

## ANNUAL REPORT 2014-15



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# CONTENTS

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Acknowledgement	02
Foreword	03
Preface	05
The Indian National Committee of IUCN	06
Organization Structure	07
Activities	08
<b>Members Report</b>	09
Keystone Foundation	10
Development Alternatives	13
The Corbett Foundation	16
Foundation for Ecological Security	20
Wildlife Protection Society of India	23
Indian National Trust for Art and Cultural Heritage	26
Centre for Media Studies	29
World Wide Fund for Nature-India	32
Gujarat Ecological Society	35
Gujarat Institute of Desert Ecology	37
OMCAR Foundation	40
Institute for Integrated Rural Development	42
Aaranyak	44
Nature, Environment and Wildlife Society	46
G.B. Pant Institute of Himalayan Environment and Development	52
Wildlife Institute of India	57
Wildlife Trust of India	61
All Indian Disaster Mitigation Institute	69
<b>Annual Financial Report</b>	71

# Acknowledgement

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*We would like to thank all the INC-IUCN members across the country for providing their contribution for this Annual Report.*

*We would like to especially thank Mr. Ashok Lavasa, Secretary, MoEFCC & Chairman, INC-IUCN for his constant guidance and encouragement for the INC activities. We are grateful to Mr. Hem Pande, Additional Secretary, MoEFCC for his valuable support in planning and implementing various INC activities and for providing funding support for many of them.*

*We are thankful to Mr. P.R. Sinha, Country Representative, IUCN-India Office and his dedicated team for sharing the responsibilities and for providing necessary update on IUCN activities globally.*

***The Team***



अशोक लवासा  
Ashok Lavasa, IAS



सचिव  
भारत सरकार  
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय  
Secretary  
Government of India  
Ministry of Environment, Forest & Climate Change

## Foreword



*I am very pleased to place in your hands the first Annual Report of the activities of the Indian National Committee of International Union for Conservation of Nature (INC-IUCN) for the year 2014-15. The Annual Report provides a good coverage of the multifarious activities undertaken by various member organizations for securing and strengthening nature conservation in the country.*

*The INC-IUCN member organizations are playing an important role in building synergies with the Government of India and in carrying forward the agenda for conservation amidst developmental challenges.*

*I take this opportunity to compliment the Wildlife Institute of India and all the member organizations of INC-IUCN for their valuable contribution to the cause of conservation.*



(ASHOK LAVASA)

Place : New Delhi  
Date : 7<sup>th</sup> August 2015



## Preface



*The Indian National Committee (INC) of the IUCN came into existence in 2001 and has since provided a forum to discuss and act on a range of issues relating to nature and wildlife conservation in the country. Over the years its membership has grown (currently 29) and represents a large number of scientific institutions and civil society organizations dealing with a wide range of expertise from conservation education to urban landscapes.*

*In alignment with the global Aichi Biodiversity Targets, India has formulated her National Biodiversity Targets and I am pleased to state that INC members are actively contributing in achieving them. In addition to this, the INC members are also engaged in a range of conservation activities and this Annual Report provides a highlight of them.*

*This being the first Annual Report of INC-IUCN, there is a lot of scope for improvements and I would urge the readership to provide their valuable comments/suggestions.*

*I would like to thank the INC-IUCN members for their valuable contribution to this Annual Report despite the short time frame available to them.*

A handwritten signature in blue ink, appearing to read 'V.B. Mathur', followed by a long, sweeping horizontal stroke.

**Dr. V.B. Mathur**  
Director,  
Wildlife Institute of India  
&  
Member - Secretary  
INC-IUCN

# The Indian National Committee of IUCN

The Indian National Committee (INC) is a forum of IUCN members in India. It was granted formal recognition by IUCN Council vide IUCN HQ Letter No. IN/4/NC55 dated 14 November, 2001. The mandate of the Committee is to coordinate activities of IUCN members in India for evolving common approaches on nature conservation. The members of the Committee bring with them expertise and knowledge in various areas of nature conservation. It is thus a forum having collective wisdom on issues related to conservation of nature and natural resources.

Currently, there are 29 members in the Committee drawn from Government of India, Scientific

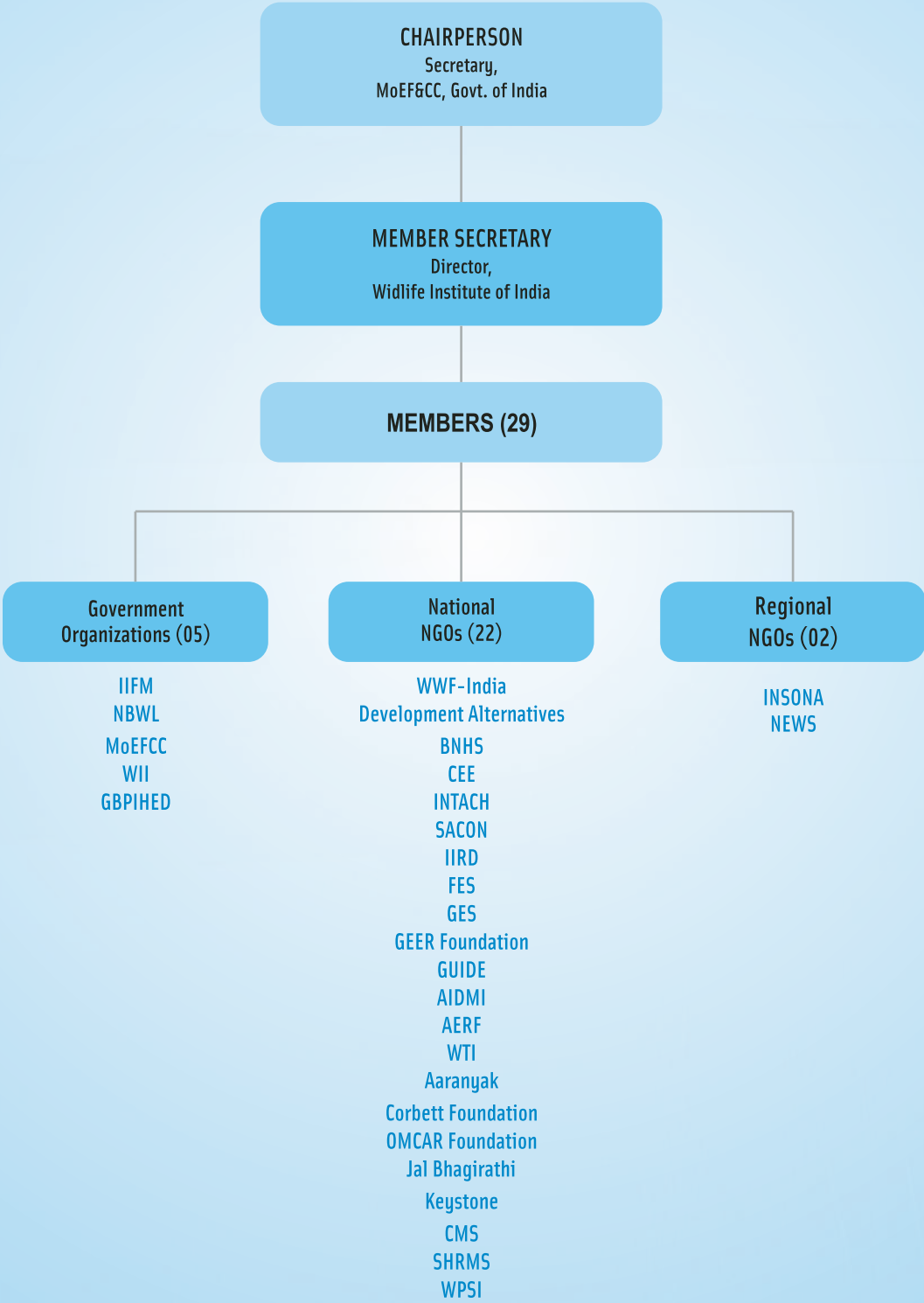
Institutions and National and International NGOs. The expertise represented in the Committee include policy planning, wildlife enforcement and management, scientific research, capacity building of personnel engaged in management of natural resources, disaster management, urban landscape management and livelihood issues.

IUCN India Office provides support to the member organization of the INC-IUCN in taking forward the global agenda of conservation including IUCN programmes. Together we are able to address all the five strategic goals adopted at CBD COP-10 at Nagoya, Japan.

## Objectives

- Provide a common forum with governmental agencies, non-governmental, organisations and others in the country connected with the IUCN
- To develop communication, cooperation and coordination amongst all Indian Members of the IUCN and communication between them and the IUCN
- To evolve a common strategy and approach and identify areas of priority conservation action, which would be taken up in the IUCN and its various commissions;
- To serve as a clearing house for dissemination of information for the IUCN within the country;
- To ensure adequate representation of government and non-government IUCN members at each World Conservation Congress
- To set-up sub-committees and specialist groups, as appropriate
- To encourage the use of scientific and professional skills, practical experience and resources of government and NGOs necessary to support the above; and
- To do all such other things as are conducive or incidental to the attainment of the above objectives.

# ORGANIZATION STRUCTURE



# Activities

## Workshop on National Biodiversity Targets, IIC, New Delhi, June 26-27, 2014.

Twenty six members of the Indian National Committee participated in the two day workshop. The participants were apprised of India's 5<sup>th</sup> National Report to the CBD and India's National Biodiversity Targets. The participants worked in a group to prepare a road map for achieving National Biodiversity Targets. During the mapping exercise, certain gaps have been identified. In order to fulfill these gaps, organizations which are not part of the Indian National Committee have also been identified, which could play a role in achieving the 12 National Biodiversity Targets.





## MEMBERS REPORT





**Keystone Foundation has completed nearly seventeen years in the Nilgiris, working with indigenous communities on eco-development initiatives. The Foundation's work has been concentrated in the areas of apiculture, micro-enterprise development, non-timber forest produce, land & water management, revival of traditional agriculture and other issues concerning indigenous communities.**

**Their goal is to work on issues of Natural Resources and Rural Development, with indigenous people in mountainous and adjoining regions, addressing the challenges of conservation, livelihoods and enterprise development, through appropriate – knowledge & action, technologies, socio-economic innovations and institutions.**

### Working to Green Businesses

Apollo Tyres Foundation (ATF) is a trust having its principal place of business at Gurgaon. ATF is the driver of the corporate social responsibility initiatives of Apollo Tyres Ltd (ATL). The corporate social responsibility philosophy of ATL focuses on combining corporate goals with development goals to enable inclusive growth by building on key partnerships and linkages that optimise the existing resources and reach out to more people, in and outside ATL.



Keystone Foundation has been entrusted with designing and conducting a biodiversity impact study

at Chennai—Waghodia, with the Chennai Factory of ATL being the “core” area of the study and a 5km radius around the factory is the “buffer” area.

The major objectives of the project are

- (1) To make a status report of the current biodiversity of the area (both core and buffer areas).
- (2) To identify species of conservation significance.
- (3) To assess the impact on the biodiversity that the company has had so far, in relation to a historical survey.
- (4) To scoring the impact.
- (5) To find out avenues of restoration and biodiversity enhancement.
- (6) To prepare a proposal for biodiversity enhancement in the project area.

### Human–Wildlife Conflict

Conflict between humans and wildlife is a pressing issue around the Western Ghats. The conservation group has been working on studying and understanding human–wildlife interactions, conflict in particular. Our study area is the Western Ghats in Kerala and Tamil Nadu. Our approach has been to consult stakeholders, conduct workshops for them and document their opinions and concerns regarding interactions with wildlife.

Forest department officials, elected members of administrative bodies, farmers and media personnel have participated actively in these workshops and aired their concerns and perspectives of the problems they have faced during their interactions with wildlife.

Given the crucial role the media plays in informing the public and influencing public opinion about wildlife



and instances of conflict, we are also in the process of documenting and analysing the various reports that have been published concerning conflicts between humans and wildlife in regional and national dailies.

### Field Guides

Given the floral diversity of the Nilgiri Biosphere Reserve (NBR), a series of field guides corresponding to the vegetation types are being prepared. The first volume is an illustrated field guide titled Forest Plants of the Nilgiris – Eastern Nilgiri Biosphere Reserve; and the second volume is a pictorial field guide, Forest Plants of the Nilgiris – Northern Nilgiri Biosphere Reserve. These books are an effort to increase interest in wild and native plants amongst non-specialists. Forest Plants of the Nilgiri Biosphere Reserve – Southeastern NBR is the third in this series of publications. The book documents 363 species from the southeastern part of the Nilgiri Biosphere Reserve. The fourth in the series is Forest Plants of the Nilgiri Biosphere Reserve – Northeastern NBR, which documents 294 species. The books cover a wide range of vegetation types from dry deciduous forests to riparian forests and grasslands. These books are yet to be published and being reviewed.



### Pollination

A Rufford Small Grant-funded study on the diversity of arthropods in agro-forest landscapes of the Nilgiri Biosphere Reserve (NBR), the aim of which was also to compare arthropod diversities in chemically treated versus organically maintained farmlands was completed. The study helped highlight the range of ecosystem services rendered by these little critters we take for granted, and as part of the outreach effort of this study, a simple, non-technical, introductory



booklet, titled The Little Things that Run the World, on insects and the many roles they play in nature was brought out.

A year-long study to understand associations between floral density, pollinators and fruiting success or yield in coffee (*Coffea arabica*) was carried in indigenously owned coffee plantations within the Nilgiris. Floral density data were collected and pollinators were observed, after which data on harvests were collected. The data are being collated to recognise any lack of pollinators with regard to coffee is underway. A poster on the various species observed pollinating coffee has been designed. This study, supported by FAO-IPAFS, is part of an international effort to understand pollinator-deficits in selected crops across the world.

Surveys of vegetable farms were undertaken to document the pollinator diversity of each of these, as part of the CEPF-funded Payment for Ecosystem Services project. The study aims to recognise the correlation between pollinator diversity on a farm and the farm's distance from the forest, which will improve our understanding of the strategic role played by forests in sustaining our agricultural systems.

A baseline survey of Apisflore in the Punanjanur area of the NBR has been completed. The presence of Apisflore was documented through direct and indirect evidence as well as through sourcing information about the bee and its presence from the local people of the region.

### Cycas Initiative in Nilambur

Cycascircularis, locally called eenth, is widely found in the hills and valleys of this part of the Western Ghats. All members of the family Cycadaceae are categorised as Critically Endangered in the IUCN Red Data List. Cycas conservation initiatives and activities have been launched in two villages to

conserve and propagate this prehistoric heritage because a lot of illegal harvesting is going on. Two harvesters' groups have been formed in two Kattunaicken villages, namely Kumbalappara and Appankkappu (Nilambur area). Meetings are conducted generally in the villages, either formally or informally, to create awareness about the importance of the Cycas plants and the need to protect these precious plants for the future.

Cycas plants in selected areas adjacent to the villages are assessed by the community members with the help of Keystone Foundation. The approximate populations of the male and female Cycas plants, the quantity harvested, the rate at which the harvests were sold, what plant parts were harvest, the areas harvested, the ancestral boundaries, if any, major threats to the plants identified by the community members, etc. were assessed through a participatory exercise. The nursery activities were begun in Kumbalappara with the planting of 700 seeds. Almost 664 plants germinated in the bed. The group members were trained how to transplant the seedlings into poly-bags. The members do this on their own now. The group also initiated the cultivation of other NTFP species along with Cycas species. The harvesters are now well aware of the need for the harvest to be sustainable. The harvesters in Kumbalappara indicate that cross-boundary harvesting by other villagers often resulted in unsustainable harvests.

## Human–Gaur Interactions in Kotagiri

Gaurs are a common sight around Kotagiri. The increasing frequency of interactions between humans and gaurs in this landscape provided us a unique opportunity to pre-empt conflict in this region. We identified five distinct herds, and closely observed two of these herds.

The different avenues of interactions between humans and gaurs in various settings were also observed. While most people were not perturbed by the presence of these animals around their area of domicile or work, there were instances where the research team had to explain to the residents/workers and convince them that no harm would come to them, as long as they did not go about provoking the gaurs. The research team also worked to sensitise the people about the needs of the gaurs and provided guidelines for the behaviour and preventive action to be adopted around them.

The team also organised a gaur festival, Doddu Habba, to increase awareness and promote the idea of co-existence with these majestic creatures. This provided artists, artisans, story tellers and musicians a platform for sharing their perspectives of the gaur and for promoting tolerance and consideration towards these animals. The programme was attended by a diverse audience, ranging from school children and teachers to farmers and representatives of the local law enforcement agency.







**Development Alternatives (DA), the world's first social enterprise dedicated to sustainable development, is a research and action organisation striving to deliver socially equitable, environmentally sound and economically scalable development outcomes. DA's green technology innovations for habitat, water, energy and waste management, which deliver basic needs and generate sustainable livelihoods, have reduced poverty and rejuvenated natural ecosystems in the most backward regions of India.**

### National Biodiversity Targets

Development Alternatives (DA) strives to deliver socially equitable, environmentally sound and economically scalable development outcomes, with biodiversity conservation and natural resource management being one of the key focus areas. The group has pioneered the concept of adopting business-like approaches for eradicating poverty and conserving the natural resource base on which human development depends. DA's work in conservation and natural resource management aligns itself with the National Biodiversity Targets.

### Research

The research work carried out by DA in the mangrove reserve forests of Bhitarkanika Wildlife Sanctuary, of Odisha, highlighted the need for alternative livelihoods and drew various recommendations that were mainstreamed into the existing plans and programmes of the state government. Assessment of



the options, awareness about alternative livelihoods and integration of options with plans were some major outcomes of the project, which was sponsored by the IUCN and Ministry of Environment, Forests and Climate Change (MoEFCC).

DA uses technologies such as remote sensing and GIS for assessing and estimating changes in forest cover. DA has estimated spatial changes and analysed temporal variations in mangrove forest cover and trends to inform and design alternative livelihood interventions to help the local economy.

### Environmental Reporting

DA has done State-of-the-Environment (SoE) reporting at the regional, national and state levels, focusing on forests, wildlife and biodiversity. DA's methods include instituting participatory assessment processes for soliciting inputs from various stakeholders including line ministries, state and central governments, civil society organisations, academic institutions and business groups.



Designated the National Host Institute for the SoE reporting process in India, DA has played a crucial role in SoE reporting for the country, as well as for 11 Indian states, with its focus on forests, wildlife and biodiversity.

DA has prepared the State of Environment Report India and performed SoE reporting for Uttar Pradesh, Jharkhand, Sikkim, Meghalaya, Daman and Diu, Karnataka and Tripura in collaboration with various agencies. Presently DA is involved in SoE reporting for Madhya Pradesh and Sikkim.

Through South Asia Environment Outlook 2014, developed with UNEP support, DA highlighted the

state and trends of the environment of the South Asian countries. Biodiversity conservation was one major focus area, with issues and pressures related to habitat loss being highlighted.

Implementation

Natural Resource Management Programme

DA's Natural Resource Management Programme is an implementation-based conservation programme. With the aim of conserving the natural resource base, minimising the impacts of anthropogenic activities on environmental resources and ensuring environmental sustainability through optimal utilisation of natural resources, DA has been working for natural resource management. DA's work in

top soil loss. Overall, the agricultural productivity has increased by 25-30per cent in terms of the economic growth of the farmers. The overall sign of change was measured in the form of ownership of physical assets created in the area, which enhance the productivity and reduce soil loss.

Income-Generating Activities

Adoption of organic manure techniques and vermin-composting were observed in DA's implementation areas. The business models of vermi-compost production, distribution and sales were replicated and adopted by 92 farmers in the Bundelkhand region.

