Awareness and sensitization programmes were conducted during important events such as World Wetland Day, World Environment Day and Wildlife Week. During the 105th Indian Science Congress, held at Manipur University, in March 2018, three poster presentations were made and an exhibition stall run with the theme "Conserving the Pride of Manipur". Six sensitization workshops on sangai conservation were conducted for personnel of military and para-military forces between December 2017 and January-February 2018.

Milestone

Research and monitoring activities are being carried out in KLNP and at the re-introduction site. The Rs.1.3 crores released for the financial year 2016-17 has been spent, and a second installment, of Rs.4.9 crores, has been released.

Spatio-temporal and Thermal Ecology of Indian Python, *Python molurus molurus* Linn. 1758 in Moyar River Valley, Tamil Nadu

ONGOING

Funding Source

Science and Engineering Research Board- Department of Science and Technology (Extra Mural Grant - Individual Centric), Government of India

Investigators

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Dr. Gautam

Researchers

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Karthi S.
Thiru Murugan V.

Date of Initiation

March 2017

Date of Completion

March 2020



Objectives

The objectives of the project are to (i) determine the movement patterns and home range characteristics of pythons; (ii) determine the activity patterns and rates of survival of relocated pythons; (iii) document the thermo-regulatory behaviour and compared it with the patterns observed in the previous study conducted in northern India; and (iv) generate information on the distribution of pythons and people's perception of snakes.

Progress

Python and other-reptile survey. A field survey was carried out between January 2018 and March 2018 in Sathyamangalam Tiger Reserve and Mudumalai Tiger Reserve. Field surveys were also carried out in five different forest types along the Moyar River valley, viz., scrub jungle, thorn forest, dry deciduous forest, moist deciduous forest and riverine forest. Ten transects of length 1 km each were laid and 10 quadrats (10 m × 10 m) separated by 100 m each were laid on these transects to quantify the micro-habitat parameters. The quadrats were laid alternately on the sides of the transects. Primary data were collected from 100 quadrats in each of the five different forest types, 500 quadrates across the study area altogether. Python presence was recorded during the transect survey. The quadrats were also searched for pythons and tracks and signs. Tree holes, rock crevices, termite mounds and burrows were the major features of interest. The roads and pathways near villages and towns were surveyed in the evening for nocturnal and road-killed reptiles. Skins shed by snakes were also considered evidence of presence. The location information was recorded using a hand-held GPS (Garmin eTrex 30x). The habitat and respective micro-habitat of each reptile were also noted.

Vegetation survey. A vegetation survey was carried out between January and March 2018 across the five major vegetation types in the study area. The vegetation in the above-mentioned quadrats was assessed. In addition, canopy cover data were collected, including

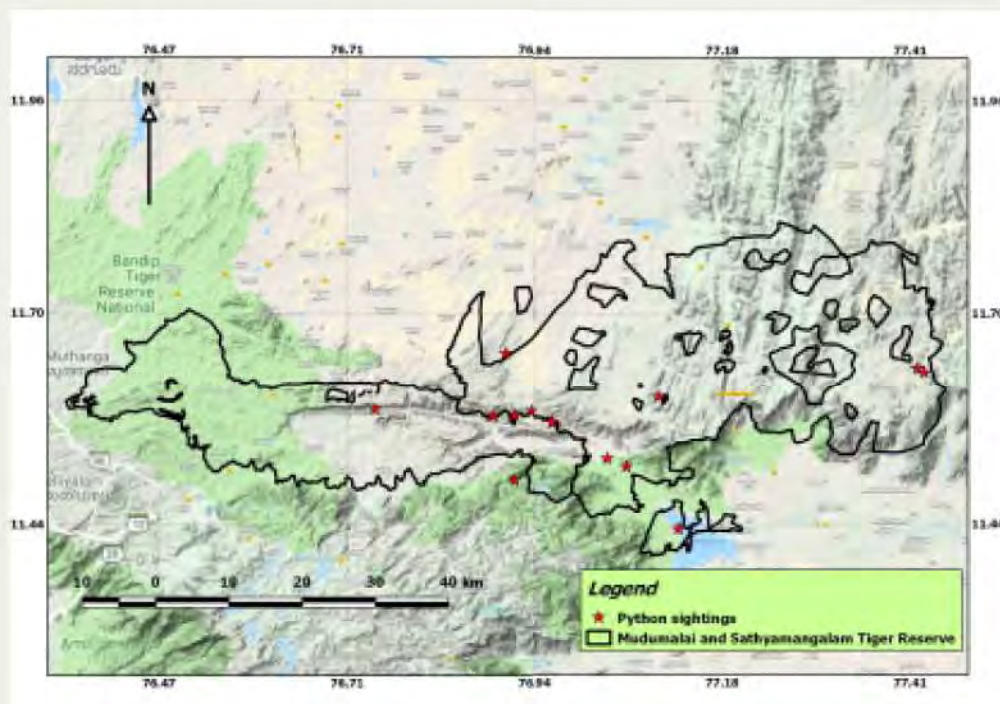


Figure 1: Python distribution in Moyar River valley (Mudumalai and Sathyamangalam tiger reserves; preliminary survey data)

the canopy height, disturbance status and distribution. Plant specimens were collected for each species and subsequently preserved as herbarium specimens for identification.

Literature survey and review: About 500 publications related to reptile radio-telemetry were collected and reviewed by the research team. The Burmese python (*Python bivittatus*) is one of the python species most studied using radio-telemetry, but similar research has not been carried out in India.

Outputs and Outcomes

The reptile and python survey was carried out from January to March 2018 in different forest regions of the Moyar River valley, which extends across two districts and two tiger reserves in the state of Tamil Nadu. The research team sought the help of local tribes and people to learn about earlier python sightings. The team treated evidence such as faeces, egg shells, shed skin and tracks in the forest as signs of the presence of pythons in the region. The team observed four pythons directly in the field, including a mating pair, during the survey. The mating pair was in a reserved forest of Sathyamangalam Tiger Reserve, along the Moyar River (Figure 1). This was a new observation from southern India and was scientifically communicated to a journal.

The reptile survey methods followed was

opportunistic sampling and area constrained visual encounter method inside a 10m x 10m quadrates along a 1km stretch. The distance between each quadrat was 100 meter and the quadrates were laid on alternative sides of the 1 km stretch, thus making it 10 quadrates in each of 1km stretch. Each 1km stretch took nearly 2 hours, making it 100 field hours for the survey. The team encountered 19 reptile species during the surveys. Photographic evidences are available for most species except few. One unidentified Gecko species is under review for identification.

Milestone

To understand the preferred habitat of python's different habitat in the study area and their vegetation have been studied. A total of c. 450 plant specimens were collected from the study plots. Tree diversity was high in Dry Deciduous Forest (n=121) with dominant species *Anogeissus latifolia* and *Erythroxylum monogynum*. The canopy cover was highest in riparian forest (80%). Among the disturbance factors evaluated, invasive species and anthropogenic pressure (grazing, fuel-wood collection and NTFP collection) are most prevalent across the study sites. Especially, invasive tree species *Prosopis juliflora* was dominant in the riparian habitats that are believed to be used by Indian rock pythons, but we need more data to understand this aspect.

Study on Ecological and Socio-economic Impact of Invasive Species, *Prosopis juliflora* and *Lantana camara*, and Their Removal from Forest, Common and Fallow Land of Tamil Nadu

ONGOING

Funding Source

Tamil Nadu Forest
Department and WII
Grant-in-Aid

Investigators

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Dr. Ruchi Badola
Dr. B.S. Adhikari

Researcher

Dr. B. Kamalakannan

Date of Initiation

March 2017

Date of Completion

March 2019



Objectives

The objective of the project is to assess the ecological and socio-economic impact of two invasive species, *Prosopis juliflora* and *Lantana camara*, and their removal from forest, common and fallow land of Tamil Nadu. It aimed to assess the following with the active involvement of local people: (i) Status and distribution of *Prosopis juliflora* and *Lantana camara* in the forests of Tamil Nadu. Initially spatial data in the GIS domain will be studied, and then sampling plots (both quadrats and circular plots) will be laid in selected agro-climatic zones to assess the structure and status of the vegetation, including *Prosopis juliflora* and *Lantana camara*, in different seasons during the project period of 2 years. (ii) Ecology of *Prosopis juliflora* and *Lantana camara* and their impacts both in forests and common land in selected agro climatic zones. Inventories of the biodiversity (e.g., herbs, shrubs, trees, fauna) of each area and in adjacent control areas (where there is no invasion of *Prosopis juliflora* and *Lantana camara*, in forests and common land) will be made and the biodiversity will be studied by laying some permanent monitoring plots in selected agro-climatic zones. (iii) Studies of nutrient recycling, groundwater level, soil moisture conditions, humidity, temperature under canopy cover, transpiration rate and other factors and the allelopathic effects of *Prosopis juliflora* and *Lantana camara* on native animal and plant species will also be carried out in the same permanent monitoring plots. The locations of the permanent monitoring plots will be decided on the basis of a reconnaissance survey. (iv) The impact of *Prosopis juliflora* and *Lantana camara* on the productivity of agricultural crops grown adjacent to dense growths of *Prosopis juliflora* and *Lantana camara* on bunds or as pure stands will also be studied. (v) The status and habitat use of wild animals in *Prosopis juliflora*- and *Lantana camara*-dominated areas as well as in areas that are free from these invasive species will be determined using line transects, track plots, etc. If required, camera traps will be used to assess the status of the wild animals in these habitats, depending upon the availability of funds. (vi) Studies will be carried out on the socio-economic impacts that *Prosopis juliflora* and *Lantana camara* have on rural populations by providing valuable provisional services (provision of fuelwood, charcoal, animal feed and constructional materials, reclamation of degraded soil, etc.). Studies on gender participation in rural economies while promoting the growth of *Prosopis juliflora* for economic benefits will be carried out.



Progress

The preliminary results reveal that Rameshwaram Taluk has a low abundance and extent of *P. juliflora* compared with the other taluks in Ramanthapuram District. The highest extent of *P. juliflora* was observed in Mudukulathur, Kamuthi and Kadaladi taluks. The richness of native herbs such as *Tephrosia purpurea*, *Croton sparsiflorus* and *Cleome viscosa* was significantly low in *P. juliflora*-invaded plots compared with the non-invaded plots. The relative abundances of birds such as *Pavo cristatus*, *Coturnix coturnix* and *Acridotheres tristis* were positively correlated with *P. juliflora* abundance in Kamuthi and Mudukulathur taluks.

Outputs and Outcomes

Among the three agro-climatic regions of Tamil Nadu (southern, western and Cauvery Delta zones), the southern zone (Ramanathapuram District) had the highest density and extent of *P. juliflora* ($F=34.35$, $P<0.05$). The density and frequency of

occurrence (%) of *P. juliflora* were also highest in the southern zone (11.19 ± 0.81 ; 84.17 ± 5.13), followed by the western zone (3.57 ± 0.60 ; 47.5 ± 6.67) and the Cauvery Delta zone (3.37 ± 0.82 ; 32.5 ± 5.90). The maximum frequency class, "E" (81-100%), was observed in all three zones, whereas the minimum frequency class, "A" (1-20%) was observed in the western zone and Cauvery Delta zone. The southern zone is covered with *Prosopis juliflora* to an extent of 79.4%, the western zone has a 46% cover and the Cauvery Delta zone, 32%.

Milestone

The native species abundance and diversity of other species were greatest in the western zone, followed by the Cauvery Delta zone and southern zone. The driest environmental settings were in the southern zone, which favoured *P. juliflora* more compared with the other two agro-zones, which are comparatively wet.

Recovery of Dugongs and Their Habitats in India: An Integrated Participatory Approach

ONGOING

Funding Source

CAMPA-Ministry of Environment, Forest and Climate Change Government of India

Investigators

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Dr. Samrat Mondol,
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Dr. Parag Nigam

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Himani, Sagar
Sumit

Date of Initiation

September 2015

Date of Completion

March 2020



Objectives

The objectives of the project are to (i) assess the population status of the dugong using advanced census techniques, determine its abundance and distribution, identify critical habitats, classify threats and develop site-specific monitoring plans to reduce hunting and incidental entanglements; (ii) characterize the critical dugong habitats, reduce direct and indirect threats, control modifications in and around the habitat and improve the habitat quality through management interventions and participatory approaches; (iii) raise awareness about the species, encourage the participation of the local communities, include other stakeholders such as the fisheries department and religious heads in conservation efforts and strengthen the dugong conservation programme by spreading awareness on a national scale; and (iv) enhance the capacity of the state forest department staff, develop/implement smart patrolling tools to improve protection enforcement and train members of the forest staff and local communities in conducting underwater surveys for long-term habitat monitoring.

Progress

The sea cow or dugong, *Dugong dugon* occurs in the Andaman and Nicobar Islands, Gulf of Mannar, Palk Bay and Gulf of Kutch in India. Several reasons have been attributed to its population decline, including sea grass habitat loss and degradation, boat traffic, gill netting, disease, chemical pollutants, consumptive use and poaching. Therefore, recovering dugongs entails targeted, multidisciplinary research that flows into management actions and advocacy for policy changes. Therefore, this dugong recovery programme aims at (i) assessing and monitoring the dugong population and habitat status; (ii) implementing site-specific management actions to recover populations and restore critical habitats; (iii) incentivizing participatory conservation efforts involving local stakeholders; and (iv) improving the capacity of enforcement and management agencies to promote integrated protection and management of the dugong and associated species.

So far, more than 25,000 school children and fisher folk have participated in awareness programmes and taken part in the dugong and habitat conservation programmes in three range states. Because of these



WII Photo Library

awareness programmes, a few fishermen in Tamil Nadu rescued and released four dugongs entangled in their fishing nets. These fishermen were honoured with incentives. A total of 200 forest officers and frontline staff members of forest departments have been oriented towards conservation of the dugong and marine biodiversity in India. Of these, 20 frontline staff members were trained in underwater biodiversity monitoring with scuba diving.

As part of the "Incentive for Conservation Programme", examinations were conducted for school-going children of the fishing community. One hundred and fifty "Dugong Ambassadors" were selected from the three dugong range states/union territories. The education of these ambassadors will be supported with "Dugong Scholarships", i.e., Rs.500/month for 2 years. Land-based pollution is one of the threats faced by the sea grass habitat in India. Therefore a study was initiated to understand the impacts of pollution on the nutritive contents of sea grass. Further, genetic samples were collected from the stranded dugongs to study their genetic diversity and their relatedness to global populations. A study on the ecosystem services of dugong habitats was conducted in Tamil Nadu and the Andamans. A management plan was developed for the Gulf of Mannar National Park with reference to dugong conservation and submitted to the Government of Tamil Nadu. Efforts are also underway to identify and manage the critical dugong habitats outside protected areas, assess the populations of dugongs using various census techniques and establish marine mammal rescue and rehabilitation facilities in all three states.

Outputs and Outcomes

A network, Friends of Dugong, has been established at the three field sites to report dugong sightings, strandings and illegal activities and to help conduct outreach programmes. Further, dugong conservation awareness and orientation workshops were conducted for the Indian Coast Guard, Marine Police and other line agencies in all three regions. To reach out to the scientific community, forest managers and public at large, several presentations were given at diverse platforms to apprise the audiences about the activities of the dugong recovery programme.

Milestone

This multi-faceted approach to dugong conservation in India has helped reach out to over 5000 stakeholders, including local communities. Over 100 research surveys have been conducted and have added datasets crucial to our understanding of the health status of sea grass. Conducting mass boat surveys to locate and map dugong habitats has been a landmark initiative. The many such surveys that will be held over the next field season will help us address the threats faced by dugong populations and will mitigate these within a stipulated timeframe.

Space Use and Dispersal of Tigers in Corbett Landscape

ONGOING

Funding Source

National Tiger Conservation Authority

Investigators

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Mr. Qamar Qureshi
Dr. Bivash Pandav

Researcher

Sudip Banerjee
Shikha Bisht

Date of Initiation

2015

Date of Completion

2020

Objectives

The objectives of the project are to (i) gain insights into tiger ecology, dispersal patterns and the land tenure system via radio telemetry; (ii) obtain robust estimates of the vital rates of tigers and estimate the prey density; and (iii) monitor tiger movements in peripheral potential conflict zones.



Progress

Radio-collaring could not be started due to delays in obtaining the appropriate permissions. Towards objective (ii) (obtaining robust estimates of the vital rates of tigers), long-term camera trap data obtained from the study area were analysed in an open capture-mark-recapture framework in the program MARK.



WII Camera Trap Image

Outputs and Outcomes

The tiger density (14 (SE 3) per 100 km²) within Corbett National Park was found to be one of the highest recorded densities of tigers in the world. The population estimate of tigers within the study area was 109-139.

The survival probability obtained from MARK differed with gender. The apparent annual survival probability of males (0.60) was lower than that of females (0.79). The research team found 61 (~50%) females to be residents since they were photo captured in two or more primary periods, compared with the males, of which 38% were residents. The overall estimate of the annual survival of adult tigers was 0.68.

Milestone

The team found 54.6% (SE 5.1%) of the females breeding each year, with a high level of recruitment (35% (SE 8%)). This could result in high emigration and turnover rates in the population.

Biodiversity Conservation and Ganga Rejuvenation

ONGOING

Funding Source

National Mission for
Clean Ganga, Ministry
of Water Resources,
River Development
and Ganga Rejuvenation

Project Leaders

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Dr. G.S. Rawat

Project Coordinators:

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Date of Initiation

July 2016

Date of Completion

June 2019



Researchers

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Component 6: Anjali Pathak, Dimpi A. Patel, Ravi Sharma, Taniya Trivedi
Project Management Unit: Rajeev Chauhan, Rajni Bohra, Neha Sharma and Rahul Kumar Gupta

Objectives

The project aims to prepare a science-based aquatic species restoration plan for the Ganga River by involving multiple stakeholders. The project has the following six components: (i) establishing the Ganga Aqualife Conservation Monitoring Centre at WII Dehra Dun for science-based conservation planning and dissemination of information; (ii) preparation of the biodiversity profile of the Ganga River and developing pilot species restoration plans for selected stretches and species; (iii) developing the capacity of forest departments and other stakeholders of the Ganga River states to monitor identified species of conservation significance; (iv) assisting NMCG with establishing the rescue and rehabilitation centres for endangered animals of the Ganga at selected sites by developing human resources and infrastructure with support from the forest and veterinary departments; (v) eliciting the participation of local communities in NMCG initiatives by providing platforms through the Panchayati Raj system, capacity development and payment for ecosystem services; and (vi) developing and implementing conservation education programmes for the riverside communities of the Ganga River.



Rahim

Progress

The Ganga Aqualife Conservation Monitoring Centre (GACMC), established in the WII campus, at Dehradun, has been integrated with the existing facilities of WII for spatial analysis, eco-toxicological research, conservation genetics, library documentation and field monitoring and assessment. Rapid biodiversity assessment of the river was carried out during the pre-monsoon

(April-June 2017) and post-monsoon (October-November 2017) periods, covering a distance of 2200 km, from Devprayag, in Uttarakhand, to Nurlpur, in West Bengal. The rapid biodiversity assessment revealed that Gangetic river dolphins are present in the Ganga from downstream of Bijnor to Farakka Barrage. Larger congregations were observed in deep-water pools (depth >3 m), particularly downstream of Kanpur. The assessment also revealed direct and indirect signs of otter presence along undisturbed stretches of the river with the least human interference, dense vegetation cover and an abundant prey base, mostly within protected areas such as Vikramshila Gangetic Dolphin Sanctuary. Turtles were encountered throughout the survey stretch. The presence of hatchlings and juveniles of some of the

encountered species indicates growing populations. Gharials were encountered at undisturbed stretches of the river in the upper Gangetic plain and at Hastinapur Wildlife Sanctuary. During the rapid biodiversity assessment, 106 species of water bird belonging to 36 families were recorded. The survey also reported new nesting sites of the Indian skimmer (*Rynchops albicollis*), an island-nesting bird in the Ganga. These birds were known to breed only in the National Chambal Sanctuary and at Mahanadi River, in Odisha.

Outputs and Outcomes

Publications are brought out periodically in the Vibrant Ganga series for dissemination of information on the aquatic biodiversity of the Ganga, the habitats of the animals, threats faced by them and their conservation status. Details of the activities are also uploaded regularly on the WII-NMCG Web page and other popular social media sites.

Thirty-two representative sites along the river, each 5 km long, were selected for intensive study for profiling the biodiversity of the Ganga. The assessment has been completed at 20 sites, while it is going on in the remaining sites. The concentration



of key pollutants in species of conservation significance was assessed according to standard international protocols for eco-toxicological analysis and quantification of non-biodegradable and xenophobic components. The protocols were developed, and analysis is in progress. The toxicology unit at WII is being refurbished to spearhead the eco-toxicological study.

Spearhead teams have been established for the states of Uttar Pradesh, Jharkhand and West Bengal. The first national-level training workshop was organized for the spearhead teams at WII in November 2017. Eight training workshops and 18 sensitization workshops were held during the reporting period. Capacity building workshops on biodiversity conservation and monitoring techniques of aquatic species of the Ganga River were organized for 74 officials of the forest department and other line agencies in the state of Uttar Pradesh. A total of 100 youth volunteers were trained in the methodology to be adopted to conduct a baseline survey of indicator species, in carrying out eco-development activities and in imparting conservation education through spearhead teams over a period of a year.

Two fully functional rescue and rehabilitation centres were established at Narora and Sarnath after renovating and the existing facilities and scientific upgrading. The Ganga Aqualife Monitoring and

Rehabilitation Centre at Narora was established in collaboration with Narora Atomic Power Station (NAPS). The Turtle Rescue and Rehabilitation Centre at Kachhua Punarvas Kendra, Sarnath, was established in collaboration with the the Uttar Pradesh Forest and Wildlife Department. The incubation room-cum-hatchery facilities were upgraded and renovated at the Turtle Rescue and Rehabilitation Centre, Sarnath. A total of 1,150 eggs of the three-striped roofed turtle (*Batagur dhongoka*) were incubated in the hatchery and the hatchlings were monitored continuously under veterinary care. A total of 116 personnel, including officials from the state forest department and police department, doctors from the state veterinary department and district administrators at Bulandshahar and Varanasi, were trained in handling injured and stressed aquatic animals during emergencies. A rapid survey of 14 sites near Sarnath and 17 sites near Narora was undertaken for releasing rescued animals.

To create awareness among the local communities and other stakeholders about Ganga's biodiversity, 250 focus group discussions, 450 household interviews and 350 sensitization meetings were held, in which more than 8000 people were sensitized. Formal agreements were signed with 94 gram panchayats in the states of Uttar Pradesh,

Uttarakhand and Bihar. Meetings were held in 19 districts, 24 blocks and 120 panchayats. Self-help groups (SHGs) were established and activated with the collaboration of the Nehru Yuva Centre and National Rural Livelihood Mission at Bulandshahr and Varanasi. A trained cadre of 250 Ganga Praharis was created after multiple on-site sensitization and orientation workshops were conducted in all the five Ganga states. A national-level training workshop was conducted for the Ganga Praharis during 11-13 March 2018. Three livelihood training centres were established at Varanasi. Micro-planning guidelines for environment sensitive village development were prepared and finalized after a national-level consultation workshop was conducted on 6 March 2018. During the workshop, the guidelines were finalized with inputs from experts from 25 organizations. The digital format for the micro-planning guidelines was also developed. The key ecosystem services of the Ganga were identified, and a methodological framework for assessing them was designed.

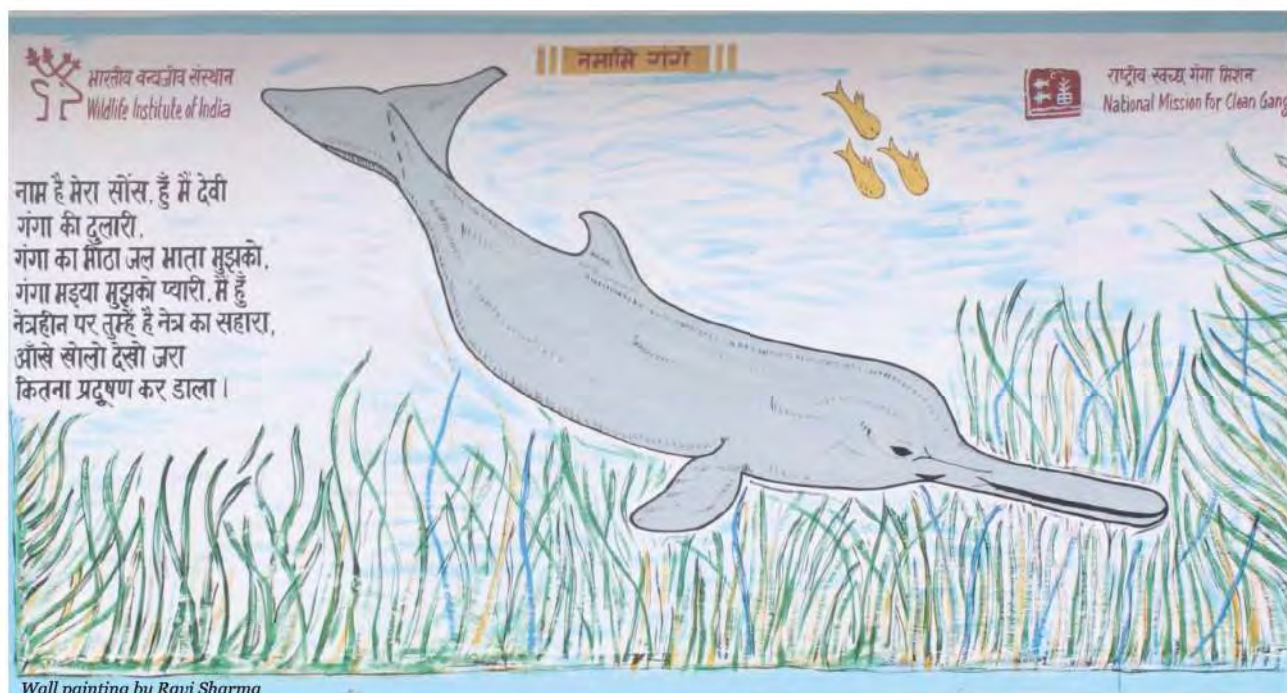
Sites were selected for nature interpretation and education centres at Sarnath and Kanpur, and a reconnaissance study was carried out. Establishment of the centre at Sarnath was initiated at the Turtle Rescue and Rehabilitation Centre there. The building was handed over to WII, and the renovation work was completed. The exhibits are being prepared. A mobile exhibition is being established on

a house boat (locally known as Bajra). The Bajra was hired and renovated. It is ready to house the informative panels, which are currently being prepared.

Milestone

"Ganga ki Baat", a series of talk shows, was broadcast by All India Radio, Dehradun (100.5 MHz), for 2 months. The talk show provided information on the aquatic diversity of the Ganga River, and project personnel shared their experience of working towards rejuvenation of the Ganga and their interactions with the various stakeholders.

An online portal was established and integrated with the WII Web page (<http://wii.gov.in/nmcg/national-mission-for-clean-ganga>). The publications of the Vibrant Ganga series are (i) Wings of Ganga: Part I - River and Wetland Birds of Ganga River and (ii) Glimpses of Ganga, Series I (a set of six brochures on the biodiversity of the Ganga River, in Hindi and English).



Dimpi Patel

Dissemination and Evaluation of Technologies through Networking of Various Institutes and Organization of Mountain Ecosystem (TIME-LEARN Coordination)

ONGOING

Funding Source

Department of Science and Technology, Government of India

Investigators

Dr. Ruchi Badola
Dr. S.A. Hussain

Researcher

Charuhas Dali

Date of Initiation

February 2017

Date of Completion

February 2020

Objectives

The objectives of the project are to (i) promote a network of the community and research institutes for technology delivery; (ii) provide appropriate technical, research and development inputs to the community; (iii) identify gaps in technology for research institutes to work on; (iv) initiate periodical monitoring and conduct a workshop for the network project; and (v) involve government development agencies for broader impact and to work on policy issues.

Progress

During the reporting period, the group monitoring workshops and field visits were conducted by an expert team. A planning and execution Workshop was conducted at WII during 22-23 May, 2017. From the workshop it was concluded that the programme should expand and that specific problems such as water resource management, gender development and agro-forestry should be focussed on. The Annual Group Monitoring Workshop of the TIME-LEARN Programme of the SEED Division, DST, New Delhi, was held on 7 and 8 December 2017 at SKUAST-J, Jammu. The honourable governor of Jammu and Kashmir, Mr. N.N. Vohra, inaugurated the workshop. He also released the brochure of the TIME-LEARN programme and had discussions on improved river rope ways, solar space heating and post-harvest technologies to benefit the mountain community.

A field visit to Himachal Pradesh was conducted in November 2017 to discuss the "with and without project scenarios" with the PIs and conduct community surveys. Field visits to Pantnagar, Nainital, Pithoragarh and the Joshimath area of Uttarakhand along with DST members and expert members in May and June 2018 to review the progress of the projects and to conduct community surveys.



Charuhas Dali

Outputs and Outcomes

Other activities were also conducted during the reporting period: (i) Analysis of detailed project reports of all the projects under the TIME-LEARN programme; (ii) sorting the projects under the TIME-LEARN programme according to their thrust areas; (iii) identification of the indicators of the projects on the basis of their objectives; (iv) collection and analysis of the progress reports of all the projects under the TIME-LEARN programme; (v) documentation (in the form of abstract books) of all the projects under the programme; (vi) joint co-ordination and monitoring of the project activities with all the PIs of the projects under the programme; (vii) publication and distribution of IME magazine for the year 2016-17 to various local NGOs and government institutions for generating greater awareness among mountain communities through networking of local NGOs and scientific and technological institutions with relevant field knowledge; (viii) designing and finalizing the logo of the TIME-LEARN programme; (ix) compilation of progress reports of all 19 projects under the programme to present before the Technical Advisory

Expert Group (TAEG) committee; (x) publication of the brochure of the programme, its launch at the AGMW and uploading to the TIME-LEARN website; (xi) presentation of all 19 projects under the programme by the PIs/Co-PIs in front of the TAEG committee at the AGMW.

Milestone

The Web site (Web domain) of the TIME-LEARN Programme was developed by WII and supported by HESCO. It was launched at the Annual Group Monitoring Workshop (AGMW). A community survey for impact analysis was conducted at four project sites in Himachal Pradesh and Uttarakhand.

Population Genetic Structure, Gene Flow in Brown Bear, *Ursus arctos isabellinus* in India (Jammu and Kashmir, Himachal Pradesh and Uttarakhand) and Assess Extent of Gene Flow between Populations of India and Pakistan: Conservation and Forensic Implications

ONGOING

Funding Source

Department of Science and
Technology, Government
of India

Investigators

Dr. S.P. Goyal
Dr. S. Sathyakumar

Researchers

Dr. Sujeet Kumar Singh,
Shahid Ahmad Dar
Vinay Kumar

Date of Initiation

November 2014

Date of Completion

May 2018



Objectives

The objectives of the project are to

- (i) determine the spatial distribution and model the occupancy of the brown bear in Jammu and Kashmir, Himachal Pradesh and Uttarakhand; (ii) determine the genetic diversity and genetic differentiation within and between population sub-divisions, if any, in the brown bear populations in Jammu and Kashmir, Himachal Pradesh and Uttarakhand; (iii) determine the level of gene flow between brown bear populations in India and Pakistan by utilizing the genotyping data of Bellemain *et al.*, (2007); (iv) estimate the genetic drift, genetic assignment, first-generation migrants, effective population size (N_e) and gene flow (N_m) of the brown bear populations of Jammu and Kashmir, Himachal Pradesh and Uttarakhand and between the brown bear populations in India and Pakistan; and (v) identify the geographical barriers to the gene flow between the brown bear populations of India and Pakistan and assign poaching cases to populations.

Progress

In 2017-18, the research team carried out sampling in all the three states (Uttarakhand, Himachal Pradesh and Jammu and Kashmir) of the brown bear distribution in the Western Himalaya. The field survey in Uttarakhand was conducted in Har Ki Doon, Ruinsar Valley and Marinda Tal, of Govind National Park (GNP). In Himachal Pradesh (HP), the team surveyed Great Himalayan National Park

(GHNP) and Sangla Wildlife Sanctuary. In Jammu and Kashmir (JK), the team surveyed Kishtwar National Park, Hirpora Wildlife Sanctuary, Kazinag National Park and non-protected areas of Kargil District. Monitoring activities were carried out during the survey. The survey areas of all the three states were difficult to assess due to the tough terrain and non-availability of logistic support. During the field visit, the team recorded direct or indirect evidence (sign) of large carnivores and birds. The indirect sign encounter rates were different in the different parts of the range surveyed. The encounter rate was lowest in GHNP (0.5 signs/km), and it highest in the Drass region of Kargil District of Jammu and Kashmir (41.3 signs/km).

During the survey, the team collected 360 scat samples. The research team extracted DNA from a total of 500 scat samples. The team used 203 (130+73) brown bear sequences to estimate the genetic diversity indices and use Bayesian inference to produce the phylogenetic tree of the brown bear and median-joining (MJ) networks to infer the intraspecific phylogeny. The Bayesian analysis revealed the presence of five haplotypes in five different lineages. All these haplotypes were grouped with the Gobi-Pakistan clade, with a high posterior probability value of 0.93. One of these haplotypes was shared between JK and HP. Apart from this shared haplotype, the team found that there was a regional haplotype in Ovara Aru Wildlife Sanctuary (JK) and different protected areas of Himachal Pradesh. Uttarakhand shared a haplotype with Pin Valley National Park. The median-joining network analyses of the reported and observed mtDNA haplotypes (Gobi-Pakistan-India) indicated the presence of the core haplotype of JK and HP. The data indicated probable phenotypic diversification with low genetic divergence within the Gobi-Pakistan-India clade. The genetic diversity of the Himalayan brown bear in India is moderate: the nucleotide and haplotype (h) diversities were found to be 0.578 and 0.00265, respectively. A neutrality test and a Bayesian skyline plot suggested that the population of Himalayan brown bears has declined in the last 5000-10,000 years, while a unimodal mismatch distribution plot showed that the population had expanded; however, the mismatch plot was not exactly unimodal.

The research team also screened 30 microsatellite loci to examine their allelic size range and polymorphism level in the Himalayan brown bear (n=16). Nineteen of the 30 microsatellite markers were amplified successfully with all the 16 samples of brown bear origin. Basic statistical parameters used to check polymorphism in microsatellite markers

(number of alleles (Na), effective number of alleles (Ne), polymorphism information content (PIC), null allele (Fnull), observed heterozygosity (Ho) and expected heterozygosity (He)) were estimated using the program CERVUS. The research team generated data on 315 scat samples with 15 selected microsatellite markers. The data missed was less than 10%.

The team also explored how the species distribution model could predict a gradient of bioclimatic conditions for the Himalayan brown bear in JK. MaxEnt was used to model the potential distribution of the brown bear. Maximum entropy analysis has recognized efficiency in processing presence-only data and small datasets. It was concluded that the habitat suitability and distribution of the Himalayan brown bear in JK is strongly influenced by the precipitation of the coldest quarter, annual mean diurnal range, NDVI (June) and isothermality. Around 10% of the study area was found to be suitable habitat for the Himalayan brown bear.

Outputs and Outcomes

During 2017-18, the research team collected samples from different parts of the distribution range of the brown bear in India. The team could not find any extra haplotype and observed only five of the haplotypes that were observed earlier. Hence, the team concluded that the haplotype observed in the Kargil and Zaskar region of Ladakh and in the Pin Valley region of Himachal Pradesh has the core haplotype of the other Himalayan brown bears of the north-western Himalayan ranges. Four multiplex panels were optimized and amplified with 315 scat samples of the Himalayan brown bear. From primary analysis of the microsatellite data of 315 samples, the team could find 240 unique genotypes. The microsatellite data showing moderate genetic diversity and indicate that there are multiple structures in the brown population population in India.

Milestone

The research team carried out intensive field work and collected brown bear scat samples from its distribution range and carried out genetic analysis with mtDNA and microsatellite markers. The team will rigorously analyse the genetic and ecological data using standard statistical parameters. The research team will apply the landscape genetic approach to understanding the possible causes of the brown bear population structure in the Western Himalayan region.

Population Genetic Structure of Nilgiri Tahr, *Hemitragus hylocrius* in Western Ghats, India: Conservation and Forensic Implications

ONGOING

Funding Source

Ministry of Science & Technology, Department of Biotechnology

Investigators

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Dr. S.P. Goyal
Dr. Parag Nigam

Researcher

Predit M.A.
Dr. Bheem Dutt Joshi

Date of Initiation

May 2015

Date of Completion

August 2018



Objectives

The objectives of the project are to (i) determine the distribution pattern in relation to sex and estimate the minimum number of Nilgiri tahr (*Hemitragus hylocrius*) individuals in the Western Ghats, India; (ii) estimate the genetic diversity of the Nilgiri tahr populations; (iii) estimate the genetic differentiation and subdivision within and between populations; (iv) estimate the genetic drift, gene flow (Nm), genetic assignment and first generation migrants; (v) estimate the effective population size (Ne) and minimum viable population (MVP) for ex situ conservation; (vi) identify geographical barriers and their effects on the gene flow; and (vii) assign poaching cases to the respective populations.

Progress

The animal commonly known as the Nilgiri tahr (old name, *Hemitragus hylocrius*; new name, *Nilgiritragus hylocrius*) is an endangered species of mountain sheep distributed in the Western Ghats, India. The present study focused on population estimation across the entire distributional range of the Nilgiri tahr and the habitat linkages between and within the populations. On the basis of preliminary surveys and the connectivity between the tahr habitats, the study area was sub-divided into five blocks or groups. The populations of these blocks may be interconnected. A total of 16 areas were surveyed in Mukurthi National Park during the calving season. The research team collected 1200 faecal samples from the surveyed areas for genetic assessment. A census was carried out in collaboration with the Tamil Nadu Forest Department after the calving season in May 2017. All the areas/blocks surveyed had Nilgiri tahr populations except Bangitapal-Labour Shed, Madippumalai and Angunda Malai. The largest congregation of tahrs (170) was recorded in the Ellamalai and Nilgiri Peak areas, and the smallest one (2) was recorded on the Kinnakorai slope. The Ellamalai shares areas of the Gudalur, Nilgiri South forest divisions and the Nilgiri peak with the Mukurthi National Park and Gudalur Forest Division. Faecal samples were collected and data such as GPS locations were noted. A



WII Photo Library

total of 317 samples were collected from Block-IV, mostly from Grizzled Giant Squirrel Wildlife Sanctuary, 228 samples from Block 1 (Mukurthi National Park and Nilgiri South Forest Division), 207 samples from Block 3 (mainly from Anamalai Tiger Reserve) and 104 samples from Block 5 (Kalakkad-Mundanthurai Tiger Reserve). The research team plans to undertake surveys in Block (Group) 2. It also plans to survey the Nilgiri Tahr populations outside protected areas. DNA was successfully extracted from 700 of the samples collected from different areas. mtDNA was used to gain an understanding of the genetic structure of the population.

Outputs and Outcomes

A total of five blocks were identified within the distribution range of the Nilgiri tahr, and a total of 1200 non-invasive genetic samples were collected from different protected areas. The research team observed the habitat characteristics for population and landscape genetics. The length, width and weight of pellets were used to classify them in age categories (fawns, sub-adults and adults) using cluster analysis for population demography based on gene flow. The DNA extracted from the 700 samples and two mitochondrial and 12 nuclear loci were

optimized for genetics-based analysis. The team generated data on the two mitochondrial primers for 50 samples from north and south of the Palghat Gap (PG), in blocks 1, 3, 4 and 5 and performed genetic analysis. All the samples clustered phylogenetically clustered north and south of PG. Subsequently, samples from south of PG (blocks 4 and 5) were found to form a clade separate from Block 3. PG acts as a physical barrier for the Nilgiri tahr populations. Forensically Informative Nucleotide sSequencing (FINS) of the populations from north and south of PG will enable assignment of any individual poached from these regions, which will have implications in wildlife forensics. Further, data have been generated for the 12 microsatellite loci from 700 samples. Data analysis is being performed.

Milestone

A population genetics database of the Nilgiri tahr across its range was established and the information used for effective conservation planning, tracking of poaching and *ex-situ* conservation.

Impact of Forest Fires on Invertebrates, Reptiles and Avifaunal Diversity in Uttarakhand

PROJECT INITIATED

Funding Source
Uttarakhand Forest
Department

Investigators
Dr. V.P. Uniyal,
Dr. R. Suresh Kumar
Dr. Abhijit Das

Researcher
Mona Chauhan,
Susmita Khan
Sarabjeet Kaur

Date of Initiation
May 2017

Date of Completion
May 2018

Objectives

The objectives of the project are to (i) assess the impact of forest fires of varying frequency, seasonality and severity on the populations and diversity of invertebrates; (ii) understand the extent of diversity of plants and the impact of forest fires on plant assemblages across various ranges of Lansdowne Forest Division; (iii) determine the distribution, habitat requirements and abundance of amphibians, reptiles and birds in fire-prone ecosystems; and (iv) assess the soil composition before and after a forest fire.



Progress

The field work was completed, and the final project report was submitted. About 225 species of invertebrate falling into 11 taxa were identified: *Blattoidea* (cockroaches and termites), *Coleoptera* (beetles), *Dermaptera* (earwigs), *Diptera* (flies), *Hemiptera* (bugs and cicadas), *Hymenoptera* (bees and wasps), *Lepidoptera* (butterflies and moths), *Odonata* (dragonflies and damselflies), *Orthoptera* (grasshoppers and crickets), *Plecoptera* (stoneflies) and *Araneae* (spiders).



WII Photo Library

Outputs and Outcomes

A total of 21 tree families, 35 shrub families and 22 herb families were recorded. The most abundant families of tree species are *Myrtaceae* (10.53%), *Fabaceae* (10.53%) and *Combretaceae* (10.53%). The most ubiquitous family of shrub species is *Fabaceae* (11.76%), and the most abundant family of herb species is *Asteraceae* (16.67%). A total of 21 reptile species (162 individuals) were recorded from the five ranges of Lansdowne Forest Division.

Milestone

One endangered species, the Asian elongated tortoise (*Indotestudo elongata*), was recorded.



WII Photo Library

Assessment of Habitat Use by Black-Necked Crane (*Grus nigricollis*) and e-Flows of Nyamjang Chu Hydroelectric Project in Tawang District, Arunachal Pradesh

PROJECT INITIATED

Funding Source

Ministry of Environment,
Forest and Climate Change

Investigators

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Dr. B.S. Adhikari,
Dr. K. Sivakumar
Dr. J.A. Johnson

Researchers

Dr. Taibangba Watham
Malyasri Bhattacharya

Date of Initiation

July 2017

Date of Completion

July 2018



Objectives

The objectives of the project are to (i) assess the habitat requirement of black-necked cranes at the Nyamjang Chu project site and (ii) assess the e-flow in the Nyamjang Chu River and e-flow requirement for conservation of threatened black-necked crane habitats and aquatic biodiversity at the Nyamjang Chu Hydroelectric Project site in the Tawang River basin.

Progress

A field study was carried out at the proposed barrage site, Zemithang Valley, Nyamjang Chu River, over a period of 7 months (July 2017 to February 2018, a period covering the wintering period of the black-necked crane) to assess the potential impacts of the proposed hydroelectric power project accurately. During the field study, the habitat and vegetation structure of the area were surveyed, details of the wildlife found in the region were collected using camera traps, the bird diversity of the region was assessed, the river depth and velocity were measured, and the GPS locations of vegetation of different types near the proposed barrage site were collected. Finally, the field information was interpreted using remote-sensing (RS) and GIS techniques and various software packages to analyse and interpret the habitat requirements of the black-necked crane and to identify environmental flows suitable for conserving the black-necked crane and how the proposed barrage will affect the existing habitat.



Pemba Tsering Komo

Outputs and Outcomes

The black-necked crane is a riverine habitat-dependent species. It mainly chooses seasonal sandbars, still-water areas, shallow areas of the river and some portions of lowland grasslands along the river banks and is highly sensitive to the slightest of disturbances to the habitat and river flow.

Construction of the proposed dam will eventually submerge the whole habitat, leaving no space for the black-necked crane, leading to local extinction in the Zemithang Valley. As a result of the gradual process of construction, an upsurge of people from outside, construction of roads for access and pollution caused by labour camps, the entire habitat will collapse.

Milestone

This study strongly recommends that the dam not be constructed in this particular area and that because of the rich biodiversity of the area it be declared a protected area (community reserve).

Implementing Rhino DNA Indexing System (RhODIS) to Counter Rhino Poaching Threat and Aid Population Management of Rhino in India

PROJECT INITIATED

Funding Source
WWF - India

Investigator
Dr. Samrat Mondol

Researcher
Tista Ghosh

Date of Initiation
April 2017

Date of Completion
April 2020

Objectives

The objectives of the project are to (i) establish a set methodology for undertaking rhino genetic studies based on invasive as well as non-invasive samples and generate a DNA data archive on Indian rhinos; (ii) use this DNA database to (a) match confiscated rhino contraband with existing database as scientific evidence of poaching involvement to prosecute wildlife offenders and (b) understand the genetic status of the present population to facilitate population management of rhinos; and (iii) promote RhODIS as the standard operation protocol for better crime investigation and train forest and police personnel to use the system.



Progress

In the first year, the research team standardized a panel of 14 micro-satellite loci for forensic as well as population genetic work on the one-horned rhinoceros of India. During the second year of the project, the team focused on standardizing non-invasive sampling and laboratory protocols for rhinos across their distribution range in India. Initially, three protected areas, Manas National Park and Pobitora Wildlife Sanctuary, in Assam, and Dudhwa National Park, in Uttar Pradesh, were targeted for standardization.



