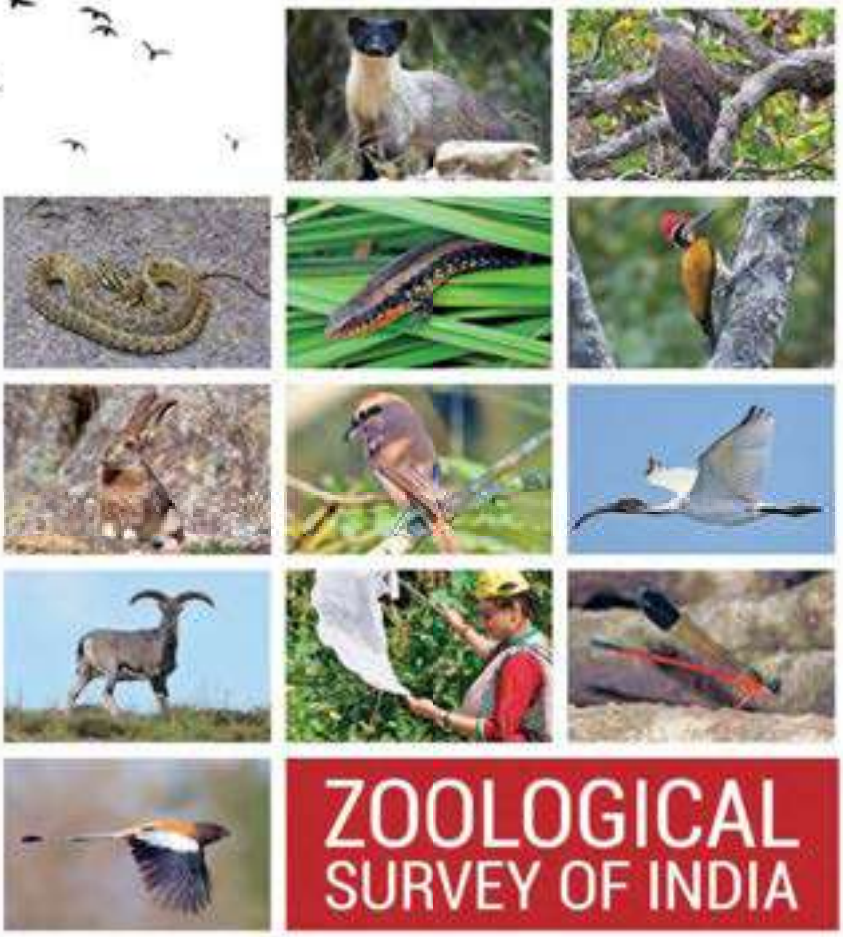


ZOOLOGICAL SURVEY OF INDIA

ANNUAL REPORT

2017-18



Ministry of Environment, Forest and Climate Change

Zoological Survey of India, 1916

ANNUAL REPORT

2017-18

ZOOLOGICAL SURVEY OF INDIA



ANNUAL REPORT 2017- 2018

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On turn of a century old glorious services to the Nation, I am delighted to present the Annual Report of Zoological Survey of India (ZSI) covering the year 2017-18, fortunately coinciding with the 102nd year of this premier organization of the country. At the outset, it is my profound duty to recall the meticulous stewardship of my predecessors who efficiently and effectivity promoted the efficacy of the ZSI in national and international arena for updating the recent knowledge of Zoological studies in general and animal taxonomy in particular in time to time for benefit of society at large.

FROM THE DIRECTOR'S DESK



I am delighted to note that year 2017-18 is yet another important period in the annals of ZSI, as ZSI widened its activities and scope in order to achieve the Aichi Biodiversity Targets under the United Nations Convention of Biological Diversity for which India is committed to it as a member Nation. Out of twenty biodiversity targets, ZSI made an attempt to attend 10 targets.

It is noteworthy to mention that by conducting series of National Workshops for mainstreaming marine, freshwater faunal, mangrove and coral reef diversity under the Target 1; status surveys for economically important sea-cucumbers under the Target 6; studies on the potential invasive species to achieve the Target 9; permanent monitoring plots for coral reefs under the Target 10; documentation of faunal resources in eco-sensitive zones and protected areas under the Target 11; inclusion of three species of elasmobranchs in Appendix - II of CITES under the Target 12; assessment of insect pollinators and soil biodiversity under the Target 14; restoration of coral reefs in Gulf of



Kachchch under the Target 15, and the Target 19 in which the transfer of science based knowledge are achieved substantially.

I am glad to inform that year 2017-18 witnessed the documentation of faunal resources in Bio-geographic zone - Himalayas, Sundarban and Great Nicobar Biosphere Reserves, Marine Biodiversity, Estuarine Biodiversity, Seagrass faunal diversity etc. on pan India basis for understating their distributional details in order to conserve and manage them for sustainable utilization. Initiatives on Mobile App for in-situ identification of fauna in Protected Areas, GIS based mapping of selected faunal groups, impact of forest fire in Himalayan region, monitoring of Himalayan biodiversity under National Mission for Himalayan Studies are few to mention.

Scientific accomplishments made by the ZSI fraternity are quite appreciable as they contributed immensely by conducting 100 surveys which resulted with the identification of 37183 specimens containing 1058 species under 46 groups, description of 104 new species, 78 species as new distributional record to country by which the biodiversity of India added with 182 more species of animals in the year 2017-18 alone.

Scientific publications are tool to disseminate the knowledge acquired by ZSI and altogether 419 publications have been made in the form of books, papers in journals and book chapters, of which it is fascinating to mention that 84 papers are published in SCI journals of international and national repute with reasonably good impact factor.

At this juncture, I place my record of appreciation to the ZSI fraternity for their relentless effort for the betterment of science and society while upscaling the spirit of ZSI.

Identifying and monitoring biological diversity is a huge and potentially infinite task given its variability in time and space and its spectrum of levels. However, the ZSI continue to contribute for understanding biodiversity and their role in ecosystem function in population, community, species and genetic level to inform the society for sustainable use and safeguarding it for the benefit of future generations.

JAI HIND.



(Kailash Chandra)



EXECUTIVE SUMMARY

The Zoological Survey of India [ZSI] is one of the premier organizations of Government of India established in the year 1916, functioning under the Ministry of Environment, Forest and Climate Change. Having headquarters at Kolkata this scientific institution has 16 Regional Centres spread across the Country. This office is mandated for conducting the surveys, inventorization of faunal wealth of India right from deep-ocean to the highest mountain ranges of the country and to provide the advisories to the Government on the biodiversity conservation, sustainable utilization of bio-resources especially in forest, agriculture, fisheries, health, animal husbandry, education, tourism sectors etc. Periodic assessment of the status of rare, threatened, endemic and endangered animals for their management and also to monitor the invasive, exotic and introduced species as well as to observe the climate change by biodiversity assessments in different ecosystems of the Country are also the objectives of the organization

ZSI is one of the few institutions in India having the vast area to survey and large scope to undertake research in India. Its jurisdiction is **3.287** million square kilometres in land and **2.172** million square kilometres in ocean. With this huge areas the studies are being undertaken by ZSI in 6 broad thematic areas viz. Exploration of Faunal Resources of India, State Fauna, Fauna of Conservation area, Status survey, Ecology and Behavioural Studies and Taxonomical Studies. During the financial year 2017-18 alone **130** programmes and **17** externally funded projects have been handled by ZSI.

In-situ and ex-situ studies have been made to document the taxonomy, diversity, distribution and status of different faunal resources of country by conducting **100** long-term surveys and several short-term local surveys in various ecosystems of the Nation during the year 2017-18. Regional Centres of ZSI made **59** surveys within their jurisdiction and the headquarters conducted **41** surveys covering different States of the Country. Altogether about **20,000** square kilometres area in the terrestrial, marine and freshwater ecosystems have been covered. Out of **771** protected areas designated in India, **48** protected areas have been surveyed during the year including National Parks, Wildlife Sanctuaries, Reserve Forests, (Tiger Reserve) and Biosphere Reserves.

All the surveys during the year resulted with the considerable number of representative voucher specimens of fauna under **46** different groups with a total of **1,01,865** examples. The collection made by the Headquarters is to the tune of **41,569** specimens and rest of them are contributed by the Regional Centres. Taxonomic identification of the collected specimens is challenging and it progressed identifying **37183** specimens during the year. Registration of taxonomically identified specimens is an important task of ZSI and it registered **37183** specimens in its National Zoological Collections. Digitization is one of the significant activities of ZSI, in which the taxonomically identified species and specimens are being digitized with the habitat details for the benefit of the needy. A total of **16182** specimens belonging to different groups have been digitized during the year.

India is one of the mega-biodiverse countries in the world endowed with the faunal diversity of **1,01,167** taxonomically described species. However, this year alone ZSI could able to identify **1058** species comprising **46** groups of animals thriving at different realms in hydrosphere, lithosphere and atmosphere. Among them **104** species are newly described by the scientists of ZSI while **78** species found as first report to India and **287** species were new distributional records to different regions of the Country.

The identification and advisory services of ZSI catering the need of law enforcing agencies for correct identity of the seized and confiscated animals, the researchers and students for the identification of fauna of their study as well as other scientific institutions dealing with research and development where animal is involved. During the year, **321** services have been rendered to different institutions whereas, **38** services have been provided exclusively for confiscated material of different animals or parts of the body for the benefit of Court of law to culminate the wildlife crime. In addition, **1,696** faunal specimens under different groups were identified exclusively for the students of various universities.



The taxonomic studies conducted by ZSI are being published periodically either in the forms of books or papers in different journals or book chapters and abstracts. Altogether **419** publications have been made during the year, of which **30** books, **389** papers including **84** papers in scientifically indexed journals of National and International repute are noteworthy.

The in-house journal, Records of Zoological Survey of India - A journal of Indian Zoology published **4** issues under the volume No.118 published and it covers **44** articles with the contribution from **25** different institutions across the country. Further to note that the journal started its online edition since 2018 onwards besides offline.

Every year ZSI is organizing a series of training programmes, seminars, workshops, conferences on different thematic areas for the benefit of vide array of people right from students, researchers and academicians to the wildlife conservators, managers, law enforcing authorities and policy makers. In the year 2017-18 alone, **9** major workshops and trainings, while **25** events have been organized by ZSI in its Headquarters and **9** Regional Centres. Further, **130** scientists and scientific staff from the Headquarters and almost all Regional Centres participated in the training programme to enhance their scientific and administrative skills. Besides, nine scientists were deputed abroad to attend meetings, symposia and expedition.

Deoxyribonucleic Acid (DNA) barcoding of the identified faunal specimens is a recent initiative of ZSI in which dedicated DNA laboratories have been established at Headquarters and four Regional Centres viz, Northern Regional Centre, Dehradun; Western Regional Centre, Pune; Freshwater Biology Regional Centre, Hyderabad; Southern Regional Centre, Chennai. Presently the priority has been given to barcode new species in addition to rare, endemic, threatened and endangered species. A total of **1,366** nucleotide sequences have been made with the inclusive of **1,206** barcodes submitted to Barcode of Life Date System (BOLD) and **160** nucleotide sequences at GenBank.



Museums have varying aims, ranging from serving researchers and students to general public at large extent. The ZSI Headquarters as well as all Regional Centres maintaining the Natural History Museum by exhibiting important faunal elements of the particular regions for the benefit of the large section of people. Visitors of the museum in Regional Centres were **2,12,792** persons as per the registered entries. ZSI also showcased its specimens in **6** galleries viz., Invertebrates, Fishes, Herpetofauna, Birds, Mammals and Ecosystem at Indian Museum, Kolkata which draw **4** to **5** lakhs visitors for viewing. It is pertinent to note that **17,549** students from schools and colleges paid visit to ZSI museums across the Country during the year.

The knowledge obtained by the scientists of ZSI in different arena of zoological affairs is regularly being disseminated in the form of lectures, group discussions, training etc. On this line, **166** lectures have been delivered by the scientists for the benefit of students, researchers and academicians in various universities, colleges and schools during the year.

ZSI entered MoU with a number of leading universities in India for Ph.D. programme, in which several scientists registered themselves as recognized supervisors for guiding the students for doctoral research. Presently more than **50** students are enrolled for Ph.D. degree programme under the supervisor-ship of ZSI scientists. During the year **5** students have been awarded for Ph.D. degree while **5** students submitted their thesis.

The ZSI is having the state-of-art library in the country for the literature in the form of books, periodicals, journals, monographs etc. pertaining to zoological studies. The library facilities is opened for the utility of general public and **10,969** persons benefited in the year by availing the facility. In order to further strengthen the library **820** books and **88** journals have been added at all the libraries of ZSI in Headquarters and Regional Centres.



ZSI being a National Institution, the laboratory facilities are extended to researchers for undertaking taxonomical studies. **150** researchers availed the laboratories in Headquarters and Regional Centres for their studies.

ZSI is also a part of Green Skill Development Programme implemented by Government of India, in which Para-taxonomy course is being offered by ZSI for the higher secondary drop-out students to gain knowledge for employment opportunity especially in forest, agriculture, heath, fisheries and tourism sectors. During the year **104** students have been trained.

Periodically ZSI is creating the infrastructure facilities to promote and enhance the taxonomical research of the organization. Accordingly during the year faunal repositories for Himalayas at Solan and Islands at Port Blair, Western Himalayan Research Laboratory and visiting scientist hostel at Dehradun have been created. In addition, **10** sophisticated microscopes, **10** high resolution cameras, insect storage systems, PCR machines etc. also been added.



The Zoological Survey of India is doing its best to disseminate the knowledge acquired to bring a sense of awareness to mainstream the Indian faunal diversity, which need to be conserved for ours and our generation's wellbeing.



The Zoological Survey of India (ZSI) was established on 1st July, 1916 to promote survey, exploration and research leading to the advancement in our knowledge of various aspects of exceptionally rich life of the erstwhile ´British Indian Empire´. The survey has its genesis in the establishment of the Zoological Section of the Indian Museum at Calcutta in 1875. ZSI is a premier institute under the Ministry of Environment, Forest and Climate change (MoEFCC). Over the successive periods, the functions of ZSI have also expanded gradually covering significant areas like the Environmental Impact Assessment with regard to fauna; survey of Conservation Areas; Status Survey of Endangered Species; Computerization of data on faunal resources; Environmental Information System (ENVIS) on faunal diversity; Identification and advisory services; Designated National Repository of Type and voucher specimen; supporting enforcement of Wildlife (Protection) Act, 1972; establishment of Marine aquaria and Museum for awareness on conservation etc. and acts as a custodian of the National Zoological Collections. The National Zoological Collections comprise more than four million specimens belonging to as many as 60,000 species including about 10,000 species of our neighboring countries like Myanmar, Pakistan, Bangladesh and Sri Lanka.

INTRODUCTION



01

PRIMARY OBJECTIVES

- Exploration, Survey, Inventorying and Monitoring of faunal diversity in various States, Ecosystems and Protected areas of India.
- Taxonomic studies of all faunal components collected.
- Periodic review of the Status of Threatened and Endemic species.
- Preparation of Red Data Book, Fauna of India and Fauna of States.
- Bioecological studies on selected important communities species.
- Preparation of databases for the recorded species of the country.
- Maintenance and Development of National Zoological Collections.
- Training, Capacity Building and Human Resource Development.
- Faunal Identification, Advisory services and Library Services.
- Publication of results including Fauna of India and Fauna of States.

SECONDARY OBJECTIVES

- Environmental Impact Assesment Studies.
- Maintenance and Development of Museum at
- Development of ENVIS and CITES Centres.
- Research Fellowships, Associateships and Emeritus Scientist Programmes.
- Collaborative research programmes on Biodiversity with other Organizations.
- GIS and Remote Sensing studies for animal diversity as well as for selected threatened species.
- Chromosomal Mapping and DNA finger printing.

ROLE OF ZSI IN BIODIVERSITY CONVENTION

In the light of the objectives of the Convention of Biological Diversity for scientific use and equitable sharing of the benefits of animal resources of the country, the objectives of ZSI has been broadened with respect to Articles 5, 6, 7, 8, 10, 13, 14, 17 and 18 of the Biodiversity Convention.

Identification and Monitoring (Article 7)

Very little can be done to assess the degree and value of biodiversity without knowing the species involved. The health of ecosystems also cannot be monitored without recognizing the presence of the individual organisms that are crucial for or indication of ecological processes.

ZSI has made extensive surveys in different parts of the country and large numbers of specimens have been collected. Of these collections, only about 65% have been taxonomically studied. These include the major groups of vertebrates, while the lower groups of invertebrates need more attention in identification as well as in surveys and explorations.

In-situ Conservation (Article 8)

Biodiversity can be conserved by the protection of undisturbed areas, representing the variety of natural ecosystems. It means, many species yet unknown to science can be protected, and will be available for assessment for their possible utilization in future.

ZSI provides information and vital data for the in-situ conservation of various species in different ecosystems, both within and outside the protected areas.



Sustainable use of biological diversity (Article 10)

Sustainable use is the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspiration of present and future generation.

ZSI has been providing regular services with regard to permissible limits of legal trading of faunal resources or derivatives thereof, monitoring services on population status of commercially important species and provides input for underutilized, culturable species both from terrestrial and aquatic systems. ZSI also provides timely information on declining population of species of commercial importance, to ensure sustainable use of components of biological diversity.

Environmental Impact Assessment (Article 14)

ZSI undertakes Environmental Impact Assessment (EIA) with special reference to ecology and wildlife.

PRINCIPAL THRUST AREAS OF WORK

Faunal inventorisation of States and Union Territories: Inventry of different Faunal group on the following states and Union Territories were undertaken, viz. Andaman & Nicobar Islands, Lakshadweep Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chattishgarh, Goa, Gujarat, Haryana, Himachal Pradesh, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Mizoram, Meghaleya, Odisha, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, Uttarakhand and West Bengal.

Faunal inventorisation of Ecosystems: (1) Marine Ecosystem: East and West coast of India, Digha coast, Campbell Bay and North Andaman (2) Island Ecosystem: Bakkahali Island, Sagar Island. (3) Estuarine Ecosystem: Cauvery, Pennaru, Narmada-Tapti (4) Mangrove ecosystem: Odisha and Sunderbans (5) Freshwater Ecosystem: Chambal River, High altitude lakes and rivers, Bhoj, Govind Sagar, Chandratal, Riverine Ecosystems of Western

Ghats (6) Himalayan Ecosystem, (7) Desert Ecosystem: Thar Desert, (8) Cold desert of Himachal Pradesh and Jammu Kashmir (9) Terai Grassland.

Faunal Inventorisation of Conservation Areas: Gulf of Mannar Marine Biosphere Reserve, Satkosia, Baisipalli, Sundarbans, Sonamukhi, Betua-Dahuri, Talley Vally, Mehao, Bornadi, Nongkhyllem, Hazaribagh, Lawalong, Point Calimer, Saddle Peak, Malabar, Thattekkad Bird Sanctuary, Sultanpur Bird Sanctuary, Govind, Rajaji, Sonanadi, Vally of Flowers, Samaspur, Nauradehi, Koyna, Navegaon, Sariska, etc.

Status Survey of Endangered Species: Coral reef, Himalayan Musk Deer, Crab eating macaque, Horseshoe crab, Swamp Deer, Hoolock Gibbon, Robber Crab, Nicobar Megapod, Black Necked Crane, Blue Sheep, Great Indian Bustard, Wild Ass, etc.

Taxonomic Studies: Protozoa, Mollusca, Marine sponges, Echinodermata, Rotifera Trematoda, Nematodes, Marine Crabs, Hymenoptera, Termites, Coleoptera, Coleopteran, Odonata, Collembola, Thysanura, Orthoptera, Hemiptera, Tettigonidae, Diptera, Oribatid Mites, Ixodid Ticks, Spiders, Fishes, Ephemeroptera, Oligochaeta, Fishes, Ampbhibia, Reptiles, Birds, Mammals, etc. .

Maintenance of National Zoological Collections (NZC): Preservation and Maintenance of NZC, holding more then 15,000 type specimens.

Advisory, Training and Extension Services: Provided as and when sought by the different Institutions/ Organizations.

Computerization and Dissemination of Data: Computerization of registered collection of Types and other specimens are being carried out along with digitization of the specimens. Interactive identification and information system, Primary Type Informations (zsifis.nic.) Digitization of ZSI publications is also being carried out.

Collaborative Research Programme /Projects: ZSI is involved in many collaborative research programmes with several Institutes and Universities across the country.

Checklist of Faunal Groups: More than 80 checklist have been uploaded (zsi.gov.in).



ZSI HEADQUARTERS, KOLKATA

Headquarters of Zoological Survey of India office is situated in Kolkata. Apart from scientific divisions and sections, ZSI also has Library, Publication, Identification and Advisory, ENVIS centre, Field Survey, Training and Extension, Museum and Taxidermy Divisions, Photography section, Artist section, Scanning Electron Microscopy Unit and Data centre. These units support research work of the scientists.

The Scientific Divisions and Sections at ZSI Headquarters undertake studies on various animal groups from Protozoa to Mammals. The various scientific sections of headquarters include Protozoology, General Non-Chordata, Platyhelminthes, Nemathelminthes, Crustacea, Mollusca, Central Entomology Laboratory, Isoptera, Lepidoptera, Hymenoptera, Coleoptera, Miscellaneous, Insect Order, Apterygota, Orthoptera, Hemiptera, Diptera, Acarology Arachnida, Marine Fish, Freshwater Fish, Protochordata, Amphibia, Reptilia, Bird Mammal & Osteology, Invertebrate Paleozoology, Vertebrate Paleozoology, Prehistoric Zoology, Wildlife and Conservation, Ecology, Soil Zoology, DNA and Molecular Systematics Laboratory, Museum & Taxidermy and Library.

REGIONAL CENTRES

NORTH EASTERN REGIONAL CENTRE (NERC) 01

SHILLONG

The North Eastern Regional Centre, Shillong is the first of the 16 Regional Centres of Zoological Survey of India and was established on 6th March, 1959 with the primary objective of exploring and documenting faunal diversity of northeastern India. The Centre's jurisdiction extends to six North East Indian states of Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura. The North -East India biogeographic zone covering these six states constitutes about 5.2 percent of the total geographic area of the country. This zone is situated in the confluence of Indo-Malayan, Indo-Chinese and Indian biogeographic sub regions and also constitutes parts of Indo-Burma biodiversity hotspots. The region is extremely rich in faunal diversity with high level of species endemism. The Centre is engaged in documenting the myriad diversity of animal life forms in this biologically rich region.

WESTERN REGIONAL CENTRE (WRC) 02

PUNE

The Western Regional Centre at Pune, Maharashtra was set up in September 1959 under the Second Five Year Plan of the Government of India. The primary objective being exploration and documentation of the Indian Peninsula, which is a complex natural unit of geomorphological and biogeographical evolution. The area south of the Narmada River known as Deccan Plateau is by far the most extensive biogeographic zone of Indian region. This large zone is relatively homogenous and is distinct from the neighbouring zones- the Western Ghats, Semi-arid and Gangetic Plain. It is further recognizable into five subdivisions viz. Deccan Plateau South, Deccan Plateau North, Eastern Highlands, Chota Nagpur and Central Highlands. The Deccan Plateau is a conglomeration of different types of ecosystems embracing myriad of biological wealth. The Western Ghats or "Sahyadri" running parallel to the west coast of India is one of the biodiversity hotspots of India. The part of the Western Ghats between Tapi River in north and Trekhol creek, Goa in south is geologically very distinct and unique. It is commonly referred to as Northern Western Ghats and extends across three states viz. Gujarat, Maharashtra and Goa.

CENTRAL ZONE REGIONAL CENTRE (CZRC) 03

JABALPUR

Central Zone Regional Centre of Zoological Survey of India was established at Jabalpur on 24th February 1960 under Second Five Year Plan, to survey and document our knowledge of the faunal resources of Central India. Central Zone Regional Centre covers two states of Central India namely Madhya Pradesh, (covering 51 Districts having 09 National Parks, 25 Wildlife Sanctuaries, 05 Tiger Reserves and 01 Biosphere Reserve) and Chhattisgarh (covering 27 Districts with 03 National Parks, 13 Wildlife Sanctuaries and 01 Tiger Reserve and 01 Biosphere Reserve shared with M.P.).

DESERT REGIONAL CENTRE (DRC) 04

JODHPUR

The Desert Regional Centre of the Zoological Survey of India, Jodhpur was established in June, 1960 in the name of Desert and Gangetic Plains Regional Station under Second Five Year Plan to survey the faunal diversity of Desert Biome. Later, in 1965 due to the characteristic changes in its boundaries, it was renamed as at present. The Jurisdiction of the Centre is spread over 3, 42,239 Sq. km. area of Rajasthan and 1,81,1000 Sq. km. of Gujarat, covering 33 Districts of Rajasthan and 25 Districts of Gujarat. The area encompasses 6 National Parks and 44 Wildlife Sanctuaries, 2 Tiger Reserve and 3 Ramsar Site. The Centre is engaged in the documentation of the rich and diverse faunal resources of the Rajasthan and Gujarat state by conducting field explorations and scientific studies.

NORTHERN REGIONAL CENTRE (NRC) 05

DEHRADUN

The Northern Regional Centre at Dehradun, Uttarakhand, was established in August 1960 under the second five year plan of the Government of India. The Northern Regional Centre is entrusted with exploration of faunal wealth in five North Indian states: Uttarakhand, Uttar Pradesh, Punjab, Haryana, Delhi and the union territory- Chandigarh, covering an area of c. 441707 sq km. The region comprises of ecologically diverse areas ranging from the western Himalayas in north with Shivaliks at the base, through Gangetic Plains with Terai in north and Bundelkhand in south, and the part of the Aravalis in southwest with equally diverse biodiversity in its one World Heritage Site (Nanda Devi), one Biosphere Reserve (Nanda Devi), two Tiger Reserves (Corbett and Dudhwa), six National Parks, seven Wildlife Sanctuaries, four Conservation Reserves and 14 Important Bird Areas.

SOUTHERN REGIONAL CENTRE (SRC) 06

CHENNAI

Southern Regional Centre was established during the II Five Year Plan on 9th March 1961 to conduct faunal explorations within its jurisdiction. Area under Jurisdiction: Tamil Nadu (30 districts with 5 National Parks, fourteen WildlifeSanctuaries, four Tiger Reserve), Karnataka (Eight districts ofsouthern part with four National Parks and ten Wildlife Sanctuaries), Southern part of Andhra Pradesh, Union Territory of Puduchery (Pondichery). Three Biosphere Reserves fall within the jurisdiction of the Centre.

GANGETIC PLAINS REGIONAL CENTRE (GPRC) 07

PATNA

Gangetic Plains Regional Centre was set up at Patna in March1965 under Third Five Year Plan to survey, ascertain and augment knowledge on the faunal resources of Gangetic Plains.Area under Jurisdiction: The jurisdiction of the Centre is spread over two states Bihar having 38 Districts with one National Park, eleven Wildlife Sanctuaries and one Tiger Reserve and Jharkhand having 24 Districts with one National Park, ten Wildlife Sanctuaries and one Tiger Reserve.

HIGH ALTITUDE REGIONAL CENTRE (HARC) 08

SOLAN

High Altitude Regional Centre was established in September 1968, under the fourth Five Year Plan of the Government of India, with the main objective of exploring the Himalayan fauna. The jurisdiction of the centre includes the mountainous states of Himachal Pradesh and Jammu & Kashmir of the North Western Himalaya. They are located between 300 22'40"N - 370 6 N' latitudes and between 720 30' 20"E - 790 04' 20" E longitudes and spread over an area of 2,77, 909 sq.km. Owing to vast altitudinal variation from 600m to 6,500m asl, it covers all the four physiographical zones of the Himalaya viz. Shiwalik, Lesser, Great and Trans Himalaya. Three important ranges, Karakoram Range is the northern most range, to the south of the Karakoram ranges run the Zanksar range and parallel to Zanksar ranges lie the Pir Panjal ranges in the region. The two states (Himachal Pradesh and Jammu & Kashmir) falling in its jurisdiction includes 09 National Parks, 43 Wildlife Sanctuaries, 37 Conservation Reserves, One Biosphere Reserve and 07 Ramsar sites.

MARINE BIOLOGY REGIONAL CENTRE (MBRC) 09

CHENNAI

Marine Biology Regional Centre was established on March 1, 1973 in Chennai, from where it was a Marine Survey Unit of Zoological Survey of India, Kolkata, since its inception under the first five year plan in April 1959. Established with the mandate to studying the Marine Biodiversity of India, this centre was commissioned to assessing the biodiversity in marine ecosystems within the 2.02 million sq km EEZ of India - from reef types such as fringing, barrier and atolls, to seagrasses, mangroves, estuaries, sand dunes, salt marshes and extensive beaches in addition to the oceanic habitats, submerged reefs and mounts.

ANDAMAN AND NICOBAR REGIONAL CENTRE (ANRC) 10

PORT BLAIR

Andaman and Nicobar Regional Centre of Zoological Survey of India (ZSI) established at Port Blair on 21st April 1977 under the Sixth Five Year Plan of Government of India. The jurisdiction of the Centre covered entire Andaman and Nicobar Islands, and its territorial waters. The studies on the faunal communities have been carrying out with the state-of-art facilities for undersea survey such as SCUBA diving equipments and marine sampling instruments, Leica M205A automated stereo-zoom microscope with DFC 500 camera attachment, compound microscopes with computer connectivity, high resolution cameras with tele-lens, and still and video cameras with underwater housing facility.

SUNDERBAN REGIONAL CENTRE, (SBRC) 11

CANNING

The Sunderban Regional Centre was established in the year 1979 at Kakdwip, West Bengal under the Fifth Five Year Plan of the Government of India. This centre was established with an objective to survey the faunal wealth of Sunderban as it is closely entangled with waterways like rivers, creeks, estuaries and marine. In the year 1984, in order to have a better focus on Sunderban Biosphere Reserve, the centre was shifted from Kakdwip to Canning. In the year 2010, SBRC planned to establish more facilities for the office for better scientific and administrative management, and from January 2012 onwards the office was shifted to a new building at No 1 Dhigirpar, Canning Town.

FRESHWATER BIOLOGY REGIONAL CENTRE (FBRC) 12

HYDERABAD

Freshwater Biology Regional Centre was established under 5th Five -Year Plan of Govt. of India on 24th February 1979 at Hyderabad, Telangana State (erstwhile united Andhra Pradesh) in contemplation to studythe limnological aspects of the freshwater bodies in and around Hyderabad. After 1985 its studies were expanded to freshwater bodies thoughout India focussing on exploration and documentation of physico-chemical, ecological profiles and faunal diversity of the all the freshwater ecosystems including wetlands of National and International (Ramsar sites) importance. The Center has holdings of freshwater faunal collections from various wetlands. The Centre is well equipped with facilities like modern analytical instruments for carrying out research in limnoecological, hydrobiological, faunistic studies and animal DNA Barcoding.

WESTERN GHATS REGIONAL CENTRE (WGRC) 13

CALICUT

The Western Ghats Regional Centre at Calicut, Kerala, established in April 1980, under the Sixth Five Year Plan of the Government of India, is one among the sixteen Regional Centres of the Zoological Survey of India (ZSI), the internationally acclaimed taxonomic organization of the country.The jurisdictional limit of the Centre encompasses the entire biogeographical zone of the Western Ghats, an extremely important life supporting system of Peninsular India. The Centre is engaged in the documentation of the rich and diverse faunal components/ resources of the Western Ghats and Kerala, by conducting field explorations and scientific studies.

ESTUARINE BIOLOGY REGIONAL CENTRE (EBRC) 14

GOPALPUR-ON-SEA

Estuarine Biology Regional Centre, Gopalpur-on-sea, Ganjam was established in 1980 during the 6th five year plan of Govt of India. The Primary objective of this centre is to conduct investigations on faunal diversity of estuaries, backwaters, lagoons and mangrove ecosystem along the east and west coast of India. Geographical Coverage include estuaries and mangrove ecosystem of India which are extended throughout the country along both east and west coasts, the jurisdiction of the Estuarine Biology Centre is 'All India' covering all estuaries and associated mangrove ecosystem of the country.

ARUNACHAL PRADESH REGIONAL CENTRE (APRC) 15

ITANAGAR

Arunachal Pradesh Regional Centre of the Zoological Survey of India was established on 31st January 1983, at Itanagar under the Seventh Five Year Plan mainly to augment and explore the knowledge on faunal wealth of Arunachal Pradesh. The Area under Jurisdiction includes, Arunachal Pradesh, a northeastern state with an area of 83,743 sq. km having total protected area of approximately 12, 000 sq. km. comprising of thirteen Wildlife Sanctuaries, two National Parks, one Orchid Sanctuary, three tiger reserves, 8 community reserves, 2 elephant reserves and one Biosphere Reserve

MARINE AQUARIUM AND REGIONAL CENTRE (MARC) 16

DIGHA

Marine Aquarium and Regional Centre was established on 1st July, 1989. The centre has two distinct wings viz. research centre and aquarium, in addition to facilities for mass education to people. The research wing of the centre started functioning in 1989; however, the aquarium was opened for public since 2003. It was set up with the objectives of conducting education and awareness programme through the marine aquarium which is an integral part of MARC and providing infrastructure facility for conducting professional training course on coastal and marine ecosystem.



Research Programmes of ZSI involves research on organisms ranging from primitive Kingdom Protista to the highly evolved Mammalia of the Kingdom Animalia, occurring in different Ecosystems, Protected Areas, States & UTs. During this financial year, ZSI, HQ and its 16 regional centres were involved in 161 programmes, including 17 externally funded projects: 43 were completed, 77 ongoing and 41 programmes were initiated during this period.

RESEARCH PROGRAMMES: HEADQUARTERS



02

01

Fauna of Maharashtra -*Corals And Porifera*

Completed

Investigators: Dr. J. G. Patnaik, Dr. Ch. Satyanarayana

Date of start: April 2010

Date of completion: March 2016

Objectives: To study and inventorize the hard Corals and Porifera of Maharashtra State.

Outcome

Twenty species of scleractinian corals belonging to 16 genera and 6 families have been recorded, of which *Leptastrea purpurea* (Dana 1846) and *Dendrophyllia indica* Pillai 1967 are first records to Maharashtra and *Pavona minuta* Wells 1954, is recorded for the first time from the west coast.

02

Scleractinian Diversity in the Coast of Orissa and Andhra Pradesh

Completed

Investigator: Dr. Ch. Satyanarayana

Date of start: April 2008

Date of completion: March 2016

Objectives: To study and inventorize the Scleractinian diversity in the coast of Orissa and Andhra Pradesh.

Outcome

First time deep water surveys on the Reef ridge communities along Andhra and Orissa coasts were carried out exclusively for Scleractinian diversity. Two new reef regions along east coast marked. Ten species of hard corals collected form first records to Andhra Pradesh and three to Orissa state. The study provide updated list of Azooxanthellate corals comprising of37 species belonging to 19 genera and 5 families

03

Scleractinian Diversity in the West Coast of India Excluding Gulf of Kutch

Completed

Investigator: Dr. Ch. Satyanarayana

Date of start: April 2011

Date of completion: March 2016

Objectives: To study and inventorize the Scleractinian diversity of West coast of India (Excluding major reefs – Gulf of Kutch and Lakshadweep).

Outcome

Little explored patch reefs along the Kerala coastwere surveyed. One species of scleractinian coral is first record to Kerala state. There are extensions in the distributional records of few azooxanthellate and zooxanthellate corals. The study recorded 35 species of stony corals belonging to 21 genera under 10 families.



View of study area

HEADQUARTERS



Ironus longicaudatus De Man, 1884

04 Fauna of Sonanadi Wildlife Sanctuary, Uttarakhand: Soil Nematodes
(Combined programme with NRC)

Completed

Investigator: Dr. Anjum N. Rizvi

Date of start: April 2014

Date of completion: March 2017

Objectives: To study the soil nematodes of Sonanadi Wildlife Sanctuaryand generate baseline data for future studies.

Outcome: Soil nematodes are regarded as one of the bioindicators of soil ecosystem and this forms first study on the soil nematodes from the sanctuary. The study revealed the presence of bacterivorous, fungivorous, palnt-parasitic and predatory nematodes, depicting the area as less disturbed.The study further revealed 38 species of soil nematodes under 9 orders, 15 families, and 27 genera. All the 38 species are being recorded for the first time from Sonanadi WLS, while six species are new distributional records from the Uttarakhand state. The baseline generated in this faunal group would be benefical for future data studies.

05 Fauna of Valley of Flower NP, Uttarakhand-Soil Nematodes
(Combined programme with NRC)

Completed

Investigator: Dr. Anjum N. Rizvi

Date of start: April 2015

Date of completion: March 2017

Objectives: To study the soil nematodes of Fauna of Valley of Flower NP and generate baseline data for future studies.

Outcome: The study on the soil nematodes of this unique ecosystem was carried out for the first time by ZSI and the study is based on single survey and therefore less diversity of soil nematodes is reported, further the diversity of soil nematode is less at higher elevation as compared to lower elevation. The study recorded 28 species of soil nematodes under 6 orders, 11 families, and 21 genera comprising bacterivorous, plant-parasitic and few predatory nematodes. Since this is the first report on the soil nematodes from Valley of Flower National Park, all the 28 species of nematodes form the first record from Valley of Flower National Park. Four species are new records from India, while three species are new distributional records from the Uttarakhand state. The baseline information on soil nematodes would be useful for future studies understand the effect of climatic changes.

06

Fauna of Samaspur Bird Sanctuary (U.P) - Soil Nematodes
(Combined programme with NRC)

Completed

Investigator: Dr. Anjum N. Rizvi

Date of start: April 2015

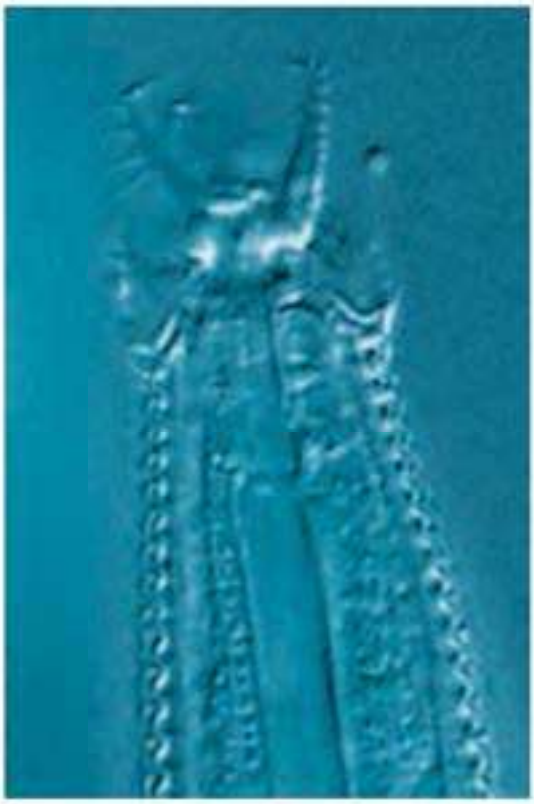
Date of completion: March 2017

Objectives: To study the soil nematodes of Samaspur Bird Sanctuary and generate baseline data for future studies.

Outcome: No studies have been reported on the soil nematodes from Samapur BS and therefore this forms first report. The study recorded 25 species of soil nematodes under 5 orders, 10 families, and 15 genera. The results are based on single survey and therefore conclusions cannot be drawn regarding the nematode community. All the 25 species form first record from Samaspur Bird Sanctuary, while, 11 species are new distributional records from the Uttar Pradesh state.



Hemicriconemoides mangifera Siddiqi, 1961



Acrobeles timmi Chaturvedi & Khera, 1979

07

Fauna of Ropar Wetland, Punjab - Soil Nematodes
(Combined programme with NRC)

Completed

Investigator: Dr. Anjum N. Rizvi

Date of start: April 2015

Date of completion: March 2017

Objectives: To study the soil nematodes of Ropar wetland, Punjab and generate baseline data for future studies.

Outcome: The study is based on single survey and therefore much more diversity of soil nematode is expected and requires more thorough studies. The study revealed 40 species of soil nematodes under 7 orders, 15 families, and 29 genera comprising bacterivorous, fungivorous and plant-parasitic feeding groups. All the 40 species form first record from Ropar Wetland, whereas 11 species are new distributional records from the Punjab state.

08

Studies on the Termite Fauna (Order-Blattaria, Infra order- Isoptera) of Himachal Pradesh

Completed

Investigators: Dr. N. Saha, Mr. P. C. Mazumder & Mrs. J. Basak

Date of start: April 2012

Date of completion: March 2016

Objectives: To study the termite fauna (Order-Blattaria, Infra order- Isoptera) of Himachal Pradesh.

Outcome: Termite fauna of the state is not rich. Soil-inhabiting 18 species of termites dominate out of 20 species, whereas only 2 wood-destroying species were encountered. Out of 20 species, 3 species being first record from the state and many new locality records included. A very primitive termite species of wood-roach-like appearance, *Archotermopsis wroughtoni* Desneux, was recorded in the cold temperate coniferous forests of Kalatop Khajjiar WLS at an elevation of 3000 m, after a lapse of about more than three decades. It is the largest out of 286 species in India and the only living representative of the genus *Archotermopsis* under the family Archotermopsidae.

09

Insect Pests and Pollinator Diversity of some major crops of North Bengal

Completed

Investigator: Dr. Bulganin Mitra

Date of start: April 2012

Date of completion: March 2016

Objectives: To study insect pest and pollinator diversity of some major crops of North Bengal.

Outcome: The study recorded 167 species under 6 orders of insects from the tea gardens of North Bengal, of which, Lepidoptera shares maximum number of species (77), followed by Hemiptera (29), Diptera (24), Coleoptera (19), Odonata (12) and Orthoptera (6). 20 species of Lepidoptera, five species of Hemiptera, five species of Coleoptera and three species of Orthoptera were found as tea pests. One species of Diptera and one species of Odonata are found as predators of tea pest in North Bengal. 14 species of Hemiptera, 11 species of Coleoptera and nine species of Lepidoptera have been recorded as recognized pests/borers of other crops and timber plants. 3 species of Hemiptera and 3 species of Diptera have been recorded as predator and 16 species of Diptera have been recorded as flower visitors/pollinators in ecosystem surrounding to tea gardens of North Bengal.



Eterusia aedea aedea Linnaeus 1763

10

Diversity and Distribution of Dipteran Fauna from Sonamukhi protected forest, Bankura, West Bengal

Completed

Investigators: Dr. Dhriti Banerjee,
Mr. R.S. Mridha,
Mr. Atanu Naskar &
Mrs. Jayita Sengupta

Date of start: April 2013

Date of completion: March 2016

Objectives: To study the diversity and distribution of Dipteran fauna from Sonamukhi protected forest, Bankura.

Outcome: i. Out of 2 families Brachyceran family has shown a higher percentile (77.77 %) of diversity than Nematoceran family. Between 9 families Bombyliidae has shown the maximum percentile of species richness (40.67%) while Pipunculidae found to be the least abundant family (1.69%). While discussing about ecological diversity, Shanon index (H) value shows that highest species diversity is obtained in the pre-monsoon and least in the monsoon season. This is because insects, particularly Diptera favour areas with moderate temperature and rainfall.

ii. It was observed that the most dominant species in pre-monsoon was *Ligyra semifuscata*, *L. auriantica*, *Oplodontha rubrithorax*, *Exoprosopa (Exoprosopa) insulata*, post-monsoon-*Thereva bilineata* and in monsoon was *Mimegralla extrema*. This is because Bombyliidae and Therevidae are mostly predominant in the arid and semi-arid zones, while Stratiomyidae preferring scorch lands of sunny forest patches with Micropezidae favouring moist climate thereby prevalent in the monsoon period.

Altogether 81 species of Dipteran fly has been reported from the Sonamukhi Protected Forest area. These 81 species have been reported under 21 genera and 20 families. Out of which 11 species were found to be new record from the surveyed area.



Episyrphus (Episyrphus) balteatus (De Geer, 1776)



View of Kameng river



11 Diversity and Zoogeographical Distribution of Freshwater Fishes of Kameng River, Arunachal Pradesh

Completed

Investigators: Dr. L. Kosygin Singh, Mr K. C. Gopi, Dr. B. Sinha, Mr. A. Dash & Miss. A. K. Tudu

Date of start: April 2013

Date of completion: March 2016

Objectives: To study the diversity and zoogeographical distribution of freshwater fishes of Kameng River, Arunachal Pradesh.

Outcome: The results include 107 species belonging to 45 genera, 17 families and 6 orders recoded from the Kameng River in the East and West Kameng Districts of Arunachal Pradesh. *Psilorhynchus nepalensis* is reported for the first time from India. *Garra quadratirostris*, *Olyra praestigiosa* and *Pethia shalynius* are reported for the first time from Arunachal Pradesh. Highest species diversity highest was observed in the family cyprinidae (42% of fish fauna). It includes 2 Endangered, 5 Vulnerable, 3 Near Threatened, 51 Least Concern, 7 Data Deficient, and 39 not assessed species. The fish fauna of the Kameng River is a mixture of endemic hill stream fishes, Assamese forms, commercially important food fishes, and some widely distribution fishes.

12 Birds of Himachal Pradesh

Completed

Investigators Dr. G. Maheswaran

Date of start: April 2011

Date of completion: March 2014

Objectives: To study the bird diversity of Himachal Pradesh.

Outcome: Total three surveys were undertaken at different places of proposed study area during the survey, 86 bird species were reported.

13 Study of animal remains from Rupar archaeological site, Haryana (erstwhile Punjab, state)

Completed

Investigators: Balmohan Baraik

Date of start: April 2012

Date of completion: March 2016

Objectives: A zootaxonomical inventory of the available animal remains would be made by critical study of the samples and by comparative assessment with skeletal components of different



A portion of the left horizontal ramus of mandible – *Bos Bubalus* Linn.

animals in the standard reference of ZSI. Co-lateral information about human culture and past ecological set-up to be retrieved from available literature/documents.

Outcome: All animal remains specimens of Rupar archaeological Site assembled for study; worked out altogether 806 specimens comprising of 17 Invertebrate and Vertebrate species. The analysis of animal remains of Rupar Archaeological site revealed exoskeleton of 01 species of Mollusca and endoskeletons of 3 species of Reptilia, 2 species of Avis and 11 species of Mammalia, both domestic as well as wild, in which cattle bones outnumbered others.

14

Status Survey of Indian Grey Wolf (*Canis lupus pallipes*) in West Bengal and some parts of Jharkhand

Completed

Investigators: Mr. P.C. Soren & Mr. D. Basu

Date of start: April 2015

Date of completion: March 2017

Objectives: To assess the population status of Indian Grey Wolf in West Bengal and some parts of Jharkhand.

Progress: Study was carried out in three district of West Bengal & some part of Jharkhand state (2015-16). And total of 44 sites were surveyed in 24 days covering 353 km. As per the data and field observation Wolves are absent in deep forest as they prefer dry deciduous scrub and open field. During the survey 45 mammal species were observed out of which n=11 individuals of wolves sighted in the study area, the direct sightings were less but the numbers of indirect evidences were quite abundant (Scat, Pug marks). Majority of the indirect evidences were observed away from human habitation (3 to 4 Km) and remote areas. But in case of Mechachua (Midnapore) and Sutan and Khata-Am areas (Bankura) their dens were located very close to human settlement in scrub forest. In all n=23 pugmarks and n=5 dens are observed during the two surveys of which 3 dens were near to agriculture field and rest are in rocky areas specially in Jhaldha areas. The questionnaire survey was also conducted in the villages The Maxant based model was also attempted to map the current distribution of wolves in the landscape. The model indicates that the most suitable habitats of the species in the landscape are located in Dalma Wildlife Sanctuary and surrounding areas. Out of the total area about 6.97% is suitable. Among the suitable areas about 1.06% is highly suitable, followed by 1.99% moderately suitable, and 3.91% with low suitability.

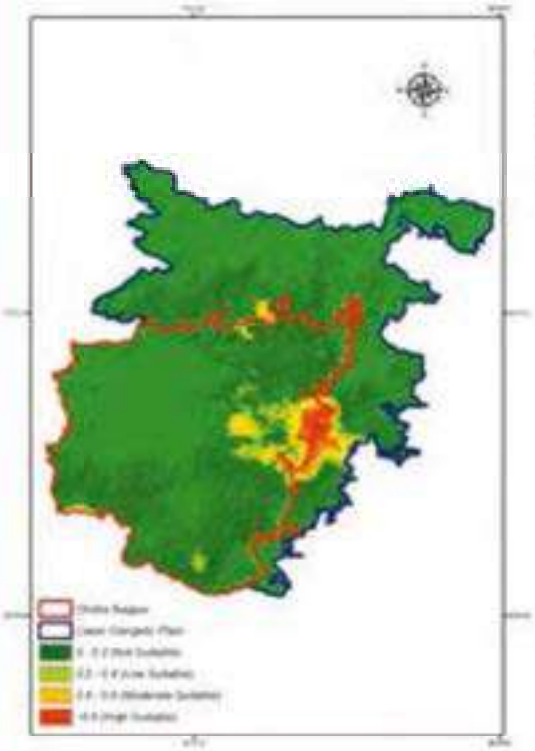


Figure 1: Probability distribution map showing the suitable habitats for *Canis lupus pallipes*.

01

Studies on the faunal diversity of Sasthamkotta lake, Kerala: Freeliving Protozoans *(Combined with FBRC, MBRC and WGRC)*

Ongoing Programme

Investigator: Dr. Jasmine, P

Date of start: April 2016

Date of completion: March 2018

Objectives: To study the diversity and ecology of free-living protozoans (Testate amoebae) in the freshwater lake, Sasthamkotta, Kerala.

Progress:
This is the first study on testate amoebae (Amoebozoa) from the Sasthamkotta Lake. Twenty two species of protozoans (testate amoebae) under 9 genera and 8 families; all the species are recorded for the first time from Sasthamkotta Lake.

02

Tropical rain forests, Western Ghats, Kerala: Free living Protozoans *(Combined with WGRC and MBRC)*

Ongoing Programme

Investigators: Dr. Jasmine, P.
Dr. Bindu, L &
Dr. Santosh Kumar

Date of start: April 2016

Date of completion: March 2019

Objectives: To study the freeliving protozoans (Amoebozoa & Ciliophora) from various ecosystems of Western Ghats, Kerala.

Progress: 89 species of rhizopods coming under 22 genera and 14 families from different ecosystems of Western Ghats of Kerala were identified, registered and RFD prepared. 6 species of free-living ciliates with 85 specimens were identified and of which 4 species are new records to India.

Significant findings: All the species are new records from Sasthamkotta Lake. Eight species of testate amoebae are new to science.



Quadrulella tropica Walles, 1912

03

Review and Revision of Scleractinian Diversity of India

Ongoing Programme

Investigator: Dr. Ch. Satyanarayana

Date of start: April 2015

Date of completion: March 2017

Progress: Database of all the scleractinian species reported from India prepared. The literature survey revealed anomalies in about 89 species belonging to 26 genera. Visited Okha Fisheries College Museum, studied and taken photographs of the Gulf of Kutch specimens deposited by Dr. Pillai. One more species recently published is synonymized. Visited Madras Museum, Chennai to study two type specimens of *Acropora* species (*indica* and *obscura* (j.s. nasuta).

04

Studies on the faunal diversity of Sasthamkotta lake, Kerala: Crustacea *(Combined with FBRC, MBRC and WGRC)*

Ongoing Programme

Investigator: Dr. K. Valarmathi

Date of start: April 2015

Date of completion: March 2018

Objective: To study the freshwater crustacean diversity in Sasthamkotta, Kerala.

Progress: Participated in the Survey from 20th to 29th December, 2016. To our surprise we couldn't collect even a single example of macro crustaceans from the Sasthamkotta Lake and the overall species diversity was also very poor. Crustacean samples were collected from the nearby river and water bodies and from feom Sasthamkotta fish market where prawn and crabs were brought from nearby area. A total of 500+ crustaceans were collected from the surrounding water bodies and market. The samples comprising the crabs, prawns and stomatopods were identified into 9 species under 6 genera and five families.

05

Tropical rain forests, Western Ghats, Kerala: Crustacea *(Combined with WGRC and MBRC)*

Ongoing Programme

Investigator: Dr. K. Valarmathi

Date of start: April 2015

Date of completion: March 2018

Objective: To study the freshwater crustacean diversity in Western Ghats, Kerala.

Progress: Visited ZSI/WGRC, Calicut to identify the unnamed specimens available in their National Zoological collections, undertaken one survey and also received crustacean samples from other survey parties who visited the Western Ghats, so far more than 400 specimens of freshwater prawns comprising 15 species were identified and still identification is under progress.

06

Diversity and Distribution of Cephalopods along the East Coast of India

Ongoing Programme

Investigators: Dr. B. Tripathy & Mr. A. K. Mukhopadhyay

Date of start: April 2015

Date of completion: March 2018

Objectives: To study the diversity and distribution of Cephalopods along the East Coast of India

Progress: Five surveys undertaken along Odisha, Andhra Pradesh and Tamil Nadu coast and 709 specimens of Cephalopods collected, Identification of all the collections have been completed resulting in 40 species, 22 genera, 14 families and 04 orders.

Significant findings: *Uroteuthis bengalensis*, endemic to Bay of Bengal was collected during the study period.

07

Fauna of Marine Mollusca of West Coast of India w.r.t. Gujarat and Maharashtra

Ongoing Programme

Investigators: Dr. B. Tripathy & Mr. A. K. Mukhopadhyay

Date of start: April 2015

Date of completion: March 2018

Objectives: To study the marine Mollusca of West Coast of India w.r.t. Gujarat and Maharashtra

Progress: Four surveys undertaken, 2100 specimens of Gastropods and 1668 specimens of Bivalves along with 123 specimens of fishes and other marine organisms collected from field, identified and registered.



Donax scortum (Linnaeus, 1758)

08 Tropical rain forests, Western Ghats, Tamil Nadu, - Encyrtidae, Sphecidae and Vespidae

(Combined with SRC Chennai)

Ongoing Programme

Investigators: Dr. S. I. Kazmi& Shri P. C. Mazumdar

Date of start: April 2016

Date of completion: March 2017

Objectives: Survey and exploration of diversity and distribution of Encyrtidae, Sphecidae and Vespidae (Hymenoptera) from Tropical rain forests of Western Ghats, Tamil Nadu.

Progress: Study for the diversity and distribution of Encyrtidae, Sphecidae and Vespidae of Western Ghats, Tamil Nadu have resulted in the collection of 908 specimens. Out of 908 specimens, 492 specimens belong to the Order Hymenoptera and 287 specimens belong to three families namely, Encyrtidae, Sphecidae and Vespidae. The results of the study revealed that nine species of Encyrtidae, seven species of Sphecidae and six species of Vespidae were documented.

Significant findings: Twenty two species representing parasitic hymenopteran family Encyrtidae and predator families Sphecidae and Vespidae were documented from Tamil Nadu parts of Western Ghats.

09 Fauna of Eastern Himalaya-Arunachal Pradesh-Coleoptera

(Combined with APRC, Itanagar)

Ongoing Programme

Investigators: Dr. Devanshu Gupta, Dr. O.P. Srivastava Mrs. A. Sar, Mr. S. K. Ghosh & Mr. R. K. Kushwaha

Date of start: April 2016

Date of completion: March 2018

Objectives: Taxonomic study of Coleoptera: Families Scarabaeidae, Staphylinidae, Dytiscidae, Gyrinidae, Haliplidae, Noteridae and Carabidae from Eastern Himalaya- Arunchal Prades.

Progress: Study and Identification is in process. 434 specimens of 81 species, 26 genera belonging to 06 families have been identified. Backlog collections have been sorted out, pinned, labelled and further processed for identification.

Significant findings: A new species *Pukupuku arunachalensis* Gupta, Chandra and Bézdék, 2017 (Coleoptera: Scarabaeidae) has been described from Namdapha National Park, Arunachal Pradesh.



Pukupuku arunachalensis Gupta, Chandra & Bezdek, 2017 1. male, holotype, 2. female, paratype.

