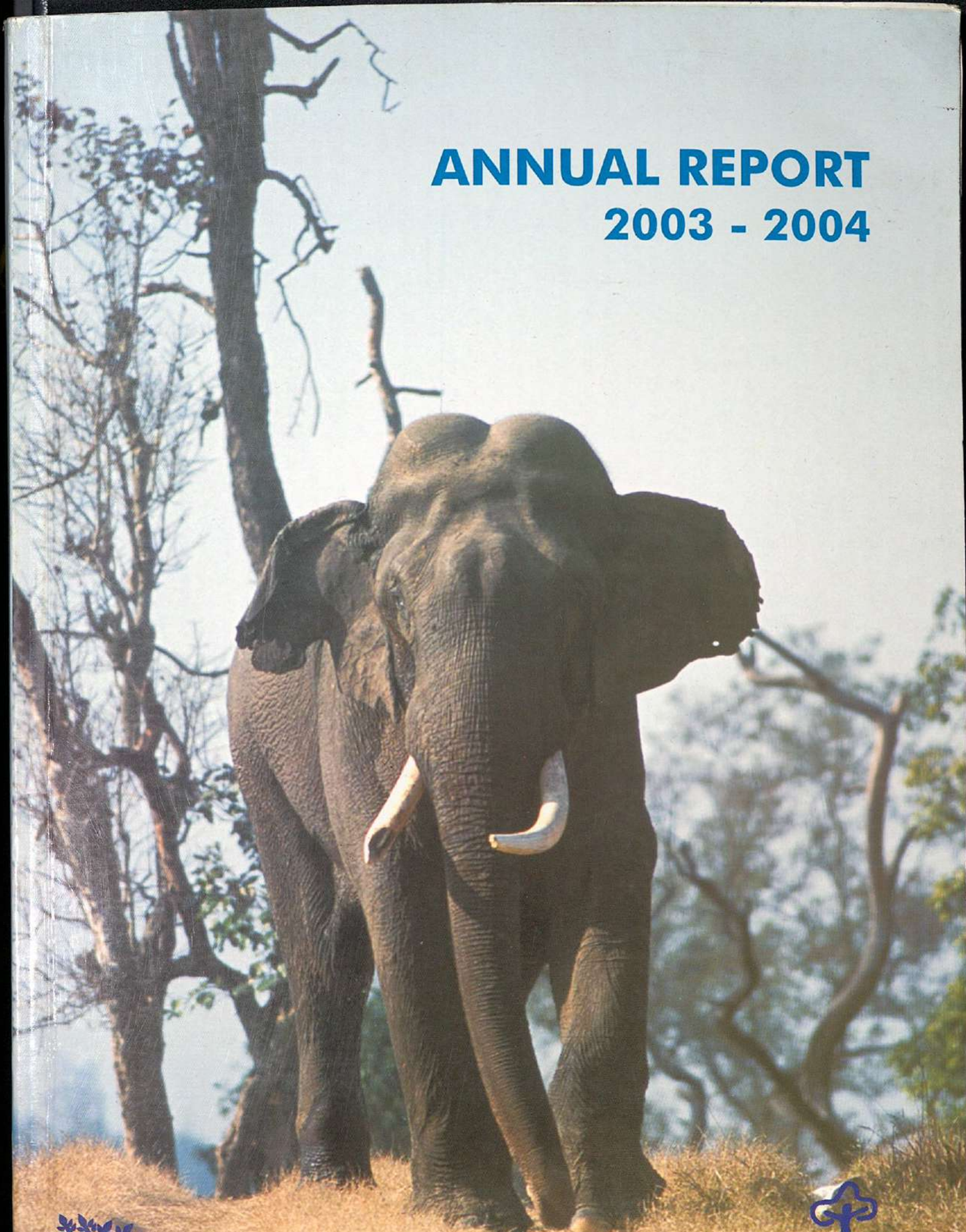
ANNUAL REPORT
2003 - 2004



भारतीय वन्यजीव संस्थान
Wildlife Institute of India

जहाँ है हरियाली ।
वहाँ है खुशहाली ॥

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Contents

Director's Note	1
The Year at a Glance	3
WII - A Profile	5
Aims and Objectives	5
Organizational Structure of WII	6
Academic Programme	7
Short Courses, Workshops, Seminars, Conferences and Meetings	10
Surveys, Study Tours, Visits and Talks	28
Research	29
Completed Projects	29
Ongoing Projects	35
Projects Initiated	51
Organization	53
Collaborations	53
Services	55
Teaching Inputs	61
Facilities	63
Welcome Guests	71
National Institute of Coastal & Marine Biodiversity	73
Perspective 2004-2005	74
Publications	75
Members	83
Accounts	87

Director's Note

The reporting year 2003-04 was busy as far as academic activities are concerned. The VIII M.Sc. Course was successfully completed by the Institute and admission procedure for IX batch of M.Sc. in wildlife sciences was also satisfactorily completed. Both the major training programmes i.e. Post-Graduate Diploma in Wildlife Management and Certificate Course in Wildlife Management have been organized as per their schedules and all the officer trainees from the country as well as abroad have successfully completed the courses.

The Institute organised some significant short courses, workshops, seminars and meetings during the reporting period. Asia Regional Workshop on "Mainstreaming Biodiversity and Climate Change", Training Workshop on Wildlife Protection, Law & Forensic Science, Workshop on "Healthcare Management of Wild Animals in Zoos" at New Delhi, Four-day workshop on Applied Statistical Methods for Ecology and Wildlife Research at BNHS, Workshop on Development of Strategic Action Plan for Wildlife Management and ex-situ Conservation in Himachal Pradesh at Shimla, Workshop on 'Capacity Building for Ecotourism' SIPARD at Agartala (Tripura), Terai Arc Tiger Conservation Landscape Workshop, two-day Training workshops on identifying species and marking wildlife items, and two-day workshop for Developing Field Protocols for Tiger Status and Habitat Monitoring at Kanha were some important workshops conducted by the Institute to renew its commitment towards wildlife conservation and management in the country.

The vacation training programme on bio-resources for school children, One-week capsule course in wildlife management for IFS Officers, Course on wildlife protection, law & forensics for the Inspectors of Customs & Central Excise Department, two-day seminar-cum-workshop on individual identification, population estimation and monitoring of lions at Gir, Courses on wildlife protection, law & forensics for the Indian Customs & Central Excise officers (Group "A" Promoted), Training course on environmental impact assessment (EIA), Four weeks study tour of officers from the Department of Wildlife Conservation from Sri Lanka, Special training course in wildlife management for Range Forest

Officers of Northeastern States at Kaziranga National Park, Training course on "Impacts of Mining Projects on Biodiversity" at Ranchi, (Jharkhand) were some of the short courses conducted by the Institute. The XVII Annual Research Seminar of the Institute was conducted during the month of October in which 25 papers were presented by the researchers, post graduate interns, collaborators and faculty members.

The Institute completed four research projects during the reporting year and the progress on rest of the ongoing projects were encouraging. The 'Conservation of the Indian Wolf' project gave much useful information as the final output, which will be helpful to the planners and policy makers to decide the future strategies for conservation of this flagship species. The GOI-UNDP sub-programme 'Wildlife Protected Area Management in Jaldapara Wildlife Sanctuary' provided major recommendations and suggestions.

The Institute was also honoured by giving the responsibility to establish the National Institute for Coastal and Marine Biodiversity (NICMB) at Kanyakumari, Tamil Nadu. The Institute has been established during the year under report.

The Institute received continuous patronage and guidance from WII-Society, Governing Body and Training, Research and Academic Council. The WII also received fruitful collaboration from its collaborators, State Forest Departments, NGOs and other agencies. On the home front, campus development activities and up gradation of the facilities of the Institute were continued.

It is my privilege and pleasure to lead this Institute during the year 2003-04. I take this opportunity to thank my colleagues, faculty and all staff members for their sincerity, hard work and dedication to achieve the mandate of the Institute. I am confident that the team of dedicated scientists and officers of WII will attain the greater heights in wildlife research, education and management in the country in the year's to come.

(S. Singsit)

WII Photo Library

Vinod Verma

Vinod Verma

The Year at a Glance

Regular Courses

- VIII M.Sc. (Wildlife Science)
- IX M.Sc. (Wildlife Science)
- XXIV Post-Graduate Diploma in Wildlife Management concluded
- XXV Post-Graduate Diploma Course in Wildlife Management Commenced
- XIX Certificate Course in Wildlife Management

Short Courses, Workshops, Seminars, Conferences and Meetings

- Asia Regional Workshop on "Mainstreaming Biodiversity and Climate Change" *April 6-11, 2003.*
- First Training Workshop on Wildlife Protection, Law & Forensic Science, *April 28-29, 2003.*
- Workshop on "Healthcare Management of Wild Animals in Zoos", New Delhi, *May 7-9, 2003.*
- Vacation Training Programme on Bio-resources for School Children, Dehradun, *May 8- June 4, 2003.*
- Four-day workshop on Applied Statistical Methods for Ecology and Wildlife Research, BNHS, *June 2-5, 2003.*
- One-week Capsule Course in Wildlife Management for IFS Officers, *June 23-27, 2003.*
- Two-day seminar cum workshop on Individual Identification, Population Estimation, and Monitoring of Lions, Gir, *July 9, 2003.*
- Workshop on Development of Strategic Action Plan for Wildlife Management and *ex-situ* Conservation in Himachal Pradesh, Hotel Holiday Home, Shimla, *August 8-9, 2003.*
- Course on Wildlife Protection, Law & Forensics for the Inspectors of Customs & Central Excise, Dehradun, *September 1-2, 2003.*
- Workshop on 'Capacity Building for Ecotourism' SIPARD, Agartala, Tripura, *September 4-6, 2003.*
- Course on Wildlife Protection, Law & Forensics for the Indian Customs & Central Excise Officers

(Group "A" Promoted), Dehradun, *September 18-19, 2003.*

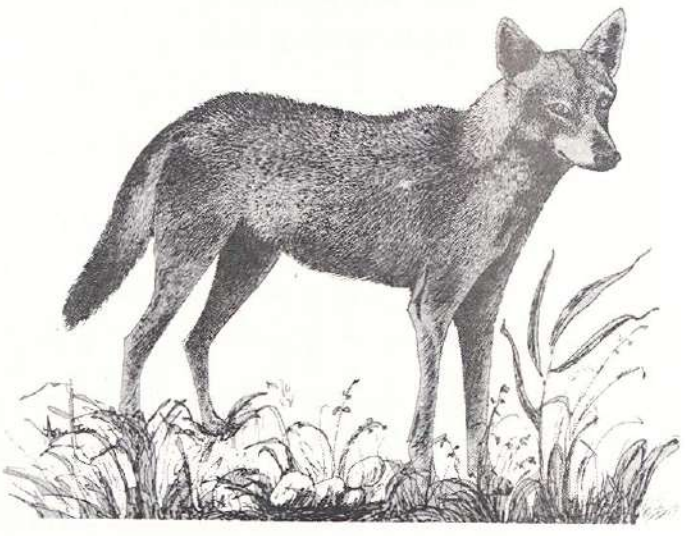
- Terai Arc Tiger Conservation Landscape Workshop, *November 6-7, 2003.*
- 2-day Training workshops on identifying species and marking wildlife items, *November 10-25, 2003.*
- A two-day training course on Wildlife Protection, Law and Forensics for IC&CES officers (Group "A"- Promoted), Dehradun, *November 25-26, 2003.*
- A two-day training course on Wildlife Protection, Law and Forensics for Inspectors of Customs & Central Excise, Dehradun, *December 5-6, 2003.*
- Training Course on Environmental Impact Assessment (EIA), *December 15-20, 2003.*
- Four weeks study tour of Officers from the Department of Wildlife Conservation, Sri Lanka, *December 21, 2003-January 21, 2004.*
- Two-day Workshop for Developing Field Protocols for Tiger Status and Habitat Monitoring, Kanha, *January 14-15, 2004.*
- A two-day training course on Wildlife Protection, Law and Forensics for IC&CES officers (Group "A"-Promoted) *January 27-28, 2004.*
- Special Training Course in Wildlife Management for Range Forest Officers of Northeastern States, Kaziranga National Park, *February 9-28, 2004.*
- Two-day workshop-cum-seminar for conveying the Data collection Field Protocols for Tiger, Prey and Habitat Status Monitoring, Pench, *February 10-11, 2004.*
- Technical Workshop on NNRMS Project 'Mapping of National Parks and Wildlife Sanctuaries' *February 19-20, 2004.*
- Workshop on Health Monitoring of Free Ranging Wild Animals, *February 23-25, 2004.*
- 7th Special Course on Wildlife Protection, Law and Forensics for the probationers of Indian Customs & Central Excise Service, Group "A" (55th Batch), *February 23-March 5, 2004.*
- Workshop on Wildlife Immobilization and Restraint, *March 8–10, 2004.*
- Training course on "Impacts of Mining Projects on Biodiversity", Ranchi, Jharkhand, *March 15–17, 2004.*

Seminar

- XVII Annual Research Seminar, *December 8-9, 2003.*

Meetings

- XLIV Governing Body Meeting, *November 1, 2003.*
- X Training, Research and Academic Council, *December 10, 2003.*
- XI Annual General Meeting of WII-Society, *December 16, 2003.*
- XI Training, Research and Academic Council, *March 17, 2004.*
- X Finance Committee Meeting, *March 25, 2004.*



WII - A Profile

The early eighties of the last century brought about the realization of rapidly diminishing natural resources and imminent environmental disasters in all spheres of life. At the same time, the understanding of environmental issues was still a little hazy, and the initial remedial responses to environmental problems had their shortcomings.

In India forests have more or less always been inhabited by humans for food, shelter and a variety of daily sustenance. It became obvious that conservation could neither be achieved in isolation nor the people living in & around protected areas wished away.

The shortcomings of the early initiatives had also brought into focus the shortage of trained manpower for wildlife management and of wildlife biologists to conduct research and the paucity of researched information preventing a clear understanding of the issues and problems and thereby proper conservation planning. A need was felt for an organization which would through multi-disciplinary research, staying close to the realities on ground, seek to find the answers to the issues in wildlife conservation and accordingly press for a holistic approach to managing wildlife and its habitats across the country and the region.

This led to the setting up of the Wildlife Institute of India (WII), at Dehra Dun, in 1982 and has emerged as a distinguished Institution in South-Asian Region. The IUCN recognised WII as one of the six regional Institution for capacity building in protected area management.

From its very formative years, WII has had collaborations with international organizations such as UNDP, FAO, USFWS, IUCN, UNESCO, etc. These have allowed the institute to build up a distinguished faculty through rigorous training and exposure to modern research techniques, and broaden its research, teaching and training base. The collaborations have also helped the institute equip itself with the most advanced laboratory and field equipment including the latest in computer hardware and software. Special courses have also been conducted to train Field Planning Officers from various protected areas in the country in wildlife management and ecodevelopment planning in protected areas.

Within India, WII has active association with ICFRE, IIRS, IGNFA (Dehra Dun), SACON (Coimbatore), BNHS (Bombay), WWF-India (New Delhi), among others.

Wildlife Institute of India has already come to be recognized as a premier regional institution for studies and training in wildlife conservation. Foresters and wildlife managers from other developing countries, particularly in south and south-east Asia, have regularly been attending WII's courses in wildlife management. Special customised diploma in Wildlife Management has also been conducted for protected area managers in Sri Lanka.

WII has given a new direction to the concept and practice of wildlife conservation, made it more practical and realistic, seeking the involvement and cooperation of the local people. However, the problems and challenges are immense and diverse in a constantly changing scenario. Learning from its own and others' experiences, WII traverses a path of hope, which will help strengthen its inputs and find answers to conservation issues and problems that would stand true for wilderness areas and countries in the developing world.

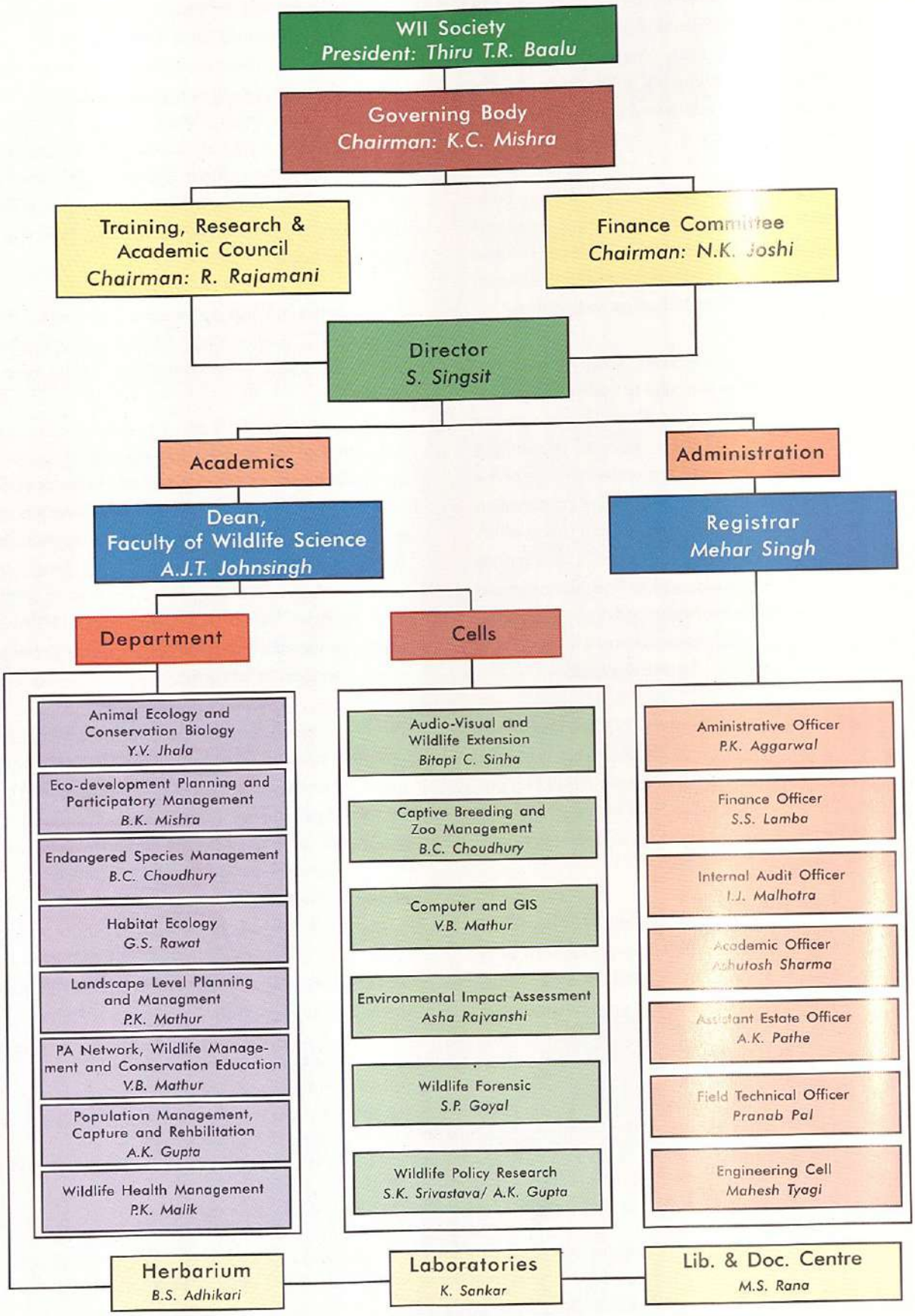
Aims and Objectives

- To build capacity and develop human resources in wildlife science
- To develop as a centre of excellence in wildlife science
- To provide consultancy and advisory services in wildlife conservation
- To advocate issues relevant to wildlife science and conservation.
- To develop as a regional centre for South Asia and South-East Asia for training and research in wildlife conservation.
- To develop as a Deemed University in wildlife science.

Our Mission

The WII's mission is to nurture the development of wildlife sciences, and promote its application in the field in a manner that accord with our economic and socio-cultural milieu.

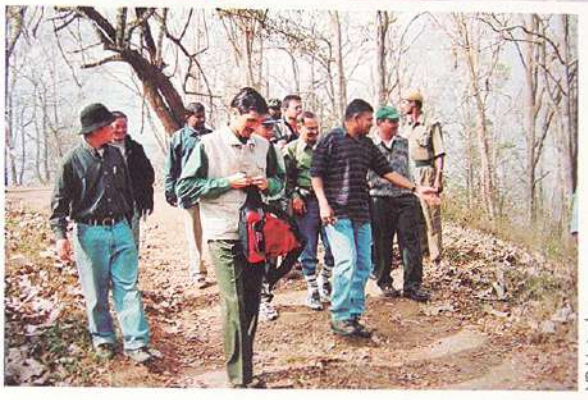
Organizational Structure of WII



Bivash Pandav

Vinod Verma

Vinod Verma



VP Uniyal

Academic Programme

VIII M.Sc. (Wildlife Science)

The VIII M.Sc. began in July 2001 with eight students. As part of the curriculum the students are required to do fieldwork, towards completion of their dissertation, which began in November 2002. The students analyzed the collected data, submitted the dissertations and made presentations on their dissertation work. All the eight students have successfully completed the course and secured first class, of which three students secured distinction.

IX M.Sc. (Wildlife Science)

The IX M. Sc. course commenced from July 15, 2003. Eight candidates joined the course. The regular classes of 1st Semester began from July 21, 2003. Besides internal faculty members, several prominent guest speakers were invited from time to time to give inputs to the course. The students visited Koluchaur, Lansdowne forest division and Sonanadi Wildlife Sanctuary of Corbett Tiger Reserve from August 10-17, 2003 for familiarization with animal tracks and signs, identifying birds and local plants, and orientation on field biology and natural history. As a part of the programme, the students visited Sariska Tiger Reserve from October 18-November 1, 2003 to learn about various aspects of field techniques related to vegetation quantification, habitat evaluation, population ecology and behavioral observations. Ist Semester course was completed in November and the students appeared in their final examinations in the first week of December. All the students successfully passed their Ist Semester examinations.

The teaching of the IInd Semester of the course began from January 5, 2004. The wetland ecology techniques and management tour was conducted during February 7-18, 2004 at Chilka and Bhitarkanika RAMSAR sites. During the weekends, experienced faculty members took the students on weekend trips to nearby Rajaji National Park.

Status of Doctoral Research in WII

Sl. No.	Thesis Title	Name	University	Supervisors
Degree Awarded				
1	An Ecological Assessment of Forests Spatial Heterogeneity, Species Diversity and Grassland Burning Practices in *Terai* Conservation Area (Awarded in April, 2003)	Sh. Harish Kumar	Saurashtra University, Rajkot	Dr. P.K. Mathur
2.	Ecology of problematic sloth bear (*Melursus ursinus*) and mitigation of human-bear conflicts in North Bilaspur forest division, Madhya Pradesh (Awarded in December, 2003)	Harendra Singh Bargali	Saurashtra University, Rajkot	Dr. N.P.S. Chauhan
3.	Habitat use, ranging pattern and management of sloth bear (*Melursus ursinus*) in North Bilaspur forest division, Madhya Pradesh (Awarded in January, 2004)	Naim Akhtar	Saurashtra University, Rajkot	Dr. N.P.S. Chauhan
4.	Factors affecting variation in social organisation and mating system of blackbuck (*Antelope cervicapra*). Ph.D. (Awarded in 2003)	Ishwaran Kavita	Department of Zoology, University of Florida, Gainesville, Fl. USA	Dr. Y.V. Jhala, Committee member (Co-Guide).
5.	A scientometric study & bibliographical control of periodical literature on wild mammals with special reference to literature published in India (Awarded in 2003)	Madan Singh Rana	Vardhaman Mahaveer Open University, Kota	Dr. Pawan Kumar Gupta and Dr. Dinesh Kumar Gupta
Registered for Ph.D.				
1.	Interactions between Forage, Recruitment and Activity Patterns of Blackbuck (*Antelope cervicapra*). Ph.D. Dissertation.	Priyadarshini, K.V.R.	Saurashtra University, Rajkot	Dr. Y.V. Jhala
2.	Social organisation and reproductive strategies of male Asiatic lions (*Panthera leo persica*). Ph.D. Dissertation.	Meena V.	FRI Deemed University, Dehradun	Dr. Y.V. Jhala

External M.Sc. Dissertation

Sl. No.	Thesis Title	Name	University	Supervisor(s)
1	Impact of Habitat Fragmentation on hoolock gibbon in Gibbon Wildlife Sanctuary, Assam.	Shri Debjyoti Chakraborty	FRI Deemed University, Dehradun	Dr. A.K. Gupta
2.	Resource Sharing among three Primate Species in Gibbon Wildlife Sanctuary, Assam.	Ms. Reenema Hazarika	FRI Deemed University, Dehradun	Dr. A.K. Gupta
3.	Statistical Models for Estimating Tiger Prey through Distance Sampling.	Shri Agni Mitra	FRI Deemed University, Dehradun	Dr. Y.V. Jhala

XXIV Post-Graduate Diploma in Wildlife Management concluded

The XXIV PG Diploma Course commenced from September 1, 2002 for a duration of nine months. Twenty officer trainees of the rank of DCFs/ACFs/ Veterinary Doctors and officers of equivalent levels from different States within India and abroad joined this course. Among the fourteen Indian officer trainees, one trainee each represented the States of Assam, Arunachal Pradesh, Jharkhand, Haryana, Meghalaya, Maharashtra, Madhya Pradesh, Sikkim, Rajasthan and Uttaranchal, two trainees each from Gujarat and Uttar Pradesh. Of the six foreign nationals, one each from Bhutan, Nepal and Sri Lanka were sponsored by the Ministry of Environment & Forests, Govt. of India, under the SAARC Wildlife Management Fellowship Scheme. The Protected Area Management and Wildlife Conservation Project, Government of Sri Lanka sponsored two candidates while one candidate from Myanmar was sponsored by the Smithsonian Institution, USA.

During the reporting period, a Management Plan tour to Dudhwa Tiger Reserve was undertaken by the officers from April 23-May 10, 2003.

At the end of the course, all the officer trainees faced a panel of faculty members and two external examiners for viva-voce. The Valedictory Function was held on May 30, 2003. Shri R.D. Jakati, IFS, CCF (Wildlife) & CWLW, Govt. of Haryana, was the Chief Guest of the function. All twenty-officer trainees were awarded 'P.G. Diploma in Wildlife Management' on their successful completion of the course.

Institute's Gold Medal for the 'Top Trainee' was bagged by Dr. Prabhaker Dubey. He also won the Wildlife Preservation Society Silver Medal for the 'Top Trainee' and Silver Medal for the' Best All Round Wildlifer'. NR Nair Memorial Silver Medal for 'Best Management Plan' was given to Shri V. Clement Ben. Dr. Prabhaker Dubey and Shri Rabindra Sharma jointly won the Best Management Term Paper (Book Prize). Shri K.C.A. Arun Prasad was declared 'Top Trainee in Wildlife Biology' (Book Prize). Institute's Gold Medal for the 'Top Foreign Trainee' was bagged by Shri Ugyen Namgyel, Bhutan.

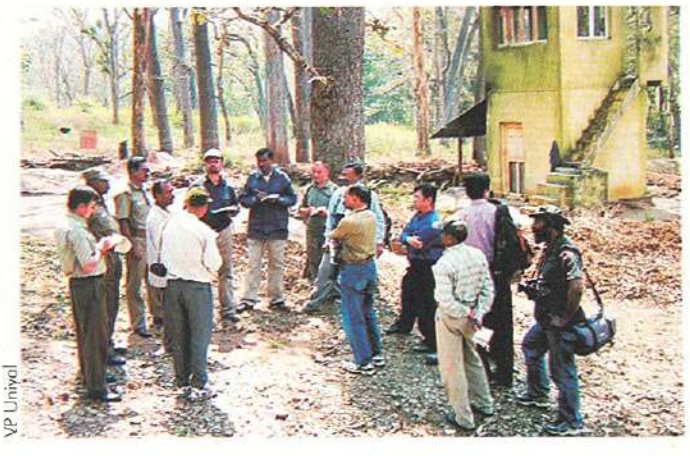
VP Uniyal

Dr. Prabhaker Dubey (U.P.), Shri V. Clement Ben (Maharashtra), Shri K.C.A. Arun Prasad (Rajasthan), Shri Rabindra Sharma (Assam), Shri Suresh Dalal (Haryana), Mr. Ugyen Namgyel (Bhutan) and Shri Gangeshwar Pandey (Uttaranchal) earned the Honours Diploma.

XXV Post-Graduate Diploma Course Commenced

The course commenced from September 1, 2003 for a duration of nine months. A total of eighteen officer trainees of the rank of DCFs/ACFs/Veterinary Doctors and equivalent levels from different States within India and abroad joined this course. Among the eleven Indian officer trainees, one each from Haryana, Kerala, Madhya Pradesh, Rajasthan, Arunachal Pradesh, and Tripura; two from Karnataka and three officers were from Assam.

Of the seven foreign nationals, one each was from Bhutan, Nepal, Maldives, Laos, Combodia and two were from Sri Lanka. The candidates from Bhutan, Nepal, Maldives and one from Sri Lanka were sponsored by the Ministry of Environment & Forest, Govt. of India under the SAARC Wildlife



VP Uniyal

Management Fellowship Scheme. The Protected Area Management and Wildlife Conservation Project, Government of Sri Lanka sponsored one candidate, while two candidates from Laos and Combodia were sponsored by the Global Tiger Forum.

For the field-training component, the officer trainees were initially taken to Corbett Tiger Reserve, Kalagarh for orientation. The objective of this tour was to introduce vegetation types, terrain types, identification of birds, familiarization with tracks and signs, different habitats and introduction to wildlife behaviour. Orientation treks were conducted both within and outside the Park and learning process was reinforced through group discussion and interaction with field officials.

Subsequently, the officer trainees were taken to Sariska Tiger Reserve during the month of November for providing basic training in the use of field gears such as use of compass, GPS, Pedometer and field technique in habitat mapping, vegetation analysis, wildlife census with special reference to ungulates and assessment of biotic pressure on wildlife habitats. Once the techniques were introduced the trainees themselves carried out fieldwork and prepared tour Journals based on knowledge gained from theoretical lectures on application of quantitative ecology, statistics and application of computers.

During the period September to March, the modules on wildlife biology, habitat ecology, applied population ecology, wildlife behaviour, application of computers, wildlife health, captive management, wildlife management, interpretive planning and visitor use management, wildlife policy and law, wetland management, wildlife restraint, ecodevelopment for biodiversity conservation, GIS and its application were completed. Apart from the Institute's faculty, several resource persons from the field and other institutions also provided inputs to the officer trainees as part of these modules.

XIX Certificate Course in Wildlife Management

The three month certificate course in wildlife management commenced on November 1, 2003 with twenty officer trainees including four foreign candidates. The Indian trainees were two each from Chhattisgarh, Punjab, Maharashtra, three from Tamil Nadu, five from Madhya Pradesh, and one each from J&K and Tripura. Two foreign candidates from Bhutan and one each from Nepal and Vietnam were sponsored by the Global Tiger Forum.

An Orientation-cum-Techniques Tour of the ongoing Certificate Course was conducted at Beribada Range of the Rajaji National Park from November 16 -22, 2003. Besides, a Management tour was also conducted at Gir National Park, Gujarat, Kanha National Park, Madhya Pradesh, and Keoladeo National Park, Bharatpur, Rajasthan from December 29, 2003 to January 19, 2004.

The *viva-voce* and presentation of management plan were held on January 27-28, 2004. The valedictory function was held on January 30, 2004 wherein certificates and awards were distributed to the participants by Shri R.P.S. Katwal, Director General, ICFRE, Dehradun. Shri Gur Aman Preet Singh from Punjab was adjudged as the top trainee. He bagged the Gold Medal for the Wildlife Conservation and the Institute's Prize for Wildlife Management (Book Prize worth Rs.1000/-). Dr. Sanjay Shakya bagged the Institute's prize for the Best All Round Wildlifer (Book Prize worth Rs. 1000/-). The Institute's prize for Best Foreign Trainee (Book Prize worth Rs. 1000/-) was bagged by Shri K. Wangchuk from Bhutan. All the trainee officers have successfully completed the course.

Debashis Chakraborty

Vinod Verma

Vinod Verma

Short Courses, Workshops, Seminars, Training Programmes

Organised by WII

Asia Regional Workshop on "Mainstreaming Biodiversity and Climate Change" *April 6-11, 2003.*

The workshop was sponsored by the IUCN-Regional Biodiversity Programme, Asia, United Nations Development Programme and the Ministry of Environment & Forests, Government of India. Forty one participants representing Bangladesh, Bhutan, Lao PDR, Nepal, Sri Lanka, Vietnam, Thailand, Germany, Switzerland and India attended the workshop. Shri N.D. Tewari, Hon'ble Chief Minister of Uttaranchal State inaugurated the workshop on April 6, 2003 and delivered the presidential address. Mr. D.D. Verma, Joint Secretary, MoEF, Mr. Yolando Velasco, UNFCCC Secretariat, Ms. Nadine Smith, UNDP and Dr. P. Balakrishnan, IUCN-RBP, Asia addressed the delegates at the inaugural session. The objective of the workshop was to address the issue of climate change and biodiversity loss on the environment and to identify local and national actions for ensuring sustainable development and reducing poverty. Shri R.P.S Katwal, Director General, ICFRE was the Chief Guest of the Valedictory Session held on April 11, 2003. The recommendations of workshop have been sent to the Convention on Biological Diversity (CBD), Convention to Combat Desertification (CCD) and United Nations Framework Convention on Climate Change (UNFCCC) Secretariats.

First Training Workshop on Wildlife Protection, Law & Forensic Science, *April 28-29, 2003.*

Based on the request from the Department of Customs & Central Excise, WII organized the workshop for the Inspectors of Central Excise & Customs. A total of 37 Inspectors participated in this training programme. The two-day workshop was organized to sensitize the Inspectors of Central Excise & Customs. Custom Inspectors being the primary controlling and checking authority of national and international trade including that of wildlife and their products. Inputs were provided by internal and external resource persons on wildlife and its conservation in India, wildlife protection and legal aspects, export and import policy relevant to wildlife trade, international conventions, identification of wildlife products in illegal trade and the dimensions of the trade, role of Regional Deputy Director, Wildlife Preservation GOI, Police, Customs and NGOs.

Workshop on "Healthcare Management of Wild Animals in Zoos", New Delhi, May 7-9, 2003.

The workshop was jointly organized by Central Zoo Authority and Wildlife Institute of India at India Habitat Centre, New Delhi. The purpose and goal of the workshop was to identify critical areas related to health management of zoo animals, prioritize important health needs and develop strategies for meeting their needs.

The workshop was attended by 57 delegates representing wildlife and veterinary health care, Ministry of Environment and Forests and Ministry of Agriculture, Govt. of India, Vice Chancellors, Deans and faculty members from Agriculture Universities, Zoo Directors, Zoo Veterinarians and Protected Area Managers. Eminent Zoo and Wildlife Veterinarians from USA, Africa and Singapore were invited to share their experiences.

The workshop was inaugurated by Thiru T.R. Baalu, Hon'ble Minister of Environment and Forests, Government of India. Shri Dalip Singh Ju Dev, Hon'ble Minister of State, Environment and Forests was the Guest of Honour. The participants were also addressed by Shri K.C. Misra, Secretary, MoEF, Shri M.K. Sharma, Director General of Forests & Special Secretary, MoEF and Shri Vinod Rishi, Addl. Director General (WL), MoEF.

Vacation Training Programme on Bio-resources for School Children, Dehradun, *May 8- June, 4, 2003.*

The National Bioresource Development Board (NBDB), Department of Biotechnology, Government of India, has taken a pro-active role in creating better awareness on issues concerning biodiversity and bioresources. The NBDB is engaged in promoting deeper awareness among school children about the importance of our environment, biodiversity, biotechnology and the relation of all these with every day life. In pursuance of this objective, the second 'Vacation Training Programme on Bio-resources for School Children' was jointly organized by the Wildlife Institute of India, Dehradun and the Institute of Himalayan Bio-resources Technology, Palampur from May 8 to July 4, 2003. The objectives of the training programme were: (a) to inculcate among school students an appreciation of the importance of biological resources of the country, their use and management; (b) to create opportunities for students for hands-on experience in the laboratory/field on the subject of bioresources; (c) to study locally available bioresources, their sustainable use and conservation; and (d) to bring about interaction of students with leading experts in the field from a pool of core and visiting faculty.