Tista Ghosh

Outputs and Outcomes

During the field surveys, the team standardized the sampling protocol through on-field swabbing of fresh rhino dung. A total of 375 dung samples were collected from three rhino-bearing areas. Currently, faecal DNA standardization is being carried out in the laboratory. Rhino parasite evaluation is also being conducted for all three areas.

Milestone

To date, the genetic data-based RhODIS approach has helped solve four cases in West Bengal and Assam. In two of these cases the prosecution happened in record time. The Chief Minister of Assam facilitated the Assam Forest Department to take quick actions to solve the crimes.

Understanding Disturbance Impacts on Psychological, Nutritional Health and Their Effect on Reproductive Capacity of Wild Tigers in the Terai Arc Landscape

PROJECT INITIATED

Funding Source
Grant-in-Aid

Investigators
Dr. Samrat Mondol
Dr. Bivash Pandav

Researcher
Shiv Kumari Patel

Date of Initiation
April 2017

Date of Completion
April 2020

Objectives

The objectives of the project are to (i) answer the question "How does the stress physiology of wild tigers differ in different tiger habitats across the Terai Arc Landscape (TAL)?" and to see how the faecal glucocorticoid metabolite (fGCM) level changes with the disturbance gradient in TAL; (ii) to find out if wild tigers experience different levels of nutritional stress in different tiger habitats and how faecal thyroid hormone metabolite (indicator of nutritional stress) levels vary with the prey density of different tiger habitats across TAL; and (iii) understand the reproductive physiology of wild tigers in selected tiger habitats within Uttarakhand. How do levels of reproductive hormones (in faeces) fluctuate across the breeding and non-breeding seasons, and how is this related to physiological stress?



Progress

During the reporting period, the research team intensively collected faecal samples from Terai East Forest Division, Terai West Forest Division, Terai Central Forest Division, Haldwani Forest Division, Champawat Forest Division and Corbett Tiger Reserve, in Uttarakhand, Valmiki Tiger Reserve, in Bihar, and Suhelwa and Sohagbarwa Wildlife Sanctuary and Amargarh Tiger Reserve, in Uttar Pradesh. More than 300 fresh scat samples have been collected. So far, 127 individuals have been identified.



Suvankar Biswas

Outputs and Outcomes

The endocrinology laboratory is currently being established. The basic equipment has been procured, and the initial work has started. All laboratory protocols for faecal hormone extraction and quantification have been standardized.



Suvankar Biswas

Reconciling Development with Conservation: Delineating Habitat Patches and Corridors for Gir Lions

PROJECT INITIATED

Funding Source

Gujarat Forest Department
and WII Grant-in-Aid

Investigators

Dr. Y.V. Jhala

Researchers

Stotra Chakrabarti
Keshab Gogoi

Date of Initiation

April 2017

Date of Completion

March 2019



Objectives

The objectives of the project are: (i) mapping and identifying hotspots of livestock predation by large carnivores in the Greater Gir Landscape; (ii) delineating movement corridors between habitat patches and lion meta-populations in the Saurashtra landscape; (iii) understanding livelihood issues and quantifying social carrying capacity for lions in the human-dominated Saurashtra landscape; and (iv) continuing to generate long-term monitoring data on the lion and prey abundance and demography.

Progress

Livestock predation hotspots across Greater Gir Landscape. Data on livestock kills by carnivores (lions and leopards) were collected from all across the lion distribution range, accounting for more than 900 villages between 2012-2016. The details were translated into English, digitized and spatially mapped in GIS. The intensity (number of livestock kills/village) of livestock predation showed an increasing trend ($R^2=0.73$, $P=0.06$, slope=15% (SE 0.05)). This suggests not only an increase in the spatial extent of the conflict but also a substantial increase in the magnitude of conflict within the same spatial extent. A significant deficit between the market rate and compensated amount for lion predation ($R^2=0.74$, $p=0.06$) was observed, with an increasing trend. A revision of compensation rates to match the market price and an efficient system to pay compensation promptly are recommended as a management strategy. Improved husbandary practices and managing the lion density below the social carrying capacity are recommended. These measures will help maintain tolerance of lions in a situation of increasing conflicts.



Keshab Gogoi

Outputs and Outcomes

Reproductive success of female Asiatic lion. From 9305 hours of observation spanning 137 mating events, the mating success of the female Asiatic lion ($n=27$) was found to be 19.7%, indicating that an average of five mating events are required for a successful detectable conception/littering. The average litter size was found to be 2.3 ± 0.1 , with a sex ratio (M/F) of 1.5 ± 0.3 ($n=52$ cubs; 31 M/21 F). However, the litter sex ratio was not significantly different from 1:1.

Long-term monitoring of space use pattern of Asiatic lion. An average of 294 ± 21 from 11 coalitions that included single males and 246 ± 82 locations from and 9 prides were used to compute home ranges. The ranges of adjacent males overlapped considerably with each other, with an average overlap of $32.1 \pm 4.1\%$. Male coalitions overlapped at places of intense female use/female pride cores. Female prides had an average home range of 61.6 ± 14.5 km², with negligible ($8.2 \pm 1.1\%$) overlap between adjacent prides. Female pride home ranges were encompassed by ranges of 2-4 male-coalitions, with each pride having one primary coalition (overlap of $81 \pm 4.9\%$ of pride ranges) and 1-3 peripheral coalitions (cumulative overlap of $26 \pm 3.9\%$ of pride ranges).



Keshab Gogoi

A Rapid Status Survey for the Globally Threatened Yellow Weaver (*Ploceus megarhynchus*) in Uttarakhand with Special Emphasis on Its Conservation Requirements

PROJECT INITIATED

Funding Source

Uttarakhand State Forest Department

Investigators

Dr. R. Suresh Kumar,
Dr. Manoj Nair,
Dr. Malvika Onial
Dr. Dhananjai Mohan

Date of Initiation

April 2017

Date of Completion

March 2018

Objectives

The objectives of the project are to (i) survey all known sites of the yellow weaver to assess the presence/absence and abundance both within protected areas and outside them in the state of Uttarakhand; (ii) identify suitable habitats for the bird that have potential for long-term conservation, with the active involvement of the local forest department and/or local communities; (iii) prepare a habitat suitability map for the species in the state on the basis of a habitat modelling approach in the GIS domain; and (iv) foster an interest in this globally threatened species among the frontline staff of the forest department so that they can themselves take up status surveys in possible localities.

Progress

This study was carried out in two phases, viz., during the pre-monsoon period (May-June) and during the monsoon (August-November) in 2017 in the Terai landscape of eastern Uttarakhand.

Extensive vehicle-based surveys covering a total distance of over 4,000 km were conducted to locate the globally threatened yellow weaver (*Ploceus megarhynchus*) as well as other species of weaver birds. Observations relating to the nesting activities of the other three weaver species that occur in the area, viz., the baya weaver, the black-breasted weaver and the streaked weaver, were recorded along with information on the number of nests, individuals (male and female) and nesting site habitat characteristics. Further, a number of villages were visited to promote weaver bird conservation among the local people as part of a sensitization and awareness initiative.





Jyotendra Thakuri

Outputs and Outcomes

Even after repeated and intensive searches, the globally threatened yellow weaver could not be sighted in the area, strongly indicating that the species is lost from the region. Rapid urbanization, particularly in the Rudrapur-Haldwani and Kashipur-Rudrapur stretches, may have affected the species, leading to its disappearance from the area. Collection for the pet trade as reported in the literature may also be a cause for the absence of the species in the area. A total of 146, 35 and 18 nesting colonies of the three other weavers, the baya, black-breasted and streaked weavers, respectively, were located during this study. The population status of the streaked weaver too seems to be critical. Possibly, this species is undergoing a serious decline. Removal of reed vegetation, the nesting substrate of the streaked weaver, for water chestnut cultivation appears to be affecting the species.

Milestone

This study found no evidence of the occurrence of the globally threatened yellow weaver in the area, suggesting that the critical western-most population of the species may be lost.

Assessing the Impacts of Power Lines on Avian Species in the Arid Plains of Western Gujarat

PROJECT INITIATED

Funding Source
Powergrid Corporation
of India Limited

Investigators
Dr. R. Suresh Kumar and
Dr. Anju Baroth

Researchers
Vipin Rao
Harindra Baraiya

Date of Initiation
November 2017

Date of Completion
October 2019

Objectives

The objectives of the project are to (i) assess the electrocution and collision risk posed to birds by existing power lines and wind farms, identify problematic configurations and generate comprehensive data on the mortality of birds and (ii) identify sensitive bird habitats along the existing and proposed power line and wind farm corridors in western Gujarat.

Progress

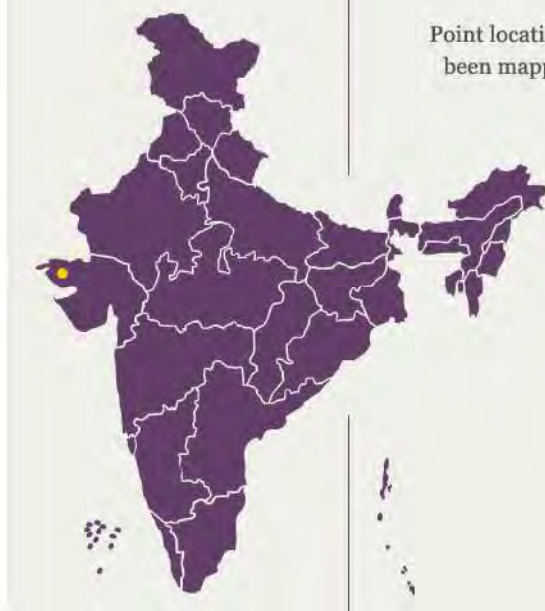
Kachchh District, in Western Gujarat, with an area of 45,000 km², is where the study is being undertaken. A grid-based approach (20 × 20 km²) has been adopted for this study. All the existing transmission power lines and windmills in the Kachchh District have been mapped and overlaid on the grid map of the district, from which priority grids (depending on the density of power lines) for surveying were identified. These are being surveyed. Information on the large avian species in the region is being gathered through questionnaire surveys and from secondary data sources to document the distribution patterns of birds.

Outputs and Outcomes

A total of 230 existing transmission power lines of varying capacity have been mapped in Kachchh District. Along with these, a total of 1,259 existing windmills had been mapped in the area using Google Earth.

Milestone

Point locations of the targeted avian species. Cranes and flamingos have been mapped to identify high-use areas and relate these to the existing power line map to assess potential impacts.



Study on Ecology and Migratory Patterns of Golden Mahseer, *Tor putitora* in River Ganga Using Radio Telemetry Techniques

PROJECT INITIATED

Funding Source
Grant-in-Aid

Investigators
Dr. J.A. Johnson
Dr. K. Sivakumar

Researcher
Bhawna Dhawan

Date of Initiation
September 2017

Date of Completion
September 2020



Objectives

The objectives of the project are to (i) investigate the breeding and migratory patterns of the golden mahseer in the Western Himalaya; (ii) document the habitat use of the golden mahseer during different stages of its life history including spawning and growing; (iii) estimate the breeding and non-breeding home ranges of the mahseer inhabiting the main river channel; and (iv) estimate using a PHABSIM model the weighted usable area and flow requirement of the golden mahseer.

Progress

A reconnaissance survey was carried out in the rivers of Uttarakhand to achieve the project objectives. On the basis of this survey, the rivers Kosi, Kollu and Nayar rivers were identified as potential areas for studying mahseer ecology. Preliminary assessment of the population structure of the golden mahseer in the Kosi River was carried out. Telemetry equipment was procured, and the necessary permission from the forest department was obtained.

Outputs and Outcomes

Field sampling locations and target locations for tagging animals have been finalized on the basis of the reconnaissance survey.

Milestone

After the end of the monsoon (September 2018), fishes will be tagged in selected rivers of Uttarakhand. Other information related to fish ecology will be generated in the current financial year.

Status of Fish Diversity in Sahyadri Tiger Reserve, Maharashtra

PROJECT INITIATED

Funding Source
Maharashtra Forest
Department

Investigators
Dr. J.A. Johnson,
Dr. K. Sivakumar
Dr. Clement Ben

Researcher
Sutanu Satpathy
Anurag Rokade

Date of Initiation
2017

Date of Completion
2019

Objectives

The objectives of the project are to (i) make an inventory of the fish diversity and assess the status in the streams/rivers/reservoirs of Sahyadri Tiger Reserve, of Maharashtra; (ii) document the condition and use of the habitat by rare and threatened fishes; and (iii) identify and map the critical habitat of the central Indian and Deccan mahseers, *Tor tor* and *Tor khudree*.

Progress

Seasonal (pre-monsoon and post-monsoon) fish sampling was carried out in streams/rivers/reservoirs of Sahyadri Tiger Reserve. A total of 23 sampling locations were chosen, and sampling was carried out in both seasons. Fishes were identified using the available taxonomic literature. A total of 40 species of fish belonging to 10 families and 24 genera were recorded. Of the 40 species recorded, three (*Hypselobarbus curmuca*, *Hypselobarbus kolus* and *Tor khudree*) are listed in IUCN threatened categories. A photographic field guide to all the recorded fish species was prepared.

Outputs and Outcomes

A monograph with species accounts and a pictorial field guide to the fishes of Sahyadri Tiger Reserve have been prepared.



Atlas of Colonial Nesting Water Birds in the East Coast States of India

PROJECT INITIATED

Funding Source
Grant-in-Aid

Investigators
Dr. Gopi G.V.
Dr. Bivash Pandav

Researcher
D. Frank Sadrack Jabaraj

Date of Initiation
January 2017

Date of Completion
December 2019

D. Frank Sadrack Jabaraj



Objectives

The objectives of the project are to (i) conduct a survey in the state of Tamil Nadu to document the existing nesting water bird colonies; (ii) collect baseline ecological information about each of the nesting colonies; (iii) assess the conservation threats to these identified colonial water bird colonies; and (iv) distinguish key colonial areas on the basis of the number of species and the number of threatened species.

Progress

The present study covers the entire state of Tamil Nadu, which is divided into three broad physiographic regions, the western hilly region, the plains along the coast and the north-western high-elevation area. Water bodies across Tamil Nadu were surveyed for the presence of water bird breeding colonies, and information pertaining to the nesting area, activity period in the nesting site, nest trees used, nesting species and conservation threats was collected during the nesting season (October 2017 to April 2018). The nesting sites and species were documented photographically.

Outputs and Outcomes

A total of 39 nesting areas were identified as breeding sites from preliminary investigations carried out during the period from October 2017 to April 2018. About 28% of the nesting sites (11 sites) are classified as protected areas, and 72% are located in non-protected areas. Twenty of the 26 water bird species were found to be nesting in the existing sites in Tamil Nadu. In general, more species nested in protected areas than in non-protected areas. *Acacia nilotica*, *Prosopis juliflora*, *Barringtonia* sp., bamboo and *Azadirachta indica* were found to be the major nesting trees. Owing to removal of nesting trees, anthropogenic disturbances, changes in monsoon pattern and many other factors, numerous nesting sites that were active in the past have been lost.

Milestone

Some of the sites that were recorded during the observed season were new when compared with previous sites. Since most of the past sites are not active, there has been a major shift in the nesting site which itself is a challenge in identifying when taken into consideration the enormous water bodies in Tamil Nadu.

ACADEMIC AND TRAINING ACTIVITIES



Academic Programme

XVI M.Sc. Wildlife Science Course

The second semester started in January 2018. During the reporting period, and as per the course schedule, the specialized tour on wetland techniques and conservation was conducted. The students were taken to various protected areas, such as wildlife sanctuaries and national parks, in Orissa and Bharatpur from 12 to 25 February 2018.

A total of twenty students have joined the XVI M.Sc. Course. The reporting period saw the culmination of XV batch of M.Sc. and initiation of XVI batch of M.Sc. The XV batch of M.Sc students defended their dissertation studies successfully:

Name of the student	Title of the dissertation
Aishwarya Bhandari	The Number Game: Influence of Pack Size Variation on Dhole Behaviour.
Mr. Kumar Ankit	Effect of habitat characteristics on waterbird diversity along river Ganga in Allahabad, U.P
Ashish AP	Comparison of natural resource governance mechanisms for conservation and management of rare and threatened species of medicinal plants and other minor forest products from Kerala
Ashwin Warudkar	Community Organization of Ground Spiders in Nicobar Islands : Influence of Habitat Structure and Island Biogeography
Krishna Murari	Grassland communities and evaluation of potential habitat for Greater One-horned Rhinoceros (<i>Rhinoceros unicornis</i>) in Valmiki Tiger Reserve, Bihar
Monisha S. Mohandas	Feral Dogs : Population status, ranging patterns and resource utilization in Desert National Park
Mr. Naman Goyal	Response of Island endemics to introduced congeners : A case study of the Nicobar Bulbul and the Red-Whiskered Bulbul.
Nimisha Srivastava	Response of Mammals to human-mediated resource base in Chamoli district of Uttarakhand
Priyanka Justa	Niche overlap and resource partitioning among two sympatric primate species in the Askot region of Uttarakhand
Rajat Rastogi	Responding the invaders : To understand the pattern of insect and plant assemblages across the gradient of plant invasion in Kanha Tiger Reserve
Rakesh Mondol	Effect of village relocation on ground birds (Galliformes) and small mammals in Sariska Tiger Reserve, Rajasthan
Ravi Kumar Sharma	Carnivore outside protected areas: Aspects of leopard ecology at Jawai, Rajasthan
Samyuktha Rao Kandregula	Effects of Lunar Cycle on Intertidal Benthic Faunal Assemblages in Nicobar Island, India
Sijagurumayum	Diversity and abundance of wet grassland birds in disturbed and undisturbed wetlands of Barak-Chindwin River basin with special emphasis on globally threatened species
Sultan	Impacts of vehicular traffic on the habitat use by wildlife along road edges

Dissertations Supervised by WII Faculty Members

Anindita Debnath (2017). **Documenting ecosystem services and assessing ecosystem health of canals in Narora, Uttar Pradesh, India.** Doon University, Dehradun. Supervisor: Dr. Gautam Talukdar.

Arkojyoti Sarkar (2017). **Land use land cover dynamics of the state of Bihar.** M.Sc. (Environment Management). Forest Research Institute (Deemed) University, Dehradun. Supervisor: Dr. Gautam Talukdar.

Gangopadhyay, S. (2017). **Estimating dog (*Canis lupus familiaris*) abundance using Mark Re-sight in Dooars, North Bengal.** M.Sc. (Environmental Science) dissertation submitted to Asutosh College, Calcutta University, Kolkata. 24 pp. Supervisor: Dr. S. Sathyakumar.

Vasavi Prakash (2017). **Identification of eco-sensitive zones around a protected area with respect to swamp deer (*Rucervus duvaucelli duvaucelli*).** Postgraduate Diploma in Geo-information Science and Earth Observation, Faculty of Geo-information Science and Earth Observation, University of Twente, The Netherlands. Supervisor: Dr. Gautam Talukdar.

Status of Doctoral Research at WII

Theses Submitted

Indranil Mondal (2018). **Evaluating landscape connectivity and bottle-necks for tigers (*Panthera tigris tigris*) in Tadoba Andhari landscape complex, Maharashtra, India.** Submitted to Forest Research Institute (Deemed) University. Supervisors: Dr. Gautam Talukdar and Dr. Bilal Habib.

Pritha Dey (2018). **Diversity assessment and molecular characterization of the Geometridae moths (*Lepidoptera: Heterocera*) in Nanda Devi Biosphere Reserve, Uttarakhand.** Saurashtra University, Rajkot, Gujarat. Supervisors: Dr. V.P. Uniyal and Dr. Kailash Chandra.

Registered

Uttaran Bandyopadhyay (2017). **Diversity and distribution pattern of moths (*Lepidoptera: Heterocera*) with special emphasis on family Noctuidae in Askot Wildlife Sanctuary, Uttarakhand.** Saurashtra University, Rajkot, Gujarat. Supervisor: Dr. V.P. Uniyal.

Priyanka Kashyap (2017). **Soil nematode community structure along elevational gradient in Bhagirathi Basin, Uttarakhand - a morphological and molecular approach.**

Saurashtra University, Rajkot, Gujarat. Supervisor: Dr. V.P. Uniyal.

Kamalika Bhattacharya (2017). **Moth (*Lepidoptera*) assemblages along altitudinal gradient in Singalila and Neora Valley National Park, central Himalaya: An ecological and molecular approach emphasising on Noctuidae.** Saurashtra University, Rajkot, Gujarat. Supervisor: Dr. V.P. Uniyal.

Kritesh Dey (2017). **Studies on assemblage of spiders (*Arachnidae: Araneae*) in different riparian zones of the River Ganga.** Forest Research Institute (Deemed) University. Supervisor: Dr. V.P. Uniyal.

Pooja Rani Sinha (2017). **Prediction of quality of water emphasizing on nutrient dynamics in Kosi watershed, Uttarakhand.** Forest Research Institute (Deemed) University. Supervisor: Dr. V.P. Uniyal.

Kumari Vandana (2017). **Assessment of pollinators in indigenous farming systems in Garhwal Himalaya, Uttarakhand.** Forest Research Institute (Deemed) University, Dehradun. Supervisor: Dr. V.P. Uniyal.

Debanjan Sarkar (2018). **The resilience of protected areas of India to climate change: Current status and future scenario.** Forest Research Institute, Dehradun. Supervisor: Dr. Gautam Talukdar.

Ruchika Sah (2018). **Ecotoxicological and GIS spatial risk assessment of estrogenic endocrine disrupting compounds (e-EDCs) from Middle Ganga.** Saurashtra University, Rajkot. Supervisor: Dr. Gautam Talukdar.

Training Programmes

XXXVIII Post-graduate Diploma in Advanced Wildlife Management concluded, Dehradun, 1 September 2016 to 30 June 2017.

During the reporting period, the officer trainees visited Kruger National Park, Johannesburg Zoo, South African Wildlife College, Moholoholo Wildlife Rehabilitation Centre, Cheetah Breeding Centre, Pretoria Zoo (Johannesburg), Pretoria National Botanical Garden and Table Mountain National Park (Cape Town) as part of their management tour's foreign component in South Africa from 19 April to 2 May 2017. The purpose of this visit was to get a regional perspective and study a wide range of wildlife species and protected area management practices. The officer trainees completed the management term paper exercise at Nameri Tiger Reserve, Assam, from 2 to 12 April 2017. The information and data collected and computed were analysed, and a term paper report was developed by each of them. The management



Vinod Verma

plan exercise was completed at Kanha Tiger Reserve, Madhya Pradesh, from 8 to 29 May 2017. The officer trainees prepared individual management plans during the period from 1 to 16 June 2017, after which the plans were evaluated.

Dr. Rajesh Gopal, Secretary General, Global Tiger Forum (GTF), was the chief guest of the valedictory function, held on 30 June 2017. The following officer trainees received awards and prizes:

The institute's gold medal for the top trainee and the 'Top Trainee in Wildlife Biology' book prize were bagged by Ms Ajeeta Longjam; the Wildlife Preservation Society silver medal for the second in merit and the silver medal for the best all-round wildlifer were given to Mr. Md. Sajid Sultan; the N.R. Nair Memorial silver medal for the best management plan was received by Mr. Vikram Kesharee Pradhan; the A.K. Chatterjee silver medal for the best management term paper was awarded to Mr. G. Ramalingam; and the silver medal for the best foreign trainee was given to Mr. Wai Yan Phyo.

XXXIX Post-graduate Diploma in Advanced Wildlife Management, 1 September 2017 to 30 June 2018.

The 10-month Post-graduate Diploma Course in Advanced Wildlife Management commenced on 1 September 2017 at this institute with 10 officer trainees of the rank of Deputy Conservator of Forests/Assistant Conservator of Forests and equivalent levels. Among them, six officers represented Indian states (two from Himachal Pradesh and one each from Meghalaya, Madhya Pradesh, Assam and Odisha). In addition, four foreign nationals from Myanmar have also joined the course.

The orientation tour, to Koluchaur, Chowkhamb, Lansdowne Forest Division, Pauri Garhwal and adjoining areas, was conducted from 25 to 29 September 2017. The objective of this tour was to introduce the concepts of conservation values, unique features, orientation to flora and fauna and identification of bird species and guilds in different forest ecosystem. This opportunity was also used to familiarize trainees with different habitats, wildlife values of the area, animal sightings, eco-tourism and human-wildlife interface situations.

XXXIII Certificate Course in Wildlife

Management, Dehradun, (concluding date, 31 January 2018). The 3-month certificate course began on 1 November 2017. A total of 13 officer trainees joined the course, of which six officer trainees were from five states of the country. The other seven were foreign nationals. Three foreign trainees belonged to Malaysia, and four were from Myanmar.

Apart from being taught in the classroom, the officer trainees were taken to Chilla for a 12-day orientation-cum-technique tour beginning on 21 November 2017 to learn various techniques pertaining to wildlife management. They were taken on a wildlife management tour during 1-20 January 2018 to various parts of Gujarat, viz., Gujarat Ecological and Educational Research Foundation, Gulf of Kutch Marine National Park, Nalsarovar Bird Sanctuary, Centre for Environment Education, Nalsarovar Wildlife Sanctuary, Dasada Wild Ass Sanctuary, Marine National Park, Jamnagar, Okha, Pirotan, Sakkarbagh Zoo, Junagarh and Gir National Park. The certificate class also visited Pench Tiger Reserve and Kanha Tiger Reserve, in Madhya Pradesh, and Keoladeo National Park, Bharatpur, in Rajasthan. The objective of this tour was to provide first-hand experience of various management practices related to habitat management, endangered species management, wildlife protection, captive management, eco-development, wildlife interface conflicts and tourism.

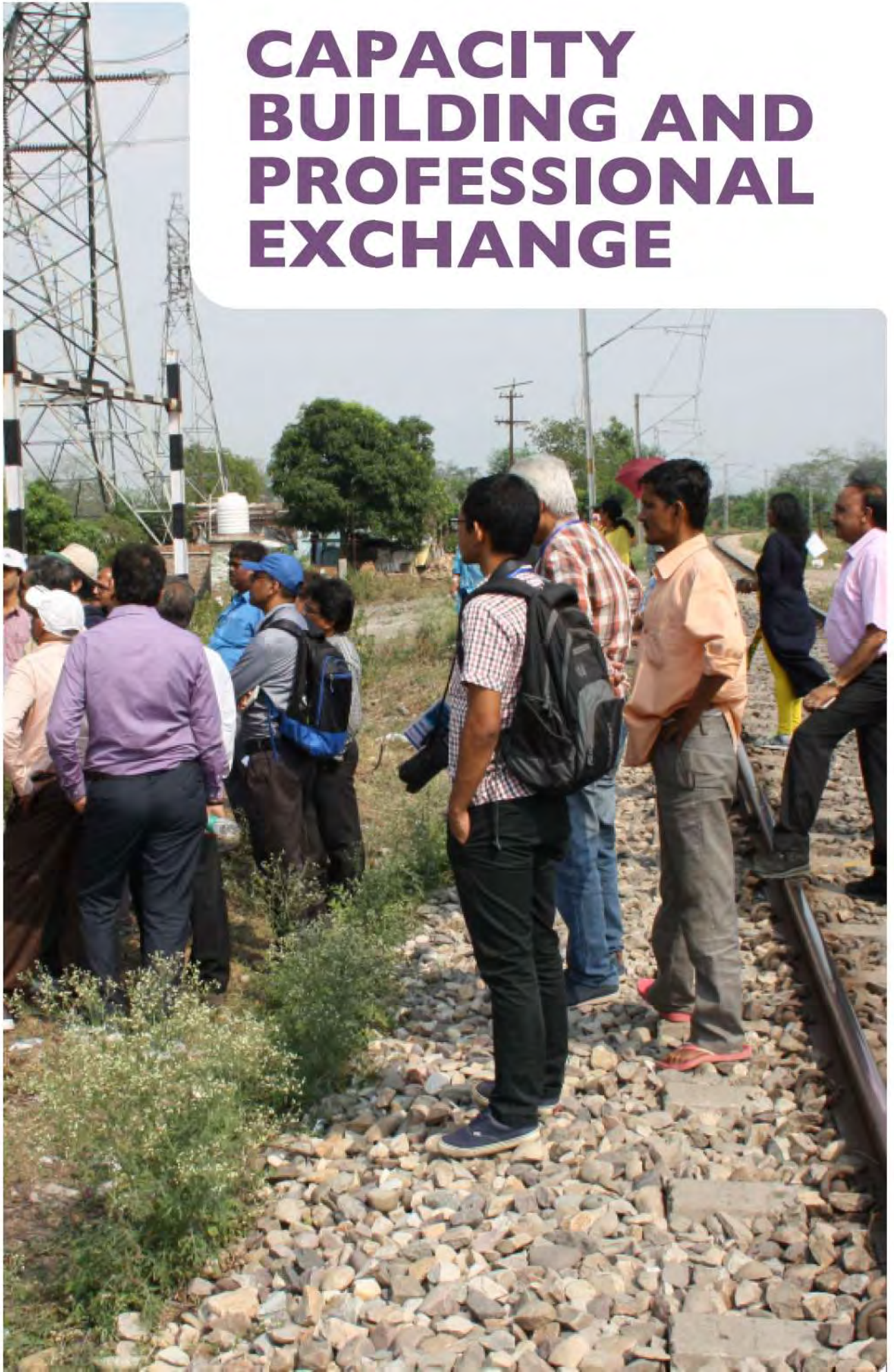
A valedictory function was organized on 31 January 2018. All the officer trainees completed the course successfully. Dr. Rajendra Dobhal, Director General, Uttarakhand State Council for Science and Technology (UCOST), Government of Uttarakhand, graced the occasion as the chief guest. He presented certificates and awards:

The institute's gold medal for the top trainee and the silver medal for the best all-round wildlifer were awarded to Dr. A.A. Kazi, from Gujarat. The institute's silver medal for wildlife management was bagged by Mr. Fauzul Azim Bin Zainal Abidin, from Malaysia. The institute's silver medal for the best foreign trainee was awarded to Ms Siti Nur Azimah Abdul Wahab, from Malaysia.

Vinod Verma



CAPACITY BUILDING AND PROFESSIONAL EXCHANGE



Programmes Organized by WII

World Heritage Day 2017 Celebrations, 18 April 2017. The UNESCO Category 2 Centre on World Natural Heritage Management and Training for Asia and the Pacific Region at WII celebrated World Heritage Day (WHD) by organizing a series of events. The participants included school students from three UNESCO World Heritage Sites (WHS) of India, namely, Nanda Devi and Valley of Flowers National Parks, Uttarakhand; Great Himalayan National Park Conservation Area, Himachal Pradesh; and Keoladeo National Park, Bharatpur, Rajasthan. There were students from Model School, National Institute for the Visually Handicapped, Dehradun, also. The primary objective of the celebration was to raise awareness among the school students through field visits, learning activities, quizzes and cultural performances. Over 200 participants took part of the WHD celebrations. Apart from the students from WHS schools and Dehradun institutions, they included WII faculty members, researchers and staff members.

The students visited Forest Research Institute and Buddha Park as well as the nature trail in the WII campus for exposure trips. A hands-on origami craft activity was organized for them. The students also took part in an exciting quiz competition on the attributes of World Heritage Sites in India. An expert talk on the theme of WHD 2017, "Cultural Heritage and Sustainable Tourism", was delivered by Ms Nupur Prothi. The highlight of the celebrations was an entertaining cultural programme, which had songs, dances, a puppet show and a Science Express documentary.

Vinod Verma



Field course on wild animal restraint and immobilization, Sariska Tiger Reserve, 18-22 April 2017. The course aimed at developing skills in the practice of wild animal anaesthesia techniques (demonstration and hands-on practice), clinical examination in the field and sampling techniques used in screening for infectious diseases. It was organized by Wildlife Institute of India and sponsored by Dept. of Forests and Park Services, Royal Govt. of Bhutan. A total of 12 participants joined the course.

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Field course on wild animal restraint and immobilization, Sariska Tiger Reserve, 22-26 April 2017. The course aimed at the capacity development of officials of Bhutan with the objective to develop skills in best practice of wild animal anaesthesia techniques, demonstration and hands-on practice, clinical examination in the field, and sampling techniques for infectious disease screening. It was organized by WII and sponsored by the Department of Forests and Park Services, Royal Government of Bhutan. Twelve officials from Bhutan attended the course. The theoretical sessions and field inputs were provided by WII faculty members.

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Fourth cycle of management effectiveness evaluation (MEE) of tiger reserves, 28 April 2017. The fourth cycle of MEE of tiger reserves in India was launched at a workshop organized by WII and NTCA, New Delhi. Five independent regional MEE teams have been constituted by the MoEFCC to carry out MEE of all the 50 tiger reserves in India. Dr. V.B. Mathur, Director, WII, made a presentation on the MEE framework and 31 headline indicators that will be used in the MEE process of 2017-18.

WII - HESCO Workshop, 23-24 May 2017. Under the project "Dissemination and evaluation of technologies through networking of various institutes and organization of mountain ecosystem" of Technology Intervention for Mountain Ecosystem (TIME) Livelihood Enhancement through Action Research and Networking (LEARN), a 2-day planning and execution workshop was organized at WII. During the workshop, inputs were provided by technical experts from Himalayan Environmental Studies and Conservation Organization (HESCO) and Department of Science and Technology. The project investigators of 19 institutes of three Western Himalayan states, i.e., Jammu and Kashmir, Himachal Pradesh and Uttarakhand, participated in the workshop and presented their work.

Training Programme, "Eco-friendly Measures to Mitigate Impacts of Rail Projects on Wildlife", Dehradun, 15-17 June 2017. WII organized a 3-day training programme, "Eco-friendly measures to mitigate impacts of rail projects on wildlife", for senior officials of Indian Railways. The objective of the programme was to sensitize the railway officials to the impacts of the railway sector on wildlife, explore the relevance of transportation ecology in promoting smart and responsible development and share best practice guidance for steering eco-friendly developments in the rail sector. A total of 18 professionals from railway departments of different zones under the Ministry of Railways

attended the workshop. This was the first ever course conducted by WII for railway officers. The course received excellent feedback from the participants.

Training-cum-Sensitization Workshop for Forest Officials, "Biodiversity Conservation and Monitoring Techniques of Aquatic Species of Ganga River", Sarnath, 3 July 2017. This training workshop aimed at developing the skills of members of the forest department staff in assessing and monitoring the aquatic fauna of the Ganga River. The workshop was attended by 26 forest officials from Kashi Wildlife Division, Varanasi, and was conducted as part of the WII-National Mission for Clean Ganga (NMCG) project.

One-Day Workshop, "Biology and Conservation of Turtles in Ganga River", Sarnath, 4 July 2017. The training team of the WII-NMCG project "Biodiversity Conservation and Ganga Rejuvenation" organized a 1-day training-cum-conservation awareness workshop for the students and teachers of Welham Boys School at Turtle Rehabilitation Centre, Sarnath, Uttar Pradesh. The students were introduced to the classification, characteristics, morphology, feeding and reproductive biology of soft- and hard-shelled turtles. The participants were also provided hands-on training and were introduced to techniques used in the rehabilitation of turtles. The purpose of the workshop was to sensitize the school children to the ecological significance of turtles, the importance of conserving the turtles of the Ganga River and the role of turtles in cleaning the river and maintaining the ecological balance in a wetland ecosystem. The workshop concluded with discussions on the threats and conservation strategies of turtles of the Ganga River, with emphasis on the role of students and citizens.

Conservation Awareness and Sensitization Programme for Students of Government Secondary School, Sarnath, 4 July 2017. A 1-day conservation awareness and sensitization programme was organized for school students at Government Secondary School, Sarnath, Uttar Pradesh, as part of the WII-NMCG project "Biodiversity Conservation and Ganga Rejuvenation". Around 50 school children and teachers participated in this sensitization programme. The main objective of this programme was to sensitize school children to the faunal diversity of the Ganga River and the culture and beliefs of the people living around it. During the programme, slogans on saving the Ganga and its biodiversity were painted on the walls of the villages around Sarnath to create awareness. A cleanliness drive was organized in and around the villages of Sarnath. The participants

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cleared plastic waste as well as bio-waste. Students were sensitized to the harmful impacts of plastic use, and they were also informed the proper methods of plastic disposal.

Training Programme, "Application of Very High Resolution Satellite Data in Natural Heritage Management" Dehradun, 11-14 July 2017. The UNESCO Category 2 Centre (C2C) on World Natural Heritage Management and Training for Asia and the Pacific Region at WII, in collaboration with Digital Globe, a leading provider of high-resolution Earth imagery and data and analytical services, organized a 3-day course at WII. The overall objective of the course was to build the capacity of world heritage stakeholders by providing a critical understanding of high-resolution satellite imagery in the field of natural heritage management. A total of 42 participants from seven countries of the Asia-Pacific, i.e., Bangladesh, Bhutan, India, Malaysia, Myanmar, Nepal and Sri Lanka, attended the course. They included World Heritage Site managers, practitioners, academic professionals and researchers.

Training programme, "Advances in Wildlife Research and Conservation", Dehradun, 10-14 August 2017. WII organized a 5-day training programme for newly recruited scientists of Zoological Survey of India (ZSI). The objective of the training programme was to build the capacity of 35 newly recruited scientists in wildlife biology, conservation and management, field techniques for data collection and quantitative and exploratory data analysis. The programme had a blend of both theory and practice and received excellent feedback from the participants.

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Consultative Meeting, "Preparation of the Zonal Master Plan for Eco-sensitive Zone (ESZ) around Protected Areas", Dehradun, 28-30 August 2017. A consultative meeting, "Preparation of the Zonal Master Plan for Eco-sensitive Zone (ESZ) around Protected Areas", was organized by WII from 28 to 30 August 2017. Forty representatives from 10 States, viz., Andhra Pradesh, Bihar, Gujarat, Jharkhand, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Telangana and Uttar Pradesh, participated in the programme. Dr. Amita Prasad, Additional Secretary, MoEFCC, was the chief guest of the inaugural session. She reiterated the commitment of the MoEFCC to building capacity to prepare state zonal master plans. Visits to the eco-sensitive zones of Rajaji National Park (Uttarakhand) and Kalesar National Park (Haryana) were also organized as part of the meeting.

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XIII Internal Annual Research Seminar (IARS), Dehradun, 30 August 2017. The IARS was chaired by Mr. Vinod Rishi, Former ADG (WL), MoEFCC. A total of 23 presentations were made during five technical sessions, viz., National Mission on Clean Ganga; Conservation Biology; Species Recovery, Status Survey and Monitoring; Species-Habitat Relationships; and Conservation Genetics. The presentations were based on recently initiated and ongoing research studies and were made by faculty members and research fellows of the institute.

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The following were adjudged the three best oral presentations by a panel of three external evaluators, and the research personnel were awarded book prizes.

Oral Presentation Awards: XIII IARS

Rank	Name	Title of Presentation
I	Shrutarshi Paul	Predicting swamp deer distribution in the upper Gangetic plains using a combination of survey and molecular approaches
II	Leela Prasad	River dolphin oil-bait fishery in lower Assam: A preliminary assessment
III	Dr. Rashid Raza	Multi-sectoral use of river water and Ganga River dolphin conservation: Issues, engagement with key stakeholders and the way forward.

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Second Himalayan Research Seminar (HRS), Dehradun, 1 September 2017. The second HRS was chaired by Dr. Shrikant Chandola, former PCCF and HoFF, Uttarakhand. A total of 23 presentations were made during five technical sessions, viz., Diversity and Distribution; Habitat Ecology; Landscape Ecology and Climate Change; Human Dimension and Ecosystem Services; and Monitoring Strategies.



The following were adjudged the three best oral presentations by a panel of three external evaluators, and the research personnel were awarded book prizes.

Oral Presentation Awards: Second HRS

Rank	Name	Title of Presentation
I	Ms Ranjana Pal	Seasonal variation in mammalian assemblages in different climatic zones of Bhagirathi Basin, Uttarakhand
II	Ms Ankita Sinha	Discerning patterns of river bird distribution using species-traits and environmental variables
III	Ms Meghna Bandhopadhyay	Importance of riverine system for conservation management: Preliminary insights on small carnivores from Great Himalayan National Park

XXXI Annual Research Seminar (ARS), Dehradun, 5-6 September 2017. The XXXI ARS of the institute was conducted at WII. Mr. A.N. Jha, Secretary, MoEFCC, and Chairman-WII Governing Body, was the chief guest of the ARS. He also delivered the inaugural address. Five publications were also released during the inaugural session of the ARS: (i) Wildlife Watch in the Indian Himalayan Region - Series III (2016-17); (ii) ENVIS Bulletin: Diversity and Ecology of Amphibians of India; (iii) Flowering Plants of Kedarnath Wildlife Sanctuary: A

Field Guide; (iv) Ecological Assessment of Siswan Reserve, Punjab; and (v) Ecology, Taxonomy, and Conservation of Fish Diversity in Subansiri River Basin of Arunachal Pradesh, North-east India.

A total of 21 presentations were made in six technical sessions, viz., Species Recovery Programme; Landscape Management and Climate Change; Large Carnivore Ecology; Wildlife Monitoring and Management; Ex situ Conservation and Molecular Genetics; and a session of 14 3-minute talks (TMT)

based on M.Sc. dissertations. A special session, the "New Frontiers Science Express: Climate Action Special (SECAS) train", was also conducted during the ARS. The presentations were based on ongoing/completed research studies and were made by research fellows and faculty members of the institute. In addition, poster presentations were also made by the researchers and project teams.

A panel of eminent scientists and wildlife managers evaluated the relevance and quality of the research presented through oral and poster presentations. The presentations made by the following researchers and M.Sc. students were adjudged the best presentations of the XXXI ARS, and the winners were awarded the book prize.



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Oral Presentation Awards: XXXI ARS

Rank	Name	Title of Presentation
I	Ms Vishnupriya Kolipakam	Genetic structure of tigers in India and its conservation implication
II	Mr. Stotra Chakrabarti	Joining the dots: Lessons learnt from a long-term research on Gir lions
III	Mr. Anant Pande	Life at the extreme: Understanding seabird ecology and genetics in Antarctica

TMT: XXXI ARS

Rank	Name	Title of Presentation
I	Mr. Naman Goyal	Patterns in avian assemblages on two islands of the Central Nicobar with emphasis on interactions between the endemic Nicobar bulbul and red-whiskered bulbul
II	Ms Monisha S Mohandas	Free ranging dogs: Population status, ranging patterns and resource utilization
III	Mr. Ashwin Warudkar	Community organization of spiders in central Nicobar Islands: Influence of habitat structure and island heterogeneity
	Sultan	The serpentine devil: Roads in the woods - A study on the impacts of a national highway on wildlife in Haridwar Forest Division

Poster Presentation Awards: XXXI ARS

Rank	Name of the Presenter	Title of the Poster Presentation
I	Ms Tanvi Gaur	National Mission for Sustaining Himalayan Ecosystem: An overview of Landscape Ecology and Visualization Laboratory
II	Ms Preeti Sharma	Indicator species approach for assessment of outstanding universal value of Sahyadri sub-cluster, Western Ghats World Heritage Site

Rank	Name of the Presenter	Title of the Poster Presentation
III	Ms Swapnali Gole	Saving the island mermaids: Current status of dugong conservation in the Andaman-Nicobar archipelago
	Mr. Predit M.A.	Understanding population characteristics of Nilgiri tahr for landscape genetics

Photographic Competition Awards: XXXI ARS

Category					
	Book Award Prize (Rs.)	Flora and Fauna	Field Activity	Non-theme	Camera Trap
First Prize	1500	Chethan Kumar	S. Rohikanta Sharma	A. Arun Kumar	Aisho Sharma
Second Prize	1250	Varun Kher	Aashna Sharma	Siva R.	Aishwarya Bhandari
Third Prize	1000	Deb Ranjan Laha	Kumar Ankit	Chethan Kumar	Shravana Goswami
Jury Special Prize	1000	Naitik Patel		Rahul De	Urjit Bhatt

More than 500 delegates attended the ARS, including members of the institute's Training, Research and Academic Council (TRAC), the Principal Chief Conservators of Forests, Chief Wildlife Wardens and other senior officials representing state forest departments, delegates representing NGOs, scientists, wildlife experts, faculty members, researchers, M.Sc. students, officer trainees of the Post-graduate Diploma Course in Advanced Wildlife Management and probationers undergoing training at the Central Academy for State Forest Service.

MSTriPES Workshop, Dehradun, 11-13

September 2017. Monitoring System for Tigers – Intensive Patrolling and Ecological Status

(MSTriPES) is a scientific tool for acquainting field staff members with modern field techniques and patrolling protocols that are useful for wildlife conservation, especially in tiger landscapes of the country. This software tool will also be used for the upcoming All India Tiger Estimation exercise during 2017-18 and for annual intensive monitoring of the tiger, co-predators, prey and their habitat. A workshop was conducted at WII for implementation of MSTriPES and data entry operations during the All India Tiger Estimation exercise to be held in 2017-18. During this 3-day workshop, 20 participants from 10 tiger reserves were provided hands-on training in using both the MSTriPES mobile application and desktop version. The participants showcased the implementation of the MSTriPES application to reduce the time needed to respond to detrimental events such as poaching or habitat degradation and as a comprehensive tool to provide an overview of tiger reserves.

Ten-day Orientation Workshop, "Wildlife and Health Management", for Veterinary Officers of Uttarakhand State, Dehradun, 11-20

September 2017. A 10-day orientation workshop was organized by WII for veterinary officers of Uttarakhand with the objective of providing exposure to various aspects of wildlife. The inputs ranged from the basics of species biology, behaviour and ecology to conservation challenges in Uttarakhand, the dimensions of human-wildlife conflicts, wildlife forensics, emerging zoonoses, ex situ management, rescue and rehabilitation as well as legal issues for relevant field investigations.