More than 2000 farmers from other districts of Bundelkhand and watershed groups have acquired



Bundelkhand has brought about a 25 per cent increase in agricultural production systems through integrated water management systems and agro-forestry models.

The ground impacts in the project area of Bundelkhand include an increase from 0.68 m to 1.25m in the water level, a 20–25 per cent increase in crop productivity and a reduction of 60–70per cent in



the skills required to implement the concepts of land and water management through exposure visits and hand-holding support.

### Dissemination of Knowledge

DA also actively does capacity building, shares knowledge and generates awareness about forestry, biodiversity and traditional knowledge at the local, state and national levels. The target groups vary from farmers and rural youths to government officials.

#### TARAgam Yatra (TGY)

TARAgam Yatra is DA's annual week-long event in which practitioners, students and policy makers come from around the country to examine successful examples of transitioning to a sustainable future. The TGY of 2014 focused on biodiversity-based livelihoods. On-ground practices were showcased through a yatra to the NBR, where Keystone Foundation has been working to develop sustainable practices of livelihoods.



### Sensitization Workshop on Forest Regeneration

A one-day training programme was organised, with DFID support, in April 2015 to sensitize forest department officials of the Government of Madhya Pradesh to deal with the issues of forest degradation and deforestation. The training addressed different aspects of vulnerability assessment of forest ecosystems and livelihoods, participatory management of forest biodiversity, identification of indicators for monitoring, the climate change mitigation potential of forestry and Reducing

Emission from Deforestation and Forest Degradation Plus (REDD+).

### Earth Day Celebrations

On 22 April 2015, more than 500 youths and women of Bundelkhand came together with great enthusiasm to celebrate Earth Day. Celebrations were spearheaded by women's groups and bal panchayats from 20 villages in Madhya Pradesh and Uttar Pradesh. The international theme of Earth Day 2015 was "It's Our Turn to Lead".



### Publications and Networks

DA disseminates information on biodiversity and wildlife through several channels to various target audiences. Through the monthly newsletter Green Pharmacy, readers are educated about wonder herbs and naturally available solutions for healthcare.

A knowledge-sharing platform has been established for dissemination of ideas and experiences for Bundelkhand. It is called the Bundelkhand Knowledge Platform. Sustainable practices are exchanged regularly through this platform, and development of conservation strategies and policies for Bundelkhand is advocated by it.

Ideas and best practices are shared in the form of policy briefs, case studies, perspective notes, tools, manuals, etc. In addition, DA's newsletter is disseminated to a wide international audience and has a biodiversity theme almost every quarter.





**The Corbett Foundation (TCF) is dedicated towards the protection of wild species and their habitats, and works in prime Bengal Tiger habitats in Uttarakhand, Madhya Pradesh and Kaziranga, has been instrumental in the conservation of some of the last remaining Great Indian Bustard habitats in Kutch, Gujarat, and One-horned Rhinoceros habitats in Assam. Besides helping to conserve India's flagship species, TCF works towards the conservation of crucial habitats at the landscape-level and creates awareness about their ecological importance.**

**Through its effective initiatives to reduce human-wildlife conflict, rescues and rehabilitations, on-ground scientific research, and collaborations with local, national and international partners, TCF works towards a future where humans and nature live in harmony.**



## Conservation and Research

### Great Indian Bustard Conservation

The Kutch Ecological Research Centre (KERC), a division of The Corbett Foundation (TCF) in Kutch, has worked in collaboration with the Gujarat Forest Department in preparing the state-level species recovery plan of the great Indian bustard (GIB). The plan covers various aspects of dealing with threats to the species within the Kutch region, solutions and action plans for restoration or development of new



habitats, various community welfare programmes and a brief concept note for the conservation breeding programme. Gujarat is the first state to prepare a separate recovery plan for the species in India. KERC also works closely with local communities that share their homes with the GIB and involves them in the protection of GIB habitats through awareness programmes. KERC released a report on the status of the GIBs in Kutch in 2012.

### Vulture Conservation

A vulture conservation project in Bandhavgarh Tiger Reserve (BTR) was launched in collaboration with the Rufford Foundation and the forest department of BTR. This project aims to address issues pertaining to the status and population of vultures in Bandhavgarh, capacity building and enhancing the knowledge of local veterinary practitioners, investigating the presence of the banned drug diclofenac sodium in cattle carcasses and creating awareness about and promoting the use of meloxicam, an alternative drug, amongst local communities. TCF facilitates the sale of meloxicam at a subsidised rate through its veterinary division in Kanha, Bandhavgarh and Kutch. Conducting orientation workshops for local para-vets and livestock inspectors (Lis), implementing incentive schemes for villagers who protect vulture nests, conducting interactive sessions





with veterinary students and creating awareness through posters are some of the activities carried out by TCF under this programme.

TCF organizes “Non-steroidal Anti-inflammatory Drug (NSAID) Toxicity in Vultures” workshops for the benefit of LIs. These workshops are intended to create awareness amongst LIs regarding the current plight of vultures and the harmful effects of diclofenac. Meloxicam vials are distributed to each participant free of cost. TCF continues with its vulture conservation work in association with SAVE (Save Asia's Vultures from Extinction).

### Awareness Advocacy

The future of India lies in the hands of its youth, and there is a pressing need to spread environmental awareness among the student community to make the members realise the seriousness of the issues at hand. TCF actively organizes workshops, campaigns and meetings to help create environmentally conscious populations of all ages. TCF conducts a gamut of awareness activities such as quizzes, presentations, competitions, nature walks, celebration of international wildlife and conservation days, film screenings and other fun-filled educational activities for teachers, children and local communities.

Young minds are malleable, and TCF believes in bringing about a change in mind-sets at an early age. India's youths are the very torch-bearers of the conservation movement of the future. Through a variety of competitions and interactive sessions, students are sensitised even as they actively absorb information. Commemorative days such as World Water Day, World Environment Day and World Forestry Day are occasions that are celebrated with gusto in the schools of villages situated in and around



Corbett, Kanha, Bandhavgarh and Kaziranga tiger reserves and the Great Rann of Kutch. TCF's awareness programmes are focused on five flagship species: the tiger *Panthera tigris*, Asiatic elephant *Elephas maximus*, greater one-horned rhinoceros *Rhinoceros unicornis*, hard ground barasingha *Rucervus duvaucelii branderi* and great Indian bustard *Ardeotis nigriceps*. To spread awareness about the hazards of global warming and climate change, TCF established an interpretation centre, the Centre on Global Warming, at the outskirts of Corbett Tiger Reserve in 2009. Educational visits to the centre are arranged for students from local schools.

TCF has been collaborating with other wildlife and conservation organisations such as Sanctuary Asia, WWF-India, the Rufford Foundation, the Bombay Natural History Society (BNHS) and Saving Asia's Vultures from Extinction (SAVE) to safeguard India's depleting wildlife. TCF's work has been published in newspapers and magazines such as the Hindustan Times, The Hitavada and Twinkle Star. TCF has published environment-related resource materials, including two books, *Prakriti Sandesh* and *Alluring Kutch*, and posters on vulture conservation and GIB conservation.

### Signboards to Prevent Road Kills

Wildlife deaths due to collisions with speeding vehicles have become a major issue across India. The development of new roads, along with the repair and widening of the older roads, has been taking a heavy toll of the mammals, reptiles, amphibians and occasionally birds. Several endangered wildlife species such as the tiger, the leopard, the elephant, bears, civets, mongooses, smaller cats, deer and antelopes are casualties on roads passing through forests as a result of reckless driving. One mitigating



measure is to install signboards warning speeding motorists about crossing wildlife. TCF has installed signboards along the major roads in and around Kanha Tiger Reserve and along National Highway 37, which traverses Kaziranga Tiger Reserve. TCF has used Gond art, traditional tribal art work symbolising the natural wealth of central India, created by local artists, to attract the attention of speeding motorists. These boards convey messages in Hindi and English about the urgent need to conserve our forests and wildlife to locals as well as tourists. These boards also serve as a platform to promote traditional tribal art and as a medium for locals to display their artistic talent. Quite a few signboards have been made out of a reflective material that glows in the dark and thus warns drivers about the possibility of wild animals crossing the road.

### Working with Communities

#### Primary healthcare to tribal and other forest-dependent communities

TCF believes that only a healthy community can contribute to a healthy environment. Modern medical

was felt that if the local communities were to be won over to the cause of conservation, some reciprocal benefits would have to be provided to them. After the phenomenal success of this initiative in Corbett, RMOP was extended to Kutch in 1999 and to Kanha and Bandhavgarh tiger reserves in 2010.

TCF operates a total of five dedicated mobile medical units to cover around 350 villages (every village is visited once a week) near Corbett, Kanha and Bandhavgarh tiger reserves, in the Kanha–Pench corridor and around the Greater Rann of Kutch. Most of these villages are in remote locations. It is not uncommon for the villagers to walk for hours to the nearest public health centre, only to find that the doctor is unavailable. Such incidences not only create a feeling of neglect among the communities but also result in their being drawn towards quack doctors and witch doctors. The people of these areas suffer from several chronic diseases and disorders as a result of malnourishment. Medical and healthcare facilities, possibly mobile, must be provided to the communities. Only a healthy mind and body can appreciate and understand the need for conservation



treatment is often not easily available to communities in remote locations, and TCF is working to bring about a change.

To establish a relationship of mutual trust between the organisation and the people living in and around Corbett Tiger Reserve, TCF pioneered the Rural Medical Outreach Programme (RMOP) in 1995. It

of wildlife. Apart from medical check-up and treatment camps, the mobile medical units also conduct health awareness programmes in schools and at community gatherings. Posters, pictorial handbooks and pamphlets have been printed on various ailments and issues such as malaria, water-borne diseases and tobacco/liquor Addiction. Successful and continuous



implementation of RMOP has created goodwill for TCF among the local communities. This grassroots approach is extremely important when undertaking any conservation programme. TCF has also been instrumental in creating awareness about health and hygiene for men, women and children. TCF has outpatient departments (OPDs) at all its centres that local people can visit to receive primary health treatment. TCF collects a nominal fee of INR10 per prescription to prevent misuse of the medicines that are provided.

**Community-Based Natural Resource Conservation**

Community-based conservation has been identified as one of the important tools of involving communities in the conservation of biodiversity. TCF has initiated a project, Community-Based Natural Resources Conservation, in the village of Bakiguda, which is situated in the buffer zone of Kanha Tiger Reserve, close to the core zone. There is increasing anthropogenic pressure on the buffer zone for fuel-wood, grazing by domestic cattle and timber. This project covers the 120-odd households of Bakiguda

to gain their support for protection of the buffer zone and help the forest department of the reserve manage its forests better. The most important aspect of the project is the restoration of around 16 hectares (0.16 sq km) of degraded forest land. Lantana, an invasive weed, has been removed from this area, and it will be replaced with local wild plant species that are preferred by the wild animals. In addition, the entire village will be provided with Sakhi energy-efficient stoves and gobar gas plants (biogas plants that use cow dung) so that the dependence of the communities on forests will be substantially reduced. The villagers will be encouraged to undertake plantation of fodder crops, which they can harvest sustainably for their own, to reduce their dependence on forests for cattle grazing and bamboo. The project also aims to make active the almost dormant village forest committee, which will look after the plantations and at the same time help the forest department monitor the forests around the village. Additionally, TCF also extends its sustainable livelihoods, medical care and veterinary care programmes to Bakiguda, thus making Bakiguda a replicable model for other villages in the buffer zones of tiger reserves.





**Foundation for Ecological Security (FES) works with communities across nine states (Rajasthan, Andhra Pradesh, Karnataka, Madhya Pradesh, Odisha, Gujarat, Maharashtra, Nagaland and Himachal Pradesh) in India towards the restoration and governance of natural resources, especially common lands and water bodies. Currently, FES supports 8,845 village communities in improving the management and governance of 2.5 million acres of common lands and reaches out to 4.62 million people.**

**During the year, FES received a certificate of appreciation from the Minister of State (Independent Charge) for Environment, Forest and Climate Change for their efforts towards restoration of common land and community empowerment.**

level workshops were organised in Koraput, Kalahandi and Nuapada districts, which were attended by participants from partner NGOs, district-level offices, forest rights committees and forestry networks sharing their views and facilitating the Community Forest Resource (CFR) claim process in the state.

Through its Prakriti Karyashalas (rural colleges), FES has conducted training programmes to meet the learning needs of rural communities, village institutions, panchayats, non-government organisations and government officials who can steer processes at the village level and help with the development of their region through local governance and stewardship of natural resources. A total of 700 training programmes in which 20,290 trainees participated, with 5541 participant-days, were conducted through Prakriti Karyashalas in the reporting period. The programmes focused on the importance of the commons in conserving biodiversity.

### Research Activities

The development of resources and the value of the benefits obtained from restoration of commons have



### Workshops and Meetings

During the year, FES organised a series of meetings and workshops across its project locations. In Odisha, one state-level workshop and three district-

been monitored through the Natural Resource Accounting System (NRAS) to record changes in soil fertility, biodiversity, standing biomass, non-timber forest products (NTFPs), carbon sequestration, employment generation, etc.



A study, “Studying Poverty Agricultural Risk and Coping Strategies (SPARCS – Phase I)” was taken up in collaboration with the University of Michigan in 100 villages across Rajasthan, Andhra Pradesh and Odisha. The first phase of the study has been completed. Preliminary analysis highlights the relevance of local coping practices and the role of institutions in developing climate-resilient strategies in agricultural systems.

In collaboration with the International Food Policy Research Institute and the Arizona State University, FES initiated a study to assess the utility of experimental games in motivating collective action around common pool resources such as land, water and forests. The study aims to develop a repertoire of games on the governance of common lands and water resources such as forests, grazing lands and ground water that can be used at the village level for promoting collective action.

Continuing its efforts in detailed ecological health monitoring in selected watersheds of pastoral, mixed farming and forest-dominated ecosystems, this year

### Events Organised

Taking forward its efforts under the banner of Shamlat Abhiyan (Campaign for the Commons), FES undertook a comprehensive mass media and community-level campaign in Rajasthan, including three rounds of SMS drives, newspaper advertisements and broadcasting Shamlat documentaries on TV channels (ETV). Traditional events and cultural practices such as Krushak Mela, cattle fairs and hariyali amavasya and international events such as World Water Day were organised and used as modes of highlighting the significance of common lands, biodiversity and water bodies and mobilising communities for conserving nature and securing commons. A total of 1650 adjoining villages in each project block were contacted to mobilise them for concerted action for the commons and water.

### National Biodiversity Targets

Over the last two decades, FES has compiled a vast amount of longitudinal data on more than 300 parameters for all districts to develop its India



FES focused on the role that hedges play in maintaining biodiversity in agro-ecosystems and inventoried the herpetofauna and migratory birds to assess environmental changes. Studies were also undertaken on the populations and habitats of the sloth bear in Kumbalgarh and Phulwari-ki-Nal Wildlife Sanctuary.

Database. Spatial information on river basins, soil, geology, land use and vegetation changes, forest types, eco-regions, flora and fauna, etc., and non-spatial information related to demographic trends, market potential indices, infrastructure, availability of amenities, etc. are contained in the database. The data have been useful in preparing inter-sectoral

analytical products such as atlases for districts and states, in guiding the prioritisation of areas for development interventions and in developing conservation action plans for selected areas, including sanctuaries and protected areas.

As a follow-up to the first inventory of birds of the Kadiiri watershed, which was made in 2009, with 93 species being recorded, another survey was conducted in July 2014, in which 13 additional species of bird, including the Asian palm swift, brown fish-owl, Eurasian hoopoe and woolly-necked stork, which is categorized as Threatened by the IUCN, were recorded.

During the year, biodiversity assessments were undertaken at Nanga Greener Zone Community Conserved Area (CCA) in two locations of Nagaland, and around 55 birds, 50 butterflies, five frogs, and

identifying the birds of the Indian subcontinent were the striking feature of AVIS-IBIS. AVIS-IBIS 2 has specific information relating to approximately 1677 avian species. A checklist of the avifauna of the Indian sub-continent was prepared. There are about 1667 species belonging to 532 genera, 113 families and 27 orders in the checklist. Around 2385 synonyms were compiled from various publications, and 1019 protonyms were corrected.

Visits

Representative of the United States Forest Service (USFS) International Programs, Mr. Valdis E. Mezanis, Director, USFS International Programs, Ms Jennifer C. Smith, Russia, Mongolia and India Program Specialist and Ms. Lenise Lago, Deputy Chief for Business Operations, visited FES project locations in the western region (Rajasthan), southern



more than 200 moth species were recorded in the region. A biodiversity survey was also carried in Pauna CCA, in which 78 bird species, 21 mammal species and 60 butterfly species were recorded. Initiated in 2010, Indian Biodiversity Information System (IBIS) is a web-based modular and searchable biodiversity database that provides resource-rich, state-of-the-art species-level information in a single user-friendly format. After creating portals on birds and mammals (AVIS-IBIS and IBIS-Mammals), FES launched its IBIS-Flora and AVIS-IBIS 2 portals as beta versions in 2014. Keys for

region (Karnataka) and eastern India (Odisha). The visiting team interacted with community stakeholders about restoration of forests and other common lands through a watershed approach, the importance of geo-hydrology in planning watershed development and implementation, the impacts on agriculture and experimental games for triggering collective action on groundwater. USFS and FES plan to collaborate broadly on aspects of forests and farming systems, technical knowhow, research, training, monitoring.



**The Wildlife Protection Society of India (WPSI) was established in 1994. From its inception, the society's primary aim has been to bring a new focus on India's growing wildlife crisis. As a member of the Indian National Committee of IUCN, WPSI has contributed to the achievement of the Nation Biodiversity Targets through programmes focused on creating conservation awareness, preventing habitat loss and degradation, promoting sustainable agricultural and fishing practices and developing alternate livelihoods for communities residing in the fringes of protected areas to reduce their dependence on forests. The key objective of WPSI's work across the country is to curb poaching and wildlife crime.**

### Conservation Awareness

Tiger Conservation Awareness in Central India Launched in 2011, this programme uses three customised audio-visual vans decorated with tiger stripes, which travel to villages on the fringes of the Kanha, Bandhavgarh, Tadoba and Pench tiger landscapes, of central India. The WPSI teams screen local language films on wildlife conservation, after which open dialogues are held with the villagers on their wildlife-related issues. Information is also provided on various government schemes that the people could benefit from. Since the launch of this programme, the three vans have conducted a total of



1,277 film screenings and meetings, reaching out to a huge audience of about 2,45,655 villagers and 2,370 forest officers. The programme has given a greater understanding of the complex issues behind human-wildlife conflict and poaching. It has also helped reduce corruption amongst officials and speeded up compensation claims, both issues that have a deep impact on the way the local people view their wildlife.

### Conservation Awareness Programmes in the Sundarbans

Creating conservation awareness is a key aspect of WPSI's work in the Sundarbans. In 2014, to highlight Forestry Week, 2000 fruit-tree saplings were distributed to students and villagers. During Wildlife Week, WPSI joined hands with the forest department to hold a wildlife programme and a quiz contest in Canning, and wildlife films were screened at the WPSI Interpretation Centre. Through the year, 23 wildlife film screenings were held across the islands of the Sundarbans, including 13 at the WPSI Interpretation Centre. Supported by WPSI, young members of the Bali Nature Club conducted clean-up drives and rescued injured birds. During the year, 15 "No Plastic" campaigns were conducted at tourist locations. Local students collected plastic waste and carried banners with messages calling for a plastic-free Sundarbans. Such events attract large audiences and provide a platform to spread the message of conservation.