Twenty seven students from nine schools in Uttaranchal and three schools in Himachal participated in this training programme. The training schedule included class room interactions, laboratory exercises, visit to various scientific institutions. All students participated in the project work on (a) understanding and Documenting Plant Diversity, (b) understanding and Documenting Bird Diversity (c) understanding and Documenting Herpetofaunal Diversity, and (d) designing Individual Websites. The valedictory session was organized on the concluding day in which Dr. P.S. Ahuja, Director, Institute of Himalayan Bioresource Technology (IHBT), Palampur, Himachal Pradesh, gave certificates to all the students for successfully completing the course and book prizes were awarded to the winners.

Four-day workshop on Applied Statistical Methods for Ecology and Wildlife Research, Mumbai, *June 2-5, 2003.*

Dr. Y.V. Jhala conducted the workshop at the Bombay Natural History Society (BNHS) for the Scientists and Research Fellows of BNHS. The objective of the workshop was to train researchers and scientists in applied statistical methods for ecological analysis.

One-week Capsule Course in Wildlife Management for IFS Officers, *June 23-27, 2003.*

One-week capsule course in Wildlife Management for IFS officers was held at this Institute as a part of compulsory training for in-service officers. Of the 46 nominations received from the MoEF, eighteen IFS officers from various States and Union Territory like A&N Island, Andhra Pradesh, Assam, Gujarat, J&K, Kerala, Madhya Pradesh, Maharashtra, Mizoram, Manipur, Orissa, Punjab and Tamil Nadu participated in the course. The course was primarily meant to

Participants of the Capsule Course discussing issues of wildlife management on the banks of River Ganga

S. Wilson

Inaugural session of the workshop on Development of Strategic Action Plan for Wildlife Management and ex-situ Conservation Strategy

S. Wilson

sensitize and strengthen the field officers in dealing with the issues of wildlife management and bio-diversity conservation with latest findings and development. The inputs primarily included various aspects of biodiversity conservation; PA networking and challenges in PA management; Management Planning; Wetlands; Wildlife Forensics; Wildlife Health & *ex-situ* Conservation; Ecotourism & Interpretation; Wildlife Act & Trade Regulations; Forested landscape; Wildlife Research; Need for career development. Besides, one full day field visit to Rajaji National Park and adjoining areas was undertaken with focus on elephant conservation, corridor problems, habitat management approaches, *gujjar* rehabilitation and eco-development.

Two-day seminar cum workshop on Individual Identification, Population Estimation, and Monitoring of Lions, Gir, Gujarat *July 9, 2003.*

Dr. Y.V. Jhala conducted the workshop for the Gujarat Forest Department in Sasan Gir. The objective of the workshop was monitoring and population of free ranging lions in Gir Protected Area.

Workshop on Development of Strategic Action Plan for Wildlife Management and *ex-situ* Conservation in Himachal Pradesh, Hotel Holiday Home, Shimla, *August 8-9, 2003.*

The two-day workshop was inaugurated by the Hon'ble Forest Minister of Himachal Pradesh Prof. Chander Kumar. The objectives of the project were: (i) to prioritize species to be taken up under *ex-situ* breeding programme, (ii) to assess current level of breeding programmes, (iii) to assess existing infrastructure and future requirements, (iv) to assess capacity building and training needs, (v) to assess needs of field research for *ex-situ* conservation, and (vi) to evolve conservation strategy and action plan for Himachal Pradesh.

The workshop was attended by 75 participants including senior officials representing Himachal Pradesh Forest Department (HPFD), resource persons, faculty members from WII and NGOs. The workshop had seven technical sessions spread over two-days. The inaugural session included an overview of the ongoing WII-HPFD project, a joint effort of the Himachal Pradesh Forest Department and the Wildlife Institute of India, Dehradun to develop a strategic vision plan for an integrated *in-situ* and *ex-situ* conservation action plan. This will be the first of its kind in the country. The outcome of the workshop was to prepare a long-term plan for scientific management of the Protected Area Network, Zoos, Botanical Gardens and Arboretums and wildlife outside the protected areas of Himachal Pradesh.

Experts from various professional organizations including Central Zoo Authority, Zoological Survey of India, Botanical Survey of India, World Pheasant Association, Himalayan Forest Research Institute, Indian Institute of Remote Sensing, National Institute of Information Technology (NIIT), National Bureau of Plant Genetic Resources, various universities, Indian Fish Conservancy, scientists from the Wildlife Institute of India, Field Managers from the HPFD and civil society representatives discussed, interacted and shared experiences to develop a strategic action plan for conservation and management of the unique Western Himalayan flora and fauna in Himachal

Pradesh. The formulation of a draft policy guideline and strategic action plan for protected area network in Himachal Pradesh, establishment of a network of captive propagation facilities of rare and endangered fauna, solutions to human-wildlife conflict, participatory management of protected areas, sustainable livelihood options based on natural resources, professionalizing human resource in management capabilities and capacity building were the themes deliberated in this workshop.

Special focus was on development of integrated conservation breeding and reintroduction plan for select western Himalayan flora and fauna particularly for the pheasants and Himalayan ungulates. Conservation of Himalayan orchids and medicinal plants were also on the agenda for discussion.

Course on Wildlife Protection, Law & Forensics for the Inspectors of Customs & Central Excise, Dehradun, *September 1-2, 2003.*

The programme aimed at sensitizing the enforcement officials about the wildlife trade related issues and connected legal implications in order to effectively curb the illegal trade in wildlife and wildlife products. The emphasis of the training, besides updating the participants on various conservation laws pertaining to biodiversity conservation, was mainly on Wildlife Protection Act, CITES, Wildlife Enforcement and Wildlife Forensics. All the participants were exposed to various aspects in the identification of the wildlife products and articles prevalent in the trade and combating enforcement strategies. The course had 27 Inspectors of Customs & Central Excise.

Workshop on 'Capacity Building for Ecotourism' SIPARD, Agartala, Tripura, *September 4-6, 2003.*

WII with financial support from the Government of Tripura organized three-day workshop for senior officers of Forest, Agriculture, Horticulture and Tourism Department of Government of Tripura. The workshop was primarily aimed at sensitizing the senior officers from different departments who have a stake in promoting ecotourism in the state. The workshop was organized through lectures by key speakers, panel discussions, group exercises and a field visit to Sepahijala Wildlife Sanctuary for on-the-spot understanding of key issues associated with ecotourism. The workshop resulted into the framing of Ecotourism Policy of Tripura, which was drafted by the coordinators of this workshop from WII.

Course on Wildlife Protection, Law & Forensics for the Indian Customs & Central Excise Officers (Group "A" Promoted), Dehradun, *September 18-19, 2003.*

A total of thirteen officers participated in the two-day training programme. The focus of the training was to sensitize the concerned enforcement officials about the trade related issues pertaining to wildlife and its derivatives and connected legal implications in order to have an effective enforcement strategy to curb illegal trade in wildlife and its products. The officers were exposed to various Laws pertaining to Biodiversity Conservation with emphasis primarily on Wildlife Protection Act, CITES, Wildlife Enforcement and Wildlife Forensics. The participants were also acquainted with various identification aspects of the wildlife products and items prevalent in the trade.

Terai Arc Tiger Conservation Landscape (TAL) Workshop, *November 6-7, 2003.*

The objective was to share the research findings with the Forest Departments, NGOs and various institutions involved in TAL conservation. It was organised by the Wildlife Institute of India and sponsored by Save the Tiger Fund and National Fish & Wildlife Foundation. The workshop, attended by eighty participants, was used as a medium to plan strategies and to stimulate concerted efforts to carry on conservation activities in the field. The participants were divided into four groups who deliberated on (i) people related issues, (ii) habitat related issues, (iii) conservation of tiger and its prey and (iv) Indo-Nepal border current conservation scenario and cooperation. All participants unanimously agreed that Forest Department should coordinate, facilitate and spearhead all the conservation programmes in TAL with the assistance of all identified agencies.

Two-day Training workshops on identifying species and marking wildlife items.

The Govt. of India published a notification No. 1-1/2003 – WL. I dated 18th April, 2003 for rules to be followed for declarations under Section 40-A of the amended Indian Wildlife (Protection) Act, 1972. Under this, owners were asked to declare and register their wildlife products/items with the respective Chief Wildlife Warden of State/UTs to obtain Certificate of ownership for the species covered by Section 40-A. One of the problems visualized by most of the States were in marking various wildlife items and identifying genuineness of these products before these are officially registered specially for Shatoosh shawls. In order to enhance technical capabilities of Forest Officers, Wildlife Institute of India organized five "Two days training workshops for States and Union Territory between November 10th and 25th, 2003:

Region	Date	No. of Participants
Northern Region	November 10-11, 2003	Eight
Western Region	November 15-16, 2003	Three
Eastern Region	November 18-19, 2003	Three
Eastern Region	November 20-21, 2003	Ten
Eastern Region II	November 24-25, 2003	Nil

Workshops planned at WII were unique, as officers were given first hand exposure by conducting various practicals on identifying species and marking wildlife items. Hands on practice facilitated active participation and interaction among officers. Two major themes viz. identifying species and marking wildlife products were discussed during each workshop. Under section on Identifying wildlife products, officers were taught how to identify species from shatoosh shawls, elephant tusk items, items made from bone, antler and their products, canines, skins of carnivores, bear bile and musk pods.

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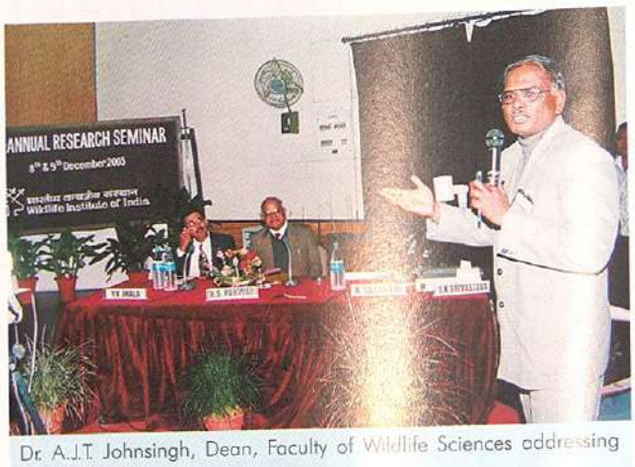
Special emphasis was given for identifying shawls made of shatoosh hair based on physical examination (weight, dimensions, and other features), colour, weaving pattern, use of embroidery and their comparison with Pashmina, Angora and other wools. This was followed by practical to collect and differentiate guard hair from the wool hair in the shawls and to study some of the physical properties of the guard hair of shatoosh that differentiate it with other wool *i.e.* Pashmina and Angora. These tips are handy in quick identification of the shatoosh shawls in almost all the shawls except in those shawls in which guard hair are not sufficiently present. After the collection of the guard hair, practical demonstration and exercise was done for the preparation of the microscopic slide for cuticular and medullar patterns as compared with other species.

Identification of tusk and its derivatives from other items were taught using physical characteristics like burning test, colour comparison, crack marks, harvesian canal identification, and examination under low magnification for Schreger lines and under Ultra Violet light. Such techniques have enabled officers to distinguish elephant tusk parts from items made of camel bone, plastics and others. Identification of antler and their products were discussed based on characteristics like pattern, texture and colour, cross-sections.

Officers were taught how to distinguish and identify species from canine, claws and rhino horn based on morphological characteristics and examination at low magnification. They were taught to identify skins of various carnivores.

Sh. R. Rajamani, Chairman TRAC and Sh. S. Singsit, Director, WII releasing a poster on Snow Leopard during the XVII Annual Research Seminar

Vinod Verma



Dr. A.J.T. Johnsingh, Dean, Faculty of Wildlife Sciences addressing the audience

Vinod Verma

A two-day training course on Wildlife Protection, Law and Forensics for IC&CES officers (Group "A"- Promoted), Dehradun, *November 24-25, 2003.*

This training course was conducted at WII. In all fifteen participants attended the training course. A full day was slated for theoretical aspects concerning legal aspects of Wildlife Protection Act (1972), CITES and exposure to Forensic Lab activities. Besides, one full day visit to Rajaji National Park was set aside for field exposure and also to sensitize the participants about multi-facet adversities faced by the forest officials in combating illegal trade in wildlife.

A two-day training course on Wildlife Protection, Law and Forensics for Inspectors of Customs & Central Excise, Dehradun, *December 5-6, 2003.*

This two-day training course was organised at WII. In all 33 participants comprising seven-lady Inspectors accompanied by one officer from National Academy of Customs, Excise & Narcotics (NACEN), Faridabad attended the training course. Two full days were utilized for theoretical aspects catering to legal acts and CITES and exposure to Forensic lab activities.

XVII Annual Research Seminar (ARS), *December 8-9, 2003.*

Shri R. Rajamani, Chairman (Training , Research & Academic Council (TRAC), chaired the seminar. A total of 25 papers were presented by the researchers, post graduate interns, collaborators, faculty members including one presentation from Dr. Barry R. Noon, visiting professor from USA. About 165 delegates from all over the country including few delegates from foreign countries (twenty from Govt. & Academic Institutions, ten from State Forest Departments, fifteen from NGOs, twenty prominent Scientists, Conservationists & Wildlife Experts and representatives from other agencies) attended the ARS. About one hundred internal participants (faculty members, researchers and post-graduate interns, officer trainees and M.Sc. students) also attended. The following were adjudged as the top five presentations and were given book awards worth Rs. 1000/- each:

Name	Topic of Presentation
Aaron S. Lobo	Diversity of sea snakes and their mortality due to shrimp trawling along the coast of Goa, Western India.
Rina Rani Singh	Characterization of Asian and African elephant ivory using various morphometric and analytical techniques.
M.S. Chaitra	Jurrasic frogs and the evolution of endemism in the Western Ghats.
Reeta Sharma	Wildlife Forensic Facility: Aims, Achievements and Future Plans.
Padmawathe R.	Effects of selective logging on vascular epiphyte diversity in a moist lowland forest of eastern Himalaya, India.

All the researchers were given book awards worth Rs. 1000/- each.

Training Course on Environmental Impact Assessment (EIA), *December 15-20, 2003.*

The objectives of the course were to: (i) develop a pool of competent professionals to independently plan, conduct and review impact assessment of development

projects to promote incorporation of ecological sustainability in development planning, (ii) introduce the relevance and scope of biodiversity impact assessment as an upcoming discipline within EIA, and (iii) enable integration of wildlife concerns in development planning for strengthening biodiversity conservation efforts. EIA was introduced as part of the nine month PG Diploma Course for in-service forest officers. This is still an ongoing effort with the benefits of the course now being regularly extended to other participants by opening the course for lateral entrants. Six lateral entrant participants attended the course.

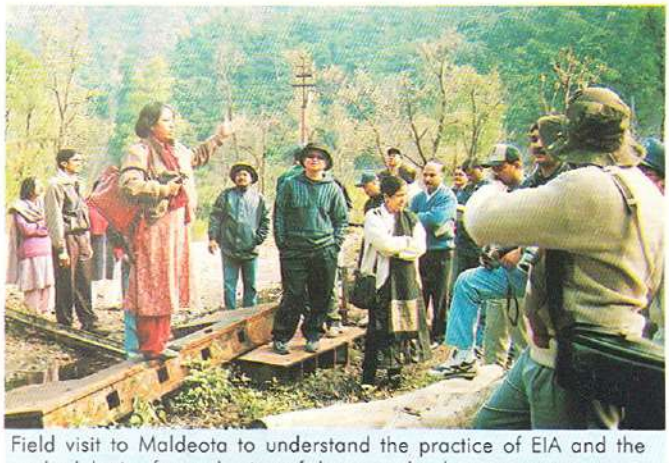
The training course on EIA was conducted to cater the training needs of the state forest departments, officials from Narmada Valley Development Authority, scientists from forestry institutions, project planners from corporate groups and officials of WWF. The course primarily aimed to draw focus on the importance of incorporating biodiversity issues in EIA subsequent to the ratification of Article 14 of Convention on Biological Diversity (CBD) and to build the capacity of individuals and the organizations they represent to adopt best practices in integrating biodiversity conservation concerns in conducting and reviewing EIA of development projects. The course was designed to provide broad understanding of the theory and practice of Environmental Impact Assessment and the methodologies for the evaluation of threats to biodiversity resources in future developmental initiatives.

A half-day field visit to the mine site of M/s Pyrites Phosphate and Chemical Limited (PPCL), Maldeota, Dehradun and the eco restoration sites near Sahastradhara was organized for the participants of the course to see the successful restoration works of the overburden dumps.

Four week study tour of Officers from the Department of Wildlife Conservation, Sri Lanka, *December 21, 2003-January 21, 2004.*

The Institute coordinated a four week study tour to India for 22 participants of National Wildlife Training Centre (NWTC) from the Department of Wildlife Conservation, Sri Lanka. Two faculty members from the Giritale Centre also accompanied the participants. The participants spent the first week in the Institute, where they were briefed on the Indian conservation scenario in developing countries, the issues pertaining to wildlife and protected area management. Subsequently, they were taken to some Protected Areas and Zoological Parks prominent of which are Keoladeo NP, Sariska TR, Periyar TR, Anaimalai WLS, Parambikulam WLS, Mudumalai NP, Bandipur TR, Mysore Zoo, Guindy NP, Vedanthangal Bird Sanctuary and Vandalur Zoo.

The field visits were aimed to provide hands on management experience of the various Protected Areas and Zoological Parks of India. A team of faculty members from the Wildlife Institute of India led the touring group. In association with Protected Area Managers they discussed the conservation prospects and management issues in each of the Protected Areas/Zoological Parks. The visiting officers were provided with adequate reading materials and field gears for aiding in learning processes.



Field visit to Maldeota to understand the practice of EIA and the methodologies for evaluation of threats to biodiversity resources
Vinod Verma

Officers from the Dept. of Wildlife Conservation, Sri Lanka discussing issues pertaining to wildlife & Protected Area Management
Vinod Verma

Two-day Workshop for Developing Field Protocols for Tiger Status and Habitat Monitoring, Kanha, *January 14-15, 2004.*

Dr. Y.V. Jhala conducted the workshop with Director, Project Tiger, Field Director and Field Staff, Kanha Tiger Reserve. The objective of the workshop was brainstorming on developing scientific protocols for monitoring tiger status, habitat and prey.

A two-day training course on Wildlife Protection, Law and Forensics for Indian Customs & Central Excise Services (IC&CES) officers (Group "A"-Promoted) *January 27-28, 2004.*

The course was conducted at WII. In all eleven participants attended the training course. For this purpose a full day was slated for theoretical aspects concerning legal aspects of Wildlife Protection Act 1972, CITES and exposure to Lab activities. Besides, one full day visit to Rajaji National Park had been set aside on January 28, 2004 for field exposure as also to sensitize them about multi-facet adversities the forest officials are to combat despite various constraints and pressures.

Special Training Course in Wildlife Management for Range Forest Officers of Northeastern States, Kaziranga National Park, *February 9-28, 2004.*

The three-week special training course began at Bagori Wildlife Range of Kaziranga National Park, Assam. The course was inaugurated by Shri M.C. Malakar, Chief Wildlife Warden, Assam. In all twelve Forest Range Officers from different States/UTs of Northeast (seven from Assam, three from Tripura and two from Nagaland) were trained in this training course.

This course was the first of its kind and was designed specifically for the officers of Northeastern states realizing that they get less opportunity to attend the regular in-house courses at WII due to paucity of funds, distance and other logistics problems. The main mandate of this course was to impart specialized technical and scientific training to the Range Officers, who constitute the backbone of the forest department, in the matters related to Wildlife Conservation. The following

Participants of the Special Training Course were taken to different field sites to expose them with different management related issues
S. Wilson

major topics were covered: (i) Wildlife Habitats and Population Assessment Techniques, (ii) Introduction of Wildlife Conservation and Management, (iii) Wildlife Management: Habitats, Animals and Protected Areas, (iv) Wildlife Law, Administration and Management Planning, (v) Captive Management, Wildlife Health, (vi) Conservation Education, Nature Interpretation and Wildlife Tourism, and (vii) Ecodevelopment for Biodiversity Conservation.

Six faculty members from the Institute and nine other subject specialists from other institutions provided their inputs as resource persons during this course. Apart from the classroom lectures and panel discussion the participating officers were also taken to different field sites during the course to expose them with the different management related issues and also proivide them with the hands-on practice in various techniques. Some of the places visited were Nameri Tiger Reserve, Pakki Wildlife Sanctuary, Golaghat RF, Nambiar-Garampani WLS, Karbi-Anglong WLS, Gibbon WLS, WTI Rescue Centre, Pigmy Hog Breeding Centre and Guwahati Zoo.

Two-day workshop-cum-seminar for conveying the Data collection Field Protocols for Tiger, Prey and Habitat Status Monitoring, Pench, *February 10-11, 2004.*

Dr. Y.V. Jhala conducted the workshop cum seminar to the Madhya Pradesh Forest Department (CFs to Guards) of the Satpura Landscape for the Project Tiger Directorate. The objective of the workshop was to communicate protocols for monitoring and field data collection exercise on tiger status, tiger habitat and tiger prey.

Park managers from five pilot project sites and Principal Investigators at a workshop on NNRMS Project

Vinod Verma

Panel discussion on interdepartmental coordination in combating illegal trade in wildlife

Vinod Verma

Technical Workshop on NNRMS Project 'Mapping of National Parks and Wildlife Sanctuaries' *February 19-20, 2004.*

As per the decision taken in the 19th Meeting of National Natural Resource Management System (NNRMS) Steering Committee on Bioresources and Environment, the Wildlife Institute of India organized a Technical Workshop on NNRMS Project 'Mapping of National Parks & Wildlife Sanctuaries'. The objectives of this workshop were: (a) to re-visit the methodology proposed for mapping of National Parks & Wildlife Sanctuaries on 1:25,000 scale and (b) to discuss the availability of maps, data and other related information for creation of database of the project pilot sites. In all 27 participants representing Park Managers from five-project pilot sites *viz.* Corbett (Uttaranchal), Dudhwa (Uttar Pradesh), Tadoba (Maharashtra), Kaziranga (Assam) and Annamalais (Tamil Nadu), all Principal Investigators and representatives from scientific institutions participated in the workshop. This 36-month project will be implemented by the scientists of Wildlife Institute of India, Indian Institute of Remote Sensing, National Remote Sensing Agency, Survey of India and Aligarh Muslim University.

Workshop on Health Monitoring of Free Ranging Wild Animals, *February 23-25, 2004.*

The training workshop was planned with the idea of sensitizing PA Managers/Veterinarians on various health management issues in free ranging wild animals. It was sponsored by State Wildlife Agencies. One participant participated in the workshop. Exposure on various aspects of health management in free ranging situations *viz.* surveillance and monitoring of wildlife health, general health assessment in free ranging populations, epidemiology and ecology of diseases, wildlife health: current and emerging problems, major wildlife diseases (infectious and non-infectious) and their management (diagnosis, prevention and control), emerging and re-emerging diseases in wildlife was given to the participant.

7th Special Course on Wildlife Protection, Law and Forensics for the probationers of Indian Customs & Central Excise Service, Group "A" (55th Batch), Dehradun, *February 23-March 5, 2004.*

Eighteen officers attended the course, which was organized at WII. The theoretical inputs consisted of lectures/panel discussions on legal aspects and CITES, status and measures to control illegal trade in various wildlife species. Besides, practical demonstration on identification of various species and their artifacts being traded was given through a visit to the Forensic Lab. A 3-day field visit to Dudhwa Tiger Reserve from March 1-3, 2004 was organized. Panel Discussion on Interdepartmental Coordination in Combating Illegal Trade in Wildlife was organized on the last day inviting officers from different fields of activities (forest, customs, wildlife management, etc.). Shri A.S. Negi, former Chief Wildlife Warden, Uttaranchal was invited as Chief Guest for the Valedictory Function.

Workshop on Wildlife Immobilization and Restraint, *March 8–10, 2004.*

The objective of the workshop was to sensitize PA Managers/Veterinarians in recent advancements in the field of chemical immobilization and restraint. It was organized by WII and sponsored by State Wildlife Agencies. Three participants participated in the

workshop. The workshop exposed participants to recent advances made in the field of Wildlife Immobilization and restraint. The participants were sensitized to various issues like legalities with respect to immobilization and restraint, capture, transport, translocation and sampling, approach and handling of animals in distress, techniques for animal restraint and immobilization, with special emphasis towards restraint and immobilization of carnivores, ungulates and elephants in distress to achieve operational effectiveness. Hands-on training on immobilization equipment was also given to the participants.

Training course on "Impacts of Mining Projects on Biodiversity", Ranchi, Jharkhand, *March 15–17, 2004.*

The course aimed to build capacity of the executives of the environment division of the mining companies and the officials of the State Pollution Control Boards to better appreciate the relevance of biodiversity issues in environmental decision making in the light of provisions of the Global Conventions on Biodiversity and to promote good practices of integrating biodiversity concerns in the EIA documentation for environmental clearance of mining projects. It was organised by the Wildlife Institute of India on the request of Central Mine Planning & Design Institute Ltd. Twenty officials working in various mining companies and State Pollution Control Boards attended the training programme.

The structure and contents of the training programme was designed to provide inputs on diverse topics including overview of process for environmental decision making with respect to mining projects, relevance of biodiversity considerations in environmental decision making, best practice models of EIA for streamlining biodiversity assessment, ecological restoration of mining projects and guidelines for retooling biodiversity assessments for mining projects.

Attended by WII Personnel

Exchange visits to University of Tromso, Norway, *April - May 2003.*

The Wildlife Institute of India (WII) and University of Tromso (UiTo), Norway have initiated an Institutional Co-operation Programme in Natural Resource Ecology and Management in 2002. This three-year co-operation programme is funded by NORAD and includes a component on faculty/student exchange visits. Under this programme, Dr. S. Sathyakumar, Dr. Sanjay Kumar Uniyal and Dr. Anjali Awasthi visited Norway. The different activities carried out during the above period included field visits to Northern Norway and academic activities at the University of Tromso and Norwegian Agriculture University, Oslo.

While at Tromso, the team visited Polaria, Tromso Museum, Polar Museum, and Sommeroy, Svensby, Kvaloyvag and Lyngseidet Islands. While the visits to the museums were a learning experience on artic wildlife and ecology, the visits to the islands were useful for bird watching and understanding Norwegian coasts and island ecosystems.

WII team members also visited Agricultural University at Ås (NORAGRIC) and had interactions with Professors Dr. Per Wegge and Dr. Jon Swenson and their Ph.D. students.

EIA Stakeholders Workshop on Management of Environmental Data, *April 29, 2003.*

The objective of the workshop was to intimate the stakeholders on the efforts made by the Environmental Information Centre (EIC) to improve availability of secondary environmental data, EIC's observations on limitations in coverage, quality and access to such data and its recommendations to overcome the limitations by way of synergies among the stakeholders' interests. The workshop, thus, attempted to provide a platform to the participants to discuss and comment upon the business model for EIC proposed on the lines of public private partnership

The workshop was organized by Ecosmart India Limited on behalf of MoEF as an initiative under the World Bank funded Environmental Management and Capacity Building (EMCB) Project. Though a multitude of agencies are involved in collection of environmental data over a long period of time, there is no single organization in India that tracks the available data to make it available in the form and manner required by the practitioners in the field of

environment. With this background, EIC is set up to serve as a professionally managed clearinghouse of environmental information under the World Bank funded Environmental Management and Capacity Building (EMCB) Project being coordinated by MoEF. Considering WII's longstanding experience of conducting EIAs, and recognizing the institution as one of the potential data providers. Dr. Asha Rajvanshi provided expert views on key areas of planning the data collection and its interpretations. During the workshop Dr. Asha Rajvanshi also made a presentation on "Sampling and interpretation techniques for floral and faunal assemblages for EIA documentation".

International training course on Economic Tools for Ecosystem Conservation, Ben Lomond, California, *June 1-14, 2003.*

Training for Conservationists from the tropics was conducted by the Conservation Strategy Fund in parternership with Conservation International at Santa Cruz Mountains, California. This course focused on the study of the principles of natural resource and environmental economics, as well as environmental valuation techniques and enabled the participants to get a hands on experience doing benefit-cost analysis, the most widely used tool for analyzing the economic benefits of projects and policies. The participants were also able to practice negotiating environmental policies. Dr. Ruchi Badola participated in the international training course.

Workshop on TERI-UPFD research project, Lucknow, *June, 2003.*

It was organized by the Uttar Pradesh Forest Department. Dr. N.P.S. Chauhan presented the World Bank assisted UP Forestry project report on man-animal conflicts in the states of Uttar Pradesh and Uttaranchal. The conflict issues covered include elephant damage in the areas of Barkot, Rajaji and Lansdowne; wild boar in areas surrounding Dudhwa and Corbett, the wolf problem in Rai Bareily and Shravasti, tiger-human conflicts in Katarniaghat, monkey-human conflicts in Lucknow and Almora and leopard-human conflicts in Pauri, Chamoli and Pithoragarh *vis-a-vis* leopard-human conflict situation in the Thailisen region of Pauri-Garhwal where leopard-human conflicts are reported to be low.

Meeting of the Central Empowered Committee (constituted by the Hon'ble Supreme Court of India in Writ Petition (Civil No. 202/95 & 171/96) to discuss about Rajaji National Park, *June 2, 2003.*

The objective was to discuss about the use of Rs. 50 crores allotted for Rajaji National Park by the Power Grid Corporation. It was organised by Central Empowered Committee. Dr. A.J.T. Johnsingh made a presentation on "Saving north-western tiger/ elephant range: A conservation plea". He suggested ways of using this money for strengthening conservation of Rajaji National Park.

IUCN- World Commission on Protected Areas (WCPA) South Asia Workshop in Dhaka, Bangladesh, *June 18-21, 2003.*

The Vice-Chair, IUCN-WCPA South Asia, Nepal and Head, IUCN Protected Areas Programme, Vietnam organized an IUCN-WCPA South Asia Preparatory Workshop for the World Parks Congress (WPC) in Dhaka, Bangladesh. Dr. V.B. Mathur and Shri B.C. Choudhury participated in this workshop. The main objectives of the workshop were: (a) to contribute to the WPC from South Asia through a co-ordinated regional effort; (b) to assist the nominated individuals to understand the WPC, its objectives, programme and outputs and thus enable them to participate more effectively; (3) to share experiences and information and prepare relevant case study material for presentation/display at the WPC and (d) to assist in the development of a long-term programme of work that will follow on from the WPC. Dr. V.B. Mathur presented a paper on "Evaluating Management Effectiveness of Protected Areas: Concept, Framework and Lessons Learnt" and Shri B.C. Choudhury presented a paper on "Developing Capacity to Manage Protected Areas: Terrestrial, Wetland and Marine Protected Areas-the WII Experience".

Interpretive Writing and the process of Interpretation, San Francisco, California , *June 23-27, 2003.*

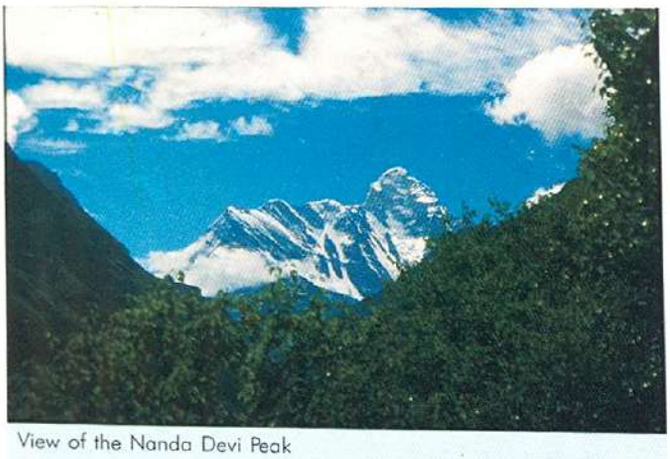
The course was organized by the National Conservation Training Centre, Shepherdstown, West Virginia. The five-day course was held at San Francisco Bay National Wildlife Refuge, California. It

emphasized on interpretive text writing for any media. Bitapi C. Sinha was supported by US Fish & Wildlife Service to attend this course.

Biodiversity Monitoring in Nanda Devi National Park, *June 20-July 7, 2003.*

The crucial Biodiversity Monitoring exercise was carried out by a team of scientists from the Wildlife Institute of India, Dehradun (WII), G.B. Pant Institute for Himalayan Environment and Development, Almora (GBPIHED) and the H.N.B. Garhwal University, Srinagar. While the Uttaranchal Forest Department wildlife staff provided the logistic and expedition management support, the Indo-Tibet Border Police (ITBP) provided the support of medics, climbers and communication personnel. Dr. S. Sathyakumar and Dr. B.S. Adhikari participated in this expedition from WII.

The expedition team surveyed along the main route to Nanda Devi Base camp, which is considered as one of the world's most formidable routes. The team surveyed areas in and around Dharansi, Dibrugeta, Deodi, Bethartoli, Ramni, Bhojgara, Patal Khan, Sarsonpatal, Nanda Devi and Devasthan I Base Camp areas. Dr. Sathyakumar who led this expedition, and Dr. S.S. Samant (GBPIHED) who had participated in the 1993 expedition, repeated their baseline surveys on fauna and flora respectively. Dr. B.S. Adhikari studied the ecology of forests, alpine meadows, made inventory of Lichens and Bryophytes and identified crucial habitats for rare and endangered plants including those of high medicinal values. The expedition members had sightings of the endangered Himalayan musk deer, bharal or blue sheep, Himalayan tahr, Asiatic black bear, marten, weasel, pika, Himalayan monal pheasant, Himalayan snow cock and several birds and many rare and endangered plants that included orchids, medicinal plants and a few plants listed in the Red Data Book. The team also collected indirect evidences of serow, common leopard, snow leopard, red fox, koklas pheasant and many other animal species. Scientists who participated in this expedition have reported positive changes in the status of vegetation, wildlife habitats and wildlife as compared to the surveys of 1993.



View of the Nanda Devi Peak

B.S. Adhikari

The scientists were unanimous in recommending the continuation of ban on mountaineering and other human use inside the Park. They proposed that Biodiversity Monitoring to be conducted every 5 or 10 years and development of eco-tourism should be allowed only in the buffer zones of Nanda Devi Biosphere Reserve involving local villagers as eco-guides and tour operators.

National Workshop on Wildlife Conservation: Challenges and Initiatives, Chennai, *June 30-July 1, 2003.*

The objective was to focus on issues related to conservation of endangered species, habitats and protected areas. It was organised by Ministry of Environment and Forests and Salim Ali Centre for Ornithology and Natural History, Coimbatore. Conservationists, Forest Officers and Biologists from different parts of the country assembled in Chennai to discuss various issues related to the conservation of endangered species, human wildlife conflict, implementation of wildlife action plan, integration of wildlife research and management plan, and management of habitats and protected areas. Dr. A.J.T. Johnsingh attended the national workshop from WII.

First International Conference on Acoustic Communication by Animals, University of Maryland, College Park, USA, *July 27-30, 2003.*

This conference was sponsored by the Acoustical Society of America (ASA) and the Centre for Comparative and Evolutionary Biology of Hearing

(C-CEBH), University of Maryland. The emphasis of the conference was to integrate information across animal taxa and to enable young investigators and students to meet and share ideas, data, and methods. A further purpose of the conference was to advance the field of animal bioacoustics through greater integration across the biological sciences. Dr. Anil Kumar presented a research paper titled, 'Acoustic communication in two sympatric species of *Pycnonotus* bulbuls'.

XIX International BioAcoustics congress, Belem, Para, Brazil, *August 10-15, 2003.*

The XIX International BioAcoustics congress was held at Beira Rio Hotel, Belem, Para, Brazil. In all ninety participants from twenty different countries participated in this conference. Dr. Anil Kumar presented a research paper on the acoustic communication of Red-vented bulbul.

"Linking mountain diversity with fire, grazing and erosion", II GMBA Symposium, La Paz, Bolivia, *August 20-23, 2003.*

It was organized by Swiss Agency for Development & Cooperation, FAO, Project GEFII-Bolivia, SERNAP Bolivia & UNAM, Morelia, Mexico. Dr. B.S. Adhikari attended Symposium and presented a paper titled "Human and livestock pressure on plant diversity in the rangelands of Changthang plateau, Ladakh, India".

WII-UNESCO Project Meeting in Durban, South Africa, *September 5-6, 2003.*

A six-member WII-UNESCO project team comprising Shri S. Singsit, Director, WII, Dr. V.B. Mathur, Project Co-ordinator, Shri B.C. Choudhury, Project Co-coordinator, Shri N.K. Vasu, Director, Kaziranga National Park, Shri K.C.A. Arun Prasad, Director, Keoladeo National Park and Shri Shiv Raj Bhatta, Chief Warden, Royal Chitwan National Park, Nepal were invited to participate in the project review meeting and the V World Parks Congress at Durban, South Africa. The WII-UNESCO project team presented the findings of the 'Initial Assessment of the Management Effectiveness' at the three South Asian sites' in meeting.