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The field component included a visit to Chidiyapur Wildlife Transit Rehabilitation Centre, the Haridwar and Chilla elephant camps and Rajaji Tiger Reserve. The participants subsequently visited the Wildlife S.O.S's facility (Elephant Conservation and Care

Centre and Bear Rescue Facility) at Agra. A field excursion to Keoladeo National Park, Bharatpur, was also organized, followed by a visit to Sariska Tiger Reserve, Alwar. The workshop was attended by 26 field veterinary officers, including seven lady officers. The workshop was sponsored by Uttarakhand Forest Department and CAMPA, Uttarakhand.

Special Course, "Wildlife Protection, Law and Forensic Science", Dehradun, 18-23 September 2017. A 1-week special course was organized by the institute for the 68th batch of officer trainees of the Indian Revenue Service (Customs and Central Excise) as part of their training programme. A total of 75 officers trainees from the National Academy of Customs, Indirect Taxes and Narcotics, Faridabad, participated in this course. The main objectives of this training programme were to (i) provide basic knowledge about wildlife and conservation perspectives in India; (ii) provide knowledge about the laws and policies relevant to the protection of wildlife and prevention of the illegal trade in wildlife at the national and International levels; (iii) introduce to Wildlife Forensics; and (iv) provide hands-on training in the identification of certain wildlife products and parts in the illegal trade.

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A field tour to Corbett Tiger Reserve was organized to sensitize the trainees to the protection and management of a wildlife protected area and issues related to the illegal trade and poaching. Eminent experts from WII, Uttarakhand State Forest Department, NBA, Ministry of Environment, Forest and Climate Change and Bombay Natural History Society provided inputs.

First Meeting of the Independent Regional Expert Committees (RECs) for Management Effectiveness Evaluation (MEE) of National Parks and Wildlife Sanctuaries in India in 2017-18, New Delhi, 19 September 2017. The

Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India, initiated management effectiveness evaluation (MEE) of 125 national parks and wildlife sanctuaries in India in 2017-18 and entrusted WII with the responsibility of technical backstopping. WII organized the first meeting of 13 regional expert committees, which was chaired by Mr. Siddhanta Das, DGF and Special Secretary, MoEFCC, and co-chaired by Mr. Soumitra Dasgupta, IGF-Wildlife, MoEFCC. The members of the 13 RECs include retired PCCFs and representatives of NGOs and academia. The evaluation of the sites will be carried out between October 2017 and September 2018.

Presentation, "Work Environment for Women Employees: Statutory and Organizational Aspects", Dehradun, 25 September 2017. Dr. Arvind Kumar Jha, former PCCF and DG (Social Forestry), Maharashtra State, and Managing Trustee of Global Enviro-legal Services Foundation (GELSEF), delivered a guest lecture titled "Work environment for women employees: Statutory and organizational aspects" at the institute. Dr. Jha discussed the provision of appropriate environments to women staff members in view of the fact that the act and rules related to sexual harassment at workplaces cast a special responsibility on the employer. Dr. Jha made three presentations: (i) The Sexual Harassment of Women at the Workplace (Prevention, Prohibition and Redressal) Act, 2013; (ii) Sexual Harassment of Women (PPR) Rules 2013; and (iii) Roles and Responsibilities: Women's Safety at Workplace. The talk was attended by faculty members, researchers and students of the institute.

Hands-on Training on Marine Biodiversity Monitoring with Scuba Diving by CAMPA-Dugong Recovery Programme, Gulf of Mannar Marine National Park, Tamil Nadu, 8-15 October 2017. WII, in collaboration with Tamil Nadu Forest Department, organized a 1-week special course, "Hands-on Training on Marine Biodiversity Monitoring with SCUBA Diving for the Frontline Staff of Tamil Nadu Forest Department" as part of the CAMPA-Dugong Recovery Programme at Gulf of Mannar Marine National Park, Tamil Nadu. The main objectives of this training programme were to provide (i) basic knowledge about the marine biodiversity of the Gulf of Mannar and Palk Bay and its conservation; (ii) knowledge about dugongs and their conservation; (iii) training in SCUBA diving in open water; (d) hands-on training in underwater marine biodiversity monitoring using quadrats and LIT and PIT methods.

A total of 10 Range Forest Officers and four Researchers participated in the training. The Chief

Wildlife Warden, Government of Tamil Nadu; Director, Gulf of Mannar Marine National Park; Wildlife Warden, Gulf of Mannar National Park; and Director, SDMRI provided inputs in the course along with WII Team.

MSTrIPES Workshop, Dehradun, 9-11 October 2017. Monitoring System for Tigers - Intensive Protection and Ecological Status (MSTrIPES), a National Tiger Conservation Authority (NTCA) funded program, is a scientific tool to acquaint field staff to modern field techniques and patrolling protocols useful for wildlife conservation especially in tiger landscapes of the country. This software tool shall be used for the upcoming All India Tiger Estimation Exercise during 2017-18 and annual intensive monitoring of tiger, co-predator, prey and their habitat. As a part of implementing the programme, the 2nd National Level Training Workshop for Computer Technicians and Field Biologists of 15 Tiger Reserves was conducted at WII. During this 3-day workshop, 29 participants underwent hands-on training in using the MSTrIPES mobile application and desktop version. The participants were exposed to the implementation of MSTrIPES to reduce the time needed to respond to events such as poaching or habitat degradation and as a comprehensive tool to monitor the pulse of tiger reserves.

Conservation Awareness Workshop for School Children, Dehradun, 12 October 2017. WII organized a conservation awareness workshop for the students of St. Patrick's Academy, Dehradun, and Rabea Girls Public School, Delhi. The main objective of the workshop was to introduce the participants to the faunal diversity of India and its importance and the NMCG-WII Biodiversity Conservation and Ganga Rejuvenation Project. A total of 140 students participated in the workshop. The participants took part in a quiz on the theme "Biodiversity of India". The students were also briefed about the importance of forensic science in wildlife conservation, and specimens were displayed.

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One-Week Special Courses in Wildlife Protection, Law and Forensic Science for Officer Trainees of Indian Revenue Service (Customs and Central Excise) Group-'A', 68th Batch, Dehradun, 30 October to 3 November and 13-17 November 2017. WII conducted a special course in wildlife protection, law and forensic science for 182 officer trainees of the Indian Revenue Service (Customs and Central Excise) Group-'A', 68th batch. The objectives of this training programme were to provide (i) basic knowledge about wildlife and conservation perspectives; (ii) knowledge about the laws and policies relevant to the protection of wildlife and prevention of the illegal trade at the national and international levels; (iii) an introduction to wildlife forensics; and (iv) hands-on training for identification of wildlife products and parts in the illegal trade.

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Simple identification tips were also shared with the officer trainees for easy interpretation. Inputs were provided on the provisions of the Biodiversity Act of India and on the trade in different taxa, including insects, birds and reptiles. A visit to Corbett National Park was also organized to explain the issues related to management of the natural resources in large landscapes and the tools and techniques used to protect them.

Second Consultative Meeting, "Preparation of the Zonal Master Plan for Eco-sensitive Zone (ESZ) around Protected Areas", Shimla, 6-8 November 2017. The second consultative meeting on the theme "Preparation of the Zonal Master Plan for Eco-sensitive Zone (ESZ) around Protected Areas" was organized by WII at Shimla, Himachal Pradesh. Twenty-nine representatives from eight states, viz., Kerala, Karnataka, Tamil Nadu, West Bengal, Haryana, Punjab, Himachal Pradesh and Jammu and Kashmir, participated in the meeting. Dr. Amita Prasad, Additional Secretary, MoEFCC, was the chief guest at the inaugural session. She reiterated the

commitment of the MoEFCC to building capacity to prepare zonal master plans for the states. A visit to the eco-sensitive zone of the Shimla Water Catchment Wildlife Sanctuary was also organized as part of the meeting.

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First National Training Workshop for Spearhead Teams of the Ganga River States, "Biodiversity Conservation and Monitoring of Aquatic Species of Ganga River", 6-12 November 2017. WII conducted its first national training workshop for spearhead teams from the Ganga River states on the theme "Biodiversity Conservation and Monitoring of Aquatic Species of Ganga River" under the project "Biodiversity Conservation and Ganga Rejuvenation". The workshop was attended by 36 forest officials from Uttar Pradesh, Bihar, Jharkhand and West Bengal. The aim of this workshop was to train the officers and frontline staff with the skills and capacities required for biodiversity monitoring and conservation and management of riverine species along the Ganga River. The objective of the workshop was to form spearhead teams for each of the Ganga River states and train them in aquatic biodiversity monitoring for practical and action-oriented implementation of science-based research activities of WII. These trained spearhead teams will in turn train other frontline staff members for successful biodiversity monitoring and restoration of the Ganga River. A field visit was also organized from 10 to 12 November 2017 at the National Chambal Sanctuary, Morena, Madhya Pradesh.

Mitigation Hierarchy in Impact Assessment for Balancing Conservation Needs with Development Priorities: IAIA Post-symposium Training Course, Washington D.C., USA, 16-17 November 2017. The mitigation hierarchy (MH) offers

a framework for effective management of environmental risks and potential impacts on biodiversity and ecosystem services across development sectors. WII organized a training course, "Mitigation Hierarchy in Impact Assessment for Balancing Conservation Needs with Development Priorities". The course aimed to benefit a wide range of professionals involved in improving the environmental sustainability of projects from the perspective of biodiversity and ecosystem services. These professionals included impact assessment practitioners, members of the conservation community, investors, decision makers and policy makers.

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The objectives of the training course were to (i) revisit the impact assessment framework to define the meaning of the term "mitigation"; (ii) introduce the mitigation hierarchy framework, key steps and practice principles; (iii) discuss the merits of offsets for addressing residual impacts and incentivizing conservation of biodiversity; and (iv) review the proactive approach for avoiding reactive mitigation (cumulative impact assessment, strategic environmental assessment and LCA for drawing the "big picture"). A total of 18 participants attended the workshop.

Two-Day Workshop, "Eco-development for Biodiversity Conservation: Assessment and Way Forward", Dehradun, 20-21 November 2017. A 2-day training workshop was organized at WII for Indian Forest Service (IFS) officers. A total of 13 participants belonging to 11 states, viz., Maharashtra, Goa, Assam, Gujarat, Karnataka, Arunachal Pradesh, Madhya Pradesh, Sikkim, Rajasthan, Tamil Nadu and Uttar Pradesh, attended the workshop. Field experiences in implementing the eco-development approach for biodiversity conservation were shared

with the participants. Methods of sustaining eco-development in the long-term and upscaling the approach at the landscape level were discussed. The modalities related to access and benefit sharing of bio-resources with local communities were also discussed.

Consultative Workshop for Preparation of Biodiversity Conservation and Rural Livelihood Improvement Project (BCRLIP) Implementation Report, Dehradun, 4-8 December 2017. WII, conducted a workshop for preparing the final implementation report of BCRLIP. The objectives of the workshop were to (i) share the experience of implementation of BCRLIP of various implementing agencies; (ii) discuss the framework for mainstreaming conservation in development; and (iii) assess the physical and financial progress of activities under various components of BCRLIP till 30 September 2017.

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The workshop was attended by the project personnel of three field learning centres (FLCs) and five project implementation sites along with senior environment and social development specialists of World Bank. There were 34 participants including the Principal Chief Conservator of Forests, Conservator of Forests, Deputy Conservator of Forests, Divisional Forest Officers, Range Forest Officers, Forest Guards and other professionals, viz., landscape planners, ecologists, sociologists, project officers, social mobilizers and livelihood facilitators.

One-Week Refresher Training Course for IFS Officers, "Management of Coastal and Marine Biodiversity in India: Challenges and Prospects", Port Blair, 4-8 December 2017. The objective of this course was to provide sensitize the

participants to issues related to administration, governance and legal frameworks for conservation of marine and coastal biodiversity in India. It was organized by WII and was sponsored by MoEFCC. The fourth training course on the theme "Management of Coastal and Marine Biodiversity in India: Challenges and Prospects" was organized in Port Blair, Andaman and Nicobar Islands. A total of 27 in-service IFS officers attended the training programme. The participants visited Mahatma Gandhi Marine National Park, Vandoor, Paratong Island and Janshi Rani Marine National Park. An interaction session with field managers was also arranged.

Module on Wildlife Management for Inducted IFS Officers, Dehradun, 6-9 December 2017. On a request from Indira Gandhi National Forest Academy (IGNFA), Dehradun, WII organized a 4-day module on wildlife management for inducted IFS officers undergoing their 10-week induction course at IGNFA. A total of 32 officers from nine states, viz., Tamil Nadu, Madhya Pradesh, West Bengal, Assam, Arunachal Pradesh, Rajasthan, Sikkim, Uttar Pradesh and Gujarat, attended. The training programme received excellent feedback from the participants.

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WII-BNHS Staff Training Workshop Report on Quantitative Conservation Tools, Dehradun, 11-17 December 2017. The Bombay Natural History Society (BNHS) is a premier conservation organization and a long-standing partner of WII. It is a collaborator in the institute's great Indian bustard (CAMPF funded) project. On a request from BNHS, WII organized a workshop to train selected staff members of BNHS in the theory and application of quantitative tools to ecology and conservation.

The workshop was attended by 27 participants. The participants were trained in advanced topics including statistical techniques, analytical software for data analysis, remote sensing and species distribution modelling.



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Third National-Level MStrIPES Training Workshop for Computer Technicians, Dehradun, 12-15 December 2017. The third national-level training workshop on MStrIPES for the computer technicians of tiger reserves was conducted from 12 to 15 December 2017. Over 80 participants from 28 tiger reserves, state forest departments and State Forest Research Institute, Jabalpur, and three officials from NTCA (Delhi, Bengaluru and Nagpur regional offices) attended the workshop. Field and interactive class room sessions were organized to make the participants familiar with the data collection, data entry, archiving, analyses, merging and generating reports on patrols, ecological, camera trap and conflict modules of the program. The framework used to collect data for the All India Tiger Estimation Exercise 2018 through MStrIPES was also explained to the participants.

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Culture-Nature Journey at the ICOMOS General Assembly, New Delhi, 13-14 December 2017. UNESCO C2C WII was invited by ICOMOS India as a partner for the 19th ICOMOS General Assembly held at Delhi, India, in December 2017. The primary theme, of the ICOMOS GA Scientific Symposium was "Heritage and Democracy". UNESCO C2C WII co-organized the thematic session titled "Culture-Nature Journey: Exploring the Complexities of Human Relationships with Natural and Cultural Places" at Delhi.

A special plenary session of "Culture-Nature Journey"



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was organized by UNESCO C2C WII on 13 December 2017. It was titled "Connecting Countries: Supporting Transnational Heritage Conservation through Linking Culture and Nature". The focus of the session was on how uniting approaches to culture and nature can support international conservation partnerships. A keynote speech was given by Mr. Sanjeev Sanyal, economist, writer, environmentalist, urban theorist and currently Principal Economic Adviser in the Ministry of Finance, Government of India. A joint publication of UNESCO C2C WII, UNESCO New Delhi and DRONAH titled "Cultural Landscapes of Asia" was released during the event along with the UNESCO C2C Bulletin for the period July-September 2017.

Sensitization and Training Workshops of "Biodiversity Conservation and Ganga Rejuvenation" Project, Kolkata, 19-24 December 2017. The NMCG-WII project team organized a series of sensitization and training workshops in the state of West Bengal. On 19 December 2017, a sensitization workshop was organized for youth and university students at the Zoological Garden, Alipore, Kolkata. A launch-cum-sensitization workshop was organized on 20 December 2017, in collaboration with the West Bengal Forest Department. The objective of the workshop was to sensitize the West Bengal Forest Department and other key stakeholders regarding the NMCG-WII-sponsored project "Biodiversity Conservation and Ganga Rejuvenation" and the CAMPA-funded "Development of Conservation Action Plan for River Dolphins" project. Representatives of more than 25 line agencies and departments participated in this workshop.

A 2-day training programme, "Monitoring of Aquatic Biodiversity of Ganga River", was organized for officials of the West Bengal Forest Department on 21 and 22 December 2017. The spearhead team of the West Bengal Forest Department facilitated this training workshop and provided professional inputs. On 23 December 2017, a sensitization-cum-livelihood

assessment workshop was organized for the fishing community at Nabadwip, Nadia District, West Bengal. A sensitization workshop was also organized for a religious group at Nabadwip, Nadia District, West Bengal, on 24 December 2017.

Second 10-day Orientation Workshop on Wildlife and Health Management, Dehradun, 15-24 January 2018. A 10-day workshop was organized by the institute for veterinary officers of Uttarakhand with the objective of providing exposure to various aspects of wildlife management. The topics ranged from the basics of species biology, behaviour and ecology to conservation challenges in Uttarakhand, dimensions of human-wildlife conflicts, wildlife forensics, emerging zoonoses, ex situ management, rescue and rehabilitation as well as legal issues for relevant field investigations. The field component included to visit to Chidiyapur Wildlife Transit Rehabilitation Centre, Haridwar; Wildlife S.O.S's facility (Elephant Conservation and Care Centre and Bear Rescue Facility) at Agra; Keoladeo Ghana National Park; and Sariska Tiger Reserve. Hands-on training in the use of a variety of immobilization equipment and physical capture techniques was provided. The workshop was attended by 24 veterinary officers including nine lady officers. The workshop was instrumental in providing insights into the ethical, scientific and professional management of wild animals. The workshop was supported by the Uttarakhand Forest Department and CAMPA, Uttarakhand.

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Fifth Course on Wildlife Conservation for Wildlife Enthusiasts, Dehradun, 15-24 January 2018. WII conducted a course on wildlife conservation for wildlife enthusiasts. A total of 20 participants (16 men and four women) attended the course who had no formal education, training and experience of wildlife biology/conservation. The participants came from varied backgrounds and included an Indian Air Force officer, three IT



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professionals, four management consultants, a retired bank manager, a homeopathic doctor, an accountant, environmental educators and three students. The participants were taken on a day visit to Asan Conservation Reserve. Then they visited the museums at the Forest Research Institute and Wadia Institute of Himalayan Geology. After the classroom sessions, the participants were taken on a 5-day field tour to the Kotdi Forest Range of the Lansdowne Forest Division, adjoining Corbett Tiger Reserve, and Jhilmil Conservation Reserve. The course received excellent feedback from the participants, who requested that the institute organize more such courses.

Two-day Training Programmes, Periyar Tiger Reserve, 19-20 January 2018 and Parambikulam Tiger Reserve, Kerala, 22-23 January 2018. The Western Ghats are one of the eight Natural World Heritage Sites in India. With a view of imparting knowledge to field managers and frontline staff members, 2-day training programmes were organized by the UNESCO C2C for Asia and Pacific Region in Kerala and Tamil Nadu.

The first training programme was organized for the Agasthyamalai and Periyar sub-cluster at Periyar Tiger Reserve with support from the Kerala Forest Department. Twenty Range Forest Officers from various protected areas within the sub-clusters participated in the training. The outstanding universal values based on which the sites were inscribed and the management actions required to conserve them were discussed in the course. The training programme for site managers and frontline staff members of the Anamalai and Nilgiri sub-clusters of Kerala was conducted at Parambikulam Tiger Reserve, Kerala. Twenty Range Forest Officers from sites within the Anamalai and Nilgiri sub-clusters participated in the programme.

Highlights of the project "Biodiversity Conservation and Ganga Rejuvenation", January 2018. A meeting was held with Hon'ble

Swami Chidanand Saraswati Ji at Parmarth Niketan Ashram, Rishikesh, Uttarakhand, to discuss the programme for the workshop for Ganga Prahari. A total of 188 Ganga Prahari have been identified across the five Ganga states (Uttarakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal). At Varanasi a batch of Ganga Prahari participated in a sensitization-cum-training workshop organized by a WII-NMCG team at Village Jalhupur, Block Chirgaon, Varanasi. A sensitization session was conducted for villagers at Pt. Deen Dayal Upadhyay Pashu Aarogya Mela, Tikari Village, Kashi Vidhyapeeth Block, on 19 January 2018, in which veterinary doctors vaccinated 950 cattle.

WII organized a 1-day consultative workshop for the Uttarakhand State Programme Management Group (SPMG) and volunteers of Ganga Vihar Manch, Uttarakhand, on the theme "Biodiversity Conservation and Ganga Rejuvenation" on 29 January 2018. Various departments working at the state level, senior scientists and researchers from the WII-NMCG team took part in the workshop. During the workshop, the participants were given an insight by the WII-NMCG team into the rich biodiversity of the Ganga River. The objectives of the six components and their outputs were explained to the participants.

Training Workshop on Animal Census, Wildlife Forensics and Wildlife Health, Spiti Wildlife Division, WII, Dehradun, 2-4 February 2018. A training workshop on animal census, wildlife forensics and wildlife health was organized by the

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institute for members of the field staff of the Spiti Wildlife Division, Himachal Pradesh Forest Department. This was focused on designing and developing a survey protocol for mammals in the trans-Himalayan landscape of Spiti, Himachal Pradesh, India. The workshop will be of use in the long-term for monitoring mammals in the trans-Himalayan landscape. This landscape is characterized by a cold desert habitat across most of its extent. Wild animals are rare since they are constrained by the

availability of food resources and suitable habitats. The workshop focused on health issues and forensics. Fifteen foresters from the Spiti Wildlife Division were exposed to Rajaji Tiger Reserve through a field visit.

Interventions in Wild Animal Health (a component of MVetSci Conservation Medicine, an online course), 3-22 February 2018. The objective of the course was to develop skills among field veterinarians in human-wildlife conflict management, translocation techniques, disease outbreak investigation and monitoring the health of declining species. The learning objectives were the following: (i) Gaining critical awareness of the effects of interventions at the human-wildlife interface. (ii) Developing a systematic understanding of the planning of, and field methods used in, disease outbreak investigation, wildlife monitoring and biological management. (iii) Gaining a comprehensive understanding, including new insights, into disease risk management in translocation programmes. (iv) Gaining a critical awareness of field methods used to investigate the role of disease in the decline of species. (v) Gaining a comprehensive understanding of ex situ medicine and management.

The course was organized by WII in collaboration with the Zoological Society of London (ZSL) and University of Edinburgh (UoE). A total of 25 participants took part in the course.

Training Programme on Monitoring of Outstanding Universal Value of Natural World Heritage Sites for Frontline Staff, Dehradun, 6-8 February 2018 and Manas Wildlife Sanctuary, Assam, 16-17 February, 2018. A training programme was organized by UNESCO Category 2 Centre (C2C) for World Natural Heritage Management and Training for Asia and the Pacific Region at WII, in which 12 participants including Range Forest Officers from Jammu and Kashmir, Uttarakhand, Sikkim, Maharashtra and Karnataka, one architect from Maharashtra and one researcher from the University of Rajasthan, Jaipur, participated.

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The second training programme was conducted at Manas National Park, Assam, in which 40 frontline staff members of the site, representatives of local NGOs and EDC members participated. The overall objective of the training programmes was to build capacity and sensitize frontline staff members and other stakeholders of World Heritage Sites to the best outstanding universal value (OUV) monitoring techniques, such as wildlife monitoring and using GIS applications and socio-economic tools.

One-Week Refresher Training Course for IFS Officers, "Eco-tourism and Biodiversity Conservation", Port Blair, 12-16 February 2018. A one-week refresher training course was organized jointly by MoEFCC, WII, CAMPA-Dugong Project and Andaman and Nicobar Islands Forest Department at Port Blair, Andaman and Nicobar Islands. This course was designed to achieve the objective of promoting integrated management of eco-tourism and coastal and marine biodiversity in India.

A total of 39 participants from the different state forest department participated in this training. Resource persons from reputed organizations provided inputs on diverse aspects of management of eco-tourism and on conservation and challenges in the coastal areas of India. This course was intended to enable the participants to gain a sound understanding of the concepts and issues related to managing sustainable eco-tourism and biodiversity, coastal and marine protected areas, the ecological and socio-political context, conservation approaches and legal-policy frameworks in terrestrial and coastal marine protected areas.

Short Course for the Project Personnel of the All India Tiger Monitoring Programme (2017-19), Dehradun, 15-28 February 2018. With the commencement of the 4-year country-wide assessment of tigers, co-predators, prey and their habitat, a total of 55 project personnel were recruited for the All India Tiger Monitoring Programme. To orient the newly recruited biologists regarding the estimation exercise, and to refresh their basic ecological and field skills, a 2-week orientation course was conducted at WII, followed by a field course at Rajaji Tiger Reserve.

The personnel were trained in the methods used to estimate abundance and density, such as distance sampling, mark-recapture frameworks, spatially explicit mark-recapture methods and genetic sampling. Further, all biologists were also trained to collect data using the latest MStrIPES Android application. At Rajaji Tiger Reserve, they had on-ground training and collected data using methods

such as distance sampling, sign surveys, camera trapping and genetic sampling.

Consultative Workshop on Preparation of India's Sixth National Report to Convention on Biological Diversity and Progress Achieved on India's National Biodiversity Target 6 (NBT 6), Dehradun, 19 February 2018. On behalf of the Ministry of Environment, Forest and Climate Change, Government of India, WII organized a 1-day consultative workshop on the reporting requirements of NBT 6 in collaboration with the National Biodiversity Authority, India, and UNDP-India under the Chairmanship of Dr. Amarjeet Ahuja, Former Secretary, Government of India.

The objectives of this consultative workshop were to (i) provide an introduction to the Convention on Biological Diversity, National Biodiversity Action Plans and their reporting requirements; and (ii) review the progress made towards -NBT 6 as well as the national contribution towards the achievement of the Global Aichi Biodiversity Targets 11 and 12. Twenty-five representatives from Central Government organizations participated in this workshop.

One-Week Training Workshop on Advances in Wildlife Conservation, Dehradun, 12-16 March 2018. The Department of Science and Technology, Government of India sponsored a 1-week training programme on the theme "Wildlife Conservation" for scientists and technologists working in the government sector. In total, 16 participants from government institutions participated in the workshop. Inputs were provided on management of invasive and alien species in protected areas; techniques used in ecological studies of wildlife; the landscape context of wildlife conservation; conservation of large carnivores and all-India tiger estimation; conservation in a changing world; the molecular approach to biodiversity conservation and wildlife; conservation and monitoring of aquatic species with special reference to water birds and crocodiles; and challenges in wetland conservation. Excellent feedback was received from the participants.

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Training of Trainers Workshops, "Wildlife Estimation along with All India Tiger Estimation 2018", Palamau Tiger Reserve, 12-28 March 2018. Over 300 officials, newly recruited frontline staff members and GIS technicians from Palamau Tiger Reserve and 32 territorial and wildlife divisions of Jharkhand were trained by the Tiger Cell and the Monitoring System for Tigers - Intensive Protection and Ecological Status (MSTrIPES) team of WII in Phase I and patrolling exercises using MSTrIPES applications and software.

The training workshops held at Betla, Palamau Tiger Reserve, covered a range of topics. (i) The introductory talk was on tiger and wildlife conservation with emphasis on the importance of the Phase I exercise. (ii) There was a talk on the functionalities of MSTrIPES, the applications, the desktop software and the computer specifications needed to support MSTrIPES. (iii) Another talk provided details of the Phase I sign survey, genetics scat collection protocol, line transects, habitat plots, human disturbance parameters, dung counts and vulture forms. (iv) In the field session training was imparted on the use of GPS, compasses, range finders and mobile apps. (v) Practical training in sign surveys and line transects was provided. (vi) A patrol exercise using the MSTrIPES mobile app was conducted for the Palamau Tiger Reserve staff. (vii) In the classroom, discussions (individual level) were held on issues encountered during the field sessions. (viii) A detailed demonstration was given on manual data entry and importing data obtained from patrols, sign surveys and line transects and forms 3A, 3B, 3C and 4 into the MSTrIPES desktop software. (ix) The modus operandi for the Phase I exercise in Jharkhand (training schedule, mock exercise, data compilation, protocol for communication of data and samples to NTCA and WII) was discussed.

National Training Workshop, "Biodiversity Conservation", for Women Scientists/Technologists, Dehradun, 19-23 March 2018. The Department of Science and Technology (DST) has launched a scheme titled "National Training Programme for Scientists and Technologists Working in Government Sector". The DST has initiated training programmes exclusively for women scientists/technologists under this scheme. WII organized a 1-week training workshop on biodiversity conservation at the institute. A total of 25 participants, of which 19 were women scientists and technologists working in government departments/institutions/organizations/universities and six were women scientists from Ganga River states, participated in the course. Prominent

resources persons from the institute and outside were invited to deliver lectures and deliberate upon the various aspects of wildlife conservation.

A field visit to Rajaji National Park was organized wherein the institute's students and faculty members sensitized the participants to the field techniques related to wildlife science, including camera trapping and using GPS and radio tracking. The human dimensions of conservation were also discussed, and the participants visited the *Gujjar* deras still located inside the forests. The participants got first-hand experiences of interactions with the *Gujjars* and the forest department. The participants celebrated World Water Day at Parmarth Niketan Ashram, Rishikesh. Excellent feedback was received from the participants about the course.

Workshops, Seminars, Conferences and Meetings Attended by WII Personnel

International Conference on Globalization and Sustainable Development: Quest for a New Paradigm? University of Rajasthan, 14-16 April 2017. Dr. V.B. Mathur, Director, WII, was invited to chair a session at the international conference "Globalization and Sustainable Development: Quest for a New Paradigm?" at the University of Rajasthan. He made a presentation titled "Environmental Conservation at the Crossroads".

Training Workshop on Disaster Risk Reduction and Heritage Sites (Cultural), Mumbai, 17-19 April 2017. Dr. V.B. Mathur, Director, WII, participated in the training workshop "Disaster Risk Reduction and Heritage Sites (Cultural)" organized by Tata Institute of Social Sciences, Mumbai Roundtable Conference, 2016.

First Meeting of the Apex Committee for Overseeing Formulation and Implementation of Projects under Prime Minister's Development Programme, Srinagar, Jammu and Kashmir, 11 May 2017. Dr. V.B. Mathur, Director, WII, participated in the first meeting of the Apex Committee for Overseeing Formulation and Implementation of Projects under Prime Minister's Development Programme at Srinagar, Jammu and Kashmir.

International Forum, "Meeting the Demand for Sustainable Infrastructure: Integrating Climate Resilience and Natural Capital into Transport Planning and Design", Hanoi, Vietnam, 17-18 May 2017. Dr. V.B. Mathur, Director,



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WII, was invited by the Asian Development Bank to participate in the international forum "Meeting the Demand for Sustainable Infrastructure: Integrating Climate Resilience and Natural Capital into Transport Planning and Design" at Hanoi, Vietnam, and to provide inputs as a speaker at the plenary session on designing ecologically sensitive transport infrastructure and to provide insights into global best practices in wildlife-friendly infrastructure design.

This interactive event provided a platform for national decision makers and technical specialists from Asia and around the world on which to deliberate and draft guiding principles for planning, designing and financing climate-resilient and ecologically sound transport infrastructure. Dr. V.B. Mathur made a presentation titled "Eco-friendly measures to mitigate the impacts of linear infrastructure on wildlife: The Indian experience".

Release of Braille Version of the Booklet "Climate Action: We Must Not Delay", New Delhi, 24 May 2017. Dr. V.B. Mathur, Director, WII, participated in the release ceremony of the Braille version of the booklet "Climate Action: We Must Not Delay" by Mr. N.S. Kang, Secretary, Department of Empowerment of Persons with Disabilities, Ministry

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of Social Justice and Empowerment, Government of India, New Delhi.

International Course on Wetlands, Integrated Water Resources Management and Food Security, Wageningen, The Netherlands, 5-23 June 2017. Dr. Gopi G.V. participated in the 19-day international course on wetlands, integrated water resources management and food security organized by Wageningen University's Centre for Development Innovation at Wageningen, The Netherlands, with a fellowship offered by the Netherlands Fellowship Programme.

GBIF Asia Regional Meeting, Hoan Kiem District, Hanoi, Vietnam, 13-14 June 2017. The objective of the meeting was to analyse biodiversity data gaps in Asia and devise an action plan for filling them, consolidate current Asian national participation in GBIF and engage new countries to join the network and build links between GBIF Asia and other related regional networks. Dr. Gautam Talukdar participated in the meeting, which was organized by GBIF. The event combined the meeting of the GBIF Asia nodes with an expanded regional meeting aimed at strengthening the participation of Asian countries and institutions in the mobilization and use of digital data relating to Asian biodiversity.

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Ninth Meeting of the UN-Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) Multidisciplinary Expert Panel (MEP), Bonn, 19-23 June 2017. Dr. V.B. Mathur, Director, WII, participated in the ninth meeting of the UN-Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) Multidisciplinary Expert Panel (MEP) in Bonn from 19-23 June 2017. Dr. Amita Prasad, Additional Secretary, MoEFCC, was the head of the Indian delegation at this meeting.



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UN-IPBES Regional Dialogue for the Asia Pacific Regional Assessment in Tokyo, Japan, 20-24 July 2017. Dr. V.B. Mathur, Director, WII, participated in the UN-IPBES Regional Dialogue for the Asia Pacific Regional Assessment in Tokyo, Japan. The aim of the dialogue meeting was to strengthen government engagement in assessment and to promote government use of the Asia Pacific assessment, once it is completed. The meetings provided an opportunity for the IPBES MEP members to engage in a dialogue with national focal points on the assessment.

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Third Authors Meeting for the IPBES Regional Assessment for Asia Pacific Region, Tokyo, Japan, 20-30 July 2017. Dr. Abhijit Das participated in the third authors meeting for the IPBES regional assessment for the Asia Pacific region in the capacity of Coordinating Lead Author for Chapter 3. The meeting was funded by the Institute of Global Environmental Strategies (IGES).

Third Authors Meeting for the IPBES Regional Assessment on Biodiversity and Ecosystem Services for the Asia Pacific Region, 24-28 July 2017. The objective of the meeting was to finalize the Regional Assessment on Biodiversity and Ecosystem Services for the Asia Pacific region. It was organized

and conducted by IPBES. The United Nations University Institute for the Advanced Study of Sustainability (UNU-IAS) hosted the first meeting, in which nearly 140 nominated experts participated to launch the Asia Pacific Regional Assessment ? a critical evaluation of the state of knowledge in biodiversity and ecosystem services.

During this 5-day meeting, the discussions of the participating experts centred on the six chapters of the IPBES Conceptual Framework. The entire assessment process took 3 years, with a summary for policy makers being included in the final report. It was submitted to the IPBES Plenary in 2018.

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IUCN-WCPA Steering Committee Meeting, Bangkok, 4 August 2017. Dr. V.B. Mathur, Director, participated in the IUCN-WCPA Steering Committee meeting organized on 4 August 2017 at Bangkok. The principal item of discussion at this meeting was the finalization of the draft WCPA-Asia Strategic Plan 2017-20 for South Asia. The first issue of the IUCN-WCPA (South Asia) Thematic Bulletin was released by Dr. Trevor Sandwith, Director, IUCN Protected Areas Programme, at the meeting.

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International Wildlife Symposium, Colombo, Sri Lanka, 15-16 August 2017. The Department of Wildlife Conservation, Government of Sri Lanka, invited Dr. V.B. Mathur, Director, to give a keynote address titled "Wildlife Conservation at Crossroads in India: Issues, Challenges and Way Ahead" at the International Wildlife Symposium held in Colombo on 15-16 August 2017. The presentation highlighted the challenges being faced by India in conserving its wild resources and the steps being taken to address them. Dr. Mathur was also felicitated by Hon'ble Deputy Minister of Environment and Forest, Government of Sri Lanka, for joining the International Editorial Board of the journal WILDLANKA, published by the Department of Wildlife Conservation, Sri Lanka.

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Five-Day Training Workshop for IFS Officers, "Environment Economics and Accounting, Green GDP and Carbon Financing" at TERI, New Delhi, 4-8 September 2017. Dr. V.B. Mathur, Director, was invited as a resource person for the training programme for IFS officers, "Environment Economics and Accounting, Green GDP and Carbon Financing" at TERI, New Delhi from 4 to 8 September 2017. He made a presentation titled "Assessment of funding for biodiversity conservation: The Biodiversity Finance Initiative (BIOFIN)".

Fourteenth GBIF Global Nodes Meeting, Helsinki, Finland, 24-29 September 2017. The objective of the meeting was to share information on the progress made by nodes and regions; establish collaboration mechanisms; and set common priorities for the Nodes Committee for the upcoming period. It was organized by GBIF. Dr. Gautam Talukdar gave a talk titled "Data Gaps in Digital Accessible Knowledge for Indian Birds". More than 2 million primary occurrence records from across India were obtained from GBIF and e-Bird, which were processed into maps of inventory completeness across the country, both prior to 1980 and after 2000, in an attempt to evaluate faunal change resulting from global climate change.



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Global Wildlife Programme Conference in Pench Tiger Reserve, Madhya Pradesh, 4 October 2017. Dr. V.B. Mathur, Director, participated in the Global Wildlife Programme Conference at Pench Tiger Reserve, Madhya Pradesh.

Tenth Meeting of the UN-Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) Multidisciplinary Expert Panel (MEP) in Bonn, 23-27 October 2017. Dr. V.B. Mathur, Director, attended the 10th meeting of the IPBES MEP in Bonn from 23 to 27 October 2017. In this meeting the implementation of the IPBES Work Programme 2016-18 and its deliverables and especially the 'Internal Review of the IPBES Functioning' by the IPBES Committee.

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Twelfth Meeting of the Conference of the Parties (CoP), Manila, Philippines, 23-28 October 2017. Dr. G. Talukdar participated in the 12th Meeting of the CoP to the Convention on the Conservation of Migratory Species of Wild Animals (CMS) held at Manila. The meeting was organized by the CMS.

Workshop on Kailash Sacred Landscape Initiative, Kathmandu, Nepal, 2-5 November 2017. Dr. Abhijit Das participated in the workshop on the Kailash Sacred Landscape Initiative for regional coordination and further planning, which was funded by ICIMOD, Kathmandu Nepal.

4th Conference on Science and Geopolitics of Himalaya-Artic-Antarctic, New Delhi, 30

November to 1 December 2017. Dr. S. Sathyakumar delivered a talk titled "Climate change impacts on fauna of the Indian Himalayan Region" at the Fourth Conference on Science and Geopolitics of Himalaya-Artic-Antarctic, held at Jawaharlal Nehru University, New Delhi.

Conference, "Resilient Hindu Kush Himalaya: Developing Solutions towards a Sustainable Future for Asia", Nepal, 3-6 December 2017. Dr.

R. Badola participated in the conference "Resilient Hindu Kush Himalaya: Developing Solutions towards a Sustainable Future for Asia". Dr. Badola was the (i) chapter table host for the biodiversity chapter at the Hindu Kush Himalaya (HKH) Science-Policy Dialogue: Key Findings and Main Messages of the HKH Monitoring and Assessment Programme (HIMAP) and (ii) a panellist in the session "Sustaining mountain ecosystems and biodiversity HKH monitoring".

IAS Professional Course Phase-I (2017 Batch), Lal Bahadur Shastri National Academy of Administration (LBSNAA), Mussoorie, 11

December 2017. Dr. V.B. Mathur, Director, WII, was invited to be the chief guest and inaugurate the IAS Professional Course Phase-I (2017 batch) at the Lal Bahadur Shastri National Academy of Administration (LBSNAA), Mussoorie, on 11 December 2017. The inauguration was followed by a plantation drive to mark the beginning of the first phase of the training course.

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First Meeting of the Informal Advisory Group (IAG) on Synergies among Biodiversity-Related Conventions, Montreal, Canada, 17-18 December 2017. The Executive Secretary, Convention on Biological Diversity (CBD) has established an Informal Advisory Group (IAG) on synergies among biodiversity-related conventions, as a follow up of CoP-13 decision XIII/24, relating to options for action to enhance cooperation and coordination.



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Dr. V.B. Mathur has been selected as one of the members who will represent the Asia Pacific Region. He attended the first meeting of the IAG, held on 17 and 18 December 2017 at Montreal, Canada.

Zoology Congress-2018 Conference,

Tirunelveli, 10-13 January 2018. The theme of the programme was the need for a sustainable living environment. It was organized by the Department of St. Xavier's College, Tirunelveli, Tamil Nadu. Dr. J.A. Johnson attended the conference and delivered a talk titled "Indian wildlife and conservation challenges". Delegates from various parts of India attended the conference.

Technical Workshop on Elephant Conservation in South Indian States,

Trivandrum, 11-12 January 2018. Dr. V.B. Mathur participated in the Technical Workshop on Elephant Conservation in South Indian States, Trivandrum, and made a presentation titled "Managing elephant populations in India: Challenges and way ahead".

Joint Management Manual Workshop, IUCN Headquarters, Gland, Switzerland, 30 January to 1 February 2018. The International Union for the Conservation of Nature (IUCN) and International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM) jointly organized a workshop to develop an action plan for producing the integrated management manual for

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culture and nature under the World Heritage Leadership Programme. The Director, IUCN, and Unit Director, ICCROM, invited Dr. V.B. Mathur to participate in and contribute to the Joint Management Manual Workshop, organized at the IUCN headquarters at Gland, Switzerland, from 30 January to 1 February 2018.

Centenary Celebrations of the University of Calcutta, Kolkata, 1-3 February 2018. Dr. S. Sathyakumar was invited to be a speaker at INTZOOCONF, held on the occasion of the centenary celebrations of the University of Calcutta at the Ramakrishna Mission Institute of Culture, Golpark, Kolkata. He delivered a talk on human-wildlife conflicts in the Indian Himalayan Region.

One-Week Compulsory Training Course for Indian Forest Service (IFS) Officers, "Eco-tourism, Livelihood and Forest Conservation", Amity Institute, Noida, 5-9 February 2018. Dr. V.B. Mathur was invited to be a resource person for the 1-week compulsory training course for IFS officers, "Eco-tourism, Livelihood and Forest Conservation", organized by Amity Institute, Noida from 5 to 9 February 2018. He made a presentation titled "Conservation at the Crossroads: Issues, Challenges and Way Forward".

UN-Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) Meeting on Preparation of "Summary for Policy Makers for the Global Biodiversity Assessment", Norway, 23-25 February 2018. The Executive Secretary, UN-IPBES, invited Dr. V.B. Mathur to attend a workshop convened to develop the Summary for Policy Makers (SPM) for the Global Assessment of Biodiversity and Ecosystem Services at Rosendal, Norway. This workshop was attended by the entire SPM author team of top international scientists/experts and international management members.

National Conference, "Climate Change, Environmental Pollution and Biodiversity Conservation", Lucknow, 24-25 February 2018. Dr. Gopi G.V. made an oral presentation titled "Mammalian species richness and diversity in a temperate forest ecosystem of Eastern Himalayan Biodiversity Hotspot" at the national conference "Climate Change, Environmental Pollution and Biodiversity Conservation" organized by Clean and Green Environmental Society, Lucknow, and CSIR - National Botanical Research Institute, Lucknow, at CSIR-NBRI, Lucknow.

Bogis-Bossey Dialogue for Biodiversity at Chexbres, Switzerland, 4-6 March 2018. The Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India, nominated Dr. V.B. Mathur, Director, WII, to participate in the Bogis-Bossey Dialogue for Biodiversity at Chexbres, Switzerland, from 4 to 6 March 2018 as part of the Indian delegation.

Sixth Session of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Meeting, Medellin, Colombia, 14-25 March 2018. Dr. Abhijit Das participated in the sixth session of the IPBES meeting, which was funded by IPBES (IGES).

105th Indian Science Congress, Imphal, 16-20 March 2018. Dr. Gopi G.V. made a poster presentation titled "Carnivore abundance and prey diversity in a temperate forest ecosystem of Eastern Himalayan Biodiversity Hotspot" at the 105th Indian Science Congress, held at Manipur University, Imphal.

UN-IPBES Plenary Meeting, Medellin, Colombia, 16-24 March 2018. Dr. V.B. Mathur, Director, WII, who has been functioning as the UN-IPBES Multidisciplinary Expert Panel member since 2014. Dr. Mathur was invited by the Executive Secretary, UN-IPBES, to attend the UN-IPBES plenary meeting held at Medellin, Colombia, from 16 to 24 March 2018. In this Plenary, the Biodiversity and Ecosystem Services Assessment Reports from 4 regions including the Asia-Pacific Region were presented, discussed and approved by the IPBES plenary.

The highlights of the meeting included (i) approval of the summaries for policy makers (SPMs) and the report chapters of four regional assessments on biodiversity and ecosystem services in Africa, the Americas, Asia and the Pacific, and Europe and Central Asia; (ii) approval of the SPM and report chapters of a thematic assessment on land degradation and restoration; (iii) a decision on

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implementation of the first work programme, including the initiation of work on two new assessments in 2018 on (1) the sustainable use of wild species and (2) tools and methodologies regarding multiple values of biodiversity to human societies; (iii) the initiation of an assessment of invasive alien species in 2019; and (v) a decision on the development of a strategic framework up to 2030 and elements of a rolling work programme. Dr. Mathur also co-Chaired the deliberations on the IPBES Review and Work Programme.

ZOOCON-2018, "Bridging the Gap: Biodiversity and Human Health", Punjab University, 21-22 March 2018. Dr. S. Sathyakumar was the invited speaker at ZOOCON-2018, "Bridging the Gap: Biodiversity and Human Health", held at the Department of Zoology, Punjab University. He delivered a talk on human-wildlife conflicts in the Indian Himalayan Region.

Visits and Study Tours

Visit of Mr. Suresh P. Prabhu, Hon'ble Minister of Railways, Dehradun, 13 May 2017. A meeting was held in the institute's Board Room under the chairmanship of Mr. Suresh Prabhakar Prabhu, Hon'ble Minister of Railways, Government of India. Fifteen faculty members of the institute including the Director, Dean and Registrar participated in the meeting. Dr. V.B. Mathur, Director, WII, welcomed the Hon'ble Minister of Railways and made a detailed presentation on the mandate and activities of the institute in the fields of the environment, forests and wildlife conservation. Mr. Satish Agnihotri, Chairman and Managing Director, Rail Vikas Nigam Limited (RVNL), New Delhi, said that he was very impressed to see the range of activities being carried out by the institute in the fields of the environment and wildlife conservation and that he looked forward to a close collaboration between RVNL and WII.