### Awareness Programmes for Youth in Kerala

WPSI's team in Kerala conducted a host of awareness activities in 2014. On World Wildlife Day, in March, a trek and wildlife quiz were organised in Nelliampathy in collaboration with the Kerala Forest Department. Fifty-seven students, teachers and NGOs attended. Lectures were at schools and colleges to promote awareness about wildlife, and on World Environment Day, in June, environment education and awareness programmes were conducted at six schools. For Wildlife Week, in October, WPSI organised workshops, meetings and quiz competitions in Kozhikode, Thiruvananthapuram and Palakkad districts, in collaboration with local NGOs.



## Community Support in the Sundarbans

### Livelihood Development

WPSI has been working with the Indian Council for Agricultural Research (ICAR) to develop alternate livelihoods and reduce dependence on the forests in the Sundarbans. In 2014, 800 women were trained in cattle rearing, organic farming and cultivating nutritional gardens. Training programmes in veterinary care and monthly veterinary camps were also held at the WPSI Centre, and the Central Saline Institution of Canning provided training in multi-crop farming and the use of agricultural techniques. Under this project, ICAR distributed 4500 Khaki Campbell

### Mangrove Plantation and Rainwater Harvesting

WPSI assists women's self-help groups in the Sundarbans with the development of mangrove nurseries by helping procure seeds and seedlings and by providing the best techniques for nurturing the plants. WPSI also helps the groups market their yield to the forest department and local NGOs. Under their youth awareness programme, in 2014 the WPSI team worked with local youths to plant 3-4 hectares of mangrove saplings. In addition, 52 ponds and five canals were developed, in which fisheries will be developed. Existing rainwater harvesting ponds were renovated in collaboration with ICAR. The team also



ducks, 100 goats, 5000 chicks, 10 cows and 5,00,000 fish roe. Additionally, six power tillers, 10 pump sets, 150 paddy threshers, 200 field sprinklers, three paddy harvesters, three paddy transplanters, 215 cono weeders, 84 coconut tree climbers, four tree sprinklers and 115 vermi-compost bags were distributed. The equipment was given to elected group leaders and rented out for use by the local people for a nominal fee, which is used to maintain and repair the equipment. One machine of each type is kept at the WPSI Centre for demonstration purposes.

coordinated work funded by the Sundarbans Development Board, such as the construction of rainwater harvesting ponds, brick paths and boat jetties and installation of solar lights.

### Bi-monthly Health Camps

Health care has been a pivotal issue in this landscape, which still has no electricity or roads and limited access to modern facilities. To address this void, WPSI conducts bi-monthly health camps at its Centre with doctors from Kolkata who generously donate their time. In 2014, 55 health camps were conducted and 3270 patients were treated.

### Self-help Groups and Micro-credit Scheme

WPSI is working with 52 women's self-help groups to help them develop skills to supplement their families' incomes. Many of these groups use a micro-credit scheme to support their endeavours. There are two primary activities: the development of mangrove nurseries and the creation of tiger-embroidered silk cushions and stoles. WPSI assists the groups in the procurement of the saplings and materials they need for these activities and in marketing their products.

### Kindergarten School

WPSI started its first kindergarten school on Bali Island in 2005, but when Cyclone Aila hit the Sundarbans in 2009, the school building was virtually destroyed. WPSI secured funds to build a sturdy new school, and in 2012, the WPSI Serenity Kindergarten School opened its doors. Today, the well-equipped school provides education to 60 children from the island. Priority is given to those with working or single parents who are unable to look after their children during the day. Every child receives uniforms, shoes, books, stationery, school bags and a nutritious mid-day meal.

### Support to Wildlife Enforcement

#### Secret Information Reward Scheme

Intelligence is the key to curbing wildlife crime. To expand sources of information, WPSI launched its Secret Information Reward Scheme in central India. The goal is to increase crime detection and strengthen anti-poaching measures. People can call WPSI's 24-hour hotline to provide anonymous alerts about suspected cases of poaching in their area. The alert is investigated, and the informant is rewarded within 7 days of a successful case. The scheme has enabled WPSI to secure a network of motivated informers around many critical wildlife habitats. In 2014, WPSI received 135 alerts under the scheme, including 29 alerts about poaching attempts. This resulted in 12 seizures and the arrest of 40 suspected wildlife criminals by enforcement agencies.

#### Enforcement Workshops

The aim of WPSI's anti-poaching training workshops is to inform and motivate enforcement authorities to combat wildlife crime. WPSI conducted 27 such



workshops in central India in 2014, which were attended by 1757 forest department and police officials. The workshop module includes illustrated talks, demonstration of poaching techniques and mock crime scenes. WPSI's lawyer, based in Katni, in Madhya Pradesh, Ms. Manjula Shrivastava, conducted an additional 14 workshops during the year for forest officers and government academies on the implications of the Wild Life (Protection) Act, 1972 and the process of documenting wildlife cases. The workshops were attended by 635 officials, all of whom were provided a copy of WPSI's Brief Guide to the Wild Life (Protection) Act.

#### Wildlife Crime Database

WPSI's Wildlife Crime Database was established in 1995. The only database of its kind in the country, it holds wildlife crime records from 1972, a period of over 40 years. The database provides critical insights into changing trends and the major players in the illegal wildlife trade. Using the data, time and again, WPSI has been able to assist enforcement agencies in identifying and locating repeat offenders and other wildlife criminals. Information sourced from the database has also been passed on to policy makers so that need-based strategies can be formulated to curb illegal wildlife crime. In 2014, WPSI recorded 1380 cases of wildlife crime from across India. Presently, WPSI's Wildlife Crime Database contains records of 26,464 wildlife crime cases, the details of 20,016 alleged wildlife criminals and their associates and mortality records of 446 species protected under the Wild Life (Protection) Act, 1972.



**In 1984, Indian National Trust for Art and Cultural Heritage (INTACH) was registered as a society and founded with the vision to create a membership organization to stimulate and spearhead heritage awareness and conservation in India. Today INTACH is recognized as one of the world's largest heritage organizations, with over 180 Chapters across the Country.**

### Natural Heritage Documentation Survey

The project at Daman–Diu–Dadra–Nagar Haveli covered lakes, wetlands, mangrove forests, the coast, river features, the fauna and their conservation status. Poor enforcement of regulations, including CRZ guidelines, over-building and industrial pollution are the bane of the environment. The assessment report and recommendations have been submitted to the Administrator.

### Onsite Waste Water Treatment Using Bioremediation Techniques

As in most urban areas, sewage and wastewater are finding their way into water channels and lakes, resulting in foul odours, eutrophication and discharge of polluted waters into the river. Agra is a prime source of tourism-based revenue, and polluted waters feature in most of the tourist attractions. Accordingly, the Commissioner invited INTACH to carry out the remediation of some critical water features.

#### East Taj Drain

This crosses the eastern entry to the Taj. INTACH installed sand bag weirs and carried out bacteria dosing and successfully removed the foul odour and reduced the pollution load at the outfall of the river from 70 mg/l BoD to <40 mg/l BoD.

#### Circuit House Lake

This foul-smelling lake forms part of the Golf Course. The algal turbidity was high, with almost nil dissolved

oxygen. The lake was receiving waste water from the Police Colony. A settling pond was created within the lake around the discharge point using sandbag weirs. Bacteria dosing was introduced in the Police Colony, 500m away. In situ dosing was carried out for 6 months using a boat. While the lake's smell has been eliminated, the DO was raised to 4 mg/l and the algal turbidity was greatly reduced. As a result, the sunlight penetration to the deeper waters has been enhanced, setting off photosynthetic processes in the deeper layers.

*Mantola Nala:* This drain crosses the entry to the Red Fort. It carries 14 MLD of polluted water with a BoD level of 160 mg/l. With measures similar to those taken at Circuit House Lake, the BoD level has gone down to <50 mg/l.

### Freshwater Conservation Programme

The programme for Delhi-NCR is being carried out in partnership with Earthwatch Institute with support from HSBC Bank over a 4-year period. The programme is based on the concept of citizen science and includes various volunteer activities involving HSBC employees, college and school students and other citizens. In this programme, volunteers are made aware of the freshwater issues in Delhi NCR and are motivated to take up the challenge of freshwater conservation at personal, institutional and societal levels. Three full-day events with HSBC employees and one half-day event with school students have been conducted in 2014 with 53 volunteers. The areas covered so far are Okhla Barrage, Bhalaswa Lake, Sanjay Lake and Hauz Khas Lake.



### Ganga River Front Development, Patna-II

Under the National Ganga River Basin project, the Government of Bihar has taken a decision to actively



manage the river front. A stretch of 8 km of the right bank of the river, with almost 300 hectares of land, has become available owing to the northward migration of the river course. To prevent the erosion of the bank, the government is proposing to lay geotubes with support from the World Bank. The entire area is vulnerable to inundation. INTACH has proposed to keep the entire area green so as to offer a green lung to the congested old Patliputra areas, improve access to the river and use local sedge grass to hold up the river bank in an inexpensive and durable manner. The green areas will also include sacred groves and forests for meditation, thus creating habitats for faunal diversity.

### Documenting the Natural Habitat and Biodiversity in Heritage Premises

Heritage sites such as sprawling forts offer refuges for biodiversity amidst intensely developed urban areas. INTACH initiated a pilot project in which the biodiversity of Adilabad Fort, Tughlaqabad Fort, Siri Fort and Jehanpanah Forest was surveyed to assess the species and associated landscape-level information. The mapping revealed that these precincts could be linked to each other through corridors. Spreading over large tracts of lands, old forts and heritage sites in urban areas contribute to the green cover and have a fair representation of the native biodiversity. Other forts with such green areas may be seen as significant green corridors in urban landscapes. The concept can then be replicated in several other cities of India.

### Documenting Lesser-Known Baolis of Rajasthan

Prominent sites are noted, whereas lesser-known traditional water structures fall through the cracks, becoming prey to neglect and “development”.



INTACH took up listing of traditional water structures such as wells, *kundis*, *johads* and check dams in Bikaner and Churu districts through field work. The reports have been made available to INTACH's Rajasthan Chapter for following up with the authorities.

### Urban Biodiversity Mapping for Vadodra, Gujarat

Water features such as lakes and their catchments, streams and river, large greens including old campuses, flora and fauna of Vadodra urban were documented with a view to raise their visibility and harmonious integration in the urban planning process.

### Study of Yamuna Stream Ecology

This project aims to study the ecological characteristics of the River Yamuna in the Delhi–NCR region, from Palla to Okhla. The study will inform us about the current status of the riparian vegetation of the floodplains, aquatic plants, zooplankton, phytoplankton, fishes and water quality. The study will provide a baseline against which changes to the river ecology can be measured. The field work has been concluded.

### Conservation Plan for Sambhar Lake

This project, in partnership with CIWSA, aims at formulating a conservation management plan for Sambhar Lake, in Rajasthan, considering the biodiversity aspect as well as the welfare of the



dependent communities. Ecological studies of Sambhar Lake and its catchment, biodiversity surveys, threat assessment and stakeholder assessments are involved in the project.

## Ecological Literacy and Urban Lakes and Wetlands Courses

INTACH offers these two courses, which in the last two years have seen a total of 50 attendees. The 4-day lakes course has modules on hydrology, biochemistry and threats and remedies, case studies by eminent professionals and field visits. The ecology course offers modules on basic concepts, understanding technical jargon, emerging issues, the legal and institutional framework, ecosystem services, international conventions, etc. The intended trainees are mid-level administrators (public and private sectors), urban planners, local body officials, NGOs, activists and members of the public.

## Uttarakhand Disaster Relief Project

INTACH is carrying out interventions in Bhiri Village, Rudraprayag District. INTACH organised a 3-day rescue and first aid training programme for school children and volunteers (total 80 persons), which was administered by the National Civil Defense Agency. Further, INTACH handed over a specialised professional rescue kit to the Mahila Mandal. The kit included items such as manually rechargeable torches, waterproof matches, medicines, waterproof bedding, tents, stretchers and shovels. INTACH is also strengthening and expanding the existing government school building –landslide debris will be converted to building blocks and used for construction.

## Delhi Biodiversity Project

This project aims at a biodiversity inventory and documentation to assess the species and associated landscape information in some selected areas of the capital. It is proposed to document natural features and habitats and delineate them on a base map of NCT Delhi. This is the part of a larger project, "Documentation of Natural Heritage of NCT, Delhi and Preparing Urban Biodiversity Plan".

The final objective is to ensure that the natural heritage of Delhi is taken into consideration in the mid-term planning review of NCT Delhi's Master Plan, thereby taking a substantial step towards urban nature conservation, ecosystem services and sustainability. The concept can then be replicated in several other urban cities.

## Conservation Management Plan for Two Urban Wetlands in Moradabad

This is being done in collaboration with WWF India, taking aboard the district administration and public stakeholders.

## Delhi Cantonment

On the request of army authorities, INTACH prepared a water management plan for an extent of 42 sq km in the Cantonment area in which several tube wells are running dry. INTACH has also prepared a biodiversity management plan for the Cantonment area.

## India Rivers Week 2014

Noting that almost all the rivers in India are in a state of stress, INTACH partnered with other NGOs such as Yamuna Jiye Abhiyaan, WWF, Toxic Links and South Asian Network on Dams, Rivers and People to observe "India Rivers Week" (24–27 November).

The year-long preparatory exercise was led by Mr. Ramaswamy R. Iyer, former Secretary, Ministry of Water Resources. A total of 150 NGOs and activists attended the conference, and the outcome is described in the "Delhi Declaration for Rivers". This document is being widely circulated and will form a springboard to inform the government policy on rivers towards ecology-conserving and people-friendly regimes.

The first-ever Bhagirath Prayas Samaan was awarded during the week to recognised achievers in the field for protecting rivers in their respective areas.

The chief guest at the opening ceremony was Mr. Jairam Ramesh, former Union Minister of Environment, and the chief guest at the closing ceremony was Ms. Uma Bharti, present Union Minister for Water Resources, River Development and Ganga Rejuvenation.





**Centre for Media Studies (CMS) established in 1991, is a not-for-profit, multi-disciplinary development research and facilitative think-tank. It endeavors to work towards Responsive Governance and Equitable Development through Research, Advocacy and Capacity Building in Social Development, Environment, Communication, Media, Transparency and Governance issues at local and national policy levels.**

## **CMS VATAVARAN Travelling Film Festival**

The CMS VATAVARAN Travelling Film Festival has travelled to 35 cities, successfully organising 44 travelling festivals since 2002. The sixth travelling edition of CMS VATAVARAN was organised in five cities, namely, Puducherry, Agra, Amritsar, Gangtok and Raipur. The theme of the sixth travelling festival was mainstreaming biodiversity conservation at different levels to promote living in harmony with nature.

The highlights of the festival included the inauguration by the head of the state/UT; felicitation of Green Ambassadors from the state; film screenings; a panel discussion on biodiversity conservation; a biodiversity quiz; and a green film-making workshop.

More than 15,000 people participated in the film festivals held in these five cities between October 2014 and March 2015.

The festival was held at different locations to facilitate the participation of audiences of different kinds in large numbers, i.e., school and college students, members of NGOs, government officials, police officials and their families, under-privileged children, the general public, the media, etc.

### **Puducherry**

The sixth edition of CMS VATAVARAN began with Puducherry CMS VATAVARAN, which was held from

7 to 12 October 2014 and on 16 October 2014 (Tuesday–Sunday and Thursday).

The Green Ambassadors from Puducherry were C. Oviya, a Class X student of Stansford International Higher Secondary School; R. Rajamanikam, scholar, Department of Ecology and Environment Science, Pondicherry University; and S. Govindan, Lecturer, Maraimalai Adigal Government Higher Secondary School, Puducherry.

A panel discussion on Climate Change and Human–Wildlife Interaction highlighted the issue of the effect of the increasing population and human-induced changes on wildlife species. The panelists included Dr. N.B. Rao (Chairman, CMS), Ms. Lata Iyer (Regional Planner, Auroville), Dr. Nanditha Krishna (Director, CPREEC, Chennai), Mr. Tim Wrey (naturalist and author, Auroville) and Ms. Sunaina Mandeem (PondyCAN!).

The following day, a film-making workshop was conducted by Accessible Horizon Films for college and university students from Puducherry and Auroville. It was led by film-makers Raghu and Mohandass. A nature trail visit was organised at Muliagam Forest Campus, a restricted forest area that is considered a tropical dry evergreen forest. A beach cleaning and slogan-writing competition were organized at Gandhi Statue. “Green Run” and the closing ceremony were organized at Beach Road.

### **Amritsar**

Amritsar CMS VATAVARAN was held from 3 to 5 November 2014 (Monday–Wednesday). The festival was declared open on 3 November by Mr. Anil Joshi, Hon'ble Minister of Local Government, Medical Education and Research, Punjab.

At the inaugural ceremony, two Green Ambassadors were felicitated for their remarkable contributions at the grassroots level in the field of environmental conservation, namely Mr. Swaran Singh, a farmer, and Ms. Manisha Thakur, a government school teacher, who prepared a vermi-compositing unit for solid waste management.

A panel discussion, Inland Waters and Wetlands Biodiversity of Punjab, was organised to mark the increasing problems faced by Punjab such as a falling water table and pollution due to industrial sources. The session was moderated by Dr. Adarsh Pal Vig,

Associate Professor, Department of Botanical and Environmental Sciences. The panelists included Mahavir Singh, IFS, Divisional Forests Officer, Amritsar; Prof. A.K. Thukral, Professor, Department of Environment and Botanical Sciences, GNDU, Amritsar; Dr. Satnam Singh Ladhar, Additional Director– Environment, PSCST, Chandigarh; Ms. Geetanjali Kanwar, Senior Project Officer, WWF-India, New Delhi; and NGO members such as Mr. Prabhdial Singh Randhawa, Mr. Babbar (Mission Aghaaz) and Mr. P.S. Bhatti.

A film-making workshop was conducted by Mohd. Aamir Aijaz, a young, enthusiastic, creative and committed film-maker and development communication professional from AJKMCR, Jamia Millia Islamia, New Delhi. The workshop was attended by 55 participants who, under the guidance of the expert film-maker, learnt the fundamentals of shooting environmental films.

## Raipur

Raipur CMS VATAVARAN was held from 15 to 18 January 2015 (Thursday–Sunday). The inaugural ceremony of Raipur CMS VATAVARAN International Environment & Wildlife Film Festival and Forum was held at Conference Hall, Circuit House, Civil Lines, Raipur.

Three people were awarded Green Ambassador awards for their remarkable contributions to the environment. They are Mr. Lalit Kumar Singhania, an environmentalist and Editor, Paryavaran Urja Times; Ms. Suniti Yadav, founder of Eco-feminist Movement in Central India and Humane Forestry; and Mr. O.P. Agrawal, an environmentalist from Surguja District, Chhattisgarh.

A total of 24 award-winning green films were screened in 11 locations in Raipur, including universities, college, schools, the jail and NGOs' premises.



A panel discussion, People and Forests of Chhattisgarh, was also organised. The session was moderated by Ms. Seema Bhatt, independent consultant, climate change, conservation and ecotourism. The panelists included Mr. Ram Prakash, IFS, PCCF & HoFF; Dr. Arvind Anil Boaz, Principal Chief Conservator of Forests and Nodal Officer, Climate Change, Government of Chhattisgarh, Raipur; Mr. Shirish Agrawal, Executive Director, Chhattisgarh State Minor Forest Produce (T&D) Cooperative Federation Ltd., Raipur; and Mr. Jaisingh Dhumal, Chief Manager, Technology Finance Group, ICICI Bank, Mumbai.