10

Collembolan Fauna of Duars region of Northern West Bengal & Shola grassland of WesternGhats

Ongoing Programmes

Investigators: Dr. G. P. Mandal & Shri K. K. Suman

Date of start: April 2014

Date of completion: March 2017

Objectives: To study the species diversity of Collembola fauna in grassland Ecosystem of Duars region of Northern West Bengal & Shola grassland of Western Ghats.

Progress: Altogether 3892 specimens of collembola have been collected,50 species of Collembola belonging to 24 genera under 7 families have been identified.

Significant findings: A new species of collembola have been accepted for publication. All the species are recorded for the first time from Duars region of Northern West Bengal & Shola grassland of Western Ghats.



Dicranocentroides flavescens Yosii, 1966

11

Taxonomic studies on Teleasinae (Hymenoptera: Platygastridae) of South Western Ghats

Ongoing Programmes

Investigator: Dr. Rajmohana, K.,

Date of start: April 2015

Date of completion: March 2018

Progress: A total of 5 surveys were conducted to different parts of South Western Ghats and out of about 200 specimens collected, the study could document 30 species of Teleasinae from South Western Ghats, of which 10 species have been discovered new to science. Of all the genera only *Trimorus* Foerster is most species rich.

12

Morphological and Molecular study of Mullets Mugiliformes: Mugilidae) of India

Ongoing Programmes

Investigators: Mr. S. S. Mishra & Dr. Vikas Kumar

Date of start: April 2014

Date of completion: March 2016

Objectives: To study the morphology and molecular characterization of Mullets of India.

Progress: Twenty tissue samples from fresh samples were collected from seven species and DNA sequences obtained. A working key for identification of Indian species is prepared with new found morphological characters. Based on molecular characters further change in generic names are included.



Planiliza macrolepis (Smith 1846)

13

Studies on the cardinal Fishes (Perciformes: Apogionidae) of West Coast of India

Ongoing Programmes

Investigator: Mr. S. S. Mishra

Date of start: April 2014

Date of completion: March 2017

Objectives: To study the cardinal fishes of West Coast of India.

Progress: Working key for identification of Indian Apogonids (cardinal fishes) prepared (both key to genera and key to species).



Jaydia smithi Kotthaus 1970

Progress: Three new species belonging to the family Muraenidae (*Gymnothorax . pseudotile, G. visakhaensis* and *E. propinqua*) have been described during the year. Description of one more new species (*Gymnothorax odishi*) has been communicated. Two species of eels of the family Ophichthidae (*Muraenichthys gymnopterus* and *Skythrenchelys zabra*) recorded for first time from the north-east coast of India. One species collected from Lakshadweep (*Gymnothorax robinsi*) found to be new record to India and manuscript under preparation. Resurrection of *Ophichtus chilkensis* and redescription of *Bascanichthys deraniyagalai* are under process.

14

Taxonomic study of Eels of the order Anguilliformes of the east coast of India

Ongoing Programmes

Investigators: Dr. A. Mohapatra, Mr. S. S. Mishra & Mr. P. C. Tudu

Date of start: April 2015

Date of completion: March 2018

Objectives: Taxonomic study of Eels of the order Anguilliformes of the east coast of India.



Strophidon sathete (Hamilton 1822)

15 Skinks of India – a taxonomic study

Ongoing Programmes

Investigators: Kaushik Deuti, Probhat Bag & Sujoy Raha

Date of start: April 2016

Date of completion: March 2019

Objectives: Taxonomic revision of all Indian skinks, as skinks are the largest family of lizards but the least studied. In this project the investigators will visit all museums in India like BNHS, IISc, SACON and document each and every skink specimen, including those in 16 Regional Centers of ZSI and study their detailed taxonomy to prepare first monograph on Skinks of India with photos and maps.

Progress: Taxonomic studies, measurements, scale counts and writing up of re-descriptions of 43 species have been done out of 62 species known from India. Two surveys conducted to ZSI, Shillong and to ZSI, Pune and BNHS, Mumbai. First survey to ZSI, Shillong (178 skinks of 9 species studied). Second Survey to BNHS, Mumbai (309 skinks of 32 species studied) & ZSI, Pune (37 skinks of 8 species studied). Re-descriptions of 43 species have been completed so far after examining both type and non-type specimens. One new record to India and one new species were sent for publication.



Eutropis macularia (Blyth, 1853)

16 Fauna of Eastern Ghats: Reptilia

Ongoing Programmes

Investigator: Dr. Varadaraju

Date of start: April 2016

Date of completion: March 2018

Objectives: To study the Reptilia fauna of Eastern Ghats.

Progress: Survey conducted: In Andhra Pradesh and Telangana, collected 16 specimens of reptiles and 340 specimens of other groups. 2nd survey of Simlipal, Chilika and Satkosia Tiger Reserve, collected 6 specimens of reptiles and 22 exs of other groups. One survey was undertaken during the year 2017-18 to Tamil Nadu. All the collections have been studied.



Geochelone elegans (Schoepff, 1795)

17 Avian Fauna of West Coast of India – Gujarat and Maharashtra

Ongoing Programmes

Investigator: Debdulal Saha

Date of start: April 2016

Date of completion: March 2018

Objectives: To study the avian fauna of west Coast of India.

Progress: Surveys were conducted by the Investigator to the proposed study area. 212 bird species were observed during surveys.

18

Status Survey of Swamp Deer or Barasingha, *Rucervus duvaucelii* (G. Cuvier, 1823) (Cervidae; Cetartiodactyla: Mammalia) in India

Ongoing Programmes

Investigator: Gaurav Sharma

Date of start: April 2015

Date of completion: March 2018

Objectives: To understand the present population status of Swamp Deer in India.

Progress: Five surveys conducted, 452 Swamp deer (Adults/sub adults) sighted at Kanha National Park, 476 in Dudhwa National Park and521in Kaziranga National Park.

19

Investigating Thrips Diversity (Thysanoptera: Insecta) in Rajasthan State of India

Ongoing Programmes

Investigator: Dr. Vikas Kumar

Date of start: April 2015

Date of completion: March 2017

Objectives: To study the Thrips diversity in Rajasthan State.

Progress: Three surveys from 2014 to 2017 have been done for the Thrips collection from Rajasthan state of India and more than 1000 slides mounted specimens with registration. 60 species identified. 140 sequences of 46 species from Rajasthan were generated.

Significant findings: Two new species of thrips: *Odontothrips moringa* Tyagi & Kumar, *Neohydatothrips chandrai* Tyagi & Kumar. One new record: *Podothrips erami* Minaei. Forty three species are newly recorded from Rajasthan state of India.

20

DNA Barcoding studies on *Holotrichia* complex (Scarabaeidae: Coleoptera) on sugarcane crops from North and Central India

Ongoing Programmes

Investigators: Dr. Kailash Chandra, Dr. Vikas Kumar & Dr. Devanshu Gupta

Date of start: April 2016

Date of completion: March 2019

Objectives: DNA Barcoding studies on *Holotrichia* complex, (Scarabaeidae: Coleoptera) on sugarcane crops from North and Central India

Progress: One survey was conducted in 2017 of Uttar Pradesh. More than 250 specimens collected and morphologically identified. DNA isolation and PCR of 60 specimens has been done. 60 sequences have been generated so far, which revealed multiple cryptic species in *Holotrichia longipennis*. DNA barcoding of other specimens is in progress. The barcodes have been uploaded at BOLD.

21

Fauna of Satkosia-Baisipally Wildlife Sanctuary, Odisha

Ongoing Programmes

Coordinators: Dr. Dhriti Banerjee & Dr. G. P. Mandal

Investigators: Subject experts

Date of start: April 2015

Date of completion: March 2018

Objectives: To identify and inventorise the fauna from various ecosystems of the Satkosia and Baisipally Wildlife Sanctuary, Odisha.

Protozoa: Identified 261 specimens comprising 37 species under 14 genera and 9 families of which three species are recorded, new to India, i.e. *Centropyxis aplanata* (Deflandre, 1929), *Gibbocarina galeata* (Penard, 1890),Kosakyan et al., 2016 and *Difflugia bacillifera* (Penard, 1890).

Platyhelminthes: Manuscript and Final Technical Report submitted. 25 species under 12 genera and 10 families of Trematodes have been reported in the present study.

Nematoda: Participated in one survey and collected 40 soil samples for the collection of nematodes. This is the first report on the nematodes from the sanctuary. The study revealed 51 species belonging to the order Dorylaimida (Nematoda) under 23 genera, 10 families and 4 superfamilies.

Crustacea: Undertaken two surveys and collected 800 specimens of decapod crustaceans, 400 specimens of aquatic insects, plankton samples and other aquatic organisms. From that 760 specimens of were identified into six species under 2 genera and two families, 45 specimens of crabs were identified into 2 species under two genera, the planktonic crustaceans comprised 19 species and 400+ aquatic hemipteran insects were identified into 38 species.

Mollusca: Total 21 species 17, genera under 12 families have been identified.

Lepidoptera: Two surveys conducted in combined survey mode. Altogether, 328 specimens of Lepidoptera were collected, out of which 260 specimens were collected by the section and other received from different survey parties. Till date, 225 specimens Comprising of 60 species belonging to 38 genera under 7 families have been identified, registered in NZC and Meta data computerized. Remaining specimens are under identification process.

Coleoptera: A total of 851 specimens belonging to 73 species and 44 genera under 5 families of Coleoptera were identified. Since there was no previous reports of species from these WLS, most of them are first report from the area.

Collembola: One combined survey conducted. Altogether 1151 specimens of collembola have been collected. 11 species of Collembola belonging to 9 genera under 4 families have been identified.

Orthoptera: 360 specimens of Orthoptera registered and maintained during period of report. Pinning and identification of rest of the specimens is completed.

Hemiptera: Altogether 5525 specimens were collected. One combined faunistic survey was conducted for 10 days from 14th to 23rd December, 2015. Collected 2753 specimens of various faunal groups and insect orders including 598 specimens of Hemipteran insects. Another combined faunistic survey (Hemiptera, CEL, Hymenoptera and Crustacea) was undertaken to Satkosia and Basipally WLS during 10.12.2016 to 19.12.2016. Collected 2773 specimens of various faunal groups and insect orders including 791 specimens of Hemipteran insects. Documentation: submitted two manuscripts85 species under 72 genera belonging to 12 families viz. Reduviidae, Miridae, Pentatomidae, Plataspidae, Cydnidae, Dinidoridae, Scutelleridae, Coreidae, Alydidae, Largidae, Pyrrhocoridae, Lygaeidae, are recorded for the first time from Satkosia Tiger Reserve, Orissa. 34 species under 22 genera belonging to 4 families viz. Cercopidae, Membracidae, Cicadellidae and Dictyopharidae from Satkosia Wildlife Sanctuary (Odisha).

Diptera: A total of 1931 specimens were collected during the survey time of which 732 diverse groups of dipteran specimens and 1150 collembolan specimens were collected from the different areas of Satkosia Tiger Reserve. Our collection covers the buffer area as well as the core area of Satkosia Tiger Reserve forest area.

Out of total collection till date, altogether 21 families have been sorted out from the total collection The most abundant flies among order Diptera is Ceratopogonidae followed by Syrphidae and Calliphoridae. The family Hippoboscidae and Tipulidae are the least abundant flies collected during the survey period. Whereas among Collembola fauna family Paronellidae found to be abundant utmost.

Among the others fauna collected, the Hymenopteran groups was most abundant groups The Hemiptera was the less abundant group collected.

Acari: Identified 227 specimens comprising 20 species under 14 genera and 8 families. All are registered. Regn. No. (5143/17- 5192/17).

Hymenoptera (Formicidae): 39 species of Formicidae identified.

Oligochaeta: Manuscript submitted.The study revealed 10 earthworm species under 8 genera and 4 families.

Zooplankton: 64 species of zooplankton, 25 species of Protozoa belongs to 8 genera; 5 family; 2 order were recorded.

Significant findings:

Protozoa: Three species are new record to India.

1. *Gibbocarina galeata* (Penard, 1890)
2. *Difflugia bacillifera* (Penard, 1890)
3. *Cyclopyxis aplanata* (Deflandre, 1929

In addition to that the testate amoebae community comprises a lot of silica indicating species were recorded from Satkosia-Baisapally WLS, especially, *Lesqueresia spiralis*.

Platyhelminthes: 17 species of trematodes form first records from the state.

Nematoda: All the 51 species are new distributional records from the Satkosia and Baisipally Wildlife Sanctuary out of which 6 species have been recorded for the first time from India.

Crustacea: One species of shrimp is new to science and one species of aquatic insect is new record to India.

Mollusca: One new record from state Odisha. Edible and pestiferous (snail) species have been identified.

Lepidoptera: All 60 species of Lepidoptera are recorded for the first time from Satkosia and Basipalliy Wildlife Sanctuary.

Apterygota: All the species are recorded for the first time from Baisipally and Satkosia Wildlife Sanctuary, Odisha. Two species of collembola were identified as new to science from Baisipally and Satkosia Wildlife Sanctuary, Odisha.

Hemiptera: 73 species under 61 genera of Hemiptera are recorded for the first time from the state of Orissa.

Diptera: Our collection scenario has also depicted that in combined effect the families like, Calliphoridae, Asilidae and Syrphidae were collected from both buffer and core area. So it may be presumed that the anthropogenic factors as well as the untouched habitats of core area has contributed to this high abundance of predatory flies as well as of pollinators and coprophagous flies.

Acari: 2 species under 2 genera i.e. *Annectacarus mucronatus* Grandjean and *Cryptogalumna cryptodontata* Grandjean are recorded new to India.

Hymenoptera (Formicidae): A rare species *Chronoxenus dalyi* (Forel) identified from the region, is being added to the National Zoological Collection for the first time. The species was found in association with a Coleoptera, which is here found for the first time from India.

Oligochaeta: Four species of earthworm have been recorded for the first time from Odisha state.

Zooplankton: Among Cladocera, 15 species belongs to 11 genera; 6 family; 2 order.

15 species new record to state Odisha. 4 species of copepoda belongs to 3 genera - new record to state Odisha.

Museum and Taxidermy: The population density of Giant Squirrel is more in the kandhoidia, Bada kheta, Kadali kholo, Tikarpara, Pumakote and Labangi and less in Bagha munda, Rayagada, Badmul, Tarva and Jagannathpur area of the protected areas. Habitat preference, food habits and nesting pattern studied.Data analysis under process.

View of Satkosia WLS



22

Fauna of Chilika Lake, Odisha

Ongoing Programmes

Coordinator: Dr. Basudev Tripathy

Investigators: Subject experts

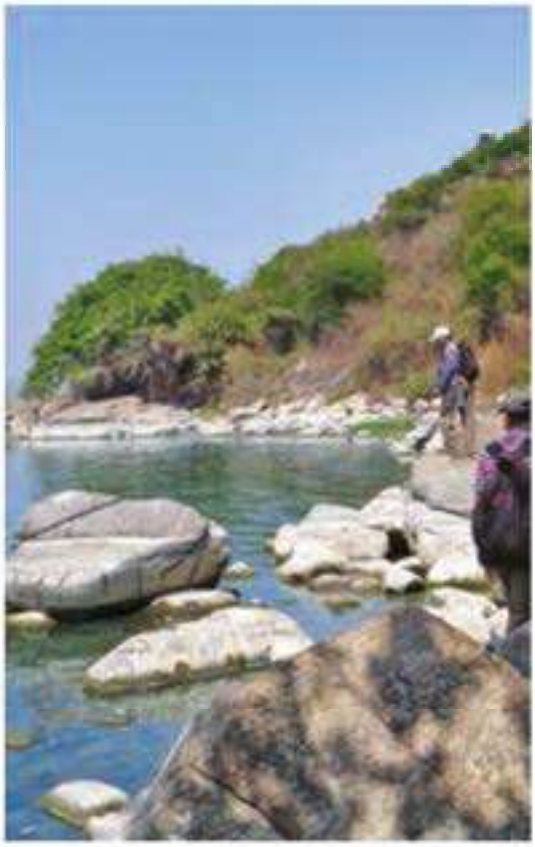
Date of start: April 2016

Date of completion: March 2019

Objectives: To study and inventorise the fauna of Chilika lake, Odisha.

Protozoa: 40 specimens of testate amoebae belonging to 18 species under 9 genera have been identified so far.18 specimens of testate amoebae belonging to 10 species under 5 genera have been registered. 18 specimens of testate amoebae belonging to 10 species under 5 genera have been digitized.

Platyhelminthes: 7 species belonging to 7 genera and 5 families (41 specimens) of trematode parasites have been identified in this year.



View of Chilika Lake



Greater Flamingo *Phoenicopterus roseus* Pallas, 1811

Nematoda: The study revealed 25 species belonging to the order Dorylaimida (Nematoda) under 15 genera and 09 families so far. Identification is going on. RFD data prepared for 189 specimens belonging to 25 species.

Crustacea: One survey conducted collected around 1000 specimens of crustaceans', so far 721 specimens of Crustaceans comprising Prawns, Crabs, Isopods and Stomatopods were identified into 28 species belonging to 20 genera and 14 families.

Mollusca: One survey undertaken in the month of February 2018 in which 483 specimens of Gastropods, 217 specimens of Bivalves collected from Chilka. All specimens identified belonging to 17 species, 10 genera and 8 families.

Collembola: No survey has been undertaken by Apterygota section.15 exs of Collembola received through Dr. K. Valarmathi. 2 species of Collembola previously reported from Chilka.

Acari: 18 species under 14 genera have been identified. All are registered.

Marine fishes: All specimens collected during earlier surveys have been identified.

DNA sequence for 98 specimens obtained, analysis under process.

At least 20 species have been found to be new records to the ecosystem. Manuscript on new records under preparation.

Resurrection of *Ophichtus chilkensis* and *Glossogobius mas* under process. Redescription of *Bascanichthys deraniyagalai* based on Chilka Lake specimens is being prepared.

Soil zoology: 2 species of copepoda, 4 species rotifer 1 sp. cladocera identified.

Hymenoptera (Formicidae): One survey conducted, 8 species of Formicidae identified.

Significant findings:

Protozoa: Total 18 species of testate amoebae were identified from Chilka so far, three species are new record to Odisha.

Platyhelminthes: Three species of Trematodes are first record from Odisha. *Bucephalopsis minimus* Verma, 1936; *Allocreadium gobii* Roytman, 1963; *Podocotyle gracilis* Yamaguti, 1952.

One Didymozoid larvae *Torticaecum fenestratum* (Linton, 1907) Yamaguti, 1942 is the first record from India.

Nematoda: All the 11 species are recorded for the first time from the areas around chilka in the districts of Ganjam and Puri. Two speciesare new record to India.



Northern Pintail, *Anas acuta* Linnaeus, 1758



Collection of soil fauna

Apterygota: One new Genus of Collembola from Chilka has been accepted for publication.

Acari: 4 species under 4 genera are new records to India. Besides 2 genera *Drymobates* Grandjean and *Adhaesozetes* Hammer are reported first time from India.

The most of the collections were made from the islands of the lake where the vegetation were typically thorny. During the collection heavy pollution by the open cast and underground coal, iron ore, bauxite and other mines were noticed which may be the reason for low population of acari

One species belong to primitive oribatid mites, 7 species in 7 genera and 4 families to gymnonotic Oribatida and 9 species in 7 genera and 4 families belong to poronotic oribatid mites group.

23

Fauna of Terai Grasslands of Gangetic Plains

Ongoing Programmes

Coordinator: Dr. G. Maheswaran

Investigators: Subject experts

Date of start: April 2016

Date of completion: March 2018

Objectives: To identify and inventorise the fauna from various ecosystems of Terai Grasslands of Gangetic Plains.

General non-Chordata: During the study, altogether, 11 species of Earthworms under 5 genera and 3 families have been reported from Bihar. 14 species of Leeches under 8 genera and 4 Families have also been reported.

Platyhelminthes: 117 specimens belonging to 34 species under 16 genera and 11 families of trematode parasites have been identified so far.

Nematoda: The study revealed 10 species belonging to the order Dorylaimida (Nematoda) under 7 genera and 7 families so far. RFD data prepared for 39 specimens belonging to 10 species.

Mollusca: Total of 415 specimens have been identified, Among 415 specimens 23 species 16 genus and 14 families have been identified.

Lepidoptera: Three surveys conducted to Terai grassland ecosystem of Bihar in combined survey mode. Altogether, 415 specimens have been collected. Till date 218 specimens comprising of 46 species belonging to 34 genera under 07 families of Lepidoptera have been identified, registered in NZC and meta data computerized. Pinning, Identification and registration of remaining specimens is under progress.

Collembola: A total of 1505 specimens of collembola have been collected.16 species of Collembola belonging to 12 genera under 3 families have been identified.

Orthoptera: 156 specimens registered and maintained during period of report. Identification of rest of the specimens are in process.

Hemiptera: Survey Conducted: Two Faunistic survey to Terai Grassland (Bihar part)/ Valmiki Tiger Reserve, West Champaran was conducted during 09.07.2016 to 18.07.2016 and collected 112 specimens of Hemiptera. One combined survey was undertaken to explore the Tarai Grassland of Gangetic plains fauna especially from the Dudhwa National Park, Pilibhi TR, Kishanpur WLS, Katernighat WLS and adjoining areas for 11 days from 10.10.2017 to 20.10.2017. Collected 3762 specimens of various faunal groups including 1154 specimens of Hemiptera.74 species under 64 genera belonging to 16 families have been identified.

Diptera:1552 specimens were collected during survey of which 217 were dipteran specimens. 180 specimens are identified till date. 150 number of specimens are registered.

Hymenoptera (Formicidae & Mutillidae): 26 species of Formicidae and 3 species of Mutillidae identified.

Acari: 18 species under 16 genera have been identified from Valmiki Tiger Reserve, Bihar. 17 species under 16 genera have been reported from Uttar Pradesh. All are registered. 1 species belong to primitive oribatid mites, 7 species in 7 genera and 4 families to gymnonotic Oribatida and 9 species in 7 genera and 4 families belong to poronotic oribatid mites group.

Birds: Two field surveys were conducted-one in Jaldapara, North Bengal and one in Dudhwa NP, Uttar Pradesh. Family wise bird checklist were also prepared for both the tours. One field survey were conducted in February, 2018 to Valmiki Tiger Reserve, Bihar and the tour report for the same have been submitted. In this tour a total of 85 bird species were recorded.

Soil zoology: 150 permanent slides prepared, 59 specimens,18 species belonging to 9 genera, 5 family and 2 orders were identified.

Significant findings:

General non -chordata: Out of 11 species of Earthworms 6 are new to science and 2 are new to Bihar. Out of 14 species of leech 4 are new to science and 8 are new to Bihar.

Platyhelminthes: 10 species of trematodes are recorded for the first time from Uttar Pradesh.

Nematoda: All the 10 species are with new distributional record from Pilibhit Tiger Reserve, Pilibhit district. 01 species recorded for the first time from India.

Apterygota: Two species of collembola were identified as new to science from Terai Grasslands of Gangetic plains. All the species are recorded for the first time from Terai Grasslands of Gangetic plains.

Acari: The geographical analysis of oribatid mites of this sanctuary has shown that the majority of species (11 species) have Neotropical distribution. The other groups are presented by species with Oriental (5 species), Nearctic (2 species), Australian (2 species) Palearctic (1 species) and Ethiopian (1 species) distribution.

Soil zoology: *Arcella megastoma* from Uttar Pradesh and *Plagiopyxis callida* species from Bihar were found to be abundant.

Collection of soil samples





01

Compilation of Deep Sea Fauna of Bay of Bengal and Arabian Sea- Special Reference to Copepods

Initiated Programme

Investigator: Dr. Honey U. K. Pillai

Date of start: April 2017

Date of completion: March 2018

Objectives: Compilation of copepod studies from Indian waters-Bay of Bengal and Arabian Sea.

Progress: A compiled information on the reported species, habitat, area, and the recent classification/status have been collected for 204 copepod species belonging to four orders and 18 families from the Arabian Sea and Bay of Bengal.

02

Studies on the Faunal Diversity of Urban lakes of Kolkata

Initiated Programme

Investigators: Dr. K. Valarmathi, Dr. P. G. Sethy & Santanu Mitra

Date of start: April 2017

Date of completion: March 2020

Objectives: To study the faunal diversity of Urban lakes of Kolkata and to publish the results in the form of research articles and Monograph.

Progress: Local surveys were conducted to East Kolkata Wetlands, Subash Sarovar, Patuli Water Park, Mydan Tank, Wetlands in Dhapa area and

collected various aquatic organisms like zooplanktons, crustaceans, Pisces, Molluscs, Insects etc and water and sediment samples for protozoans. Observations were made for the presence of higher vertebrates like reptile, bird, mammal and the identification is under progress.



Collection at East Kolkata Wetlands



Himalayapotamon chambaensis Mitra and Valarmathi, 2017

03

Efficacy of DNA Barcoding in identification of Platygastroidea (Hymenoptera) from India

Initiated Programme

Investigators: Dr. Rajmohana, K., Dr. Vikas Kumar, Dr. Kaumod Tyagi

Date of start: April 2017

Date of completion: March 2020

Progress: One survey undertaken, PCR of four species done. Morphology based identification of 10 species of Platygastroidea completed.

04

Revision of *genus* Holotrichia Hope, 1837 from India

Initiated Programme

Investigators: Dr. Kailash Chandra & Dr. Devanshu Gupta

Date of start: April 2017

Date of completion: March 2020

Objective: Revision of genus *Holotrichia* Hope, 1837 (Melolonthinae: Scarabaeidae: Coleoptera) from India.

Progress: About 250 specimens representing 23 species of the genus *Holotrichia* present in Coleoptera section, ZSI, HQs were sorted out, pinned, and identified. The male genitalia of 9 species viz., *H. farinosa, H. fissa, H. longipennis, H. nagpurensis, H. nicobarica, H. rustica, H. sculpticollis, H. serrata* and *H. tetarana* were dissected and illustrated. The re-descriptions of these species were written along with the habitus photographs.



Hipposideros speoris (Schneider, 1800)

05 Validation of Chiropteran Species present in the National Zoological Collections (NZC)

Initiated Programme

Investigators: Dr. C. Venkatraman & Dr. M. Kamalakanan

Date of start: April 2017

Date of completion: March 2020

Progress: A total of 5,310 bat specimens contained in 655 jars were segregated from the existing NZC collection. Three bat species (Least Leaf-nosed Bat, *Hipposideros cineraceus*, Durgas Dasas Leaf-nosed Bat *Hipposideros durgadasi*, and Greater Long-tongued Fruit Bat, *Macroglossus sobrinus*were found extended its distribution range to other parts of India.

06 Zooarchaeology of faunal remains of Kalibangan, Rajasthan – An Indus Valley site

Initiated Programme

Investigator: Mrs. Supriya Nandy

Date of start: April 2017

Date of completion: March 2020

Objectives: Compilation of copepod studies from Indian waters-Bay of Bengal and Arabian Sea.

Progress: The animal remains specimens from Kalibangan site are being sorted out, arranged and identified; till date about 1400 number of specimens have been worked out among which 612 specimens identified and registered belonging to six species under six genera of three families and two orders of Class Mammalia. Identification work continued.



Bos indicus Linn - Horn core



Bos gaurus Smith - proximal portion of femur



Rhinoceros unicornis Linn -Right unciform bone



Bubalus bubalis (Linn) - Distal fragment of left numerus

07

Status survey of Hangul in Jammu and Kashmir

Initiated Programme

Investigator: Dr. Lalit Kumar Sharma

Date of start: April 2017

Date of completion: March 2020

Objective: To understand the present population status of Hangul in Jammu and Kashmir State.

Progress: The Department of Wildlife Protection is conducting periodic monitoring of hangul through population census. The monitoring is done by using the permanent transects marked by the department to systematically cover the entire landscape. The population monitoring of the species is going on since 1965. As per Gee (1966) the hangul population in Jammu and Kashmir was composed of 3000-5000 individuals in 1940. As per the Wildlife Department data till 1947 the number of individuals in the population ranges from 1000 to 2000. There was a sharp decline reported by Gee, (1966) where the total number of individuals was about 400 individuals. Gee (1965) compiled population data for the years viz., 1954, 1957, 1960, 1962, 1965 where the number of individuals in the population ranges from 200 to 550. Schaller (1969) reported that the hangul population in dachigam ranges from 150 to 200 individuals. Whereas, Kurt (1978) stated that the hangul population is composed of about 250 individuals in Dachigam. Since, then the population of the species has been monitored very frequently to understand the causes of decline and to take apt management actions for the long term conservation of the species. A number of studies have highlighted that the population demography is a serious problem for this species. Several surveys conducted earlier since 1969 to 2015 indicates that there is a decline in number of males per female and also the recruitment of new individuals has also declined over the year. However, more recent census conducted in 2015 indicates that the Hangul's population in Dachigam NP is composed of 110-130 animals and the overall mean population including the other relic populations in Kashmir (Tral-Overa, Lidder; Chattergul-Wanghat, Sindh and Diver Inderbug-Lolab, Kishanganga) is of about 148 individuals (Bacha 2015).

Significant findings: Major factors for decline in hangul population in Kashmir Based on the critical review of published literature and the population census reports of the Wildlife Protection Department of Jammu and Kashmir Government, following are the major causes identified which needs conservation and management actions for the long term viability of the species and also for achieving the goal envisaged in the recovery plan of the species.

i. Low recruitment rate of fawns
ii. Increase in predator numbers
iii. Grazing of domestic livestock in summer habitat.
iv. Poaching
v. Zoonotic diseases
vi. Habitat fragmentation and loss of movement corridors of hangul.



Figure. Trends in population estimates and population demographic characteristics (male: female, Young: female ratio). The data on demography for the year 2013 is not available and hence not presented.

08

Faunal diversity of Ganga (Gangotri to Gangasagar)

Initiated Programme

Coordinator: Dr. Lalit Kumar Sharma

Investigators: Subject expertsat ZSI HQ/ NRC/ GPRC

Date of start: April 2017

Date of completion: March 2020

Objective: To assess the faunal diversity of Ganga from Gangotri to Gangasagar.

Progress: So far two surveys have been conducted in Upper section of Ganga river during March 2018. During the survey about 300 km stretch of Ganga river was covered by a team of scientists from ZSI, HQ and a Ganga stretch near Patna city was covered by GPRC, Patna with respect to faunal diversity assessment. During the period ZSI, HQ team collected about 771 specimens of various insects among them 428 were of order Diptera. About 78 specimens of fishes was also collected representing 59 species of fishes. The identification at species level is under process.

09

Morphological and molecular systematics of Thysanoptera of Odisha & Gujarat

Initiated Programme

Investigators: Dr. Kaomud Tyagi & Dr. Vikas Kumar

Date of start: April 2017

Date of completion: March 2020

Objective: To study the morphological and molecular systematics of Thysanoptera of Odisha & Gujarat

Progress: Two Surveys, one each in Gujarat and Odisha State of India have been conducted. A total of 60 species have been identified and barcoded, which revealed a number of cryptic species in at least five thrips species. Data analysis is in progress. More than 500 specimens collected. About 40 species have been newly recorded from each state.

10

ZSI-National Faunal Genome Resources (ZSINAGR): Sequencing Fifty Animals Mitogenomes-Phase-I

Initiated Programme

Investigators: Dr. Kailash Chandra & Dr. Vikas Kumar

Date of start: April 2017

Date of completion: March 2020

Progress: Complete Mitochondrial Genomes of Seven species of different taxa: Thysanoptera (*Thrips palmi*, *Rhipiphorothrips cruentatus*, *Holarthrothrips indicus*, *Neohydatothrips samayunkur*), Spider (*Lyrognatha crotalus*), and Turtles (*Nilssonia nigricans* and *Pangshura tentoria*) have been sequenced and analysed.

11 DNA Barcoding of Vertebrate Fauna present in National Zoological Collection (NZC) of ZSI w.s.r. to Primates

Initiated Programme

Investigators: Dr. Mukesh Thakur, Dr. C. Venkatraman & Dr. Vikas Kumar

Date of start: April 2017

Date of completion: March 2020

Progress: A total number of 291 samples were collected from the NZC, Mammalogy & Osteology Section, ZSI, HQ, Kolkata processed for DNA barcoding. In total 150 sequences/barcodes of vertebrates have been generated.







Museum specimens of Primates

12 Fauna of Buxa Tiger Reserve, West Bengal

Initiated Programme

Coordinators: Dr. S. I. Kazmi & Dr. A. Ramesh Kumar

Investigators: Subject experts

Date of start: April 2017

Date of completion: March 2020

Objective: To explore and inventorize the fauna of Buxa Tiger Reserve.

Protozoa: A survey was conducted from 23rd March to 29th March 2018. A total of 36 soil/moss and 5 water samples were collected from the BTR. 3 species belonging to two genera and two families with 11 specimens identified/ recorded. Analyses of further samples in progress.

Platyhelminthes: One combined survey was undertaken w.e.f. 20-11-2017 to 23-11-2017. 77 specimens in 18 vials of Trematode parasites have been collected. 4 specimens belonging to 4 species under 3 genera and 3 families of trematode parasites have been identified.

Nematoda: 5 soil samples received from survey teams were processed and collected 100 specimens of soil nematodes.

20 soil samples have been recently received by other survey team, they are under extraction process. Permanent wax slides preparation and identification is under process.

Hymenoptera: One survey was conducted. As a result, totally 1714 specimens were collected. Out of 1714, 870 specimens belongs to Hymenoptera under the families of Encyrtidae, Mymaridae, Apidae, Scoliidae, Platygastridae, Scelionidae, Diapriidae, Vespidae, Sphecidae, Aphelinidae, Eulophidae, Eurytomidae, Braconidae, Pteromalidae, Ichneumonidae etc.

Orthoptera: One survey has been conducted with Lepidoptera and Isoptera section from 30.10.2017 to 03.11.2017 and collected 174 specimens of Orthoptera.

Hemiptera: Survey conducted during 26th to 31st March, 2018. Collected 37 insect samples, 32 soil samples, 6 water samples and 4 moss

samples for the collection of Protozoa and other fauna.

Identified 16 species under 15 genera belonging to 8 families of Hemiptera.

Soil zoology: 37 ex. of 17 species belonging to 8 genera, 4 family, 2 orders of Protozoa were identified and registered From Buxa Tiger reserve.

Significant findings:

Platyhelminthes: One species of Trematode parasites, *Allocreadium mahaseri* Pande, 1938 has been found the first record from West Bengal.

Hymenoptra: Three species of Apidae viz., *Apis dorsata* Fabr, *Apis cerana* Fabr, *Anthopora cingulata* Fabr; one species of Encyrtidae viz., *Encyrtus aurantii* (Geoffroy); one species of Mymaridae viz., *Narayanella pilipes* (Subba Rao); four species of Vespidae viz., Polistes (Gyrostoma) wattii Cameron, *Delta esuriens* (Fabricius), *Vespa affinis Linnaeus*, *Delta conoideum* Gmelini; two species of Sphecidae viz., *Chalybion bengalense* Dahlbom, *Sphex predator* Smith were recorded from Buxa Tiger Reserve, West Bengal for the first time.

13

Fauna of Mahananda Wildlife Sanctuary, West Bengal

Initiated Programme

Coordinator: Dr. Shelley Acharya

Investigators: Subject experts

Date of start: April 2017

Date of completion: March 2020

Objective: To explore and inventorize the fauna from Mahananda Wildlife Sanctuary, West Bengal.

Protozoa: A survey has been conducted from 23rd March to 29th March 2018. A total of 38 soil/moss and 9 water samples were collected from the BTR and Mahananda WLS. Analyses of further samples in progress.2 species belonging to two genera and two families with 8 examples identified/recorded. Also identified24 specimens comprising 10 species, 5 genera under 4 families, 2 new records to West Bengal (Nebella collaris, Nebela galeata).

Platyhelminthes: Collected 83 soil samples specimens; identified15 specimens, comprising 4 species, 3 genera under 3 families.

Nematoda: Soil samples received from survey teams. Collected 85 specimens of soil nematodes. Permanent wax slides preparation and identification is under process. Recently received 15 soil samples. Extraction is under process.

Mollusca: Identified 235 specimens comprising 13 species, 13 genera under 8 families. Edible and economically important species (*Brotia costula, Paludomus blanfordiana, Filopoludina bengalensis*) have been identified. One invasive species (*Lissachatina fulica*) has been identified.

Lepidoptera: Collected 386 specimens; identified 113 specimens comprising of 19 species (Moth), 17 genera under 3 families and 12 species (Butterfly), 11 genera under 4 families. Three Crambid species have been found probable new records for West Bengal but confirmation is still required.

Hymenoptera: One survey was conducted. As a result, total 1380 specimens were collected. Out of 1380, 935 specimens belongs to Hymenoptera under the families of Encyrtidae, Mymaridae, Apidae, Scoliidae, Platygastridae, Scelionidae, Diapriidae, Vespidae, Sphecidae, Aphelinidae, Eulophidae, Eurytomidae, Braconidae, Pteromalidae, Ichneumonidae etc.

Hymenoptera (Formicidae): One survey conducted. 31species of Formicidae identified.

Odonata: Identified 20 specimens of comprising 6 species, 5 genera under 2 families.

Orthoptera: Identified 63 specimens comprising 22 species, 19 genera under 5 families .

Hemiptera: Collected 896 specimens; identified 66 specimens comprising 18 species,17 genera under 11 families.

Acari: Collected102 soil samples specimens; Identified 128 specimens comprising 22 species under 18 genera.

Arachnida: identified 54 specimens comprising 16 species,16 genera under 12 families.

Ecology Scetion: 113 specimens identified in at 7 species under 4 genera and 3 families.

Soil zoology: Onesurvey conducted, 2 species recorded from Mahananda Wildlife Sanctuary. A total of 400 permanent slides were made.

Significant findings: One species of *Gonostomum affine* (Stein, 1859) Sterki, 1878 has been found from Mahananda Wildlife Sanctuary.

Two species of trematodes have been found the first record from West Bengal.

Opegaster mehrii Harshey, 1937

Opegaster mastacembeli Harshey, 1937

Five species of Encyrtidae viz., *Copidosoma floridanum* (Ash.), *Tassonia gloriae* Girault, *Ooencyrtus utetheisae* (Risbec), *Leptomastix tsukumiensis* Tachikawa, *Neodusmetia sangwani* (Subba Rao); four species of Mymaridae viz., *Cosmocomoidea trialbifuniculatus* (Subba Rao), *Mymar taprobanicum* Ward, *Narayanella thornypoda* (Narayanana and Subba Rao), *Polynema brevicarinae* Annecke & Doutt; four species of Sphecidae viz., *Chlorion lobatum* (Fabricious), *Sphex subtruncatus* Dahlbom, *Sphex predator* Smith, *Sphex walshae* Hensen; one species of *Xylocopa* sp. were recorded from Mahananda wildlife sanctuary, West Bengal for first time. Catalogued the species of hymenopterans is baseline data for further invention of forester and researchers.



Collection of Termites at Mahananda WLS



14

Fauna of Lakshadweep

Initiated Programme

Coordinators: Dr. Anjum N. Rizvi, Dr P. M. Sureshan & Dr Rajkumar Rajan

Investigators: Subject experts

Date of start: April 2017

Date of completion: March 2020

Objectives: To identify and inventorize the fauna of Lakshadweep with special refrence to terrestrial fauna

Progress: One survey was undertaken to Lakshadweep from 21st Nov to 9th Dec'17. In total 15 localities were surveyed for the observation and collection of fauna. Total fauna 2214 specimens comprising 22 faunal groups were collected, including 21 soil samples for the investigation of soil-inhabiting nematodes and Collembola. Observations were made on 2 species of mammals, 14 species of birds, three species of reptiles.

Second survey was conducted from 25-31st March'2018 by WGRS, Kerala.

Collected 501exs belonging to 21 faunal groups.

Identifications:

Soil nematodes: 72 specimens belonging to 13 species under 10 genera, 8 families and 7 orders. RFD data prepared for 72 specimens belonging to 13 species.

Hemiptera: 31 specimens representing 12 species under 8 families and 12 genera.

Odonata: 8 specimens representing 5 species under 2 families and 5 genera

Diptera: 77 specimens representing 11 species under 8 families and 9 genera

Hymenoptera: 147 specimens belonging to 16 species including one new species under 5 families and 15 genera.

Lepidoptera: 85 specimens belonging to 8 species under 2 families and 8 genera

Amphibia: 5 specimens belonging to 2 species.

Reptilia: 4 specimens belonging to 2 species.

Total identification include 429 specimens belonging to 69 species

Significant findings: 13 species of nematodes are first records from Lakshadweep Islands and three species are new records from India. One new species of Hymenoptera is under publication.

View of lake at Bangaram Island



15 Fauna of Daman, Diu, Dadra & Nagar Haveli

Initiated Programme

Coordinators: Dr. Rajmohana, K & Dr. G. P. Mandal

Investigators: Subject experts

Date of start: April 2017

Date of completion: March 2020

Objective: To identify and inventorise the fauna of Daman, Diu, Dadra & Nagar Haveli.

Progress: 24 specimens of Protozoa (Rhizopoda) of soil were identified. 7 species belonging to 4 genera, 2 families and 1 order were identified and registered.

Nematoda: 58 specimens belonging to 12 species identified.

Mollusca: Of the 119 specimens collected, 11 species under 11 genera of 10 families identified. (5 species marine, 4 species land and 2 species fresh water).

Isoptera: 194 specimens. 8 species under 4 genera and 2 families.

Lepidoptera: Total collection of Lepidopteron insects from surveys conducted: 173 specimens.

53 specimens comprising 21 species belonging to 13 genera under 6 families of Lepidoptera have been identified. Pinning, Identification and registration of remaining specimens is under progress.

Collembola: 1275 specimens of Collembola collected. 16 species under 11 genera of 4 families have been identified.

Orthoptera: 172 specimens of Orthoptera have been registered and maintained during period of report. Pinning and identification of the rest of the specimens is continuing.

Hemiptera: 96 specimens were identified belonging to 9 families under 17 genera representing 18 species.

Amphibia: A total of 26 specimens under 7 species, 6 genera and 4 families.

Soil zoology: 41 soil samples, 16 moss samples and 20 zooplankton samples received, identified 7 species belonging to 4 genera; 12 family; 1 order were identified.

Significant findings: All the 12 species of nematode are being recorded for the first time from Diu Island and all the species of Collembola were recorded for the first time from the Daman, Diu, Dadra & Nagar Haveli.

16 Fauna of Assam

Initiated Programme

Coordinator: Dr. Dhriti Banerjee

Investigators: Subject experts

Date of start: April 2017

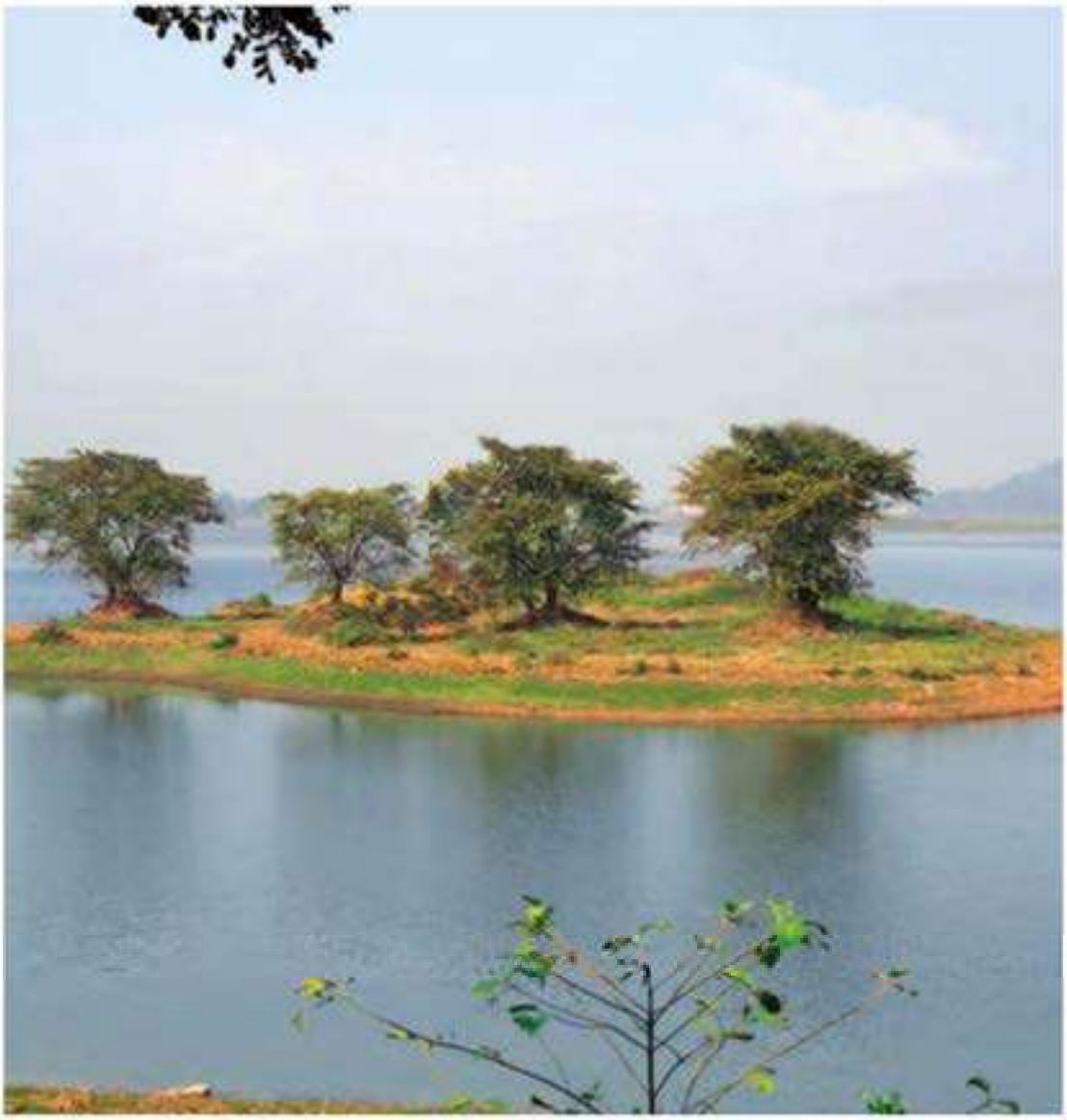
Date of completion: March 2020

Objectives: To identify and inventorize the fauna of Assam.

Progress: Dr Sen participated in survey to Assam from 30th January to 10th February, 2018 in the districts of Morigaon, Nagaon, Golaghat, Shonitpur. 37 soil samples were collected for the study of soil Nematodes the processesing of nematodes and slide preparation under processes.

Collembola: One combined survey undertaken during 30.01.2018 to 10.02.2018.1250 specimens of Collembola have been collected.10 species of Collembola under 6 genera of 3 families have been identified.

Diptera: A total of 1669 specimens was collected during the survey time of which 1540 diverse groups of dipteran specimens and 129 non dipteran specimens were collected from the different areas of survey stations of Assam. Our collection covers the buffer area as well as the core area of different protected area.



The overall collection scenario of Dipteran and non-dipteran specimens from the survey localities, altogether 20 families have been sorted out from the total collection while we are still expecting few more families from the unsorted dipteran fauna collection as the number of unsorted Diptera is also higher (25.2%).

More precisely it can be said that the groups of dipteran flies like Calliphoridae, Sarcophagidae, Muscidae were found to be prevalent in the buffer and transition zone of forest where anthropogenic disturbances has occurred. Among the others fauna collected, the Hymenopteran groups was most abundant and the Odonata was the least abundant.

Significant findings: All the species of Collembola were recorded for the first time from Assam. The most abundant flies among order Diptera is Muscidae (12.40%) followed by Calliphoridae (9.35%) Sarcophagidae (10.52%), Sepsidae (7.98%) and Syrphidae (4.67%). The family Bombyliidae (0.12%) and Stratiomyidae (0.13%) are the least abundant flies collected during the survey period. Whereas among non diptera fauna Order Hymenoptera (44.96%) found to be abundant utmost.

17

Fauna of Neora Valley National Park

Initiated Programme

Coordinator: Dr. P. G. S. Sethy

Investigators: Subject experts

Date of start: April 2017

Date of completion: March 2020

Objectives: Inventorisation of fauna of Neora Valley National Park.

Progress: One survey conducted from March, 14-22, 2018.

Specimens collected: 705 specimens of Lepidoptera (603 of Macro Lepidoptera and 102 of Micro Lepidoptera specimens).

Identification is under progress.

Soil zoology: One survey conducted, 71 samples of soil, water and moss were collected, identification under progress.



Amolops marmoratus (Blyth, 1855)



Parias monticola (Canter, 1839)

17

Fauna of Gorumara National Park and Chapramari Wildlife Sanctuary

Initiated Programme

Coordinators: Dr. M. E. Hassan &
Dr. R. Goswami

Investigators: Subject experts

Date of start: April 2017

Date of completion: March 2020

Objective: To inventorize the fauna of Gorumara National Park and Chapramari Wildlife Sanctuary.

Isoptera: 5 species under 3 genera and one family identified.

Lepidoptera: 17 species belonging to 16 genera under 5 families from 284 specimens identified.

Hymenoptera: Collected 683 specimens. 9 species identified under 7 genera of 2 families found in 44 specimens.

Orthoptera: Collected 167 specimens. Identified 57 specimens belonging to 20 species and 16 genera under 4 families.

Hemiptera: Collected 514 specimens. Identification: 21 species under 19 genera of 9 families.

Acari: Collected 58 soil samples. 10 species under 8 genera of soil cryptostigmatid mites was found in 11 soil samples.

Ecology Section: Total 407 specimens of earthworms collected, amongst these 111 specimens have been identified belonging to 10 species of 8 genera under 5families.

Soil zoology: 40 soil and 16 water samples and 16 moss samples were collected. 10 species 6 genera 3 familiy and 2 orders were identified.

Significant findings: *Abulfeda punctatus* Distant (Hemiptera: Pyrrhocoridae).

18

Fauna of Lakshadweep: Echinoderms

Initiated Programme

Investigators: Dr. N. Marimuthu
Dr. Ch. Satyanarayana
Dr. Rajkumar Rajan

Date of start: April 2017

Date of completion: March 2020

Objective: Study the Echinoderms diversity of Lakshadweep group of Islands.

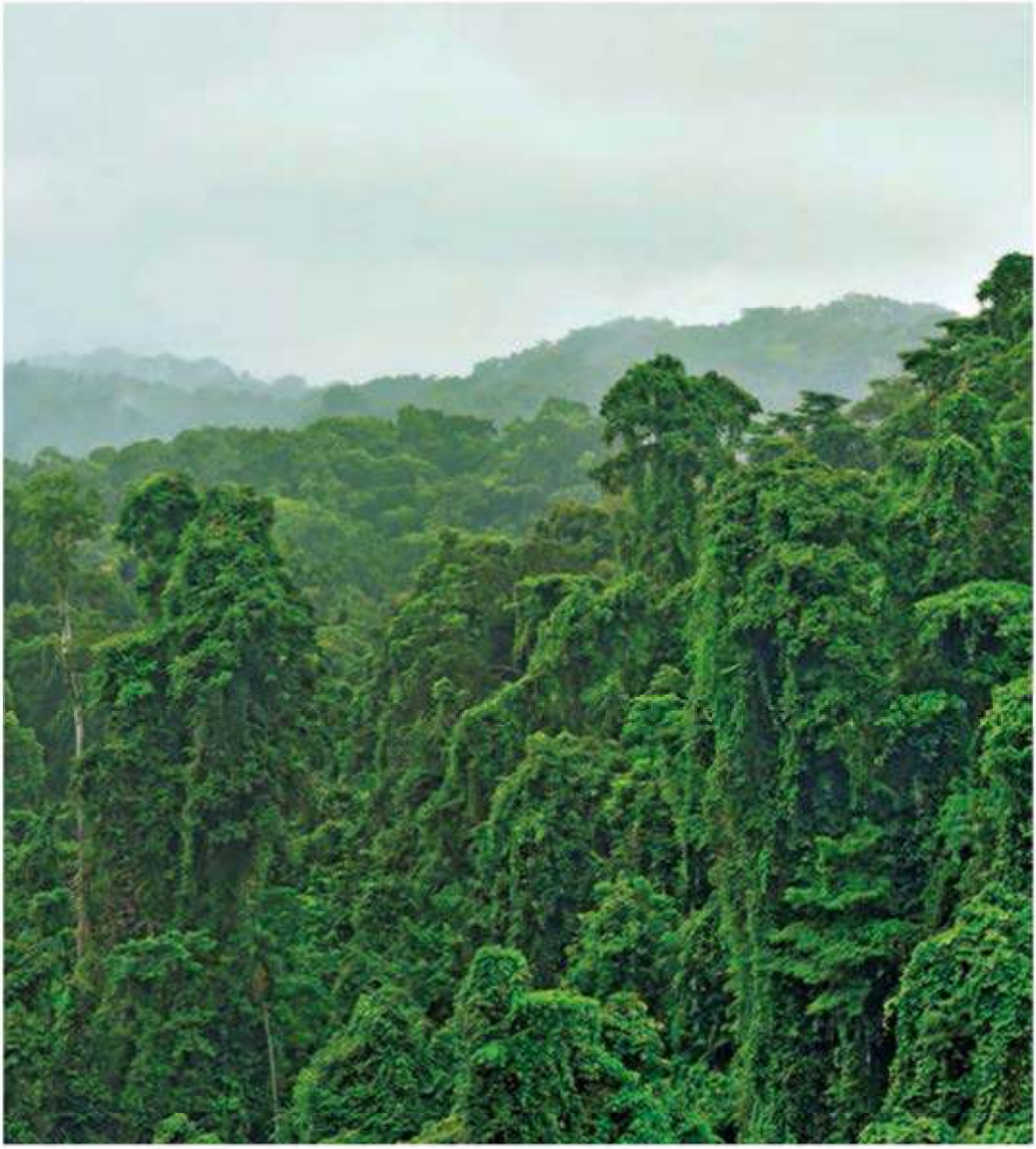
Progress: A total of 404 specimens under 5 phyla were collected by using SCUBA in the end of February 2018. Among this, 237 specimens were from Echinodermata. About seven Islands have been covered such as Agatti, Bangaram, Tinnakara, Kavaratti, Kadamat, Kalpeni and Cheriyum Islands during the survey period.



Echinometra mathaei Blainville, 1825

ZSI has 16 Regional Centres spread across the county. These Regional Centres were involved in 88 research programmes: 29 completed programmes, 45 ongoing programmes, while 14 programmes were initated during the year.

RESEARCH PROGRAMMES REGIONAL CENTRES



03

01

Fauna of Assam
(Combined with HQ, ZSI)

Ongoing Programmes

Investigators: Officer-in-Charge & Scientific staff.

Date of start: April 2016

Date of completion: March 2018

Objective: To document the diversity of various faunal groups occurring in the state, especially lower group of animals and to generate distributional information on the fauna of the state

Progress: Two combined surveys were conducted in Bornadi Wildlife Sanctuary surveys. A total of 958 specimens were collected from the above two. Identification of the above material and also from previous surveys is in progress. Compilation of information on the following groups is in progress (Crustacea, Lepidoptera, Pisces, Amphibia, Reptilia and Chiroptera).



Hylarana tytleri Theobald, 1868



View of Umtrew river, Nongkhyllem WLS

02

Faunal Inventory of Nongkhyllem Wildlife Sanctuary, Meghalaya

Ongoing Programmes

Investigators: Mrs. I. J. Kharkongor,
Dr. Uttam Saikia,
Dr. Dimos Khynriam,
Sh. A. B. Meetei,
Sh. Amit Rana,
Sh. Bhaskar Saikia &
Mrs. Rita Dev

Date of start: April 2015

Date of completion: March 2018

Objective: Inventorying and documentation of the faunal diversity of Nongkhyllem Wildlife Sanctuary.

Progress: Five surveys were conducted to the Sanctuary. A total of 838 specimens were collected. Of which, 627 specimens were identified to 106 species belonging to Coleoptera, Hemiptera, Curstacea, Lepidoptera, Arachnida Mollusca, Pisces, Amphibia and Reptilia.