Vth IUCN World Park Congress, Durban, South Africa, *September 8-17, 2003.*

The IUCN World Congress on Protected Areas or IUCN World Parks Congress (WPC) as it has become known, is a 10 yearly event which provides the major global forum for setting the agenda for protected areas (PAs). The WPC is a major international event for IUCN. It offers a unique opportunity to take stock of protected areas; provide an honest appraisal of progress and setbacks; and chart the course for protected areas over the next decade and beyond. The Vth IUCN World Parks Congress was held in Durban, South Africa from September 8 to 17, 2003.The theme of the WPC was *"Benefits Beyond Boundaries"*. Over three thousand delegates from across the globe participated.

Shri B.C. Choudhury participated and delivered lectures on 'The Wildlife Institute of India: A generation of conservation training' on September 9, 2003 and 'Biosphere reserve for fostering coastal marine linkage: case study of the Gulf of Mannar Protected Area'on September 13, 2003.

XII World Forestry Congress, Quebec City, Canada, *September 21-28, 2003.*

Dr. Ruchi Badola and Dr. S.A. Hussain attended the Congress and presented a joint paper "Valuing the storm protection functions of mangroves-case study from India".

Course on Recent advances in cold water aquaculture, Palampur, Himachal Pradesh, *September 21–October 2, 2003.*

The course was designed with the objective to apprise and update the knowledge of cold water fisheries through the recent advances made in this field. It was organized by Dept. of Fisheries, College of Veterinary and Animal Sciences and sponsored by ICAR. Capt. (Dr.) Parag Nigam attended the course. The course was intended for apprising the participants on recent advances made in the field of cold water aquaculture with emphasis on health management of cold water fish, fish diseases and their management, conservation strategies and fisheries as a potential eco-development and ecotourism activity.

Conference on Western Ghats Conservation and Human Welfare, Bangalore, *September 22-24, 2003.*

The objective was to evolve strategies for the conservation of Western Ghats. It was organised by Ashoka Trust for Research in Ecology and the Environment (ATREE), Bangalore. The workshop was attended by conservationists working in Western Ghats. Various presentations were made on the conservation significance of the Western Ghats, its flora and fauna. Dr. A.J.T. Johnsingh made a presentation on "Threatened Vertebrates of Western Ghats, India". The conclusion was the Western Ghats should be managed to benefit the people of the region.

"The World Wolf Congress 2003 - Bridging Science and Community", Banff, Alberta, Canada, *September 25-28, 2003.*

The objective was bridging science and communities on wolf biology, human-wolf conflicts, habitat and prey ecology. Dr. Y.V. Jhala presented three papers and chaired a technical session.

"Wildlife and Communities" National Workshop, Ahmedabad, *October 9-10, 2003.*

The workshop was organized by MoEF, GFD & GEER Foundation. Dr. Y.V. Jhala participated from WII.

The objectives of the workshop were: (i) How to get and win the support of local communities for conservation? (ii) Case studies, where local communities were responsible for effective conservation, and (iii) Legal aspects of recognizing community conservation and strengthen it.

Dev Bhoomi Elephants under threat, Rishikesh, *October 11, 2003.*

The objective was to discuss about the problems of elephant conservation around Rishikesh and Haridwar. It was organised by the Friends of Doon Society and Elephant Sanctuary, USA. The workshop was attended by Shri S.S. Bist, Director, Project Elephant; Shri A.S. Negi, former Chief Wildlife Warden, Uttaranchal; Shri Samir Sinha, Director, Rajaji National Park; Shri Nirmal Ghosh and Shri P.K. Ghosh, President, Friends of Doon.

Various issues related to the conservation of elephants in Rajaji National Park were discussed. Dr. Johnsingh made a presentation on "Elephants around Haridwar and Rishikesh, Holy Cities of Dev Bhoomi". The workshop was followed by *Ganesh Puja* and *Aarti* on the banks of Ganga at Parmarth Ghat. Pujya Swami Chidanand Saraswatiji Maharaj (*Pujya Muniji*), President of Parmarth Niketan read out a Declaration on Elephant Conservation.

9th meeting of Expert Group on Eastern and Western Ghats, New Delhi, *October 21-22, 2003.*

On behalf of the Director, WII, Dr. Sushant Chowdhury and Dr. K. Vasudevan attended the above meeting at MoEF. The meeting was chaired by Prof. R. Gadakar from Centre for Ecological Sciences, IISc, Bangalore. The meeting refereed 47 submitted projects and five deferred project proposals for funding supports. Besides the meeting also discussed review and monitoring of ongoing projects and identifying thrust areas of coordinated research in Eastern and Western Ghats.

Training needs in Wetland conservation and management in India – with special reference to the southern region, Cochin, *November 4–5, 2003.*

Shri B.C. Choudhury participated in the MoEF workshop for southern region.

Marine conservation in South Asia, New Delhi (British Council), *November 12, 2003.*

Shri B.C. Choudhury participated in the Seminar organized by the British Council.

"A look at threatened species" Centenary Seminar at Bombay Natural History Society, Mumbai, *November 12-15, 2003.*

The objective was to celebrate the publication of 100th Volume of Journal of Bombay Natural History Society. It was organised by the Bombay Natural History Society, Mumbai. Bombay Natural History Society (BNHS) is one of the oldest NGOs in India established in the year 1883. It has published the Journal Bombay Natural History Society since 1886 without any interruption. It was fitting that BNHS had chosen the birth anniversary of Dr. Salim Ali to bring out the 100th volume of the Journal by having a seminar at Powai, Bombay.

Dr. A.J.T. Johnsingh made a presentation on "Enabling tigers survive in Haryana and Himachal Pradesh" and chaired the plenary session on 14th in which Dr. George B. Schaller gave the keynote address and Dr. Ullas Karanth spoke on "Tiger ecology and conservation in the Indian sub-continent". Dr. Y.V. Jhala presented two papers and chaired a technical session. Shri B.C. Choudhury also presented papers on 'Conservation Breeding and re-introduction of Crocodilians – A Path Ahead' and 'Conservation of Sarus crane in U.P.'

Banff Mountain Summit: Mountain as water tower, Banff, Alberta, Canada, *November 23-26, 2003.*

Dr. S.A. Hussain attended the Summit and presented a paper titled "Vanishing Oasis: A case study on the conservation issues of wetlands of Indian Changthang, Ladakh"

Understanding Human-Elephant relationships in a landscape of rainforests and plantations in Valparai, *November 29, 2003.*

The objective was to discuss about the findings of the project "Understanding Human-Elephant relationships in a landscape of rainforests and plantations in Valparai". It was organised by Nature Conservation Foundation (NCF), Tamil Nadu Forest Department and Anamalai Biodiversity Conservation Association. Valparai Plateau (200 km^2) is in Anamalai Hills where there is a problem of elephants raiding houses and stores to eat rice, *atta* and jaggery and feeding on banana and mango plants in the backyard of houses. This leads to human-elephant conflict and to address this, a study was initiated by NCF with the assistance from US Fish and Wildlife Service. The findings of the study were discussed during the workshop and one important recommendation that emerged was that the corridor vegetation along the stream banks on the Plateau need to be reestablished which will reduce the incidents of human-elephant conflict. Dr. Johnsingh made a presentation on "Natural History and Conservation of Asian Elephants".

Workshop on GOI-UNDP Sea Turtle Project, Goa, *November 29, 2003.*

Shri B.C. Choudhury attended the workshop for development of Sea Turtle Conservation Action Plan for Goa organized by CEE, Ahmedabad and Goa Forest Department.

UNESCO Project Review Meeting, Paris, *December, 1-3, 2003.*

Dr. V.B. Mathur, Project Co-ordinator, WII-UNESCO Project participated in the UNESCO Project "Enhancing Our Heritage: Managing and Monitoring for Success in World Natural Heritage Sites" Review Meeting organized by the UNESCO World Heritage Centre, Paris, France. Dr. Mathur presented a paper titled "Need Assessment for Enhancing Management Effectiveness Evaluation under UNESCO-Enhancing Our Heritage Project".

3rd International Wildlife Management Congress, Christchurch, New Zealand, *December 1-5, 2003.*

Dr. A.K. Gupta attended the above Congress that was attended by about nine hundred participants from 83 countries. He also presented a paper "Ecodevelopment and Protected Area Management in India" in the said workshop.

XXIV All India conference of Indian Association of Special Libraries and Information Centres (IASLIC), Dehradun, *December 15-18, 2003.*

This national conference on knowledge management in special libraries in digital environment was organized by Survey of India at Wadia Institute of Himalayan Geology, Dehradun. This conference was attended by around three-hundred experts across the country. Dr. M.S. Rana, Mrs. Sunita Agarwal, Shri Y.S. Verma and Shri M.M. Uniyal participated in the conference.

Workshop on Wetlands for Eastern Region towards a National Wetland Policy, Bhubaneshwar, *December 16, 2003.*

Shri B.C. Choudhury participated in the MoEF sponsored workshop.

9th meeting of the Project Elephant Steering Committee, New Delhi, *December 22, 2003.*

On behalf of the Director, WII, Dr. Sushant Chowdhury attended the meeting of the Project Elephant Steering Committee organized at the MoEF, New Delhi. The meeting was chaired by Secretary E & F, GOI. The elephant census accomplished by the

elephant bearing States was presented for information to all. A concern for discrepancies in elephant enumeration in Kerala was taken note of by the members. Declaration of 23 Elephant Reserves in national level was also taken note of. The implementation difficulties in registration and ownership of domesticated elephants under section 43 (1) of amended Wildlife Protection Act was realized and suggestions were invited for undertaking modification.

Meeting on Monitoring of Illegal Killing of Elephant (MIKE), *December 23, 2003.*

The CITES, MIKE meeting organized at the National Zoo, New Delhi on 23rd December 2003 was attended by Dr. Sushant Chowdhury. The meeting was chaired by the ADG (WL), MoEF. The appropriate method for elephant enumeration was the central issue for discussion. The site-specific elephant population-monitoring format developed for this was discussed with various representatives from the States. Besides these many other issues related to man-elephant conflicts were also discussed in the meeting.

49th All India conference of Indian Library Association (ILA), Jhansi, U.P., *December 29, 2003-January 1, 2004.*

The national conference on "Responding to User's Need in Changing Information Landscapes; Sojourn of Libraries from palm leaf to palm top" was organized by Bundelkhand University, Jhansi. It was attended by more than 250 librarians and information scientists from all over India. Dr. M.S. Rana, Librarian participated in the conference.

National Natural Resource Management System (NNRMS) Steering Committee on Bioresources and Environment Meeting, New Delhi, *December 31, 2003.*

The Ministry of Environment and Forests, Government of India organized the 19th meeting of the Steering Committee (SC) of National Natural Resource Management System (NNRMS) on Bioresources and Environment under the chairmanship of Dr. P. Ghosh, Secretary, MoEF. Dr. V.B. Mathur attended this meeting and made a presentation on "Mapping of National Parks and Wildlife Sanctuaries". The NNRMS-SC approved the project proposal submitted by the Institute for mapping of five protected areas in the country under the NNRMS programme.

Workshop on Methods in Behavioural Ecology, *January 12-24, 2004.*

The objectives were: (i) Capacity building in the field of Behavioural ecology, (ii) to encourage research activities in this field. It was organized by Centre for Ecological Sciences, IISc, Bangalore, and sponsored by Department of Science and Technology, New Delhi. Different aspects of behavioural ecology and sociobiology such as evolution of social behaviour, observational methods, mathematical ecology, plant animal interaction, mechanisms of animal behaviour, evolutionary genetics, biological clocks, evolution and speciation, courtship behaviour, population dynamics, modeling in behavioural ecology, evolution of mutualism, chemical ecology and plant behavioural, were taught by eminent scientists. Experimental work on measurement of behaviour in insects and analysis were also part of this workshop. Dr. Anil Kumar attended the workshop.

Map India 2004 and 7th Annual International Conference in New Delhi, *January 28-30, 2004.*

Map India 2004 and the 7th Annual International Conference and Exhibition in India in the field of geographic information technologies were jointly organized by the Centre for Spatial Database Management and Solutions (CSDMS), GIS Development and Survey. A total of 1126 delegates from India and 126 from overseas representing 46 countries participated in this conference. Dr. V.B. Mathur, along with Sh. Rashid Raza, Sh. Panna Lal and Dr. Manoj Agarwal presented a joint paper on 'Biodiversity Characterization in Middle Goriganga Valley Askot Wildlife Sanctuary, Uttaranchal State using Remote Sensing and GIS Technology', which was adjudged as the Best Paper of the conference.

XV International Conference on Bear Research and Management, San Diego, California, USA, *February 8-13, 2004.*

Dr. S. Sathyakumar participated in the conference and presented two posters on "Field survey for Brown Bear – Human Conflicts in Zanskar and Suru Valleys, Ladakh, India" and "Distribution Model for Brown Bear in Zanskar and Suru Valleys, Ladakh, India" by

Dr. S. Sathyakumar and Shri Q. Qureshi. Dr. N.P.S. Chauhan also participated in the conference.

Vulture Recovery Plan Workshop, *February 12-14, 2004.*

The purpose of the workshop was to discuss present status of declining populations of Gyps vultures, causes of the decline and development of action plan for griffon vulture conservation across the gyps range states. It was organized by Bombay Natural History Society, in collaboration with Haryana Forest and Wildlife Department, and sponsored by the Darwin Initiative, UK. Around 35 scientists and conservationists from different countries participated in this workshop. During the workshop, besides the presentations of research papers, all possible causes of decline were discussed. Most participants agreed that the presence of a pharmaceutical drug 'Diclofenac' in dead vultures could be a significant factor for decline. However, in remote areas, where such drugs are not in use, the causes of decline were not clear. Some participants agreed that an unidentified epidemic infection might be a cause. The workshop came to an end with the following recommendations: the use of Diclofenac should be banned to minimize the catastrophic decline; captive breeding centres should be established to help increase the existing populations, conservation and awareness education programmes and intensive research work for the identification of causes of decline. Dr. Anil Kumar attended the workshop.

Training Workshop on Wildlife Abundance Estimation and Monitoring for Wildlife Staff of Nanda Devi Biosphere Reserve (NDBR) and National Park, Kedarnath Wildlife Sanctuary and Govind Pashu Vihar, *February 23-27, 2004.*

The Uttaranchal Forest Department funded and organised the training workshop. It was conducted at Joshimath and in the buffer zone of NDBR. Dr. S. Sathyakumar co-ordinated the workshop. Dr. Sanjay K. Uniyal and Ms. Swati K. participated in it as resource persons. About 25 wildlife staff participated in the workshop that was focussed on wildlife abundance estimation and monitoring for wildlife of Himalayan region. The participants were taken to different parts of the buffer zone of NDBR for field exercises. They were also trained in data analyses, interpretation and presentation of results.

VII World Bamboo Congress, Hotel Ashoka, New Delhi, *February 28-March 4, 2004.*

Dr. A.K. Gupta represented WII in this International Congress and presented a paper "Bamboo based Wildlife Conservation and Ecotourism".

Training Workshop on "Management and Conservation of World Heritage Sites", Hiroshima, Japan, *March 8-12, 2004.*

The United Nations Institute of Training and Research (UNITAR), Hiroshima, Japan organized a Training Workshop on the Management and Conservation of World Heritage Sites in Hiroshima, Japan. The objectives of the workshop were to: (a) discuss the World Heritage concept and its underlying philosophy and (b) deliberate on issues relating to the management and conservation of the World Heritage Sites. 23 participants from eleven countries representing park management, scientific institutions, and NGOs associated with the conservation of World Heritage Sites participated in the workshop. Dr. V.B. Mathur participated in this workshop.

Marine conservation in South Asia, STEH Workshop, New Delhi (US Embassy), *March 11, 2004.*

Shri B.C. Choudhury participated in it. US Embassy organized the workshop for Asian Region on Scientific, Technology, Environment and Health Sector Policy.

Department of Biotechnology Task Force on 'Application of Biotechnology for Biodiversity Conservation and Environment', New Delhi.

Dr. V.B. Mathur was invited to become a member of the Department of Biotechnology Task Force on 'Application of Biotechnology for Biodiversity Conservation and Environment', New Delhi. The task force is chaired by Dr. R. Gadagkar, Professor, Indian Institute of Science, Bangalore. During the reporting period Dr. Mathur attended three meetings of the task force.

Brain-storming session on protection of wildlife from electrocution, *March 20, 2004.*

The objective was the protection of wildlife from electrocution. The session was organised by Central

Empowered Committee constituted by the Hon'ble Supreme Court of India in Writ Petition (Civil No. 202/95 & 171/96). Electricity is being misused to kill wildlife. In order to address this problem, based on the petition given by Wildlife Protection Society of India a meeting was convened by Central Empowered Committee with the Power Corporation. Numerous valuable recommendations came to address this problem. One important recommendation was that the Central Electricity Authority will issue detailed guidelines for laying of transmission/distribution lines specially in respect of 11 kv and 33 kv transmission line in the area critical from the wildlife point of view and before the issue of guides, as a test case, ground mapping of Rajaji National Park will be carried out to assess the feasibility. Dr. A.J.T. Johnsingh attended the session.

Workshop on Wildlife Rehabilitation, *March 23-25, 2004.*

The workshop was organized by Wildlife Trust of India. Dr. A.K. Gupta attended this workshop as a resource person and presented a paper on "Relevance of Wildlife Rehabilitation to Conservation with special reference to Primates".

Meeting of the Expert Committee, *March 25, 2004.*

The Committee was set up under the chairmanship of Secretary (Environment & Forests) to prepare an action plan to suggest the possible solution to the problems being faced by the people of Himachal Pradesh due to increase in Population of monkeys, stray cattle and stray dogs.

Dr. A.K. Gupta represented WII in the 2nd, 3rd, and 4th meetings of this Committee. He also presented a status paper on "Primate Species of concern and Management Options" in the 4th meeting on March 25, 2004.

Study Tours and Visits

Spot Inspection of the Musk Deer, farm at Tarikhet and visit to Musk Deer Research Centre, Mehroori, District Bageshwar, UA, *June 23-24, 2003.*

A team consisting of Shri Aseem Srivastava, DIG (WL), MoEF, Shri D.V.S. Khati, Field Director, Corbett National Park and Capt. (Dr.) Parag Nigam, Sr. Lecturer, WII visited the Musk Deer Research Centre (Central Council of Research in Ayurveda and Siddha, Ministry of Health and Family Welfare). The team visited the site for carrying out on the spot inspection of the Centre and assessing the feasibility of non-invasive techniques for collection of musk from live animals.

Study tour to USA under the WII-USFWS collaborative project titled "Planning & Development of Interpretive Facilities in Selected PAs" *June 19 – July 18, 2003.*

One of the component identified in the WII-USFWS collaborative project was visit of Indian counterparts to USA. Bitapi C. Sinha, Site Co-ordinator, Panna went for a study tour to USA. The purpose of the visit was to study model interpretation facilities, exhibit fabrication and visit interpretation facilities and meet various conservation organizations.

During the visit, Bitapi C. Sinha visited San Diego, California, Portland, Oregon, Chincoteague National Wildlife Refuge and National Conservation Training Centre, Shepherdstown. She also visited the Smithsonian Natural History Museum at Washington DC. At the end of the tour, she made a presentation on the work at Panna to an audience including the Chief of the International Affairs Office, at the headquarters of the US Fish and Wildlife Service at Washington DC.

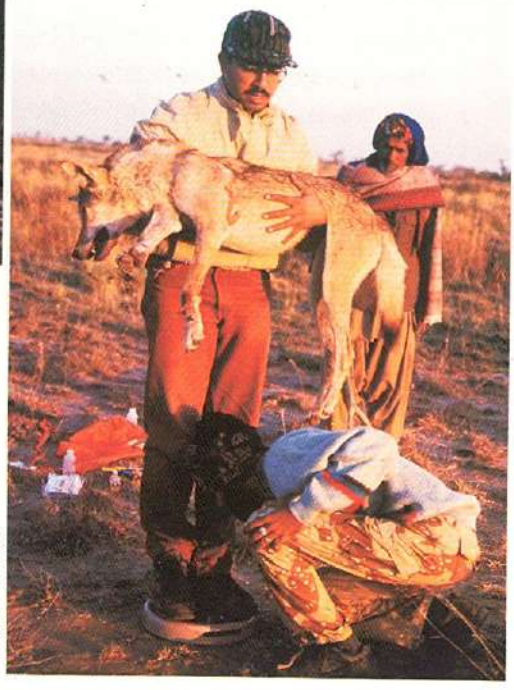
Republic Day Parade, 2004, New Delhi, *January 26, 2004.*

Dr. P.K. Malik and Capt. (Dr.) Parag Nigam coordinated with Ministry of Defence and participated in Republic Day Parade 2004 to deal with any emergency and distress to participating elephants.

The Institute conducted three regular courses, contintued one M.Sc. Wildlife Science course, 26 short courses, workshops, meeting, symposium and an Annual Research Seminar during hte reporting year. Faculty members of the Institute also participated in a large number of workshops, seminars and conferences conducted by other organisations.

YV Jhala

YV Jhala



Dinesh K. Sharma

Research
Completed Projects

Externally Funded Research Projects
Funding Agency: U.S. Fish & Wildlife Service

Conservation of the Indian Wolf

Principal Investigator: Dr. Yadvendradev V. Jhala

Researchers: Dr. D.K. Sharma, Dr. Bharat Jethva, Ms. Priyadarshini K.V.R., Ms. R. Sujata, Ms. R. Pande, Shri K.S. Chauhan, Dr. A. Dutta, Shri N. Joshi, Ms. J. Avtade, Ms. V. Vishwanathan, Ms. K. Isvaran, Ms. A. Aiyadurai, Ms. D.R. Sahabandu, Shri V.K. Patil and Shri J. Vattakaven.

Collaborators: Dr. Olav Oftedal, Dr. Robert Fleischer and Dr. Jesus Maldonado, Smithsonian Institution

Date of initiation: May 1996

Date of completion: December 2003

Budget allotted: Rs. 64, 82,700.00

The objective of this research project was to study the ecology of the Indian wolf and use this information to develop an effective conservation strategy for the species and its habitat. The specific objectives were to: (i) estimate the distribution and abundance of wolves and identify viable populations, (ii) estimate the diet and consumption rates of wolves, (iii) estimate the home-ranges of select wolf packs and relate them to prey availability, (iv) identify the major mortality factors, current and potential threats to wolf populations, (v) determine the genealogy of the Indian wolf, its relation to other sub-species of wolves, (vi) estimate the extent of threat to wild wolf gene pools by hybridization with feral dogs, and (vii) evaluate the magnitude and possible mitigation of human-wolf conflict. Since studying a large carnivore in isolation would be of little value, the project also addressed research on sympatric carnivores and major prey and their habitats.

There were three intensive study sites, the Bhal, Abdasa and Kutch areas in Gujarat and Ojar area near Nasik in Maharashtra where wolves were captured and radio-collared. A short but intensive study was also conducted on wolf attacks on children in eastern Uttar Pradesh. Major inferences were drawn from a sample of fourteen radio-collared wolves from ten different packs. Surveys and questionnaires were the major source of information for determining wolf distribution.

Based on studies of mitochondrial DNA, it was found that three different wolf lineage currently exist in the Indian sub-continent. Of these the Himalayan lineage (extending from Himachal Pradesh through Nepal to Sikkim) is the most ancient and ancestral (diverged about 800,000 years before period (BP)) wolf lineage in the world. The peninsular wolf lineage is also very old (400,000 years BP) compared to the wide-spread wolf dog lineage to which all other wolves of the world and all the dog breeds belong (about 150,000 years BP). This wolf-dog lineage is found in parts of Ladakh, Western Kashmir, Eurasia and North America. All the free ranging peninsular wolves that were sampled did not share any mitochondrial DNA markers (haplotypes) with Indian or other dogs, nor did any of the feral dogs from India have a wolf haplotype. The study suggests that there is little threat to wild wolf gene pools from hybridization with feral dogs.

The wolf (peninsular lineage) is more widespread than it was previously believed. Its range is continuous over the states of Uttar Pradesh, Madhya Pradesh, Rajasthan, Gujarat, Maharashtra, Andhra Pradesh, parts of Karnataka, Bihar, Orissa and West Bengal. Wolves occur at low density throughout most of their range (one wolf per 100-200 km^2), but their densities can be as high as 5-8 wolves per 100 km^2 in certain habitat pockets. Territory sizes of wolf packs ranged between 100 to 200 km^2 and were related to prey availability. Pack sizes ranged between 2 to 14 wolves. Though wolves occupied varied habitats and survived in human dominated agro-pastoral landscapes, they required about 5 to 8 km^2 of undisturbed habitat during the breeding season (December to March), which had good cover and fresh water for successful rearing of pups.

The social organization of the Indian wolf was similar to that of other wolf sub-species. In a pack, a single pair (the alpha pair) of adult wolves bred, other adult and sub-adult pack members serve as helpers and assist in defending the territory, protecting the pups, and bringing food for the pups and the alpha female. There was a high turnover of alpha pack members. The average tenure being 2.7 years with the longest duration, an alpha member held its position being 6 years. Average litter size was 5 pups and ranged between 4-7 pups. The primary natural prey of wolves was medium to small ungulates such as blackbuck and chinkara. Hare and rodents also contributed significantly to the diet of the wolf. In most of the wolf's range, natural prey populations were depressed and the wolves subsisted on small domestic livestock like goats, sheep, and cattle calves. In areas, where wolves were abundant and wild prey scarce, a maximum economic loss of about Rs. 30,000 per 100 km^2 was estimated in the form of livestock predated by wolves. Wolves were observed to feed at a frequency of once in 3.5 days, and consumed 4.6 kg on the average at a kill. On the average they needed about 1.8 kg of fresh meat per day per wolf. By preferentially predating on adult male blackbuck wolves shaped the age and sex structure of the blackbuck population in the Bhal area. Wolf predation, in combination with jackal predation on blackbuck calves was responsible for controlling the blackbuck population of Velavadar National Park. Since golden jackals were not territorial and seasonally aggregated in areas of good food availability (blackbuck calving grounds, with densities as high as 1.6 jackals per km^2) their numerical response contributed more significantly than the functional response of wolves in controlling the blackbuck population.

Major causes of mortality amongst wolves were killing by human and by diseases. Canine distemper and rabies were the two major diseases responsible for wolf deaths. Distemper primarily affected pups and juvenile wolves and curtailed recruitment, while rabies outbreaks destroyed entire packs. Wolves were quite resilient to disease caused mortality. Areas vacated due to pack mortality were re-occupied within a year. This colonization of vacant wolf territories was possible since wolf distribution was continuous. However, long-term effects of diseases need to be monitored prior to drawing conclusions regarding the role of disease in wolf population dynamics. Human caused mortality was most severe for pups. Most wolf dens when located by local pastoralists were stuffed with tinder and smoked to kill pups. Wolves respond to human disturbance by moving pups between several dens and rendezvous sites prior to the pups joining the pack. Pup mortality by human causes can be compensated by the high fecundity in wolves. Adult wolves were killed primarily by poisoning carcasses

of domestic livestock killed by wolves, with pesticides. This practice is not target specific and threatens to not only wipe out the wolves from an area, but also puts to risk the entire carnivore community. Even though the wolf is a schedule 1 species and protected by law, it was not possible to enforce the law. A more effective means for conserving wolves seems to be through increased awareness amongst the local public and at times by practicing measures to mitigate intense wolf predation on livestock.

Wolves have sporadically been recorded to attack children in certain parts of their range. Wolf attacks on children in Jaunpur, Pratapgarh and Sultanpur districts of eastern Uttar Pradesh were studied and authenticated. The generalities that emerge from such areas were high human density that has good wolf habitat but poor natural prey availability. In most of such areas there is high poverty, poor housing, and the livestock is heavily guarded. The radio-telemetry data has shown that wolves come in contact with humans very often and it would be very easy for them to potentially attack and kill children. The study suggests that attacks on children are extremely rare, considering the opportunities for attacks available to wolves. Such attacks need to be viewed in their specific ecological and socio-economic context.

To ensure the survival of the wolf for the future generations, it is essential to: (i) seasonally protect the core breeding areas (5-10 km^2) of established packs, (ii) prevent the use of poison for killing wolves (and other carnivores) and severely punish any person found guilty of this crime, (iii) increase public awareness and support for the wolf, (iv) mitigate human-wolf conflict either by (a) eliminating problematic wolves in case of attacks on children, (b) subsidizing economic loss of livestock to wolf predation only in areas and seasons of severe conflict, (c) promoting safe livestock rearing practices like corrals for the night and keeping guard dogs, and (v) control poaching of wild prey species of the wolf like blackbuck, chinkara, and hare so as to increase their numbers, and (vi) reduce feral dog populations in areas where wolves are to be conserved since they tend to compete for wolf prey and spread infectious diseases to wolves and other wild carnivores. Wolf conservation areas need not be protected areas (National Parks and Sanctuaries) in the strict sense of the word, but can be put to multiple uses including dry farming and controlled livestock grazing. The wolf has survived in the Indian sub-continent for over 400,000 years; it does not face many of the problems associated with insularization that spell doom for other large carnivores. With correct attitudes and actions, their future can be ensured.

Nine peer reviewed publications, several popular articles, six Masters Thesis, and three Ph. D. Dissertations have been the outcome from this project. The project has received good press coverage, nationally as well as internationally. National Geographic Television based a documentary film on the attacks on children by wolves based on the work done on this project. The BBC has completed filming for its documentary based on this research project on the Natural History of Indian Wolves and Human-Wolf Interface, the documentary is likely to be released this year.

Collaborations
GOI-UNDP Sub-Programme

Wildlife Protected Area Management in Jaldapara Wildlife Sanctuary

Sub-Programme Coordinator: Dr. B.K. Mishra

Date of initiation: October 1999

Date of completion: September 2003

Budget allotted: US$ 2,00,000

This GOI-UNDP sub-programme aimed at: (a) updating and implementing an integrated management and ecodevelopment plan at Jaldapara Wildlife Sanctuary, (b) enhancing capacity of State wildlife agency, and (c) strengthening support for conservation measures by the State Government. This was done in partnership with the local community and other key stakeholders, including local participating institutions. The overall outcome of the project had been both in qualitative and quantitative terms. Major quantitative outputs as per the project objectives are given below and the details of these outputs are described in the final report of the sub-programme.

Major outputs of the project:

(A) Developing Co-ordination Mechanism: (i) Active partners involved in the project – four, (ii) Constitution of co-ordination and implementation committees, and (iii) PA level co-ordination mechanism evolved.

(B) Empowering the Partners: (i) Constitutions of spearhead team and their training, (ii) Training of other PA staff by spearhead team and others, (iii) Training of village community/NGO representatives, (iv) Community conservation awareness camps and motivational visits, (v) Awareness visits of PA staff to other PAs, (vi) Training of PA staff in wildlife management, ecodevelopment planning, and (vii) Tranquilization, radio-telemetry, and wildlife health management.

(C) Institution Building: (i) Establishment of ecodevelopment committees - 22 villages, (ii) Preparation of micro-plans – nine villages, (iii) Implementation of micro-plans and initiation of ecodevelopment activities – two villages, and (iv) Formation of women self help group – two.

(D) Short-term Study/Research: (i) Research studies commissioned - four nos., and (ii) Reports/documents prepared – four nos.

(E) Revision of Management Plan: Updating and implementation of an integrated management and ecodevelopment plan.

(F) Improvements in PA Protection: (i) Protection road network repaired – 250 kms, (ii) Construction and maintenance of other protection infrastructure, and (iii) EDCs provided help in protection.

The qualitative outputs have generated the overall atmosphere for stakeholders' participation and ecodevelopment initiatives around the Jaldapara Sanctuary. There is a pool of staff in the PA, which is sensitive to the issue of park people interactions and their management actions. The local communities are directly or indirectly helping in habitat protection work. A beginning was made through village nature awareness camps organized by NGO partners. The level of participation of local communities is raised in the PA conservation initiatives, due to the project initiatives and subsequent implementation of the ecodevelopment programme but much more needs to be done.

Gender Sensitization Training for the women self help groups of North and South Bengal

B.K. Mishra

The role of WII was quite different in this project. Most of the activities which are implemented in the field were done by the Executing Agency (*i.e.* West Bengal Forest Department) and the Implementing Agency (*i.e.* WII) had its very limited role in influencing these activities and thus speeding of implementation of the programme in the field. However, it gave lessons to handle multi-disciplinary and multi stakeholder led programs.

WII Grant-in aid Project

Impact of forest fragmentation on the hoolock gibbon (*Hylobates hoolock*) in Assam, India

Investigators: Dr. A.K. Gupta, Dr. Ravi Chellam and Shri Qamar Qureshi

Researcher: Ms. Kashmira Kakati

Date of initiation: January 22, 2001

Date of completion: January 21, 2004

Budget allotted: Rs. 22.80 lac

The objective of the project was to compare the following parameters of gibbon groups in a relatively large and continuous forest with those in forest fragments: (i) Demographic characteristics of the populations, (ii) Sizes and characteristics of the home ranges, and (iii) Species diversity in the diet and composition (leaf/fruit).

Fieldwork was completed and the final presentation was made during the XVII Annual Research Seminar. The final report is being completed.

Collaboration between WII and National Fish & Wildlife Foundation, USA

Monitoring of forest conditions and prey base for the tiger conservation in the Terai Arc Landscape (TAL)

Investigators: Dr. A.J.T. Johnsingh, Shri Qamar Qureshi, Dr. S.P. Goyal and Dr. G.S. Rawat

Researchers: Shri K. Ramesh, Shri Raja Pandian, Dr. Ashish David and Ms. Soumya Prasad

Date of initiation: July 2002

Date of completion: March 2004

Budget allotted: US $ 53,500

The objective was to assess the status of tiger, prey base, forest condition and human population in the Indian part of the Terai Arc Tiger Conservation Landscape which extends from Simbalwara – Kalesar forests, west of Yamuna River to Valmiki Tiger Reserve, east of Gandak River.

The study found that the TAL has eight broad, homogeneous vegetation communities, but the structural components vary highly across the landscape. The tiger habitat on the Indian side is in nine blocks and the largest block, ca. 4000 km^2, is around Corbett TR. Ten corridors that potentially connect these nine blocks have been identified. The overall status of prey (ungulate) availability is reasonably good in this landscape. It is evident that tiger distribution and abundance are linearly related to wild ungulate prey, especially chital (*Axis axis*), which has a wide spatial distribution. It appears that in a few years' time, tigers may cease to exist in habitats like Sohagi-Barwa (west), an isolated habitat patch in Uttar Pradesh, which is under enormous biotic pressure.

The valuable information collected on vegetation parameters, prey and tiger distribution can be used as baseline data to initiate monitoring programmes; this could include establishment of a suitable number of one-hectare plots and line transects, wherever possible, for evaluating habitat conditions and prey abundance, respectively. The study recommends that on priority basis, Chilla-Motichur and Gola river corridors should be established, and the conservation status of the block containing Royal Sukhlaphanta Wildlife Reserve - Pilibhit Forest Division - Kishanpur Wildlife Sanctuary should be strengthened. Initiation of a conservation programme like the establishment of Rajaji-Shivalik Tiger Reserve is urgently needed to eliminate boulder mining in the river Yamuna to ensure the ranging and occurrence of tigers across the Yamuna. There was a consensus in the two-day workshop held in November, 2003 that the Nepal model, which has a strong scientific foundation, needs to be followed on the Indian side of the TAL. Cross-border cooperation is essential to ensure the long-term conservation of tiger and its habitat. Project Report has been submitted.

TERI-UPFD Consultancy Project

'Man-animal conflicts in Uttaranchal and Uttar Pradesh' under World Bank Forestry project. The study included monkey menace in Almora, elephant damage problem in Barkot, Rajaji National Park, Lansdowne, crop damage by wild boar in the periphery of Dudhwa National Park and Corbett National Park; leopard menace in Pauri, Chamoli, Almora and Pithorgarh, man-tiger conflict in Katerniaghat wildlife sanctuary and child-lifting by wolves in Rai Bareilly and Shravasti districts, Uttar Pradesh.