On the third day of the festival, a two-day long film-making workshop was organized at Kushabhau Thakre University of Journalism and Mass Communication from 8:30 am to 5:30 pm. The workshop was conducted by the film-maker Mohd. Aamir Aijaz.

On the fourth day, a nature trail was organised at Champai Devi Temple and Forests, Mahasamun. Approximately two dozen films were screened in six slots (8:00 am to 4:00 pm) each day during the festival.



## Gangtok

The Gangtok CMS VATAVARAN – International Environmental Film Festival and Forum was inaugurated at a gala inaugural ceremony at Chintan Bhawan, Gangtok on 12 March 2015. Mr. Tshering Wangdi Lepcha, who was the guest of honour, declared the festival open. A special video message by Mr. Prakash Javadekar, Hon'ble Minister of Environment, Forest and Climate Change, Government of India was shown, in which he complimented Sikkim for its beauty and green initiatives.

The festival, which was held from 12 to 17 March 2015, comprised the inaugural ceremony, felicitation of Green Ambassadors, Mr. Nosang Limboo and Ms.



Tshering Uden Bhutia, from Sikkim, a panel discussion, film screenings, a film-making workshop and a nature trail.

The inaugural day also saw an important panel discussion, Biodiversity Conservation in Sikkim: Issues and Concerns, which was held at the meeting hall in Chintan Bhawan. The panel discussion was chaired by Dr. Thomas Chandy, PCCF cum Principal Secretary, Department of Forest, Environment & Wildlife Management, Government of Sikkim. This panel discussion showcased the rich biodiversity of the state and looked at some of the key threats. Key issues such as ecotourism and climate change adaptation were also discussed during the panel discussion. The panelists included eminent people from Sikkim, namely, Dr. Usha Lachungpa, Principal Research Officer (Wildlife), Forest, Environment and Wildlife Management Department and Additional Director, Sikkim State Biodiversity Board, Government of Sikkim, Gangtok; Dr. Hemant K. Badola, Scientist-F (Conservation of Biodiversity) and Scientist-in-Charge, G.B. Pant Institute of Himalayan Environment & Development, Sikkim Unit; Mr. R.P. Gurung, Chief Executive Officer, Ecotourism and Conservation Society of Sikkim, Gangtok; and Dr. Sunil S. Thorat, Scientist-C and Officer on Special Duty, Institute of Bio-resources and Sustainable Development, Sikkim Unit, Department of Biotechnology, Ministry of Science and Technology, Government of India. Ms. Seema Bhatt, senior expert on biodiversity and ecotourism, moderated this panel discussion.



On the second day of Gangtok CMS VATAVARAN (13 March 2015), a green film-making workshop was organised at the Sikkim State Council of Science & Technology. This one-day workshop was open for all and was attended by students and nature enthusiasts. It was conducted by Mr. Tapas Das, former Professor of Satyajit Ray Film Institute and cinematographer from Kolkata.

As part of the activities of Gangtok CMS VATAVARAN, a nature trail was organized on 14 March 2015 for students at the Himalayan Zoological Park, Gangtok. Situated at an altitude of 1780 metres, the park houses a variety of animal species found in the Himalaya.

CMS VATAVARAN also collaborated with the Nehru Yuva Kendra Sangathan for the national integration camp held from 14 to 18 March 2015. A slogan-writing competition was also held on the first day of the camp's collaborative programme with CMS VATAVARAN (16 March 2015). More than 200 youths from six states participated in a cleaning drive held as part of the Gangtok CMS VATAVARAN on that day. The cleaning drive was carried out in and around Paljor Stadium.

More than 300 defence personnel and their families attended a special film screening during the festival.

## Agra

Agra CMS VATAVARAN was held from 26 to 28 March 2015 (Thursday–Saturday). Prof. Mohd. Muzammil, the Vice Chancellor of Dr. B.R. Ambedkar University, who was the chief guest, declared the festival open.

A highlight of the inaugural ceremony was the felicitation of Mr. Ambar Vishal as the Green Ambassador from Agra.

A special talk on the River Yamuna and the Taj Mahal was presented by Mr. Brij Khandelwal, who is an eminent conservationist. Students of Dr. B.R. Ambedkar University carried out a cleaning drive at the Shaheed Smarak, Sanjay Place.

A slogan writing competition in Hindi and English was also held at the Department of Social Work, Dr. B.R. Ambedkar University on the theme of biodiversity conservation.

The third and final day of Agra CMS VATAVARAN had special film screenings at the Central Jail and Agra Cantonment.





**World Wide Fund for Nature-India (WWF-India) is working for promotion of nature conservation and environment protection as the foundation for sustainable and equitable development throughout India. It has identified the country's most critical regions and the priority species that characterise the country's natural heritage and is working to conserve their health and numbers through field work, policy interventions and positive campaigns.**

**The initiatives of WWF-India invariably involve working in close collaboration with the government line agencies (e.g., NTCA, WII, IIT, NLU-Delhi, NGPRI, KRIDA), local communities and other key stakeholders. WWF-India operates through more than 76 state and field offices in 22 states across India.**

**Workshops and Meetings**

Across programmes and state offices, numerous meetings and workshops were organised during the year. These meetings and workshops were organized at various levels from the grassroots level to the national level. The themes of the workshops and meetings ranged from natural resource management to livelihoods and conservation, sustainable agriculture practices, capacity building to reduce trade in wildlife parts and to manage human-wildlife conflicts, climate change and adaptation, river health



and conservation of marine ecosystems. Some of these are described in the following.

About 120 meetings were held to sensitize local people to conserve the Ramganga and Ganga rivers and to conserve the biodiversity therein. River-Mitras, a multi-stakeholder group created previously, started functioning for conservation of the biodiversity of these rivers. Meetings were organized in industries and urban communities in Moradabad for reducing water risks.

A series of sensitisation workshops and training programmes were conducted for the judiciary and enforcement agencies, respectively, by TRAFFIC. Consultative meetings were held to develop a plan to protect species that are traded.

Senior officials of the Bihar Forest Department were oriented towards scientific management planning. Various workshops were conducted with the judiciary and enforcement agencies for biodiversity protection. A workshop on conservation was conducted for 25 IFS officers, during which the significance of corridors in landscape conservation and approaches need for corridor conservation were deliberated upon.

Various meetings and workshops were conducted to enhance the capacity of the internal staff, e.g.,



stewardship for results, improving communications and engagement with communities.

More than 300 capacity-building programmes were conducted for the communities, and there were about 12,000 beneficiaries.

Research Activities

WWF-India carried out many research activities to support conservation of biodiversity. Some of these are mentioned in the following.

Tiger monitoring study was conducted in partnership with the NTCA and WII in various tiger reserves in six species landscapes. Assessment of fuel wood consumption was carried out in various landscapes. A study on connecting habitat corridors in the Panna Landscape was conducted. The assessment of the status and monitoring of the greater one-horned rhinoceros in Dudhwa National Park was completed during the year. A study on the Kanha-Pench corridor was completed, and a publication, Lifeline for Tigers-Status and Conservation of the Kanha-Pench Corridor, Madhya Pradesh, was brought out.

Five research studies for sustainable agriculture were carried out. A decision-making system for water is being developed in collaboration with NGPRI. Another study on greenhouse gas emissions from cotton production systems in India and Pakistan was conducted.



Assessing the dependence of communities on natural resources is a regular activity in WWF's conservation programmes. During the year, "Assessment of Fuel Wood Consumption in Kanha-Pench Corridor MP" was completed, and data collection in other landscapes continued.

Studies were undertaken to assess E-flows of the River Ramganga and to assess the health of the rivers Ramganga and Ganga. Telemetry studies of gharial were initiated to understand the habitat preference and migratory characteristics.

Events Organised

To conserve energy, which is linked with conservation of natural resources, WWF-India organised Earth Hour on 28 March. This even reached out to 4.1 million people. A total 54 corporates (0.45 million







employees) signed up for the event. In Delhi, 2.65 million people participated through resident welfare associations (RWAs). About 300 RWAs, 500 shops and 100 corporates in Delhi switched off. The event was organised in 60 cities across India.

An event on Indian rivers was organised as part of Rivers Week in November 2014. The Hon'ble Union Minister for Water Resources and Ganga Rejuvenation chaired the concluding session. During the event, the Delhi Declaration - Let Our Rivers Live was presented to the Hon'ble Minister.

An event, Climate Solver, was organized in which five companies were awarded for their innovations aimed at reducing green house gas emissions and enhancing energy access. During the event, an RE+ report on specific solar energy applications was also launched.

An event, Public Dialogue on Renewable Energy (RE), was organised in which financial institutions, government agencies, RE manufacturers, Distribution Companies (Discoms) and RWAs participated. The event was held towards the end of the studies carried out on renewable energy to know public perceptions regarding the uptake of renewable energy. The event was anchored by Bahar Dutt.

A micro solar power plant was inaugurated in the Satpuda Maikal Landscape. This community-managed solar plant provides clean energy to a village in a remote area and helps reduce human-wildlife conflicts and pressures on the tiger habitat.

### Follow-up on National Biodiversity Targets

During the year, WWF-India contributed to six National Biodiversity Targets. Through its education

programmes in schools across various states, awareness about biodiversity conservation was created by organizing wildlife quizzes. The significance and values of biodiversity conservation were integrated with the planning of linear infrastructure in the Terai Arc Landscape by a government agency. Species and landscape conservation work across 15 states continued to conserve the corridors connecting protected areas while ensuring the well-being of the humans in these areas. The work to promote sustainable agriculture practices for crops continued, and 37,000 farmers were certified by Better Cotton Initiative and 30,000 sugarcane-growing farmers were reached out to for sustainable water management.

Through its ongoing programmes, WWF-India has been working to conserve coastal-marine, desert (both hot and cold), forest, wetland and agricultural ecosystems and the species therein. WWF initiated evaluation of ecosystem services for one of its landscapes during the year.

### Visits

During the year, many dignitaries visited WWF, notable among them are the Hon'ble Minister for Environment, Forest and Climate Change, Mr. Prakash Javadekar, and the Hon'ble Union Minister for Water Resources and Ganga Rejuvenation, Ms. Uma Bharti. Dr. Chandramohan, Advisor and Head, SEED Division, DST, visited WWF. He expressed a desire for increased collaboration between DST and WWF.

**Gujarat Ecology Society (GES) is a research based NGO and involved in research, conservation and extension activities. GES was founded in 1995. It is recognised as a Scientific and Industrial Research Organisation by Government of India, Ministry of Science and Technology. As an NGO, GES brings out the technical facts of research in field of ecology and its allied subjects into simple and presents the same before policy makers, managers and people. Hence, cater towards dissemination of scientific findings to common man.**

### Workshops and Meetings

Programmes were held to orient villagers towards the role of biodiversity management committees and preparing people's biodiversity registers (PBRs) on 25 January and 8 February 2015.

An orientation programme was held for Loka Bharthi students on 5 April 2015 so that they could study ecological changes along the Gujarat coastline. They were trained to collect information from coastal villages using questionnaires.

An orientation programme was conducted for coastal villagers for protection and conservation of mangroves on 29 April 2015 at Zamdi village, Bharuch District, Gujarat.

### Research Activities

Study of the vegetation and soil characteristics in Banni and comparing the data set with the findings of the previous study conducted in 2002.

Collection of information on the agro-biodiversity, domesticated biodiversity and wild biodiversity of 33 villages around Vadodara.

Ecology of the Kim and Kolak rivers, with special emphasis on invertebrates. The water, sediment and biological characteristics of the riverine system were studied from the upper reaches to the estuarine region.

Study of wetland ecology of two ponds, at Alwa and Limda, near Vadodara and preparation of a conservation plan. The water, sediment and biological parameters were studied over three seasons. The catchment area was studied using remote sensing images, and a management plan was developed for the conservation of these ponds.

The Mini River, flowing within the Vadodara Industrial Area, was studied. The water and sediment quality, vegetation pattern and faunal composition along the entire stretch of the river was studied by laying quadrats.

Assessment of the groundwater in different wards of Vadodara city to assess the status of drinking water in the city.

### Events Organised

Orientation programme for BMC members towards sustainable management of wetland ecosystems under UNEP GEF project

Drawing competition for school children on the theme of mangroves and the coast at Neja village, Jambusar, on 30 April 2015.

### National Biodiversity Targets

#### Target 1

National Children Science Congress (NCSC) –training of students in biodiversity, climate change, the planet Earth, water conservation and energy

GES has created around 50 BMCs and trained them in the management of BMCs, maintenance of PBRs and the ABS mechanism.



**Target 3**

Trend analysis of the natural resource base (forest cover, land use, coastal water quality, water resource status, etc.) and giving suggestions for conservation and sustainable use are among the components of several ongoing GES studies.

**Target 4**

Study of the vegetation dynamics of Banni over 10 years, with special emphasis on the density of *Prosopis juliflora*.

Management of wetlands for controlling invasive species in the ponds at Alwa and Limda near Vadodara.

**Target 5**

GES is working on the fisheries of the Gujarat coast with special reference to sustainable livelihoods and the socioeconomics of fishers.

**Target 6**

GES is undertaking a study of the Marine National Park of the Gulf of Kachchh with an emphasis on the health of mangrove ecosystems and air pollution.

**Target 7**

A study of the estuaries of the coast of south Gujarat, which are breeding habitats for fish, to obtain insights into the level of pollution and its impacts.

**Target 8**

GES is implementing a UNEP GEF project that covers 15 villages situated in wetlands, with a special emphasis on wetland conservation.

**Visits**

- A GES team visited the Purna estuarine area and the Dangs region in May 2015 for identifying biodiversity heritage sites.
- Dr. Jayendra Lakhmapurkar attended the orientation programme conducted by the National Biodiversity Board, Chennai on laws and policies in July 2015.
- Two papers by Dr. Jagruti Rathod and Ms. Amita Sankhwal were presented at the National Workshop on Dryland Birds, held at Gujarat Institute of Desert Ecology (GUIDE), Bhuj on 8 January 2015.
- Dr. Deepa Gavali presented the findings of the study "Vegetation Dynamics in Banni Grasslands Under the Influence of Changing Climate" at a one-day workshop held at Bhuj on 13 February 2015.
- Dr. Deepa Gavali and Dr. Jayendra Lakhmapurkar attended the one-day national-level technical expert consultation on the ICZM plan for the Gulf of Kachchh on prioritization of coastal zone management held on 17 April 2015.





**Gujarat Institute of Desert Ecology (GUIDE) was established in May 1995 and registered as public trust and society. A multidisciplinary team of Scientists from diverse ecological background and vast field experiences and supporting Research Biologists form the backbone of the institute. GUIDE's research activities are linked to the goal of developing it as a centre of excellence in the study of understanding and addressing ecological, environmental and social problems and/or issues and promoting sustainable development in arid and semi-arid regions of the state.**

### Workshops and Meetings

Gujarat Institute of Desert Ecology (GUIDE), Bhuj, Kachchh, Gujarat, India is actively involved in various research, education and extension and outreach programmes to spread the message of biodiversity conservation among the various segments of society and stakeholders. During 2014–2015, two training programmes on mangrove plantation techniques were conducted in Modhwa village, on 17 and 24 July 2014. Around 60 people participated. The importance of mangroves, site selection, seed collection and nursery techniques, different methods of planting, post-planting care, the distribution of mangroves and the need for planting mangroves were explained through audio-visual presentations.

GUIDE also conducts Corporate–Community Partnership for Mangrove and Biodiversity Conservation workshops in Kachchh, Gujarat. A workshop was organised by GUIDE on 4 July 2014 as part of an IUCN-MEF project. Representatives of coastal industries of Gulf of Kachchh and IUCN participated in the workshop. Mr. P.R. Sinha, Head, India IUCN, Dr. Ishwar, Dr. Nisha D'Souza and over 20 industrial representatives participated in this one-day workshop. The major objective of these workshops is to analyse means of augmenting corporate–community partnership for conservation of mangroves and coastal biodiversity.

GUIDE has been actively carrying out watershed development programmes in many parts of Kachchh. As part of these activities, GUIDE also conducts training programmes for organisations according to their needs. A team of 35 members from the Institute for Integrated Rural Development (IIRD), Aurangabad, visited GUIDE during September 2014 for exposure to watershed programmes and training.

Birds, the most diverse group of vertebrates after fishes, are recognised as indicators of ecosystem health. Many species of dryland bird are under threat of extinction due to natural or anthropogenic activities. GUIDE organised the “National Symposium on Dryland Birds: Strategy for Conservation and Management”, on 9 and 10 January 2015, at Court Hall, KSKV Kachchh University, Bhuj to delineate future strategies for conservation of birds in dryland habitats. The symposium was attended by 175 participants, including Dr. J.A. Khan, IFS, Chairman, GBB, Dr. P.A. Azeez, Director, SACON, Mr. U.D. Singh, CCF, Kachchh, Prof. V.C. Soni, Prof. A.K. Sharma, Mr.





Shyamal Tikadar, CRD, Prof. B.M. Paracharya and professors, scientists, researchers and master's students from Kachchh University, Patan University, SP University, Saurashtra University, Bhavnagar University, MS University, Aligarh Muslim University and Ajmer University. Representatives of BNHS, other NGOs, birdwatchers' societies, industries, etc. also participated.

The Vibrant Gujarat Summit provides opportunities to exhibit strengths and core competences of Gujarat to potential investors and partners in different sectors. Since 2011, the education sector has been included as one of the development sectors in the summit. GUIDE also participated in the 13th Vibrant Gujarat event and had a stall in the Education Pavilion. Dr. Jayesh Bhatt represented GUIDE at the event, which was held between period 8 and 13 January 2015 at Gandhinagar. The theme for the education pavilion in Vibrant Gujarat 2015 was "Holistic Development through Education".

### Research Activities

GUIDE has initiated another collaborative research programme, "Climate Change, Uncertainty and Transformation". The inaugural meeting of this project was held at GUIDE from 2 to 7 February 2015. This project is based at the Norwegian University of Life Sciences at Noragric and has a consortium of partners. The meeting was attended by Prof. Lyla Mehta, Prof. Vinita Damodaran, Dr. Shilpi Srivastava;

Dr. Lars Otto Naess, from the Institute of Development Studies, University of Sussex, UK; Dr. Espen Sjaastad and Dr. Darley Kjosavik, from the Norwegian University of Life Sciences (NMBU), Norway; Dr. Synne Movik, from the Norwegian Institute for Water Research (NIVA), Norway; Dr. Rohan D'Souza from Jawaharlal Nehru University, New Delhi; Dr. Alankar, from SARAI, New Delhi; Dr. Mihir Bhatt, from All India Disaster Mitigation Institute; Mr. Shibaji Bhose and Ms. Upasona Ghosh, from Indian Institute for Health Management, Kolkata; Dr. N.C. Narayanan, from Indian Institute of Technology, Mumbai; and Dr. V. Vijay Kumar, GUIDE, Bhuj-Kachchh.

### National Biodiversity Targets

- GUIDE took up many research studies relevant to biodiversity during the period 2014–2015. The following are some of the important ones:
- Status and Ecology of Caracal (*Caracal caracal*) in Kachchh District, Gujarat.
- Digital Herbarium for Academic and Research Purpose– Angiosperms of Gujarat (Kachchh, Saurashtra, North Gujarat).
- People's Biodiversity Register and Biodiversity Monitoring Committee for 25 Panchayats of Mandvi Taluka, Kachchh District.
- Ecosystem Assessment of the Habitats in Kachchh District– Planning for Biodiversity and



Livelihoods into the Future, under the UGC-UKIERI programme.