NORTH EASTERN REGIONAL CENTRE(NERC), SHILLONG



Aquatic collection from Bornadi River at Bogamati, Bornadi WLS

03

Faunal Inventory of Bornadi Wildlife Sanctuary, Assam

Ongoing Programmes

Investigators: Mrs. I. J. Kharkongor, Dr. Uttam Saikia, Dr. Dimos Khynriam, Sh. A B Meetei, Sh. Amit Rana, Sh. Bhaskar Saikia & Mrs. Rita Dev

Date of start: April 2014

Date of completion: March 2018

Objectives: Inventorying and documentation of the faunal resources of Bornadi Wildlife Sanctuary.

Progress: Two surveys were conducted during the months of November, 2017 and March, 2018. A total of 958 specimens were collected, of which 117 specimens were identified belonging to 36 species under 6 faunal groups namely Lepidoptera, Crustacea, Mollusca, Pisces, Amphibia and Mammalia.

Significant findings: *Aglais caschmirensis aesis* Fruhstorfer (Lepidoptera: Nymphalidae) and *Scabies crispata* (Gould) (Bivalvia: Unionidae) and *Parawixia dehaani* Doleschall (Arachnida: Araneidae) are first records from Meghalaya.

01

Resurvey of Siju Cave along with Krem Labit and Umlawan, Meghalaya

Initiated Programmes

Investigators: Officer-in-Charge and Scientists of NERC

Date of start: April 2017

Date of completion: March 2020

Objectives: To document the cave fauna of Meghalaya state and to highlight the subterranean faunal diversity and their conservation needs.

Progress: One survey was conducted to Siju, cave South Garo Hills during March, 2018 and 48 specimens were collected. Identification in process.



Mist net trapping of Bats at Siju Cave, Siju Cave Survey



Cavernicole crustacean from Siju cave



Hydrophylax bahuvistara



Indirana chiravasi



Polypedates cf. maculatus



Raorchestes ghatei



Ichthyophis species



Gegeneophis species

01 Faunisitc Survey of Koyna Wildlife Sanctuary, Maharashtra

Ongoing Programmes

Investigators: Officer-in-Charge & Scientific staff

Date of start: April 2015

Date of completion: March 2018

Objective: To ascertain the diversity profile of different faunal groups of Koyna Wildlife Sanctuary.

Progress: Two surveys were conducted during the period under report. A total of 380 species of 297 genera of 14 different faunal groups from Koyna Wildlife Sanctuary, Maharashtra have been reported.

02 Tropical Rainforest Ecosystems: Western Ghats –Maharasthtra - Darkling Beetles (Tenebrionidae: Coleoptera

Ongoing Programmes

Investigators: Dr. V. D. Hegde & Dr. Vasantha Kumar

Date of start: April 2016

Date of completion: March 2018

Objective: To ascertain the diversity of darkling beetles of Northern Western Ghats of Maharashtra.

Progress: Two surveys were conducted during the period under report. From the study area 40 species belonging to 26 genera and 1024 of beetles specimens have been identified.

Significant findings: The Genus *Cryphaeus* Klug, 1933 (Coleoptera:Tenebrionidae: Toxicini) was new record to India

03 Biodiversity Hotspots and Tropical Rainforest Ecosystems: Western Ghats, Maharashtra Phase –I: Noctuidae (Insecta: Lepidoptera: Heterocera)

Ongoing Programmes

Investigator: Dr. Aparna S. Kalawate

Date of start: April 2015

Date of completion: March 2018

Objectives: To ascertain the diversity profile of Noctuidae fauna of Western Ghats of Maharashtra.

WESTERN REGIONAL CENTRE (WRC), PUNE

Progress: Altogether 48 species under 38 genera of noctuid moths from the Northern Western Ghats, Maharashtra have been reported.

Significant findings: First record of orange yellow moth, *Aegocera venulia* (Cramer, [1777]) (Noctuoidea: Noctuidae: Agaristinae) from Maharashtra, India ahs been reported.



Aquatic collection at Navegaon NP

04

Faunisitc Survey of Navegaon National Park, Maharashtra

Ongoing Programmes

Investigators: Officer-in-Charge & all Scientific staff

Date of start: April 2015

Date of completion: March 2018

Objective: To ascertain the diversity profile of different faunal groups of Navegaon National Park, Maharashtra.

Progress: One survey was conducted during the period under report. Altogether, 20 species belonging to 18 genera and 207 specimens of different faunal groups have been reported.



Under stone collection



Botyodes asialis Guenee, 1854

01

Taxonomic Studies on the Crambidae (Lepidoptera: Heterocera) Fauna of Madhya Pradesh and Chhattisgarh

Completed Programmes

Investigator: Dr. S. Sambath

Date of start: April 2014

Date of completion: March 2017

Objective: To study the Crambidae fauna of Madhya Pradesh and Chhattisgarh through field survey and their documentation.

Outcome: The study revealed 32 species belonging to 27 genera in 03 subfamilies viz., Acentropinae (02 species and 01 genus), Pyraustinae (5 species and 05 genera), Spilomelinae (25 species and 22 genera). A checklist of Crambidae fauna of Madhya Pradesh and Chhattisgarh was also prepared which deals with 91 species and 59 genera in 09 subfamilies of Crambidae. Of which, 62 species from Madhya Pradesh and 45 species from Chhattisgarh have already been reported. 24 species of Crambidae commonly reported from both the states. The present study added 09 more species as new record to Madhya Pradesh and constitutes 71 species belonging to 54 genera in 09 subfamilies of Crambidae. While studying the Crambidae fauna of Madhya Pradesh, nine species were recorded for the first time from Madhya Pradesh, namely, *Paraponyx stagnalis* (Zeller, 1852), *Pyrausta panopealis* (Walker, 1859), *Agrotera basinotata* Hampson, 1891, *Cydalima laticostalis* (Guenee, 1854), *Nausinoe geometralis* (Guenee, 1854), *Nausinoe pueritia* Cramer, 1780, *Omiodes diemenalis* Guenee, 1854, *Palpita asiaticalis* Inoue, 1994, *Talanga sexpunctalis* (Moore, 1867)

01

Studies on the Faunal Diversity of Bhoj Wetland, Bhopal: A Ramsar Site of Madhya Pradesh

(Combined Programme of ZSI, FBRC, Hyderabad & CZRC, Jabalpur)

Ongoing Programmes

Investigators: Dr. D. V. Rao,
Dr. S. Sambath,
Mrs. R. Sultana,
Dr. S. S. Talmale &
Mr. Sandeep Kushwaha

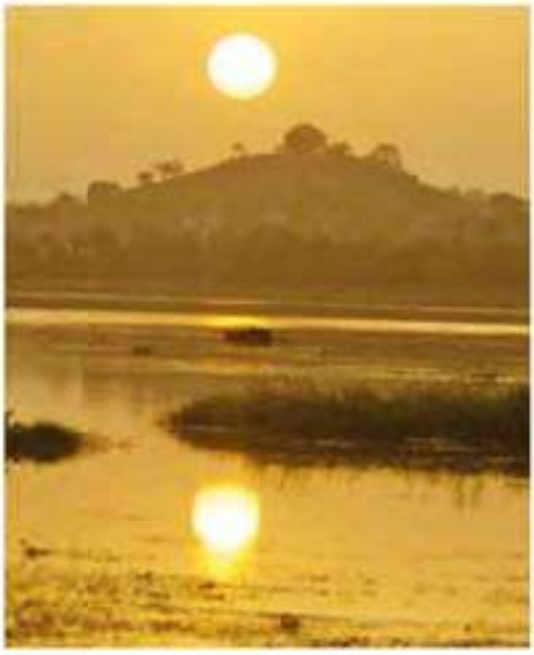
Date of start: April 2015

Date of completion: March 2017

Objective: To study and document the faunal Diversity of Bhoj Wetland, through field surveys.

Outcome: The Study deals with 499 species of various fauna, of which, 256 species of invertebrates and 243 species of vertebrate.

Significant findings: Two species of moths namely *Pyrausta diniasalis* (Walker, 1859) and *Amata lucina* (Butler, 1876) reported as new record to Madhya Pradesh.



View of Bhoj Wetland

CENTRAL ZONE REGIONAL CENTRE(CZRC), JABALPUR

Cydalima conchylalis (Guenee, 1854)



01

Faunal Diversity of Kanha Tiger Reserve and National Park, Madhya Pradesh

Initiated Programmes

Investigators: Officer-in-Charge and Scientists of CZRC and Scientists of ZSI Hqs. Kolkata

Date of start: April 2017

Date of completion: March 2020

Objective: To study the faunal diversity of Kanha Tiger Reserve and National Park through the field surveys and to document the various faunal components.

Progress: Two surveys conducted and collected 507 specimens. Identification include 24species belonging to belonging to Arachinida, Lepidoptera, Amphibia and Reptilia. Observed five species of Mammals.

Significant findings: 06 species of moths reported for the first time from this Tiger Reserve.



Cuon alpines (Pallas, 1811)



Rucervus duvaucelii (G. Cuvier, 1823)

02

Faunal Diversity of Panna Tiger Reserve, Districts Panna and Chhatarpur, Madhya Pradesh

Ongoing Programmes

Investigators: Officer-in-Charge & Scientists of CZRC

Date of start: April 2016

Date of completion: March 2019

Objectives: To studies the faunal diversity of Panna Tiger Reserve through the field surveys and to document the various faunal components.

Progress: Two survey conducted and collected 1425 specimens belonging to Odonata, Hemiptera, Lepidoptera, Coleoptera, Arachnida, Amphibia, Reptilia, Observations were made on Aves and Mammals.

Significant findings: 48 species of moths (Lepidoptera) and 22 species of Odonata reported for the first time from this Tiger Reserve.

01

Status Survey of *Ardeotis nigriceps* (Vigor, 1831) (Great Indian Bustard) in Grasslands of Rajasthan

Completed Programmes

Investigators: Officer-in-Charge

Date of start: April 2014

Date of completion: March 2017

Objective: To assess the status of *Ardeotis nigriceps* (Vigor, 1831) in Grasslands of Rajasthan.

Outcome: A population of 39 individuals of *Ardeotis nigriceps* (Vigors, 1831) (GIB) both ♂♀ were sighted and recorded under the research programme. Status of present distributional range of GIB worked out. The species is now confined to 4-5 grassland localities of Jaisalmer district and not recorded anywhere else in the entire surveyed areas in the State. Apart from observation some general collections were made and about 180 specimens were identified belonging to 5 faunal groups. Grassland habitats of GIB in Jaisalmer district including localities within Desert National Park Sanctuary (DNPS) were analyzed and present population structure worked out along with ♂,♀ ratio. Breeding population and its present status is also counted.

01

State Fauna - Rajasthan

Ongoing Programmes

Investigators: Officer-in-Charge

Date of start: April 2016

Date of completion: March 2017

Progress: 141 species of Pisces, 13 species of Amphibians, 81 species of Reptiles, 532 species of aves, 92 species of Mammals recorded under the programme. Manuscripts on Porifera, Collembola, and Coleoptera: Bruchidae and Chiggers mites, Orthoptera, Lepidoptera, and Hymenoptera received so far. Manuscript (Vol. I - Vertebrates) is submitted.



Lepus nigricollis F. Cuvier, 1823



Sus scrofa Linnaeus, 1758

02

Studies on Faunal Diversity of Dry Grasslands of the Thar Desert

Ongoing Programmes

Investigators: Officer-in-Charge & Scientific staff

Date of start: April 2015

Date of completion: March 2018

Progress: Identified 14 species of fishes, 6 species of amphibians, 13 species of reptiles, 261 species of birds and 18 species of mammals studied so far.

DESERT REGIONAL CENTRE, JODHPUR

Manuscripts on vertebrate faunal diversity of the area surveyed under the research programme are being prepared.

Significant findings: Important grassland species of aves such as *Ardeotis nigriceps* (Vigors, 1831) and *Chlamydotis macqueenii* (Gray, 1832) were sighted from the grasslands of Kachchh region whereas, *Syphеotides indicus* (Miller, 1782) were observed in the grasslands of Kachchh and Ajmer region.



Gazella bennettii (Sykes, 1831)

01

Studies on Faunal Diversity of Narayan Sarovar Wildlife Sanctuary, Gujarat

Initiated Programmes

Investigators: Dr. Sanjeev Kumar & Dr. H. S. Banyal & Scientific staff

Date of start: April 2017

Date of completion: March 2020

Progress: 4 species of amphibians, 15 species of reptiles, 126 species of birds & 15 species of mammals were identified and recorded.

Significant findings: Important species of vertebrates viz. Saw scaled viper,Leith's sand snake, European roller, Black necked stork, Chestnut-bellied sandgrouse, Black francolin, Indian Jackal, Indian fox, Indian Hare including the flagship species of the sanctuary Chinkara were sighted from the Sanctuary.

02

Studies on Faunal diversity of Jaisamand Wildlife Sanctuary, Rajasthan

Initiated Programmes

Investigators: Dr. Sanjeev Kumar & Dr. H. S. Banyal

Date of start: April 2017

Date of completion: March 2020

Progress: Permission from CWLW, SFD, and Rajasthan awaited/not received.



A grassland (Meuaria) with water pools, Morbi

01

Diversity of Nematodes in Govind Wildlife Sanctuary and National Park, Uttarakhand

Completed Programmes

Investigator: Dr. Vinita Sharma

Date of start: April 2011

Date of completion: March 2014

Objectives:

i. To inventorize the nematode fauna of Govind Wildlife Sanctuary and National Park

ii. To prepare Data Base information of nematode associated with Forest Ecosystem

Outcome: Soil nematode diversity was studied from 36 species of forests trees and medicinal plants (more than 10 years old) in 49 localities of Govind Wildlife Sanctuary and National Park, Uttarkashi, Uttarakhand. A total of 92 taxa of nematodes belonging to 41 genera, 16 families and 6 orders are being recorded around the roots of forest tree species and medicinal plants during survey of GWLS & NP from 2012-2015. Twelve species of dorylaims and mononchids recorded for the first time from India and one genus *Belaxeillusis* being recorded first time from India.

02

Fauna of Sonanadi Wildlife Sanctuary (Nainital, Uttarakhand)

Completed Programmes

Investigators: Dr. Archana Bahuguna, Dr. Narender Sharma, Dr. Anil Kumar, Dr. Vinita Sharma & Sh. Parmod Kumar

Date of start: April 2014

Date of completion: March 2017

Objectives:

i. To inventorize the Fauna of Sonanadi WLS.

ii. To compile it in the form of publication.

Outcome: surveys were conducted for three years and the faunal diversity has been found to be 3441 species, of which 152 species and subspecies of fauna have been reported for the first time from Sonanadi Wildlife Sanctuary, thus representing new records for the sanctuary. This includes 11 species of Reptilia, 8 species of Amphibia, 17 species of Pisces and 25 species of Nematodes which have been reported for the first time for the Sanctuary. Under invertebrate group i.e. Lepidoptera 64 species with 45 genera under four families were reported and for Orthoptera, 28 species with 22 genera were reported under two families Acridoidea and Pyrgomorphoidea.

156 species of birds belonging to 16 orders and 54 families were recorded in different habitats of the sanctuary. Most dominant family was Muscicapidae represents 14 species, followed by family Columbidae (8 species) and Accipitridae (8 species). More than half species (55.8%) were passerine birds (songbirds), while 44.2% species were non-passerines. Out of 156 species, 125 species (80%) were resident in the area, and about 20% were migratory. Among mammals, occurrence of total 14 species were identified in the area.



Greater Flameback, *Chrysocolaptes guttacristatus*, (Tickell, 1833)

NORTHERN REGIONAL CENTRE (NRC), DEHRADUN



Yellow-Throated Marten, Martes flavigula Boddaert, 1785

03 Fauna of Valley of Flower NP, Uttarakhand

Completed Programmes

Investigators: Dr. Archana Bahuguna, Dr. Narender Sharma, Dr. Anil Kumar, Dr. Vinita Sharma & Sh. Parmod Kumar

Date of start: April 2015

Date of completion: March 2017

Objectives:

i. To inventorize the Fauna of Valley of Flower NP

ii. To compile it in the form of publication- Conservation Area Series.

Outcome: Three surveys were conducted from 2015-2017 and the study recorded 85 spcies of fauna, of which 66 species and subspecies of fauna have been reported for the first time from Valley of Flower, thus representing new records for the sanctuary. This includes 47 species of Aves, 7 species of Lepidoptera, 5 species of Orthoptera and 6 species nematoda.

47 bird's species observed belong to eight orders and 25 families were observed. Family Muscicapidae with nine species was the most dominant group, while family Corvidae represented by five species. Analysis of the data revealed that the area is not very rich in mammals diversity. In the present study total 11 species belong to five orders and nine families were observed. Order Carnivora with four species was the most dominant group, while family Muridae represented by two species. Roylei's Pika was most species was seen in the area.

04 Freshwater Ecosystems- Ropar Wetland, Punjab

Completed Programmes

Investigators: Dr. Archana Bahuguna, Dr. Narender Sharma, Dr. Anil Kumar, Dr. Vinita Sharma & Sh. Parmod Kumar

Date of start: April 2015

Date of completion: March 2017

Objectives:

i. To inventorize the Fauna of Ropar Wetland.

ii. To compile it in the form of publication.

Outcome: A consolidated account of 280 faunal species belonging to 177 genera and 104 families of 33 orders both vertebrates as well are being recorded from this wetland. 124 species and subspecies of fauna have been reported for the first time from Ropar Wetland, thus representing new records for the sanctuary. This includes 5 species of Mammals, 11 species of Reptilia, 5 species of Amphibia, 26 species of Pisces and 9 species of Nematodes, 23 species of orthoptera and 45 species of Lepidoptera which have been reported for the first time for the Sanctuary.

As regards to Birds about 110 species of birds belonging to 15 orders and 47 families were recorded in the present study including some rare/ interesting records. The area is rich in the occurrence of songbirds. Out of 108 species, 46 were songbirds belonging to twenty two families under order Passeriformes. Habitat degradation and increasing anthropogenic pressure are the major threats for sustainability of avifauna of the area. Apart from this, on the basis of direct sightings and secondary information, total fourteen species of mammals belonging to 7 orders and 12 families were recorded in the present study

05

Fauna of Samaspur Bird Sanctuary (Uttar Pradesh)

Completed Programmes

Investigators: Dr. Archana Bahuguna, Dr. Narender Sharma, Dr. Anil Kumar, Dr. Vinita Sharma & Sh. Parmod Kumar

Date of start: April 2015

Date of completion: March 2017

Objectives:

i. To identify the Fauna of Samaspur Bird Sanctaury

ii. To compile it in the form of publication Conservation Area Series (ZSI publication).

Outcome: A total 215 faunal species reported from the area 77 species and subspecies of fauna have been reported for the first time from Samaspur Bird Sanctuary, thus representing new records for the sanctuary. This includes 8 species of Mammals, 12 species of Reptilia, 5 species of Amphibia, 7 species of Pisces, 7 species of Mollusca and 9 species of Nematodes, 23 species of orthoptera and 45 species of Lepidoptera which have been reported for the first time for the Sanctuary.

Among 92 species of birds observed species of birds some rare/ interesting records were also observed. Most dominant families were Anatidae. More than half species (58.6%) were non-passerine birds mostly comprised of migratory ducks, storks, cormorants, egrets & herons, raptors, jacanas, doves and kingfishers, while 41.4% species were non-passerines mostly comprised of crows, bulbuls, prinias, robins & chats, mynas & starlings and wagtails.



Black-headed Ibis, *Threskiornis melanocephalus* (Latham, 1790)



Blue Sheep *Pseudois nayaur* Hodgson, 1833

06

Status survey of Blue Sheep *Pseudois nayaur* in North West Trans Himalaya

Completed Programmes

Investigator: Dr. Anil Kumar

Date of start: April 2015

Date of completion: March 2018

Objectives:

i. To evaluate the population status of target species

ii. To evaluate the conservation threats/ issues pertaining to target species

Outcome: On the basis of information collected on the distribution and population estimates of Blue Sheep in the distribution range in three states i.e. Himachal Pradesh, Ladakh in Jammu & Kashmir and Uttarakhand. The total population is about 5836-7331 individuals. Analysis of the data revealed that about 34.15 % were males, 42.07 % females, and 23.78 % were sub-adults.

07

Status survey of Black-necked Crane *Grus nigricollis* in Ladakh, India

Completed Programmes

Investigator: Dr. Anil Kumar

Date of start: April 2015

Date of completion: March 2018

Objectives:

i. To evaluate the population status of target species

ii. To evaluate the conservation threats/ issues pertaining to target species

Outcome: Field surveys were undertaken during 2015 and 2016 to enumerate the population of Black-necked Crane in Ladakh. Analysis of the data revealed the occurrence of small groups comprised of 2 to 4 individuals, present only in eight localities. Total 23 individuals were sighted directly. While, interview based estimated populations was 51 individuals. There may be 10 to 15 more individuals in the wetlands could not be covered in the present study. Unorganized development activities, fencing in wetlands and increasing population of feral dogs is mainly accountable for decreasing population of Black-necked Crane. While, free grazing of big herds of domestic livestock in the habitats is main threat for the sustainability of this species. Apart from this, total seventy one species of birds belonging to 13 orders and 30 families were recorded including some rare/ interesting records, besides a few species remained unidentified due to inadequate observations.

01

Fauna of Uttar Pradesh Bird Sanctuaries

Initiated Programmes

Investigators: Dr. Archana Bahuguna,
Dr. Narender Sharma,
Dr. Anil Kumar,
Dr. Vinita Sharma &
Dr. Sanjay Punikar

Date of start: April 2017

Date of completion: March 2019

Objectives:

i. Faunistic survey to Uttar Pradesh Bird Sanctuaries

ii. To compile the data in the form of publication, Conservation Area series (ZSI publication).

Progress: Identification: Four species of terrestrial nematodes; Six species under 4 genera of Papilionoidea (Lepidoptera) were identified from Nawbganj Bird Sanctuary, U.P ; 5 species of Odonata; 5 species of Pisces; 5 species of Reptilia and 5 species of Amphibia were also identified.

02

Fauna of Agro-ecosystem-Punjab & Haryana

Initiated Programmes

Investigators: Dr. Archana Bahuguna,
Dr. Narender Sharma,
Dr. Anil Kumar,
Dr. Vinita Sharma &
Dr. Sanjay Punikar

Date of start: April 2017

Date of completion: March 2018

Objectives:

To compile the data in the form of publication, Ecosystem series (ZSI publication).

Progress: Manuscript under preparation based on collections, reports and other publications. Manuscript prepared: Nematoda of agroecosystem Punjab, Lepidoptera and Orthoptera of agroecosystem of Punjab, Amphibia and Reptilia of Punjab and Haryana agroecosystem. Remaning group under preparation.

01

Fauna of Southern Eastern Ghats of Tamil Nadu.

Completed Programmes

Investigators: Officer in Charge and all scientific staff

Date of start: April 2008

Date of completion: March 2011

Objective: To document the fauna of Southern Eastern Ghats of Tamil Nadu

Outcome: Following fauna, recorded Rotifers 13 species under 8 genera belongs to 5 families. Cladocerans 23 species under 14 genera belongs to 6 families. Odonata 41 species under 29 genera belongs to 6 families. Hemiptera 64 species under 51 genera belongs to 13 families.

02

Faunal survey of Middle Eastern Ghats of Tamil Nadu

Completed Programmes

Investigators: Officer in Charge and all Scientific staff

Date of start: April 2011

Date of completion: March 2014

Objectives: To document fauna of Middle Eastern Ghats.

Outcome: The study revealed the following group of fauna:

Rotifer: 16 species under 6 genera belongs to 4 families; Pisces: 32 species under 17 genera belongs to 13 families; Cladocera: 10 species under 7 genera belongs to 6 families; Odonata: 48 species under 31 genera belongs to 7 families; Orthoptera: 20 species under 18 genera 5 families.

03

Fauna of Western Ghats of Tamil Nadu

Completed Programmes

Investigators: Officer in Charge and all Scientific staff

Date of start: April 2013

Date of completion: March 2017

Objectives: To document faunal diversity of tropical rainforests of southern Western Ghats.

Outcome: The study revelaed the following fauna from the area under study:

Sponges: 23 species under 9 genera; Platyhelmenthis: 30 species; Collembola: 38 species under 23 genera belongs to 5 families; Diptera: 904 species; Ephemeroptera: 44 species; Odonata: 93 species; Cicadellidae: 115 species; Vespidae: 53 species under 23 genera belongs to 4 subfamilies; Scolidae: 20 species under 7 genera belongs to 1 subfamily; Eucharitidae: 9 species under 5 genera belongs to 1 subfamily; Spiders: 140 species belongs to 30 families; Amphibia: 89 species under 24 genera belongs to 11 families; Mammals: 103 species belonging to 11 orders and 30 families; Coleoptera: (Carabidae) 7 species of ground beetles under 6 genera; Cockroaches (Blattodea) 61 species under 31 genera of 4 families; Mantis (Mantodea): 10 species under 7 genera of four families; Orthoptera: 37 species under 29 genera belonging to 5 families; Bark flies: (Psocoptera): 2 species under two genera of two families; Whip scorpion (Arachnida: Thelyphonida): 2 subspecies under one genera of one family; Scorpions (Arachnida: Scorpiones): 8 species under 6 genera; Crabs (Decapoda: Gecarcinucidae): 2 species under one genera and one family.

SOUTHERN REGIONAL CENTRE (SRC), CHENNAI



Neurobasis chinensis (Linnaeus, 1758)

04 Taxonomy and Ecology of Hydropsychidae (Insecta: Trichoptera) of Southern Western Ghats

Completed Programmes

Investigator: Dr. S. Prabakaran

Date of start: April 2013

Date of completion: March 2016

Objectives: The study recorded 34 species under 10 genera belonging to 3 subfamilies.

Outcomes: The study recorded **34** species of Tricoptera under 10 genera belonging to 3 subfamilies.

01 Fauna of Point Calimere Wildlife Sanctuary, Tamil Nadu

Ongoing Programmes

Investigators: Officer in Charge and all Scientific staff

Date of start: April 2015

Date of completion: March 2018

Objectives: To document the fauna of Point Calimere Wildlife Sanctuary.

Progress: A total of 182 species of birds, 31 species of mammals, 15 species of amphibians, 42 species of reptiles, 32 species of butterflies, 17 species of dragonflies documented.



Caprona ransonnetii (C. Felder, 1868)

02

Lesser known Fauna of Cauvery Estuary, Tamil Nadu

Ongoing Programmes

Investigators: Officer-in-Charge and all Scientific staff

Date of start: April 2015

Date of completion: March 2018

Objectives: To document lesser known fauna of Cauvery Estuary.

Progress: Samples of different faunal groups collected and observed. Final manuscripts under preparation.

03

Lizards (Reptilia: Squamata: Sauria) of Western Ghats of Tamil Nadu, India

Ongoing Programmes

Investigators: Dr. R. Aengals

Date of start: April 2013

Date of completion: March 2016

Objectives: To document diversity of Lizards in Western Ghats.

Progress: 172 specimens of lizards and snakes collected. Include 23 species of lizards and 9 species of snakes. During the survey, 4 species of snakes viz., *Boiga nuchalis* (Gunther 1875), *Macropisthodon plumbicolor* (Cantor, 1839), *Oligodon taeniolatus* (Jerdon, 1853), *Naja naja* (Linnaeus, 1758), and 2 endemic species viz., *Oligodon venustus* (Jerdon 1853), *Plectrurus perroteti* (Dumeril, 1854) photographed.

01

DNA barcoding of selected faunal groups/species

Initited programme

Investigator: Dr. Ranjana

Date of start: April 2017

Date of completion: Continuing

Objectives: To create DNA barcode of fauna of India.

Progress: DNA isolated from specimens: Pisces -34 species, Odonates- 7 species Lepidoptera – 5, Diptera -10, Coleoptera -8 Arthopoda - 2, Aquatic insects -5, Crustacea (Prawns) -11, Crustacea (Crabs) -1, Mammal -1.



Euphaea fraseri (Laidlaw, 1920)



Salea horsfieldii Gray, 1845

01

Taxonomic studies on family Noctuidae from Bihar and Jharkhand

Completed Programmes

Investigator: Dr. Navneet Singh

Date of start: April 2011

Date of completion: 2017

Objective: To study the family Noctuidae from Bihar and Jharkhand.

Outcome: A total of 195 species of moths (including 140 species of Noctuidae) from Bihar and Jharkhand have been collected and identified. Four new species have been discovered with two new records from India. 17 species of Noctuidae have been reported for the first time from Palamu Tiger Reserve. 36 species of Noctuidae have been reported for the first time from Valmiki Tiger Reserve. Dissections of all the identified species have been done to study the external male and female genitalia. Photography of adult moths of all the studied species has been completed. Photography of male and female genitalia of all the identified species has been completed.

Compilation of data is under progress. Final manuscript already submitted.

01

Mollusca and zooplankton of temporary and permanent water bodies in and around Valmiki Tiger Reserve, Kusheshwar Asthan, Saraiyaman Lake and Gogabil Pakhsi Vihar (IBA-sites) in Bihar

Ongoing Programmes

Investigator: Dr. Gopal Sharma

Date of start: April 2012

Date of completion: March 2014

Objective: To study Mollusca and zooplankton of temporary and permanent water bodies in and around Valmiki Tiger Reserve, Kusheshwar Asthan, Saraiyaman Lake and Gogabil Pakhsi Vihar (IBA-sites) in Bihar.

Progress: Identified Mollusca: 37species; Zooplankton: 38species; Annelida: 9species; Arthropoda: 17species and Crustacea: 9 species.

02

State Fauna of Jharkhand (Aquatic invertebrates and Lepidoptera)

Ongoing Programmes

Investigators: Dr. Gopal Sharma & Dr. Navneet Singh

Date of start: April 2014

Date of completion: March 2017

Objective: To study the aquatic invertebrates and Lepidoptera of Jharkhand.

Progress: Hazaribagh Wildlife Sanctuary, Saranda Forests, Dalma Wildlife Sanctuary, Lawalong Wildlife Sanctuary, Parasnath Hill, Itkhori, Koderma, Palkot Wildlife Sanctuary, Masanjor Dam, Tanu Dam, Konar Dam, Topchanchi Lake, Pachkheri Dam and Mahuadarr Wildlife Sanctuary have been surveyed during the year 2016-17. A total of 2600 specimens of order Lepidoptera, 360 specimens of Non Lepidopterous Insects and 2289 specimens of aquatic invertebrates were collected. 435 species of Insects (325 species of Lepidoptera); 42 species of Mollusca; 56 species of zooplankton; 6 species of amphibians; 102 species of Bird species were recorded from the area.

GANGETIC PLAINS REGIONAL CENTRE (GPRC), PATNA

03

Fauna of Hazaribgh Wildlife Sanctuary, Jharkhand

Ongoing Programmes

Investigators: Dr. Gopal Sharma & Dr. Navneet Singh

Date of start: April 2015

Date of completion: March 2017

Objectives: To study and inventorize the faunal diversity of Hazaribgh Wildlife Sanctuary, Jharkhand.

Progress: All scheduled surveys were completed. A total of 320 specimens of order Lepidoptera and 725 specimens of aquatic invertebrates were collected.

Identified: Lepidoptera: 202 species; Mollusca: 23 species; Zooplankton: 22 species; Amphibians: 3 species, Bird: 82 species were identified.

05

Fauna of Terai Grassland of Bihar

Ongoing Programmes

Investigators: Dr. Gopal Sharma & Dr. Navneet Singh

Date of start: April 2016

Date of completion: March 2018

Objectives: To study and inventorize the faunal diversity of Terai Grassland of Bihar.

Progress: All the specimens were sorted and labeled. 1300 specimens of Insects and 1355 speciemns of aquatic fauna have been collected with 30 vials of zooplankton; 29 species of Mollusca under 1012 specimens identified; 97 bird species were observed during the period reported; 5 species of Amphibians identified; 3 species of reptiles were identified.

04

Fauna of Lawalong Wildlife Sanctuary, Chatra, Jharkhand

Ongoing Programmes

Investigators: Dr. Gopal Sharma & Dr. Navneet Singh

Date of start: April 2015

Date of completion: March 2017

Objectives: To study and inventorize the faunal diversity of Lawalong Wildlife Sanctuary, Chatra, Jharkhand.

Progress: Lepidoptera: 80 species; Mollusca: 25 species, Zooplankton: 22 species; Amphibian: 3 species were identified, while, 54 species of Birds were recorded from the area.

01

Fauna of Gautam Buddha Wildlife Sanctuary, Bihar & Fauna of Pant Wildlife Sanctuary, Rajgir, Bihar

Initiated Programmes

Investigators: Dr. Gopal Sharma & Dr. Rahul Joshi

Date of start: April 2017

Date of completion: March 2020

Objectives: To study and inventorize the faunal diversity of Gautam Buddha Wildlife Sanctuary, and Pant Wildlife Sanctuary, Bihar.

Progress: Total 1707 Specimens were collected: 102 specimens of Insects, 21 Crustacea, 9 Amphibian, 58 vials of zooplankton collected, Mollusca 854 specimens collected and 8 species under 670 exs identified, 600 specimens of Insects (Lepidoptera & eight other orders) were also collected.

01

Faunal Diversity of Kalatop Khajjiar Wildlife Sanctuary, District Chamba, Himachal Pradesh

Completed Programmes

Investigators: Dr. Avtar Kaur Sidhu, Dr. Indu Sharm, Dr. Anil Kumar, Dr. R. Paliwal & Dr. Kamal Saini

Date of start: April 2010

Date of completion: March 2014

Objectives: To study and inventorize the faunal diversity of Kalatop Khajjiar Wildlife Sanctuary, District Chamba, and Himachal Pradesh

Outcome: Being one of the oldest preserved sanctuaries of the state, the Kalatop Khajjiar Wildlife sanctuary is very important from conservation point of view. Overall, diversity of the area is rich, as it is easily approachable sanctuary and due to the tourist interferences the faunal wealth is under stress. The documentation of the faunal wealth will provide base line data for further studies as well as for the conservation of the fauna. Document published comprising 345 species.



Vanessa cashmirensis (Kollar, 1848)



Vulpes vulpes montana Pearson, 1836

02

Faunal Resources of Spiti Valley and Chandertal Lake, District Lahul & Spiti, Himachal Pradesh

Completed Programmes

Investigators: Dr. Avtar Kaur Sidhu, Dr. Indu Sharma, Dr. Anil Kumar, Dr. R. Paliwal & Dr. Kamal Saini

Date of start: April 2012

Date of completion: March 2015

Objectives: To study faunal resources of Spiti Valley and Chandertal Lake, district Lahaul & Spiti.

Outcome: Spiti, in Trans-Himalayan range of Himachal Pradesh is one of the unexplored Valley. The faunal diversity of the area has been inventorized for the first time. The species recorded/identified are endemic and also threatened. The 08 spots of *Parnassius* comprising of 03 species have been explored for the first time from the area. The document comprising 211 species referable to 149 genera and 12 groups has been accepted for publication

HIGH ALTITUDE REGIONAL CENTRE (HARC), SOLAN

01

Faunal Resources of Sangla Valley, District Kinnaur Himachal Pradesh

Ongoing Programmes

Investigators: Dr. Avtar Kaur Sidhu, Dr. Gaurav Sharma, Dr. Indu Sharma, Dr. T. Kubendran, Dr. R. Paliwal & Dr. Kamal Saini

Date of start: April 2015

Date of completion: March 2018

Objectives: To study and inventorize the faunal diversity of Sangla Valley, district Kinnaur (Himachal Pradesh)

Progress: Two surveys conducted in 2017-18 In first survey, a total of 966 exs pertaining to 21 animal groups and in second survey 688 specimens referable of 13 faunal groups have been collected respectively. Tour Reports have been submitted.

The following groups of fauna were identified:

Protoza: 22 species; Olighochaeta: 06 species; Lepidoptera: Rhopalocera: 33 species; Lepidoptera: Heterocera: 12 species; Ephemeroptera: 08species; Orthoptera: 37 species; Odonata: 09 species; Pisces: 02 species; Herpetofauna: 02 species; Aves: 65 species; Mammals: 12 species.

Significant findings: The documentation of the Fauna from the area will be first attempt. Two species of Protozoa viz. *Quadrulella quadrigera* and *Quadrulella scutellata* are new record for India.

Bhoj patra forests near Sangla valley





Papilio polyctor Boisduval, 1836

02

Faunal Resources of Sainj Wildlife Sanctuary, district Kullu, Himachal Pradesh

Ongoing Programmes

Investigators: Dr. Avtar Kaur Sidhu, Dr. Gaurav Sharma, Dr. Indu Sharma, Dr. T. Kubendran, Dr. R. Paliwal & Dr. Kamal Saini

Date of start: April 2015

Date of completion: March 2018

Objectives: To study and inventorize the faunal diversity of Sainj WLS, District Kullu (Himachal Pradesh)

Progress: Two surveys conducted in 2017-18 In first survey, a total of 1000 specimens everywhere pertaining to 22 animal groups and in second survey 134 specimens referable of 16 faunal groups have been collected respectively. Tour Reports have been submitted. Species identified include Olighochaeta: 07species; Lepidoptera: Rhopalocera: 43 species; Lepidoptera: Heterocera: 09 species; Ephemeroptera: 07 species; Orthoptera: 39 species; Odonata: 16 species; Pisces: 04species; Herpetofauna: 05 species; Aves: 74 species; Mammals: 12 species.

Significant findings: The fauna recorded from the sanctuary is unique as the area represents the temperate and alpine ecosystems. Thus, the documentation of fauna of the sanctuary will be useful in formulating policies for conservation of rich biodiversity and sustainable development.

01

Taxonomy of Meiobenthic communities with special emphasis on Nematodes, Polychaetes & Tardigrades in Andhra Coast

Completed Programmes

Investigator: Dr. G. Sivaleela

Date of start: April 2014

Date of completion: March 2017

Objectives: Todocument the miobenthic communities like nematodes, polychaetes and tardigrades of Andhra coast

Outcome: Three surveys have been undertaken during the study period. 20 coastal areas have been surveyed. 106 species of nematodes belonging to 65 genera 30 families and 6 orders identified from 5734 specimens. 10 species of nematodes were new distributional records from this coast. publishedcomprising 345 species.



Thenatus denticulatus Warwick, 1970

02

Fauna of Western Ghats (Tamil Nadu): Mantodea

Completed Programmes

Investigator: Dr. G. Srinivasan

Date of start: April 2014

Date of completion: March 2017

Objectives: Todocument the mantodean fauna of Western Ghats.

Outcome: A total of 10 species under 7 genera were identified.

Progress: A total of 43 species belonging to 29 genera are discussed here and this includes 7 genera of 9 species from new collection based on surveys.

03

Reef Associated Bryozoan of Gujarat and Maharashtra Coast

Completed Programmes

Investigators: Dr. C. Venkataraman & Dr. P. Padmanaban

Date of start: April 2015

Date of completion: March 2018

Objectives: Assessing Bryozoa of west coast (Gujarat and Maharashtra).

Outcome: Three extensive field surveys were undertaken along the coast of Gujarat (2) and Maharashtra (1). A total of 25 species were identified under 17 families 19 genera. Of which, 8 species are recorded for the first time from Indian coastal waters.

MARINE BIOLOGY REGIONAL CENTRE (MBRC), CHENNAI

04

Free-living protozoa: Freshwater ecosystems: Sasthamkotta, Kerala

Completed Programmes

Investigator: Dr. Bindu, L

Date of start: April 2016

Date of completion: March 2018

Objectives: Documenting the free-living protozoans of Sasthamkotta, Kerala.

Outcome: One survey was undertaken along with the FBRC and WGRC. 22 species of rhizopods under 9 genera and 8 families were identified from 16 samples.

02

Revision of Scleractinian coral genus *Montipora* Blainville, 1830, and preparation of annotated checklist of Scleractinians in Indian waters

Ongoing Programmes

Investigator: Dr. Rajkumar Rajan

Date of start: April 2014

Date of completion: March 2017

Objectives: Study the taxonomy of the genus *Montipora* and prepration of annotated checklist of Scleractinians of Indian waters.

Progress: One field survey and two museum studies were undertaken 24 species of *Montipora* have been identified from 69 specimens. 179 specimens of scleractinians were identified.

01

Studies on Free-living Protozoans, Western Ghats, Kerala

Ongoing Programmes

Investigator: Dr. Bindu, L

Date of start: April 2016

Date of completion: March 2018

Objectives: Documenting the free-living protozoans of Western Ghats.

Progress: Conducted one survey during the year, Identified and registered 89 species of rhizopods under 22 genera and 14 families from different ecosystems of Western Ghats of Kerala. 15 species are new records to India. 8 species of rhizopods as new to science.

03

Studies on the Taxonomy of Polychaeta in the Coral reefs of Gulf of Mannar

Ongoing Programmes

Investigators Mr. Anand Kumar, A

Date of start: April 2016

Date of completion: March 2019

Objectives: Assess the taxonomic status of the class polycheta and mapping of distribution of polychaeta fauna in Gulf of Mannar.

Progress: Combined surveys with the programme 'Coral reef dwelling Polyclads of Gulf of Mannar Biosphere Reserve', Polychaeta collected during the previous survey (2016-17), were identified; comprising 15 species from 92 specimens.

04

Coral Reef Dwelling Polyclads of Gulf of Mannar Biosphere Reserve, Tamil Nadu

Ongoing Programmes

Investigators: Dr. P. Padmanaban & Sri.R. Rajendra Kumar

Date of start: April 2016

Date of completion: March 2019

Objectives: Assess the taxonomy and mapping of distribution of Polyclads fauna in Gulf of Mannar.

Progress: A total of 410 specimens were collected, which include Crustacea-14; Echinodermata – 29; Fish -1; Balanoglossus -4; Mollusca -198; Nemertinea -3; Polychaeta -92; Porifera -3; Sipuncula -1; Polyclad 1 ex; Marine Insects -64 specimens.

05

Opisthobranchs of Gulf of Mannar

Ongoing Programmes

Investigator: Dr. C. Venkatraman

Date of start: April 2016

Date of completion: March 2019

Objectives: To study the opisthobraanchs diversity of Gulf of Mannar

Progress: A total of 260 specimens under 9 phyla were collected. 53 shores birds were observed; 49 specimens of opisthobraanchs were collected from 11 localities of Gulf of Mannar Biosphere reserve; 12 species of opisthobranchs were identified so far of which 7 species are new record to India.

01

Taxonomic studies on Meiofauna with special reference to Free-living Marine Nematodes of West Coast

Initiated Programmes

Investigator: Dr. G. Sivaleela

Date of start: April 2017

Date of completion: March 2020

Objectives: To study the diversity of marine nematodes of West coast

Progress: 20 coastal sites in the west Coast (Maharashtra and Goa) was covered from 3 - 12 November 2017. 33 Meiofaunal samples were collected. 50 species of marine Nematodes were identified.

02

Status survey of sea turtles of Chennai coast

Initiated Programmes

Investigators: Dr. Padmanaban & Mr. Anand Kumar, A

Date of start: April 2017

Date of completion: March 2018

Objectives: To assess the status of sea turtles of Chennai coast,

Progress: Five surveys were undertaken from December 2017 to March 2018, along the stretch of Chennai coast. Three species of sea turtles were identified i.e. *Lepidochelys olivacea*, - Olive Ridley Sea Turtle, *Chelonia mydas* - Green Turtle and *Eretmochelys imbricata*. Five nesting sites and tracks were observed. Morphometric measurements on the carcasses of the 100 dead turtles were observed.

03

Population studies of commercially viable Sea cucumber species in Gulf of Mannar Marine National Park and Palk Bay

Initiated Programmes

Investigators: Dr. Rajkumar Rajan, Dr. Padmanaban, Mr. Anand Kumar, A & Ms. Vanishree

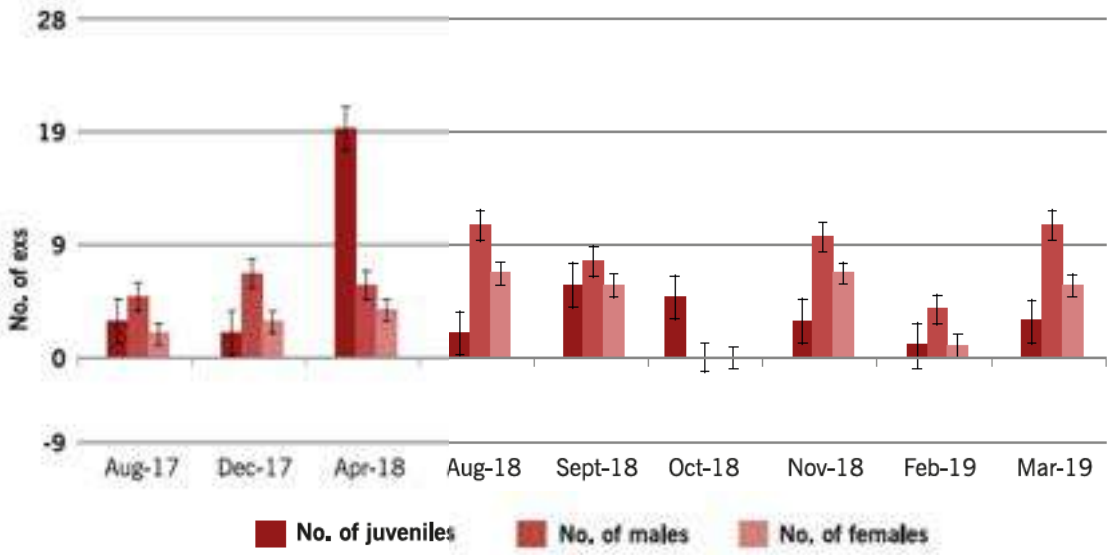
Date of start: April 2017

Date of completion: March 2019

Progress: Population studies of commercially viable Sea cucumber species in Gulf of Mannar Marine National Park and Palk Bay. 2 tours were undertaken. 43 and 21 stations were sampled respectively in Gulf of Mannar and Palk Bay for population density, size-classes and biology of seacucumber species. A total number of 449 individuals were collected which includes specimens from 3 families, 3 genus, 6 species of holothuria was identified.



Holothuria atra Jaeger, 1833



01 Status of Coral and its Associated Macrofauna in North Reef Island Sanctuary, North Andaman

Completed Programme

Investigator: Dr. C. Raghunathan

Date of start: April 2014

Date of completion: 2018

Objectives:

i. To assess the present status of corals and coral associated macrofaunal communities such as echinoderms, molluscs, nudibranchs, soft corals and other marine faunal groups.

ii. To estimate the diversity, density and distribution of coral and other macrofauna in the reef area.

Outcome: North Reef Island and adjoining islands of North Andaman are located in the western coastal side of Andaman group of islands and surrounded by Bay of Bengal. Among the studied areas, Interview Island is the largest one with the area of 133 sq. km. followed by North Reef Island with 3.48 sq. km., Latouche Island with 0.96 sq. km., Shark Island with 0.60 sq. km. and Kwangtung Island with 0.57 sq. km. The present study disclosed the status of corals, and reef associated macro faunal communities which is useful tool for the effective management and conservation of this ecologically fragile ecosystem. One the basis of extensive studies for a period of 3 years, it was revealed that a total 1108 species of faunal communities were recorded from North Reef Island and adjoining islands. The study also revealed new distributional record of 12 species of faunal communities including 7 species of scleractinian corals, 1 species of octocoral, 3 species of crabs and one species of opisthobranch from the study areas. The present study on corals and associated faunal communities of North Reef Island and adjoining islands suggest that the diversity, distribution, evenness, abundance, similarities among the islands of study areas is statistically significant and the reef biodiversity to be conserved in order to recover its loss from the impact of tsunami.



Acabaria ouvea (Grasshoff, 1999)

02 Status of coral and its associated macrofauna in Neil Island, Ritchie's Archipelago, South Andaman

Completed Programme

Investigators: Dr. C. Raghunathan & Mrs. Kamla Devi

Date of start: April 2014

Date of completion: March 2017

Objectives:

i. To assess the present status of corals and coral associated macrofaunal communities such as echinoderms, molluscs, nudibranchs, soft corals, fishes and other marine faunal groups.

ii. To estimate the diversity, density and distribution of coral and other macrofauna in the reef area.

iii. To assess the primary and secondary productivities.

iv. To assess the impact of tourism on marine faunal components.

ANDAMAN AND NICOBAR RESEARCH CENTRE (ANRC), PORT BLAIR

Outcome: Neil Island is one of the thirteen islands of Ritchie's Archipelago, situated in Andaman Sea. It is about 36 km. in distance form Port Blair with a total landmass of 13.7 sq. km. It is the second island of Ritchie's Archipelago after Havelock, has a population of more than 3040 people. Neil Island is one of the marine biodiversity rich area in Andaman with coral reefs, mangroves and seagrass habitats. There is no specific study made on marine faunal communities particularly on Neil Island till date apart from some coral reef surveys of Zoological Survey of India. The present study was conducted to record marine faunal communities during the initiation of tourism at Neil Island. Findings of this study will be helpful conserve marine faunal communities by regulating tourism in order to prevent anthropogenic impact to the biodiversity. One the basis of extensive studies for a period of 3 years, it was revealed that a total 635 species of faunal communities were recorded from coastal and marine ecosystem of Neil Island. During the study period, 7 species of fauna viz. 3 species of scleractinian corals, 1 species of sponge, 1 species of ascidia and 2 species of fishes were documented as new distributional record to Indian waters from Neil Island. The study during the period of last 3 years explains the health status of scleractinian corals along with its recruitment, diversity and distribution. The outcome of the study indicated that the marine biodiversity in the coral reef ecosystem of Neil Island is comparatively high which needs to be conserved by effective managerial plans.



Gardineroseris planulata (Dana, 1846)

01

Status survey of Coral Reefs in South Andaman and Nicobar Islands

Ongoing Programme

Investigators: Dr. R. Rajkumar & Mr. P.T. Rajan

Date of start: April 2007

Date of completion: March 2011

Objectives: To assess the status of Coral Reefs in South Andaman and Nicobar Islands.

Progress: Status assessment on 9 South Andaman reefs (Mahatma Ghandhi Marine National Park) and 6 reef areas in Havelock group of Islands have been studied in July 2009. Data was obtained for percent cover of live and dead corals, species number and diversity.

Significant findings: 49 species of corals from Mahatman Gandhi Marine National Park, 47 species form Havelock Island, 18 species form Hendry Lawrence Island and 22 species form Outram Islands were identified.

02

Octocorallian diversity in the coral reefs of Andaman and Nicobar waters

Ongoing Programme

Investigators: Dr. R. Rajkumar & Mr. P. T. Rajan

Date of start: April 2005

Date of completion: 2018

Objectives: To assess the Octocorallian diversity in the coral reefs of Andaman and Nicobar waters.

Progress: One survey has been conducted to Ritches Archipelago during July 2009. Six reef areas in three Islands (Havelock, Henry Lawrence and Outram) were surveyed.

Photographs of Zoanthids, Softcorals were analyzed for identification.

Significant findings: 14 species (9 species of Soft corals, 2 Gorgonians, 1 Stolonifera, 1 Heliopora and 1 Millepora) have been identified from the underwater photographs of the specimens on these field studies.

03

Studies on Macrobenthos – Corals and other key species, and monitoring diversity changes of coral reefs in Protected Areas of North Andaman Islands

Ongoing Programme

Investigators: Dr. R. Rajkumar & Mr. P. T. Rajan

Date of start: April 2007

Date of completion: 2018

Objectives: To study the Macrobenthos - Corals and other key species, and monitor the diversity changes of coral reefs in Protected Areas of North Andaman Islands.

Progress: Analyses of the previous survey results (reef areas in 11 islands in North Andaman were surveyed in the year 2006-07) are completed.

Survey has been conducted to Landfall Island, Ross and Smith Islands, Table Island Reef Island and Paget Island during April 2010.The data and samples collected during the survey being analysed.

Significant findings: It is observed that 11 fringing reefs in North Andaman Islands due to landmass uplift (~1m) following the earth quake on December 25, 2004.

LIT survey revealed that exposed area possessed high coral cover i.e., 89.8% as against the 37.92% in the unexposed/existing reef zone.

The uplift caused the reef crest and part of reef slope has been permanently exposed resulting the 30% of live coral reef area.

04

Status survey of Robber Crab *Birgus latro* in Nicobar Islands

Ongoing Programmes

Investigator: Dr. C. Sivaperuman

Date of start: April 2015

Date of completion: March 2018

Objectives:

i. Assess present status and distribution of robber crab.

ii. Study the habitat relationship of robber crab during nesting & breeding season

iii. Prepare conservation action plan and monitoring of robber crab.

Progress: Surveys have been conducted in Great Nicobar and Little Nicobar Islands.

Significant findings: 15 nests and 12 direct sighting of Coconut Crab *Birgus latro* Linnaeus have been observed in Little Nicobar, Great Nicobar and Nancowry group of islands.



Birgus latro Linnaeus

05

Faunal Diversity of Andaman and Nicobar islands: Marine and Terrestrial Fauna of Paget group of Islands

Ongoing Programme

Investigator: Dr. C. Sivaperuman

Date of start: April 2016

Date of completion: March 2019

Objectives:

i. To assess present status and distribution of faunal diversity of Andaman and Nicobar islands with special reference to Paget group of Islands (Terrestrial & Marine)

ii. To study their distribution and habitat ecology

iii. To identify the threats and their impacts on ecology and demography suggest management options for the conservation of the faunal diversity

iv. To suggest management recommendation for the conservation of the fauna of this Island

Progress: A total of 612 species including 98 species of scleractinian corals, 8 species of sea anemones, 25 species of octocorals, 6 species of hydrozoans, 24 species of sponges, 46 species of molluscs, 18 species of opisthobranchs, 4 species of polyclads, 20 soecies of crabs, 9 species of shrimps, 2 species of lobsters, 20 species of echinoderms, 12 species of ascidians, 170 species of fishes, 17 species of Bryozoa, 43 species of Birds, 39 species of Butterflies, 28 species of Spiders, 12 species of reptiles, 3 species of Amphibians and 4 species of mammals identified.



Megapodius nicobariensis Blyth, 1846

06

Status Survey of Nicobar Megapode *Megapodius nicobariensis* Blyth in Nicobar Islands

Ongoing Programme

Investigator: Dr. C. Sivaperuman

Date of start: April 2015

Date of completion: March 2018

Objectives:

i. Assess present status and distribution of Nicobar Megapode.

ii. Study the habitat relationship of megapode during nesting & breeding season.

iii Prepare conservation action plan and monitoring of Nicobar Megapode.

Progress: 112 breeding mounts of Nicobar Megapode have been identified.

166 individuals of birds sighted in Great Nicobar, Little Nicobar Island and Nancowry group of islands.

Significant findings: In addition, the following Nicobar endemic bird species have been observed namely, Great Nicobar Serpent-Eagle, *Spilornis klossi* Richmond, Nicobar Imperial-Pigeon *Ducula nicobarica* Blyth, Nicobar Parakeet, *Psittacula caniceps* (Blyth), Nicobar Scops-Owl, *Otus alius* Rasmussen, Great Nicobar White-breasted Waterhen, *Amaurornis phoenicurus midnicobaricus* Abdulali, Nicobar Cuckoo-Dove *Macropygia rufipennis tiwarii* Abdulali, Nicobar Red-Cheeked Parakeet, *Psittacula longicauda nicobarica* (Gould), Nicobar Oriental Scops-Owl, *Otus sunia nicobaricus* (Hodgson), Nicobar Stork-billed Kingfisher, *Pelargopsis capensis intermedia* Hume.

01

Biodiversity of Acridoidea (Orthoptera) of Sundarbans, West Bengal

Completed Programmes

Investigator: Dr. D. Suresh Chand

Date of start: April 2011

Date of completion: March 2013

Objective: To study the Biodiversity of Acridoidea (Orthoptera) of Sundarbans, West Bengal.