Mr. Suresh Prabhu, in his remarks, recalled his long association with WII and expressed his happiness over the contributions being made by the institute to various aspects of natural resource conservation. He stressed the need to not only protect the environment but actively promote environmental conservation. He said that the Ministry of Railways was committed to promoting "green railway lines" and to preventing elephant injury/mortality due to the existing rail operations and the proposed expansion projects. He said that WII's strengths and capabilities will be used by the Ministry of Railways to institutionalize the environmental safeguards and to build the capacity of the rail engineering and operational staff for effective environmental and wildlife conservation.

Study Tour of Wildlife Officials from Sri Lanka, Dehradun, 1-15 October 2017. WII organized a study tour of 28 frontline staff members of the rank of Range Assistant in the Department of Wildlife Conservation, Government of Sri Lanka, during the first fortnight of October. The objective of this study tour was to provide first-hand experience of various management practices related to habitat management for endangered species, wildlife protection and control of human activities, wildlife interface conflicts and tourism. Classroom lectures at WII and field visits to Kanha and Pench tiger reserves helped the visiting officials understand the scientific ways of protected area management. Daily patrolling, elephant camps, grassland management, tourism regulation and community involvement in conservation were discussed during the field visits. Excellent feedback ratings were received from the participants.

Visit of His Excellency Mr. V.P. Singh Badnore, Hon'ble Governor of Punjab and Administrator, Union Territory of Chandigarh, to WII, 27 December 2017. The Hon'ble Governor of Punjab and Administrator, Union Territory of Chandigarh, His Excellency Mr. V.P. Singh Badnore, visited WII on 27 December 2017. The Hon'ble Governor expressed his pleasure at being at the institute and recalled his long association with the institute in working towards the goal of wildlife conservation in general and tiger conservation in particular. The programme of his visit included an interaction with members of the faculty and research staff of the institute. Presentations were made on four topics: (i) "Tiger conservation in India: An update" (Dr. Kausik Banerjee); (ii) "Tiger conservation in Sariska" (Dr. Parag Nigam); (iii) "Conservation of the great Indian bustard" (Dr. Sutirtha Dutta); and (iv) "Management of Keoladeo National Park: A World Heritage Site" (Dr. K. Sivakumar). The Hon'ble Governor acknowledged the institute's scientific inputs in successfully bringing the tiger back in Sariska and Panna tiger reserves. He emphasized the

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need to connect local communities with conservation and stressed the importance of their support for achieving conservation success. Dr. V.B. Mathur, Director, WII, recalled the dynamic leadership provided by the Hon'ble Governor as Chairman of the Rajasthan State Empowered Committee, set up to deal with tiger conservation and wildlife management issues after the Sariska debacle.

Study Tour of Wildlife Officials from Sri Lanka, Dehradun, 8-22 March 2018. WII organized a study tour for 25 members of the frontline staff of the rank of Range Forest Assistant in the Department of Wildlife Conservation, Government of Sri Lanka. The objective of this study tour was to provide hands-on experience of various management practices related to habitat management for endangered species, wildlife protection and control of human activities, wildlife interface conflicts and tourism. Classroom lectures at WII and field visits to Rajaji National Park and Kanha Tiger Reserve helped the visiting officials understand the scientific ways of protected area management. Daily patrolling, elephant camps, grassland management, tourism regulation and community involvement in conservation were discussed during the field visits. Excellent feedback ratings were received from the participants.

Visit of the Hon'ble Minister, Dr. Harsh Vardhan to Inaugurate the UNESCO C2C New Building at WII, Dehradun, 10 March 2018. Acknowledging the demonstrated capability of WII in

wildlife and biodiversity studies and natural heritage conservation, UNESCO and the Government of India decided to establish Category 2 Centre for World Natural Heritage Management and Training for Asia and the Pacific Region at WII with a formal signing of an agreement on 2 September 2015.

The new building of the centre was inaugurated by Dr. Harsh Vardhan, Hon'ble Minister for Environment, Forest and Climate Change, Government of India, at an event organized in the premises of WII. After inaugurating the new building and taking a tour it, the Hon'ble Minister addressed the large gathering by lauding the capacity and competence of WII, which had led this prestigious recognition. Dr. Harsh Vardhan noted with pleasure that this centre had the unique distinction of being the first centre in the world devoted to natural heritage conservation. On this occasion, he planted a sapling of Magnolia champaca. He reiterated the government's commitment not only to strengthen the Category 2 Centre but also take forward the proposal to designate WII an Institute of National Importance (INI) to its logical conclusion. Mr. Siddhanta Das, Director General of Forests and Special Secretary to Government of India, graced the occasion as the guest of honour.

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PROFESSIONAL SUPPORT



Biodiversity Conservation and Rural Livelihood Improvement Project (BCRLIP)

Funding Source

Funded by IDA and GEF
through World Bank

Investigators

Mr. Ajay Srivastav,
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Mr. Ajay Kumar

Date of Initiation

September 2011

Date of Completion

March 2018

Objectives

In recognition of the need to integrate conservation and development for biodiversity conservation and human wellbeing, the Biodiversity Conservation and Rural Livelihood Improvement Project (BCRLIP) was designed using learning and knowledge from earlier participatory programmes, in both India and abroad. Accordingly, the Project Appraisal Document (PAD) defines the BCRLIP as an implementation programme with the objective "to develop and promote new models of conservation at the landscape scale through enhanced capacity and institution building for mainstreaming biodiversity conservation outcomes".

Progress

This was the last year of the project. All the team members from the different components (mammals, birds, plants, fish, socio-economy, ecological mapping) visited the field demonstration site, Askot, and collected data to prepare the final reports. Several meetings and workshops were conducted with the respective stakeholders to consolidate the output for the final project completion report. A number of workshops and training programmes were also organized for other implementing agencies.

The following final reports of studies on biological indicators were prepared during the year: (i) Evaluation Assessment of Plants as Indicator Species for Long-Term Monitoring in Askot Landscape, Uttarakhand. Final report. (ii) Evaluation of Birds as Potential Indicator Species for Long-Term monitoring in Askot Landscape, Uttarakhand. Final report. (iii) Mammals in Askot Landscape: Activity, Distribution and Habitat Suitability. (iv) Monitoring Protocol: Protocol for Monitoring Mammals in Mountainous Landscapes Using Camera Traps. (v) Fishes of Askot Landscape and Monitoring Protocol for Indicator Species in Askot Landscape, Uttarakhand. (vi) Socio-economic Status and Natural Resource Dependency of Local Communities in Askot Landscape, Uttarakhand. BCRLIP, final report. (vii) Atlas A4 Askot Landscape. (viii) Curriculum Design for Landscape.



Management Planning for Protected Areas of Sikkim

Funding Source
Sikkim Forest Department

Investigators
Mr. Ajay Srivastav

Researchers
Ms Paridhi Jain and
Ms Anindita Debnath

Date of Initiation
October 2016

Objectives

The objectives are (i) preparation of management plans for Maenam Wildlife Sanctuary and Khangchendzonga National Park (KNP) and (ii) conducting a training programme for the officials of the Sikkim Forest Department in the preparation of a management plan.

Progress

A training programme was organized at Gangtok for officials of the Sikkim Forest Department. During the reporting period, field visits were conducted and data were collected from the two sites to prepare plans.

Household questionnaire surveys were conducted in the EDCs surrounding the two protected areas. These household surveys yielded information on the socio-economic conditions, forest dependence, livestock, climate change, human-wildlife conflict, condition of water sources, main problems in agriculture, etc.

Vegetation sampling was conducted in 10-m² plots every 500 m on designated trek routes. The following analysis has been completed for the Maenam management plan: (i) The forest utilization pattern has been determined, with information for the major utilized species. (ii) Human-wildlife conflict sensitive maps were generated with livestock-killing and crop-raiding patterns. (iii) Mitigation and management strategies have been suggested for the conflicts.

Outputs and Outcomes

The draft management plan for Maenam Wildlife Sanctuary has been prepared and sent to the Sikkim Forest Department for comments. The KNP management plan is being prepared.

WII-University of Chicago MoU for Bird Study in the Western and Eastern Himalaya

Funding Source
University of Chicago

Investigators
Dr. Pratap Singh

Date of Initiation
May 2007; renewed
30 March 2018

Objectives

The study has the objectives of studying the following: (i) Bird species numbers and densities in the Eastern and Western Himalaya overall; (ii) the effect of climate change on breeding birds in Himachal Pradesh; (iii) the hybrid zone of the greenish warbler in Himachal Pradesh; (iv) wintering warblers in Mahabaleswar, in Maharashtra; and (v) bird population changes in the Eastern Ghats of Andhra Pradesh.

Progress

Field work was carried out in Himachal Pradesh, Maharashtra and Andhra Pradesh. A report is being written.

Outputs and Outcomes:

The studies carried out under this project will provide a better understanding of the effects of climate change and other factors on Himalayan breeding birds, their effects on wintering populations, long-term changes in the Eastern Ghats birds and the evolutionary process of hybridization across a ring species, the greenish warbler.

Milestone:

The studies carried out under the MoU include detailed components related to the effects of climate change on birds over long periods and include evolutionary and ecological processes of speciation along a distributional ring.

Services

IPBES Asia Pacific Region Assessment of Biodiversity and Ecosystem Services

The Intergovernmental Platform for Biodiversity and Ecosystem Services (IPBES), an intergovernmental body, with its headquarters at Bonn, Germany was established in 2012 as a parallel to the Intergovernmental Panel on Climate Change (IPCC). IPBES is placed under the auspices of four United Nations entities viz. UNEP, UNESCO, FAO and UNDP and administered by UNEP. All the member countries of the United Nations and its Members are committed to building IPBES as the leading intergovernmental body for assessing the state of the planet's biodiversity, its ecosystems and the essential services they provide to society. The aim of IPBES is to strengthen the science-policy interface for biodiversity and ecosystem services for the conservation and sustainable use of biodiversity, long-term human well-being and sustainable development. It critically assesses the state of knowledge on the interactions between human societies and the natural world. IPBES spearheaded an ambitious task of assessing the status of Biodiversity and Ecosystem Services in four regions of the globe (i) Africa, (ii) the Americas, (iii) Asia and

the Pacific, and (iv) Europe and Central Asia. One thousand scientists from all over the world are currently contributing to the work of IPBES on a voluntary basis. They are nominated by their government or an organization, and selected by the Multidisciplinary Expert Panel (MEP).

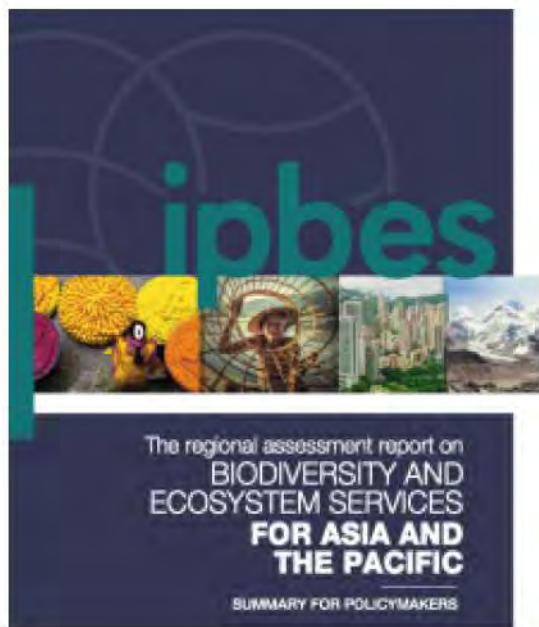
Dr. Vinod B. Mathur, Director, WII was selected as Multidisciplinary Expert Panel Member and as Regional Vice Chair for the Asia-Pacific Region. For the assessment of the status of Biodiversity and Ecosystem Services in Asia Pacific region, 115 experts were selected of which 26 were Indian. It is stated that out of the 26 Indians selected, 6 are from the Wildlife Institute of India as per the details given below:



S. No	Name	Designation	CategoryAssessment chapter
1	Dr. Gopal Rawat	Scientist G	Coordinating Lead AuthorChapter 3- Status, trends and future dynamics of biodiversity and Ecosystems
2	Dr. Asha Rajvanshi	Scientist G	Coordinating Lead Author Chapter 2- Nature's benefit to people and quality of life
3	Dr. Ruchi Badola	Scientist G	Lead AuthorChapter 5- Integrated and cross-scale analysis of interactions
4	Dr. Malvika Onial	Scientist D	Lead AuthorChapter 6- Options for governance and Institutional arrangements
5	Dr. Gautam Talukdar	Scientist E	Lead Author Chapter 1- Setting the scene - Policy relevant questions for the region
6	Dr. Sonali Ghosh	Scientist E	Young FellowChapter 5- Integrated and cross-scale analysis of interactions

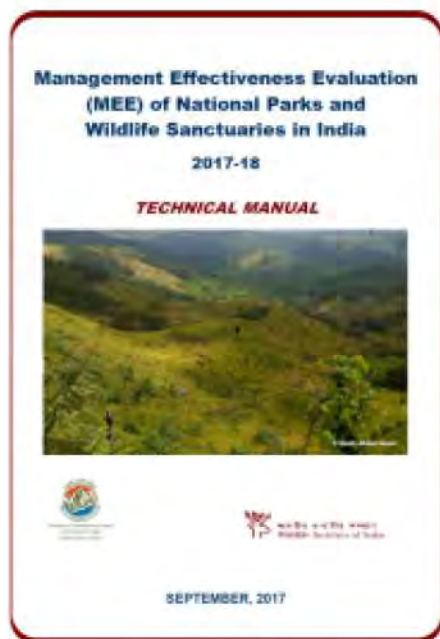
The process of regional assessment of Biodiversity and Ecosystem Services in Asia Pacific region (APR) started in May 2015 and after three round of authors' meetings over three years, culminated in March 2018. The key outcome of the assessment was the development of the Summary for Policy Makers (SPM). <https://www.ipbes.net/assessment-reports/asia-pacific>

This SPM was approved in the sixth session of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Plenary, held during 17 to 24 March 2018, in Medellín, Colombia.



Management Effectiveness Evaluation (MEE) of Protected Areas in India (2017-18)

The Ministry of Environment, Forest and Climate Change, Government of India assigned the responsibility of technical backstopping of independent MEE of 125 protected areas in India. The institute prepared a technical manual to guide the MEE process.



Cells

EIA Cell Activities

The Environmental Impact Assessment Cell of WII continued to undertake R&D related studies, provide professional support in capacity building initiatives at WII and other institutions; professional bodies; government and corporate organizations. Efforts of networking with global and regional institutions and collaborations with international agencies also continued to expand and diversify.

Professional Support To Other Organisations

Professional Support to IAIA: IAIA (International Association for Impact Assessment) is an interdisciplinary, non-profit professional society established in 1980. This professional body with over 2500 members representing EIA professionals, practitioners, government officials, project planners, administrators, teachers and students from across the globe is the leading global authority for advancing innovations and communication of best practices in all forms of impact assessment. Dr. Asha Rajvanshi and Dr. V.B. Mathur have been members of this association for over a decade and have actively contributed to the activities of the Biodiversity and Ecology Section. They have been directly involved in the planning of sessions for the annual meeting and in delivering of training courses. Based on her longstanding experience of imparting training in the field of Impact Assessment and the practical applications of IA, IAIA invited Dr Asha Rajvanshi to serve as the member of the IAIA's Committee for Professional Development Programme (PDP) to guide the development of a suite of web-based training courses. In this capacity, Dr Rajvanshi is providing professional support in the development of various training modules. Dr. Asha Rajvanshi has been recently invited to serve on the Awards Committee of IAIA.

Invitation to be a part of the academic panel: Following the development of SEA guidance tools kits and practice manuals under the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)-WII collaborative project project: Strategic Environmental Assessment - Increasing Planning Efficiency & Reducing Conflicts of Interest, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH is providing technical cooperation to Department of Land Resources, Ministry of Rural Development, Government of India, for promoting Integrated Land use Planning and Management in India in the states of Odisha and Tamil Nadu. For the purpose of formulation of land use policies and related guiding documents in the two pilot states, a multi-sectoral working group (involving multiple

state sectoral departments) is being formed. As part of the same, an academic expert panel is being proposed for guiding and vetting the policies and guiding documents. Dr. Asha Rajvanshi is invited to be a part of this academic panel. In this capacity, she continues to provide professional support in the capacity building efforts of GIZ in the field of SEA.

Contribution as a member of the working group of The Nature Conservancy on Trade-Offs Analysis for River Flow Management of the Middle Ganga: In an effort to enhance the ability of decision-makers to make informed and effective decisions, the Center for Ganga River Basin Management and Studies (CGRBMS), the Wildlife Institute of India (WII), and The Nature Conservancy (TNC) in partnership with NMCG (National Mission for Clean Ganga), and other entities (such as the World Wildlife Fund) have developed a framework for evaluating the consequences and trade-offs of alternative river flow management actions on biodiversity and ecosystem services.

As a member of WII team with expertise in the area of assessing the impacts of hydropower projects on ecosystem services, Dr. Rajvanshi is contributed in the discussions of the working group for developing a framework for 'Analysis of Trade-offs for River Flow Management of the Middle Ganga'.

Information Technology, Remote Sensing and Geographic Information System (IT and RS/GIS Cell)

The Information Technology, Remote Sensing and Geographic Information System facility is a part of almost all wildlife research projects, education and training. The facility is available 24x7 to the faculty members, trainees, researchers, students and collaborators working with the institute. A large number of desktop computers configured with MS Windows, Linux and specialized analytical software for data processing are made available in the dedicated laboratories.

The computer facility consists of a wide array of hardware connected in a local area network (LAN). There are Intel Xeon servers with storage area network (SAN) and network attached storage (NAS) systems for Internet, Intranet, database management and library automation services. There are more than 400 nodes and 600 users on the WII LAN. Wi-Fi connectivity is provided in the hostels, guest houses, classrooms, auditorium, Board Room and Porta Cabin. The institute has dedicated and unshared 100 Mbps (fibre) and 15 Mbps (RF, Microwave) Internet leased line connectivity through ISPs, BSNL and Reliance Communications.



The Geoinformatics Laboratory caters to the research and training programme of the Institute. The laboratory is equipped with several high-end workstations, an AO scanner-cum-plotter and software packages, viz., ArcGIS, ERDAS Imagine, IDRISI, GRASS and several open source software packages used in landscape-level analysis. A dedicated team provides support and training in IT and geoinformatics. Modules on remote sensing, GIS and landscape ecology are conducted for students of the M.Sc. in Wildlife Science course and for officer trainees of the advanced post-graduate diploma and certificate courses in wildlife management conducted by the institute. Hands-on training is also provided to other graduate and post-graduate students and interns.

WII has a video conferencing facility consisting of Polycom HDX 8000 VC systems with high-definition cameras and displays with an IP Internet leased line connection. These systems are regularly used for conducting lectures, meetings, classes, interviews and presentations within the country and abroad.

During the reporting year, the following new activities were carried out by the IT and RS/GIS Cell.

Establishment of the Data Centre at the Institute

The Data Centre is a facility consisting of networked computers and storage that organizations use to organize, process, store and disseminate large amounts of data. The information technology services rely heavily upon the applications, services and data of the Data Centre, making it a focal point and critical asset for everyday operations.

The broad requirements of the Data Centre includes infrastructure, viz., physical, electrical, air conditioning, fire protection and other facilities, installation and integration of IT infrastructure, viz., servers, storage systems, networking components, security equipment, firewalls/IDS, etc., software and

databases. The Data Centre of the institute was established in compliance with these requirements.

Establishment of Server Virtualization: This is a technique that involves partitioning a physical server into a number of small virtual servers using virtualization software. In server virtualization, each virtual server runs multiple operating system instances at the same time. This technique provides faster resource control and a cost-effective solution in terms of hardware, space and electrical power supply usage. The IT and RS/GIS Cell has established virtual servers using the VMware virtualization software package.

Comprehensive Firewall Protection for WII Campus Wide Network: Over the years, the WII Campus Wide Network (CWN) has grown substantially. There are more than 400 nodes and 600 users on the WII network. In order to protect all the systems and users' data on CWN, a Sophos XG 430 Unified Threat Management (UTM) system was established. It provides comprehensive next-generation firewall protection with features such as network protection, web protection and sandstorm protection for security against ransomware and targeted attacks, email protection, Web server protection. It also has other regular features of UTM appliances.

Upgrading of Internet Leased Line Connection: The fibre optic Internet leased line (ILL) connection provided by Bharat Sanchar Nigam Limited (BSNL) was upgraded from 30 Mbps to 100 Mbps to cater to the demand for increased bandwidth and the gradual increase in the number of Internet users at the institute.

New Procurement: The following new systems were obtained by the institute during the reporting period.

Hardware: desktop computers, 55; laptop computers, 31; workstation computers, 19; laser printers/MFP, 40; computer network managed switches, 5; Wi-Fi access points, 5; UPS systems, 5, CCTV cameras, 8; biometric access control systems, 3.

Software: ArcGIS 16-user license (upgraded to latest version, 10.5); ERDAS Imagine 10-user license (upgraded to latest version, 2016 NCSS 11 (Number Cruncher Statistical System)).

Application of Geoinformatics in Research Projects: Geoinformatics technology is being used in most of the research projects of the institute for wildlife research and conservation. Work is in

progress on the development of a spatial database related to the boundaries of all the national parks, wildlife sanctuaries, conservation reserves and community reserves in the country. Similarly, digitization of the division, range and beat boundaries of the 17 tiger range states in the country is in progress. The country-level data on climate, vegetation, topography and animal distribution is also in progress.

Workshops/Conferences/Meetings/Training Programs Attended

Workshop on Publishing Spatial Data Using PostGIS and Geoserver, Dehradun, 17-27 July 2017. This workshop was conducted by KAIINOS Geospatial Technologies, Hyderabad. The workshop provided the background as well as hands-on-training in the use of PostGIS and Geoserver. Geoserver is a Web interface to visualize and host data and provide data to the users. PostGIS is useful for cataloguing, retrieval and smart processing of spatial data. Both PostGIS and Geoserver are useful for data sharing with administrative security with multiple users. The use of these applications will increase the efficiency of the workforce of the organization. They also provide quick and organized access to the spatial database for users within the organization and for various collaborators.

This workshop was attended by faculty members, research scholars and technical professionals working in the GIS and IT sector of WII and handling huge spatial datasets for research and monitoring purposes.

Training in Google Earth Engine, Dehradun, 23 February 2018. Google Earth Engine is a platform for petabyte-scale scientific analysis and visualization of global geospatial datasets. It has features for trend analysis, classification, computing indices such as NVDI, creating cloud-free composites, building applications for resource monitoring, etc. The technical Google Earth Engine training programme was attended by 75 participants, including faculty members, researchers, students and technical professionals of WII and research scholars from the Forest Survey of India, Dehradun. The programme was conducted by Dr. Nicholas Clinton, Google Developer Advocate.

IIRS Users Interaction Meet-2018, Dehradun, 27 February 2018. IIRS User Interaction Meet (IUIM) - 2018 was held at the Indian Institute of Remote Sensing (IIRS), Dehradun. The objective of the meet was to remain in the forefront of capacity building in remote sensing geo-informatics and their

applications. A constant dialogue with the users/stakeholders is of paramount importance. IUIIM - 2018 provided a platform for sharing the experiences of user ministries/stakeholders, the geospatial community and the IIRS faculty and for exploring potential areas for capacity building and joint research. Dr. Panna Lal and Dr. Manoj Agarwal attended this meet.

Library and Documentation Centre

The Library and Documentation Centre (L&DC) of WII plays a vital role in disseminating information to a wide range of users, including scientists, researchers and wildlife managers. It was established, in line with WII's mission, as a multi-disciplinary information and learning resource centre on biodiversity conservation and management. It has the following objectives: (i) to serve as a repository of all the wildlife-related literature published in India; (b) to acquire, organize and disseminate all relevant literature on biodiversity conservation and related fields; (c) to serve the user readership through normal and special library and information services; (d) to establish and maintain links with other national information systems in India and other countries to ensure a free flow of information at the national and international levels; (e) to serve as a training centre for information personnel and users; and (f) to bring out periodic updates/bulletins on the current content of periodicals, research in progress, unpublished research literature, (dissertations, theses) and compile bibliographies on various themes for ENVIS bulletins and the database of WII publications.



The L&DC now holds 28,504 books, 8802 maps/toposheets and more than 7165 bound volumes of old and rare journals. The library also maintains a good collection of 11,200 scientific papers. It subscribes to more than 500 print and online journals. The L&DC is fully computerized and

uses LIBSYS (library management software), UNESCO'S WINISIS software and barcode and related technologies. All the library users, i.e., researchers, officer trainees and faculty members, can access online journals and online databases subscribed to by the L&DC through the Intranet. The current contents of the latest print journals are also updated in the Intranet. Being connected to the library facility, the users have access all the items in the in-house databases such as books, reprints, Indian wildlife abstracts, map/toposheet collection and press clippings and those in specialized bibliographic databases (Musk Deer, Application of Telemetry in Wildlife, Wildlife and Protected Area Management in Madhya Pradesh, Mountain Ungulates, Rainforest Conservation in India, Ungulates of India, Rajaji National Park, Galliformes of India, Freshwater Turtles of India, Telemetry in Wildlife Science, Coastal and Marine Protected Areas of India, Waterbirds of India and Ecology and Management of Grassland Habitats in India, Bibliography on the Fauna and Microflora of the Indian Himalayan Region). Users can access an online database, i.e., Indiastat.com, through the Intranet. The L&DC provides a variety of library and information services to its users.

During 2017-18, approximately 31,000 documents were issued and consulted. The Value Added Service was provided to 2000 clients, and the Ready Reference Service was provided to approximately 200 clients. Approximately 250 queries from outside users were attended to, and more than 3400 bibliographic references were provided to users. The in-house databases were regularly updated during the reporting period. The WII publication database was updated by adding research papers, theses, reports, popular articles, papers presented and other material in this period. Specialized bibliographies were also compiled for different courses and when there were user requests. The E-Document delivery service was also provided to outsiders during this period.

Wildlife Extension and Audio Visual

The cell caters to the needs academic activities. It maintains 16-mm films, video films, CDs/DVDs, a conference system, a projection system, audio visual equipment, still cameras and video cameras with accessories and a photo library. During the reporting period, the cell provided support for all the workshops, seminars, meetings and courses; visiting classes; guest lectures; and celebrations of important days or events.

As part of its information dissemination activities, the institute prepares four quarterly issues of the e-newsletter of WII. The issues were uploaded to the website of the institute during the reporting period.

Science Express Climate Action Special

(SECAS) Train, 17 February 2017 to 8 September 2017. Science Express is an innovative mobile science exhibition mounted on a 16-coach AC train that has been custom-built for the Department of Science and Technology (DST) by Indian Railways. SECAS is a unique collaborative initiative of the Department of Science and Technology (DST), Ministry of Environment, Forest and Climate Change (MoEFCC), Department of Biotechnology (DBT) and Ministry of Railways, Government of India; WII; and Vikram A. Sarabhai Community Science Centre (VASCSC).

A booklet titled "Climate Action: We Must Not Delay", which provides facts and information on topics such as global warming, carbon footprints, deforestation, human health, glacier melt, biodiversity loss, and the Paris Agreement, was published by the institute for distribution among the school students who visited the train. This booklet was printed in 11 Indian languages. Braille versions (English and Hindi) of these booklets were released by Mr. N.S. Kang, Secretary, Ministry of Social Justice and Empowerment, Government of India, in a function held at Pandit Deen Dayal Antodaya Bhawan, CGO Complex, New Delhi, on 23 May 2017. The Braille versions of the booklet were brought out to make the educational experience about biodiversity conservation and climate change of visually challenged persons more inclusive. During its halts at three stations, platform and outreach activities were also conducted by the institute.

The ninth phase of the Science Express as SECAS travelled over 19,000 km, covering 75 stations across India, before completing its journey, on 8 September 2017 at Gandhinagar. The ninth phase received more than 24 lakh visitors.

World Environment Day Celebrations at WII,

4-6 June 2017. World Environment Day was celebrated at WII with a commitment to make the younger generation aware of the importance of the environment for humans. About 250 people, including nature lovers, green activists, ecologists, adults and children participated in the "WII Nature Trail Walk". The overall aim was to promote love for wildlife and give the participants a "mini nature experience". The walk was followed by a photo exhibition and a documentary on the Xmas bush frog. The second day was specially planned for the

local schools of Dehradun in collaboration with Eco Task and Green Stock. Students of all age groups (standards I to IX) participated in the event. There was an origami session for the children, in which they were taught to how make paper frogs and flowers.

Mr. Ajay Narayan Jha, Secretary, Ministry of Environment, Forest and Climate Change, Government of India, inaugurated the institute's Nature Trail with new signage on 6 June 2017. A booklet titled "Knowing Campus Snakes" was also released by him on this occasion.

Swachhta Pakhwada Celebrations at WII, 1-15

June 2017. As per directives from the Ministry of Environment, Forest and Climate Change, Swachhta Pakhwada was implemented under the Swachh Bharat Mission at WII.

Vinod Verma



As part of Swachhta Pakhwada, the following activities were undertaken: (i) Cleanliness of the office complex, residential blocks and adjoining areas. A total of 82 people participated in a cleanliness drive on 10 June 2017. (ii) Divyang access to toilet facilities. Toilets for handicapped persons (ladies and gentlemen) have been developed within the institute premises. During the Pakhwada, the cleanliness and hygiene of these toilets were reviewed and enhanced. (iii) Publicity material. Banners, standees and pamphlets were prepared to spread awareness about the Pakhwada and were prominently displayed and distributed. (iv) Swachhta Pakhwada celebrated in Science Express Climate Action Special (SECAS) Train. As part of the publicity for Pakhwada activities, awareness material in the form of pamphlets was distributed to the visitors of the SECAS Train. During the halt of the train at Whitefield, Kengeri and Koduru stations from 7 to 14 June 2017, a number of platform activities were undertaken to spread awareness about the Pakhwada. (v) Ganga Aqualife Awareness Campaign. WII organized a cleaning programme on 9 June 2017 at Triveni Ghat, Rishikesh as a part of

the Government of India's Swachhta Pakhwada drive and this campaign. The faculty members, research scholars and office staff of WII, representatives of government and non-government organizations, visitors and local people participated in the cleaning drive.

World Ozone Day celebrated at the Institute, Dehradun, 15 September 2017. World Ozone Day is observed every year on 16 September to mark the adoption of the Montreal Protocol in 1987. The WII-ENVIS Centre on Wildlife and Protected Areas celebrated World Ozone Day 2017 and the 30th anniversary of the Montreal Protocol. As part of the celebrations, a video film titled "2048 - A Futuristic Prediction on Ozone Layer Depletion", on the science behind the depletion of the ozone layer and the efforts to protect it, was screened. Posters on the 30th anniversary of the Montreal Protocol were also displayed at the institute to generate awareness. The event was attended by faculty members, researchers, students and staff members of the institute.



XV WII-FODS "Wildlife and Environment Quiz" 2017, Dehradun, 6 October 2017. The XV WII-FODS Wildlife and Environment Quiz 2017 - a collaborative activity of WII and the Friends of the Doon Society (FODS) - was organized at WII to mark the celebrations of Wildlife Week 2017. Twenty-five schools from Dehradun and Mussoorie participated in the preliminary round. The preliminary round had 50 multiple choice questions, with 1 mark for every correct response. Ten starred questions were used as tie breaker questions. The top five scorers in the preliminary round were adjudged the finalists. The schools selected for the finals were the Doon School, St. Joseph's Academy, Universal Academy School, Ann Mary School and D.A.V. Public School. The final quiz had five rounds, viz. (i) Doon Valley; (ii) The bigger picture; (iii) Open the third eye; (iv) Luck by chance; and (v) Rapid fire. Ann Mary School topped the list and won the WII-FODS Sameer Ghosh Memorial Nature and Wildlife Rolling Trophy, Shield and Book Prize. St. Joseph's Academy School won

the second prize, and the Doon School won the third prize and received the WII-FODS book prizes.

Mr. Damodar Sharma, IAS (Retd.), Former Secretary

Vinod Verma



(Forests), Government of Rajasthan and Member, WII-Governing Body graced the occasion as Chief Guest and distributed the Prizes to the Winning Teams.

Wildlife Forensic and Conservation Genetics

The WFCG Cell was established to strengthen the enforcement of the Wildlife (Protection) Act, 1972 of India. The main functions of the cell include identification of species from a variety of wildlife parts and products for forensic investigations, expanding a repository of wildlife reference samples and conducting research and development in new forensic tools. It is now a recognized laboratory for conducting wildlife forensic research and casework to support the judiciary process. In addition, the WFCG Cell plays a role in sensitizing enforcement agencies to crime scene examination and collection of evidence through regular training and workshops. Being a focal agency in the South-east Asian region, the cell also provides advanced training for wildlife crime analysis to scientific organizations of neighbouring countries. The WFCG Cell provides services related to molecular ecology to various ongoing research projects that involve phylogeny, population genetics and endocrinology.



During 2017-18, the cell received a total of 199 wildlife offence cases from enforcement agencies across the country, of which 63% were from forest departments, 13% from the police, 22% from honourable courts, 1% from MoEFCC and 1% from hospitals (Figure 1). An assortment of biological products were received for species identification, and 73% of these products contained tissue samples requiring DNA-based techniques. 27% of the cases required morphometric techniques for species identification (Figure 2). The cell provided reports on species identification for 292 cases and received 64 summonses from various honourable courts for appearance as an expert scientific witness during this period.

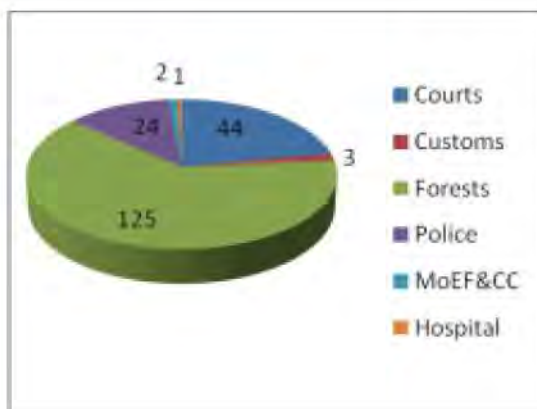


Figure - 1

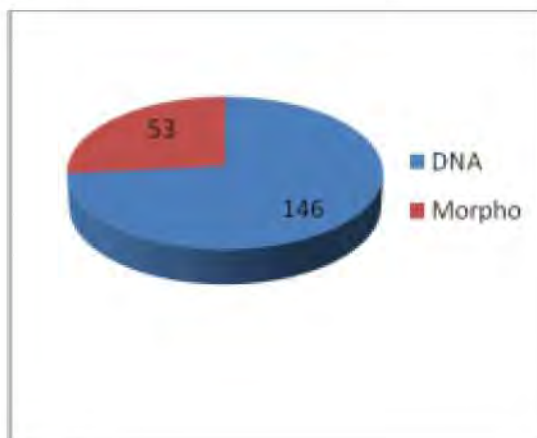


Figure - 2

Field exercises and lectures were conducted on the theme "crime scene management and evidence collection" for officer trainees of the diploma course and certificate course at IGNFA and CASFOS and for forest officers. Hands-on-training was also conducted on the identification of various body parts and products encountered in the illegal wildlife trade for forest officers and customs probationers. Along

with these training programmes, popular lectures were delivered for various visitors/classes at the WFCG Cell and at IGNFA and CASFOS, Dehradun. The WFCG Cell also works in partnership with TRAFFIC, India, for sensitization and training of the enforcement agencies across the country. Experts of the WFCG Cell provided inputs at workshops organized by the National Academy of Custom and Indirect Taxes (NACIN) at their regional office and headquarters to train custom officers in controlling the illegal wildlife trade. Besides, the WFCG Cell published a study on the selling of prohibited wildlife parts on e-commerce portals.

The WFCG cell is involved in conducting research in the fields of conservation genetics and wildlife endocrinology, where cutting-edge molecular tools are being used to understand species biology. A new initiative titled "Rhino DNA Indexing System (RhoDIS)" helped solve four rhino poaching cases in West Bengal and Assam. The Chief Minister of Assam facilitated quick actions by the Assam Forest Department to solve crimes and mentioned the support provided by WII. Another project, titled "Meta-population Dynamics of Tigers in Terai Arc Landscape" is using faecal DNA data to understand known tiger corridor functionalities in this landscape. Genetic data clearly showed that one of the tiger corridors (the Gola River corridor) in Uttarakhand is dysfunctional now. The conservation genetics laboratory also contributes to the objectives of several projects at the institute. Genetic analysis is also being carried out for all tiger-bearing areas in the country. This enables us to identify evolutionarily significant units of tiger populations and to infer the gene-flow or lack of it in large landscapes.

A total of 76 different species (113 samples) were identified as having died due to power lines. The associated work was carried out as part of the ongoing genetic work on the critically endangered great Indian bustard. Genetic work being carried out at the lab on this species aims to aid the conservation breeding programme of the great Indian bustard by characterizing the current genetic status of the population and identifying the best founder population. Genetic work revealed that the Rajasthan population is the most diverse and encompasses most of the diversity of all the relic populations in Gujarat, Maharashtra and Andhra Pradesh. Continuous genetic monitoring will help ensure the success of this species. The genetic characterization and phylogeography of the Asiatic lion, spiders and the Gangetic river dolphin are some of the other aspects the lab is working on.

In the wildlife endocrinology facility, one project is focused on understanding the impacts of disturbances on psychological and nutritional health and their effects on the reproductive capacity of wild tigers in the Terai Arc Landscape. In this project, faecal hormone measures are being used to understand stress, nutrition and reproductive functions in tiger populations. All the laboratory protocols for faecal hormone extraction and quantification have been standardized, and sampling is going on.

ENVIS Centre on Wildlife and Protected Areas

MoEFCC, Government of India, established the 23rd Centre on Environment Information System in September 1997 at WII. The thematic area of the WII ENVIS Centre is "wildlife and protected areas". The mission of ENVIS is to support and facilitate the diverse groups of clientele, from policy makers to researchers and industries, and promote national- and international-level cooperation and exchange of environmental data and information through a nation-wide network. The goals of the WII ENVIS Centre are to (i) build up a repository and act as a dissemination centre for information on wildlife sciences; (ii) provide information for decision making at the apex level in relation to conservation and development; (iii) establish a database on the protected area network in India; and (iv) promote national and international cooperation through networking and exchange of wildlife-related information.

During the reporting period, Volume 19 of the ENVIS bulletin, titled "Diversity and Ecology of Amphibians of India", was released by Mr. H.S. Panwar, former Director, WII, during the XXXI Annual Research Seminar of WII, held on 5 September 2017, in the presence of Mr. Ajay Narayan Jha, Secretary (EF&CC), MoEFCC; Dr. V.B. Mathur, Director, WII; Dr. G.S. Rawat, Dean, WII; and Mr. P.R. Sinha, former Director, WII, and Chairman, WII-TRAC.



This special ENVIS issue was edited by Dr. Abhijit Das. This issue is an effort to collate the scientific information needed for conservation of covert species such as amphibians. It contains 18 chapters under three sections that cover the history, natural history, taxonomy, ecology, regeneration and reproductive biology and practices of amphibian conservation.

National Wildlife Database Cell

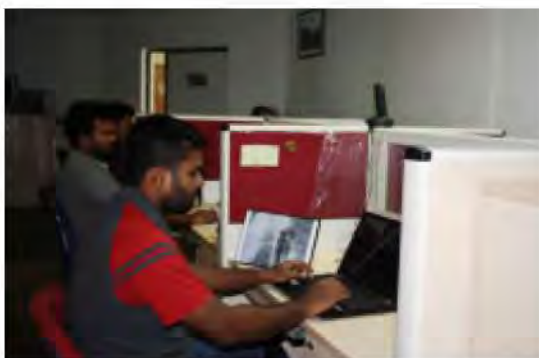
The objectives of the computer-based National Wildlife Database are to: (i) provide readily accessible and comprehensive information on the conservation status of biogeographic regions, habitat types, animal species and the network of protected areas in the country; (ii) establish linkages with researchers, protected area managers and planners and with other data centres; and (iii) facilitate wildlife research and training activities by providing publications on protected areas, habitat types and animal species.

During 2017-18, the thrust of the activities was on updating the Protected Areas, Species and Wildlife Bibliography databases on the basis of current information collected from various published/unpublished sources. The Protected Area Database of the country was updated, and there are 770 protected areas, including 103 national parks, 544 wildlife sanctuaries, 46 community reserves and 77 conservation reserves in the country, with an extent of 1,62,098 km² (4.93% of the total geographical area of the country). The Species Database was corrected and updated by adding information on the distribution of mammalian species in various protected areas. The Bibliographic Database was updated by adding the literature published on Indian wildlife in various issues of journals/periodicals during the reporting period. The Wildlife Protected Area Network Report has been updated by incorporating the latest information. The Trainees Database was updated, and now it provides information on 694 Diploma and 590 Certificate officer trainees trained in various courses, including 255 foreign nationals. The website of the National Wildlife Database was updated with the latest information. Nearly 150 queries were received, and outputs were provided in various desired formats.

Tiger Cell

In order to achieve the goal of tiger conservation through a holistic approach based on science, the Tiger Cell (in collaboration with the National Tiger Conservation Authority - NTCA) was established at WII in April 2016. The main mandates of the cell

include (i) periodic, country-wide assessment of tigers, co-predators, prey and their habitat; (ii) ecological monitoring of the tiger reserves; (iii) implementation of MSTRIPES in tiger reserves; (iv) site appraisal and evaluation of development projects vis-à-vis tiger distribution, dispersal and the corridor network; (v) maintenance of national tiger photo database for controlling the illegal wildlife trade related to tigers; and (vi) providing training as and when required for ecological monitoring, research and management.



During the reporting period, the major activities of the cell were the following: (i) country-wide assessment of tigers, co-predators, prey and their habitat; (ii) delineation of country-wide sampling blocks; (iii) preparation of camera trapping grid of 2 km² for all the tiger reserves and most of the territorial divisions of the tiger landscape; (iv) preparing field guides on Phase I protocols translating them into multiple languages (Hindi, Odiya, Bengali, Kannada, Tamil, Marathi, Telugu) (a separate field guide in Bengali was developed for the Sundarbans (India and Bangladesh)); (v) preparation of a camera trap (Phase III) manual; (vi) intensive sampling in North-east India (Assam, Arunachal Pradesh, Mizoram and Nagaland; teams were sent for the first time); (vii) developing and field testing of sampling strategies for tiger, carnivore and prey enumeration using advanced protocols such as the random encounter model and spatially explicit capture-recapture model; (viii) deployment of field teams in Kanha Tiger Reserve, Bandhavgarh Tiger Reserve and Kuno Wildlife Sanctuary (Madhya Pradesh), Ranthambhore Tiger Reserve (Rajasthan), Kaziranga National Park, Orang Tiger Reserve and Karbi Anglong Hills (Assam), Kamlang Tiger Reserve, Namdapha Tiger Reserve and Dibang Tiger Reserve (Arunachal Pradesh), Dampa Tiger Reserve (Mizoram), Intanki National Park (Nagaland), Kalakad Mundanthurai Tiger Reserve (Tamil Nadu) and Nashik Landscape

(Maharashtra); (ix) hand holding all tiger-range states regarding sampling for the All India Tiger Estimation exercise; (x) MSTRIPES; (xi) providing regular inputs for conceptualization, design and customization of multilingual Android mobile applications for MSTRIPES patrols and of ecological, conflict and polygon search modules; (xii) providing inputs for developing and testing MSTRIPES desktop software; and (xiii) developing the CaTRAT (Camera Trap Data Repository and Analysis Tool) interface in MSTRIPES to automate species identification (significant work has been done in this direction). An analytical tool with smart visualization of camera trap data is being developed.

National Repository for Camera Trap Photographs of Tigers (NRCTPT): The cell received photographs of nine tiger skins from different crime locations in India and Nepal and analysed them using the Extract Compare program. Matches of two of these were found in the more than 40,000 tiger photographs maintained in the NRCTPT at the cell.

Training and Capacity Building: Over 2300 officials, frontline staff members, GIS/computer technicians, biologists from tiger reserves and NGO partners were provided training by the Tiger Cell during the past year.

Technical Assistance to GoI and State Forest Departments: (i) Evaluation of 40 proposals related to developmental projects in the tiger landscapes all across the country and communication of reports to NTCA and MoEFCC for the Standing Committee of the National Board of Wildlife. (ii) Development of a training manual, "Protocols for Monitoring Habitat Quality and Wildlife Populations: Tiger Landscapes", for monitoring tigers in all tiger range countries coordinated by the Global Tiger Forum (GTF). (iii) Mapping of vulture data for the entire country in a report titled "Status of Vultures in Tiger Landscapes of India". (iv) Country-wide mapping of elephants (completed). (v) Assisting the state forest departments with developing and implementing tiger and prey recovery programmes. (vi) Micro-satellite genotyping analysis of tiger samples (from the Satpura, Melghat, Nagarjunasagar Srisailem, Kalakad Mundanthurai and Bandipur tiger reserves) not analysed during the 2014 cycle of tiger estimation to add to our repository of 158 individuals. (vii) Genotyping of 180 leopards with 11 markers and three replicates for each sample. The cell completed genotyping of 220 wild dog-positive samples for individual identification. The

standardization and genotyping of sloth bear samples from across the country is going on.