- Assessment of the Impact of Agrochemicals on Avifauna in the Catchment of Keoladeo National Park, Rajasthan.
- Status and Distribution of Conservation Significant Areas for Wildlife in Kachchh District, Gujarat.
- Status, Conservation and Management Plan for Mangroves of Kandla Port Region.
- Apart from these, some microbial biodiversity studies were carried out, including “Ecological Perspective of Rann of Kachchh– Studies on Physico-chemical and Microbial Community Structure of Soil”, which was carried out in collaboration with SP University, Anand. The study “Exploration of Endophytic Microorganisms for Novel Bioactive Compounds from Mangrove Environment of Kachchh, Gujarat” was initiated.
- A total of 3400 herbarium sheets of 614 species were collected from the Kachchh region were prepared under the digital herbarium project. Of these 614 species, 116 species have been authenticated by the Arid Zone Regional Circle, Botanical Survey of India (BSI), Jodhpur.

## Visits

Dr. V. Vijay Kumar attended the International Round Table meet in connection with the research project “Climate Change and Its Uncertainty – From Below and Above” at the Institute of Development Studies (IDS), University of Sussex, Brighton, UK between 5 and 12 July 2014. He also attended the Fifth International Conference on “Drylands, Desert and Desertification”, held at Israel between 17 and 20 November, 2014 and “UK–Israel and Dryland Symposium”, held in Israel on 20 November 2014, and presented two papers. Dr. Anjan Kumar Prusty attended the Shechtman International Symposium “Sustainable Mining and Processing”, held at

Cancun, Mexico between 29 June and 4 July 2014. Dr. Prusty chaired a Young Researcher Session at this symposium.

Dr. Rohitkumar Patel attended a conference, “Status of Endemic and Threatened Angiosperms of Gujarat”, organised by the Department of Botany, MS University of Baroda, Vadodara on 14 and 15 July 2014. A symposium, “Desert Science – Opportunities and Challenges”, was held at Jai Narayan Vyas University, Jodhpur between 4 and 6 December 2014. It was organised by the National Academy of Sciences, India (NASI), Allahabad. Dr. V. Vijay Kumar delivered a talk, “Reclamation of Greater Rann of Kachchh, Gujarat – A Pilot Approach”, at this symposium. The Director, GUIDE (Mr. R.V. Asari) also attended the symposium. Mr. Bhagirath Paradva and Mr. Piyush Vaghasiya (JRFs) attended the Eighth National Symposium on Recent Trends in Science and Technology on 22 February 2015 at Christ College, Rajkot. Their presentation, “Vegetation Characteristics of Greater Rann of Kachchh, Gujarat”, was ranked second at the national level. Mr. R.V. Asari attended the events organized on 31 January and 2 February 2015 in celebration of World Wetland Day at Nalsarovar by Ministry of Environment, Forests and Climate Change (MoEFCC), GFD and IUCN. Dr. V. Vijay Kumar, Mr. P.M. Patel, Dr. K. Karthikeyan and Dr. Rohitkumar Patel attended the conference “Sustainable Development and Water Management” organised by the Ministry of Water Resources, River Development and Ganga Rejuvenation, Government of India, New Delhi on 16 January 2015 at Jilla Panchayat, Bhuj–Kachchh.





**Organization for Marine Conservation and Research (OMCAR) Foundation is a registered, non-governmental, non-profit organization with tax exemption of 80G and 12AA and FCRA. The Foundation is engaged in a multitude of activities for the conservation of coastal and adjacent ecosystems of northern Palk Bay, India. In-situ conservation and Environmental Awareness are among the chief areas of concern for OMCAR Foundation. The marine and coastal ecology research programme strives to promote and enhance the conservation of mangrove and sea-grass ecosystems in the region by a participatory approach involving local community. Through our Environment Education Programmes in coastal schools, the foundation aims to strengthen individual and team responsibility among school students in nature conservation.**

### Survey of Seagrass Beds – Dugong Feeding Grounds

Seagrass beds were surveyed using acoustic, video and scuba ground truth data collection. Since the start of this project in 2012, about 210 km<sup>2</sup> was covered and important dugong feeding grounds were identified. The distribution of different species with depth was determined. This survey will cover the near-shore seagrass beds of the entire Palk Bay in 2–3 years.



The findings (photos, videos and species identified) of this research work are being shared with the local community through awareness and education events regularly, which will be also published in scientific journals soon.

### Artisanal Fisher Survey in Palk Bay

Artisanal fishers in the Palk Bay follow traditional, unique methods of fishing such as pot fishing, sail bait fishing and free swimming. They still use traditional wooden canoes in the near-shore waters and collect shrimps by hand from mangrove waters. No survey report is available about the artisanal fishers of Palk Bay. Such a survey is necessary for improving their livelihoods and preserving their traditional methods. The artisanal fisher survey aims to fill this gap by identifying traditional fishers in local fishing villages. The staff visited the households of the fishers to understand their economic conditions, problems with continuing to use traditional fishing techniques and ask them for suggestions for improving the fish productivity in their traditional fishing areas. The survey will be completed at the end of this year.

### Sustainable Fishery Education in Schools

Sustainable fishery education events were conducted at three schools. Sixty students participated in the programme held at T. Kottai Melakadu Government Higher Secondary School. Fifty-five students participated in the event at Naduvikadu Oxford Metric Higher Secondary School, and 63 students participated in the event at Adirampattinam Imam Shabi Matriculation School. The productivity of the Palk Bay marine fishery, fish assemblages, the mangrove ecosystem, the seagrass ecosystem, the importance of fish protein for a healthy society and good practices for sustainable fisheries were explained to the students. They were invited to participate in the events to be held at the Palk Bay Centre for Environmental Education in the forthcoming months.

### District-Level Teacher Training Programme for Environmental Education

Teachers, who are Eco-club and National Green Corps coordinators in various middle, high and higher secondary schools of Thanjavur District attended a



field training programme held at OMCAR Palk Bay Centre, near Mallipattinam, Thanjavur district. This training programme was conducted by the C.P.R. Environmental Education Centre, Chennai and OMCAR Foundation at the OMCAR Palk Bay Environmental Education Centre, located at Velivayal village, on the coast, near Mallipattinam. The importance of marine conservation, the biodiversity of

mangroves and managing its conservation and the need for creating awareness about mangroves among the public and educating people about marine and coastal areas were discussed.

Underwater research equipment, scientific instruments that are useful for studying marine sediments and solar energy equipment were displayed.







**Institute for Integrated Rural Development (IIRD) has emerged out of the need to strengthen grassroots development initiatives for promoting sustainable livelihoods. Since 1987, IIRD has been exploring into the area of "self-reliant" development through people's initiatives focusing on organic agriculture, alternative marketing, appropriate housing, micro-enterprise development, community based health, environmental education and women's development. Together with the people, IIRD strives to bring about better livelihoods-improved incomes, appropriate housing, better health and nutrition, inclusion of the marginalized - particularly elderly destitute persons and persons with disabilities, and a more sustainable environment.**

### Workshops and Meetings

- Participated in the International Organic World Congress, held from 13 to 15 October 2015 and gave a presentation on participatory guarantee systems (PGS) for organic agricultural produce.
- Series of workshops conducted in six districts to identify local crop varieties in the Marathwada region of Maharashtra.
- Series of workshops conducted in five districts to promote organic farming in the Marathwada region of Maharashtra.
- Three regional workshops on soil and water conservation and management in Aurangabad conducted, in which NGOs and field-level representatives actively engaged in community-based soil and water conservation measures.

### Research Activities

- Research study, "Maharashtra Gene Bank", carried out to identify and document the different crop varieties in the Marathwada region of Maharashtra.
- Survey of the water resources available in 17 villages carried out, study of traditional methods of soil and water conservation carried out and potential measures of conserving soil and water Identified.







## Events Organized

- Environment Day was celebrated on 5 June 2014 and on 5 June 2015. Village-level workshops focused on one theme on each of these days.
- Drawing and poetry competitions for school children on the theme of biodiversity.
- International Seed Day was celebrated on 26 April. Traditional farmers were involved in strengthening local village-based seed banks.

## Visits

- A team from IIRD, along with field-level representatives from the Marathwada region, visited Kachch District, of Gujarat, in September 2014 to learn about traditional water conservation and management measures. The visit was organised by Gujarat Institute for Desert Ecology.
- Representatives of IIRD visited villages in Thane District, of Maharashtra, in September 2014 to study the participatory plant breeding practiced by tribals in the district. The visit was organized by BAIF(Bharatiya Agro Industries Foundation) Development Research Foundation.





**Aaranyak is a registered society working in the field of nature conservation in North East India since 1989. Its strength lies in applied research in biological and social field and its thrust area of work is the North Eastern India and Eastern Himalayas. From a small beginning in the year 1989, it has been slowly, but steadily growing as a premier research based organisation in North East India to cater the complex need of biodiversity conservation in the culturally diverse region of India. It is being recognized as a Scientific and Industrial Research Organization (SIRO) by the DSIR of Ministry of Science and Technology, Govt. of India.**

### Workshops and Meetings

- A two-daylong training programme was organised for Dolphin Conservation Network (DCN) members at IIBM, Guwahati on 21 and 22 January 2014. DCN is a network of community volunteers spread over the important dolphin habitats of the Brahmaputra River and its tributaries.
- "Orientation Workshop on Effective Legal and Scientific Tools for Participating in Environmental Decision Making" was conducted at IIBM, Guwahati on 30 and 31 January 2014.
- A total of 70 individuals participated in a day-long orientation programme held at IIE,



Guwahati on 2 February 2014. The programme focused on the wetlands of Assam in the context of hydrological connectivity, climate change, ecosystem services and livelihoods, with reference to Deepor Beel, Kamrup (Metro) District, Assam.

- An 8-daylong workshop for journalists on climate change was organised at Tinsukia District, Assam, from 16 to 23 February 2014. A total of 25 journalists from different parts of the globe participated in this workshop.
- A conference, "Climate Change Adaptation: Priorities for Research, Policy and Practices in North East India", was organised at NEDFi, Guwahati on 25 and 26 February 2014. More than 100 people participated in this conference.
- The "State-Level Workshop on Right to Water and Sanitation" was organised on 20 and 21 March 2014 at Guwahati.
- A training programme on remote sensing and GIS applications in various fields between 4 and 10 January 2014 at Aaranyak.
- A training programme on remote sensing, GIS and GPS applications in municipality area study was conducted from 22 to 24 May 2014.
- A campaign called "Rhino and Tiger Goes to School" was organised simultaneously at Kaziranga National Park, Rajiv Gandhi Orang National Park, Pobitora Wildlife Sanctuary and Guwahati in 2014 and 2015.
- As part of the silver jubilee celebrations of Aaranyak, an art competition, "Conservation through Colours", was organised for school children in June and July 2014 at 63 places in Assam. More than 9300 children participated.
- A moving photographic exhibition was organised at different places in the state, including Guwahati, Dibrugarh, Tinsukia and Kaziranga, as part of the silver jubilee celebrations of Aaranyak.
- "Nature Orientation Initiative", a four-day-long residential programme designed for the

- students of fringe areas of protected are as to strengthen conservation was organised at Kaziranga National Park from 31 January to 3 February in 2014 and 2015 in Bagori Range.
- “Nature Orientation Initiative”, a three-day-long residential programme for students was organised at Pobitora Wildlife Sanctuary during 25–28 February 2015.
  - Hoolock gibbon conservation training was organized at Gibbon Conservation Centre Morioni, Jorhat from 24 to 30 January 2015 and from 21 to 27 March 2015.
  - A radio programme, “Aamar Aranya”, was initiated to sensitize the people of the state. This is being broadcast through All India Radio, Guwahati since August 2014.
  - A legal orientation programme was organized for the forest staff of Manas National Park.

### Research Activities

- Monitoring of Gangetic dolphin in Assam using acoustic and standard survey methods.
- Monitoring tiger population and density in Manas National Park and Kaziranga National Park for the National Tiger Conservation Authority and Wildlife Institute of India, in connection with all-India tiger estimation efforts.
- Non-invasive genetic monitoring of tigers in tiger reserves of Arunachal Pradesh.
- Population genetic monitoring of greater One-horned Rhino (*Rhinoceros unicornis*) in Jaldapara National Park, West Bengal, India.
- Non-invasive genetic population monitoring of Javan and Sumatran rhinos in Indonesia.
- Monitoring nesting colonies of greater adjutant storks in Assam, with special emphasis on Dadara village of Kamrup District, Assam.
- Impact of embankments on community adaptive capacity and resilience.

- Testing of flood early warning system to vulnerable populations in eastern Assam.
- Study on environmental immigration from flood and erosion-affected areas of eastern Assam.
- Understanding ecosystem change and ecosystem–livelihoods interface to support policy on incentive-based mechanism for better management of ecosystem services in Poba Reserve Forest and Motapung-Maguri Beel.
- Land use/land cover mapping and GIS database creation for Kaziranga–Karbianglong landscape of Assam.

### Awards Received

- Indira Gandhi Paryavaran Purashkar 2012 from the Secretary to the Ministry of Environment, Forests and Climate Change (MoEFCC), Government of India, on 2 February 2015 at the MoEFCC, New Delhi.
- Aaranyak and ICIMOD jointly received the 2014 Lighthouse Activity Award, announced by the United Nations Framework Convention on Climate Change (UNFCCC) in Lima, Peru on 11 December during COP-20 (United National Climate Change Conference), which was held in Lima from 1 to 14 December 2014. The Lighthouse Activities selected by the United Nations Climate Change Secretariat, under its Momentum for Change Initiative, from all over the world, are inspiring and transformational mitigation and adaptation activities







**Nature, Environment and Wildlife Society (NEWS) believes that one ecosystem is one planet. Humans as well as every other organism are dependent on their environment. NEWS is working on various projects to increase awareness among people, encouraging people for sustainable development and even adapting mitigation and adaptive strategies for restoration and protection of resources.**

### Workshops and Meetings

- Workshop, "Sharing Rural Service Provider and Flagship Programmes", was conducted at NEWS head office on 7 February 2014 conducted by Swayambhar.
- A four-day theatre workshop was organised for school children of higher classes in Raidighi

School– Pathar Pratima during February 2014 for conservation of mangroves. After this workshop, the students designed and wrote the script of the play, staged the drama in schools and were invited to stage it at other public functions. Noted theatre personality Mr. Tirthankar Chanda and his team took the lead in organising the same.

- NEWS addressed the NCC Cadet Corps during a day-long programme held at Fort William on 26 May 2014 to raise awareness about the environment and screened the film *Yeh Mera India*, produced by Animal Planet
- NEWS participated in the "Annual Livelihoods Partners and Investors Meet" from 8 to 10 July 2014 at Paris, where challenges for upscale afforestation activities were discussed.
- Awareness meetings were held with the students of Indian Institute of Social Welfare and Business Management (IISWBM), Kolkata on 29 August 2014.
- On 30 August 2014, NEWS organised a day-long workshop for the forest guards and range officers of Sundarban Biosphere Reserve and Sundarban Tiger Reserve, in which the *Manual*







*of Mangrove Plantation in Sundarban on the Basis of the Present Status Report* was distributed among the forest guards. The manual can serve as a guide for making plantation strategies in the Sundarbans.

- NEWS addressed the students at Ramkrishna Mission Ashram, Golpark about the issues and challenges of the Sundarbans in September 2014.
- NEWS organised a seminar for the faculty of Techno India, Salt Lake Campus, with a campus organisation (Ichhe Dana). A presentation on the environment, the importance of the Sundarbans and the role of youth in environmental protection was made in October 2014.
- The Livelihoods (France) team, with European and Indian delegates, trained 18 community members (Mangrove Stewards) in the Sundarbans on different aspects and methods of measuring the sequestered carbon in a mangrove plantation between 8 and 12 December 2014. The use of a scientific methodology with apps for quick data entry and submission and providing updates through mobile phones was accepted well by the Mangrove Stewards.
- On 8 and 9 April 2015, Naandi Foundation, a partner NGO, visited the community villages and plantation plots in the Sundarbans, and an interactive workshop was organised by NEWS to discuss different issues and factors related to the implementation of income generation activities as a part of the mangrove restoration project.



## Visits

- Mr. Bernard Giraud, President, Livelihoods, visited the Sundarbans from 13 to 15 February 2014. He visited the mangrove plantation sites of the mangrove afforestation, reforestation and restoration project and met and interacted with the local community.
- World Bank representatives and State Project Management Unit personnel met the NEWS team for their first Entry Point Activity at Ramkarchar Gram Panchayat, in Sagar Island, on 20 June 2014.
- The first carbon verification and validation was done in March 2015 by UNFCCC delegates (AFOLU Services) for the mangrove restoration project.
- Noted film and television personality Mr. Badshah Maitra visited Kanthalberia and Harbhangi-Narayantolla for mangrove conservation and interacted in a do's and don'ts discussion with the communities.
- In February, 2015 NEWS assisted the Hon'ble National Green Tribunal, Eastern Bench with obtaining facts and reports about irregularities in the eco-sensitive zones of the Sundarbans. The amicus curiae of the court was accompanied by NEWS and submitted a detailed report, on the basis of which the Hon'ble Court directed the government to enforce the rules and regulations strictly in this fragile area.



## Research Activities

- NEWS has been collecting Salinity and pH data of soil and water, in the upper and lower reaches, twice a month for 3 years in the five main rivers of the Sundarbans, *i.e.*, the Bidyadhari, Matla, Raimangal, Saptamukhani-Thakuran and Muriganga, to identify the changes in salinity in the region. The pilot phase of the project “Estimation of Population Trend of Lesser Cats in Buxa Tiger Reserve”, carried out using camera traps was completed and the report submitted in June 2014. The next phase of camera trapping in the entire area has been completed. The project is in the report submission stage.
- A project to publish a manual containing life-size footprints of all the Indian mammals in the Alipore Zoological Gardens, Kolkata and Padmaja Naidu Himalayan Zoological Park, Darjeeling was carried out in collaboration with the State Zoo Authority, West Bengal. A total of 32 pugmarks and hoofmarks have been collected from all the mammals present in these two zoos. The manual is in press.
- The project “Benchmark Studies on the Status of Sundarban Mangrove Forests”, under the IUCN LGP “Alternative Livelihood Options for Vulnerable Mangrove Resource Users in the Sundarban Biosphere Reserve, West Bengal” was completed, and the project report was submitted in June 2014.
- NEWS, as a domain expert, was engaged in the project “Tourism Road Map– Documents on Sundarban, Blueprint for Transformation” as a consultant to Yes Bank collaboratively with the Department of Tourism, Government of West Bengal in sourcing, collecting, sharing and analyzing the key data necessary overall for the study, which assessed the present status of tourism in the Sundarbans to develop a roadmap for establishing a community-based tourism Model to facilitate future development in the region.
- In collaboration with Earthwatch Institute, UK, NEWS is carrying out a freshwater watch programme to assess the impacts of changes in the water use pattern and water quality on the aquatic flora of the East Kolkata Wetlands– a Ramsar site.
- A concurrent evaluation of the National Afforestation Programme (NAP), implemented by 20 forest development agencies (FDAs), under West Bengal State Forest Development Agencies for the sanctioned programme during 2010–2011 and 2011–2012, is being carried out by NEWS.
- Compilation of growth data and the soil characters from 192 sample points in various strata of plantation areas was carried out to determine carbon sequestration values. The data collection was performed using GPS, sophisticated forestry measuring equipment and Android phones (for uploads). The entire exercise was carried out by the local communities through a vigorous exercise.