Outcome: Total four surveys were conducted. A total of 1678 from different faunal groups were collected belonging to Amphibia, Pisces Orthoptera, Coleoptera, Lepidoptera, Odonata, Hemiptera, Hymenoptera, and Crabs Among these 364 specimens of Acridoidea belonging to 21 species were collected, identified, and registered.



Atractomorpha crenulata Fabricius, 1793



Acrida exaltata (Walker, 1859)

02

Diversity and ecology of insects with special reference to Orthoptera in and around Sundarbans

Completed Programmes

Investigator: Dr. D. Suresh Chand

Date of start: April 2013

Date of completion: March 2015

Objective: To study the Diversity and ecology of insects with special reference to Orthoptera in and around Sundarbans.

Outcome: Four surveys were conducted in Sunderbans during the project tenure. Total number of 997 faunal specimens were collected from all the four surveys, belonging to Fishes, Gastropods, Prawns, Crabs Orthoptera, Lepidoptera, Coleoptera, Odonata. Identified, 173 specimens belonging to Acrididae (8 genera, 11 species); Pyrgomorphidae (1 genus, 1 species) Gryllidae (2 genera, 4 species) Gryllotalpidae (1 genus, 1 species) and Tettigonidae (3 genera, 3 species).

SUNDERBAN REGIONAL CENTRE (SBRC), CANNING

Brevitrygo nimbricata (Bloch Schneider 1801



03

Diversity of Sharks and Rays in different landing centres of Sundarbans

Completed Programmes

Investigators: Mrs. Supriya Nandy & Dr. D. Suresh Chand

Date of start: April 2014

Date of completion: March 2016

Objectives: To study the diversity of Sharksand Rays in different landing centres of Sundarbans.

Outcome: Total 24 local surveys were conducted in different fish landing centres of Sunderbans between 2014-16. A total of 1092 specimens were collected from different faunal groups, which are as follows: Fishes - 874 specimens, Crabs-54 specimens, Prawns-162 specimens and Molluscs-02. These includes 103 specimens of Sharks and Ray fishes among which total 71 specimens have been identified belonging to 13 species under 9 genera of three orders.



Ocypo diamacrocera H. Milne Edwards, 1852

01

Faunal Diversity of Sunderban Biosphere Reserve

Ongoing Programme

Investigator: Dr. D. Suresh Chand

Date of start: April 2016

Date of completion: March 2018

Objectives: To study the diversity of Sharksand Rays in different landing centres of Sundarbans.

Progress: Two tours completed in and around Sunderban Biosphere Reserve, Pakhirala, Sudhanakhali, Pirkhali, Raimangal, Dobanki, Chamta, Chandkhali, Bagmara, Harikhali, Khatwajhuri, Jhilla, Burirdabri, Jhingakhali, Bagna, and Panchakmukhani. Observed 4 species of Mammals, and 71 speceis of Birds. Besides collected 290 specimens of different



Panulirus homarus (Linaeus, 1758)

insect groups. The second survey tour was undertaken to Sunderban namely Sajnakhali Range, Dobanki, Netidopani, Boney camp, Kalas beach, Kalas camp, Chulkati camp, Lothian camp and HaiKhalli are the prominent places. During the above survey period about 386 specimens of various order of insects including orthoptera, coleoptera, diptera, hymenoptera, blattodea, lepidoptera and arachnida were collected. Moreover molluscan Brachyuran crabs, Scypozoanmedsae, Horseshoe crab, Lobster shrimp, Slug, Plankton and Benthos samples were also collected.

Observations were made on seven species of shore and land birds Interestingly, the pug marks of Sundarban tiger *Panthera tigris tigris* (Linnaeus, 1758) photographed at Dobanki.

Significant findings: One species under the family Onchiidae and the genus *Onchiumis* is new record to India.

Onchidium sp



01

Studies on the Faunal Diversity of Bhoj Wetland, Bhopal: A Ramsar Site of Madhya Pradesh

Completed Programme

Investigators: Dr. Dr. D.V. Rao, Dr. Deepa Jaiswal & Mrs. S.K. Rehanuma

Date of start: April 2015

Date of completion: March 2017

Objective: To study and inventorize the aquatic fauna (Pisces, Molluscs, Insects, Zooplankton) of Bhoj wetlands.

Outcome: The present faunal exploration of Bhoj wetland recorded 499 species belonging to 349 genera and 140 families, of which 256 species are invertebrates and 243 species, are vertebrates. Significant findings include two new record to Madhya Pradesh, Pyrausta *diniasalis* (Walker, 1859) and *Amata lucina* (Butler, 1876).





View of Tsomoriri Lake

01

Studies on the faunal diversity of Tsomoriri lake, Ladakh, Jammu & Kashmir

Ongoing Programme

Investigators: Dr. Dr. D.V. Rao, Dr. Deepa Jaiswal & Mrs. S.K.Rehanuma

Date of start: April 2016

Date of completion: March 2018

Objective: To study and inventorize the fauna of Tsomoriri Lake.

Progress: Three reptiles, 104 insects, 3 crustaceans, 4 zooplankton samples and 4 algal bloom samples were collected from 4 selected sampling sites and handed over to respective group experts.

FRESHWATER BIOLOGY REGIONAL CENTRE (FBRC), HYDRABAD

02

Studies on the Faunal Diversity of Sastamkotta Lake, Kerala

Ongoing Programmes

Investigators: Dr. Dr. D.V. Rao, Dr. Deepa Jaiswal, Dr. Y. Prasanna & Mrs. S.K.Rehanuma

Date of start: April 2016

Date of completion: March 2019

Objectives: To study and inventorize fauna of Sashtamkotta lake.

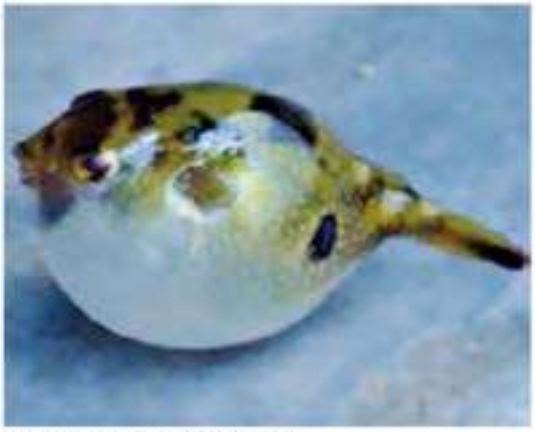
Progress: Two surveys were conducted first from 20.08.2016 to 30.08.2016 and second from 20.12.2016 to 29.12.2016 respectively.

The fauna collected during both the surveys are as follows: Pisces-183 Exs; Aquatic Insects-397 Exs; Mollusca-23 Specimens, Plankton-15 Exs; Crustacea-2 Exs; Amphibia (Frog)-3 Specimens.

Significant findings: *Polistes (Polistella) strigosus atratus* Das & Gupta is a new record for Kerala and butterfly, Crimson Rose *Pachliopta hector,* is protected in the Schedule- I of Indian Wildlife (Protection) Act of 1972.



View of Sashtamkotta lake



Leiodon cutcutia (F. Hamilton, 1822)

01

Fauna of Eastern Ghats-Riverine and Hill Stream Fishes & Molecular Characterization

Initiated Programme

Investigators: Dr. Boni Amin Laskar

Date of start: April 2017

Date of completion: March 2020

Objectives: To study molecular characterization of riverine and hill stream fishes of Eastern Ghats.

Progress: Two field surveys were conducted first from 23-30th Aug. 2017 to Mahanadi River, Chhattisgarh. Details of the faunal collections are mentioned below.

First Survey:
Pisces-217 Prawn-11; Amphibian (Frog)-10

Crustacea -4; Aquatic insect-1; Mollusca-41.

Second Survey:
Pisces-98 Prawn-11; Amphibian (Frog)-12; Diplopoda-01; Arachnida-07; Crustacea -60; Insecta-48; Mollusca-271; Annelida-2; Nematyhelminthyes-1.

Identification of specimens is in progress.

A total of 53 (Fifty Three) Barcode sequences have been contributed to NCBI and BOLD.

01

Fauna of Conservation Area: Thattekkad Bird Sanctuary, Ernakulam District, Kerala

Completed Programmes

Investigators: Dr. P.M. Sureshan, Dr. K.G. Emiliyamma, Dr. K. Rajmohana, Dr. B.H.C.K. Murthy, Dr. P. Girish Kumar & Dr. Md. Jafer Palot

Date of start: April 2014

Date of completion: March 2017

Objective: To study and inventorize the fauna of Thattekkad Bird Sanctuary.

Outcome: The data collected through the study is compiled in the form of book which includes 24 chapters: Protozoa, Insecta: Hymenoptera: Pteromalidae, Platygastridae, Formicidae, Eucharitidae, Vespidae, Scoliidae, Sphecidae, Braconidae. Other insects groups included in the study are Odonata, Dermaptera, Mantodea, Lepidoptera and Isoptera. Non -insect groups like Arachnida: Scorpiones, Scolopendromorpha: Centipedes, Mollusca, Crustacea: Decapoda are also studied. Vertebrate groups studied include Pisces, Amphibia, Reptilia, Aves and Mammalia. The Manuscript included the description of a new genus and two new species of freshwater crabs, one new species of centipede and two new species of scorpions, besides several new records of fauna to India and Kerala.Other significant findings include two research papers published on a new species of Centipede and a new genus and two new species of freshwater crabs. Range extension of an Odonata species published. New Discoveries include one new genus and 6 new species. They are *Karkata ghanarakta* Pati et.al. gen. et sp. nov. (Decapoda: Brachyura)*Pilarta punctatissima* Pati et.al.(Decapoda: Brachyura); *Allorhynchium tuberculatum* Girish Kumar & Carpenter, 2016 (Hymenoptera: Vespidae);*Chiromachetes manikandani* sp.nov. (Arachnida: Scorpiones: Liochelidae);*Heterometrus thattekkadensis* sp. nov. (Arachnida: Scorpiones: Scorpionidae); and *Rhysida aspinosus* Dhanya and Sureshan, 2017. Besides, three species arenew record to India/ Kerala. They are the genus *Coeleumenes* van der Vecht (Hymenoptera: Vespidae) from Peninsular India (Published), *Lyriothemis tricolor* Ris (Odonata: Libellulidae) from South India and *Arcella artocera* and *Paraquadrula irregularis* (Protozoa: Rhizopoda) - new to India.

02

Fauna of Kerala

Completed Programme

Investigators: O/C and Scientists of WGRC, Scientists of HQ, Kolkata and O/C and scientists of SRC, Chennai

Date of start: April 2015

Date of completion: March 2017

Objective: To study and inventorize the fauna of Kerala.

Outcome: The data have been compiled based on earlier literature and identification of specimens in the holdings of WGRC, ZSI, Calicut. Final manuscript submitted as two volumes for publication, Vol.1- Vertebrata (Pisces, Amphibia, Reptilia, Aves and Mammalia). Vol.II-Invertebrata which includes 41 chapters of various faunal groups.

Significant findings include new species and new records of various groups. Invertebrate fauna of Kerala has been compiled in a taxonomic point of view for the first time.



Antepipona minutissima Giordani Soika, 1982.

WESTERN GHATS REGIONAL CENTRE (WGRC), KOZHIKODE

01

Grassland Ecosystem: Survey and Documentation of Faunal resources of Shola Grasslands of Western Ghats- Phase-1

Ongoing Programmes

Investigators: Dr. P.M. Sureshan, Dr. K.G. Emiliyamma, Dr. K. Rajmohana, Dr. B.H.C.K. Murthy, Dr. P. Girish Kumar & Dr. Md. Jafer Palot

Date of start: April 2014

Date of completion: March 2017

Objectives: To study and inventorize the fauna of Shola grasslands of Western Ghats.

Progress: All the assigned surveys completed. Major sholas of southern Western Ghats (Kerala) surveyed. Final technical report submitted. Final manuscript is under preparation which includes chapters on Invertebrata (Hymenoptera Pteromalidae, Platygastridae, Diapriidae and Vespidae), Collembola, Mantodea, Odonata, Dermaptera, Lepiodptera, Arachnida: Scorpiones, Spiders, Chilopoda: Centipedes, Crustacea (Freshwater Crabs), Mollusca, Vertebrata (Pisces, Amphibia, Reptilia, Aves and Mammalia). 14 new species of Insects (Hymenotpera (Pteromaldiae) and Odonata) described / published. 3 new species of centipedes and 2 new species of scorpions identified and described. 4 species of insects recorded for the first time from India.

Significant findings: 7 research papers on new species and three papers on new records published. FTR submitted. Final manuscript is under preparation. Extension of distributional range of the rare Black Microhylid frog *Melanobatrachus indicus* Beddome, 1878 from Marayoor forests, Kerala published. 13 species are published as new to science such as *Protosticta monticola* Emiliyamma and Jafer Palot, 2016 (Odonata: Zygoptera: Platystictidae), *Notanisus elongatus* Raseena & Sureshan, 2014 (Hymenoptera: Pteromalidae), *Psilocera keralensis* Sureshan, 2014 (Hymenoptera: Pteromalidae), *Cleonymus kamijo* Sureshan & Dhanya Balan, 2014 (Hymenoptera: Pteromalidae), *Notanisus indicus* Sureshan, 2015 (Hymenoptera: Pteromalidae), *Coelopisthia indica* Sureshan ((Hymenoptera: Pteromalidae), *Dipara ponmudiensis* Sureshan & Farsana, 2015 (Hymenoptera: Pteromalidae), *Cleonymus indicus* Sureshan, 2015 (Hymenoptera: Pteromalidae), *Oraserna siruvanica* Girish Kumar & Sureshan, 2016 (Hyemnoptera: Eucharitidae) and *Eurydintomorpha indica* Sureshan, 2016 (Hymenoptera: Pteromalidae). 03 species are new record to India/Kerala such as *Leucospis histrio* Maindron, 1878 (Hymenoptera: Leucospidae) to Kerala, *Trigonoderus pulcher* Walker ((Hymenoptera: Pteromalidae) to India and *Parancistrocerus vicinus* Giordani Soika, 1994 (Hymenoptera: Vespidae) to Kerala.

02

Agroecosystem: Rice Ecosystems of Kerala- Phase 1

Ongoing Programme

Investigators: Dr. P.M. Sureshan, Dr. K.G. Emiliyamma, Dr. K. Rajmohana, Dr. B.H.C.K. Murthy, Dr. P. Girish Kumar & Dr. Md. Jafer Palot

Date of start: April 2015

Date of completion: March 2018

Objectives: To study and inventorize the fauna of Rice ecosystems of Kerala.

Progress: 8 local surveys were conducted to the various rice ecosystems of Kozhikode, Kannur, Malappuram and Wayanad districts and collected 450 specimens of various faunal groups. Identification of faunal samples collected from surveys is progressing. Dr. P.M. Sureshan, Scientist-D & Officer-in-Charge, identified 152

specimens of Pteromalidae (Hymenoptera) belonging to 22 species under 10 genera. Dr. K.G. Emiliyamma, Scientist-D identified 32 specimens of Odonata belonging to 17 species under 9 genera. Dr. P. Girish kumar, Scientist-C, identified 45 species of wasps (21 sp.of vespidae, 9 sp.of Sphecidae, 6 sp.of Scoliidae and 5 sp.of Eucharitidae) under 4 families. Two male morphs of spiders (*Thomisus keralae* Biswas and Roy and *Oxytate elongata* (Tikader)) have been recorded for the first time from India. One researchpaper on the fauna of spiders (Arachnida) of the paddy fields of Wayanad district, Kerala has been published. Final manuscript is under preparation.

03 Freshwater Ecosystem: Sasthamkotta, Kerala

Ongoing Programme

Investigators: Dr. P.M. Sureshan, Dr. K.G. Emiliyamma, Dr. K. Rajmohana, Dr. B.H.C.K. Murthy, Dr. P. Girish Kumar & Dr. Md. Jafer Palot

Date of start: April 2016

Date of completion: March 2019

Objectives: To study and inventorize the fauna of Sasthamkotta lake.

Progress: All assigned surveys completed, jointly with FBC, Hyderabad and MBRC, Chennai. The chapters on Chalcidoidea (Hymenoptera); Chilopoda: Scolopendromorpha; Mantodea, Odonata, Chalcididae (Hymenoptera): Vespidae, Chalcidoidea, Scoliidae, Sphecidae, Lepidoptera; Aves, Mammalia, Amphibia and Reptilia were prepared and submitted to the OIC, FBS, Hyderabad for the preparation of Final Technical Report and manuscript.

Significant findings: The scolid wasp, *Scolia (Discolia) bilunata* de Saussure (Hymenoptera) has been recorded for the first time from Kerala. Observations and collections of various invertebrate fauna in and around the lake have been initiated for taxonomic studies for the first time.

04 Tropical Rainforests- Western Ghats, Kerala

Ongoing Programme

Investigator: Dr. P.M. Sureshan

Date of start: April 2015

Date of completion: March 2018

Objectives: To study and inventorize the fauna of tropical rain forests of Kerala.

Progress: Compilation work based on earlier literature and identification of specimens in the holdings of WGRC/ZSI, Calicut. The work is under completion. Several new species of invertebrates such as Scorpiones (*Hottentotta keralensis* Aswathi, Sureshan & Lourenco,2016 *Buthoscorpio chinnarensis* Aswathi & Sureshan, 2016, Centipedes (*Rhysida aspinosus* Dhanya & Sureshan, *Cryptopsmalabarensis* Dhanya & Sureshan), Insecta: (*Parancistrocerus jaferpaloti* Girish Kumar & Carpenter (Vespidae: Hymenoptera); *Gollumiella metallica* Girish Kumar & Sureshan (Eucharitidae : Hymenoptera) published. Vertebrates (Amphibia, Pisces, Reptilia) were published from the region by ZSI scientists. The manuscript is under finalization for submission.

Significant findings: Compilation ofthe fauna (both Vertebrata and Invertebrata) of tropical rainforests, Western Ghats of Kerala attempted for the first time. One new species on Scorpion and another 6 scientific papers were published. 3 new species published such as *Hottentotta keralensis* Aswathi, Sureshan & Lourenco, 2016 (Arachnida:

Scorpiones), *Parancistrocerus jaferpaloti* Girish Kumar & Carpenter (Vespidae: Hymenoptera), and *Gollumiella metallica* Girish Kumar & Sureshan (Eucharitidae: Hymenoptera). Extension of distributional range of the rare Black Microhylid frog *Melanobatrachus indicus* Beddome, 1878 from Marayoor forests, Kerala, is published.

Karkata ghanarakta Pati et al., 2017





Cauvery Estuarine Area at Nagore

01 Taxonomical Studies on Lesser-Known Fauna of Cauvery Estuary

Ongoing Programme

Investigator: Sri. Arunendra Mohapatra

Date of start: April 2016

Date of completion: March 2018

Objective: To study and inventories the lesser-known faun of Cauvery Estuary.

Progress: Final Technical Report has been submitted. Total 17 species belonging to 17 genera and 12 families under phylum Echinodermata, Cnidarian and Arthropoda have been recorded.

Significant findings: All the species have been recorded newly from Cauvery Estuary, since, earlier, no taxonomic studies on these faunal groups were undertaken with respect to Cauvery Estuary. However, most of the species have been reported from South-East Coast (Tamil Nadu and Pudduchery coast) of India.

02 Current Status of Faunal Diversity of Rushikulya Estuary

Ongoing Programme

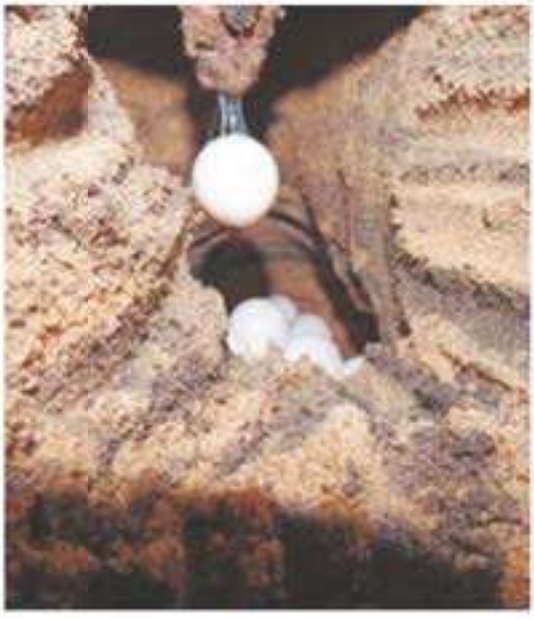
Investigator: Dr. Swetapadma Dash

Date of start: April 2016

Date of completion: March 2019

Objective: To study and inventories the fauna of Rushikulya estuary.

Progress: In total 1811 specimens were collected which includes 288 molluscs, 366 fishes, 484 crustaceans, 652 insects, 21 specimens of polychaetes. Total 404 specimens (37 species under 32 genera, 21 families and 12 orders) of mollusks were identified. One hundred and forty six fish specimens were identified which includes 45 species belonging to 40 genera, 30 families and 07 orders. Thirty three crustacean specimens were identified which includes 11 species under 08 genera, 05 families and 01 order. Major, 341insect specimens were identified which includes 44 species under 33 genera, 15 families and 03 orders.



Egg laying of Olive Ridley Turtle

ESTUARINE BIOLOGY REGIONAL CENTRE (EBRC), GOPALPUR-ON-SEA, ORISSA



Protobothrops jerdonii (Gunther, 1875)

01 Faunal Diversity of Mehao Forest Reserve, Arunachal Pradesh

Ongoing Programme

Investigators: Dr. S. D. Gurumayum & Dr. B. Sinha

Date of start: April 2015

Date of completion: March 2017

Objective: To inventorise the faunal biodiversity of Mehao Wild Life Sanctuary, Arunachal Pradesh wsr to Fish, Amphibia, mollusca and zooplankton.

Progress: 63 Mollusca, 45 Fishes, 9 Amphibia and 11 Reptiles were identified from the collections.

02 Fauna of Talle Valley Wildlife Sanctuary, Eastern Himalayas

Ongoing Programme

Investigators: Dr. B. Sinha & Dr. S. D. Gurumayum

Date of start: April 2015

Date of completion: March 2018

Objective: To document biodiversity of selected faunal groups of Talle Valley Wildlife sanctuary in the Eastern Himalayas of India.

Progress: Six surveys including 2 combined surveys conducted. About 4888 faunal specimens collected including Protozoa, Butterflies, Fishes, Amphibians and Reptiles. Observations were also made on Birds and Mammals.

Significant findings: One new amphibian (*Odorrana arunachalensis*) described. MS on 2 new cyprinids communicated. 2 new ephemeroptera including a new family record to India communicated.

New Records to India-*Aphelocheirus (Aphelocheirus) nepalensis* Zettel, 1998 (Heteroptera: Aphelocheiridae), *Choroterpes (Dilatognathus) nigella* (Kang & Yang 1994) (Ephemeroptera: Leptophlebidae), 16 species of testate amoebae (Phylum Amoebozoa and Phylum Rhizaria) have been recorded new to India.



Leptobrachium bompu Sondhi and Ohler, 2011

ARUNACHAL PRADESH REGIONAL CENTRE (APRC), ITANAGAR

03 Fauna of Eastern Himalayas - Amphibians of Arunachal Pradesh

Ongoing Programme

Investigators: Dr. Bikramjit Sinha & Sh. Bhaskar Saikia

Date of start: April 2016

Date of completion: March 2018

Objective: To study the biodiversity and zoogeographic distribution of amphibians of Arunachal Himalayas.

Progress: Four surveys conducted 1181 specimens of various faunal groups collected (including 111 specimens of amphibians). 379 specimensfrom backlog amphibian collections in the APRC/ZSI, were studied. A total of 83 species under 33 genera, 9 families and 3 orders were found to be present.



Odorrana arunachalensis Saikia *et al.*,2017



DDBR expedition team 3 in Malinye, L. D. Valley

04 Fauna of Dihang-Dibang Biosphere Reserve, Arunachal Pradesh

Ongoing Programme

Investigators: Dr. Bikramjit Sinha & other Scientists from HQ & RCs

Date of start: April 2016

Date of completion: March 2019

Objective: To explore the faunal biodiversity of DDBR in Arunachal Himalayas.

Progress: Expedition undertaken during Oct 24-Nov 5, 2017 with the participation of scientists and staff from APRC, Itanagar, NERC, Shillong, SRC, Chennai, WGRC, Calicut, WRC, Pune, NRC, Dehradun and ZSI, HQ, Kolkata. Expedition Report submitted by team. Report by Team Results as of now indicates record of 35 species of mammals and 105 species of birds.

01

Taxonomic study of Eels of the order Anguilliformes of the East coast of India

Completed Programme

Investigators: Dr. Anil Mohapatra, Mr. S.S. Mishra & Mr. P.C. Tudu

Date of start: April 2015

Date of completion: March 2018

Objective: To study and inventorize the Eels of the order Anguilliformes of the East coast of India.

Outcome: Total 65 days survey conducted and 2167 numbers of Anguilliformes were collected from various states along East coast of India. The manuscript includes detailed studies on 51 species belonging to 7 families and 21 genera. Significant findings include 6 new species 8 species have been recorded new to India, 2 genera reported for the first time from India and 3 species have been recorded for east coast of India.



Gymnothorax visakhaensis Mohapatra et.al.2017

Gymnothorax Visakhaensis Mohapatra et.al. 2017



Encheliycore propinqua Mohapatra et.al. 2017



01

Distribution, Diversity and Taxonomy of the Zooplankton from the Digha Coast, East Coast of India

Initiated Programme

Investigator: Dr. S. Balakrishnan

Date of start: April 2017

Date of completion: March 2020

Objective: To study and inventorize the collection and taxonomical identification of Zooplankton from the Digha Coast.

Progress: 24 days inter-tidal surveys were conducted in Digha adjacent areas. A total of 803 specimens were collected belonging to 102 species of Fishes, Echinodermata, Annelida, Mollusca, Brachiopoda, Lingulata and zooplankton.

MARINE AQUARIUM & REGIONAL CENTRE (MARC), DIGHA

02

Diversity and Distribution of Octocorals and Associated Fauna along the Digha coast of India

Initiated Programme

Investigator: Dr. J.S. Yogesh Kumar

Date of start: April 2017

Date of completion: March 2020

Objective: To determine the species diversity and abundance of Octocorals and associated faunal community along the Digha Coast of India

Progress: 32 days inter-tidal survey conducted and 307 numbers of samples were collected of which 44 number of octocoral samples from Digha coast.

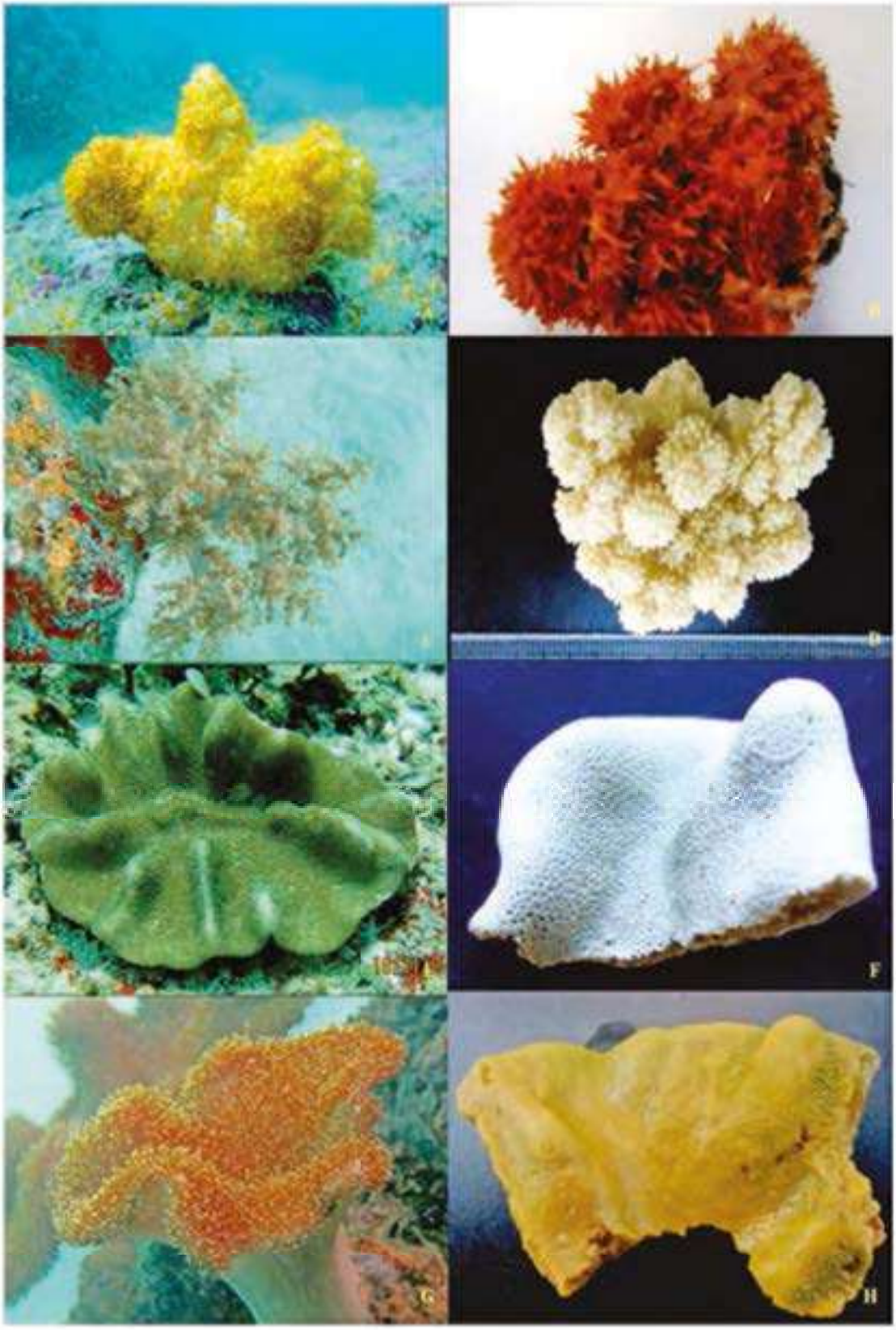
Significant findings: A total 19 species are new record for India, such as seven Antipatharian black corals (*Cupressopathes abies*, (Linnaeus, 1758); *Cupressopathes pumila* (Brook, 1889); *Tanacetipathes hirta* (Gray, 1857); *Antipathes dendrochristos*, Opresko, 2005; *Cladopathes plumose* (Thomson and Simpson, 1905); *Trissopathes tetracrada*, Opresko, 2003; *Dendrobathypathes isocrada* Opresko, 2002), five Alcyonacea soft corals (*Dendronephthya mucronata* Putter, 1900; *Dendronephthya savignyi* Ehrenberg, 1843; *Sarcophyton subviride* Tixier-Durivault, 1958; *Lobophytum depressum* Tixier – Durivault, 1966; *Briareum violaceum* (Quoy & Gaimard, 1833) and seven Nudibranchia (Sea slug) *Goniobranchus preciosa* (Kelaart, 1858), *Goniobranchus annulatus* (Eliot, 1904), *Goniobranchus cavae* (Eliot, 1904), *Goniobranchus collingwoodi* (Rudman, 1987), *Pteraeolidia ianthina* (Angas, 1864), *Elysia nealae* Ostergaard, 1955, *Thecacera pacifica* (Bergh, 1884). Of which 7 species of Antipatharia (Black corals) are coming under the Schedule – I category of wildlife protection act 1986. Also reported Schedule – I marine mammal (Irrawaddy dolphin *Orcaella brevirostris*) was washed along Digha coast during the study period.



Dendronephthya ganjamensis Henderson, 1909



Cavernularia malabarica Fowler, 1894



New records of Octocorals (A & B – *Dendronephthya mucronata*, C & D – *Dendronephthya savignyi*, E & F – *Lobophytum depressum*, G & H – *Sarcophyton subviride*).

EXTERNALLY FUNDED PROJECTS

Besides departental programes, ZSI scientists were also engaged in 17 externally funded projects.The Funding agencies include:

- Gujarat Forest Department under ICZM Project of MoEFCC with the funding from World Bank.
- Department of Science and Technology, Lakshadweep
- Ministry of Environment, Forest and Climate Change
- National Mission on Himalayan Studies , MoEFCC
- Department of Science & Technology (DST-SERB), Govt. of India, New Delhi
- DST funded project under Women Scientist scheme
- DST INSPIRE Faculty AWARD, Govt. of India, New Delhi
- All India Co-ordinated Project on Taxonomy (AICOPTAX), MoEFCC
- M/s GPS Technologies Pvt.Ltd., New Delhi
- M/s RSPL Ltd., Ahmedabad.
- West Bengal Biodiversity Board



04

01

Improvement of the quality of Reefs through Coral Transplantation/Restoration of Corals at Gulf of Kutch – A community based Sustainable Approach

Ongoing Projcet

Funding agency: Marine National Park, Gujarat Forest Department under ICZM Project of MoEFCC with the funding from World Bank.

Project Coordinator: Director, Zoological Survey of India

Nodal Officer: Dr. Ch. Satyanarayana

Date of start: June 2012

Date of completion: December 2018

Sanctioned at HQ, ZSI- Kolkata

Objective: To restore an area of 1050 sq. meter area in the Marine National Park area of Gulf of Kutch especially with the reintroduction of extirpated branching acropora species.

Progress: Technical Report and the Manuscript submitted. In this one of its kind and first time effort in the world, successfully transplanted the extinct branching corals in turbid environment (Gulf of Kutch) where few agencies failed to do restoration. An area of 1050 sq. meter transplanted in the Marine National Park reef area of Gulf of Kutch with new interventions. Discovered a solution to the global warming raved reefs. Imparted training in SCUBA diving and Reef restoration to the MNP staff and locals for sustainability of the project. Succession in the reef area started.Supporting MNP staff in monitoring the restored reefs.

Significant findings: It is proved that even Acropora species can be restored in turbid environments and Gulf of Kachchh has the potential to act as *Coral refugia*.

Because of the remarkable success, the Nodal officer was invited by TED CRCE (Agency which invites innovative and remarkable achievers in the field of Technology, Entertainment and Design to deliver talks) and the talk was uploaded in the YOUTUBE. Got invitation from the MNP to submit a proposal to start another innovative restoration technique in Gulf of Kutch.

02

Long Term Monitoring of Coral reefs of Lakshadweep Islands

Ongoing Projcet

Funding source: Department of Science and Technology, Lakshadweep

Investigators: Dr. Rajkumar Rajan.

Date of start: November 2015

Date of completion: October 2025

Santioned at MBRC, ZSI- Chennai

Progress:

i. The methodology to survey the coral reefs were finalized and 2 stations around the eastern reef slope of Agatti atoll, 3 stations in the north and south reef slope of Bangaram and 4 stations along the Eastern and Western reef slopes of Kavaratti were marked.

ii. Laying of the permanent transects to monitor the trend in changes of coral cover over has been underway.

iii. A study on coral spawning was carried out in March 2017. *Acropora formosa* was observed to release fertilised spawn on March 8th and spawn slicks were collected and cultured for 12 days. The eggs were observed to develop into larvae on the third day. The larval count increased with the decrease in the egg count and the settlement of planula larvae was observed.

iv. A training programme was organized to provide the Monitoring Staff training on scientific observation methods used in the survey and observation of the Coral reefs.

v. Two manuals were produced to aid the staff in their work. The Training Manual was produced with the objective to improve

EXTERNALLY- FUNDED PROJECTS

knowledge on basic coral reef and reef fish monitoring techniques used globally and the fish taxonomy manual was produced to help the staff identify reef fishes.

vi. The Dive Training for the Monitoring Staff is underway towards PADI licensing.

vii. A laboratory has been set up at the office of the Conservator of Forests, Lakshadweep, and Kavaratti, furnished with equipment's necessary for the field studies, microbiology work, water quality measurements, GIS, and computer infrastructure.

03

Lepidoptera (Insecta) as potential Indicator-Taxa for tracking Climate Change in the Indian Himalayan Landscape"

Ongoing Projcet

Funding source: MoEF&CC

Investigators: Dr Kailash Chandra

Co-Investigator: Dr Vikas Kumar

Date of start: March 2016

Date of completion: 2019

Sanctioned at HQ, ZSI- Kolkata

Objectives:

i. To investigate the differential processes influencing the diversity and distribution pattern of Lepidoptera assemblages (moths and butterflies) in six Protected Areas of Indian Himalayan Landscape.

ii. Repeating monitoring surveys in historical collection localities originally carried out by earlier workers, and generating current species-distribution map from primary as well as secondary data.

iii. To evaluate status and distribution of threatened Apollo and other Parnassinae butterflies and preparing habitat suitability map.

iv. To compare genetic distinctness of Lepidopteran species commonly occurring in Western, Central and Eastern Himalaya through DNA Barcoding and to resolve species complexes and cryptic species.

Progress: Altogether, 114 Long Term Ecological Monitoring (LTEM) sites have been established along altitudinal gradients in 5 study areas (except Sikkim) across Himalayan Landscape for continuous Lepidoptera monitoring.

Altogether 1917 in Hemis NP, 3700 in Great Himalayan NP, 1362 in Askot WLS, 3852 in Central Himalaya and 3173 individual moths in Dihang-Dibang BR have been sampled.

Review of more than 400 literature on Himalayan Lepidoptera has been carried out and database of historical records including collection details of nearly 15000 entries has been prepared.

Species richness maps from secondary records have been generated for identifying prominent historical localities for repeat monitoring surveys.

Secondary information on threatened Apollos recorded from Indian Himalayas has been gathered for generating habitat suitability maps.

DNA isolation and PCR reactions were carried out for 720 specimens. 400 full length and good quality sequences were obtained.

The developed sequences were submitted to BOLD database under the project 'Lepidoptera of Indian Himalayas' for acquiring unique BOLD-IDs

Significant findings:

i. Compilation of secondary literature revealed 1249 subspecies/1013 species of butterflies and 4107 species of moths from IHR.

ii. 345 species belonging to 166 genera under 6 families of butterflies and 1007 species belonging to 456 genera under 24 families of moths have been identified from the primary collections.

iii. Five historical localities with high species records were identified for repeat sampling: Bhimtal area & Govind WLS (Uttarakhand), Darjeeling Hills (West Bengal) and Dharmasala & Simla (Himachal Pradesh)

iv. 8 species of moths identified from primary sampling are altitudinally restricted having distribution range above 3000 m, thus can be potential Indicator species for monitoring Climate change.

v. 26 species of moths and 1 species of butterfly were recorded for the first time from India, and 6 probable new species of moths were recorded which are currently under the process of description.

vi. Habitat suitability modelling of Scheduled *Parnassius epaphus* (Common Red Apollo) revealed high altitude areas in Sikkim and Arunachal Pradesh as the most suitable sites for its projected future distribution.

v. The molecular study revealed a total of 14 species complexes within the highly cryptic genus *Abraxas* (Geometridae). Study on genetic distances of Lepidopteran species within three Biogeographic Provinces of IHR revealed 40, 6 and 29 Haplotypes as unique species composition recorded in Arunachal Pradesh, Jammu & Kashmir and West Bengal, respectively.

04

Biodiversity Assessment through Long-term monitoring plots in the Indian Himalayan Landscape

Ongoing Projcet

Funding source: NMHS, MoEF&CC

Investigators: Dr Kailash Chandra

Co-Investigator: Dr. Vikas Kumar

Date of start: March 2016

Date of completion: 2019

Sanctioned at HQ, ZSI- Kolkata

Objectives:

i. To create a geospatial and genetic database on the fauna of Himalaya and the Climate-change-induced impact on faunal diversity of the region.

ii. To establish long-term faunal diversity monitoring plots across the Himalayan Region.

iii. To develop long-term monitoring protocols for selected indicator taxa in the Region.

iv. To develop local level capacity building among students, teachers and NGO's in long- term monitoring through training programmes and publications.

Progress: A total of nine field surveys conducted in the Himalayan regions of India ~6000 specimens collected on different faunal groups from the selected monitoring plots of the study sites of Indian Himalaya. Geospatial maps and GIS database on collection localities based on past literature as well as data from the field was prepared. Molecular database has been initiated on the fauna of Himalayan region and sequencing of some faunal groups are being done. Selected monitoring plots has been surveyed repeatedly and collected specimens have been under identification. Distribution modelling with respect of climate change for the selected taxa has been initiated. A compilation of Faunal Diversity of Indian Himalaya was broughout in which more than 30,377 fauna have been documented on all faunal groups. A manual on field methodology and procedures for survey and monitor the fauna of Indian Himalaya as well as to monitor the ecosystem and landscape health of Indian Himalaya has been brought out as per the mandate the project. Capacity building workshop for frontline staff of forest and wildlife department, other stakeholders from various universities, colleges, and NGOs was organised participated at HARC, ZSI, Solan during March 2018.

05

Phylogenetic relationship and delineating the taxonomic boundaries of Saurian species in Western Himalayas: Implication in Wildlife Forensic and Molecular Systematics.

Ongoing Projcet

Funding source: DST funded project under Women Scientist scheme

Investigator: Ankita Rajpoot.

Date of start: March 2016

Date of completion: 2018

Sanctioned at HQ, ZSI- Kolkata

Progress

i. Isolation: DNA isolation of 30 specimens of Lizards including 10 species.

PCR Amplification of 12S r RNA, 16Sr RNA, Cytochrome b and Cytochrome c oxidase subunit I mitochondrial genes in *Laudakia tuberculata, Asymblepharus himalayana, Lysosoma punctata, Maluya macularia, Eutropis carinata, Varanus bengalensis, Varanus flavescens, Calotes versicolor*.

ii. Sequences Submitted: 48 Sequences of three mitochondrial genes of four *Varanus* species, 4 sequences of four species of Skinks, 40 sequences of two genes of lizards, Accession Numbers received from NCBI: KU867849-862, KU746362-376 and KU746377-89.

06

Combined taxonomy, biogeography and next generation sequencing (NGS) based reassessment of Testudines in Eastern Himalaya and Indo-Burma biodiversity hotspots with special references to archival specimens at National Zoological Collection's (2016-2018)

Ongoing Projcet

Funding source: Department of Science & Technology (DST), Govt. of India, New Delhi

Investigator: Dr Shantanu Kundu (PDF)

Date of start: March 2016

Date of completion: 2018

Sanctioned at HQ, ZSI- Kolkata

Progress: Survey the Chelonian diversity in Assam, Meghalaya and Arunachal Pradesh in northeast India. Collected the blood samples from wild living individuals with prior permission and tissue samples from commercialized specimens. Studies on the archival materials (General and Type collections) available in National Zoological Collections in Reptilia Section, Spirit Building, Zoological Survey of India, Kolkata. Generation of DNA barcode data of the studied taxa and acquired the proper accession number and BOLD-IDs from both GenBank and BOLD database. Generated the complete mitochondrial genome of *Nilssonia nigricans* and *Pangshura tentoria*, through Next Generation Sequencing Techniques. Studied the ecto and endo parasites of the wild living turtles and in the gut content of the commercialized available specimens. Check list of Exotic Chelonians and Marine turtles in National Zoological Collections of Zoological Survey of India, Kolkata.

07

Taxonomic study of Tettigoniidae (Orthoptera) of India

Ongoing Projcet

Funding source: All India Co-ordinated Project on Taxonomy (AICOPTAX), MoEFCC

Investigator: Dr. D. Suresh Chand

Date of start: March 2016

Date of completion: 2019

Sanctioned at HQ, ZSI- Kolkata

Progress: Inventory of Tettigoniidae has been carried out in different Agroclimatic zones and forests of four states, Odisha, Bihar, Jharkhand and West Bengal. In Odisha 106 specimens of tettigoniids were collected from 19 different localities involving 6 districts. In Bihar 61 specimens of tettigoniids were collected from 13 different localities belonging to 4 districts. Six districts were surveyed in Jharkhand and collected 37 specimens of tettigoniids from 48 different localities. However, from West Bengal the maximum number of tettigoniids were collected 149 specimens from 4 districts. Besides the major survey, 18 local surveys were conducted in the South 24 parganas of West Bengal, and collected 236 specimens of tettigoniids. Totally 589 specimens were collected from all the four states, and so far 16 species of tettigoniids were identified under 10 genera. Further identification and survey is in progress.

08

Studies on the moth fauna of Pachmarhi Biosphere Reserve - an assessment of the species richness, relative abundance and distribution as environmental indicators

Ongoing Projcet

Funding source: Ministry of Environment, Forest and Climate Change

Investigator: Dr. S. Sambath

Date of start: March 2016

Date of completion: 2019

Sanctioned at HQ, ZSI- Kolkata

Objectives:

(i). To determine the species composition and relative abundance of moth population across different season and habitat in Pachmarhi Biosphere Reserve.

(ii). To determine the microhabitat associations, host plant relationships and to relate moth species composition to vegetation across the different habitat.

(iii). To prepare the distribution map of the moth fauna using GIS techniques.

Progress: Field survey was undertaken from Bori Wildlife Sanctuary, Satpura and Pachmarhi National Park to assess the species composition, relative abundance of moth species from selected localities of Bori WLS, Satpur TR and Pachmarhi National Park. A total of 712 moth specimens were collected from various localities and were identified into 88 species belonging to 84 genera in 12 families under 09 superfamilies were recorded.

Significant findings:. During the course of study, 82 species belonging to 75 genera were added to the moth fauna of Pachmarhi Biosphere Reserve.

- Distribution of moth species from different localities of Pachmarhi Biosphere Reserve has been studied.
- Of the recorded species, *Episparsis liturata* Fabricius showed highest dominance Matkuli

followed by *Achaea janata* Linnaeus, 1758, *Sameodes cancellalis* (Zeller) *Spoladea recurvalis* Fabricius and *Acanthopsis* sp.

- The species richness and diversity of moths observed in the Matkuli region followed by the FRH, Mahadev and Panar Pani Forest area.
- Among the different localities Matkuli and FRH Mahadev Forest regions showed high similarities followed by Panar Pani and FRH Dela Kheri
- Of the 88 species recorded, 59 species are Common (C), 9 species are very common (VC) and 20 species are rarely (R) recorded during the course of study.
- The Geo-Coordinates of various collection localities were also recorded.
- Diversity of various moth species among different families were also observed and analyzed.

09

Genetic management of captive Red Panda (*Ailurus fulgens*) populations in India: implications in conservation breeding and reintroduction programmes

Ongoing Project

Funding source: DST SERB, Govt. of India, New Delhi

Investigators: Dr. Lalit Kumar Sharma

Date of start: March 2016

Date of completion: 2019

Sanctioned at HQ, ZSI- Kolkata

Progress: Data on the distribution of the species was obtained from primary and secondary sources. The primary source of information includes field surveys were conducted in the previously known distribution sites of the Protected Areas of West Bengal (Singalila National Park & Neura Valley National Park) and efforts were made to identify the new sites. The secondary information on the presence/absence of Red Panda was also collected through literature review, questionnaire surveys, personal interviewing the locals, forest department and from a network of NGO's. In addition to this, archived database Global Biodiversity Information Facility (www.gbif.net) was also used for supplementary information regarding past records of the species. The study area was stratified and 5 x 5 Km grids were marked based on the reconnaissance surveys and efforts were made to cover all grids falling in the Red Panda habitat during the study period for direct and indirect signs through line/trail transects of 2 km length. GIS and remote sensing techniques was used for spatial analysis and to the generate distribution maps of Red Panda in Singalila National Park, and Neura Valley National Park, West Bengal. The Maxent software program was used for modelling the Species distribution of Red panda.

Significant findings: A total of n=47 sites of independent occurrence location of species were recorded during the field survey in Singalila National Park, and Neura Valley National Park West Bengal, India. ArcGIS and Erdas Imagine were also used to analyse and interpret the data obtained from Maxent software. To understand the genetic composition of the captive population of red panda the genetic analysis of the samples is going on and also the samples collected from wild are also processed for population genetics analysis.

01

Study on the Faunal Components and Preparation of Management and Conservation Plan for Flamingo Sanctuary at Thane, Mumbai

Initiated Project

Funding source: M/s GPS Technologies Pvt.Ltd., New Delhi

Investigators: Dr. Kailash Chandra, Dr. Basudev Tripathy, Dr. G. Maheswaran & Dr. Lalit Kumar Sharma

Date of start: March 2017

Date of completion: 2018

Sanctioned at HQ, ZSI- Kolkata

Progress: Final Technical Report submitted to the funding agency. For monitoring study, pertaining to Impact of Noise and Vibration on the Flamingo and also the response and behavior of flamingo towards noise and vibration from the tunneling operation on birds and the benthic fauna as well as habitat was suggested. As a precautionary measure, as much as possible activities on the ground in proximity of bird rookeries in Thane Creek to be restricted was recommended.

02

Study on Status Survey and Conservation Plan for sea turtles along Kuranga Coast, Devbhumi Dwarka District, Gujarat

Initiated Project

Funding source: M/s RSPL Ltd., Ahmedabad

Investigators: Dr. Kailash Chandra, Dr. Basudev Tripathy & Dr. Ch. Satyanarayana

Date of start: March 2017

Date of completion: 2018

Sanctioned at HQ, ZSI- Kolkata

Progress: Field work and data collection completed, Final Technical Report submitted. Based on the detailed field survey, it was observed that due to its narrow beach width, rocky substratum, heavy wave actions,vegetation cover, slope, presence of pebbles and rubbles, tidal inundation, presence of animals on the beach as well presence of human being and thereby unfavorable for sea turtles for laying eggs.However, the – 1 km stretch from both sea water intake point towards Gojiness and from outfall point towards Okhamadhi, much of the sporadic nesting could be taking place along this coastal stretch. Therefore, suitable conservation measures were suggested for safeguarding the nesting habitats along the coast.

03 Seasonal Dynamics of Microzooplankton and their trophic role in the pelagic food web of the Northern Coastal waters of Bay of Bengal

Initiated Project

Funding source: Department of Science & Technology (SERB), New Delhi

Investigators: Dr. Jasmine P

Date of start: March 2017

Date of completion: 2020

Sanctioned at HQ, ZSI- Kolkata

Objectives:

i. Spatio- temporal variation of microzooplankton diversity along the coastal waters of northern Bay of Bengal.

ii. Role of microzooplankton in the pelagic food web and their inter relationship with different trophic levels of the ecosystem.

iii. To assess the impact of episodic events on the community structure of microzooplankton and the role in the biogeochemistry of coastal waters of Bay of Bengal.

iv. To compare the temporal dynamics of the ciliate colonizations between different water depths and also to find out the indicator taxa for monitoring water quality in coastal waters

v. To create a taxonomic database of the coastal ciliate communities

Progress: One winter survey from coastal waters of West Bengal to Kakkinada coast of Bay of Bengal were completed. The samples of Microzooplankton, Mesozooplankton and all environmental parameters were collected and anlysis in progress.

Significant findings: Swarms of Ctenophores were observed and collected from the Sunderbans coastal waters of West Bengal during winter monsoon.

04 Diversity, Distribution and Status of Freshwater Fishes of Jaldhaka River, West Bengal, India

Initiated Project

Funding source: West Bengal Biodiversity Board

Date of start: March 2017

Date of completion: 2019

Sanctioned at HQ, ZSI- Kolkata

Objectives: To study the diversity, distribution pattern and status of freshwater fishes of Jaldhaka River, West Bengal.

Progress: Two faunistic surveys undertaken and more than 580 specimens of freshwater fishes were collected. Identified 42 species of fishes which belonging to 24 genera and 9 families. All the identified specimens are deposited in the National Zoological Collections and registered.

Significant findings: *Garra birostris* is collected for the first time from West Bengal.

05 River Dolphin Conservation under Green Skill Development Program (GSDP)

Initiated Project

Funding source: Ministry of Environment and Forests Climate Change, New Delhi

Investigators: Dr. Gopal Sharma

Date of start: March 2017

Date of completion: 2018

Sanctioned at HQ, ZSI- Kolkata

Progress: Training on River Dolphin Conservation under GSDP completed

06

Taxonomic studies on the Tubulifera (Insecta: Thysanoptera) of India

Initiated Project

Funding source: All India Co-ordinated Project on Taxonomy (AICOPTAX), MoEFCC

Investigators: Dr. Vikas Kumar

Date of start: March 2017

Date of completion: 2020

Sanctioned at HQ, ZSI- Kolkata

Progress: Two Surveys, one each in Gujarat and Odisha State of India have been conducted. A total of 37 species have been identified and barcoded, which revealed a number of cryptic species in at least five thrips species. Data analysis is in progress.

About 20 species have been newly recorded from each state.

07

Biosystematics of Mayflies (Insecta: Ephemeroptera) of India.

Initiated Project

Funding source: All India Co-ordinated Project on Taxonomy (AICOPTAX), MoEFCC

Investigators: Dr. K.A. Subramanian

Date of start: March 2017

Date of completion: 2020

Sanctioned at HQ, ZSI- Kolkata

Objectives of the Project

(1) Study on the biosystematics of families Leptophlebiidae, Ephemeridae, Hepatageniidae and Baetidae (Insecta: Order Ephemeroptera)

(2) Taxonomical description and identification of diagnostic characters of the larval and adult stages of species of above mentioned families

(3) Study on the patterns of distribution of the species within India

(4) Capacity building among students on Ephemeroptera Taxonomy by conducting trainings and workshops

(5) Development of online internet resources for Ephemeroptera of India.

Progress of the Project

i) Extensive surveys were conducted in Arunachal Pradesh, East coast and southern Western Ghats (Tamil Nadu).

ii) Collected samples were identified up to genera and species.

iii) Unidentified samples deposited in the national Zoological Collections, ZSI, Chennai were sorted and identified.

iv) One new genera, four new species and one new record was reported and published.

v) Key to *Choroterpes* Eaton, 1881 (Ephemeroptera: Leptophlebiidae) was revised and published.

vi) Digitization showing all taxonomic characters of 22 species from the Western Ghats was carried out.

08

Conservation of Red Panda (*Ailurus fulgens*) in Eastern Himalayas: evaluating distribution, population status and conservation genetics for long term management and implication in conservation

Initiated Project

Funding source: DST INSPIRE Faculty AWARD, Govt. of India, New Delhi

Investigators: Dr. Mukesh Thakur,
Mr. Hiren Khatri &
Mr. Shambadeb Basu

Date of start: March 2017

Date of completion: 2020

Sanctioned at HQ, ZSI- Kolkata

Progress: Exploratory field surveys to Arunachal Pradesh (Panchen Lakhara Community Conservation Area, Zemithang, Tawang District) and West Bengal (Singalila National Park & Neora Valley) were undertaken for the sign survey of red panda presence and the collection of non-invasive samples for genetic analysis. Questionnaire interviews to the locals at Panchen Lakhara Community Conservation Area, Zemithang were undertaken to gather information for the Red Panda and other mammalian species presence in Tawang district.

During the field surveys, the highest altitude gained was 3594m and red panda faeces were collected on elevation ranging from 3451m and 3038m. In Twang, we found evidences of Red Panda presence at 33 sights, mostly in the form of faecal samples. In total, 21 faecal samples were collected. We also witnessed direct sightings of Red Panda 4 times. GPS coordinates and vegetation data was recorded for all sighted locations. Faecal samples of red panda collected from ground, trees and logs.



At a Glance: Scientific Programmes 2017-18

	Completed	Ongoing	Initiated	Total
Headquarters ZSI	14	23	19	56
Regional Centres	29	45	14	88
Externally Funded	-	09	08	17
Total	**43**	**77**	**41**	**161**



Field Survey Division supervises the overall surveys carried out by the different scientific divisions of Headquarters and Regional Centers. Altogether 100 surveys have been conducted during the year 2017-18

SURVEYS



05

Details of Surevys conducted during the year 2017-18.