Research Laboratory

The WII's research/ teaching laboratory is well equipped with advance equipment like High Performance Liquid Chromatography, UV-Visible Spectrophotometer, Fiber Analyzer and Fully Automatic Nitrogen Analyzers, Digital pH & Conductivity Meter, Flame Photometer, Digital Analytical Balances, Stereomicroscope. The equipments are required for analyzing various Physio-chemical parameters and analysis of nutrient content biological samples. Recently, one of the laboratories has been renovated to catering toxicological studies from water, soil and biological sample. The sophisticated instruments like Gas Chromatography (GS), Deep freezer (-85°C) and other equipment needed for toxicological studies. This laboratory facility is also used for teaching and conducting practical classless for various ongoing courses of the Institute as well as other organizations / Universities around the Dehradun. This includes analysis of herbivore pellet and carnivore scat, collection & preservation of biological materials, determination of age and sex of wild animals based on the body parts, osteology of mammals, Photomicrography and analysis of ecological (plant, water and soil) samples for various purposes. During the reporting period in more than 5000 samples were analyzed in the laboratory, which includes nutrient analysis of animals suing scates/ pellets, plant ADF, NDF, Lignin, Cellulose, Crude Protein, Tannin, Phosphate, Calcium, Magnesium, Nitrogen, Phosphate, Calcium, and Magnesium. Technical inputs in various fields training program were also provided by the laboratory staff, which includes snake rescue, demonstration of camera trap, mist netting for birds and demonstrating radio telemetry techniques.

Vinod Verma



Herbarium

During the reporting period, the herbarium staff provided inputs to various field activities and surveyed different protected areas. Approximately 325 plant species were identified that were collected by research scholars, diploma and certificate trainees and faculty members from various parts of the country: Kedarnath Wildlife Sanctuary, Rajaji National Park, Valmiki Tiger Reserve, Sariska Tiger Reserve, Panna Tiger Reserve, Kailash Sacred Landscape and Askot Landscape, in Pithoragarh, the WII campus, Great Himalayan National Park, Pin Valley National Park, and Niti Valley (in Nanda Devi Biosphere Reserve - Trans-Himalaya), Ladakh and Arunachal Pradesh. Apart from specimens, around 150 photographs from various protected areas and locations outside protected areas were identified. Last year, around 425 specimens of lichens were added to the herbarium.

Campus Development

The following works were completed during the year: (i) construction of a connecting corridor from the UNESCO (C2C) building to the Auditorium Hall; (ii) installation of ACs and furniture in the UNESCO building; (iii) procurement, installation, testing and commissioning of a gas fire suppression system with an addressable fire alarm system in the Forensic and Computer Lab/GIS Lab; (iv) installation of solar LED street lights along the campus boundary wall; and (v) purchase of two New Travellers. The works are in progress: (i) construction of a women's hostel (20 rooms); (ii) construction of a guest house for visiting faculty members; (iii) renovation of the washroom of the old hostel; (iv) construction of Porta Cabin for Forensics Lab; and (v) renovation of washroom in Type IV and Type V quarters.

Vinod Verma



Right to Information

Dr. Anju Baroth, in the capacity of Nodal Officer, RTI, WII, facilitated the generation of information to be hosted on the WII-RTI portal as part of suo moto disclosure under Section 4 of RTI Act, 2005. The following are the details of RTI and first appeals for the year from April 2017 to March 2018:

RTI and First Appeals for the year from 1 April 2017 to 31 March 2018

RTI applications	Opening Balance as on 1st April 2017	No. of new applications directly received from Indian Citizens during 2017-18	No of new applications received as transferred from other Public Authorities during 2017-18	No of applications transferred to other Public Authorities during 2017-18	No of applications as on 31.03.2018	No of applications disposed off/ rejected during 2017-18	No of applications not disposed off/rejected and hence carried forward to next year 2018-19
(a)	(b)	(c)	(d)	(e)	(f) (b+c+d)-(e)	(g)	(h) (f-g)
RTI	09	40	09	02	56	47	09
First Appeal	00	00	03	00	03	03	00

Details of Vigilance Cases for the year 2017-18 of Wildlife Institute of India, Dehradun

Vigilance Cases as on 01.04.2017	No. of vigilance cases added during the year	No. of vigilance cases pending as on 31.03.2018
Nil	Nil	Nil

Chandan Jani



UNESCO Category 2 Centre for World Natural Heritage Management and Training for the Asia and Pacific Region at Wildlife Institute of India

The UNESCO Category 2 Centre (C2C) for World Natural Heritage Management and Training for Asia and the Pacific Region has been established at the Wildlife Institute of India, Dehradun following signing of the Agreement between Government of India and UNESCO in September, 2015. The Centre's mission is to strengthen implementation of the World Heritage Convention in the Asia-Pacific Region by building the capacity of all those professionals and bodies involved with Natural Heritage site inscription, protection, conservation and management in Asia and the Pacific region, through training, research, dissemination of information and network building.

During 2017-18, the Centre was involved in supporting nomination of World Heritage properties, capacity building, research and monitoring, and outreach programmes as part of its mandate for the year.

Nominations/Dossiers

A key objective of the Centre is to contribute towards enhancing representation of properties on the World Heritage List. Towards this end, the Centre offers technical support to State Parties in the process of nomination of World Heritage Sites. During the year, UNESCO C2C India provided inputs for the proposal for minor boundary modification of Manas Wildlife Sanctuary, Assam to extend it at par with the National Park area and of Western Ghats for inclusion of five site elements of Goa. The World Heritage Committee recommended the cases for major boundary modification.

Capacity Building Trainings and Workshops

Among the core functions of the Centre is to conduct short and long-term capacity-building activities, including workshops, courses and international conferences. UNESCO C2C India organised thematic training programmes on Disaster Risk Reduction and Heritage Sites at Mumbai during 14-19 April, 2017; Application of Very High Resolution Satellite Data in Natural Heritage Management at Dehradun during 11-14 July, 2017; Pilot Testing of Management Effective Evaluation Framework for Marine Protected Areas including Coastal and Marine World Heritage

Sites at Tuticorin, Tamil Nadu during 15-17 November, 2017; Monitoring of OUVs of Natural World Heritage Sites in India in five sites of the country in January-February, 2018; and Community Awareness Programme for representatives from Great Himalayan National Park Conservation Area at Dehradun on 19 March, 2018. The Centre hosted INTACH-ICH National Conference on Himalayan Heritage in Dehradun from 29-30 November, 2017 and a session/panel discussion on Culture-Nature Journey at the ICOMOS General Assembly in New Delhi from 13-14 December, 2017. Students from Green Hub, Assam, Ahmedabad University and WII undertook internship with our Centre on World Heritage issues. Three 'Visiting Fellows' worked on subjects relevant to World Heritage during the reporting period were part of the Centre during the year.

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Advisory Services

The Centre offered advisory services on World Natural Heritage issues to State Party of India for the 41st Session of the World Heritage Committee Meeting held in Krakow, Poland in July, 2017, State of Conservation Report (Keoladeo National Park, Rajasthan) and to IUCN for revision of the World Heritage Outlook. The Centre also provided technical inputs for establishing C2Cs in Zacatecas, Mexico and Jeju, Republic of Korea.

Outreach

A basic objective of the Centre is to raise awareness among the general public, youth and wider audience, in particular of the importance of natural World Heritage and the need to protect it. Various outreach activities included Celebration of World Heritage Day in Dehradun (18 April, 2017); Celebration of Green Hub Festival in Assam on 14 May, 2017; interaction with Indian World Heritage Site Park Managers on 13



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July, 2017; and hosting students from Griffith University, Australia and Centre for Heritage Management, Ahmedabad University. The Centre continued to publish its quarterly e-bulletin, which is a compilation of news and relevant articles pertaining to Natural World Heritage sites in the Asia-Pacific region; four issues were released during the year. A new building of UNESCO C2C India was inaugurated by the Hon'ble Minister for Environment, Forest and Climate Change, Government of India in the premises of WII on 10th March, 2018.

Research & Monitoring

A function of the Centre is to undertake research on identified priority areas related to natural World Heritage protection and management. Ongoing research from the previous year on Evaluation of the Outstanding Universal Values of Western Ghats (Sahyadri Sub-cluster) for provisioning & regulating ecosystem services was completed during this period. Staff from the Centre participated in the poster presentation category for two of its projects on Assam biodiversity and Western Ghats ecosystem services on the occasion of Internal Annual Research Seminar of WII in August-September, 2017.

Training and Workshops attended by C2C Staff

Faculty and staff of UNESCO C2C at WII attended several national and international trainings and workshops, namely, International workshop on establishing a global research and training centre on Internationally Designated Areas held in Jeju Island, Republic of Korea during 15-16 September, 2017; 37th Indian Scientific Expedition to Antarctica organised by National Centre for Antarctic and Ocean Research,

Government of India in January-March, 2018; Nature-Culture Journey at the ICOMOS General Assembly held in New Delhi during 13-14 December, 2017; Understanding OUVs and World Heritage at Green Hub Festival in Assam on 14 May, 2017; and Joint Management Manual Workshop on nature and culture organised by IUCN at Gland during 30 January - 1 February, 2018.



Collaborations

Through its activities during the year, UNESCO C2C India collaborated with a range of sub-national, national and international institutions and organizations viz. Uttarakhand State Council for Science and Technology (UCOST), Dehradun; International Centre for Integrated Mountain Development (ICIMOD), Nepal; Centre for Space Science and Technology Education in Asia and the Pacific (CSSTEAP), IIRS, Dehradun; Maharashtra Forest Department; Assam State Biodiversity Board; Green Hub, Tezpur, Assam; Tata Institute of Social Sciences, Mumbai; Digital Globe, Singapore; ICOMOS India; IUCN; INTACH Heritage Academy, New Delhi.

VISITORS



Vinod Verma

- College of Forestry Kerala Agricultural University Thrissur, Kerala, 10 April, 2017.
- Rajiv Gandhi Institute of Veterinary Education & Research, Kurumbapet, Puducherry, 12 April, 2017.
- Kundal Academy of Development, Sangli, Maharashtra, 13 April, 2017.
- Central Academy for State Forest Service, Dehradun, 13 April, 2017.
- BSF Institute of Adventure & Advance Training, Doiwala, Dehradun, 15 April, 2017.
- Forest Guard Training Academy, Haldwani, 26 April, 2017.
- Veterinary College, Kerala, 28 April, 2017.
- Gujarat Forest Ranger College, Rajpipla, 1 May, 2017.
- Central Academy of Forest Education, Kurseong, Darjeeling, 8 May, 2017.
- NNRMS (ISRO Sponsored) Indian Institute of Remote Sensing, Dehradun, 6 June, 2017.
- Forest Training Institute & Rangers College, Sundernagar, Mandi, 21 June, 2017.
- Kundal Academy of Development, Sangli, Maharashtra, 4 July, 2017.
- Forest Training Institute & Rangers College, Sundernagar, Mandi, 7 July, 2017.
- Central Academy for State Forest Service, Dehradun, 12 July, 2017.
- Assam Forest Department, 19 July, 2017.
- Central Academy for State Forest Service, Dehradun, 21 July, 2017.
- Forest Range Officer Trainees, Haldwani, 11 August, 2017.
- Graphic Era Deemed University, Dehradun, 14 September, 2017.
- Kurukshetra University, Haryana, 19 September, 2017.
- Forest Academy Coimbatore, Tamil Nadu, 6 October, 2017.
- Bharathiar University, Coimbatore, Tamil Nadu, 7 October, 2017.
- Woodstock School, Mussoorie, 9 October, 2017.
- TERI University, New Delhi, 9-10 October, 2017.
- Sambha Tibetan School, Paont Sahib, 10 October, 2017.
- Central Academy, Coimbatore, Tamil Nadu, 10 October, 2017.
- Dr. G.C. Negi College of Veterinary and Animal Science, Himachal Pradesh, 12 October, 2017.
- St. Patrick's Academy, Clemen Town, Dehradun, 12 October, 2017.
- Rabea Girls' Public School, 12 October, 2017.
- Tamil Nadu Agricultural University Forest College and Research Institute, 2 November, 2017.
- Forestry Birsa Agricultural University, Kanke, Ranchi, 3 November, 2017.
- LNJN National Institute of Criminology and Forensic Science, Rohini, Delhi, 7 November, 2017.
- Agriculture and Forestry University, Makawanpur, Nepal, 11 November, 2017.
- O.P. Jindal Modern School, Hisar, Haryana, 10 November, 2017.
- Agriculture and Forestry University, Makawanpur, Nepal, 16 November, 2017.
- Kerala Agricultural University College of Forestry, Thrissur, Kerala, 28 November, 2017.
- Dr. Balasaheb Sawant Krishi Vidyapeeth, College of Forestry, Dapoli Dist.-Ratnagiri, Maharashtra, 30 November, 2017.
- Central Academy for State Forest Service, Dehradun, 5 December, 2017.
- Central Academy for State Forest Service, Dehradun 15 December, 2017.
- Central Academy for State Forest Service, Dehradun, 19 December, 2017.
- Arts and Science College Kamareddy, Dist., Telangana State, 20 December, 2017.
- Karnataka Veterinary, Animal and Fisheries University, Bidar, Hebbal, Bengaluru, Group-I & II, 26 December, 2017.
- Kundal Academy of Development, Tal Palus, Dist. Sangli, 26 December, 2017.
- Institute & Rangers College, Sundernagar Mandi, 29 December, 2017.
- Bharatiya Vidya Bahavan's Hazarimal Somani College, Mumbai, 24 January, 2018.
- Forest Department Hoshiarpur, Punjab (Forest Guard Trainees), 2 February, 2018.
- Indian Institute of Remote Sensing, Dehradun, 7 February, 2018.
- Forest Range Officer Trainees, Coimbatore, 8 February, 2018.
- B.Sc. Forestry, Sam Higginbottom, University of Agriculture, Technology and Sciences, Allahabad, 23 February, 2018.

- The IIS University, Jaipur, 23 February, 2018.
- Central Academy for State Forest Service, Dehradun, 23 February, 2018.
- B.Sc. Forestry, Kathmandu Forestry College, Nepal, 1 March, 2018.
- Central Academy for State Forest Service, Dehradun, 5 March, 2018.
- Forest Trainees of Kashmir Forest Training School Chatternar, Bandipora Camp Jammu (J&K) Jammu, 6 March, 2018.
- TERI School of Advanced Studies, New Delhi, 7 March, 2018.
- Jawaharlal Nehru University, School of Environmental Sciences, New Delhi, 7 March, 2018.
- College of Veterinary Science & A.H., Gujarat, 12 March, 2018.
- Institute of Forestry, Pokhara, Nepal, 15 March, 2018.
- College of Veterinary and Animal Sciences, University, Kerala, 16 March, 2018.
- Forest Guard Trainees from Uttarakhand Forestry Training Academy, Haldwani, 20 March, 2018.
- ASPEE College of Horticulture & Forestry Navsari University, Gujarat, 20 March, 2018.
- Babasaheb Bhimrao Ambedkar University, Lucknow, 21 March, 2018.
- Central Academy for State Forest Service, Dehradun, 21 March, 2018.
- Kerala Veterinary and Animal Sciences University, Kerala, 22 March, 2018.
- Institute of Forestry, Pokhara, Nepal, 22 March, 2018.
- Woodstock School, Mussoorie, Uttarakhand, 27 March, 2018.

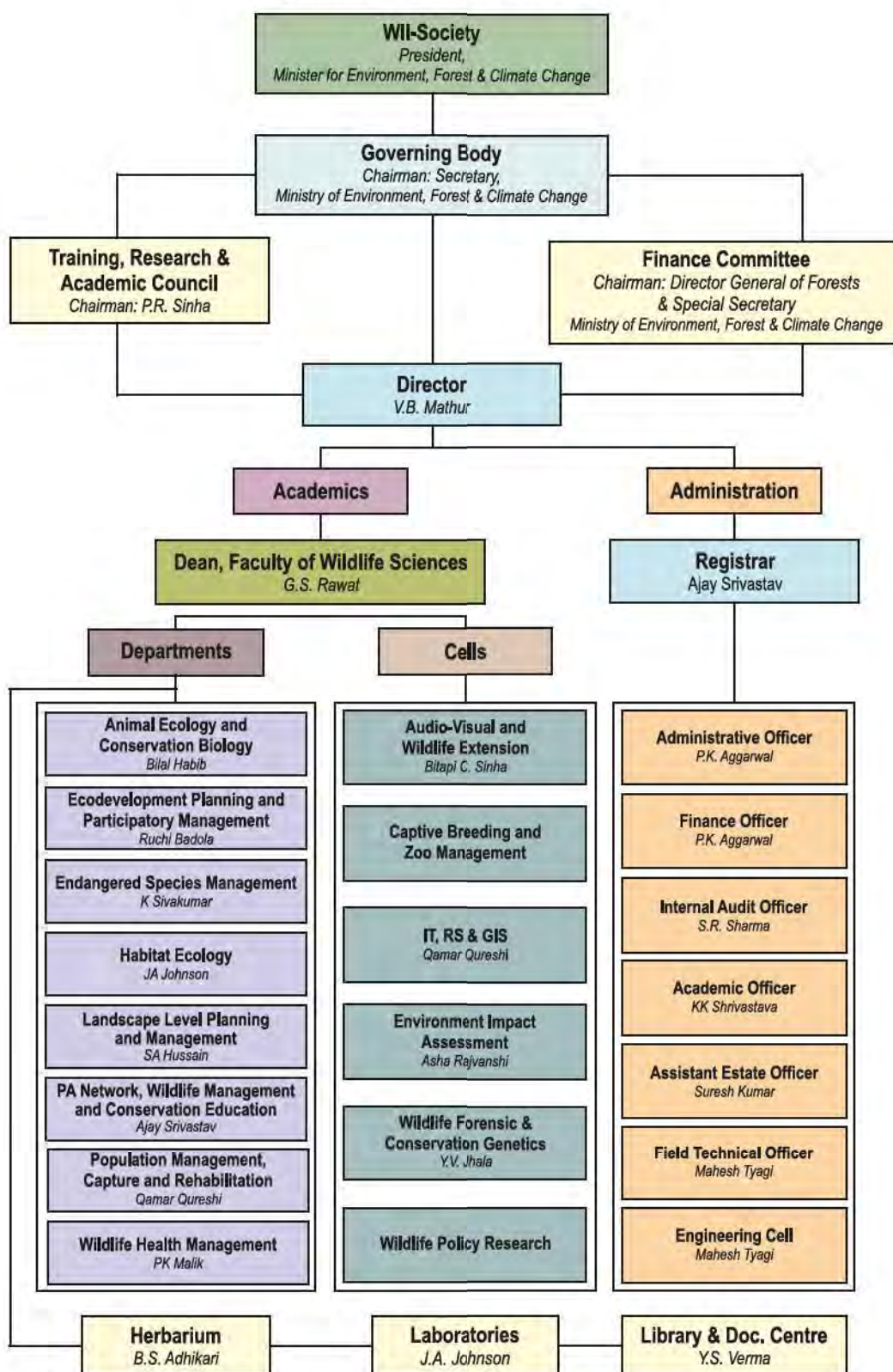
Vinod Verma



GOVERNANCE



Organizational Structure of WII



Wildlife Institute of India - Society

1. Dr. Harsh Vardhan **(President)**
Hon'ble Minister of Environment, Forest & Climate Change, Government of India,
Indira Paryavaran Bhavan,
Jor Bagh Road,
New Delhi-110 003
2. Dr. Mahesh Sharma **(Vice- President)**
Hon'ble Minister of State for Environment, Forest & Climate Change, Government of India,
Indira Paryavaran Bhavan,
Jor Bagh Road,
New Delhi - 110 003

Members

3. Shri Kunwar Bhartendra Singh,
Hon'ble Member of Parliament,
Lok Sabha, New Delhi
802, Narmada Appts.
Dr. Bishambar Das Marg,
New Delhi - 110 001
4. Shri Dushyant Chautala,
Hon'ble Member of Parliament,
Lok Sabha, New Delhi
18, Janpath,
New Delhi-110001
5. Shri R.K. Sinha
Hon'ble Member of Parliament
Rajya Sabha, New Delhi
C-1/22, Humayun Road,
New Delhi

North -East India

6. Smt. Pramila Rani Brahma
Hon'ble Forest Minister
Assam
Janata Bhawan 326, D-Block Dispur,
Guwahati 781006
7. Shri Clement Marak
Minister of Forest & Environment
Department -
Sericulture & Weaving Department
Warimagirr, Williamnagar
East Garo Hills District Meghalaya
8. Ms. Prema Khandu,
Hon'ble Chief Minister & Forest Minister
Arunachal Pradesh
Gyangkhar village,
P.O Lemberdung,
PS Tawang, Dist. Tawang,
Arunachal Pradesh

Eastern, India

9. Shri Sushil Kumar Modi,
Hon'ble Dy. Chief Minister & Forest
Minister,
Office of Dy. Chief Minister,
Main Secretariat,
Patna - 800015, Bihar
10. Shri Raghubar Das,
Hon'ble Chief Minister & Forest Minister,
Jharkhand,
Chief Minister Residence,
Kanke Road,
Ranchi-834008

Western Region

11. Hon'ble Chief Minister &
Minister of Forest, Environment &
Panchayat,
G-1 Ground floor ,Golden hill Apartment ,
Mangor,
Vasco-Da- Gama ,Goa
12. The Hon'ble Minister of Forests
Government of Gujarat,
1st Floor, Swarnim Sankul-1,
New Sachivalaya,
Gandhinagar, Gujarat

Southern India

13. Hon'ble Minister of Environment and
Forests, Science and Technology,
Govt. of Andhra Pradesh,
Room no: 121,L-Block
Hyderabad, Andhra Pradesh
14. Shri B. Ramanath Rai,
Hon'ble Minister of Forest, Ecology &
Environment,
Govt. of Karnataka,
Vikasa Soudha,
Bangalore - 560 001

Northern India

15. Shri Narbir Singh,
Hon'ble Minister of Public Works (B&R),
Forests, Architecture & Civil Aviation,
Haryana Civil Secretariat,
8th Floor,
Chandigarh
16. Hon'ble Minister of Food & Civil Supply,
Environment & Forest & Education,
Govt. of NCT of Delhi,
A-Wing, 8th Level, Delhi Secretariat, IP
Estate,
New Delhi - 110 002

Central India

17. Shri Mahesh Gagda,
Hon'ble Minister of Forests, "Mingachal",
D 7-8, Bharat Mata Chowk,
Shankar Nagar,
Raipur, Chhattisgarh

Permanent Member

18. Dr. Harak Singh Rawat
Hon'ble Forest Minister
Uttarakhand
Shrikhot, Ganganali,
Srinagar, Garhwal
19. Shri Uday Singh Wala
CEO, WL Epic Media P Ltd., Bungalow
82, Aram Nagar Part 2, Andheri West,
Mumbai - 400 061
20. Shri Vijay Mehta
Chairman,
Mefcom Group,
5th Floor, 77, Nehru Place,
Sanchi Building,
New Delhi - 110 019
21. Shri T.K. Joshi
Conservationist,
B- 22, New Krishna Park,
New Delhi - 110 018
22. Shri Himanshu Malhotra, Wildlife Film
Maker, Multi Media, C-50 Defence Colony,
New Delhi - 110 024
23. Shri Damodar Sharma, IAS (Retd.)
Former Secretary (Forests), Government of
Rajasthan,
House No. 65, Scheme No. 08, Aditya Vihar,
Gandhipath,
Vaishali Nagar,
Jaipur - 302 021
24. Shri R.P. Agarwalla, IFS (Rtd.)
21B, Hatisil Kharghuli,
Dr. Bhupen Hazarika Path,
Guwahati - 781 004
25. Dr. H.S. Singh
Plot 44, Sector-8,
Gandhinagar - 382 010
26. Dr. A.K. Puri
Director -Management
Institute of Technology and Science (ITS),
Mohan Nagar,
Ghaziabad - 201 007
27. Professor Dileep K. Singh
Professor
Department of Zoology,
University of Delhi
Delhi - 110 007

28. Shri S.S. Bist
Former Principal Chief Conservator of
Forests & Head of Forest Force,
Government of West Bengal,
Bist Bhawan, Lane C-12, Turner Road,
Dehradun
29. Shri Deepak Apte,
Director,
Bombay Natural History Society. Hornbill
House, Opp. Lion Gate, Shaheed Bhagat
Singh Road,
Mumbai 400 001
30. Shri Ravi Singh,
Secretary General & CEO
World Wide Fund for Nature-India (WWF),
"Secretariat",
172-Lodhi Estate,
New Delhi-110 003
31. Dr. Prashant Singh
Executive Vice President
Wildlife Preservation Society of India,
Heritage Apartments Flat No.-2,
1st Floor, 18-New Road,
Dehradun - 248 001
32. Director,
Centre for Environment Education
Nehru Foundation for Development,
Thaltej Tekra,
Ahmedabad - 380 054
33. Dr. Anil Prakash Joshi,
Himalayan Environmental studies &
Conservation Organization,
Village : Shuklapur,
P.O. : Ambiwala,
Via: Prem Nagar,
Dehradun, Uttarakhand

Member (Ex-officio)

34. Secretary to the Govt. of India,
Ministry of Environment, Forest & Climate
Change,
Indira Paryavaran Bhavan
Jor Bagh Road, Ali Ganj,
New Delhi - 110 003
35. The Secretary,
Government of India,
Ministry of Finance,
North Block,
New Delhi - 110 001
36. The Secretary
Government of India,
Department of Science and Technology,
Technology Bhavan,
New Mehrauli Road,
New Delhi - 110 01

37. The Secretary,
Government of India
Department of Education,
Ministry of Human Resource Development,
Shastri Bhavan,
New Delhi - 110 001
 38. Representative of
The Advisor,
(Environment & Forest) of
Niti Aayog, Sansad Marg,
New Delhi
 39. Representative of the
The Chairman
University Grant Commission
(UGC),Bahadur Shah Zafar Marg,
New Delhi
 40. The Chief Secretary
Govt. of Uttarakhand
"Sachivalaya"
Dehradun
 41. Shri Siddhanta Das
Director General of Forest &
Special Secretary to the Government of
India,
Ministry of Environment, Forest & Climate
Change,
Indira Paryavaran Bhavan
Jor Bagh Road, Ali Ganj
New Delhi - 110 003
 42. Shri M.S. Negi,
Additional Director General of Forest(WL),
& Director Wildlife Preservation,
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Change,
Indira Paryavaran Bhavan
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New Delhi - 110 003
 43. Mrs. Anuradha Mitra
Additional Secretary & Financial Advisor
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 44. Dr. S. C. Gairola
Director General,
Indian Council of Forestry Research &
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Dehra Dun - 248 006
 45. Dr. Kailash Chandra,
Director
Zoological Survey of India
Prani Vigyan Bhawan, M-Block,
New Alipore - 700,053, Kolkata
 46. Dr. Paramjit Singh,
Director
Botanical Survey of India,
CGO Complex, 3 MSO Building,
Block F, 5th & 6th Floor, DF Block, Sector-I,
Salt Lake City
Kolkata - 700 064 (W.B.)
- ### Member
47. Dr. G.S. Rawat
Dean
Faculty of Wildlife Sciences
Wildlife Institute of India
Chandrabani,
Dehradun - 248 001
 48. Shri Ajay Srivastav
Scientist-G and Registrar
Wildlife Institute of India
Chandrabani,
Dehradun - 248 001
- ### Member-Secretary
49. Dr. V.B. Mathur,
Director,
Wildlife Institute of India,
Chandrabani,
Dehradun - 248 001
- ### Permanent Invitee
50. Shri Soumitra Dasgupta
Inspector General of Forests (WL)
Ministry of Environment, Forest & Climate
Change
Indira Paryavaran Bhavan
Jor Bagh Road, Ali Ganj
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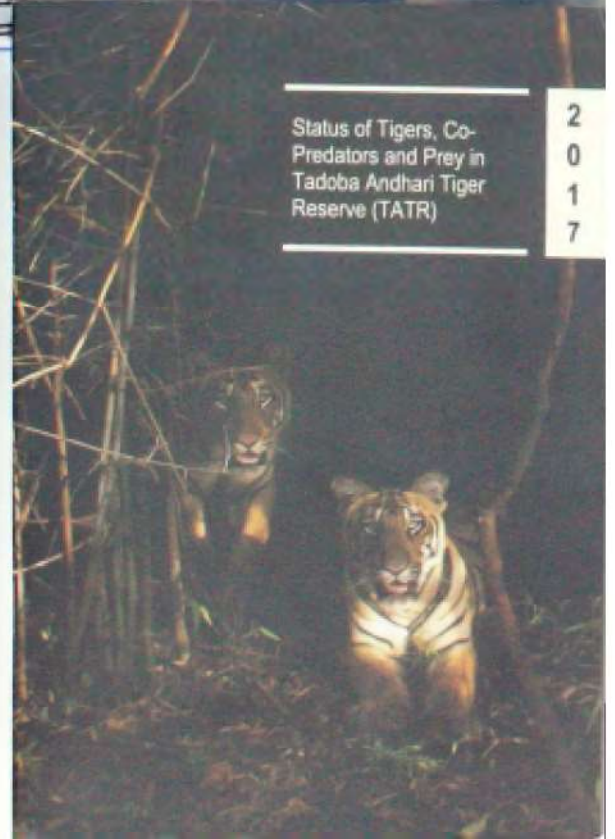
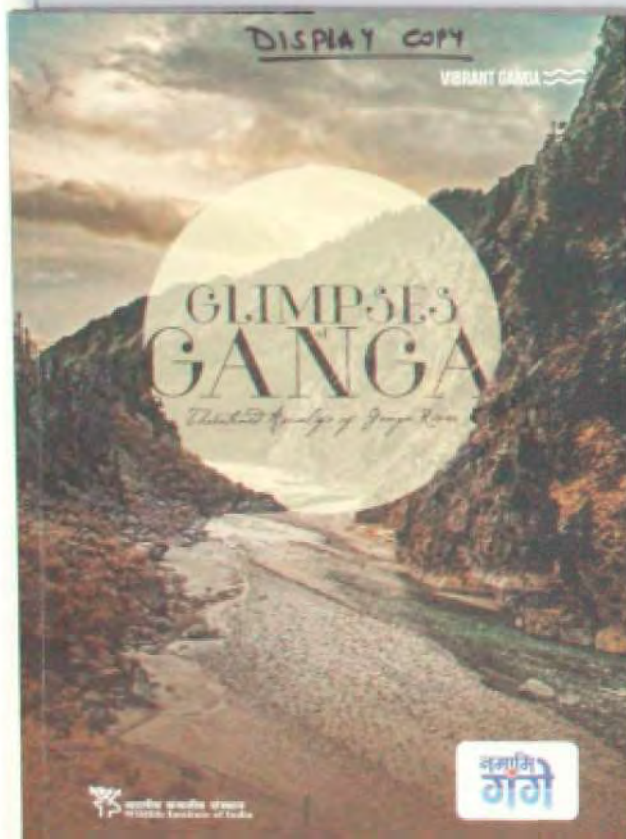
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ACCOUNT



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Separate Audit Report of the Comptroller and Auditor General of India on the Accounts of Wildlife Institute of India, Dehradun for the year ended 31st March 2018

1. We have audited the attached Balance Sheet of Wildlife Institute of India, as on 31 March 2018, the Income & Expenditure Account and the Receipt and Payment Account for the year ended on that date under Section 20(1) of the Comptroller & Auditor General's (Duties, Powers & Conditions of Service) Act, 1971 read with section 38G of the Wildlife (Protection) Act, 1972. These financial statements are the responsibility of the WII's management. Our responsibility is to express an opinion on these financial statements based on our audit.
2. This Separate Audit Report contains the comments of the Comptroller and Auditor General of India (CAG) on the accounting treatment only with regard to classification, conformity with the best accounting practices, accounting standards and disclosure norms, etc. Audit observations on financial transactions with regard to compliance with the Law, Rules & Regulations (Propriety and Regularity) and efficiency-cum-performance aspects, etc., if any, are reported through Inspection Reports/CAG's Audit Reports separately.
3. We have conducted our audit in accordance with auditing standards generally accepted in India. These standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatements. An audit includes examining, on a test basis, evidences supporting the amounts and disclosure in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of financial statements. We believe that our audit provides a reasonable basis for our opinion.
4. Based on our audit, we report that:
 - (i) We have obtained all the information and explanations, which to the best of our knowledge and belief were necessary for the purpose of our audit.
 - (ii) The Balance Sheet, Income and Expenditure Account and Receipt and Payment Account dealt with by this report

have been drawn up in the format approved by the Ministry of Finance.

- (iii) In our opinion, proper books of accounts and other relevant records have been maintained by the WII as required under section 38G of the Wildlife (Protection) Act, 1972 in so far as it appears from our examination of such books.
- (iv) We further report that:

A. Balance sheet

1. Assets

1.1 Fixed Assets '₹ 16.50 crore'

- (i) WII purchased Gas Fire Suppression System with addressable Fire Alarm System amounting to ₹ 50.93 lakh which was shown under the head 'Building' instead of depicting the same under 'Plant and Machinery' and depreciation was charged at the half yearly rate of 5 *per cent* (i.e. ₹ 254649) instead of 7.5 *per cent* (i.e. ₹ 381973). Charging depreciation at different rate resulted in overstatement of Assets and understatement of expenditure amounting to ₹ 127324.
- (ii) WII purchased Solar LED Street lights amounting to ₹ 8.20 lakh which was booked as Expenditure but not included in the schedule 8 'Fixed Assets'. This resulted in understatement of Fixed Assets by ₹ 8.20 lakh and overstatement of expenditure to the same extent.
- (iii) WII purchased Library Books amounting to ₹ 2.92 lakh but the same was not included in Schedule 8 Fixed Assets, resulting in understatement of Fixed Assets by ₹ 2.92 lakh and overstatement of expenditure to the same extent.
- (iv) WII purchased Computers/Printers amounting to ₹ 3.92 lakh and the same was shown as Office Equipment under Schedule -8 Fixed Assets and depreciation was charged @ of 15 *per cent* instead of 40 *per cent*. This resulted in overstatement of assets by ₹ 177460 1.56 lakh and understatement of expenditure in Income and Expenditure account to the same extent due to charging of lower rate of depreciation.
- (v) WII charge depreciation on UPS amounting to ₹ 42426 under Schedule -8 Fixed Assets as 'Computer Peripherals' at

40 per cent instead of 15 per cent (Office Equipment), which resulted in understatement of assets by ₹ 16970 and overstatement of expenditure to the same extent.

- (vi) The rate of depreciation charged by the WII in respect of AC Plant, Computer Peripherals, Books and Library Books were not as per Income tax.
- (vii) WII has not made any provision for Audit Fee in the Annual Accounts for the year 2017-18, thereby resulting in understatement of Liabilities in the accounts to that extent.
- (viii) WII included an amount of ₹ 2.56 crore under Building Complex in Schedule 8 'Fixed Assets' and charged depreciation of ₹ 12.78 lakh at the rate of 5 per cent for half year, whereas the work was still under progress. This resulted in overstatement of Fixed Assets and Expenditure by ₹ 2.43 crore and ₹ 0.13 crore respectively besides understatement of work in progress by ₹ 2.56 crore.

(i) B. Income & Expenditure Accounts:

(ii) 1. Expenditure ₹ 36.90 crore

- (iii) The closing balance of the consumable store was noticed as ₹ 4.50 lakh which resulted in understatement of Current Assets and overstatement of Expenditure of ₹ 4.50 lakh.
- (iv) Prepaid expenditure of ₹ 2.45 lakh incurred on Insurance & Premium for 15 vehicles for the period 04.03.2018 to 22.03.2019 was not shown under "Current Assets, Loans and Advances (Schedule 11). This resulted in overstatement of Expenditure to the tune of ₹ 2.45 lakh and understatement of Current Assets to the same amount.

C. General:

- (i) TDS of ₹ 95.75 deducted by Bank during the year 2017-18 on fixed deposits of ₹ 39.22 crore in FDRs (GPF, Pension & Corpus Funds) by banks shown in Schedule- 11 'Current Assets, Loan and Advances'. The refund claim is pending with Income tax Department.

- (ii) An amount of ₹ 556968.00 as Security Deposit and ₹ 901658.00 as EMD received under the head unsecured loans and borrowings (Schedule 5) and current liability and Provisions respectively were pending.

D. Grants-in-Aid:

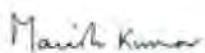
WII received Grants in Aid of ₹ 33.97 crore (₹ 32.27 crore revenue and ₹ 1.70 crore capital) besides opening balance of ₹ 5.45 crore and other receipts of ₹ 4.27 crore. Out of total available amount of ₹ 43.69 crore, WII made payments of ₹ 35.84 crore and an amount of ₹ 7.85 crore was lying at bank.

E. Management Letter

Deficiencies which have not been included in the Separate Audit Report have been brought to the notice of WII, Dehradun through a Management letter issued separately for remedial/corrective action.

- (v) Subject to our observations in the preceding paragraphs, we report that the Balance Sheet, Income & Expenditure Account and Receipt & Payment Account dealt with by this report are in agreement with the books of accounts.
- (vi) In our opinion and to the best of our information and according to the explanations given to us, the said financial statement read together with the accounting policies and notes on accounts, and subject to significant matters stated above and other mentioned in Annexure to this Audit Report give a true and fair view in conformity with accounting principles generally accepted in India.
- (a) In so far as it relates to the Balance Sheet, the state of affairs of the Wild Life Institute of India, Dehradun as at 31 March 2018; and
- (b) In so far as it relates to the Income & Expenditure Accounts the deficit for the year ended on that date.

Date: 19/11/2018
Place: New Delhi


Director General of Audit (SD)

Annexure - 'A'

- (i) In Schedule 7 - Current Liabilities- Sundry Creditors - Others (Grant-in-Aid) ₹ 43425324 was outstanding (₹ 82200 since 2015-16 and ₹ 179183 since 2016-17 and ₹ 43163941 since 2017-18).
- (ii) The value of investment of Corpus Fund in Union Bank of India (UBI) shown by WII was ₹ 195014428.00 as on 31.03.2018 whereas bank statement showed an amount of ₹ 195018021. Thus there was a difference of ₹ 3593. The same needs to be reconciled.
- (iii) In schedule 11: Current Assets, Loans and Advances etc. ₹ 280984.00 was depicted against Loan to MoEF&CC for World Environment Day (MoEF&CC) Which remained unchanged (₹ 267298.00 since 2011-12 & 13686 since 2012-13) Loan for WCF workshop amounting to ₹ 30253.00 remained unchanged since 2012-13. Training cost accrued but not received amounting to ₹ 838375.00 remained unchanged (from 1996-97 - ₹ 1000.00, 1999-00 ₹ 150875, 2001-02 ₹ 26500 and 2005-06 ₹ 660000). Reasons for amount being outstanding without adjustment/recovery may be elucidated.

Director (EA)

Annexure

1. Adequacy of Internal Audit System

Internal Audit for the period 2013-14 to 2017-18 was conducted in August 2018 by MOEF&CC and the Report was awaited.

2. Adequacy of Internal Control System

There is scope of improvement in the Internal Control System of WII in the following areas, as deficiencies were noticed;

- i. Cash Book was not maintained in prescribed form i.e. GAR 3.
- ii. Denomination-wise details of closing balance were not mentioned during physical verification of cash at the end of each month.
- iii. The deposit of Cash receipts were made by cashier after a delay of two to seven days.
- iv. The Expenditure Control Register, Works Control Register and Register of Contracts were not maintained.
- v. Register of Valuable as per GAR 5, Accession Register as per GFR 18, Stock Register of Consumables and Investment Register were not maintained in prescribed format.

3. System of Physical Verification of Assets

- i. Physical verification of fixed Assets was not done for the year 2017-18.
- ii. The Assets Register was not maintained as per GFR- 22.

4. System of Physical Verification of Inventory

Physical verification of stationary, consumable items and library books was not done for the year 2017-18.

5. Payment of Statutory Dues

WII is regular in payment of Statutory Dues.