Faculty: Dr. N.P.S. Chauhan

Technical Assistants: Shri Nitin Kamboj and Shri Suraj Dutt

Date of initiation: February 2001

Date of completion: June 2003

Budget allotted: Rs. 6.00 lac

The fieldwork and data analysis and compilation were done simultaneously. The final report was submitted in June 2003. In and around Barkot, Rajaji National Park and Lansdowne, assessment of human casualties and crop damage by elephant was done. Elephant frequently visit different areas *viz.* Goltappar, Ghamandpur, Jakhan, Rani Pokhari and Sainkot blocks of Barkot Forest range of Dehradun Division

especially during summers after crossing river Jakhan in the west of the division and cause extensive damage to crops. Earlier there used to be few incidences of crop damage by straying elephants in Ghamandpur and Majri Villages (Lachhiwala Forest Range) only during summers. Now the crop damage by elephants is widespread and recorded in Ghamandpur, Lysterpur, Rani Pokhari and Dujyawala villages. Damage to *kharif* crops by elephant was assessed in Ganeshpur, Banjarawala, Ganga Bhogpur Talla, Ganga Bhogpur malla and Kassan villages. In Kandokhal Vikash Khand (Gohari Range), elephants caused extensive damage to wheat, rice and vegetable crops. Also in Bailwala and Bindasene villages, rice, maize and mundwa crops were severely damaged by elephants. Extensive damage was recorded to four *kharif* crops *i.e.* maize (*Zea mays*), groundnut (*Arachis hypogea*), *bajra* (*Pennisetum typhoides*) and *jowar* (*Sorghum vulgare*), and two *Rabi* crops *i.e.* wheat (*Triticum aestivum*) and gram (*Cicer arietenum*).

Agricultural crop damage by wild pigs in and around Dudhwa and Corbett tiger reserves was also evaluated. The crop damage problem in the peripheries of Corbett Tiger Reserve covering Dhara, Dhela, Jhirna and Kalagarh villages was studied. Although the damage caused to agriculture crops was due to elephant, pigs, monkeys *etc.*, but it is difficult to separate out the damage caused by the individual species to these crops.

Study on tiger-human conflicts in Katarniaghat, leopard-human conflicts in Pauri, Chamoli, Pithoragarh and Thailisen has been completed. Based on Forest Department information, 140 human casualties were due to leopards alone in Pauri Garhwal since 1988. Over the years, number of leopard victims ranged 2 to 22 per year. Pabau and Pauri blocks were severely affected. In Pabau alone, leopards killed 28 human between 1996 and 1997. The area is surrounded by relatively good forest and provide good cover to leopard population. Of the 126 leopard victims, 66% were females. In the hills, females have the responsibility to do all the outdoor work, thus there is high probability of encounters with leopards.

Village-wise location of man-leopard and tiger conflicts and demographic information were compiled and mapped. An assessment of monkey-human conflicts in Lucknow and Almora has also been completed. Information on occurrence of these conflicts was collected in specially designed formats. All related information available with the departments has been collected. Based on this information and survey of the affected areas, results were compiled to establish facts and suggest strategies.

Bindu Raghavan

Bindu Raghavan

Sankay K. Uniyal

Ongoing Projects

WII Grant-in-aid Projects

Ecology of Otters in Corbett Tiger Reserve: Impacts of Kalagarh reservoir on habitat use pattern

Investigator: Dr. S. A. Hussain

Researcher: Shri Asghar Nawab

Date of initiation: November 2000

Date of completion: November 2004

Total budget allotted: Rs. 10,66,400.00 (Rs. 7,82,400.00 – original budget + 2, 37,000 – Additional fund allocated + 47,000 given by IUCN SSC Otter Specialist Group).

The objectives of the project are: (i) to determine the status of otters in the Corbett Tiger Reserve and in the adjacent areas between Yamuna and Sharda river systems; (ii) to identify the factors governing their distribution; (iii) to examine habitat use patterns along the Ramganga main stream and the reservoir; (iv) to compare the feeding habits of otters between Ramganga main stream and the reservoir; and (v) to examine associated threats to otter populations, such as cases of poaching and destruction of stream habitats in the region.

The field survey and fish sampling has been completed for the study area *i.e.* Corbett Tiger Reserve and the data collected is being analyzed.

The results suggest that otters prefer the three major perennial water bodies namely Rivers Ramganga, Mandal and Palain. Otter occurrence was found to be significant in different sites/zones. Of the 113 records, 79 were in River Ramganga followed by 23 in River Mandal and 11 in River Palain. There were no evidence obtained from Rivers Sonanadi, Kosi and the reservoir. Based on logistic regression which had classification accuracy of 78% variables such as; availability of sand bed, escape cover, tree cover, grass height and prey occurrence were identified to determine otter occurrence in the three preferred sites/ zones. Though logistic regression identified grazing as a disturbance factor the difference between used and unused plot were not significant, perhaps because most of the records were in areas that are disturbance free. The difference between disturbed site (reservoir) and undisturbed site (River Ramganga) showed that River Ramganga had more sandy areas and shoreline vegetation as compared to reservoir. The escape cover distance was found to be higher in the reservoir and also it was comparatively disturbed. Attempts were

made to determine the degree of the impact of disturbances on the otter population and its habitats. Human presence along the riverbanks was evident in areas that lay close to the vicinity of the Reserve boundary. Illegal fishing was the major form of disturbance and apart from this removal of bank side vegetation and extraction of sand and boulders from the River Kosi were rampant. The species is confined to small area and the survival of this population could be attributed to high protection status in the Corbett Tiger Reserve.

Feeding habits of otters were studied by analyzing scats collected from three-survey sites *i.e.* River Ramganga, River Palain and River Mandal covering 100 Km stretch of the study area. Collections were made from the entrance of dens, communal sprainting sites and feeding areas. A total of 499 scats were collected of which 120 scats have been analyzed, that were selected randomly. Diet composition of otters in Corbett Tiger Reserve is represented by five prey categories in which fish (100%) was the most frequently occurring item in the scats and also formed the bulk (96.13%) of otter diet. There were no difference in proportions of different prey categories used between winter and summer across all three rivers, although the number of prey categories differed between the seasons. During winters, diet was substituted with crabs and frogs, however, in minor proportions. Five fish species were identified from otter scats, that belonged to two families. Members of the family Cyprinidae were taken more frequently, however the bulk was formed more by *Glyptothorax* spp. which belongs to family Sisoridae. There was variation in the proportions of fish species used between winter and summer across the three rivers. During winter all five species were used, however in summer only three species were taken. The major bulk in winters was formed by *Chagunius* spp. While in summer *Glyptothorax* spp formed the major bulk across the three rivers. Fish availability was estimated in 10 Km stretches along the rivers in the buffer areas of the reserve. *Tor putitora* was the most abundant species, while there was no catch from the reservoir for *Puntius* spp., which is preferred by otters in summer and also there was no catch for *Schizothorax* and *Chagunius* spp. which are preferred by otters in winter from river Kosi. Food resource availability plays an important role in the presence of otters in the reserve and the otter population consistency could well be related to preferred prey abundance.

Diversity and rarity in floral and avifaunal assemblages in the western Himalaya: A study of patterns and mechanisms to devise viable biodiversity conservation strategies

Investigators: Dr. V.B. Mathur and Dr. K.J. Gaston

Researcher: Shri Rashid H. Raza

Date of initiation: June 2001

Date of completion: June 2005

Budget allotted: Rs. 19.92 lac

The objectives of the project are: (i) to determine the patterns and relationships of plant and bird diversity and rarity along a complete altitudinal gradient (from foothills to 5000 metres), (ii) to identify and investigate the relative role of different mechanisms in generating the observed patterns of diversity and rarity, (iii) to identify altitudinal zones and habitats of high diversity and rarity, hence of conservation importance, and (iv) to develop guidelines for meeting biodiversity conservation goals based on understanding of the processes generating diversity and rarity patterns.

During the reporting period field studies were carried out in Goriganga valley which captures the entire gradient of Himalayan habitats ranging from subtropical Sal to Alpine meadows within a distance of about a hundred km of the river from its confluence to source. A total of 246 (212 Summer resident, forest dependent) bird species in 34 families and 135 genera, representing more than 45% of the breeding bird diversity of the Western Himalaya and nearly 55% of breeding bird species of the Kumaon Himalaya were recorded in the region. Birds of this assemblage were grouped along the altitude gradient. The groups corresponded to Subtropical, Temperate, Sub alpine and Alpine bioclimatic zones. The bird zonation corresponds well with vegetation zones. Higher richness occurs in the Temperate zone. Bird communities differ in terms of biogeographic affinities along the altitude gradient and point to different source pools.

Goriganga valley forms a part of Askot WLS and Nanda Devi Biosphere Reserve. The Birdlife International under the Important Bird Area (IBA) programme has proposed it as an 'Important Bird Area'. Cheer Pheasant (Vulnerable) and Satyr Tragopan (Near Threatened) occur in the area, in addition to the 'Restricted Range', White throated Tit. The area is well represented by species restricted

to different global biomes ('Biome Restricted Species' the Important Bird Area Programme criterion) with 90 species representing 'Eurasian High Mountain, Sino-Himalayan Temperate Forest & Sino-Himalayan subtropical forest' - biomes. The assemblage represents 46% of the Sino-Himalayan Temperate Forest, species found in India and is particularly important for them. Less than 4% of the area falls under the subtropical zone, however a number of bird species are altitudinal migrants and depend on this zone. This zone also faces a high level of pressure from anthropogenic factors and occurs patchily. Conservation of the contiguity of this exceptional biological gradient from subtropical to alpine zones is of prime concern.

Conservation genetics of marine turtles on the mainland coast and islands of India

Investigators: Shri B.C. Choudhury, WII, Kartik Shanker, ATREE, Ramesh K. Aggarwal and Lalji Singh, Centre for Cellular and Molecular Biology.

Researchers: Shri Gopi. G.V., WII, Ms. Pavani Somaya and Shri T.P. Velvan, Centre for Cellular and Molecular Biology

Date of Initiation: August 2001

Date of Completion: June 2004

Budget allotted: 26.92 lakhs

The objectives of the project are: (i) Documentation of mito-chondrial DNA haplotypes of marine turtles in the Indian ocean; (ii) Population genetics of the Olive Ridley (*Lepidochelys olivacea*) off the mainland coast and islands in India; and (iii) Multiple paternity in Olive Ridleys on the east coast of India.

India has five of the seven known species of marine turtles, and several of these populations are endangered due to exploitation, habitat destruction and incidental mortality in trawl nets. In recent years, development and integration of molecular techniques in population genetic studies have opened up new vistas to seek answers to questions of ecological interest. The information generated by the powerful DNA based molecular tools on the genetics of extant populations, have been found to be of immensely useful in designing conservation strategies and framing management policies.

This study intends to document genetic structure of the marine turtles on the Indian coast using DNA marker approaches, mainly DNA sequence based polymorphisms. Efforts will also be undertaken to develop marine turtle specific micro-satellite markers for potential use in genetic analysis. These molecular characterization studies are expected to help create a comprehensive database of DNA haplotypes of marine turtle populations in the Indian waters. If feasible, comparisons between nuclear micro-satellite markers and mitochondrial markers will be used to test for differences in gene flow between males and females in different regions. The study of the population structure of Olive Ridleys along the east and west coast and the Islands would be critical in assigning conservation priorities to particular nesting beaches or populations.

During the reporting year, 92 Samples belonging to two species of marine turtles (Green turtle and Olive Ridley turtle) were collected from Gujarat, Goa, Kerala and Tamil Nadu. Of the total collected samples, 41 samples (Green turtle) were from the Gujarat coast, 41 samples (32 Green turtles and 9 Olive Ridley) were from Goa, six samples (Olive Ridleys) were from Kerala and four samples (Green turtle) were from Tamil Nadu coast. Due to logistic difficulties samples could not be collected from Karnataka. With these samples, total samples collected for the present study numbers more than 250. High quality genomic DNA from most of the samples collected earlier and the fresh samples are being processed for DNA isolation. Currently, molecular analysis involving mitochondrial d-loop haplotyping (PCR amplification and sequencing) is in progress. Additional samples are planned to be collected from Tamil Nadu, Kerala and Karnataka.

Developing a spatial conservation protocol for central Indian highlands through a biogeographical analysis of birds and existing protected area network: A Geographical Information Systems approach.

Investigators: Shri Qamar Qureshi and Dr. Ravi Chellam

Researcher: Shri R. Jayapal

Date of initiation: February 9, 2001

Date of completion: February 8, 2006

Budget allotted: Rs. 33.92 lac

The main objectives of the project are: (i) to analyse patterns of species richness in birds of the Central Indian Highlands, and to study interaction among

biological, environmental and socio-economic correlates of biodiversity using birds as reference taxa, (ii) to sub-regionalize the biogeographical province of the central Indian highlands based on these ecological interactions and patterns, to assist in identifying landscape units of unique biodiversity value, and (iii) to develop a spatial framework of conservation protocol for the region through a complementary analysis of existing PA network and bio-geographical constructions using GIS.

The entire study area was gridded into 15' x 15' block squares (1:50,000 scale), and a preliminary investigation of environmental features of the region (including topography, drainage, soil, and agro-climate) revealed fifteen sub-regions, which form the primary sampling units of the study. In each sub-region, major representative habitats were identified for field sampling of birds and vegetation. The fieldwork involves sampling for breeding bird species using modified variable-width line transects, habitat measurements, and ground truthing of WiFS-FCC vegetation cover data for habitat mapping. A total of twenty-three vegetation types were covered, for bird, by transects. Ten habitat attributes regarding structural and biological characteristics of trees and shrubs, grass cover, bamboo-cover, and human disturbance were measured for each habitat. The nature of associations between bird species richness and habitat characteristics was investigated. Evidence was searched for the relative roles of ecological versus bio-geographical factors in determining the biodiversity of an area, by analysing the bird-vegetation relationships across teak and sal biomes of the central Indian highlands. The bird species richness seemed to be a function of bio-geographical history at the regional level, and a function of ecological factors on a local scale.

The fieldwork has been completed in east and the survey in western Madhya Pradesh is planned. The areas covered in current survey include East Maikal, Kaimur Hills and parts of Vindhya Scarplands. So far about fifty-five per cent of the study area has been covered under the field survey. The nature of association between bird assemblages and vegetation characteristics in central India was investigated. A total of ninety bird species was encountered. Two dissimilarity matrices based on bird species composition and vegetation characteristics were constructed and then compared using Mantel's test and randomization analysis. Strong correlation between bird species and vegetation structure (Mantel's $r=0.6$, $p<0.01$) were detected. The plant and bird database is being prepared for central Indian highlands.

The ecology of the leopard in Satpura National Park and Bori Wildlife Sanctuary

Investigators: Dr. Ravi Chellam and Shri Qamar Qureshi

Researcher: Shri Advait Edgaonkar

Date of initiation: June 2001

Date of completion: June 2006

Budget allotted: Rs. 38.72 lac

The objectives of the project are: (i) to investigate leopard habitat use and preference, (ii) to examine the role of seasons, habitat, sex and social status on territory, ranging and habitat selection, (iii) to quantify the food habits and prey preferences of the leopard, and (iv) to validate and test various methods for estimating leopard numbers, densities, indices of abundance, and to recommend an effective technique for monitoring their population.

Fieldwork for the long-term study on leopard ecology started in January 2002. A study area of about 180-km^2 was identified in Bori Wildlife Sanctuary and Satpura National Park. Transects (236 km) and trails (696 km) were monitored for the prey and the predator. Transects each 2 km long were randomly laid in this area. The utilization of prey species was studied by scat analysis. Based on scat analysis, the order of prey preference by leopard was chital, sambar, peafowl, langur and porcupine. The density and encounter rate of sambar and chital was highest followed by muntjack and nilgai. The overall prey density is low with National Park having higher density than that of sanctuary. At least seven leopards were identified through camera traps in the study area.

At present resource mapping, prey abundance estimation using direct sighting and indirect signs, leopard abundance estimation based on mark-recapture (camera trapping) and indirect signs are being carried out in the field. The crucial information regarding movement, home range and predation ecology of leopard will be collected after getting the permission from MoEF for radio-collaring.

Characterization of species from bone, tusk, rhino horn and antler to deal wildlife offence cases

Investigator: Dr. S. P. Goyal
Researcher: Smt. Rina Rani Singh
Date of Initiation: July 2, 2001
Date of Completion: July 1, 2006
Budget allotted: Rs. 42.6 lac

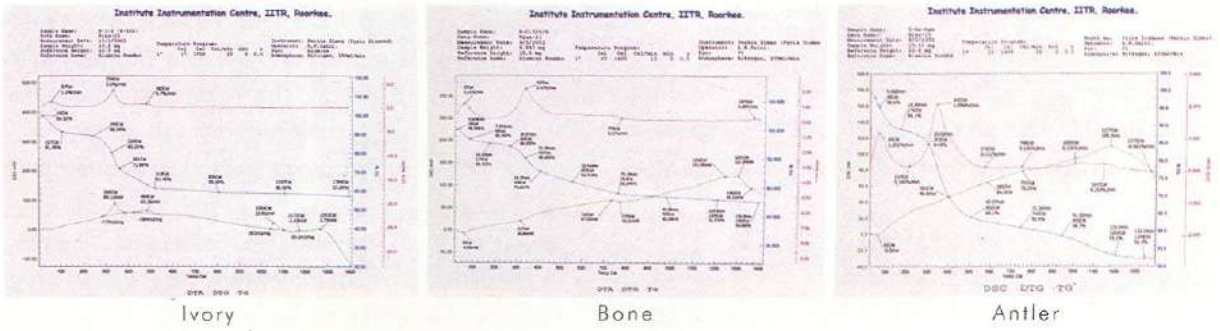
To develop and standardize protocols for identifying various parts and products in wildlife for proper implementation of Indian Wildlife (Protection) Act – 1972, aims of ongoing project are to: (a) develop morphometric, crystallographic and DNA based techniques to characterize species from bones of major animals such as tiger, leopard, chital, sambar, barking deer and swamp deer, (b) establish species-specific characteristics of raw and finished products of Asian ivory and prepare protocols to differentiate from other similar products, used in the trade, (c) investigate source-area of Asian elephant ivory, (d) determine characteristics of rhino horn, and (e) establish species characteristics and keys to identify antler of deer species.

In continuation with two years research work, further samples were added for various techniques and also initiated work on few more techniques. Scanning Electron Microscopy (SEM) technique was used to characterize surface structure of antler at three different positions of chital (n=1), sambar (n=2), barking deer (n=1) and hog deer (n=2). The surface structure revealed by SEM is consistent among same species at same position. Surface structure is different at similar positions across different species and hence it can serve as a tool to differentiate antler of various species, even in pieces. Few more samples were added for morphometric measurements of antlers. Elephant ivory was also characterized using SEM for Asian (n=3) and African (n=4) at three different portions in each sample.

Data sheet for measurement of various bones of carnivores (tiger and leopard) and herbivores (chital, sambar, barking deer, hog deer and swamp deer) were developed. Skulls of tiger (n=4), leopard (n=4), hog deer (n=1) and barking deer (n=2) were used for cranial measured. Various bones of tiger like femur (n=5), humerus (n=3), pelvic (n=3) and pectoral (n=3) were also measured. These measurements will be used for cluster analysis so that any unknown bone can be matched.

X-ray diffraction (XRD) of more samples were added this year for antler (n=4), Asian ivory (n=4), African ivory (n= 5), tiger (n=1) and elephant (n=1) bones. Differences are noted in X-ray diffraction pattern of antler, Asian ivory, African ivory, tiger bone and rhino horn. XRD pattern indicates that African ivory is more crystalline as compared to Asian. Tiger bones diffraction pattern shows presence of one peak at 26^0 angles, which is not present in either ivory or antler. Elephant bone diffractogram is yet to be compared. A poster paper on topic "Application of X-ray Diffraction to Characterize Ivory, Antler and Rhino Horn: Implications for Wildlife Forensics" was presented at European Academy of Forensic Science (EAFS 2003) at Istanbul, Turkey.

Thermo gravimetric analysis (TGA) in which the nature of weight loss is noted at different temperature was carried out at Indian Institute of Technology, Roorkee. Samples analyzed were for antler of chital (n=2), sambar (n=2), barking deer (n=1) and hog deer (n=1), Asian ivory (n=4), tiger (n=2) and leopard (n=2) bones. Approximately 10 mg of samples were burnt till 1400^0C under 100 ml/min of nitrogen medium. Average weight loss in case of antler, bone, African ivory and Asian ivory is 47.32%, 40.35%, 48.15% and 47.15% respectively. It is highest in case of African ivory and lowest in case of bones. Average loss of moisture content in antler, bone, African ivory and Asian ivory



Thermogravimetric curves for ivory, antler and bone

is 7.38%, 7.88%, 3.45% and 4.62% respectively. The moisture content is higher in bones and lowest in African ivory. Comparative Thermogravimetric curves (TG curve) of ivory, antler and bone shows that the third peak in case of ivory is exothermic at 773° C where as antler and bone both have endothermic third peak at temperature 749 and 482 ° C respectively

X-ray Fluorescence (XRF) examination was carried on the Asian (n=5) and African (n=5) ivory samples, antler of chital (n=1), sambar (n=1) and hog deer (n=1) to know the qualitative constituent of these samples. Inductively Couple Plasma- Atomic Emission Spectrometry (ICP-AES) analysis was also used for quantification of the elemental composition for ivory of Asian (n = 5) and African (n=3) origin, rhino horn (n=1), antler of chital (n=2), sambar (n=2), hog deer (n=2), tiger (n=1) and elephant (n=1) bones. Difference in relative abundance of some elements was noted. To get more precise result, Inductively Couple Plasma- Mass Spectrometry (ICP-MS) analysis was done for Asian ivory (n=4), African ivory (n=4), antler of chital (n=2), sambar (n=2), hog deer (n=2), rhino horn (n=1), tiger (n=1) and leopard (n=1) bones. Data are yet to be analyzed.

A paper titled "Characterization of Asian and African elephant ivory using various morphometric and analytical techniques" was presented in the Annual Research Seminar 2003, which received second best presentation award.

Ecology of the dhole (*Cuon alpinus* Pallas) in Central India

Principal Investigators: Dr. A.J.T. Johnsingh and Dr. K. Sankar

Researcher: Shri B. Bhaskar Acharya

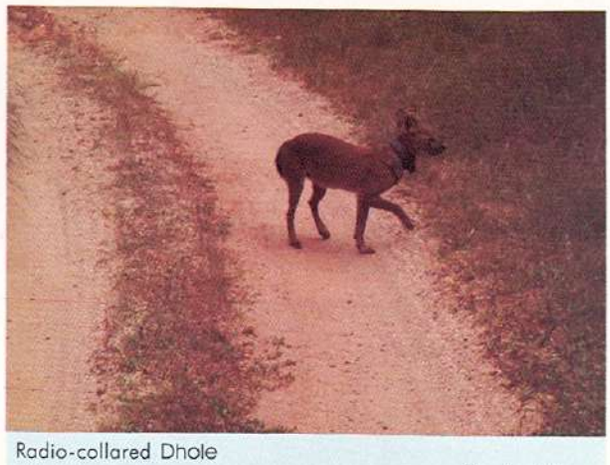
Date of initiation: January, 2001

Date of completion: January, 2005

Budget allotted: Rs. 15, 47,550.00

The project aims to study dhole (*Cuon alpinus*) habitat use and ranging patterns, food habits, behaviour, social organization and prey species abundance in Pench Tiger Reserve, Madhya Pradesh.

Fieldwork was initiated on May 5, 2001. During the reporting period two dholes (male and female) were captured, immobilized and radio-collared and tracked. Ecological information such as pack characteristics, behaviour, activity and movements



Radio-collared Dhole

Bhaskar Acharya

of these packs were recorded. Systematic estimation of prey abundance was conducted on twenty permanently marked line transects in the intensive study area. Data regarding the encounter rates and group composition of dhole prey species were also recorded using vehicle-based counts. Carnivore scats and kills were recorded whenever encountered for dietary analyses. Preliminary results indicated that during the non-denning season, dhole home ranges varied from 70-80 sq. km. The most encountered dhole prey species was chital, and the same was reflected from dhole scats and kills.

Social organization and dispersal in Asiatic Lions

Investigators: Dr. Y.V. Jhala, Dr. Ravi Chellam and Shri B.J. Pathak, IFS, CF (Wildlife) Junagadh Circle, Gujarat

Researcher: Ms. V. Meena

Date of initiation: March 2002

Date of completion: March 2007

Budget allotted: Rs. 62.4 lac

The major objectives of this project are to understand the factors that influence the social organization in Asiatic lions, and determine the dispersal patterns of sub-adult male lions, using radio-telemetry.

The project aims to understand the social organization of male lion coalitions and the role they play in the population dynamics. The relationships between coalition partners, their territory size in relation to female groups and prey availability, and tenure of dominant males are some of the questions being investigated. At high lion densities it seems likely that tenures of dominant males may be short with high turnover rates, this in turn may result in higher cub mortality through infanticide resulting in population regulation. Since answers to most of the above

questions can only be aptly answered using radio-telemetry. Permissions from the Ministry of Environment and Forests and the Chief Wildlife Warden, Gujarat State are awaited for putting radio-collars on lions. Simultaneously, record of male coalitions, their takeovers of new territories and the female prides within their territories through intense monitoring and individual identification using whisker patterns are kept. Scats from known male lions and cubs born in prides were collected within their territories with the aim to determine relationship between coalition partners and paternity from scat DNA. Data on time activity budgets of coalition male lions and ungulate densities in the intensive study area within Gir has been collected. Permissions for radio-collaring lions are eagerly awaited to address all the objectives of this research project.

Status and Ecology of Leopard in Pauri Garhwal, Phase-II: Ranging patterns and reproductive biology of leopard (*Panthera pardus*) in Pauri Garhwal Himalayas

Investigator: Dr. S.P. Goyal

Researcher: Shri Devendra Singh

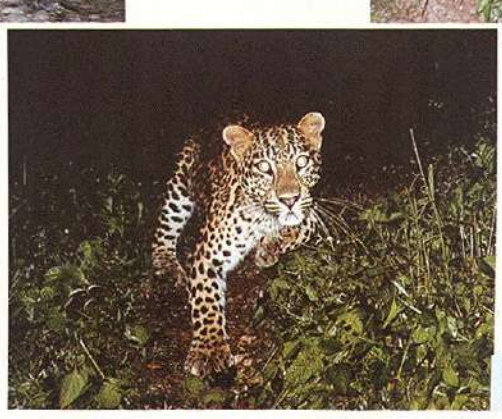
Date of initiation: January 1, 2002

Date of completion: December 31, 2005

Budget allotted: Rs. 37,93,900

For understanding ranging patterns and reproductive biology of leopards under various conflict zones (Low, medium and high), the present project is aimed: (i) to determine ranging patterns and home range of females under three conflict zones and correlate with respect to topography, vegetation, prey (wild & domestic) abundance, land use patterns and human dimension, (ii) understand reproductive biology with reference to frequency of pregnancy/lactation in three conflict zones and (iii) to suggest mitigatory measures to minimize conflict in hills. Under this project we have planned to radio collar the animals.

To determine the abundance and distribution of leopards and prey species (wild and domestic) trails have been identified and monitored within different leopard-human conflict zones (low, medium and high). Trails were monitored throughout the year in selected 20 km^2 of each conflict category. Leopard signs such as scats, scraps/tracks and prey species tracks were collected systematically on each trail. Trails were more frequently used by leopards in high conflict areas and visits were shorter and less frequent in low conflict areas. Data suggest that trails in human settlements areas of high and medium conflict zones were used more frequently by leopards during rainy seasons.



Leopards photographed through Camera Trap.

Leopard scats were collected from three study sites. This period covered three seasons (rainy, winter, and summer). Average scats encounter rate was 1.8 per km. in conflict areas where as it was 1.3/km and 1.03 per km in medium and low conflict areas respectively. Leopard scraps were noted randomly on the trail and average scarp marking frequency per km was 3.9, 3.2 and 2.5 in high, medium and low conflict areas respectively. Photo trap data suggests that male does more scrape in comparison to female.

Photo traps were used intensively in high and low conflict areas to record information on current population and sex ratio of leopards. Animals were identified based on rosette patterns. Rough estimates indicate that there are 3 to 4 animals per 10 sq. km in high conflict areas in comparison to two animals per 10 sq. km recorded in low conflict areas.

Wild prey species recorded in all conflict areas were wild boar, porcupine, barking deer and pheasant and their numbers appears to be very low in all categories. Data obtained through Photo-Trap sessions indicate that wild boars and porcupines are the main prey species left in these areas. Of the 184 photo trap nights used in low and high conflict areas, 22 wild boars and 14 porcupines were photographed in low conflict areas whereas 17 wild boar and 11 porcupines were photographed in high conflict areas. Other species confirmed through Photo-Trap sessions were jungle cat (*Felis chaus*), red fox (*Vulpes vulpes*), leopard cat (*Prionailurus bengalensis*), jackal (*Canis aureus*) and Himalayan black bear (*Selenarctos thibetanus*).

Road side counts were carried out in all three conflict areas to estimate the relative abundance of livestock. Number of livestock was surprisingly varying within three conflict zones and it was highest in low conflict areas. During road side monitoring (5-7 pm), 13 leopards were sighted of which 7 sightings were from high conflict areas. Female with two cubs were sighted in high and medium conflict areas and both sightings were recorded in the months of September.

The diet of leopard was studied by analyzing scats (n=112) collected during field work. Scats were analyzed based on hard parts present in the scats. Scat analysis revealed that large proportion (70%) of prey for leopard included domestic species such as livestock and dogs. Rodents and birds were only 6% per cent in the diet of animal.

All places (n=6) where leopard attacked people were surveyed and details of each incident was obtained. We collected information on sex of alleged man – eaters (n=7) and it appears most of the time female leopards is coming in contact of human.

Use of "Carnivore Survey Disc" (USA) for monitoring of leopard abundance was started in different conflict areas. Study on ranging patterns and home range of female leopard will be started once the radio collaring permission is granted by MoEF.

Conservation ecology of an isolated population of gaur (*Bos gaurus*) in Trishna Wildlife Sanctuary, Tripura

Investigators: Dr. A.K. Gupta and Dr. K. Sankar

Researcher: Shri Sabyasachi Das Gupta

Date of initiation: January 2002

Date of completion: December 2004

Budget allotted: Rs. 18.34 lac

The objectives of the project are to: (i) study the status, distribution, population structure, habitat use and food plants of endangered mammals in the Trishna Wildlife Sanctuary (TWS), (ii) prepare vegetation and land cover maps of TWS, (iii) identify major threats to the endangered mammals, and (iv) suggest management recommendations for the conservation of the target species.

Reporting period 2003–04 was spent focusing on work in the field. Behavioural and activity data for hoolock gibbon – *Bunopithecus hoolock*, capped langur – *Trachypithecus pileata*, and pigtailed macaque – *Macaca nemestrina* were collected systematically for summer and winter season following scan sampling method. A total of 8 days per season (4 months a season) per group was spent in following them from dawn to dusk to collect ecological information, specially on food habits. Chemical analysis (NDF, ADF, lignin, ash, Total Phosphate,

Female Gibbon in Trishna Wildlife Sanctuary

Sabyasachi Dasgupta

Nitrogen, Crude Protein, Sodium, Potassium) of 53 food plants for above mentioned study animals including gaur were completed in the laboratory. Land use and land cover map was prepared in the GIS lab and it was taken to the field for the final check in ground. Permanent vegetation plots along transects were repeatedly quantified during summer and winter. When ever encountered with gaur – *Bos gaurus*, they were followed. GPS location of animals were recorded while doing group scans for primate to know their movement pattern and also identified new food plants or it's parts and the samples of those food plants and parts were collected for chemical analysis. Locations of roosting trees were recorded from time to time and marked food trees were monitored for phenological information. New food trees for phenological studies were added as they are recorded. In total thirteen groups of Capped langur, four groups of Pigtailed macaque, two groups of Hoolock gibbon three groups of Phayres' langur were identified in the study area.

An Evaluation of Endemism of the Amphibian Assemblages in the Western Ghats, using Molecular Techniques

Investigators: Dr. Karthikeyan Vasudevan (WII), Dr. Ramesh Aggarwal (Centre for Cellular & Molecular Biology) & Dr. Kartik Shanker (ATREE)

Researcher: Shri M.S. Chaitra

Date of initiation: January 17, 2003

Date of completion: January 17, 2005

Budget allotted: Rs. 7.98 lac

The objectives of the project are: (i) to ascertain whether the taxa recognized at present are true natural assemblages; and (ii) to evaluate the species richness and distribution patterns of Ranidae and Rhacophoridae using molecular techniques.

The study made progress in the extraction and sequencing of DNA from toe clip samples of amphibians particularly those belonging to the genus *Philautus*. The compilation and the analysis of the morphological data are in progress.

The study made the discovery of a fossorial frog taxon related to the African Heleophrynidae and *Seychellian sooglossidae* from the Western Ghats of India. This frog possesses a suite of unique ancient characters indicating that it is a transitional form between Archaeobatrachians and Neobatrachians. Molecular clock analysis based on the nucleotide diversity in mitochondrial 12S and 16S genes dates this frog as a Gondwana relic, which evolved 150-195 mya (Million years ago) during the mid Jurassic period. With this taxon, the evolution of endemism in the Western Ghats and other Gondwana break-up landmasses is now dated much before the Cretaceous-Tertiary boundary. It is proposed that, sea level surge in the late Jurassic isolated tablelands created insular amphibian fauna. Reduction in area would have promoted stochastic extinction and resulted in the present day amphibian endemism.

The study produced two publications in peer reviewed journals. The PIs formulated a project to continue fieldwork and were awarded funds from the Department of Biotechnology, Ministry of Science and Technology.

Polypacdates pseudocruciger

S.U. Saravanakumar

U.S. Fish & Wildlife Service collaborative project

Planning and development of interpretive facilities in Panna & Corbett National Park

Project Coordinator: Shri B.C. Choudhury
Site Coordinators, Panna: Smt. Bitapi C. Sinha and Field Director, Panna Tiger Reserve
Site Coordinators, Corbett: Dr. Mehar Singh and Field Director, Corbett Tiger Reserve
USFWS counterparts : Mr. Gary Stolz (Refuge Manager, USFWS, Texas, USA) and Ms. Gayle Hazelwood (Chief Interpreter, Martin Luther King Junior National Historic Site, Atlanta, USA)
Date of Initiation: October 1, 1998
Date of completion: December, 2004
Budget allotted: Rs. 119.91 lac

The objectives of the project are: (i) to study Kanha and Melghat interpretive programme and develop suitable interpretive methodologies assimilating the best of American technology and expertise with Indian socio-cultural reality (ii) to develop area-specific and comprehensive interpretive plans for two different areas viz., Panna National Park and Corbett National Park. (iii) to implement these interpretive plans with the help of concerned Site Managers & State Government, and (iv) to prepare a manual on interpretation and conservation education.

The project tenure was to be over during December, 2003. Since the project was initiated late and the with changes of Corbett Tiger Reserve from Uttar Pradesh to Uttaranchal, the progress of work was not per schedule requiring a no cost extension upto December, 2004 which the USFWS has approved.

In Panna Site, during the reporting year layout and designing of individual panels was carried out. The panels were accordingly, framed, laminated and installed at the Karnavati Interpretation Centre. The Centre was handed over to the park and is now fully operational. The landscape work for the centre was completed. Plantation work was carried out as per the plan provided by the architect. The Kitchen-cum-cafeteria, amphitheatre and overhead water head tank were constructed as per the designs provided.

Bitapi C. Sinha, Site Coordinator, Panna went on a study tour to USA. The purpose of the visit was to study model interpretation facilities, exhibit fabrication and visit interpretation facilities and meet various conservation organizations. During the visit, Bitapi C. Sinha also visited San Diego, California, Portland, Oregon, Chincoteague National Wildlife Refuge and National Conservation Training Centre, Shepherdstown. She also visited the Smithsonian Natural History Museum at Washington DC. At the end of the tour, she made a presentation on the works carried out at Panna to an audience including the Chief of the International Affairs Office, at the headquarters of the US Fish and Wildlife Service at Washington DC.

The script writing and the editing of the orientation film was completed and is ready for premiere. The film is titled 'Panna-The Jewel of Central India'.

A set of six postcards, four greeting cards and four stickers were also brought out for the Panna Tiger Reserve. The proceeds from the sales would go to the Staff Welfare Fund of the Reserve.

In Corbett Site during the reporting period Research on Biodiversity and Physiography of Corbett National Park was completed based on which Implementation of Interpretation Plan & Signage plan for Dhangarhi Interpretation Centre, Jim Corbett Museum, Kaladhungi and text for outdoor signage were prepared. A website with the domain name corbettnationalpark.org and 50 MB space for hosting was reserved for one year. After preparation of the website from WII, it has been parked on the server in September 2003.