Details of Surveys	Head Quarters	Regional Centre
1. ECOSYSTEMS		
1a. Marine ecosystem	04	01
1b. Island ecosystem	02	03
1c. Estuarine ecosystem	-	03
1d. Mangrove ecosystem	01	01
1e. Fresh water ecosystem	02	01
1f. Himalayan ecosystem	01	01
1g. Desert ecosystem	-	02
1h. Grassland ecosystem	02	02
1i. Tropical rain forest ecosystem	01	01
2.PROTECTED AREAS	16	32
3. STATE/UNION TERRITORIES SURVEYS	04	03
4. STATUS SURVEY OF ENDANGERED SPECIES	02	04
5. TAXONOMIC STUDIES	05	04
6. Study Tour	01	01
TOTAL	**41**	**59**
GRAND TOTAL	**100**	

Result frame work document (RFD) of ZSI from April, 2017 to March, 2018

Objective	Action	Success Indicators	Unit	Target Value for Financial Year 2017-18	Progressive up to 31/03/2018	Percentage
Survey, documentation & conservation of Wild faunal diversity of the country & identification of new taxa	Survey of Forest Ecosystems, Protected Areas & Fragile Ecosystems	Surveys conducted	No.	100	100	100.0%
	Digitization of national Zoological collections	Faunal Specimens digitized	No.	10,000	16182	161.82%
Taxonomic studies on faunal diversity	Identification of specimens collected from different Survey tours	Number of Specimens identified	No.	25,000	37183	148.73%
Maintenance of National Zoological Collections	Registration of National Zoological Collection	Number of specimens registered	No.	25,000	37183	148.73%
Advanced studies on Faunal Diversity.	Application of modern tools on Faunal diversity	Number of specimens studied through modern tools.	No.	100	170	170.00%

NEW DISCOVERIES

Biodiversity is essentially the number of species found in a patricular area. Fundamental to any measure of biodiversity is the recognition of species. Discovering new species increases the faunal resource of our country. ZSI plays major role in discovering new species.

104 new species were described belonging to different faunal groups:

15 new species of Platyhelminthes, 4 new species of Nematoda, 2 new species of Annelida, 6 new species of Arachnida, 9 new species of Crustacea, 5 new species of Collembola, 2 new species of Coleoptera, 2 new species of Diptera, 4 new species of Ephemeroptera, 4 new species of Hemiptera, 19 new species of Hymenoptera, , 5 new species of Lepidoptera, 1 new species of odonata, 8 new species of Orthoptera , 1 new species of Thysanoptera, 3 new species of Tricoptera, 2 new species of Urochordata, 7 new species of Pisces and 5 new species of Ampbhibia were described.

Details of the new discoveries by the scientists of ZSI and other institutes //Colleges are published yearly in the Book "Animal Discoveries" and is available on ZSI website

(URL: https://zsi.gov.in/WriteReadData/userfiles/file/Animal%20Discovery/Animal%20Discoveries%202017.pdf



06

New species described by the ZSI Scientists

104 **new species were described belonging to different faunal groups:**

15 new species of Platyhelminthes,
4 new species of Nematoda,
2 new species of Annelida,
6 new species of Arachnida,
9 new species of Crustacea,
5 new species of Collembola,
2 new species of Coleoptera,
2 new species of Diptera,
4 new species of Ephemeroptera,
4 new species of Hemiptera,
19 new species of Hymenoptera,
5 new species of Lepidoptera,
1 new species of odonata,
8 new species of Orthoptera ,
1 new species of Thysanoptera,
3 new species of Tricoptera,
2 new species of Urochordata,
7 new species of Pisces and
5 new species of Amphibia

Details of the new discoveries by the scientists of ZSI and other institutes /Colleges are published yearly in the Book "Animal Discoveries" and is available on ZSI website

(URL: https://zsi.gov.in/WriteReadData/userfiles/file/Animal%20Discovery/Animal%20Discoveries%202017.pdf

List of the species described by ZSI is given in the table

New Discoveries by ZSI Scientists

15 **New species of Platyhelminthes**

1. *Wenyonia sanyali* Banerjee and Manna.
2. *Gyrocoelia mizoramensis* Banerjee, Manna and Sanyal.
3. *Pentorchis arunachalensis* Banerjee, Manna and Sanyal.
4. *Prostheceraeus fuscolineatus* Dixit, Raghunathan and Chandra.
5. *Pseudoceros auranticrinis* Dixit, Raghunathan and Chandra.
6. *Pseudoceros galatheensis* Dixit, Raghunathan and Chandra.
7. *Pseudoceros nigropunctatus* Dixit, Raghunathan and Chandra.
8. *Pseudoceros vishnui* Dixit, Raghunathan and Chandra.
9. *Ptychobothrium leiodoni* Banerjee, Manna and Sanyal.
10. *Ptychobothrium raiamusi* Banerjee, Manna and Sanyal.
11. *Senga bengalensis* Banerjee, Manna and Sanyal.
12. *Senga kakdwipensis* Banerjee, Manna and Sanyal.
13. *Senga nagalandensis* Banerjee, Manna and Sanyal.
14. *Senga orissaensis* Banerjee, Manna and Sanyal.
15. *Spathebothrium vivekanandai* Banerjee, Manna and Sanyal.

New species of Nematoda

04

16. *Aquatides heynsi* Sen
17. *Parapharyngodon tuberculata* Rizvi, Maity and Bursey.
18. *Thelandros dehradunensis* Rizvi, Maity and Bursey.
19. *Thelandros tuberculata* Rizvi, Maity and Bursey.

New species of Annelida

02

20. *Octochaetona nurulai* Mandal, Hasan and Talukder.
21. *Placobdella rampurai* Mandal, Mridha, Hasan and Ghosh.

New species of Arachnida

06

22. *Epocilla sirohi* Caleb, Chatterjee, Tyagi, Kundu and Kumar.
23. *Icius kumariae* Caleb
24. *Langelurillus lacteus* Sanap, Joglekar and Caleb
25. *Langelurillus onyx* Caleb, Sanap, Joglekar and Prajapati.
26. *Mogrus rajasthanensis* Caleb, Chatterjee, tyagi, Kundu and Kumar.
27. *Rhysida apinosus* Dhanya and Sureshan

New species of Crustacea

09

28. *Cylindrotelphusa breviphallus* Pati, Rajesh, raj, Sheeja, Kumar and Sureshan.
29. *Cylindrotelphusa longiphallus* Pati, Rajesh, raj, Sheeja, Kumar and Sureshan.
30. *Himalayapotamon garhwalense* Pati and Singh
31. *Karkata ghanarakta* Pati, Rajesh, Raj, Sheeja, Kumar and Sureshan.
32. *Karkata kusumbha* Pati, Rajesh, Raj, Sheeja, Kumar and Sureshan.
33. *Pilarta aroma* Pati, Rajesh, Raj, Sheeja, Kumar and Sureshan.
34. *Pilarta punctatissima* Pati, Rajesh, Raj, Sheeja, Kumar and Sureshan.
35. *Himalayapotamon chambaensis* Mitra and Valarmathi.
36. *Teretamon spelaeum* Absar, Mitra and Kharkongor.

New species of Collembola

05

37. *Isotomurus dhanbadensis* Mandal, Suman and Bhattacharya.
38. *Isotomurus indicus* Mandal, Suman and Bhattacharya.
39. *Isotomurus jharkhandensis* Mandal, Suman and Bhattacharya.
40. *Isotomurus sahebganjensis* Mandal, Suman and Bhattacharya.
41. *Proisotoma pakurensis* Mandal, Suman and Bhattacharya.

New species of Coleoptera

02

42. *Pukupuku arunachalensis* Gupta, Chandra and Bezdek.
43. *Tropiorhynchus annandalei* Gupta and Chandra.

New species of Diptera

02

44. *Plagiostenopterina sagarensis* Roy, Parui and Mitra.
45. *Tabanus pseudoannularis* Maity, Naskar, Hazra, Sengupta, Parui and Banerjee.

New species of Ephemeroptera

04

46. *Thalerosphyrus meghalayensis* Selvakumar and Chandra.
47. *Choroterpes (Choroterpes) kaegis* Selvakumar, Subramanian and Chandra.
48. *Choroterpes (Dilatognathus) nicobarensis* Selvakumar and Chandra.
49. *Prosopistoma someshwarensis* Ramya-Roop, Selvakumar and Subramanian.

New species of Hemiptera

04

50. *Eotrechus fuscus* Basu, Chandra and Venkatesan.
51. *Mesovelia lillyae* Jehamalar and Chandra.
52. *Mesovelia kumaria* Jehamalar and Chandra
53. *Mesovelia easaci* Jehamalar and Chandra

New species of Hymenoptera

19

54. *Stilbula bullista* Kumar
55. *Stilbula muthangensis* Kumar
56. *Stilbula namida* Kumar
57. *Stilbula shendurunica* Kumar
58. *Stilbula silentvalliensis* Kumar
59. *Odontomutilla paderua* Das and Kumar
60. *Iphitrachelus neogracilis* Anjana and Rajmohana.
61. *Iphitrachelus shajii* Anjana and Rajmohana.
62. *Dipara tamila* Sureshan, Kumar and Sheeja
63. *Halticoptera cavatura* Sureshan
64. *Pycentron keralensis* Sureshan
65. *Psilocera manickai* Sureshan
66. *Anokha Rajmohana* and Veenakumari,
67. *Anokha anoojii* Rajmohana and Veenakumari
68. *Anokha nigra* Rajmohana
69. *Apteroscelio aureus* Veenakumari, Talamas and Rajmohana
70. *Apteroscelio shyamala* Veenakumari, Talamas and Rajmohana
71. *Pararrhynchium venkataramani* Kumar and Carpenter
72. *Discoelius vasukii* Pannure and Carpenter

New species of Lepidoptera

05

73. *Microlithosia jaghiri* Singh, Joshi and Ranjan
74. *Ramila sunderbanensis* Biswas, Shah, Modak and Mitra.
75. *Thysanoptyx manganensis* Singh, Joshi, Kirti and Volynkin
76. *Miltochrista pseudomodesta* Joshi, Singh and Volynkin
77. *Miltochrista quadra* Joshi, Singh and Volynkin

New species of Lepidoptera

01

78. *Nososticta nicobarica* Rajeshkumar, Raghunathan and Chandra.

New species of Orthoptera

08

79. *Epistaurus tinsensis* Gupta and Chandra
80. *Keshava Gupta* and Chandra
81. *Keshava barnawaparensis* Gupta and Chandra
82. *Keshava jugadensis* Gupta and Chandra
83. *Keshava shishodensis* Gupta and Chandra
84. *Gryllacris durgensis* Gupta and Chandra
85. *Coptotettix korbensis* Gupta and Chandra
86. *Coptotettix magedhensis* Gupta and Chandra

New species of Thysanoptera

01

87. *Danothrips litseae* Tyagi, Singha and Kumar

New species of Trichoptera

03

88. *Hydropsyche curvata* Pandher, Kaur, Parey and Saini
89. *Hydropsyche golitarensis* Pandher, Kaur, Parey and Saini
90. *Hydropsyche hajinensis* Pandher, Kaur, Parey and Saini

02

New species of Lepidoptera

2 New species of Urochordata

91. *Rhopalaea bilobata* Mondal, Raghunathan and Chandra
92. *Herdmania andamanensis* Mondal, Raghunathan and Chandra

07

New species of Pisces

93. *Enchelycore propinqua* Mohapatra,Smith, Mohanty, Mishra and Tudu.
94. *Gymnothorax pseudotile* Mohapatra, Smith, Ray, Mishra and Mohanty.
95. *Gymnothorax visakhaensis* Mohapatra, Smith, Mohanty,Mishra and Tudu.
96. *Amblygaster indiana* Mary, Balasubramanian, Selvaraju and Shiny.
97. *Garra chindwinensis* Kosygin, Premananda and Saldullah.
98. *Parapsilorhynchus odishaensis* Baliarsingh, Kosygin and Swain
99. *Parapsilorhynchus swaini* Baliarsingh and Kosygi

05

New species of Amphibia

100. *Fejervarya goemchi* Dinesh, Kulkarni, Swamy and Deepak
101. *Fejervarya jhilmilensis* Bahuguna
102. *Xenophrys katabhako* Deuti, Grosjean, Nicolas, Vasudevan and Ohler
103. *Xenophrys sanu* Deuti, Grosjean, Nicolas, Vasudevan and Ohler
104. *Odorrana arunachalensis* Saikia, Sinha and Kharkongor

New Records from India

78

Cnidaria

1. *Actinodendron arboretum* (Quoy and Gaimard, 1833)
2. *Diadumene leucolena* (Verrill, 1866)
3. *Sarcophyton acutum* Tixier-Durivault,1970
4. *Sarcophyton latum* Dana, 1846
5. *Sarcophyton spongiosum* Thomson and Dean, 1931
6. *Sarcophyton cornispiculatum* Verseveldt, 1971
7. *Sarcophyton birkelandi* Verseveldt, 1978
8. *Desmophyllum dianthus* Esper, 1794
9. *Balanophyllia galapagensis* Vaughan, 1906
10. *Cladopsammia eguchii* Wells, 1982
11. *Truncatoflabellum spheniscus* (Dana, 1846)

Nematoda

12. *Aporcelaimellus krygeri* (Ditlevsen, 1928) Heyns, 1965
13. *Aporcelaimellus obscuroides* Altheer, 1967
14. *Metaporcelaimellus marinensis* Alvarez-Ortega, Subbotin and Pen- Santiaga, 2012
15. *Mesodorylaimus pulcher* Andrasssy, 1986
16. *Leptonchus transvaalensis* Heyns, 1963
17. *Nygolaimus tenuis* Heyns, 1967
18. *Paravulvus hartingii* (de Man, 1880) Thorne 1974
19. *Iotonchus sagaensis* Khan, Araki and Bilgrami, 2000
20. *Iotonchus tenuidentatus* (Kreis, 1924) Mulvey, 1963
21. *Nußonchus levistomus* Siddiqi, 1984
22. *Coomansus arvensis* (Eroshenko, 1972) Jairajpuri & Khan, 1977
23. *Coomansus ouinnensis* (Yeast 1992) Andrassy 1993
24. *Lotonchulus darreni* (Ahmad, Baniyamuddin & Jairajpuri, 2005) Vinciguerra and Orselli, 2006.
25. *Mulveyvellus parazschokkei* (Allgen, 1929) Andrássy, 1993

Arachnida

26. *Psechrus inflatus* Bayer, 2012

Crustacea

27. *Ashtoret maculata* (Miers, 1877)
28. *Gomeza bicornis* Gray, 1831
29. *Paradorippe cathayana* Manning & Holthius, 1986
30. *Hiplyra variegata* (Ruppell, 1830)

Coleoptera

31. *Cryphaeus gazella* (Fabricius, 1798)

Dermaptera

32. *Gonolabis electa* Burr. 1910

Ephemeroptera

33. *Bungona (Chopralla) pusilla* (Müller-Liebenau, 1984)
34. *Bungona (Centroptella) soldani* (Müller-Liebenau, 1983)
35. *Choroterpes (Dilatognathus) nigella* (Kang & Yang, 1994)

Hemiptera

36. *Remaudiereana flavipes* (Motschulsky, 1863)
37. *Usilanus denotatus* Distant, 1909

Hymenoptera

38. *Dicopomorpha zebra* Huber
39. *Ormyrus longicaudus* Narendran, 1999
40. *Ormyrus secus* Narendran, 1999
41. *Ectopioglossa sublaevis* (Smith, 1857)
42. *Eumenes pomiformis* (Fabricius, 1781)
43. *Pseudepipona (Pseudepipona)* Vicina gusenleitner, 1973

Lepidoptera

44. *Diomea fasciata* (Leech, 1900)
45. *Ischyja hagenii* (Snellen, 1885)
46. *Ophisma pallescens* (Walker, [1863] 1864)
47. *Platyja acerces* (Prout, 1928)
48. *Serrodes caesia* Warren, 1915
49. *Simplicia bimarginata* (Walker, [1863], 1864)
50. *Tamba delicata* Prout, 1932
51. *Tiruvaca hollowayi* Kobes, 1988

Trichoptera

52. *Hydropsyche athamas* Malicky & Chantaramongkol, 2000
53. *Hydropsyche augelas* Malicky & Chantaramongkol, 2000
54. *Hydropsyche camillus* Malicky & Chantaramongkol, 2000
55. *Hydropsyche harpagofalcata* Mey, 1995
56. *Hydropsyche homunculus* Schmid, 1965
57. *Hydropsyche quadrata* (Li & Dudgeon), 1990

Thysanoptera

58. *Podothrips erami* Minaei, 2015

Mollusca

59. *Ceratosoma tenue* Abraham, 1876
60. *Miamira magnifica* Eliot, 1910
61. *Dendrodoris elongata* Baba, 1936
62. *Dendrodoris guttata* (Odhner, 1917)
63. *Halgerda formosa* Bergh, 1880
64. *Lomanotus vermiformes* Eliot, 1908
65. *Phyllidia exquisita* Brunckhorst, 1993
66. *Costasiella usagi* Ichikawa, 1993

Echinodermata

67. *Brissus latecarinatus* (Leske, 1778)

Urochordata

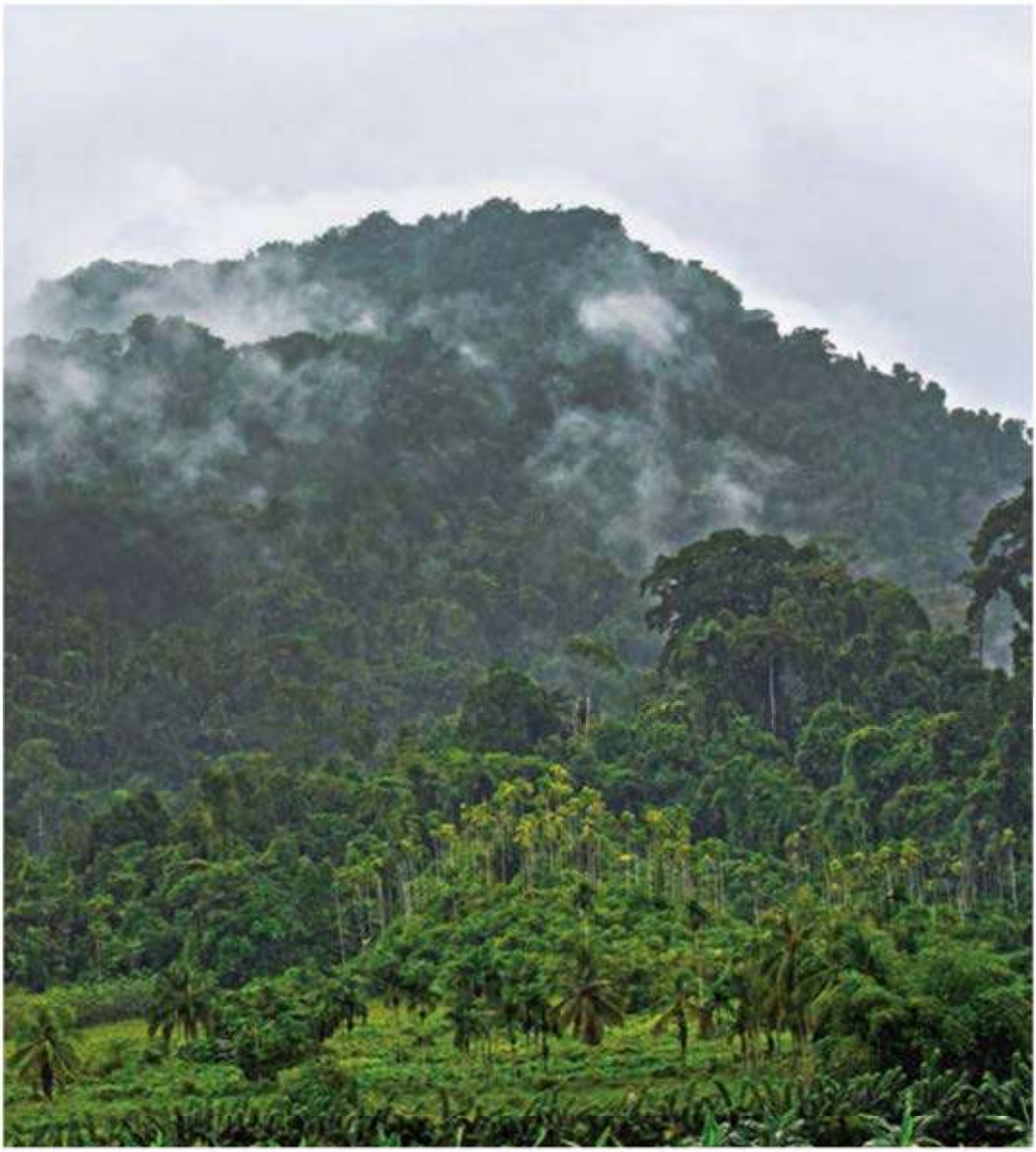
68. *Clavelina australis* (Herdman, 1899)
69. *Clavelina fecunda* (Sluiter, 1904)
70. *Clavelina robusta* Kott, 1990
71. *Rhopalaea circula* Monniot and Monniot, 2001
72. *Rhopalaea fusca* (Herdman, 1880)
73. *Rhopalaea macrothorax* (Herdman, 1880)
74. *Didemnum molle* Herdman, 1886
75. *Diplosoma simile* Sluiter, 1909
76. *Trididemnum cyclops* Michaelsen, 1921
77. *Lissoclinum patella* Gottschaldt, 1898

Pisces

78. *Glyptothorax igniculus* Ng and Kullander, 2013



PUBLICATIONS



07

I Books Published

1. Records of ZSI Vol. 117(1) e-journal
2. Records of ZSI Vol. 117(2) e-journal
3. Records of ZSI Vol. 117(3) e-journal
4. Records of ZSI Vol. 117(4) e-journal
5. Conservation Area Series, 58, Fauna of Kanyakumari National Park
6. Conservation Area Series, 60, Fauna of Sultanpur National Park
7. Conservation Area Series, 61, Fauna of Great Nicobar Biosphere Reserve
8. Occasional Paper No. 381, Taxonomic Account of House flies (Diptera)
9. Occasional Paper No. 382, Freshwater Crabs of Mizoram
10. Occasional Paper No. 383, Taxonomic Studies of small mammals of MP
11. Occasional Paper No. 384, Reef associated Ascidians of A&N Islands
12. Occasional Paper No. 385, Sponges of A&N Islands
13. Occasional Paper No. 386, Faunal Diversity in Nayachar Island
14. Occasional Paper No. 387, Studies of epi-benthic fauna of Gulf of Mannar
15. Occasional Paper No. 389, Taxonomic Studies on the Scolopendromorphic Centepedes of Kerala
16. Memoirs of ZSI Vol. 22 (4), Monograph on the Snappers of India
17. Thrips of Economic Importance
18. Animal Discoveries, 2016
19. Current Status of Freshwater Faunal Diversity in India
20. Fauna of Sunderbans Biosphere Reserve
21. Guide to Marine Aquarium Fishes of MARC, Digha
22. Biography and Bibliography of Prof. TC Narendran
23. Fauna of India - Homoptera : Aphidoidea, Part-7(2)
24. Genotypic Fauna, Series, 2
25. Annual Report 2015-16
26. Atlas of Odonata of Western Ghats
27. Faunal Diversity of Indian Himalaya
28. Endemic Animals of A&N Islands
29. Status Survey Report, 13, Status of Horseshoe Crab
30. Kailash, K. Kumar, S. & Baniyal, H. S. 2017. Faunal study in respect of EIA/EMP of Kapurdi Lignite Mines of Barmer District, Rajasthan belongs to Barmer Lignite Mining Company Ltd. Publ.: Director, ZSI, Kolkata, Pp. 1-48.

II. Research Papers Published in SCI Journals

1. Absar, P. F., Mitra, S. & Kharkongor, I. J. 2017. *Teretamon spelaeum*, a new species of freshwater crab (Crustacea: Decapoda: Potamidae) from a limestone cave in Meghalaya, India. *Zootaxa*,**4365**(3): 302-310.
2. Aneesh, P. T., Helna, A. K., Valarmathi, K., Chandra, K. & Mitra, S. 2017. Redescription of *Nerocila exocoeti* Pillai, 1954 (Crustacea: Isopoda: Cymothoidae) parasitic on beloniform (Exocoetidae and Hemiramphidae) hosts with *Nerocila madrasensis* Ramakrishna & Ramaniah, 1978 placed into synonymy. *Zootaxa*, **4365**(3): 385-394.
3. Aneesh, P. T, Valarmathi, K & Mitra, S. 2017. Redescription of *Nerocila recurvispina* Schiödte and Meinert 1881: (Crustacea: isopoda) from the Hooghly River, Kolkata, India. *Marine Biodiversity.*
4. Anoop, V. S., Kumar, K. S., Sivakumar, K. C., Reghunathan, D., Manoj, P., Deuti, K. & George, S. 2017. The complete mitochondrial genome of Euphlyctis karaavali (Amphibia: Anura) with a note on its range expansion. *Conservation Genetics Resources.*
5. Baliarsingh, B. K.&Kosygin, L. 2017. A new species of *Parapsilorhynchus* Hora, 1921 (Pisces: Cyprinidae) from Odisha, India. *Indian Journal of Fisheries*, **64**(4): 44-49.
6. Balakrishnan, S., Santhanam, P. & Srinivasan, M. 2018. Element concentrations in marine macroalgae of Tuticorin coastal waters, Southeast coast of India. *Indian Journal of Geo-Marine Sciences*,**47**(06): 2018.
7. Behera, S., Tripathy, B., Choudhury, B. C. & Sivakumar, K. 2018. Movements of Olive ridley Turtles (Lepidochelys olivacea) in the Bay of Bengal, India, determined via Satellite Telemetry. *Chelonian Conservation and Biology*, **17**(1): 1245-50.

8. Bhaskar, R. & Mohindra, V. 2018. Variability in DNA COI sequences reveals new haplotypes in freshwater turtles from northern region of India. Mitochondrial DNA Part B, 3: (1), 317-323.

9. Bharti, D., Kumar, S.&La Terza, A. 2017. Corrigendum to "Two gonostomatid ciliates from the soil of Lombardia, Italy; including note on the Soil Mapping Project" Bharti et al. *Journal of Eukaryotic Microbiology*,**64**, 907.

10. Bharathi, G. M. P., Rajendra, S. & Raghunathan, C. 2017. Notes on yellow-spotted moray eel, *Echidna xanthospilos* (Actionopterygii: Anguilliformes: Muraenidae), from Great Nicobar Island, India. *Acta Ichthyologica et Piscatoria*,**47**(2): 209-212. DOI: 10.3750/AIEP/02182.

11. Biswas, O., Shah, S. K., Modak, B. K. & Mitra, B. 2017. Description of one new species of genus *Ramila* Moore, 1867 (Lepidoptera, Crambidae, Schoenobiinae) from Indian Sunderbans with a revised key to the Indian species. *Oriental Insects*, 2157- 8745.

12. Chatterjee, S., Caleb, J. T. D., Tyagi, K., Kundu, S. &Kumar, V. 2017. Two new species of jumping spiders of the genus *Epocilla* Thorell and *Mogrus* Simon (Araneae: Salticidae) from India. *Arthropoda Selecta*, **26**(4):321-326.

13. Das, S., Raha, S., Mitra, S. & Bag, P. 2017. Implication of variable characters for the taxonomy of *Altiphylax stoliczkai* (Steindachner, 1867) and *Altiphylax yarkandensis* (Anderson, 1872) (Reptilia: Gekkonidae) with comments on the ZSI 'syntype 'of the latter taxon. *Zootaxa*, **4320**(1): 183-192.

14. Dixit, S., Raghunathan, C. & Chandra, K. 2017. Two new *Pseudoceros* (Polycladida: Pseudocerotidae) and a *Prostheceraeus* (Polycladida: Euryleptidae) from Andaman and Nicobar Islands, India. *Zootaxa*, **4269**(4): 495-512.

15. Dubey, A. K. 2017. Description of a new species *Setaleyrodes machili* Dubey, sp. Nov. (Hemiptera: Aleyrodidae) infesting *Machilus odoritissima* Nees (Lauraceae) in Western Himalaya, India. *Zootaxa*, **4363**(2): 291-300.

16. Dubey, A. K. & Martin, J. H. 2018. A review of the genus *Tuberaleyrodes Takahashi* (Hemiptera: Aleyrodidae) with description of five new species from Brunei, Hong Kong and Malaysia. *Zootaxa*,**4202**(2): 251-282.

17. Dubey, A. K. & Singh, S. 2017. A new whitefly genus and species, *Himalayaleyrodes sarcococcae* Dubey, (Hemiptera: Aleyrodidae) infesting Christmas box (Buxaceae) in Western Himalaya, India. *Zootaxa*, **4269**(4): 531-544.

18. Giri, V. B., Bauer, A. M., Mohapatra, P. P., Srinivasulu, C. & Agarwal, I. 2017. A new species of large-bodied, tuberculate Hemidactylus Oken, 1846 (Squamata: Gekkonidae) from the Eastern Ghats, India. *Zootaxa*, **4347**(2): 331-345.

19. Gupta, D. & Chandra, K. 2017. *Tropiorhynchus annandalei* (Coleoptera: Scarabaeidae: Rutelinae), a new species from Maharashtra, India. *Zootaxa*, **4337**(4): 509-522.

20. Gupta, D., Chandra, K. & Khan, S. 2017. Studies on tribe Onitini (Scarabaeinae: Scarabaeidae: Coleoptera) from Madhya Pradesh with a checklist from India. Proceedings of *National Academy of Sciences, India, Section B, Biological Sciences*, **87**(3): 1025-1039.

21. Gupta, S. K. & Chandra, K. 2017. A new species and a key to species of the genus *Coptotettix* Bolivar, 1887 from India (Orthoptera: Tetrigoidea, Tetrigidae). *Zootaxa*, **4299**(1): 146-150.

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III. Papers published in International Journals

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IV. Papers Published in Indian Journals

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Zoological Survey of India was established in 1916 as a department of the Government of India. Since then the Library is an integral part of this organisation. As O.W. Holmes said, the library is "A nest in which to hatch scholars" the Library of Zoological Survey of India also served the purpose of a nest, where many scholars have been nurtured. Now, it is known to be one of the biggest libraries of Asia.

LIBRARY & PUBLICATION DIVISION



08

In the year 1962, the library had a collection of **500** number of books and journals only and during 2017-2018 this number have been raised to **55110** number of books and **13844** number of bound volumes of journals and also about the same number of loose volumes of journals. In addition to these a very rare and valuable collections of books, plates, pictorial maps, diagrams of 15th Century to 18th Century also enrich the collection of this library.

To conserve the rare book collection and also to make appropriate use of the valuable scientific publications from Zoological Survey of India, the documents have been digitized with utmost care and uploaded on the website of ZSI (www.zsi.gov.in). According to the recommendation by MOEFCC, the digitization work is in process and during 2017-2018, 10,65,317 pages have been digitized.

During 2017-2018, **350** numbers of journals have been added, accessioned and displayed. One on-line journal procured. 2283 readers from ZSI and outside institutions availed the library facilities during this year.

A graphical representation of the library developments at Regional centres of ZSI during the year is as below:



Figure. 1: Total Holding of Library

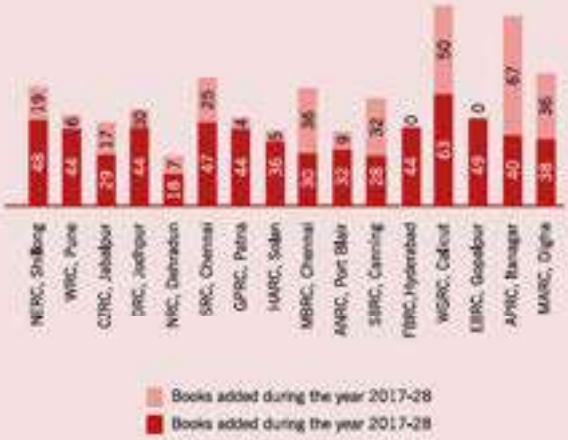


Figure. 1: Total Holding of Library

PUBLICATION DIVISION

About the Publications of ZSI

The Research contributions of scientists and researchers from ZSI and other institutes are being published regularly by the Publication Division of ZSI. Altogether 1542 documents of publications under 16 different series, including Rec. zool. Surv. India - A Journal of Indian Zoology, have been produced by ZSI. The publications of the Survey are widely circulated and have excellent reputation throughout the world. These publications are the main media for dissemination of the results of zoological researches conducted by the Survey as well as outside zoologists on Indian Zoology and a number of valuable papers have already appeared under the aegis of ZSI publications.

Records of the Zoological Survey of India

The Records of the Zoological Survey of India provides media opportunity for zoological communications dealing with taxonomy, faunistics, biology, ecology and population of any taxon, and acts as a journal of Indian Zoology. This is a quarterly publication with four parts annually. It was started in the year 1907 from the Zoological Section of Indian Museum as Records of the Indian Museum in order to publish result of faunistic surveys conducted by the scientists. During the year following books and journals were published : Two volumes of Records of Zoological Survey of India, Seven Occasional papers, one Memoirs of ZSI, three Conservation Area Series (Protected Area Network), one Guide to Marine Aquarium Fishes of MARC, Digha, Biography and Bibliography of Prof. TC Narendran, one Animal Discoveries one book on 2016, one book on Current Status of Freshwater Faunal Diversity in India and another on Fauna of Sunderbans Biosphere Reserve are very significant. Apart from these 10 publications are in press. NAAS rating was obtained for Records of the ZSI journal

Book releases by dignitaries:

- Three books were released: Two books were released by Shri. Ajay Narayan Jha, Secretary, MoEF&CC, Government of India and one book was released at ZSI-Hyderabad.

Museum and Taxidermy Division is supervising and maintaining the Insetcs, Fishes, Amphibia, Reptilia, Mammals and Ecological Gallery of Zoological Survey of India at Indian Museum.

MUSEUM AND TAXIDERMY DIVISION



09

MUSEUM DEVELOPMENT





1. Renovation of Mammal Gallery in Indian Museum.

2. Renovation of Invertebrate Gallery in Indian Museum



3. Renovation of Ecology Gallery









EXHIBITION

- Exhibition "Biodiversity and Sustainable Tourism" on International day for Biological Diversity at Panaji-Goa from 22nd -23rd May, 2017.
- Display of one Diorama on Mangrove ecosystem in National conference on "Faunal diversity of Mangrove Ecosystem" on July 1st and 2nd, 2017 at ZSI, HQ Kolkata.
- Participated in 22nd Sunderban Kristi Mela O Loko Sanskriti Ustab at Kultali, Basanti, South 24 Parganas from 20 - 29th December, 2017.
- Participated the 105th Indian Science Congress (16-20th March, 2018) in Manipur University, Imphal.
- Participated the "Ban Bandhab Ustab 2018" at Sunderban, West Bengal on 22-03-2018.

ZSI is regularly organising Training programmes, Symposia, Seminars etc. on different topics for researchers, students, forest personnels, Faculties of in house as well as other institutes.

CAPACITY BUILDING (TRAININGS & WORKSHOPS)



10

Training modules

ZSI is organising training programmes, symposia, seminars etc. regularly on different topics like Leadership course on Collection, Preservation and Identification of Insects, Mites of Economic Importance, Field ornithology, Herpetology, Taxidermy, GIS, GPS, Scanning electron Microscopy, DNA barcoding, Photography, Scheduled animals, Coastal zone management, administrative trainings, Seminar on Global Warming; Climate Change and Sustainable Development, Leadership course on Environmental Awareness of Protected areas and Conservation of Wildlife, Earth Day Celebration, Biodiversity day celebration, World Environment day celebration, Wildlife Week; Conferences on Animal taxonomy, Marine diversity, Freshwater diversity, mangrove ecosystem diversity, Coral reef ecosystem diversity.

Category of trainees

- Frontline staff of Wildlife and Forest Department of State government (Forest Officials of Range Officers and Forester)
- Field Staff of Custom & Central Excise Department and
- Coast Guard (Assistant Commandant level)
- Intelligence Bureau, CID & Revenue Intelligence (Field Level Staff)
- State Biodiversity Boards (SBB)
- Staffs of ZSI
- Graduate/ postgraduate students of school/colleges/ universities
- Research scholars
- Faculties from school/colleges/ universities

Course duration

Trainings usually of two or three days are conducted presently. Besides the class room lectures, presentation and slide shows, the trainees are taken to visit in different scientific sections, laboratories and museum accompanied by local field trips. At the end of the training session, the trainees are evaluated by providing questionnaire and thereafter participation certificates are issued. The participants express their views and opinion across the feedback form.

The coordination of the training activities:

The training activities of the organization were coordinated by Director Dr. Kailash Chandra through Dr. G. Maheswaran, Head of Office, Mr K.C. Gopi, Additional Director, Dr. Basudeb Tripathy, Officer in charge of Technical section, Dr. Shelley Acharya, Divisional in charge and the Coordinators of each training programme who were further assisted by the supporting staffs. The Coordination Unit is responsible for preparation of the annual training calendar, allocation of venue for the training programmes, faculty deployment in various courses, estimation of budget ,preparation of annual programmes schedules, extending training assistance by way of faculty support, conduct of organization specific programmes, preparation of various reports of training related activities, organizing prize distribution ceremonies of the Institute and compilation of annual report of the Institute.

Training conducted in 2017-18

Zoological Survey of India is a leading institution in faunal survey, exploration and identification. As per its mandate the organization conducts training courses by Training and Extension Division every year. During the year i.e., 01st April 2017 to 31st March, 2018 four training programmes conducted in this area are mentioned below.

PROGRAMME 1

Training workshop on Skills and Techniques of Taxidermy









Training Period: 2 days

Date: 8th to 9th September, 2017

Venue: ZSI Hq, Kolkata and F.P.S Building, Kolkata

Allocation of venue for the training programmes, faculty deployment in various courses, estimation of budget ,preparation of annual programmes schedules, extending training assistance by way of faculty support, conduct of organization specific programmes, preparation of various reports of training related activities, organizing prize distribution ceremonies of the Institute and compilation of annual report of the Institute.

Training funds

The Institute has been regularly acquiring and utilizing training budget granted by MoEFCC, New Delhi as a part of its effort to enhance the effectiveness of training.

Participants

25 participants from the state of Odisha, Maharashtra, Madhya Pradesh, West Bengal, Arunachal Pradesh, Kerala, Andhra Pradesh, Uttar Pradesh and Jharkhand joined this workshop.

Faculties: Dr. Pranjalendu Roy, Former Head of the Department, Regional Museum of Natural History(RMNH), Bhubaneswar, Dr. Shibaprasad Parida(RMNH) and former taxidermist, ZSI Mr D.N Basu.

Apart from classroom lectures participants were taught regarding measurements, skinning, preparation of skin, Mounting, preparation of skeleton of large mammals, articulation and preservation of whole specimen including labelling and packing for despatch.

PROGRAMME 2

Training workshop on "Modern Approaches in Biodiversity Studies"







Training Period: 1 day
Date: 10th October, 2017
Venue: ZSI, Kolkata

Participants: 44 participants including scientists, researchers from ZSI HQ participated in the training programme.

Faculties: Dr. Malay Naskar, Principal Scientist, ICAR- CIFRI, Barrackpore, Dr. Sumit Mandal, Assistant Professor, Presidency University, Dr. Sudipto Roy, Sr. Principal Investigator, Institute of Molecular and Cell Biology, University of Singapore joined as resource persons.

The trainees were taught about the modern techniques of genetics and developmental biology, sample data collection and statistical analysis.



PROGRAMME 3

Workshop on "Administrative Training for Office Superintendents and UDC"

Programme 3

Training Period: 12 days
Date: 20th November- 1st December, 2017
Venue: ZSI, Kolkata

Participants: 24 administrative staffs from ZSI

Faculties: Faculties from Institute of Secretariat Training & Management, Department of Personnel & Training, New Delhi



PROGRAMME 4

Training Workshop on "DNA Barcoding in assessment of faunal diversity"

Training Period: 5 days

Date: 5th- 9th March, 2018

Venue: ZSI, Kolkata

Participants: 20 participants from North Eastern states, Rajasthan, Jabalpur, Punjab, U.P., Kashmir, Hyderabad, Bihar, West Bengal and other state attended the training programme.

Faculties: Prof. Rup Lal, Delhi University; Dr. S. P. Goyal, Emeritus Scientist, Wildlife Institute of India; Dr. Praveen K. Karanth, Indian Institute of Science; Dr. Vivek Sahajpal, Assistant Director, State Forensic Science Laboratory, Himachal Pradesh





The training program is a part of the regular skill development programmes of ZSI, and for which, the program is specifically designed to demonstrate extensive laboratory practices and lecture series on the theoretical background of DNA Barcoding.





National Conference on the Status of Invasive Alien Species of India' held at Kolkata, on 14th and 15th December 2017

The Zoological Survey of India (ZSI) and Botanical Survey of India (BSI) organized a 'National Conference on the Status of Invasive Alien Species of India' at Kolkata, on 14th and 15th December 2017 under the aegis of programme of the Ministry of Environment, Forest and Climate Change (MoEF&CC), Government of India. Nineteen presentations covering invasive alien species of India including, alien trees and weeds, control and management of Lantana sp., woody invasive alien species in Himalayas, invasive fauna in marine, freshwater and terrestrial ecosystems, management of invasive species in island ecosystem, invasive marine algae, impact of Prosopis juliflora, invasive ascidians, guidelines for prioritization of invasive alien species, trends of invasive species in Western Ghats, allelopathic effect on invasive plants, invasive insects on agro-ecosystem, and ecological impacts and management of aquatic weeds have been made by eminent experts on invasive biota across the country during two days Conference. A total of 110 registered participants including, 36 researchers and students from 27 research and

academic institutions located in different parts of the country who made a poster presentations, and officers from ZSI and BSI were also attended the programme. The following recommendations were made out of the workshop for consideration.

i. It is not clear how many invasive plants, animal and microbial species are found in India? The first priority is to prepare list of invasive alien species in India and then prioritize the invasive alien species for their management.

ii. The magnitude of the prioritized invasive species needs to be mapped using remote sensing techniques and the data generated should be plotted on the GIS platform. Similar approaches should be followed for all other alien species for monitoring purpose.

iii. Multidisciplinary integrated research and development on the biological and ecological processes of invasion must be initiated for those aliens that have been impacting the different ecosystems across the country. This should be done by developing a PAN India network project. The research should include model development that identifies potential invasive species and potential areas of invasion in India.

iv. The invasive alien species should be eradicated from island ecosystems and protected areas (PAs) by formulating strategies that may require modifying the existing and evolving new policy framework in line with 17 Sustainable Development Goals (SDGs), Aichi Biodiversity targets and National Biodiversity targets besides developing and implementing appropriate management techniques.

v. Citizen science on invasive alien species should be developed to make stakeholders aware about the adverse impacts of invasive species and need to manage them.





'National Workshop on Coral Reef Ecosystem of West Coast of India

Current Status and Way Forward' was organized at Jamnagar, Gujarat during 12th to 14th July, 2017 under the aegis of AICOPTAX programme of the Ministry of Environment, Forest and Climate Change (MoEF&CC), Government of India. Dr. Amita Prasad, Additional Secretary, Ministry of Environment, Forest and Climate Change, Government of India was cordially invited as Chief Guest, Mr G.K. Sinha, Principal Chief Conservator of Forests (Wildlife), Government of Gujarat, Mr. R.D. Kamboj, Additional PCCF, Government of Gujarat and Director, GEER Foundation and Mr. Shyamal Tikadar, Chief Conservator of Forests, Government of Gujarat and Director, Gulf of Kachchh Marine National Park were cordially invited as Guests of Honour. Thirteen presentations covering marine biodiversity of west coast of India, integrated coastal zone management, application of remote sensing tool for reef assessPment, corals of Gulf of Kachchh, long-term monitoring of corals in Lakshadweep, corals of Sindhudurg coast, diversity of Alcyonacean corals, diversity of molluscs in west coast, variability of chlorophyll biomass, conservation of corals and fishery resources in coral

reef ecosystem have been made by eminent scientists from across the country during two days technical sessions. Thirty two researchers and young scientists from Saurashtra University, Rajkot; CSIR-Central Salt and Marine Chemicals Research Institute, Bhavnagar; Maharaja Krishnakumarsinhji Bhavnagar University, Bhavnagar; Gujarat Institute of Desert Ecology, Bhuj; ICAR-Central Marine Fisheries Research Institute, Veraval; GEER Foundation, Gandhinagar; University of Kerala, Trivandrum; Marine Bio-resource Centre - GSBTM, Jamnagar; Bombay Natural History Society; and ZSI Jamnagar Field Station.

Four day capacity building on Bio-monitoring of Aquatic Ecosystems

For Officials and Scientists of Telangana State Pollution Control Board, Telangana.

A four day training programme was organized for the officials of Telangana State Pollution Control Board from 16th Nov 2017 to 19th Nov 2017. This specialized training was attended by eight scientists and officials of the Telangana State Pollution Control Board. The training funds were provided by Telangana Government. The technical sessions of the training programme covered various aspects of monitoring aquatic ecosystems including use of DNA based analysis and also the importance of GIS & Remote Sensing in conducting monitoring studies.



Fifth training programme on Integrated Coastal Zone Management for Community People during 16th-20th July, 2017 at Marine Aquarium & Regional Centre, Zoological Survey of India, Ministry of Environment, Forest & Climate Change, Digha-721 428, West Bengal.The training programme was sponsored by the ICZMP, World Bank and total 11 participants got trained by this five days programme. Peoples from different departments like Fishery Dept., Forest Dept., DSDA, Coastal Police, BDO Offices, Tourism Dept, etc. were trained by this training.





GSDP on Biodiversity Conservationists and Skilling Parataxonomists

Orientation workshop for the trainers of National Green Skill development Programme on Biodiversity Conservationists and Para-taxonomists during 25-26 May 2017 at APRC, Itanagar. APRC successfully conducted the 3-months Foundation Course training on Biodiversity Conservationists during May-July 2017. The training on advanced course on Skilling Parataxonomists under the NGSDP was conducted during November 2017 to January 2018

Regional Workshop on Conservation and Mangement of Wetland (Eastern Region) was organized on the aegis of National River Conservation Directorate, MoEF &CC. from 23rd to 34th June,2017 at ZSI-Kolkata.

The ZSI continued its task of rendering Identification and Advisory services free of cost to research and teaching institutions in India, Central and state Government/ Agencies, NGO's, Industries and also to individuals on zoological specimens and related matters.

IDENTIFICATION & ADVISORY SERVICES



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Identification & Advisory Services Rendered to the following:

1. Dr. Tarak Goswami, Dept. of Entomology, Bihar Agricultural University
2. Dr. A. K. Ghosh Centre for Environment & Development
3. Dr. Somnath Roy, Incharge, Entomology Department, TRA, Tocklai Tea Research Institute, Jorhat, Assam.
4. Ms. Ekta Davad, Deptt. of Zoology, Modern College, Shibaji Nagar, PUNE
5. Parveen Tarzana Absar, M.Sc (Wildlife Science) Final Year student, Aligarh Muslim University, Aligarh who visited the Crustacea Section on 20th April, 2017.
6. Miss. Prema, CAS, Parangipettai, in the form of laboratory facilities and training on the usage of microscope for taking photographs and measurements.
7. Miss. Sudipta Mondal, JRF/ZSI/FBRC - 7 specimens of prawns and 3 specimens of crabs brought by her were identified into 3 species.
8. Mr. Amit Kumar Gayen, Asstt. Prof, Netaji Nagar College, Kolkata.
9. Dr. Christina Labramchhani, Scientist Kakdwip Research Centre of ICAR, CIBA, Kakdwip was trained for identifying Peneaid prawns based on some significant taxonomic characters.
10. Advisory services on the taxanomy, ecobiolgy, diversity and population studies on the mangrove crabs was rendered to Mr. Amit Kumar Gayen, Asst. Prof. Netaji Nagar College for his Ph.D programme.
11. 24 specimens of prawns and 5 specimensof crabs were identified into 3 species for Saheba, student for her project on Faunal diversity during the prawn seed collections in Sagar Island.
12. 19 specimens of decapod crustaceans sent by JBB tea, were identified into 5 species.
13. Taxonomical and ecological information on hermit crab of Sunderban delta, were provided to Dr. Samir Sardar, Asstt. Prof., Ramkrishna Mission college, Rahara,
14. Advisory services and scientific guidance on the taxonomic study of freshwater crabs was extended to Miss. Caneuyal John, Scientist (on Probation) CIFRI, Barrackpore, Kolkata on 9th February, 2018 by Dr. K. Valarmathi
15. Mr. Deepak Raj, Department of Life Sciences, Central University of Tamil Nadu, Neelakudi, Thiruvarur, Tamil Nadu was guided forsix months for partial fulfilment of M.Sc dissertation. Dissertation topic :Taxonomy and Biogeography of Reptiles of India.
16. Ms. Pragya Pandey, Department of Biodiversity and Conservation, Roll University school of Environment Management, Guru GovindSingh Indraprastha University, Dwarka, Sector-16, New Delhi. Dissertation topic: Taxonomy and Biogeography of Scorpions of Madhya Pradesh under Dr. Pratyush P. Mohapatra, Scientist-'D'.
17. Mr. Rishabh Jaggi, Department of Biodiversity and Conservation, University school of Environment Management, Guru GovindSingh IndraprasthaUniversity, Dwarka, Sector-16, New Delhi. Dissertation topic: Taxonomy and Biogeography of Scorpions of Madhya Pradesh under Dr. Pratyush P. Mohapatra, Scientist-'D'.
18. Mr. Rakesh Mohalik, Department of Wildlife and Biodiversity Conservation, North Orissa University is working for fulfillment of M.Sc. dissertation on "polymorphism in Forstein's cat snake *Boiga forsteni* Dumeril, Bibron and Dumeril, 1854"
19. Dr. S.S. Talmale, Assistant Zoologist, delivered lecture cum demonstration on "Collection, Preservation and Identification of Indian Mammals" to the participants of three months certificate course of Para-taxonomy at ZSI, WRC, Pune on 27.12.2017.
20. Dr. S.S. Talmale, Assistant Zoologist, Identified bat specimen received from the Principal, Shivprasad Sadanand Jaiswal College, Arjuni/Morgaon, District Gondia, Maharashtra. Specimen deposited to the National collection of ZSI, CZRC Jabalpur.
21. Dr. S.S. Talmale, Assistant Zoologist, Identified Odonata specimens collected from Jabalpur area received on donation from Mr. Vivek Sharma Jabalpur.

22. Dr. S.S. Talmale, Assistant Zoologist, identified of one rat specimen for Officer-in-Charge, All India Network Project on Agricultural Ornithology, College of Horticulture, Kerala Agricultural University, Thrissur.

23. Identified Odonata specimens received on donation from Mr Ashish Tiple, Asstt. Professor and Head, Department of Zoology, Vidyabharati college, Seloo, Wardha, Maharashtra.

24. Dr. Amitava Banerjee, Assistant Professor, Department of Agricultural Entomology, Bidhan Chandra Krishi Viswavidyalaya, Mohanpur, Nadia, West Bengal.

25. Dr. A.K. Ghosh, Visiting Professor, School of Environment Studies & School of Oceanographic Studies, Jadavpur University, Kolkata.

26. Dr. Shirley Daniel, Assistant Professor and Research Supervisor, Department of Zoology, Scott Christian College, Tamil Nadu.

27. Dr. Dipak Kumar Som, Associate Professor, Division of Entomology, Maulana Azad College, Kolkata-13, West Bengal.

28. Mainak Chakroborty, IISER, Orissa Professor, Department of Zoology, Lady Brabourne College, Kolkata.

29. Dr. Ishtiyaq Ahmad, Assistant Professor, Entomology, Faculty of Agriculture, University of Kashmir Wadura, Skuast, Kashmir-193201.

30. Dr. Prakash Karmakar, Teacher in Charge, Dept. of Botany & Forestry, Vidyasagar University, pin: 721102.

31. Mr. Binod Sardar, Kulpi Janapriya High School, South 24 Paraganas, West Bengal.

32. Dr. A Ramesh, Director, IIBT, kancheepuram District, Tamil Nadu, Padappai.

33. Nagendra Kumar, Uttar Banga Krishi viswa vidyalaya, Coochbehar-736165, West Bengal.

34. Deputy Conservator of Forests, Barmer, Rajasthan

35. The Education Academy, Jodhpur at DRC, ZSI

36. Deptt. of Zoology, J.N.V. University, Jodhpur

37. Analyst- Biodiversity and one Jr. Analyst-Biodiversity of M/s Terracon Ecotech Pvt. Ltd. Mumbai.

38. Balika A. V. M. High School, Shastri Nagar, Jodhpur.

39. Shubh Prabhat High Secondary School, Jetpur, Pali.

40. Sri Aurobindo Centre of New Education, Jodhpur

41. Deptt. of Zoology, J.N.V. University, Jodhpur

42. Rajasthan State Forest Department

43. Mrs. Y.Y. Falak , Moolji Jaitha College , Maharashtra

44. Sachin Kamble, Research student (Ph.D), Department of Zoology, Research Centre,

45. Shankar Rao Mohite Mahavidyalaya, Akluj, Dist. Solapur.

46. The Deputy Director (PP), Regional Plant quarantine station, GST Road, Meenambakkam, Chennai - 600 027.

47. Dr. P. Senthilkumaar, Associate Professor and Head, P.G. and Research Department of Zoology, Sir Theagaraya College, Chennai - 600 021.

48. Dr. Mrs. K. Thana Lakshmi, Associate Professor and Head (Rtd.), Department of Zoology, Holy Cross College, Nagercoil - 629 004.

49. Nigthingale Sheeba, Research Scholar, Department of Zoology, Holy Cross College, Nagercoil - 629 004.

50. Dr. D. Mubdeen Sultana, Assistant Professor, P.G. and Research Department of Zoology, J.B.A.S. College for Women, Teynampet, Chennai -18

51. Miss. Meena. E, Research Scholar, C/O Dr. S Santhi, Assistant Professor, Department of Zoology, Queen Mary's College, Chennai.

52. Mrs. Renjana, Research Scholar, M.S.M college, Kerala University, Kayamkulam, Alappuzha Dist.

53. Mrs. Remya, Research Scholar, M.S.M college, Kerala University, Kayamkulam, Alappuzha Dist.

54. Ms. R. Tamillakiya, M.phil student, C/o Dr. M. Shanmughavalli, HOD of the Dept of Zoology, Quaid-e-millath Govt College for Women, Annasalai, Chennai -2.

55. Ms. M. Gomathi, M. Phil Scholar C/o Dr. B. Meena, Associate Professor of Zoology, Department of Zoology, Presidency College Chennai-600 005.

56. Mrs. N. Sudha, Research Scholar, Department of Biochemistry, University of Madras, Guindy Campus, Chennai.

57. Ms.S. Thanga Malathi, Research Scholar, Department of Biochemistry, Mohamed Sathak college of Arts & Science, Sholinganallur, Chennai -600119.