Director (EA)

RECEIPT & PAYMENT ACCOUNTS FOR THE YEAR 2017-18

RECEIPTS			Previous Year		PAYMENT		Previous Year	
Particulars	Plan	Non Plan	Total	Particulars	Plan	Non Plan	Total	
(A) GRANT-IN-AID								
To Opening Balance				Expenses				
Cash in Bank	5,44,49,195.04	-	5,44,49,195.04	By Salaries & Allowances	19,30,88,666.00	-	19,30,88,666.00	
Cash In Hand	10,801.00	-	10,801.00	By Medical	1,02,08,418.00	-	1,02,08,418.00	
				By LTC	18,14,759.00	-	18,14,759.00	
				By OTA	31,325.00	-	31,325.00	
To Grant in Aid (Revenue)	32,27,00,000.00	-	32,27,00,000.00	By Honorarium	1,47,000.00	-	1,47,000.00	
To Grant in Aid (Capital)	1,70,00,000.00	-	1,70,00,000.00	By Fellowship & Wages (R/Proj)	78,15,256.00	-	78,15,256.00	
To Grant (other Projects)	2,60,000.00	-	2,60,000.00	By Stipend of MSc Students	8,00,459.00	-	8,00,459.00	
To MSc Course Fee	34,60,093.00	-	34,60,093.00	By Leave encashment & Gratuity	74,45,764.00	-	74,45,764.00	
To Bus Charges	-	-	-	By Bonus	6,08,307.00	-	6,08,307.00	
To Rent	46,320.00	-	46,320.00	By Fellowship Forensic Cell	5,85,664.00	-	5,85,664.00	
To WII Products	-	-	-	By Base Camp Exp. (Res Project)	2,38,374.00	-	2,38,374.00	
To Misc Receipts	5,82,402.00	-	5,82,402.00	By Advance for veh insurance	-	-	-	
To Elect & Water	2,400.00	-	2,400.00	By Annual Res Seminar-ARS	6,64,284.00	-	6,64,284.00	
To Interest on Saving A/c	18,92,239.00	-	18,92,239.00	By Estate Security	1,23,43,182.00	-	1,23,43,182.00	
To Loan & Advance	68,400.00	-	68,400.00	By POL, Hiring of Veh (R/Proj)	6,04,659.00	-	6,04,659.00	
To EMD Security Deposit	2,58,350.00	-	2,58,350.00	By Contingencies (Res Proj)	13,82,647.00	-	13,82,647.00	
To Hostel Caution Money	2,59,900.00	-	2,59,900.00	By Travel Expenses (Res. Proj)	6,65,226.00	-	6,65,226.00	
To Inttt on HBA	-	-	-	By Lab Expenses-Forc Lab	7,59,325.00	-	7,59,325.00	
To Travel/FA Adv.-GIA	4,00,743.00	-	4,00,743.00	By Harbierum	-	-	-	
To Travel Adv. (R/Proj)	21,000.00	-	21,000.00	By M.Sc Expenditure	45,32,445.00	-	45,32,445.00	
To FA (Research Project)	1,69,362.00	-	1,69,362.00	By Elect and Water Charges	98,79,024.00	-	98,79,024.00	
To LTC Adv	42,642.00	-	42,642.00	By Hospitality/Entertainment	3,15,898.00	-	3,15,898.00	
To Medical Adv	22,984.00	-	22,984.00	By POL of WII Vehicle	6,75,924.00	-	6,75,924.00	
To M.Sc-FA & TA Advance	4,22,441.00	-	4,22,441.00	By Postage & Telegram	1,99,041.00	-	1,99,041.00	
To TDS	-	-	-	By Repair & Maint of Vehicle	9,27,376.00	-	9,27,376.00	

RECEIPTS			Previous Year		PAYMENT		Previous Year	
Particulars	Plan	Non Plan	Total	Particulars	Plan	Non Plan	Total	
To Loan from othe project	12,812.00	-	12,812.00	By Sport	52,787.00	-	52,787.00	
To Expenses for Capitales	14,36,823.00	-	14,36,823.00	By Stationery & Consumables	8,76,968.00	-	8,76,968.00	
To Opening Stock-Library	5,301.00	-	5,301.00	By Telephone & Trunk Calls	6,15,238.00	-	6,15,238.00	
To GPF Recd	5,400.00	-	5,400.00	By Legal Expenses	3,07,992.00	-	3,07,992.00	
To Genetic lab	-	-	-	By Operational expenses	4,24,941.00	-	4,24,941.00	
Adv payment CPWD	77,22,933.00	-	77,22,933.00	By Printing & Binding	15,25,681.00	-	15,25,681.00	
Adv Payment CCU	2,55,55,073.00	-	2,55,55,073.00	By Maint of Will Campus	5,67,350.00	-	5,67,350.00	
Advance for Veh. Ins.	65,359.00	-	65,359.00	By Repair of equip/furniture	1,09,558.00	-	1,09,558.00	
				By Computer AMC & Cons.	24,24,283.00	-	24,24,283.00	
				By Lab. Exp-Research Lab	2,92,665.00	-	2,92,665.00	
				By Lab. Expenses-Gen.	30,291.00	-	30,291.00	
				By Maint. Of Civil Work	64,28,938.00	-	64,28,938.00	
				By Transferred to Trg A/c	1,60,00,000.00	-	1,60,00,000.00	
				By Travel Expenses	24,22,878.00	-	24,22,878.00	
				By GP Funds	-	-	-	
				By Travel expenses Library	-	-	-	
				By Lib expenses	-	-	-	
				By Computer & Accessories	9,79,359.00	-	9,79,359.00	
				By Furniture & Fixture	2,78,134.00	-	2,78,134.00	
				By Journals & Periodicals	27,51,744.00	-	27,51,744.00	
				By TDS	22,101.00	-	22,101.00	
				By Fellowship Arrear	65,754.00	-	65,754.00	
				By Medical Adv	11,58,000.00	-	11,58,000.00	
				By Forest/Travel Advance (GIA)	-	-	-	
				By Forest advance R/Proj	2,762.00	-	2,762.00	
				By Tour Advance -R/Proj	41,000.00	-	41,000.00	
				By LTC Advance	-	-	-	
				By M.Sc. TA Advance	-	-	-	
				By M.Sc. FA Advance	-	-	-	

RECEIPTS	Previous Year			PAYMENT			Previous Year		
	Plan	Non Plan	Total	Particulars	Plan	Non Plan	Total	Plan	Previous Year
				By Building Complex	2,55,55,073.00	-	2,55,55,073.00		-
				By Campus Development	50,92,979.00	-	50,92,979.00		1,30,52,641.00
				By Vehicle	19,71,130.00	-	19,71,130.00		-
				By Development of Forensic Lab.	15,56,899.00	-	15,56,899.00		1,84,541.00
				By Lb Eqpt (Harberian)	34,691.00	-	34,691.00		-
				By Lab Equipment (Res. Lab.)	21,500.00	-	21,500.00		18,480.00
				By Office equipment	2,42,290.00	-	2,42,290.00		2,36,611.00
				By Office Eqpt (Res. Proj.)	28,160.00	-	28,160.00		2,04,343.00
				By Camp Eqpt (Res. Proj.)	6,38,277.00	-	6,38,277.00		1,25,000.00
				By Loan and adv-IT Kanpur	9,91,200.00	-	9,91,200.00		-
				By Intt. Tfr to Corpus Fund	61,95,962.00	-	61,95,962.00		-
				By Prev. Year bal. Transf. to Corpus	1,76,26,894.00	-	1,76,26,894.00		82,77,000.00
				By DST Funded Asatic Lion	-	-	-		3,00,000.00
				Previous Year bal. Transf.	-	-	-		-
				By Advance for CPWD	-	-	-		90,76,438.00
				By Advance for CCU	31,47,150.00	-	31,47,150.00		-
				By Sundry Creditores	19,92,648.00	-	19,92,648.00		33,69,368.00
				By Complementry-Library	5,301.00	-	5,301.00		17,958.00
				Internal loan	16,110.00	-	16,110.00		-
				By Welfare fund	-	-	-		5,650.00
				Adv for Vehical Ins. Premium	1,81,491.00	-	1,81,491.00		-
				In Bank	7,84,63,541.04	-	7,84,63,541.04		5,44,49,195.04
				In Hand	230.00	-	230.00		10,801.00
A' Total	43,68,72,973.04	-	43,68,72,973.04	A' Total	43,68,72,973.04	-	43,68,72,973.04		30,45,05,905.04

Receipt & Payment Accounts for the year 2017-18

GPF						
RECEIPTS		Previsou Year		PAYMENT		Previous Year
Particulars	Plan	Non Plan	Total	Particulars	Plan	Total
To Opening Bal (Bank)	40,15,421.00	-	40,15,421.00	By Final Payment	32,53,599.00	32,53,599.00
To GP Fund Contribution	2,37,69,709.00	-	2,37,69,709.00	By Advance/withdrawal	70,76,958.00	70,76,958.00
To Encashment of RBI Bond	-	-	-	By Loan to Deputationists	-	-
To Int. on saving a/c	4,54,855.00	-	4,54,855.00	By Investment of FDR	90,00,000.00	90,00,000.00
To Int. on RBI Bond	-	-	-			
To Refunds of Loan	-	-	-			
				By Closing Balance (Bank)	89,09,428.00	89,09,428.00
F' Total	2,82,39,985.00		2,82,39,985.00	F' Total	2,82,39,985.00	5,39,09,746.00

Receipt & Payment Accounts for the year 2017-18

PENSIONS						
RECEIPTS		Previsou Year		PAYMENT		Previous Year
Particulars	Plan	Non Plan	Total	Particulars	Plan	Total
To Opening Balance						
Cash in Bank	57,32,894.00	-	57,32,894.00	By Investment in FDR	-	-
To encashment of FDR	2,08,54,255.00	-	2,08,54,255.00	By Commuted Value of Pension	75,52,311.00	75,52,311.00
To encashment of RBI Bond	-	-	-	By Pension/ Family Pension	2,30,44,652.00	2,30,44,652.00
To Interest (Pension A/c)	1,31,487.00	-	1,31,487.00			
To WII Contribution	87,54,943.00	-	87,54,943.00	By Loan	-	-
To Interest on FDRs	7,59,918.00	-	7,59,918.00			
To Interest on RBI Bond	-	-	-			
To Refund of Loan	-	-	-			
				Cash in Bank	56,36,534.00	56,36,534.00
D' Total	3,62,33,497.00		3,62,33,497.00	D' Total	3,62,33,497.00	2,32,91,814.00

Receipt & Payment Accounts for the year 2017-18

CORPUS FUND

RECEIPTS	Previsou Year			PAYMENT			Previous Year		
	Plan	Non Plan	Total	Particulars	Plan	Non Plan	Total	Plan	Total
To Opening Balance	1,17,68,477.00	-	1,17,68,477.00	By Investment in FDRs	3,14,00,000.00	-	3,14,00,000.00	10,82,36,200.00	
To Misc Receipts	7,60,23,606.00	-	7,60,23,606.00	By 30% 7CPC Arrear	65,23,219.00	-	65,23,219.00	-	
To Interests on Saving A/c	7,86,503.00	-	7,86,503.00	By investment in RBI Bonds	4,20,00,000.00	-	4,20,00,000.00	-	
To Encashment of RBI Bond	-	-	-	Wrongly credited by bank	2,000.00	-	2,000.00	-	
To Interest on RBI Bond	-	-	-						
To Encashment of FDR	2,22,20,859.00	-	2,22,20,859.00						
To Interest on FDR	11,27,894.00	-	11,27,894.00						
				Closing Balance	3,20,02,120.00		3,20,02,120.00	1,17,68,477.57	
F' Total	11,19,27,339.00	-	11,19,27,339.00	F' Total	11,19,27,339.00		11,19,27,339.00	12,00,04,677.67	

Receipt & Payment Accounts for the year 2017-18

TRAINING ACCOUNT

RECEIPTS	Previsou Year			PAYMENT			Previous Year		
	Plan	Non Plan	Total	Particulars	Plan	Non Plan	Total	Plan	Total
To Opening in Bank	1,47,91,877.99	-	1,47,91,877.99	By Equipment	-	-	-	2,09,801.00	
To Grant Received	1,60,00,000.00	-	1,60,00,000.00	By Office Equipment	1,20,680.00	-	1,20,680.00	3,22,481.00	
To Interest Received	4,53,860.00	-	4,53,860.00	By Contr/Misc	11,96,831.17	-	11,96,831.17	5,52,159.46	
To Other Receipts	1,48,98,884.00	-	1,48,98,884.00	By Camping Gear	11,69,220.00	-	11,69,220.00	6,99,660.00	
To Adv. for Expenses	1,45,000.00	-	1,45,000.00	By Travelling Expenses	39,18,978.00	-	39,18,978.00	57,70,899.00	
Interest on FDR	-	-	-	By TA/DA & Honorarium	8,28,888.00	-	8,28,888.00	3,42,359.00	
Encashment of FDR	-	-	-	By POL & Maint of Vehicle	5,58,610.41	-	5,58,610.41	9,67,974.00	
Other for expenses	3,90,181.00	-	3,90,181.00	By Boarding & Lodging	1,12,03,824.00	-	1,12,03,824.00	59,61,507.55	
				By Books	1,33,460.00	-	1,33,460.00	71,144.00	
				By Salary & Wages	12,92,931.00	-	12,92,931.00	6,94,642.00	

RECEIPTS		Previous Year		PAYMENT		Previous Year	
Particulars	Plan	Non Plan	Total	Particulars	Plan	Non Plan	Total
				By Other Advance	2,58,558.00	-	2,58,558.00
				By Corpus Funds	1,03,29,860.00	-	1,03,29,860.00
				By Maint of Vehicle	2,20,262.59	-	2,20,262.59
				By Sports Item	67,294.00	-	67,294.00
				By Advances for expenses	1,55,000.00	-	1,55,000.00
				By Maint. Of Civil Work	97,459.00	-	97,459.00
				By Closing in Bank	1,51,27,946.82	-	1,51,27,946.82
C' Total	4,66,79,802.99	-	4,66,79,802.99	C' Total	4,66,79,802.99	-	4,66,79,802.99
							3,22,09,855.00
							3,22,09,855.00

Receipt & Payment Accounts for the year 2017-18

CONSULTANCY PROJECTS

RECEIPTS		Previous Year		PAYMENT		Previous Year	
Particulars	Plan	Non Plan	Total	Particulars	Plan	Non Plan	Total
To Opening Balance:							
at Bank	2,49,92,327.52	-	2,49,92,327.52	By Office Equipment	21,51,699.00	-	21,51,699.00
To Grant Received	3,61,52,356.89	-	3,61,52,356.89	By Camp Equipment ontinencigices/Misc	-	-	-
To Interest Saving A/c	6,48,557.00	-	6,48,557.00	By Contingenciges/Misc	56,56,171.57	-	56,56,171.57
To Misc Receipt	4,67,44,210.00	-	4,67,44,210.00	By Fellowship & Wages	15,48,322.00	-	15,48,322.00
To Advance for expenses	1,24,000.00	-	1,24,000.00	By Travel Expenses	36,87,453.00	-	36,87,453.00
				By PDL & Maint. of veh.	2,55,568.00	-	2,55,568.00
				By Stationery items	4,78,701.00	-	4,78,701.00
				By Advance for expenses(FA)	80,000.00	-	80,000.00
							1,24,000.00
							1,24,000.00

CONSULTANCY PROJECTS

RECEIPTS	Previous Year			PAYMENT			Previous Year		
	Plan	Non Plan	Total	Particulars	Plan	Non Plan	Total		
Particulars									
				By Boarding & Lodging	90,82,704.84	-	90,82,704.84	59,59,517.00	
				By TA /DA & Honorarium	1,86,496.00	-	1,86,496.00	2,70,693.00	
				By Transf. To Corpus Fund	2,06,37,866.00	-	2,06,37,866.00	63,42,872.00	
				By Consultancy fees	-	-	-	28,000.00	
				By Report writing	27,750.00	-	27,750.00	3,76,903.00	
				By Field Equipment	2,76,590.00	-	2,76,590.00	2,15,205.00	
				By Building renovation	-	-	-	14,13,350.00	
				By Misc Receipt-Payment	-	-	-	19,78,886.00	
				Total Expenditure	4,40,69,321.41	-	4,40,69,321.41		
				By Bank Balance	6,45,92,130.00	-	6,45,92,130.00	2,49,92,327.52	
E' Total	10,86,61,451.41	-	10,86,61,451.41	E' Total	10,86,61,451.41	-	10,86,61,451.41	5,31,38,141.86	5,31,38,141.86



(P.K. Aggarwal)
Finance Officer



(Dr. V.B. Mathur)
Director

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
BALANCE SHEET AS ON 31 MARCH 2018

		(Amt. Rs.)	
CORPUS /CAPITAL FUND AND LIABILITIES	Schedule	Current Year	Previous Year
CORPUS /CAPITAL FUND	1	58,04,89,783.64	47,61,66,728.81
RESERVE AND SURPLUS	2	-	-
EARMARKED FUND	3	6,45,92,130.00	2,49,92,327.52
SECURED LOAN AND BORROWINGS	4	-	-
UNSECURED LOAN AND BORROWINGS	5	5,25,37,593.00	5,25,03,703.00
DEFERRED CREDIT LIABILITIES	6	19,75,678.00	62,79,401.00
CURRENT LIABILITIES AND PROVISION	7	25,96,11,109.00	20,71,95,462.00
TOTAL (A)		95,92,06,293.64	76,71,37,622.33
ASSETS			
FIXED ASSETS	8	16,50,08,064.11	14,76,39,510.10
INVESTMENTS- FROM EARMARKED / ENDOWMENT FUNDS	9	-	-
INVESTMENTS- OTHERS	10	48,61,51,388.00	40,68,77,733.00
CURRENT ASSETS, LOANS, ADVANCES ETC.	11	30,80,46,841.53	21,26,20,379.23
MISCELLANEOUS EXPENDITURE (to the extent not written off or adjusted)			
TOTAL (B)		95,92,06,293.64	76,71,37,622.33



(P.K. Aggarwal)
Finance Officer



(Dr. V.B. Mathur)
Director

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
SCHEDULES FORMING PART OF BALANCE SHEET FOR THE YEAR ENDED 31 MARCH 2018

		(Amt. Rs.)	
SCHEDULE 1: CORPUS/ CAPITAL FUND		Current Year	Previous Year
Balance as at the beginning of the year		28,72,48,856.14	24,33,97,014.15
Add: Contribution towards Corpus/ Capital fund		3,88,44,683.00	1,98,73,320.00
Add/(Deduct) : Balance of net income (expenditure) transferred from		-2,88,57,209.17	2,39,78,521.99
TOTAL	A	29,72,36,329.97	28,72,48,856.14
Corpus Fund			
Opening Balance		18,89,17,872.67	12,81,61,316.67
Received during the year		7,60,23,606.00	3,02,78,530.00
Add Accrued Interest		2,29,22,797.00	1,27,16,314.00
Add Interest Earned		19,14,397.00	1,77,61,712.00
Add/Less : Paid to 7th CPC		-65,23,219.00	-
Add/Less : wrongly credited		-2,000.00	-
Total	B	28,32,53,453.67	18,89,17,872.67
Total A+B		58,04,89,783.64	47,61,66,728.81

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
SCHEDULES FORMING PART OF BALANCE SHEET FOR THE YEAR ENDED 31 MARCH 2018

		(Amt. Rs.)
SCHEDULE 2: RESERVE AND SURPLUS:	Current Year	Previous Year
1. Capital Reserve :		
As per last Account	-	-
Addition during the year	-	-
Less : Deductions during the year	-	-
2. Revaluation Reserve :		
As per last Account	-	-
Addition during the year	-	-
Less : Deductions during the year	-	-
3. Special Reserves :		
As per last Account	-	-
Addition during the year	-	-
Less : Deductions during the year	-	-
4. General Reserve :		
As per last Account	-	-
Addition during the year	-	-
Less : Deductions during the year	-	-
TOTAL	-	-

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
SCHEDULES FORMING PART OF BALANCE SHEET FOR THE YEAR ENDED 31 MARCH 2017

	Current Year	Previous Year
SCHEDULE 3 : EARMARKED FUNDS		
a) Opening Balance of the Funds	2,49,92,327.52	1,98,04,819.07
b) Addition to the Funds		
i Grants Received	8,30,20,566.89	3,28,37,957.79
ii Interest Received	6,48,557.00	4,95,365.00
Total	8,36,69,123.89	3,33,33,322.79
TOTAL (A+B)	10,86,61,451.41	5,31,38,141.86
Utilisation/Expenditure towards objectives of funds		
c) i Capital Expenditures (Fixed Assets)		
Camp/Field Equipment	2,76,590.00	2,15,205.00
Office Equipment	21,51,699.00	8,11,507.00
Furniture & Fixture	-	60,738.00
ii Revenue Expenditure		
Contingencies/Misc.	28,42,637.57	39,97,102.34
Fellowship & Wages	15,48,322.00	22,24,862.00
Travel Expenses	36,87,453.00	32,55,653.00
POL & Maint. Of Vehicle	2,55,568.00	3,48,954.00
Advance for Expenses (FA)	80,000.00	1,24,000.00
Boarding & Lodging	90,82,704.84	59,59,517.00
Misc receipt – Payment (Previous Year)	-	19,78,886.00
Consultancy Fees	-	28,000.00
Repair/ Renovation of Coaches	-	14,13,350.00
Report Writing	27,750.00	3,76,903.00
Corpus fund	2,05,37,866.00	63,42,872.00

SCHEDULE 3 : EARMARKED FUNDS	Current Year	Previous Year
TA/DA & Honorarium	1,86,496.00	2,70,693.00
Stationery items	4,78,701.00	2,32,966.00
Training Course Materials	28,13,534.00	5,04,606.00
TOTAL-C	4,40,69,321.41	2,81,45,814.34
NET BALANCE AS AT THE YEAR-END (A+B-C)	6,45,92,130.00	2,49,92,327.52

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
SCHEDULES FORMING PART OF BALANCE SHEET FOR THE YEAR ENDED 31 MARCH 2018

		(Amt. Rs.)
SCHEDULE 4 : SECURED LOANS AND BORROWINGS	Current Year	Previous Year
(1) Central Govt.	-	-
(2) State Govt. (Specify)	-	-
(3) Financial Institutions		
(a) Term Loans	-	-
(ib) Interest accrued and due	-	-
(4) Banks		
(i) Term Loans		
-Interest accrued and due	-	-
(ii) Others Loans (specify)		
- Interest accrued and due	-	-
(5) Other Institutions and Agencies	-	-
(6) Debentures and Bonds	-	-
(7) Others (specify)	-	-
TOTAL	-	-

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
SCHEDULES FORMING PART OF BALANCE SHEET FOR THE YEAR ENDED 31 MARCH 2018

		(Amt. Rs.)
SCHEDULE 5 : UNSECURED LOANS AND BORROWINGS	Current Year	Previous Year
(1) Central Govt.	-	-
(2) State Govt. (Specify)	-	-
(3) Financial Institutions	-	-
(4) Banks		
(i) Term Loans	-	-
(ii) Others (specify)	-	-
(5) Other Institutions and Agencies	-	-
(6) Debentures and Bonds	-	-
(7) Fixed Deposits	-	-
(8) Others (Specify)		
Security Deposit	5,56,968.00	5,06,968.00
Internal Loan	-	16,110.00
Pension Fund	5,19,80,625.00	5,19,80,625.00
TOTAL	5,25,37,593.00	5,25,03,703.00

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
SCHEDULES FORMING PART OF BALANCE SHEET FOR THE YEAR ENDED 31 MARCH 2018

		(Amt. Rs.)
SCHEDULE 6 : DEFERRED CREDIT LIABILITIES:	Current Year	Previous Year
(A) Acceptances secured by hypothecation of capital equipment and other assets	-	-
(B) Others	19,75,678.00	62,79,401.00
TOTAL	19,75,678.00	62,79,401.00

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
SCHEDULES FORMING PART OF BALANCE SHEET FOR THE YEAR ENDED 31 MARCH 2018

		(Amt. Rs.)
SCHEDULE 7 : CURRENT LIABILITIES AND PROVISION	Current Year	Previous Year
(A) CURRENT LIABILITIES		
(1) Acceptances		
(2) Sundry Creditors		
(1) For Goods		
(2) For Others		
Other payments outstanding (Res Project) (13-14)	-	13,678.00
Other Payments outstanding (Grant in Aid) (15-16)	82,200.00	1,12,200.00
Other Payments outstanding (Grant in Aid) (16-17)	1,79,183.00	21,28,153.00
Other Payments outstanding (Grant in Aid) (17-18)	4,31,63,941.00	-
(3) Advances Received		
Hostel Caution Money	9,67,403.00	7,07,503.00
(4) Interest accrued but not due on		
(1) Secured Loans/Borrowings	-	-
(2) Unsecured Loans/Borrowings	-	-
(5) Statutory Liabilities		
(1) Overdue		
(2) Others (Specify)		
Pension Fund	8,28,42,748.00	9,19,35,691.00
GP Fund	13,14,73,976.00	11,15,17,074.00
(6) Others (Specify)		
EMD Received	9,01,658.00	6,93,308.00
Welfare Fund	-	-
TOTAL (A)	25,96,11,109.00	20,71,07,607.00
(B) Provisions		
(1) For Taxation		
TDS	-	22,101.00
(2) Gratuity		
(3) Superannuation/ Pension	-	-
(4) Accumulated Leave Encashment	-	-
(5) Trade Warranties/ Claims	-	-
(6) Others (Specify)		
TDS refund paid to GPF, Pension & Corpus	-	-
CGEGIS	-	-
GPF	-	-
Payment to Income Tax	-	-
Payment made to Sh Rajkishore Mohanto (Res. Project)	-	-
Fellowship (Arrear)	-	65,754.00
TOTAL (B)	-	87,855.00
TOTAL (A+ B)	25,96,11,109.00	20,71,95,462.00

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, DEHRADUN
SCHEDULES FORMING PART OF BALANCE SHEET FOR THE YEAR ENDED 31 MARCH 2016-18
SCHEDULE 8 : FIXED ASSETS

Particulars	Gross Block				DEPRECIATION			NET BLOCK				
	Addition during the year				As at the beginning of the year	For the year	Deduction during the year	At the end of the year	As at the current year-end	As at the Previous year-end		
	Cost as at the beginning of the year	Upto 30-Sep	After 30-Sep	Deduction during the year	Adjustment change of dep rates	Cost as at the end of the year	As at the beginning of the year	For the year	Deduction during the year	At the end of the year	As at the current year-end	As at the Previous year-end
LAND												
BLOCK: 0%												
Land	66,07,214.58	-	-	-	-	66,07,214.58	-	-	-	-	66,07,214.58	66,07,214.58
TOTAL	66,07,214.58	-	-	-	-	66,07,214.58	-	-	-	-	66,07,214.58	66,07,214.58
BUILDINGS												
BLOCK: 10%												
Arch. & Sprinson Fee	18,45,397.41	-	-	-	-	18,45,397.41	2,05,044.00	1,84,540.00	-	1,84,540.00	16,60,857.41	18,45,397.41
Auditorium	27,63,427.47	-	-	-	-	27,63,427.47	3,07,047.00	2,76,343.00	-	2,76,343.00	24,87,084.47	27,63,427.47
Boundary Fencing	1,68,405.23	-	-	-	-	1,68,405.23	18,712.00	16,841.00	-	16,841.00	1,51,564.23	1,68,405.23
Boundary Wall	2,97,760.79	-	-	-	-	2,97,760.79	33,084.00	29,776.00	-	29,776.00	2,67,984.79	2,97,760.79
Building Complex	4,05,40,916.86	-	2,55,55,073.00	-	-	6,60,95,989.86	45,04,546.00	53,31,846.00	-	53,31,846.00	6,07,64,143.86	4,05,40,916.86
Campus Develop	5,36,65,640.70	-	50,92,979.00	-	-	5,87,58,619.70	52,62,390.00	56,21,213.00	-	56,21,213.00	5,31,37,406.70	5,36,65,640.70
Tennis Court	1,09,297.51	-	-	-	-	1,09,297.51	12,144.00	10,930.00	-	10,930.00	98,367.51	1,09,297.51
Sports Complex	1,50,907.46	-	-	-	-	1,50,907.46	16,767.00	15,091.00	-	15,091.00	1,35,816.46	1,50,907.46
Road & Culvert	3,30,697.48	-	-	-	-	3,30,697.48	36,744.00	33,070.00	-	33,070.00	2,97,627.48	3,30,697.48
BLOCK: 5%												
Staff Quarters	56,45,554.71	-	-	-	-	56,45,554.71	2,97,134.00	2,82,278.00	-	2,82,278.00	53,63,276.71	56,45,554.71
TOTAL	10,55,18,005.62	-	3,06,48,052.00	-	-	13,61,66,057.62	1,06,93,612.00	1,18,01,928.00	-	1,18,01,928.00	12,43,64,129.62	10,55,18,005.62

Particulars	Gross Block				DEPRECIATION			NET BLOCK				
	Cost as at the beginning of the year	Addition during the year		Deduction during the year	Adjustment change of dep rates	Cost as at the end of the year	As at the beginning of the year	For the year	Deduction during the year	At the end of the year	As at the current year-end	As at the Previous year-end
		Upto 30-Sep	After 30-Sep									
PLANT MACHINERY & EQPT												
BLOCK: 15%												
Vehicle	41,06,152.10	-	19,71,130.00	-	-	60,77,282.10	7,24,615.00	7,63,758.00	-	7,63,758.00	53,13,524.10	41,06,152.10
Development of Foerensic Laboratory	40,41,358.16	11,71,625.00	3,85,274.00	-	-	55,98,257.16	7,09,707.00	8,10,843.00	-	8,10,843.00	47,87,414.16	40,41,358.16
Training Equipment	18,84,582.80	-	-	-	-	18,84,582.80	3,32,573.00	2,82,687.00	-	2,82,687.00	16,01,895.80	18,84,582.80
Camp Equipment (project)	1,42,613.80	-	-	-	-	1,42,613.80	25,167.00	21,392.00	-	21,392.00	1,21,221.80	1,42,613.80
DG Set	7,07,664.39	-	-	-	-	7,07,664.39	1,24,882.00	1,06,150.00	-	1,06,150.00	6,01,514.39	7,07,664.39
EPABX	61,568.86	-	-	-	-	61,568.86	10,865.00	9,235.00	-	9,235.00	52,333.86	61,568.86
Lab Equipment	30,29,389.98	46,500.00	9,691.00	-	-	30,85,580.98	5,32,968.00	4,62,110.00	-	4,62,110.00	26,23,470.98	30,29,389.98
Office Equipment	16,36,744.07	97,580.00	1,44,710.00	-	-	18,79,034.07	2,87,580.00	2,71,002.00	-	2,71,002.00	16,08,032.07	16,36,744.07
Trg Equipment (Trg A/c)	18,61,955.01	-	-	-	-	18,61,955.01	3,10,314.00	2,79,293.00	-	2,79,293.00	15,82,662.01	18,61,955.01
Office Equipment (Trig A/c)	19,98,082.99	-	1,20,680.00	-	-	21,18,762.99	3,48,632.00	3,08,763.00	-	3,08,763.00	18,09,999.99	19,98,082.99
Office Equipment (Project)	6,963.97	-	-	-	-	6,963.97	1,229.00	1,045.00	-	1,045.00	5,918.97	6,963.97
Office Equipment (R/Proj)	28,59,893.62	-	28,160.00	-	-	28,88,053.62	4,86,657.00	4,31,096.00	-	4,31,096.00	24,56,957.62	28,59,893.62
Camp Equipment (R/Proj)	56,89,664.85	-	6,38,277.00	-	-	63,27,941.85	10,01,361.00	9,01,321.00	-	9,01,321.00	54,26,620.85	56,89,664.85
TOTAL	2,80,26,634.60	13,15,705.00	32,97,922.00	-	-	3,26,40,261.62	48,96,550.00	46,48,695.00	-	46,48,695.00	2,79,91,566.62	2,80,26,634.60
AC Plant : BLOCK : 10%												
AC Plant	5,24,582.46	30,857.00	-	-	-	5,55,439.46	92,573.00	55,544.00	-	55,544.00	4,99,895.46	5,24,582.46
TOTAL	5,24,582.46	30,857.00	-	-	-	5,55,439.46	92,573.00	55,544.00	-	55,544.00	4,99,895.46	5,24,582.46
FURNITURE, FIXTURES : BLOCK : 10%												
Furnitures & Fixtures	31,89,765.73	55,087.00	2,23,047.00	-	-	34,67,899.73	3,52,434.00	3,35,637.00	-	3,35,637.00	31,32,262.73	31,89,765.73
Furniture & Fixture (Trg)	2,81,048.59	-	-	-	-	2,81,048.59	31,228.00	28,105.00	-	28,105.00	2,52,943.59	2,81,048.59
TOTAL	34,70,814.32	55,087.00	2,23,047.00	-	-	37,48,948.32	3,83,662.00	3,63,742.00	-	3,63,742.00	33,85,206.32	34,70,814.32

FORM OF FINANCIAL STATEMENTS(NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
SCHEDULES FORMING PART OF BALANCE SHEET FOR THE YEAR ENDED 31 MARCH 2018

	(Amt. Rs.)	
SCHEDULE :9 INVESTMENTS FROM EARMARKED/ENDOWMENT FUNDES	Current Year	Previous Year
(1) In the Govt. Securities	-	-
(2) Other approved Securities	-	-
(3) Shares	-	-
(4) Debentures and Bonds	-	-
(5) Subsidiaries and Joint Ventures	-	-
(6) Others (Specify)	-	-
TOTAL	-	-

FORM OF FINANCIAL STATEMENTS(NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
SCHEDULES FORMING PART OF BALANCE SHEET FOR THE YEAR ENDED 31 MARCH 2018

	(Amt. Rs.)	
SCHEDULE :10 INVESTMENT - OTHERS	Current Year	Previous Year
(1) In the Govt. Securities		
(2) Other approved Securities		
(3) Shares		
(4) Debentures and Bonds		
Investment in RBI Bond (GPF)	-	-
Investment in RBI Bond (Pension)	-	-
Investment in RBI Bond (Corpus Fund)	4,20,00,000.00	-
(5) Subsidiaries and Joint Ventures		
(6) Others (Specify)		
Investment in GIA	5,19,80,625.00	5,19,80,625.00
Investment in Training Account	-	-
Investment in FDR (GPF)	10,52,23,896.00	9,81,99,152.00
Autosweep FDR-GPF	75,00,000.00	30,00,000.00
Investment in FDR (Pension Fund)	6,10,25,558.00	7,53,77,842.00
FDR Corpus Fund	18,34,21,309.00	16,33,20,114.00
Autosweep FDR Corpus fund	3,05,00,000.00	1,05,00,000.00
Autosweep FDR-Pension Fund	45,00,000.00	45,00,000.00
TOTAL	48,61,51,388.00	40,68,77,733.00



(P.K. Aggarwal)
Finance Officer



(Dr. V.B. Mathur)
Director

FORM OF FINANCIAL STATEMENTS(NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
SCHEDULES FORMING PART OF BALANCE SHEET FOR THE YEAR ENDED 31 MARCH 2018

	(Amt. Rs.)	
SCHEDULE :11 CURRENT ASSETS, LOANS, ADVANCES ETC.	Current Year	Previous Year
(A) CURRENT ASSETS		
(1) Inventories		
Closing Stock of Steel & Cement	-	-
Advance paid for Journals (Grant in Aid)	-	-
Closing Balance of WII Publication	3,13,620.00	3,18,921.00
(2) Sundry Debtors		
(1) Debts Outstanding for a period exceeding six months	-	-
(2) Others (Specify)		
(3) Cash balances in hand (including cheques/drafts and imprest)		
Grant-in-Aid A/c	230.00	10,801.00
Training A/c	-	-
Pension Fund A/c	-	-
GPF A/c	-	-
Corpus Fund	-	-
(4) Bank Balances		
(1) With Scheduled Banks		
Grant-in-Aid A/c	7,84,63,541.04	5,44,49,195.04
Training A/c	1,51,27,946.82	1,47,91,878.00
Pension Fund A/c	11,36,534.00	12,32,894.00
GPF A/c	14,09,428.00	10,15,421.00
Corpus fund No 4032	15,02,120.67	12,68,477.67
Endowment Funds	6,45,92,130.00	2,49,92,327.52
TOTAL (A)	16,25,45,550.53	9,80,79,915.23
(B) LOANS, ADVANCES AND OTHER ASSETS	Current Year	Previous Year
(1) Loans		
(1) Staff		
Loan & Advances to Staff FA(MSc) TA(MSc) FA TA LTC Med Adv)	-	68,400.00
Advance for expenses (Staff) (0+ 0+ 0+ 0+ 1158000)	11,58,000.00	8,88,810.00
Advance for expenses (Research Projects)	43,762.00	1,90,362.00
Land Acquisition Charges (Deposited in Hon'ble High Court)	1,80,00,000.00	1,80,00,000.00
Loan from other projects	-	12,812.00
Advance for expenses (Training Account)	1,55,000.00	1,45,000.00
Advance for IIT Kanpur	9,91,200.00	-
GPF	-	5,400.00
Advance for Vehicle Insurance	65,359.00	65,359.00
(2) Other entities engaged in activities /objectives similar to		
(3) Others (Specify)		
Adv for civil work to CPWD	13,53,505.00	90,76,438.00

Loan for World Environment Day (MoEF)	2,80,984.00	2,80,984.00
Loan for WCF workshop	30,253.00	30,253.00
Advance payment to CCI	2,18,92,077.00	4,43,00,000.00
Advance Payment-Training Account	2,58,558.00	3,90,181.00
(2) Advances and other amounts recoverable in cash or in kind or		
(1) On Capital Accounts		
(2) Prepayments		
(3) Others (Specify)		
Security Deposit for Electricity Connection	4,12,283.00	4,12,283.00
TDS to be refunded by the ITO (Pension Fund)	43,89,787.00	43,22,984.00
TDS to be refunded by the ITO (GPF)	22,77,757.00	22,77,757.00
TDS to be refunded by the ITO (Corpus fund)	29,07,227.00	29,07,227.00
(3) Income Accrued		
(1) On Investments from Earmarked / Endowment Funds		
(2) On Investments -Others		
Interest Accrued on FDR (GIA)	82,77,056.00	42,71,427.00
Interest Accrued on FDR (Training Account)	-	-
Interest Accrued on FDR (GPF)	1,50,62,895.00	70,24,744.00
Interest Accrued on FDR (Pension Fund)	1,17,90,869.00	65,01,971.00
Interest Accrued on FDR (Corpus Fund)	2,29,22,797.00	1,09,22,054.00
(3) On Loans and Advances		
(4) Others (Specify)		
Training Cost Accrued But not Received	8,38,375.00	8,38,375.00
Pre-receipted bill issued but not received	-	-
(4) Expenses payable towards capital/fixed Assets		
(1) Research Project (2013-14)	-	13,678.00
(2) Grant in Aid (2015-16)	82,200.00	1,12,200.00
(3) Grant in Aid (2016-17)	88,620.00	14,81,765.00
(4) Research Project (2017-18)	18,76,671.00	-
(5) Grant in Aid (2017-18)	3,03,46,056.00	-
TOTAL (B)	14,55,01,291.00	11,45,40,464.00
TOTAL (A+B)	30,80,46,841.53	21,26,20,379.23


(P.K. Aggarwal)
Finance Officer


(Dr. V.B. Mathur)
Director

FORM OF FINANCIAL STATEMENTS(NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 2017-18

		(Amt. Rs.)	
	Schedule	Current Year	Previous Year
INCOME			
Income from Sales/Services	12	-	-
Grants/Subsidies	13	30,08,55,317.00	24,51,26,680.00
Fees/Subscriptions	14	3,46,18,977.00	2,59,03,179.00
Income from Investments (from earmarked/endowment Funds Transferred to funds)	15	-	-
Income from Royalty, Publication etc	16	6,31,122.00	27,89,895.00
Interest Earned	17	44,59,489.00	43,76,568.00
Other Income	18	-	-
Increase/decrease) in stock of Finished goods and works-in-progress	19	-	-
TOTAL (A)		34,05,64,905.00	27,81,96,322.00
EXPENDITURE			
Establishment Expenses (Plan & Non Plan)	20	22,40,76,923.00	17,07,06,897.00
Other Administrative Expenses (Plan & Non Plan)	21	14,49,18,958.17	8,35,10,903.01
Expenditure on Grants, Subsidies etc.	22	-	-
Expenditure on Grants, Subsidies etc.	23	-	-
Significant account Policies (notes on Accounts)	24	-	-
CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS (Illustrative)	25	-	-
Total (B)		36,89,95,881.17	25,42,17,800.01
Balance being excess of Income over Expenditure (A-B)		-2,84,30,976.17	2,39,78,521.99
Prior period items		-4,26,233.00	-
BALANCE BEING SURPLUS (DEFICIT) CARRIED TO CORPUS/CAPITAL FUND		-2,88,57,209.17	2,39,78,521.99

FORM OF FINANCIAL STATEMENTS(NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 2017-18

		(Amt. Rs.)	
SCHEDULE :12 INCOME FROM SALES/SERVICES		Current Year	Previous Year
(1) Income from Sales			
(a) Sale of Finished Goods		-	-
(b) Sale of Raw Material		-	-
(c) Sale of Scraps		-	-
(2) Income from Services			
(a) Labour and Processing Charges		-	-
(b) Professional/Consultancy Services		-	-
(c) Agency Commission and Brokerage		-	-
(d) Maintenance Services (Equipment/Property)		-	-
(e) Other (Specify)		-	-
TOTAL		-	-

FORM OF FINANCIAL STATEMENTS(NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 2017-18

	(Amt. Rs.)	
SCHEDULE :13 GRANTS/SUBSIDIES	Current Year	Previous Year
(1) Central Government		
Grant –in– Aid from MoEF	32,97,53,000.00	26,50,00,000.00
Balance Grant 2016-17	99,47,000.00	-
Amt capitalized	(-) 3,88,44,683.00	1,98,73,320.00
Total	30,08,55,317.00	24,51,26,680.00
(2) State Governments (s)		
(3) Government Agencies	-	-
(4) Institutions/Welfare Bodies	-	-
(5) International Organisations	-	-
(6) Others (Specify)		
WII Contribution (Pension A/c)	-	-
TOTAL	30,08,55,317.00	24,51,26,680.00

FORM OF FINANCIAL STATEMENTS(NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 2017-18

	(Amt. Rs.)	
SCHEDULE :14 FEES/ SUBSCRIPTIONS	Current Year	Previous Year
(1) Entrance Fees		
M.Sc.Course Fee	34,60,093.00	23,46,848.00
(2) Annual Fees/ Subscriptions	-	-
(3) Seminar/ Program Fees		
Seminar/ Workshop Fees	-	-
(4) Consultancy Fees		
Consultancy refund	-	-
(5) Others (Specify)		
Other Receipt (Training)	1,48,98,884.00	1,60,56,331.00
Receipt for Training courses	1,60,00,000.00	75,00,000.00
Other Project Grant	2,60,000.00	
Pre-receipted bill issued but not received	-	-
Receipt for Training Cost	-	-
TOTAL	3,46,18,977.00	2,59,03,179.00

FORM OF FINANCIAL STATEMENTS(NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 2017-18

		(Amt. Rs.)			
SCHEDULE :15 INCOME FROM INVESTMENTS		Investment from Earmarked fund		Investment-Other	
(income on Investment from Earmarked/Endowment funds transferred to Funds)		Current Year	Previous Year	Current Year	Previous Year
1.	Interest				
	(a) On Govt Securities	-	-	-	-
	(b) Other Bonds/Debentures	-	-	-	-
2.	Dividends:				
	(a) On Shares	-	-	-	-
	(b) On Mutual Fund Securities	-	-	-	-
3.	Rents	-	-	-	-
4.	Others (Specify)	-	-	-	-
TOTAL		-	-	-	-

FORM OF FINANCIAL STATEMENTS(NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 2017-18

		(Amt. Rs.)	
SCHEDULE :16 INCOME FROM ROYALTY, PUBLICATION ETC.		Current Year	Previous Year
(1)	Income from Royalty	-	-
(2)	Income from Publications	-	-
(3)	Others (Specify)		
	Genetic lab	-	70,000.00
	Misc. Receipts	5,82,402.00	12,22,474.00
	Intrest on HBA	-	1,72,370.00
	Misc Income from Lib	-	-
	WII Products	-	17,625.00
	House Licence Fee	46,320.00	6,60,010.00
	Bus Charges	-	2,17,386.00
	Electricity & Water Charges	2,400.00	4,30,030.00
	Telephone	-	-
TOTAL		6,31,122.00	27,89,895.00

FORM OF FINANCIAL STATEMENTS(NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 2017-18

	(Amt. Rs.)	
SCHEDULE :17 INTEREST EARNED	Current Year	Previous Year
(1) On Term Deposits		
(1) With Scheduled Banks		
Int. on Bank Deposit	-	-
Interest on FDR	-	-
Interest on Investment	-	-
(2) With Non-Scheduled Banks	-	-
(3) With Institutions	-	-
(4) Others (Specify)	-	-
Int. on Investment(Training)	-	-
Interest (Training)	-	-
(2) On Savings Account		
(1) With Scheduled Banks		
Int. on Savings Account	-	-
Accrued Interest on FDR A/c (GIA)	40,05,629.00	40,89,703.00
Accrued Interest on FDR A/c (Training A/c)	-	-
Interest on Saving A/c (Training A/c)	4,53,860.00	2,48,834.00
Interest Received Training account against FDR	-	38,031.00
(2) With Non-Scheduled Banks	-	-
(3) Post Office Savings Account	-	-
(4) Others (Specify)	-	-
(3) On Loans		
(1) Interest on Loan & Advance	-	-
(2) Others	-	-
(4) Interest on Debtors and Other Receivables		
TOTAL	44,59,489.00	43,76,568.00

FORM OF FINANCIAL STATEMENTS(NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 2017-18

	(Amt. Rs.)	
SCHEDULE :18 OTHER INCOME	Current Year	Previous Year
(1) Profit on Sale/Disposal of Assets		
(1) Owned Assets	-	-
(2) Assets acquired out of grants, or received free of cost	-	-
(2) Export Incentives realized	-	-
(3) Fees for Misc. Services	-	-
(4) Others (Specify)		
Misc. Receipts	-	-
EMD Forfeited	-	-
Receipt for Project	-	-
TOTAL	-	-

FORM OF FINANCIAL STATEMENTS(NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 2017-18

		(Amt. Rs.)
SCHEDULE :19 INCREASE/DECREASE IN STOCK OF FINISHED GOODS	Current Year	Previous Year
(1) Closing Stock		
(1) Finished Goods		
Closing Stock of WII Publication	-	-
(2) Work-in-progress	-	-
(2) Less : Opening Stock		
(1) Finished Goods	-	-
(2) Work-in-progress	-	-
TOTAL	-	-

FORM OF FINANCIAL STATEMENTS(NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 2017-18

				(Amt. Rs.)
SCHEDULE :20 ESTABLISHMENT EXPENSES	Less of Last yr committed	Current Year	Previous Year	
		Plan	Non Plan	Plan Non Plan
(1) Salaries and Wages				
Salary & Wages (Training A/c)		12,92,931.00	-	6,94,642.00 -
Honorarium		1,47,000.00	-	99,400.00 -
Medical		1,02,08,418.00	-	65,84,065.00 -
Fellowship - Forensic Cell		5,85,664.00	-	14,69,287.00 -
Salaries & Allowances		18,53,60,029.00	-	13,44,40,280.00 1,50,00,000.00
Stipend		8,00,459.00	-	6,66,401.00 -
Fellowship & Wages (Research Project)		78,15,256.00	-	30,31,632.00 -
HRA		50,70,088.00	-	- -
(2) Allowances and Bonus				
Bonus		6,08,307.00	-	9,09,385.00 -
OTA		31,325.00	-	1,05,986.00 -
LTC		18,14,759.00	-	18,16,184.00 -
Corps Fund (Training)		-	-	- -
Transferred to Corpus Fund		-	-	- -
Honorarium (Training A/c)		-	-	- -
(3) Others (Specify)				
(4) Contribution to Other Fund (Specify)				
Leave Salary and Pension Contr.		26,58,549.00	-	19,53,839.00 -
(5) Staff Welfare Expenses				
Uniforms		-	-	- -
(6) Expenses on Employees Retirement and Terminal Benefits				
Final Payment				
Leave Encashment & Gratuity		74,45,764.00	-	38,29,544.00 -
(7) Others (Specify)				
Camp Expenses (Research Project)		2,38,374.00	-	1,06,252.00 -
TOTAL		22,40,76,923.00	-	15,57,06,897.00 1,50,00,000.00



(P.K. Aggarwal)
Finance Officer



(Dr. V.B. Mathur)
Director

FORM OF FINANCIAL STATEMENTS(NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 2017-18

			(Amt. Rs.)			
SCHEDULE :21 OTHER ADMINISTRATIVE EXPENSES	R&P	Committed	Current Year		Previous Year	
			Plan	Non Plan	Plan	Non Plan
AMC of Computers	24,24,283.00	-	24,24,283.00	-	20,18,912.00	-
Annual Research Seminar	6,64,284.00	18,000.00	6,82,284.00	-	4,99,383.00	-
Contingencies/Misc. (Research Project)	7,42,258.00	-	7,42,258.00	-	6,31,440.00	-
Cont./Misc. (Training Account)	24,99,511.17	-	24,99,511.17	-	16,65,322.46	-
Expenses for Library	-	82,888.00	82,888.00	-	99,890.00	-
Electricity and Water Charges	98,79,024.00	-	98,79,024.00	-	96,61,368.00	-
Maint. Of WII Campus	5,67,350.00	-	5,67,350.00	-	5,42,991.00	-
Estate Security	1,23,43,182.00	-	1,23,43,182.00	-	62,03,086.00	-
Lab Expenses (Research lab)	2,92,665.00	1,07,808.00	4,00,473.00	-	2,28,527.00	-
Lab Expenses (Forensic Lab)	7,59,325.00	99,54,135.00	1,07,13,460.00	-	12,93,966.00	-
Lab Expenses (Genetic Lab)	30,291.00	-	30,291.00	-	2,02,811.00	-
Legal Expenses	3,07,992.00	-	3,07,992.00	-	2,87,361.00	-
M.Sc. Course Expenditure	45,32,445.00	-	45,32,445.00	-	27,14,779.00	-
Operational Expenses 62145+362796	4,24,941.00	4,38,209.00	8,63,150.00	-	8,65,996.00	-
Corpur Fund Transfer (Training Account)	1,03,29,860.00	-	1,03,29,860.00	-	2,00,000.00	-
POL & Maintenance of Vehicle (Research Project)	6,04,659.00	-	6,04,659.00	-	5,55,787.00	-
POL & Maintenance of Vehicle (Training A/c)	5,58,610.41	-	5,58,610.41	-	9,67,974.00	-
POL for Vehicles	6,75,924.00	-	6,75,924.00	-	6,20,495.00	-
Postage & Telegrams	1,99,041.00	-	1,99,041.00	-	1,32,300.00	-
Printing & Binding	15,25,681.00	-	15,25,681.00	-	34,500.00	-
Borading & Lodging (Training Account)	1,12,03,824.00	-	1,12,03,824.00	-	59,61,507.55	-
Repair & Maintenance of Vehicles	7,05,972.00	-	7,05,972.00	-	7,90,171.00	-
Vehicle insurance	3,37,536.00	-	3,37,536.00	-	-	-
Repair of Vehicle (Training Account)	2,20,262.59	-	2,20,262.59	-	17,925.00	-
Repair & Maintenance furniture & Fixture	1,09,558.00	-	1,09,558.00	-	1,12,527.00	-
Sports	52,787.00	-	52,787.00	-	3,10,300.00	-
Hospitality/entertainment	3,15,898.00	-	3,15,898.00	-	-	-
Sport Goods (Training Account)	67,294.00	-	67,294.00	-	7,366.00	-
Stationery	8,76,968.00	3,40,174.00	12,17,142.00	-	4,43,754.00	-
Training Allowance	-	-	-	-	-	-
Telephone & TC	6,15,238.00	-	6,15,238.00	-	4,86,360.00	-
Training & Skill Upgradation of Staff	-	-	-	-	-	-
Training Cost Expenditure	1,60,00,000.00	-	1,60,00,000.00	-	75,00,000.00	-
Travel Exp. (Grant in Aid)	24,22,878.00	-	24,22,878.00	-	12,97,997.00	-
Travel Exp. (Research Project)	6,65,226.00	-	6,65,226.00	-	4,62,066.00	-

		(Amt. Rs.)			
SCHEDULE :21 OTHER ADMINISTRATIVE EXPENSES	R&P	Committed	Current Year		Previous Year
			Plan	Non Plan	Plan Non Plan
Travelling Expenses (Training A/c)	47,47,866.00	-	47,47,866.00	-	57,70,899.00 -
Maintinancae of civil work	64,28,938.00	-	64,28,938.00	-	10,11,650.00 -
Add : Expenditure Plant & Treee (As pointed out by Audit)	-	-	-	-	- -
Wild Life Health Lab	-	-	-	-	1,00,000.00 -
Harberium	-	-	-	-	34,242.00 -
Complementary-Lib.	5,301.00	-	5,301.00	-	17,958.00 -
Repair of Building (Training Account)	97,459.00	-	97,459.00	-	10,64,878.00 -
DST Funded Asatic Lion & GPS telemetry	-	-	-	-	3,00,000.00 -
Antartica Programme	6,40,389.00	-	6,40,389.00	-	- -
Opening Bal. Grant transfer for Next Financial Year 2017-18	99,47,000.00	-	99,47,000.00	-	82,77,000.00 -
Funds Transfer of Misc. Receipt to Corpus A/c	76,79,894.00	-	76,79,894.00	-	- -
Depriication during the year 20859968+616161	2,14,76,129.00	-	2,14,76,129.00	-	2,01,17,414.00 -
TOTAL		1,09,41,214.00	14,49,18,958.17	-	8,35,10,903.01 -

FORM OF FINANCIAL STATEMENTS(NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 2017-18

		(Amt. Rs.)			
SCHEDULE :22 EXPENDITURE ON GRANTS, SUBSIDIES ETC...		Current Year		Previous Year	
		Plan	Non Plan	Plan	Non Plan
(a) Grants given to Institutions/Organisation		-	-	-	-
(b) Subsidies given to Institution/Organisations		-	-	-	-
TOTAL		-	-	-	-

FORM OF FINANCIAL STATEMENTS(NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 2017-18

		(Amt. Rs.)			
SCHEDULE :23 EXPENDITURE ON GRANTS, SUBSIDIES ETC...		Current Year		Previous Year	
		Plan	Non Plan	Plan	Non Plan
(a) On Fixed Loans		-	-	-	-
(b) On other Loans (including Bank Chargs)		-	-	-	-
(C) Other (Specify)		-	-	-	-
TOTAL		-	-	-	-

FORM OF FINANCIAL STATEMENTS(NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 2017-18

SCHEDULE – 24 SIGNIFICANT ACCOUNTING POLICES (Notes on Accounts)

1	ACCOUNTING CONVENTION The financial statement are prepared on the basis of historical cost convention, unless otherwise stated and on the accrual method of accounting.
2	INVENTORY VALUATION
2.1	Stores and spares (including machinery spares) are valued at cost.
2.2	Nil
3	INVESTMENTS
3.1	Investments classified as Long term investments are carried at cost. Provision for decline, other than temporary, is made on carrying cost of such investments.
3.2	Investments classified as current are carried at lower of cost and fair value. Provision for shortfall In the value of such investments is made for each investment considered individually and not on a global basis.
3.3	Cost includes acquisition expenses like brokerage, transfer stamps.
4	EXCISE DUTY Nil
5	FIXED ASSETS
5.1	Fixed assets are stated at cost of acquisition inclusive of inward freight, duties and taxes and incidental and direct expenses related to acquisition. In respect of projects involving construction, related pre-operational expenses (including interest on loan for specific project prior to its completion), form part of the value of the assets. capitalized
5.2	Fixed assets received by way of non-monetary grants, (other than towards the Corpus Fund), are capitalized at values stated by corresponding credit to capital Reserve.
6	DEPRECIATION
6.1	Depreciation is provided on "Written Down Value method" as per specified in the Income-tax, 1961 except depreciation on cost adjustments arising on account of conversion of foreign currency, liabilities for acquisition of fixed assets, which is amortized over the residual life of the respective assets.
6.2	In respect of additions to/deductions from fixed assets during the year, depreciation is considered on pro-rata basis.
6.3	Nil
7	MISCELLANEOUS EXPENDITURE Nil
8	ACCOUNTING FOR SALES Nil
9	GOVERNMENT GRANT/SUBSIDIES
9.1	Government grants of the natures of contribution towards capital cost of setting up projects are treated as Capital Reserve
9.2	Government grants in respect of specific assets acquired are shown as a deduction from the cost of the related assets.
9.3	Government grants /subsidy are accounted on realization basis.
10	FOREIGN CURRENCY TRANSACTION
10.1	Transaction denominated in foreign currency are accounted at the exchange rate prevailing at the date of the transaction.
10.2	Current assets, foreign currency loans and current liabilities are converted at the exchange rate prevailing as at the year end and the resultant gain/loss is adjustment to cost of fixed assets, if the foreign currency liability related to fixed assets, and in other cases is considered to revenue
11	LEASE Lease rentals are expensed with reference to lease terms.
12	RETIREMENT BENEFITS The pension scheme followed in the institute is based on CCS Pension Rules, for the employees appointed prior to 01 Jan 2004. The New Pension Scheme(NPS) is in operation for the employees recruited on or after 01 Jan 2004
13	PRIOR PERIOD ITEMS
13.1	Prior period items, Extra ordinary items and changes in Accounting Policies are accounted in accordance with Accounting Standard-5.