An agreement has been signed between Wildlife Institute of India and M/s Philipose Museum Interiors, New Delhi in July 2003 to undertake the fabrication work of Jim Corbett Museum Kaladhungi, Dhangarhi Visitor Centre and outdoor signage in Corbett National Park as per the Interpretation Plan and the work is in progress.

An agreement has been signed in February 2004 between Wildlife Institute of India and M/s Wilderness Films India Ltd., New Delhi for the production of a twelve minutes duration orientation film on Corbett.

Under the Outreach Programme draft layout of project publications *i.e.* Park Brochure, Handout, Stickers, Posters have been prepared and are being reviewed for final production.

The study tour of project site managers and the Corbett Site P.I. to Interpretation facilities of some well known Protected Areas of USA is under discussion with the USFWS Office of the International Affairs.

Externally Funded Research Projects
WINROCK International India Sponsored Project

"Developing predictive models for Impact of climate change on forest vegetation in the western Himalaya", under National Communications Project Meet on Climate Change

Investigators: Dr. B.S. Adhikari and Dr. G.S. Rawat

Date of initiation: April 2002

Date of completion: December 2004

Budget allotted: Rs. 3,56,400.00

The objectives of the project are: (i) to document structural changes in the forest vegetation along a wide altitudinal gradient, (ii) to study change in biomass, productivity and nutrient status all along the altitudinal gradient, (iii) comparison of above parameters with the forests along altitudinal gradient as well as forest types in Kumaon Himalaya, (iv) to develop a status of each forest for above mentioned parameters, and (v) prediction of shift in boundaries of forest formations in relation to climate change.

Timberline forest and alpine meadow in Nanda Devi Biosphere Reserve, Uttaranchal

B.S. Adhikari

The relationships between temperature, structural and functional attributes at a regional scale (both Kumaon and Garhwal) are: (i) the density declines at 2750m and at 11.1°C MAT, (ii) the total basal area declines at 2650m and at 11.5°C MAT, and (iii) the biomass, productivity and litter fall decline at 3050m and at 9.7°C MAT. The ecological parameters were compared within and between the watersheds.

Department of Wildlife Protection, Jammu & Kashmir Government

Aspects of Ecology of Hangul (*Cervus elaphus*) and Leopard (*Panthera pardus*) in Dachigam National Park, Kashmir

Principal Investigators: Dr. S. Sathyakumar and Shri Qamar Qureshi

Technical Assistant: Shri Khursheed Ahmad and Shri Shaheen Iqbal

Date of initiation: September, 2001

Date of completion: September, 2006

Project Budget: This research project is funded and run by Jammu & Kashmir Wildlife Department. WII provides technical expertise.

The objectives of the project are to: (i) assess the status and distribution of Hangul in Dachigam National Park and adjoining areas, (ii) study the habitat use and food habits of the Hangul in different seasons, (iii) assess the status and distribution of Leopard in Dachigam National Park and adjoining areas, (iv) study the habitat use and food habits of the leopard and identify extent of predation on Hangul, and (v) identify threats, anthropogenic pressures and other factors that affect the Hangul or its habitat.

Twenty-two transect ranging in length from 2 to 3.5 Km were randomly laid in the intensive study area for estimation of large prey species abundance. The trails/tracks along the fixed forest blocks were monitored on a rotational basis to get the encounter rates of hangul and other associated prey species across the different seasons. Data on group,

composition, behaviour, activity, movement pattern and other ecological information of the target species along with direct and indirect signs of leopards (scrapes, scats, pugmarks etc.) were systematically recorded. The diet of leopards is assessed from their scats. A total of 212 leopard scats were collected so far and one hundred were anlaysed to obtain information on the food habits and prey preference of leopard. The diet of leopard constitute 25% hangul, dog 21 %, sheep 3 %, black bear 7%, langur 10 %, rodent 44 %, bird 4 % and rest is constituted by unidentified material and vegetative matter. There is a plan to put radio and GPS transmitters on hangul and leopard to understand their ranging pattern, hangul fawning ground and predation ecology of leopard.

DST Sponsored Project

Acoustic signals in two avian species: their characterization and importance

Investigator: Dr. Anil Kumar
Date of initiation: January 28, 2002
Date of completion: January 27, 2005
Budget allotted: Rs. 10.96 lac

The objectives of the project are: (i) to record and analyze the physical characteristics of acoustic signals in Red-vented bulbul (*Pycnonotus cafer*) and Himalayan bulbul (*P. leucogenys*) species, (ii) to understand the biological function of these signals in both species, and (iii) possible role of acoustic signals in species isolation.

Recordings of the acoustic signals of Red-vented bulbul and Himalayan bulbul were made in their natural habitats in Dehradun (30°26'N; 78°06'E) between May 2002 and December 2003. Some recordings were also made in Srinagar, Garhwal (30°21'N; 78°77'E), the lower hills of Mussoorie and Chilla range of Rajaji National Park near Haridwar (29°55'N; 78°08'E). The habitat of the main study area was sub-urban. All sites were within a 100-km radius. Vocalizations of these birds were recorded using Sony PCM-M1 or Marantz PMD 222 sound recorders and JVC MZ-500 or Sennheiser ME-66 microphones. Behavioral correlates were used to infer the possible meanings of signals.

These recordings were digitized using M-Audiophile 2496 (sound card) at a sampling rate of 22.5 to 48 kHz and 16-bit resolution. After editing, cuts of high quality recordings were analyzed with the help of Avisoft SAS Lab Pro (version 4.1) software. All spectrograms were produced with the following settings: 512 FFT-length, 75 % Frame, Hamming window and 87.5 % time window overlap.

In the present study, minimum and maximum frequencies, range of frequency, dominant frequency (frequency of maximal amplitude), duration and gap in signals were measured to define the acoustical features of the vocalizations. Number and types of elements, rate of production and complexity levels (types of elements per minute) were also measured. Results were expressed as mean ± SE.

Acoustic signals in Red-vented bulbul: This species emits a high variety of vocal signals that can be classified on the basis of their acoustical features and context of production. In recorded vocalizations of this species, it was found that individuals sang throughout the year. One hundred and forty three song samples (2 to 8 minutes duration) were analyzed. Most songs were discrete type (88% of the total observations) composed of strophes (phrases) preceded and followed by temporal gaps. In a song bout, usually the same types of strophes were repeated several times in a stereotyped manner with minor structural variations of elements before switching to another type of strophe. Sometimes a single element type was found interjected between two distinct strophes (n=16). Incomplete strophes were also identified (n=23).

Duration of strophes was 0.65 to 1.2 sec. (0.79±0.08, n=124) and the gap between strophes was 3 to 12 sec. (4.64±0.06, n=124). The frequency varied from 0.86 to 8.0 kHz, but in most phrases it varied from 1.5 to 4.5 kHz. Most strophes (n=93) were composed of 2 to 6 elements that were often dissimilar in structure. Behavioral observations revealed that the biological

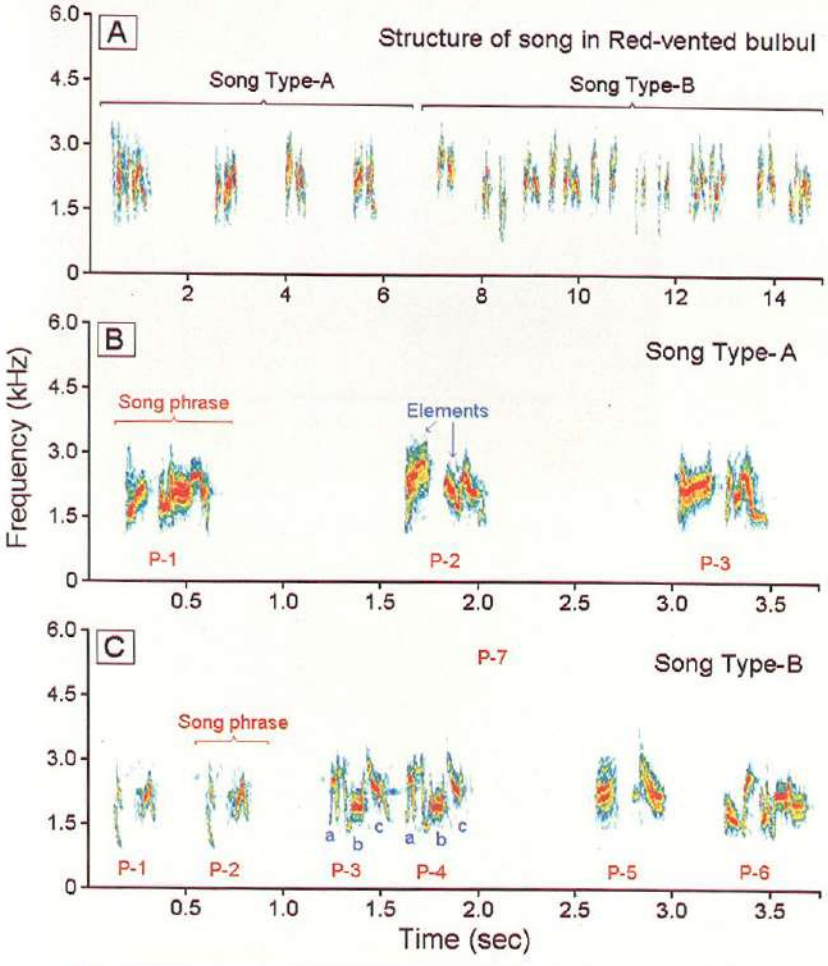


Figure: Showing the structure and categories of songs in Red-vented bulbul. (A) Two types of songs. (B) Song Type-A composed of different types of phrases such as P-1, P-2 and P-3. (C) Song Type-B composed of short duration phrases with irregular inter-phrase gaps and minor structural variations of elements, such as elements of P-3 and P-4

Red-vented bulbul (*Pycnonotus cafer*)
Anil Kumar

Begging Calls
Anil Kumar

functions of song in this specie appeared to maintain pair bonds and the synchronization of breeding activities. In some recordings (11.9 % of the total observations, n=17), singing rate (phrases per minute) and song complexity levels (types of elements per minute) were much higher (about four times) than in the other song recordings. It seems that the species used two categories of songs: Type-A songs (88.1 %) commonly sung throughout the year to maintain pair-bonds, and Type-B songs (11.9 %) were rare and most likely used for mating purposes.

Besides song, different types of context specific calls were identified. Individuals produced type-I alarm calls (fast and wide band, 1.03 to 6.36 kHz.) under low predation pressure and type-II calls (narrow frequency range, 1.37 to 3.39 kHz.) under high predation pressure. Roosting calls were fast and wide band signals phonetically similar to type-I alarm calls. Three types of begging/contact calls were recorded in nestlings/fledglings. Greeting calls and flight calls were composed of complex phrases, like song, but were short and used for proximate functions like calls.

Acoustic signals in Himalayan bulbul: Two categories of songs and different types of context specific calls have been identified in this species. The acoustic communication system of this species appeared very similar to Red-vented bulbul (RVB). Like RVB, two types of alarm calls (based on predation risk), roosting calls, begging calls, contact calls and distress calls were identified and recorded. Two types of complex calls (greeting calls and flight calls) were also observed. Detailed acoustical characterization and comparison with RVB is in progress.

Findings/achievements: (i) In contrast with most temperate birds, both species sang throughout the year; (ii) Males and females, both were observed singing; and (iii) Two categories of songs were observed.

Funded by WII, ISLT & USFWS and additional funding support by International Bear Association

Strengthening Field Conservation through Ecological Studies, Capacity Building and Conservation Awareness in Ladakh Trans-Himalaya: A Collaborative Initiative

Investigators: Dr. V.B. Mathur and Dr. Y.V. Bhatnagar

Participating Faculty: Dr. G.S. Rawat, Dr. S. Sathyakumar, Dr. S.A. Hussain, Shri Qamar Qureshi, Dr. V.P. Uniyal, Dr. B.S. Adhikari, Dr. Karthik Vasudevan, Dr. Bivash Pandav and Dr. K. Sivakumar

Researcher: Ms. Bindu Raghavan

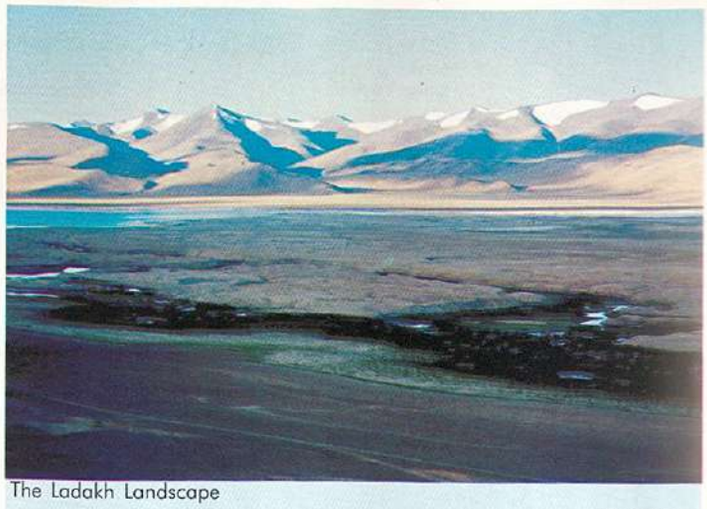
Date of initiation: August 2002

Date of completion: July 2005

Budget allotted: Rs. 28 lakhs

The Trans-Himalaya has unique biodiversity values of which precious little is known. Recognizing this and the long-term interest in the region, the Wildlife Institute of India (WII) and its collaborating agencies in the recently concluded Himalayan Biodiversity Project (HBD), the International Snow Leopard Trust (ISLT) and the United States Fish and Wildlife Service (USFWS) initiated a collaborative programme to enhance conservation and research activities in the Trans-Himalaya, with a focus on the Ladakh region that constitutes the bulk of the Trans Himalaya in India. Certain aspects of Ladakh's unique biodiversity have remained largely unexplored. It was also felt that there was tremendous scope and need for conservation activities in Ladakh. It was thus decided to work on a collaborative effort that would provide basic infrastructure in Ladakh and allow work by a multidisciplinary team. The Collaborative Ladakh Field Research Station (CLFRS), a four-room office-cum-residence was hired in Oct 1999 at Leh. The collaborative project provides basic staff and other necessary facilities to scientists visiting Ladakh for work.

Based on the outputs in the initial two years it was proposed, under a new programme, to continue research on selected issues in a more focussed manner. The project proposes to make a holistic assessment of significant conservation issues in Ladakh, and set up a working model for a possible solution. At the same time, it proposes to continue with the assessment of baseline status of rare and lesser-known taxa, limited to two to three such surveys in a year. As a continuing process, better-trained and equipped staff will be generated through training workshops dealing with techniques and wildlife management. Also, the management of wildlife in PAs and outside them will be made more streamlined, based on better conservation and management plans from consultations among scientists and managers. Awareness among various stakeholders regarding wildlife conservation will also be generated, based upon solid research findings. More specific objectives of the project are detailed below: (i) Conduct a focussed applied research project on the issue of the impact of livestock grazing on the vegetation, the abiotic environment and sympatric wildlife species and attempt to develop a working model for planning conservation in the intensive study site, (ii) Generate baseline information through targeted field surveys on rare and endangered taxa and add to the spatial database being developed at WII, (iii) Develop resource material for conservation education of various target groups in Ladakh, (iv) Build capacity of the local Government department(s) and Non-Government Organizations for wildlife monitoring and management of their wildlife-related natural resources, and (v) Develop a Conservation Action Plan for conserving of wildlife in Ladakh, including both areas within existing PAs and outside.



The Ladakh Landscape

B.S. Adhikari

Progress: A field survey on Brown Bear Human conflicts and habitat evaluation in the Zanskar region between Lamayuru and Padam was carried out during September 2003. The areas surveyed were Photoksar, Lingshot, Hanumul and Zongla. The development of a brown bear distribution model using GIS has been completed. The report is in final stages of completion. This component was partly funded by the International Bear Association.

One M.Sc. Dissertation study on Urial-Livestock interactions in Ladakh was carried out from November 2002 to May 2003 by the researcher.

In collaboration with the Centre of Environmental Education (CEE), Ahmedabad and as an activity of the 'Conservation Awareness' component of the above Project, a poster series was prepared during the reporting period. The first poster of the "Hardy Mountains, Fragile Environments" series was brought out to commemorate the 'International Year of the Mountains' in 2002. Following this, a series of four posters on the following themes: (a) Snow Leopard Kingdom (b) Web of life (c) Snow Leopard in Danger (d) Snow Leopard Facts have been prepared along with a booklet 'Snow Leopard: Monarch of the Mountains – Information, Activities and Ideas for Educators' to serve as a learning resource material for the conservation awareness programme for school children in Ladakh. The poster series was released during the Annual Research Seminar by Shri R. Rajamani, Chairman, TRAC of WII. The WII, CEE and a local NGO in Ladakh are collaborating to implement this programme in Ladakh during 2004-2005.

International Collaborative Project (Funding agency: NORAD)

WII-University of Tromso, Institutional Cooperation Programme in Natural Resource Ecology and Management in the Himalaya

Investigators: Dr. A.J.T. Johnsingh, Dr. G.S. Rawat, Dr. R.S. Chundawat, Dr. S. Sathyakumar (Nodal Officer), Dr. Y.V. Bhatnagar and Dr. J.L. Fox (UiT collaborator)

Research Associates: Dr. Sanjay K. Uniyal and Dr. Anjali Awasthi

Technical Assistants: Mr. Tsewang Namgail and Ms. Swati K.

Date of initiation: February 2002

Date of completion: January 2005

During the reporting period, field research activities continued at the Tso kar Basin, Eastern Ladakh on Rangeland productivity and its use by wild and domestic herbivores; at Gya Miru Wildlife Sanctuary on Argali-livestock interactions; and at Kedarnath Wildlife Sanctuary on Himalayan tahr – livestock interactions. Plant and animal dung samples collected from these study sites were analysed in the WII lab for animal food habit and plant nutrient studies. As part of the faculty and student exchange programme of this project, Dr. S. Sathyakumar, Dr. Sanjay Uniyal and Dr. Anjali Awasthi visited the University of Tromso, Norway and field sites in northern Norway.

The different activities carried out during the reporting period included field visits to Northern Norway and academic activities at the University of Tromso and Norwegian Agriculture Univérsity, Oslo. The team visited Polaria, Tromso Museum, Polar Museum, and Sommeroy, Svensby, Kvaloyvag and Lyngseidet Islands. They also visited Agricultural University at As (NORAGRIC) and had interactions with Professors Dr. Per Wegge and Dr. Jon Swenson and their Ph.D. students. Dr. Fox and his students visited study sites in Ladakh to carryout specific research tasks under this research programme.

Funding Agency : Ministry of Environment and Forests

Studies on animal-habitat interactions in the buffer zones of the Nanda Devi Biosphere Reserve

Principal Investigator: Dr. S. Sathyakumar

Co-investigator: Dr. G.S. Rawat

Date of initiation: February 2002

Date of completion: February, 2005

Budget allotted: Rs. 4.49 lac

The objectives of the project were to: (i) assess the status of wildlife habitats along gradients of human use, (ii) study the distribution, abundance and habitat use patterns of large mammals and pheasants, and (iii) Identify threats to large mammalian and pheasant species and their habitats and suggest possible mitigation for long-term conservation and management.

During the reporting period, the Technical Assistant left the project so the research activities were not carried out. Recruitment of another researcher is in progress.

All India co-coordinated Research Project on Taxonomy of Indian orchids

National co-coordinator: Dr. Satish Kumar
Collaborator: Dr. G.S. Rawat (Uttaranchal and Bihar states)
Researchers: Shri Jeewan Singh Jalal and Shri Pankaj Sahani
Date of initiation: December 2002
Date of completion: December 2007
Budget allotted: Rs. 19.35 lac.

The objectives of the project are: (1) status survey, collection, identification and preservation of orchids, (2) maintain collection and taxonomic databases, (3) develop user-friendly identification manuals, (4) train college students, teachers and local communities in parataxonomy, and (5) to bring out volumes on Indian orchids.

During the reporting period selected sites of Uttaranchal and erstwhile Bihar including Jharkhand were surveyed for orchid diversity. Several new localities, host species and orchids not reported earlier were identified and recorded during the survey.

In Uttaranchal the study was carried out in different seasons *i.e.* monsoon, winter and summer. Different habitat types such as river valleys, alpine grasslands and upland forests covering distance of ca. 900 km with an altitudinal range from 640-4500 m asl were surveyed. A total of 65 orchids from different habitats were recorded during the study period.

In Jharkhand, different forested areas of Ranchi, Gumla, Simdega, Bokaro, Palamau, Hazaribagh, Chatra, Koderma, Girdih, Dhanbad (Parasnath)

Vanda cristata Lindl. Found in riverine areas of upland forests at an altitude of 1000-2500m. Photgraphed in Gori Valley.
Jeevan Singh Jalal

Latehar, Dumka, Godda, Pakur, Sahibganj, Jamtara, Singhbhum, Saraikela, Daltonganj and Lohardagga districts, a distance ca. 600 kms on foot was surveyed for orchids status and abundance. A total of 40 different species of orchids were recorded and collected during August 2002 to December 2003.

Collaboration between WII & USFWS

Conservation of Hoolock Gibbon in Meghalaya, Mizoram, and Tripura

Investigator: Dr. A.K. Gupta
Researcher: Shri Narayana Sharma
Date of initiation: June, 2002
Date of completion: August 2004
Budget allotted: Rs. 13,58,136.00

The objectives of the project are to: (i) survey the states of Meghalaya, Tripura and Mizoram for fragmented gibbon habitats, record information on time of isolation, and distance to nearby forest patches, (ii) using loud calls of gibbons and actual sightings on randomly selected line transects carry out a population survey of the hoolock gibbon on each identified site of three states, (iii) using data gathered from sample plots within occupied gibbon habitat, estimate the vertical structure of the forest, total density, presence of vines and lianas, canopy cover and canopy continuity. Also record presence of food trees and areas under forestry plantations, and (iv) Conduct a workshop to disseminate project information.

The fieldwork for the WII-USFWS project has been completed. The data analysis and drafting of final report is in progress.

S.U. Saravanakumar

Bivash Pandav

Projects Initiated

WII Grant-in-aid Project

Monitoring the changes in Biological Diversity after relocation of *Gujjars* in Rajaji-Corbett Conservation Area

Investigators: Dr. Karthikeyan Vasudevan, Dr. Bivash Pandav, Dr. B.S. Adhikari, Dr. K. Sivakumar and Dr. V.P. Uniyal

Date of initiation: November 7, 2003

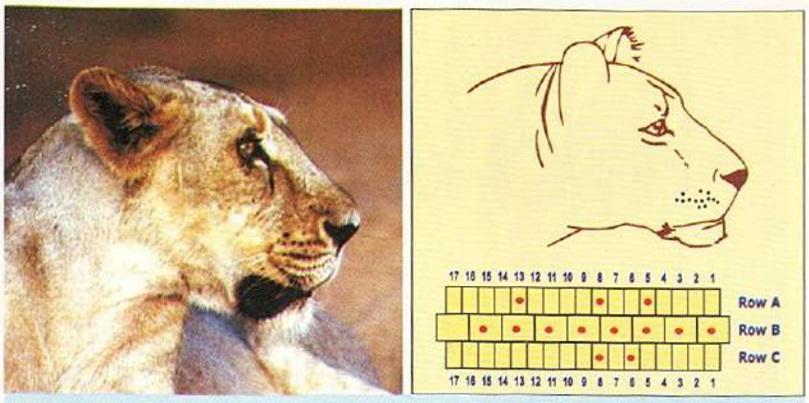
Date of completion: November 7, 2008

Budget allotted: Rs. 8.87 Lac

The objective of the project was to monitor the changes in biological diversity after relocation of *gujjars* in Rajaji-Corbett Conservation Area (RCCA).

The planning for the field work started on 20 November 2003. Field work for this research project was initiated on 20 December 2003. A base camp has been established at Mundal, in the Chilla range of Rajaji NP. Two field assistants have been stationed at this base camp along with the park staff. This will serve as a camp for small dissertation projects and the frequent visits by the project team. It was decided that the study would focus on the recovery of the habitat and therefore permanent plots to monitor vegetation and transects to record animal use of the area will be laid. All 1 ha plots had similar micro-topographic conditions, among them four plots were assigned as 'Dera' treatment, with centers of these plots less than 100 m from existing *gujjar* deras. Three plots each were assigned as 'Translocation' and 'Control'. The 'Translocation' plots included the area where *gujjar* deras were present before translocation. 'Control' plots were in areas without any influence of *gujjars* over a long period of time. Each 1 ha plot was subdivided into 100 10×10 m quadrats and sampled for tree species diversity and use by wild ungulate species and domestic livestock, through count of pellets and dungs. Seven 1 ha plots have been laid and data compiled during the year. These plots were compared to identify the change in the habitat and the animal use of the area after the relocation. Since the RCCA is ranked high as a Tiger Conservation Unit (TCU), raus (river beds) of Chilla range were walked to ascertain the evidences through tracks of large carnivores and their wild ungulate prey species. Nine raus were covered and a distance of 43.75 km was walked during January and February

2004. Five out of nice raus were categorized as 'undisturbed' and the rest 'disturbed'. GPS locations of *gujjar* deras in Chilla, Haridwar, Motichur and Ranipur Ranges of Rajaji National Park are being compiled.



Calibration of vibrissae patterns of lions for individual identification

It is hypothesized that there will be change towards increasing species richness and density in the area that were originally occupied by the *gujjars*, thereby improving the habitat for wild ungulates and elephants. The documentation of succession will provide insights into the mode of proliferation of weeds and the processes that govern them. The proposed monitoring will provide an objective assessment of impact of the relocation on the habitat, wildlife and the livelihood of the *gujjars*. The monitoring of biological diversity will further strengthen the decision to relocate human habitations from the protected areas in the Rajaji-Corbett Tiger Conservation Area. The study has already provided indications that the habitat in Chilla range, where the *gujjars* have been relocated, has improved and there is an increase in the animal use.

Ecological Monitoring of Gir

Investigators: Dr. Y.V. Jhala and Shri Q. Qureshi

Researchers: Shri C. Dave and Shri K.S. Chauhan

Date of initiation: January 2004

Date of completion: January 2007

Budget allotted: Rs. 29.16 lac & US$ 6,000 from USFWS

The project is an extension of the work commenced under GEF consultancy project of the Gujarat Forest Department. The primary objective of the project is to take the monitoring protocols developed by WII for Gir to a further stage where they are likely to become a regular feature for the management. The specific objectives are: (i) to map the entire greater Gir region for land use and potential for lion movement between the protected area and the satellite populations of lions; and (ii) to further refine and continue with the population monitoring of lions, leopards and ungulates.

A field base has been set up and researchers have commenced data collection on the project for the past two months.

Ministry of Science & Technology, Department of Bio-technology Sponsored Project

An evaluation of endemism of the herpetofaunal assemblages from the Western Ghats using molecular techniques

Investigators: Dr. Karthikeyan Vasudevan, Dr. Ramesh Aggarwal and Dr. Kartik Shanker

Researcher: Shri M.S. Chaitra

Date of initiation: January 14, 2004

Date of completion: January 14, 2007

Budget allotted: Rs. 11.95 lac

The objectives of the project are: (i) to ascertain whether currently recognized taxa represent true natural assemblages/species using DNA typing approaches; (ii) to evaluate the species richness and distribution patterns of Rhacophoridae and Uropeltidae using DNA sequencing of phylogenetically informative genomic domains; and (iii) if feasible, to develop few frog specific micro-satellite markers and use the same for understanding population structure of some members of the genus *Philautus* and *Uropeltis*.

Progress: The project has been recently initiated a JRF has been selected through national level screening. Field sites have been identified and sampling will be initiated.

The Institute completed five research projects. During the reporting year, there were twenty ongoing projects while three new projects were initiated.

Organization

Collaborations

USDA Forest Service

The Institute has successfully completed a major project in collaboration with the USDA Forest Service in December, 2002. During the current year, the collaborative efforts were continued with USFS so as to develop a proposal for the 'no-cost Phase-II project' from the balance fund of already obligated grant. The Phase-II proposal aims to develop an implementation plan based on the research findings of the Phase-I project. This was achieved through extensive consultations with the US scientists' team of the project. The Phase-II plans to have site specific workshops and full involvement of concerned site managers. Thus, a 2.5 year Phase-II proposal was considered by the TRAC and approved subject to the GOI concurrence.

UNESCO-UNF Project on Enhancing Our Heritage: Monitoring and Managing for Success in World Natural Heritage Sites

The UNESCO World Heritage Centre (WHC) in collaboration with the IUCN World Commission on Protected Areas (WCPA), the University of Queensland, Australia and with funding support from the United Nations Foundation (UNF) have initiated a project 'Enhancing Our Heritage: Monitoring and Managing for Success in World Natural Heritage Sites'. The project aims to improve the management of World Heritage Sites through the development of better assessment, monitoring and reporting systems and the application of the results of these systems to adopt/enhance site management as required. Based on the results of the project, IUCN will provide recommendations to the World Heritage Committee on a consistent approach to assessment, monitoring and reporting on the state of conservation and management effectiveness of the World Heritage Sites.

Ten World Heritage Sites in Africa, Latin America and South Asia have been included under this project. The three South Asian pilot sites are Kaziranga National Park, Assam, Keoladeo National Park, Bharatpur and the Royal Chitawan National Park (RCNP), Nepal. The Ministry of Environment and Forests, Government of India has entrusted the responsibility of project implementation to the Wildlife Institute of India as a Regional Partner Institution for the 4-year project (2002-2005). The WII has signed

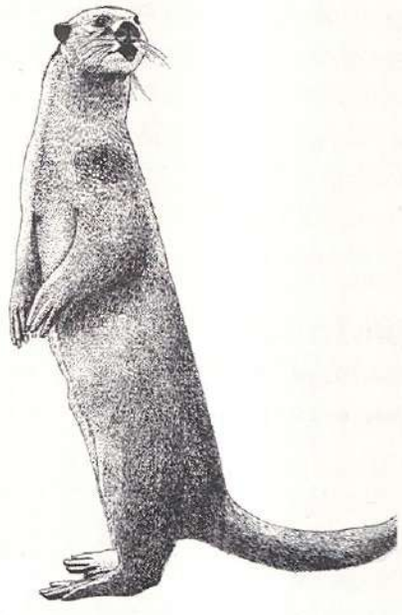
contracts with the UNESCO and the University of Queensland and Memorandum of Understanding (MoU) with the State Governments of Assam and Rajasthan for implementation of the project activities at the two sites. An MoU was also signed in June, 2003 between WII and the Department of National Parks and Wildlife Conservation (DNPWC), Nepal for project implementation in the Royal Chitawan National Park. The WII organized several site level consultations to carry out the task of 'Initial Assessment of the Management Effectiveness' at the two Indian sites as per the methodology evolved for this global project. In July, 2003 a team of officers from the DNPWC, King Mahendra Trust for Nation Conservation (KMNTC) and RCNP, Nepal visited WII to finalize the 'Initial Assessment of the Management Effectiveness' in RCNP.

A six-member project team comprising Shri S. Singsit, Dr.V.B. Mathur, Shri B.C. Choudhury, Shri N.K.Vasu, Director, Kaziranga National Park, Shri K.C.A. Arun Prasad, Director, Keoladeo National Park and Shri Shiv Raj Bhatta, Chief Warden, Royal Chitwan National Park, Nepal participated in the project review meeting and the V World Parks Congress at Durban, South Africa from September 5-17, 2003. The WII-UNESCO project team presented the findings of the 'Initial Assessment of the Management Effectiveness at the three South Asian sites' in the project review meeting held on September 5-6, 2004. Three video capsules on the project activities in three pilot sites in South Asia were also released during the project review meeting. Dr. V.B. Mathur presented papers on 'Initial Management Effectiveness Evaluation of Keoladeo, Kaziranga and Royal Chitwan National Parks' under 'UNESCO - Enhancing Our Heritage Project' and 'Standardized Self-Reporting in World Heritage Sites' in the IUCN V World Parks Congress in Durban, South Africa, during September 5-18, 2003.

Professionalizing Protected Area Management for the 21st Century – A World Heritage Biodiversity Programme for India

The United Nations Educational, Scientific and Cultural Organization (UNESCO) in collaboration with the United Nations Foundation (UNF) had given a planning grant in 2001 to the Ministry of Environment and Forests (MoEF), Government of India, to develop a ten-year World Heritage Biodiversity Programme (WHBP) for India. The goal of this WHB Programme is to strengthen biodiversity conservation in protected areas by building replicable models at World Heritage Sites that emphasize law enforcement, promote habitat integrity and connectivity and improve the professional, social and political profile of the protected area management community and its civil society partners.

The MoEF entrusted the responsibility of developing a framework proposal for identifying priorities, actions and activities and their time frame and budget requirement under this project jointly to the Wildlife Institute of India and the Ashoka Trust for Research in Ecology and Environment (ATREE), Bangalore. During the reporting period, several consultations were held in the World Heritage Sites for formulating the project proposal and two meetings of the Project Coordination Committee (PCC) under the chairmanship of the Additional Director General of Forests (Wildlife), MoEF were held to finalize the project proposal. The WHBP for India proposal amounting to US$ 7.8 million was submitted by the WII-ATREE team to MoEF in December, 2003 for obtaining clearances from other GOI agencies. It is expected that funding support up to US$ 5 million will be provided by UNF and its partners for project implementation from January, 2005 onwards. Dr.V.B. Mathur from WII and Dr. J. Krishnaswamy from ATREE are coordinating this project.



Asha Rajvanshi

C.P Sharma

Services

Development of Biodiversity Information Module for Uttar Pradesh and Uttaranchal Forest Departments

The WII entered into a contract agreement in September, 1999 with Food and Agriculture Organization (FAO) of the United Nations to work on the design and development of a Biodiversity Information Module (BIM). This would act as part of the overall Forest Management Information System (FMIS) being developed in collaboration with the Siemens Information System Ltd., (SISL) for the Uttar Pradesh Forest Department (UPFD), and Uttaranchal Forest Department (UAFD). The FMIS being developed for the UPFD and UAFD seeks to improve the current information management procedures and to make use of information technology in department activities, particularly the use of state-of-art database management systems and GIS technology. The BIM will address the information management needs of *in-situ* and *ex-situ* conservation areas and also the managed forest areas. A biodiversity database is also being designed as part of the project, which will provide comprehensive information on physical, ecological, management and socio-economic attributes pertaining to various categories of conservation areas. Once functional, the BIM will facilitate the preparation of resource inventories and assist in the PA management planning and decision-making. The final technical report of the project 'Design and Development of Biodiversity Information Management System' submitted by the WII Team to the UN-FAO, New Delhi in December, 2003 was accepted. The FMIS-BIM software is under implementation in the states of Uttar Pradesh and Uttaranchal.

Contributions in International Initiatives

Evaluation of the UNEP-GEF Project under the UN assignment

Based on the global search of experts, the Chief of the Evaluation and Oversight Unit (EOU) of the UNEP-GEF Division of Global Environmental Facility Coordination, Nairobi, invited Dr. V.B. Mathur and Dr. Asha Rajvanshi to undertake the evaluation of FAO/GEF Project – 'Barriers and Best Practices in Integrated Management of Mountain Ecosystem'. This Medium Sized Project (MSP) aimed to identify best

practices in GEF and non GEF projects dealing with biodiversity, climate change and international waters in the context of integrated management of mountain ecosystems. To undertake the task of project evaluation under the assignment offer, Dr. V.B. Mathur and Dr. Asha Rajvanshi visited the UNEP Regional Office for Europe in Geneva and the UNEP World Conservation Monitoring Centre (WCMC) in Cambridge, UK during October 6-12, 2003. During this period they interacted with the Head, UNEP Regional Office, Programme Officer, Director WCMC and several other functionaries associated with the implementation of the project and evaluated various project outputs. The assignment was successfully completed and the technical report was accepted and appreciated for the professional approach adopted for the evaluation by the UNEP.