## Events Organised

- NEWS participated in the Lokopriyo Mela, held at Sonakhali in Basanti in the Sunderbans on 23 January 2014. NEWS put up a stall where posters and drawings made by various school students in the Sunderban area regarding the importance of the mangrove forest were displayed. These imparted knowledge about the various species of mangrove tree and their properties.
- NEWS, in collaboration with Sunderban Tiger Reserve, distributed winter gear for 275 forest guards of Sunderban Tiger Reserve and Biosphere Reserve on 24 February 2014.
- NEWS put up a stall at the Notun Hat Krishi Mela from 29 January to 4 February 2014 that sought to spread awareness about the importance of the mangrove forests of the Sunderbans through the use of flex, posters and drawings made by Sunderbans school students. It also screened special films such as *Aila & Sunderban – Glorious Green and Beyond*, a production of NEWS.
- A photography exhibition was held from 29 January to 4 February 2014 at the Academy of Fine Arts, Kolkata. The exhibition was colourful, and photographs taken by veterans as well as upcoming naturalists and lovers of nature and wildlife were exhibited. The exhibition was inaugurated by Mr. N.C. Bahuguna, then PCCF, Department of Forests, Government of West Bengal and Mr. Pradeep Vyas, Additional PCCF.
- NEWS, in collaboration with Nopany Institute of Healthcare Studies and Rotary Club of Calcutta, Chowringhee, organised the Handicapped Aids Distribution Camp at Bali-I Gram Panchayat on 9 March 2014.
- NEWS put up a stall at the Namkhana Gramin Mela on 4 and 5 April 2014. Posters displaying mangrove conservation activities in the Sunderbans were put up.
- On 17 April 2014, NEWS participated in Baisakhi Mela at Jyotishpur to spread awareness about the importance of the mangrove forests of the Sunderbans.
- A blood grouping camp was organised on 4 and 5 April 2014 at the Khansaheb Abad High School, Rudranagar, Sagar–Sunderbans by NEWS in collaboration with Livelihoods. The blood groups of a total of 836 students were identified by pathologists.
- On World Environment Day, 2014, the staff of Standard Chartered Bank, NCC cadets, other community members at the East Kolkata Wetlands (EKW) and the students and staff members of Budge Budge Subhash Girls High School distributed paper bags made by them to the public in the market places at the respective venues and pointed out the harmful aspects of using plastics. The staff members of the Yes Bank branches at Camac Street and Dalhousie also joined the campaign and carried out a similar exercise to generate awareness about the use of recycled materials.
- A microphone announcement and interactive programme was conducted in the Bidya–Jyotishpur area with the support of the Basanti police on 26 July 2014 to create awareness about problems such as grazing, fishing and felling of trees at this mangrove plantation site.
- With very limited corporate funding, smokeless *chullahs* were introduced in 165 households in Harekrishnapur village of Jyotishpurgram





panchayat from August 2014. The *chullahs* not only reduce the fuel wood consumption and the anthropogenic pressure on the mangrove forests but also reduce the health hazards faced by the women folk. Further, the technology is transferred to the communities.

- On 3 September 2014, NEWS organised a talk and a film show in collaboration with Birla Institute of Technology & Management (BITM) on elephant conservation. A special screening of *God on the Edge* was also organised.
- On 19 September 2014, NEWS, in collaboration with Earthwatch Institute and HSBC, organised the inaugural Citizen Science Leaders (CSL) programme to assess the impacts of changes in the water use pattern and water quality on the aquatic flora of the East Kolkata Wetlands for the project "Citizen Science Research Project in East Kolkata Wetland".
- At Kolkata Book Fair, in 2014 and in 2015, NEWS put up a book stall to spread awareness about conservation.
- A joint raid was organised with the Police Department, Canning Division against illegal encroachment upon mangrove areas for fisheries in Dabur Char on 21 October 2014.
- On 14 and 15 January 2015, NEWS put up a stall at Gangasagar Mela to exhibit homemade handicrafts. These were made by self-help group members of Ramkachar, Sagar Block. The stall was put up to encourage the members to continue their work and to make them realize the market value of the handicrafts.
- NEWS put up a stall on 24 and 25 January 2015 at NGO Mela at Bali, Sundarbans, 24 Parganas to exhibit the work done by NEWS in protecting the mangroves and their resources.



- NEWS celebrated World Environment Day on 5 June 2015 by creating awareness among school children about waste water management in the East Kolkata Wetlands.

## National Biodiversity Targets

### Target 2

"Specific programmes linking economic and social wellbeing based on conservation and sustainable use action combined with equitable sharing of benefits developed by 2015 and implemented by government agencies as well as all relevant stakeholder groups, including private sector, thereafter." The target combines issues of economics, ecosystems and business with conservation, sustainable use and access and benefit-sharing issues.

## NEWS

Mangrove Restoration programme with private business organisation restores and builds functional mangrove ecosystem for the community and delivers carbon credits to the Financers in an upfront investment protocol. An extent of 4404 hectares of mangroves has been restored and protected. A total of 30,000 women were involved in the project. The project was implemented on government lands with funds from a French company, Livelihoods, a partnership initiative of Danone.

### Target 3

"Ecosystems and biodiversity goods and services maintained, translated into local livelihood security programmes that results in revival of at least 7–10 per cent of representative ecosystems by 2020." Conservation and sustainable management of ecosystems for the benefit of society is a necessary pre-condition for successful restoration of ecosystems and habitats.





## NEWS

Fish, crab and honey resources are protected through mangrove afforestation. Natural resources are being managed sustainably. Pisciculture of local varieties of fishes are being promoted, and agriculture through traditional organic farming practices and using indigenous farming tools is being promoted under “Income Enhancement by Low Cost Investment” programmes. A total of 32 farmers have adopted total organic fish cultivation over five months. They were not provided any grants, and only training support was provided. At least 200 farmers will be targeted in the System of Rice Intensification (SRI) mode in the forthcoming paddy season.

### Target 4

“By 2015, a coordinated and incrementally tested action programme on implementing the Biological Diversity Act (2002) and the Rules (2004) developed with a target that by 2020, policy, regulatory and enabling actions for conservation, sustainable use and benefit sharing are firmly in place”. Strengthening the implementation enhances better management, use and sharing of benefits of actions related to biodiversity goods and ecosystem services in the country.

## NEWS

There has been continuous media coverage highlighting encroachments in the mangroves. The Hon'ble National Green Tribunal has issued strict laws pertaining to conservation of the Sundarbans. The Joint Secretary of NEWS is a member of the high powered committee formed under the Chief Secretary for formulating guidelines. Enforcement of laws and regulations is being given priority. The State Pollution Control Board, West Bengal, is implementing the laws pertaining to the region in consultation with relevant stakeholders. The human face of conservation is often not highlighted and implemented as “against humanity”.

### Target 5

“By 2020, achieve at least 5 per cent increase in agricultural production systems based on enhanced use of agro biodiversity, participatory actions, public-private partnership and appropriate investments in inclusive development agenda

besides developing better approaches for fisheries and livestock management.” The target combines the issues of conservation, sustainable use and sharing the benefits of use, wrapping them into one suggesting an approach that is measurable and meaningful for achieving the food, nutrition and health securities of the people in India.

## NEWS

Promotion of integrated crop and livestock farming, local varieties of seeds, revival of traditional watershed management practices and discouraging the indiscriminate use of chemical fertilisers and pesticides for generating additional income to farm families. Organic mapping has been initiated by NEWS in the Sundarbans, and farmers have developed and preserved more than 100 types of local variety of seeds. The target is to have a committed Mangrove Steward from each village, giving first-hand information about losses, outbreaks of diseases, encroachment or felling of trees within the mangrove network in the Sundarbans through a participatory process.

### Target 6

“Develop integrated action frameworks, based on policy and regulatory reviews and implementation experiences, on forest conservation, protected areas management that include coastal and marine ecosystems in a manner that enhances local governance systems by 2017, resulting in at least 2–5 per cent increase in their cover.” The target also focuses on issues of institutional, legal and policy-based synergies, which is a key pre-requisite for a better governance system.

## NEWS

NEWS is working with the different departments of the government, especially local panchayats, to create environmental awareness and enforce policies related to the Sundarbans at the local level. NEWS is also in the decision-making committee. It ensures better sensitisation towards biodiversity-related issues and possible actions that can be taken for environment protection. Presently, NEWS is working with 58 gram panchayats in 14 blocks of the Sundarbans. The challenge is immense but achievable.



**G.B. Pant Institute of Himalayan Environment and Development (GBPIHED)** an autonomous institute of the Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India has been issued a mandate of achieving sustainable development and environmental conservation in the Indian Himalayan Region (IHR). The institute functions in a decentralized manner, with its headquarters located at Kosi-Katarmal, Almora, Uttarakhand, and four regional units at Mohal-Kullu, Himachal Pradesh, Srinagar-Garhwal, Uttarakhand, Pangthang, Sikkim and Itanagar, Arunachal Pradesh. Recently, the fifth unit of GBPIHED was established at MoEFCC, New Delhi to look into mountain issues holistically and bring the mountain perspective to plans and policies. The institute has biodiversity conservation and management as one of its major thematic thrusts, with its focus on conservation and sustainable use of the biological diversity in the Indian Himalayan Region (IHR). During the year 2014-15.

### Activities

- (1) Organization of landscape *yatras* as a tool for promoting conservation and sustainable use of biological diversity.
- (2) Promotion of conservation education through nature camps.



- (3) Demonstration of *ex situ* conservation of Himalayan biodiversity elements by way of focusing on threatened species.
- (4) On-site exposure and training in nature interpretation and learning.
- (5) Strengthening of citizen science programmes for sensitization of diverse stakeholders.
- (6) Promotion of eco-tourism for maintaining ecological integrity, improving livelihoods, etc.



All these activities will continue through the 12th plan so as to enhance their contributions towards achieving Biodiversity Targets 2020.

In addition, the institute has eight new initiatives

- Himalayan Research Fellowships.
- Himalayan Young Researchers' Forum.
- Himalayan Research Mentors' Forum.
- Himalayan Popular Lecture Series.
- Himalayan Peoples' Representatives Meet.
- Himalayan Students' Nature Awareness Campaign.
- Himalayan Farmers' Livelihoods Enhancement Drive.
- Mountains Environmental Policies Repository.

### Strides in

- (1) Strengthening regional cooperation through coordination of transboundary conservation and development initiatives.

- (2) Implementing the Task Force on Forest Resources and Plant Biodiversity under the National Mission for Sustaining Himalayan Ecosystems.

### Workshops and Meetings

- (i) Second national consultation workshop, 'Khangchendzonga Landscape Conservation & Development Initiative (India)', at Gangtok, Sikkim (9 April 2014).
- (ii) Consultative meeting under global pollination project, 'Conservation and management of pollinators for sustainable agriculture through ecosystem approach' at GBPIHED, Himachal Unit, Mohal-Kullu, Himachal Pradesh (11 April 2014).
- (iii) National consultation for 'Preparation of BSL-India Conservation and Development Strategy (CDS) and Comprehensive Environmental & Socio-economic Monitoring Strategy (CESMS)' under BSLCDI at Itanagar, Arunachal Pradesh (17–18 November 2014).
- (iv) National consultation cum write-shop on Khangchendzonga Landscape Conservation & Development Initiative in India for developing CDSs at Gangtok, Sikkim (3–4 December 2014).
- (v) Workshop, 'Youth and Climate Change in the Indian Himalayan Region', in collaboration with Central Himalayan Environment Association (CHEA), Nainital, Uttarakhand, at GBPIHED, Himachal Unit, Mohal-Kullu, Himachal Pradesh (1–3 December 2014).

### Research Activities

- 1) A study was conducted in selected eco-tourism sites in Himalayan states (Himachal Pradesh, Uttarakhand, Sikkim and Arunachal Pradesh) to understand the potential of ecotourism in biodiversity conservation and sustainable livelihoods in the IHR. The arrival of tourists over a period, existing policies related to promotion of eco-tourism and institutional approaches to promote tourism were studied. Each site was assessed to develop an ecotourism model that integrates tourism with ecology, economy and

culture and to strengthen community conservation approaches to improve the quality of the product. For example, an analysis of the cultural tourism at Hadimba Temple, at Manali, and nature-based tourism (white water rafting) in the River Beas, in Kullu Valley, in Himachal Pradesh, revealed that the former site, being a national heritage monument of archaeological importance, is visited by large numbers of tourists, which provides local vendors with a good income. Tourists visiting Hadimba Temple (n=236) reported different levels of satisfaction with the environmental cleanliness, waste management, rituals, implementation of good practices and knowledge gained. Similar studies were carried out at other sites such as the River Beas, in Himachal Pradesh, Tsomgo Lake, in Sikkim, and the Tehri dam site, in Uttarakhand.

- 2) A biodiversity assessment was conducted to develop wildlife management/biodiversity conservation plan for Trans-Arunachal Highway sectors: Potin–Bopi, Godak–Tai, Tai–Bame, Nechipu–Bana and Seppa–Passa. A total of 859 species were found, of which 724 species (84.28%) are ethno-botanically important. Of these, 231 species (31%) are trees, 224 (30%) are herbs, 151 (21%) are shrubs and 109 (15%) are climbers. A total of 287 species (33%) are rare, endemic and threatened species (RET), and 23 species are endemic to Northeast India, Indo-China and the Arunachal Himalayan Region. In addition, 52 animal species of prime





ethnozoological significance were recorded along the Trans-Arunachal Highway, 80% of these being mammals, 12% birds and fish and the remaining 8% other species. Most of the animals had indigenous faiths and beliefs closely associated with them.

3) The following were carried out to understand the patterns and processes of biodiversity in a changing resource use and climate situation:

- A study of the dependence of the local people on the natural resources of the Kumaun region,
- A qualitative assessment of the floristic diversity and regeneration patterns in Kanawar Wildlife Sanctuary, Himachal Pradesh,
- Identification of indicators for biodiversity conservation and sustainability in the Kanchendzonga Biosphere Reserve, Sikkim.
- An inventory of ethnomedicinally important plants at West Kameng, Arunachal Pradesh.

4) Pollination deficit protocols (PDPs) were implemented successfully at three STEP sites (Mustard, Apple and Large Cardamom) for three consecutive years (two years for Mustard). Some broad trends were identified. Bumblebees (*Bombus* sp.) and the Honey-Bee (*Apis cerana*) were the most frequent visitors to Large Cardamom, and the density of pollinators correlated positively with the flowering phenology of the target crop. It was revealing that higher bumble-bee densities resulted in significantly ( $p < 0.03$ ) higher yields of the crop (on average 21–41 g/plant). In the case of Apple, higher population densities of *Apis cerana*, *Bombus* sp. and wild bees were found in orchards close to natural habitats. Higher fruit set rates and fruit yields were observed in orchards supplemented with bee colonies, irrespective of the relative location of an orchard with respect to natural habitats. There was a declining trend in the pollinator density in the

second year for Mustard, but there was no significant impact on the yield.

5) Implementation of the Kailash Sacred Landscape Conservation and Development Initiative, the first transboundary regional cooperation project of its kind, was initiated. Extensive field surveys and consultations were conducted along a horizontal transect to

- Assess and map resources.
- Assess needs.
- Identify sites for long-term monitoring.

A stakeholder's consultation and needs assessment workshop was organized for the horizontal transect. Further, students and teachers of 13 schools along the transect were motivated to participate in National Nature Camps during 2014 to establish a more dynamic process of awareness generation in the landscape. These schools will be associated in the long-term with the project to generate information on the resources of the landscape, map poverty and identify the people's needs and priorities.

6) Under the Khangchendzonga Landscape Conservation and Development Initiative, a national consultation (inception meeting) was organized on 28 and 29 January 2014 to:

- Delineate the proposed landscape, including Sikkim and a part of West Bengal (Darjeeling and Jalpaiguri districts).
- Identify two nodal persons (one each for Sikkim and West Bengal).
- Form a core group.
- Form two working groups (one each for Sikkim and West Bengal) to provide inputs for a feasibility assessment.
- Develop plans for the future.

## Events Organized

- International Day for Biological Diversity' (22 May 2014) celebrations were organized at the

GBPIHED headquarters, at Kosi-Katarmal, and at different units of the institute.

- Three concurrent landscape *yatras* were organized along a vertical transect under the Kailash Sacred Landscape Conservation and Development Initiative (KSLCDI). Considerable information was generated about the landscape, the interfaces and transition of systems and their possible management and livelihood opportunities and challenges (24 May to 8 June 2014).
- The 'First Meet of Himalayan Young Researchers' was organized at GBPIHED, Kosi-Katarmal, Almora, Uttarakhand (7–9 September 2014).
- Volunteers programmes were organized as part of the GBPIHED-EWI Himalayan ecosystems research project 'Assessment and quantification of forest ecosystem services with special emphasis on pollination in the Indian Himalayan agro-ecosystems' at the Himachal Pradesh unit, at Mohal-Kullu (9–18 October 2014).
- KSLCDI was showcased at the Jeoljibi International Trade Fair (14–17 November 2014) to create awareness about the project and its components in both the India and Nepal parts of the Kailash landscape.
- As part of a new initiative, the 'Popular Lecture Series', the institute organized lectures by eminent persons on real-time problems of the



Himalaya. Lectures were organized at the headquarters and regional units.

- A training programme for high school students was organized during 1–5 December 2014 at the Garhwal unit of the institute to :

- (1) Carry forward the scientific spirit, popularize scientific knowledge, promote scientific thinking and conduct activities related to science and technology among students.
- (2) Conduct exposure visits for students to various research and development (R&D) institutions, high-tech laboratories and field demonstration sites.
- (3) Encourage students to choose science courses and select careers in science and technology.

### National Biodiversity Targets

The institute is committed to the achievement of the National Biodiversity Targets 2020. In this context, the institute has a theme, 'Biodiversity Conservation and Management', dedicated to conservation of Himalayan biodiversity and issues related to its management. The institute contributes directly or indirectly to the achievement of the following National Biodiversity Targets:

National Biodiversity Target 1. Conservation education programmes for students and teachers are organized regularly with the aim of creating awareness among youth and to make them understand the value of biodiversity and the steps they can take to conserve and use it sustainably. During 2014, the institute launched eight new initiatives to engage with multiple stakeholders. One of these initiatives, 'Himalayan Students Awareness Campaign' attempts to promote awareness among young children.

National Biodiversity Target 2. Attempts to link eco-tourism with conservation provide ample opportunities for empowerment and self-reliance by offering marked-oriented solutions. Eco-tourism, by definition, demands responsibility and the respect of the stakeholders involved for the surroundings. The possibility of extending eco-tourism to nature-based (hiking to Alpine meadows, peaks and lakes, bird watching, forest walks, wildlife watching), culture-

based (food festivals, village festivals), pilgrimage-based (temples, monasteries), leisure-based (sightseeing, ropeways) and MICE (meetings, incentive tours, conferences and expos) activities and special events (Buddha Mahotsav, Kullu Dussehra) was explored. Appropriate execution of the plans will help maintain the ecological integrity and enhance the livelihood options of the locals.

**National Biodiversity Target 3.** The institute, through different land restoration programmes, is contributing to minimization of the rate of degradation in the IHR. The institute has already developed different prototypes for participative rehabilitation of degraded land in the IHR.

**National Biodiversity Target 4.** GBPIHED has initiated extensive mapping of invasive species under its Transboundary Conservation and Development Initiative in the Kailash landscape to suggest a comprehensive management plan.