FORM OF FINANCIAL STATEMENTS(NON-PROFIT ORGANISATIONS)
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 2017-18

		(Amt. Rs.)			
SCHEDULE :25 – CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS (Illustrative)		Current Year		Previous Year	
		Plan	Non Plan	Plan	Non Plan
1	CONTINGENT LIABILITIES				
1.1	Claims against the Entity not acknowledged as debts	-	-	-	-
1.2	In respect of :				
	Bank guarantees given by/on behalf of the entity	-	-	-	-
	Letters of Credit opened by Bank on behalf of the Entity	-	-	-	-
	Bills discounted with banks	-	-	-	-
1.3	Disputed demands in respect of :				
	Income Tax	-	-	-	-
	Sales-Tax	-	-	-	-
	Municipal Taxes	-	-	-	-
1.4	In respect of claims from parties for non-execution of orders, but contested by the Entity	-	-	-	-
2	CAPITAL COMMITMENTS				
	Estimated value of contracts remaining to be executed on capital account and not provided for (net of advance)	-	-	-	-
3	LEASE OBLIGATIONS				
	Future obligations for rentals under finance lease arrangements for Plant and Machinery amount to	-	-	-	-
4	CURRENT ASSETS, LOANS AND ADVANCES				
	In the opinion of the Management, the current assets, loans and advances have a value on realization in the ordinary course of business, equal at least to the aggregate amount shown in the Balance Sheet.	-	-	-	-
5	TAXATION				
	In view of there being no taxable income under Income-tax Act 1961, no provision for income tax has been considered necessary	-	-	-	-
6	FOREIGN CURRENCY TRANSACTIONS				
6.1	Value of Imports calculated on C.I.F. Basis :				
	Purchase of finished Goods	-	-	-	-
	Raw Materials & Components (including in transit)	-	-	-	-
	Capital Goods	-	-	-	-
	Stores, Spares and Consumables	-	-	-	-
6.2	Expenditure in foreign currency:				
	a) Travel	-	-	-	-
	b) Remittances and Interest payment to Financial Institutions/Banks in Foreign Currency	-	-	-	-
	c) Other expenditure:				
	Commission on Sales	-	-	-	-
	Legal and Professional Expenses	-	-	-	-
	Miscellaneous Expenses	-	-	-	-

				(Amt. Rs.)
SCHEDULE :25 - CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS (Illustrative)		Current Year		Previous Year
	Plan	Non Plan	Plan	Non Plan
6.3 Earnings:				
Value of Exports on FOB basis	-	-	-	-
6.4 Remuneration to auditors				
As auditors				
Taxation Matters	-	-	-	-
For Management Services	-	-	-	-
For certification	-	-	-	-
other	-	-	-	-
7 Corresponding figures for the previous year have been regrouped/rearranged, wherever necessary	-	-	-	-
8 Schedules 1 to 25 are annexed to and form an integral part of the Balance Sheets as at 31 Mar 2018 and the Income and Expenditure Account for the year ended on that date.				
TOTAL	-	-	-	-

GENERAL PROVIDENT FUND ACCOUNT NO. 518502010001297
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 2017-18

Income		Expenditure	
Particulars	Amount	Particulars	Amount
Opening Balance	4015421.00	Final payment of GPF	3253599.00
Interest Received on Saving Account	454855.00	Investment	9000000.00
Interest Earned on RBI Bond	0.00	Advance/Withdrawal paid	7076958.00
GPF Contribution	23769709.00	Interest Accrued and invested	0.00
Encashment of RBI Bonds	0.00	TDS on Interest if FDR	0.00
Interest Accrued on FDR	0.00	Loan to Deputationists	0.00
Refunded of Loan	0.00	Bank Balance	8909428.00
Total	28239985.00	Total	28239985.00

PENSION FUND ACCOUNT NO. 518502010000018
WILDLIFE INSTITUTE OF INDIA, CHANDRABANI, DEHRADUN
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 2017-18

Income		Expenditure	
Particulars	Amount	Particulars	Amount
Opening Balance	5732894.00	Investment in FDR	0.00
Interest Received on Saving Account	131487.00	Commuted Value of Pension	7552311.00
Interest Earned on FDR	759918.00	Family Pension/ Pension	23044652.00
Interest Earned on RBI Bonds	0.00	Interest Accrued and invested	0.00
WII Contribution	8754943.00	Loan	0.00
Encashment of FDR	20854255.00		
Encashment of RBI Bonds	0.00		
Interest Accrued	0.00		
Refund of Loan	0.00	Bank Balance	5636534.00
Total	36233497.00	Total	36233497.00

FORM OF FINANCIAL STATEMENTS (NON-PROFIT ORGANISATIONS)
Wildlife Institute of India, Dehradun
Fixed Assets Purchased from Funds reflected in Schedule-3
ACCOUNT FOR THE YEAR ENDED 2017-18

Particulars	Gross Block				Depreciation		Net Block				
	Addition during the year										
	Cost as at the beginning of the year	Upto 30-Sep	After 30-Sep		Deduction during the year	Cost as at the end of the year	As at the beginning of the year	For the year	At the end of the year	As at the current year-end	As at the Previous year-end
PLANT MACHINERY & EQPT											
BLOCK: 15%											
Office Equipment	5179959.98	977287.00		1174412.00	-	7331658.98	-	1011667.95	1011667.95	6319991.03	5179959.98
Camp Equipment	3454055.21	147900.00		128690.00	-	3730645.21	-	549945.03	549945.03	3180700.18	3454055.21
TOTAL	8634015.19	1125187.00		1303102.00	-	11062304.21	-	1561613.00	1561613.00	9500691.21	8634015.19
FURNITURE, FIXTURES											
BLOCK : 10%											
Furnitures & Fixtures	220508.06	-		-	-	220508.06	-	22050.81	22050.81	198457.25	220508.06
TOTAL	220508.06	-		-	-	220508.06	-	22050.81	22050.81	198457.25	220508.06
BOOKS : BLOCK : 60%											
Books	27814.82	-		-	-	27814.82	-	16688.89	16688.89	11125.93	27814.82
TOTAL	27814.82	-		-	-	27814.82	-	16688.89	16688.89	11125.93	27814.82
GRAND TOTAL	8882338.06	1125187.00		1303102.00	-	11310627.09	-	1600352.70	1600352.70	9710274.39	8882338.06



(P.K. Aggarwal)
Finance Officer



(Dr. V.B. Mathur)
Director

ASSESSING THE IMPACT OF POWER-LINES ON AVIAN SPECIES IN THE ARID PLAINS OF WESTERN GUJARAT
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Bal.	-	Manpower	1,43,548.00
Grant Received	8,10,000.00	Equipment	1,11,260.00
Interest Received	1,200.00	Institutional Charges	1,21,500.00
		Expenditure Total	3,76,308.00
		Bank Balance A/c No. 56170	4,34,892.00
Grand Total	8,11,200.00	Grand Total	8,11,200.00

DST FUNDED-WOMEN SCIENTIST (WOS) PROJECT
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Bal.	-	Manpower	4,50,645.00
Grant Received	10,50,000.00	Consumables	1,39,586.00
Interest Received	12,334.00	Institutional Charges	90,000.00
		Expenditure Total	6,80,231.00
		Bank Balance A/c No. 55926	3,82,103.00
Grand Total	10,62,334.00	Grand Total	10,62,334.00

POPULATION GENETIC STRUCTURE IN TRACKING POACHING CASES OF INDIAN PANGOLIN
(MANIS CRASSICUDATE)
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Bal.	-	Manpower	4,69,333.00
Grant Received	9,60,000.00	Contingencies	8,597.00
Interest Received	3,025.00	Field Allowance	5,600.00
		Travel Expenditure	43,150.00
		Institutional Chares	1,00,000.00
		Advance for Expesnes	30,000.00
		Expenditure Total	5,56,680.00
		Bank Balance A/c No. 56111	3,06,345.00
Grand Total	9,63,025.00	Grand Total	9,63,025.00

**FORENSIC CELL REVOLVING
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Bal.	61,19,239.16	Consumables	1,13,607.00
Forensic Income	17,39,994.25	Contingency	44,358.00
Interest Received	2,51,199.00	Institutional Charges	14,977.00
		Travel Expenditure	2,36,478.00
		Advance for Expenses	49,000.00
		Expenditure Total	4,58,420.00
		Bank Balance A/c No. 53911	76,52,012.41
Grand Total	81,10,432.41	Grand Total	81,10,432.41

**CAUSES OF AVIAN DIVERSITY GRADIENTS ALONG THE HIMALAYAS
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Bal.	9,114.23	Manpower	21,832.00
Intt. Received	1,544.00	Contingency	5,467.32
Loan Received from A/c No. 55510	20,000.00		
		Expenditure Total	27,299.32
		Bank Balance A/c No. 53582	3,358.91
Grand Total	30,658.23	Grand Total	30,658.23

**UNDERSTANDING THE AMUR FALCON FALCO AMURENSIS, THEIR STOP OVER SITES IN NAGALAND AND
THEIR MIGRATORY ROUTES FOR BETTER CONSERVATION PLANNING
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Bal.	8,646.71	Manpower	2,24,071.00
Grant Received	20,28,250.00	Travel Expenditure	1,06,660.00
Interest Received	23,209.00	Base Camp Expenses	26,446.00
		Satellite Tagging and Tracking	3,80,645.58
		Field Equipment	2,094.00
		Contingency	21,778.50
		POL & Maint. Of Vehicle	44,740.00
		Loan: Director WII A/c No. 55467	11,029.00
		Advance for Expenses	20,000.00
		Expenditure Total	8,37,464.08
		Bank Balance A/c No. 55510	12,22,641.63
Grand Total	20,60,105.71	Grand Total	20,60,105.71

ECOLOGICAL RECONNAISSANCE AND CONSERVATION ASSESSMENT OF AVIFAUNA IN SAHYADRI TIGER RESERVE
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Bal.	2,70,880.00	Manpower	6,01,553.00
Grant Received	5,98,800.00	Contingency	73,939.00
Interest Received	8,213.00	Travel Expenditure	79,483.00
Advance	10,000.00	Field Wages	69,252.00
Loan Received Director WII A/c No. 55510	11,029.00	Institutional Charges	89,820.00
Loan Received from A/c 55742	4,00,000.00	Field Equipment	1,77,412.00
		Advance for Expenses	94,000.00
		Expenditure Total	11,85,459.00
		Bank Balance A/c No. 55467	1,13,463.00
Grand Total	12,98,922.00	Grand Total	12,98,922.00

MONITORING OF RE-INTRODUCED GAUR IN BANDHAVGARH TIGER RESERVE
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	2,46,206.50	Fellows & Wages	6,18,366.00
Grant Received	15,29,535.00	Travel Expenditure	1,50,147.00
Interest	20,064.00	Pol & Maint. Of Vehicle	2,13,741.00
		Contingency	26,549.00
		Total Expenditure	10,08,803.00
		Bank UBI-50629	7,87,002.50
Grand Total	17,95,805.50	Grand Total	17,95,805.50

MONITORING OF RE-INTRODUCED TIGERS IN SARISKA TIGER RESERVE
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	7,31,547.55	Manpower	10,81,155.00
Grant Received	30,32,400.00	Field Assistant	10,63,259.00
Interest	27,199.00	Travel Expenses	99,089.00
		POL & Maint. Of Vehicle	4,31,738.00
		Purchase of Drugs & Accessories	1,04,271.00
		Misc/Contingency/Base Camp	22,402.00
		Total Expenditure	28,01,914.00
		Bank UBI-50545	9,89,232.55
Grand Total	37,91,146.55	Grand Total	37,91,146.55

**MONITORING OF SOURCE POPULATION OF TIGERS IN RANTHAMBORE TIGER RESERVE
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	26,898.84	Fellowship and wages	27,500.00
Interest	1,086.00	Corpus fund	484.84
		Total Expenditure	27,984.84
		Bank UBI - 64	-
Grand Total	27,984.84	Grand Total	27,984.84

**RADIO COLLARING OF TIGERS IN SUNDERBANS TIGER RESERVE
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	6,29,705.20	Manpower	4,90,505.00
Grant Received	6,00,000.00	Veh POL & Boat hiring	24,132.00
Interest	22,953.00	Travel Expenditure	5,070.00
		Total	5,19,707.00
		Director WII A/c No. 55338	1,00,000.00
		Total Expenditure	6,24,777.00
		Bank UBI-50546	6,32,951.20
Grand Total	12,52,658.20	Grand Total	18,77,435.20

**RADIO TELEMETRY MONITORING SOURCE POPULATION OF TIGERS IN KANHA TIGER RESERVE
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	36,71,549.18	Manpower	15,79,369.00
Grant Received	44,51,000.00	Travel	25,432.00
Interest	1,41,821.00	Vehicle & POL	7,48,349.00
Advacne for Expenses	6,000.00	Equipment	3,30,750.00
		Base Camp	3,805.00
		Contingency & Publication	1,25,143.00
		Total Expenditure	28,12,848.00
		Outstanding:	
		Advacne for Expenses	18,000.00
		Bank UBI-50685	54,39,522.18
Grand Total	82,70,370.18	Grand Total	82,70,370.18

ECOLOGICAL MONITORING OF TIGER POPULATION IN PANNA LANDSCAPE (MP)
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	53,95,998.48	Manpower	11,08,576.00
Grants Received	18,00,000.00	Field Assistant	3,45,528.00
Interest	1,93,819.00	Vehicle Hiring & Fuel	13,49,792.00
		Contingency/Mis	1,69,870.00
		Travel	25,841.00
		Base Camp	87,655.00
		Meeting and Report Preparation	57,290.00
		Field Equipment	97,924.00
		Institutional charges	2,00,000.00
		Total expenditure	34,42,476.00
		Outstanding:	
		Forest Advance	5,000.00
		Tour Advance	40,000.00
		Loan to D/WII A/c No.-54159	10,00,000.00
		Bank UBI-50908	29,02,341.48
Grand Total	73,89,817.48	Grand Total	73,89,817.48

ECOLOGY OF CLOUDED LEOPARD (NEOFELIS NEBULOSA) IN AN EAST HIMALAYAN BIODIVERSITY HOTSPOT
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	12,73,303.00	Manpower	4,15,182.00
Grants received	4,00,000.00	Consumables	39,222.00
Interest	39,131.00	Travel	3,59,440.00
		Contingencies	1,54,613.00
		Equipment	3,32,443.00
		Total expenditure	13,00,900.00
		Bank UBI - 55559	4,11,534.00
Grand Total	17,12,434.00	Grand Total	17,12,434.00

**RECONCILING DEVELOPMENT WITH CONSERVATION: DELINEATING HABITAT PATCHES AND CORRIDORS
FOR GIR LIONS
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	7,21,870.00	Manpower	11,68,046.51
Loan:- Director WII A/c No. 50968	4,50,000.00	Field base rent	44,000.00
Grant received	5,50,000.00	Travel	45,442.00
Interest received	15,921.00	Contingencies	6,796.00
		Vehicle POL	2,62,606.00
		Publication	1,62,528.30
		Total Expenditure	16,89,418.81
		Bank UBI - 55692	48,372.19
Grand Total	17,37,791.00	Grand Total	17,37,791.00

**AN INVESTIGATION OF SPECIES OCCUPANCY PATTERNS AND NICHE DIFFERENTIATION AMONG
SYMPATRIC CARNIVORES ACROSS VARYING LAND USE AND DISTURBANCE REGIMES IN AND AROUND
MEHAO WILDLIFE SANCTUARY (ARUNACHAL PRADESH)
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	2,26,945.00	Manpower, Consumables, National Travel, Contingencies and Minor Equipments	3,40,705.00
Grant Received	4,00,000.00	Institutional Charges	40,000.00
Interest	12,177.00	Total Expenditure	3,80,705.00
		Outstanding Tour advance	15,000.00
		Bank UBI - 55358	2,43,417.00
Grand Total	6,39,122.00	Grand Total	6,39,122.00

**RESEARCH ON FLAGSHIP SPECIES IN DACHIGAM NATIONAL PARK, WANGATH CONSERVATION RESERVE
AND THAJWAS WILDLIFE SANCTUARY
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	4,16,185.00		
Interest	15,904.00		
		Total Expenditure	-
		Bank UBI - 55384	4,32,089.00
Grand Total	4,32,089.00	Grand Total	4,32,089.00

STUDY ON DIVERSITY AND ECOLOGY OF HERPETOFAUNA OF PANNA TIGER RESERVE (MP)
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	-	Manpower	2,55,314.00
Grant received	9,00,000.00	Field Assistant	55,440.00
Interest received	10,580.00	Travel	60,078.00
		Hiring of vehicle	1,12,260.00
		Equipment	91,108.00
		Institutional charges	1,10,000.00
		Consumables	49,489.00
		Total Expenditure	7,33,689.00
		Bank UBI – 55735	1,76,891.00
Grand Total	9,10,580.00	Grand Total	9,10,580.00

WL WORKSHOP ON CENSUS TECHNIQUE (H.P)
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	-	TA for PI	2,700.00
Grant received	7,69,995.00	Boarding Lodging	2,22,207.00
Interest	15,330.00	Travel Expenditure (Field Work)	96,960.00
		Stationery & Printing	23,534.00
		Contingencies	14,390.00
		Institutional charges	1,15,500.00
		Total Expenditure	4,75,291.00
		Bank UBI – 55756	3,10,034.00
Grand Total	7,85,325.00	Grand Total	7,85,325.00

AUGMENTATION AND LONG TERM MONITORING OF TIGER IN BUXA TIGER RESERVE (W.B)
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	-	Institutional charges	1,00,000.00
Grant received	73,90,000.00		
Interest	479.00		
		Total Expenditure	1,00,000.00
		Bank UBI – 56209	72,90,479.00
Grand Total	73,90,479.00	Grand Total	73,90,479.00

DEVELOPING SPATIAL DATABASE ON THE STATUS DISTRIBUTION AND ABUNDANCE OF UNGULATES IN AND AROUND THE FOREST DIVISION, KULLU (H.P)

RECEIPT & PAYMENT

FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	-	Institutional charges	30,000.00
Grant received	3,00,000.00		
		Total Expenditure	30,000.00
		Bank UBI -56366	2,70,000.00
Grand Total	3,00,000.00	Grand Total	3,00,000.00

DST- INSPIRED FACULTY FELLOW & DST FUNDED: METAPOPOPULATION DYNAMIC OF TIGER IN TERAI ARC LANDSCAPE PROJECT & POPULATION GENETICS OF SWAMP DEER

RECEIPT & PAYMENT

FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	4,30,328.00	Manpower	11,27,692.00
Grant Received - Swamp Deer	3,80,000.00	Equipment	64,180.00
Grant Received - Metapopulation	17,43,862.00	Contingency	1,23,265.00
Bank Interest for F.Y. 2017-18	17,750.00	Consumables	2,01,165.00
Loan from A/c No. 54992	2,00,000.00	Travel	34,519.00
		Total Expenditure	15,50,821.00
		Outstanding:	
		Forest Advance	52,000.00
		Balance as on 31.03.2018 A/c No: 54269	11,69,119.00
Grand Total	27,71,940.00	Grand Total	27,71,940.00

WCT PANTHERA FUNDED: METAPOPOPULATION DYNAMIC OF TIGER IN TERAI ARC LANDSCAPE PROJECT

RECEIPT & PAYMENT

FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	21,04,818.55	Manpower	3,05,700.00
Opening Balance of Advances	50,000.00	Fiel, Vehicle hiring, maintenance and logistics	1,83,832.00
Grant Received	11,82,510.00	Contingency	1,06,882.00
Interest Received	88,122.00	Equipment	45,550.00
		Lab Reagents	6,80,192.00
		Total Expenditure	13,22,156.00
		Outstanding:	
		Advance for Expenses	1,48,083.00
		Loan to DST Metapopulation	2,00,000.00
		Balance as on 31.03.2018 A/c No: 54992	17,55,211.55
Grand Total	34,25,450.55	Grand Total	34,25,450.55

**IMPLEMENTING RHINO DNA INDEXING SYSTEM TO COUNTER RHINO POACHING THREAT AND AID
POPULATION MANAGEMENT IN INDIA**

RECEIPT & PAYMENT

FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	7,68,872.00	Manpower	3,33,818.00
Grant Received	12,87,104.00	Travel	6,000.00
Bank Interest for F.Y. 2017-18	25,698.00	Contingency	5,585.00
		Laboratory Reagents	3,12,779.00
		Total Expenditure	6,58,182.00
		Outstanding:	
		Forest Advance	39,175.00
		Tour Advance	12,000.00
		Balance as on 31.03.2018 A/c No: 55585	13,72,317.00
Grand Total	20,81,674.00	Grand Total	20,81,674.00

NATIONAL MISSION ON HIMALAYAN STUDIES (NMHS)-HUMAN WILDLIFE CONFLICT PROJECT (PROJECT 1)

NATIONAL MISSION ON HIMALAYAN STUDIES (NMHS)-FELLOWSHIP PROJECT (PROJECT 2)

NATIONAL MISSION ON HIMALAYAN STUDIES (NMHS)-TREELINE PROJECT (PROJECT 3)

RECEIPT & PAYMENT

FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	20687008.00	Expenses: Human Wildlife conflict	
Grant Received HWC Project	11000400.00	Manpower	31,44,567.00
Grant Received Fellowship Project	7004360.00	Consumables	4,65,060.00
Grant Received Treeline Project	1431800.00	Contingency	6,79,361.73
Bank Interest for F.Y. 2017-18	656050.00	Travel	12,49,805.00
Advance for Expenses	280907.00	Equipment	75,05,331.15
		Activities & Other project cost	8,79,419.00
		Forest Advance	4,18,355.00
		Tour Advance	1,62,431.00
		Expenses: Fellowship	
		Manpower	44,20,919.00
		Contingency including travelling	27,31,346.00
		Forest Advance	2,59,069.00
		Tour Advance	61,960.00
		Expenses : Treeline	
		Manpower	6,58,956.00
		Consumables	67,430.00
		Contingency	64,608.00
		Travel	64,049.00
		Equipment	5,30,516.00
		Forest Advance	23,781.00
		Total Expenditure	2,33,86,963.88
		Loan: Director WII A/c No. 55352	5,00,000.00
		Loan: Director WII A/c No. 55018	5,00,000.00
		Balance as on 31.03.2018 (A/c No - 55352)	1,66,73,561.12
Grand Total	41060525.00	Grand Total	4,10,60,525.00

**DST-NMSHE PROGRAMME PROJECT-MICRO FLORA AND FAUNA & WILDLIFE ANIMAL POPULATION &
DST-NMSHE TEK PROJECT
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
		NMSHE Project	
Opening Balance	29,90,888.00	Manpower	74,61,596.00
Grant Received	3,00,00,000.00	Equipment	61,28,940.61
Bank Interest for F.Y. 2017-18	1,57,722.00	Travel & field work	27,72,677.00
Advance for Expenses	27,581.00	Consumables	1,95,002.00
Advance for CPWD	1,91,60,496.00	Overhead	1,00,000.00
		Workshop report & Miscellaneous	6,80,026.02
		Printing of reports/Contingencies	3,93,739.00
		Development of Lab (CPWD)	22,94,914.00
		Loan Refund: Director WII A/c No. 55526	75,00,000.00
		Adjustment transfer to JNU Project	1,41,934.00
		Expenses for Civil Work	1,91,60,496.00
		Total Expenditure	4,68,29,324.63
		Outstanding:	
		Forest Advance	8,02,994.00
		Tour Advance	3,16,558.00
		Loan : Director WII- JNU Project A/c No. 54272	25,000.00
		JNU Project:	
		Manpower	91,200.00
		Balance as on 31.03.2018 (A/C No - (54272)	42,71,610.37
Grand Total	5,23,36,687.00	Grand Total	5,23,36,687.00

**DST-NMSHE TEK PROJECT
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	0.00	Manpower	9,13,377.00
Adjustment Balance tfr from NMSHE project	1,41,934.00	Equipment	1,82,688.00
Grant Received	9,32,629.00	Travel & field work	98,908.00
Bank Interest for F.Y. 2017-18	4,567.00	Consumables	45,894.00
Director WII A/c No. 55352	5,00,000.00	Printing of reports/Contingencies	62,311.00
Director WII A/c No. 54272	25,000.00		
		Total Expenditure	13,03,178.00
		Outstanding:	
		Forest Advance	20,000.00
		Tour Advance	5,000.00
		Balance as on 31.03.2018 (A/C No - (55746)	2,75,952.00
Grand Total	16,04,130.00	Grand Total	16,04,130.00

**AITEP 2013-15/MSTRIPS/EVA PHY STREES & CORBETT RADIO TELEMTRY, GENETIC CONNECTIVITY
PROJECT
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	81,12,552.70	Fellowship	80,40,801.00
Grant AITEP	2,13,21,480.00	POL & eh Hiring	6,08,954.00
Grant AITEP	1,00,00,000.00	Travel Exp	15,02,085.00
Grant AITEP	1,25,00,000.00	Contingencies	33,56,061.00
Misc Receipts	6,27,200.00	field equipment	77,83,661.00
Grant 50546	4,00,000.00	Institutional Charges	35,09,000.00
Grant Genetic	2,00,000.00	MSTRIP Workshop	11,57,476.00
Grant MSTRIP	9,50,000.00	Map	2,06,250.00
Grant MSTRIP	50,00,000.00	Misc. Payment (Other Project-Grant)	27,79,035.00
Misc income	56,000.00	Printing/Publication	3,22,499.53
Intrest	3,52,156.00	Loan: Director WII A/c No. 55367	8,00,000.00
Advances for Expenses	1,81,768.00	Loan Refund: Director WII A/c No. 55338	6,00,000.00
		Loan: Director WII A/c No. 55692	4,50,000.00
		Total Expenses	3,11,15,822.53
		Forest/Tour Advance	7,59,804.00
		Bank UBI-53431	2,78,25,530.17
Grand Total	5,97,01,156.70	Grand Total	5,97,01,156.70

**WII - TIGER CELL & PALAMAU TIGER PROJECT
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	3,00,267.00	Manpower	29,48,651.00
Grant Received	85,40,280.00	POL & eh Hiring	9,238.00
Intrest	34,960.00	Travel Exp	5,36,648.00
Refund of loan	8,00,000.00	Contingencies	23,982.75
		Equipment	4,24,000.00
		Total expenses	39,42,519.75
		Tour Advance	1,60,000.00
		Tour Advance	22,756.00
		Grand Total	41,25,275.75
		Bank UBI-55367	55,50,231.25
Grand Total	96,75,507.00	Grand Total	96,75,507.00

**WII - LONG TERM MONITORING OF TIGER IN TADABO ANDHARI TIGER RESERVE
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	8,06,133.32	Fellowship	11,22,161.00
Grant Received	61,91,360.00	POL & eh Hiring	5,55,260.00
Intrest	39,827.00	Travel Exp	5,23,065.00
		GIB Survey	9,59,115.00
		Contingencies	2,46,049.07
		Institutional Charges	2,81,250.00
		Field equipment	15,14,975.00
		Total expenses	52,01,875.07
		Tour Advance	7,000.00
		Grand Total	52,08,875.07
		Bank UBI-53431	18,28,445.25
Grand Total	70,37,320.32	Grand Total	70,37,320.32

**WII - GLOBAL TIGER FORUM SNOW LEOPARD PROJECT
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	4,17,060.00	POL & Hiring of Vehicle	21,191.00
Intrest	15,633.00	Contingencies	4,992.75
		Grand Total	26,183.75
		Bank UBI-52366	4,06,509.25
Grand Total	4,32,693.00	Grand Total	4,32,693.00

**WII - ECOLOGICAL IMPACT ASSESSMENT AND ROAD INFRASTRUCTURE
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	8,36,272.00	Fellowship	8,47,058.00
Refund of loan	7,00,000.00	POL & eh Hiring	1,87,435.00
Intrest	24,917.00	Travel Exp	2,55,136.00
		Base camp	25,090.00
		Contingencies	87,544.00
		field equipment	36,000.00
		Total expenses	14,38,263.00
		Tour Advance	1,163.00
		Grand Total	14,39,426.00
		Bank UBI-55338	1,21,763.00
Grand Total	15,61,189.00	Grand Total	15,61,189.00

**WII – RE-INTRODUCTION OF CHEETAH PROJECT
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	18,896.00		
Interest	731.00	Bank UBI-52366	19,627.00
Grand Total	19,627.00	Grand Total	19,627.00

**WII MANAGEMENT EFFECTIVENESS EVALUATION (MEE) OF PROTECTED AREAS
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	1826011.04	Travel Expenses	4992770.00
	Sitting Fee	282000.00	
Grant received for MEE Tiger Reserve	1104000.00	Per diem to evaluation team	1324410.00
Grant received for MEE of NPs and WLS 40 PAs	2289000.00	Report Writing Cost	190000.00
Grant received for MEE of NPs and WLS 125 PAs	20000000.00	Project Initiation Cost	1071948.00
Interest received 2017-18	282767.00	Project Management Cost	988677.00
		Miscellaneous & unforeseen Expenses/Overheads	1213654.47
		Loan: Director WII A/c No. 56211	1500000.00
		FDRs	10000000.00
		Total of MEE Expenditure	21563459.47
		Expenditure MEE Tiger Reserve	768058.00
		Bank Balance A/C No – 62	3170260.57
Grand Total	25501778.04	Grand Total	25501778.04

**PROJECT TIGER CO-PREDATOR, PREY & HABITAT PHASE IV
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	116270.00	Consumable Printing of report	214452.00
Interest received 2017-18	5235.00		
Grant received	200000.00		
		Bank Balance A/C No – 50673	107053.00
Grand Total	321505.00	Grand Total	321505.00

DIVERSITY OF MOTHS ASSEMBLAGE AND THEIR POTENTIAL ROLE AS CONSERVATION TOOL IN DIFFERENT PROTECTED AREAS OF UTTARAKHAND

RECEIPT & PAYMENT

FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	33395.00	Consumeable	14201.00
Grant received	0.00	Travel	18559.00
Interest received 2017-18	827.00	Overhead charges to Corpus fund	1462.00
		Bank Balance A/C No - 53258	0.00
Grand Total	34222.00	Grand Total	34222.00

PREPARING AND UPDATING STUD BOOKS OF 34 ENDANGERED SPECIES (14 OLD AND 20 NEW)

RECEIPT & PAYMENT

FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	1315103.08	Salaries	1160073.00
Interest received 2017-18	26008.00	Travel (Data collection from Zoos)	94427.00
Grant received	1039000.00	Stationery	57514.00
		Miscellaneous & contingencies	14763.00
		Bank Balance A/C No - 53274	1053334.08
Grand Total	2380111.08	Grand Total	2380111.08

PATTERN OF BIOMASS PRODUCTION BY WETLANDS AND ITS USE BY WILD UNGULATES IN KAZIRANGA LANDSCAPE

RECEIPT & PAYMENT

FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	199482.00		
Interest received 2017-18	7752.00		
		Bank Balance A/C No - 53439	207234.00
Grand Total	207234.00	Grand Total	207234.00

**BLACK KITE PROJECT
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Raptor Research & Conservation Foundation, Mumbai	1519590.00	Manpower Wages to Fd Asst	234908.00
Interest received 2017-18	53210.00	Equipment	3301610.00
Grant received for Project	1212300.00	Travel	15944.00
Grant received for Equipment	1305000.00	Contingencies	17440.00
		Bank Balance A/C No - 55500	520198.00
Grand Total	4090100.00	Grand Total	4090100.00

**WII-BUILDING PARTNERSHIP TO SUPPORT UNESCO WORLD HERITAGE PROGRAMME
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Bal.	63,970.33	Misc. & Contingencies	60,487.00
Intt. Received	1,003.00	Corpus Funds	4,486.33
		Expenditure Total	64,973.33
		Bank Balance A/c No. 50246	0.00
Grand Total	64,973.33	Grand Total	64,973.33

**WII-ENVIS PROJECT
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	13,36,098.75	Fellowship and Wages	9,06,177.00
Intt. Received	54,575.00	Travelling Expenditure	92,462.00
Grant Received	17,09,184.00	Contingency	1,11,436.00
Misc. Income (Entry Fee of Quiz-2015)	27,000.00	Report Writing	7,10,290.00
Grant-Certificate Course Nature Interpretation	18,59,500.00	Quiz Programme Expenditure	15,941.00
Grant-Green Skill Development Programme	18,59,500.00	Payable Salary	76,563.00
Salary Payable	70,686.00	M/s Xpression Print & Graphics	2,32,500.00
		Advance for Expenses	86.00
		Expenditure Total	21,45,455.00
		Bank Balance A/c No. 32	47,71,088.75
Grand Total	69,16,543.75	Grand Total	69,16,543.75

**WII-UNESCO PROJECT
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	23,84,820.41	Advance for Expenses	1,68,600.00
Intt. Received	61,883.00		
Advance for Expenses	1,68,600.00		
		Expenditure Total	1,68,600.00
		Bank Balance A/c No. 44	24,46,703.41
Grand Total	26,15,303.41	Grand Total	26,15,303.41

**WII-DGH SEATURTLE TELEMETRY PROJECT
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	8,45,942.28		
Intt. Received	32,895.00		
		Expenditure Total	0.00
		Bank Balance A/c No. 59	8,78,837.28
Grand Total	8,78,837.28	Grand Total	8,78,837.28

**WII-GRATUITY OF CONTRIBUTION
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	74,581.00	Contigencies	91.17
Gratuity of Fund	40,800.00		
Interest Received	3,332.00		
		Expenditure Total	91.17
		Bank Balance A/c No. 55326	1,18,621.83
Grand Total	1,18,713.00	Grand Total	1,18,713.00

**TIGER RESPONSE TO PRAY HUMAN DISTURBANCE
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	15,51,379.30		
Interest Received	60,079.00		
		Expenditure Total	0.00
		Bank Balance A/c No. 60	16,11,458.30
Grand Total	16,11,458.30	Grand Total	16,11,458.30

**ISRO-GBP PROJECT ON LULC DYNAMICS & BIOFIN PROJECT
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	20,62,957.87	Salary & Wages	1815123.00
Grant Received-BIOFIN Project	7,39,180.00	Boarding & Lodging	86545.00
Interest Received	60,218.00	Travel Expenses	244959.00
		Institutional Charges	66435.00
		Misc. & Contingencies	202268.00
		Workshop Expenses	126325.00
		Advance for Expenses	174.00
		Expenditure Total	25,41,829.00
		Bank Balance A/c No. 51241	3,20,526.87
Grand Total	28,62,355.87	Grand Total	28,62,355.87

**INTERRATED DEVELOPMENT OF WILDLIFE HABITATS
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	54,944.00		
Intt. Received	2,088.00		
		Expenditure Total	0.00
		Bank Balance A/c No. 51240	57,032.00
Grand Total	57,032.00	Grand Total	57,032.00

**WII-MONITORING LAND-USE BY WILDLIFE. LIVESTOCK AND HUMAN IN KHANGCHENDZONGA
BIOSPHERES RESERVE
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	65,786.10	Corpus Funds	67332.10
Intt. Received	1,546.00		
		Expenditure Total	67,332.10
		Bank Balance A/c No. 51411	0.00
Grand Total	67,332.10	Grand Total	67,332.10

**I U C N CELL
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	3,88,630.39	Misc. and Meeting and Confrenace	120.00
Intt. Received	18,764.00		
Member Ship Fees	1,60,050.00		
		Expenditure Total	120.00
		Bank Balance A/c No. 41	5,67,324.39
Grand Total	5,67,444.39	Grand Total	5,67,444.39

**WESTERN TRAGOPAN PROJECT
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	15,03,726.00	Travel Expenses	41264.00
Intt. Received	58,188.00	Advance for Expenses	20000.00
Advance for Expenses	20,000.00		
		Expenditure Total	61,264.00
		Bank Balance A/c No. 52465	15,20,650.00
Grand Total	15,81,914.00	Grand Total	15,81,914.00

STRUCTURAL AND FUNCTIONAL ATTRIBUTES OF PLANT COMMUNITIES IN COLD ARID REGION OF NANDA DEVI BIOSPHERES RESERVE, UTTARAKHAND
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	10,574.00		
Intt. Received	409.00		
		Expenditure Total	0.00
		Bank Balance A/c No. 52529	10,983.00
Grand Total	10,983.00	Grand Total	10,983.00

ASSESSMENT OF ECOLOGICAL SETTING AND BIODIVERSITY VALUES OF PAPIKONDA NATIONAL PARK AND INDIRA SAGAR (POLAVARAM) MULT. PROJECT
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	6,09,395.00		
Intt. Received	23,599.00		
		Expenditure Total	0.00
		Bank Balance A/c No. 53223	6,32,994.00
Grand Total	6,32,994.00	Grand Total	6,32,994.00

ECOLOGY AND CONSERVATION OF SEA TURTLE OFF COAST OF THE SINDHUDURY USING SATELLITE TRACKING TECHNIQUES & DEVELOPMENT OF INTERGRATED MANAGEMENT PLAN OF THE THANE CREEK FLAMINGO SANCTURY
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	3,07,116.00		
Grant-Mangrove and Marine	5,00,400.00		
Intt. Received	25,398.00		
		Expenditure Total	0.00
		Bank Balance A/c No. 54273	8,32,914.00
Grand Total	8,32,914.00	Grand Total	8,32,914.00

**WII-UNESCO C 2 C PROJECT
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	68,02,416.00	Salaries	6183011.00
Grant Received	4,50,00,000.00	Fellowship & Visting Fellow	1295288.00
Intt. Received	4,27,735.00	Travel Expenditure	567875.00
Director U Cost, Dehradun	1,00,000.00	Contigencies/Misc. Expenses	683026.00
Misc. Receipt	15,000.00	Office Equipment	2345186.00
The Sahyadri Tiger Cons. Foundation	4,48,500.00	Database Development & Maintenance	401357.00
Advance for Expenses	1,14,030.00	Report Writing	157250.00
		Training & Workshop Expenses	4498105.00
		Base Camp Expenses	10683.00
		Boarding & Lodging	59286
		UNESCO Building	9914200.00
		Advance for Expenses	113192.00
		Expenditure Total	2,63,28,459.00
		Bank Balance A/c No. 54034	2,65,79,222.00
Grand Total	5,29,07,681.00	Grand Total	5,29,07,681.00

**WII-THE UNIVERSITY OF BRITISH COLUMBIA
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	368376.02	Boardig & Lodging	136205.00
Grant	2,35,254.75	Travel Expenses	77266.00
Intt. Received	15,374.00	Wages of Field Assistant	41716.00
		Contigencies	2804.69
		Expenditure Total	2,57,991.69
		Bank Balance A/c No. 55061	3,61,013.08
Grand Total	6,19,004.77	Grand Total	6,19,004.77

**WILD LIFE INSTITUTE OF INDIA
FOREIGN CONTRIBUTION ACCOUNT
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Balance as on April,1 2017		Fellowship & Wages	964098.39
UBI A/c No 518502010000010	19711220.95	Travel Expenditure	1724877.22
Interest Received	704534.00	Base Camp Expenses	18000.00
Fund Received		Contingencies	987750.87
Training Programme of Bhutan Officer	1200000.00	Office Equipemt	758310.00
Study Tour for Bangladehs Forest Department 22-28 May 2018	855214.00	Fund Transferred	1287104.00
Indo-US Science of Technology Forum (IUSST)	85270.00	Boarding & Lodging	761250.00
UNESCO Application of Very High Res. Workshop 11-14 July 2018	250000.00	Corpus Funds	163652.00
ZSL-UKFD on Tiger Conservation Project	9307174.00	Report & Writing	125000.00
Implementing Rhino DNA Indexing System	1287104.00	Consultancy	560000.00
		Advance for Expenses	192601.00
		Balance Amt. Refund	2289910.95
		POL & Maint. Of Vehicle	30175.00
Advance for Expenses	267887.00	Total Expenditure	9862729.43
		Balance as on 31.03.2018	
		UBI A/c No 518502010000010	23805674.52
Grand Total	33668403.95	Grand Total	33668403.95