Global Millennium Ecosystem Assessment Process

The Millennium Ecosystem Assessment (MEA) is an IUCN led 4-year international and multi-scale assessment that is designed to meet the needs of decision-makers for scientific information on the links between ecosystem change and human well-being. The MEA will identify policy, institutional, legislative or technological changes that could improve the management of ecosystems, thereby increasing their contributions to development and maintaining their long-term sustainability. After finalization of the assessment outlines, over four hundred natural and social scientists from sixty-six countries have started to assess the relations between ecosystems and human well-being. Four working groups of the scientists are assessing the current and future capacity of ecosystems to provide services to humankind including the impacts of ecosystem change on well-being. The co-chairs of the Global Assessment Responses Working Group invited Dr. V.B. Mathur and Dr. Asha Rajvanshi to be on the MEA team and provide professional inputs in the preparation of MEA report as contributing authors. Write-up on specific sections of the report that focuses on 'Addressing Biodiversity Issues in Environmental Impact Assessment' has been prepared by the above members of WII faculty and is under review by the experts.

Consultancy Projects

WII-HPFD Project

The Institute was entrusted a short-term consultancy assignment by the Himachal Pradesh Forest Department (HPFD). This assignment involved formulation of the following two conservation projects: (i) Conservation of flora and fauna in and around the Great Himalayan National Park, and (ii) Conservation of endangered wildlife species in Himachal Pradesh.

Participating faculty members and external resource persons engaged on the project undertook field visits to different protected areas and other field sites in Himachal Pradesh during ghte reporting period. They also had intensive consultations with concerned field managers and senior officials of HPFD at Shimla. A two-day workshop was organized on 'The Development of *ex-situ* conservation strategies and action plan for Himachal Pradesh' at Shimla during August 8-9, 2003. The workshop was attended by the HPFD officials, field managers, select resource persons and WII's faculty members. The Hon'ble Forest Minister, HP; Principal Secretary (Forests); PCCF and Additional PCCF (Wildlife) took active part in the workshop deliberations and also addressed the participants.

Study on man-animal conflicts under H.P. Forestry Project

The study was undertaken under the WII-HPFD project. Leopard-man conflict has been reported from all over Himachal Pradesh, but it has attained alarming proportions in some areas of Mandi and Hamirpur districts. In Mandi district, villages located in the vicinity of five forest divisions, namely, Mandi, Sunder Nagar, Joginder Nagar, Nachan and Karsog are affected from leopard problem; whereas in Hamirpur district having only one affected forest division. A total of 268 human casualties by leopard, black bear, wild boar and monkey have been reported in Mandi, Sunder Nagar, Joginder Nagar, Nachan, Karsog and Hamirpur forest divisions in Himachal Pradesh during 1991-2003.

In and around Great Himalayan National Park and buffer eco-development project area, there were only four-human casualties between 1989 and 1998. Black bear is responsible for three cases, whereas leopard

injured one person. The livestock killings were mainly by leopard, black bear (*Selenarctos thibetanus*) and brown bear (*Ursus arctos*) in these areas. A total of 7131 livestock killings by leopard were reported in Mandi and Hamirpur districts of Himachal Pradesh.

Major damage causing species in hilly areas are black bear, wild boar, monkey and rodents, and in low lying flat or undulating areas are nilgai and wild boar. In Himachal Pradesh, agricultural crop damage by nilgai is confined to Una areas bordering Punjab. Wild boar damage to agricultural crops is widespread. Himalayan black bear (*Selenarctos thibetenus*) and Himalayan brown bear (*Ursus arctos*) cause extensive damage to agricultural crops, human mauling and cattle lifting in these areas. Villages and agricultural crop fields are close to forests. To mitigate the problem cost-effectively in specific situations, it is necessary to have the knowledge of the ecology and behaviour of nilgai and wild boar within protected areas and outside village interface man-altered fragmented areas, and nature and extent of crop damage problem and socio-economic aspects of crop losses. Based on the brief survey of affected areas, general recommendations were made to minimize human-leopard conflict.

Environment Impact Assessment Cell

The Environmental Impact Assessment Cell of WII continued to provide professional support in capacity building initiatives at WII, sister organizations, other institutions, professional bodies and Government and Corporate organizations. The following are the specific tasks accomplished by EIA Cell during the reporting year.

- **Environmental Impact Assessment Study EIA Study of the area under consideration for renewal of mining lease of M/s Narmada Cements Company Limited**

In response to the request from the Nodal Officer, Forest Conservation Act, Gujarat Forest Department, WII accepted the proposal to undertake the EIA study to evaluate the likely ecological impacts of the renewal of the lease area of the limestone mine of M/s Narmada Cement Company Limited in Babarkot village, in District Amreli, Gujarat.

WII submitted a technical and financial proposal for the above study after the site visits. The study was initiated after receiving the letter of award from M/s Narmada Cements Ltd. in February 2004 with the following specific objectives: (i) assessment of the impacts of mine renewal on distribution of lions in and the around mine lease areas, (ii) assessment of habitat suitability for lions and wild ungulates in the mine lease areas, (iii) evaluation of the importance of the mine lease area for long-term viability of lion population in the area, and (iv) provide recommendations arising out of the study to facilitate environmental decision making. The study is being jointly supervised by Dr. Y.V. Jhala and Dr. Asha Rajvanshi.

- **Preparation of the Forest Scheduling Plan for Omkareshwar Hydroelectric Project**

WII undertook the four-year study of the Environmental Impact Assessment of the Narmada and Omkareshewar projects with special reference to Impacts on flora and fauna and attendant human aspects under the consultancy offer of Narmada Valley Development Authority (NVDA), Govt. of Madhya Pradesh, Bhopal during 1990-1994. One of the essential requirements under the MoU signed for this study between WII and NVDA was the preparation of forest scheduling plan. At that time, it was felt that the preparation of forest scheduling plan would be required only in the event of project implementation subsequent to accordance of environmental clearance by MoEF. The requirement of Forest Scheduling Plan was reiterated by NVDA, subsequently, as the project was granted clearance and is under implementation. In response to this request, WII undertook the study for preparation of the Forest Scheduling Plan during July 2003. The WII team comprising of Dr. V.B. Mathur and Dr. Asha Rajvanshi, Principal Investigators of the project and Dr. N.M Ishwar, Project Associate (ENVIS), who was co-opted to work on this study, visited the area under proposed submergence of the Omkareshwar Project for preparation of the clearfelling plan in accordance with the scheduling of submergence. The team was ably assisted by Shri J.J. Dutta, Former Principal Chief Conservator of Forests and Shri R.C. Sharma, Retired Conservator of Forests, Madhya Pradesh Forest Department for

this study through their valuable inputs both in field and in the preparation of the documentation.

- **Placement of Students for Summer Training**

WII has been providing academic support to several universities within the country by providing opportunities to graduate and post-graduate students for undertaking dissertation work and summer training. Miss Adity Roy, Graduate student from Delhi University sought placement with WII for summer training. During the three-month period of attachment at WII, she conducted the study – 'An insight into socio-economic aspects and psychology of rehabilitated *gujjar* population in Pathri and Gaindikhatta relocation sites'. Her work was jointly supervised by Dr. Asha Rajvanshi and Dr. A.J.T. Johnsingh.

- **Advisory Support to MoEF**

WII continued to provide advisory services to MoEF on matters related to environmental decision making. WII was represented on the Expert Committee for mining projects. In this capacity, WII is advising the Environment Division of MoEF in the evaluation of EIA reports on mining projects for decision making with respect to environmental clearance. The nature of work involved extensive review of EIA documentation, attending Expert Committee Meetings at MoEF for environmental appraisal of projects and evaluation of project specific Conservation Plans prepared as part of Environmental Management Plans (EMP). Dr. Asha Rajvanshi provided this support on behalf of WII.

WII also provided advisory support in the site appraisal of the proposed cement plant site and the captive limestone mine of M/s Harish Cements located in Sundernagar, Mandi district, Himachal Pradesh. Dr. Asha Rajvanshi undertook the visit to the sites of the proposed projects along with the officials of the MoEF and other members of the sub-group constituted by MoEF. The report based on site visit was submitted to MoEF for decision making.

Wildlife Forensic Cell

Wildlife Forensic Cell (WFC) established at the Institute is aimed to (i) undertake Research and Development work for developing and standardizing protocols for identifying species from parts and products of animal and plants found in trade, (ii) prepare Protocols and Manuals for identifying species, (iii) identify source of origin of key species from parts e.g. tiger, leopard and elephant in trade, (iv) identify plant parts and products found in trade, (v) transfer technology to Regional Laboratories through workshops and hands-on work, (vi) sensitize issues among various enforcement agencies for proper evidence collection and crime scene examination through regular workshops and (vii) establish repository of reference samples. During the reporting year eighty-four wildlife offence cases were received for identification of species from Department of Forest (58.3%), Police (20.2%) Court (13.1) and GOI (8.3%) *(Figure 1)*. Seized biological products were of shawls, skins, hair, bones, claws, meat, ivory and its products, painting brushes, and other finished products like, shoes and waist belts, fishing flies, pendants etc. Different fake wildlife products were also received. WFC personnel's have appeared in the court of law as "Expert Witness" at New Delhi, Ghaziabad and Ajmer.

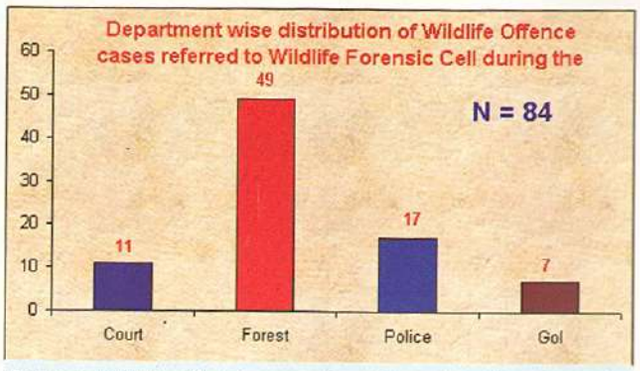


Figure 1. Wildlife offence cases referred by various departments to WII.

Protocols for identifying bear bile (Family Ursidae) were standardized using thin layer chromatography (TLC) and high performance thin layer chromatography (HPTLC). This gave highly accurate and reproducible results which were used in dealing wildlife offence cases involving bear gall bladders. *(Figure 2)*

The above diagram shows the great accuracy and sensitivity with which the salts present in bear bile can be detected. The results were found to be reliable and reproducible.

In order to complement of our exiting protocols of identifying species from hair structure, the Institute

undertook R/D for developing protocols for identifying species from Keratins proteins. This technique was used to generate keratin patterns for wool of shahtoosh or Tibetan antelope (*Pantholops hodgsonii*), pashmina goat (*Capra hircus*) and angora rabbit (*Oryctolagus cunniculus*) with sodium dodecyl sulphate polyacrylamide gel electrophoresis (SDS-PAGE). Distinct species specific profile was obtained in the all the three species with high degree of reproducibility of results (*Figure 3*). The statistical interpretation of the molecular weight data of the bands shows that shahtoosh is totally distinct from pashmina and angora and hence, this technique can used to identify species from limited and highly processed wool samples.

While developing DNA based protocols for identifying species from various parts and products, six restriction enzymes were used viz, Hae III, Alu I, Rsa I, Msp I, EcoR I and Hind III to check the sites of the PCR amplified product of sambar, chital and mongoose species. It was found that the success rate of restriction

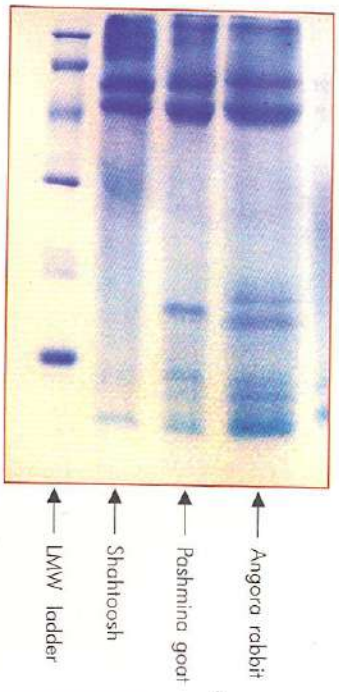


Figure 3. Keratin pattern of shahtoosh, pashmina and angora wool.

digestion in relation to the above mentioned extracted methods was in order of Qaigen (90%)>chelex (75%)>PC (55%). Data indicates that it is possible to distinguish between Sambar (*Cervus unicolor*) and Chital (*Axis axis*) by using the restriction enzymes Hae III and Rsa I. It is also possible to distinguish mongoose from other studied species using Hae III and Rsa I.17 samples were subjected to RAPD (Randomly amplified Polymorphic DNA) analysis and the success was observed in the order of Qaigen (75%)>PC(25%)>Chelex (0%). It was observed that RAPD technique may not be useful for identifying and discriminating species from forensic samples due to poor rate of amplification.

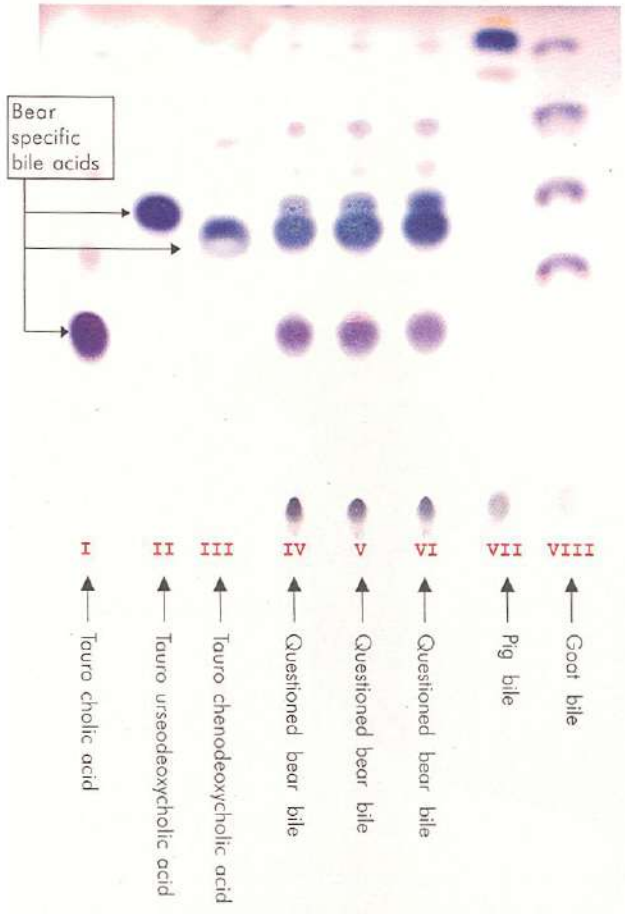


Figure 2. Developed chromatogram of bear bile's and reference standards.

In view of recent amendment in the Indian Wildlife (Protection) Act -1972 for declaring wildlife items, WFC has organized five *"Two days training workshops on identifying and marking wildlife items"* for forest officials of all the states. These workshops provided a rare opportunity to the forest officials to have actual hands on training on the various simple techniques for identification and marking various wildlife products. Officer trainees were told how to identify shahtoosh shawls, antlers, canines, rhino horn, ivory by morphological and microscopic characteristics, examination of fake and real skins, preliminary identification of bear bile and characterizing musk

pods and musk powder. Various marking techniques like photography, ink marking, bar coding, use of official seal, engraving or etching, clamp tagging with lead sealing, electronic chip tagging were also demonstrated. Suggested documentation of ownership certificate of wildlife products was also discussed.

WFC has provided inputs in different short term courses of Forest and Custom Officers organized by the Institute and in courses of other organizations like Forest Research Institute, State Forest Service College, Indira Gandhi National Forest Academy, BSF Academy – Tekenpur, Vocational Training Programme for Children, University students from Nepal, Tamil Nadu, Chattisgarh, M.P., Patiala, IIFM Bhopal, RIMC cadets, Delhi College of Environmental Engineering etc.

WFC has facilitated summer training for three students of Department of Biotechnology, G.G.D.S.D. College, Punjab University, Chandigarh to work on Double diffusion, SDS-PAGE and isoelectric focusing and prepared their training report. Ms. Pooja Deep Goyal, student of M.Sc. in Forensic Science, Punjabi University, Patiala has worked in Wildlife Forensic Lab for her dissertation titled "Identification of bird species (Protected under Wildlife Protection Act -1972) by developing sarcoplasmic protein profiles"

Findings of the work undertaken on DNA related techniques by WFC were presented as poster at 3rd European Academy of Forensic Science Conference (EAFS) 2003 at Istanbul, Turkey from September 22-27, 2003. It was organized by the Institute of Forensic Sciences of Istanbul University on behalf of the European network of Forensic Science Institutes (ENFSI). The poster was selected among the best 15 posters of the >1000 posters presented by the Jury of EAFS. Ms. R. Sharma of WFC was awarded German Academic Exchange Service (GAES DAAD) Fellowship by Ministry of Human Resource Development, Govt. of India to work on Ph.D. topic titled "*Panthera tigris* genome: Implications in wildlife forensics" in Germany.

S. Wilson

Vinod Verma

S. Wilson

Teaching inputs provided to other institutions in Dehradun/Outside

Dr. V.B. Mathur (May 27, 2003): **Forest Research Institute, Dehradun.** Integrated Protected Area Network (IPAN) System.

Dr. A.K. Gupta (June 4, 2003): **IGNFA,** Ecodevelopment: Issues of Sustainability.

Dr. Asha Rajvanshi (June 27, 2003): **Forest Research Institute, Dehradun.** Environmental Impact Assessment.

Dr. Y.V. Jhala (June 2003): **Bombay Natural History Society, Mumbai.** Biometry to researchers and scientists of the society.

Dr. V.B. Mathur (July 1, 2003): **Indira Gandhi National Forest Academy, Dehradun.** Planning Protected Area Network in India for Biodiversity Conservation.

Dr. A.K. Gupta (July 2, 2003): **IGNFA, Dehradun,** Landscape Approach to Wildlife Management – A Case study from Meghalaya.

Dr. A.K. Gupta (August 1, 2003): **SFS College, Dehradun,** Wildlife Management.

Dr. Y.V. Jhala (August 2003): **Four lectures at State Forest College, FRI, Dehradun.** Population Ecology to the SFS class.

Dr. A.K. Gupta (August 8, 2003): **SFS College, Dehradun,** National Wildlife Action Plan.

Dr. V.B. Mathur (August 13, 2003): **Forest Survey of India, Dehradun.** Resource Mapping of PAs using GIS.

Dr. A.K. Gupta (August 27, 2003): **SFS College, Dehradun,** Role of Wildlife Research in Wildlife Conservation.

Dr. V.B. Mathur (September 1, 2003): **Indian Institute of Remote Sensing,** Dehradun. Remote Sensing and GIS Applications in Protected Area Management.

Dr. B.K. Mishra (September 4, 2003): **Indian Institute of Remote Sensing, Dehradun.** India Ecodevelopment Project.

Dr. Asha Rajvanshi (September 17-19, 2003): **Forest Research Institute, Dehradun.** Environmental Impact Assessment.

Dr. A.K. Gupta (September 19, 2003): **IGNFA, Dehradun,** Panel Discussion: Indian Forest Service: Issues and Challenges.

Dr. V.B. Mathur (September 25, 2003): **Forest Survey of India, Dehradun.** GIS Applications in preparation of Protected Area Management Plans.

Dr. Asha Rajvanshi (September 26, 2003): **Indian Institute of Remote Sensing, Dehradun.** Environment Impact Analysis.

Dr. P.K. Mathur (October 31, 2003): Lecture to B.Sc. Forestry final year class from **Tamil Nadu Agriculture University Forest College and Research Institute, Mettupalayam, Tamil Nadu.**

Dr. V.B. Mathur (November 1, 2003): **Forest Survey of India, Dehradun.** Application of Information Technology in Biodiversity Conservation.

Dr. A.K. Gupta (November 10, 2003): **IGNFA, Dehradun, Importance** of Wildlife Research for Wildlife Managers.

Dr. A.K. Gupta (November 12, 2003): **IGNFA, Dehradun,** Panel Discussion: Indian Forest Service: Issues and Challenges.

Dr. Asha Rajvanshi (November 19, 2003): **State Forest Service College, Dehradun.** Theory and Practice of EIA.

Dr. Asha Rajvanshi (November 24, 2003): **Indira Gandhi National Forest Academy,** Dehradun. EIA as a tool for forest management.

Dr. A.K. Gupta (November 24, 2003): **IGNFA, Dehradun,** Panel Discussion: Indian Forest Service: Issues and Challenges.

Shri B.C. Choudhury (December 12, 2003): **Scholars Home School, Art exchange programme, Dehradun.** Conservation of Sarus crane in India.

Dr. Asha Rajvanshi (December 19, 2003): **Forest Research Institute, Dehradun.** Ecological Impact Assessment of Forestry Projects.

Dr. V.B. Mathur (December 22, 2003): **Forest Survey of India, Dehradun.** Remote Sensing and GIS Applications in Wildlife Conservation.

Dr. Asha Rajvanshi (January 6-8, 2004): **Indian Bureau of Mines, Udaipur.** Inputs on *"Ecological Assessment of Mineral Extraction Projects "* in the training programme on Enforcement of Mineral Conservation and Development Rules.

Dr. A.K. Gupta (January 8, 2004): **IGNFA,** Panel Discussion 'Indian Forest Service: Issues and Challenges'.

Dr. A.K. Gupta (January 9, 2004): **SFS College, Dehradun,** Importance of Wildlife Research and its Relevance to Managers.

Dr. A.K. Gupta (January 12, 2004): **SFS College, Dehradun,** Ecotourism.

Dr. Asha Rajvanshi (January 13, 2004): **Forest Research Institute, Dehradun.** Relevance of baseline studies in EIA.

Dr. P.K. Mathur (January 15, 2004): **State Forest Service College, Dehradun.** Biodiversity Conservation – Concepts and Approaches.

Dr. Asha Rajvanshi (January 15, 2004): **Forest Research Institute, Dehradun.** EIA approaches to sectoral developments.

Dr. Asha Rajvanshi (January 16, 2004): **Forest Research Institute, Dehradun.** Best practice guidance and case studies in EIA.

Dr. V.B. Mathur (January 21, 2004): **Forest Survey of India, Dehradun.** GIS Applications in preparation of Protected Area Management Plans.

Dr. A.K. Gupta (February 20, 2004): **IGNFA, Dehradun,** Panel Discussion 'Indian Forest Service: Issues and Challenges'.

Shri B.C. Choudhury (March 24, 2004): **WTI, New Delhi.** A case study of rehabilitation and repatriated Indian star tortoise in Andhra Pradesh.

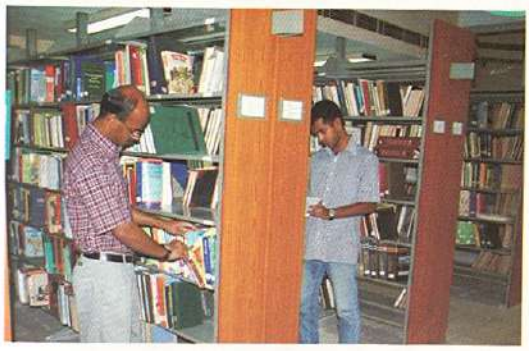
Dr. Asha Rajvanshi (March 27, 2004): **Dehradun Chapter of All India Human Rights Commission.** People voices in environmental choices.

Shri Qamar Qureshi: **Indo Tibetan Border Police** Use of Global Positioning System.

Dr. P.K. Mathur : **IGNFA, Dehradun.** Lecture for visiting groups of IFS Officers undergoing 'Advanced Management Course for 1982, 1986 and 1987 batches'.

Shri Qamar Qureshi : **Jammu & Kashmir Wildlife Protection Department.** Technical input to the department to conduct hangul population estimation.

Shri Qamar Qureshi : **Project Tiger Directorate, New Delhi.** Technical input in Kanha and Pench workshops on tiger and its habitat evaluation.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Facilities

The Library and Documentation Centre (L & DC)

It is being realized that for quick socio-economic development, it is not only necessary to promote scientific and technological research but also to disseminate information at a fast pace to the users. The library and documentation centre plays a vital role in dissemination of information to target scientists of research organizations. Thus, the library & documentation centre is considered the backbone of any research institution. So is the WII Library and Documentation Centre. It has been primarily designed to function as a centre of learning resources within the framework of the Institute's mission. The Library and Documentation Centre has the following objectives :

a. To serve as a repository of all wildlife related literature published in India.
b. To acquire, organize and disseminate all relevant world wide literature on biodiversity conservation and related fields.
c. To serve the user readership through normal and special library & information services, like circulation, reference, photocopy, documentation
d. To establish and maintain links with other national information systems in India and other countries to ensure free flow of information at national and international levels.
e. To serve as a training centre for information personnel and users.
f. To provide the above services to :
   - WII,
   - Protected areas all over the country,
   - Institutions engaged in nature conservation research in the country & abroad,
   - Universities & Colleges,
   - Individual scholars working in related areas, NGOs, etc.
g. To bring out periodic publications on the following :
   - Current content of periodicals,
   - Research in progress,
   - List of unpublished research literature, covering dissertations, thesis etc.
   - Compilation of bibliographies, and
   - Compilation of abstracts

The L & DC possesses approx. 23000 books, 14,000 newspaper clippings, 7150 maps/toposheets and more than 5000 bound volumes of old and rare journals. The library also maintains good collection of scientific

paper number to 9000. It subscribes to more than 300 periodicals. During this year, 672 books, proceedings, thesis & reports, 500 scientific papers and reprints and 2500 press clippings, 25 new CD-ROM titles have been added to the library collection.

The L & DC is fully computerized, using LIBSYS Library Management Software, UNESCO'S CDS/ISIS Software, CD Server, Barcode and related technologies. For optimum resources use by researchers, students, officer trainees and other users, seven computer terminals available in the library premises and the faculty desks have been inter-connected with LAN. Being connected to the library facility, the users have the facility to access all in-house databases like books, reprints, Indian wildlife abstract, map/toposheet collection, press clippings, specialized bibliographic databases on Musk Deer, Application of Telemetry in Wildlife, Wildlife and Protected Area Management in Madhya Pradesh, Mountain Ungulates, Rainforests Conservation in India, etc. Users also have access to CD-ROM databases like Wildlife Worldwide 1935 -, E-CD and CAB Spectrum 1973 available on the LAN. The L & DC provides a variety of Library & Information Services to its user

During the reporting period over 3,57,000 pages of photocopies were provided to the users. Approximately 32,000 documents issued and consulted during 2003-04. Value added service was provided to 155 clients while ready reference service to approx. 2,800 clients. Approximately 150 queries were attended from outside users and more than 15,000 bibliographic references were provided to the users. 40 documents have been procured on Inter-Library Loan from nearby libraries. For strengthening the library collection and its services, an evaluation of library services was also conducted at different levels to provide a better service to its user.

FACTS

Services provided during 2003-2004

S. No.	Services	Numbers
1.	Photocopy exposure	357000 pages
2.	Documents issued/consulted	32000 documents approx.
3.	Value added service	155 clients
4.	Ready reference service	2800 clients
5.	Inter Library Loan	41 documents
6.	Document delivery	50 clients
7.	Document procurement request *(Articles requested from NISCAIRE {Formrely INSDOC} & other libraries)*	20 clients
8.	Articles added to WILD *(Indian Wildlife Abstract Service)*	289 articles

Revenue Generation from services during 2003-2004

S. No.	Services	Amount (Rs.)
1.	Bibliographical/Document delivery services	7225.00
2.	Photocopying service	8627.00
3.	WII Publications	232242.00

Volume Added to Library Collection during 2003-2004

S. No.	Services	Number
1.	Books and Monographs	672
2.	Journals (bound Volumes)	300
3.	Newspaper clippings	2500
4.	Reprints	500
5.	Maps/toposheets	50

Computer & GIS Cell

The computer facility of the Institute has a very impressive array of computer hardware and software. This facility has been considerably strengthened with inputs from the Institute's own resources and those from various collaborative projects. At present, the computer facility of the Institute is well developed to serve research, training, database, GIS, remote sensing, cartographic and desktop publishing requirements of the Institute.

Computers are now used in every sphere of the Institute activities from simple word processing to complex data analysis. All the eight faculty departments and the library, administration and finance sections are equipped with a range of Pentiums and 486s. Major scientific activities of the Institute, including database management, graphic analysis, statistical operations, mapping and desktop publications are carried out on these machines. There are four UNIX based Sun workstations with Arc/Info software for Geographical Information System (GIS) and ERDAS Imagine for digital image processing of remotely sensed data.

The Institute has a heterogeneous computer hardware setup connected to Local Area Network (LAN). There are two Pentium II file servers, two Pentium III Internet servers and 150 plus nodes. The LAN is based on the state-of-the-art structured cabling with fibre optics as the backbone connecting all the office buildings. The computers are connected to LAN through network switches on UTP cable.

The Institute has 512-Kbps leased line Internet connectivity with its own Internet server hosting the institute's website and mailing system. All the computers of the institute are provided with Internet and mailing services. The users are provided with individual e-mail accounts on the institute's server.

The Computer & GIS Cell of WII conducted computer-training courses for the students, researchers, staff and officer-trainees of the PG Diploma Course and Certificate Course in wildlife management. Inputs were given on concepts of computer, LAN/internet, software packages viz. MS Windows, MS-Office, SPSS, S-Plus and specialised software packages related to wildlife research. Hands on training were also given on Arc/Info and ERDAS Imagine software packages for Geographical Information System, Remote Sensing and Global Positioning System technology.

Due to the increase in number of simultaneous users of the Institute's internet facility and the consequent increase in the volume of data traffic, the present 64 Kbps bandwidth became inadequate. Therefore, the institute upgraded the Internet bandwidth to 512 Kbps on leased line physical loop system in order to provide a steady and reliable Internet connectivity. This upgradation was done through Videsh Sanchar Nigam Limited (VSNL) for Internet services and Bharat Sanchar Nigam Limited (BSNL) for physical loop system.

The computer facility of the Institute was further strengthened by the procurement of new computer hardware from WII grant-in-aid.

In the reporting year three HCL Infiniti-Challenger workstations for GIS/RS laboratory and DTP facility and one HP 2300DN laser printer were procured.

Audio Visual & Wildlife Extension Cell

The Audio Visual & Wildlife Extension Cell of the Institute caters to various requirements of academic activities. The cell maintains 16mm films, video films, synchronized programme and various other audio-visual equipment. This year three Hitachi LCD video projectors, three Topex Visual Presenters, Four DVD Player, four Cordless microphone , CM-30 Ahuja Conference System installed in Porta Cabin, One 42" Plasma screen fitted in Board room. Two OHP Kinderman, One slide projector Ektagraphic BR-III, Alkosign Astra Plus White board with movable stand were fitted in Porta cabin. These are extensively used for teaching purpose. The cell screened thirty shows of nine projectors synchronized programme of the Institute "We are Nature, Nature is our world" during the reporting period on different occasions. During the year, photo documentation of different activities of the Institute were also undertaken. A total of 25 albums were made for quick retrieval of the photographs. Documentation of prints and Negatives of different activities of 2003 was done during the reporting period. Documentation in CD of Kaziranga

NP photos & video clippings were made for the use of participating officers as training aid. The photographic support was given to the forensic cell for seized material.

● Newsletters

As part of the information dissemination programme, the following issue of Newsletters was published during the reporting year:

* WII Newsletter Volume 9 No.4, Winter 2002
* WII Newsletter Volume 10 No.1, Spring 2003
* WII Newsletter Volume 10 No.2, Summer 2003
* WII Newsletter Volume 10 No.3, Autumn 2003
* WII Newsletter Volume 10 No.4, Winter 2003

● Celebration of International Day for Biological Diversity

The International Day for Biological Diversity was celebrated on May 22, 2003. The following programmes were organised on the occasion: (i) An essay competition in Hindi for staff was organised in the Seminar Hall (Teaching Block) of the Institute. The topic was "Mountain Tourism and Biodiversity". Twelve staff members participated in the competition, (ii) A clay-modelling workshop for children of WII family (staff/faculty/researchers/trainee officers) was organised in the Old Hostel Lounge of the Institute. Sh. C. M. Mishra, an Artist of repute from Dehradun was the resource person. Children showed overwhelming response in this workshop. Ninety-five children participated in this event. They learnt different aspects of drawing and painting also.

● Celebration of World Environment Day

Every year, the Institute celebrates the World Environment Day, on June 5. "Water – Two billion people are dying for it", was the theme for this year as suggested by the UNEP. With a view of creating awareness about the importance of water amongst younger generation and children, a full day trip was organized to Phandowala in Rajaji National Park. A total of 70 children of the WII family participated in the trip. The day began with discussion on Biodiversity and the importance of water for animals in the Rajaji National Park and for human beings. The children were told about the native plants in the vicinity of Phandowala Forest Rest House. Besides bird watching and environmental games the children

S. Wilson

participated in removing plastic and polythene bags from a stretch of the Suswa River near the Phandowala Forest Rest House. The children also participated in a discussion on the how to save water in their house.

● Wildlife Week celebrations

The 'Wildlife Week' was celebrated at the Institute during October 2-8, 2003. Various activities were organised to disseminate the message of wildlife conservation. Talks on Biodiversity Conservation were organised in some schools by the faculty members and researchers of the Institute during October 6-10, 2003. A Nature Card preparation competition was organised for children of Class V-IX from nominated schools on October 7, 2003. A total of 82 students participated in this competition. A Poster Making Competition was organised for staff of the Institute on October 6, 2003. Seven staff members took part in the competition. The theme for the poster competition was "You and Wildlife". Inputs were provided by the faculty members and researchers of the Institute in a workshop on Biodiversity Awareness organised for students from the Himalayan States. It was organized by the Songtsen Library, Dehradun from October 2-4, 2003. A popular talk was delivered by Dr. G.S. Rawat on October 7, 2003 followed by

S. Wilson

another talk by Dr. A.J.T. Johnsingh on October 8, 2003 for faculty members, researchers, students and staff of the Institute.

The prize distribution ceremony was organised on October 8, 2003 for the winners of various competitions such as Poster Competition and Nature Card preparation competition. Prize-winning cards prepared by the school children were auctioned amongst the audience and the money collected on each bid was given to the concerned child as an encouragement and motivation for the efforts one has afoot. The prizes were also given away to the winners of the essay writing competition on "Tourism and Mountain Biodiversity" organized for WII staff during the International Day for Biological Diversity on May 22, 2003. A total of 12 staff members participated in the competition. Shri S. Singsit, Director of the Institute gave away the prizes and the certificates to the winners. Eco-friendly cotton cloth bags were kept for sale amongst WII family.

National Wildlife Database Cell

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

During 2003-2004, the main thrust of the activities was on the compilation of reports/ bibliographies and modification of website besides the collection & input of data and its validation as a regular activity. The Protected Area Database was updated further and presently there are 584 Protected Areas including 92 National Parks and 492 Wildlife Sanctuaries in India, covering 154,999.07 km^2, which is 4.71% of the total geographical area of the country. Species Database was corrected and updated by adding information on the distribution of mammalian species in various protected areas. Bibliographic Database was updated by addition of current literatures published on Indian wildlife in the various issues of journals & periodicals received during the said period. Trainees Database has information on officers trained in the various Diploma and Certificate courses including 94 foreign nationals besides information on various short courses.

Website of the National Wildlife Database has been modified and updated further by incorporating the latest information.

Wildlife Protected Area Network in India has been updated further by incorporating the latest information received upto March, 2004.

Assistance was provided to the GIS Cell in further development and updation of PA Atlas and PA location maps by providing information on various protected areas including those newly created.

More than three hundred (including internal and external) queries were answered and outputs in various formats were provided.

ENVIS Centre 'Wildlife and Protected Areas'

The Ministry of Environment and Forests, Government of India established the 23rd Centre on Environmental Information System in September 1997 at Wildlife Institute of India. The thematic area of WII ENVIS Centre is 'Wildlife and Protected Areas'. The mission of ENVIS is to support and facilitate the diverse group of clientele from policy makers to researchers and industries and common man at national and international level on a possible range of environmental data and information through a nation-wide web enabled network.

The goals of WII ENVIS Centre are:

- Build up a repository and act as a dissemination centre for information on wildlife sciences
- Provide information for decision-making at the apex level relating to wildlife conservation
- Establish a database on Protected Area Network in India
- Promote national and international co-operation through networking and exchange of wildlife related information

The objectives of WII-ENVIS Centre are:

- Build-up of information storage, retrieval and dissemination capabilities in subject areas related to wildlife science
- Establish linkages with all information sources in wildlife conservation and management in the country and abroad for increasing the information content
- Respond to user queries by supplying substantive information in the form of published reports, documents, extracts, research papers and other unpublished and analysed information as far as possible
- Maintain links with other ENVIS Centres with the ultimate objective of identification of data and knowledge gaps in specified subject areas and take action towards filling these gaps
- Publish bulletins on thematic focus areas

During the reporting period the WII ENVIS Centre published its seventh thematic ENVIS Bulletin on 'Mountain Ungulates'. This issue covered the mountain ungulates of the Greater and Trans-Himalayas. The first section provides the species' profiles and their distribution in India and across the world. The second section provides the protected area network and state reports on status and management of mountain ungulates in the several Himalayan states including Jammu & Kashmir, Himachal Pradesh, Uttaranchal, Sikkim and Arunachal Pradesh. The third section discusses issues related to the conservation of mountain ungulates in the Himalayan region and also focuses on the regional perspectives for conservation of snow leopard (*Panthera uncia*). The bulletin also includes a veteran's section which provides valuable information on key issues for conservation of mountain ungulates written by eminent conservationists. A comprehensive bibliography of mountain ungulates has also been included. The bulletin was sent to more than 1000 individuals/ organizations in India and abroad.