58. Research Scholar, University of Calicut, Calicut

59. Dr. Rajashekar K.P., University of Agricultural sciences, Dharward, Karnataka.

60. University of Kashmir, Srinagar

61. Mr. Ranjith, Research Scholar, University of Calicut

62. Dr.Ankita Gupta, ICAR-National Bureau of Agricultural Insects, Bangalore

63. Mr. Rajesh, K.M, Research Scholar, Insect Ecology and Ethology Lab, Dept.of Zoology, University of Calicut

64. M. Sc. Zoology students of Bharathidasan University, Tamil Nadu.

65. Ms. Usha Sharma, Ph.D. Research Scholar, Cytogenetics & Molecular Genetics, Himachal Pradesh University, Shimla.

66. Ms. Sruthi, M.Sc. 4th semester, Malabar Christian College, Kozhikode

67. Mrs. Lubna, M., M.Sc. Zoology, K.V.M. College, Valancherry, Malappuram

68. Mrs. Sajna, V, M.Sc. Zoology, 4th semester, PSMO College, Tirurangadi, Malappuram

69. Ms. Pallavi, M, M.Sc. Zoology, Little Flower College, Guruvayur

70. Joshua Andrews, Research Scholar, Loyola College, Chennai

71. Ms. Silpa, M. M.Sc. Zoology student, Sree Krishna College, Guruvayur

72. B. Sc. Students of Govt. Arts & Science College, Kozhikode

73. Mrs. Sangeetha Varma of Central University, Kasaragod

74. Mr. Muhammed Asghar Hassan, Pakistan

75. Mr. Jiri Hava, Department of Forest Protection and Entomology, Faculty of Forestry and Wood Sciences, Czech University of Life Sciences, Czech Republic

76. Mrs. Thresiamma Varghese, Research Associate, Centre for Ecological Sciences, Indian Institute of Science, Bengaluru

77. Dr. K. Sreedevi, Senior Scientist, NBAIR, Bengaluru

78. Mr. T.K. Sudheesh Kumar, Assistant Professor, Department of Zoology, Govt. College Madappally, Vadakara

79. Dr. Lambert Kishore, Associate Professor, Department of Zoology, Malabar Christian College, Kozhikode

80. Dr. K.P. Muhammed Shareef, Assistant Professor, Department of Zoology, PSMO College, Thirurangadi

81. M. Sc. students, M.E.S. College, Valancheri

82. Mrs. Sabina Langthasa, Ph. D. Student, Department of Life Science & Bioinformatics, Assam University-Diphu Campus, Karbi Anglong, Assam

83. Mr. Rajesh, Research Scholar, Department of Zoology, University of Calicut

84. Mrs. Murugasridevi, Research Scholar, Tamil Nadu Agricultural University, Coimbatore

85. Dr. V.M. Sathish Kumar, Zoological Assistant, Northern Regional Centre, ZSI, Dehradun

86. Santhikrishna, M.Sc. Student, St. Joseph's College Devagiri, Kozhikode

87. M.Sc. Zoology students of Bharathiyar University, Coimbatore

88. Mr. Athul, S.N, student of National Institute of Design (NID), Ahmadabad, Gujarat

89. B.Sc final year Zoology students of Government Arts & College, Meenchanda, Kozhikode

90. M.Sc. Zoology (Entomology) students of M.E.S K.V. M. College, Valancherry, Malappuram district

91. Ms. Shanthikrishna, M.Sc (Zoology) final year student of St. Joseph's College, Devagiri, Kozhikode.

92. Ms. Smitha A., Science Teacher, Padinharethara Girls Higher Secondary School, Wayanad.

93. Mr. Abhinand & team of Shivapuram Government Higher Secondary School, Kozhikode for their Project work on 'Mangrove ecosystem of north Kerala' for the presentation in State level Children's Science Congress at KFRI, Peechi, Thrissur.

94. Ms. K. Surya, M.Sc. (Environmental Science), University of Calicut

95. Identified and given a report on a confiscated specimen of tortoise (Starred Tortoise) for the Thamarasserry Range Officer, Kozhikode on 04.12.2017 to be submitted before the Second Class Magistrate Court, Thamarasserry, Kozhikode.

96. Mr. Robin Abraham, Kansas University, USA for the amphibian type specimens kept at WGRC, ZSI, Calicut.

97. Ms. Santhi Krishna M and Athira George, M.Sc. (Zoology) students of St. Joseph's College Devagiri

98. Mr. Ahamed Omar Haroon, B.Sc. (Zoology) student of St. Joseph's College, Bangalore

99. Ms. Ananya, K. M. Sc. (Environmental Science), University of Calicut

100. Mr. Rahul Das, P. K, M. Sc (Zoology), Post Graduate Department of Zoology, Jamal Muhammed College, Thiruchirapally, Tamil Nadu

101. M.Sc students of St. Joseph's Devagiri College, Kozhikode.

102. Dr Teji. K.T, Asst Professor, Department of Zoology, Morning Star Home Science College, Angamaly.

103. Ms. Rashmi Karunakaran, M.Sc. (Zoology) students of Department of Animal Sciences, Central University, Kasaragod.

104. Central Marine Fisheries Research Institute (CMFRI)

105. College of Basic Science and Humanities, Orissa University of Agriculture and Technology

106. Digha Science Centre & National Science Camp

107. University of Calcutta

108. Institute of Environmental Studies & Wetland Management

109. West Bengal Pollution Control Board

110. WWF-India

111. Centre for Marine Living Resource & Ecology (CMLRE), Kochi

112. Gurucharan College, Silchar

113. C.V. Raman College of Engineering

114. Sh. Junas, JRF from Madras College, Madras (TN)

115. Research Scholar, Jammu University, J&K

116. Research Scholar, Department of Zoology and Environmental Studies, Punjabi University, Patiala

117. Dr. Julka, Shoolni University, Solan

118. Dr. Sku Nlube from Heriot Watt University, Edinbugh, U.K and Research Scholar from IIT Roorkee, Uttarakhand.

119. Jawahar Navodaya Vidyalaya, Surangi, Ganjam

120. SBR, Govt. Women College, Behrampur

121. H.O.D. Swami Vivekananada Memorial College, Jagatsinghpur, Odisha

122. Students from Marine Science Department, Berhampur University

123. Mrs. Sabrina Langthasa, Research Scholar, Department of Life Sciences, Assam University

124. Mrs. H. Lato, Divisional Forest Officer, Jaintia Hills(WL) Division, Meghalaya

125. Dr. Pradeep Gandhale, Scientist, ICAR Centre High Security Animal Disease, Bhopal

126. Mr. Aishnya Sarma, Post Graduate Student, National Centre for Biological Sciences, Bangalore

127. Mr. Vijoy, Assistant Conservator of Forest, Khasi Hills Wildlife Division, Meghalaya

128. Mrs. Parveen Absar, Post Graduate Student, Aligarh Muslim University

129. Mr. Klur Mukhim, Asstt. Prof., Dept of Zoology, Lady Keane College

130. T. Ngaomei, PhD scholar, Manipur University

131. Dr. A. Tamuli, Head, Dept of Life Sciences, Assam University, Diphu Campus

132. Meghalaya State Biodiversity Board, Shillong

133. Department of Zoology, Sankardev college, Shillong

134. Sh A.Boro, Research Scholar, Deptt of Zoology (Gauhati University)

135. Mr M.Deb, Researcher, Deptt of Biotechnology, St: Anthony's College, Shillong

136. A. Sarma, PG student from NCBS, Bangalore

137. Anandaram Boro, PhD scholar, Deptt: of Zoology, Gauhati University

138. Dr. Zeeshan Ali, Post Doc Fellow, IISER, Berhampur

139. Meghalaya Basin Development Authority, Shillong

140. Identification and advisory services were rendered to Dr. Suchismita Chatterjee of Nabadwip Vidyasagar College and identified 31 Lots of fishes.

141. Identification services were rendered to Prof. Gautam Aditya, University of Calcutta, Department of Zoology on freshwater fishes.

142. Identification services were rendered to Mrs. Kankana Roy Bhattacharya of University of Calcutta, Department of Zoology on freshwater fishes.

143. Dr. L Kosygin Singh provided information on freshwater fishes available in the National Zoological Collections of ZSI, Kolkata to twenty students of DM College of Science, Imphal, Manipur.

144. Dr. Bam Deo Panday, Dr. Sanjay k. Srivastav, Dr. Anand Prakash and 15 students of Udai Pratap College, Varanasi, Uttar Pradesh.

145. 99 ex. of Leech identified by Dr. C.K Mandal sent by Debashis Bhatnagar, Dirang, Arunachal Pradesh.

146. 4 ex. of Earthworms received from Dr. Shyamasree Ghosh, National Institute of science Education and Research, Odisha.

147. Pabitra Das, Midnapur East,West Bengal

148. ICAR, Barackpur

149. 1 ex of sponge (1 species under 1 genus and one family) identified by Sri D.N.Das. Material received from Chilka Development Authority (CDA), Orissa is identified as Spongilla alba Carter, 1849.

150. Z.S.I. Lot No.68/2017 received from JBB Project-2017, Officer-in-charge, Technical Section.

151. Z.S.I. 12/2018, Abdul Sadat (Assisstant Professor) Raniganj University, Faculty of Science, Department of Sericulture.

152. Z.S.I. 34/2017, received from Bhaswati Majumder, Vidyasagar College, P.G. Department, C.L. Block, Sector-II, Salt Lake, Kolkata-700091.

153. Z.S.I. 51/2017, received from Debashis Roy, HOD, Department of Zoology, Sammilani Mahavidyalaya, E.M. Bypass, Kolkata.

154. Z.S.I. 39/2017, received from Dr. Jharna Chakraborty, Dean, Faculty of Life, Rajiv Gandhi University, Rono hills, Doimukh (A.P.)

155. Z.S.I. 55/2017, received from Dr. Tarak Nath Goswami, Assisstant Professor, Department of Entomology, Bihar Agricultural college, Bihar Agricultural University, Sabour, Bhagalpur-813210.

156. Z.S.I. 40/2017, received from Gautam Aditya, Associate Professor, Department of Zoology, University of Calcutta, 35 Ballygunge Circular Road, Kolkata-700019.

157. Z.S.I. 50/2017, received from Dr. Prakash Karmakar, Teacher-in-charge, Department of Botany and Forestry, Vidyasagar University.

158. Mangalore University, Wild Life Crime Control Bureau, Kolkata,

159. Guwahati University, Assam

160. Sidho-Kanho-Birsha University, Jharkhand

161. K.V. Salt Lake, Kolkata.

162. Victoria college, Kolkata.

163. Vignnan University, Dept. of Biotechnology.

164. Tarak Nath Goswami, Bihar Agricultural university

165. Dr. Nneez Mahamed, Tamil Nadu.

166. Vidhyasagar Evening college.

167. Mr. Ujjal Das ,J.R.F, ZSI

168. Mr. Subhomoy Das, Asstt. Prof, Mahishadal Raj College.

169. Enquiry made by Prof. R. Sukumar, Centre for Ecological Sciences, Indian Institute of Science, Bangalore, regarding fossil Proboscidian collection present in the holdings of ZSI, Kolkata - compiled the list of said specimens in the holding of Vertebrate Palaeozoology section and reply sent.

170. Enquiry made by Mr R. Mondol, Research Scholar, Viswa Bharati University, regarding literature and other informations about palaeontology of South western West Bengal - provided him the required information and literature

171. Sub fossil turtle specimens from different sites present in sectional collection sorted and shown to Dr. Walter Joyce, Professor of Paleontology, Department of Geosciences, University of Fribourg/Freiburg, Switzerland and helped him to study other extant soft shelled turtle skeletons present in ZSI collection pertaining to his study on evolution of Turtles.

172. Dr. Narayan Chandra Mandal, Professor of Botany, Viswa-Bharati University, Santiniketan - 731235 West Bengal was furnished with an identification report of The Yellow-Green House Gecko, Hemidactylus flaviviridis Ruppell, 1835 on 04.01.2018.

173. Mr. Santi Prasad, Tiwari, Asstt. Sub- Inspector of Ploice, Burdwan G.R.P.S, West Bengal wasfurnished with an identification report of 4 photos of seized Turtle on 27. 02. 2018.

174. Museum specimens from Victoria Institution (College) were repaired retouched and hand over to the Department.

175. Repair of Museum specimens from Ballygunge Science College were done and hand over to the Department.

176. Ms. Jasmine J. of Rabindra Bharati University, Kolkata completed her MSc. Dissertation work on repair and cleaning of bones.

177. Enquiry of 5 vials of zooplankton samples received from Ms. Uma Das, from Assam. May 2017 - 28 species of zooplankton belonging to Protozoa - 3 sp, rotifer - 15 sp, cladocera- 5 sp and copepod - 3 spp. were identified from 5 vials of zooplankton samples received from Ms. Uma Das, from Assam.

178. Enquiry of 5 vials of zooplankton samples received from Ms. SulataKar, from Assam. June, 2017 - 20 species of zooplankton belonging to Protozoa - 3 sp, rotifer - 12 sp, cladocera- 3 sp and copepod - 2 sp were identified from enquiry of 5 vials of zooplankton samples received from Ms. SulataKar, from Assam

179. Enquiry of 8 vials of zooplankton samples of Tripura received from Dr. A.K. Ghosh, from Kolkata. June, 2017 - 21 species of zooplankton belonging to Protozoa - 7 sp, rotifer - 8 sp, cladocera- 4 sp and copepod - 2 sp along with phytoplankton were identified from the enquiry of 8 vials of zooplankton samples of Tripura received from Dr. A.K. Ghosh, from Kolkata.

180. Enquiry of 5 vials of zooplankton samples received from Ms. Papia Das, from Assam. July 2017 - 25 species of zooplankton belonging to Protozoa - 4 sp, rotifer - 14 sp, cladocera- 5 sp and copepod - 2 sp were identified from enquiry of 5 vials of zooplankton samples received from Ms. Papia Das, from Assam

181. Enquiry of 8 vials of zooplankton samples and one soil samples of Tripura received from Dr. A.K. Ghosh, from Kolkata. September, 2017- 19 species of zooplankton belonging to Protozoa - 10 sp, rotifer - 4 sp, cladocera- 2 sp and copepod - 3 sp were identified from

Enquiry of 8 vials of zooplankton samples and one soil samples of tripura received from Dr. A.K. Ghosh, from Kolkata.

182. Enquiry of 5 vials of zooplankton samples received from Ms. Bimola, from Manipur. November 2017 - 18species of zooplankton belonging to Protozoa - 4 sp, rotifer - 8 sp, cladocera- 4 sp and copepod - 2 sp along with phytoplankton were identified from the enquiry of 5 vials of zooplankton samples collected from Manipur wetlands (Report sent).

183. 4 zooplankton samples received from Dr. Sashikant Majahi, Karnataka March, 2018.

184. 4 soil samples received from Dr. T. Citarasu, Manonmaniam Sundaranar University, Tamilnadu, March 2018

185. Reply for question under RTI Act, 2005, checklist of Indian scleractinian corals was provided on request.

186. Status report of Megapode bird in Nicobar Islands, status of mulberry silkworm in Andaman and Nicobar Islands, were submitted to the Department of Environment and Forests, Andaman and Nicobar Administration on request.

187. Proposal for inclusion of the scalloped hammerhead shark, *Sphyrna lewini* (Griffith & Smith, 1834), in the Appendix I of CITES under the Convention on the Conservation of Migratory Species of Wild Animals (CMS) was submitted to the Principal Chief Conservator of Forests, Department of Environment & Forests, Andaman and Nicobar Administration on request.

188. Seized flesh & flipper of Oliver Ridley Turtles was identified for the Divisional Forest Officer, Department of Environment & Forests, South Andaman on request.

189. One species of jellyfish i.e. *Pelagia noctiluca* (Forsskål, 1775) (Semaeostomeae: Pelagiidae) was identified for a fourth year B. Tech. Biotechnology, Vellore Institute of Technology (VIT), Vellore, Tamil Nadu on request.

190. Evaluation was made on the expression of Interest for undertaking Marine Pearl Farming to produce Black Pearl from the Blacklip oyster in A & N Islands for the Andaman and Nicobar Administration, Port Blair on request.

191. Question paper on Biodiversity - Methods of Conservation and Management for 2016 Batch M.Sc. (BO&BD) Semester II Final Examination of Kerala University of Fisheries & Ocean Studies was prepared and submitted to Vice-Chancellor, Kerala University of Fisheries & Ocean Studies, Kerala on request.

192. Details about the environmental parameters for the development and survival of corals were provided to Dr. Jayendra Lakhmapurkar, Gujarat Ecology Society, Gujarat on request.

193. Distributional details of two marine Invasive Alien Species (IAS) were provided to the Deputy Conservator of Forests, Department of Environment and Forests, Andaman and Nicobar Administration, Port Blair on request.

194. A report on the shelf life period edible nest Swiftlet has been provided to the Conservator of Forests (Wildlife), Department of Environment and Forests, Andaman and Nicobar Administration.

195. Comments for the query 'Monkeys of Katchal Island, Nicobar spreading disease to human being' sought by Lieutenant Governor of Andaman an Nicobar Islands has been provided to the Principal Chief Conservator of Forests (Wildlife), Andaman and Nicobar Administration.

196. Information on the details of the recognition of the Great Nicobar Biosphere Reserve in the MAB programme of UNESCO has been provided to Conservator of Forests (Wildlife), Department of Environment and Forests, Andaman and Nicobar Administration on request.

197. Two species of molluscs were identified for the Department of Environment and Forests, Andaman and Nicobar Administration on request.

198. Photographs of fauna of Andaman and Nicobar Islands were provided to the Ministry of Environment, Forest and Climate Change, Government of India for publication in the E-Book on request.

199. Brief document on the fauna of the waterbodies of Andaman and Nicobar Islands was provided to the Deputy Conservator of Forests, Division of Silviculture, Department of Environment and Forests on request.

200. Details of the fauna of the waterbodies of Andaman and Nicobar Islands were provided to the Director, Science & Technology, Andaman& Nicobar Islands on request.

201. Taxonomic information of Fisheries Museum was provided to the Director, Fisheries, Andaman and Nicobar Administration on request.

202. Submitted detail report on the wetland birds of the tsunami inundated wetlands of south Andaman to the Chief Secretary, Andaman and Nicobar Administration on request.

203. Information about the faunal diversity of Andaman and Nicobar Islands was provided to the students of St. Mary's Sr. Secondary School, Bathubasti, Port Blair on request.

204. Brief information on marine fauna of Andaman and Nicobar Islands was provided to the Department of Zoology, Yogada Satsanga Palpara Mahavidyalaya, Palpara, Midnapur (E), West Bengal on request.

205. Information on faunal diversity of Long Island was provided to the Divisional Forest Officer, Middle Andaman Forest Division, Rangat on request.

206. Advance course of the Green Skill Development Programme of Para-Taxonomists was organized during November 2017 - January 2018. Theoretical and practical guidance were provided to the students of Advance Course of GSDP during this month by the Officers and staff of this office.

207. Identification details of 20 mollusc specimens were submitted to the Department of Environment and Forest, Andaman and Nicobar Administration, Port Blair on request.

208. Avifaunal images were provided for the preparation of display boards to the Divisional Forest Officer, Middle Andaman Division, Department of Environment and Forest, Rangat on request.

209. Detailed report on the list of scheduled species of North Bay, South Andaman was submitted to the Director, Directorate of Tourism, Andaman and Nicobar Islands on request.

210. Facilities were provided to Dr. K. Sivakumar, Associate Professor, Centre for Advance Studies in Marine Biology, Annamalai University to study the sponge diversity of Andaman Islands during his visited to this centre during 15th to 18th January 2018 while discussion also made on the possibility of collaborative research project on mangrove bird communities on request.

211. Service provided to Middle Andaman Forest Division for the Celebration of World Wetland Day on 2nd February 2018.

212. Dr. C. Sivaperuman served as expert member for selection of Junior Research Fellow funded by Department of Science and Technology, GOI at Department of Ocean Studies and Marine Biology, Pondicherry University, Port Blair on 7th February 2018.

213. Dr. Bikramjit Sinha, Scientist-D and Officer-in-Charge examined Ph. D. Thesis of Ratnabali Sengupta of West Bengal State University and submitted thesis examination report.

214. Dr. Bikramjit Sinha identified 3 specimens of fishes brought by B. Sc. 6th Semester students of DN Govt College, Itanagar on 17/04/2017 and

215. Dr. S.D. Gurumayum has given advisory service to state fisheries department, Arunachal Pradesh officials on Fisheries of Arunachal Pradesh.

216. One turtle photo picture was mailed for identification by Dr. Suja Professor of Zoology St.Aloysius College Kottayam, Mahatma Gandhi University, Kerala and it was identified as aquatic turtle *Melanochelys trijugacoronata* (Anderson, 1879).

217. Two lizard photo picture was mailed to me for identification by Mr R. Sakthivel, SRC /ZSI Chennai and it was identified as *Calotes versicolor* (Daudin 1812).

218. Students of Jawahar Navodaya Vidyalaya, Surangi, Ganjam during their EBRC, ZSI office visit on 30th October, 2017.

219. 19 students and one teacher of SBR, Govt. Women College, Behrampur visited the museum at EBRC, ZSI and briefed during December, 2017.

220. 28 students visited the museum at EBRC, ZSI and briefed during January, 2018.

221. 1 lot (121 specimens) of marine fish samples submitted from H.O.D. Swami Vivekananada Memorial College, Jagatsinghpur, Odisha were identified by Dr. Anil Mohapatra, Scientist-D and Officer-in Charge.

222. 3 lots (52 specimens) of mullusca samples for M.Sc. final year Disseration work of students from Marine Science Department, Berhampur University was identified by Mr Arunendu Mahapatra, Scientist-C.

223. 1 lot (121 specimens) of marine fish samples submitted from H.O.D. Swami Vivekananada Memorial College, Jagatsinghpur, Odisha were identified by Dr. Anil Mohapatra, Scientist-D and Officer-in Charge.

224. 3 lots (52 specimens) of mollusca samples for M.Sc. final year Disseration work of students from Marine Science Department, Berhampur University was identified by Mr Arunendu Mahapatra, Scientist-C.

225. Dr. Deepa Jaiswal, Sci.D provided identification of few aquatic insects and also digital photographic facility of some Aquatic insects to Dr. Balraj Khobragade, Asstt. Professor, Department of Zoology, Ahmednagar College, Ahmednagar (Maharashtra).

226. Dr. S. S. Jadhav, Sci.D provided identification of Fish specimens to Prof. Diksha Kamble, Dept. of Zoology, Dr. Babasaheb Ambedkar Arts, Commerce & Science College, Mahad, District Raigad, Maharashtra-402301.

227. Dr. S. S. Jadhav, Sci.D provided identification of Fish specimens to Prof. Suphala Pujari, Asstt. Professor, Dept. of Zoology, Govt. College of Arts, Science & Commerce, Sanquelim, Goa.

228. Mrs. Rehnuma Sulthana provided identification of Mollusca to Prof. Jyoti, Gulbarga University, Karnataka on 22nd Dec.2017.

229. Dr. S. S. Jadhav, Sci.D provided identification of Fish specimens to Mr. Mohd. Arif, Research Scholar, University of Jammu.

230. Dr. Deepa Jaiswal, Sci.D provided Lab facility and reference work for Vivek Vardhini College and Sarojini Naidu P.G. College research fellows regarding insect identification for their summer project.

231. Dr. Avtar Kaur Sidhu, Scientist-D identified 80 species of butterflies received from Sh. Junas, JRF from Madras College, Madras (TN) and report has been communicated.

232. Dr. Kamal Saini, Assistant Zoologist identified 61 species comprising 254 specimens from DRC, ZSI, Jodhpur and report has been communicated.

233. Dr. Gaurav Sharma, Scientist-D identified 02 species of Odonata received from Research Scholar, Jammu University, J& K.

234. Dr. Avtar Kaur Sidhu, Scientist-D identified butterfly species form ZSI Jodhpur and sent the report on 01.02.2018.

235. Dr. Indu Sharma, Scientist-D identified 07 species fishes received from the Research Scholar, Jammu University & report submitted and provided the literature services to Dr. Sku Nlube from Heriot Watt University, Edinbugh, U.K and Research Scholar from IIT Roorkee, Uttarakhand.

236. Dr. Avtar Kaur Sidhu, Scientist-D provided the identification of Lepidopteran collections to the four students of M.Sc. (Zoology) from Shoolni University, Solan who visited the centre on 26th -27th February, 2018.

237. Dr. Avtar Kaur Sidhu, Scientist-D identified 05 species of butterflies of family Pieridae for Ph. D. work of Research Scholar, Department of Zoology and Environmental Studies, Punjabi University, Patiala and submitted the report.

238. Dr. Avtar Kaur Sidhu, Scientist-D identified 40 species of butterflies from Himachal Pradesh, sent by Dr. J.M. Julka, Shoolni University, Solan and submitted the report.

239. Dr. S. Balakrishnan, Scientist - D reviewed eleven manuscripts as a reviewer to the journals like Environmental Nanotechnology, Monitoring & Management (1 MS), Journal of Threatened Taxa (1 MS), Indian Journal of Geo-Marine Sciences (4 MS), Bulletin of Environmental Contamination and Toxicology (1 MS), Journal of Parasitic Diseases (1 MS), Human and Ecological Risk Assessment: An International Journal (1 MS), Proceedings of the Zoological Society (1 MS) and Proceedings of the National Academy of Sciences, India Section B: Biological Sciences (1 MS).

240. Dr. S. Balakrishnan, Scientist - D evaluated one Ph.D. Thesis "Studies on biology, culture and biochemical aspects of brine Mrmp *Artemia franciscara* (Kellogg, 1906) from Tuticorin, Southeast coast of India" of Mr. S. Balachander, Bharathidasan University, Tiruchirappalli 620 024, Tamil Nadu, India.

241. Dr. J.S. Yogesh Kumar, Scientist - D evaluated Ph.D. Thesis "*Bioconversion of Mrmp shell waste into value added products and its applications*" of S. Abirami, Research Department of Zoology, Kamaraj College, Thoothukudi; Manonmaniam Sundaranar University, Tirunelveli, India.

242. Dr. J.S. Yogesh Kumar, Scientist - D evaluated Ph.D. Thesis "*Production of Microbial Biopesticides using waste water sludge as raw material*" of N. Benit, Research Department of Botany, Holy Cross College (Autonomous), Nagercoil, 629004, Manonmaniam Sundaranar University, Tirunelveli, India.

243. Dr. J.S. Yogesh Kumar, Scientist - D was a board member of the public Viva - Voce examination, examiner of Ph.D. Thesis "*Bioconversion of Mrmp shell waste into value added products and its applications*" of S. Abirami, under the supervision of Dr. D. Nagarajan, principal of Kamaraj College, Thoothukudi, Tamil Nadu on 12th January 2018.

244. Dr. S. Balakrishnan, Scientist - D, identified 10 pictures of freshwater crab species sent by Dr. Muralisankar, Assistant Professor, Department of Zoology, School of Life Sciences, Bharathiar University, Coimbatore, Tamil Nadu, India and submitted report.

245. Dr. J.S. Yogesh Kumar, Scientist - D, identified 12 number of Octocoral samples send by Dr. K. Venkataraman, Former Director, ZSI, from NCSCM, Chennai on 4th August, 2017 and identification report submitted.

246. Dr. J.S. Yogesh Kumar, Scientist - D, identified 53 number of fish samples send by Digha Fisherman & Fish Association (DFFTA) on 3rd January, 2018 and identification report submitted.

247. Dr. J.S. Yogesh Kumar, Scientist - D, identified 41 number of mollusc samples send by Dr. Mayukhmala Mandal, Charuchandra College, Kolkata on 19th February, 2018 and identification report submitted.

248. Dr. J.S. Yogesh Kumar, Scientist - D, identified 1 soft coral sample send by Dr. Sivaleela, Scientist - C, MBRC, ZSI, Chennai on 12th March, 2018 and identification report submitted.

249. Dr. J.S. Yogesh Kumar, Scientist - D, identified 14 number of Ophisthobranch samples send by Dr. C. Venkataraman, Officer-in-Charge, Mammal division, ZSI, Kolkata on 5th March, 2018 and identification report submitted.

250. Dr. J.S. Yogesh Kumar, Scientist - D evaluated and participated in the Viva-voce examination of Ph.D candidate at Kamaraj College, MS University, Tuticorin.

251. Mr. P.C. Tudu, Scientist - C, identified the marine molluscan specimen of Mr. Manotosh Das, Ph.D. Scholar of Vidyasagar University and handed over to him on 26.04.2017.

252. Identified two samples of molluscan shell, Tectus niloticus (Linnaeus,1967) for customs clearance deposited by V.R. Shell Mart, Triplcane Chennai on 27.03.18.

253. Leech samples received from Biotechnology Department SRM University Chennai and the same has been forwarded to H.Q, Kolkata on 27.03.2018

254. One species of Fish and one bivalve species received from Dept. of Biotechnology Loyola College, Chennai for identification on 27.02.2018.

255. Identified shell samples as *Turbinella pyrum* (Linnaeus,1767) deposited by the PSG College of Pharmacy, Coimbatore.

256. Sea cucumber samples *Holothuria* identified. The samples deposited by the Forest Range Officer Gulf of Mannar National Park on 16.01.2018.

257. Twenty species of Molluscs identified for the samples deposited by Ph. D researcher, Department of Zoology, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.

258. Marine snails vouchered specimens added to NZC-MBRC/ZSI, Chennai deposited by Ms. D.K. Bharati, Ph. D Student, CES, IISC, Bengaluru on 26.12.17.

259. Crab species *Eumedonus zebra* Alcock,1895 added to NZC- MBRC/ZSI, Chennai deposited by Dr. Tenjing, SY, NCSCM, Anna University Campus, Chennai on 26.12.17.

260. Molluscs shell identified as *Turbinella pyrum* (Linnaeus,1767) deposited Department of Chemistry Sidda Central Research Institute, Chennai on 26.12.17.

261. Bivalve *Arcuatula senthousia* (M-2097) deposited by Dr. Durga Prasad Behera, NCSCM, Anna University Campus, Chennai on 26.12.17 added to NZC-MBRC/ZSI, Chennai

262. Marine intertidal macro-invertebrates (Porifera to Echinodermata) Identified and report issued to Ph. D researcher, Department of Zoology, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad on 18.05.2017.

263. Nine samples of sponge identified and added to NZC/MBRC/ZSI, Chennai deposited by Ms. Kaveri S. Kasa, JRF, Shobaben Pratapbhai Patel School of Pharmacy & Technology Management Mumbai on 07.04.2017.

264. Dr. Anil Kumar guided a M.Sc. student from IIRS, Dehradun for her M.Sc. dissertation work on the birds of Asan Barrage, Dehradun. (work is completed).

265. Three images of birds were received from Garhwal University for identification.

266. Received hair sample from Desert Regional Centre, ZSI, Jodhpur for analysis

267. Collection, Preservation and Identification of Insect to 38 trainees of Range Forest Officer, Uttarakhand Forest Training Academy, Haldwani on 16.08.2017.

268. Department of Zoology, Research Centre, Shankar Rao Mohite Mahavidyalaya, Akluj, Dist. Solapur.

269. The Deputy Director (PP), Regional Plant quarantine station Chennai.

270. Department of Zoology, Sir Theagaraya College, Chennai

271. Holy Cross College, Nagercoil

272. Department of Zoology, J.B.A.S. College for Women, Chennai.

273. Queen Marry's College, Chennai

274. M.S.M College, Kerala University

275. Dept of Zoology, Quaid-e-millath Govt College for Women, Chennai

276. Department of Zoology, Presidency College, Chennai

277. Department of Biochemistry, University of Madras, Chennai.

278. Department of Biochemistry, Mohamed Sathak college of Arts &Science, Chennai - 600119.

279. University of Calicut, Kerala

280. Identification Report on Freshwater Mollusca and Spider sent to The Principal, Ahmednagar College, Post Box No. 21, Station Road, Ahemadnagar-414 001 vide letter no 6-1/Tech/2017-18/289 dt. 03/04/2017.

281. Identification Report on Freshwater Mollusca sent to The Principal, Ahmednagar College, Post Box No. 21, Station Road, Ahemadnagar-414 001 vide letter no 6-1/Tech/2017-18/288 dt. 03/04/2017.

282. Identification & Advisory Services rendered to Dr. S. S. Patole, Dept of Zoology, Sitaram Govind Patil Arts, Science &Commerce College, Sakri, Dhule-424304 for beetle and bug specimens.

283. Identification service was rendered for spider specimens to The Principal, S.G. Patil Arts, Science and Commerce College, Sakri, Dist. Dhule, Sakri-424304, Maharashtra.

284. Identification service was rendered to Prof. Diksha Kamble, Dr. Babasaheb Ambedkar College, Mahad, Dist. Raigad, Maharashtra for freshwater fish specimens.

285. Identification Report on Spider sent to Miss. Gayatri D. Rajgurav, M.Phil. Student, Dept. of Zoology, Prof. Ramkrishna More Arts, Commerce and Science College, Akurdi, Pune-411 044, Maharashtra.

286. Identification Report on Mollusca sent to Mr. Dhammapal Wagh, Ph.D Student from Dept. of Zoology, at Dr.B.A.M.University, Aurangabad.

287. Fish images received for identification from Prof. A. T. Kalse, Head, Dept. of Zoology, Nanasaheb Chavan ASC College, Chalisgaon, Dist. Jalgaon, Maharashtra.

288. Fish specimens received for identification from Dr. R. N. Patil, Sadguru Gadage Maharaj College, Karad, Dist. Satara, Maharashtra.

289. Identification Report on Spider sent to Miss. Gayatri D. Rajgurav, M.Phil. Student, Dept. of Zoology, Prof. Ramkrishna More Arts, Commerce and Science College, Akurdi, Pune-411 044Maharashtra vide No. 6-1/Tech./2017/576 dated 17/07/2017.

290. Fish specimens received for identification from Mr. Ram Salvi, Chiplun, District Ratnagiri, Maharashtra.

291. Identification Report sent to Prof. Sujata Magdum, P.G. Department and Research Center, Department of Zoology, KTHM College, Nashik.

292. Coleoptera and Hemiptera specimens received for identification from S.G. Patil, College, Sakri, Dhule Dist., Maharashtra.

293. Identification report of Spider, Mollusca photographs was sent via E-mail to Dr. S. S. Talmale, Asstt. Zoologist, ZSI, CZRC, Jabalpur.

294. Crab specimen received for identification from Dr. Mrs. Nilakshi Pradhan, Principal, M.A.M's Sumatibhai Shah Ayurved Mahavidyalaya, Hadapsar, PUNE-400 028, Pune Dist., Maharashtra.

295. Crab specimen received for identification from Mrs. Pratima Pawar, Plot No. 11, Tukai Bunglow, Swarajya Nagar Colony, Goliwar Maidan, Godoli,Satara-415 002, Satara Dist., Maharashtra.

296. Coleoptera specimens received for identification from Dr. S. Sheela, Scientist-D, O/C, Central Entomological Laboratory, ZSI Hq., Kolkata.

297. Identification Report on the freshwater and land mollusca specimens was sent to Prof. Dr. S. R. Magare, C.H.C. Arts, S.G.P. Commerce & B.B.J. P. Science College, Taloda-425 413, Dist. Nandurbar, Maharashtra.

298. Identification & Advisory Services rendered to Dr. S.S. Patole, Department of Zoology, Sitaram Govind Patil Arts, Science & Commerce College, Sakri, Dhule-424304 for Coleoptera.

299. Marine/freshwater crab specimens (10 Ex.) received for identification from Dr. P. Sreenivasula Reddy, Department of Zoology, Sri Venkateswara University, Natural Sciences Building, Tirupati-517 502, Andhra Pradesh.

300. Freshwater and land mollusc specimens received for identification from Prof. Dr. Gajanan. A. Wagh, Asssociate Professor, Dept. of Zoology, Mr Shivaji Science College, Amravati-444603.

301. Coleoptera, Hymenoptera and Hemiptera specimens received for identification from Dr. S.S. Patole, Department of Zoology, Sitaram Govind Patil Arts, Science & Commerce College, Sakri, Dhule-424 304.

302. Freshwater crab specimens (52 Ex.) received for identification from Dr. Rajendra S. More, Head, Department of Zoology, D.U.B. Senior

Science College, DAPOLI-415 712, Maharashtra.

303. Identification Report on the freshwater mollusca specimens was sent to the Principal, Ahmednagar College, Post Box No. 21, Station Road, Ahemadnagar-414 001 vide letter no.6-1/ Tech./2018/330 dated 23.03.2018.

304. Identification Report on the Spider specimens was sent to the Principal, Ahmednagar College, Post Box No. 21, Station Road, Ahemadnagar-414 001 vide letter no.6-1/ Tech./2018/331 dated 23.03.2018.

305. Freshwater crab specimens (46 Ex.) received for identification from Mr. Wetetsho Kapfo, Research Fellow, Healthcare Laboratory & Research Centre, Naga Hospital Authority, Kohima-797 001, Nagaland.

306. Submitted review on report of minor research project received from Maharashtra State Biodiversity Board on project "Diversity of freshwater Molluscan fauna along the Godavari river of Western Maharashtra".

307. Submitted comments to Maharashtra State Biodiversity Board on the project "Molecular characterization of bioactive constituents from selected cephalopods from West Coast".

308. Submitted comments to Maharashtra State Biodiversity Board on the project Academic Research on Chemical Ecology of Plant insect herbivore interactions".

309. Provided advisory services on request to Prof. C. Sundara Raj, Department of Zoology, Scott Christian College, Nagercoil, Kanyakumari, Tamil Nadu in identification of 20 species of amphibians from Kanyakumari district under 12 genera, 7 family and 2 orders.

310. Advisory services provided for Mr. Krishna Khan regarding the examination of *Duttaphrynus scaber* voucher samples.

311. Dr. Bikramjit Sinha identified 3 specimens of fishes brought by B. Sc. 6th Semester students of DN Govt College, Itanagar on 17/04/2017 and identification report provided.

312. Dr. Bikramjit Sinha organized and acted as Chairman of the selection committee for selecting trainees for the foundation course on Nature Guides at APRC, ZSI, Itanagar on 16th May 2017.

313. Dr. Bikramjit Sinha acted as a member of the screening-cum-selection committee for selection of candidates for 07 different project based positions in various ongoing projects at NE unit, GBNIHED, Itanagar on 30th May 2017.

314. Dr. Bikramjit Sinha discussed with Shri N. Tam, Director, SFRI who visited the Centre on 31st May 2017 and we discussed many issues like regular publication of the Bulletin of Arunachal Pradesh Forest Research, PBR and similar others.

315. Dr. Bikramjit Sinha provided inputs for streamlining of publication system of Bulletin of Arunachal Forest Research to the visisting Scientist form Orchid Research, Tipi, Dr. Jambey Tsering.

316. Dr. Bikramjit Sinha attended the screening-cum-selection committee for selection of candidates for four different project based positions in GBNIHESD at its NE Unit at Itanagar on 15th September 2017.

317. Dr. Bikramjit Sinha discussed with Dr. Kenjum Bagra, Research Officer, Arunachal Pradesh Biodiverswisty Board who visited the Centre on 18th September 2017 about state level workshop related to India's 6th report to CBD.

318. Dr. SD Gurumaym rendered advisory service to Mr Jayanta Dutta, Technical Asst, KVK Changlang, Arunachal Pradesh, undergoing PG in the Department of Fisheries Resource Management, College of Fisheries, Assam Agriculture University, Raha, Assam. Dr. SD Gurumaym identified three fish species collected from Changlang district Arunachal Pradesh which come under 3 genera, 3 families and two orders.

319. Dr. B. Sinha acted as Chairman of the screening-cum-selection committee for recruitment of project based positions in NE unit of GHNIHESD, Itanagar on 6th December 2017.

320. Dr. B. Sinha rendered advisory services to Dr. Kenjum Bagra, Research Officer, Arunachal Pradesh Biodiversity Board regarding conducting of the State level workshop on NBAP, NBT and 6th National Report to CBD on 17th January 2018.

321. Dr. B. Sinha wasinter viewed as invited guest in the Aaj Ki Mehmann Programme of All India Radio, Itanagar on 14th October 2017.

Identifications were provided to confiscated wildlife materials received from Govt. Offices/ Law Enforcing Directorates / Police Department etc.

IDENTIFICATION OF CONFISCATED WILDLIFE MATERIALS


Painting brushes made up of hairs of
Grey Mongoose
Horns of
Rhinoceros unicornis Linnaeus
Indian Rhinoceros

Identification of Seized/ Confiscated materials: 30

1. West Bengal Forest Department was provided identification report of confiscated star tortoise on 08.09.2017.
2. CID, Govt. of West Bengal was provided identification report of confiscated Indian flap-shell turtle, Indian Roofed turtle, Narrow-headed softshell turtle and spotted pond turtle.
3. Kolkata Police was provided identification services of confiscated Tokay Gecko.
4. Identified the confiscated bird photographs sent by Wildlife Crime Control Bureau, Cochin.
5. Identified the bird photographs received from the Judicial Magistrate Court.
6. Identified confiscated 17 Rose-ringed parakeets brought by the officials of Kozhikode Flying Squad Division of Kerala Forest department.
7. Rendered identification services to the Forest Range Officer, Vellikulangara Range, Thrissur regarding the identification of confiscated Turtle species to be submitted before the Judicial First Class Magistrate Court, Chalakudi.
8. Identified the confiscated bird and mammal photographs sent by Wildlife Crime Control Bureau, Cochin.
9. Identified the confiscated bird photographs (Rose-ringed Parakeet, *Psittacula krameri*) sent by Wildlife Crime Control Bureau, Cochin.
10. Officials of Kerala Forests & Wildlife Department for the study of Malabar Civet skin kept at WGRC, ZSI, Calicut.
11. Identified confiscated corals (Hard and horny) sent by Gujarat Forest Department.
12. Identified a confiscated Reptilian material sent by Gujarat Forest Department.
13. DFO, Gorumara Wildlife Division, Jalpaiguri was provided with identification of confiscated skin of spotted deer and fake horn.
14. Pranab Paul, SI of Police, Jalpaiguri DD, CID, West Bengal was provided identification of confiscated elephant tusk.
15. DFO, Baikunthapur Div.Ravindra Nagar Siliguri-734006 was provided identification of confiscated tusk of *Elephas maximus*, upper jaw of *Sus scrofa* & skin of *Viverricula indica*.
16. Dep. Field Dir. BTR, Alipurduar -22 was provided identification of confiscated horn.
17. DFO, Baikunthapur Div. Ravindra Nagar Siliguri-734006 was provided with identification of confiscated skin of leopard and scales of pangolin.
18. Regional Dy Director, WCCB-SR, Chennai (through O/C,ZSI, Chennai) was provided identification of confiscated hair brushes made from hair of mongoose.
19. Forest range Officer, Wildlife wing, Salt Lake, Kolkata was provided with identification of confiscated sea cucumber and hair brushes made from hair of mongoose.
20. DFO, Jaldapara Wildlife Div., Cooch Behar was provided identification of confiscated elephant teeth and tusk.
21. Range Officer, Senchal West Range, Darjeeling was provided identification of confiscated leopard hair.
22. Mr. Agni Mitra, WCCB (ER), Kolkata was provided identification of confiscated meat.
23. DFO, Valmiki Tiger Reserve was provided identification of confiscated meat.
24. DFO, Gorumara Wildlife Div., Jalpaiguri was provided identification of confiscated skin of leopard.
25. Identified seized bone specimen sent by Deputy Conservator of Forests, social Forestry Division, Ahmedabad, Gujarat and report sent.
26. Pradip Adhikary, Sub-Inspector of Police, Burdwan GRPS, West Bengal was provided with identification services of seized Indian Soft-shell Turtle (*Lissemys punctata*) on 17.11.2017 based on photograph.

27. DFO, 24 Parganas South Division, Forest Dept, Govt. of West Bengal was identified one live Tokay Gecko on 14.11.2017.

28. Apurba Kumar Mandal, Sub-Inspector of Police, Criminal Investigation Dept, Govtof West Bengal was identified photos of seized Tokay Gecko (Gekko gecko) on 07.09.2017.

29. DFO, Gorumara Wildlife Division, Jalpaiguri, West Bengal was identified one Burmese Python skin on 17.05.2017.

30. H.R. Prabuddha, Deputy Conservator of Forests, Social Forestry Division, Ahmedabad, Gujarat was identified Monitor lizard body parts on 22.08.2017.

31. 15 species of molluscs confiscated by Department of Environment and Forests, Andaman and Nicobar Administration, Port Blair were identified.

32. Submitted identification report on two skins of Blackbuck (Antilope cervicapra) which is in Schedule I of Wildlife Protection Act, 1972 to the Police department, Dombivilli, Thane dist, Maharashtra.

33. One skin sample received for identification from Forensic Laboratory, Pune. Identificaiton: Fake skin of *Panthera tigris* (Tiger).

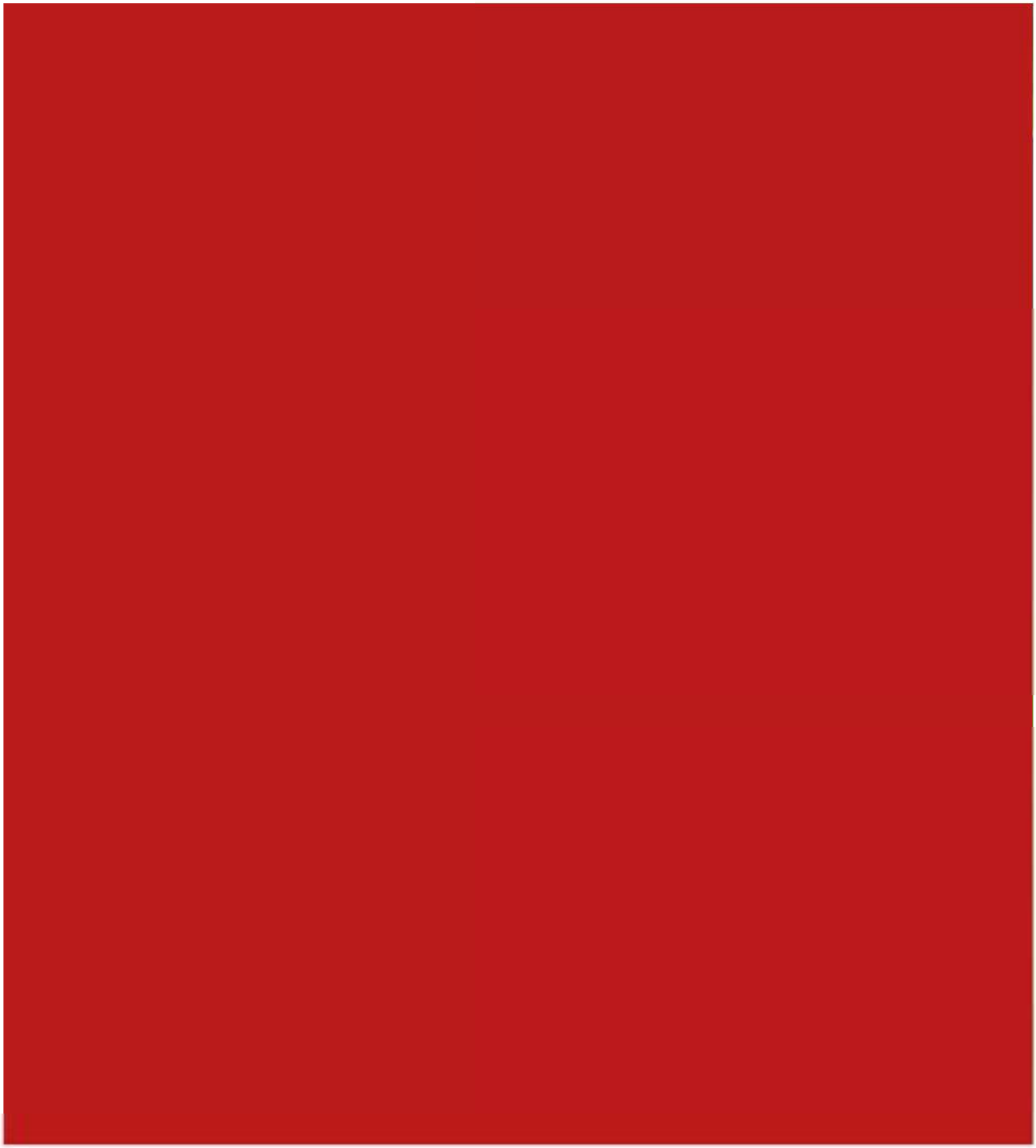
34. One skin sample received for identification from Alafata Police Station, Maharashtra. Identificaiton: Skin of *Panthera pardus* (Leopard).

35. Two skin samples received for identification from Kasarwadi Police Thane, Maharashtra. Identification: i. Skin of Axis axis (spotted deer) under Schedule III of Wildlife Protection Act, 1972. ii. Skin of *Panthera pardus* (Leopard) under Schedule I of Wildlife Protection Act, 1972.

36. One skin sample received for identification from Ulhasnagar Crime Branch, Maharashtra. Identification: Skin of *Panthera pardus* (Leopard) under Schedule I of Wildlife Protection Act, 1972.

37. One skin sample received for identification from Police Department, Thane City, Maharashtra). Identificaiton: Fake skin of *Panthera tigris* (Tiger).

38. Identified one leopard (*Panthera pardus*) skin for crime branch, Thane and submitted identification report.



SEMINARS, CONFERENCES, WORKSHOPS & MEETINGS ATTENDED BY SCIENTISTS



12

Seminars, Conferences, Workshops & Meetings Attended By Scientists of ZSI

April 2017

1. Dr. Md. Jafer Palot, Assistant Zoologist, attended meetings of District Environmental Impact Assessment Committee at the Civil Station, Kozhikode on 7th and 28th April

2. Dr. Md. Jafer Palot, Assistant Zoologist, attended the Summer Camp (TIPS) for students at Malabar Christian College, Kozhikode on 11th April 2017 and delivered a talk on "Biodiversity around us" organized by the Internal Quality Assurance Cell (IQAC), Malabar Christian College, Kozhikode. He also delivered a talk on "Biodiversity Conservation" at the Conference Hall of State Museum & Zoo, Thrissur on 29th April, 2017 for the tribal students of Kerala organized by the Department of Museums and Zoos., Govt. of Kerala.

3. Dr. Deepa Jaiswal, Scientist-D attended Board of Studies meeting held at St. Ann's Post Graduate College for Women, Hyderabad on 19th April, 2017.

4. Dr. C. Raghunathan, Scientist-E attended a briefing meeting regarding the study visit of Department-related Parliamentary Standing Committee on Science & Technology, Environment & Forests to Andaman and Nicobar Islands held at Parliament House, Rajya Sabha Secretariat, New Delhi on 20th April, 2017; attended the meeting to identify the possible commercial and developmental fisheries held at Fishery Survey of India, Port Blair on 24th April, 2017; served as a member in Doctoral Committee in Pondicherry University on 5th, 7th and 12th April, 2017.

5. Dr. Gaurav Sharma, Scientist-D attended a meeting with DFO and Forest Official of Jaldapara Wildlife Division, Alipurduar, W.B. on identification of Wildlife material. Also attended two Wildlife Court Case Witness Hearing i.e. Case No. 622/15 and 841/16 identification witness hearing of 'Rhinoceros exhibits' at the Honorable Addl. Chief Judicial Magistrate, 2nd Court, Alipurduar, W.B. on 25th April, 2017.

6. Dr. Bikramjit Sinha attended the 1st meeting of the 21st State Board of Wildlife, Arunachal Pradesh Chaired by Honourable CM in the conference hall of Chief Ministers Office on 18th April, 2017

7. All the Officer-in-Charge of Regional Centres and scientist of headquarters attended Annual Programme meeting at ZSI, HQ during 27-29 April, 2017

May 2017

8. Dr. Md. Jafer Palot, Assistant Zoologist, delivered a talk on "Bird Migration and Migratory Birds of Kerala" at Nehru Yuvak Kendra, Malappuram on 10th May, 2017 organised by the WWF-India (Kerala Chapter) and Kerala State Biodiversity Board, hiruvananthapurram on the occasion of World Migratory Bird Day.

9. Dr. Jasmine. P, Scientist- D, attended the Review meeting of Arctic Expedition, 2017 on 28th April, 2017 in NCAOR, Goa.

10. The ZSI, Port Blair coordinated the Department related Parliamentary Standing Committee on Science & Technology, Environment & Forests at Havelock Island and Port Blair during 6th to 8th May, 2017 to understand the activities of ZSI in Andaman and Nicobar Islands. The Committee meeting was chaired by Mrs. Renuka Chowdhury, M.P., Rajya Sabha, in which 17 Members of Parliament were attended. Dr. Kailash Chandra, Director, ZSI made a presentation on the Activities and Achievements of ZSI, Port Blair before the committee on 6th May, 2017 at Havelock Island. The Parliamentary Committee also visited the ZSI Office on 7th May, 2017 where Dr. C. Raghunathan, Scientist - E & Officer-in-Charge briefed about the faunal resources of Andaman and Nicobar Islands and explained the museum exhibits and faunal repositories.

11. Dr. C. Raghunathan, Scientist- E, served as a member in the meeting of the Committee for identifying suitable Scuba diving sites at Andaman held at Chief Conservator (Wildlife) office on 15th May, 2017; served as a member in the meeting of the Committee for identifying suitable bird watching sites and evolving strategies at Andaman and Nicobar Islands held at Chief Conservator (Wildlife) office on 15th May, 2017.

12. Dr. C. Sivaperuman, Scientist-D, attended the Indian Antarctic Expedition debriefing meeting on 15th May, 2017 at National Centre for Antarctic and Ocean Research, Goa on invitation; served as Member for selection of various scientific posts at Regional Medical Research Centre, Port Blair on 25th & 26th May, 2017; conducted the foundation course of the Green Skill Development Programme and delivered four lectures on Overview of Zoological Survey of India, Biodiversity Profile of India With special focus to A& N Islands, Vegetation types of India and Major ecosystems of India & Avifauna of Andaman & Nicobar Islands.

13. Dr. SD Gurumayum, Scientist- D, delivered an invited lecture on *Contribution of Ornamental Fisheries in blue Revolution of Arunachal Pradesh* at a Workshop on Development Strategies for Technological Intervention towards Blue Revolution in Arunachal Pradesh on 16th May 2017 organised jointly by ICAR-Central Institute of Freshwater Aquaculture (CIFA) and Department of fisheries, Govt. of Arunachal Pradesh.

14. Dr. R. Babu, Scientist- D, delivered a lecture on "Diversity of insects with special reference to Odonata" to the M.Sc. students of Stella Maris College, Chennai on 16th May, 2017. He also delivered a lecture on "Diversity of insects and Introduction to taxonomy" to the B.Sc. students of Stella Maris College, Chennai, five M.Sc. Zoology students, Ethiraj College, Chennai and one M.Sc. student from Dept. of Zoology, Bhrathiar University, Coimbatore on 7th June, 2017 and delivered a lecture on "Collection, preservation and identification of Insects with special reference to Odonata" to the M.Sc. students of Zoology, New College, Chennai on 11th July, 2017.

15. Dr. Bikramjit Sinha attended as a member in the meeting of the technical committee for protected areas in the O/o of the PCCF (WL & BD), Itanagar on 17th May 2017.

16. Dr. Avtar Kaur Sidhu, Scientist-D & Officer-in-Charge attended meeting of the State Board of Wildlife, U. T. Chandigrah under the chairmanship of H. E., The Governor of Punjab & Administrator, U. T. Chandigrah on 19th May, 2017 at Punjab Raj Bhawan, Chandigrah and also attended the plant ceremony in memory of Honorable Minister Sh. Anil Madhav Dave.

17. Dr. D. V. Rao and Dr. Deepa Jaiswal, Scientist-D, participated in International Biodiversity day celebrations on 22nd May, 2017 at Birla Platinum, Hyderabad.

18. Dr. Gopal Sharma, Scientist-D, delivered a lecture on Conservation of Gauraiya (*Paserdomesticus*) a state bird of Bihar at Rajkiya Mahila Mahvidyalaya Guljarbagh, Patna on 22nd May, 2017.

19. Dr. Honey U.K. Pillai, Scientist- D, attended the Brainstorming session on Deep Sea Fishery as part of Deep Sea Mission under the umbrella programme called Blue Revolution at CMLRE, Kochi on 23rd May, 2018.

20. Dr. Deepa Jaiswal, Dr. Boni A. Laskar & Dr. Karuthapandi participated in National Conference on the Current Status of Freshwater Faunal Diversity of India on 26-27th May, 2017 at FBRC, Hyderabad.

21. Dr. Dhriti Banerjee, Scientist-D, attended and participated at National Conference on "Faunal Diversity of Freshwater Ecosystem" at Hyderabad, on 26th and 27th May, 2017.

22. Dr. P.C. Pathania, Scientist-D attended workshop on "Biotechnological Intervention in Muga and Eri Silk R&D sector which is jointly organized by Department of Biotechnology, Ministry of Science & Technology, New Delhi and Central MugaEri Research and Training Institute, Central Silk board, Lahdoigarh, Jorhat, Assam from 25-27th May, 2017.

23. Dr L. Bindu, Scientist D, attended the National Conference on 'Current status of fresh water fauna of India' at Hyderabad from 26th to 27th May, 2017 and delivered lectures on freshwater rhizopods and ciliates.