**"EFFECT OF CLIMATE CHANGE ON RIVERINE FORESTS AND INDICATOR SPECIES ALONG ALONG RIVER
GANGA IN UTTARAKHAND"
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	273634.00	Corpus Fund	280308.00
Bank Interest received during 2017-18	6674.00		
		Total Expenditure	280308.00
		Balance as on 31.03.2018, A/c no 53319	0.00
Grand Total	280308.00	Grand Total	280308.00

**DISTRIBUTION, POPULATION STATUS & CONSERVATION GENETICS OF CHEER PHASANT (CATERUS
WALLICHI) IN HIMACHAL PRADESH
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	6832.00	Corpus Fund	7009.00
Bank Interest received during 2017-18	177.00		
		Balance as on 31.03.2018 A/C No - 53669	0.00
Grand Total	7009.00	Grand Total	7009.00

"ECOLOGY TAXONOMY AND CONSERVATION OF FISH DIVERSITY IN SUBANSIRI RIVER BASIN OF ARUNACHAL PRADESH"
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	188023.00	Manpower	14400.00
Interest received during F.Y. 2017-18	7606.00	Contingencies	23975.00
		Total Expenditure	38375.00
		Balance as on 31.03.2018, A/c No - 53803	157254.00
Grand Total	195629.00	Grand Total	195629.00

"PLANT PHENOLOGICAL RESPONSES TO CLIMATIC VARIATIONS ALONG TIMBERLINE ECOTONE IN OUTER FRINGES OF ASKOT WILDLIFE SANCTUARY"
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	206283.00	Corpus Fund	211652.00
Interest received during F.Y. 2017-18	5369.00		
		Total Expenditure	211652.00
		Balance as on 31.03.2018, A/c No - 53605	0.00
Grand Total	211652.00	Grand Total	211652.00

"KAILASH SACRED LANDSCAPE CONSERVATION AND DEVELOPMENT INITIATIVE (KSLCDI)"
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	1859878.67	Manpower	815908.00
Grant received during 2017-18	1519092.81	Workshop	235836.00
Interest received during F.Y. 2017-18	91129.00	Travel	127772.00
Advance for Expenses	80000.00	Miscellaneous Expenses	72122.08
		IT Communication/ Stationary	788.00
		Overhead/ Institutional Charges	131612.00
		Field work and field base rental	18000.00
		Total Expenditure	1402038.08
		Outstanding :	
		Advance for Expenses	15000.00
		Balance as on 31.03.2018, A/c No. 53475	2133062.40
Grand Total	3550100.48	Grand Total	3550100.48

**PATTERN OF SPATIAL AND TEMPORAL HABITAT OCCUPANCY IN RELATION TO CROP RAIDING BEHAVIOUR
AND GENETIC VARIATION OF FREE-RANGING ASIAN ELEPHANT (ELEPHAS MAXIMUS)**

RECEIPT & PAYMENT

FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	103.00	Corpus Fund	120.00
Interest received during F.Y. 2017-18	17.00		
		Total Expenditure	120.00
		Balance as on 31.03.2018, A/c No. 53957	0.00
Grand Total	120.00	Grand Total	120.00

**5TH NATIONAL REPORT TO CONVENTION ON BIOLOGICAL DIVERSITY (CBD) UNDER GEF DIRECTOR ACCESS
PROJECT & REVISION OF NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN (NBSAP) UNDER GEF
DIRECT REVISION OF NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN (NBSAP) UNDER GEF
DIRECT ACCESS PROJECT TITLED "STRENGTHENING THE ENABLING ENVIRONMENT AND MANAGEMENT IN
INDIA"**

RECEIPT & PAYMENT

FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	1118435.00	Corpus Fund	1147211.90
Bank Interest received during F.Y. 2017-18	29103.00	Misc. Expenses	326.10
		Total Expenditure	1147538.00
		Balance as on 31.03.2018, A/c No - 53203	0.00
Grand Total	1147538.00	Grand Total	1147538.00

**POPULATION GENETIC STRUCTURE AND GENE FLOW IN BROWN BEAR POPULATION IN INDIA AND ASSESS
EXTENT OF GENE FLOW BETWEEN POPULATION OF INDIA & PAKISTAN**

RECEIPT & PAYMENT

FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	75406.00	Manpower	940509.00
IVth year grant received from SERB	1000000.00	Consumables	180862.00
Bank Interest for F.Y. 2017-18	7979.00	Travel	67423.00
Loan from NMHS HWC A/c No. 55352	500000.00	Contingencies	228512.00
		Overhead Charges	100000.00
		Total Expenditure	1517306.00
		Forest Advance	6930.00
		Balance as on 31.03.2018 A/c No. 55018	59149.00
Grand Total	1583385.00	Grand Total	1583385.00

GENETIC ASSESSMENT OF SAMBER RUSA UNICOLOR POPULATION IN NORTH-EAST INDIA
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	662859.00	Equipment	90886.00
IVth Year Grant Received from SERB	350000.00	Manpower	121752.00
Bank Interest for F.Y. 2017-18	14450.00	Consumables	387414.00
		Travel	67042.00
		Contingencies	11426.00
		Institutional Charges	300000.00
		Total Expenditure	978520.00
		Outstanding :	
		Tour Advance	362.00
		Balance as on 31.03.2018 A/c No. 54947	48427.00
Grand Total	1027309.00	Grand Total	1027309.00

ASSESSMENT OF THE CONSERVATION VALUE OF MANGROVES OF GUJARAT (PROJECT 1) & MAPPING OF MARINE PROTECTED AREAS OF INDIA COAST INCLUDING ISLANDS (PROJECT 2) & MARINE TURTLE PROJECT ALONG THE COAST OF PUDUCHERRY & KARAIKAL REGION (PROJECT 3) & DETERMINATION OF CONSERVATION VALUE OF MANGROVES OF GOA (PROJECT 4)
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	650355.00	Field Equipment	38000.00
Bank Interest for F.Y. 2017-18	24683.00	Stationery	14990.00
		Contingencies	124.00
		Office Equipments	34417.00
		Institutional Charges	230883.00
		Total Expenditure	318414.00
		Outstanding :	
		Loan to D/WII A/c No. 55701	100000.00
		Balance as on 31.03.2018 A/c No. 54919	256624.00
Grand Total	675038.00	Grand Total	675038.00

HYDRO ELECTRICAL PROJECT & BELLARY MACRO LEVEL STUDY
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	472310.00	Corpus Fund	484825.00
Bank Interest for F.Y. 2017-18	12620.00	Misc.	105.00
		Total Expenditure	484930.00
		Balance as on 31.03.2018 A/C No. - 52127	0.00
Grand Total	484930.00	Grand Total	484930.00

EVALUATING ECOLOGICAL STATUS OF LEOPARDS IN KALESAR NATIONAL PARK, H.R. & RECONNAISSANCE SURVEY FOR BLACKBUCK AND ITS HABITAT IN AND ADJOINING LANDSCAPE OR NPCIL COLONY SITE (H.R.) & MAPPING LANDUSE/ LANDCOVER PATTERNS IN ARAVALLIS, HARYANA WITH SPECIAL REFERENCE TO STATUS OF KEY WILDLIFE SPECIES & LONG TERM MONITORING OF LEOPARDS AND ITS PREY IN KALESAR NATIONAL PARK HARYANA
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	1302559.33	Contingency	96739.00
Bank Interest for F.Y. 2017-18	41066.00	Equipment	81990.00
		Printing of report	109368.00
		Travel & Vehicle Hiring for field visit	46432.00
		Other Expenses	32097.50
		Manpower	319088.00
		Institutional Charges	174613.00
		Total Expenditure	860327.50
		Balance as on 31.03.2018 A/c No. 54196	483297.83
Grand Total	1343625.33	Grand Total	1343625.33

POPULATION GENETIC STRUCTURE OF NILGIRI THAR IN WESTERN GHATS, INDIA CONSERVATION & FORENSIC IMPLICATIONS & DBT- STIPEND FOR DBT-RA
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	514370.00	Manpower	816074.00
Advance for Expenses	13717.00	Contingency	58966.23
IIIInd Grant Received for Population Genetics Structure Nilgiri Tahr	760241.00	Travels	196384.00
IIIInd Year Grant Received from Indian Institute of Science DBT-RA Programme	626000.00	Stipend for DBT Research Associate with HRA	555473.00
Loan:Chattisgarh Elephant Project A/c No. 55760	20000.00	Total Expenditure	1626897.23
Bank Interest for F.Y. 2017-17	19308.00	Outstanding :	
		Forest Advance	50000.00
		Balance as on 31.03.2018 A/c No. - 55157	276738.77
Grand Total	1953636.00	Grand Total	1953636.00

**CONSERVATION OF MANIPUR'S BROW ANTLERED DEER OF SANGAI AN INTEGRATED APPROACH
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	2325935.00	Manpower	2928131.53
Opening Balance of Advance	89245.00	Infrastructure and Equipment	1020137.00
Interest Received	72160.00	Research & Monitoring	961998.00
FDR Interest	670674.00	Base Camp Expenses	97126.00
FDR Withdrawal	5000000.00	Capacity Building	771105.00
Loan: CAMPA GIB A/c No. 55292	2500000.00	Community Engagement	21960.00
		Conservation Education & Awareness	276267.00
		Establishment of Second Home	234613.00
		Habitat Recovery Plan at KLNP	929774.00
		Vetrinary Action Plan	19275.00
		Total Expenditure	7260386.53
		Outstanding :	
		Forest Advance	40000.00
		Tour Advance	49496.00
		Advance to Management Unit A/c No. 55357	500000.00
		Balance as on Date 31.03.2018 A/c No. 55295	2808131.47
Grand Total	10658014.00	Grand Total	10658014.00

**RECOVERY OF DUGONGS AND THEIR HABITATS IN INDIA AN INTEGRATED PARTICIPATORY APPROACH
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	2190245.00	Manpower Engagement	1976658.00
Bank Interest	72706.00	Capacity Building	5776211.00
Interest of FDR	1850520.00	Research Monitoring Species and Habitat	5595357.00
FDR Withdrawal	12500000.00	Participatory Management	279435.00
		Marine Mammal Rescue and Rehabilitation	70760.00
		Total Expenditure	13698421.00
		Outstanding :	
		Tour Advance	220000.00
		Advance to Management Unit	500000.00
		Balance as on Date 31.03.2018 A/c No. 55294	2195050.00
Grand Total	16613471.00	Grand Total	16613471.00

NTCA- E-BIRD TECHNOLOGY FOR TIGER CONSERVATION DEVELOPMENT AND INTEGRATION OF UN-MANNED AERIAL VEHICLES AS A SURVEILLANCE AND MONITORING TOOL FOR PROTECTION OF TIGERS AND CAPACITY BUILDING OF FRONTLINE STAFF
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	2920750.00	Manpower	1363959.00
Interest Received	86545.00	Equipment	902740.00
IVth Grant Received	2000000.00	Travel & Lodging	546086.00
Misc Grant	300000.00	Contingency	311071.00
		Miscellaneous	93114.00
		Institutional Charges	300000.00
		Total Expenditure	3516970.00
		Outstanding :	
		Forest Advance	10000.00
		Tour Advance	26730.00
		Balance as on 31.03.2018 A/c No. 55580	1753595.00
Grand Total	5307295.00	Grand Total	5307295.00

PRIORITIZATION AND PREPERATION OF BRIEF DOCUMENT FOR NOTIFICATION UNDER WETLANDS RULES, 2010 IN CHHATTISGARH
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	1415000.00	Equipment	141493.00
Interest Received	23960.00	Manpower	513841.00
		Misc & report Writing	30185.00
		Travel	239423.00
		Institutional Charges	184500.00
		Total Expenditure	1109442.00
		Balance as on 31.03.2018 A/c No. 55688	329518.00
Grand Total	1438960.00	Grand Total	1438960.00

**10 DAY ORIENTATION TRAINING ON WILDLIFE MANAGEMENT WITH SPECIAL REFERENCE TO HEALTH
MANAGEMENT FOR FIELD VETERINARIAN OF UTTARAKHAND
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Ist Grant Received	4880000.00	Learning Materials Misc Hono IT	552695.00
Interest Received	105157.00	Loadging and Boarding	1202792.00
		Travel	603679.00
		Vetrinary Supplies	169204.00
		Institutional Charges	732000.00
		Total Expenditure	3260370.00
		Outstanding :	
		Advance to Hotel (Sariska Palace, Rajasthan)	94200.00
		Balance as on 31.03.2018 A/c No. 55709	1630587.00
Grand Total	4985157.00	Grand Total	4985157.00

**BIODIVERSITY ASSESSMENT (FAUNAL ASSESSMENT) OF GAUTAM BUDHA WILDLIFE SANCTUARY IN
HAZARIBAGH AND GAYA DISTRICT
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Ist Grant Received	1231650.00	Manpower	841052.00
IIInd Grant Received	2070000.00	Field Assiatant	64250.00
Interest Received	10749.00	Travel & Field Visit	101576.00
		Consmables & Stationery Items	26787.00
		Field Camp establishment Expenses	21504.00
		POL	25627.00
		Vehicle Hiring for Field Work	24000.00
		Contingencies	22909.00
		TDS Refund Against Grant 10 %	207000.00
		Total Expenditure	1334705.00
		Balance as on 31.03.2018 A/c No. 55784	1977694.00
Grand Total	3312399.00	Grand Total	3312399.00

**SPATIO TEMPORAL AND THERMAL ECOLOGY ON INDIAN PYTHON IN MOYAR RIVER, TAMIL NADU PROJECT
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Ist Grant Received (Non-Recurring)	1068000.00	Manpower	453500.00
IInd Grant Received (Recurring)	1500000.00	Consumables	4290.00
Interest Received	34211.00	Contingency	26596.25
		Other Cost	50792.00
		Travel	87509.00
		Total Expenditure	597687.25
		Outstanding :	
		Scurity Deposit: (Caution Money) to S. Karthy	25000.00
		Tour Advance	613.00
		Forest Advance	12000
		Balance as on 31.03.2018 A/c No. 55725	1941910.75
Grand Total	2602211.00	Grand Total	2602211.00

**STUDY OF ECOLOGY AND SOCIO-ECONOMIC IMPACT OF INVASSIVE SPECIES, PROSOPIS JULIFLORA AND
LATANA CAMERA, AND THEIR REMOVAL FROM FOREST COMMON AND FALLOW LAND INTAMIL NADU
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Ist Grant Received	370600.00	Manpower	288042.00
Loan From D/WII A/c No. 54919	100000.00	Other Items	21014.25
Interest Received	3843.00	Travel	61301.50
		Field Camp Establishment	22750.00
		Institutional Charges	55590.00
		Total Expenditure	448697.75
		Outstanding :	
		Advances (Outstanding Tour Advance & Forest Advance)	25000.00
		Balance as on 31.03.2018 A/c No. 55701	745.25
Grand Total	474443.00	Grand Total	474443.00

**ASSESSMENT OF HABITAT USE BY BLACK NECKED CRANE AND EFLOW OF NYAMJANG CHU HYDRO
ELECTRIC PROJECT IN TAIWANG DISTRICT ARUNANCHAL PRADESH
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Ist Grant Received	3686900.00	Fellowship and Wages	908317.00
Interest Received	45930.00	Travel	672909.00
		Institutional Charges	480900.00
		Contingencies	46124.00
		Equipment	826034.00
		Total Expenditure	2934284.00
		Outstanding :	
		Forest advance	6390.00
		Loan to Sahydari Anjama Project A/c No/ 55742	400000.00
		Total Expenditure	406390.00
		Balance as on 31.03.2018 A/c No. 55742	392156.00
Grand Total	3732830.00	Grand Total	3732830.00

**HABITAT IMPROVEMENT & CONSERVATION BREEDING OF THE INDIAN BUSTARD
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	5126905.18	Staff Engagement	3536356.00
Opening Balance of Advance	324719.00	Conservation Breeding	163683.00
Interest Received	114110.00	Applied Research	9042024.99
FDR Interest	2270788.00	Capacity Building and Awareness	538475.00
FDR Withdrawal	15000000.00	Pilot Habitat Management	1922831.00
		Outstanding :	
		Advance for FA/TA	424081.00
		Advance to Management Unit A/c No. 55357	500000.00
		Loan to CAMPA SANGAI A/c No. 55295	2500000.00
		Total Expenditure	18627450.99
		Balance as on Date 31.03.2018 A/c No. 55292	4209071.19
Grand Total	22836522.18	Grand Total	22836522.18

DEVELOPMENT OF CONSERVATION PLAN FOR RIVER DOLPHINS
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	2156426.69	Manpower Engagement	5335089.00
Interest Received	79264.00	Capacity Building & Awareness	1304768.00
Interest of FDR	2568954.00	Research	13056929.93
FDR Withdrawal	17500000.00	Misc/Contingency	727799.50
Advance for Expenses	405494.00	Outstanding :	
		Advance for FA/TA	1384458.00
		Advance to Management Unit A/ C No. 55357	500000.00
		Total Expenditure	20424586.43
		Balance as on Date 31.03.2018 A/c No. 55293	401094.26
Grand Total	22710138.69	Grand Total	22710138.69

PROJECT MANAGEMENT UNIT
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	3885301.00	Manpower	2702798.00
Advance Received	2000000.00	Contingency	750067.00
Interest Received	104595.00	Travel	96660.00
		Workshop	50362.00
		Miscellaneous	1508287.00
		Total Expenditure	5108174.00
		Balance as on 31.03.2018 A/c No. 55357	881722.00
Grand Total	5989896.00	Grand Total	5989896.00

POPULATION ESTIMATION AND HOME SITE
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	5,83,543.00	Fellowship & Wages	99,881.00
Interest received	15,894.00	Travel Exp.	10,381.00
		Contingencies	593.00
		Equipment	97,990.00
		Total expenditure	2,08,845.00
		Tour Advance	25,000.00
		Loan:- Director WII A/c No. 55244	2,00,000.00
		Balance UBI A/C No 55281	1,65,592.00
Grand Total	5,99,437.00	Grand Total	5,99,437.00

**GENETIC ASSESSMENT OF WILD CAUGHT LEOPARD IN THE STATE OF MAHARASHTRA.
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	5,64,978.00	Sample collection	22,306.00
Interest received	19,546.00	Disease Investigation/Genetic and Forensic	9,455.00
		Total expenditure	31,761.00
		Forest Advance	50,000.00
		Tour Advance	10,000.00
		Balance UBI A/C No 55280	4,92,763.00
Grand Total	5,84,524.00	Grand Total	5,84,524.00

**STUDY IN SHIVALIK AND ARAVALI AREAS
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	7,74,466.00	Manpower	4,14,050.00
Interest received	23,568.00	Contingencies	29,279.00
		Travel	97,457.00
		Total expenditure	5,40,786.00
		Forest Advance	75,000.00
		Balance UBI A/C No 55257	1,82,248.00
Grand Total	7,98,034.00	Grand Total	7,98,034.00

**CONSERVING GREAT INDIAN BUSTARD LANDSCAPES
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	15,43,798.00	Manpower	7,08,400.00
Interest received	48,931.00	Field Logistic	2,66,614.00
Grant Received	1,60,417.00	Contingencies	0.00
Advance for expenses	2,00,000.00	Total expenditure	9,75,014.00
		Forest Advances	1,10,000.00
		Balance UBI A/C No 55339	8,68,132.00
Grand Total	19,53,146.00	Grand Total	19,53,146.00

ECOLOGY OF WOLVES WITH EMPHASES ON DISPERSAL IN A HUMAN DOMINATED LANDSCAPES
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	3449029.00	Manpower	3,59,249.00
Interest received	78,897.00	Consumable	75,245.00
		Travel	1,31,349.00
		Equipment	27,04,206.00
		Contingencies	77,512.00
		Total Expenditure	33,47,561.00
		Forest Advances	69,999.00
		Balance as on 31.03.2018 A/c No. - 55480	1,10,366.00
Grand Total	35,27,926.00	Grand Total	35,27,926.00

GEF-UNDP-GOI MUNNAR LANDSCAPE PROJECT
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	3,65,711.00	Contingency	200.00
Interest Received	14,193.00	Equipment	7,052.00
Advance for Expenses	31,381.00	Travel Expenses	9,131.00
Loan: Director WII A/c No.	4,00,000.00	Total expenditure	16,383.00
		Forest Advance	11,381.00
		Institutional Charges	4,00,000.00
		Balance as on 31.03.2018 A/c No. - 55075	3,83,521.00
Grand Total	8,11,285.00	Grand Total	8,11,285.00

SWAMP DEER- FUNDED BY UTTARAKHAND FOREST DEPARTMENT
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	14,49,968.00	Consumables	5,70,556.00
Grant received	9,42,900.00	Travel	77,836.00
Advance for Expenses	20,000.00	Institutional Charges	1,41,435.00
Interest Received	45,339.00	Contingencies	11,015.00
		Equipment	10,70,434.00
		Total Expenditure	18,71,276.00
		Outstanding :	
		Forest Advances	50,000.00
		Balance as on 31.03.2018 A/c No. - 55350	5,36,931.00
Grand Total	24,58,207.00	Grand Total	24,58,207.00

EVALUATION OF WALLS AND OTHER BARRIERS USED FOR STOPPING CROP DEPREDATION BY ELEPHANTS & WILD PIGS

RECEIPT & PAYMENT

FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	12,24,339.00	Manpower	3,06,798.00
Interest received	34,890.00	Hiring of vehicle	1,76,260.00
		Field Assistant	1,09,200.00
		Total Expenditure	5,92,258.00
		Outstanding :	
		Forest Advances	85,000.00
		Balance as on 31.03.2018 A/c 55351	5,81,971.00
Grand Total	12,59,229.00	Grand Total	12,59,229.00

"ASSESSMENT OF IMPACTS ON WILDLIFE OF KEDARNATH VALLEY DUE TO HELICOPTER SERVICES"

RECEIPT & PAYMENT

FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	7,71,017.00	Chemicals	95,704.00
Interest Received	27,724.00	Stress Analysis	1,00,165.00
Advance for Expenses	1,10,000.00	Contingences & Mis	26,365.00
		Total expenditure	2,22,234.00
		Outstanding :	
		Forest Advances	1,10,000.00
		Bank Accounts Saving A/c No. 55282	5,76,507.00
Grand Total	9,08,741.00	Grand Total	9,08,741.00

CONCEPT ON TECHNOLOGY INTERVENTION FOR MOUNTAIN ECOSYSTEM (TIME) FOR COORDINATION (HESCO)

RECEIPT & PAYMENT

FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	11,43,596.00	Manpower	3,26,979.00
Interest Received	23,175.00	Institutional Charges	1,00,000.00
		Travel	1,48,582.00
		Consumables	64,900.00
		Contingencies	1,06,559.00
		Project Planning Workshop	9,512.00
		Total expenditure	7,56,532.00
		Outstanding :	
		Forest Advances	32,561.00
		Loan to NMHS Project	18,000.00
		Bank Accounts Saving A/c No. 55700	3,59,678.00
Grand Total	11,66,771.00	Grand Total	11,66,771.00

ETALIAN HYDRO PROJECT
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Grant Received	53,66,700.00	Equipment	4,76,156.00
Loan Received from 'MEE' Project A/c No. 62	15,00,000.00	Field Studies	6,09,829.00
		Manpower	4,78,954.00
		Institutional Charges	32,22,000.00
		Report Printing	14,100.00
		Contingences & Mis	36,526.00
		Total expenditure	48,37,565.00
		Outstanding :	
		Forest Advances	8,07,000.00
		Tour Advances	3,10,000.00
		Bank Accounts Saving A/c No. 56211	9,12,135.00
Grand Total	68,66,700.00	Grand Total	68,66,700.00

DEVELOPING GENETIC DATABASE TO UNDERSTAND METAPOPULATION DYNAMICS & CONNECTIVITY OF TIGERS
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	17,60,091.00	Laboratory reagents & Consumables	4,09,702.00
Grant received	26,01,545.00	Field Vehicle hiring	4,17,685.00
Interest Received	54,111.00	Bank Charges	34.00
		Base Camp	18,997.00
		Field Assistant	21,000.00
		Contingency	27,184.00
		Miscellaneous cost	5,000.00
		Sample Storage Freezer	1,11,409.00
		Total Expenditure	10,11,011.00
		Outstanding :	
		Forest Advances	25,000.00
		Tour Advance	10,000.00
		Balance as on 31.03.2018 A/c No. - 55479	33,69,736.00
Grand Total	44,15,747.00	Grand Total	44,15,747.00

**SARANDA FORESTS
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	1,43,406.00	Equipment	2,338.00
Grant received	25,00,000.00	Institutional Charges	22,44,080.00
Interest Received	3,028.00	Mis Expenses	16.00
		Loan: Director WII A/c No. 55075	4,00,000.00
		Total expenditure	26,46,434.00
		Bank Accounts Saving A/c No. 55074	0.00
Grand Total	26,46,434.00	Grand Total	26,46,434.00

**STUDYING THE DISPERSAL OF TIGERS ACROSS THE EASTERN
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	19,19,131.00	Fellowship & Wages	7,81,650.00
Interest received	32,063.00	Travel Exp.	2,87,944.00
Grant received	35,00,000.00	Base Camp Exp.	15,000.00
Loan Received A/c No. 55281	2,00,000.00	Contingencies	1,44,735.00
		Field equipment	7,31,646.37
		Total expenditure	19,60,975.37
		Outstanding:	
		Tour Advance	20,000.00
		Balance UBI A/C No 55244	36,70,218.63
Grand Total	56,51,194.00	Grand Total	56,51,194.00

**REVOLVING FUND FOR GUEST HOUSE MAINTENANCE A/C NO. 54189
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	1413358.00	Operational Expenses	44,71,703.00
Rent Received	6546462.00	Equipment	7,14,721.00
Hostel Accomodation Charges	1750761.00		
Food Bill	504703.00		
Interest Received	89483.00		
Misc. Receipts	4000.00	Total Expenditure	51,86,424.00
		Balance UBI A/C No 55244	51,22,343.00
Grand Total	1,03,08,767.00	Grand Total	1,03,08,767.00


(P.K. Aggarwal)
Finance Officer


(Dr. V.B. Mathur)
Director

**ECOLOGY OF SLOTH BEAR IN AND AROUND RATANMAHAL JAMBUGHODA SANCTUARIES & UNPROTECTED AND FRAGMENTED
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	4,18,133.00	Manpower	1,440.00
Bank Interest for F.Y. 2017-18	15,999.00	Travel	54,675.00
Advance for Expenses	40,000.00	Total Expenditure	56,115.00
		Balance as on 31.03.2018 A/c No.: 53632	4,18,017.00
Grand Total	4,74,132.00	Grand Total	4,74,132.00

**EVALUATION OF PREY AVAILABILITY AND HABITAT SUITABILITY FOR TIGER AND ITS RANGING PATTERNS IN SANJAY TIGER RESERVE, MADHYA PRADESH
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	23,176.00	Manpower	11,42,555.00
Grant Received	14,76,000.00	Travels	5,84,523.00
Loan: Director WII A/c NO. 54189	10,00,000.00	Contingency	12,930.00
Bank Interest for F.Y. 2017-18	8,951.00	Advance for Expenses	16,000.00
		Total Expenditure	17,56,008.00
		Balance as on 31.03.2018 A/c No.: 54159	7,52,119.00
Grand Total	25,08,127.00	Grand Total	25,08,127.00

**DIVERSITY OF SPIDER (ARACHIDA: ARANEAE) ASSEMBLAGES IN ASKOT WILDLIFE HIMALAYAS SANCTUARY, UTTARAKHAND
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	94,421.00	Contingencies	68.00
Bank Interest for F.Y. 2017-18	4,128.00		
		Total Expenditure	68.00
		Balance as on 31.03.2018 A/c No: 53752	98,481.00
Grand Total	98,549.00	Grand Total	98,549.00

ECOLOGY OF ENDANGERED ASIATIC LIONS USING SATELLITE & GPS TELEMTRY
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	3,64,028.00		
Bank Interest for F.Y. 2017-18	14,200.00		
		Total Expenditure	-
		Balance as on 31.03.2018 A/c No: 53583	3,78,228.00
Grand Total	3,78,228.00	Grand Total	3,78,228.00

NMCG- BIODIVERSITY CONSERVATION AND GANGA REJUVENATION PART 1 (COMPONENT- 1, 3 & 4)
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	2,05,98,970.00	Component -1	
Grant Received	-	Contingency/Misc	1,47,887.16
Bank Interest for F.Y. 2017-18	7,11,406.00	Manpower	28,75,857.00
Opening balance of Advances (C4)	1,00,000.00	Travel & Field Work	4,99,026.00
		Equipment	7,91,214.00
		Operational	22,06,864.33
		Advance for Expenses	82,500.00
		Total Expenditure (A)	66,03,348.49
		Component -3	
		Contingency/Misc	-
		Manpower	8,22,763.00
		Travel & Field Work	2,06,788.00
		Operational	34,37,726.33
		Advance for Expenses	-
		Total Expenditure (B)	44,67,277.33
		Component -4	
		Contingency/Misc	67,801.00
		Manpower	16,55,458.00
		Travel & Field Work	4,39,292.00
		Equipment	5,55,900.00
		Operational	13,52,516.34
		Institutional charges	-
		Advance for Expenses	2,500.00
		Total Expenditure @	40,73,467.34
		Total Expenditure (A+B+C)	1,51,44,093.16
		Balance as on 31.03.2018 A/c No.: 55408	62,66,282.84
Grand Total	2,14,10,376.00	Grand Total	2,14,10,376.00

RAPID ASSESSMENT OF ECOLOGICAL IMPACTS OF CAMPING OPERATIONS FOR RIVER RAFTING ALONG THE GANGA
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	2,79,612.00	Contingency	30.00
Bank Interest for F.Y. 2017-18	12,269.00	Travel	10,800.00
		Transfer to Corpus Fund A/c No: 4032	2,81,051.00
		Total Expenditure	2,91,881.00
		Balance as on 31.03.2018 A/c No.: 55325	0.00
Grand Total	2,91,881.00	Grand Total	2,91,881.00

CSIR- AN ASSESSMENT OF BREEDING , FORAGING AND HABITAT USE PATTERNS OF A THREATENED PISCIVOROUS COLONIAL NESTING WATERBIRD, ORIENTAL DARTER AT BHITARKANIKA MANGROVES
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	3,80,684.00	Staff Salary	1,28,100.00
Bank Interest for F.Y. 2017-18	9,890.00	Contingencies	50,662.00
		Equipment	1,81,860.00
		Total Expenditure	3,60,622.00
		Balance as on 31.03.2018 A/c No.: 55104	29,952.00
Grand Total	3,90,574.00	Grand Total	3,90,574.00

NMCG- BIODIVERSITY CONSERVATION AND GANGA REJUVENATION PHASE- 2 (COMPONENT 2, 5 & 6)
RECEIPT & PAYMENT
FROM 01.4.2017 TO 31.3.2018

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	5,58,05,979.00	Component 2	
Grant Received	-	Manpower	61,31,520.00
Loan: D/WII A/c No. 54272	75,00,000.00	Equipment	1,34,68,256.04
Bank Interest for F.Y. 2017-18	21,21,838.00	Operational Expenses	27,97,563.33
		Travels	14,72,834.00
		Other Expenses	5,00,871.00
		Advance for Expenses	57,500.00
		Total Expenditure (A)	2,44,28,544.37
		Component 5	
		Manpower	33,27,490.00
		Equipment	6,69,073.00
		Operational Expenses	33,06,638.34
		Travels	10,10,338.00

RECEIPT	Amount	PAYMENT	Amount
		Other Expenses	2,33,820.60
		Advance for Expenses	2,58,500.00
		Total Expenditure (B)	88,05,859.94
		Component 6	
		Manpower	13,59,145.00
		Equipment	3,46,310.00
		Operational Expenses	16,24,527.33
		Travels	3,69,278.00
		Other Expenses	52,485.60
		Advance for Expenses	66,600.00
		Total Expenditure @	38,18,345.93
		Total Expenditure (A+B+C)	3,70,52,750.24
		Balance as on 31.03.2018 A/c No. - 55526	2,83,75,066.76
Grand Total	6,54,27,817.00	Grand Total	6,54,27,817.00

**TIGER RECOVERY STRATEGY AND LONG TERM MONITORING IN SAHAYADRI TIGER RESERVE,
MAHARASHTRA
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	37,29,851.00	Manpower	13,31,842.00
Grant Received	-	Contingency	3,18,274.00
Interest Received	1,20,062.00	Travel	2,60,133.00
		Equipment	1,67,039.00
		Total Expenditure	20,77,288.00
		Outstanding:	
		Advance for Expenses	50,000.00
		Balance as on 31.03.2018 A/c No.: 55541	17,22,625.00
Grand Total	38,49,913.00	Grand Total	38,49,913.00

**STATUS OF FISH DIVERSITY IN SAHYADRI TIGER RESERVE, MAHARASHTRA
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	4,31,000.00	Manpower	1,89,880.00
Grant Received from Nainital	2,50,000.00	Travel	1,36,775.00
Interest Received	7,129.00	Contingencies & Consumables	58,475.00
		Institutional charges	56,000.00
		Total Expenditure	4,41,130.00
		Balance as on 31.03.2017 A/c No.: 55691	2,46,999.00
Grand Total	6,88,129.00	Grand Total	6,88,129.00

**A RAPID STATUS SURVEY FOR THE GLOBALLY THREATENED YELLOW WEAVER PLOCEUS MEGARHYNCHUS
IN UTTARAKHAND
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	-	Manpower	70,722.00
Grant Received	2,95,550.00	Accommodation	24,535.00
Bank Interest for F.Y. 2017-18	4,716.00	Food Expenses	7,573.00
		Institutional Charges	38,550.00
		Travel	65,709.00
		Contingencies	14,440.00
		Total Expenditure	2,21,529.00
		Balance as on 31.03.2018 A/c No.: 55693	78,737.00
Grand Total	3,00,266.00	Grand Total	3,00,266.00

**PARTICIPATION OF WII IN THE INDIAN SCIENTIFIC EXPENDITURE TO ANTARCTICA (INSEA)
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	-		
Grant Received	6,40,389.00		
Bank Interest for F.Y. 2017-18	13,672.00		
		Total Expenditure	-
		Balance as on 31.03.2018 A/c No.: 55788	6,54,061.00
Grand Total	6,54,061.00	Grand Total	6,54,061.00

**CONSERVATION MANAGEMENT OF ELEPHANTS IN CHHATTISGARH: CAPACITY BUILDING INITIATIVE ON
THE DISPERSAL & RANGING PATTERNS OF ELEPHANTS FOR EFFECTIVE MANAGEMENT OF HUMAN -
ELEPHANT INTERACTIONS
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance	-	Manpower	6,67,000.00
Grant Received	99,94,000.00	Accommodation & Food	1,61,734.00
Bank Interest for F.Y. 2017-18	2,04,505.00	Equipment & Field Gears	26,514.00
		Supplies & Materials	31,126.00
		Travel	6,26,705.00
		Institutional Charges	13,03,000.00
		Advance for Expenses	1,10,000.00
		Total Expenditure	29,26,079.00
		Loan taken for Purchase of Chemicals	8,73,335.17
		Loan to Nilgiri Thar Project	20,000.00
		Balance as on 31.03.2018 A/c No.: 55760	63,79,090.83
Grand Total	1,01,98,505.00	Grand Total	1,01,98,505.00

**WII-BCRLIP PROJECT
RECEIPT & PAYMENT
FOR THE PERIOD OF 01-04-2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance		GIS Hardware and soft ware	16,800.00
Bank Accounts	20,37,318.99	Project management cell	10,052.00
Advance for Expenses	15,000.00	A. Support to landscape site	27,71,261.00
Grant received	60,00,000.00	c. Core training programe	10,73,383.00
Interest on saving bank a/c	59,729.00	Contractual service for consultancy	2,00,000.00
Misc. Receipt	2,956.00	D. Institutional and methodological framework	1,93,426.00
		E. Institutional strenthning of WII	24,07,377.64
		G. Recurring cost excluding govt. staff cost	11,62,809.00
		Total Expenditure	78,35,108.64
		Advance for Expenses	696.00
		Closing Balance	
		Bank Accounts	2,79,199.35
Grand Total	81,15,003.99	Grand Total	81,15,003.99

**DBT PROJECT LINKING PROTECTED AREA NETWORKS & NEAR REAL TIME
RECEIPT & PAYMENT
FOR THE PERIOD OF 23-03-2018 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance			
Grant received	21,48,000.00	Expenditure	-
		Closing Balance	
		Bank Accounts	21,48,000.00
Grand Total	21,48,000.00	Grand Total	21,48,000.00

**AUGMENTATION & RECOVERY OF TIGER POPULATION INSATKOSIA TR
RECEIPT & PAYMENT
FOR THE PERIOD OF 01.04.2017 TO 31-03-2018**

RECEIPT	Amount	PAYMENT	Amount
Opening Balance		Institutional charges	10,00,000.00
Grant received	30,00,000.00	Expenditure	10,00,000.00
		Closing Balance	
		Bank Accounts No 56377	20,00,000.00
Grand Total	30,00,000.00	Grand Total	30,00,000.00

Separate Audit Report on the Accounts of Wildlife Institute of India, Dehradun for the year 2017-18.

Sl. No.	Audit Para	Reply
Para	A. Balance Sheet:	
	1. WII purchased Gas Fire Suppression System with addressable Fire Alarm System amounting to Rs. 50,92,979/- which was shown under Building instead of depicting the under "Plant and Machinery and depreciation was charged at the half yearly rate of 5% (i.e. Rs. 2,54,649/-) instead of 7.5% (i.e. Rs. 3,81,973/-). Charging depreciation at different rate resulted in overstatement of Assets and understatement of expenditure amounting to Rs. 1,27,324/-.	1. Correction will be made in the Balance Sheet for the year 2018-19. Compliance will be shown during next audit.
	2. WII purchased Solar LED Street lights amounting to Rs. 8.20 lakh. The amount was booked in Expenditure but was not included in the Schedule 8 Fixed Assets. This resulted in understatement of Fixed Assets by Rs. 8.20 lakh and overstatement of Expenditure to the same extent.	2. Noted for future compliance and necessary correction will be made in the balance sheet for the financial year 2018-19. Compliance will be shown during next audit.
	3. WII purchased Library Books amounting to Rs. 2.92 lakh but the same was not included in Schedule -8 Fixed Assets, resulting in understatement of Fixed Assets by Rs. 2.92 lakh and overstatement of expenditure to the same extent.	3. Noted for future compliances and necessary corrections will be made in the balance sheet for the financial year 2018-19. Compliance will be shown during next audit.
	4. WII purchased Computers/Printers amounting to Rs. 3,92,134/- and the same was shown as Office Equipment under Schedule -8 Fixed Assets and depreciation was charged instead of 60%. This resulted in overstatement of assets by Rs. 1,77,460/- and understatement of expenditure in Income and Expenditure account to the same extent due to charging of lower rate of depreciation.	4. Noted for future compliances and necessary corrections will be made in the balance sheet for the financial year 2018-19. Compliance will be shown during next audit.
	5. UPS amounting to Rs. 42,426/- purchased by WII was shown under Schedule -8 Fixed Assets as Computer Peripherals and depreciation was charged at 60% instead of 15% for Office Equipment, which resulted in understatement of assets by Rs. 19,092/- and overstatement of expenditure to the same extent.	5. Noted for future compliances and necessary corrections will be made in the balance sheet for the financial year 2018-19. Compliance will be shown during next audit.

Sl. No.	Audit Para	Reply
6.	WII has not made any provision for Audit Fee in the Annual Accounts for the year 2017-18, thereby resulting in understatement of Liabilities in the accounts to that extent.	6. Provision of Audit fee will be made in the accounts and will be released on receipt of amount of audit fee to be paid to the Principal Director of Audit Scientific Departments, New Delhi.
B. Income & Expenditure Accounts:		
1.	WII included an amount of Rs. 255.55 lakh under Schedule 8 Fixed Assets and charged depreciation of Rs. 12.78 lakh at the rate of 5% for half year, whereas the work was still under progress. This resulted in statement of Fixed Assets and Expenditure by Rs. 242.77 lakh and Rs. 12.78 lakh respectively besides understatement of Work in Progress by 255.55 lakh.	1. Correction will be made in the Annual Accounts for the year 2018-19. Compliance will be shown during next audit.
2.	WII purchased the consumable items amounting to Rs. 8.77 lakh during 2017-18. Though the closing balance of consumable items was Rs. 4.50 lakh, the same were not depicted in the Annual Accounts, which resulted in understatement of Current Assets and overstatement of Expenditure of Rs. 4.50 lakh.	2. Noted for future compliance and Compliance will be shown during next audit.
3.	Prepaid expenditure of Rs. 2.45 lakh incurred on Insurance & Premium for 15 vehicles for the period 04.03.2018 to 22.03.2019 was not shown under "Current Assets, Loans and Advances (Schedule 11). This resulted overstatement of Expenditure to the tune of Rs. 2.45 lakh and understatement of Current Assets to the same amount.	3. Noted for future compliance.
C. Grants-in-Aid:		
	WII received Grants in Aid of Rs. 33.97 crore (Rs. 32.27 crore revenue and Rs. 1.70 crore capital) besides opening balance of Rs. 5.45 crore and other receipts of Rs. 4.27 crore. Out of total available amount of Rs. 43.69 crore, WII made payments of Rs. 35.84 crore and an amount of Rs. 7.85 crore was lying at bank.	Amount of Rs. 7.85 crore was balance and pertaining to the committed expenditure of previous year. The process of payment could not be completed due to late receipt of grants from the MoEFCC, New Delhi. As such unspent balance of Rs. 7.85 crore was lying in bank and spent as committed expenditure.
D. General:		
	(II) In Schedule-7-Current Liabilities-Sundry Creditors-Others (Grants-in-Aid) Rs. 4,34,25,324/- was outstanding (Rs. 82,200/- since 2015-16 and Rs. 1,79,183/- since 2016-17 and Rs. 4,31,63,941/- since 2017-18).	(I) Efforts are being made to receive the outstanding amount. Compliance will be shown during next audit.

Sl. No.	Audit Para	Reply
	(ii) The value of investment of Corpus Fund in Union Bank of India (UBI) shown by WII was Rs. 19,50,14,428/- as on 31.03.2018 whereas bank statement showed an amount of Rs. 19,50,18,021/-. Thus there was a difference of Rs. 3,593/-.	(ii) Difference of Rs. 3,593/- is being reconciled. Compliance will be shown during next audit.
	(iii) TDS amounting to Rs. 95.75 lakh had been deducted by Bank on matured amount of Fixed Deposit of WII receivable upto March 2017-18.	(iii) Refund case of TDS is under trial in the Court of Assistant commissioner of Income Tax, exemption circle Ghaziabad. Final outcome of the case will intimated after finalization of the case by Income Tax Department.
	(iv) In Schedule 5: Unsecured Loans and borrowings, Security Deposits amounting Rs. 5,56,968/- was depicted. Similarly, Schedule 7: Current Liability and Provisions Others (Specify) EMD amounting to Rs. 9,01,658/- was depicted. Reasons for amounts outstanding were not elucidated.	(iv) Details of outstanding amount of Security Deposits are on account of EMDs/Security Deposits of various agencies and will be released after the security period is over. Detail of outstanding amount and reasons thereof will be shown during next audit.
	(v) In Schedule 11: Current Assets, Loans and Advances Etc. (B), Rs. 2,80,984/- was depicted against Loan to MoEFCC for World Environment Day (MoEFCC) which remained static (Rs. 2,67,298/- since 2011-12 & Rs. 13,686/- since 2012-13) Loan for WCF workshop amounting to Rs. 30,253/- remained static since 2012-13. Training cost accrued but not received amounting to Rs. 8,38,375.00 remained static (from 1996-97 - Rs. 1,000.00, 1999-00 1,50,875/-, 2001-02 Rs. 26,500/- and 2005-06 Rs. 6,60,000/-). Reasons for amount being outstanding without adjustment/recovery may be elucidated.	(v) Efforts are being made to receive the outstanding amount Rs. 2,80,984/- from MoEFCC, New Delhi. As regard the recovery of outstanding amount from other offices, matter is being pursued with the concerned State Government Departments. Compliance will be shown during next audit.
E: Annexure:		
	1. Adequacy of Internal Audit System The internal audit of WII, Dehradun for the period 2013-14 to 2017-18 was conducted in August 2018 by MOEF&CC (Report still awaited).	1. Internal Audit Report from the Controller of Accounts, (PAO, MoEFCC), New Delhi is awaited and will be shown during next audit.
	2. Adequacy of Internal Control System There is scope of improvement in the Internal Control System of WII in the following areas, as deficiencies were noticed;	

Sl. No.	Audit Para	Reply
	(i) Cash Book was not in prescribed form i.e. GAR 3.	(i) Noted for future compliance.
	(ii) Denomination-wise details of closing balance were not mentioned during physical verification of cash at the end of each month.	(ii) Noted for future compliance.
	(iii) The deposit of Cash receipts were made by cashier after a delay of 2 to 7 days.	(iii) Noted for future compliance.
	(iv) The Expenditure Control Register, Works Control Register and Register of Contracts were not maintained.	(iv) Noted for future compliance.
	(v) Register of Valuable as per GAR 5, Accession Register as per GFR 18, Stock Register of Consumables and Investment Register were not maintained in prescribed format.	(v) Noted for future compliance.
3. System of Physical Verification of Assets		
i.	Physical verification of fixed Assets was not done for the year 2017-18.	i. Physical verification of fixed assets for the year 2017-18 is under progress and Compliance will be shown to next audit.
ii.	The Assets Register was not maintained as per GFR -22.	ii. Fixed assets register will be maintained in GFR 22 for the year 2018-19 and Compliance will be shown to next audit.
4. System of Physical Verification of Inventory		
	Physical verification of stationery, consumable items and library books was not done for the year 2017-18.	Physical verification of stationery, consumable items and library books for the year 2017-18 I in progress.
5. Payment of Statutory Dues		
	WII is regular in payment of Statutory Dues	No audit observations to be replied.



भारतीय वन्यजीव संस्थान
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