The WII-ENVIS Centre is currently working on the publication of two bulletins *viz.* (i) Conservation of Rain Forests in India and (ii) Ungulates of the Peninsular India.

Research Laboratory

The laboratory extends technical inputs in conducting various teaching & training courses of the Institute and provides analytical support to research projects. Teaching classes followed by practical for on going courses were conducted at the laboratory on various instrumentation & analytical techniques, taxidermy, herbivore pellet and carnivore scat analysis and age and sex determination of animals. The laboratory staff provided technical inputs in capturing and handling live animals and birds in field, demonstration of camera traps, small mammal traps, electric fencing, radio telemetry and taxidermy to various training programmes. The laboratory staff recorded meteorological data from Chandrabani campus during the reporting year. The maximum and minimum temperature recorded were 41°C (June 2003) and 2°C (January 2004) respectively. Total annual rainfall recorded was 1802.3 mm.

The laboratory is equipped with sophisticated instruments like Atomic Absorbtion Spectrometer (AAS), High Performance Liquid Chromatograph (HPLC) and UV-Visible Spectrophotometer. Two laboratory technicians had undergone a short-term training program on 'Atomic Absorption Spectrometer' at the Perkin Elmer's Application Laboratory, Mumbai. Two hundred sixty seven plant samples were analyzed for sodium, potassium, calcium, phosphorus, ADF, NDF, lignin, cellulose, crude protein and organic carbon contents. Three hundred scat samples of tiger, dhole, leopard, sloth bear and Himalayan black bear were analyzed for studying the food habits of carnivores.

Conservation Genetics Laboratory

The major findings of the Conservation Genetics Laboratory on the discovery of the ancient Indian wolf lineages were published in the Biology Letters, Proceedings of the Royal Society, London. This collaborative WII's research got good national and international publicity and was covered by India Today, Times of India, Sanctuary India, SPAN magazine, International Wolf, BBC Radio "World talk" and Smithsonian Science news. Currently micro-satellite, and mitochondrial DNA of Indian wolves, golden jackals, indigenous Indian dogs, striped hyenas, lions and tigers are being amplified for studying their phylogeny and genetic diversity. Collaborative

research on avian malaria strains introduced in Hawaii through past introductions of Indian birds is being researched through PCR. Lectures and practical workshops were provided to the M.Sc. and other visiting classes in molecular techniques for Conservation Biology.

Herbarium

During the reporting period the staff of WII herbarium identified 2075 specimens from areas like Bandipur National Park, Rajaji National Park, Corbett National Park, Chamba District, Himachal Pradesh, Pakhui Wildlife Sanctuary, Trishna Wildlife Sanctuary, Dudhwa National Park.

Native grass species like *Arundo donax, Phragmites karka, Saccharum bengalensis and Saccharum spontaneum* were introduced in the campus with the help of herbarium staff. The accession of herbarium sheets and labeling is being carried out. The teaching inputs on herbarium preparation and its uses were made to Certificate Course trainees, M.Sc. Students and several visiting classes by herbarium section.

Shri P.L. Saklani visited Surkanda Devi forests to conduct the vegetation survey and helped in the establishment of medicinal plant garden as part of National Plant Conservation programme of Uttaranchal Forest Department. Shri M.M. Babu visited Nameng National Park and Pakhui Wildlife Sanctuary for vegetation survey.

Shri M.M. Babu attended a training on "Above ground Biodiversity Assessment" in Assam organized by Centre for Biodiversity Management, Australia and WWF, India and successfully completed the training. He was judged best participant and received award.

Other Activities

- **WII-Friends of the Doon (FoD) 'Wildlife and Environmental Quiz'**

In order to enhance conservation awareness amongst the school children, the WII in collaboration with the Friends of the Doon (FoD) conducted a 'Wildlife and Environmental Quiz' programme. Sixteen schools in Dehradun participated in the programme, which was conducted in three rounds. The final round of the quiz was held in WII on October 4, 2003 in which teams from Scholars Home, St. Joseph's Academy, Convent of Jesus and Mary, and Brightlands School participated. Brightlands school team represented by Varsha Negi, Anindya Shankar and Ankur Bharadwaj were declared winners and were awarded the WII-FoD Rolling Trophy, book prizes and a 3-day trip to Corbett Tiger Reserve, Uttaranchal.

- **Van Mahotsav**

The *Van Mahotsav* was celebrated at WII campus on July 29, 2003. Director, Dean, Registrar, all faculty members, officers and staff members participated in tree plantation programme. The following tree species were planted around Block I and Block III campus. (i) *Azdirachta Indica* (ii) *Bauhinia verigata/Purpurea* (iii) *Cassia fistula* (iv) *Syzygium cumini* (v) *Dendrocalamus strictus* (vi) *Delonix regia*, and (vii) *Emblica officinalis*.

Establishment News

Joined by transfer on deputation on foreign services

1. Shri Debashis Chakraborty, Reader

Repatriation

1. Shri S.K. Srivastava, Professor
2. Dr. Mehar Singh, Registrar

Resigned

1. Dr. Yashveer Bhatnagar, Sr. Lecturer
2. Dr. R.S. Chundawat, Reader

Appointments

1. Shri Vinod Singh Bisht, Driver
2. Shri Dharam Singh, Driver
3. Smt. Sarita Rani, Attendant

Passed away

1. Shri Vidhya Dutt, May 14, 2003

WII at the All India Forest Sports Meet

A contingent of players from WII participated in the XII All India Forest Sports Meet held at Goa from February 10-14, 2004. WII team brought laurels to the Institute by winning Bronze medal in Hockey and Rifle Shooting.

Dr. Manoj Agarwal won the Bronze Medal in Rifle Shooting. The members of the Bronze medal winning

hockey team were: Dr. B.S. Adhikari (Captain), Sh. Madan M. Uniyal, Sh. C.P. Sharma, Sh. Dinesh S. Pundir, Sh. Gyanesh Chhibber, Sh. Narendra Aswal, Sh. Rakesh Sundriyal, Sh. Niranjan Bhandari, Sh. Lalit Negi, Sh. Sanjay Bharti, Sh. Chitrapal, Sh. Jai Prakash, Sh. Sunil Sundriyal, Sh. Vijay Prasad.

Campus Development

1. The work for providing and installation of air conditioning system for the Seminar Hall Cum- Interpretation Centre was in progress, and it is expected that the Air Conditioning work will be completed in June 2004.
2. Repair work in staff quarters in Block I & III, Office Building Toilets, Library Block, Laboratory and Academic Cell was completed in June 2003 at a cost of Rs. 4,84,067.00.
3. The earth work, leveling and consolidation to form play ground at Block III was completed in June 2003 at a cost of Rs. 3,72,462.00.
4. Road repair work in Block I was completed in March 2004 at a cost of Rs. 3,60,197.00

Visit of Members of National Forestry Commission to WII

The National Forestry Commission (NFC) under the Chairmanship of Justice B.N. Kirpal visited Wildlife Institute of India on January 23, 2004 and a meeting was held in Board Room of the Institute. The members of the commission included Shri N.K. Joshi, DGF, Member-Secretary, Shri Chandi Prasad Bhat, Shri A.P. Muthuswami, Shri M.K. Ranjitsinh, Prof. J.S. Singh. Shri J.V. Sharma, Shri A.K. Johari, Shri Sanjiv Chadha, Shri V.K. Sharma and Shri Pradeep Kumar also accompanied the Committee on behalf of the MoEF. The WII was represented by the Shri S. Singsit, Director and all the faculty members of the WII. The agenda for this visit was as follows: (i) To review and assess the existing policy and legal framework and their impact in a holistic manner from the ecological, economic, scientific, social and cultural viewpoint, (ii) To examine the current status of forest administration and the forestry institutions both at all India and State level to meet the emerging needs of the civil society, (iii) Make recommendations indicating specific policy options for achieving sustainable forest and wildlife management and development, biodiversity conservation and ecological security, (iv) Suggest ways and means to make forest administration more effective with a view to help to achieve the above policy options, (v) Establish meaningful partnership and interface between forestry management and local communities including tribal.

Shri S. Singsit, Director presented an overview on the Institute's mandate, goals, objectives and achievements made so far in the field of wildlife training and conservation. After the presentation by the Director, the National Forestry Commission held a detailed discussion session with the faculty members of the Institute and discussed various issues related to wildlife training and conservation.

Some of the submissions made by the WII before the National Forestry Commission were as follows: (i) Commission should advise the State Forest Departments (SFDs) to utilize the services of officers trained in wildlife to the maximum capacity by their postings in the wildlife related areas. (ii) The Commission should advise the State Forest Departments to nominate more officers for fully funded specialized training courses to utilize full capacity at the WII. (iii) The post of Director, WII should be upgraded from its present scale equivalent to the CCF to a higher scale equivalent of the PCCF. (iv) Senior Scale level Tenural posts in the WII should be upgraded to the level of selection grade/ supertime scale to facilitate recruitment of officers with at least 13-years of service as recommended by the Biplab Das Gupta Committee. (v) The proposed Technical, Administrative and Finance positions in the Institute as recommended by the High Level Evaluation Committee in 1994 should be sanctioned including the up gradation of some positions. (vi) To meet the demands of the SFDs and other stakeholders in the following advanced new sub-disciplines of Wildlife Management, the WII should be provided with matching financial outlay, manpower, and infrastructure: (a) Wildlife Health, (b) Conservation Genetics, (c) Wildlife Forensic, (d) Ecodevelopment, (e) Wildlife Disease Management, Toxicology and Epidemiology, (f) Mass Capture and Translocation, (g) GIS and Remote Sensing Application.

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Vinod Verma

Vinod Verma

Welcome Guests

- Shri S.C. Sharma, Addl. DG (Retd.), Wildlife, MoEF;
- A group of DIG from BSF;
- IFS officers of 16th Professional staff upgradation course at IGNFA;
- IFS officers (1993 Batch) Advanced Forest Management course, IGNFA.
- A group of 13 senior IFS Officers undergoing 16th Professional Skill Upgradation course at IGNFA accompanied by faculty members on July 4, 2003.
- A class of 30 cadets and two masters from Rashtriya Indian Military College, Dehradun on July 31, 2003.
- A group of 25 IFS (Probationers) of 2003 batch from Indira Gandhi National Forest Academy, Dehradun on August 6, 2003.
- A class of 71 B.V.Sc. Final year students from Veterinary College & Research Institute, Namakkal, Tamil Nadu on August 22, 2003.
- A class of 20 M.Sc. students and two faculty members from School of Mathematics & Allied Sciences, Jiwaji University, Gwalior on August 25, 2003.
- A group of 46 students from class VI to XII and one teacher from Raja Ram Mohan Roy Academy, Dehradun on August 29, 2003.
- A batch of 22 participants from 12 countries of Asia & Pacific Region of International short course on Geo-informatics for Biodiversity Assessment undergoing training at IIRS Dehradun on September 8, 2003.
- A group of 60 students of B.V.Sc. Final Year from Tamil Nadu Veterinary and Animal Science, University, Madras Veterinary College, Chennai on September 11, 2003.
- A class of 15 B.Sc. III year, Forestry Students from Kerala accompanied by two faculty members from Kerala Agricultural University, College of Forestry, Vellainikkara, Trichur, Kerala on September 13, 2003.
- A batch of 25 senior IFS officers undergoing Advance Forest Management course at IGNFA, Dehradun on September 17, 2003.

- A group of 25 students of III year Zoology and 5 staff members from SGTB Khalsa College, University of Delhi, Delhi on September 25, 2003.
- A group of 30 teachers from different Universities undergoing training at FRI from Forest Research Institute, Dehradun, September 25, 2003.
- 44 Students accompanied by faculty teachers from Acharya Narendra Dev College, Delhi University, Oct. 1, 2003.
- IFS officers (1986 batch) of advanced forest management course from IGNFA, Dehradun, Oct.15, 2003.
- 35 Range Officers from T.N. Agricultural University Forest College & Research Institute, Mettupalayem, Tamil Nadu, Oct. 16, 2003.
- M.Sc. Final Year (Wl. Sc.) from Department of Wildlife Science Forestry Centre of Wildlife & Ornithology, AMU, Aligarh, Oct. 17, 03.
- 15 students of B.Sc. (Forestry) from T.N. Agri. University, Forest College and Research Institute, Mettupalayam T.N., Oct. 31, 2003.
- 40 B.Sc. (II) Botany students with faculty from Acharya Narendra Dev College, University of Delhi, New Delhi, Nov. 3, 2003.
- IFS Officer (1982 batch) of advanced accompany by faculty from IGNFA, Dehradun, Nov. 12, 2003.
- 55 B.Sc. (Final year) accompany by faculty from Rohia College Bombay, Nov. 13, 2003.
- 20 Forest Officers from Haryana Forestry Department (Wildlife), Nov. 20, 2003.
- 20 students from Gurukul, Haridwar, Nov. 21, 2003.
- IFS Officer (1987 batch) from IGNFA, Dehradun, Nov. 27, 2003.
- 19 students of B.Sc. Forestry 3rd year from Tribhuvan University/Institute of Forestry Nepal, Dec. 2, 2003.
- 45 students of the P.G.D.F.M. (Batch 2003-05) & two faculty members from IIFM, Bhopal (M.P), Dec. 3, 2003.
- 30 BE (Environmental) students and 4 faculty members from Delhi College of Engineering, Delhi, Dec. 10, 2003.
- 90 student of 9^{th} class from St. Mary's convent Sec. School, Clement Town Dehradun, Dec. 11, 2003.
- 38 students and 2 Faculty B.Sc. Forestry 3^{rd} year from Tribhuvan University/Institute of Forest, Nepal, Dec. 16, 2003.
- IFS Officers (17 years seniority) of Advance Management course from IGNFA, Dehradun, Dec. 17, 2003.
- 36 Pre-Final Students of College of Veterinary and Animal Science CSKHPKC, Palampur, (H.P.) from College of Veterinary and Animal Science, CSKHPKV, Palampur (H.P.), Dec. 29, 2003.
- 30 cadets and two masters from Rashtriya Indian Military College, Dehradun, January 5, 2004.
- 10 B.Sc. (Forestry) students & faculty members from S.K. University of Agriculture Sciences & Technology of Kashmir, February 9, 2004.
- 33 IFS officers of 17 years of service from IGNFA, Dehradun, February 25, 2004.
- 60 M.Sc. (Botany/Applied Botany) students and six faculty members from Bundelkhand University, Jhansi, February 27, 2004.
- 130 primary school children alongwith six teachers from GRD Academy (Day School) Niranjanpur, Patel Nagar, Dehra Dun, March 5, 2004.
- 70 B.V.Sc. (Final year) students and faculty members from Madras Veterinary College, Chennai, March 12, 2004.
- 34 forest guards from Haryana Forest Department, Sohana, Haryana, March 16, 2004.
- 70 B.V.Sc. (Final year) students along with 2 faculty members from Madras Veterinary College, Chennai, March 19, 2004
- 22 forest guards alongwith their officers from Forest Department, Chakrata (UA), March 23, 2004.
- 46 Ranger trainees and 2 officers from Uttaranchal Forestry Training Academy, Haldwani (Nainital), March 24, 2004.

K. Sivakumar

National Institute for Coastal and Marine Biodiversity (NICMB)

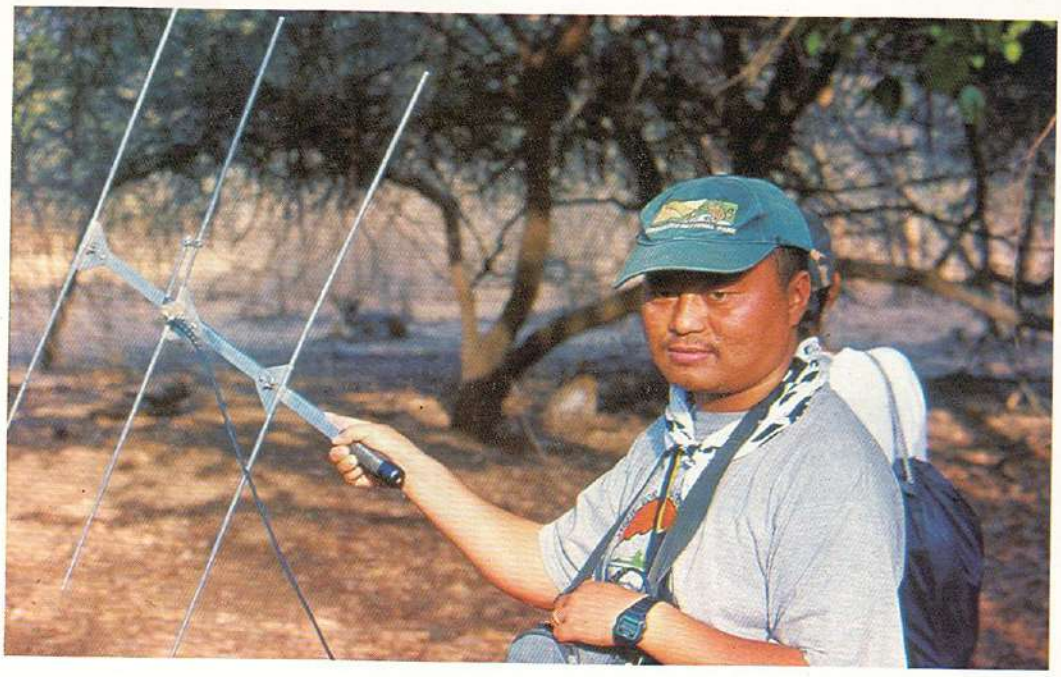
The National Institute for Coastal & Marine Biodiversity (NICMB) was set up at Kanyakumari, Tamil Nadu during October, 2003. This was the recommendation of the National Seminar on Coastal & Marine Biodiversity for Conservation and Management organized by WII at Kanyakumari in March, 2003. The Ministry of Environment & Forests (MoEF) endorsed this recommendation and decided to set up the NICMB at Kanyakumari. The Wildlife Institute of India was given the responsibility for setting up of the NICMB, Kanyakumari. The decision was appreciated by the Indian Board for Wildlife. The NICMB will collate information on activities by various agencies on the coastal and marine environment in India and coordinate the MoEF funded activities of conservation agencies along the coast and marine habitats. Capacity building for marine biodiversity protection, management oriented research, awareness education and transfer of state of art management methods to marine conservation practitioner will be the main agenda of the NICMB.


Chosen Land for NICMB

K. Sivakumar


Coast of Kanyakumari

K. Sivakumar



YV Jhala

Perspective 2004-05

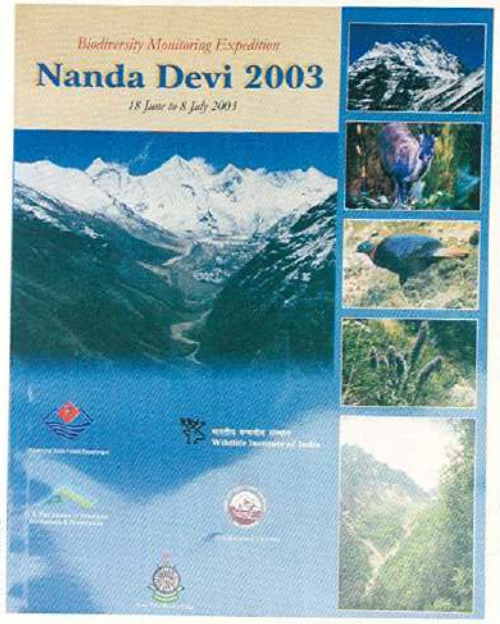
Both regular training courses *i.e.* Post Graduate Diploma Course in Wildlife Management and Certificate Course in Wildlife Management and the regular academic programme *i.e.* M.Sc. (Wildlife Science) will be continued in the coming year. The short courses like one-week compulsory training course in Wildlife management for IFS officers, five-day training course for integrated Watershed Development Project for Punjab State, IUCN Sponsored International Training Programme on Biological Diversity & EIA, and three-week course on Management Plan Writing for forest officers of Tripura Forest Department (Funded by Tripura FD) are also scheduled for the year 2004-05. VIII Special Course in Wildlife Protection, Law & Forensic Sciences for probationers of Indian Customs & Central Excise Service Group A will be conducted during the year.

A workshop on conservation of wildlife issues and concerns for Forest Secretaries and Chief Wildlife Wardens of States and UTs will be organized during 2004-05.

Research is one of the main mandates of the Institute. The research projects always get proper attention by the Institute. The Institute is running some collaborative projects in collaboration with some famous International agencies. The collaboration will be continued this year too.

On the home front, the campus development activities are being planned as per the need of the Institute. Hopefully, the construction of five type-IV residential quarters in Block III will be initiated during the coming year. The newly constructed Auditorium will be fully equipped and start functioning for the activities of the Institute.

The development of National Institute of Coastal and Marine Biodiversity (NICMB) at Kanyakumari (Tamil Nadu) is a new initiative of the Institute. The responsibility to establish the NICMB is given to the Wildlife Institute of India by the MoEF and the Institute is completing this task with zeal and positive approach.



Vinod Verma

Vinod Verma

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Vinod Verma

Vinod Verma

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Secretary,
Ministry of Environment & Forests,
Govt. of India, Paryavaran Bhavan, B-Block,
CGO Complex, Lodi Road,
New Delhi - 110 003

2 Vice- Chairman
Director General of Forests & Special Secretary,
Ministry of Environment & Forests,
Govt. of India, Paryavaran Bhavan, B-Block,
CGO Complex, Lodi Road,
New Delhi - 110 003

A representative of the Indian Board for Wildlife who is a member of WII-Society for a period of three years to be nominated by the President
(The present membership tenure is valid upto 24.2.2005)

3 Shri Valmik Thapar,
19, Kautilya Marg, Chanakyapuri,
New Delhi-110 021

Five non-official persons from amongst eminent Members Scientists/Naturalists/Conservationists for a period of three years to be nominated by the President from time to time who are members of WII-Society.
(The present membership tenure is valid upto 24.2.2005)

4 Shri Samar Singh,
(Former Director General, WWF-India)
P-1, Hauz Khas,
New Delhi-110 016

5 Shri H.S. Panwar,
(Former Director, WII)
M-22, South City,
Gurgaon-122 001

6 Dr. R. Sukumar,
Centre of Ecological Sciences,
Indian Institute of Science,
Bangalore (Karnataka)

7 Dr. Kanchan Chopra,
Institute of Economic Growth
University of Delhi Enclave,
New Delhi-110 007

8 Shri S.B. Singh,
(Former Chief Wildlife Warden, Meghalaya)
House No. 18/494, Indira Nagar
Lucknow-226 016

9 Financial Advisor & Joint Secretary
to the Government of India,
Ministry of Environment & Forests,
Paryavaran Bhavan, B-Block,
CGO Complex, Lodi Road,
New Delhi - 110 003

10 Chief Secretary,
Government of Uttaranchal
(or his/her nominee not below the rank of Secretary to the State Government) "Sachivalaya",
Dehradun-248 001

11-16. Chief Wildlife Warden in the State Govt. of Uttaranchal (permanent member) and five Chief Wildlife Wardens on a regional rotational basis at a time for a period of three years.

17 Addl. Director General (WL) &
Director Wildlife Preservation,
Ministry of Environment & Forests,
Paryavaran Bhavan, B-Block,
CGO Complex, Lodi Road,
New Delhi - 110 003

18 Director General,
Indian Council of Forestry Research & Education, New Forest,
Dehra Dun - 248 006

19 The Chairman,
Training, Research and Academic Council, WII
Special Invitee,

20 Dr. P.K. Malik,
Wildlife Institute of India,
Dehra Dun - 248 001

21 Director,
Wildlife Institute of India,
Dehra Dun - 248 001
Member-Secretary

Training, Research & Academic Council (TRAC)

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Former Secretary, MoEF
8-2-585/A/1, Road No. 9, Banjara Hills,
Hyderabad – 500 034

2 Shri H.S. Panwar,
(Former Director, WII)
M-22, South City,
Gurgaon-122 001

3 Dr. Asad R. Rahmani,
Director, Bombay Natural History Society,
Museum Compound,
Shaheed Bhagat Singh Marg,
Mumbai-400 023

4 Dr. R.K. Sinha,
Professor and Head, Department of Zoology,
Patna University,
Patna

5 Prof. V.C. Soni,
Department of Biosciences,
Saurashtra University,
Rajkot

6 Prof. P.C. Bhattacharya,
Head of Department of Zoology,
Guwahati University,
Guwahati

Ex-Officio Members

7 The Director Wildlife Preservation,
Government of India,
Ministry of Environment & Forests,
CGO Complex, Lodi Road,
New Delhi – 110 003

8 Chief Wildlife Wardens on a regional rotational basis at a time for a period of three years: -
Northern - Himachal Pradesh, Delhi
Eastern - Jharkhand, West Bengal
Central - Madhya Pradesh
Western - Rajasthan, Maharashtra
North Eastern - Sikkim, Arunachal Pradesh, Tripura
Southern - Karnataka, Andhra Pradesh
Permanent Invitee - Uttaranchal

9 The Director,
Salim Ali Centre for Ornithology and
Natural History (SACON), Anaikatty P.O.
Coimbatore - 641 108

10 The Director,
Botanical Survey of India,
Kolkata

11 The Director,
Zoological Survey of India
Kolkata

12 The Member-Secretary,
Central Zoo Authority,
New Delhi

13 A representative of Indian Council of Forest Research and Education (ICFRE),
Dehradun

14 The Dean,
Faculty of Wildlife Science
Wildlife Institute of India,
Dehrdun

15 The Chairman,
Internal Research Advisory Committee,
Wildlife Institute of India,
Dehradun

16 The Registrar,
Wildlife Institute of India,
Dehradun

17 Member- Secretary
The Director,
Wildlife Institute of India,
Dehradun

Finance Committee

1 Chairman
Shri M.K. Sharma, IFS
Director General of Forests &
Special Secretary, Government of India,
Ministry of Environment & Forests,
Paryavaran Bhavan, CGO Complex,
B-Block, Lodi Road,
New Delhi – 110 003

2 Shri N.K. Joshi, IFS
Addl. Director General of Forests (WL) &
Director, Wildlife Preservation,
Ministry of Environment & Forests,
CGO Complex, Paryavaran Bhavan,
B-Block, Lodi Road,
New Delhi – 110 003

3 Shri S.B. Singh, IFS (Retd.)
(Former Chief Wildlife Warden, Meghalaya)
House No. 18/494, Indira Nagar
Lucknow – 226 016

4 Shri J.L. Chugh,
Deputy Secretary, (Representative of JS & FA)
Ministry of Environment & Forests,
Paryavaran Bhavan, B-Block,
CGO Complex, Lodi Road
New Delhi – 110 003

5 Member-Secretary
Shri S. Singsit, IFS
Director
Wildlife Institute of India
Dehradun

Special invitee

6 Shri S.S. Lamba,
Finance Officer,
Wildlife Institute of India
Dehradun

7 Shri P.K. Aggarwal
Administrative Officer
Wildlife Institute of India
Dehradun

Building Committee

1 Chairman,
Director General
Indian Council for Forest Research & Education
P.O. New Forest
Dehradun

2 Chief Engineer, CCU
Ministry of Environment & Forests,
Paryavaran Bhavan, B-Block
CGO Complex, Lodi Road,
New Delhi – 110 003

3 Member-Secretary,
Director
Wildlife Institute of India
Dehradun

Accounts

Audit Certificate

I have examined the Receipt and Payments Account, Income and Expenditure Account for the year ended 31st March, 2004 and the Balance Sheet as on 31st March, 2004 of the Wildlife Institute of India, Dehradun. I have obtained all the information and explanations that I have required and subject to the observations in the appended Audit Report, I certify, as a result of my audit, that in my opinion these accounts and Balance Sheet are properly drawn up so as to exhibit a true and fair view of the state of affairs of Wildlife Institute of India, Dehradun according to the best of information and explanation given to me and as shown by the books of the organisation.

Place: New Delhi
Date: 3rd February, 2005

Principal Director of Audit

WILDLIFE INSTITUTE OF INDIA, DEHRADUN

Receipt & Payment Accounts for year 2003-2004

RECEIPTS				PAYMENT			
Particulars	Plan	Non Plan	Total	Particulars	Plan	Non Plan	Total
To Opening Balance				By Salaries & Allowance	12,363,241.00	8,947,209.00	21,310,450.00
Cash in Hand	0.00	64,126.00	64,126.00	By Honorarium		23,200.00	23,200.00
Cash in Bank	0.00	14,665,352.74	14,665,352.74	By Fellowship	289,953.00		289,953.00
To Cable	0.00	108,950.00	108,950.00	By Wages	513,152.00	379,336.00	892,488.00
To Camera Trapping	0.00	50,000.00	50,000.00	By Travel Expenses	2,180,519.00	38,440.00	2,218,959.00
To CGEGIS	0.00	105,170.00	105,170.00	By Postage & Telephone	194,813.00		194,813.00
To CZA Stud. Book Project	0.00	167,325.00	167,325.00	By Electricity & Water	0.00	3,779,907.00	3,779,907.00
To EMD Received	0.00	186,040.00	186,040.00	By Entertainment Charges	0.00	232,033.00	232,033.00
To Employees Contribution (EPF)	0.00	963,652.00	963,652.00	By Conveyance Charges	0.00	13,042.00	13,042.00
To GPF	0.00	3,079,635.00	3,079,635.00	By Medical Expenses	2,040,533.00	0.00	2,040,533.00
To HDFC	0.00	83,685.00	83,685.00	By Newspaper & magazine	45,118.00	0.00	45,118.00
To Hostel Caution Money	0.00	2,500.00	2,500.00	By Operational Expenditure	5,719,790.00	110,457.00	5,830,247.00
To Income Tax Salary	0.00	1,096,191.00	1,096,191.00	By OTA	0.00	415,012.00	415,012.00
To Loans	0.00	3,000,000.00	3,000,000.00	By POL for Vehicle	1,233,959.00	0.00	1,233,959.00
To Project Cost	0.00	2,021,700.00	2,021,700.00	By Repair and maintenance of Vehicle	525,878.00	0.00	525,878.00
To Sale Tax/ Trade Tax/Prof.Tax. Com. Tax	0.00	96,078.00	96,078.00	By Publication	112,235.00	0.00	112,235.00
To Security Deposit	0.00	61,397.00	61,397.00	By Publicity & Advertisement	126,693.00	0.00	126,693.00
To SP & FB Fund	0.00	400.00	400.00	By Stationery	225,240.00	913,813.00	1,139,053.00
To TDS	0.00	282,546.00	282,546.00	By Cable	0.00	108,750.00	108,750.00
To Advance for Expenses (Project)	1,757,383.00	0.00	1,757,383.00	By Camera Trapping	0.00	50,000.00	50,000.00
To Advance for Expenses to Staff	1,747,188.00	0.00	1,747,188.00	By CGEGIS	0.00	106,010.00	106,010.00
To Recovery of Steel & Cement	0.00	27,260.00	27,260.00	By CZA Management course	0.00	119,768.00	119,768.00
To Loans & Advance to Staff	0.00	791,248.00	791,248.00	By CZA Management Course 2001	0.00	172,139.00	172,139.00
To Lab Equipment	3,783,745.00	0.00	3,783,745.00	By CZA Stud. Book Project	0.00	326,683.00	326,683.00
To Library Books	10,724.00	0.00	10,724.00	By CZA Value of Exhibit Design	0.00	200,000.00	200,000.00
To Sale of Old Vehicles	121,421.00	0.00	121,421.00	By EMD	0.00	179,530.00	179,530.00
To Camp Expenses (Project)	30.00	0.00	30.00	By Employee Contribution (EPF)	0.00	963,652.00	963,652.00
To Contingencies/ Misc. (Project)	12.00	0.00	12.00	By GPF	0.00	3,079,635.00	3,079,635.00
To Electricity & Water Charges	0.00	260,308.00	260,308.00	By HDFC	0.00	83,685.00	83,685.00
To Fellowship	4,000.00	0.00	4,000.00	By Hostel Caution Money	0.00	27,500.00	27,500.00
To Lab Expenses	28,223.00	0.00	28,223.00	By Income Tax Salary	0.00	1,096,191.00	1,096,191.00
To Legal Expenses	0.00	5,000.00	5,000.00	By Loans	0.00	2,500,000.00	2,500,000.00
To Library Expenses	157.00	0.00	157.00	By Payment Received For Research	0.00	82,202.00	82,202.00
To LTC	251,543.00	0.00	251,543.00	By Project Cost	0.00	2,021,700.00	2,021,700.00

To M. Sc. Course Expenditure	1,261.00	180.00	1,441.00	By Sale / Trade / Prof. Tax/ com. Tax	0.00	96,078.00	96,078.00
To Medical	4,400.00	0.00	4,400.00	By Security Deposit	0.00	70,194.00	70,194.00
To Operational Expenditure	6,952.00	79.00	7,031.00	By SP & FB Fund	0.00	400.00	400.00
To POL for Vehicles	5,556.00	0.00	5,556.00	By Study On Acquisition of Private			
To Postage & Telegram	3,141.00	901.00	4,042.00	Land Around N. Park	0.00	25,000.00	25,000.00
To Publication	73,862.00	0.00	73,862.00	By TDS	0.00	287,563.00	287,563.00
To Salaries & Allowance	27,444.00	11,418.00	38,862.00	By Telemetry Workshop	0.00	117,191.00	117,191.00
To Stationery	1,950.00	0.00	1,950.00	By Advance Receipt of Printing			
To Telephone & TC	73,103.00	2,189.00	75,292.00	of Eco-Dev. Project	0.00	391,700.00	391,700.00
To Travel Expenses (Project)	22,305.00	0.00	22,305.00	By Tropical Rain Forest Workshop	0.00	107,039.00	107,039.00
To Travel Exps	327,062.00	3,957.00	331,019.00	By Zoo Mgmt. Crs. 02	0.00	243,527.00	243,527.00
To Workshop / Seminar		45,000.00	45,000.00	By Account No. 01 FDR	33,000,000.00	0.00	33,000,000.00
To Bus Charges		62,611.00	62,611.00	By Advance For Expenses (Project)	1,043,050.00	0.00	1,043,050.00
To Consultancy Refund	0.00	352,146.00	352,146.00	By Advance For Expenses to Staff	1,759,996.00	0.00	1,759,996.00
To EMD Forfeited	0.00	10,000.00	10,000.00	By Loans & Advance to Staff	0.00	585,682.00	585,682.00
To Grant -In-Aid From MoEF	80,000,000.00	10,607,000.00	90,607,000.00	By AC Plant	1,990,491.00	0.00	1,990,491.00
To House Licence Fee	0.00	288,910.00	288,910.00	By Camp Equipment (Project)	1,247,755.00	0.00	1,247,755.00
To Instt Charges (WII Receipts)	0.00	244,599.00	244,599.00	By Campus Development	584,067.00	0.00	584,067.00
To Int. On Bank Deposited	0.00	220,352.00	220,352.00	By Computer & Accessories	307,969.00	0.00	307,969.00
To Lab Testing Charges	0.00	62,500.00	62,500.00	By Furniture & Fixtures	194,703.00	0.00	194,703.00
To M. Sc. Course Fee	0.00	506,250.64	506,250.64	By Journals & Periodicals	6,039,903.00	0.00	6,039,903.00
To Misc. Receipts	0.00	730,838.20	730,838.20	By Lab Equipment	1,207,816.00	0.00	1,207,816.00
To Rent	0.00	166,677.00	166,677.00	By Library Book	895,965.00	0.00	895,965.00
To Research Project	0.00	2,935,936.00	2,935,936.00	By Materials and Supplies	11,400.00	0.00	11,400.00
To Training Cost	0.00	2,231,086.00	2,231,086.00	By Office Equipment	3,139,359.00	0.00	3,139,359.00
To WII Products	0.00	121,282.00	121,282.00	By Office Equipment (Project)	87,040.00	0.00	87,040.00
	0.00	0.00	0.00	By Photographs & Equipment	26,815.00	0.00	26,815.00
	0.00	0.00	0.00	By Training Equipment	19,888.00	0.00	19,888.00
	0.00	0.00	0.00	By AMC of Computers	144,635.00	0.00	144,635.00
	0.00	0.00	0.00	By Annual Research Seminar	183,659.00	0.00	183,659.00
	0.00	0.00	0.00	By Bonus	0.00	249,658.00	249,658.00
	0.00	0.00	0.00	By Camp Expenses (Project)	136,777.00	0.00	136,777.00
	0.00	0.00	0.00	By Contigencies/ Misc. (Project)	860,737.00	0.00	860,737.00
	0.00	0.00	0.00	By EPF Contribution	0.00	87,397.00	87,397.00
	0.00	0.00	0.00	By Estate Maintenance	1,744,500.00	0.00	1,744,500.00
	0.00	0.00	0.00	By Estate Security	2,365,768.00	0.00	2,365,768.00
	0.00	0.00	0.00	By Fellowship & Wages (Project)	1,545,530.00	0.00	1,545,530.00
	0.00	0.00	0.00	By Lab Expenses	790,141.00	0.00	790,141.00
	0.00	0.00	0.00	By Leave Salary and Pension Contr to LIC	549,193.00	0.00	549,193.00
	0.00	0.00	0.00	By Legal Expenses	0.00	536,835.00	536,835.00
	0.00	0.00	0.00	By Library Expenses	42,782.00	0.00	42,782.00
	0.00	0.00	0.00	By LTC	622,830.00	0.00	622,830.00