**National Biodiversity Target 6.** Extensive ecological studies are being taken up in representative biodiversity-rich areas (biosphere reserves, protected areas, etc.) and sensitive habitats (e.g. Alpine habitats, the timberline, wetlands) to strengthen specific conservation and management strategies. The institute is also involved in monitoring changes at the ecosystem and species levels. In addition, the institute is effectively using biotechnological approaches, especially for species that are difficult to propagate using conventional methods and that are rare in the wild.

**National Biodiversity Target 7.** The institute is involved in assessing the genetic diversity of rare, endangered, threatened, endemic and high-value plants to minimize genetic erosion and safeguard their genetic diversity.

**National Biodiversity Target 9.** Through its Transboundary Conservation and Development Initiative, the institute is facilitating the formation of biodiversity management committees (BMCs) and preparation of people's biodiversity registers (PBRs) in remote villages. GBPIHED is also supporting awareness and capacity building programmes for diverse stakeholders.

**National Biodiversity Target 11.** The institute is one of the major contributing partners of the National Mission for Sustaining Himalayan Ecosystem (NMSHE) task force on traditional knowledge. It has also initiated the development of the Himalayan Biodiversity and Climate Change Knowledge Network, which will, among other activities, document traditional knowledge about biodiversity and climate change.

## Visits

- Participation in 'Second Regional Workshop on Kanchenjunga Landscape Conservation and Development Initiative' [Thimphu, Bhutan; 16–18 April 2014].
- Participation in 'Experts' Consultation on Frameworks for Long-term Environmental and Socioeconomic Monitoring and Ecosystem Management in the Hindu Kush Himalaya' [Chengdu, China; 12–16 May 2014].
- Participation in the second regional strategic meeting to discuss a regional cooperation framework for the Brahmaputra Salween Landscape Conservation and Development Initiative (BSLCDI) [Nay Pyi Taw, Myanmar, 26–27 June 2014]
- Participation in the Sixth International Steering Committee of the GEF/UNEP/FAO Global Pollination Project and making a presentation on India's progress. [Rome, Italy, 6 November 2014]
- Participation in the Earth Watch Summit—2014 [Boston, USA, 6–8 November 2014]
- Participation in the IUCN World Park Congress [Sydney, Australia, 12–19 November 2014]
- Participation in an exposure trip prior to the KSLCDI [Tibetan Autonomous Region, 22–30 July 2014].



**The Wildlife Institute of India (WII) was established in 1986 as an autonomous institute of the Ministry of Environment, Forest & Climate Change (MoEFCC), Government of India. The institute has emerged as a premier training and research institution in the field of wildlife and protected area management in South Asia and South-east Asia. Its mandate is to generate quality information and knowledge products in wildlife science and mainstream them in capacity-building programmes for various target groups and provide advisory support to the central and state governments.**

## Research Activities

The thrust areas of research of WII are monitoring carnivores; prey populations and habitats; human dimensions of wildlife conservation; development of the Web-enabled National Wildlife Information

System (NWIS); applications of modern technology in wildlife studies; strengthening wildlife forensic and conservation genetics capabilities; studies on wildlife health; wildlife toxicology; environmental economics and climate change; and studies on freshwater, coastal and marine ecosystems.

WII's research projects generate valuable scientific data, help evolve study techniques relevant to the Indian ground conditions and create trained field biologists, socio-economists and wildlife managers. The research also enables the institute's faculty to keep abreast of current field situations, management needs and research trends in the field and thus constantly enhance their professional skills and update their teaching. The research agenda is guided by the Training, Research Advisory Committee (TRAC). This committee comprises eminent conservationists, academicians and representatives of scientific organizations and state wildlife organizations, as a result of which the research conforms to the national conservation priorities.

The institute was working on 54 research projects during the reporting period. Results of some research projects are presented.



### Monitoring Reintroduced Tigers in Sariska Tiger Reserve, Rajasthan

Nine adult Tigers (Tigresses ST2, ST5, ST7, ST8, ST9 and ST10 and Tigers ST4 and ST6) were tracked effectively using radio-telemetry, direct sightings, pugmark tracking and camera trapping. The Tigress ST2, which has a non-functional radio-collar, and Tigresses ST7 and ST8, which are not radio-collared, were monitored on the basis of pugmark tracking, direct sightings and camera trapping during the reporting period.

A total of 152 Tiger scat samples were collected, and 133 Tiger kills were recorded. Seven prey species were recorded from the scats. Livestock (Buffalo and Brahminy Cattle) were most frequently killed by Tigers, followed by Sambar, Nilgai, Chital, Wild Pig, Peafowl and Common Langur. The density of Peafowl was the highest amongst all the prey species, followed by Nilgai, Chital, Sambar and Wild Pig. The overall wild ungulate density of Sariska during the study period was 43.26/km<sup>2</sup>. The total livestock density was 110.09/km<sup>2</sup> in Sariska during the study period. Scat analysis indicated the order of prey preference of Tigers in 2014–2015 to be Sambar>Chital>Common Langur>Nilgai>livestock. Restriction of grazing and relocation of villages from the notified national park area are recommended for the survival of Tigers in Sariska in the future.

Two Tigresses (ST2 and ST10) gave birth to two cubs each (one male and one female) during the reporting period. The total population of Tigers in Sariska is now 13, including the four cubs, which are seven months old at present.

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

The overall prey density and mean group size were estimated for all prey species. The half normal key function with cosine adjustment was the best-fitted model for estimating the density of prey species on the basis of the lowest Akaike information criterion (AIC). The estimated densities were higher for all the prey species (Common Langur, Nilgai, Four-horned Antelope, Black-naped Hare, Chinkara, Junglefowl and livestock) in winter compared with the monsoon. An extent of 72.11 km<sup>2</sup> was sampled during the monsoon and 363.56 km<sup>2</sup> sampled in winter for assessing the presence of carnivores. The Sloth Bear encounter rate was found to be higher in both the seasons, i.e., 0.4511 and 0.48537 for the monsoon and winter, respectively. Five individual Tigers (one female and four males) were identified on the basis of the camera trap photographs obtained in the study area.







### Monitoring Reintroduced Gaur *Bos gaurus gaurus* in Bandhavgarh Tiger Reserve, Madhya Pradesh

The Gaur largely used mixed forest, followed by bamboo and grassland, whereas Sal forest and riparian forest were used according to their availability within the home range. During the study period, a total of 82 species of food plant belonging to 29 families were recorded, comprising 34 tree species, eight shrub species, 14 herb species, 23 grass species and three climber species. A total of 6,724 feeding records of Gaur were collected in Bandhavgarh during the study period using the scan sampling technique. Overall, the major food items identified in Bandhavgarh on the basis of the percent time spent feeding by Gaur were Bamboo (*Dendrocalamus strictus*) leaves, grasses, herbs, Shorea robusta leaves, *Butea superba* (climber) leaves and *Chloroxylon swietenia* leaves.

A total of 1933 body scores from 50 Gaur that were reintroduced were examined for sex and for age classes during the study period. 80.6% of the Gaur were found to be in good body condition, followed by 16.1% in fair condition and 3.3% in poor body condition. Sex-wise, about 86% of the male Gaur were observed to be in good body condition compared with 70.3% of the female Gaur. When the different demographic classes were analysed, it was found that calves were always found in good body condition.

### Biodiversity Conservation and Rural Livelihood Improvement Project (BCLRIP)

India has been experimenting with participatory approaches for managing biodiversity conservation and has achieved global recognition through programmes such as joint forest management and



eco-development. Over the years, the need has been felt to expand such approaches to larger landscapes with multiple land uses so as to integrate the range of development and livelihood concerns with biodiversity conservation. BCLRIP is one initiative to address these concerns. This World Bank-assisted project of MoEFCC is being implemented in partnership with the state forest departments involved.

During 2014–2015, many initiatives were undertaken to carry forward this project. A national workshop was conducted in New Delhi during April 2014 to facilitate dissemination of details of the landscape approach. During August 2014 a training programme, 'Biodiversity Concerns and Human Well-being: Toward Landscape Approach', was organized in Thiruvananthapuram, Kerala for policy-level officers, and this opportunity was also used to launch BCLRIP formally in the Agasthyamalai Landscape. Subsequently, a training workshop on the same subject for middle-level officers was organized at Pachmarhi, Madhya Pradesh in November 2014. The Field Learning Centres have already started conducting training programmes for the staff and officers of project implementation sites as well as other stakeholders.

## Capacity Building

### Regular Training Programmes

The institute organizes two regular training programmes. The 10-month Post-Graduate Diploma Course in Advanced Wildlife Management is meant for in-service Indian Forest Service and State Forest Service officers of the rank of Deputy Conservator of Forests (DCF)/Assistant Conservator of Forests (ACF) and their equivalents. Foreign nationals with a background in forestry and/or experience in wildlife conservation and management at equivalent levels



are also eligible for admission to the course. WII has trained 636 officers in 35 courses, of whom 538 were from Indian states and 98 were foreign nationals from 16 countries. The 10-month XXXVI P.G. Diploma Course in Advanced Wildlife Management commenced in September 2014. This course began with 20 participants, of whom 16 were from Indian states and four from Bangladesh.

WII organizes a three-month certificate course for in-service Range Officers and their equivalents. The institute has trained 538 officers in 30 courses, of whom 420 were from Indian states and 118 were foreign nationals from 15 countries, in 29 courses. The XXX Certificate Course in Wildlife Management concluded in January 2015. Twenty-one candidates were selected for the course, of whom 15 were from Indian states and six were from Malaysia.

On a request from the Bangladesh Forest Department, a three-month Special Certificate Course in Wildlife Management was organized by WII. Sixteen officers of the rank of Wildlife and Biodiversity Conservation Officer and equivalent were trained.



Conservation and Sustainable Management of Existing and Potential Coastal and Marine Protected Areas (CSM-CMPA)'. The project is being jointly implemented by the MoEFCC, Government of India and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH on behalf of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU). GIZ has invited WII to be a partner to strengthen the capacities of key training organizations involved with marine protected areas. A special certificate course was organized jointly by WII and GIZ for field-level staff members of forest departments at the Indian Institute of Scuba Diving and Aquatic Sports. A total of nine participants participated in this course.



### Capacity Building for Conservation and Sustainable Management of Existing and Potential Coastal and Marine Protected Areas in India

India and Germany have joined hands to work towards conservation of coastal and marine biodiversity and improving the livelihoods of the local population concerned through a new project,

### Short-term Training Programmes

Besides the regular courses, the institute also organizes short courses and workshops. These courses are tailor-made for different stakeholders. During 2014–2015, the institute organized 12 courses for veterinarians, customs and central excise officers, in-service IFS officers, *in-situ* and *ex-situ* managers, forest departments, environment and planning experts and consultants.



**Wildlife Trust of India (WTI) is a leading Indian nature conservation organisation committed to the service of nature. Its mission is to conserve wildlife and its habitat and to work for the welfare of individual wild animals, in partnership with communities and governments. WTI's team of 150 dedicated professionals work towards achieving its vision of a secure natural heritage of India, in six priority landscapes, knit holistically together by seven key strategies or Big Ideas.**

## Workshops and Meetings

A 12-day workshop was held in September 2014, at Naurangia Done, for skill enhancement of Tharu women in grass weaving. The programme was an initiative under Green Livelihood program of WTI and Nature India. Altogether, 26 Tharu women were trained by 10 professional designers including students and faculty of Srishti Institute of Art, Design and Technology, Bengaluru. The designers and artisans came up with several grass woven products like toys, lunch boxes, lampshades, bedroom slippers, a range of fruit baskets, coasters, casserole cases, small furniture, insulation cases for tiffin boxes, laptop and i-pad cases to name a few. Traditionally, Tharu women use Moonj (*Saccharum munja*) and Kharai (*Saccharum spontaneum*) grasses to make baskets for their home uses. The



baskets filled with paddy are traditionally given as gift baskets to brides in the community. A range of contemporary products using these traditional skills and materials is envisaged to be marketed by Nature India, WTI in the near future.

Agriculture consultant visited Valmiki during November, 2014 and discussed Package of Practice (PoP) of wheat cultivation. The villagers were also briefed about seed production, storage and treatment. Later, Utthan provided three quintals of foundation and certified wheat seeds. Materials for poly-tube vegetable nursery have been procured. The nurseries would be set up by different SHGs. Kisan Diary has been given to the farmers to record information on Rabi crops.

Workshop on development of skill for women weavers: The IFAW-WTI initiative to provide green livelihood to communities under the Greater Manas Conservation Project went a step further with a three-week long training workshop in weaving techniques to professionally prepare the weavers. Through a strategic tie up with the Bengaluru based Srishti Institute of Art, Design and Technology and a fruitful local collaboration with Aagor, the weaving enterprise of the Action Northeast Trust (ANT), the IFAW-WTI team succeeded in enabling eight women beneficiaries to sharpen their existing weaving techniques to cater to contemporary markets.

In the Aagor weavers' training centre at Rowmari, Chirang, BTC eight women weavers were carefully selected from among the IFAW-WTI beneficiaries of the green livelihoods project and were brought to the centre for this intensive residential training workshop. The weavers formerly produced a wide range of hand woven attire comprising traditionally used aronai, gamosa, dokhona in limited colours and patterns that enabled them to earn some additional monthly income. Considering the weaving expertise of these women, a unique and innovative idea to merge traditional design with wildlife conservation themes was offered in this workshop.

A three-day long 'Nature Guide Training' was organised by the Forest Department with support from various NGOs and local CBOs in October, 2014 at Manas National Park. IFAW-WTI provided some expenses and distributed 60 copies of 'Wildlife (Protection) Act, 1972, in Assamese.



A livestock management training programme was organized in March, 2015, for the Kalapahar-Daigurung elephant corridor dependent villages at Dairy Farm in collaboration with the Veterinary Department, Silonijan. Village elders, headman, SHG's members and youth from the five corridor dependent villages participated in the training program.

In February, 2015 a workshop, 'Karbi Anglong Biodiversity and Wildlife Conservation and Animal Action Education (AAE)', was organized at Harlongbi Volongbi College, Deithor. The programme was attended by students and faculty of the college. WTI team gave a presentation and also screened wildlife documentaries. During the course of the programme, students pledged to save wildlife and also took part in the signature campaign.

WTI in collaboration with the Don Bosco Technical Institute, Golaghat, Assam, held a two-month training programme for 20 youth from villages dependent on Kalapahar–Daigurung Elephant Corridor. During the course of the workshop, the trainees were given skill-based training on driving, electrical wiring, motor mechanics, plumbing, welding, tailoring and basic construction.

Two training programs for farmers, one in Maharajganj district and other in Pratapgarh district, were organised with the support of Srishti Sewa Sansthan and Tarun Chetna, SDTT partners in Maharajganj and Pratapgarh districts respectively. In the trainings, the resource persons included officials from the Agriculture Department and Forest Department. The farmers were informed about the importance of sarus cranes, wetlands and reasons of decline in Sarus population. The resource persons highlighted the repercussions of excessive use of pesticide, especially without knowing the actual requirement for

a pest/crop, on sarus reproduction. Other threats to the bird were also discussed. 137 farmers participated in the programme. The farmers were also given inputs on preparation of 'Matka Rasayan' a biopesticide, vermiwash and a biofertilizer.

Community level meetings were organised in Maharajganj, Faizabad and Pratapgarh districts and four village level Sarus Conservation Committees were constituted. The village heads (Gram Pradhan) were present during the meetings. The village level committees are being formed in sarus nesting areas and large congregation sites to facilitate community based conservation and protection initiatives.

Two meetings with communities were organized in September 2014 at 10 nesting sites in Maharajganj, Faizabad and the Pratapgarh districts of UP. Sarus Protection Committees have been formed in these villages. These meetings were chaired by the village Pradhan. In Pratapgarh district, the Forest Department also participated in the meeting wherein nest protection and egg stealing cases were discussed. Posters on Sarus conservation and other birds were distributed to local communities and forest staff. In October, a training programme was organised at Gorakhpur and 15 Sarus Mitra (Volunteers) from Maharajganj, Siddhartha Nagar, Kushinagar, Faizabad, Pratapgarh and Barabanki districts participated.

In November 2014, UP Forest Department organised a training workshop for UP forest staff at Forest Training Institute (FTI) Kanpur. A total of 26 forest staff from various forest divisions of Uttar Pradesh attended this training programme. WTI project personnel were invited as the resource persons to provide training to the forest staff. During the training-workshop, information about conflict animal management issues such as monitoring, caging, tactical and chemical capture and handling of captured animal was shared with the forest staff.

Meetings between farmers, SDTT partners (Shohratgarh Environmental Society, Srishti Sewa Sansthan and Aparajita) and WTI team happened in December, 2014. During the course of the meeting, Sarus conservation issues were discussed and awareness posters were distributed. Officials of Bahraich Agriculture Department and scientists from Krishi Vigyan Kendra (KVK) were also present.



Training for farmers was organized in Bahraich district in which 77 farmers of Mungeshpur village in Kaisharganj block participated. Scientists from Krishi Vigyan Kendra, Bahraich, participated in the training as resource persons. Sir Dorabji Tata Trust partner NGO Aparajita helped in organising the training. The scientists emphasised on organic farming and maintaining the crop cycle for sustenance of the natural productivity system of the land. They suggested avoiding overuse of synthetic agrichemicals. The resource persons also highlighted the need of conserving the water bodies in agricultural areas to meet the needs of farmers as well as aquatic animals. An awareness program was organised among the children of farmers in Mahasi village of Kaisarganj block. The program was organized by Aparajita Samajik Sansthan wherein WTI team addressed the students and highlighted the sarus conservation issues.

In Lucknow, WTI sensitised local villagers and school children on human-animal conflict situations (date). Awareness meetings were conducted in Lila Khera and Katolee villages. People were informed on how to avoid confrontation with a tiger in the area. They were also informed how they can help Forest Department in dealing with the situation.

The Animal Action Education (AAE) Teachers workshop was organized in September 2014, at Zilla Parishad School, Shenda in Gondia District. Fifteen teachers from twelve schools of Nagzira-Nawegaon corridor participated in the workshop. WTI discussed

about the AAE programme and the role of teachers in conservation and conducting activities in their schools. Activity packs in Hindi were provided to the teachers during workshop.

A planning meeting with Murdholi BMC was held in village Garada in December 2014. The members were briefed about the People's Biodiversity Register draft and the date of handover of the final document to BMC– Gondia and Maharashtra State Biodiversity Board (MSBB) at Sondlagondi village in December, 2014. It was also decided to hold one meeting in each of the village Gram Panchayats to select one wetland for improvement or restoration and select 25 hectares of village forest for regeneration with funding from MSBB.

Training on construction of cook stoves was held for villagers of Garada in March, 2015. Fifteen women participated in the training given by SHG members of Sondlagondi village.

A two day training programme on sustainable harvesting and value addition of NTFPs was held in Garada village in March, 2015. Total of 40 villagers participated in the training organized by Centre of Science for Villages (CSV).

A meeting was organized at Pangti village between WTI and Village Council Members (VCMs) to make a strategic plan for the conservation of Amur falcons. In the meeting, WTI conveyed that formation of Amur falcon's protection squad and ex-gratia to the land owners of the Amur falcon roosting site will be carried



out. Distribution of gear (tshirts, shoes, caps, etc) to the protection squad was also promised. On 1st October, Nagaland Forest Department in partnership with WTI and Wokha district administration organised a Amur falcon welcome program at Pangti Village. Nagaland's Minister of Environment and Forest, Dr. Nicky Kire, unveiled two tourist watch towers, which were constructed by Doyang Forest Division and Nagaland Bamboo Mission. After the arrival of Amur falcons in the first week of October, a 30-member Amur falcon protection squad was formed to monitor different roosting sites of Amur falcons.