24. A three month's Foundation Course for Biodiversity Conservationists under Green Skill Development Programme (GSDP) of ENVIS framework of Ministry of Environment, Forest and Climate Change (MoEF&CC), New Delhi was launched in collaboration with Arid Zone Regional Centre, Botanical Survey of India, Jodhpur from 29th May, 2017 at the Desert Regional Centre, ZSI, Jodhpur

June 2017

25. Dr. Rajkumar Rajan, Scientist D, served as External Examiner to the PhD Viva-voce Examination of Ms. A. Josephine Adeline, of the Thesis entitled 'Comparative study of the leaf bark and heartwood extracts of *Caesalpinia sappon* for its *in-vitro* activity' at Ethiraj College for Women, Chennai - 8, on 1st June, 2017.

26. Dr. C. Raghunathan, Scientist-E and Officer-in-Charge attended the meeting on Development of Tuna Fisheries in Andaman and Nicobar Islands chaired by the Chief Secretary of A & N Administration on 2nd June, 2017 and chaired by Hon'ble Lieutenant Governor of A & N Islands on 5th June, 2017; served as a member for the selection of suitable applicants for 13 different awards in ICAR-CIARI, Port Blair on 19th June, 2017; served as a Guest of Honour in the 11th National Statistics Day organized by National Sample Survey Office, Ministry of Statistics and Programme Implementation on 29th June, 2017 and delivered the address; prepared the question paper on Biodiversity - Methods of Conservation and Management for 2016 Batch M.Sc. (BO&BD) Semester II Final Examination of Kerala University of Fisheries & Ocean Studies on request.

27. Mr. Manish Chandra Patel, Senior Zoological Assistant participated in Training for Trainers of International Yoga Day Protocol 2017 from 5th to 9th June, 2017 organised by Ayush Department, Port Blair; attended a meeting on possibilities to issue entry ticket of all the museums for tourists in Port Blair in a single window system on 9th June, 2017 at Directorate of Tourism, Andaman and Nicobar Administration, Port Blair.

28. Dr. Gopal Sharma, Scientist- D, delivered a lecture on conservation of endangered species w.s.r. to Biodiversity of Gangetic Plains at Zoo Interpretation Centre, Patna on 5th June, 2017.

29. Dr. Ch. Satyanarayana, Scientist-B, functioned as a resource person in the the World Environment Day on 5th June, 2017 organized by the Training and Extension Division of ZSI by delivering a talk on the theme "Connecting People to Nature" before the participating school children, scientists, researchers and staffs and created awareness on the importance of nature with special reference to Corals and Coral Reefs.

30. Mrs I.J. Kharkongor, Scientist D & Mr B. Saikia, Sr Zool Asstt and Mr I. Imam, JRF, delivered lectures on various aspects of zoo taxonomy and faunal diversities of NE India in a programme organized on occasion of *World Environment Day 2017*, at Anne Margareth Barr Memorial Higher Secondary School, Kharang, E. Khasi Hills Dist, Meghalaya on 5th June, 2017.

31. Dr. Md. Jafer Palot, Assistant Zoologist, attended the Environmental day Seminar on 5th June, 2017 and delivered a talk on "Connecting people to Nature" at East Avenue Hotel, Calicut organized by Institute of Engineers of Kozhikode.

32. Dr P. Padmanaban, Assistant Zoologist, delivered talk on "Marine Reptiles - Taxonomy, Diversity and Distribution for students of various colleges (M.Sc., Zoology) students on 6th June, 2017.

33. Ms. Rinku Goswami, Scientist-D, delivered a lecture on Ecosystem and Related Fauna-Grassland and Scrubland on 7th June, 2017 in Green Skill Development Programme.

34. Dr. Viswa Venkat Gantait, Assistant Zoologist, delivered a lecture on 'Reminiscence of Antarctica Expedition' on 7th June, 2017 in Green Skill Development Programme at ZSI HQ.

35. Dr Rizvi delivered lecture on helminthes to GSDP students

36. Dr. Sanjeev Kumar, Scientist-D & Officer-in-charge organized quarterly workshop on Official Language Hindi on 8th June, 2017 at DRC, ZSI, Jodhpur. All the staff members participated in the said workshop.

37. Dr. V. V. Gantait, Assistant Zoologist, delivered a lecture on 'Mangrove Ecosystem of West Bengal' on 12th June, 2017 in Green Skill Development Programme at ZSI HQ.

38. Dr. Rajkumar Rajan, Scientist D, attended the 'Brainstorming meeting on Deep Sea Mission - Marine Biodiversity, Genomics and Marine Biotechnology' organized combinedly by Central Marine and Living Resources Institute, Kochi

and Marine Biotechnology Division, National Institute of Ocean Technology, Chennai on 12th June, 2017.

39. Dr. R. Babu, Scientist-D, Imparted training on 'Collection, preservation and identification of Insects with special reference to Odonata' to the five Post-Graduate students of Zoology, Ethiraj College, Chennai, and one M.Sc. student from Dept. of Zoology, Bhrathiar University, Coimbatore 14th to 16th June, 2017 at SRC, ZSI, Chennai.

40. Dr. D. Gupta, Scientist-C participated in ESRI India Regional User Conference (East) on 15th June, 2017 at Hyatt Regency, Salt Lake City, Kolkata.

41. Dr. Dhriti Banerjee, Scientist- D, attended and participated at Regional User Conference (East) on 'GIS: Enabling Transformation' at Kolkata, on 15th June, 2017.

42. Dr. Md. Jafer Palot, Asstt. Zoologist, attended the Biodiversity Management Committee meeting of Kozhikode district on 15th-16th June, 2017 and on 30th June, 2017 of Malappuram district and delivered a talk on 'Importance of Biodiversity'. This meeting was organized by Kerala State Biodiversity Board, Thiruvananthapuram.

43. Dr. Rajkumar Rajan, Scientist D, attended and made a presentation on 'Indicators for Sustainable Development of Coastal and Marine Areas in India' at the 'Workshop on Preparation of Indicators for Sustainable Development Goals', organized by State Planning Commission, Chennai on 16th June, 2017.

44. Dr. K.G. Emiliyamma, Scientist-D, delivered a lecture on "Environmental conservation" to the vara resident association at Kadalundi on 18th June, 2017. She also delivered a lecture on Dragonfly and Damselfly diversity of Kerala in a seminar cum workshop on "Parataxonomy: Disseminating Science to layman", organized by the Dept.of Zoology, KKTM Govt. College, Pullut, Thrissur and sponsored by Directorate of Collegiate education, Kerala on 6th & 7th November, 2017.

45. Miss Jhimli Mondal, Senior Research Fellow, participated in '2017 Courses: Taxonomy and Biology of Tunicates' from 20th June to 4th July, 2017 at Smithsonian Tropical Research Institute (STRI), Bocas Del Toro, Panama on invitation.

46. Dr. G.P. Mandal, Scientist-D, attended Regional Workshop on "Conservation and Management of Wetland (Eastern States)" is being organized under aegis of the National River Conservation Directorate of the Ministry of Environment, Forest & Climate Change, Govt. of India, at ZSI HQ, Kolkata from during 23-24th June, 2017.

47. Dr. Satyanarayana and Dr. Marimuthu attended a Regional workshop on "Conservation and management of wetland (Eastern states)" at ZSI-HQ on 23rd June, 2017. On invitation, he delivered a talk on "The Status of Coral Reefs from the Director, Indian Museum and subsequent deputation by DZSI - The Paradises Underwater" at Ashutosh hall on 28.02.18.

48. Dr. D. Gupta , Scientist-C participated as resource person for demonstrating aquatic insect collection in two days Regional Workshop on "Conservation and Management of Wetland (Eastern States)" being organized under aegis of the National River Conservation Directorate of the Ministry of Environment, Forest & Climate Change, Govt. of India, at ZSI HQ, Kolkata from 23-24th June, 2017.

49. Dr. P.C. Pathania, Scientist- D and Sh. Suresh Kr. Shah, Asstt. Zoologist attended workshop on Conservation and Management of Wetlands (Eastern Region) organized on the aegis of National River Conservation Directorate, MOEF& CC at Annandale Hall, Prani Vigyan Bhawan, ZSI, Kolkata on 23-24th June, 2017.

50. Dr. Basudev Tripathy, Scientist-D of Mollusca Section co-organised the Workshop on Conservation and Management of Wetlands (Eastern Region) for MoEFCC, at ZSI from 23-24th June, 2017.

51. Dr. Chitra J. Scientist- C, deputed as Resource person in field visit to demonstrate the collection, methodology and significance of zooplankton of east Kolkata wetlands, Kolkata to the delagates participated in Regional workshop on conservation and management of wetlands (Eastern region) organized on the aegis of National river conservation directorate, MoEFCC on 23rd and 24th June, 2017 held at Annandale hall, Zoological Survey of India, Kolkata - 700 053.

52. Dr P. Padmanaban, Assistant Zoologist, attended the Stakeholders consultation workshop for the preparation of Management Plan of Gulf of Mannar on 27th June, 2017, in the Office of the Wildlife Warden, Ramanathapuram, Tamilnadu.

53. Dr. Rajkumar Rajan, Scientist D, attended and presented the paper entitled 'Status, Distribution, Conservation, Management and Sustainable Utilization of Lessor Known Marine Invertebrates in Gulf of Mannar Marine Biosphere Reserve to be included in the Management plan for Gulf of Mannar Marine National Park and Biosphere Reserve 2017-18 to 2026-27, on the `Consultation workshop to finalize the draft framework of the Management Plan' held at the Wildlife Warden Office, Ramanathapuram on 27th June, 2017, jointly organized by Tamil Nadu Forest Department and Wildlife Institute of India under the CAMPA-Dugong Programme of Govt. of India.

54. As an invitee Dr. H. S. Banyal, Scientist-D attended a seminar on the topic "Deterioration of Natural Resources - A Global Crisis: Challenges and Remedies" jointly organized by Apana Sansthan & J.N.V. University, Jodhpur on 28th June, 2017.

55. Dr. Indu Sharma, Scientist-D attended the meeting of Hindi NARAKASH on dated 28th June, 2017 at Urdu Teaching Center, Solan.

56. As an invitee Dr. H. S. Banyal, Scientist-D attended a workshop on Official Language Hindi organized by AZRC, BSI, Jodhpur on 29th June, 2017.

57. Dr U. Saikia, Scientist- C represented the Office in a meeting of the Assam State Biodiversity Board at Guwahati, on the 30th June, 2017.

58. Dr. K. A. Subramanian, Scientist- D participated in third Inter Governmental Science Policy Platform on Biodiversity and Ecosystem Services (IPBES) Asia-Pacific Authors meeting at United Nations University Tokyo, Japan from 21-28th July, 2017 as one of the lead authors on Freshwater Ecosystems and Land use and Land cover change. He also attended Board of Trustees Meeting of Chennai Snake Park on 30th June, 2017. He attended Tamil Nadu Wetland Authority Meeting at Secretariat on 29th August, 2017.

July 2017

59. All the scientists and scientific staff attended National Conference on 'Current Status of Faunal Diversity of Mangrove Ecosystem in India", from 1st to 2nd July'17.

60. Dr. Md. Jafer Palot, Asstt. Zoologist, attended the 'Ecosystem Evaluation Workshop' at Central Marine Research Institute, Kozhikode on 1st July, 2017 organized by Kerala State Biodiversity Board, Thiruvananthapuram.

61. Dr. N. Sharma, Scientist- D, presented a paper on, " Role of genitalia in the identification of butterflies of the genus *Maniola* Schrank (Lepidoptera : Nymphalidae) from North-West Himalaya" in International conference on Science: Emerging Scenario & Future Challenges organized by Him Science Congress Association at Atal Bihari Institute of Mountaineering and Allied Sports, Manali, Himachal Pradesh w.e.f. 1st to 2nd July, 2017.

62. Dr. N. Sharma, Scientist- D, performed the duties of Judge for the award of best Oral Presentation in International conference on Science: Emerging Scenario & Future Challenges organized by Him Science Congress Association at Atal Bihari Institute of Mountaineering and Allied Sports, Manali, Himachal Pradesh w.e.f. 1st to 2nd July, 2017.

63. Dr. Rajkumar Rajan, Scientist D, represented Zoological Survey of India as one of the respondents in the court case pertaining to the ban on sea cucumber fishing in Gulf of Mannar and Palk Bay, at the personnel hearing arranged at the Office of DG, Wild life, Ministry of Environment, Forests and Climate Change on 4th July, 2017.

64. Dr. Girish Kumar, P., Scientist-C, attended State Level Steering Committee meeting of Agasthyamala and Nilgiri Biosphere Reserve on 6th July, 2017 at Forest Headquarters, Vazhuthakad, Thiruvananthapuram.

65. Dr. Aftab Ahmad, Scientist-D attended two days workshop organized by IDEA on Climate Change in Eastern Ghats and East Coast held on 8th to 9th July, 2017 at Youth Hostel, Gopalpur on Sea, District Ganjam, Odisha and delivered a lecture on " Estuarine Fauna of India".

66. Dr. Aftab Ahmad, Scientist-D, attended two days workshop organized by IDEA on Climate Change in Eastern Ghats and East Coast held on 8th July, 2017 to 9th July, 2017 at Youth Hostel, Gopalpur on Sea, District Ganjam, Odisha and delivered a lecture on ' Estuarine Fauna of India'.

67. Mrs. Supriya Nandy, Scientist -C delivered lecture on 'Mammalian fauna of West Bengal' in Green Skill Development Programme Advanced Training Course on 10th July, 2017.

68. Dr. C. Sivaperuman, Scientist-D, attended Research Advisory committee meeting 12th July, 2017 at Department of Environment and Forests, A & N Islands to review the research projects on request; attended Doctoral Committee meeting to assess the progress of the Ph.D. research scholar at ZSI, Port Blair on 18th July, 2017 on invitation; attended a National Seminar on "Empowerment of women through Skill Development and Training: A critical Analysis of Government Policies and programmes with special reference to Andaman & Nicobar Islands" organized by the Department of Homescience, Jawaharlal Nehru Rajkeeya Mahavidyala, Port Blair on 28th & 29th July, 2017 on request; attended the State Level Expert Appraisal Committee meeting at Department of Environment and Forests, A & N Islands on 29th July, 2017 on request.

69. Dr. Ch. Satyanarayana, Scientist-B, Dr. Basudev Tripathy, Scientist-D attended and participated in the organisation of National Workshop on Coral Reef Ecosystem of West Coast of India: Current Status and Way Forward organised by ZSI at Jamnagar, Gujarat from 12th to 14th July, 2017.

70. Dr. Rajkumar Rajan, Scientist D, attended and made a presentation `Status and conservation of coral reefs in Lakshadweep - Zoological Survey of India and beyond' at the `National Workshop on coral reef ecosystems of West Coast of India - Current Status and Way forward' Organized by Zoological Survey of India from 12-14th July at Jamnagar, Gujarat.

71. Dr. Gopal Sharma, Scientist D presented the final draft of Dolphin management plan before the PCCF, Bihar on 14th July, 2017 at Aranya Bhawan, Patna.

72. Dr. Deepa Jaiswal, Scientist-D attended Andhra Pradesh State Biodiversity meeting on 18th July, 2017 at Vijaywada, A.P.

73. Dr. Gopal Sharma, Scientist D attended and delivered a lecture on 'River recharging and Gangetic Dolphin' in a an Awareness raising programon 'Ground Water Issues and Role of National Hydrology Project and its management in Bihar' organized by Ministry of Water Resources, River Development & Ganga rejuvenation on 18th July, 2017.

74. Dr. Rajkumar Rajan, Scientist D, attended the project scrutiny meeting at National Biodiversity Authority, Chennai, on 19th July, 2017 and 24th August, 2017.

75. Dr. V. V. Gantait, Assistant Zoologist, attended the Training Programme on GeM at ZSI HQ on 21st July, 2017.

76. Dr. Ch. Satyanarayana, Scientist-B, on deputation participated in a training on Government e-Marketplace (GeM) imparted by Dr Anurag Singh from an Institution affliated to Ministry of Finance. The training was organised by the Stores Section of Zoological Survey of India on 21st July, 2017 at Bainiprasad Hall, ZSI Headquarters.

77. Dr. Deepa Jaiswal, Scientist-D, attended the 4th Telangana State Wild Life Board meeting on 22nd July, 2017 at Hyderabad.

78. Dr. Navneet Singh, Scientist D & Dr. Rahul Joshi, Scientist C attended meeting of NARAAKASH at Income tax office on 22nd July, 2017.

79. Dr. Tulika Biswas, Assistant Zoologist, participated in the GSDP field work in ChintamoniKar Bird sanctuary at Narendrapur, Kolkata on 22nd July, 2017.

80. Mrs. Jennifer Lyngdoh, Officer-in-Charge attended an Interactive Meeting on 28th July, 2017 at the Regional Office, MoEFCC during the visit of Mr S. Das, Director General of Forests, MoEF & CC, Delhi.

81. Dr. Avtar Kaur Sidhu, Scientist-D attended DSC meeting under the chairmanship of Deputy Secretary (Admin.) for screening of recruitment for posts of Scientist-C in ZSI at MoEF & CC from 31st July, 2017 to 3rd August, 2017.

82. Dr. Anil Mohapatra (2017). Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) at Tokyo, Japan from 22.07.2017 to 30.07.20 2017.

August 2017

83. Mr. S. Mitra, Senior Zoological Assistant, participated as a resource person for field training at Bichitrapur mangrove (Odisha) and Tazpur (West Bengal) in connection with GSDP Programme conducted by ZSI Head Quarter on 1st & 2nd August, 2017.

84. Mrs I.J. Kharkongor, Scientist D, delivered an Invited Talk on 3rd August, 2017 to undergraduate students in the Department of Zoology, Sankardev College, Shillong on the topic *'All About Butterflies'*.

85. All the scientists and scientific staff of ZSI - Kolkata, attended a lecture of on DNA barcoding introductory, CCDB pipelines and barcoding museum specimens by Dr. Suresh Naik, a Research Scientist and Curator of DNA Archive at Canadian Centre of DNA Barcoding (CCDB), University of Guleph, Canada on 7th August, 2017 at ZSI, Headquarters.

86. Dr. K. A. Subramanian, Scientist- D represented Director, ZSI in the 44th ABS Meeting held at NBA on 8-9th August, 2017.

87. Dr. Basudev Tripathy, Scientist-D, as Coordinator organised capacity building training for newly recruited scientists of ZSI, held at Wildlife Institute of India from 9th - 14th August, 2017.

88. Allthe newly recruited Scientists C and D, attended training programme on 'Advances in Wildlife studies and Conservation' at WII, Dehradun from 9th August, 2018 to 14th August, 2018.

89. Dr. Sanjeev Kumar, Scientist-D & Officer-in-charge has attended Town Official Language Committee (TOLC) meeting organized by DRM Office, North-West Railways, Jodhpur on 10th August, 2017 at Rail Bhavan, Jodhpur.

90. Dr. Deepa Jaiswal & Dr. Karuthapandi delivered invited talk on aquatic coleoptera & Freshwater Fishes respectively at St. Francis College for Women, Hyderabad on 11th August, 2017.

91. Dr. Md. Jafer Palot, Assistant Zoologist, attended the State Board for Wildlife at the conference Hall of Chief Minister, Secretariat, Thiruvananthapuram on 16th August, 2017 organised by Kerala Forests & Wildlife Department.

92. Dr. C. Sivaperuman, Scientist-D, delivered a talk on the 'Island Biodiversity with special reference to Avifauna of Andaman & Nicobar Islands' in the work on Sustainability Education programme for teachers organized by CPR Environmental Education Centre, Port Blair on 16th August, 2017; delivered a talk on the 'Avifaunal diversity in Andaman & Nicobar Islands' in the work on Eco-Eureka on youth engagement on nature and labs organized by CPR Environmental Education Centre, Port Blair, on 20th August, 2017.

93. Dr. Bikramjit Sinha, Scientist- D, participated in the Regional Consultation workshop on Mainstreaming Biodiversity: National Biodiversity Action Plan, National Biodiversity Targets and India's Sixth National Report to Convention on Biological Diversity Organised by Ministry of Environment, Forest and Climate Change, Government of India in association with National Biodiversity Authority and United Nations Development Programme with support from Assam State Government and Assam State Biodiversity Board at Hotel Lily, Guwahati during 17-18th August, 2017.

94. Dr. Deepa Jaiswal & Dr. Karuthapandi, Scientist- D participated in National workshop on Urban Environmental Management-solutions for sustainability from 17-18th August, 2017 and delivered lecture on Role of faunal diversity in Biomonitoring of urban environment at NEERI, Hyderabad.

95. Dr. Gurumayum, Scientist- D, attended a one day training/workshop on NTRP, Bhabishya, Revision of Pension case, PFMS, compilation of Accounts and settlement of Audit Paras at PAO, MoEF&CC, New Delhi on 18th August, 2017.

96. Dr. R. Aengals Scientist-D, Dr.Aftab Ahmad, Scientist-D, Dr. H. S. Banyal, Scientist-Dhad attended DDO Training /Workshop on 18th August, 2017 at Ganganagar Auditorium of Indira Paryavaran Bhabwan, Jor Bagh New Delhi.

97. Dr. Gopal Sharma, Scientist D, Mrs I.J. Kharkongor, Dr. Boni Amin Laskar, Scientist-D Mrs S. Mawlong, and Mrs. Sissy. B. Cherain, Office Supdt., participated in PFMS training on 18th August, 2017 at New Delhi.

98. Dr. Sanjeev Kumar, Scientist-D & Officer-in-charge attended a meeting organized by General Manager, Regional Remote Sensing Centre (West), National Remote Sensing Centre, ISRO, Deptt. of Space, Govt. of India at CAZRI Campus, Jodhpur jointly with AZRC, BSI, Jodhpur on 23rd August, 2017 to Design & development Geo-web Portal & Mobile application for Faunal/Floral Diversity Resource mapping and Capacity Building by Addressing Geo-tagging, Geo-Visualization & Spatial Analysis of faunal/floral diversity of Rajasthan and Gujarat, India on Bhuvan Platform. A MoU draft is under preparation to be approved by all the authorities of participating organizations.

99. Dr. Dhriti Banerjee, Scientist-D ,Dr. A. N. Rizvi, Scientist D, Dr S.I. Kazmi Sceintist D and Dr Chitra J., Scientist-C, acted as a Resource persons to demonstrate Field survey techniques on invertebrates in the Training programme for Technical staff of Forest Survey of India, Eastern Zone from 24th to 25th August, 2017 organized by Zoological Survey of India and Botanical Survey of India, held at AJC Bose Indian Botanical, Garden, Howrah.

100. Dr. Avtar Kaur Sidhu, Scientist-D, Dr. Indu Sharma, Scientist-D and Dr. T. Kubendran, Scientist-C attended National Workshop on "Scoping the Baseline Knowledge on Vertebrates of Himachal Pradesh to develop Conservation Priorities" organized by Himachal Pradesh Forest Department, Shimla in collaboration with Zoo outreach Organization, Coimbatore, Tamil Nadu at HFRI, Panthaghati, Shimla from 24th to 26th August, 2017.

101. Dr. Avtar Kaur Sidhu, Scientist-D, Dr. Indu Sharma, Scientist-D and Dr. T. Kubendran, Scientist-C attended National Workshop on "Scoping the Baseline Knowledge on Vertebrates of Himachal Pradesh to develop Conservation Priorities" organized by Himachal Pradesh Forest Department, Shimla in collaboration with Zoo outreach Organization, Coimbatore, Tamil Nadu at HFRI, Panthaghati, Shimla from 24th to 26th August, 2017.

102. Dr. Anil Kumar, Scientist-D participated in the "Consultative Meeting on 'Preparation of Zonal Master Plan for Eco-Sensitive Zone (ESZ) around Protected Areas' from 28-30th August, 2017 at Wildlife Institute of India, Dehradun.

103. Dr. Narendra Sharma, Scientist-D attended one day training /workshop on NTRP, Bhavishya, Revision of pension case, PFMS on 18th August, 2017 at Ministry of Environment, Forests & Climate Change, New Delhi.

104. Dr. Gopal Sharma, Scientist D attended CIMFRI (CSIR) meeting on third evaluation of current status of River Damodar in Jharkhand.

105. Dr. Bikramjit Sinha attended a peer review meeting of the Bulletin of Arunachal Forest Research in SFRI, Itanagar on 8th August 2017.

106. Dr. Bikramjit Sinha attended the 7th meeting of the Arunachal Pradesh Biodiversity Board as a member on 24th August 2017 in State Forest Research Institute, Itanagar.

107. Dr. Bikramjit Sinha attended the 10th State Level Steering Committee of Dehang Dibang Biosphere Reserve in the O/o of Chief Secretary, Government of Arunachal Pradesh on 29th August, 2017.

108. Dr. Bikramjit Sinha attended the State Forest Research Committee, Arunachal Pradesh in the O/o of the PCCF (WL & BD) on 31st August 2017.

109. Dr. Temjenmongla, Scientist-C attended the training programme on 'Advances in Wildlife Research and Conservation' at Wild Life Institute of India, Dehradun, from 10-14th August, 2017.

110. Dr. M. Jayashankar, participated in five days training programme on "Advances in Wildlife Research and Conservation" at Wildlife Institute of India, Dehradun from 10-14th August 2017.

September 2017

111. Dr. Chitra J., Scientist- C, provided training in zooplankton taxonomy to the Ph.D scholar Mr. Boopendra Ahirwar student of Dr. Sadhana Kesharwani, Supervisor and Assistant Professor Home Science college, Jabalpur and Supervisor Dr. Rita Bhandari, professorand Head, Department of Zoology, OSK college, Jabalpur forwarded by Director ZSI to undergo training in zooplankton from 4th to 9th September, 2017.

112. Dr. C. Sivaperuman, Scientist-D & Officer-in-Charge, served as member for selection of Research Scientist at RMRC, Port Blair on 8th September, 2017 on request; delivered a talk on Antarctic Expedition 2017 during the workshop on World Ozone Day Celebration at ZSI, Port Blair; delivered a talk on Island Biodiversity with special reference to Avifauna of Andaman & Nicobar Islands" in the work on Sustainability Education programme for teachers organized by CPREE, on 18th September, 2017 on request; delivered a talk on the "Bird hazards studies in the airport of Andaman" at INS Utkrosh, Port Blair on 20th September, 2017 on request; appeared before the Judicial Magistrate court in Port Blair for clarification regarding identified confiscated specimen on 21st September, 2017; served as member in the Building coordination committee at RMRC, Port Blair on 22nd September, 2017 on request.

113. Dr. Tulika Biswas, Assistant Zoologist, participated in National Seminar on Forest Resource: Conservation issues on 9th September, 2017 at Jadavpur University.

114. Dr. Bikramjit Sinha, Scientist- D, attended the 29th Annual Day Celebration programme of GBNIHESD at its NE Unit, Itanagar on 10th September, 2017.

115. Dr. R. Aengals, Scientist-D, delivered the inaugural address on Advancement of Biological sciences towards new generation with special reference to faunal taxonomy and biodiversity in India in the UGC-CPE sponsored Seminar at Bankim Sardar College, Tangrahali, South 24 Parganas on 12th September, 2017.

116. Dr. Gopal Sharma, Scientist D delivered a lecture in Oriental college, Patna City, topic Biodiversity threats and Conservation on 13th September, 2017.

117. Dr. Rajkumar Rajan, Scientist D and Dr. Marimuthu, Scientist D, delivered a Special Lecture on "Importance of SCUBA in the monitoring of marine benthic reef and associated organisms"to the Researchers and Master Students of Madurai Kamaraj University and its affiliated colleges at Department of Marine and Coastal Studies, Madurai Kamaraj University, Pudhumadam, Tamil Nadu on 14th September, 2017.

118. Dr. Deepa Jaiswal, Dr. Boni Amin Laskar participated in one day seminar on "Women in Science" organized by Indian Science Congress Association on 14th September, 2017 at Hyderabad.

119. Dr. Avtar Kaur Sidhu, Scientist-D & Officer-in-Charge participated in the Regional Consultation Workshop on Mainstreaming Biodiversity, titled "Consultation Workshop on Mainstreaming Biodiversity: National Biodiversity Action Plan, National Biodiversity Targets and India's Sixth National Report to CBD" held on 14-15th September, 2017 at Chandigarh.

120. Dr. Anil Mohapatra, Dr. S. Balakrishnan, Dr. J.S. Yogesh Kumar &Mr. P.C. Tudu (2017). Seminar on "Future of Digha: Tackling the Oceans along the West Bengal Coast" during the period from 14th - 15th September 2017 at Digha.

121. Dr. Avtar Kaur Sidhu, Scientist-D & Officer-in-Charge participated in the Regional Consultation Workshop on Mainstreaming Biodiversity, titled "Consultation Workshop on Mainstreaming Biodiversity: National Biodiversity Action Plan, National Biodiversity Targets and India's Sixth National Report to CBD" held on 14-15th September, 2017 at Chandigarh.

122. Dr. K. A. Subramaniayan, Scientist 'D' participated in 9th Indian Symposium on Odonatology on 15-19th September, 2017 at Goa.

123. Mrs I. J. Kharkongor, Scientist D, Mr A. Rana, Sr Zool Asstt, Mr B. Saikia, Sr Zool Asstt and Mrs R. Deb, Sr Zool Asstt, delivered Popular Talks on the occasion of the *International Day for the Preservation of the Ozone Layer* at Laitumkhrah Assamese Secondary School on 15th September, 2017.

124. Dr. Sanjeev Kumar, Scientist-D has attended National Seminar & delivered invited lecture at Mr R. K. P. Govt. P. G. College, Kishangarh (Ajmer), Rajasthan on 15th September, 2017 & also presided over the valedictory function of the National Seminar as Guest of Honour.

125. Dr. Rajkumar Rajan, Scientist D, delivered a lecture (invited) 'Integrated Coastal Management - Conservation and Sustainable use of Coastal Bio-resources'at the 'International Workshop on Awareness for conservation and sustainable use of biodiversity in India' organized at the Department of Zoology, Thiruvalluvar University, Vellore, 632115, from 18th to 19th September, 2017.

126. Mr. P.T. Rajan, Senior Zoological Assistant, participated as a resource person for two days orientation programme for TSET members by the Directorate of Tourism, Andaman and Nicobar Administration on 19th and 20th September, 2017 on request.

127. Dr. Navneet Singh, Scientist D and Mr. G. Ramesh, Sr. Zoological Assistant, participated in the National Workshop on Order Lepidoptera held at Punjabi University, Patiala from 20th September, 2017 to 22nd September, 2017.

128. Dr. Gopal Sharma, Scientist D delivered a lecture in Bihar Veterinary College, Patna on Biodiversity and its Challenges on 21st September, 2017.

129. Dr. Deepa Jaiswal, Scientist- D, participated in National workshop on sixth National report on Convention of Biological diversity organized by MoEF & CC, TSBB and NBA from 21st to 22nd September, 2017 at Hyderabad.

130. Dr. Sanjeev Kumar, Scientist-D attended as a Special Invitee, the Farmers Fair & Innovation Day organized by CAZRI, Jodhpur on 23rd September, 2017. A stall depicting faunal diversity was installed by DRC, ZSI Jodhpur at the exhibition on the occasion. Dr. H. S. Banyal, Scientist-D has also participated in the said event.

131. Dr. K. A. Subramanian, Scientist- D represented Director, ZSI in the Tamil Nadu State Wildlife Board Meeting held on 25th September, 2017.

132. Dr. Md. Jafer Palot, Asstt. Zoologist, attended one day Biodiversity Seminar at PSMO College, Thirurangadi on 28th September, 2017 and delivered a talk on 'Biodiversity and Conservation of Mangrove ecosystem of Kerala'.

October 2017

133. Dr. R. Venkitesan, Scientist-D, attended National conference on Advancements of Applied Zoology for Sustainable Development - current Trends and future Perspectives " held on 5th and 6th October,2017. Organized by the Dept. of Zoology, Pachaiyappa's College, Chennai-30.

134. Dr. Basudev Tripathy, Scientist- D, delivered lecture on Conservation of Coastal and Marine Fauna of Upper East Coast of India to the participant of ICZM training programme organised by MARC, Digha on 6th October, 2017.

135. Dr. Rajkumar Rajan, Scientist D, delivered a lecture (invited) `Integrated Coastal Management - Conservation and Sustainable use of Coastal Resources' at the 5th Training Programme on Integrated Coastal Zone Management (ICZM) for the State Government Officials of West Bengal, organized at Marine Aquarium & Regional Centre, Digha, West Bengal from 6th - 10th October, 2017.

136. Dr. Kamal Saini, Assistant Zoologist delivered an invited lecture on Wildlife to graduate student at I B College, Panipat (Haryana) on 7th October, 2017.

137. Dr. P.S. Bhatnagar, Scientist-D & Officer-in-Charge and Dr. K.P. Dinesh, Scientist-D attended Attended Regional Conference on Environment-2017 at Pune, on 7 - 8th October, 2017 at Dhanvantri Auditorium, AFMC, Opposite Command Hospital, Pune.

138. Dr. Anil Kumar, participated and presented a research paper titled, "Characteristics of vocalizations in some species of bulbuls from Arunachal Pradesh, India" in International Conference of Bio-Acoustics (XXVI IBAC), at Gurukul Kangri University, Haridwar, from 8th to 13th October, 2017.

139. Dr. Chitra J., Scientist- C, delivered a lecture on "Current research strategies in zooplankton and note on plagiarism and ethics in Research" and chairperson, for a session. Also as National Advisory member of the National Workshop on "Research Methodology" organized by Department of Post Graduate Studies and Research in Zoology, Government college at Kalabaragi, Karnataka sponsored by UGC from 9th to 11th October, 2017.

140. Sceintists , scientific staff and reserachers of ZSI Headquarters attended Training workshop on "Modern approaches in biodiversity studies" at ZSI, HQ Office, Kolkata on 10th October, 2017.

141. Dr. Ch. Satyanarayana, Scientist-B, attended 5th ICZM training programme for State Government officials at Marine Aquarium and Regional Centre, ZSI, Digha on 10th October, 2017 and delivered a lecture on "Coastal and Marine living resources - Minor and Major Invertebrate faunal communities and their importance".

142. Dr. Gopal Sharma, Scientist- D, participated in a project evaluation program for Graduate student in Patna Women's College, Patna University, Patna on 12th October, 2017.

143. Dr. C. Venkatraman, Scientist-D delivered two lectures on 'Faunal Diversity in India' and another on 'Marine Biodiversity of India - An overview' to the Zoology students of St. Teresa College for Women, Cochin on 12th & 13th October 2017.

144. Dr. Basudev Tripathy, Scientist- D, attended meeting on nature Index; GHNP and Chilika, organised by National Biodiversity Authority at Kullu, Himachal Pradesh from 13th to 14th October, 2017.

145. Dr. Ch. Satyanarayana, Scientist-B, delivered a TEDxCRCE talk at Samwaad Auditorium, Fr. Conceicao Rodrigues College of Engineering, Bandra Bandstand, Mumbai. On "Restoration of Extirpated Branching Corals at Gulf of Kachchh". This was uploaded on youtube.

146. Dr. Dhriti Banerjee, Scientist-D, Dr Anjum N. Rizvi, Dr Ialit Sharma delivered lectures to the students of Kendriya Vidyalaya, Dum Dum on 16th October, 2017 as a part of the student's educational tour to ZSI, H.Q, Kolkata.

147. Dr. Md. Jafer Palot, Asisstant Zoologist, attended the district level planning meeting on environment & forests on 19th October 2017 convened by the district Panchayath and the Kerala Forests & Wildlife Department, Kozhikode division.

148. As a coordinator of the Advanced Course on skilling Para-Taxonomists under Green Skill Development Programme (GSDP) of ENVIS framework of MoEF&CC, New Delhi Dr. Sanjeev Kumar, Scientist-D & Officer-in-charge has coordinated selection of candidates through Walk-in-Interview & also acted as a chairman of the committee of experts on 24th October, 2017.

149. Dr. P.M. Sureshan, Scientist-D & Officer-in-Charge, handled one full day session on Hymenoptera taxonomy and practicals as resource person in DST-SERB School in Insect Biology- 2017 Hymenotpera Taxonomy on 26th October, 2017 sponsored by Science and Engineering Research Board (SERB) DST, Govt. of India.

150. Dr. S. Balakrishnan, Scientist 'D' & Officer-in Charge, participated "Launch Fisher Friend Mobile Application - Bangla pilot test programme", Organized by Rural Eco-Development Centre (REDC), M.S. Swaminathan Research Foundation (MSSRF) and Indian National Centre for Ocean Information Services (INCOIS) on 26th October, 2017.

151. Dr. Md. Jafer Palot, Assistant Zoologist, delivered a talk on 'Importance of Environmental Education' at the Prof. John Commemorative function organized by the Environmental Science Department, Kannur University, Kannur on 28th October, 2017.

152. Dr. Jasmine P., Scientist- D, attended the Women's committee meeting on 30th October, 2017 in the Staff Selection Committee, West Bengal as the Women's Committee chairman.

153. Mrs I.J. Kharkongor, Scientist-D, and Mrs R. Deb, Sr Zool. Asstt., attended the Valedictory Function of Wildlife Week 2017, held on 31st October, 2017 at All Saints Hall, Shillong on invitation from the Wildlife Wing of Forest & Environment Department, Govt of Meghalaya.

154. Dr. Sanjay Paunikar, Scientist-D attended and participated in the discussion of Biocontrol agents of insect pests in the National Seminar on Biological Control of Insect Pests- Current developments and Future Strategies at Forest Research institute, Dehradun on 31st October, 2017. The write up on Entomofauna of Siwalik and Trans Himalaya is in progress.

155. All the officer-in-charge of Regional Centres and Members from Headquarters, attended half yearly meeting at CZRC, ZSI, Jabalpur from 28th November, 2017 to 4th December, 2017 .

156. Dr. S. Balakrishnan, Scientist 'D' & Officer-in Charge, participated "Launch Fisher Friend Mobile Application - Bangla pilot test programme", Organized by Rural Eco-Development Centre (REDC), M.S. Swaminathan Research Foundation (MSSRF) and Indian National Centre for Ocean Information Services (INCOIS) on 26th, October, 2017.

157. Dr. B. Sinha acted as invited Judge in the State Level Science Drama Competition 2017 organized by Arunachal Pradesh Science Centre, Department of Science & Technology, Government of Arunachal Pradesh on 6th October 2017.

November 2017

158. Dr. Md. Jafer Palot, Assistant Zoologist, delivered a lecture on Diversity of Butterflies of Kerala in a seminar cum workshop on "Parataxonomy: Disseminating Science to layman", organized by the Dept. of Zoology, KKTM Govt. College, Pullut, Thrissur and sponsored by Directorate of Collegiate education, Kerala on 6th & 7th November, 2017.

159. Dr. K. G. Emiliyamma, Scientist-D and Dr. Md. Jafer Palot, Asstt. Zoologist, participated in a Seminar cum Workshop on "Parataxonomy: Disseminating Science to layman", organized by the Dept. of Zoology, KKTM Govt. College, Pullut, Thrissur and sponsored by Directorate of Collegiate education, Kerala on 6th & 7th November, 2017.

160. Dr. B. Sinha, Scientist- D, participated in the State Level Workshop on Mainstreaming Grassroots Innovations jointly organized by Arunachal Pradesh State Council of Science and Technology and National Innovation Foundation-India on 9th November, 2017 at Aruanchal Pradesh Science Centre, Itanagar.

161. Dr. K. A. Subramanian, Scientist- D represented Director, ZSI in the 45th ABS Meeting held at NBA on 10th November, 2017.

162. Dr. Dhriti Banerjee, Scientist-D has given lecture upon Integrated Taxonomy" to the students of Advanced GSDP course on 15th November, 2017 at ZSI (H.Q), Kolkata.

163. Dr. V.V. Gantait, Assistant Zoologist, participated in the 2nd Regional Science and Technology Congress (Western Region), 2017 at The University of Burdwan, Bardhaman, West Bengal, organised by Department of Higher Education, Science and Technology and Biotechnology, Govt. of West Bengal and The University of Burdwan during 16th-17th November, 2017.

164. Mrs. I. J. Kharkongor, Scientist-D, Dr. Uttam Saikia, Scientist-C, and Dr D. Khynriam, Scientist-B, attended the Inaugural Programme of 10th Northeast Bioinformatics Annual Coordinators meet at St Edmund's College, Shillong on 16th November, 2017.

165. Dr. Rajkumar Rajan, Scientist D, conducted a PhD viva voce of a candidate Ms. S. Nandhini, Ethiraj College for Women, Chennai, of the thesis entitled 'Antifouling potential of Loligoduvauceliink and extracts

of mangrove leaves against biofouling bacterial community from fishing boats' on 17th November, 2017, as assigned by the University of Madras.Attended the proposal scrutiny meeting at National Biodiversity Authority, on 14th December, 2017.

166. Dr. Santosh Kumar, Scientist- D, took a lecture and practical class on the "Importance of Taxonomy in Environmental Studies" on 17th November, 2017 for Green Skill Development Programme students, course for the advance level.

167. Dr. Gopal Sharma, Scientist D, participated as a judge in the Science exhibition in Patna Science College, Patna on 17th November, 2017.

168. Dr. V.V. Gantait, Assistant Zoologist, delivered B. D. Chatterjee Memorial Lecture (3rd Lecture) on Reminiscence of Antarctica Expedition, 2012-2013 at Midnapore College (Autonomous), Medinipore, Paschim Medinipore, West Bengal on 18th November, 2017.

169. Dr. R. Babu, Scientist-D, attended the "Conservation Authority of Pallikaranai Marsh Land Project Executive Committee Meeting" on 23rd November, 2017 at Pallikaranai Interpretation Centre, Department of Forests, Government of Tamil Nadu, Chennai.

170. Dr. Md.Jafer Palot, attended 3days National Seminar on Biodiversity conservation on 23-25th November 2017 at the Department of Zoology, Government Brennen College, Thalasserry and delivered a lecture on 'Butterfly Migration in Kerala- An overview' on 24th November 2017.

171. Dr. Karuthapandi, Scientist-C, Mrs. Rehanuma Sk. Sr. Zool. Asst., attended a talk on SAVE THE FROG by Kerry M. Kriger at CCMB LaCONES on 26th November, 2017.

172. Dr. Gopal Sharma, Scientist D participated in National symposium on on 26th November, 2017 held by Department of Forest, Govt. of Bihar at Maurya Lok Hotel, Patna.

173. Dr. H. S. Baryal, Scientist-D attended Town Official Language Committee (TOLC) meeting organized by DRM Office, North-West Railways, Jodhpur on 29th November, 2017 at Rail Bhavan, Jodhpur.

174. Dr. K. A. Subramanian, Scientist- D represented Director, ZSI in the 45th ABS Meeting held at NBA on 8th November, 2017 and 46th ABS Meeting held at NBA on 21st December, 2017.

December 2017

175. Dr. D. Gupta, Scientist-C attended and presented a paper in "Prospects of Innovations in Life Sciences and Socio Economic Challenges", 3rd National Conference of Zoological Society of Chhattisgarh organised by Department of Zoology, C.M.D. Post Graduate College, Bilaspur from 2nd to 3rd December, 2017.

176. Dr. R. Aengals, Scientist-D, attended the Workshop for Settlement of Outstanding Internal Audit Para held at Office of Chief Controller of Accounts, Indira Paryavaran Bhavan, New Delhi on 6th December, 2017.

177. All Officers and Staffs of ZSI HQ attended a Lecturer on the topic, "Modern taxonomy of Mosquitoes" by Dr. B.K. Tyagi, Visiting Scientist, Punjabi University, Patiala on 6th December, 2017 in Annandale Hall, ZSI, Kolkata.

178. Mrs I.J. Kharkongor, Scientist-D, attended the Inter Agency Co-ordination Meeting on Wildlife Crime organized by the Eastern Region Sub-Regional Office of the Wildlife Crime Control Bureau, MoEFCC, held in the conference room of the CWW, Govt: of Nagaland, Dimapur on 6th December, 2017.

179. Dr. Boni Amin Laskar, Scientist- D, attended Workshop for Settlement of Outstanding Internal Audit Paras on 6th December, 2017 at MoEF&CC, New Delhi.

180. Mrs. Rehanuma Sk., Sr. Zool. Asst., attended "Dakshin-Pashchim ke Kshetriya Rajbhasha Sammelan" on 8th December, 2017.

181. Dr. Marimuthu, Scientist D, participated in the National Conference on SMART

(Science, Medicine, Agriculture, Research and Technology) SUMMIT 2017, organized by Pearl Foundation (Foundation for Educational Excellence, Palkalai Nagar East, Near Madurai Kamaraj University) at Hotel Fortune Pandian, Madurai 625002, Tamil Nadu on 10th December, 2017.

182. Dr. Rajkumar Rajan, Scientist D, attended the '2017 Marine Mammal Research in India Symposium' (helping to foster marine mammal research and conservation in India) at National Centre for Biological Sciences, Bengaluru on 11th & 12th December, 2017.

183. Dr. Gopal Sharma, Scientist D, attended two days workshop on development of Digharia Pahad under Eco-Tourism Scheme on 13th & 14th December, 2017 at Deoghar in Jharkhand.

184. Dr. Rajmohana, Dr. Anjum N. Rizvi, Dr. Dhriti Bannerjee, Dr Shelly Archarya, Dr. Chitra, Ms. Debashree, Dr. V.V. Gantait and other members attended the National Conference on 'Status of Invasive Alien Species in India' organized by ZSI and BSI on 14th and 15th December, 2017.

185. Dr. K. A. Subramanian, Scientist- D participated Tamil Nadu State Forest Policy (draft) discussion meeting (10 AM-2 PM) on 18th December, 2017. organized Care Earth Trust, Chennai.

186. Mr Pranit P. Landge, Library & Information Assistant attended One Week International Workshop on Research Information Management for Academic and Scientific Libraries at AISSMS COE Pune during 18th to 22nd December, 2017.

187. Dr. K. A. Subramanian, Scientist- D participated in Chennai Snake Park Trust Meeting (3 PM to 6 PM) on 18th December, 2017. He also participated in Tamil Nadu State Wildlife Board Meeting on 23rd January, 2018 under the Chairmanship of Hon'ble Chief Minister, Tamil Nadu.

188. Mr. Sen Raj, Taxidermist-Grade II, attended the training program on e-procurement process and GeM's held at INGAF, Chennai on 19th & 20th December, 2017.

189. Dr. Avtar Kaur Sidhu, Scientist-D and Officer-in-Charge attended the Central Govt. Coordination Committee meeting held on 21st December, 2017 at DMRC, Solan for finalizing the list of holidays to be observed during the year 2018 and AMAs.

190. Dr. Md. Jafer Palot, Assistant Zoologist, delivered a talk on the 'Importance of Midland laterite hillocks of Kerala' to the students of NSS Camp at Government Girls Higher Secondary School, Madayi, Kannur district on 25th December, 2017.

191. Dr. V.D. Hegde, Scientist-D delivered Key Note Address at one day workshop at Shikshan Maharshi Guruvarya R.G. Shinde Mahavidyalaya, Paranda, Osmanabad on 28th December, 2017.

192. Dr. Gopal Sharma Scientist D attended two days seminar on Dolphin Identification through Photography was organized by the ZSI Patna.

January 2018

193. Mr Praveen K., Senior Zoological Assistant, participated in Hands -on-Training on DNA Barcoding: Methods and Applications held during 4th to 5th January, 2018 at Freshwater Biology Regional Centre (FBRC), ZSI, Hyderabad, Telangana.

194. Dr. Sanjeev Kumar, Dr. H.S. Banyal, Dr. R.H. Raina, attended meeting with Mr Kumar Rajnish, National Programme Co-ordinator, ENVIS Secretariat, Ministry of Environment, Forest and Climate Change (MoEF & CC), (Govt. of India) New Delhi on the occasion of his visit to Jodhpur to evaluate the progress of ongoing Advanced Course of Para-Taxonomist under Green Skill Development Programme (GSDP). The meeting was held jointly by ZSI-BSI Jodhpur at the Conference Hall of BSI, AZRC, Jodhpur on 5th January, 2018.

195. Scientist-D, Dr. Sreeraj, C.R., Scientist-C, Dr. T. Kubendran, Scientist-C, Dr. Rahul Joshi Scientist C Dr D. Khyriam, Scientist-B, attended the "Workshop on NTRP, CDDO & EIS Module under PFMS for twenty four CDDOs of MoEFCC' during 11th to 12th January, 2018.

196. Dr. Ch. Satyanarayana, Scientist-B, on invitation participated in a National Workshop "Policies to Action" jointly organised by Gujrat Ecological Commission, Gujrat and SICOM, New Delhi from 12-13th January, 2018 and delivered a talk entitled "Incredible Reef Restoration Success- An ICZM Experience" and presented the effort of ZSI scientists which lead to the one of its kind in the world Restoration effort at Gulf of Kachchh on 13th January, 2018.

197. Dr. Jasmine P., Scientist- D, delivered lecture on 16th January, 2018 on the topic "Biomonitoring for micro invertebrates in aquatic systems" for the participants of the Telangana State Pollution Control Board Under the Training Program on Bio-monitoring of Rivers and Water bodies at ZSI HQ, Kolkata from 16th - 19th January, 2018.

198. Dr. Santosh Kumar, Scientist- D, delivered lecture on 16th January, 2018 on the topic "Protozoan ciliates as bio-indicators for water quality assessment" for the participants of the Telangana State Pollution Control Board Under the Training Program on Bio-monitoring of Rivers and Water bodies at ZSI HQ, Kolkata from 16th to 19th January, 2018.

199. Dr. K. Valarmathi, Scientist- D, delivered a lecture on "Techniques for studying crustaceans in Aquatic ecosystem" in the Training programme on Bio-monitoring of rivers and water bodies of Telengana state Pollution Control Board.

200. Dr. Aftab Ahmad, Scientist-C attended 17th Foundation Training Programme for Scientists and Technologists from 22nd January, 2018 to 16th March, 2018 at Indian Institute of Public Administration, New Delhi.

201. Dr. B. Sinha, Scientist- D, delivered an invited lecture entitled "India's National Biodiversity Action Plan, National Biodiversity Targets and 6th National report to CBD" in the State level workshop on NBAP, NBT & 6th National Report to CBD organized by Arunachal Pradesh Biodiversity Board on 24th January, 2018 at SFRI, Itanagar.

202. Dr. Chitra J., Scientist- C, delivered lecture on "Zooplankton, a tiny magicians in aquatic ecosystems" rendered hands on Training and field visit to Rabindrasarovar to the Green Skill Development Programme of 10 students at Soil Zoology section on 25th January, 2018.

203. WGRC, ZSI, Calicut participated in the Kerala Science Congress Exhibition at Thalasserry (Kannur Dt.) and set stall from 26th to 30th January 2018.

204. All the Sceintists and scientific staff of ZSI headquarter attended inauguration of Training workshop organized on "Collection, Preservation and Identification of Insects and mites of Economic Importance" from 30th to 31st January 2017 at ZSI Headquarters, Kolkata

205. ZSI Patna organised two days seminar of Dolphin identification through photography on 29th -30th January, 2018.

206. Mr. Sandeep Kushwaha, Senior Zoological Assistant attended the ESW National conference Khajuraho and presented paper entitled Diversity of Hemiptera Fauna of Pench Tiger Reserve, Madhya Pradesh, India" held on 30th to 31st January, 2017.

278. Dr. K.K. Bineesh, Scientist-D served as a representative to evaluate the expression of Interest for undertaking Marine Pearl Farming to produce Black Pearl from the Blacklip oyster in Department of Fisheries, Andaman and Nicobar Islands.

208. All the scientist and scientific staff , attended lecture delivered by Prof. Randy Gaugler, Distinguished Professor, Center for Vector Biology, Rutgers University, New Jersey, USA and Dr. Yi Wang, Senior Scientist, Dept. Of Entomology, Rutgers University, New Jersey, USA on Autodisseminarion, hetero dissemination and other advance survillance and control techniques.

209. Shri. P.C. Tudu, Scientist-C attended 17th Foundation Training Programme for Scientists and Technologists from 22nd January, 2018 to 16th March, 2018 at Indian Institute of Public Administration, New Delhi.

February 2018

210. Dr. K. A. Subramanian, Scientist- D delivered: *"Freshwater Biodiversity Conservation in*

India" on 1st February, 2018 at Christ College, Irringalakuda, Kerala, in connection with World Wetland Day.

211. Dr. Md. Jafer Palot, Assistant Zoologist, attended World Wetland day seminar at Morning Star Home Science College, Angamali, Ernakulam district on 1st February, 2018 and delivered a talk on "Wetlands for Sustainable Future". He also attended at Malabar Christian College, Kozhikode on 2nd February, 2018 and delivered a talk on "Importance of Kotttooli Wetlands".

212. Mr. Atanu Naskar, Sr. Zool. Asstand Mrs. Jayita Sengupta, Sr. Zool. Asst., has been participated in an International Seminar "INTERZOOCON" organized by Department of Zoology, University of Calcutta, Kolkata, on 1st to 3rd February, 2018 at Ramakrishna Mission and Cultural Institute, Gol Park, Kolkata.

213. Dr. Yogesh Kumar, Scientist- D, presented the paper "Diversity and distribution of shallow water Octocorallia from Mahatma Gandhi Marine National Park, South Andaman, India" by J.S., Geetha, S., Sornaraj, R. and Raghunathan, C. (2018) at International Conference on "Biodiversity-Strategies for Conservation and Sustainable Utilization" on 1st to 2nd February, 2018 (Abstract No. 22).

214. Geetha, S., Yogesh Kumar, J.S., Marimuthu, N. and Sornaraj, R. (2018). Invasive species *Carijoa riisei* (Octocorallia: Alcyonacea) as soft fouler on the artificial structures of the Indian coast. International Conference on "Biodiversity-Strategies for Conservation and Sustainable Utilization" on 1st to 2nd February, 2018 (Abstract No. 61).

215. Dr. Gurumayum, Scientist- D, attended Indo Japan Bilateral Symposium on "*Future Perspective of Bioresource Utilization-In North - Eastern Region*" from 1st to 4th February, 2018 organised jointly by IIT, Guwahati and GIFU University, Japan, and delivered a lecture as a lead speaker on Game *Fish Fauna of Arunachal Pradesh- a feature perspective of Bioresource utilization.*

216. Dr. B. Sinha, Scientist-D & Officer-in-Charge participated in the 1-day Orientation Programme on climate Change Adaptation, Mitigation, Strategies and Planning for Sr. Government Officials under NMSHE project in Arunachal Pradesh organized by State Climate Change Cell (SCCC), Department of Environment and Forests, Arunachal Pradesh on 2nd February, 2018 at Hotel Waii International, Itanagar.

217. Dr. V.M. Sathish Kumar, Assistant Zoologist delivered an invited lecture on '*Animal Cloning & Biocorder, The latest digital trends in Taxonomy*" to the Agricultural Trainee officers in connection with a training course on Soil & Water Conservation on 2nd February, 2018 at ICAR-IISWC, Dehradun, upon invitation by Dr Bankey Bihari, Principal Scientist, ICAR-IISWC, Dehradun.

218. Dr. Sanjeev Kumar & Dr. H.S. Banyal, Scientist-D has attended National Workshop on Importance of Air Quality and its monitoring jointly organized by Deptt. of Zoology & Environmental Sciences of LMC&ST and Envirotech Centre for Research and Development, New Delhi at Lachoo Memorial College of Science & Technology (LMC & ST), Jodhpur on 3rd February, 2018.

219. Dr. K. A. Subramanian, Scientist- D attended Nobel Prize Lecture Series, Department of Biotechnology, Govt. of India, Rashtrapati Bhawan, on 5th February, 2018.

220. Dr. Sanjeev Kumar, Scientist-D conducted examination of the trainee candidates of Advanced Course of GSDP for Para-Taxonomists on 6th - 7th February, 2018 and results declared. Dr. H.S. Banyal, Scientist-D also performed as internal examiner in aforesaid examination.

221. Mrs. Jennifer Lyngdoh, Scientist-D attended the "*Regional Workshop on Planning Transboundary Technical Collaboration for Landscape Management*" from 6th to 10th February, 2018, at Nay Pyi Taw, Myanmar.