	0.00	0.00	0.00	By M. Sc. Course Expenditure	501,973.00	0.00	501,973.00
	0.00	0.00	0.00	By Pension Contribution	1,094,778.00	0.00	1,094,778.00
	0.00	0.00	0.00	By POL & Maintenance of Vehicle (Project)	567,099.00	0.00	567,099.00
	0.00	0.00	0.00	By Printing & binding	255,711.00	0.00	255,711.00
	0.00	0.00	0.00	By Research Project Expenditure	2,000,000.00	0.00	2,000,000.00
	0.00	0.00	0.00	By Sports Goods	29,399.00	0.00	29,399.00
	0.00	0.00	0.00	By Stipend	62,671.00	0.00	62,671.00
	0.00	0.00	0.00	By Telephone & Tc	1,619,675.00	0.00	1,619,675.00
	0.00	0.00	0.00	By Training Cost Expenditure	5,000,000.00	0.00	5,000,000.00
	0.00	0.00	0.00	By Travel Expenses (Project)	227,498.00	0.00	227,498.00
	0.00	0.00	0.00	By Uniforms	38,489.00	0.00	38,489.00
	0.00	0.00	0.00	By Workshop/ Seminar	140,587.00	0.00	140,587.00
	0.00	0.00	0.00	By Bus Charges	0.00	100.00	100.00
	0.00	0.00	0.00	By Misc. Receipts	0.00	3000	3,000.00
	0.00	0.00	0.00	By Training Cost	0.00	2231086	2,231,086.00
	0.00	0.00	0.00	By WII Products	0.00	23,600.00	23,600.00
				By Closing in Bank	*0.00*	*4,955,510.58*	*4,955,510.58*
				By Closing in Hand	*0.00*	*340,710.00*	*340,710.00*
A' Total	**88,251,462.00**	**45,722,475.58**	**133,973,937.58**	**A' Total**	**97,651,773.00**	**36,322,164.58**	**133,973,937.58**

Research Project

Particulars	Plan	Non Plan	Total	Particulars	Plan	Non Plan	Total
To Opening Balance				By EPF, House Licence Fees, Bus,			
Cash in Bank	*0.00*	*0.00*	*0.00*	Other Recoveries Payable		8,241.00	8,241.00
To EPF,House Licence Fee, Bus & Other				By Advance for Expenses (Research Project)	714,336.00		714,336.00
Recoveries Payable		8,241.00	8,241.00	By Office Equipment (Research Project)	7,133.00		7,133.00
To Advance For Expenses (Res. Project)		580,376.00	580,376.00	By Camp Expenses (Research Project)	655,943.00		655,943.00
To Contingencies/ Misc. (Research Project)		500.00	500.00	By Contingencies/ Misc. (Research Project)	327,344.00		327,344.00
To Fellowship & Wages (Research Project)		13,867.00	13,867.00	By Fellowship & Wages (Research Project)	745,976.00		745,976.00
To Travel Expenses (Research Project)		44,145.00	44,145.00	By POL & Maintenance of Vehicle (Research Project)	166,760.00		166,760.00
To Misc. Receipts for Research Project		2,475,779.00	2,475,779.00	By Travel Expenses (Research Project)	244,580.00		244,580.00
				By Closing Balance			0.00
				Cash in Bank		*219,791.00*	*219,791.00*
				Cash in Hand		*32,804.00*	*32,804.00*
B' Total	**0.00**	**3,122,908.00**	**3,122,908.00**	**B' Total**	**2,862,072.00**	**260,836.00**	**3,122,908.00**

Training Account

Particulars	Plan	Non Plan	Total	Particulars	Plan	Non Plan	Total
To Opening Balance	*0.00*	*4,333,827.36*	*4,333,827.36*	By EPF Contribution (Training A/c)	0.00	4,776.00	4,776.00
To EPF Contribution	0.00	4,776.00	4,776.00	By TDS	0.00	17,937.00	17,937.00
To TDS	0.00	17,937.00	17,937.00	By Advance for Training Expenses	0.00	2,595,500.00	2,595,500.00
To Advance for Training Expenses	0.00	1,600,241.00	1,600,241.00	By Training FDR	0.00	5,000,000.00	5,000,000.00
To Contingent & Misc. Expenses	0.00	122,185.00	122,185.00	By Computer and Peripheral	0.00	16,423.00	16,423.00
To Stationery Expenses	0.00	652.00	652.00	By Office Equipments (Training A/c)	0.00	23,100.00	23,100.00
To Traveling Allowance	0.00	235,464.00	235,464.00	By Training Equipment	0.00	1,908,570.00	1,908,570.00
To Misc. Receipts (Training A/c)	0.00	2,837,774.00	2,837,774.00	By Contingent & Misc. Expenses	0.00	2,643,477.00	2,643,477.00
To Receipt for Workshop/ Course	0.00	10,228,192.00	10,228,192.00	By Honorarium (Training A/c)	0.00	12,195.00	12,195.00
				By Library Books	0.00	235,537.00	235,537.00
				By Salary & Allowance	0.00	145,000.00	145,000.00
				By Stationery	0.00	1,197,107.00	1,197,107.00
				By Training Allowance	0.00	565,520.00	565,520.00
				By Traveling Allowance	0.00	1,951,808.00	1,951,808.00
				By Closing in Bank	*0.00*	*3,064,098.36*	*3,064,098.36*
C' Total	**0.00**	**19381048.36**	**19381048.36**	**C' Total**	**0.00**	**19381048.36**	**19381048.36**

Pension

Particulars	Plan	Non Plan	Total	Particular	Plan	Non Plan	Total
To Opening Balance				By Income Tax From Pensioners	0.00	12,000.00	12,000.00
Cash in Bank	*0.00*	*754,288.00*	*754,288.00*	By Investment in FDR	0.00	21,206,321.00	21,206,321.00
To Income Tax From Pensioners	0.00	12,000.00	12,000.00	By Commuted Value of Pension	0.00	328,843.00	328,843.00
To Birla Plus	0.00	1,200,000.00	1,200,000.00	By Pension/ Family Pension	0.00	685,781.00	685,781.00
To FRANKLIN TEMPLETON				By Closing Balance			
Pension Fund A/c	0.00	6,500,000.00	6,500,000.00	*Cash in Bank*	*0.00*	*2,186,252.78*	*2,186,252.78*
To IDBI	0.00	3,000,000.00	3,000,000.00				
To Kotak Mahindra Fund	0.00	2,800,000.00	2,800,000.00				
To KRISHNA JBN	0.00	1,440,000.00	1,440,000.00				
To Tata Guilt Fund	0.00	4,500,000.00	4,500,000.00				
To Interest on Investment	0.00	3,054,858.78	3,054,858.78				
To Interest on Saving Account	0.00	62,575.00	62,575.00				
To Misc. Receipts	0.00	5,500.00	5,500.00				
To WII Contribution	0.00	1,089,976.00	1,089,976.00				
D' Total	**0.00**	**24,419,197.78**	**24,419,197.78**	**D' Total**	**0.00**	**24,419,197.78**	**24,419,197.78**

Consultancy Project

Particulars	Plan	Non Plan	Total	Particulars	Plan	Non Plan	Total
To Opening Balance				By EPF Subscription	0.00	12,380.00	12,380.00
Cash in Bank	0.00	9,643,875.00	9,643,875.00	By House Licence Fee	0.00	2,808.00	2,808.00
To EPF Subscription	0.00	12,380.00	12,380.00	By TDS	0.00	3,796.00	3,796.00
To House Licence Fee	0.00	2,808.00	2,808.00	By Loan to other A/c	0.00	3,000,000.00	3,000,000.00
To TDS	0.00	3,796.00	3,796.00	By Camp Expenses	0.00	66,631.00	66,631.00
To Camp Expenses	0.00	55,679.00	55,679.00	By Cont. / Misc.	0.00	826,227.00	826,227.00
To Cont. Expenses	0.00	197,243.00	197,243.00	By Fellowship & Wages	0.00	591,385.00	591,385.00
To Fellowship & Wages	0.00	17,335.00	17,335.00	By POL and Maintenance of Vehicle	0.00	34,437.00	34,437.00
To Travel Expenses	0.00	65,894.00	65,894.00	By Travel Expenses	0.00	110,705.00	110,705.00
To Misc. Receipts	0.00	694,355.00	694,355.00	By Misc. Receipts	0.00	4,125.00	4,125.00
To Receipts for Project	0.00	1,682,052.00	1,682,052.00	By Closing Balance			
				Cash in Bank	0.00	7,722,688.00	7,722,688.00
				Cash in Hand	0.00	235.00	235.00
E' Total	**0.00**	**12,375,417.00**	**12,375,417.00**	**E' Total**	**0.00**	**12,375,417.00**	**12,375,417.00**

GPF

Particulars	Plan	Non Plan	Total	Particulars	Plan	Non Plan	Total
To Opening Balance				By FDR	0.00	13,127,963.79	13,127,963.79
Cash in Bank	0.00	2,105,273.00	2,105,273.00	By ICICI	0.00	445,000.00	445,000.00
To FRANKLIN TEMPLETON (GPF A/c)	0.00	1,000,000.00	1,000,000.00	By Advance/ Withdrawal	0.00	1,645,659.00	1,645,659.00
To HDFC	0.00	1,996,000.00	1,996,000.00	By Final Payment	0.00	810,213.00	810,213.00
To ICICI	0.00	4,500,000.00	4,500,000.00	By Closing Balance			0.00
To MPSEB Board	0.00	1,800,000.00	1,800,000.00	Cash in Bank	0.00	826,250.26	826,250.26
To Misc. Receipts	0.00	2,154,383.05	2,154,383.05				
To WII Contribution	0.00	3,299,430.00	3,299,430.00				
F' Total	**0.00**	**16,855,086.05**	**16,855,086.05**	**F' Total**	**0.00**	**16,855,086.05**	**16,855,086.05**
A+B+C+D+E+F Grand Total	**88,251,462.00**	**121,876,132.77**	**210,127,594.77**	**A+B+C+D+E+F Grand Total**	**100,513,845.00**	**109,613,749.77**	**210,127,594.77**

(S.S. Lamba)
Finance Officer

(P.R. Sinha)
Director

Financial Statements (Non-Profit Organization)
Wildlife Institute of India, Chandrabani, Dehradun
BALANCE SHEET FOR THE YEAR 2003-2004

Amount (Rs.)

CORPUS /CAPITAL FUND AND LIABILITIES	Schedule	Current Year	Previous Year
CORPUS /CAPITAL FUND	1	303617602.67	-5641287.00
RESERVE AND SURPLUS	2	0.00	350155641.00
EARMARKED/ENDOWMENT FUND	3	0.00	0.00
SECURED LOAN AND BORROWINGS	4	0.00	0.00
UNSECURED LOAN AND BORROWINGS	5	3611428.00	3120225.00
DEFERRED CREDIT LIABILITIES	6	0.00	0.00
CURRENT LIABILITIES AND PROVISION	7	50771165.00	1717675.00
TOTAL (A)		**358000195.67**	**349352254.00**
ASSETS			
FIXED ASSETS	8	198745720.00	260817529.00
INVESTMENTS- FROM EARMARKED / ENDOWMENT FUNDS	9	0.00	0.00
INVESTMENTS- OTHERS	10	94829284.79	50786000.00
CURENT ASSETS, LOANS, ADVANCES ETC.	11	64425190.88	37748725.00
MISCELLANEOUS EXPENDITURE (to the extent not written off or adjusted)			
TOTAL (B)		**358000195.67**	**349352254.00**

(S.S. Lamba)
Finance Officer

(P.R. Sinha)
Director

Financial Statement (Non-Profit Organization)
Wildlife Institute of India
Schedule forming part of Balance Sheet as on 31st March 2004

	(Amt. Rs.)	
	Current Year	Previous Year
SCHEDULE 1: CORPUS/ CAPITAL FUND		
Balance as at the beginning of the year	-5641287.00	33020595.39
Add: Contribution towards Corpus/ Capital fund	313252587.00	
Add/(Deduct) : Balance of net income (expenditure) transferred from	-3993697.33	-38661882.39
TOTAL	**303617602.67**	**-5641287.00**
SCHEDULE 2: RESERVE AND SURPLUS		
(1) Capital Reserve		
Amt. capitalised	0.00	299460080.00
Pension Fund		32794288.00
GP Fund		17901273.00
(2) Revaluation Reserve		
(3) Special Reserve		
(4) General Reserve		
TOTAL	**0.00**	**350155641.00**
SCHEDULE 3: EARMARKED/ENDOWMENT FUND		
TOTAL	**0.00**	**0.00**
SCHEDULE 4 : SECURED LOAN AND BORROWINGS		
(1) Central Government		
(2) State Government		
(3) Financial Institutions		
(1) Term Loans		
(2) Interest accrued and due		
(4) Banks		
(1) Term Loans-Interest accrued and due		
(2) Other Loans (specify)-Interest accrued and due		
(5) Other Institutions and Agencies		
(6) Debentures and Bonds		
(7) Others (Specify)		
TOTAL	**0.00**	**0.00**
SCHEDULE 5 : UNSECURED LOANS AND BORROWINGS		
(1) Central Govt.		
(2) State Govt.(Specify)		
(3) Financial Instittions		
(1) Term Loans		
(2) Interest accrued and due		
(4) Banks		
(1) Term Loans-Interest accrued and due		
(2) Other Loans (specify)-Interest accrued and due		
(i) Term Loans		
(ii) Others (specify)		
(5) Other Institutions and Agencies		
(6) Debentures and Bonds		
(7) Fixed Deposits		
(8) Others (Specify)		
Security Deposit	573307.00	582104.00
Loans	3038121.00	2538121.00
TOTAL	**3611428.00**	**3120225.00**

SCHEDULE 6 : DEFERRED CREDIT LIABILITIES		
(1) Acceptances secured by hypothecation of capital equipment and		
(2) Others (Specify)		
TOTAL	**0.00**	**0.00**
SCHEDULE 7 : CURRENT LIABILITIES AND PROVISION		
(A) CURRENT LIABILITIES		
(1) Acceptances		
(2) Sundry Creditors		
(1) For Goods		
(2) For Others		
(3) Advances Received		
Study on Acquisition of Private Land Around National Park		25000.00
CZA Management Course 2001		172139.00
CZA Stud Book Project		159358.00
Tropical Rain Forest workshop		107039.00
Payment Received for Research Equipment for Siberain		82202.00
CZA Value of Exihibit Design		200000.00
To Advance Receipt of Printing of Eco-Dev. Project		391700.00
Zoo Management Course 2002		243527.00
Hostel Caution Money	65000.00	90000.00
CZA Management Course		119768.00
Telemetry Workshop		117191.00
(4) Interest accrued but not due on		
(1) Secured Loans/Borrowings		
(2) Unsecured Loans/Borrowings		
(5) Statuary Liabilities		
(1) Overdue		
(2) Others (Specify)		
(1) Pension Fund	32794288.00	
(2) GPF	17901273.00	
(6) Others (Specify)		
EMD Received	6510.00	
TDS (Consultancy Project)		
EPF, House Licence Fee, Bus Charges & Other recoveries		
TOTAL (A)	**50767071.00**	**1707924.00**
(B) Provisions		
(1) For Taxation		
Income Tax Salary		
TDS	3614.00	8631.00
TDS (Training A/c)		
(2) Gratuity		
(3) Superannuation/ Pension		
(4) Accumulated Leave Encashment		
(5) Trade Warranties/ Claims		
(6) Others (Specify)		
Income Tax from Pensioners		
Employee Contribution EPF		
CM Relief Fund		
CGEGIS	-840.00	
Cable	1320.00	1120.00
HDFC		
GPF		
SP & FB Fund		
Car/Scooter Adv. (Transferrable)		
Sale Tax/Trade Tax/Prof.Tax/ Com. Tax		
EPF Contribution (Training A/c)		
House Licence Fee (Consultancy A/c)		
EPF Subscription		
TOTAL (B)	**4094.00**	**9751.00**
TOTAL (A+ B)	**50771165.00**	**1717675.00**

SCHEDULE 8 : FIXED ASSETS

Particulars	Gross Block					DEPRECIATION			NET BLOCK	
	Cost as at the beginning of the year	Addition during the year		Deduction during the year	Cost as at the end of the year	As at the beginning of the year	For the year	At the end of the year	As at the current year-end	As at the Previous year-end
		Upto 30-Sep	After 30-Sep							
LAND										
BLOCK: 0%										
Avenue Plantations	3438280.15	0.00	0.00	0.00	3438280.15	0.00	0.00	0.00	3438280.15	3438280.15
Land	6607214.58	0.00	0.00	0.00	6607214.58	0.00	0.00	0.00	6607214.58	6607214.58
Trees	2432709.00	0.00	0.00	0.00	2432709.00	0.00	0.00	0.00	2432709.00	2432709.00
TOTAL	12478203.73	0.00	0.00	0.00	12478203.73	0.00	0.00	0.00	12478203.73	12478203.73
BUILDINGS										
BLOCK: 10%										
Arch. & Supervision Fee	7777557.85	0.00	0.00	0.00	7777557.85	864173.00	777755.79	777755.79	6999802.07	7777557.85
Auditorium	8574076.00	0.00	0.00	0.00	8574076.00	952675.00	857407.60	857407.60	7716668.40	8574076.00
Boundary Fencing	736141.93	0.00	0.00	0.00	736141.93	81793.00	73614.19	73614.19	662527.74	736141.93
Boundary Wall	1301580.59	0.00	0.00	0.00	1301580.59	144620.00	130158.06	130158.06	1171422.53	1301580.59
Building Campus	122633426.70	0.00	0.00	0.00	122633426.70	13625936.30	12263342.67	12263342.67	110370084.03	122633426.70
Campus Development	6503591.01	584067.00	0.00	0.00	7087658.01	722621.00	708765.80	708765.80	6378892.21	6503591.01
Materials and Supplies	3477354.95	11400.00	0.00	0.00	3488754.95	386373.00	348875.50	348875.50	3139879.46	3477354.95
Tennis Court	477767.00	0.00	0.00	0.00	477767.00	53085.00	47776.70	47776.70	429990.30	477767.00
BLOCK: 20%										
Road & Culvert	1379289.00	0.00	0.00	0.00	1379289.00	344822.00	275857.80	275857.80	1103431.20	1379289.00
Staff Quarters	2540416.00	0.00	0.00	0.00	2540416.00	635104.00	508083.20	508083.20	2032332.80	2540416.00
TOTAL	155401201.03	595467.00	0.00	0.00	155996668.03	17811202.30	15991637.31	15991637.31	140005030.74	155401201.03
PLANT MACHINERY & EQUIPMENT										
BLOCK: 20%										
Vehicle	4663182.80	0.00	0.00	121421.00	4541761.80	1165795.70	908352.36	908352.36	3633409.44	4663182.80
Vehicle (Project)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Training Equipment	0.00	1908570.00	0.00	0.00	1908570.00	0.00	381714.00	381714.00	1526856.00	0.00
Vehicle (Research Project)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BLOCK: 20%										
AC Plant	2037532.50	1990491.00	0.00	0.00	4028023.50	679177.50	1007005.88	1007005.88	3021017.63	2037532.50
Camp Equipment	534667.76	1247755.00	0.00	0.00	1782422.76	178222.58	445605.69	445605.69	1336817.07	534667.76
DG Set	1477744.50	0.00	0.00	0.00	1477744.50	492581.50	369436.13	369436.13	1108308.38	1477744.50
EPABX	769500.00	0.00	0.00	0.00	769500.00	256500.00	192375.00	192375.00	577125.00	769500.00
Lab Equipment	3005301.80	1207816.00	0.00	3783745.00	429372.80	1001767.27	107343.20	107343.20	322029.60	3005301.80
Office Equipment	7684417.43	3139359.00	0.00	0.00	10823776.43	2561472.48	2705944.11	2705944.11	8117832.32	7684417.43
Training Equipment	23784477.18	19888.00	0.00	0.00	23804365.18	7928159.06	5951091.30	5951091.30	17853273.89	23784477.18

Office Equipment (Project)	0.00	87040.00	0.00	0.00	87040.00	0.00	21760.00	21760.00	65280.00	0.00
Camp Equip.(Conslt. Project)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Office Equip. (Res. Project)	0.00	7133.00	0.00	0.00	7133.00	0.00	1783.25	1783.25	5349.75	0.00
Camp Equip.(Res. Project)	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	43956823.97	9608052.00	0.00	3905166.00	49659709.97	14263676.09	12092410.92	12092410.92	37567299.08	43956823.97
VEHICLES										
BLOCK : 20%										
Vehicle (Conslt. Project)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FURNITURE, FIXTURES										
BLOCK : 15%										
Furnitures & Fixtures	9852803.44	194703.00	0.00	0.00	10047506.44	1738730.00	1507125.97	1507125.97	8540380.47	9852803.44
Furniture & Fixture	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	9852803.44	194703.00	0.00	0.00	10047506.44	1738730.00	1507125.97	1507125.97	8540380.47	9852803.44
OFFICE EQUIPMENT										
BLOCK : 20%										
Office Equip. (Training A/c)	0.00	23100.00	0.00	0.00	23100.00	0.00	4620.00	4620.00	18480.00	0.00
BLOCK 25%										
Office Equip. (Conslt. Project)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	0.00	23100.00	0.00	0.00	23100.00	0.00	4620.00	4620.00	18480.00	0.00
COMPUTER/PERIPHERALS										
BLOCK : 20%										
Computer and Peripherals	0.00	16423.00	0.00	0.00	16423.00	0.00	3284.60	3284.60	13138.40	0.00
BLOCK : 60%										
Computer & Accessories	0.00	307969.00	0.00	0.00	307969.00	0.00	184781.40	184781.40	123187.60	0.00
TOTAL	0.00	324392.00	0.00	0.00	324392.00	0.00	188066.00	188066.00	136326.00	0.00
LIBRARY BOOKS										
BLOCK : 100%										
Eductional Films	1080432.35	0.00	0.00	0.00	1080432.35	0.00	1080432.35	1080432.35	0.00	1080432.35
Journals & Periodicals	22645690.00	6039903.00	0.00	0.00	28685593.00	4112293.00	28685593.00	28685593.00	0.00	22645690.00
Library Books	13196444.28	895965.00	0.00	10724.00	14081685.28	1041593.00	14081685.28	14081685.28	0.00	13196444.28
Photographs & Equipment	2205930.20	26815.00	0.00	0.00	2232745.20	230056.00	2232745.20	2232745.20	0.00	2205930.20
TOTAL	39128496.83	6962683.00	0.00	10724.00	46080455.83	5383942.00	46080455.83	46080455.83	0.00	39128496.83
GRAND TOTAL	260817529.00	17708397.00	0.00	3915890.00	274610036.00	39197550.39	75864316.03	75864316.03	198745720.02	260817529.00

SCHEDULE :10 INVESTMENT - OTHERS		
(1) In the Govt. Securities		
(2) Other approved Securities		
(3) Shares		
(4) Debentures and Bonds		
(5) Subsidaries and Joint Ventures		
(6) Others (Specify)		
Investment in FDR (Pension Fund)	33806321.00	12600000.00
FDR (GPF)	19627963.79	6500000.00
Franklin Templeton (GPF A/c)		1000000.00
Account No. 1 FDR	33450000.00	450000.00
MPSEB Bond		1800000.00
Krishna JBN		1440000.00
Training FDR	7500000.00	2500000.00
ICICI	445000.00	4500000.00
HDFC (GPF A/c)		1996000.00
IDBI		3000000.00
Franklin Templeton (Pension Fund)		6500000.00
Tata Guilt Fund		4500000.00
Kotak Mahindra Fund		2800000.00
Birla Plus		1200000.00
TOTAL	**94829284.79**	**50786000.00**
SCHEDULE :11 CURRENT ASSETS, LOANS, ADVANCES ETC.		
(A) CURRENT ASSETS		
(1) Inventories		
Closing Stock of Steel & Cement	131274.90	158534.90
Advance for Training Expenses	1351302.00	356043.00
Advance for Research Projects		
Training Cost Accrued but not Recd.	403975.00	403975.00
Grant-in-Aid accrued but not received	35700000.00	
(2) Sundry Debtors		
(1) Debts Outstanding for a period exceeding six months		
(2) Others (Specify)		
(3) Cash balances in hand (including cheques/drafts and imprest)		
Grant-in-Aid A/c	340710.00	64126.00
Research Project A/c	32804.00	
Training A/c		
Consultancy A/c	235.00	
Pension Fund A/c		
GPF A/c		
(4) Bank Balances		
(1) With Scheduled Banks		
Grant-in-Aid A/c	4955510.58	14665352.74
Research Project A/c	219791.00	
Training A/c	3064098.36	4333827.36
Consultancy A/c	7722688.00	9643875.00
Pension Fund A/c	2186252.78	754288.00
GPF A/c	826250.26	2105273.00
TOTAL (A)	**56934891.88**	**32485295.00**

(B) LOANS, ADVANCES AND OTHER ASSETS		
(1) Loans		
(1) Staff		
Loan & Advances to Staff	2435590.00	2641156.00
Advance for expenses to Staff	1680626.00	1667818.00
Advance for expenses (Project)	240123.00	954456.00
Advances for expenses (Conslt. Project)		
HBA		
Advance for Computer		
Festival Advance		
Conveyance (Scooter, Motorcycle, Car etc.)		
Advance for expenses (Research Projects)	133960.00	
(2) Other entities engaged in activities /objectives similar to		
(3) Others (Specify)		
Loan to Envis Project		
Loan to Other A/c	3000000.00	
(2) Advances and other amounts recoverable in cash or in kind		
(1) On Capital Accounts		
(2) Prepayments		
(3) Others (Specify)		
(3) Income Accrued		
(1) On Investments from Earmarked / Endowment Funds		
(2) On Invesments -Others		
(3) On Loans and Advances		
(4) Others (Specify)		
(4) Claims Receivable		
TOTAL (B)	**7490299.00**	**5263430.00**
TOTAL (A+B)	**64425190.88**	**37748725.00**

(S.S. Lamba)
Finance Officer

(P.R. Sinha)
Director

Financial Statement (Non-Profit Organization)
Wildlife Institute of India, Dehradun
INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31st March 2004

INCOME	Schedule	Current Year	Previous Year
Income from Sales/Service	12	0.00	0.00
Grants/Subsidies	13	113604469.00	56789666.00
Fees/Subscriptions	14	13924362.64	584078.00
Income from Investments (Income on Invest. From earmarked/endow. Funds t/f to Funds	15	0.00	0.00
Income from Royalty, Publication etc.	16	1386358.20	366604.00
Interest Earned	17	3337785.78	2327618.00
Other Income	18	13517669.05	26577385.00
Increase/(decrease) in stock of Finished Goods and works-in-progress	19	0.00	0.00
TOTAL (A)		**145770644.67**	**86645351.00**
EXPENDITURE			
Establishment Expenses	20	38210997.00	30239496.00
Other Administrative Expenses	21	35689029.00	55870187.00
Expenditure on Grants, Subsidies etc.	22	0.00	0.00
Interest	23	0.00	0.00
Depreciation (Net Total at the year end - corresponding to Schedule- 8)		75864316.00	39197550.39
TOTAL (B)		**149764342.00**	**125307233.39**
Balance being excess of Income over Expenditure (A-B)		-3993697.33	-38661882.39
Transfer to Special Reserve (Specify each)			
Transfer to / From General Reserve			
BALANCE BEING SURPLUS (DEFICIT) CARRIED TO CORPUS/CAPITAL FUND		**-3993697.33**	**-38661882.39**

(S.S. Lamba)
Finance Officer

(P.R. Sinha)
Director

Financial Statement (Non-Profit Organization)
Wildlife Institute of India
Schedule forming part of Income and Expenditure Account for the year ended 31st March 2004

	(Amt. Rs.)	
	Current Year	**Previous Year**
SCHEDULE :13 GRANTS/SUBSIDIES		
(1) Central Government		
Grant -in- Aid from MoEF	112514493.00	56789666.00
(2) State Government (s)		
(3) Government Agencies		
(4) Institutions/Welfare Bodies		
(5) International Organisations		
(6) Others (Specify)		
WII Contribution (Pension A/c)	1089976.00	
TOTAL	**113604469.00**	**56789666.00**
SCHEDULE :14 FEES/ SUBSCRIPTIONS		
(1) Entrance Fees		
M.Sc.Course Fee	506250.64	109360.00
(2) Annual Fees/ Subscriptions		
(3) Seminar/ Program Fees		
Seminar/ Workshop Fees		102218.00
(4) Consultancy Fees		
Consultancy refund	352146.00	372500.00
(5) Others (Specify)		
Other Receipt (Training)		
Training Cost		
Receipt for Workshop/Courses	10228192.00	
Misc. Receipts (Training A/c)	2837774.00	
Receipt for Training Cost		
TOTAL	**13924362.64**	**584078.00**
SCHEDULE :16 INCOME FROM ROYALTY, PUBLICATION ETC.		
(1) Income from Royalty		
(2) Income from Publications		
(3) Others (Specify)		
Misc. Receipts	727838.20	
Instt. Charges (WII Receipts)	244599.00	66725.00
House Licence Fee	288910.00	299879.00
Bus Charges	62511.00	
Lab Testing Charges	62500.00	
TOTAL	**1386358.20**	**366604.00**

SCHEDULE :17 INTEREST EARNED		
(1) On Term Deposits		
(1) With Scheduled Banks		
Int. on Bank Deposit	220352.00	117110.00
Interest on FDR		
Interest on Investment	3054858.78	
(2) With Non-Scheduled Banks		
(3) With Institutions		
(4) Others (Specify)		
Int. on Investment		
(2) On Savings Account		2210508.00
(1) With Scheduled Banks		
Int. on Savings Account	62575.00	
(2) With Non-Scheduled Banks		
(3) Post Office Savings Account		
(4) Others (Specify)		
(3) On Loans		
(1) Employees/Staff		
(2) Others		
(4) Interest on Debtors and Other Receivables		
TOTAL	**3337785.78**	**2327618.00**
SCHEDULE :18 OTHER INCOME		
(1) Profit on Sale/Disposal of Assets		
(1) Owned Assets		
(2) Assets acquired out of grants, or received free of cost		
(2) Export Incentives realized		
(3) Fees for Misc. Services		
(4) Others (Specify)		
Misc. Receipts (Pension A/c)	5500.00	
WII Contribution (GPF A/c)	3299430.00	
Misc. Receipts (GPF A/c)	2154383.05	
Consultancy Project Receipts during the year		17478434.00
EMD Forfeited	10000.00	
Research Project	2935936.00	
Rent	166677.00	148890.00
WII Products	97682.00	197880.00
Misc. Receipts (Penal Int. on Car Advance)		35696.00
Training Receipts Income		8102284.00
EPF Receipts		
Misc. Receipts (Consultancy A/c)	690230.00	
Receipt for Project	1682052.00	
Saving of Project Cost		614201.00
Misc. Receipts for Research Project	2475779.00	
TOTAL	**13517669.05**	**26577385.00**

SCHEDULE :20 ESTABLISHMENT EXPENSES		
(1) Salaries and Wages		
Fellowship	285953.00	469269.00
Medical	2036133.00	1599315.00
Stipend	62671.00	100800.00
Travel Exp. (Project)	205193.00	
Salary & Allowances	145000.00	
Travel Exp. (Cosnlt. Project)	44811.00	
Fellowship & Wages (Research Project)	732109.00	
Honorarium	23200.00	36900.00
Salary & Allowances	21271588.00	20539008.00
Fellowship & Wages (Project)	1545530.00	
Wages	892488.00	412324.00
Fellowship & Wages (Conslt. Project)	574050.00	
Travel Exp. (Research Project)	200435.00	
Salary & Wages		
(2) Allowances and Bonus		
Bonus	249658.00	252586.00
OTA	415012.00	508427.00
LTC	371287.00	
Honorarium (Training A/c)	12195.00	
Travelling Allowances	1716344.00	
Training Allowances	565520.00	
(3) Contribution to Provident Fund		
WII Contribution		182913.00
Research Project Expenditure	2000000.00	5245014.00
(4) Contribution to Other Fund (Specify)		
Leave Salary and Pension Contribution to LIC	549193.00	
(5) Staff Welfare Expenses		
Uniforms	38489.00	19031.00
Employer Contribution to EPF		
(6) Expenses on Employees Retirement and Terminal Benefits		
Final Payment	810213.00	
Leave Encashment		873909.00
(7) Others (Specify)		
Commuted Value of Pension	328843.00	
Pension/Family Pension	685781.00	
Misc./Cont.		
Camp Expenses (Project)	136747.00	
Camp Expenses (Conslt. Project)	10952.00	
Advance / Withdrawal	1645659.00	
Camp Expenses (Research Project)	655943.00	
TOTAL	**38210997.00**	**30239496.00**

SCHEDULE :21 OTHER ADMINISTRATIVE EXPENSES		
AMC of Computers	144635.00	
Annual Research Seminar	183659.00	
Auditors Remuneration		96185.00
Consultancy Charges		50000.00
Consultancy project Exp.		15247990.00
Cont./Misc. (Conslt. Project)	628984.00	
Contingencies/Misc. (Project)	860725.00	
Contingencies/Misc. (Research Project)	326844.00	
Contingencies/Misc.Exp.	2521292.00	
Conveyance Charges	13042.00	4531.00
Electricity and Water Charges	3519599.00	2617365.00
Entertainment Charges	232033.00	
EPF Contribution	87397.00	
Estate Maintenance	1744500.00	2165876.00
Estate Security	2365768.00	
Forest Advance		
Govt. Contribution to Pension Fund		
IUCN Contribution		
Lab Chemicals		485554.00
Lab Expenses	761918.00	
Landscaping		
Legal Expenses	531835.00	77548.00
Library Books (Training A/c)	235537.00	
Library Expenses	42625.00	
M.Sc. Course Expenditure	500532.00	
Newspaper & Magazine	45118.00	39688.00
Operational Expenses	5823216.00	1701857.00
Pension & EPF Expenses		
Pension Contribution	1094778.00	13055157.00
POL & Maintenance of Vehicle (Project)	567099.00	
POL & Maintenance of Vehicle (Research Project)	166760.00	
POL & Maintenance of Vehicle (Conslt. Project)	34437.00	
POL for Vehicles	1228403.00	961562.00
Postage & Telegrams	190771.00	244565.00
Printing & Binding	255711.00	411545.00
Publication	38373.00	
Publicity & Advertisement	126693.00	509511.00
Rent of Buildings		
Repair & Maintenance of Vehicles	525878.00	728574.00
Repair of Computer		
Saletax (Contractor)		
Sample Testing Charges		
Sports Goods	29399.00	23127.00
Stationery	1137103.00	1327874.00
Stationery Exp.	1196455.00	
Telephone & TC	1544383.00	930777.00
Training Account Exp.		7509649.00
Training Cost Expenditure	5000000.00	5000000.00
Training Receipts		
Travel Exp.	1887940.00	2681252.00
Workshop/Seminar	95587.00	
TOTAL	**35689029.00**	**55870187.00**

(S.S. Lamba)
Finance Officer

(P.R. Sinha)
Director

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