A coral rescue and awareness workshop was conducted at Bhimrana, near Mithapur in February, 2015. Around 100 fishermen from Arambada, Surajkaradi and Bhimrana attended the programme along with their family members.

Odisha State Consultative Workshop to review and finalise the elephant corridors of the state was jointly organized by WTI, Project Elephant, Ministry of Environment, Forests & Climate Change, Odisha Forest Department and state government on 12th January, 2015. The meeting was chaired by Mr SS Srivasatava, PCCF & CWLW, Odisha and attended by two CCFs, four CFs and about 15 DFOs.

Jharkhand State Consultative Workshop to review and finalise the elephant corridors of the state was jointly organized by WTI, Project Elephant, Ministry of Environment, Forests & Climate Change, and Jharkhand Forest Department on 20th January, 2015 and attended by PCCF (WL) and over 50 senior officials of Jharkhand Forest Department, WTI and other conservationists

WTI supported the 5th edition of the Students Conference on Conservation Science at Bengaluru in August 2014. The event brought together students, researchers and conservationists from Asia and Africa to share information on wildlife conservation in these two continents and the threats faced through a series of talks, workshops and discussions held over a period of three days.

A three-day workshop on Snow leopard conservation was conducted in Jigme Dorji National Park in Bhutan. During the three-day training workshop, participants were introduced to the general ecology and biology of the snow leopard, its prey and related ecosystems. Trainers also presented different types of socio-economic survey methods including the Participatory Rural Appraisal (PRA) method. It was followed by a training on sign survey method for the snow leopard and its prey -- blue sheep. Along with the sign survey methodologies, participants were also trained on the collection of samples and its storage protocols.

GTF co-organised the second Global Tiger Stocktaking conference at Dhaka, Bangladesh between September 14-16, 2014. Dr Jagdish Kishwan, Chief Advisor, WTI participated in this conference and discussed various issues. He also commented on the Dhaka Declaration (the outcome of the said conference), on behalf of IFAW. GTF secretariat, in collaboration with WTI released the 3rd Edition of Action Tiger, (during the sixth General Assembly by Abdullah Al Islam Jakob, Deputy Forest Minister- People's Republic of Bangladesh.



A visit to the Wildlife Institute of India was organized in October, 2014 to work on specific points (strengths of WII & GTF) of Global Tiger Atlas for the establishment of VRCE (proposed by the GTF at Dhaka). WTI assisted GTF Secretary to host the 2nd edition of e-Global Tiger on GTF's official website and circulated it online through the social media for greater reach.

Wildlife Trust of India (WTI) and its global partner International Fund for Animal Welfare (IFAW) jointly organised the annual 'Indo-Russian Tiger Watch Programme' in March, 2015, with the Global Tiger Forum (GTF). The programme focuses on giving the Russian forest officers a compact training on tiger conservation through a number of field exercises in a renowned tiger reserve of India.

### Training of frontline staff

Trainings for forest field staff of Brahmapuri, Nagbhed and Sindewahi were conducted in November, 2014. WTI conducted three batches of Wildlife Crime Prevention Trainings, one each in Madhav National Park (for the staff of Shivpuri and Gwalior circles), Panna Tiger Reserve (for the staff of Chhatarpur and Sagar circles) and Bandhavgarh Tiger Reserve (for the staff of Rewa and Shahdol circles). In each batch, 50 staff were trained and equipped with field kits. This series of trainings were co-funded by Madhya Pradesh Forest Department and WTI, and were held in December, 2014.

WTI in partnership with Madhya Pradesh Forest Department conducted Wildlife Crime Prevention Training in Indore for the frontline staff of Indore and Ujjain circles in February, 2015. In total, 46 staff including Range Officers, Foresters and Forest Guards from both the circles were trained and equipped. This training in Indore was the last of the series of eight trainings that covered all 16 forest circles in Madhya Pradesh.

WTI conducted Wildlife Crime Prevention training of frontline staff of Manas Areas (covering Kachugaon, Haltugaon and Chirang Divisions) in February 2015.

WTI organised a 'Prevention of Wildlife Trade Training' workshop for the staff of Forest Protection and Surveillance Unit (FPSU), Department of Forest and Park Services, Ministry of Forests and Agriculture, Bhutan. The training was held at Phuntsholing, Bhutan, in March, 2015. The workshop

intensively focused on training the forest staff on prevention of cross border wildlife trade. In total, 14 forest staff, including seven from FPSU and seven from Wildlife Conservation Division (WCD) participated in the training.

### Research Activities

Site selection survey for Cheer pheasant reintroduction: survey to identify potential release sites for Cheer pheasant reared in captivity in Himachal Pradesh, a collaborative project of Himachal Forest Dept, CZA and WTI.

Gharial Restocking Project: As a part of the Gharial Restocking Project of the Environment & Forest Department, Government of Bihar, 30 gharials have been released till now in the Gandak River after being fitted with satellite tags for monitoring. Gandak is a historic distribution range of the species. The project is technically supported and implemented by Wildlife Trust of India (WTI) since March 2014.



- Study of Whale Shark movement pattern along West Coasts of India through satellite tagging
- Coral reef restoration along Mithapur reef, Gujarat
- Swamp deer translocation from KNP to Manas National park, Assam
- Groundtruthing of Elephant corridor to assess its current status and preparation of conservation plan for individual corridors.
- Study to address the impact of linear intrusions on wildlife in the Western Ghats
- Human elephant conflict survey in Baghty and Pangty valley, Nagaland



## Events Organised

A day-long 'Human Pledge and Signature Campaign' was organised at Fungbili M.E. School, near Betbari camp, Bhuyanapra Range of Manas. A large area of Manas NP is encroached by the fringe villages. Therefore, the programme was organised to draw attention of various stakeholders and to sensitise the local youth and other groups to this issue. The members of the All Boro Students Union (ABSU), Rabang Anchalik, under the leadership of Bharat Boro, made all the necessary arrangement from inviting people to taking an oath to save the World Heritage Site. About 400 participants, including school children, took part in the campaign. Presence of famous visual artists like Kishore Das, JP Das and Mridul Saikia encouraged other participants to come forward to be a part of the campaign. A rally was organised and several slogans were raised to stop poaching and encroachment. The rally/human chain campaign started from Fungbili M.E. School to New Betbari village (encroached) covering a distance of about 3 kms. The artists from AVAA painted the Manas landscape on a common canvas that had signatures of the participants. The best part of the day was the oath taking by more than 400 participants to stop encroachment, poaching and save the forest and wildlife of Manas for future generations. Finally, they put their signature to mark their pledge.

WTI organized the Elephant Cup Football Tournament, in January 15, 2015, at Koilamati High School, Karbi Anglong. The tournament was organised in collaboration with the Koilamati Young Star Club. Thirty two teams from in and around Chokihola and Silonijan took part in the tournament. Before the start of every game, players and audiences were asked to chant the slogan 'We Love our National Heritage Animal'. Also, a signature campaign on 'Playing to Save Wildlife' saw players, officials, audiences and guests signing on the signature board.

During the 41st Karbi Youth Festival, held in February, 2015, at Karbi People's Hall, Taralango, the Karbi Anglong Conservation Project organised a signature campaign on the theme: 'Save the Biodiversity and Wildlife of Karbi Anglong'. Nearly, 300 people took part in the campaign.

A community support programme was organised in February 2015, wherein more than 100 water filters were distributed amongst the villagers of Dello area in Dibang as a token of appreciation for their involvement and continued support for the Hoolock Gibbon Translocation Project.

In November 2015, a program was organised in Sumer Nagar village situated in fringe of Dudhwa NP where frequent incidents of leopard predation on goats have been reported. The PRT members of this village were told about how to deal with such situations.

In November 25, an awareness program was conducted for 180 school children of Rampurwa village bordering Kanterniaghat WLS. Children were informed about the behaviour and ecology of large cats. Meeting with villagers and PRT members were held on the same day in Mangal Purwa village.

World Wetlands Day was observed on February 2 in Gilola Block of Shravasti district. A programme was organized at the Nehru Memorial Inter College. More than 100 students were taken to Sacrail, the nearest wetland from the school, where they spent the day observing the wetland biodiversity. WTI team explained to students the need for conserving the wetland ecosystem and the threats that have led to deterioration of wetlands throughout the country and Uttar Pradesh in particular. A quiz competition was also organized.

WTI team participated in the Farmers' Awareness programmes organized by Shravasti Gramodyog Seva Sansthan, Shravasti (February 4) and Aparajita Seva Sansthan, Bahraich (February 11). About 60 farmers participated in the programme. Experts explained farmers about the crop cycle and advantages of using bio-pesticide like Matka Rasayan (herbal bio-pesticide) to protect crops. Importance of wetlands for water conservation and sarus cranes was also discussed with the farmers. Posters on sarus crane and other birds were also distributed among the farmers.

This year the Gujarat Whale Shark Day (GWSD) was celebrated on November 22, 2014. Prior to that, several activities were organised for school kids in Veraval, Mangarol, Dhamlej, Dwaraka, Sutrapada and Mithapur. Activities included Whale shark

painting, Whale shark elocution, marine quiz and Whale shark rangoli. GWSD started with a rally of around 150 school children in Somnath. District Collector, Gir Somnath, inaugurated the function. The Gujarati version of the Whale shark report was also released during the event.

A marker tag training programme for fishermen was conducted in Dhamlej in February, 2015. Around 17 fishermen attended the training along with the Forest staff.

An awareness drive on conservation of birds affected by kite flying festivals in Jaipur was initiated in December. The project aimed to sensitise the school children as well as the general masses on how flying kites can pose a serious threat to the local avifauna around Jaipur. Through this RAP the team will conduct street plays (Nukkad- Natak), peace processions, film screenings and signature campaigns across the city. The project team's contact details were also circulated with the campaign material as a bird rescue helpline, due to which people informed them about bird rescue cases. The team has responded to these cases and has helped in treating injuries there by reducing casualties. The team also lobbied with local government agencies to reduce the use of the harmful glass manja to prevent injuries to the birds. They also gained the support of

local religious heads to reach out to the masses during the campaign. Manja clean up drives were conducted after the kite flying season.

The handover of Maharashtra's first People's Biodiversity Register to State Biodiversity Board (SBB) and Gondia District Biodiversity Management Committee (BMC) happened in December 2014 at Sondlagondi village. The programme was attended by Dr. Dilip Singh, MSBB Member Secretary and Add. APCCF; Dr. Jitender Ramgaonkar- DCF & Member Secretary, Gondia BMC; Kumi Togowa, Hiromi Furushima and Mayasuki Sakamoto of JTEF; and WTI team consisting of Dr. Rahul Kaul, Senior Director & Chief Ecologist, Dr. Rajendra Mishra Regional Head – Central India, Prafulla Bhamburkar- Senior Advisor; Dr Shriram Bhuskute, Principal- Bhavbhuthi College; Dr. C. J. Khune, MB Patel College, Dr. Laxman Nagpurkar, HoD (Zoology), Sakoli; Sawan Bahekar, Hon. Wildlife Warden, Gondia; villagers and other NGOs.

International Women's Day was observed in Doan Valley in which nearly 100 women of the seven project villages took out a procession in the area.

The 3rd International Minding Animals Conference, focusing on varied aspects of Animal rights, welfare, and critical animal studies was being organized, by



the Wildlife Trust of India, Minding Animals International and the Jawaharlal Nehru University. The conference was held at the Jawaharlal Nehru University, from the 13th of January to the 20th of January. Over these seven days, the conference initiated dialogue amongst various groups of people, institutions and organisations involved with animals, both domestic and wild, in an attempt to develop universals of animal welfare, rights as well as conservation. The dialogue was initiated over six distinct themes; Wildlife Welfare and Conservation Science; Animals and Religion; Women and Animals; Animal Law and Public Policy; Animals and Humanities; Animals and Culture, wherein, invited speakers from all across the world will deliver diverse lectures and conduct seminars based on the above mentioned themes.

### Visits

Members of Murdholi BMC and JFM committees of seven villages from Nagzira-Nawegaon corridor in Gondia visited the village Menda in Dist. Garhchiroli. Twenty members visited the village to interact and know how the villagers are protecting and managing their natural resources in partnership with government agencies. The members also visited the Nawegaon wetland, which is also an IBA site.

Pardhi settlement Wayfadh near Wardha was visited for building linkage and acceptance in the community settlement and to know their daily activity patterns.

Executive Trustee and Chief, Communities for Conservation, Ms. Tara Gandhi, visited Central India

Project sites in Gondia and Wardha in November, 2014. The team also visited MS Swaminathan Foundation (MSSF) in Wardha and sought information on their activities in Maharashtra. During her visits, she interacted with villagers of Sondlagondi, Khamtalav and Alabedar and also visited a Pardhi settlement in Wardha.

A group of 24 students and 16 teachers visited Nagzira TR in December, 2014 and also saw the best maintained plantation. WTI team gave a presentation on the biological and conservation activities of WTI in Central India. The DCF sought WTI's help in documenting open wells without parapet walls in the corridor area and the estimate for construction of wall for the same. He also sought WTI's help in training the forest staff in GPS, transect walks and placing of camera traps.

IFAW-WTI team visited Bhutan to conduct a training session for the Bhutan Forest Department. The staff was trained in a real life scenario where they had to catch known poachers who unbeknownst to them were actually a part of the training team.

The second World Wildlife Day in Bhutan was celebrated in Jangbi village under Trongsa Dzongkhag in Jigme Singye Wangchuck National Park in March, 2015. Organized jointly by Wildlife Conservation Division and Jigme Singye Wangchuck National Park, Department of Forests and Park Services, in support from WTI, the day was celebrated with the local theme 'Partnering with Local Communities to Combat Wildlife Crime'.





**The All India Disaster Mitigation Institute (AIDMI) is a registered non-governmental organization based in Ahmedabad, Gujarat, India. It is a community-based action planning, action research and advocacy organization, working towards bridging the gap between policy, practice and research related to disaster mitigation. Established in 1989 after Gujarat droughts, AIDMI has evolved into a learning organization that addresses and advocates rights of poor and marginalized communities across South-Asia. AIDMI's role in addressing HFA priorities (Hyogo Framework for Action 2005-2015) is instrumental. The pro poor approaches of AIDMI to address the risks communities are exposed to, has been recognized by various international, national and sub-national organizations as well as communities. Awarded 'Center of Excellence' by United Nations office for South-South Co-operation (UNOSSC) AIDMI strives to address climate and disaster risks while keeping focus on sustainable development of disaster affected communities.**

### **The Making of Pro-Poor District Disaster Management Plans in Assam and Jammu & Kashmir**

The project aims to understand climate and disaster risk, Strengthen Governance to Manage Disaster Risk, Preparedness for Response, Recovery and Reconstruction, and linking DRR efforts with mainstream development program in Assam. After consultations with local government, series of meetings and dialogue took place with communities to make these plans Eco sensitive. For each district, Climate Change and Ecosystem Sensitive Risk Mitigation and Resilience Building Plan was prepared. Conservation activities like planting bamboo trees to prevent soil erosion were promoted. Conservation of sericulture was also a key priority in one of the district, Dehamji.



### **Non-Structural Safety Assessments from Disasters in Hospitals: A case of 15 Hospitals in Assam**

The project identified gaps in safety policies adopted in public and private hospitals. Non-structural assessment of 15 hospitals in Assam calls for strengthening preparedness efforts for hospitals. Segregations of medical waste and recyclable waste was one of the aspect which was addressed in this project. Hygiene and cleanliness status of hospital premises were reported to authorities. Ecosystem based Hospital Disaster Management planning was demanded by stakeholders.

### **Review of Studies on Urban Floods in Guwahati**

The comprehensive set of action based recommendations addressing important sectors like housing and urban planning, drainage, water supply, urban ecosystem, solid waste management, transportation and for Urban Local Bodies (ULBs) were submitted to ASDMA. Land encroachment and poor drainage system of the city was found as a key findings. Depleting green cover due to deforestation leads to massive urban flash floods in Guwahati every year followed by landslide. Conservation of trees in hilly areas were promoted.

### **Integrating Climate Change Adaptation with Disaster Risk Reduction in Assam and Odisha**

Training Needs Assessment in Odisha and Assam: Roadmap to strengthen capacity building programs on Climate Change Adaptation and Disaster Risk Reduction for Odisha and Assam is prepared. Focus given on institutional partnership to reduce the impact



of extreme climatic events. All government authorities pledged to develop eco sensitive disaster mitigation plans.

**Innovating Disaster Micro Insurance for Local Market Recovery**

The core challenge addressed by this project is promoting local recovery after a crisis rather than engendering dependence on international aid. Existing local markets have been highlighted as an advantageous feature of urban crises to deliver goods and services for affected populations. 4500 small business holders will be covered in this project. Intervention inducing behaviour change to reduce risk in addition to providing risk coverage, has not been addressed in any other study to date. Ideally, risk coverage through this insurance programme would not serve as an excuse to ignore risks but have a positive effect – promoting action to minimize and mitigate the impacts of those risks.

**Methods toolbox for assessing loss and damage at local level**

The project involves developing a methods toolbox for local-level assessment of loss and damage from climate-related stressors, including sudden-onset events and slow-onset processes. The study was conducted in Satyabadi Development Block of Puri District in Odisha. It covered 11 villages (Hamlet Villages) from three Panchayats namely Ketaki Patna, Sukal and Madhuban. In these villages a total of 220 Household level interviews were conducted. 5 Focused Group Discussions with men and 5 with women were also conducted in 5 amongst the eleven villages. Loss and damage is already a significant consequence of inadequate mitigation efforts and limited capacity and funding for adaptation to climatic changes. The study will help practitioners to develop a eco sensitive recovery planning to reduce loss and damage due to extreme climatic events and disasters.

**Understanding Children's Perspectives on Climate Change**

Focused group discussions conducted with children of Ahmedabad and Bihar to know their understandings on climate change. Children also recommended some school level activities to reduce the impact of climate change. Impact of deforestation and greenhouse gas emissions were discussed and promotion of environment conservation activities by children were discussed.





# ANNUAL FINANCIAL REPORT



Annexure- 3.1

IUCN-CELL  
Receipt & Payment

For the Financial year 1<sup>st</sup> April 2014 to 31<sup>st</sup> March 2015

Receipts	Amount	Payment	Amount
To Opening Balance	438022.89		
To Interest	14228.00		
To Member Ships	126000.00		
To Misc. Receipts	18200.00		
		By IUCN CELL - UBI Saving A/c No# 41	596450.89
Grand Total	596450.89	Grand Total	596450.89

  
RAJIV GUPTA  
Account Assistant

Audit Certificate

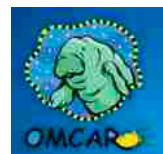
I have examined the Receipts and Payment Account for the Financial Year 1<sup>st</sup> April 2014 to 31<sup>st</sup> March 2015 of the WII-IUCN Cell Dehradun. I Certify, as a result of my audit, that in my opinion these accounts are properly drawn up so as to exhibit a true and fair view of IUCN Cell- Wildlife Institute of India, DehraDun according to the best of information and explanation given to me and as shown by the books of the organization.

  
Finance Officer  
वित्त अधिकारी/Finance Officer  
भारतीय वन्य जीव संस्थान, देहरादून  
Wildlife Institute of India, Dehradun





National Board for Wildlife



CEE  
Centre for Environment Education



Gujarat Institute of Desert Ecology