222. Dr. Rajkumar Rajan, Scientist D, Participated in the Expert workshop on Marine Protected Areas and other area-based conservation measures, organized by the Secretariat of the Convention on Biological Diversity, at Montreal, Canada from 6th to 9th February, 2018 Delivered a lecture (invited) 'Marine Biodiveristy and its conservation in India' at

the Event ZOOSCOPE 2017" on 5th March, 2018, organized by P.G. & Research Department of Zoology, Justice Basheer Ahmed Sayeed College for women, Teynampet, Chennai, Tamil Nadu 600018.

223. Dr. G. Sivaleela, Scientist C, participated International Training and Workshop on Meiofauna at Cochin from 6th to 10th February, 2018

224. Dr. Rahul Joshi, Scientist C, Sri Vijay Kumar and Sri Jalil Ahmad participated in Hindi Karyashala organized by Central Ground Water Board, Patna on 7th February, 2018.

225. Dr. Gopal Sharma, Scientist D, participated and inaugurated a science exhibition at Bishop Biscott, High School, Patna on 10th February, 2018.

226. Dr. K. A. Subramanian, Scientist- D attended Indo-German Biodiversity Programme. Access and Benefit Sharing (ABS) Partnership Project at National Biodiversity Authority on 12th to 13th February, 2018.

227. Dr. Anil Mohapatra, Scientist D & Officer-in-Charge, had delivered a invited lectureon "Current trends in marine fish species discovery in India" at Central Institute of Fresh Water Aquaculture (CIFA), ICAR, Bhubaneswar on 13th February, 2018.

228. Dr. Avtar Kaur Sidhu, Scientist-D and Officer-in-Charge attended meeting of Jammu and Kashmir Biodiversity Board as nominee of Director, Zoological Survey of India at the Office of the Director, State Forest Research Institute, Jammu on 15th February, 2018 on "Revision/inclusion of biological resources of Jammu and Kashmir as Threatened Species of Plants and Animals under u/s 38 of the Biological Diversity Act, 2002" presided over by PCCF, Sh. Suresh Chough of J&K.

229. Dr. Temjenmongla attended Smart Republic 2018, International Conference on Collaborative Development of Smart Cities & Smart Villages, Hotel Shangri La's Eros, Janpath, New Delhi on 15th - 16th February, 2018.

230. Vimala D., SRF participated and presented a paper on Emerging whitefly (Hemiptera: Aleyrodidae) pests on some medicinal plants in Karnataka, at "National Conference on Neo-classical Approaches in Zoological Science" & A Zoological Society Initiative- II 'Young Scientists Meet' held on 16th & 17th February, 2017 at University of Madras, Chennai. She also participated and presented a paper on "Host range of the whitefly *Aleurolobus marlatti* (Quaintance) (Hemiptera: Aleyrodidae) in Eastern Ghats, India" at International Conference on Biodiversity - Strategies for Conservation & Sustainable Utilization, held on 1st & 2nd February, 2018, at Ethiraj College for Women, Chennai.

231. Dr. Md.Jafer Palot, Asstt. Zoologist, attended meeting of 'National Biodiversity Garden and Traditional Knowledge Centre' at the head Office of Kerala State Biodiversity Board, Thiruvananthapuram on 17th February 2018.

232. Mrs I.J.Kharkongor, Scientist-D, attended the 7th meeting of the Governing Body of the Meghalaya Zoo Project Implementation Society held on 19th February, 2018 at the Conference Hall of the O/o The PCCF & HoFF, Govt. of Meghalaya, Shillong.

233. Dr. B. Sinha, Scientist- D, undergone a training programme on Climate Change and Carbon Mitigation at ICFRE, Dehradun from 19th to 23rd February, 2018.

235. Dr. I. Bindu, Scientist D, attended One-week training programme on 'Climate Change and Carbon mitigation' at ICFRE, Dehradun from 19th to 23rd February, 2018.

236. Mr Sandeep Kushwaha, Senior Zoological Assistant attended the National Workshop on Recent Technologies for Food Security and Rural Development held from 19th to 25th February, 2018 at Allahabad.

237. Three days training programme (21st to 23rd February, 2018) has been organized in the HARC, ZSI, Solan on biodiversity of North West Himalaya to 20 PG students of Eternal University, Baru Sahib, District Sirmour (HP). Dr. Avtar Kaur Sidhu, Scientist-D; Dr. Gaurav Sharma, Scientist-D; Dr. Indu Sharma, Scientist-D; Dr. T. Kubendran, Scientist-C and Dr. Kamal Saini, Assistant Zoologist gave lectures on "Insect Diversity (except Aquatic Insects) with special reference to North-West

Himalaya", "Studies on Faunal diversity s.r.t. Mammalian Diversity and their conservation in India", "Vertebrate Diversity of North West Himalaya", "Aquatic Insects and Conservations" and "Diversity of Insecta: Orthoptera from North West Himalaya" respectively, besides training them on insect & wet collection preservation and awareness of the exhibits/Fauna in the Museum of the Center.

238. Dr. Avtar Kaur Sidhu, Scientist-D; Dr. Gaurav Sharma, Scientist-D; Dr. Indu Sharma, Scientist-D; Dr. T. Kubendran, Scientist-C and Dr. Kamal Saini, Assistant Zoologist gave lectures on "Insect Diversity (except Aquatic Insects) with special reference to North-West Himalaya", "Studies on Faunal diversity s.r.t. Mammalian Diversity and their conservation in India", "Vertebrate Diversity of North West Himalaya", "Aquatic Insects and Conservations" and "Diversity of Insecta: Orthoptera from North West Himalaya" respectively during training programme (21st to 23rd February, 2018) in the Centre on biodiversity of North West Himalaya to 20 PG students of Eternal University, Baru Sahib, District Sirmour (HP).

239. Dr. Gurumayum, Scientist- D, also attended a National seminar on National Seminar on Pteridological Studies in India: Perspectives and Modern approaches in relation to Environment and Climate change on 22nd and 23rd February, 2018 organised by Botanical Survey of India in collaboration with Indian Fern Society, Chandigarh at Assembly hall Arunachal Pradesh.

240. Dr. V.V. Gantait, Assistant Zoologist, delivered a lecture as Invited Speaker on 'Indian Scientific Expedition to Antarctica' at a National Seminar on "Biodiversity & Conservation Scenario in 21st Century" on 25th February, 2018 at Sakhawat Memorial Girls' School, Kolkata.

241. Exhibition stall of WGRC, ZSI, Calicut set at Government College, Kodanchery, Kozhikode on 26th and 27th February, 2018 in connection with Shasthrayan 2018 a project of Dept. of Higher education, Govt. of Kerala.

242. Dr. K. A. Subramanian, Scientist- D attended National Biodiversity Authority Project Proposal screening meeting 15th February, 2018. He also attended Tamil Nadu Biodiversity Board. Indo-German Biodiversity Programme Access and Benefit Sharing (ABS) project launch meeting on 27th February, 2018.

243. Dr. Rahul Joshi, Scientist C delivered a guest lecture at Tawi College, Shapurkandi on 'Insect pests of Agricultural crops' on 27th February, 2018.

March 2018

244. Dr. Boni Amin Laskar, Scientist-D, attended DNA Barcoding workshop as a speaker (Resource Person) held at CDT-MSD, ZSI HQ during 5th March, 2018 to 9th March, 2018.

245. Dr. V.V. Gantait, Assistant Zoologist, deliver a lecture as an Invited Speaker on 'Antarctica Expedition, 2012-13' on 5th March, 2018 at Geological Survey of India, Kolkata.

246. Dr. V.V. Gantait, Assistant Zoologist, attended in a Training programme on 'DNA Barcoding to assessment of Faunal Diversity' on 5th -9th March, 2018 at ZSI HQ, Kolkata.

247. Dr Archana Bahuguna, Scientist- D, visited ZSI Hq Kolkata, for to participate as a speaker for the Hands on Training on DNA Barcoding in Assessment of Faunal Diversity organized by the Centre for DNA Taxonomy, Molecular Systematics Division & Training and Extension Division, Zoological Survey of India, Kolkata (5-9th March, 2018).

248. Dr. K.P. Dinesh, Scientist-D attended hands on training on "DNA Barcoding in Assessment of Faunal Diversity" held at the ZSI, Kolkata from 5-9th March, 2018 to deliver a lecture 'Application of Phylogeography in Taxonomy: Amphibian as a model system'.

249. Capacity Building Programme and Workshop on "Snake Rescue and Rehabilitation" organized by Andhra Pradesh Forest Department from 5th to 7th, March, 2018 at Papikonda National Park and a policy document on "Guidelines for rescue and rehabilitation of snakes" is under preparation.

250. Training Workshop on "DNA Barcoding in assessment of faunal diversity" for 5 days, 5th to 9th March, 2018 was organized at ZSI, Kolkata. 20 participants from North Eastern states, Rajasthan, Jabalpur, Punjab, U.P, Kashmir, Hyderabad, Bihar, West Bengal and other state attended the training programme. Prof. Rup Lal, Delhi University; Dr. S. P. Goyal, Emeritus Scientist, Wildlife Institute of India; Dr. Praveen K. Karanth, Indian Institute of Science; Dr. Vivek Sahajpal, Assistant Director, State Forensic Science Laboratory, Himachal Pradesh gave lecture to the trainees. The training program is a part of the regular skill development programmes of ZSI, and for which, the program is specifically designed to demonstrate extensive laboratory practices and lecture series on the theoretical background of DNA Barcoding.

251. Dr. Santosh Kumar, Scientist- D, delivered lecture in hands on training on "DNA Barcoding in Assessment of faunal diversity" organized Held on 5th to 9th March, 2018 at the Annandale Hall, ZSI HQ.

252. Dr. K. A. Subramanian, Scientist- D represented Director, ZSI in the 42nd ABS Meeting held at NBA on 7th March, 2017.

253. Dr. N. Sharma, Scientist- D, presented paper on Terrestrial Nematode Diversity on pine in Govind Wildlife Sanctuary, Uttarkashi, Uttarakhand, India in 12th Uttarakhand State Science and Technology Congress (USSTC) 2017-18 Organized by Uttarakhand State Council for Science and Technology (UCOST) at UCOST Campus, Vigyan Dham, Jhajra, Dehradun on 7th to 9th March, 2018.

254. Exhibition stall of WGRC, ZSI, Calicut set at University of Calicut, on 7th to 9th March, 2018 in connection with Shasthrayan 2018 a project of Dept. of Higher education, Govt. of Kerala.

255. Dr. Temjenmongla, Scientist- D, attended One day workshop on 'Resilient India' at India Habitat Centre, New Delhi, 12th March, 2018.

256. Dr. Sanjeev Kumar & Dr. H.S. Banyal, Scientist-D has attended and delivered invited papers in theOfficial Language Scientific Seminar on *Science for Nation Buildingheld* from 12th -13th March, 2018 at Defence Laboratory, DRDO, Jodhpur.

257. Dr. Sanjeev Kumar, Scientist-D & Nodal Officer GSDP has organized certificate of completion distribution ceremony on the occasion of valedictory function of Advance course of GSDP on 12th March, 2018 at DRC, ZSI, Jodhpur. Mr. R.S. Shekhawat ,IFS, APCCF, Rajasthan State Forest Department presided the function as a Chief guest whereas Mr. Vinod Maina, Scientist-D & H.O.O. AZRC, BSI, Jodhpur & Dr. N. S. Rathore Ex. Scientist-F, ZSI, Jodhpur attended the function as distinguished guests. All the officers and staff participated in the said programme.

258. Dr. V.D. Hegde, Scientist-D attended One-Week Training Workshop on "Advances in Wildlife Conservation" sponsored by Department of Science and Technology under 'National Training Programme for Scientists & Technologists working in Government Sector' from 12-16th March, 2018 at Wildlife Institute of India, Dehradun.

259. One day workshop on "Animal taxonomy" organized as in-house programme (on request) for the M.Sc. students from Utkal University, Bhubaneswar, Odisha and Guru Govind Singh Indra Prastha University, New Delhi on 13th March, 2018.

260. Dr. Sanjeev Kumar, Scientist-D & Officer-in-charge organized quarterly workshop on Official Language Hindi on 16th March, 2018 at DRC, ZSI, Jodhpur. Dr. Sanjeev Kumar, Scientist-D has presented a PPT in Hindi on Use of Technical Terminology in Zoology on this occasion. All the officers and staff participated with great enthusiasm in the aforesaid Workshop.

261. Dr. K. Valarmathi Scientist- D attended a Training Workshop on "Biodiversity Conservation" for women scientists/ technologists from 19th to 23rd March, 2018 at Wildlife Institute of India, Dehradun.

262. Dr. Rahul Joshi, Scientist C, delivered an invited lecture in National Seminar on "Environmental Challenges: Monitoring

Assessment and Remediation" on Diversity of moths (Lepidoptera) from Dalma Wildlife Sanctuary, Jharkhand organised by the Department of Zoology, Patna Science College, Patna University, Patna on 21st - 22nd March, 2018.

263. Dr Gopal Sharma, Scientist D delivered an invited lecture on faunal diversity of Budha and Rajgir Wildlife Sanctuary a National Seminar on Environmental Challenges: Monitoring Assessment and Remediation organised by the Department of Zoology, Patna Science College, Patna University, Patna on 21st -22nd March, 2018.

264. Dr. K. A. Subramaniayan, Scientist 'D' participated in 1st Indian Dragonfly Conference from 21-23rd March, 2018, Dehradun.

265. Dr. Gaurav Sharma, Scientist-D delivered a Lecture on "Studies on the reproductive behaviour of some species of Damselflies and Dragonflies (Odonata: Insecta) in India" during the First Indian Conference of Odonatology at Dolphin (PG) Institute of Biomedical and Natural Sciences, Dehradun, Uttarakhand on 22nd March, 2018.

266. Dr. Gaurav Sharma, Scientist-D delivered a Lecture on "Studies on the reproductive behaviour of some species of Damselflies and Dragonflies (Odonata: Insecta) in India" during the First Indian Conference of Odonatology at Dolphin (PG) Institute of Biomedical and Natural Sciences, Dehradun, Uttarakhand on 22nd March, 2018.

267. Dr. Avtar Kaur Sidhu, Scientist-D delivered a talk on "Butterfly Diversity of High Altitude Areas of Himalaya and their conservation" on 23rd March, 2018 during the capacity building workshop on 'Long term monitoring of Himalayan Biodiversity for stakeholders of Himalayan region' has been organized at HARC, Solan under NHMS programme, MoEF & CC, Govt. of India (jointly organized by, ZSI, BSI and G.B. Pant Institute) from 23rd-24th March, 2018.

268. The capacity building workshop on 'Long term monitoring of Himalayan Biodiversity for stakeholders of Himalayan region' has been organized at HARC, Solan under NHMS programme, MoEF & CC, Govt. of India (jointly organized by, ZSI, BSI and G.B. Pant Institute) from 23rd-24th March, 2018 and a field trip to Chail Wildlife Sanctuary on 25.03.2018. More than 50 participants from Universities (including teachers, Ph.D. and Post graduate students), Forest Departments (including Range officers and forest guards) and NGOs attended it. The workshop was presided over by Dr. G. S. Goraya PCCF (HOFF); Himachal Pradesh, Vice Chancellor of Nauni University, Dr. H. C. Sharma; Sh. Rajesh Kumar, Registrar, Nauni University; Director, Zoological Survey of India; Director, Botanical Survey of India; Sh. Harshwardhan Kathuria, Conservator, Solan; Sh. Pawan Kumar Achal, Assistant Conservator, Solan and Sh. R. S. Jaswal, DFO, Solan.

269. Dr. Basudev Tripathy, Scientist- D, as coordinator, organised the Capacity Building Workshop on Conservation and Management of Himalayan Biodiversity for stakeholders, held at ZSI, HARC, Solan from 23-24th March, 2018.

270. One capacity building programme on Reptiles of Central India was organized under the banner of Jungle wallahs for the tourists, nature guides and Forest Department staff at Khatiya gate of Kanha National Park on 26th March, 2018.

271. Dr. Anil Mohapatra, Scientist D & Officer-in-Charge had attended the seminar on "Beach Erosion & Anthropogenic exploitation at coastal line of Odisha and its effect on Olive riddley sea Turtle, Irrawaddy Dolphin & Fish population and measures for conservation" Organised by Berhampur University and ABAHANA from 29-30th March, 2018 and delivered a lecture on "Conservation of Marine fauna: An urgent need".

272. Sri Swarup R. Mohanty, JRF, attended the seminar on "Beach Erosion & Anthropogenic exploitation at coastal line of Odisha and its effect on Olive riddley sea Turtle, Irrawaddy Dolphin & Fish population and measures for conservation" Organised by Berhampur University and ABAHANA from 29-30th March, 2018.

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275. Dr. Karuthapandi attended 105th Indian Science Congress held at Imphal, Manipur and presented a paper on "Zooplankton diversity and composition of three freshwater lakes of Hyderabad" on 16-20th March, 2018.

276. Mr. S. Mitra, Senior Zoological Assistant participated as a resource person in Green skill development programme and delivered two lectures. He has also participated in the field trip to Botanical Garden and Nalban along with green skill development participants and expert team came for Wetland Programme respectively.

277. Mr. Radheyshyam Mridha, Assistant Zoologist, has given a Lecture upon "Laws regarding local permission for procuring materials from the forest, NTPFs permission" to the Students of National Green Skill Development Programme at ZSI (H.Q), Kolkata.

278. Mr. Radheyshyam Mridha, Assistant Zoologist, has given Lecture upon "Upokari ebong opokari kit potongo" to the Students of National Green Skill Development Programme at ZSI (H.Q), Kolkata.

279. Mr. Atanu Naskar, Senior Zoological Assistant,has given Lecture upon "Masha ebong Machi: Bharat Borsher Jib Baichitryo" to the Students of National Green Skill Development Programme at ZSI (H.Q), Kolkata.

280. Mrs. Jayita Sengupta, Senior Zoological Assistant, has given Lecturenupon "Akramanattyak Parak Pragati (Kit potongo) ebong Jalobayu poribortner karone khoti briddhi. ebong Machi: Bharat Borsher Jib Baichitryo" to the Students of National Green Skill Development Programme at ZSI (H.Q), Kolkata.

281. Ms. Rinku Goswami, Scientist-D, arranged two training and demonstration programmes on Zoological Records and J-gate, the gateway for e- journal for ZSI Kolkata scientist.

282. Dr. B. Sinha as a member attended the meeting of the Arunachal Pradesh Forest Research Committee for Wildlife Protected Areas in the O/o PCCF (WL), Govt. of Arunachal Pradesh, Itanagar on 16th March 2018.

283. Dr. Temjenmongla attended the 17th Foundation Training Programme for Scientists & Technologists at IIPA, New Delhi from 22nd January till 16th March, 2018.



Scientists have participated in many International meetings, Conferences and Expeditions during the year under report.

INTERNATIONAL PARTICIPATION


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Sl.No.	Name of Scientists	Purpose	Duration
1	Dr. C. Sivaperuman, Scientist-D	Participate in the "36th Indian Scientific Expedition to Antarctica (ISEA)" to NCAOR, Goa	15th December, 2016 to 5th April, 2017 (Funding through MoES)
2	Dr. Kailash Chandra, Scientist-G, Director	Participate in the 6th International Symposium on "Biodiversity and Natural Heritage of the Himalaya at Erfurt/ Thuringia, Germany	21st to 23rd April, 2017 at Erfurt/Thuringia, Germany (Funding through ZSI Grant-in-Aid)
3	Dr. Kailash Chandra, Scientist-G, Director	Participate in the "Shared Natural and Cultural Heritage for Sustainable Tourism in the Kangchenjunga Transboundary Landscape at Thimpu, Bhutan.	2nd May 2017 to 4th May 2017 at Thimpu, Bhutan (Funding through ZSI Grant-in-Aid)
4	Dr. Jasmine P, Scientist-D, ZSI, Kolkata	Participate in the "Indian Scientific Expedition to ARCTIC, SVALBARD, Norway" Conducted by NCAOR, Goa	09th June, 2017 to 16th July, 2017 at SVALBARD, Norway (Funding through MoES)
5	Dr. Lalit Kumar Sharma, Scientist-C, ZSI, Kolkata	Participate in the 29th Meeting of the Animals Committee under CITES, at Gland, Switzerland from 18th July to 22nd July 2017	18th July to 22nd July 2017 at Gland, Switzerland (Funding through ZSI Grant-in-Aid)
6	Dr. C. Raghunathan, Scientist-E, ZSI, Kolkata	Attend the third author meeting for the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) expert group meeting at Tokyo, Japan from 24th to 28th July, 2017	24th to 28th July, 2017 at Tokyo, Japan (Funding through IPBES)
7	Dr. G. Maheswaran, Scienclst-E, ZSI, Kolkata	Attend the third author meeting for the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) expert group meeting at Tokyo, Japan from 24th to 28th July, 2017	24th to 28th July, 2017 at Tokyo, Japan (Funding through IPBES)

Sl.No.	Name of Scientists	Purpose	Duration
8	Dr. Subramanian K.A., Scientist-D, SRC, Chennai	Attend the third author meeting for the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) expert group meeting at Tokyo, Japan from 24th to 28th July, 2017	24th to 28th July, 2017 at Tokyo, Japan (Funding through IPBES)
9	Dr. Anil Mohapatra, Scientist-D, ZSI, Kolkata	Attend the third author meeting for the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) expert group meeting at Tokyo, Japan from 24th to 28th July, 2017	24th to 28th July, 2017 at Tokyo, Japan (Funding through IPBES)
10.	Dr. Kailash Chandra Scientist-G, Director & Dr. Vikas Kumar, Scientist-D	7th International Barcode of Life Conference, at Kruger National Park, South Africa	20th to 24th November, 2017
11.	Smt. Jennifer Lyngdoh, Scientist-D	Hi-LIFE Regional Workshop on planning Transboundary Technical Collaboration for Landscape management and HILIFE Planning 2018, held at Nay Pyi Taw, Myanmar	7th to 9th February 2018

DNA barcoding: DNA barcoding aims to provide an efficient method for species-level identifications using wide range of species specific molecular markers. However, species identification based on DNA barcodes can be achieved only if sequences of identified species of an organism are available in the database. In this regard, ZSI is enriching the information on DNA barcodes and submitted 1366 sequences, of which 1206 DNA barcodes at BOLD (Barcode of Life Data System) and 160 sequnecs in GenBank for future references.

DNA BARCODES SUBMITTED TO BOLD/GenBank



14

DNA Barcodes Submitted To BOLD/GenBank/NCBI

1. Tyagi, K., Kumar, V., Singha, D., Chakraborty, R. 2017. Partial cds of mitochondrial Cytochrome c oxidase subunit I (mtCOI) gene from *Thrips tabaci* (TH-1116), partial sequence from *Thrips tabaci*: DNA barcoding thrips of India. Nucleotide sequence Process ID: THH340-16. Sequence publication in The barcode of Life Data Systems (BOLD), BOLD database. (http://www.boldsystems.org).
2. Tyagi, K., Kumar, V., Singha, D., Chakraborty, R. 2017.Partial cds of mitochondrial Cytochrome c oxidase subunit I (mtCOI) gene from *Thrips palmi* (TH-1101), partial sequence from *Thrips palmi*: DNA barcoding thrips of India. Nucleotide sequence Process ID:THH329-16. Sequence publication in The barcode of Life Data Systems (BOLD), BOLD database. (http://www.boldsystems.org).
3. Tyagi, K., Kumar, V., Singha, D., Chakraborty, R. 2017.Partial cds of mitochondrial Cytochrome c oxidase subunit I (mtCOI) gene from *Thrips palmi* (TH-1112), partial sequence from *Thrips palmi*: DNA barcoding thrips of India. Nucleotide sequence Process ID:THH336-16. Sequence publication in The barcode of Life Data Systems (BOLD), BOLD database. (http://www.boldsystems.org).
4. Tyagi, K., Kumar, V., Singha, D., Chakraborty, R. 2017.Partial cds of mitochondrial Cytochrome c oxidase subunit I (mtCOI) gene from *Thrips palmi* (TH-1062A), partial sequence from *Thrips palmi*: DNA barcoding thrips of India. Nucleotide sequence Process ID:THH306-16. Sequence publication in The barcode of Life Data Systems (BOLD), BOLD database. (http://www.boldsystems.org).
5. Tyagi, K., Kumar, V., Singha, D., Chakraborty, R. 2017.Partial cds of mitochondrial Cytochrome c oxidase subunit I (mtCOI) gene from *Thrips palmi* (TH-1002), partial sequence from *Thrips palmi*: DNA barcoding thrips of India. Nucleotide sequence Process ID:THH299-16. Sequence publication in The barcode of Life Data Systems (BOLD), BOLD database. (http://www.boldsystems.org).
6. Tyagi, K., Kumar, V., Singha, D., Chakraborty, R. 2017.Partial cds of mitochondrial Cytochrome c oxidase subunit I (mtCOI) gene from *Thrips palmi* (TH-1085), partial sequence from *Thrips palmi*: DNA barcoding thrips of India. Nucleotide sequence Process ID:THH272-16. Sequence publication in The barcode of Life Data Systems (BOLD), BOLD database. (http://www.boldsystems.org).
7. Tyagi, K., Kumar, V., Singha, D., Chakraborty, R. 2017.Partial cds of mitochondrial Cytochrome c oxidase subunit I (mtCOI) gene from *Thrips palmi* (TH-1114), partial sequence from *Thrips palmi*: DNA barcoding thrips of India. Nucleotide sequence Process ID:THH338-16. Sequence publication in The barcode of Life Data Systems (BOLD), BOLD database. (http://www.boldsystems.org).
8. Tyagi, K., Kumar, V., Singha, D., Chakraborty, R. 2017. Partial cds of mitochondrial Cytochrome c oxidase subunit I (mtCOI) gene from *Thrips palmi* (TH-1097), partial sequence from *Thrips palmi*: DNA barcoding thrips of India. Nucleotide sequence Process ID:THH325-16. Sequence publication in The barcode of Life Data Systems (BOLD), BOLD database. (http://www.boldsystems.org).
9. Tyagi, K., Kumar, V., Singha, D., Chakraborty, R. 2017.Partial cds of mitochondrial Cytochrome c oxidase subunit I (mtCOI) gene from *Thrips palmi* (TH-1110), partial sequence from *Thrips palmi*: DNA barcoding thrips of India. Nucleotide sequence Process ID:THH334-16. Sequence publication in The barcode of Life Data Systems (BOLD), BOLD database. (http://www.boldsystems.org).
10. Tyagi, K., Kumar, V., Singha, D., Chakraborty, R. 2017.Partial cds of mitochondrial Cytochrome c oxidase subunit I (mtCOI) gene from *Thrips palmi* (TH-1115), partial sequence from *Thrips palmi*: DNA barcoding thrips of India. Nucleotide sequence Process ID:THH339-16. Sequence publication in The barcode of Life Data Systems (BOLD), BOLD database. (http://www.boldsystems.org).
11. Tyagi, K., Kumar, V., Singha, D., Chakraborty, R. 2017.Partial cds of mitochondrial Cytochrome c oxidase subunit I (mtCOI) gene from *Thrips palmi* (TH-1113), partial sequence from *Thrips palmi*: DNA barcoding thrips of

India. Nucleotide sequence Process ID:THH337-16. Sequence publication in The barcode of Life Data Systems (BOLD), BOLD database. (http://www.boldsystems.org).

12. Tyagi, K., Kumar, V., Singha, D., Chakraborty, R. 2017.Partial cds of mitochondrial Cytochrome c oxidase subunit I (mtCOI) gene from *Thrips palmi* (TH-1098), partial sequence from *Thrips palmi*: DNA barcoding thrips of India. Nucleotide sequence Process ID:THH326-16. Sequence publication in The barcode of Life Data Systems (BOLD), BOLD database. (http://www.boldsystems.org).

13. Tyagi, K., Kumar, V., Singha, D., Chakraborty, R. 2017.Partial cds of mitochondrial Cytochrome c oxidase subunit I (mtCOI) gene from *Thrips palmi* (TH-1099), partial sequence from *Thrips palmi*: DNA barcoding thrips of India. Nucleotide sequence Process ID:THH327-16. Sequence publication in The barcode of Life Data Systems (BOLD), BOLD database. (http://www.boldsystems.org).

14. Tyagi, K., Kumar, V., Singha, D., Chakraborty, R. 2017.Partial cds of mitochondrial Cytochrome c oxidase subunit I (mtCOI) gene from *Thrips palmi* (TH-1062), partial sequence from *Thrips palmi*: DNA barcoding thrips of India. Nucleotide sequence Process ID:THH263-16. Sequence publication in The barcode of Life Data Systems (BOLD), BOLD database. (http://www.boldsystems.org).

15. Tyagi, K., Kumar, V., Singha, D., Chakraborty, R. 2017.Partial cds of mitochondrial Cytochrome c oxidase subunit I (mtCOI) gene from *Thrips palmi* (TH-1108), partial sequence from *Thrips palmi*: DNA barcoding thrips of India. Nucleotide sequence Process ID:THH333-16. Sequence publication in The barcode of Life Data Systems (BOLD), BOLD database. (http://www.boldsystems.org).

16. Tyagi, K., Kumar, V., Singha, D., Chakraborty, R. 2017.Partial cds of mitochondrial Cytochrome c oxidase subunit I (mtCOI) gene from *Thrips palmi* (TH-1105), partial sequence from *Thrips palmi*: DNA barcoding thrips of India. Nucleotide sequence Process ID:THH332-16. Sequence publication in The barcode of Life Data Systems (BOLD), BOLD database. (http://www.boldsystems.org).

17. Tyagi, K., Kumar, V., Singha, D., Chakraborty, R. 2017.Partial cds of mitochondrial Cytochrome c oxidase subunit I (mtCOI) gene from *Thrips palmi* (TH-1086), partial sequence from *Thrips palmi*: DNA barcoding thrips of India. Nucleotide sequence Process ID:THH273-16. Sequence publication in The barcode of Life Data Systems (BOLD), BOLD database. (http://www.boldsystems.org).

18. Tyagi, K., Kumar, V., Singha, D., Chakraborty, R. 2017.Partial cds of mitochondrial Cytochrome c oxidase subunit I (mtCOI) gene from *Thrips palmi* (TH-1083), partial sequence from *Thrips palmi*: DNA barcoding thrips of India. Nucleotide sequence Process ID:THH271-16. Sequence publication in The barcode of Life Data Systems (BOLD), BOLD database. (http://www.boldsystems.org).

19. Tyagi, K., Kumar, V., Singha, D., Chakraborty, R. 2017.Partial cds of mitochondrial Cytochrome c oxidase subunit I (mtCOI) gene from *Thrips palmi* (TH-1095), partial sequence from *Thrips palmi*: DNA barcoding thrips of India. Nucleotide sequence Process ID:THH324-16. Sequence publication in The barcode of Life Data Systems (BOLD), BOLD database. (http://www.boldsystems.org).

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1288. Rajpoot A, Bahuguna A, Kumar VP.2018. Partial cds of mitochondrial cytochrome oxidase I (mtCOI) gene from *Eurema laeta*. Accession No. MH157782. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (https://www.ncbi.nlm.nih.gov

1289. Rajpoot A, Bahuguna A, Kumar VP.2018. Partial cds of mitochondrial cytochrome oxidase I (mtCOI) gene from *Eurema laeta*. Accession No. MH157783. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (https://www.ncbi.nlm.nih.gov

1290. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Euphlyctis cyanophlyctis*. Accession No: MH423706. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1291. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Euphlyctis cyanophlyctis*. Accession No: MH423707. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1292. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Ingerana borealis*. Accession No: MH423708. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1293. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Ingerana borealis*. Accession No: MH423709. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1294. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Euphlyctis hexadactylus*. Accession No: MH423710. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1295. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Euphlyctis hexadactylus*. Accession No: MH423711. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1296. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Euphlyctis cyanophlyctis*. Accession No: MH423712. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1297. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Sus scrofa*. Accession No: MH423713. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1298. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Sus scrofa*. Accession No: MH423714. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1299. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Bos taurus*. Accession No: MH423715. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1300. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Coturnix coturnix*. Accession No: MH423716. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1301. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Xenophrys maosonensis*. Accession No: MH423717. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1302. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Ptyas mucosa*. Accession No: MH423718. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1303. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Canis aureus*. Accession No: MH423719. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1304. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Eutropis macularia*. Accession No: MH423720. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1305. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Hemidactylus brookii*. Accession No: MH423721. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1306. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Hemidactylus flaviviridis*. Accession No: MH423722. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1307. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Euphlyctis cyanophlyctis*. Accession No: MH423723. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1308. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from. *Fejervarya caperata*. Accession No: MH423724. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1309. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from. *Asymblepharus sikimmensis*. Accession No: MH423725. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1310. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Asymblepharus sikimmensis*. Accession No: MH423726. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1311. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Asymblepharus sikimmensis*. Accession No: MH423727. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1312. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Asymblepharus sikimmensis*. Accession No: MH423728. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1313. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Asymblepharus sikimmensis*. Accession No: MH423729. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1314. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Asymblepharus sikimmensis*. Accession No: MH423730. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1315. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Sphenomorphus maculatus*. Accession No: MH423731. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1316. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Sphenomorphus maculatus*. Accession No: MH423732. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1317. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Sphenomorphus maculatus*. Accession No: MH423733. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1318. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Manis pentadactyla*. Accession No: MH423734. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1319. Thakur M, et al. 2018. Partial mitochondrial 12S ribosomal RNA (12S rRNA) gene from *Paradoxurus hermaphroditus*. Accession No: MH423735. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1320. Thakur M, et al. 2018. Partial mitochondrial 16S ribosomal RNA (16S rRNA) gene from *Euphlyctis cyanophlyctis*. Accession No: MH423736. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1321. Thakur M, et al. 2018. Partial mitochondrial 16S ribosomal RNA (16S rRNA) gene from *Euphlyctis hexadactylus*. Accession No: MH423737. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1322. Thakur M, et al. 2018. Partial mitochondrial 16S ribosomal RNA (16S rRNA) gene from *Euphlyctis hexadactylus*. Accession No: MH423738. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1323. Thakur M, et al. 2018. Partial mitochondrial 16S ribosomal RNA (16S rRNA) gene from *Macaca silenus*. Accession No: MH423739. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1324. Thakur M, et al. 2018. Partial mitochondrial 16S ribosomal RNA (16S rRNA) gene from *Philautus longchuanensis*. Accession No: MH423740. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1325. Thakur M, et al. 2018. Partial mitochondrial 16S ribosomal RNA (16S rRNA) gene from *Sarcogyps calvus*. Accession No: MH423741. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1326. Thakur M, et al. 2018. Partial mitochondrial 16S ribosomal RNA (16S rRNA) gene from *Sarcogyps calvus*. Accession No: MH423742. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1327. Thakur M, et al. 2018. Partial mitochondrial 16S ribosomal RNA (16S rRNA) gene from *Bos taurus*. Accession No: MH423743. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1328. Thakur M, et al. 2018. Partial mitochondrial 16S ribosomal RNA (16S rRNA) gene from *Sus scrofa*. Accession No: MH423744. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1329. Thakur M, et al. 2018. Partial mitochondrial 16S ribosomal RNA (16S rRNA) gene from *Ptyas mucosa*. Accession No: MH423745. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1330. Thakur M, et al. 2018. Partial mitochondrial 16S ribosomal RNA (16S rRNA) gene from *Xenophrys maosonensis*. Accession No: MH423746. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1331. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Sus scrofa*. Accession No: MH423747. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1332. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Bos taurus*. Accession No: MH423748. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1333. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Coturnix coturnix*. Accession No: MH423749. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1334. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Macaca silenus*. Accession No: MH423750. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1335. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Macaca silenus*. Accession No: MH423751. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1336. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Macaca silenus*. Accession No: MH423752. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1337. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Sarcogyps calvus*. Accession No: MH423753. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1338. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Sarcogyps calvus*. Accession No: MH423754. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1339. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Euphlyctis cyanophlyctis*. Accession No: MH423755. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1340. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Fejervarya caperata*. Accession No: MH423756. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1341. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Fejervarya caperata*. Accession No: MH423756. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1342. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Fejervarya caperata*. Accession No: MH423757. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1343. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Canis aureus*. Accession No: MH423758. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1344. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Ophisops jerdonii*. Accession No: MH423759. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1345. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Hemidactylus flaviviridis*. Accession No: MH423760. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1346. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Asymblepharus sikimmensis*. Accession No: MH423761. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1347. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Asymblepharus sikimmensis*. Accession No: MH423761. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1348. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Asymblepharus sikimmensis*. Accession No: MH423762. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1349. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Asymblepharus sikimmensis*. Accession No: MH423763. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1350. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Asymblepharus sikimmensis*. Accession No: MH423764. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1351. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Asymblepharus sikimmensis*. Accession No: MH423765. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1352. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Euphlyctis cyanophlyctis*. Accession No: MH423766. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1353. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Euphlyctis cyanophlyctis*. Accession No: MH423767. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1354. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Euphlyctis cyanophlyctis*. Accession No: MH423768. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1355. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Fejervarya pierrei*. Accession No: MH423769. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1356. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Fejervarya pierrei*. Accession No: MH423770. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1357. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Fejervarya pierrei*. Accession No: MH423771. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1358. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Pericrocotus speciosus*. Accession No: MH423772. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1359. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Bungarus niger*. Accession No: MH423773. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1360. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Protobothrops jerdonii*. Accession No: MH423774. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1361. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Euphlyctis cyanophlyctis*. Accession No: MH423775. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1362. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Manis pentadactyla*. Accession No: MH423776. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

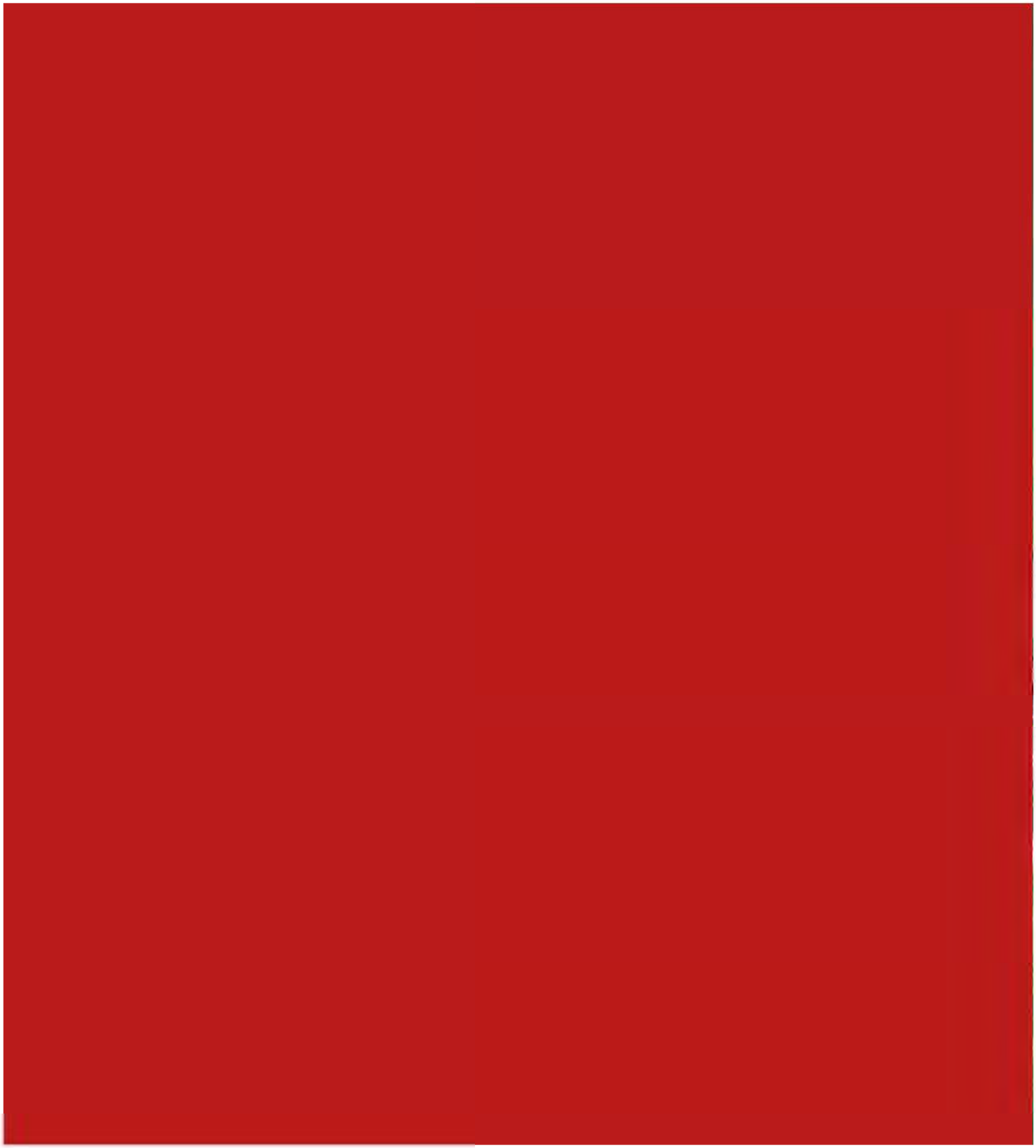
1363. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Paradoxurus hermaphroditus*. Accession No: MH423777. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1364. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Sus scrofa*. Accession No: MH423778. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)

1365. Thakur M, et al. 2018. Partial cds of mitochondrial cytochrome B (cytB) gene from *Sus scrofa*. Accession No: MH423779. Sequence publication in National Center of Biotechnology Information (NCBI), Database. (http://www.ncbi.nlm.nih.gov)







EVENTS & ACTIVITIES



15



ZSI had put up stall on International day for Biological Diversity at Panaji-Goa from 22nd -23rd May, 17



22nd Sunderban Kristi Mela O Loko Sanskriti Ustab at Kultali, Basanti, South 24 Parganas from 20 - 29th December, 17





ZSI stall during 105th Indian Science Congress (16-20th March, 18) in Manipur University, Imphal



Hindi week celebration at DRC, Jodhpur



GSDP Foundation Courese Jodhpur



GSDP Foundation Course at APRC Itanagar



Green Pledge at APRC Itanagar



World Environment Day celebration Programme at APRC Itanagar



GSDP Programme at WGRC, Calicut



GSDP Validictory function, HQ, ZSI-Kolkata



GSDP Field Visit Botanical Garden, Kolkata



Hindi week celebration 2017



Hindi week celebration 2017



Yoga Day Celebration 2017

Unveiling of Whale skeleton (42 ft long) at MARC, ZSI, Digha

The Additional Secretary to Government of India, Ministry of Environment, Forest and Climate Change, Dr. Amita Prasad, IAS inaugurated Sunderban Walkthrough Diorama & A 42 ft long Whale Skeleton and Instrumentation Museum at Zoological Survey of India (ZSI), Marine Aquarium cum Regional Centre at Digha on 6th October 2017 in presence of Dr. Kailash Chandra, Director, Zoological Survey of India, Shri. Rajendra Jakhar, IFS, Additional Project Director, State Project Management Unit (SPMU), Integrated Coastal Zone Management Project, West Bengal, Dr. C. Raghunathan, Scientist E, Zoological Survey of India, Dr. Basudev Tripathy, ZSI, Kolkata, Dr. Anil Mohapatra, Officer-in-Charge, Dr. S. Balakrishnan, Dr. J. S. Yogesh Kumar, Shri. P.C. Tudu, Marine Aquarium and Regional Centre, Digha and Other dignitaries. A five days Training Programme on Integrated Coastal Zone Management for the State Govt. Officials of West Bengal, was also inaugurated during the occasion.

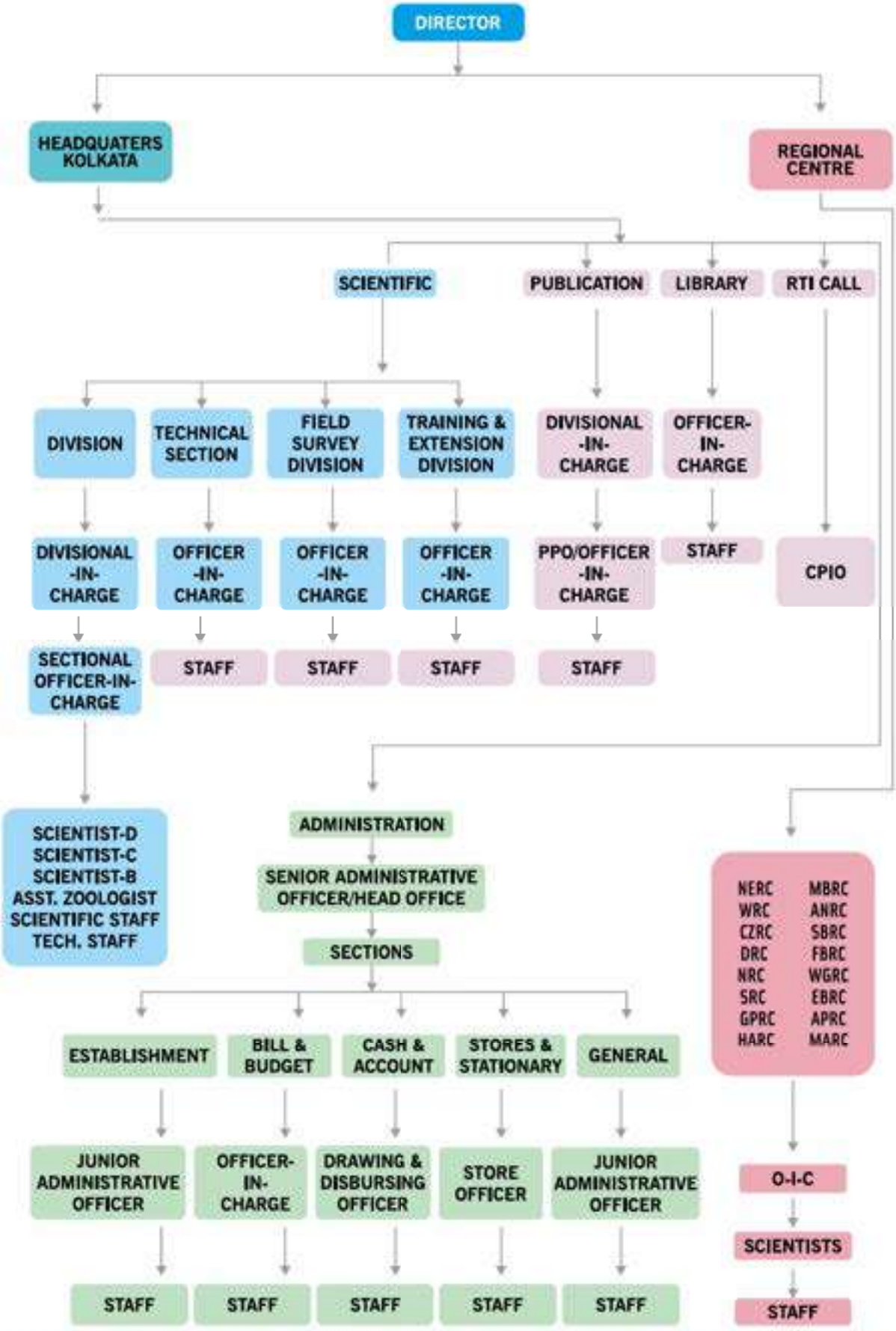


Unveiling of Whale skeleton (42 ft long) at MARC, ZSI, Digha



Unveiling of Sunderban Walkthrough Diorama at MARC, ZSI, Digha

ZOOLOGICAL SURVEY OF INDIA
ORGANIZATIONAL STRUCTURE



Stores Section is responsible for material management functions of Zoological Survey of India.

STORES SECTION



16

Stores Section is responsible for materials management functions of Zoological Survey of India. The Stores and Stationery Section employing over 06 to 08 staff members with its headquarters at Kolkata is headed by Stores Officer who is responsible for all policy matters and establishing all procedural guidelines and overseeing the implementation of the same. In view of diverse geographical locations all over the country, Regional Stations have been decentralised in respect of Purchases. However financial sanction is being accorded by the HQ as per Delegation of Financial Power. To achieve objective of making available the various stores to different user Section, Stores Officer is assisted by a team of Office Superintendent, Assistant, LDC and other staff members entrusted with the tendering, contracting and other affiliated purchase functions. To complement the purchase activities, there is a Warehouse (Stores) at HQ look after by Store-Keeper responsible for Stores Management function such as receipt of material, accounting, issue to the users, storage, preservation and stock verification, etc. Items of common use are procured in bulk after inviting competitive bids and stored in the form of common user items. Also Stores Section is looking after the purchases of Equipment and other items for Externally Funded Project.

This apart, the Stores Section also handles disposal of items, which have become surplus, obsolete or unserviceable by e-Auction. A large quantity of scrap materials, which is generated from time to time is also disposed off by the Stores Section on regular basis, as per the laid down procedure and guidelines. Besides triming Inventory Levels and minimizing Inventory Carrying Costs, timely disposal can also recover significant portion of the capital invested on the inventory. It also releases much needed storage space for storing active inventory.

During the period, GePNIC under CPPP has been implemented at Zoological Survey of India. ZSI has started its e-Procurement through NIC. Zoological Survey of India has also been registered at Government e-Marketplace (GeM). GeM aims to enhance transparency, efficiency and speed in public procurement. It provides the tools of e-bidding, reverse e-auction and demand aggregation to facilitate the government users, achieve the best value for their money.

During the period, Zoological Survey of India has procured Computer Qty-30 by using Reverse Auction through GeM. During the period, Aadhaar Enabled Biometric Attendance Device, Air Conditioner, Printer, Camera, etc has been purchased through GeM. During the period, Order has been placed for developing Mobile Apps for Faunal Species Information through Tender. Total 156 Purchase Order has been placed for Equipment and items during the period.

Infrastructure Developments:

Infrastructure facilities to promote and enhance the research of the organization are being done periodically. During the year four significant developments were made namely, faunal repositories for Himalayas at Solan and Islands at Port Blair, Western Himalayan Research Laboratory and visiting scientist hostel at Dehradun.

In addition, following equipment were added

Sl No	Description
1	Stereo Zoom Microscopes
2	Research Microscopes
3	Epifluorescence Microscope
4	Portable PH Meter
5	Multiline or Multi Probe
6	Laptops
7	PCR Machine
8	Field Binoculars
9	Digital Cameras
10	Refrigerators
11	Malaise Traps
12	Spectrophometer UV-Visible
13	Insect Storage Systems
14	Book shelves
15	Furniture
16	Field Equipment / items

AMC has been concluded for the following Equipment:-

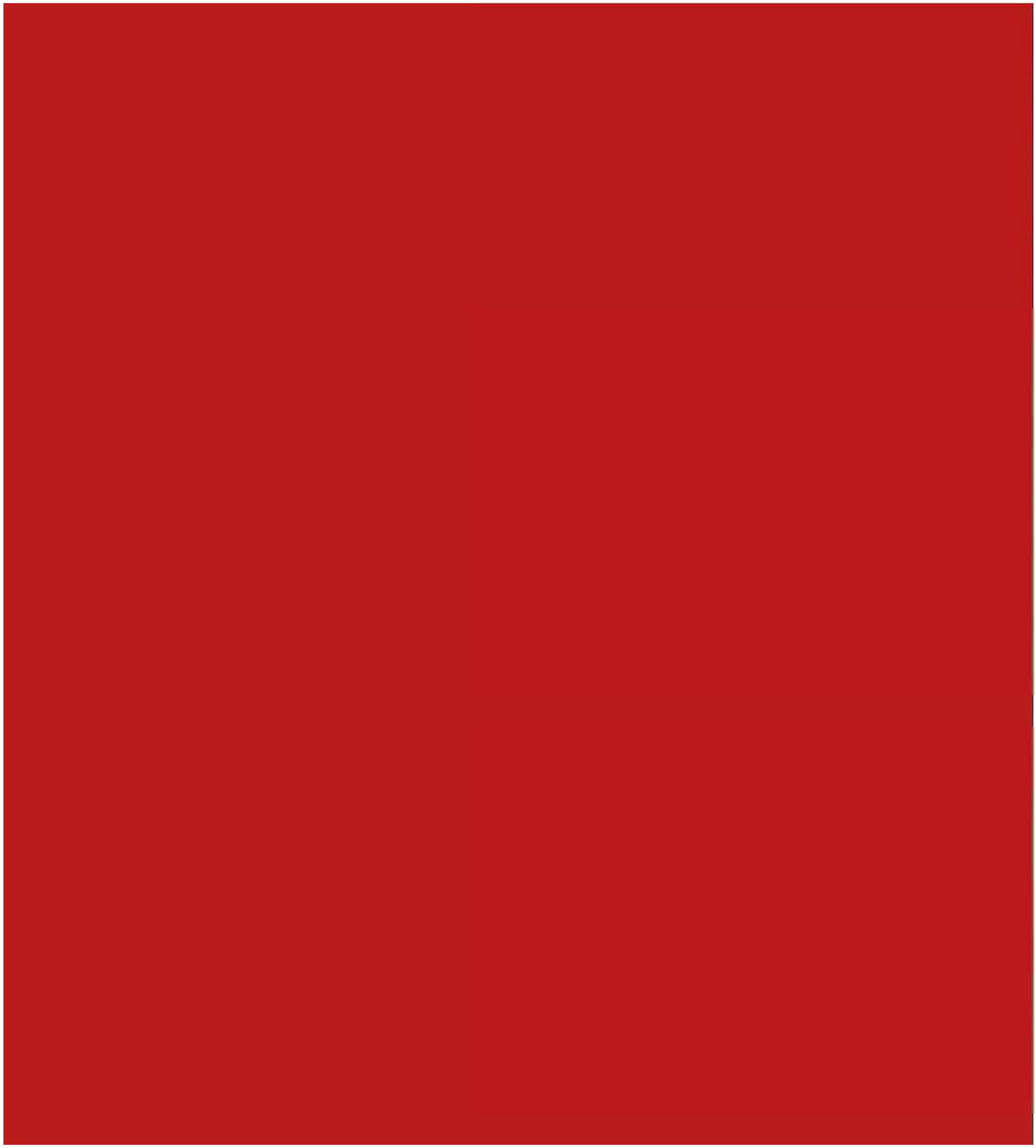
Sl No	Description
1	Computers and Printers
2	Microscope
3	Photocopier Machine
4	EPABX System
5	DNA Equipment

As part of the campaign Swachh Bharat Abhiyan, Stores Section has sorted out items lying in Ware house (Stores) between Wanted and Unwanted items and categorise the items as :-

- Frequently used items
- Occasionally used items
- Rarely used items

Items which are not in use and obsolete has been declared condemned and recommended for disposal.





ACCOUNTS



17

Sub-heads as Demand for Grants	Revised Estimate 2017-18	Expenditure Upto 31.03.18	Balance
Salary	369000000	368267096	732904
Wages	14500000	14492957	7043
O.T.A.	90000	71236	18764
Medical	5000000	4956825	43175
O.T.E.	22000000	21815022	184978
F.T.E.	1000000	998521	1479
O.E.	53000000	52926138	73862
RRT	2000000	1993674	6326
Publication	7000000	6997491	2509
S.& M.	30500000	30495648	4352
Min.Works	4600000	4544904	55096
OCS	6000000	5993635	6365
Grants-in-Aid	25000	25000	0
Sch.& Stp.	7000000	6998376	1624
Other charges	6300000	6298967	1033
Total	**528015000**	**526875490**	**1139510**

ZSI IN NEWS


Migratory bird hurt in poacher trap at lake
जीव-जंतुओं के रखरखाव को लेकर देहरादून में होगी रिसर्च
कीठम झील में शिकार पर कब लगेगा अंकुश?
LOCAL/ NORTH EAST
Orientation prog for trainers of para-taxonomists conducted
Trainers oriented on skilling para-taxonomists
दैनिक भास्कर
दिव्य हिमाचल
Young scientist finds new species of albino crabs in Jaintia Hills cave
Rare species of bat discovered in Shillong

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